

May we suggest you contact the ITT Cannon technical sales office nearest you for immediate assistance with technical questions, order placement or simply to discuss your next project.

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- Low insertion force contacts.
- Both environmental and non- environmental versions.
- Polarizing posts that are removable from the mating face.
- Field replaceable inserts for size 22 and power contacts.
- Up to 800 size 22 contacts in one connector.
- Crimp, coax, power, printed circuit and wire wrappable post style contacts.
- Uses standard DPX crimp, insertion/extraction tooling.
- Waveguide connections available.



**BKAD/E**  
Rear Release/Rear Removable  
Size 12, 16, 20, 22 Crimp Contacts

BKAD/E connectors represent a major milestones in presenting a new rack and panel connector for support of the air transportation market. Several important design concerns have been addressed and solved in this new series. High mating forces of pluggable modules in a rack have been reduced by approximately two-thirds.

The low insertion force contacts are also interchangeable with the contacts used in the DPX series and permit retrofit of existing equipment.

**BKAF**  
Front Release/Front Removable  
Size 22 Solder Tail and Wrap Post Contacts

This new connector is totally intermateable and intermountable with ARINC 600 connectors now in the field.

The BKAF permits the user to easily replace a contact in case of problems, rather than disassemble the entire connector--it is available with size 22 contacts in wrap post or solder-tail versions. The system maintains the advantages of low insertion force technology incorporated in all ARINC 600 connectors.

Pos-Aline Connector Construction Feature

In the ARINC 600 connector series, Size 22 contacts are the only size that utilize this design feature. The hooded socket extends from its insulator while the pin contacts are shrouded by its front insulator.

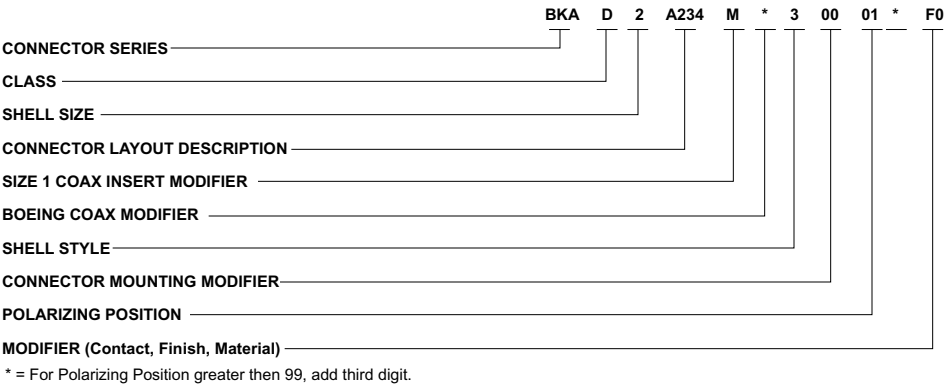
All other contacts used in this series employ standard contact design.

The result is that the complement of contacts for the plug connectors will consist of pin contacts for size 22 and socket contacts for all others. The receptacle contacts will be just the reverse, socket contact for size 22 and pin contacts for the balance.

Material Specifications

|                   |             | BKAD             | BKAE                     | BKAF             | Specifications |
|-------------------|-------------|------------------|--------------------------|------------------|----------------|
| Shell & Waveguide | Material    | Aluminum alloy   | Aluminum alloy           | Aluminum alloy   | QQ A-591/A380  |
|                   | Finish      | Alodine 1200     | Alodine 1200             | Alodine 1200     | MIL-C-5541     |
| Insulator         | Material    | Thermoset        | Thermoset                | Thermoset        | N/A            |
|                   | Material    | Copper alloy     | Copper alloy             | Copper alloy     | QQ-C-533       |
| Contacts          | Finish      | Gold over Nickel | Gold over Nickel         | Gold over Nickel | MIL-G-45204    |
|                   | Termination | Crimp            | Crimp                    | P.C./Wrap Post   | N/A            |
| Grommets/Seals    | Material    | N/A              | Silicone-based Elastomer | N/A              | N/A            |
| O-Ring            | Material    | N/A              | Silicone-based Elastomer | N/A              | N/A            |

How to Order



- CONNECTOR SERIES
- BKA (Per ARINC 600)
- CLASS
- D

- Non-environmental (rear release, crimp contacts)
- E

- Environmental (rear release, crimp contacts)
- F

- Non-environmental (front release, solder and wrap post #22 contact, rear release all others)
- C

- Same as E, except uses BKAD shells, and Less 0 rings on plug side.
- S

- Environmental (0-ring is used to seal between connector shell and insulators with rear release, crimp contacts.
- T

- Non-environmental connector using filtered contacts (reference Cannon Phoenix)

- SHELL SIZE
- 1

- Max. contact capacity - 125
- 2

- Max. contact capacity - 400
- 3

- Max. contact capacity - 800

CONNECTOR LAYOUT DESCRIPTION

(See page 4)

- SIZE 1 COAX INSERT MODIFIER
- M

- Connector contains modified 71W1 or 2W2 insert (four MTG screw hole locations and coaxial contact used in this insert are interchangeable between different manufacturers
- NOTE: A dash must be inserted whenever code does not apply.

BOEING COAX MODIFIER

| Boeing Coax Code | ITTC Code | ITTC Coax Contacts Supplied  |                              |
|------------------|-----------|------------------------------|------------------------------|
|                  |           | Plug Connector               | Receptacle Connector         |
| AA               | Blank     | No Coax Supplied             | No Coax Supplied             |
| AB               | B         | 349-0013-000                 | 349-0014-000                 |
| AC               | C         | 349-0015-000                 | 349-0016-000                 |
| AD               | D         | 349-0013-000<br>349-0017-000 | 349-0014-000<br>349-0002-000 |
| AE               | E         | 349-0015-000<br>349-0018-000 | 349-0016-000<br>349-0004-000 |
| AF               | F         | 349-0015-000<br>349-0017-000 | 349-0016-000<br>349-0002-000 |

- SHELL STYLE
- 3

- Plug (rack side)
- 4

- Receptacle (box side)

- CONNECTOR MOUNTING MODIFIER
- 00

- Standard design, .148 dia. holes
- 01

- With #6-32 ESNA (#12 NCFMA2-62) clinch nuts (see chart)
- | Connector Size | Number of Clinch Nuts |            |
|----------------|-----------------------|------------|
|                | Plug                  | Receptacle |
| 1              | 4                     | 4          |
| 2              | 4                     | 6          |
| 3              | 8                     | 10         |
- 02

- Size 1 receptacle only - less 3 printed circuit board mounting lugs
- 03

- With #4-40 ESNA (#22 NCFMA2-40) clinch nuts (see chart)
- 08

- Size 2 and 3 plug and receptacle only - with #4-40 ESNA (#22 NCFMA2-40) clinch nuts (all mounting holes)
- 09

- Size 2 and 3 plug and receptacle only - with #6-32 ESNA (#12 NCFMA2-62) clinch nuts (all mounting holes)
- 16

- Same as - 00 mounting modification except with nickel finished shells .0008 - .0012 thick with EMI grounding spring for plug shells and supplied with non-environmental inserts.
- 17

- Same as - 00 mounting modification except with nickel finished shells .0008 - .0012 thick with EMI grounding spring for plug shells and supplied with environmental inserts not potted into shell.
- 23

- With floating eyelets (.048 min. radial float) 4 corner holes per connector.
- Consult factory if other modifications are required

## How to Order (Continued)

**CONNECTOR LAYOUT DESCRIPTION** Note: All layouts with "OPEN" insert cavity are not supplied with an insulator. If a Blank insert is required please consult factory.  
Three Digit Number Contained within the Shell Layout Indicates Total Number of Contacts Available (including Waveguide)

| Connector Layout | Shell Size | Shell Cavity Identification |           |      |   |   |   | Ref. ARINC Characteristic | Connector Layout | Shell Size | Shell Cavity Identification |       |      |       |      |       | Ref. ARINC Characteristic |
|------------------|------------|-----------------------------|-----------|------|---|---|---|---------------------------|------------------|------------|-----------------------------|-------|------|-------|------|-------|---------------------------|
|                  |            | A                           | B         | C    | D | E | F |                           |                  |            | A                           | B     | C    | D     | E    | F     |                           |
| -005             | 1          | OPEN                        | OPEN      | 5W2  |   |   |   |                           | -T173            | 2          | 150                         | 10T10 | 13W2 |       |      |       |                           |
| -060             | 1          | OPEN                        | 60        | OPEN |   |   |   |                           | 234              | 2          | 150                         | 71W1  | 13W2 |       |      |       | 709                       |
| A060             | 1          | 60                          | OPEN      | OPEN |   |   |   |                           | A234             | 2          | 71W1                        | 150   | 13W2 |       |      |       | 727                       |
| -065             | 1          | OPEN                        | 60        | 5W2  |   |   |   |                           | -246             | 2          | 120T2                       | 120T2 | 6T6  |       |      |       |                           |
| A065             | 1          | 60                          | Open      | 5W2  |   |   |   |                           | -248             | 2          | 121                         | 121   | 6T6  |       |      |       |                           |
| -120             | 1          | 60                          | 60        | OPEN |   |   |   |                           | 250              | 2          | OPEN                        | 150   | 100  |       |      |       |                           |
| -125             | 1          | 60                          | 60        | 5W2  |   |   |   | ●                         | 250A             | 2          | 150                         | BLANK | 100  |       |      |       |                           |
| -013             | 2          | OPEN                        | OPEN      | 13W2 |   |   |   |                           | -251             | 2          | Waveguide                   | 150   | 100  |       |      |       |                           |
| -017             | 2          | 2W2                         | 2W2       | 13W2 |   |   |   |                           | -300             | 2          | 150                         | 150   | OPEN |       |      |       |                           |
| -071             | 2          | OPEN                        | 71W1      | OPEN |   |   |   |                           | -306             | 2          | 150                         | 150   | 6T6  |       |      |       |                           |
| A071             | 2          | 71W1                        | OPEN      | OPEN |   |   |   |                           | -313             | 2          | 150                         | 150   | 13W2 |       |      | ● ● ● |                           |
| -085             | 2          | Waveguide                   | 71W1      | 13W2 |   |   |   |                           | -370             | 2          | 150                         | 120T2 | 100  |       |      |       |                           |
| A085             | 2          | 71W1                        | Waveguide | 13W2 |   |   |   |                           | -400             | 2          | 150                         | 150   | 100  |       |      |       |                           |
| 86M              | 2          | 2W2                         | 71W1A     | 13W2 |   |   |   |                           | -021             | 3          | 4W4                         | 4W4   | 13W2 | BLANK | OPEN | OPEN  |                           |
| -093             | 2          | 4W4                         | 4W4       | 85   |   |   |   |                           | -026             | 3          | OPEN                        | OPEN  | 13W2 | OPEN  | OPEN | 13W2  |                           |
| -100             | 2          | OPEN                        | OPEN      | 100  |   |   |   |                           | -113             | 3          | OPEN                        | OPEN  | 100  | OPEN  | OPEN | 13W2  |                           |
| -137             | 2          | 121                         | 10T10     | 6T6  |   |   |   |                           | -A113            | 3          | OPEN                        | OPEN  | 13W2 | OPEN  | OPEN | 100   |                           |
| -T141            | 2          | 120T2                       | 10T10     | 13W2 |   |   |   |                           | -114             | 3          | 4W4                         | 4W4   | 4W4  | 4W4   | 13W2 | 85    |                           |
| -142             | 2          | 71W1                        | 71W1      | OPEN |   |   |   |                           | -284             | 3          | 71W1                        | 71W1  | OPEN | 71W1  | 71W1 | OPEN  |                           |
| -155             | 2          | 71W1                        | 71W1      | 13W2 |   |   |   | ● ●                       | -310             | 3          | 71W1                        | 71W1  | 13W2 | 71W1  | 71W1 | 13W2  |                           |
| 155M             | 2          | 71W1A                       | 71W1A     | 13W2 |   |   |   |                           | -330M            | 3          | 2W1                         | 2W2   | 13W2 | 150   | 150  | 13W2  |                           |
| V155M            | 2          | 71W1B                       | 71W1A     | 13W2 |   |   |   |                           | -A330M           | 3          | 150                         | 150   | 13W2 | 2W2   | 2W2  | 13W2  |                           |
| 158M             | 2          | 2W2                         | 71W1A     | 85   |   |   |   |                           | -496             | 3          | 121                         | 121   | 121  | 121   | 6T6  | 6T6   |                           |
| -A158M           | 2          | 2W2                         | 71W1B     | 85   |   |   |   |                           | -600             | 3          | 150                         | 150   | OPEN | 150   | 150  | OPEN  |                           |
| -163             | 2          | OPEN                        | 150       | 13W2 |   |   |   |                           | -626             | 3          | 150                         | 150   | 13W2 | 150   | 150  | 13W2  | ● ● ● ●                   |
| A163             | 2          | 150                         | OPEN      | 13W2 |   |   |   |                           | -713             | 3          | 150                         | 150   | 100  | 150   | 150  | 13W2  |                           |
| -164             | 2          | 150                         | Waveguide | 13W2 |   |   |   |                           | A713             | 3          | 150                         | 150   | 13W2 | 150   | 150  | 100   |                           |
| A164             | 2          | Waveguide                   | 150       | 13W2 |   |   |   | 708                       | -734             | 3          | 150                         | 150   | 100  | 150   | 150  | 3W    |                           |
| 165M             | 2          | 150                         | 2W2       | 13W2 |   |   |   |                           | -764             | 3          | 150                         | 150   | 64   | 150   | 150  | 100   |                           |
| -A165M           | 2          | 2W2                         | 150       | 13W2 |   |   |   |                           | -800             | 3          | 150                         | 150   | 100  | 150   | 150  | 100   |                           |
| -167             | 2          | 4W4                         | 150       | 13W2 |   |   |   |                           | -269M            | 3          | 2W2                         | 2W2   | 13W2 | 2W2   | 150  | 100   | 732                       |
| 173M             | 2          | 2W2                         | 71W1B     | 100  |   |   |   |                           | 271C             | 3          | 4W4                         | 4W4   | 13W2 | BLANK | 150  | 100   |                           |
|                  |            |                             |           |      |   |   |   |                           | 271M             | 3          | 2W2                         | 2W2   | 13W2 | 4W4   | 150  | 100   |                           |
|                  |            |                             |           |      |   |   |   |                           | -326             | 3          | OPEN                        | 150   | 13W2 | OPEN  | 150  | 13W2  |                           |

**NOTE. ANY OTHER COMBINATION OF INSERTS WITHIN A SPECIFIC SHELL IS AVAILABLE UPON REQUEST**

- Layout included in the following ARINC configurations 702, 710, 711, 712, 714, 715, 716, 723.
- ● Layout included in the following ARINC configurations 707, 718 & 730.
- ● ● Layout included in the following ARINC configurations 701, 702, 703, 704, 705, 706, 724, 725.
- ● ● ● Layout included in the following ARINC configurations 701, 717, 726, 729.

**POLARIZING POSITION**

01 thru 99 (per ARINC 600)

Blank-Polarizing posts or keys not installed but supplied with connector

**MODIFIER (Contact, Finish, Material)**

Blank - Rear release, crimp, signal and power contacts supplied with connector (when applicable)  
FO - Contacts not supplied with connector (FO not stamped on connector)  
FOO - Less contacts and waveguide (FOO not stamped on connector)  
SA - Front release .025(0.63) D. x .150 (3.81) solder post and crimp, rear release power contacts (when applicable) supplied with connector  
SB - Front release .025(0.63) D. x .250 (6.35) solder post and crimp, rear release power contacts (when applicable) supplied with connector

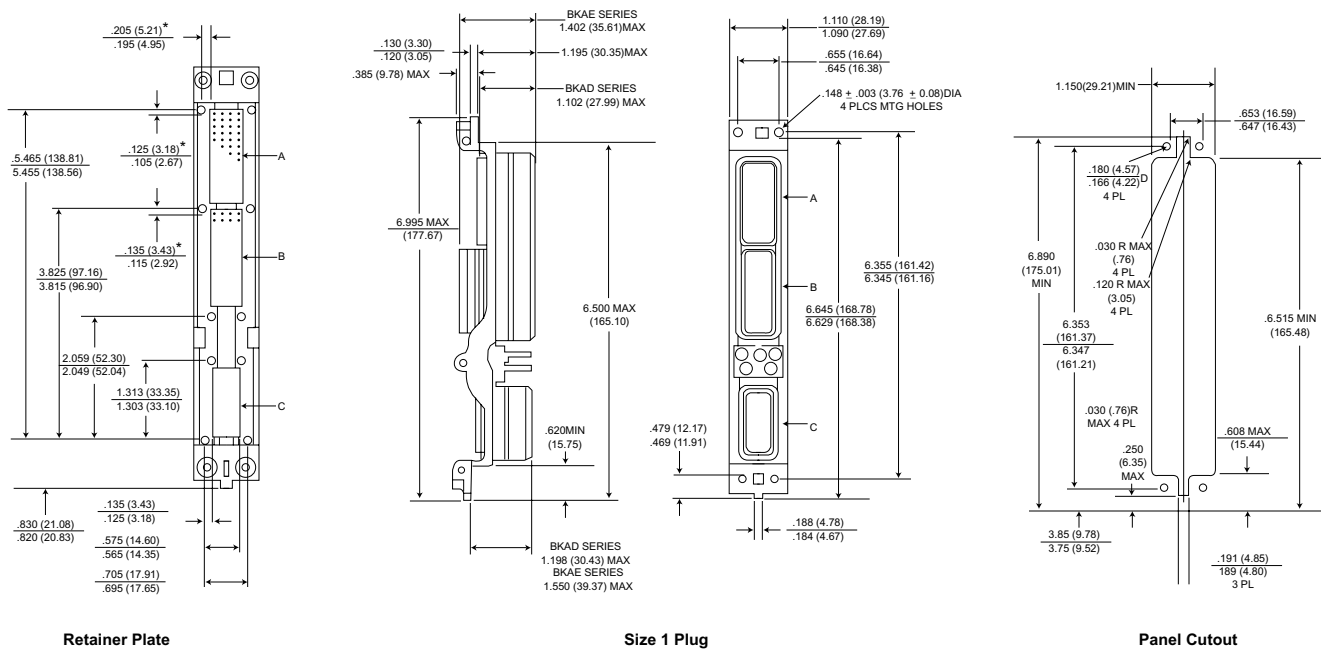
SC - Front release .025(0.63) D. x .375 (9.53) solder post and crimp, rear release power contacts (when applicable) supplied with connector  
SD - Front release .025(0.63) D. x .500 (12.7) solder post and crimp, rear release power contacts (when applicable) supplied with connector  
WA - Front release .025(0.63) Sq. x .250 (6.35) (1 wrap) wrap post and crimp, rear release power contacts (when applicable) supplied with connector  
WB - Front release .025(0.63) Sq. x .375 (9.53) (2 wraps) wrap post and crimp, rear release power contacts (when applicable) supplied with connector

WC - Front release .025(0.63) Sq. x 500 (12.7) (3 wraps) wrap post and crimp, rear release power contacts (when applicable) supplied with connector  
WD - Front release .025 (0.64) Sq. x 641 (16.28) (3 wraps) wrap post and crimp, rear release power contacts (when applicable) supplied with connector

NOTE: COAXIAL CONTACTS TO BE ORDERED SEPARATELY

## Shell Dimensions - Size 1

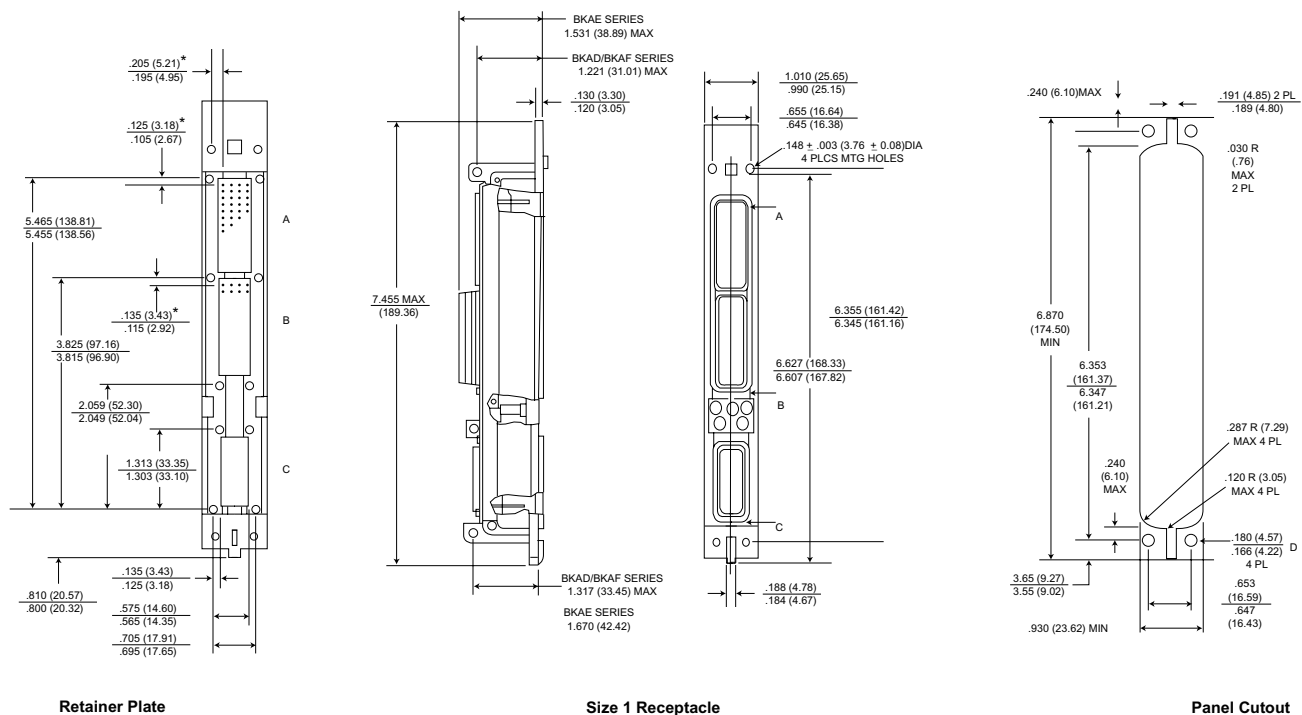
## Plug



\* This dimension indicates distance from centerline of retaining screw to the centerline of first contact cavity.

For further information, refer to ARINC 600 specification or consult factory.

## Receptacle

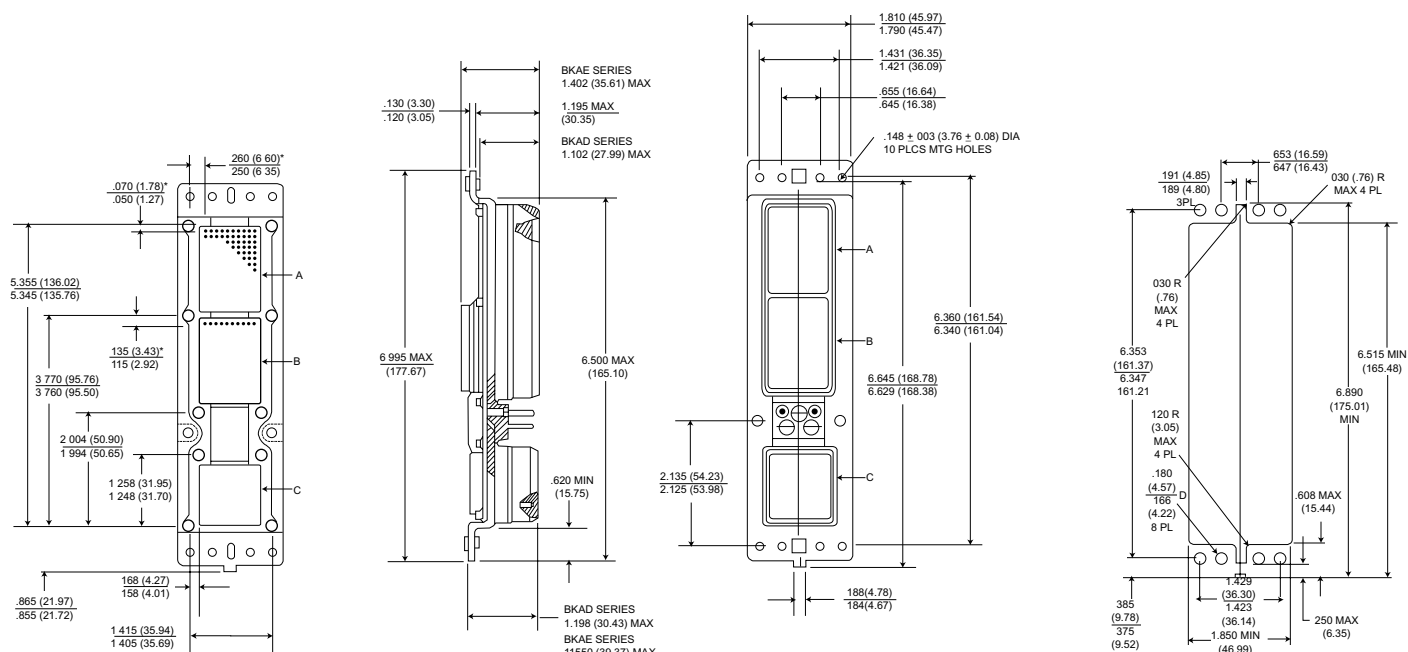


\* This dimension indicates distance from centerline of retaining screw to the centerline of first contact cavity.

For further information, refer to ARINC 600 specification or consult factory.

## Shell Dimensions - Size 2

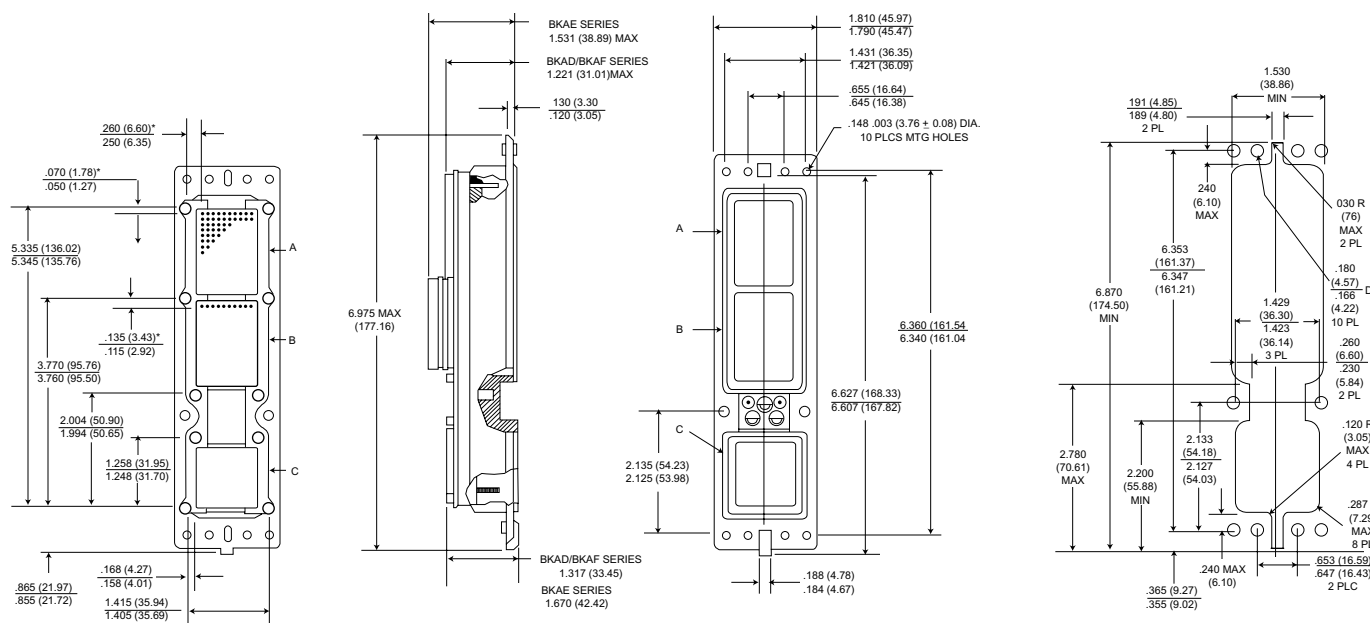
## Plug



\* This dimension indicates distance from centerline of retaining screw to the centerline of first contact cavity.

For further information, refer to ARINC 600 specification or consult factory.

## Receptacle

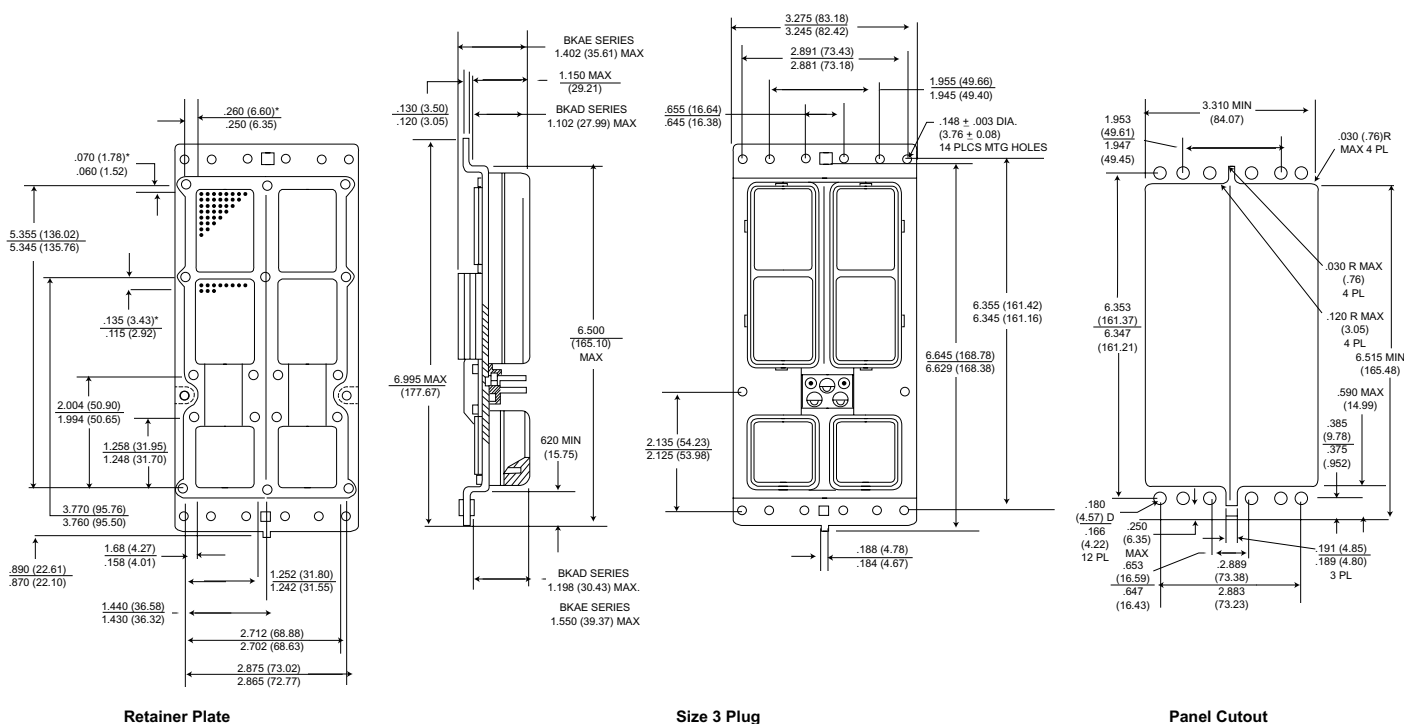


\*This dimension indicates distance from centerline of retaining screw to the centerline of first contact cavity.

For further information, refer to ARINC 600 specification or consult factory.

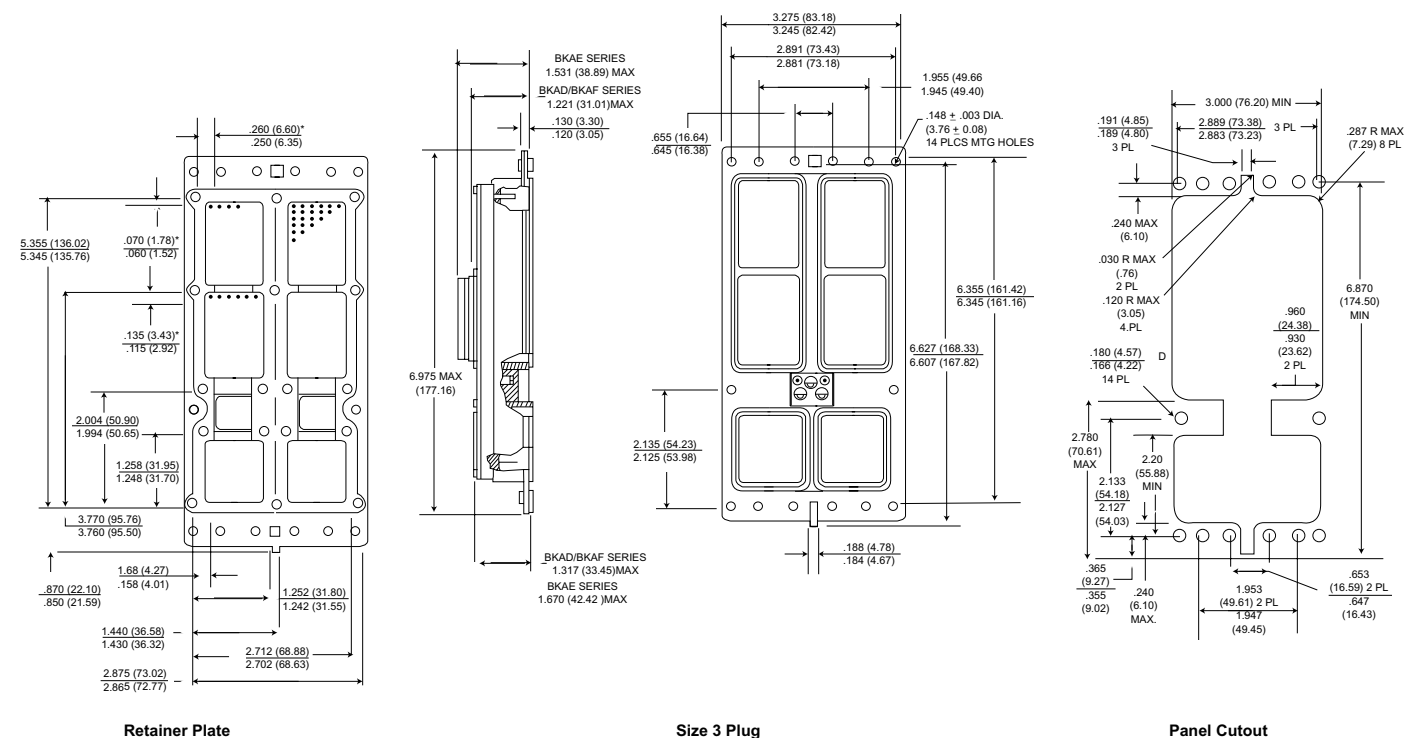
## Shell Dimensions - Size 3

## Plug



For further information, refer to ARINC 600 specification or consult factory.

## Receptacle

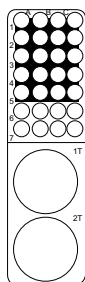


For further information, refer to ARINC 600 specification or consult factory.

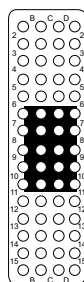
## Contact Arrangements - Shell Size 1

### BKAD/BKAE (Plug Rear face shown)

Shell Cavity  
A or B

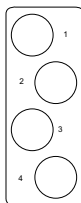


30T2  
28 #22  
2 #8 TWINAX/COAX  
(#8 Grounded to  
Shell)

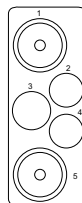


60  
60 #22

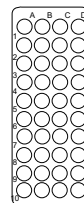
Shell Cavity  
C



4  
4 #12



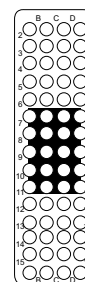
5W2  
1 #12  
2 #16  
2 #5 COAX



40  
40 #22

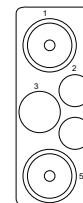
### BKAF - Available Receptacle Shell Only (Front Release)

Shell Cavity  
A or B



60  
60 #22

Shell Cavity  
C



5W2  
1 #12  
2 #16  
2 #5 COAX

REAR SURFACE WHITE ON BLUE TO INDICATE REAR RELEASE REAR REMOVAL CONTACTS

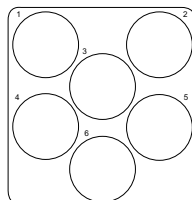
(For Contact Cavity Location and Contact Cavity Identification refer to ARINC 600 or consult factory)

ENGAGING END SURFACE WHITE ON RED TO INDICATE FRONT RELEASE FRONT REMOVAL CONTACTS

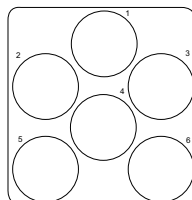
## Contact Arrangements - Shell Sizes 2 and 3

### BKAD/BKAE (Plug Rear face shown)

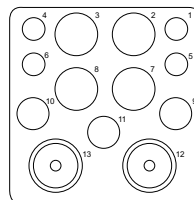
Shell Cavity  
C or F



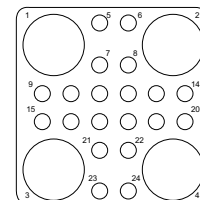
6\*\*  
6 #8



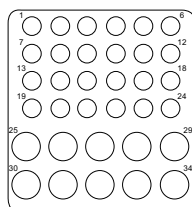
6T6\*\*  
6 #8  
(Metallic Insert)



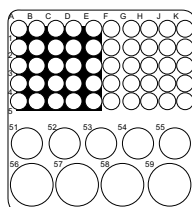
13W2  
4 #20, 4 #12, 3 #16  
2 #5 COAX



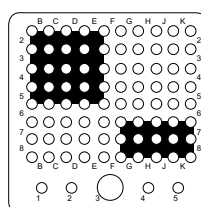
24T4\*\*  
20 #20, 4 #8



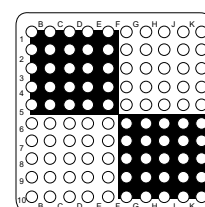
34\*\*  
24 #20, 10 #18



59\*\*  
50 #22, 5 #16, 4 #12



85  
80 #22, 4 #20, 1 #16



100  
100 #22

\*\*Pending ARINC release.

NOTE: In layouts using #22 contacts mixed with any other contact size (20HD, 16, 12), the size #22 contact type (pin or socket) determines the insulator as a pin insert or a socket insert.

REAR SURFACE WHITE ON BLUE TO INDICATE REAR RELEASE, REAR REMOVAL CONTACTS FOR INSERTS CONTAINING STANDARD SIGNAL & POWER CONTACTS

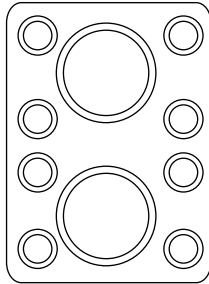
(For Contact Cavity Location and Contact Cavity Identification refer to ARINC 600 or consult factory)

## Contact Arrangements - Shell Sizes 2 and 3

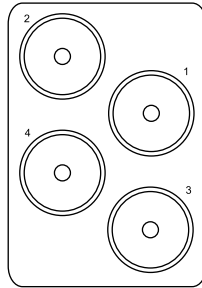
BKAD/BKAE (Plug Rear face shown)

Shell Cavity

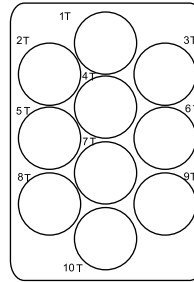
A,B,D,E



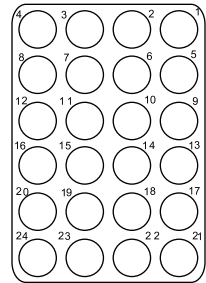
**2W2**  
**2 #1 COAX**



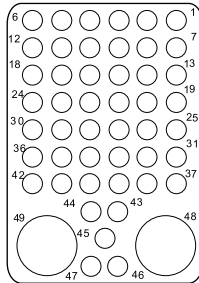
**4W4**  
**4 Modified**  
**#1 COAX**  
**(Metallic Insert)**



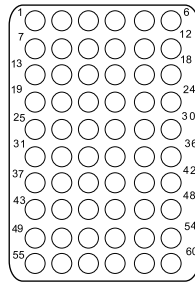
**10T10\*\***  
**10 #8 TRIAX/COAX**  
**(#8 Grounded to Shell)**  
**(Metallic Insert)**



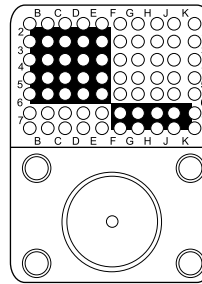
**24\*\***  
**24 #12**



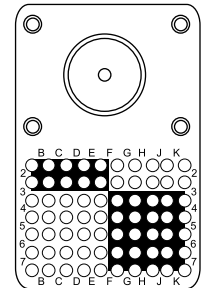
**49T2\*\***  
**47 #20**  
**2 #8**



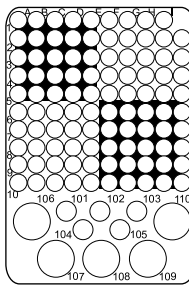
**60\*\***  
**60 #20**



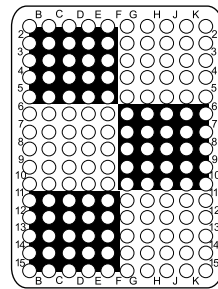
**71W1**  
**70 #22**  
**1 #1 COAX**



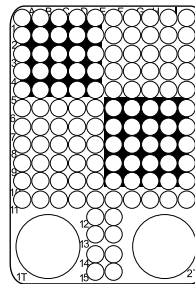
**71W1B**  
**70 #22**  
**1 #1 COAX**



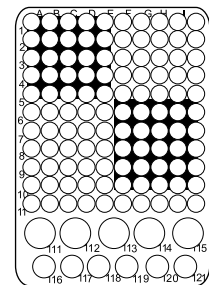
**110\*\***  
**100 #22**  
**5 #12 & 5 #20**



**150**  
**150 #22**



**120T2\*\***  
**118 #22**  
**2 #8 TWINAX/COAX**  
**(#8 Grounded to Shell)**



**121\*\***  
**110 #22**  
**5 #16**  
**6 #20**

\*\* Pending ARINC release.

REAR SURFACE WHITE ON BLUE TO INDICATE REAR RELEASE. REAR REMOVAL CONTACTS FOR INSERTS CONTAINING STANDARD SIGNAL & POWER CONTACTS

(For Contact Cavity Location and Contact Cavity Identification refer to ARINC 600 or consult factory)

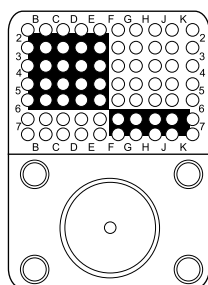
## Contact Arrangements - Shell Sizes 2 and 3

BKAF - Available Receptacle Shell ONLY

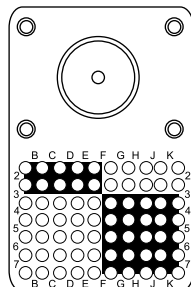
(Front Release)

SHELL CAVITY

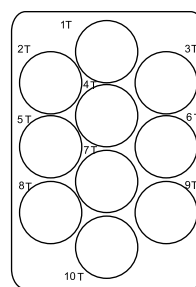
A, B, D, E,



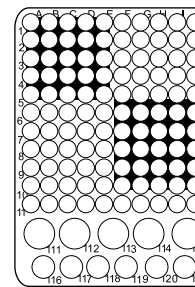
**71W1**  
**70 #22**



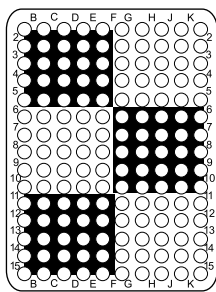
**71W1B**  
**70 #22**



**10T10\*\***  
**10 #8**



**121F\*\***  
**110 #22**  
**6 #20**  
**5 #16**



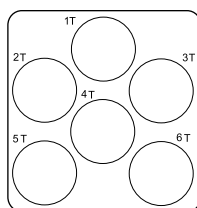
**150**  
**150 #22**

ENGAGING END SURFACE WHITE ON RED TO INDICATE FRONT RELEASE FRONT REMOVAL CONTACTS FOR INSERTS CONTAINING STANDARD SIGNAL & POWER CONTACTS

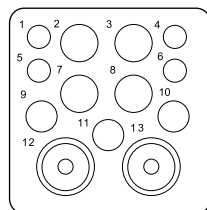
BKAF - Available Receptacle Shell ONLY

(Front Release)

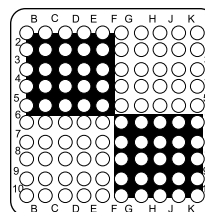
SHELL CAVITY C, F



**6T6\*\***  
**6 #8**



**13W2**  
**4 #20**  
**3 #16**  
**4 #12**  
**2 #5 COAX**



**100**  
**100 #22**

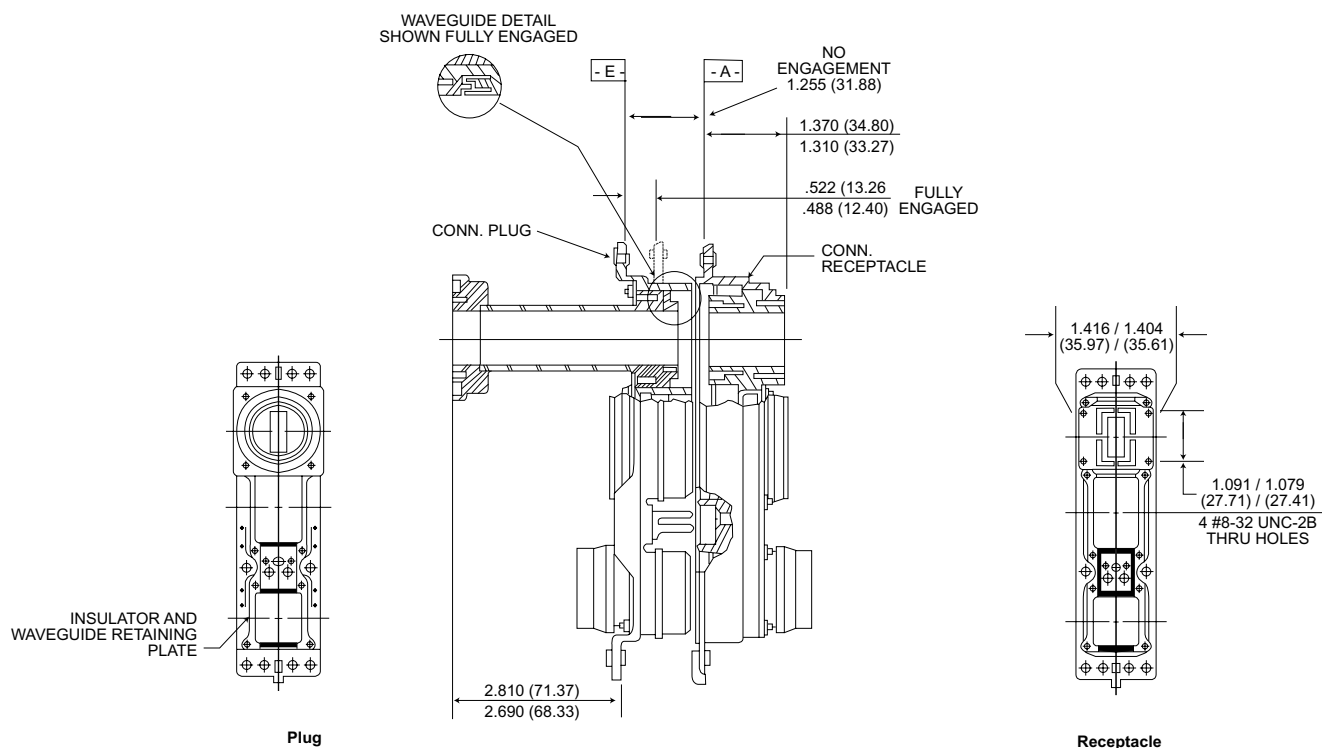
\*\* Pending ARINC release.

NOTE #22 CONTACTS ARE SOCKETS, 20HD,16, 12 ARE PIN CONTACTS.

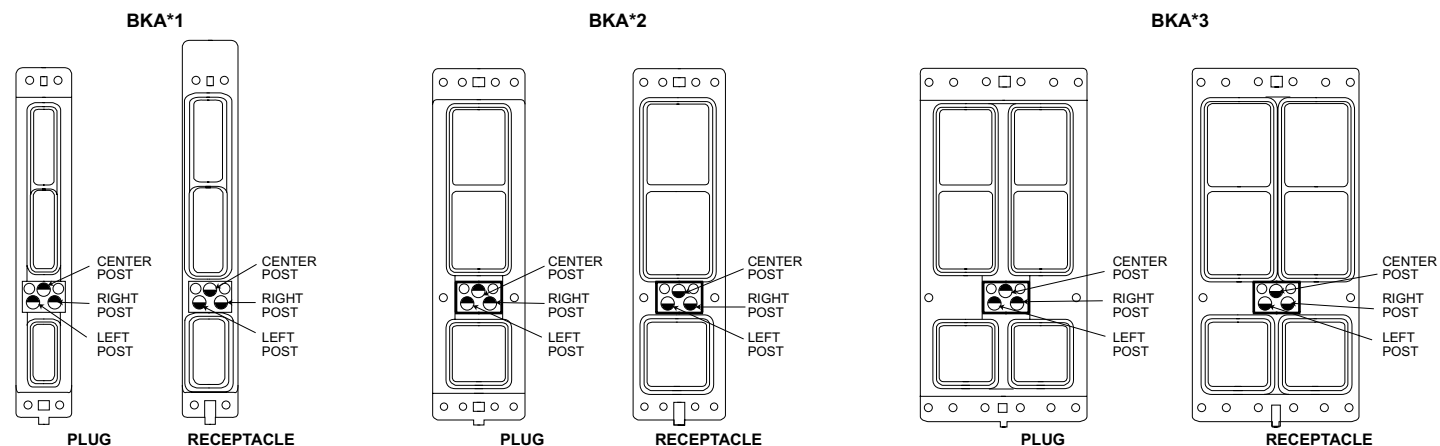
ENGAGING END SURFACE WHITE ON RED TO INDICATE FRONT RELEASE, FRONT REMOVAL CONTACTS FOR INSERTS CONTAINING STANDARD SIGNAL & POWER CONTACTS

(For Contacts Cavity Location and Contact Cavity Identification refer to ARINC 600 or Consult Factory)

## Waveguide Connections



## Polarization (Engaging End)





## Contact and Termination Tooling Data

## BKA\* (LIF) Crimp Contacts

| Contact Size and Part Numbers |                            |                             | Crimp Tooling |              |                |              |              | Insertion/Extraction Tooling |                                  |                                |                        | Wire Size      |                |                       |
|-------------------------------|----------------------------|-----------------------------|---------------|--------------|----------------|--------------|--------------|------------------------------|----------------------------------|--------------------------------|------------------------|----------------|----------------|-----------------------|
|                               | Part Numbers               |                             | Tool P/N      |              | Selec-<br>tor# | Locator P/N  |              | MIL Spec.                    | ITT Cannon                       |                                |                        | AWG            | Insul Dia. Max | Strip Length          |
| Size                          | Pin                        | Socket                      | MIL Spec.     | ITT Cannon   |                | Mil Spec.    | ITT Cannon   |                              | Insertion                        | Extraction                     | Ins./Ext.              |                |                |                       |
| 2222                          | Used in Plug 030-2259-000  | Used in Recep. 031-1287-000 | M22520 /2-01  | 995-0001-584 | 3<br>3<br>4    | M22520 /2-23 | 995-0002-015 | M81969 /1-01                 | CIT-DPXMA-22-1 Metal 070256-0000 | CET-DPXMA-22 Metal 070317-0000 | 980-0004-804 Metal Tip | 26<br>24<br>22 | .054 (1.4)     | .130/.110 (3.3)/(2.8) |
| 2020HD                        | Used in Recep 030-2273-000 | Used in Plug 031-1302-000   | M22520 /2-01  | 995-0001-584 | 6<br>7         | M22520 /2-08 | 995-0001-604 | M81969 /1-02                 | -                                | -                              | 980-0004-805 Metal Tip | 22<br>20       | .071 (1.8)     | .167/.147 (4.2)/(3.7) |
| 1616                          | Used in Recep 030-2280-000 | Used in Plug 031-1303-000   | M22520 /1-01  | 995-0001-585 | 4<br>5<br>6    | M22520 /1-02 | 995-0001-736 | M81969 /1-03                 | -                                | CET 16-9 Plastic               | 980-0004-806 Metal Tip | 20<br>18<br>16 | .103 (2.6)     | .207/.230 (6.9)/(5.8) |
| 1212                          | Used in Recep 030-2286-000 | Used in Plug 031-1308-000   | M22520 /1-01  | 995-0001-585 | 7<br>8         | M22520 /1-11 | 995-0002-027 | M81969 /14-04                | -                                | CET 12-4 Plastic               | CIET-12 Plastic        | 14<br>12       | .135 (3.4)     | .270/.230 (6.9)/(5.8) |

## BKA\* Thermocouple Contacts

| Contact Size and Part Numbers |                           |                             | Crimp Tooling |              |                |              |              | Insertion/Extraction Tooling |                                  |                                |                        | Wire Size |                |                       |
|-------------------------------|---------------------------|-----------------------------|---------------|--------------|----------------|--------------|--------------|------------------------------|----------------------------------|--------------------------------|------------------------|-----------|----------------|-----------------------|
| Part Number                   |                           |                             | Tool P/N      |              | Selec-<br>tor# | Locator P/N  |              | MIL Spec.                    | ITT Cannon                       |                                |                        | AWG       | Insul Dia. Max | Strip Length          |
| Size                          | Pin                       | Socket                      | MIL Spec.     | ITT Cannon   |                | Mil Spec.    | ITT Cannon   |                              | Insertion                        | Extraction                     | Ins./Ext.              |           |                |                       |
| 2222 Alumel                   | Used in Plug 030-1975-009 | Used in Recep. 031-1113-009 | M22520 /2-01  | 995-0001 584 | 3              | M22520 /2-23 | 995-0002-015 | M81969 /1-01                 | CIT-DPXMA-22-1 Metal 070256-0000 | CET-DPXMA-22 Metal 070317-0000 | 980-0004-804 Metal Tip | 26 24 22  | .054 (1.4)     | .130/.110 (3.3)/(2.8) |
| 2222 Chromel                  | Used in Plug 030-1975-010 | Used in Recep. 031-1113-010 |               |              | 4              |              |              |                              |                                  |                                |                        |           |                |                       |

## BKAF-ARINC 600 Size 22 Wrap Post Socket Contacts With .025(6.35) Square Wire-Wrappable Tails-Receptacle Only.

The new low insertion force, front-insertable, front-removable #22 socket contacts with .025(6.35) square wire wrappable tails are now available for use in the BKAF non-environmental receptacle version only.

These contacts can be sold separately or they can be supplied with a connector (see How to Order). Use part numbers shown in the table on the right when ordering separately.

| Contact Mod. | Part Number  | Number of Wraps | Min. Post Extension | Extraction Tool |
|--------------|--------------|-----------------|---------------------|-----------------|
| WA           | 031-1351-000 | 1               | .250 (6.35)         | CET-BKAF 22S    |
| WB           | 031-1351-001 | 2               | .375 (9.52)         |                 |
| WC           | 031-1351-002 | 3               | .500 (12.70)        |                 |
| WD           | 031-1351-003 | 3               | .641 (16.28)        |                 |

## BKAF Printed Circuit Solder Post Socket Contacts Size 22 with .025(6.35) Dia. Printed Circuit Tails-Receptacle Only.

The new low insertion force, front-insertable, front-removable #22 socket contacts with .025(6.35) dia., PC tails are now available for use in the BKAF non-environmental receptacle version only.

These contacts can be sold separately or they can be supplied with a connector (see How to Order). Use part numbers shown in the table on the right when ordering separately.

| Contact Mod. | Part Number  | Min. Post Extension | Extraction Tool |
|--------------|--------------|---------------------|-----------------|
| SA           | 031-1352-000 | .150 (3.81)         | CET-BKAF 22S    |
| SB           | 031-1352-001 | .250 (6.35)         |                 |
| SC           | 031-1351-002 | .375 (9.52)         |                 |
| SD           | 031-1352-003 | .500 (12.70)        |                 |

## BKAD/F Solder Post, Power Pin Contacts (Captive)-Receptacle Only.

Contacts are captivated between two unbonded insulator halves.

| Contact Size | Part Number  | Post Dia.   | Min. Post Extension* |
|--------------|--------------|-------------|----------------------|
| 2D HD        | 030-2358-000 | .032 (0.81) | .150 (3.81)          |
| 16           | 030-2357-000 | .050 (1.27) | .150 (3.81)          |
| 12           | 030-2356-000 | .081 (2.06) | .150 (3.81)          |

\*Consult factory for other available lengths

## BKAF Solder Post Pin Contact Front Release

| Contact Size | Part Number  | Post Dia.   | Min. Post Extension | Extraction Tool |
|--------------|--------------|-------------|---------------------|-----------------|
| 20HD         | 030-3287-000 | .030 (0.76) | .300* (7.62)        | 317-1798-00     |
| 16HD         | 030-3287-001 | .050 (1.27) | .300* (7.62)        | 317-1798-02     |
| 12HD         | 030-3287-002 | .081 (2.06) | .300* (7.62)        | 317-1798-02     |

\*Applies to BKAF 13W2 and 5W2 inserts only

## Front Release Pin Contacts Size 20 and 16

| Contact Size | Part Number  | PC Tail Dia.            | Min. Post Extension |
|--------------|--------------|-------------------------|---------------------|
| 20           | 030-3296-001 | .034 (0.86)/.030 (0.76) | .260 (6.60)         |
| 20           | 030-3296-002 | .034 (0.86)/.030 (0.76) | .385 (9.78)         |
| 16           | 030-3297-001 | .052 (1.32)/.048 (1.22) | .260 (6.60)         |
| 16           | 030-3297-002 | .052 (1.32)/.048 (1.22) | .385 (9.78)         |
| 16           | 030-3297-005 | .052 (1.32)/.048 (1.22) | .300 (7.62)         |
| 20           | 030-3296-004 | .034 (0.86)/.030 (0.76) | .300 (7.62)         |

**Size 5 Coax Contact (Rear insertable/removable)**

Crimp Center Contact-Conforming to ARINC 600

| Cable Accommodation         | Part Number                |                         | Crimp Tooling  |              |         |              |              |              |               | Extraction Tool |
|-----------------------------|----------------------------|-------------------------|----------------|--------------|---------|--------------|--------------|--------------|---------------|-----------------|
|                             |                            |                         | Center Contact |              |         |              | Outer Shell  |              |               |                 |
|                             |                            |                         | Tool           |              | Locator |              | MIL STD      |              | ITT Cannon    |                 |
|                             | Pin (Receptacle Connector) | Socket (Plug Connector) | MIL Spec       | ITT Cannnon  | Daniels | ITT Cannon   | Frame        | Jaw          | Complete Tool |                 |
| RG-58C/U<br>BA-5903<br>(BG) | 349-0014-000               | 349-0013-000            | M22520/2-01    | 995-0001-584 | K-345   | 995-0002-049 | M22520/5-01  | M22520/5-45B | CCT-HX3-156   | CET-C8          |
| 5021K1011<br>(Raychem)      | 349-0016-000               | 349-0015-000            | M22520/2-01    | 995-0001-584 | K-345   | 995-0002-049 | M22520/5-01  | M22520/5-45B | CCT-HX3-156   | CET-C8          |
| RG-223                      | 349-1060-100               | 349-1059-000            | M22250/2-01    | 995-0001-584 | K-345   | 995-0002-049 | M22520/5-01  | M22520/5-45B | CCT-HX3-156   | CET-C8          |
| RG-400                      | -                          | 349-1003-000            | M22250/2-01    | 995-0001-584 | K-345   | 995-0002-049 | M22520/10-01 | M22520/10-23 | -             | CET-C8          |
| RG-316                      | -                          | 349-1004-000            | M22250/2-01    | 995-0001-584 | K-345   | 995-0002-049 | M22520/10-01 | M22520/10-23 | -             | CET-C8          |

**Size 12 Shielded Contact (Rear insertable/removable)**

|                     | Part Number                |                         | Crimp Tooling  |              |             |              |                  |               |              | Tool         |                  |
|---------------------|----------------------------|-------------------------|----------------|--------------|-------------|--------------|------------------|---------------|--------------|--------------|------------------|
|                     |                            |                         | Center Contact |              |             |              | Outer Shell Tool |               |              |              |                  |
|                     |                            |                         | Tool P/N       |              | Locator P/N |              |                  |               |              |              |                  |
| Cable Accommodation | Pin (Receptacle Connector) | Socket (Plug Connector) | MIL Spec       | ITT Cannon   | Daniels     | ITT Cannon   | MIL Std          |               | ITT Cannon   | MIL Spec     | ITT Cannon       |
|                     |                            |                         |                |              |             |              | Frame            | Jaw           |              |              |                  |
| RG-196A/U           | 249-1767-000               | -                       | M22520/2-01    | 995-0001-584 | K-182       | 995-0002-051 | M22520/1-01      | M22520/10-05A | 995-0001-071 | M81969/28-02 | CET-12-4 Plastic |
| 5071 (HW)           | 249-1767-001               | -                       | M22520/2-01    | 995-0001-584 | K-182       | 995-0002-051 | M22520/1-01      | M22520/10-05A | 995-0001-071 | M81969/28-02 | CET-12-4 Plastic |
| RG-174/U            | -                          | 249-1768-000            | M22520/2-01    | 995-0001-584 | K-182       | 995-0002-051 | M22520/1-01      | M22520/10-05A | 995-0001-071 | M81969/28-02 | CET-12-4 Plastic |
| BMS-1348 (BG)       | -                          | 249-2203-000            | M22520/2-01    | 995-0001-584 | K-644       | 995-0002-050 | M22520/1-01      | M22520/10-05A | 995-0001-071 | M81969/28-02 | CET-12-4 Plastic |

**Size 1 Modified Coaxial Contacts (4W4 Layout Only)****Plug Connector**

| Cable Accommodation | Part Number  | Style       | Coax | Replacement Termination Kits |              |
|---------------------|--------------|-------------|------|------------------------------|--------------|
|                     |              |             |      | Solder Type                  | Crimp Type   |
| RG214               | 349-1043-001 | Straight    |      | 320-1066-000                 | 320-1066-016 |
| AA-5886             | 349-1048-000 | Straight    |      | 320-1066-002                 | 320-1066-018 |
| RG393               | 349-1051-000 | Straight    |      | 320-1066-003                 | 320-1066-019 |
| ECS 311201          | 349-1046-000 | Straight    |      | 320-1066-001                 | 320-1066-017 |
| AA-5887             | 349-1049-000 | Straight    |      | 320-1066-004                 | 320-1066-013 |
| AA-5888             | 349-1050-000 | Straight    |      | 320-1066-005                 | 320-1066-014 |
| RG142               | 349-1047-000 | Straight    |      | 320-1066-006                 | 320-1066-015 |
| Various             | 349-1047-001 | TNC Adapter |      | -                            | -            |

Customer Use Drawings:

All Coax contacts (except 349-1047-001) customer use drawing #349-0000-305

Crimp termination kits: Customer use drawing #320-0000-305

Solder termination kits: Customer use drawing #320-0000-304

**Receptacle Connector**

| Cable Accommodation | Part Number  | Style       | Coax | Replacement Termination Kits |            |
|---------------------|--------------|-------------|------|------------------------------|------------|
|                     |              |             |      | Solder Type                  | Crimp Type |
| RG316 DS            | 349-1051-002 | Straight    |      | 320-1066-008                 | N/A        |
| RG142               | 349-1044-000 | Straight    |      | 320-1066-007                 | N/A        |
| Various             | 349-1042-000 | SMA Adapter |      | -                            | -          |

Customer Use Drawings:

Coax contacts 349-1051-002 and 349-1044-000 are located on customer use drawing #349-0000-304

Coax contacts 349-1042-000 is located on customer use drawing #320-1042-000

**Sizes 1 Coax Contacts (71W1 layout only)**

Same standard coax contacts as used in ITT Cannon's DPX (ARINC 404) connector series.

**Receptacle Connector**

| Cable Accommodation                        | Coax Part Number | Style    | Replacement Coax Termination Kit | Replacement Coax Body Assembly |
|--------------------------------------------|------------------|----------|----------------------------------|--------------------------------|
| RG-9/U<br>RG-214/U                         | 249-1521-000     |          | 249-1521-002                     | 021-0144-000                   |
| NSA 935354<br>NSA 935355                   | -                |          | 249-2201-000                     |                                |
| RG-55/U<br>RG-58/U<br>RG-142/U<br>RG-400/U | 249-1554-000     | Straight | 249-1554-002                     | 021-0144-003                   |
| RG-58/U<br>RG-142/U<br>RG-225/U            | 249-1604-001     | 90°      | 249-1604-003                     | 021-0144-006                   |
| RG-402/U<br>UT-141                         | 249-1604-002     |          |                                  |                                |
| RG-402/U<br>UT-141                         | 249-5027-008     | Straight | 249-5027-016                     | 021-0144-001                   |
| SMA Jack Termination                       | 249-5027-017     | Straight | -                                | -                              |

**Plug Connector**

| Cable Accommodation      | Coax Part Number | Style    | Replacement Coax Termination Kit | Replacement Coax Body Assembly |
|--------------------------|------------------|----------|----------------------------------|--------------------------------|
| RG-9/U                   | 249-1522-000     | Straight | 249-1522-002                     | 021-0144-004                   |
| NSA 935354<br>NSA 935355 | -                |          | 249-2202-000                     |                                |
| RG-58/U<br>RG-142/U      | 249-1882-000     |          |                                  |                                |
| RG-402/U                 | 249-1885-002     | Straight | 320-0051-000                     | 021-0144-011                   |
| RG-214/U                 | 249-5123-000     | Straight | 249-5027-013                     | 021-0144-008                   |
| RG-115/U                 | 249-5123-001     |          | 249-5027-015                     |                                |

**Sizes 1 Coax Contacts (To be used with connectors containing 71W1A, 71W1B and 2W2 insert modifier-"M")**

Designed to be interchangeable with contacts made by other manufacturers.

**Receptacle Connector**

| Cable Accommodation                     | Part Number  | Style       |
|-----------------------------------------|--------------|-------------|
| RG-142B/U                               | 349-0021-000 | Right Angle |
| RG-402/U<br>UT-141                      | 349-0022-000 | Right Angle |
| SMA Jack Termination                    | 349-0023-000 | Straight    |
| RG-214/U<br>RG-393/U<br>BA-6903<br>(BG) | 349-0002-000 | Straight    |
| 5012H3012<br>(Raychem)                  | 349-0004-000 | Straight    |
| RG-142B/U                               | 349-0006-000 | Straight    |
| RG-402/U<br>UT-141                      | 349-0008-000 | Straight    |

**Plug Connector**

| Cable Accommodation    | Standard Size 1 Part Number | Modular Size 1 Part Number | Termination Kit for Modular Size 1 Coax | Style    |
|------------------------|-----------------------------|----------------------------|-----------------------------------------|----------|
| RG-214/U               | 349-0017-000                | 349-1053-003               | 320-1066-000                            | Straight |
| RG-393/U               | 349-0017-000                | -                          | -                                       |          |
| BA-6903                | 349-0017-000                | 349-1053-007               | 320-1066-003                            |          |
| 5012H3012<br>(Raychem) | 349-0018-000                | -                          | -                                       | Straight |
| RG-142B/U              | 349-0005-000                | 349-1053-006               | 320-1066-006                            | Straight |
| RG-402/U<br>UT-141     | 349-0007-000                | -                          | -                                       | Straight |
| AA-5888                | -                           | 349-1053-008               | 320-1066-005                            | Straight |
| ECS-310801             | -                           | 349-1053-005               | -                                       | Straight |
| AA-5886                | -                           | 349-1053-004               | 320-1066-002                            | Straight |
| BSX-7004-502           | -                           | 349-1053-003               | -                                       | Straight |
| ECS-311201             | -                           | 349-1053-002               | 320-1066-001                            | Straight |
| AA-5887                | -                           | 349-1053-001               | 320-1066-004                            | Straight |
| Adam Russell<br>PC-38  | -                           | 349-1053-000               | -                                       | Straight |

## Size 8 Coaxial Contacts

## Plug Connector

| Contact Type<br>Socket<br>Part Number | *Engagement |      | **Termination  |                |                       |                      | RF Cable<br>Number              |
|---------------------------------------|-------------|------|----------------|----------------|-----------------------|----------------------|---------------------------------|
|                                       | Short       | Long | Crimp<br>RR-RR | Crimp<br>FR-RR | Solder<br>.250 (6.35) | FR-FR<br>.375 (9.52) |                                 |
| 349-1087-000                          | -           | -    | X              |                |                       |                      | Adams-Russell Co. Inc.<br>FC11Z |
| 349-1087-001                          | -           | -    | X              |                |                       |                      | Adams-Russell Co. Inc.<br>FC14Z |

## Receptacle Connector

| Contact Type<br>Socket<br>Part Number | *Engagement |      | **Termination  |                |                      |                       | RF Cable<br>Number              |
|---------------------------------------|-------------|------|----------------|----------------|----------------------|-----------------------|---------------------------------|
|                                       | Short       | Long | Crimp<br>RR-RR | Crimp<br>FR-RR | FR-FR<br>.250 (6.35) | Solder<br>.375 (9.52) |                                 |
| 349-1084-000                          | -           | X    |                |                | X                    |                       |                                 |
| 349-1084-001                          | X           | -    |                |                | X                    |                       |                                 |
| 349-1084-002                          | -           | X    |                |                |                      | X                     |                                 |
| 349-1084-003                          | X           | -    |                |                |                      | X                     |                                 |
| 349-1086-000                          | -           | X    |                | X              |                      |                       | Adams-Russell Co. Inc.<br>FC11Z |
| 349-1086-001                          | -           | X    |                | X              |                      |                       | Adams-Russell Co. Inc.<br>FC14Z |

## Size 8 Twinax Contacts

## Plug Connector

| Contact Type<br>Socket<br>Part Number | *Engagement |      | **Termination  |                |                       |                      | RF Cable<br>Number                    |
|---------------------------------------|-------------|------|----------------|----------------|-----------------------|----------------------|---------------------------------------|
|                                       | Short       | Long | Crimp<br>RR-RR | Crimp<br>FR-RR | Solder<br>.250 (6.35) | FR-FR<br>.375 (9.52) |                                       |
| 349-1006-000                          | -           | -    | X              |                |                       |                      | M17/176-00002                         |
| 349-1081-000                          | -           | -    | X              |                |                       |                      | Tensolite Co.<br>24463/9 B017X-2 (LD) |

## Receptacle Connector

| Contact Type<br>Socket<br>Part Number | *Engagement |      | **Termination  |                |                       |                      | RF Cable<br>Number                    |
|---------------------------------------|-------------|------|----------------|----------------|-----------------------|----------------------|---------------------------------------|
|                                       | Short       | Long | Crimp<br>RR-RR | Crimp<br>FR-RR | Solder<br>.250 (6.35) | FR-FR<br>.375 (9.52) |                                       |
| 349-1007-000                          | -           | -    | X              |                |                       |                      | M17/176-00002                         |
| 349-1080-000                          | X           | -    |                |                | X                     |                      |                                       |
| 349-1080-001                          | -           | X    |                |                | X                     |                      |                                       |
| 349-1080-002                          | X           | -    |                |                |                       | X                    |                                       |
| 349-1080-003                          | -           | X    |                |                |                       | X                    |                                       |
| 349-1082-000                          | X           | -    |                | X              |                       |                      | Tensolite Co.<br>24463/9 B017X-2 (LD) |
| 349-1082-001                          | -           | X    |                | X              |                       |                      | Tensolite Co.<br>24463/9 B017X-2 (LD) |
| 349-1088-000                          | -           | X    | X              |                |                       |                      | Tensolite Co.<br>24463/9 B017X-2 (LD) |

## Size 8 Ground Contacts

## Plug Connector

| Contact Type<br>Socket<br>Part Number | *Engagement |      | **Termination  |                |                       |                      | Wire<br>Size |
|---------------------------------------|-------------|------|----------------|----------------|-----------------------|----------------------|--------------|
|                                       | Short       | Long | Crimp<br>RR-RR | Crimp<br>FR-RR | Solder<br>.250 (6.35) | FR-FR<br>.375 (9.52) |              |
| 031-3300-000                          | -           | -    | X              |                |                       |                      | 8, 10 AWG    |

## Receptacle Connector

| Contact Type<br>Socket<br>Part Number | *Engagement |      | **Termination  |                |                       |                      | Wire<br>Size |
|---------------------------------------|-------------|------|----------------|----------------|-----------------------|----------------------|--------------|
|                                       | Short       | Long | Crimp<br>RR-RR | Crimp<br>FR-RR | Solder<br>.250 (6.35) | FR-FR<br>.375 (9.52) |              |
| 030-3306-000                          | -           | X    |                |                | X                     |                      | 8, 10 AWG    |
| 030-3306-001                          | -           | X    |                |                |                       | X                    | 8, 10 AWG    |
| 030-3676-000                          | -           | -    |                | X              |                       |                      | 8, 10 AWG    |

\* The electrical engagement of "Long" contacts is .150 (3.81) greater than the electrical engagement of "Short" contact.

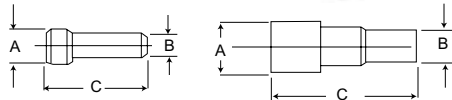
\*\*RR-RR indicates rear release, rear removal.

FR-RR indicates front release, rear removal.

FR-FR indicates front release, front removal.

## Sealing Plugs-BKAE Environmental Connectors Only

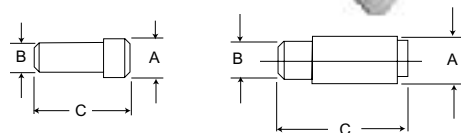
P/N 225-0090-000  
Material: Teflon  
(All others thermoplastic)



| Part Number  | Contact Size   | Color  | A          | B          | C           |
|--------------|----------------|--------|------------|------------|-------------|
| 225-1013-000 | 22             | Black  | .063 (1.6) | .040 (1.0) | .469 (11.9) |
| 225-0070-000 | 20             | Red    | .085 (2.2) | .065 (1.6) | .469 (11.9) |
| 225-0071-000 | 16             | Blue   | .115 (2.9) | .075 (1.9) | .469 (11.9) |
| 225-0072-000 | 12             | Yellow | .171 (4.3) | .121 (3.1) | .564 (14.3) |
| 225-0090-000 | #5 and #9 Coax | White  | .365 (9.3) | .287 (7.3) | .835 (21.2) |

## Filler Plugs-BKAD Non-Environmental Connectors Only

P/N 225-0099-000  
Material: Teflon  
(All others thermoplastic)



BKAF P/N 225-1058-000  
(Size 22 - Black)  
(See Customer Use Drawing for details)

| Part Number  | Contact Size            | Color  | A          | B          | C            |
|--------------|-------------------------|--------|------------|------------|--------------|
| 225-0094-000 | 22                      | Black  | .069 (1.7) | .051 (1.3) | .420 (10.7)  |
| 225-0095-000 | 20                      | Red    | .083 (2.1) | .069 (1.7) | .350 (8.9)   |
| 225-0096-000 | 16                      | Blue   | .131 (3.3) | .108 (2.7) | .320 (8.1)   |
| 225-0097-000 | 12                      | Yellow | .187 (4.7) | .156 (4.0) | .320 (8.1)   |
| 225-0098-000 | #5 Coax (Pin)           | White  | .275 (7.0) | .251 (6.4) | .450 (11.4)  |
| 225-0099-000 | #5 and #9 Coax (Socket) | White  | .275 (7.0) | .251 (6.4) | 1.061 (26.9) |

## Cavity Reducer



Pin  
P/N 021-8756-000



Socket  
P/N 021-8757-000

## #5 Coax to #12 Contact

Cavity reducers are available when additional circuits are required for size 12 power contacts. These reducers, having the internal configuration of size 12 power contact, are inserted into the size 5 coaxial insulator cavity to create size 12 power contact cavity.

## Dust Caps

Conductive dust caps protect against static electricity.



| Part Number  | Description         |
|--------------|---------------------|
| 025-1121-001 | BKAD 1-A & B-Plug   |
| 025-1122-001 | BKAD 1-C-Plug       |
| 025-1123-001 | BKAD 2&3-A & B-Plug |
| 025-1124-001 | BKAD 2&3-C-Plug     |

Note: Supplied as standard for BKA product line only.

| Part Number  | Description               |
|--------------|---------------------------|
| 025-1155-001 | BKAD 1-A&B-Receptacle     |
| 025-1156-001 | BKAD 1-C-Receptacle       |
| 025-1157-001 | BKAD 2&3-A & B-Receptacle |
| 025-1158-001 | BKAD 2&3-C-Receptacle     |

## Replaceable Inserts

| Layout   | Class | Part Number  |                 |
|----------|-------|--------------|-----------------|
|          |       | Pin Assembly | Socket Assembly |
| 2W2**    | BKAD  | 144-2944-000 | 144-2945-000    |
|          | BKAE  | 144-2944-000 | 144-2945-000    |
| A        | BKAE  | 143-1156-001 | 143-1157-001    |
| 4W4**    | BKAD  | 177-1000-002 | 177-1001-004    |
|          | BKAE  | 177-1000-002 | 177-1001-004    |
| 5W2      | BKAD  | 143-1912-000 | 143-1913-000    |
|          | BKAE  | 143-1912-001 | 143-1913-001    |
|          | BKAF  | 143-1141-000 | N/A             |
| 6        | BKAE  | 143-1154-001 | 143-1155-001    |
| 6T6      | BKAD  | 228-1026-002 | 228-1012-003    |
|          | BKAE  | 228-1026-001 | 228-1012-001    |
|          | BKAF  | N/A          | 228-1015-001    |
| 10T10    | BKAD  | 228-1027-002 | N/A             |
|          | BKAE  | 228-1027-001 | 228-1014-002    |
| 13W2     | BKAD  | 143-1908-000 | 143-1909-000    |
|          | BKAE  | 143-1908-001 | 143-1909-001    |
|          | BKAF  | 143-1142-000 | N/A             |
| 30T2     | BKAD  | 143-1173-000 | 143-1174-000    |
|          | BKAE  | 143-1173-001 | 143-1174-001    |
| 34       | BKAD  | 143-1159-001 | N/A             |
|          | BKAE  | 143-1097-005 | 143-1098-005    |
| 40       | BKAE  | 143-1171-001 | 143-1172-001    |
| 59*      | BKAE  | 143-1167-001 | 143-1170-001    |
| 60-#20** | BKAE  | 143-3714-003 | 143-3715-003    |
| 60-#22** | BKAD  | 143-1910-000 | 143-1911-000    |
|          | BKAE  | 143-1910-001 | 143-1911-001    |
|          | BKAF  | N/A          | 143-2065-000    |
| 71W1     | BKAD  | 143-1958-000 | 143-1960-000    |
|          | BKAE  | 143-1958-002 | 143-1960-002    |
|          | BKAF  | N/A          | 143-2090-000    |
| 71W1A*   | BKAD  | 143-2085-001 | 143-2086-001    |
|          | BKAE  | 143-2085-000 | 143-2086-000    |
|          | BKAF  | N/A          | 143-2066-000    |
| 71W1B    | BKAD  | 143-1113-000 | 143-1111-000    |
|          | BKAE  | 143-114-000  | 143-1112-000    |
|          | BKAF  | N/A          | 143-1118-000    |
| 85       | BKAD  | 143-3877-000 | 143-3878-000    |
|          | BKAE  | 143-3879-000 | 143-3880-000    |
|          | BKAF  | N/A          | 143-1178-000    |
| 100      | BKAD  | 143-2015-000 | 143-2016-000    |
|          | BKAE  | 143-2015-001 | 143-2016-001    |
|          | BKAF  | N/A          | 143-2067-000    |
| 110      | BKAE  | 143-1182-000 | 143-1183-000    |
| 120T2    | BKAD  | N/A          | 143-1166-002    |
|          | BKAE  | 143-1165-001 | 143-1166-001    |
|          | BKAF  | N/A          | 143-1177-000    |
| 121      | BKAD  | 143-1150-002 | 143-1158-002    |
|          | BKAE  | 143-1150-001 | 143-1158-001    |
| 150      | BKAD  | 143-1906-000 | 143-1907-000    |
|          | BKAE  | 143-1906-001 | 143-1907-001    |
|          | BKAF  | N/A          | 143-2068-000    |

Consult factory for Insert Part Numbers not listed.

\*Modified 71W1 insert to be used with connectors containing 71W1 insert modifier "M"

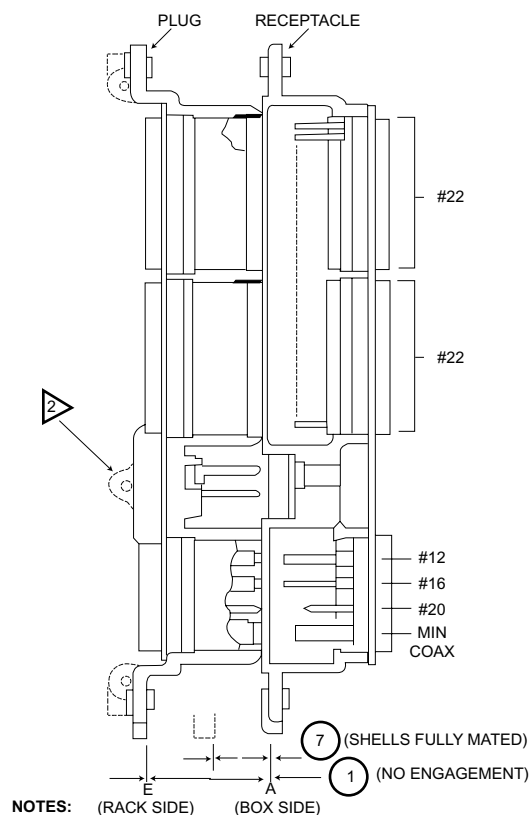
\*\*\*Pin Inserts' accept receptacle coax contacts. "Socket Inserts" accept plug coax contacts.

## Cross Reference-Part Number/Customer-Use Drawing

| COMPONENT<br>PART NUMBER                  | CUSTOMER USE<br>DRAWING NUMBER | COMPONENT<br>PART NUMBER     | CUSTOMER USE<br>DRAWING NUMBER | COMPONENT<br>PART NUMBER                | CUSTOMER USE<br>DRAWING NUMBER |
|-------------------------------------------|--------------------------------|------------------------------|--------------------------------|-----------------------------------------|--------------------------------|
| <b>Contacts</b>                           |                                | 143-1908-000                 |                                | <b>Replacement Coax Termination Kit</b> |                                |
| 030-1975-009                              | 030-1975-009                   | 143-1908-001                 | 143-0000-081                   | 249-1521-002                            | 249-1521-002                   |
| 030-1975-010                              | 030-1975-010                   | 143-1909-000                 |                                | 249-1522-009                            | 249-1522-010                   |
| 030-2259-000                              | 030-2259-000                   | 143-1909-001                 |                                | 249-1522-010                            | 249-1522-010                   |
| 030-2273-000                              | 030-2273-000                   | 143-1910-000                 |                                | 249-1554-002                            | 249-1554-002                   |
| 030-2280-000                              | 030-2280-000                   | 143-1910-001                 | 143-0000-077                   | 249-1604-003                            | 249-1604-003                   |
| 030-2286-000                              | 030-2286-000                   | 143-1911-000                 |                                | 249-1604-004                            | 249-1604-004                   |
| 030-2356-000                              | 030-2356-000                   | 143-1911-001                 |                                | 249-2201-000                            | 249-1521-002                   |
| 030-2357-000                              | 030-2357-000                   | 143-1912-000                 |                                | 249-2202-000                            | 249-1522-010                   |
| 030-2358-000                              | 030-2358-000                   | 143-1912-001                 | 143-0000-080                   | 249-5027-013                            | 249-5027-013                   |
| 031-1113-009                              | 031-1113-009                   | 143-1913-000                 |                                | 249-5027-015                            | 249-5027-007                   |
| 031-1113-010                              | 031-1113-010                   | 143-1913-001                 |                                | 249-5027-016                            | 249-5027-016                   |
| 031-1287-000                              | 031-1287-000                   | 143-1958-000                 |                                | 320-0051-000                            | 1250Y                          |
| 031-1302-000                              | 031-1302-000                   | 143-1958-002                 | 143-0000-079                   | 320-1066-000                            |                                |
| 031-1303-000                              | 031-1303-000                   | 143-1960-000                 |                                | 320-1066-001                            |                                |
| 031-1308-000                              | 031-1308-000                   | 143-1960-002                 |                                | 320-1066-002                            |                                |
| 031-1351-000                              |                                | 143-2015-000                 |                                | 320-1066-003                            | 320-000-305                    |
| 031-1351-001                              | 031-0000-343                   | 143-2015-001                 | 143-0000-078                   | 320-1066-004                            |                                |
| 031-1351-002                              |                                | 143-2016-000                 |                                | 320-1066-005                            |                                |
| 031-1351-003                              |                                | 143-2016-001                 |                                | 320-1066-006                            |                                |
| 031-1352-000                              |                                | 143-2065-000                 |                                | <b>Dust Caps</b>                        |                                |
| 031-1252-000                              | 031-0000-344                   | 143-2066-000                 | 1247Y                          | 025-1121-001                            |                                |
| 031-1252-002                              |                                | 143-2067-000                 |                                | 025-1122-001                            | 025-0000-054                   |
| 031-1352-003                              |                                | 143-2068-000                 |                                | 025-1123-001                            | (Conductive Only)              |
| <b>Replacement Coax<br/>Body Assembly</b> |                                | 143-2085-000                 |                                | 025-1124-001                            |                                |
| 021-0144-000                              | 021-0144-000                   | 143-2085-001                 | 143-0000-079                   | 025-1155-001                            |                                |
| 021-0144-001                              | 021-0144-001                   | 143-2086-000                 |                                | 025-1156-001                            | 025-0000-055                   |
| 021-0144-002                              | 021-0144-002                   | 143-2086-001                 |                                | 025-1157-001                            | (Conductive Only)              |
| 021-0144-003                              | 021-0144-003                   | <b>Size #1 Coax Contacts</b> |                                | 025-1158-001                            |                                |
| 021-0144-004                              | 021-0144-004                   | 249-1521-000                 | 249-1521-000                   | <b>Filler Plugs</b>                     |                                |
| 021-0144-006                              | 021-0144-006                   | 249-1522-000                 | 249-1522-000                   | 225-0094-000                            |                                |
| 021-0144-008                              | 021-0144-008                   | 249-1522-002                 | 249-1522-002                   | 225-0095-000                            |                                |
| 021-0144-011                              | 021-0144-011                   | 249-1554-000                 | 249-1554-000                   | 225-0096-000                            | 225-0000-014                   |
| <b>Size #5 Coax Contacts</b>              |                                | 249-1604-000                 | 249-1604-000                   | 225-0097-000                            |                                |
| 349-0013-000                              | 349-0000-000                   | 249-1604-001                 | 249-1604-001                   | 225-0098-000                            |                                |
| 349-0014-000                              | 349-0000-001                   | 249-1604-002                 | 249-1604-002                   | 225-0099-000                            |                                |
| 349-0015-000                              | 349-0000-002                   | 249-1882-000                 | 249-1882-000                   | 225-1058-000                            |                                |
| 349-0016-000                              | 349-0000-001                   | 249-1882-002                 | 1250Y                          | <b>Sealing Plugs</b>                    |                                |
| 349-1003-000                              |                                | 249-1885-002                 |                                | 225-0072-000                            | 225-0000-006                   |
| 349-1009-000                              | 349-000-301                    | 249-5027-008                 | 249-5027-008                   | 225-0090-000                            | 225-0090-000                   |
| <b>Size #12 Shielded Contact</b>          |                                | 249-5027-017                 | 249-5027-017                   | 225-1013-000                            |                                |
| 249-1767-000                              | 249-1767-000                   | 249-5123-000                 | 249-5027-000                   | 225-1014-000                            | 225-0000-008                   |
| 249-1767-001                              | 249-1767-001                   | 249-5123-001                 | 249-5027-007                   | 225-1015-000                            |                                |
| 249-1768-000                              | 249-1768-000                   | 349-1053-000                 |                                | <b>Replaceable Inserts</b>              |                                |
| 249-2203-000                              | 249-2203-000                   | 349-1053-001                 |                                | 143-1906-000                            |                                |
| <b>Replaceable Inserts</b>                |                                | 349-1053-002                 |                                | 143-1906-001                            | 143-0000-079                   |
| 143-1906-000                              |                                | 349-1053-003                 |                                | 143-1907-001                            |                                |
| 143-1906-001                              |                                | 349-1053-004                 | 349-0000-306                   | 143-1907-001                            |                                |
| 143-1907-001                              |                                | 3491053-005                  |                                |                                         |                                |
| 143-1907-001                              |                                | 349-1053-006                 |                                |                                         |                                |
|                                           |                                | 349-1053-007                 |                                |                                         |                                |
|                                           |                                | 349-1053-008                 |                                |                                         |                                |
|                                           |                                | 349-1053-009                 |                                |                                         |                                |

For part numbers not listed, consult ITT Cannon for applicable customer-use drawing.

## ARINC 600 Connector Engaging Sequence



## NOTES:

1. Varies; See Mil-Spec. (#5 Coax)

2. Size 1 only.

3. Flush head screws are not permitted for connector mounting as they would position connector incorrectly.

4. Dimension 7 was calculated to provide clearance for  
 - MCU backplate mat'l thickness of 2.5 mm (.10 in).  
 - Rack backplate mat'l thickness of 2.5 mm (.10 in).  
 - Connector mounting pan head screws, MCU 2.0 mm (.08 in).  
 - Tolerance allowance - 3.2 mm (.13 in.) rack 2.0 mm (.08 in.)  
 Total - 12.2 (.50 in) (minimum).

| Mating Sequence                    | Flange Position With:           | Flange Spacing in. (mm)        |
|------------------------------------|---------------------------------|--------------------------------|
| 1                                  | No Engagement                   | 1.245 (31.62)<br>Nom.          |
| 2                                  | Shells Initially Engaged        | 1.110 (28.19)<br>1.073 (27.25) |
| 3                                  | Polarizing Pins Entering Keys   | 1.073 (27.25)<br>1.023 (25.88) |
| Contacts Entering Mating Insulator |                                 |                                |
| #22                                |                                 | .800 (22.32)<br>.748 (18.99)   |
| #20                                |                                 | .805 (20.44)<br>.741 (18.82)   |
| #16                                |                                 | 1.012 (25.70)<br>.949 (24.10)  |
| #12                                |                                 | 1.008 (23.60)<br>.953 (24.20)  |
| Miniature Coax                     |                                 | 1                              |
| Contacts Electrically Engaged      |                                 |                                |
| #22                                |                                 | .642 (16.30)<br>.547 (13.89)   |
| #20                                |                                 | .649 (16.48)<br>.553 (14.04)   |
| #16                                |                                 | .728 (18.49)<br>.818 (20.77)   |
| #12                                |                                 | .772 (19.60)<br>.692 (17.57)   |
| Miniature Coax                     |                                 | 1                              |
| 6                                  | "0" Ring Engagement (BKAE Only) | .618 (15.70)<br>.578 (14.68)   |
| 7                                  | Shells Fully Mated              | .522 (13.26)<br>.488 (12.40)   |

- Available Rear Release/Rear Removable Front Release/Front Removable
- Low Insertion force contacts.
- Both environmental and non-environmental versions.
- Polarizing post that are removable from the mating face.
- Field replaceable inserts.
- Up to 150 Size #22 contacts per connector.
- Crimp, coax, twinax, printed circuit and wire wrappable post style contacts.
- Uses standard ARINC 600, crimp, insertion/extraction tooling.



**SGA** connectors utilize all the Signal cavity inserts and contacts from the ARINC 600 connector series. It was designed to be used where there are space constraints in which a standard ARINC 600 connector can not be used. ITT Cannon's SGA connector fills the need for a 150 maximum contact connector with a smaller shell design than Shell Size 2 of ARINC 600, and has more contacts available than single gang DPX with 106 Size 22 contacts.

## Materials and Finishes

|                       |             | SGA*D                       | SGA*E                       | SGA*F                       | Specifications |
|-----------------------|-------------|-----------------------------|-----------------------------|-----------------------------|----------------|
| <b>Shell</b>          | Material    | Aluminum alloy              | Aluminum alloy              | Aluminum alloy              | QQ-A-591/A380  |
|                       | Finish      | Clear chromate over cadmium | Clear chromate over cadmium | Clear chromate over cadmium | QQ-P-416       |
| <b>Insulator</b>      | Material    | Thermoplastic               | Thermoplastic               | Thermoset                   | N/A            |
|                       | Material    | Copper alloy                | Copper alloy                | Copper alloy                | QQ-C-533       |
| <b>Contacts</b>       | Finish      | Gold                        | Gold                        | Gold                        | MIL-G-45204    |
|                       | Termination | Crimp                       | Crimp                       | P.C/Wrap Post               | N/A            |
| <b>Grommets/Seals</b> | Material    | N/A                         | Silicone-based Elastomer    | N/A                         | N/A            |
| <b>O-Ring</b>         | Material    | N/A                         | Silicone-based Elastomer    | N/A                         | N/A            |

## How to Order (Refer to ARINC 600 [BKA] pages 13-16 for contact information.)

### CONNECTOR SERIES

SGA (Single Gang ARINC 600)

### SHELL STYLE

- 3 - Plug (Rack Side)
- 4 - Receptacle (Box Side)

### CLASS

- C - Non-environmental with Grommet only, insulators are not potted into the connector shell.
- D - Non-environmental (rear release crimp contacts).
- E - Environmentally sealed (rear release crimp contacts).
- F - Non-environmental (front release, printed circuit or wire wrap posts).
- R - EMI/RFI Protected & Environmentally sealed, O-ring omitted (plug only). (Reference ITTC Phoenix)

### CONTACT ARRANGEMENT

(See ARINC 600 (BKA) contact arrangements, pages 9-10)

### CONTACT TYPE

- P - Pin Contacts
- S - Socket Contacts

### CONNECTOR MOUNTING MODIFIER

- Mounting modifiers 00, 03, 06, 14, 15, hole location is .705 basic from connector vertical centerline.
- 00 - .151 Dia. Mounting holes.
  - 03 - .156 with #4-40 Self-Locking Clinch Nuts (ESNA #22NCFMA2-40) 4 per connector.
  - 06 - .188 Dia. For #6-32 Clinch nuts (ESNA #12NCFMA2-62) 4 per connector.
  - 14 - .137 Dia, Countersunk 82° x .230 Dia., Engaging face of mounting flange.
  - 15 - .137 Dia, Countersunk 82° x .230 Dia., Engaging face of mounting flange. Supplied with slant shield grounding spring.

### CONNECTOR SERIES

### SHELL STYLE

### CLASS

### CONTACT ARRANGEMENT

### CONTACT TYPE (PIN OR SOCKET)

### CONNECTOR MOUNTING MODIFIER

### POLARIZING POSITION

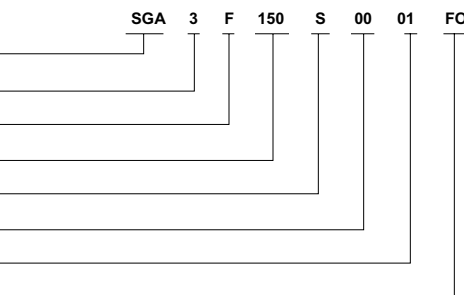
### CONTACT MODIFIER

Mounting modifiers 05, 07, 08, 09, 10, 11, 12, 13, hole location is .650 basic from connector vertical centerline.

- 05 - .208 Dia. for Floating Eyelet
- 07 - .212/.204 Slot 4 places.
- 08 - .120 Dia. Countersunk 82° x .230 Dia., Engaging face of mounting flange.
- 09 - .120 Dia. Countersunk 82° x .230 Dia., Rear face of mounting flange.
- 10 - .120 Dia. Countersunk 100° x .230 Dia., Engaging face of mounting flange.
- 11 - .120 Dia. Countersunk 100° x .230 Dia., Rear face of mounting flange.
- 12 - .137 Dia. Countersunk 82° x .230 Dia., Engaging face of mounting flange.
- 13 - .137 Dia. Countersunk 82° x .230 Dia., Rear face of mounting flange.

### POLARIZING POSITION

- 01 - 36 Positions. (See Chart page 24)
- When the last two digits are omitted, the polarizing posts will not be assembled and position number is not stamped on the connector. This allows the user to position the post and stamp the appropriate number on the shell. If the last two digits are "00", polarizing posts are not supplied with the connector.

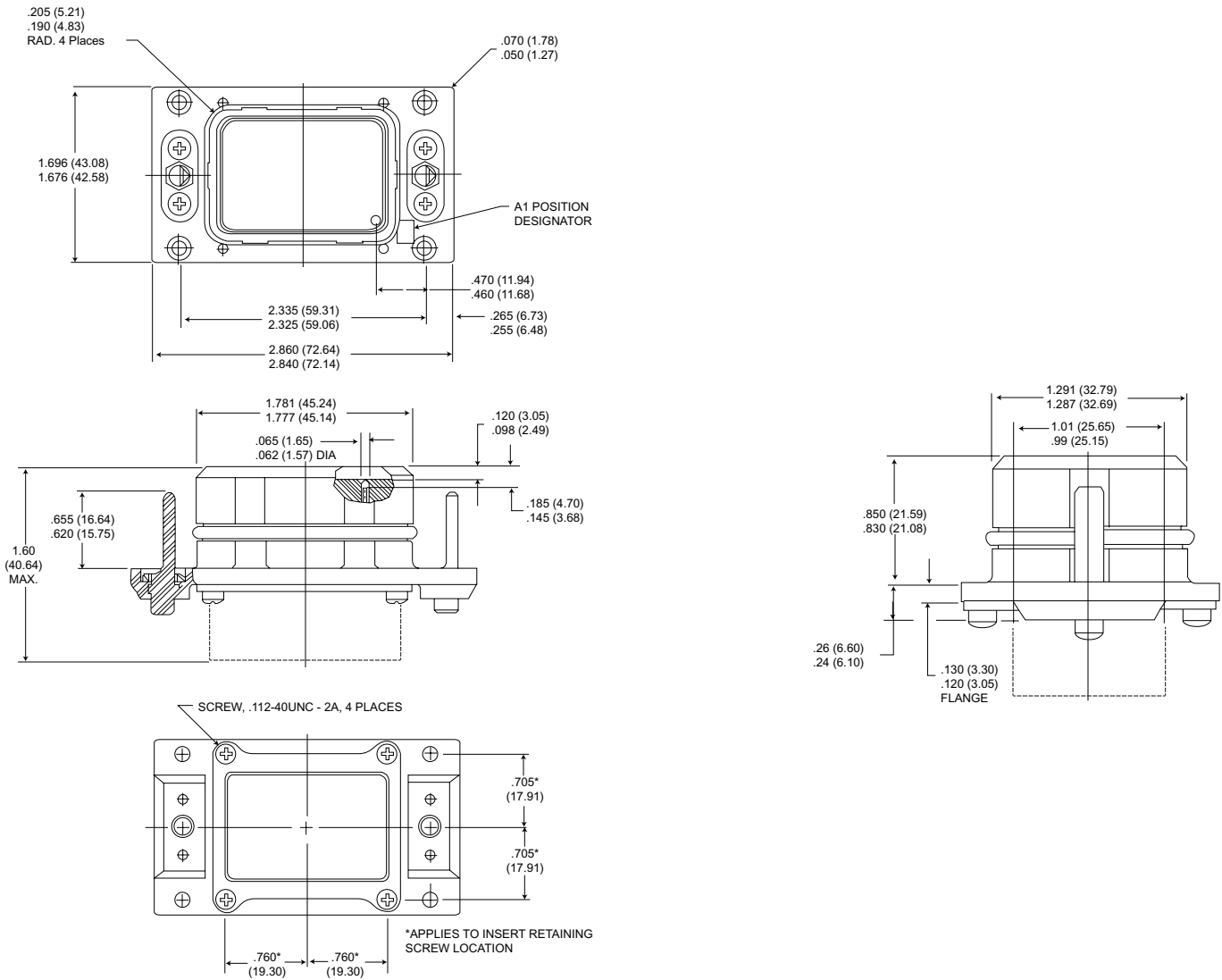


### CONTACT MODIFIER

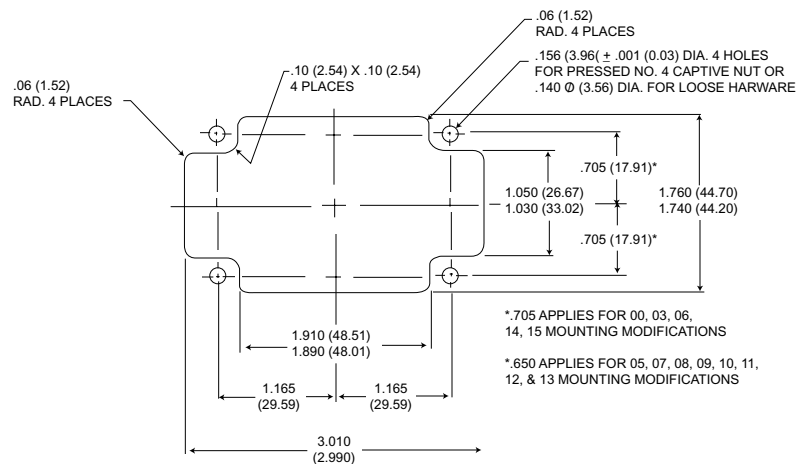
Refer to page 13 for replacement contact part numbers and required termination tooling information. (Blank) - With standard Crimp type Rear release contacts.

- F0 - Contacts are not supplied with connector (FO not stamped on connector.)
- SA - Front release .025 Dia. x .150 Solder Post Size 22 Sockets
- SB - Front release .025 Dia. x .250 Solder Post Size 22 Sockets
- SC - Front release .025 Dia. x .375 Solder Post Size 22 Sockets
- SD - Front release .025 Dia. x .500 Solder Post Size 22 Sockets
- WA - Front release .025 Sq. x .250 (1 Wrap)
- WB - Front release .025 Sq. x .375 (2 Wrap)
- WC - Front release .025 Sq. x .500 (3 Wrap)
- WD - Front release .025 Sq. x .641 (3 Wrap)

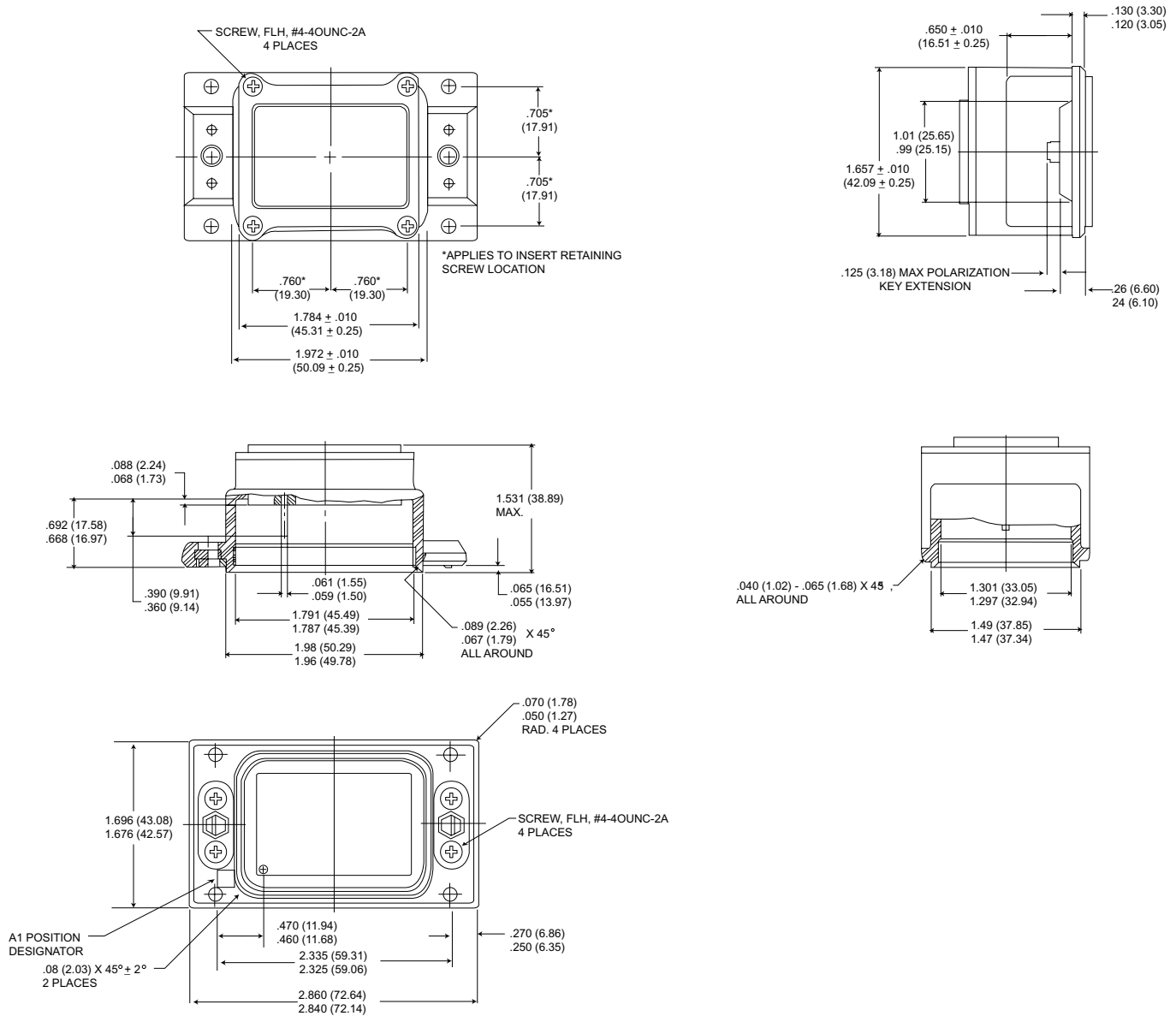
## Plug Shell Dimensions



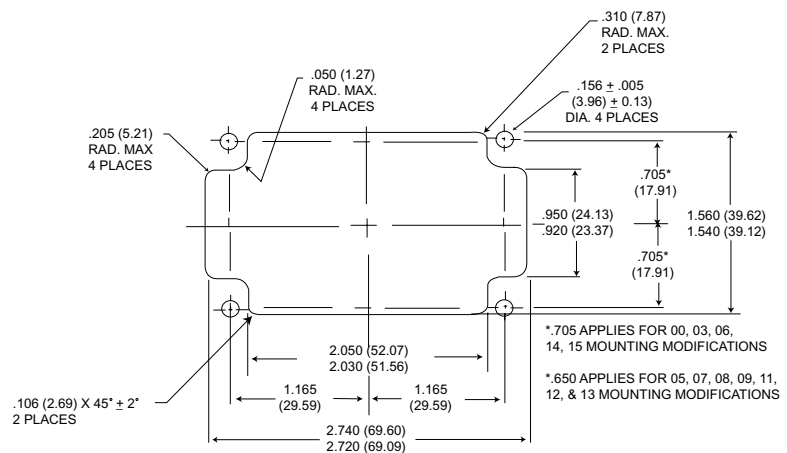
## Recommended Panel Cutout



## Receptacle Shell Dimensions



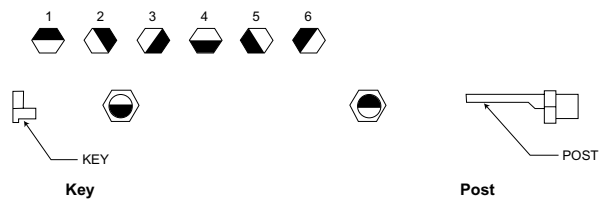
## Recommended Panel Cutout



Polarization



Polarizing Positions



| Position | Connector Receptacle |            | Connector Plug |             |
|----------|----------------------|------------|----------------|-------------|
|          | Top Key              | Bottom Key | Top Post       | Bottom Post |
| 01       | 1                    | 1          | 4              | 4           |
| 02       | 3                    | 4          | 2              | 1           |
| 03       | 2                    | 4          | 3              | 1           |
| 04       | 1                    | 4          | 4              | 1           |
| 05       | 6                    | 4          | 5              | 1           |
| 06       | 5                    | 4          | 6              | 1           |
| 07       | 4                    | 5          | 1              | 6           |
| 08       | 3                    | 5          | 2              | 6           |
| 09       | 2                    | 5          | 3              | 6           |
| 10       | 1                    | 5          | 4              | 6           |
| 11       | 6                    | 5          | 5              | 6           |
| 12       | 5                    | 5          | 6              | 6           |
| 13       | 4                    | 6          | 1              | 5           |
| 14       | 3                    | 6          | 2              | 5           |
| 15       | 2                    | 6          | 3              | 5           |
| 16       | 1                    | 6          | 4              | 5           |
| 17       | 6                    | 6          | 5              | 5           |
| 18       | 5                    | 6          | 6              | 5           |
| 19       | 4                    | 1          | 1              | 4           |
| 20       | 3                    | 1          | 2              | 4           |
| 21       | 2                    | 1          | 3              | 4           |
| 22       | 4                    | 4          | 1              | 1           |
| 23       | 6                    | 1          | 5              | 4           |
| 24       | 5                    | 1          | 6              | 4           |
| 25       | 4                    | 2          | 1              | 3           |
| 26       | 3                    | 2          | 2              | 3           |
| 27       | 2                    | 2          | 3              | 3           |
| 28       | 1                    | 2          | 4              | 3           |
| 29       | 6                    | 2          | 5              | 3           |
| 30       | 5                    | 2          | 6              | 3           |
| 31       | 4                    | 3          | 1              | 2           |
| 32       | 3                    | 3          | 2              | 2           |
| 33       | 2                    | 3          | 3              | 2           |
| 34       | 1                    | 3          | 4              | 2           |
| 35       | 6                    | 3          | 5              | 2           |
| 36       | 5                    | 3          | 6              | 2           |

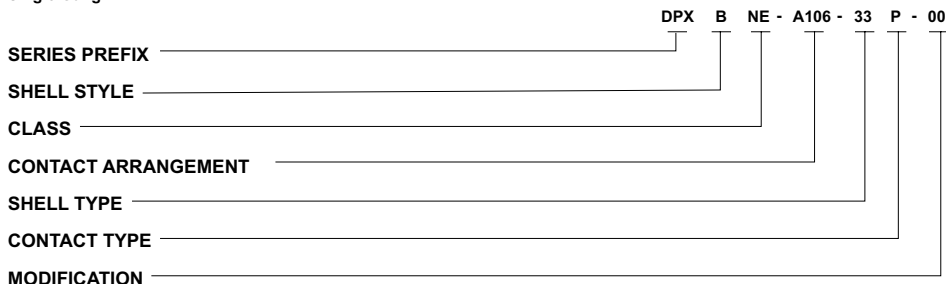
Cannon's DPXNA (non-environmental, Type IV) and DPXNE (environmental, Types II and III) rack and panel connectors are designed to meet or exceed the requirements of MIL-C-81659, Revision B. They are used in military and aerospace applications and computer periphery equipment requirements, and

are designed to operate in temperatures ranging from - 65°C to + 125°C. DPXNA/NE connectors are available in single, 2, 3, and 4 gang configurations, with a total of 12 contact arrangements accommodation contact sizes 12, 16, 20 and 22, and combination standard and coaxial contacts.

Contact retention of these crimp snap-in contacts is provided by the LITTLE CAESAR® rear release contact retention assembly. Environmental sealing is accomplished by wire sealing grommets and interfacial seals.

## How to Order

### Single Gang



### SERIES PREFIX

DPX - ITT Cannon Designation

### SHEL STYLE

B - ARINC 'B' Shell

### CLASS (MIL-C-81659B, Class 1)....

NA - Non - Environmental (MIL-C-81659B, Type IV)  
NE - Environmental (Mil-C-81659B, Types II and III)

### INSERT DESIGNATOR

In the 3 and 4 gang assemblies, the insert designation number represents cumulative (total) contacts. The charts on page 26 denote shell cavity location by layout. (If desired arrangement location is not defined, please consult or local sales engineering office.)

### CONTACT ARRANGEMENT

See page 31

### SHELL TYPE

'33' for Plug; '34' for Receptacle

### CONTACT TYPE

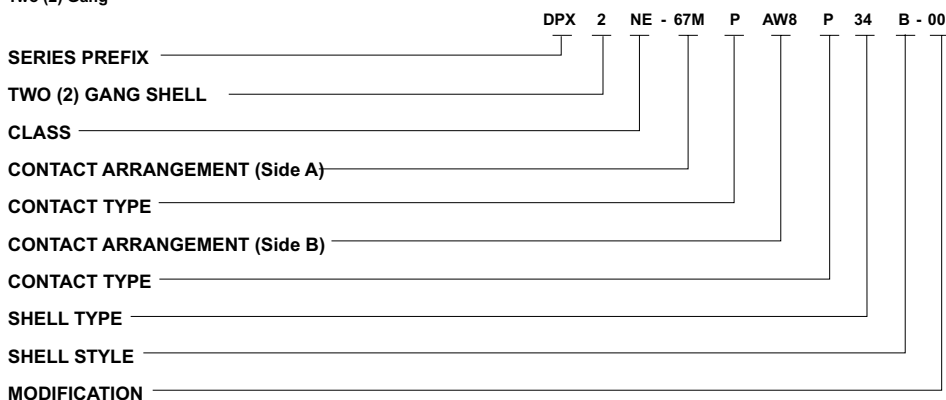
'P' for Pin (Standard on '34' receptacle except A106 layout which has reversed contact sex)  
'S' for Socket (Standard on '33' plug except A106 layout which has reversed contact sex)

### MODIFICATION CODES

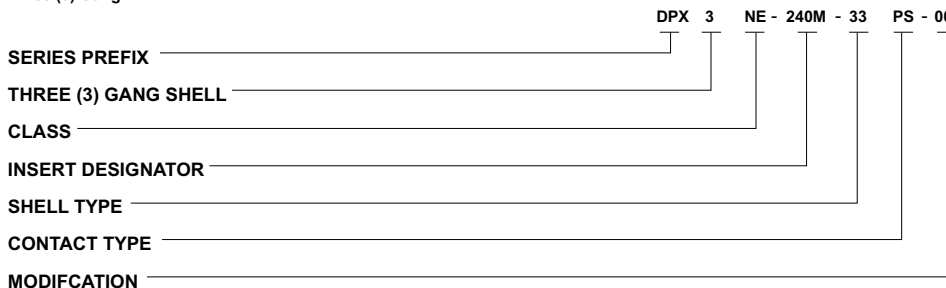
- 00 Standard
- 01 Standard with clinch nuts in the mounting holes (34 only).
- 02 Standard with tabs for attaching junction shells.
- 03 Standard with mounting holes .120 dia. countersunk 100° to .230 dia. (33. only).
- 17 Combination of 01\*\* and 02\*\* (clinch nuts in mounting holes - 34 only and tabs for attaching junction shells).
- 22 Standard with clinch nuts (.33 only).
- 23 Standard with standard floating eyelets.
- 29 Standard except less grommet (NE, pin only).
- 30 Same as - 29\*\* except with tabs for attaching junction shells.
- 33 Same as - 29\*\* except with clinch nuts.
- 37 Same as - 29\*\* except with clinch nuts and tabs for attaching junction shells.
- 39 Standard with standard floating eyelets and tabs for attaching junction shells.

**NOTE:** For additional modification codes please consult the factory

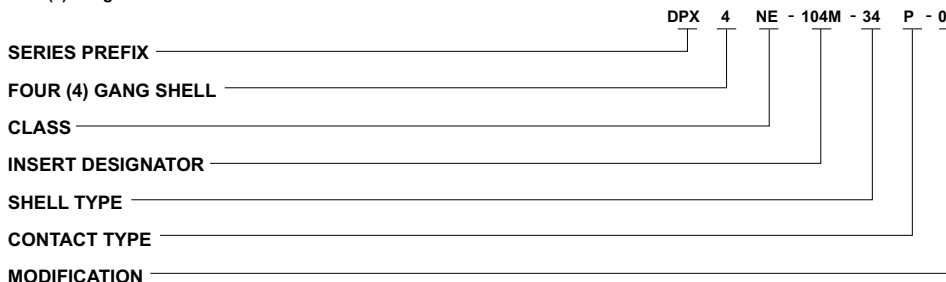
### Two (2) Gang



### Three (3) Gang



### Four (4) Gang



**NOTE:** On 3 & 4 gang assemblies, combination layouts, the contact type designator of the A106 layout. If applicable, precedes the designator for standard contact sex layouts. See three (3) gang nomenclature breakdown above for 240M example (67MS, 67 MS, A106P).

## Insert Designator Number

| DPX3NA/DPX3NE |      |        |        |        |        |       |        |        |        | DPX4NA/DPX4NE |      |        |        |        |        |        |      |        |        |        |        |
|---------------|------|--------|--------|--------|--------|-------|--------|--------|--------|---------------|------|--------|--------|--------|--------|--------|------|--------|--------|--------|--------|
| MS3157        | ITTC | Side A | Side B | Side C | MS3157 | ITTC  | Side A | Side B | Side C | MS3157        | ITTC | Side A | Side B | Side C | Side D | MS3157 | ITTC | Side A | Side B | Side C | Side D |
| 0005          | 78M  | 26MP   | 26MP   | 26MP   | 0066   | 24M   | W8MS   | W8MS   | W8MS   | 0007          | 104M | 26MP   | 26MP   | 26MP   | 26MP   | 0063   | 95M  | 10W3MP | 10W3MP | W8MP   | 67MP   |
| 0006          | 78M  | 26MS   | 26MS   | 26MS   | 0067   | 122M  | W8MP   | W8MP   | A106S  | 0008          | 104M | 26MS   | 26MS   | 26MS   | 26MS   | 0064   | 95M  | 10W3MS | 10W3MS | W8MS   | 67MS   |
| 0013          | 120M | 40MP   | 40MP   | 40MP   | 0068   | 122M  | W8MS   | W8MS   | A106P  | 0015          | 160M | 40MP   | 40MP   | 40MP   | 40MP   | 0085   | 150M | W8MP   | W8MP   | 67MP   | 67MP   |
| 0014          | 120M | 40MS   | 40MS   | 40MS   | 0073   | 142M  | 67MP   | 67MP   | W8MP   | 0016          | 160M | 40MS   | 40MS   | 40MS   | 40MS   | 0086   | 150M | W8MS   | W8MS   | 67MS   | 67MS   |
| 0021          | 135M | 45MP   | 45MP   | 45MP   | 0074   | 142M  | 67MS   | 67MS   | W8MS   | 0023          | 180M | 45MP   | 45MP   | 45MP   | 45MP   | 0095   | 326M | A106S  | W8MP   | A106S  | A106S  |
| 0022          | 135M | 45MS   | 45MS   | 45MS   | 0075   | 240M  | 67MP   | 67MP   | A106S  | 0024          | 180M | 45MS   | 45MS   | 45MS   | 45MS   | 0096   | 326M | A106P  | W8MS   | A106P  | A106P  |
| 0029          | 171M | 57MP   | 57MP   | 57MP   | 0076   | 240M  | 67MS   | 67MS   | A106P  | 0031          | 228M | 57MP   | 57MP   | 57MP   | 57MP   | 0097   | 287M | A106S  | 67MP   | A106S  | W8MP   |
| 0030          | 171M | 57MS   | 57MS   | 57MS   | 0079   | A240M | 67MP   | A106S  | 67MP   | 0032          | 228M | 57MS   | 57MS   | 57MS   | 57MS   | 0098   | 287M | A106P  | 67MS   | A106P  | W8MS   |
| 0037          | 201M | 67MP   | 67MP   | 67MP   | 0080   | A240M | 67MS   | A106P  | 67MS   | 0039          | 268M | 67MP   | 67MP   | 67MP   | 67MP   | 0099   | 189M | A106S  | 67MP   | W8MP   | W8MP   |
| 0038          | 201M | 67MS   | 67MS   | 67MS   | 0091   | 279M  | A106S  | A106S  | 67MP   | 0040          | 268M | 67MS   | 67MS   | 67MS   | 67MS   | 0100   | 189M | A106P  | 67MS   | W8MS   | W8MS   |
| 0045          | A318 | A106P  | A106P  | A106P  | 0092   | 279M  | A106P  | A106P  | 67MS   | 0047          | A424 | A106P  | A106P  | A106P  | A106P  | 0101   | 346M | A106S  | A106S  | 67MP   | 67MP   |
| 0046          | A318 | A106S  | A106S  | A106S  | 0157   | 244M  | A106S  | A106S  | 32W4MP | 0048          | A424 | A106S  | A106S  | A106S  | A106S  | 0102   | 346M | A106P  | A106P  | 67MS   | 67MS   |
| 0065          | 24M  | W8MP   | W8MP   | W8MP   | 0158   | 244M  | A106P  | A106P  | 32W4MS |               |      |        |        |        |        |        |      |        |        |        |        |

## Performance and Material Specifications

## MATERIALS AND FINISHES

| Description                       | Material                               | Finish                                                                                            |
|-----------------------------------|----------------------------------------|---------------------------------------------------------------------------------------------------|
| Shell                             | Aluminum alloy                         | Cadmium plating, Type II, Class 3/QQ-P-416 with yellow chromate finish (underplating may be used) |
| Insulators                        | Thermoplastic or thermosetting plastic | None                                                                                              |
| Elastomers                        | Silicone rubber (ITT Cannon Blend)     | None                                                                                              |
| Contacts                          | Copper alloy                           | Gold plate per MIL-G-45204, Type 1, Grade C, Class 1 with suitable underplating (silver not used) |
| Insulator Retaining Plate         | Aluminum alloy                         | Anodize, blue color                                                                               |
| Junction Shells                   | Aluminum alloy                         | Same as shell                                                                                     |
| (Not available for four gang)     |                                        |                                                                                                   |
| Clinch Nuts                       | Stainless steel                        | Cadmium Plating                                                                                   |
| Float Mounts                      | Stainless Steel                        | None                                                                                              |
| Polarizing Posts                  | Zinc (die cast )                       | Cadmium plating                                                                                   |
| Polarizing Keys & Retaining Plate | Nickel Silver                          | None                                                                                              |
| Screws                            | Brass                                  | Cadmium plating                                                                                   |
| Lockwashers                       | Phosphor Bronze                        | Cadmium plating                                                                                   |

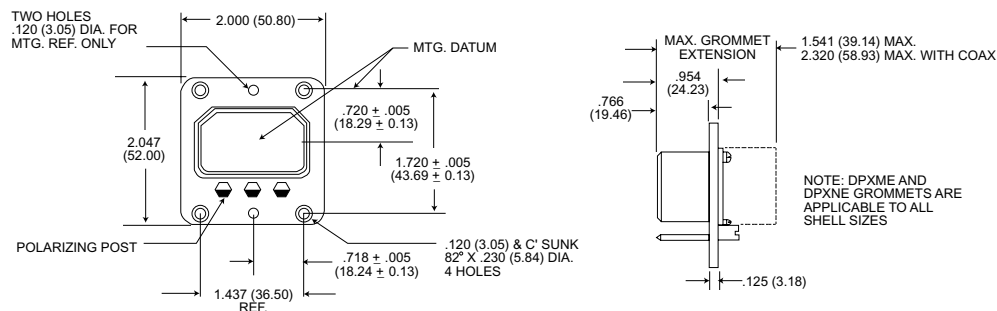
## ELECTRICAL

| Contact size | Wire Size | Insulation O.D. Limits (Inch) | Test Current per Mil-C-39029 | Max. Current for Tests (Amps) (Mil-C-39029) | Max. Potential Drop (Millivolts) at 25°C |
|--------------|-----------|-------------------------------|------------------------------|---------------------------------------------|------------------------------------------|
|              |           | Max.                          |                              |                                             |                                          |
| 12           | 12        | .135 (3.43)                   | 23.0                         | 23.0                                        | 63                                       |
|              | 14        |                               | 17.0                         | 17.0                                        | 60                                       |
|              | 16        |                               | 13.0                         | 13.0                                        | 68                                       |
| 16           | 18        | .103 (2.62)                   | -                            | -                                           | -                                        |
|              | 20        |                               | 7.5                          | -                                           | 75                                       |
|              | 20        |                               | 7.5                          | 7.5                                         | 83                                       |
| 20           | 22        | .071 (1.80)                   | -                            | -                                           | -                                        |
|              | 24        |                               | 3.0                          | 3.0                                         | 68                                       |
|              | 22        |                               | 5.0                          | 5.0                                         | 110                                      |
| 22           | 24        | .054 (1.37)                   | -                            | -                                           | -                                        |
|              | 26        |                               | 2.0                          | 2.0                                         | 80                                       |

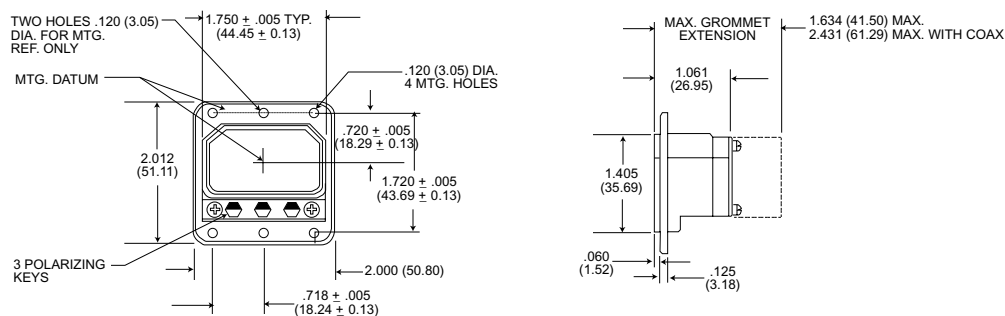
Note - The maximum contact resistance listed above is with silver plated wire.

## Shell Dimensions

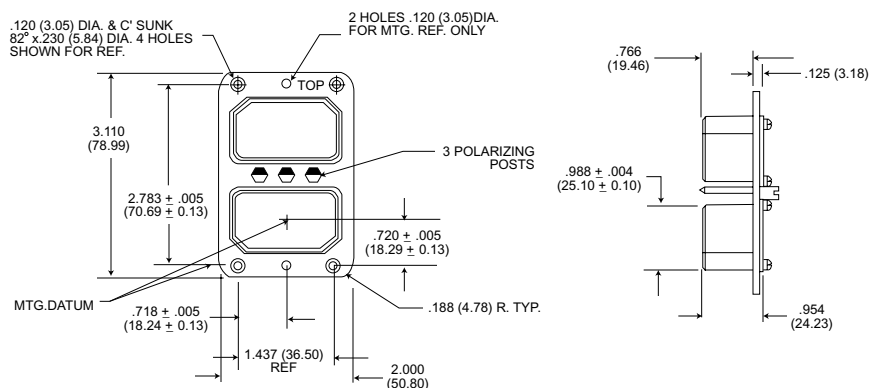
## DPXB-33



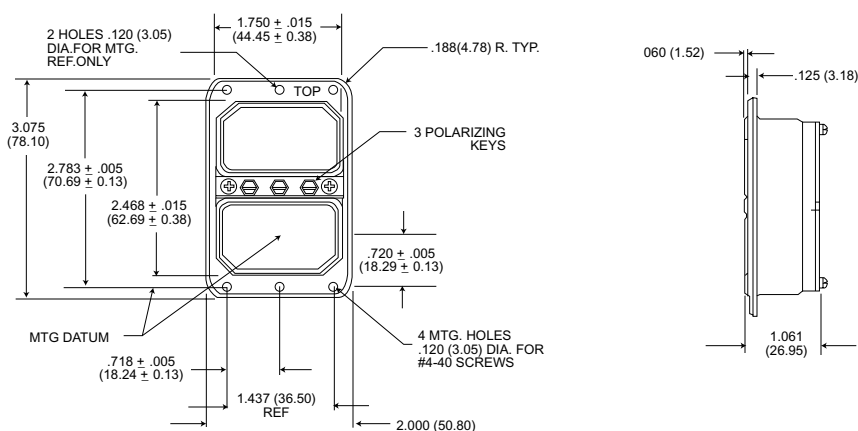
## DPXB-34



## DPX2-33B



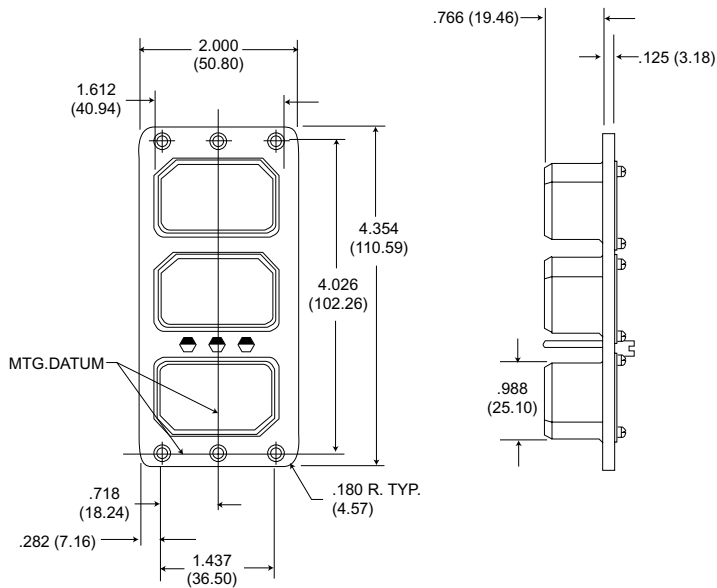
## DPX2-34B



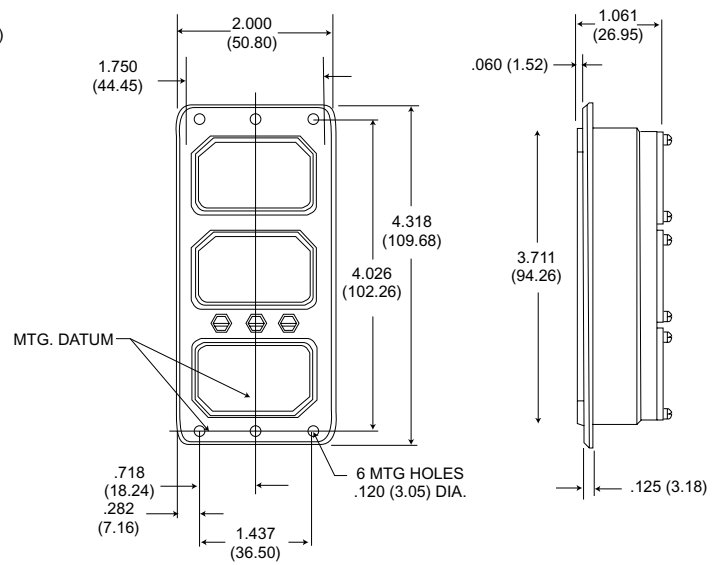
All tolerances ± .015 (0.38) unless other wise noted.

## Shell Dimensions

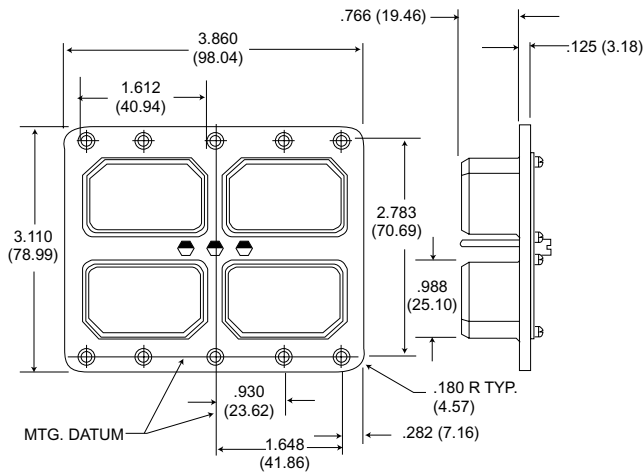
DPX3-33



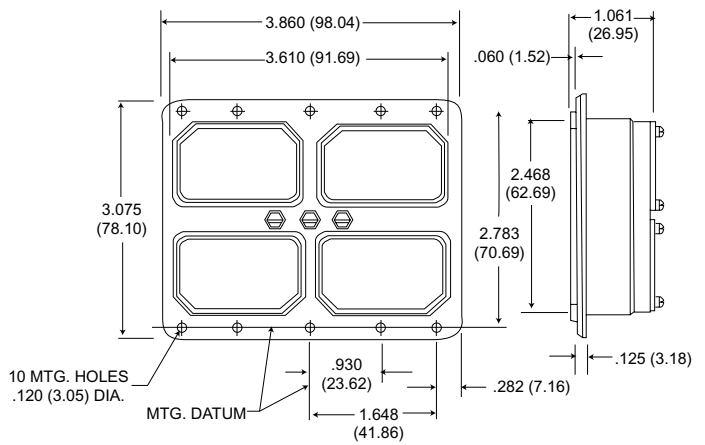
DPX3-34



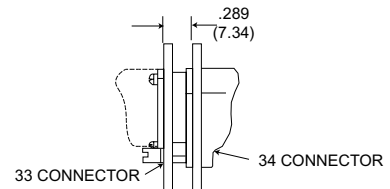
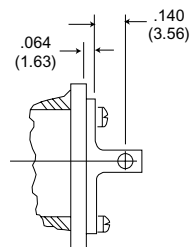
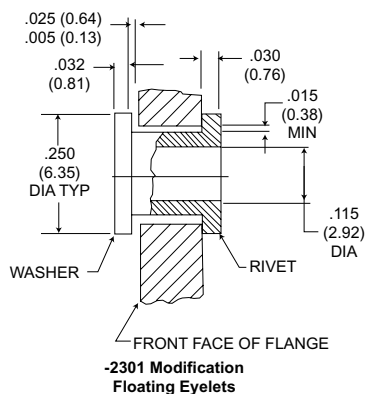
DPX4-33



DPX4-34



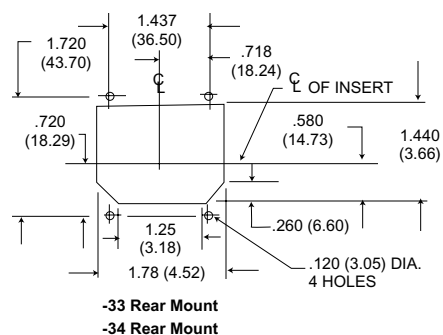
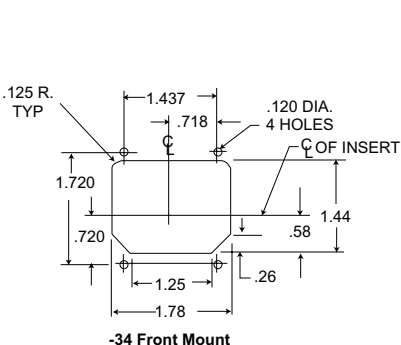
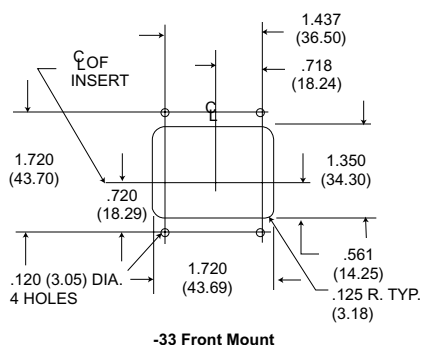
## Modification Code



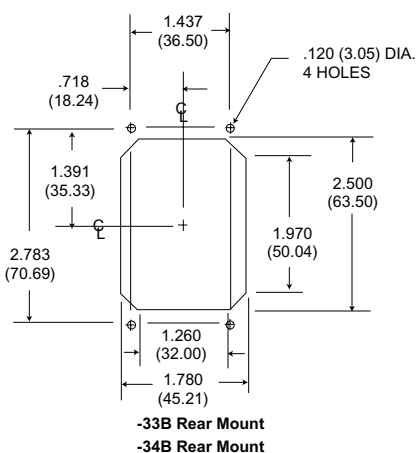
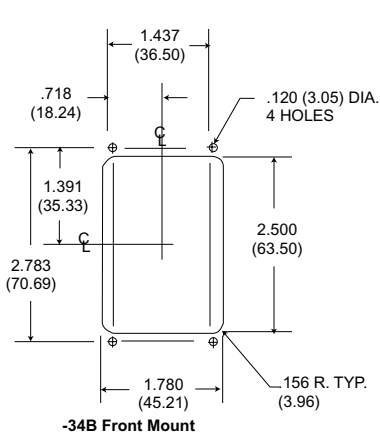
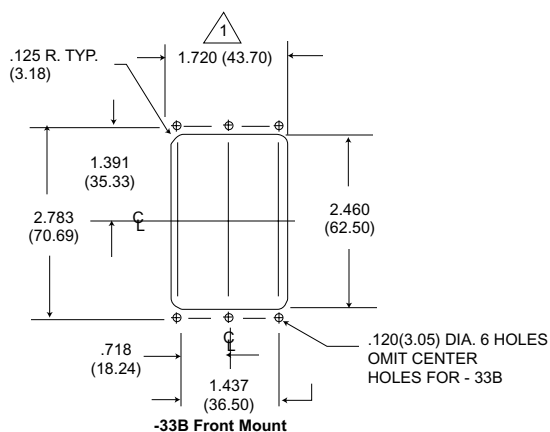
All tolerances  $\pm .015$  (0.38) unless otherwise noted.

## Panel Cutouts

## DPXB

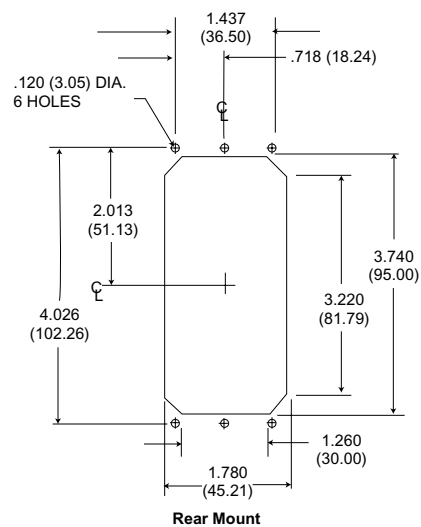
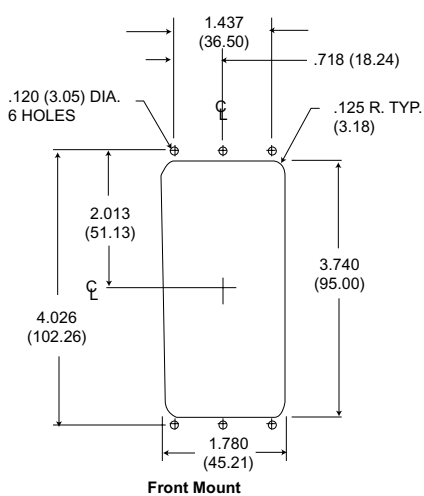


## DPX2



△ For -23 float mtg. mod. 1.78 (45.21)

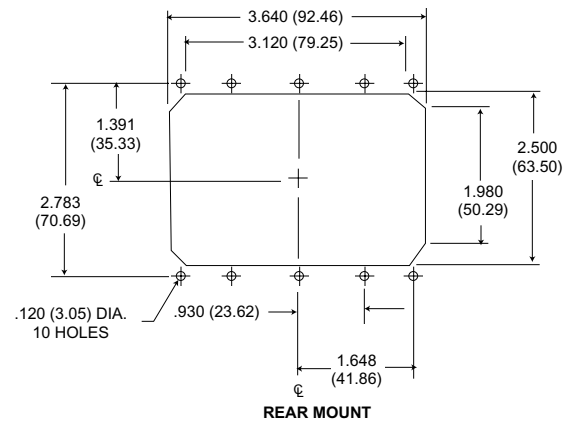
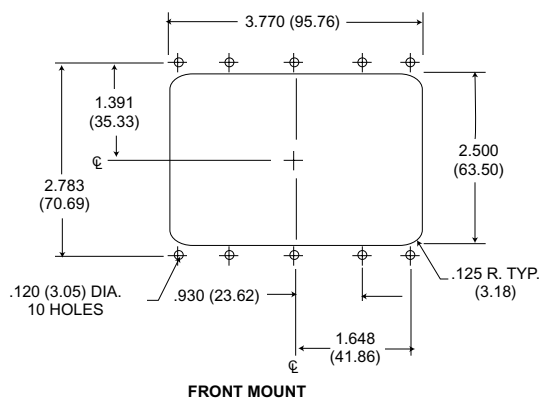
## DPX3



All tolerance  $\pm .015$  (0.38) unless other wise noted.

## Panel Cutouts (Continued)

## DPX4

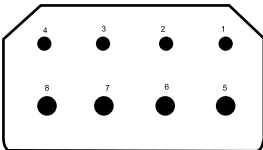


All tolerance  $\pm .015$  (0.38) unless otherwise noted.

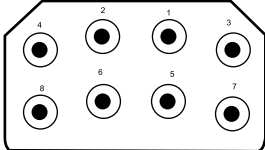
Contact Arranements

Face View of Pin Insulator Shown.

Layout  
Contacts  
Test Voltage



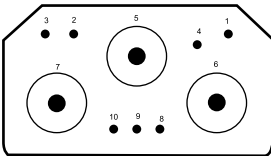
D8M  
4 #16, 4 #12  
1500



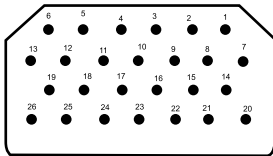
W8M  
8 Coaxial\*  
1000

| Cross Reference |       |
|-----------------|-------|
| MS3157          | ITTC  |
| C8              | W8M   |
| E8              | D8M   |
| 10C3            | 10W3M |
| 26              | 26M   |
| 32C2            | 32W2M |
| 32C4            | 32W4M |
|                 | 33C4M |
| 40              | 40M   |
| 40C1            | 40W1M |
| 45              | 45M   |
| 57              | 57M   |
| 67              | 67M   |
| 106             | A106  |

Layout  
Contacts  
Test Voltage

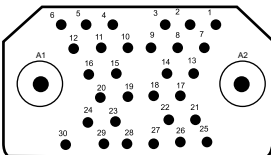


10W3M  
7HD #20, 3 Coaxial\*\*  
1500  
(Coax 1000)

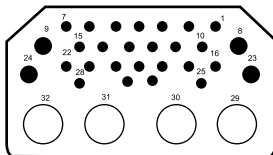


26M  
26 #16  
1500

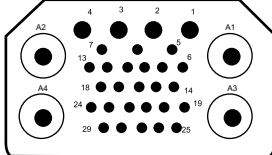
Layout  
Contacts  
Test Voltage



32W2M  
30HD #20, 2 Coaxial†  
1500  
(Coax 1000)

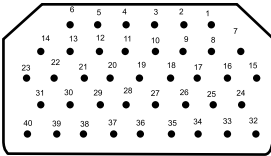


32W4M  
24HD #20  
4 #16, 4 Coaxial\*  
1500  
(Coax 1000)

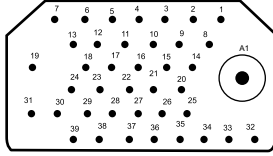


33C4M  
25HD #20, 4 Coaxial†  
1000

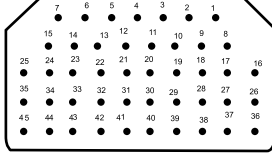
Layout  
Contacts  
Test Voltage



40M  
40HD #20  
1500

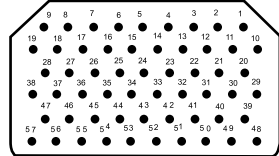


40W1M  
39HD #20, 1 COAXIAL†  
1500  
(COAX 1000)

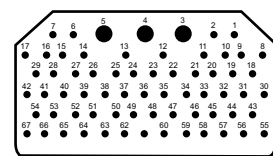


45M  
45HD #20  
1500

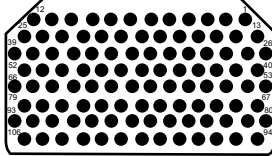
Layout  
Contacts  
Test Voltage



57M  
57 HD #20  
1500



67M  
64 HD #20, 3 #16  
1000



A106  
106 #22  
1000

\*SIZE 9 COAXIAL \*\*SIZE 11 COAXIAL † SIZE 5 COAXIAL  
NOTE: All coaxial layouts supplied less coaxial contacts (i.e. W8M, 10W3M, 32W2M, 32W4M, 33C4M, 36W7, 40W1M)

## Contact and Termination Tooling Data - Military

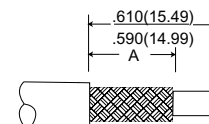
| Contact Size | DPX*NE/NA                             |                                          | Wire Accom. | Crimp Tool Part Number | Locator Part Number      | Insertion/Extraction Tool    | Layout Usage DPX*NE/NA                          |
|--------------|---------------------------------------|------------------------------------------|-------------|------------------------|--------------------------|------------------------------|-------------------------------------------------|
|              | Pin Part Number (Military Equivalent) | Socket Part Number (Military Equivalent) |             |                        |                          |                              |                                                 |
| 2222         | 030-1975-008 (M39029/11-144)          | 031-1113-008 (M39029/12-148)             | 22, 24, 26  | M22520/2-01            | M22520/2-23              | CIT-DPXMA-22 M81969/1-01     | A106                                            |
| 2020HD       | 030-1892-004 (M39029/11-145)          | 031-1047-003 (M39029/12-149)             | 20, 22, 24  | M22520/2-01 MS-3191-1  | M22520/2-08 Standard     | CIT-20 CET-20D-1 M81969/1-02 | 10W3M, 32W2M, 32W4M, 40M, 40W1M, 45M, 57M, 67M, |
| 1616         | 030-9083-012 (M39029/11-146)          | 031-1271-000 (M39029/12-150)             | 16, 18, 20  | M22520/1-01 MS-3191-1  | M22520/1-02 Std. Locator | CIET-16                      | D8M, 26M, 32W4M, 67M                            |
| 1212         | 030-1909-002 (M39029/11-147)          | 031-1059-003 (M39029/12-151)             | 12, 14      | M22520/1-01            | M22520/1-11              | CIET-12                      | D8M                                             |

\*Requires air line pressure of 80 to 100 PSI for CBT-600 and 120 PSI for CBT-600B.

## Coaxial Contact Data

## Components/Accessories

LITTLE CAESAR® contact retention assembly (W8M, 32W2M, 32W4M & 40W1M contact arrangements)



| Contact Arrangement | Part Number (P=Pin, S = Socket) |              |              | Cable Accommodation† |                     | Ins. Dia. Size/Max. | 'A' Trim Dim. |
|---------------------|---------------------------------|--------------|--------------|----------------------|---------------------|---------------------|---------------|
|                     | Without Seal††                  |              | With Seal    | Seal 1               | Seal 2              |                     |               |
|                     | A152†††                         | A176†††      | A152†††      |                      |                     |                     |               |
| (Size 5 Coax)       | P-249-2071-000                  | 249-2071-001 | 249-2101-000 | RG180                | RG195U              | .158 (4.01)         | .260(6.60)    |
|                     | S-249-2076-000                  | 249-2076-001 | 249-2106-000 |                      |                     |                     | .250(6.35)    |
|                     | P-249-2072-000                  | 249-2072-001 | 249-2102-000 | RG58                 | X                   | .196 (4.98)         | .260(6.60)    |
|                     | S-249-2077-000                  | 249-2077-001 | 249-2107-000 |                      |                     |                     | .250(6.35)    |
|                     | P-249-2073-000                  | 249-2073-001 | 249-2103-000 | RG142                | X                   | .196 (4.98)         | .260(6.60)    |
|                     | S-249-2078-000                  | 249-2078-001 | 249-2108-000 |                      |                     |                     | .250(6.35)    |
|                     | P-249-2074-000                  | 249-2074-001 | 249-2104-000 | RG179                | RG174, RG179, RG316 | .111 (2.82)         | .350(8.89)    |
|                     | S-249-2079-000                  | 249-2079-001 | 249-2109-000 |                      |                     |                     | .330(8.38)    |
|                     | P-249-2075-000                  | 249-2075-001 | 249-2105-000 | RG178                | X                   | .075 (1.90)         | .260(6.60)    |
|                     | S-249-2080-000                  | 249-2080-001 | 249-2110-000 | RG196                |                     |                     | .250(6.35)    |
| (Size 9 Coax)       | P-249-2081-000                  | 249-2081-001 | 249-2111-000 | RG180                | RG195U              | .158 (4.01)         | .260(6.60)    |
|                     | S-249-2086-000                  | 249-2086-001 | 249-2116-000 |                      |                     |                     | .250(6.35)    |
|                     | P-249-2082-000                  | 249-2082-001 | 249-2112-000 | RG58                 | X                   | .196 (4.98)         | .260(6.60)    |
|                     | S-249-2087-000                  | 249-2087-001 | 249-2117-000 |                      |                     |                     | .250(6.35)    |
|                     | P-249-2083-000                  | 249-2083-001 | 249-2113-000 | RG142                | X                   | .196 (4.98)         | .260(6.60)    |
|                     | S-249-2088-000                  | 249-2088-001 | 249-2118-000 |                      |                     |                     | .250(6.35)    |
|                     | P-249-2084-000                  | 249-2084-001 | 249-2114-000 | RG179                | RG174, RG179, RG316 | .111 (2.82)         | .350(8.89)    |
|                     | S-249-2089-000                  | 249-2089-001 | 249-2119-000 |                      |                     |                     | .330(8.38)    |
|                     | P-249-2085-000                  | 249-2085-001 | 249-2115-000 | RG178U               | X                   | .075 (1.90)         | .260(6.60)    |
|                     | S-249-2090-000                  | 249-2090-001 | 249-2120-000 | RG196U               |                     |                     | .250(6.35)    |

NOTES: † Coaxials without the seal accommodates both Seal 1 and Seal 2 cables.

†† Coaxials without the seal are utilized in DPX\*NE connectors supplied less the grommet (modification code: - 29\*\*) and DPX\*NA connectors.

††† A152 modification code indicates .00005 (0.0010) gold plating on coaxial contacts. (Standard for the DPXNE/NA series.)

A176 modification code indicates .00002 (0.0005) gold plating on coaxial contacts.

## Wire Strip Dimensions



| Wire Strip Dimension |                      |
|----------------------|----------------------|
|                      | A Dim.               |
| #22                  | .130/.110(3.30/2.79) |
| #20HD                | .167/.147(4.24/3.73) |
| #16                  | .270/.230(6.86/5.84) |
| #12                  | .270/.230(6.86/5.84) |

Dimensions are shown in inches (millimeters).  
Dimensions subject to change.

www.ittcannon.com

## Coaxial Contact Data

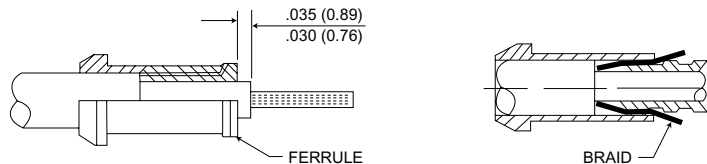
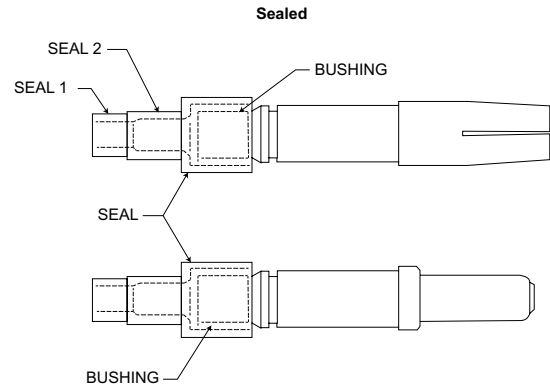
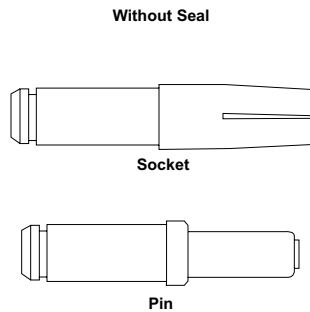
## Installation Data

1. Use basic tool M22520/5-01 with Y-211 die (#995-0002-249) for crimping.
2. Use extraction tool No. CET-C8. An insertion tool is not required (See Note 5).
3. Center contact, rear insulator, crimp ring, support bushing (not applicable to RG58/RG142 coaxials), seal sleeve, front insulator, shell and ferrule are shipped unassembled in a common container.

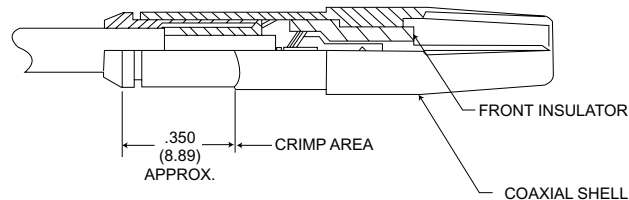
## 4. Cable Assembly Instructions

- Step 1 - If applicable determine which portion of seal sleeve should be used. If Seal 2 is used, cut off Seal 1 portion.
- Step 2 - In sequence, place seal sleeve, support bushing and crimp ring over cable jacket.
- Step 3 - Trim cable per illustration.
- Step 4 - Comb out braid and flare out ends to permit entry of ferrule.
- Step 5 - Complete termination per illustration.

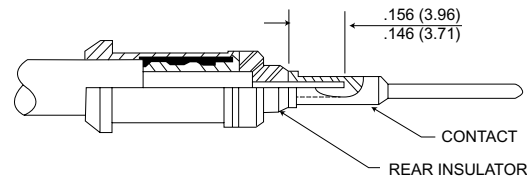
5. To extract coaxial, push back seal sleeve and support bushing. Slip cable into extraction tool. Push tool into insert until contacts coaxial retaining shoulder. Grip both cable and tool with one hand and pull coaxial rearward out of insert cavity.
6. To facilitate extraction of contacts, the length of free cable adjacent to the rear surface of the connector should not be less than 2.000 (50.80).



- A. Push ferrule under braid as far as it will go. Trim off braid extending beyond shoulder of ferrule, if necessary.
- B. While holding ferrule in place pull crimp sleeve forward over braid until it is tight against shoulder on ferrule. Pull firmly against face of ferrule to make sure it is up tight.
- C. Trim dielectric to the .035 (0.89)/.030 (0.76) dimension.



- A. Place front insulator over contact and then push assembly into coaxial shell.
- B. Place parts in jaw of crimp tool. Locate jaws at start of chamber on crimp sleeve. Press sleeve firmly into coaxial shell and crimp.
- C. After assembled coaxial is inserted into connector, push support bushing into grommet until shoulder rests on tubular extension. Then pull sealing sleeve forward until it is snug on grommet.



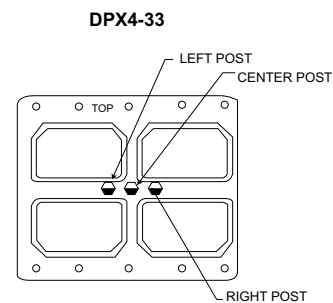
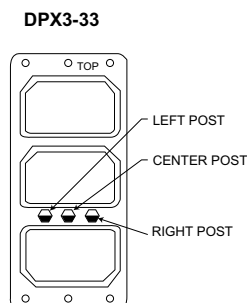
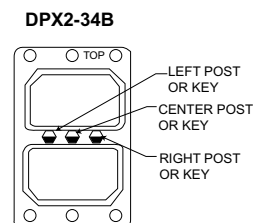
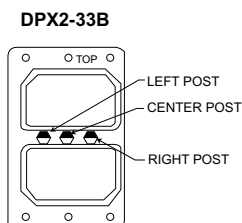
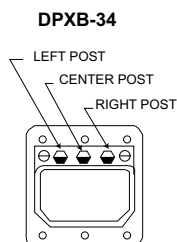
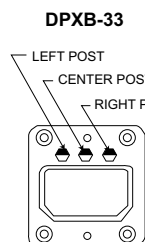
- A. Carefully push inner conductor through rear insulator.
- B. While holding rear insulator firmly against ferrule, trim conductor to .156 (3.96)/.146 (3.91) dimension.
- C. Place contact over conductor and solder.

## Polarization Positions

MIL-C-81659B requires that polarizing post be shipped unassembled with the connector. The user then assembles the post in the preferred position and marks the position number on the connector. All DPXNA and DPXNE connectors shall be sold this way. The position number will not be marked.



### Face View of Engaging End



The last two digits in the four-digit dash number refer to the polarizing post position. The polarizing posts will be shipped unassembled with the connector assembly. The position number is not stamped on the connector. This allows the customer to position the posts themselves and then stamp the appropriate number on the shell.

| 33 PLUG MALE SHELL |           |             |            |          |           |             |            | 34 RECEPTACLE FEMALE SHELL |           |             |            |          |           |             |            |
|--------------------|-----------|-------------|------------|----------|-----------|-------------|------------|----------------------------|-----------|-------------|------------|----------|-----------|-------------|------------|
| Position           | Left Post | Center Post | Right Post | Position | Left Post | Center Post | Right Post | Position                   | Left Post | Center Post | Right Post | Position | Left Post | Center Post | Right Post |
| 01                 | 1         | 1           | 1          | 51       | 3         | 2           | 5          | 01                         | 4         | 4           | 4          | 51       | 6         | 3           | 2          |
| 02                 | 2         | 1           | 1          | 52       | 4         | 2           | 5          | 02                         | 4         | 4           | 3          | 52       | 6         | 3           | 1          |
| 03                 | 3         | 1           | 1          | 53       | 5         | 2           | 5          | 03                         | 4         | 4           | 2          | 53       | 6         | 3           | 6          |
| 04                 | 4         | 1           | 1          | 54       | 6         | 2           | 5          | 04                         | 4         | 4           | 1          | 54       | 6         | 3           | 5          |
| 05                 | 5         | 1           | 1          | 55       | 1         | 2           | 4          | 05                         | 4         | 4           | 6          | 55       | 1         | 3           | 4          |
| 06                 | 6         | 1           | 1          | 56       | 2         | 2           | 4          | 06                         | 4         | 4           | 5          | 56       | 1         | 3           | 3          |
| 07                 | 1         | 1           | 6          | 57       | 3         | 2           | 4          | 07                         | 5         | 4           | 4          | 57       | 1         | 3           | 2          |
| 08                 | 2         | 1           | 6          | 58       | 4         | 2           | 4          | 08                         | 5         | 4           | 3          | 58       | 1         | 3           | 1          |
| 09                 | 3         | 1           | 6          | 59       | 5         | 2           | 4          | 09                         | 5         | 4           | 2          | 59       | 1         | 3           | 6          |
| 10                 | 4         | 1           | 6          | 60       | 6         | 2           | 4          | 10                         | 5         | 4           | 1          | 60       | 1         | 3           | 5          |
| 11                 | 5         | 1           | 6          | 61       | 1         | 2           | 3          | 11                         | 5         | 4           | 6          | 61       | 2         | 3           | 4          |
| 12                 | 6         | 1           | 6          | 62       | 2         | 2           | 3          | 12                         | 5         | 4           | 5          | 62       | 2         | 3           | 3          |
| 13                 | 1         | 1           | 5          | 63       | 3         | 2           | 3          | 13                         | 6         | 4           | 4          | 63       | 2         | 3           | 2          |
| 14                 | 2         | 1           | 5          | 64       | 4         | 2           | 3          | 14                         | 6         | 4           | 3          | 64       | 2         | 3           | 1          |
| 15                 | 3         | 1           | 5          | 65       | 5         | 2           | 3          | 15                         | 6         | 4           | 2          | 65       | 2         | 3           | 6          |
| 16                 | 4         | 1           | 5          | 66       | 6         | 2           | 3          | 16                         | 6         | 4           | 1          | 66       | 2         | 3           | 5          |
| 17                 | 5         | 1           | 5          | 67       | 1         | 2           | 2          | 17                         | 6         | 4           | 6          | 67       | 3         | 3           | 4          |
| 18                 | 6         | 1           | 5          | 68       | 2         | 2           | 2          | 18                         | 6         | 4           | 5          | 68       | 3         | 3           | 3          |
| 19                 | 1         | 1           | 4          | 69       | 3         | 2           | 2          | 19                         | 1         | 4           | 4          | 69       | 3         | 3           | 2          |
| 20                 | 2         | 1           | 4          | 70       | 4         | 2           | 2          | 20                         | 1         | 4           | 3          | 70       | 3         | 3           | 1          |
| 21                 | 3         | 1           | 4          | 71       | 5         | 2           | 2          | 21                         | 1         | 4           | 2          | 71       | 3         | 3           | 6          |
| 22                 | 4         | 1           | 4          | 72       | 6         | 2           | 2          | 22                         | 1         | 4           | 1          | 72       | 3         | 3           | 5          |
| 23                 | 5         | 1           | 4          | 73       | 1         | 3           | 1          | 23                         | 1         | 4           | 6          | 73       | 4         | 2           | 4          |
| 24                 | 6         | 1           | 4          | 74       | 2         | 3           | 1          | 24                         | 1         | 4           | 5          | 74       | 4         | 2           | 3          |
| 25                 | 1         | 1           | 3          | 75       | 3         | 3           | 1          | 25                         | 2         | 4           | 4          | 75       | 4         | 2           | 2          |
| 26                 | 2         | 1           | 3          | 76       | 4         | 3           | 1          | 26                         | 2         | 4           | 3          | 76       | 4         | 2           | 1          |
| 27                 | 3         | 1           | 3          | 77       | 5         | 3           | 1          | 27                         | 2         | 4           | 2          | 77       | 4         | 2           | 6          |
| 28                 | 4         | 1           | 3          | 78       | 6         | 3           | 1          | 28                         | 2         | 4           | 1          | 78       | 4         | 2           | 5          |
| 29                 | 5         | 1           | 3          | 79       | 1         | 3           | 6          | 29                         | 2         | 4           | 6          | 79       | 5         | 2           | 4          |
| 30                 | 6         | 1           | 3          | 80       | 2         | 3           | 6          | 30                         | 2         | 4           | 5          | 80       | 5         | 2           | 3          |
| 31                 | 1         | 1           | 2          | 81       | 3         | 3           | 6          | 31                         | 3         | 4           | 4          | 81       | 5         | 2           | 2          |
| 32                 | 2         | 1           | 2          | 82       | 4         | 3           | 6          | 32                         | 3         | 4           | 3          | 82       | 5         | 2           | 1          |
| 33                 | 3         | 1           | 2          | 83       | 5         | 3           | 6          | 33                         | 3         | 4           | 2          | 83       | 5         | 2           | 6          |
| 34                 | 4         | 1           | 2          | 84       | 6         | 3           | 6          | 34                         | 3         | 4           | 1          | 84       | 5         | 2           | 5          |
| 35                 | 5         | 1           | 2          | 85       | 1         | 3           | 5          | 35                         | 3         | 4           | 6          | 85       | 6         | 2           | 4          |
| 36                 | 6         | 1           | 2          | 86       | 2         | 3           | 5          | 36                         | 3         | 4           | 5          | 86       | 6         | 2           | 3          |
| 37                 | 1         | 2           | 1          | 87       | 3         | 3           | 5          | 37                         | 4         | 3           | 4          | 87       | 6         | 2           | 2          |
| 38                 | 2         | 2           | 1          | 88       | 4         | 3           | 5          | 38                         | 4         | 3           | 3          | 88       | 6         | 2           | 1          |
| 39                 | 3         | 2           | 1          | 89       | 5         | 3           | 5          | 39                         | 4         | 3           | 2          | 89       | 6         | 2           | 6          |
| 40                 | 4         | 2           | 1          | 90       | 6         | 3           | 5          | 40                         | 4         | 3           | 1          | 90       | 6         | 2           | 5          |
| 41                 | 5         | 2           | 1          | 91       | 3         | 3           | 4          | 41                         | 4         | 3           | 6          | 91       | 1         | 2           | 4          |
| 42                 | 6         | 2           | 1          | 92       | 2         | 3           | 4          | 42                         | 4         | 3           | 5          | 92       | 1         | 2           | 3          |
| 43                 | 1         | 2           | 6          | 93       | 3         | 3           | 4          | 43                         | 5         | 3           | 4          | 93       | 1         | 2           | 2          |
| 44                 | 2         | 2           | 6          | 94       | 4         | 3           | 4          | 44                         | 5         | 3           | 3          | 94       | 1         | 2           | 1          |
| 45                 | 3         | 2           | 6          | 95       | 5         | 3           | 4          | 45                         | 5         | 3           | 2          | 95       | 1         | 2           | 6          |
| 46                 | 4         | 2           | 6          | 96       | 6         | 3           | 4          | 46                         | 5         | 3           | 1          | 96       | 1         | 2           | 5          |
| 47                 | 5         | 2           | 6          | 97       | 1         | 3           | 3          | 47                         | 5         | 3           | 6          | 97       | 2         | 2           | 4          |
| 48                 | 6         | 2           | 6          | 98       | 2         | 3           | 3          | 48                         | 5         | 3           | 5          | 98       | 2         | 2           | 3          |
| 49                 | 1         | 2           | 5          | 99       | 3         | 3           | 3          | 49                         | 6         | 3           | 4          | 99       | 2         | 2           | 2          |
| 50                 | 2         | 2           | 5          |          |           |             |            | 50                         | 6         | 3           | 3          |          |           |             |            |

## Cross Reference from Military to Cannon Part Numbers

| Military Part Number | Cannon Part Number         | Military Part Number | Cannon Part Number         | Military Part Number | Cannon Part Number   |
|----------------------|----------------------------|----------------------|----------------------------|----------------------|----------------------|
| M81659/29A2-0001     | DPXBNE-26M-33P-00          | M81659/35A2-0122     | DPX2NE-32W2MS40W1MS-33B-00 | M81659/37A2-0005     | DPX3NE-78M-33P-00    |
| 0002                 | DPXBNE-26M-33S-00          | 0123                 | DPX2NE-32WMP45MP-33B-00    | 0006                 | DPX3NE-78M-33S-00    |
| 0009                 | DPXBNE-40M-33P-00          | 0124                 | DPX2NE-32W2MS45MS-33B-00   | 0013                 | DPX3NE-120M-33P-00   |
| 0010                 | DPXBNE-40M-33S-00          | 0125                 | DPX2NE-32W2MP57MP-33B-00   | 0014                 | DPX3NE-120M-33S-00   |
| 0017                 | DPXBNE-45M-33P-00          | 0126                 | DPX2NE-32W2MS57MS-33B-00   | 0021                 | DPX3NE-135M-33P-00   |
| 0018                 | DPXBNE-45M-33S-00          | 0127                 | DPX2NE-32W2MP67MP-33B-00   | 0022                 | DPX3NE-135M-33S-00   |
| 0025                 | DPXBNE-57M-33P-00          | 0128                 | DPX2NE-32W2MS67MS-33B-00   | 0029                 | DPX3NE-171M-33P-00   |
| 0026                 | DPXBNE-57M-33S-00          | 0129                 | DPX2NE-32W2MPA106S-33B-00  | 0030                 | DPX3NE-171M-33S-00   |
| 0033                 | DPXBNE-67M-33P-00          | 0130                 | DPX2NE-32W2MSA106P-33B-00  | 0037                 | DPX3NE-201M-33P-00   |
| 0034                 | DPXBNE-67M-33S-00          | 0131                 | DPX2NE-40W1MP40W1MP-33B-00 | 0038                 | DPX3NE-201M-33S-00   |
| 0041                 | DPXBNE-A106-33P-00         | 0132                 | DPX2NE-40W1MS40W1MS-33N-00 | 0045                 | DPX3NE-A318-33P-00   |
| 0042                 | DPXBNE-A106-33S-00         | 0133                 | DPX2NE-57MPA106S-33B-00    | 0046                 | DPX3NE-A318-33S-00   |
| 0083                 | DPXBNE-D8M-33P-00          | 0134                 | DPX2NE-57MSA106P-33B-00    | 0065                 | DPX3NE-24M-33P-00    |
| 0084                 | DPXBNE-D8M-33S-00          | 0145                 | DPX2NE-W8MP57MP-33B-00     | 0066                 | DPX3NE-24M-33S-00    |
| 0135                 | DPXBNE-W8M-33P-00          | 0146                 | DPX2NE-W8MS57MS-33B-00     | 0067                 | DPX3NE-122M-33SP-00  |
| 0136                 | DPXBNE-W8M-33S-00          | 0147                 | DPX2NE-57MP26MP-33B-00     | 0068                 | DPX3NE-122M-33PS-00  |
| 0137                 | DPXBNE-10W3M-33P-00        | 0148                 | DPX2NE-57MS25MS-33B-00     | 0073                 | DPX3NE-142M-33P-00   |
| 0138                 | DPXBNE-10W3M-33S-00        | 0151                 | DPX2NE-32W4MPA106S-33B-00  | 0074                 | DPX3NE-142M-33S-00   |
| 0139                 | DPXBNE-32W2M-33P-00        | 0152                 | DPX2NE-32W4MSA106P-33B-00  | 0075                 | DPX3NE-240M-33P-00   |
| 0140                 | DPXBNE-32W2M-33S-00        | 0155                 | DPX2NE-W8MP32W4MP-33B-00   | 0076                 | DPX3NE-240M-33S-00   |
| 0141                 | DPXBNE-40W1M-33P-00        | 0156                 | DPX2NE-W8MS32W4MS-33B-00   | 0079                 | DPX3NE-A240M-33SP-00 |
| 0142                 | DPXBNE-40W1M-33S-00        | 0159                 | DPX2NE-32W4MPW8MP-33B-00   | 0080                 | DPX3NE-A240M-33PS-00 |
| 0149                 | DPXBNE-32W4M-33P-00        | 0160                 | DPX2NE-32W4MSW8MS-33B-00   | 0091                 | DPX3NE-279M-33SP-00  |
| 0150                 | DPXBNE-32W4M-33S-00        |                      |                            | 0092                 | DPX3NE-279M-33PS-00  |
| M81659/31A2-001      | DPXBNE-26M-33P-00          | M81659/35A2-0003     | DPX2NE-26MP26MP-34B-00     | 0157                 | DPX3NE-244M-33SP-00  |
| 0002                 | DPXBNE-26M-33S-00          | 0004                 | DPX2NE-26MS26MS-34B-00     | 0158                 | DPX3NE-244M-33PS-00  |
| 0009                 | DPXBNE-40M-33P-00          | 0011                 | DPX2NE-40MP40MP-34B-00     |                      |                      |
| 0010                 | DPXBNE-40M-33S-00          | 0012                 | DPX2NE-40MS40MS-34B-00     | M81659/39A2-0005     | DPX3NE-78M-34P-00    |
| 0017                 | DPXBNE-45M-33P-00          | 0019                 | DPX2NE-45MP45MP-34B-00     | 0006                 | DPX3NE-78M-34S-00    |
| 0018                 | DPXBNE-45M-33S-00          | 0020                 | DPX2NE-45MS45MS-34B-00     | 0013                 | DPX3NE-120M-34P-00   |
| 0025                 | DPXBNE-57M-33P-00          | 0027                 | DPX2NE-57MP57MP-34B-00     | 0014                 | DPX3NE-120M-34S-00   |
| 0026                 | DPXBNE-57M-33S-00          | 0028                 | DPX2NE-57MS57MS-34B-00     | 0021                 | DPX3NE-135M-34P-00   |
| 0033                 | DPXBNE-67M-33P-00          | 0035                 | DPX2NE-67MP67MP-34B-00     | 0022                 | DPX3NE-135M-34S-00   |
| 0034                 | DPXBNE-67M-33S-00          | 0036                 | DPX2NE-67MS67MS-34B-00     | 0029                 | DPX3NE-171M-34P-00   |
| 0041                 | DPXBNE-A106-33P-00         | 0043                 | DPX2NE-A106PA106P-34B-00   | 0030                 | DPX3NE-171M-34S-00   |
| 0042                 | DPXBNE-A106-33S-00         | 0044                 | DPX2NE-A106SA106S-34B-00   | 0037                 | DPX3NE-201M-34P-00   |
| 0083                 | DPXBNE-D8M-33P-00          | 0057                 | DPX2NE-A106S26MP-34B-00    | 0038                 | DPX3NE-201M-34S-00   |
| 0084                 | DPXBNE-D8M-33S-00          | 0058                 | DPX2NE-A106P26MS-34B-00    | 0045                 | DPX3NE-A318-34P-00   |
| 0135                 | DPXBNE-W8M-33P-00          | 0059                 | DPX2NE-26MPA106S-34B-00    | 0046                 | DPX3NE-A318-34S-00   |
| 0136                 | DPXBNE-W8M-33S-00          | 0060                 | DPX2NE-26MSA106P-34B-00    | 0065                 | DPX3NE-24M-34P-00    |
| 0137                 | DPXBNE-10W3M-33P-00        | 0071                 | DPX2NE-67MPA106S-34B-00    | 0066                 | DPX3NE-24M-34S-00    |
| 0138                 | DPXBNE-10W3M-33S-00        | 0072                 | DPX2NE-67MSA106P-34B-00    | 0067                 | DPX3NE-122M-34SP-00  |
| 0139                 | DPXBNE-32W2M-33P-00        | 0087                 | DPX2NE-A106SW8MP-34B-00    | 0068                 | DPX3NE-122M-34PS-00  |
| 0140                 | DPXBNE-32W2M-33S-00        | 0088                 | DPX2NE-A106PW8MS-34B-00    | 0073                 | DPX3NE-142M-34P-00   |
| 0141                 | DPXBNE-40W1M-33P-00        | 0089                 | DPX2NE-A106S67MP-34B-00    | 0074                 | DPX3NE-142M-34S-00   |
| 0142                 | DPXBNE-40W1M-33S-00        | 0090                 | DPX2NE-A106P67MS-34B-00    | 0075                 | DPX3NE-240M-34P-00   |
| 0149                 | DPXBNE-32W4M-33P-00        | 0109                 | DPX2NE-C2P40W1MP-34B-00    | 0076                 | DPX3NE-240M-34S-00   |
| 0150                 | DPXBNE-32W4M-33S-00        | 0110                 | DPX2NE-C2S40W1MS-34B-00    | 0079                 | DPX3NE-A240M-34SP-00 |
| M81659/33A2-0003     | DPX2NE-26MP26MP-33B-00     | 0111                 | DPX2NE-C2P57MP-34B-00      | 0080                 | DPX3NE-A240M-34PS-00 |
| 0004                 | DPX2NE-26MS26MS-33B-00     | 0112                 | DPX2NE-C2S57MS-34B-00      | 0091                 | DPX3NE-279M-34SP-00  |
| 0011                 | DPX2NE-40MP40MP-33B-00     | 0113                 | DPX2NE-AC3P67MP-34B-00     | 0092                 | DPX3NE-279M-34PS-00  |
| 0012                 | DPX2NE-40MS40MS-33B-00     | 0114                 | DPX2NE-AC3S67MS-34B-00     | 0157                 | DPX3NE-244M-34SP-00  |
| 0019                 | DPX2NE-45MP45MP-33B-00     | 0115                 | DPX2NE-AC3PA106S-34B-00    | 0158                 | DPX3NE-244M-34PS-00  |
| 0020                 | DPX2NE-45MS45MS-33B-00     | 0116                 | DPX2NE-AC3SA106P-34B-00    |                      |                      |
| 0027                 | DPX2NE-57MP57MP-33B-00     | 0117                 | DPX2NE-W8MPA106S-34B-00    | M81659/41A2-0007     | DPX4NE-104M-33P-00   |
| 0028                 | DPX2NE-57MS57MS-33B-00     | 0118                 | DPX2NE-W8MSA106P-34B-00    | 0008                 | DPX4NE-104M-33S-00   |
| 0035                 | DPX2NE-67MP67MP-33B-00     | 0119                 | DPX2NE-10W3P32W2MP-34B-00  | 0015                 | DPX4NE-160M-33P-00   |
| 0036                 | DPX2NE-67MS67MS-33B-00     | 0120                 | DPX2NE-10W3S32W2MS-34B-00  | 0016                 | DPX4NE-160M-33S-00   |
| 0043                 | DPX2NE-A106PA106P-33B-00   | 0121                 | DPX2NE-32W2MP40W1MP-34B-00 | 0023                 | DPX4NE-180M-33P-00   |
| 0044                 | DPX2NE-A106SA106S-33B-00   | 0122                 | DPX2NE-32W2MS40W1MS-34B-00 | 0024                 | DPX4NE-180M-33S-00   |
| 0057                 | DPX2NE-A106S26MP-33B-00    | 0123                 | DPX2NE-32W2MP45MP-34B-00   | 0031                 | DPX4NE-228M-33P-00   |
| 0058                 | DPX2NE-A106P26MS-33B-00    | 0124                 | DPX2NE-32W3MS45MS-34B-00   | 0032                 | DPX4NE-228M-33S-00   |
| 0059                 | DPX2NE-26MPA106S-33B-00    | 0125                 | DPX2NE-32W2MP57MP-34B-00   | 0039                 | DPX4NE-268M-33P-00   |
| 0060                 | DPX2NE-26MSA106P-33B-00    | 0126                 | DPX2NE-32W3MS57MS-34B-00   | 0040                 | DPX4NE-268M-33S-00   |
| 0071                 | DPX2NE-67MPA106S-33B-00    | 0127                 | DPX2NE-32W2MP67MP-34B-00   | 0047                 | DPX4NE-A424-33P-00   |
| 0072                 | DPX2NE-67MSA106P-33B-00    | 0128                 | DPX2NE-32W2MS67MS-34B-00   | 0048                 | DPX4NE-A424-33S-00   |
| 0087                 | DPX2NE-A106PW8MP-33B-00    | 0129                 | DPX2NE-32W2MPA106S-34B-00  | 0061                 | DPX4NE-104M-33P-00   |
| 0088                 | DPX2NE-A106PW8MS-33B-00    | 0130                 | DPX2NE-32W2MSA106P-34B-00  | 0062                 | DPX4NE-104M-33S-00   |
| 0089                 | DPX2NE-A106S67MP-33B-00    | 0131                 | DPX2NE-40W1MP40W1MP-34B-00 | 0063                 | DPX4NE-95M-33P-00    |
| 0090                 | DPX2NE-A106P67MS-33B-00    | 0132                 | DPX2NE-40W1MS40W1MS-34B-00 | 0064                 | DPX4NE-95M-33S-00    |
| 0109                 | DPX2NE-C2P40W1MP-33B-00    | 0133                 | DPX2NE-57MPA106S-34B-00    | 0085                 | DPX4NE-150M-33P-00   |
| 0110                 | DPX2NE-C2S40W1MS-33B-00    | 0134                 | DPX2NE-57MSA106P-34B-00    | 0086                 | DPX4NE-150M-33S-00   |
| 0111                 | DPX2NE-C2P57MP-33B-00      | 0145                 | DPX2NE-W8MP57MP-34B-00     | 0095                 | DPX4NE-326M-33SP-00  |
| 0112                 | DPX2NE-C2S57MS-33B-00      | 0146                 | DPX2NE-W8MS57MS-34B-00     | 0096                 | DPX4NE-326M-33PS-00  |
| 0113                 | DPX2NE-AC3P67MP-33B-00     | 0147                 | DPX2NE-57MP26MP-34B-00     | 0097                 | DPX4NE-287M-33SP-00  |
| 0114                 | DPX2NE-AC3S67MS-33B-00     | 0148                 | DPX2NE-57MS26MS-34B-00     | 0098                 | DPX4NE-287M-33PS-00  |
| 0115                 | DPX2NE-AC3PA106S-33B-00    | 0151                 | DPX2NE-32W4MPA106S-34B-00  | 0099                 | DPX4NE-189M-33SP-00  |
| 0116                 | DPX2NE-AC3SA106P-33B-00    | 0152                 | DPX2NE-32W4MSA106P-34B-00  | 0100                 | DPX4NE-189M-33PS-00  |
| 0117                 | DPX2NE-W8MSA106S-33B-00    | 0155                 | DPX2NE-W8MP32W4MP-34B-00   | 0101                 | DPX4NE-346M-33SP-00  |
| 0118                 | DPX2NE-W8MSA106P-33B-00    | 0156                 | DPX2NE-W8MS32W4MS-34B-00   | 0102                 | DPX4NE-346M-33PS-00  |
| 0119                 | DPX2NE-10W3MP32W2MP-33B-00 | 0159                 | DPX2NE-32W4MPW8MP-34B-00   |                      |                      |
| 0120                 | DPX2NE-10W3MS32W2MS-33B-00 | 0160                 | DPX2NE-32W4MSW8MS-34B-00   |                      |                      |
| 0121                 | DPX2NE-32W2MP40W1MP-33B-00 |                      |                            |                      |                      |

## Cross Reference from Military to Cannon Part Numbers (Continued)

| Military Part Number | Cannon Part Number        | Military Part Number | Cannon Part Number         | Military Part Number | Cannon Part Number  |
|----------------------|---------------------------|----------------------|----------------------------|----------------------|---------------------|
| M81659/43A2-0007     | DPX4NE-104M-34P-00        | M81659/62A2-0121     | DPX2NE-32W2MP40W1MP-34S-29 | M81659i65A2-0026     | DPXBNA-57M-33S-00   |
| 0008                 | DPX4NE-104M-34S-00        | 0122                 | DPX2NE-32W2MP40W1MS-34B-29 | 0033                 | DPXBNA-67M-33P-00   |
| 0015                 | DPX4NE-160M-34P-00        | 0123                 | DPX2NE-32W2MP45MP-34B-29   | 0034                 | DPXBNA-67M-33S-00   |
| 0016                 | DPX4NE-160M-34S-00        | 0124                 | DPX2NE-32W2MS45MS-34B-29   | 0041                 | DPXBNA-A106-33P-00  |
| 0023                 | DPX4NE-180M-34P-00        | 0125                 | DPX2NE-32W2MP57MP-34B-29   | 0042                 | DPXBNA-A106-33S-00  |
| 0024                 | DPX4NE-180M-34S-00        | 0126                 | DPX2NE-32W2MS57MS-34B-29   | 0083                 | DPXBNA-D8M-33P-00   |
| 0031                 | DPX4NE-228M-34P-00        | 0127                 | DPX2NE-32W2MP67MP-34B-29   | 0084                 | DPXBNA-D8M-33S-00   |
| 0032                 | DPX4NE-228M-34S-00        | 0128                 | DPX2NE-32W2MS67MS-34B-29   | 0135                 | DPXBNA-W8M-33P-00   |
| 0039                 | DPX4NE-268M-34P-00        | 0129                 | DPX2NE-32W2MPA106S-34B-29  | 0136                 | DPXBNA-W8M-33S-00   |
| 0040                 | DPX4NE-268M-34S-00        | 0130                 | DPX2NE-32W2MSA106P-34B-29  | 0137                 | DPXBNA-10W3M-33P-00 |
| 0047                 | DPX4NE-A424-34P-00        | 0131                 | DPX2NE-40W1MP40W1MP-34B-29 | 0138                 | DPXBNA-10W3M-33S-00 |
| 0048                 | DPX4NE-A424-34S-00        | 0132                 | DPX2NE-40WIMS40W1MS-34B-29 | 0139                 | DPXBNA-32W2M-33P-00 |
| 0061                 | DPX4NE-104M-34P-00        | 0133                 | DPX2NE-57MPA106S-34B-29    | 0140                 | DPXBNA-32W2M-33S-00 |
| 0062                 | DPX4NE-104M-34S-00        | 0134                 | DPX2NE-57MSA106P-34B-29    | 0141                 | DPXBNA-40W1M-33P-00 |
| 0063                 | DPX4NE-95M-34P-00         | 0145                 | DPX2NE-W8MP57MP-34B-29     | 0142                 | DPXBNA-40W1M-33S-00 |
| 0064                 | DPX4NE-95M-34S-00         | 0146                 | DPX2NE-W8MS57MS-34B-29     | 0149                 | DPXBNA-32W4M-33P-00 |
| 0085                 | DPX4NE-150M-34P-00        | 0147                 | DPX2NE-57MP26MP-34B-29     | 0150                 | DPXBNA-32W4M-33S-00 |
| 0086                 | DPX4NE-150M-34S-00        | 0148                 | DPX2NE-57MS26MS-34B-29     | M81659/66A2-0001     | DPXBNA-26M-34P-00   |
| 0095                 | DPX4NE-326M-34S-00        | 0151                 | DPX2NE-32W4MPA106S-34B-29  | 0002                 | DPXBNA-26M-34S-00   |
| 0096                 | DPX4NE-326M-34PS-00       | 0152                 | DPX2NE-32W4MSA106P-34B-29  | 0009                 | DPXBNA-40M-34P-00   |
| 0097                 | DPX4NE-287M-34S-00        | 0155                 | DPX2NE-W8MP32W4MP-34B-29   | 0010                 | DPXBNA-40M-34S-00   |
| 0098                 | DPX4NE-287M-34PS-00       | 0156                 | DPX2NE-W8MS32W4MS-34B-29   | 0017                 | DPXBNA-45M-34P-00   |
| 0099                 | DPX4NE-189M-34S-00        | 0159                 | DPX2NE-32W4MPW8MP-34B-29   | 0018                 | DPXBNA-45M-34S-00   |
| 0100                 | DPX4NE-189M-34PS-00       | 0160                 | DPX2NE-32W4MSW8MS-34B-29   | 0025                 | DPXBNA-57M-34P-00   |
| 0101                 | DPX4NE-346M-34S-00        | M81659/63A2-0005     | DPX3NE-78M-34P-29          | 0026                 | DPXBNA-57M-34S-00   |
| 0102                 | DPX4NE-346M-34PS-00       | 0006                 | DPX3NE-78M-34S-29          | 0033                 | DPXBNA-67M-34P-00   |
| M81659/61A2-0001     | DPXBNE-26M-34P-29         | 0013                 | DPX3NE-120M-34P-29         | 0034                 | DPXBNA-67M-34S-00   |
| 0002                 | DPXBNE-26M-34S-29         | 0014                 | DPX3NE-120M-34S-29         | 0041                 | DPXBNA-A106-34P-00  |
| 0009                 | DPXBNE-40M-34P-29         | 0021                 | DPX3NE-135M-34P-29         | 0042                 | DPXBNA-A106-34S-00  |
| 0010                 | DPXBNE-40M-34S-29         | 0022                 | DPX3NE-135M-34S-29         | 0083                 | DPXBNA-D8M-34P-00   |
| 0017                 | DPXBNE-45M-34P-29         | 0029                 | DPX3NE-171M-34P-29         | 0084                 | DPXBNA-D8M-34S-00   |
| 0018                 | DPXBNE-45M-34S-29         | 0030                 | DPX3NE-171M-34S-29         | 0135                 | DPXBNA-W8M-34P-00   |
| 0025                 | DPXBNE-57M-34P-29         | 0037                 | DPX3NE-201M-34P-29         | 0136                 | DPXBNA-W8M-34S-00   |
| 0026                 | DPXBNE-57M-34S-29         | 0038                 | DPX3NE-201M-34S-29         | 0137                 | DPXBNA-10W3M-34P-00 |
| 0033                 | DPXBNE-67M-34P-29         | 0041                 | DPX3NE-A318-30-29          | 0138                 | DPXBNA-10W3M-34S-00 |
| 0034                 | DPXBNE-67M-34S-29         | 0046                 | DPX3NE-A318-34S-29         | 0139                 | DPXBNA-32W2M-34P-00 |
| 0041                 | DPXBNE-A106-34P-29        | 0065                 | DPX3NE-24M-34P-29          | 0140                 | DPXBNA-32W2M-34S-00 |
| 0042                 | DPXBNE-A106-34S-29        | 0066                 | DPX3NE-24M-34S-29          | 0141                 | DPXBNA-40W1M-34P-00 |
| 0083                 | DPXBNE-D8M-34P-29         | 0067                 | DPX3NE-122M-34SP-29        | 0142                 | DPXBNA-40W1M-34S-00 |
| 0084                 | DPXBNE-D8M-34S-29         | 0068                 | DPX3NE-122M-34PS-29        | 0149                 | DPXBNA-32W4M-34P-00 |
| 0135                 | DPXBNE-W8M-34P-29         | 0073                 | DPX3NE-142M-34P-29         | 0150                 | DPXBNA-32W4M-34S-00 |
| 0136                 | DPXBNE-W8M-34S-29         | 0074                 | DPX3NE-142M-34S-29         | M81659 67A2-0001     | DPXBNA-26M-34P-01   |
| 0137                 | DPXBNE-10W3M-34P-29       | 0075                 | DPX3NE-240M-34P-29         | 0002                 | DPXBNA-26M-34S-01   |
| 0138                 | DPXBNE-10W3M-34S-29       | 0076                 | DPX3NE-240M-34S-29         | 0009                 | DPXBNA-40M-34P-01   |
| 0139                 | DPXBNE-32W2M-34P-29       | 0079                 | DPX3NE-A240M-34SP-29       | 0010                 | DPXBNA-40M-34S-01   |
| 0140                 | DPXBNE-32W2M-34S-29       | 0080                 | DPX3NE-A240M-34PS-29       | 0017                 | DPXBNA-45M-34P-01   |
| 0141                 | DPXBNE-40W1M-34P-29       | 0091                 | DPX3NE-279M-34SP-29        | 0018                 | DPXBNA-45M-34S-01   |
| 0142                 | DPXBNE-40W1M-34S-29       | 0092                 | DPX3NE-279M-34PS-29        | 0025                 | DPXBNA-57M-34P-01   |
| 0149                 | DPXBNE-32W4M-34P-29       | 0157                 | DPX3NE-244M-34SP-29        | 0026                 | DPXBNA-57M-34S-01   |
| 0150                 | DPXBNE-32W4M-34S-29       | 0158                 | DPX3NE-244M-34PS-29        | 0033                 | DPXBNA-67M-34P-01   |
| M81659/62A2-0003     | DPX2NE-26MP-26MP-34B-29   | M81659/ 64A2-0007    | DPX4NE-104M-34P-29         | 0034                 | DPXBNA-67M-34S-01   |
| 0004                 | DPX2NE-26MS26MS-34B-29    | 0008                 | DPX4NE-104M-34S-29         | 0041                 | DPXBNA-A106-34P-01  |
| 0011                 | DPX2NE-40MP40MP-34B-29    | 0015                 | DPX4NE-160M-34P-29         | 0042                 | DPXBNA-A106-34S-01  |
| 0012                 | DPX2NE-40MS40MS-34B-29    | 0016                 | DPX4NE-160M-34S-29         | 0083                 | DPXBNA-D8M-34P-01   |
| 0019                 | DPX2NE-45MP45MP-34B-29    | 0023                 | DPX4NE-180M-34P-29         | 0084                 | DPXBNA-D8M-34S-01   |
| 0020                 | DPX2NE-45MS45MS-34B-29    | 0024                 | DPX4NE-180M-34S-29         | 0135                 | DPXBNA-W8M-34P-01   |
| 0027                 | DPX2NE-57MP57MP-34B-29    | 0031                 | DPX4NE-228M-34P-29         | 0136                 | DPXBNA-W8M-34S-01   |
| 0028                 | DPX2NE-57MS57MS-34B-29    | 0032                 | DPX4NE-228M-34S-29         | 0137                 | DPXBNA-10W3M-34P-01 |
| 0035                 | DPX2NE-67MP67MP-34B-29    | 0039                 | DPX4NE-268M-34P-29         | 0138                 | DPXBNA-10W3M-34S-01 |
| 0036                 | DPX2NE-67MS67MS-34B-29    | 0040                 | DPX4NE-268M-34S-29         | 0139                 | DPXBNA-32W2M-34P-01 |
| 0043                 | DPX2NE-A106PA106P-34B-29  | 0047                 | DPX4NE-A424-34P-29         | 0140                 | DPXBNA-32W2M-34S-01 |
| 0044                 | DPX2NE-A106SA106S-34B-29  | 0048                 | DPX4NE-A424-34S-29         | 0141                 | DPXBNA-40W1M-34P-01 |
| 0057                 | DPX2NE-A106S26MP-34B-29   | 0061                 | DPX4NE-104M-34P-29         | 0142                 | DPXBNA-40W1M-34S-01 |
| 0058                 | DPX2NE-A106P26MS-34B-29   | 0062                 | DPX4NE-104M-34S-29         | 0149                 | DPXBNA-32W4M-34P-01 |
| 0059                 | DPX2NE-26MPA106S-34B-29   | 0063                 | DPX4NE-95M-34P-29          | 0150                 | DPXBNA-32W4M-34S-01 |
| 0060                 | DPX2NE-26MSA106P-34B-29   | 0064                 | DPX4NE-95M-34S-29          | M81659/68A2-0001     | DPXBNA-26M-34P-23   |
| 0071                 | DPX2NE-67MPA106S-34B-29   | 0085                 | DPX4NE-150M-34P-29         | 0002                 | DPXBNA-26M-34S-23   |
| 0072                 | DPX2NE-67MSA106P-34B-29   | 0086                 | DPX4NE-150M-34S-29         | 0009                 | DPXBNA-40M-34P-23   |
| 0087                 | DPX2NE-A10BSW8MP-34B-29   | 0095                 | DPX4NE-326M-34SP-29        | 0010                 | DPXBNA-40M-34S-23   |
| 0088                 | DPX2NE-A106PW8MS-34B-29   | 0096                 | DPX4NE-326M-34PS-29        | 0017                 | DPXBNA-45M-34P-23   |
| 0089                 | DPX2NE-A106S67MP-34B-29   | 0097                 | DPX4NE-287M-34SP-29        | 0018                 | DPXBNA-45M-34S-23   |
| 0090                 | DPX2NE-A106P67MS-34B-29   | 0098                 | DPX4NE-287M-34PS-29        | 0025                 | DPXBNA-57M-34P-23   |
| 0109                 | DPX2NE-C2P46W1MP-34B-29   | 0099                 | DPX4NE-189M-34SP-29        | 0026                 | DPXBNA-57M-34S-23   |
| 0110                 | DPX2NE-C2S40W1MS-34B-29   | 0100                 | DPX4NE-189M-34PS-29        | 0033                 | DPXBNA-67M-34P-23   |
| 0111                 | DPX2NE-C2P57MP-34B-29     | 0101                 | DPX4NE-346M-34SP-29        | 0034                 | DPXBNA-67M-34S-23   |
| 0112                 | DPX2NE-C2S57MS-34B-29     | 0102                 | DPX4NE-346M-34PS-29        | 0041                 | DPXBNA-A106-34P-23  |
| 0113                 | DPX2NE-AC3P67MP-34B-29    | M81659/65A2-0001     | DPXBNA-26M-33P-00          | 0042                 | DPXBNA-A106-34S-23  |
| 0114                 | DPX2NE-AC3S67MS-34B-29    | 0002                 | DPXBNA-26M-33S-00          | 0083                 | DPXBNA-D8M-34P-23   |
| 0115                 | DPX2NE-AC3PA106S-34B-29   | 0009                 | DPXBNA-40M-33P-00          | 0084                 | DPXBNA-D8M-34S-23   |
| 0116                 | DPX2NE-AC3SA106P-34B-29   | 0010                 | DPXBNA-40M-33S-00          | 0135                 | DPXBNA-W8M-34P-23   |
| 0117                 | DPX2NE-W8MPA106S-34B-29   | 0017                 | DPXBNA-45M-33P-00          | 0136                 | DPXBNA-W8M-34S-23   |
| 0118                 | DPX2NE-W8MSA106P-34B-29   | 0018                 | DPXBNA-45M-33S-00          | 0137                 | DPXBNA-10W3M-34P-23 |
| 0119                 | DPX2NE-10W3P32W2MP-34B-29 | 0025                 | DPXBNA-57M-33P-00          |                      |                     |
| 0120                 | DPX2NE-10W3S32W2MS-34B-29 |                      |                            |                      |                     |

## Cross Reference from Military to Cannon Part Numbers

| Military Part Number | Cannon Part Number         | Military Part Number | Cannon Part Number         | Military Part Number | Cannon Part Number         |
|----------------------|----------------------------|----------------------|----------------------------|----------------------|----------------------------|
| M81659/68A2-0138     | DPXBNA-10W3M-34S-23        | M81659/70A2-0060     | DPX2NA-26MSA106P-34B-00    | M81659/71A2-0126     | DPX2NA-32W2MS57MS-34B-01   |
| 0139                 | DPXBNA-32W2M-34P-23        | 0071                 | DPX2NA-67MPA106S-34B-00    | 0127                 | DPX2NA-32W2MP67MP-34B-01   |
| 0140                 | DPXBNA-32W2M-34S-23        | 0072                 | DPX2NA-67MSA106P-34B-00    | 0128                 | DPX2NA-32W2MS67MS-34B-01   |
| 0141                 | DPXBNA-40W1M-34P-23        | 0087                 | DPX2NA-A106SW8MP-34B-00    | 0129                 | DPX2NA-32W2MPA106S-34B-01  |
| 0142                 | DPXBNA-40W1M-34S-23        | 0088                 | DPX2NA-A106PW8MS-34B-00    | 0130                 | DPX2NA-32W2MSA106P-34B-01  |
| 0149                 | DPXBNA-32W4M-34P-23        | 0089                 | DPX2NA-A106S67MP-34B-00    | 0131                 | DPX2NA-40W1MP40W1MP-34B-01 |
| 0150                 | DPXBNA-32W4M-34S-23        | 0090                 | DPX2NA-A106P67MS-34B-00    | 0132                 | DPX2NA-40W1MS40W1MS-34B-01 |
| M81659/69A2-0003     | DPX2NA-26MP26MP-33B-00     | 0109                 | DPX2NA-C2P40W1MP-34B-00    | 0133                 | DPX2NA-57MPA106S-34B-01    |
| 0004                 | DPX2NA-26MS26MS-33B-00     | 0110                 | DPX2NA-C2S40W1MS-34B-00    | 0134                 | DPX2NA-57MSA106P-34B-01    |
| 0011                 | DPX2NA-40MP40MP-33B-00     | 0111                 | DPX2NA-C2P57MP-34B-00      | 0145                 | DPX2NA-W8MP57MP-34B-01     |
| 0012                 | DPX2NA-40MS40MS-33B-00     | 0112                 | DPX2NA-C2S57MS-34B-00      | 0146                 | DPX2NA-W8MS57MS-34B-01     |
| 0019                 | DPX2NA-45MP45MP-33B-00     | 0113                 | DPX2NA-AC3P67MP-34B-00     | 0147                 | DPX2NA-57MP26MP-34B-01     |
| 0020                 | DPX2NA-45MS45MS-33B-00     | 0114                 | DPX2NA-AC3S67MS-34B-00     | 0148                 | DPX2NA-57MS26MS-34B-01     |
| 0027                 | DPX2NA-57MP57MP-33B-00     | 0115                 | DPX2NA-AC3PA106S-34B-00    | 0151                 | DPX2NA-32W4MPA106S-34B-01  |
| 0028                 | DPX2NA-57MS57MS-33B-00     | 0116                 | DPX2NA-AC3SA106P-34B-00    | 0152                 | DPX2NA-32W4MSA106P-34B-01  |
| 0035                 | DPX2NA-67MP67MP-33B-00     | 0117                 | DPX2NA-W8MPA106S-34B-00    | 0155                 | DPX2NA-W8MP32W4MP-34B-01   |
| 0036                 | DPX2NA-67MS67MS-33B-00     | 0118                 | DPX2NA-W8MSA106P-34B-00    | 0156                 | DPX2NA-W8MS32W4MS-34B-01   |
| 0043                 | DPX2NA-A106PA106P-33B-00   | 0119                 | DPX2NA-10W3P32W2MP-34B-00  | 0159                 | DPX2NA-32W4MPW8MP-34B-01   |
| 0044                 | DPX2NA-A106SA106S-33B-00   | 0120                 | DPX2NA-10W3S32W2MS-34B-00  | 0160                 | DPX2NA-32W4MSW8MS-34B-01   |
| 0057                 | DPX2NA-A106S26MP-33B-00    | 0121                 | DPX2NA-32W2MP40W1MP-34B-00 | M81659/72A2-0003     | DPX2NA-26MP26MP-34B-23     |
| 0058                 | DPX2NA-A106P26MS-33B-00    | 0122                 | DPX2NA-32W2MS40W1MS-34B-00 | 0004                 | DPX2NA-26MS26MS-34B-23     |
| 0059                 | DPX2NA-26MPA106S-33B-00    | 0123                 | DPX2NA-32W2MP45MP-34B-00   | 0011                 | DPX2NA-40MP40MP-34B-23     |
| 0060                 | DPX2NA-26MSA106P-33B-00    | 0124                 | DPX2NA-32W2MS45MS-34B-00   | 0012                 | DPX2NA-40MS40MS-34B-23     |
| 0071                 | DPX2NA-67MPA106S-33B-00    | 0125                 | DPX2NA-32W2MP57MP-34B-00   | 0019                 | DPX2NA-45MP45MP-34B-23     |
| 0072                 | DPX2NA-67MSA106P-33B-00    | 0126                 | DPX2NA-32W2MS57MS-34B-00   | 0020                 | DPX2NA-45MS45MS-34B-23     |
| 0087                 | DPX2NA-A106SW8MP-33B-00    | 0127                 | DPX2NA-32W2MP67MP-34B-00   | 0027                 | DPX2NA-57MP57MP-34B-23     |
| 0088                 | DPX2NA-A106PW8MS-33B-00    | 0128                 | DPX2NA-32W2MS67MS-34B-00   | 0028                 | DPX2NA-57MS57MS-34B-23     |
| 0089                 | DPX2NA-A106S67MP-33B-00    | 0129                 | DPX2NA-32W2MPA106S-34B-00  | 0035                 | DPX2NA-67MP67MP-34B-23     |
| 0090                 | DPX2NA-A106P67MS-33B-00    | 0130                 | DPX2NA-32W2MSA106P-34B-00  | 0036                 | DPX2NA-67MS67MS-34B-23     |
| 0109                 | DPX2NA-C2P40W1MP-33B-00    | 0131                 | DPX2NA-40W1MP40W1MP-34B-00 | 0043                 | DPX2NA-A106PA106P-34B-23   |
| 0110                 | DPX2NA-C2S40W1MS-33B-00    | 0132                 | DPX2NA-40W1MS40W1MS-34B-00 | 0044                 | DPX2NA-A106SA106S-34B-23   |
| 0111                 | DPX2NA-C2P57MP-33B-00      | 0133                 | DPX2NA-57MPA106S-34B-00    | 0057                 | DPX2NA-A106S26MP-34B-23    |
| 0112                 | DPX2NA-C2S57MS-33B-00      | 0134                 | DPX2NA-57MSA106P-34B-00    | 0058                 | DPX2NA-A106P26MS-34B-23    |
| 0113                 | DPX2NA-AC3P67MP-33B-00     | 0145                 | DPX2NA-W8MP57MP-34B-00     | 0059                 | DPX2NA-26MPA106S-34B-23    |
| 0114                 | DPX2NA-AC3S67MS-33B-00     | 0146                 | DPX2NA-W8MS57MS-34B-00     | 0060                 | DPX2NA-26MSA106P-34B-23    |
| 0115                 | DPX2NA-AC3PA106S-33B-00    | 0147                 | DPX2NA-57MP26MP-34B-00     | 0071                 | DPX2NA-67MPA106S-34B-23    |
| 0116                 | DPX2NA-AC3SA106P-33B-00    | 0148                 | DPX2NA-57MS26MS-34B-00     | 0072                 | DPX2NA-67MSA106P-34B-23    |
| 0117                 | DPX2NA-W8MPA106S-33B-00    | 0151                 | DPX2NA-32W4MPA106S-34B-00  | 0087                 | DPX2NA-A106SW8MP-34B-23    |
| 0118                 | DPX2NA-W8MSA106P-33B-00    | 0152                 | DPX2NA-32W4MSA106P-34B-00  | 0088                 | DPX2NA-A106PW8MS-34B-23    |
| 0119                 | DPX2NA-10W3P32W2MP-33B-00  | 0155                 | DPX2NA-W8MP32W4MP-34B-00   | 0089                 | DPX2NA-A106S67MP-34B-23    |
| 0120                 | DPX2NA-10W3S32W2MS-33B-00  | 0156                 | DPX2NA-W8MP32W4MP-34B-00   | 0090                 | DPX2NA-A106P67MS-34B-23    |
| 0121                 | DPX2NA-32W2MP40W1MP-33B-00 | 0159                 | DPX2NA-32W4MPW8MP-34B-00   | 0109                 | DPX2NA-C2P40W1MP-34B-23    |
| 0122                 | DPX2NA-32W2MS40W1MS-33B-00 | 0160                 | DPX2NA-32W4MSW8MS-34B-00   | 0110                 | DPX2NA-C2S40W1MS-34B-23    |
| 0123                 | DPX2NA-32W2MP45MP-33B-00   | M81659/71A2-0003     | DPX2NA-26MP26MP-34B-01     | 0111                 | DPX2NA-C2P57MP-34B-23      |
| 0124                 | DPX2NA-32W2MS45MS-33B-00   | 0004                 | DPX2NA-26MS26MS-34B-01     | 0112                 | DPX2NA-C2S57MS-34B-23      |
| 0125                 | DPX2NA-32W2MP57MP-33B-00   | 0011                 | DPX2NA-40MP40MP-34B-01     | 0113                 | DPX2NA-AC3P67MP-34B-23     |
| 0126                 | DPX2NA-32W2MS57MS-33B-00   | 0012                 | DPX2NA-40MS40MS-34B-01     | 0114                 | DPX2NA-AC3P67MS-34B-23     |
| 0127                 | DPX2NA-32W2MP67MP-33B-00   | 0019                 | DPX2NA-45MP45MP-34B-01     | 0115                 | DPX2NA-AC3PA106S-34B-23    |
| 0128                 | DPX2NA-32W2MS67MS-33B-00   | 0020                 | DPX2NA-45MS45MS-34B-01     | 0116                 | DPX2NA-AC3SA106P-34B-23    |
| 0129                 | DPX2NA-32W2MPA106S-33B-00  | 0027                 | DPX2NA-57MP57MP-34B-01     | 0117                 | DPX2NA-W8MPA106S-34B-23    |
| 0130                 | DPX2NA-32W2MSA106P-33B-00  | 0028                 | DPX2NA-57MS57MS-34B-01     | 0118                 | DPX2NA-W8MSA106P-34B-23    |
| 0131                 | DPX2NA-40W1MP40W1MP-33B-00 | 0035                 | DPX2NA-67MP67MP-34B-01     | 0119                 | DPX2NA-10W3P32W2MP-34B-23  |
| 0132                 | DPX2NA-40W1MS40W1MS-33B-00 | 0036                 | DPX2NA-67MS67MS-34B-01     | 0120                 | DPX2NA-10W3S32W2MS-34B-23  |
| 0133                 | DPX2NA-57MPA106S-33B-00    | 0043                 | DPX2NA-A106PA106P-34B-01   | 0121                 | DPX2NA-32W2MP40W1MP-34B-23 |
| 0134                 | DPX2NA-57MSA106P-33B-00    | 0044                 | DPX2NA-A106SA106S-34B-01   | 0122                 | DPX2NA-32W2MS40W1MS-34B-23 |
| 0145                 | DPX2NA-W8MP57MP-33B-00     | 0057                 | DPX2NA-A106S26MP-34B-01    | 0123                 | DPX2NA-32W2MP45MP-34B-23   |
| 0146                 | DPX2NA-W8MS57MS-33B-00     | 0058                 | DPX2NA-A106P26MS-34B-01    | 0124                 | DPX2NA-32W2MS45MS-34B-23   |
| 0147                 | DPX2NA-57MP26MP-33B-00     | 0059                 | DPX2NA-26MPA106S-34B-01    | 0125                 | DPX2NA-32W2MP57MP-34B-23   |
| 0148                 | DPX2NA-57MS26MS-33B-00     | 0060                 | DPX2NA-26MSA106P-34B-01    | 0126                 | DPX2NA-32W2MS57MS-34B-23   |
| 0151                 | DPX2NA-32W4MPA106S-33B-00  | 0071                 | DPX2NA-67MPA106S-34B-01    | 0127                 | DPX2NA-32W2MP67MP-34B-23   |
| 0152                 | DPX2NA-32W4MPA106P-33B-00  | 0072                 | DPX2NA-67MSA106P-34B-01    | 0128                 | DPX2NA-32W2MS67MS-34B-23   |
| 0155                 | DPX2NA-W8MP32W4MP-33B-00   | 0087                 | DPX2NA-A106SW8MP-34B-01    | 0129                 | DPX2NA-32W2MPA106S-34B-23  |
| 0156                 | DPX2NA-W8MS32W4MS-33B-00   | 0088                 | DPX2NA-A106PW8MS-34B-01    | 0130                 | DPX2NA-32W2MSA106P-34B-23  |
| 0159                 | DPX2NA-32W4MPW8MP-33B-00   | 0089                 | DPX2NA-A106S67MP-34B-01    | 0131                 | DPX2NA-40W1MP40W1MP-34B-23 |
| 0160                 | DPX2NA-32W4MSW8MS-33B-00   | 0090                 | DPX2NA-A106P67MS-34B-01    | 0132                 | DPX2NA-40W1MS40W1MS-34B-23 |
| M81659/70A2-0003     | DPX2NA-26MP26MP-34B-00     | 0109                 | DPX2NA-C2P40W1MP-34B-01    | 0133                 | DPX2NA-57MPA106S-34B-23    |
| 0004                 | DPX2NA-26MS26MS-34B-00     | 0110                 | DPX2NA-C2S40W1MS-34B-01    | 0134                 | DPX2NA-57MSA106P-34B-23    |
| 0011                 | DPX2NA-40MP40MP-34B-00     | 0111                 | DPX2NA-C2P57MP-34B-01      | 0145                 | DPX2NA-W8MP57MP-34B-23     |
| 0012                 | DPX2NA-40MS40MS-34B-00     | 0112                 | DPX2NA-C2S57MS-34B-01      | 0146                 | DPX2NA-W8MS57MS-34B-23     |
| 0019                 | DPX2NA-45MP45MP-34B-00     | 0113                 | DPX2NA-AC3P67MP-34B-01     | 0147                 | DPX2NA-57MP26MP-34B-23     |
| 0020                 | DPX2NA-45MS45MS-34B-00     | 0114                 | DPX2NA-AC3S67MS-34B-01     | 0148                 | DPX2NA-57MS26MS-34B-23     |
| 0027                 | DPX2NA-57MP57MP-34B-00     | 0115                 | DPX2NA-AC3PA106S-34B-01    | 0151                 | DPX2NA-32W4MPA106S-34B-23  |
| 0028                 | DPX2NA-57MS57MS-34B-00     | 0116                 | DPX2NA-AC3SA106P-34B-01    | 0152                 | DPX2NA-32W4MSA106P-34B-23  |
| 0035                 | DPX2NA-67MP67MP-34B-00     | 0117                 | DPX2NA-W8MPA106S-34B-01    | 0155                 | DPX2NA-W8MP32W4MP-34B-23   |
| 0036                 | DPX2NA-67MS67MS-34B-00     | 0118                 | DPX2NA-W8MSA106P-34B-01    | 0156                 | DPX2NA-W8MS32W4MS-34B-23   |
| 0043                 | DPX2NA-A106PA106P-34B-00   | 0119                 | DPX2NA-10W3P32W2MP-34B-01  | 0159                 | DPX2NA-32W4MPW8MP-34B-23   |
| 0044                 | DPX2NA-A106SA106S-34B-00   | 0120                 | DPX2NA-10W3S32W2MS-34B-01  | 0160                 | DPX2NA-32W4MSW8MS-34B-23   |
| 0057                 | DPX2NA-A106S26MP-34B-00    | 0121                 | DPX2NA-32W2MP40W1MP-34B-01 |                      |                            |
| 0058                 | DPX2NA-A106P26MS-34B-00    | 0122                 | DPX2NA-32W2MS40W1MS-34B-01 |                      |                            |
| 0059                 | DPX2NA-26MPA106P-34B-00    | 0123                 | DPX2NA-32W2MP45MP-34B-01   |                      |                            |
|                      |                            | 0124                 | DPX2NA-32W2MS45MS-34B-01   |                      |                            |
|                      |                            | 0125                 | DPX2NA-32W2MP57MP-34B-01   |                      |                            |

## Coaxial Cable Reference Guide

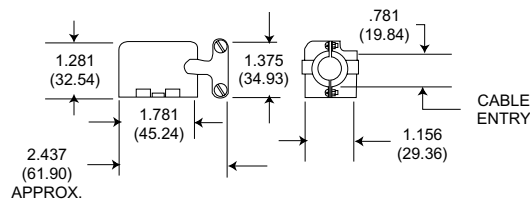
For BKA\*, DPX Series (Crimp, &amp; Solder)

Reference MIL-C-17D &amp; DPX NE/NA MIL-C-81659 Series

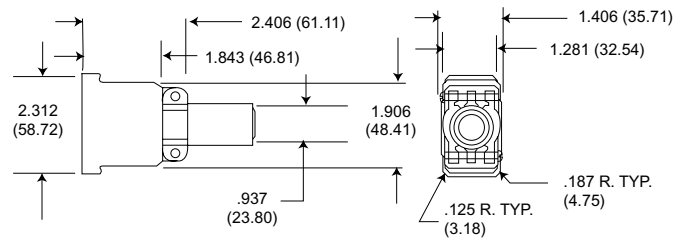
| RG/U Type | Inner Conductor | Dielectric Material | DOD (Inch) | Jacket Material | O.D (Inch) | Weight (lbs/ft) | Max. Oper. Temp. Range (C) | Max. Oper. Voltage (Volts RMS) | Suggested Alt Cable | Code Crimp Type Coax | Code Solder Type Coax | DPX NE/NA Military     |
|-----------|-----------------|---------------------|------------|-----------------|------------|-----------------|----------------------------|--------------------------------|---------------------|----------------------|-----------------------|------------------------|
| 7         | 0.0359"         | Air-space PE        | 0.250      | PVC             | 0.370      | 0.080           | - 40 + 80                  | 1,000                          | Use RG63B           | -                    | I                     | -                      |
| 9         | 0.0855"         | PE                  | 0.280      | PVC             | 0.420      | 0.140           | - 40 + 80                  | 4,000                          | Use RG214           | -                    | R,AC                  | -                      |
| 55        | 0.0320"         | PE                  | 0.116      | PE              | 0.206 MAX  | 0.032           | - 55 + 80                  | 1,900                          | Use RG55B           | S                    | C,J                   | -                      |
| 58        | 0.0320" BC      | PE                  | 0.116      | PVC             | 0.195      | 0.029           | - 40 + 80                  | 1,900                          | Use RG58B           | D,P,G J,AC,AD        | C,J,Z, AB             | Size 5/9 Seal 1        |
| 59        | 0.0253"         | PE                  | 0.146      | PVC             | 0.242      | 0.032           | - 40 + 80                  | 2,300                          | Use RG59B           | A,F,T                | D                     | -                      |
| 59B       | 0.0230'         | PE                  | 0.146      | PVC             | 0.242      | 0.032           | - 40 + 80                  | 2,300                          | Use up to 1000 MHz  | -                    | -                     | -                      |
| 62        | 0.0253"         | Air-space PE        | 0.146      | PVC             | 0.242      | 0.038           | - 40 + 80                  | 750                            | Use RG62A           | A,F,T                | E                     | -                      |
| 62A       | 0.0253"         | Air-space PE        | 0.146      | PVC             | 0.242      | 0.038           | - 40 + 80                  | 750                            | -                   | -                    | -                     | -                      |
| 71        | 0.0253"         | Air-space PE        | 0.146      | PVC             | 0.250 Max. | 0.046           | - 40 + 80                  | 750                            | Use RG71B           | -                    | E                     | -                      |
| 115       | 0.0840"         | PTFE                | 0.250      | FG Braid        | 0.375      | 0.148           | - 55 + 250                 | 5,000                          | Use RG115A          | V                    | -                     | -                      |
| 142       | 0.0359"         | PTFE                | 0.116      | FG Braid        | 0.206 Max  | 0.047           | - 55 + 250                 | 1,900                          | Use RG142A          | S,AE                 | -                     | Size 5/9 Seal 1        |
| 142B      | 0.0390"         | PTFE                | 0.116      | FEP             | 0.195      | 0.050           | - 55 + 200                 | 1,900                          | -                   | -                    | -                     | -                      |
| 174       | 0.0189"         | PE                  | 0.060      | PVC             | 0.100      | 0.008           | - 40 + 80                  | 1,500                          | -                   | D,H,U AF             | -                     | Size 5/9 Seal 2        |
| 178       | 0.0120"         | PTFE                | 0.036      | KEL-F           | 0.079 Max  | 0.0054          | - 40 + 150                 | 1,000                          | Use RG178B          | E,R,K,AG, L,M,AF     | -                     | Size 5/9 Seal 1        |
| 179       | 0.0120"         | PTFE                | 0.057      | KEL-F           | 0.094 Max  | 0.010           | - 55 + 150                 | 1,200                          | Use RG179B          | D,H,U AF             | -                     | Size 5/9 Seal 1 Seal 2 |
| 179B      | 0.0120"         | PTFE                | 0.063      | FEP             | 0.100      | 0.010           | - 55 + 200                 | 1,200                          | -                   | -                    | -                     | -                      |
| 180       | 0.0120"         | PTFE                | 0.103      | KEL-F           | 0.141 Max. | 0.019           | - 40 + 150                 | 1,500                          | Use RG180B          | C,AB                 | B                     | Size 5/9 Seal 1        |
| 180B      | 0.0120"         | PTFE                | 0.102      | FEP             | 0.145 Max  | 0.019           | - 55 + 200                 | 1,500                          | -                   | AB                   | -                     | -                      |
| 187       | 0.0120"         | PTFE                | 0.060      | PTFE            | 0.110 Max. | 0.010           | - 55 + 250                 | 1,200                          | Use RG179B          | D,H,U AF             | A,K                   | -                      |
| 188       | 0.0201"         | PTFE                | 0.060      | PTFE            | 0.110 Max. | 0.011           | - 55 + 250                 | 1,200                          | Use RG316           | D,H,U, AF            | A,K                   | -                      |
| 195       |                 | PTFE                | 0.102      | PTFE            | 0.155 Max. | 0.020           | - 55 + 250                 | 1,500                          | Use RG180B          | C,AB                 | B                     | -                      |
| 196       |                 | PTFE                | 0.034      | PTFE            | 0.080 Max. | 0.006           | - 55 + 250                 | 1,000                          | Use RG178B          | E,R,K, L,AA,AG       | AA                    | Size 5/9 Seal 1        |
| 214       | 0.0888"         | PE                  | 0.285      | PVC             | 0.425      | 0.126           | - 40 + 80                  | 5,000                          | -                   | -                    | R,AC                  | -                      |
| 223       | 0.035"          | pE                  | 0.116      | PVC             | 0.216 Max. | 0.034           | - 40 + 80                  | 1,900                          | -                   | -                    | C,J                   | -                      |
| 225       | 0.0936'         | PTFE                | 0.285      | FG Braid        | 0.430      | 0.180           | - 55 + 250                 | 5,000                          | -                   | -                    | -                     | Size 5/9 Seal 2        |
| 316       | 0.0201"         | PTFE                | 0.060      | FEP             | 0.102      | 0.012           | - 55 + 200                 | 1,200                          | Use RG188A          | -                    | -                     | Size 5/9 Seal 2        |
| 393       | 0.0936"         | PTFE                | 0.285      | FEP             | 0.390      | 0.165           | - 55 + 200                 | 5,000                          | Use RG225           | -                    | -                     | -                      |
| 400       | 0.0385"         | PTFE                | 0.116      | FEP             | 0.195      | 0.050           | - 55 + 200                 | 1,900                          | -                   | -                    | -                     | -                      |
| 402       | 0.0360'         | PTFE                | 0.119      | None            | 0.141      | 0.032           | - 55 + 200                 | 2,500                          | Use RG142B          | -                    | -                     | -                      |

## Junction Shells

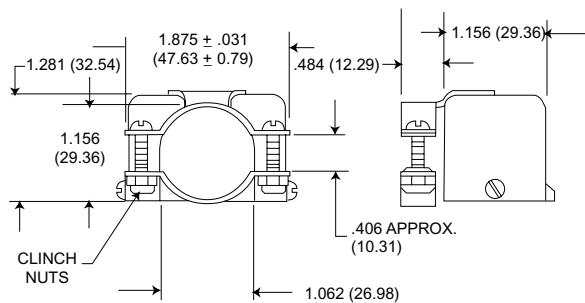
## 90° Angle



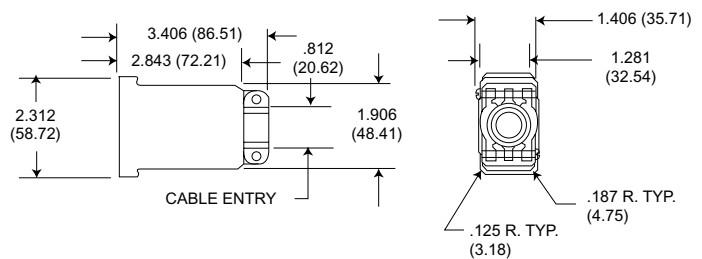
| Style        | Part Number |
|--------------|-------------|
| (Right) DPXA | 20745-22    |
| (Left) DPXA  | 20745-23    |
| (Right) DPX2 | 20745-10    |
| (Left) DPX2  | 20745-11    |

(DPXA ONLY)  
DIECAST STRAIGHT JUNCTION SHELL

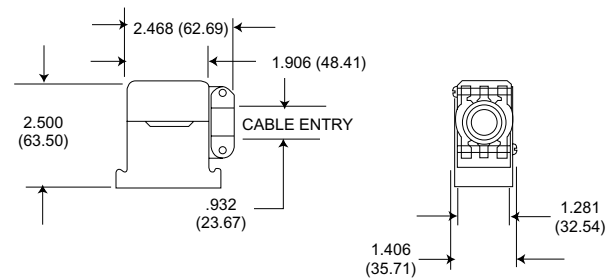
| Style | Part Number |
|-------|-------------|
| DPXA  | 22017       |

90° Angle DPX2  
Junction Shell (Side Outlet)

| Style | Part Number |
|-------|-------------|
| DPX2  | 20745-12    |

(DPXA ONLY)  
DIECAST STRAIGHT JUNCTION SHELL (LONG)

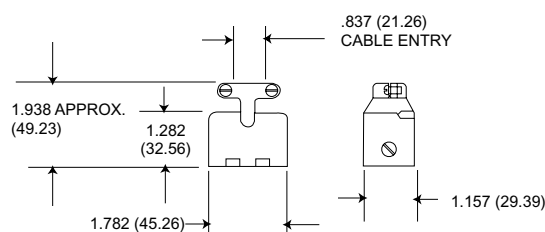
| Style | Part Number |
|-------|-------------|
| DPXA  | 22017-2     |

(DPXA ONLY)  
DIECAST 90° ANGLE JUNCTION SHELL

| Style | Part Number |
|-------|-------------|
| DPXA  | 22017-1     |

Diecast junction shells may be used on DPXA connectors. They have 4-40 NC-2B tapped mounting holes for attaching to the shell mounting hardware.

## STRAIGHT JUNCTION SHELL



| Style | Part Number |
|-------|-------------|
| DPXA  | 20745-21    |
| DPX2  | 20745-8     |

\* DPX2 Junction Shells are also used on DPXB connectors.

## Dust Caps



DPXA-60 for 34 Shells  
025-0762-000

DPXB-60 for 34 Shells  
025-0767-000

Conductive

DPXB-60-1 for 34 Shell  
Conductive Dust Caps  
025-0767-001  
Protect Against  
Static Electricity



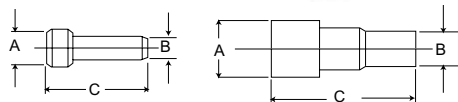
DPXA-59 for 33 Shells  
225-0749-000  
Also used on DPXB-33

Conductive

DPXA-59 for 33 Shell  
025-0749-001

## Sealing Plugs

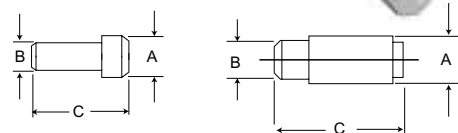
P/N 225-0090-000 only  
Material: Teflon



| Part Number  | Contact Size   | Color  | A          | B          | C           |
|--------------|----------------|--------|------------|------------|-------------|
| 225-1013-000 | 22             | Black  | .063 (1.6) | .040 (1.0) | .469 (11.9) |
| 225-0070-000 | 20             | Red    | .085 (2.2) | .065 (1.6) | .469 (11.9) |
| 225-0071-000 | 16             | Blue   | .115 (2.9) | .075 (1.9) | .469 (11.9) |
| 225-0072-000 | 12             | Yellow | .171 (4.3) | .121 (3.1) | .564 (14.3) |
| 225-0090-000 | #5 and #9 Coax | White  | .365 (9.3) | .287 (7.3) | .835 (21.2) |

## Filler Plugs

P/N 225-0099-000 only  
Material: Thermoplastic



| Part Number  | Contact Size            | Color  | A          | B          | C            |
|--------------|-------------------------|--------|------------|------------|--------------|
| 225-0094-000 | 22                      | Black  | .069 (1.7) | .051 (1.3) | .420 (10.7)  |
| 225-0095-000 | 20                      | Red    | .083 (2.1) | .069 (1.7) | .350 (8.9)   |
| 225-0096-000 | 16                      | Blue   | .131 (3.3) | .108 (2.7) | .320 (8.1)   |
| 225-0097-000 | 12                      | Yellow | .187 (4.7) | .156 (4.0) | .320 (8.1)   |
| 225-0098-000 | #5 Coax (Pin)           | White  | .275 (7.0) | .251 (6.4) | .450 (11.4)  |
| 225-0099-000 | #5 and #9 Coax (Socket) | White  | .275 (7.0) | .251 (6.4) | 1.061 (26.9) |

(See Customer Use Drawing for details)

**DPXA - Single Shell DPX**

DPXA connectors are one-piece shell miniature rack/panel connectors. The construction offers high strength and maximum utilization of insert area for contact arrangements accommodating up to 106 contacts. Shells are keystone-shaped for polarization. Operating temperature for the DPXA is -54.2°C to +125°C (-67°F to +257°F).



DPXA-34



DPXB-33

**DPXB - Polarized ARINC Shell**

DPXB connectors are DPXA connectors with an ARINC B shelf. Additional polarization is provided by three hexagonal polarizing posts.

**DPX2 - Two Gang DPX Series**

DPX2 connectors are the original two-gang versions of the DPX, and are made of the same materials and accommodate the same contact arrangements. Keystone shaped shells accommodate two DPX inserts with up to 212 contacts. The DPX2 has three polarizing posts with 99 polarizing positions.



DPX2-34



DPX2-33

**DPX2 - A - ARINC A Shell**

DPX2-A connectors are DPX2 connectors with an ARINC A shell. This shell type has the receptacle flange placed .344 (8.74) from the front of the engaging portion of the shell, and short aluminum alloy polarizing posts permit polarization before contacts engage.

**DPX2-B - ARINC B Shell**

DPX2-B connectors supersede the DPX2-A and have an ARINC B Shell. This Shell type has the

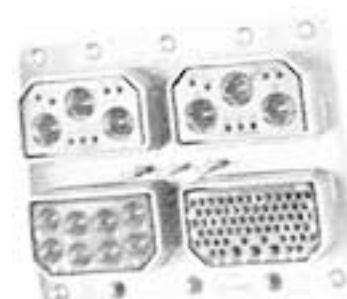
receptacle flange placed .060 (1.52) from the front of the engaging portion of the shell, and polarizing posts permit polarization before the shells engage.

**DPX3 - Three Gang DPX Series**

DPX3 connectors are three-gang versions of the DPX, made of the same materials, and accommodate the same contact arrangements. The three-gang version can therefore accommodate up to a total of 318 in the keystone shaped shells, with three polarizing posts that are capable of providing up to 99 polarizing positions.



DPX3-33



DPX4-33

**DPX4 - Four Gang DPX Series**

DPX4 connectors are four gang versions of the DPX, made of the same materials, and can accommodate four separate arrangements that can total up to 424 contacts. The DPX4 has three polarizing posts with 99 polarizing positions.

**DPX\*MA - LITTLE CAESAR® Contact Assembly**

DPX\*MA connectors are DPX connectors with the LITTLE CAESAR contact assembly for rear insertion, release, and extraction of crimp type contacts. Insertion requires no tool; extraction requires an expendable plastic tool. A hard dielectric, closed-entry socket insert has lead-in chamfers for positive mating of contacts. Contacts are crimpable with the M22501 tool.

**DPX\*ME - Environmental with LITTLE CAESAR® Contact Assembly**

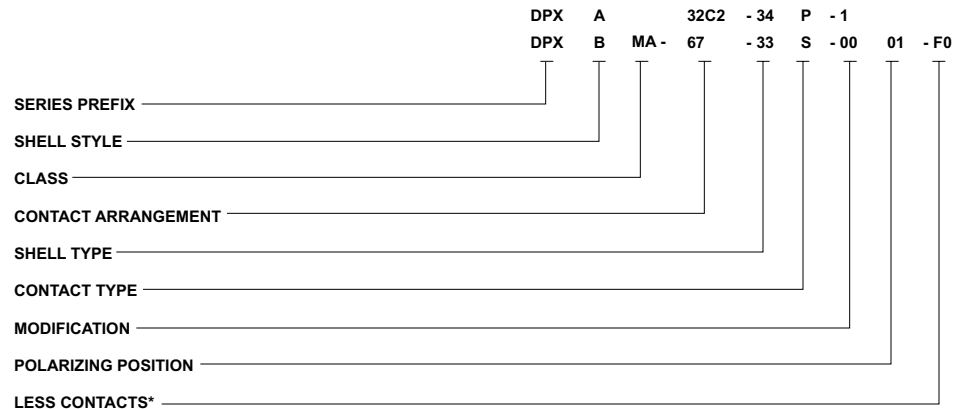
DPX\*ME connectors are DPXMA connectors with environmental interfacial and grommet seals, and olive drab shell finish.

**Performance and Material Specifications (DPXA/DPXB/DPX\*MA/DPX\*ME)**

|                      |             | DPXA/DPXB/DPX2                     | DPX*MA/DPX2*MA/ME                                            | Specifications |
|----------------------|-------------|------------------------------------|--------------------------------------------------------------|----------------|
| Shell                | Material    | Aluminum alloy                     | Aluminum alloy                                               | QQ-A-591/A380  |
|                      | Finish      | Cadmium plate with yellow chromate | Cadmium plate with yellow chromate for MA; olive drab for ME | QQ-P-416       |
| Insulator            | Material    | Melamine or Phenolic               | Diallyl phthalate or epoxy                                   | MIL-M-14       |
|                      | Material    | Copper alloy                       | Copper alloy                                                 | QQ-C-533       |
| Contacts             | Finish      | Gold                               | Gold                                                         | MIL-G-45204    |
|                      | Termination | Solder Pot                         | Crimp                                                        | N/A            |
|                      | Material    | Die Cast                           | Die cast                                                     |                |
| Polarizing Posts     | Finish      | Cadmium                            | Cadmium                                                      | QQ-P-416       |
|                      | Material    | Steel                              | Steel                                                        | QQS-630-637    |
| Screws & Lockwashers | Finish      | Cadmium Plate                      | Cadmium plate                                                | QQ-P-416       |
|                      | Material    | N/A                                | Silicone                                                     | N/A            |

## How to Order

## DPXA/DPXB



## SERIES PREFIX

DPX - ITT Cannon designation

## SHELL STYLE

A - Single shell

B - Polarized ARINC shell

## CLASS

No designator - Solder type

MA - Crimp type with LITTLE CAESAR contact assembly

ME - Environmental crimp type

## CONTACT ARRANGEMENT

2 thru 106 (see pages 48-52)

## SHELL TYPE

33 for plug; 34 for receptacle

## CONTACT TYPE

P for pin; S for socket

## MODIFICATION

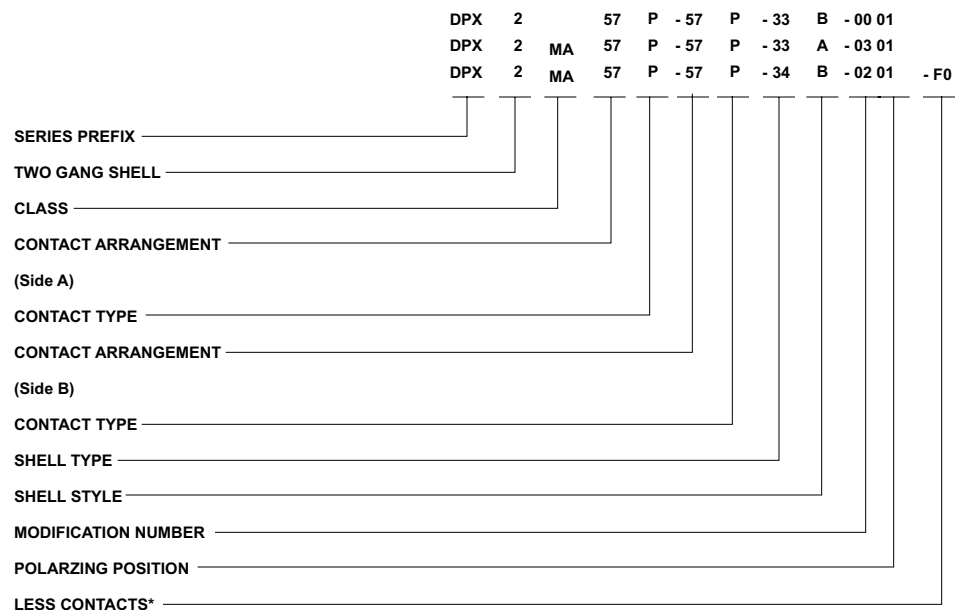
DPXA - See page 64

DPXB - See pages 64-67

## POLARIZING POSITION

For DPXB shell style only

## DPX2



## SERIES PREFIX

DPX - ITT Cannon designation

## SHELL

2 - Two gang

## CLASS

No designator - Solder type

MA - Crimp type with LITTLE CAESAR contact assembly

ME - Environmental crimp type

## CONTACT ARRANGEMENT

2 thru 106 (see pages 48-52)

## CONTACT TYPE

P for pin; S for socket

## SHELL TYPE

33 for plug; 34 for receptacle

## SHELL STYLE

No designator - original two-gang DPX

A - ARINC A shell

B - ARINC B shell

## MODIFICATION

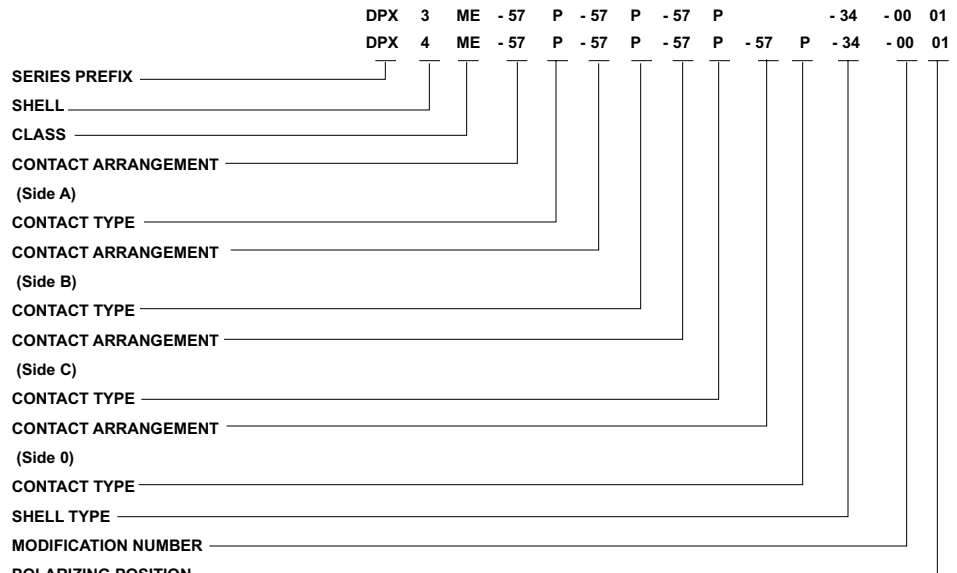
See pages 64-67

## POLARIZING POSITION

See pages 67-68

## How to Order

## DPX3/DPX4



## SERIES PREFIX

DPX - ITT Cannon designation

## SHELL

3 - Three gang 4 - Four gang

## CLASS

MA - Crimp type contacts in LITTLE CAESAR contact assembly  
ME - Environment-resistant, crimp type contacts

## \*CONTACT ARRANGEMENT

See pages 48-49 for applicable arrangements. Please specify each arrangement number as indicated in ordering nomenclature for 3 or 4 gang if not listed below.

## POLARIZING POSITION

## \*\*CONTACT TYPE

P for pin; S for socket. Designation follows each arrangement as ordered for 3 or 4 gang versions.

## SHELL TYPE

33 for plug; 34 for receptacle

MODIFICATION See pages 64-67

POLARIZING POSITION See pages 67-68

## DPXMA/ME

## DPXMA/DPXME - 0PX - 3 Shell Layouts

| Layout | Insert - Used in shell position as noted |       |       |       |       |       |
|--------|------------------------------------------|-------|-------|-------|-------|-------|
|        | MA:                                      | W8    | 32W4  | 57    | 67    | A106  |
|        | ME:                                      | AW8   | A32W4 | 57    | 67    | A106  |
| *E24   |                                          | A,B,C |       |       |       |       |
| *F122  |                                          | A,B   |       |       |       | C     |
| G122   |                                          | B     |       | A,C   |       |       |
| *E142  |                                          | C     |       |       | A,B   |       |
| *A166  |                                          |       | C     |       | A,B   |       |
| 171    |                                          |       |       | A,B,C |       |       |
| 201    |                                          |       |       |       | A,B,C |       |
| *C205  |                                          |       | C     |       | A     | B     |
| B240   |                                          |       |       |       | A,C   | B     |
| C240   |                                          |       |       |       | A,B   | C     |
| *D244  |                                          |       | C     |       |       | A,B   |
| A279   |                                          |       |       |       | C     | A,B   |
| A318   |                                          |       |       |       |       | A,B,C |

\*Applicable to "ME" only. Consult factory for similar layouts application to "MA."

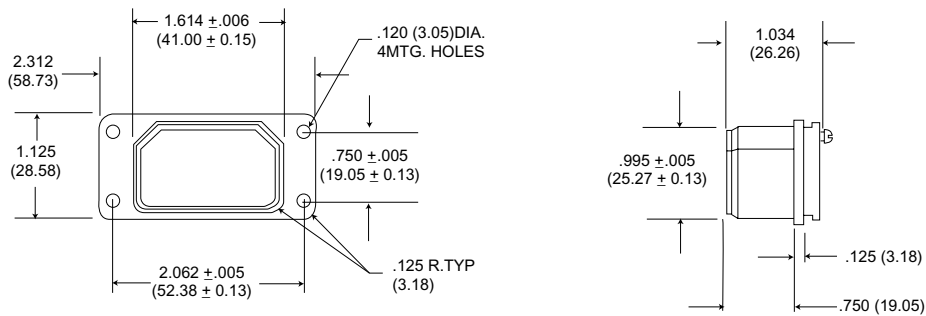
NOTE: For pictorial views of above layouts see pages 50-51.

## DPXMA/DPXME - 0PX - 4 Shell Layouts

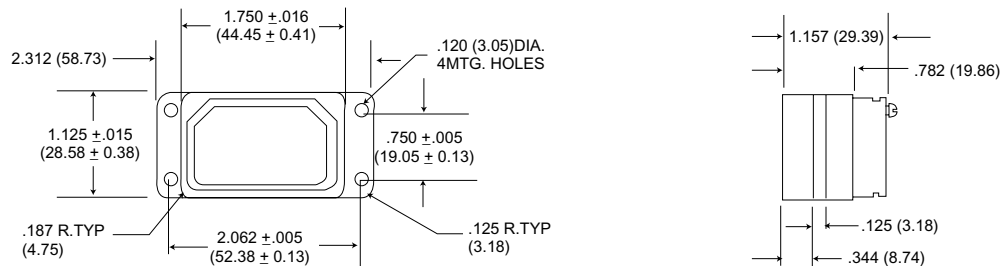
| Layout | Insert - Used in shell position as noted |     |       |       |       |         |         |
|--------|------------------------------------------|-----|-------|-------|-------|---------|---------|
|        | MA:                                      | W8  | 26    | 32W4  | 57    | 67      | A106    |
|        | ME:                                      | AW8 | 26    | A32W4 | 57    | 67      | A106    |
| 145    |                                          |     | A,B,C |       |       | D       |         |
| *B148  |                                          | C,D | B     |       |       |         | A       |
| B150   |                                          | A,B |       |       | A,C   | C,D     |         |
| *181   |                                          | B   |       |       |       | A       | C       |
| *B189  |                                          | C,D |       |       |       | B       | A       |
| *A198  |                                          |     |       | C,D   | A,B,C | A,B     |         |
| 268    |                                          |     |       |       |       | A,B,C,D |         |
| *E287  |                                          | D   |       |       |       | B       | A,C     |
| *220   |                                          | B   |       |       |       |         | C,D     |
| *A233  |                                          |     |       | A     |       | B,C,D   |         |
| 279    |                                          |     |       |       |       | A       | C,D     |
| *F287  |                                          | B   |       |       |       | A       | C,D     |
| *E326  |                                          | B   |       |       |       |         | A,C,D   |
| A346   |                                          |     |       |       |       | C,D     | A,B     |
| B346   |                                          |     |       |       |       | A,B     | C,D     |
| 385    |                                          |     |       |       |       | A       | B,C,D   |
| A424   |                                          |     |       |       |       |         | A,B,C,D |

## Single Gang

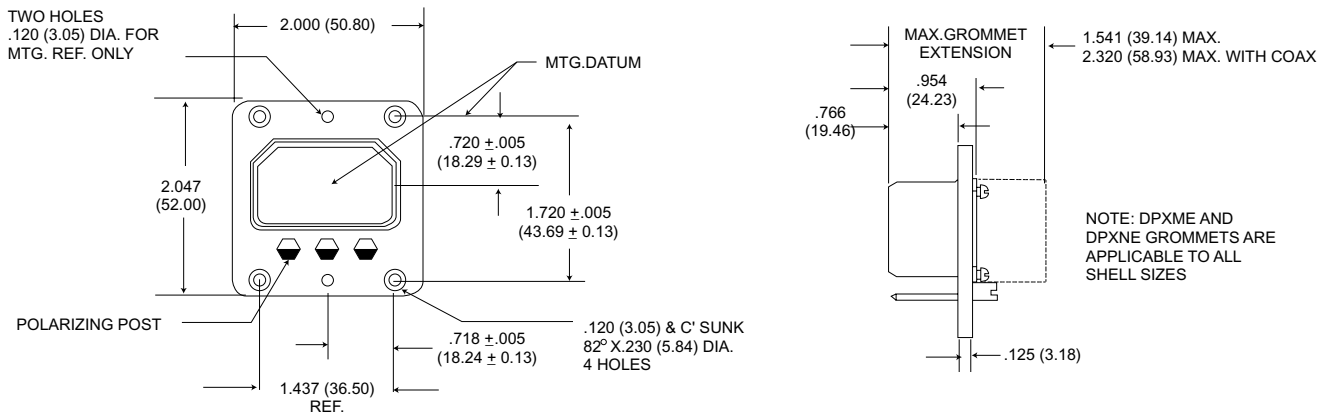
## DPXA-33

All tolerances  $\pm .015(0.38)$  unless otherwise noted.

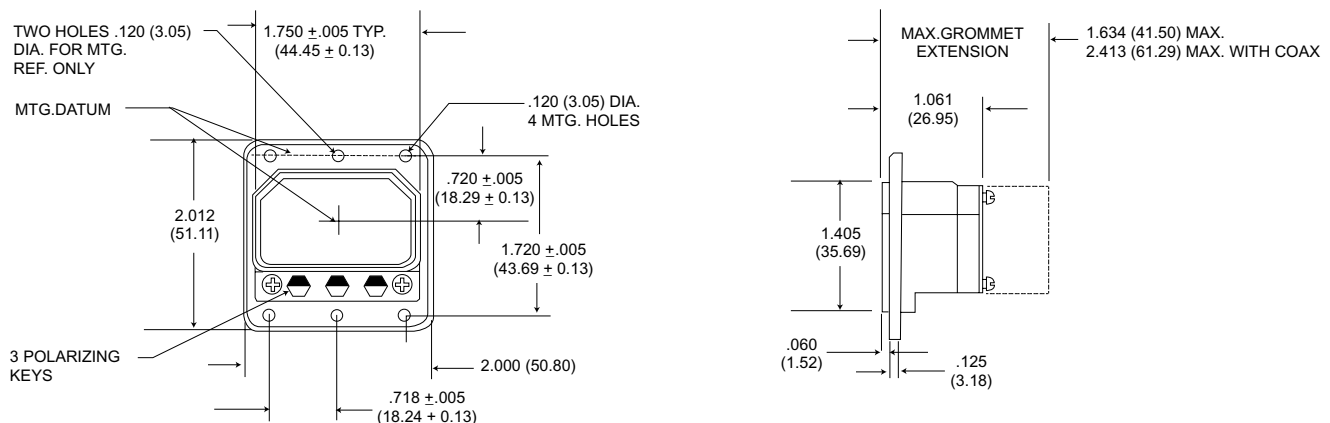
## DPXA-34



## DPXA-33 ARINC Shell



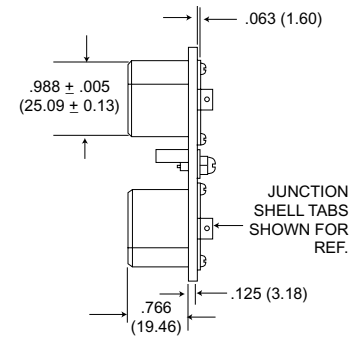
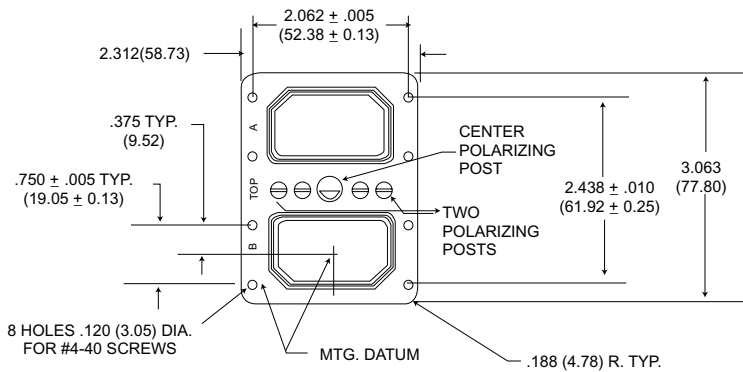
## DPXA-34 ARINC Shell



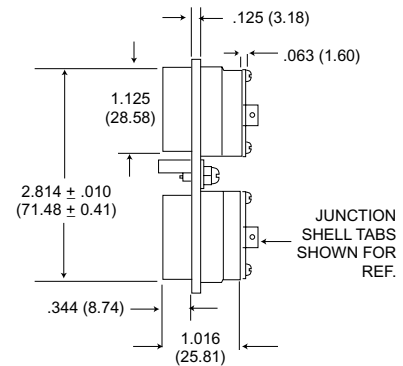
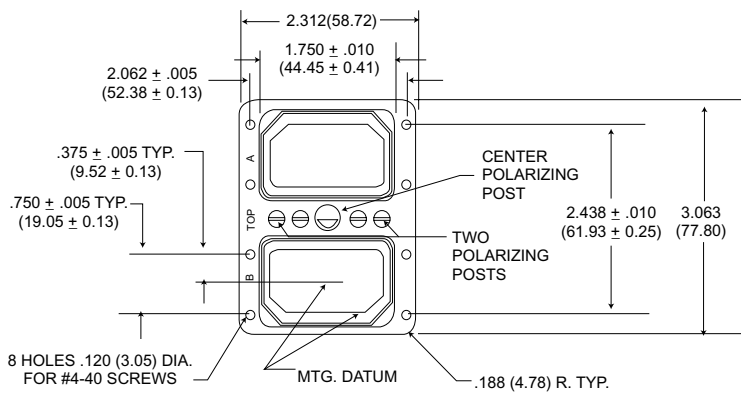
NOTE - ARINC requires that DPXB shells are mounted with the polarizing posts at the top. See pages 67-68

## Two Gang

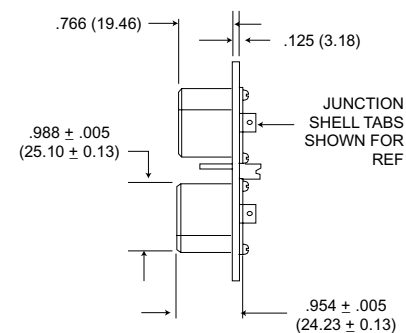
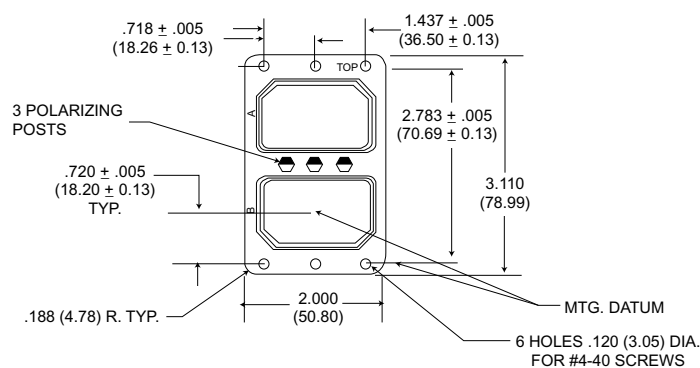
## DPX2-33 Shell

All tolerance are  $\pm .015$  (0.38) unless otherwise noted.

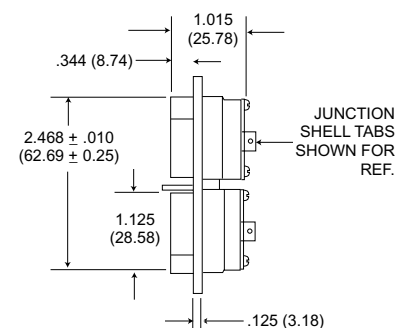
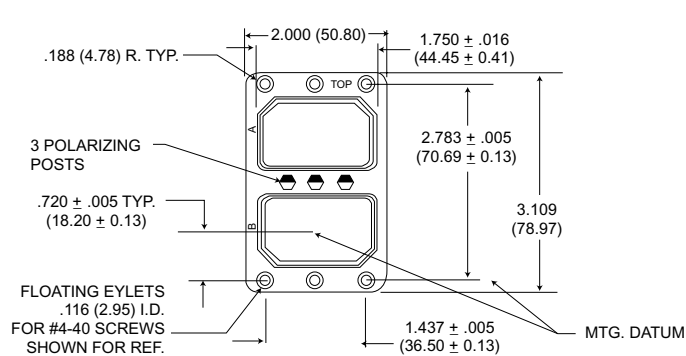
## DPX2-34 Shell



## DPX2-33A ARINC A Shell

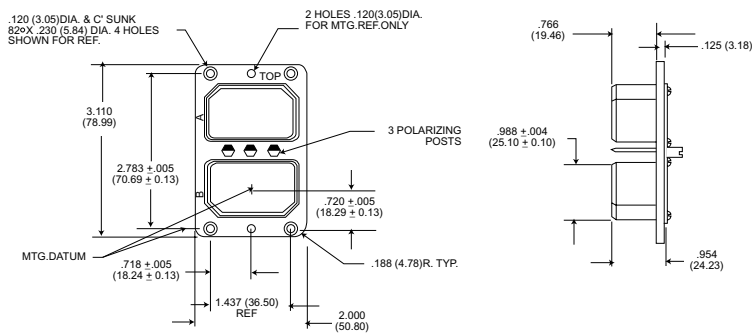


## DPX2-34A ARINC A Shell



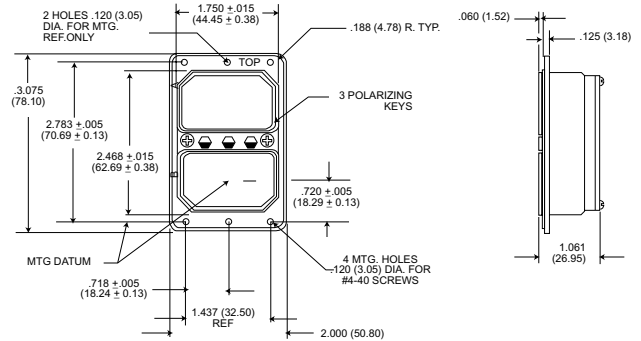
## Two Gang - ARINC B Shell

DPX2-33B



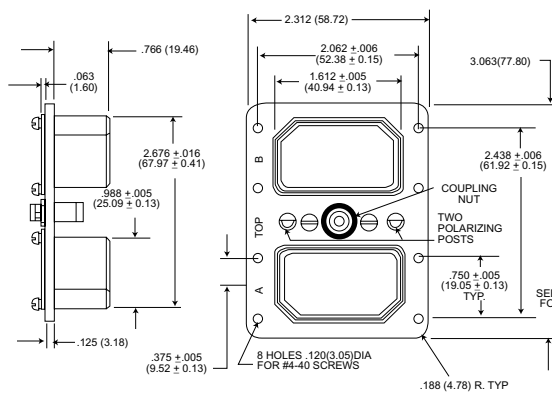
DPX2-34B

All tolerances are ± .015(0.38) unless other wise noted.

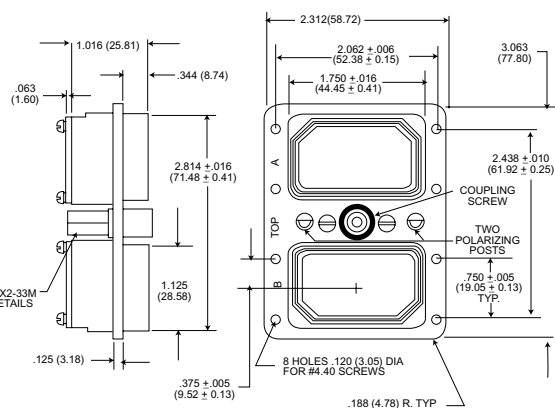


## Two Gang - Screw Coupling

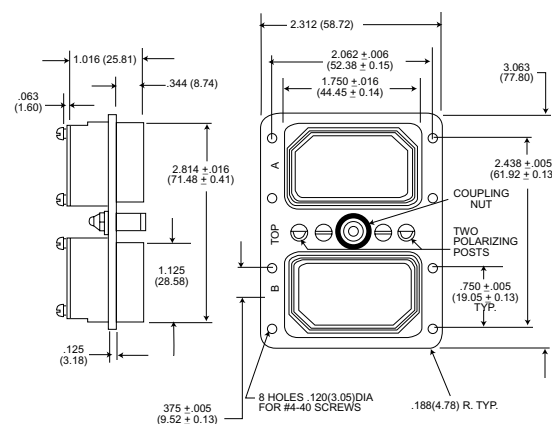
DPX2-33F (Female)



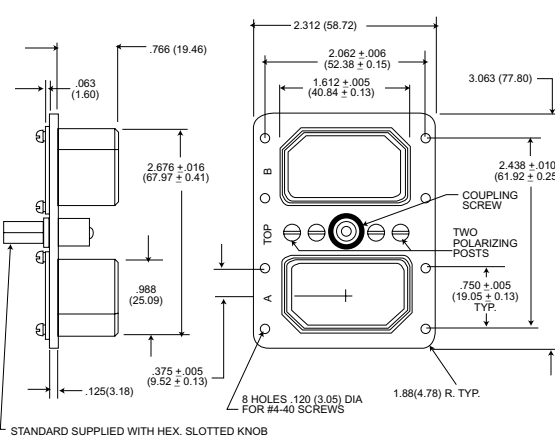
DPX2-34M (Male)



DPX2-34F (Female)

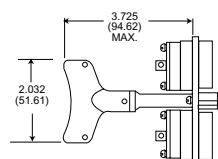


DPX2-33M (Male)

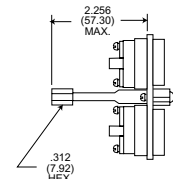


## Engaging Devices

DPX2-34M with wing handle type  
-0901; example, DPX2-34M-0901

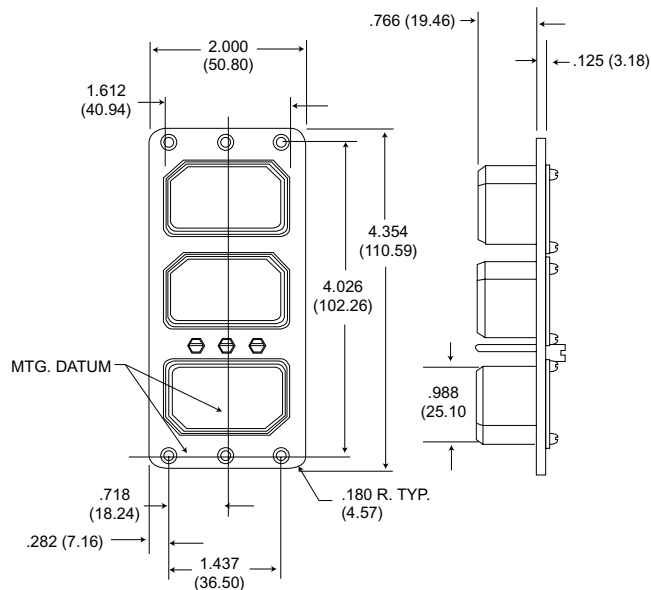


DPX2-34M with extended hex,  
knob type -0501; example, DPX2-34M-0501

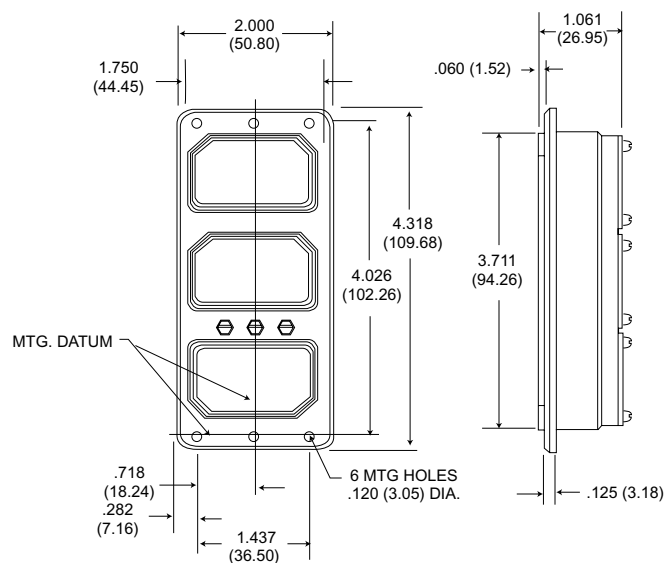


## Two Gang - ARINC B Shell

DPX3-33

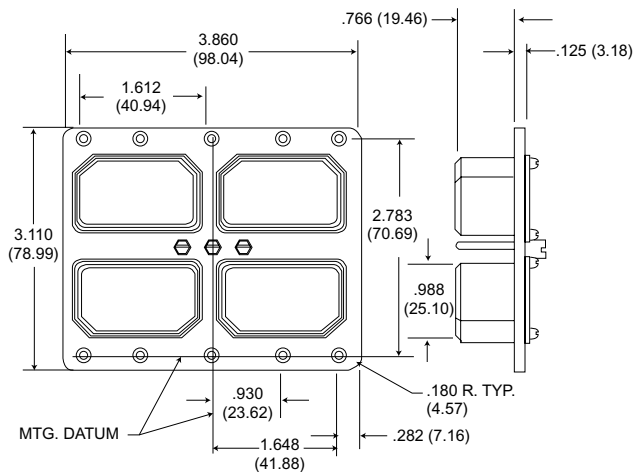


DPX3-34

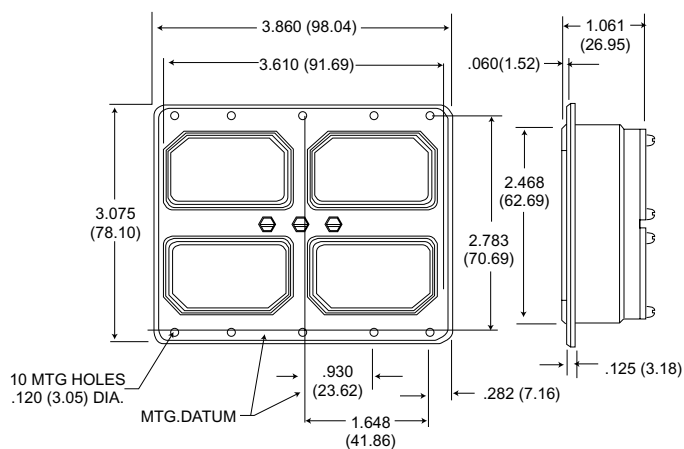
All tolerances are  $\pm .015(0.38)$  unless other wise noted.

## Four Gang

DPX4-33

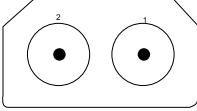
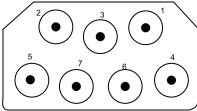
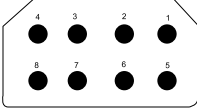
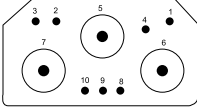
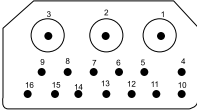
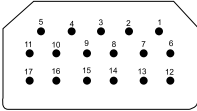
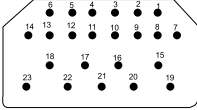
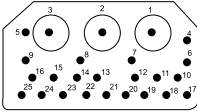


DPX4-34



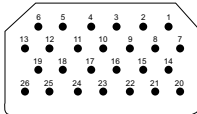
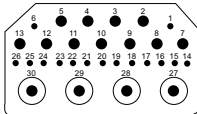
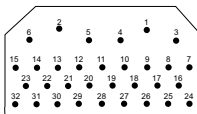
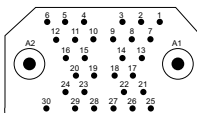
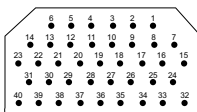
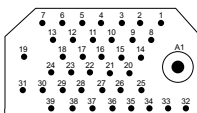
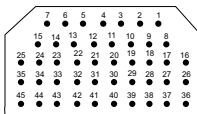
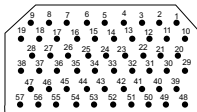
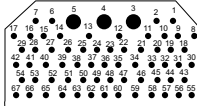
## Contact Arrangement Variations Solder Type (Captive Contacts)

NOTE: See pages 55-56 for Coaxial/Power Contact Termination Data

|               | Contact Arr.                                                                        | No. of Contacts & Wire size | Test Voltage AC (RMS)          | PIN              |                   | SOCKET          |                   |
|---------------|-------------------------------------------------------------------------------------|-----------------------------|--------------------------------|------------------|-------------------|-----------------|-------------------|
|               |                                                                                     |                             |                                | Contact Arr. No. | Contact Type Code | Contact Numbers | Contact Type Code |
| <b>C2</b>     |    | 2 coax (RG-9/U)             | 1000 (1,2)V matched impedance  | C2               | R                 | 1-2             | R                 |
|               |                                                                                     |                             |                                | C2C              | AB                | 1-2             | Consult Factory   |
|               |                                                                                     |                             |                                | C2M              | Consult Factory   |                 | AC                |
|               |                                                                                     |                             |                                | C7               | K                 | 1-7             | F                 |
|               |                                                                                     |                             |                                |                  |                   |                 | G                 |
|               |                                                                                     |                             |                                | C7A              | A                 | 1-7             | Same as Pin       |
|               |                                                                                     |                             |                                | C7B              | B                 | 1-7             | Same as Pin       |
|               |                                                                                     |                             |                                |                  | Same as Socket    |                 | K                 |
|               |                                                                                     |                             |                                | C7B              | (Use C7)          |                 |                   |
|               |                                                                                     |                             |                                | C7M              | C                 | 1-7             | Same as Pin       |
|               |                                                                                     |                             |                                | C7X              | AA                | 1-7             | Same as Pin       |
|               |                                                                                     |                             |                                | C7AA             | Z                 | 1-7             | Same as Pin       |
| <b>C7</b>     |    | 7 coax                      | 1000 (1-7)V                    |                  |                   |                 |                   |
| <b>8*</b>     |    | 8 #12                       | 2000V                          | 8                | N                 | 1-8             | 1-8               |
| <b>10C3*</b>  |    | 7 #20<br>3 coax             | 1500 (1-4, 8-10)V              | 10C3             | L                 | 1-4, 8-10       | Same as Pin       |
|               |                                                                                     |                             |                                |                  | I                 | 5,6,7           |                   |
|               |                                                                                     |                             |                                | A10C3            | L                 | 1-4, 8-10       | Same as Pin       |
|               |                                                                                     |                             |                                |                  | J                 | 5,6,7           |                   |
|               |                                                                                     |                             |                                | B16C3            | M                 | 4-16            | Same as Pin       |
|               |                                                                                     |                             |                                |                  | A                 | 1-3             |                   |
|               |                                                                                     |                             |                                | C16C3            | M                 | 4-16            | Same as Pin       |
|               |                                                                                     |                             |                                |                  | B                 | 1-3             |                   |
|               |                                                                                     |                             |                                | G16C3            | M                 | 4-16            | Same as Pin       |
|               |                                                                                     |                             |                                |                  | C                 | 1-3             |                   |
|               |                                                                                     |                             |                                | J16C3            | M                 | 4-16            | Same as Pin       |
|               |                                                                                     |                             |                                |                  | K                 | 1-3             |                   |
|               |                                                                                     |                             |                                | ZE16C3           | M                 | 4-16            | Same as Pin       |
|               |                                                                                     |                             |                                |                  | Z                 | 1-3             |                   |
|               |                                                                                     |                             |                                | ZF16C3           | M                 | 4-16            | Same as Pin       |
|               |                                                                                     |                             |                                |                  | AA                | 1-3             |                   |
| <b>B16C3*</b> |  | 13 #16<br>3 coax            | 1500 (4-16)V<br>1000 (1-3)V    |                  |                   |                 |                   |
| <b>17</b>     |  | 17 #20                      | 2000V                          | 17               | L                 | 1-17            | Same as Pin       |
| <b>23</b>     |  | 23 #20                      | 2000 (15-23).<br>1500 (1-14)V. | 23               | L                 | 1-23            | Same as Pin       |
|               |                                                                                     |                             |                                | 25C3             | L                 | 4-25            | L                 |
|               |                                                                                     |                             |                                |                  | K                 | 1-3             | F                 |
|               |                                                                                     |                             |                                |                  |                   |                 | G                 |
|               |                                                                                     |                             |                                | F25C3            | L                 | 4-25            | Same as Pin       |
|               |                                                                                     |                             |                                |                  | C                 | 1-3             |                   |
|               |                                                                                     |                             |                                | G25C3            | L                 | 4-25            | Same as Pin       |
|               |                                                                                     |                             |                                |                  | A                 | 1-3             |                   |
|               |                                                                                     |                             |                                | J25C3            | L                 | 4-25            | Same as Pin       |
|               |                                                                                     |                             |                                |                  | B                 | 1-3             |                   |
|               |                                                                                     |                             |                                | Q25C3            | L                 | 4-25            | Same as Pin       |
|               |                                                                                     |                             |                                |                  | Z                 | 1-3             |                   |
|               |                                                                                     |                             |                                | R25C3            | L                 | 4-25            | Same as Pin       |
|               |                                                                                     |                             |                                |                  | AA                | 1-3             |                   |
| <b>25C3*</b>  |  | 22 (#20).<br>3 coax         | 1500 (4-25)V.<br>1000 (1-3)V   |                  |                   |                 |                   |

## Contact Arrangement Variations Solder Type (Captive Contacts)

NOTE: See pages 55-56 for Coaxial/Power Contact Termination Data

|       |                                                                                     |      |                              |                                                 | PIN          |                 | SOCKET            |                                 |                   |                   |
|-------|-------------------------------------------------------------------------------------|------|------------------------------|-------------------------------------------------|--------------|-----------------|-------------------|---------------------------------|-------------------|-------------------|
|       |                                                                                     |      |                              |                                                 | Contact Arr. | No. of Contacts | Contact Type Code | Contact Numbers                 | No. of Contacts   | Contact Type Code |
| 26*   |    | 26   | 26 #16                       | 1500V                                           | 26           | 26              | M                 | 1-26                            | Same as Pin       |                   |
| 30C4  |    | 30C4 | 15 #20.<br>11 #16,<br>4 coax | 1500 (2-5<br>& 7-13)V<br>1000 (1,6<br>& 14-26)V | A30C4        | 15<br>11<br>4   | L<br>M<br>Z       | 1,6 14-26<br>2-5, 7-13<br>27-30 | Same as Pin       |                   |
|       |                                                                                     |      |                              |                                                 | B30C4        | 15<br>11<br>4   | L<br>M<br>AA      | 1,6 14-26<br>2-5, 7-13<br>27-30 | Same as Pin       |                   |
|       |                                                                                     |      |                              |                                                 | C30C4        | 15<br>11<br>4   | L<br>M<br>A       | 1,6 14-26<br>2-5, 7-13<br>27-30 | Same as Pin       |                   |
| 32    |    | 32   | 3 #16<br>29 #20              | 2000<br>(1-6)<br>1500<br>(7-32)V                | 32           | 29<br>3         | L<br>M            | 1,3,4,7-32<br>2,5,6             | Same as Pin       |                   |
| 32C2* |    | 32C2 | 30 #20<br>2 coax             | 1500<br>(1-30)V<br>1000<br>(A1, A2)V            | 32C2         | 30<br>2         | L<br>K            | 1-30<br>A1, A2                  | 30<br>2<br>L<br>F | 1-30<br>A1, A2    |
|       |                                                                                     |      |                              |                                                 | A32C2        | 30<br>2         | L<br>A            | 1-30<br>A1, A2                  | Same as Pin       |                   |
|       |                                                                                     |      |                              |                                                 | C32C2        | 30<br>2         | L<br>B            | 1-30<br>A1, A2                  | Same as Pin       |                   |
|       |                                                                                     |      |                              |                                                 | D32C2        | 30<br>2         | L<br>C            | 1-30<br>A1, A2                  | Same as Pin       |                   |
|       |                                                                                     |      |                              |                                                 | M32C2        | 30<br>2         | L<br>Z            | 1-30<br>A1, A2                  | Same as Pin       |                   |
|       |                                                                                     |      |                              |                                                 | N32C2        | 30<br>2         | L<br>AA           | 1-30<br>A1, A2                  | Same as Pin       |                   |
| 40*   |  | 40   | 40 #20                       | 1500V                                           | 40           | 40              | L                 | 1-40                            | Same as Pin       |                   |
| 40C1* |  | 40C1 | 39 #20<br>1 coax             | 1500<br>(1-39)V<br>1000<br>(A1)V                | 40C1         | 39<br>1         | L<br>B            | 1-39<br>A1                      | Same as Pin       |                   |
|       |                                                                                     |      |                              |                                                 | A40C1        | 39<br>1         | L<br>K            | 1-39<br>A1                      | 39<br>1<br>L<br>F | 1-39<br>A1        |
|       |                                                                                     |      |                              |                                                 | F40C1        | 39<br>1         | L<br>C            | 1-39<br>A1                      | Same as Pin       |                   |
|       |                                                                                     |      |                              |                                                 | J40C1        | 39<br>1         | L<br>Z            | 1-39<br>A1                      | Same as Pin       |                   |
|       |                                                                                     |      |                              |                                                 | K40C1        | 39<br>1         | L<br>AA           | 1-39<br>A1                      | Same as Pin       |                   |
|       |                                                                                     |      |                              |                                                 | L40C1        | 39<br>1         | L<br>A            | 1-39<br>A1                      | Same as Pin       |                   |
| 45*   |  | 45   | 45 #20                       | 1500V                                           | 45           | 45              | L                 | 1-45                            | Same as Pin       |                   |
| 57*   |  | 57   | 57 #20                       | 1500V                                           | 57           | 57              | L                 | 1-57                            | Same as Pin       |                   |
| 67*   |  | 67   | 64 #20<br>3 #16              | 1000V                                           | 67           | 64<br>3         | L<br>M            | 1-2,6-65<br>3-5                 | Same as Pin       |                   |

## Contact Arrangement Variations, Crimp Type - DPX\*MA/ME Series

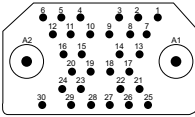
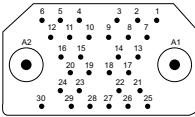
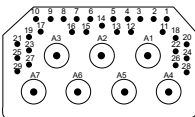
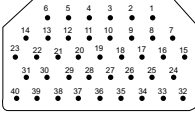
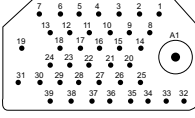
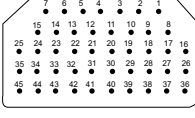
NOTE: See pages 58-61 for Coaxial Contact data  
See pages 53-54 for Crimp Contact data

|         |  | Contact Arr.                        | No. of Contacts & Wire Size | Test Voltage AC (RMS)                                                             | Contact Arr. No.                             | No. of Contacts                          | Contact Size or Code Letter                       | Contact Numbers            |
|---------|--|-------------------------------------|-----------------------------|-----------------------------------------------------------------------------------|----------------------------------------------|------------------------------------------|---------------------------------------------------|----------------------------|
| 8       |  | 8                                   | 8 #12                       |                                                                                   | 8                                            | 8                                        | 12                                                | 1-8                        |
| D8      |  | D8                                  | 4 #16, 4 #12                |                                                                                   | D8                                           | 4                                        | 16<br>12                                          | 1-4<br>5-8                 |
| W8**    |  | W8**<br>(For MA)<br>AW8<br>(For ME) | 8 coax                      | 1000V (1-8)V                                                                      | W8<br>C8A<br>C8B<br>C8C<br>C8E<br>C8G<br>C8H | 8                                        | coax<br>G<br>F<br>H<br>R<br>S<br>AB               | 1-8                        |
| 10      |  | 10                                  | 2 #8, 8 #20                 | 1500V                                                                             | 10                                           | 2<br>8                                   | B<br>20                                           | 1,2<br>3-10                |
| A10     |  | A10                                 | 8 #16, 2 #4                 | 1500V                                                                             | A10                                          | 8<br>2                                   | 16<br>4                                           | 1-3, 5,<br>6, 8-10<br>4, 7 |
| 10W3**  |  | 10W3**                              | 7 #20, H.D.,<br>3 coax      | 1500<br>(1-4, 8-10)V                                                              | 10W3<br>A10C3<br>B10C3                       | 7<br>3<br>7<br>3<br>7<br>3               | 20 H.D.<br>coax<br>20 H.D.<br>AC<br>20 H.D.<br>AC | 1-4, 8-10<br>5-7           |
| B16W3** |  | SOCKET<br>ONLY<br>B16W3             | 13 #16, 3 coax              | 1500 (4-16)<br>1000 (1-3)V<br>socket side only<br>(Not available<br>in ME series) | B16W3                                        | 13<br>3                                  | 16<br>coax                                        | 4-16<br>1-3                |
| 25W3    |  | 25W3                                | 22 (#20) 3 coax             | 1500 (4-25)V,<br>1000 (1-3)V<br>(Not available<br>in ME series)                   | 25W3<br>25A3<br>25B3<br>25D3                 | 22<br>3<br>22<br>3<br>22<br>3<br>22<br>3 | 20<br>coax<br>20<br>C<br>20<br>D<br>20<br>B       | 4-25<br>1-3                |
| 26      |  | 26                                  | 26 #16                      | 1500V                                                                             | 26                                           | 26                                       | 16                                                | 1-26                       |

\*\*Crimp rear release coaxial contacts.

## Contact Arrangement Variations, Crimp Type - DPX\*MA/ME Series

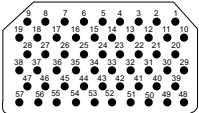
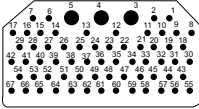
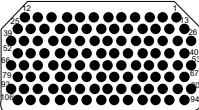
NOTE: See pages 58-61 for Coaxial Contact data  
See pages 53-54 for Crimp Contact data

|      | Contact Arr.                                                                        | No. of Contacts & Wire Size    | Test Voltage AC (RMS)         | Contact Arr. No. | No. of Contacts | Contact Size or Code Letter | Contact Numbers                              |
|------|-------------------------------------------------------------------------------------|--------------------------------|-------------------------------|------------------|-----------------|-----------------------------|----------------------------------------------|
| 32W2 |    | 30 #20, 2 coax                 | 1500 (1-30),<br>1000 (A1,A2)V | 32W2             | 30<br>2         | 20<br>coax                  | 1-30<br>A1,A2                                |
|      |                                                                                     |                                |                               | 32A2             | 30<br>2         | 20<br>B                     |                                              |
|      |                                                                                     |                                |                               | 32B2             | 30<br>2         | 20<br>A                     |                                              |
|      |                                                                                     |                                |                               | 32C2             | 30<br>2         | 20<br>D                     |                                              |
|      |                                                                                     |                                |                               | D32C2            | 30<br>2         | 20<br>J                     |                                              |
|      |                                                                                     |                                |                               | 32F2             | 30<br>2         | 20<br>P                     |                                              |
|      |                                                                                     |                                |                               | 32G2             | 30<br>2         | 20<br>C                     |                                              |
| 32W4 |    | 24 #20 H.D.<br>4 #16, 4 coax   | 1500 (1-28),<br>1000 (29-32)V | 32W4             | 4<br>24<br>4    | coax<br>20 H.D.<br>16       | 29-32<br>1-7, 10-22<br>25-28<br>8, 9, 23, 24 |
|      |                                                                                     |                                |                               | 32C4             | 4<br>24<br>4    | S<br>20 H. D.<br>16         |                                              |
|      |                                                                                     |                                |                               | B32C4            | 4<br>24<br>4    | H<br>20 H. D.<br>16         |                                              |
|      |                                                                                     |                                |                               | C32C4            | 4<br>24<br>4    | R<br>20 H. D.<br>16         |                                              |
|      |                                                                                     |                                |                               | D32C4            | 4<br>24<br>4    | G<br>20 H. D.<br>16         |                                              |
|      |                                                                                     |                                |                               | E32C4            | 4<br>24<br>4    | AA<br>20 H. D.<br>16        |                                              |
|      |                                                                                     |                                |                               | H32C4            | 4<br>24<br>4    | AB<br>20 H. D.<br>16        |                                              |
| 36W7 |  | 29 #22 H.D.<br>7 coax (Size 5) | 1000                          | 36W7**           |                 |                             |                                              |
| 40   |  | 40 #20                         | 1500V                         | 40               | 40              | 20                          | 1-40                                         |
| 40W1 |  | 39 #20,<br>1 coax              | 1500 (1-39)<br>1000 (A1)V     | 40W1             | 39<br>1         | 20<br>coax                  | 1-39<br>A1                                   |
|      |                                                                                     |                                |                               | 40B1             | 39<br>1         | 20<br>B                     |                                              |
|      |                                                                                     |                                |                               | 40F1             | 39<br>1         | 20<br>P                     |                                              |
|      |                                                                                     |                                |                               | F40C1            | 39<br>1         | 20<br>J                     |                                              |
| 45   |  | 45 #20                         | 1500V                         | 45               | 45              | 20                          | 1-45                                         |

\*\*Crimp rear release coaxial contacts.

Contact Arrangement Variations, Crimp Type - DPX\*MA/ME Series

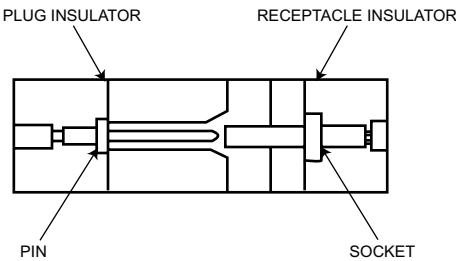
NOTE: See pages 58-61 for Coaxial Contact data  
See pages 53-54 for Crimp Contact data

|       |                                                                                   | Contact Arr. | No. of Contacts & Wire Size | Test Voltage AC (RMS)            | Contact Arr. No. | No. of Contacts | Contact Size or Code Letter | Contact Numbers      |
|-------|-----------------------------------------------------------------------------------|--------------|-----------------------------|----------------------------------|------------------|-----------------|-----------------------------|----------------------|
| 57    |  | 57           | 57 #20                      | 1500V                            | 57               | 57              | 20                          | 1-57                 |
| 67    |  | 67           | 64 #20 H.D.<br>3 #16        | 1500 (3-5)<br>1000 (1, 2, 6-67)V | 67               | 64<br>3         | 20 H.D.<br>16               | 1-2, 6-67<br>3, 4, 5 |
| A106† |  | A106†        | 106 #22                     | 1000V                            | A106             | 106             | 22                          | 1-106                |

\*\*Crimp rear release coaxial contacts.  
†A106 arrangements have the POS-ALINE connector design. See below.  
NOTE: Engaging force of each layout arrangement shall not exceed 45 lbs. maximum.

Positive Contact Alignment Design

For high density A106 contact arrangement



In the POS-ALIGN connector construction the entire pin contact is recessed in an individual cavity in the plug insulator while the sturdy socket members are exposed and extend from the connector receptacle face. There is a lead-in chamfer that guides the socket contact into the pin cavity assuring proper contact alignment during mating and protecting the pin contact from damage and wear.

## Contact and Termination Tooling Data - Commercial

## Crimp Contacts

The crimp contacts are shipped with the connector, not installed. Additional contacts may be ordered using the part numbers listed below. All tools must

be purchased separately. The insertion/extraction tools listed are plastic type. Consult factory for more durable metal tools.

| Part Number  |        |                   |                                                                                                     |             |                                        |                                             |                                          |                                         |                                               |
|--------------|--------|-------------------|-----------------------------------------------------------------------------------------------------|-------------|----------------------------------------|---------------------------------------------|------------------------------------------|-----------------------------------------|-----------------------------------------------|
| Contact Size | Type   | DPX MA Commercial | DPX ME Commercial  | Wire Accom. | Crimp Tool Part Number                 | Locator Part Number                         | Insertion/Extraction Tool (Part No.)     | Layout Usage DPX ME                     | DPX MA                                        |
| 2222         | Pin    | 030-1975-007      | 030-1975-005                                                                                        | 22,24,26    | M22520/2-01                            | M22520/2-23                                 | CIT-DPXMA-22<br>M81969/1-01              | A106                                    | A106                                          |
|              | Socket | 031-1113-007      | 031-1113-008                                                                                        |             |                                        |                                             |                                          |                                         |                                               |
| 2020         | Pin    | 030-9081-000      | 030-2040-000                                                                                        | 20,22,24    | M225-20/1-01<br>MS-3191-1<br>MS-3191-3 | M22520/2-08<br>Std. Locator<br>Std. Locator | CIET-20<br>(274-7001-000)                | 10,<br>A32W2,<br>40,<br>A40W1,<br>45,57 | 10,<br>25W2,<br>32W2<br>40,<br>40W1,<br>45,57 |
|              | Socket | 031-9134-001      | 031-1046-002                                                                                        |             |                                        |                                             |                                          |                                         |                                               |
| 2020HD       | Pin    | 030-9081-003      | 030-1892-002                                                                                        | 20,22,24    | M22520/2-01<br>MS-3191-1               | M22520/2-08<br>Standard                     | CIET-20<br>M81969/1-02<br>(980-0004-805) | 10W3<br>A32W4,<br>67                    | 10W3<br>32W4,<br>67                           |
|              | Socket | 031-9134-004      | 031-1047-002                                                                                        |             |                                        |                                             |                                          |                                         |                                               |
| 1616         | Pin    | 030-9083-001      | 030-1893-002                                                                                        | 16,18,20    | M22520/1-01<br>MS-3191-1               | M22520/1-02<br>Std. Locator                 | CIET-16<br>(274-7002-000)                | D8,<br>A10,<br>26,<br>A32W4,<br>67      | D8,<br>A10,<br>B16W3,<br>26,<br>32W4,<br>67   |
|              | Socket | 031-9206-004      | 031-9206-021                                                                                        |             |                                        |                                             |                                          |                                         |                                               |
| 1212         | Pin    | 030-1909-001      | 030-2045-000                                                                                        | 12,14       | M22520/1-01                            | M22520/1-11                                 | CIET-12<br>(274-7003-000)                | D8                                      | 8,<br>D8                                      |
|              | Socket | 031-1059-001      | 031-1059-002                                                                                        |             |                                        |                                             |                                          |                                         |                                               |
| 0808         | Pin    | 030-1908-001      | 030-1908-001                                                                                        | 8           | CBT-600*<br>CBT600B*                   | CCH8-1 Head<br>CCHP-8-6                     | CET-8-2<br>(323-7004-000)                | 10                                      | 10                                            |
|              | Socket | 031-1154-000      | 031-1154-000                                                                                        |             |                                        |                                             |                                          |                                         |                                               |
| 0406         | Pin    | 030-2049-000      | 030-2049-000                                                                                        | 6           | CBT-600*<br>CBT600B*                   | CCH4-1 Head<br>CCHP-4-8                     | CET-4-8<br>(323-7008-000)                | A10                                     | A10                                           |
|              | Socket | 031-1151-000      | 031-1151-000                                                                                        |             |                                        |                                             |                                          |                                         |                                               |

\* Requires air line pressure of 80 to 100 psi.

These DPXME contacts are being superseded in favor of military DPXNE/NA contacts, this applies to all existing DPXME connector assemblies, except for size 20 contacts.

## Electrical Data

| Contact Size | Wire Size | Insulation (O.D.) Limits Inch (mm) Max. | Test Current per MIL-C-39029 Table VI | Max. Current for Tests (Amps) (Mil-C-39029) | Max. Potential Drop (Millivolts) at 25°C per MIL-C-39029 |
|--------------|-----------|-----------------------------------------|---------------------------------------|---------------------------------------------|----------------------------------------------------------|
| 4            | 6         | .310 (7.87)                             | 60                                    | 60                                          | 33                                                       |
| 8            | 8         | .250 (6.35)                             | 46                                    | 46                                          | 39                                                       |
| 12           | 12        | .135 (3.43)                             | 23                                    | 23                                          | 63                                                       |
|              | 14        |                                         | 17                                    | 17                                          | 60                                                       |
| 16           | 16        | .103 (2.62)                             | 13                                    | 13                                          | 68                                                       |
|              | 18        |                                         | -                                     | -                                           | -                                                        |
|              | 20        |                                         | 7.5                                   | -                                           | 75                                                       |
| 20           | 20        | .071 (1.80)                             | 7.5                                   | 7.5                                         | 83                                                       |
|              | 22        |                                         | -                                     | -                                           | -                                                        |
|              | 24        |                                         | 3                                     | 3.0                                         | 68                                                       |
| 22           | 22        | .054 (1.37)                             | 5                                     | 5.0                                         | 110                                                      |
|              | 24        |                                         | -                                     | -                                           | -                                                        |
|              | 26        |                                         | 2                                     | 2.0                                         | 80                                                       |

## Description of Modification Codes for Special Connector Insert Assemblies

| Class | Series           | DPX Insert Type                                                                   | Class   | Series | DPX Insert Type                                                                                      | Class               | Series | DPX Insert Type                                                                                                      |
|-------|------------------|-----------------------------------------------------------------------------------|---------|--------|------------------------------------------------------------------------------------------------------|---------------------|--------|----------------------------------------------------------------------------------------------------------------------|
| None  | DPXA<br>DPXB     | Two (2) pieces, solder pot.                                                       | D*      | -      | (MA) LITTLE CAESAR assembly, crimp pot, (Cat. A)                                                     | DPX2CA-/            | -      | A side: (MAS) LITTLE CAESAR assembly, solder pot (32W2S)                                                             |
| MA    | DPXAMA<br>DPXBMA | LITTLE CAESAR rear release contact retention assembly, crimp pot.                 | E*      | -      | Metal plates.                                                                                        | DPX2AC-(Reverse CA) | -      | B side; Standard 2 Piece, solder pot (57S).<br>Ex: DPX2CA-32W2S57S-33-0001                                           |
| MAS   | -                | LITTLE CAESAR assembly, solder pot.                                               | F*      | -      | Rear release, crimp (MB type only).                                                                  | DPX2AF              | -      | A side: Standard solder pot.<br>B side: Rear release crimp with separator.<br>Ex: DPX2AF-13S26S-33B-0001             |
| MB    | -                | LITTLE CAESAR rear release contact retention assembly, crimp pot, with separator. | DPX2-   | -      | Standard 2 pieces, solder pot, both sides,<br>Ex: DPX2-57S57S-33-0001                                | DPX2BA              | -      | A side: Ring-Loc solder pot (40W1S).<br>B Side: 2 Piece, Solder Pot (57S).<br>Ex: DPX2BA-40W1S57S-33-0001            |
| MS    | -                | Ring-Loc, solder pot,                                                             | DPX2MA  | -      | Standard LITTLE CAESAR assembly, crimp pot both sides Ring-loc coax.<br>EX:DPX2MA-57S57S-33-0001     | DPX2DA              | -      | A side: (MA) LITTLE CAESAR assembly, Crimp (67S).<br>B Side: 2 Piece, solder pot (57S).<br>Ex: DPX3DA-67S57S-33-0001 |
| ME    | -                | Environmental, connector.                                                         | DPX2MAS | -      | LITTLE CAESAR assembly, solder pot, both sides Ring-Loc coax.<br>EX: DPX2MAS-57S57S-33-001           | DPX2EB              | -      | A side: Metal plates for grounding (Coaxes).<br>B side: Ring-Loc, solder pot.<br>Ex: DPX2EB-C1P40W1P-34B-0001        |
| A*    | -                | Two (2) pieces, solder pot (Standard 2 pieces insert).                            | DPX2MS- | -      | Ring-Loc, solder pot. Layout 25C3 pin only and 40C1 Pin and socket.<br>EX: DPX2MS-40W1S40W1S-33-0001 |                     |        |                                                                                                                      |
| B*    | -                | Ring-Loc, solder pot. (See MS)                                                    |         |        |                                                                                                      |                     |        |                                                                                                                      |
| C*    | -                | (MAS) LITTLE CAESAR assembly, Solder pot.                                         |         |        |                                                                                                      |                     |        |                                                                                                                      |

\*NOTE: When any two of these letters are used in combination, the inserts ("A" and "B") side have the style contacts indicated (see table opposite for examples).

## Contact and Termination Tooling Data

## DPXMA (LIF) Crimp Contacts

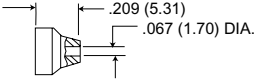
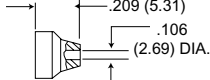
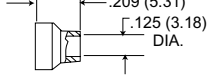
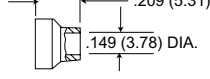
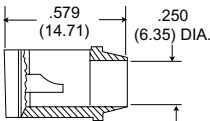
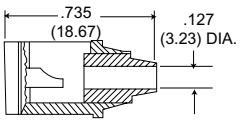
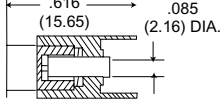
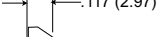
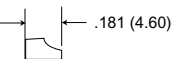
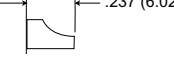
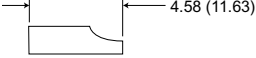
| Contact Size<br>and Part Numbers |                            |                            | Crimp Tooling   |                  |                    |                 |                  | Insertion/<br>Extraction Tooling |                                          |                                        | Wire Size                            |                |                          |                           |
|----------------------------------|----------------------------|----------------------------|-----------------|------------------|--------------------|-----------------|------------------|----------------------------------|------------------------------------------|----------------------------------------|--------------------------------------|----------------|--------------------------|---------------------------|
| Part Number                      |                            |                            | Tool P/N        |                  | Se-<br>lec<br>tor# | Locator P/N     |                  | MIL<br>Spec                      | ITT Cannon                               |                                        |                                      | AWG            | Insul<br>Dia. Max.       | Strip<br>Length           |
| Size                             | Pin*                       | Socket*                    | MIL<br>Spec     | ITT<br>Cannon    |                    | MIL<br>Spec     | ITT<br>Cannon    |                                  | Insertion                                | Extraction                             | Ins./Ext.                            |                |                          |                           |
| 222                              | Plug<br>030-2259-000       | Receptacle<br>031-1287-000 | M22520<br>/2-01 | 995-0001<br>-584 | 3                  | M22520<br>2-23  | 995-0002<br>-015 | M81969<br>/1-01                  | CIT-DPXMA-22-1<br>Metal<br>(070256-0000) | CET-DPXMA-22<br>Metal<br>(070317-0000) | (980-0004-804)<br>Metal Tip          | 26             | .054<br>(1.37)           | .130/ .110<br>(3.30/2.54) |
|                                  |                            |                            |                 |                  | 3                  |                 |                  |                                  |                                          |                                        |                                      | 24             |                          |                           |
|                                  |                            |                            |                 |                  | 4                  |                 |                  |                                  |                                          |                                        |                                      | 22             |                          |                           |
| 2020HD                           | Receptacle<br>030-2273-000 | Plug<br>031-1302-000       | M22520<br>/2-01 | 995-0001<br>-584 | 6                  | M22520<br>/2-08 | 995-0001<br>-604 | M81969<br>/1-02                  | -                                        | (980-0004-805)<br>Metal Tip            | 22                                   | .071<br>(1.80) | .167/.147<br>(4.24/3.73) |                           |
|                                  |                            |                            |                 |                  | 7                  |                 |                  |                                  |                                          |                                        | 20                                   |                |                          |                           |
|                                  |                            |                            |                 |                  | 6                  |                 |                  |                                  |                                          |                                        |                                      |                |                          |                           |
| 1616                             | Receptacle<br>030-2280-000 | Plug<br>031-1303-000       | M22520<br>1-01  | 995-0001<br>-585 | 4                  | M22520<br>/1-02 | 995-0001<br>-736 | M81969<br>/1-03                  | -                                        | CET-16-9<br>Plastic<br>(323-7001-000)  | (980-0004-806)<br>Metal Tip          | 20             | .103<br>(2.62)           | .270/ .230<br>(6.86/5.84) |
|                                  |                            |                            |                 |                  | 5                  |                 |                  |                                  |                                          |                                        |                                      | 18             |                          |                           |
|                                  |                            |                            |                 |                  | 6                  |                 |                  |                                  |                                          |                                        |                                      | 16             |                          |                           |
| 1212                             | Receptacle<br>030-2286-000 | Plug<br>031-1308-000       | M22520<br>1-01  | 995-0001<br>-585 | 7                  | M22520<br>/1-11 | 995-0002<br>-027 | M81969<br>/14-04                 | -                                        | CET-12-4<br>Plastic<br>(323-7002-000)  | CIET-12<br>Plastic<br>(274-7003-000) | 14             | .135<br>(3.43)           | .270/ .230<br>(6.86/5.84) |
|                                  |                            |                            |                 |                  | 8                  |                 |                  |                                  |                                          |                                        |                                      | 12             |                          |                           |
|                                  |                            |                            |                 |                  |                    |                 |                  |                                  |                                          |                                        |                                      |                |                          |                           |

\* Used in Plug or Receptacle as noted below.

## DPXMA Thermocouple Contacts

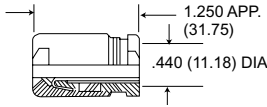
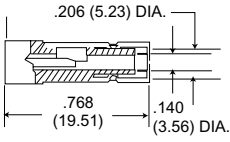
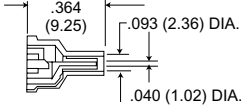
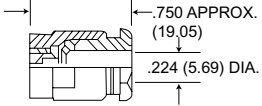
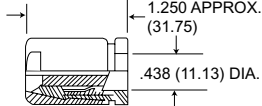
| Contact Size and Part Numbers |              |              | Crimp Tooling |               |            |              |               | Insertion/Extraction Tooling |                                    |                                  |                          | Wire Size |                 |                      |
|-------------------------------|--------------|--------------|---------------|---------------|------------|--------------|---------------|------------------------------|------------------------------------|----------------------------------|--------------------------|-----------|-----------------|----------------------|
| Part Number                   |              |              | Tool P/N      |               | Selec tor# | Locator P/N  |               | MIL Spec                     | ITT Cannon                         |                                  |                          | AWG       | Insul Dia. Max. | Strip Length         |
| Size                          | Pin*         | Socket*      | MIL Spec      | ITT Cannon    |            | MIL Spec     | ITT Cannon    |                              | Insertion                          | Extraction                       | Ins./Ext.                |           |                 |                      |
| 2222                          | Plug         | Receptacle   | M22520 /2-01  | 995-0001 -584 | 3          | M22520 /2-23 | 995-0002 -015 | M81969 /1-01                 | CIT-DPXMA-22-1 Metal (070256-0000) | CET-DPXMA-22 Metal (070317-0000) | (980-0004-804) Metal Tip | 26        | .054 (1.37)     | .130/110 (3.30/2.54) |
| Alumel                        | 030-1975-009 | 031-1113-009 |               |               | 3          |              |               |                              |                                    |                                  |                          | 24        |                 |                      |
| 2222                          | Plug         | Receptacle   |               |               | 4          |              |               |                              |                                    |                                  |                          | 22        |                 |                      |
| Chromel                       | 030-1975-010 | 031-1113-010 |               |               |            |              |               |                              |                                    |                                  |                          |           |                 |                      |

## Coaxial/Power Contact Termination Data (Retained by Captive Insulator Assy.)

| Rear Extension<br>from insulator                                                    | Contact<br>type<br>code | Part Number                                  |                                              | Cable<br>Accommodation         | Layout<br>Accommodation                      |
|-------------------------------------------------------------------------------------|-------------------------|----------------------------------------------|----------------------------------------------|--------------------------------|----------------------------------------------|
|                                                                                     |                         | Pin                                          | Socket                                       |                                |                                              |
|    | <b>A</b>                | 249-0672-000                                 | 249-0671-000                                 | RG-187/U<br>RG-188/U           | C7A, B16C3,<br>G25C3, C30C4,<br>A32C2, L40C1 |
|    | <b>B</b>                | 249-0702-000                                 | 249-0703-000                                 | RG-180/U<br>RG-195/U           | C7B, J25C3,<br>C16C3, C32C2,<br>40C1         |
|    | <b>C</b>                | 249-0749-000                                 | 249-0750-000                                 | RG-55/U<br>RG-58/U<br>RG-223/U | C7H, G16C3,<br>F25C3, D32C2,<br>F40C1        |
|    | <b>D</b>                | -                                            | 249-0518-000                                 | RG-59/U                        | C7J, H16C3,<br>H25C3, F32C2,<br>E30C4, E40C1 |
|   | <b>I</b>                | 249-0365-000                                 | 249-0353-000                                 | RG-7/U                         | 10C3                                         |
|  | <b>J</b>                | 249-0257-000                                 | 249-0268-000                                 | RG-55/U<br>RG-58/U<br>RG-223/U | A10C3                                        |
|  | <b>K</b>                | 249-0583-000<br>024-0015-000<br>253-0120-000 | 249-0591-000<br>024-0015-000<br>253-0120-000 | RG-187/U<br>RG-188/U           | 25C3, 32C2,<br>J16C3, A40C1,<br>C7, C7D      |
| A40C1 pin only, use C40C1 for socket.                                               |                         |                                              |                                              |                                |                                              |
|  | <b>L</b>                | 330-0144-000                                 | 330-0145-000                                 | 7.5 amp #20 wire               | See Note 1                                   |
|  | <b>M</b>                | 030-0056-010                                 | 031-0016-008                                 | 13 amp #16 wire                | See Note 2                                   |
|  | <b>N</b>                | 030-0017-015                                 | -                                            | 23 amp                         | 8                                            |
|  | <b>O</b>                | -                                            | 031-0059-008                                 | #12 wire                       | 8                                            |

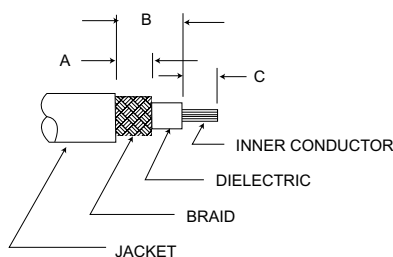
\* These coaxial contacts are supplied with the connector.

## Coaxial/Power Contact Termination Data (Retained by Captive Insulator Assy.)

| Rear Extension<br>from insulator                                                    | Contact<br>type<br>code | Part Number     |              | Cable<br>Accommodation              | Layout<br>Accommodation                       |
|-------------------------------------------------------------------------------------|-------------------------|-----------------|--------------|-------------------------------------|-----------------------------------------------|
|                                                                                     |                         | Pin             | Socket       |                                     |                                               |
|    | <b>R</b>                | 249-1521-000    | 249-1522-000 | RG-9/U, RG-214/U                    | C2                                            |
|    | <b>Z</b>                | 249-1624-000    | 249-1598-000 | RG-58/U<br>with Captive<br>Contact  | C7AA, ZE16C3<br>Q25C3, A30C4<br>M32C2, J40C1  |
|    | <b>AA</b>               | 249-1599-000    | 249-1622-000 | RG-196/U<br>with Captive<br>Contact | C7X, ZF16C3,<br>R25C3, B30C4,<br>N32C2, K40C1 |
|    | <b>AB</b>               | 249-1554-000    | -            | RG-58/U                             | C2C                                           |
|  | <b>AC</b>               | Consult Factory | 249-5027-001 | RG-9/U<br>RG-214/U                  | C2M                                           |

NOTES: 1. Code L-10C3, A10C3, 17, 23, 25C3, E25C3, F25C3, G25C3, H25C3, J25C3, Q25C3, R125C3, 30C4, A30C4, C30C4, D30C4, E30C4, 32, 32C2, A32C2, C32C2, 032C2, F32C2, M32C2, N32C2, Q32C2, 40, 40C1, B40C1, D40C1, E40C1, F40C1, H40C1, J40C1, K40C1, L40C1, 45, 57, 67,  
2. Code M-B16C3, C16C3, G16C3, H16C3, M16C3, ZE16C3, ZF16C3, 26, 30C4, 32, 67

## Suggested Cable Trim Dimensions



| Code Letter | Inches    |           |           | Millimeters |             |             |
|-------------|-----------|-----------|-----------|-------------|-------------|-------------|
|             | A         | B         | C         | A           | B           | C           |
| A           | .166/.146 | .358/.318 | .14       | 4.22/3.71   | 9.08/8.08   | 3.55        |
| B           | .166/.146 | .358/.318 | .14       | 4.22/3.71   | 9.08/8.08   | 3.55        |
| C           | .166/.146 | .358/.318 | .14       | 4.22/3.71   | 9.08/8.08   | 3.55        |
| D           | .166/.146 | .358/.318 | .14       | 4.22/3.71   | 9.08/8.08   | 3.55        |
| E           | .166/.146 | .358/.318 | .14       | 4.22/3.71   | 9.08/8.08   | 3.55        |
| I           | .166/.146 | .39       | .166/.146 | 4.22/3.71   | 9.91        | 4.21/3.71   |
| J           | .166/.146 | .55       | .166/.146 | 4.22/3.71   | 13.97       | 4.21/3.71   |
| K           | .198/.178 | .488/.428 | .25       | 5.03/4.52   | 11.38/10.87 | 6.35        |
| Z           | .08       | .41       | .23       | 2.03        | 10.41       | 5.84        |
| AA          | .11       | .23       | .195/.175 | 2.79        | 5.84        | 4.95/4.45   |
| AB          | .238/.198 | .233/.193 | .447/.427 | 6.04/5.03   | 5.92/4.90   | 11.35/10.89 |
| AC          | .345/.281 | .516/.484 | .359/.296 | 8.71/7.14   | 13.1/12.3   | 9.12/7.52   |
| R           | .238/.198 | .233/.193 | .582/.542 | 6.05/5.03   | 5.92/4.90   | 14.8/13.8   |

## Coaxial Cable Assembly

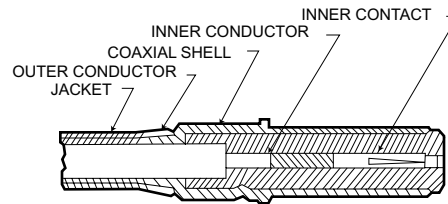
ITT Cannon recommends resistance soldering for all solder contacts, particularly for RF cable where excessive heat will damage the dielectric. Wires

should be pre-tinned. Bushing, endbells, and junction shells (where applicable) must be slipped over wire bundles before soldering is started. Consult

factory for types not shown. The mechanical steps in wiring coaxials described below.

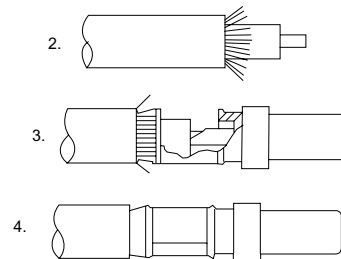
### For Codes A, B, C, D, and E

1. Cut cable evenly. Trim to dimensions as shown on page 56. Care should be taken not to injure the conductor or dielectric.
2. Remove inner contact from coaxial assembly and solder it to inner conductor of cable.
3. Push inner contact back into coaxial assembly.
4. Pull outer conductor over coaxial shell, and solder.
5. Apply shrink sleeving after assembly.



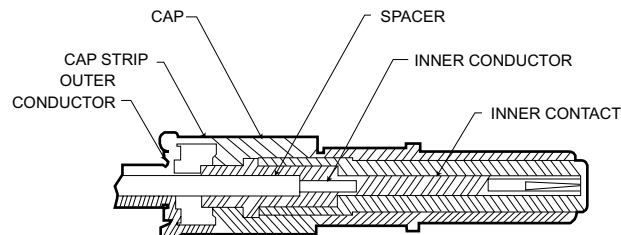
### For Codes I and J

1. Cut cable evenly. Trim to dimensions as shown on page 56. Care should be taken not to injure the conductor or dielectric.
2. Comb braid, tin conductor and remove flux.
3. Remove solder pot cover. Insert cable and solder conductor to contact. The dielectric should butt against contact solder pot.
4. Replace solder pot cover and solder braid to ferrule.
5. Apply shrink sleeving after assembly.



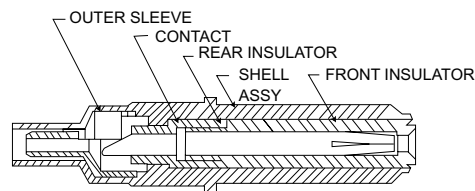
### For Codes K

1. Cut cable evenly. Trim to dimensions as shown on page 56. Care should be taken not to injure the conductor or dielectric.
2. Unscrew cap and remove spacer and inner contact from coaxial assembly.
3. Push cable through center of cap and spacer.
4. Solder inner contact to inner conductor of cable.
5. Push inner contact back into coaxial shell assembly and attach cap.
6. Separate outer conductor of cables into two pigtailed 180° apart.
7. Attach on pigtail to each end of cap strip and solder.
8. Apply shrink sleeving after assembly.



### For Codes Z and AA

1. Cut cable evenly. Trim to dimensions as shown on page 56. Care should be taken not to injure the conductor or dielectric.
2. Solder inner conductor to coaxial contact through side slot in coaxial with outer sleeve pushed back on cable.
3. Pull sleeve forward over braid and solder through holes in sleeve.
4. Solder sleeve to coaxial body.



## Coaxial Contacts

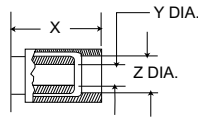
NOTES: 1. The "X" dimension is take from the rear of the shell.

2. Codes G and S are inactive for new design. Use codes AD and AE.

3. Code AA is designed for installations that have limited space in the terminal area. Use code AG for standard installations.

\*P for pin; S for socket.

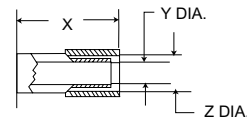
Codes A, B, C, D, E, H, P, R



| Arr.<br>Used In               | Code<br>Letter | Cable<br>Accommodation                   | Part Number*   | Contact<br>Retention | X<br>Max.    | Y<br>Dia.   | Z<br>Dia.   | Crimp Tool              | Extraction<br>Tool       |
|-------------------------------|----------------|------------------------------------------|----------------|----------------------|--------------|-------------|-------------|-------------------------|--------------------------|
| B16W3<br>25W3<br>32W2<br>40W1 | A              | *RG-59/U<br>RG-62/U                      | P-249-1397-000 | Ring Loc             | .760 (19.30) | .158 (4.01) | .275 (6.53) | CA58073                 | CET-C4<br>(038869-0004)  |
|                               |                |                                          | S-249-1398-000 |                      |              | .148 (3.76) | .247 (6.27) |                         |                          |
|                               | B              | *RG-58/U                                 | P-249-1399-000 | Ring Loc             | .760 (19.30) | .128 (3.25) | .211 (5.36) |                         |                          |
|                               |                |                                          | S-249-1400-000 |                      |              | .118 (3.00) | .201 (5.10) |                         |                          |
|                               | C              | *RG-180/U<br>RG-195/U                    | P-249-1401-000 | Ring Loc             | .760 (19.30) | .128 (3.25) | .166 (4.22) |                         |                          |
|                               |                |                                          | S-249-1402-000 |                      |              | .118 (3.00) | .156 (3.96) |                         |                          |
|                               | D              | RG-174/U, RG-187/U<br>RG-179/U, RG-188/U | P-249-1403-000 | Ring Loc             | .760 (19.30) | .072 (1.83) | .121 (3.07) | CCT-HX4-524<br>CCT-408M |                          |
|                               |                |                                          | S-249-1404-000 |                      |              | .062 (1.57) | .111 (2.82) |                         |                          |
|                               | E              | RG-178/U<br>RG-196/U                     | P-249-1405-000 | Ring Loc             | .760 (19.30) | .072 (1.83) | .091 (2.31) |                         |                          |
|                               |                |                                          | S-249-1406-000 |                      |              | .062 (1.57) | .081 (2.06) |                         |                          |
| W8<br>32W4                    | H              | RG-174/U, RG-187/U<br>RG-179/U, RG-188/U | P-249-1633-000 | LITTLE<br>CAESAR     | .592 (15.04) | .072 (1.83) | .121 (3.07) | CCT-HX4-524<br>CCT-408M | CET-C8<br>(323-7011-000) |
|                               |                |                                          | S-249-1634-000 |                      |              | .062 (1.57) | .111 (2.82) |                         |                          |
| B16W3<br>25W3<br>32W2<br>40W1 | P              | *RG-58/U with nylon<br>braid over jacket | S-249-1608-000 | Ring Loc             | .760 (19.30) | .128 (3.25) | .235 (5.97) | Crimp<br>CA58073        | CET-C4<br>(038869-0004)  |
|                               |                |                                          |                |                      |              | .118 (3.00) | .215 (5.46) |                         |                          |
| W8<br>32W4                    | R              | *RG-178/U<br>RG-196/U                    | P-249-1670-000 | LITTLE<br>CAESAR     | .592 (15.04) | .072 (1.83) | .091 (2.31) | CCT-HX4-524<br>CCT-408M | CET-C8<br>(323-7011-000) |
|                               |                |                                          | S-249-1671-000 |                      |              | .062 (1.57) | .081 (2.06) |                         |                          |

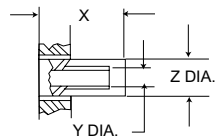
**\*IMPORTANT: These coaxials can only be used in the DPX\*MAS or DPX\*MB Connector Series.**

Codes F, S, T



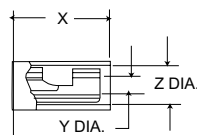
|            |   |                     |                |                  |              |             |             |                        |                          |
|------------|---|---------------------|----------------|------------------|--------------|-------------|-------------|------------------------|--------------------------|
| W8<br>32W4 | F | RG-59/U<br>RG-62/U  | P-249-1474-000 | LITTLE<br>CAESAR | .775 (19.68) | .158 (4.01) | .238 (6.04) | CA58073<br>CCT-HX3-156 | CET-C8<br>(323-7011-000) |
|            |   |                     | S-249-1471-000 |                  |              | .148 (3.76) | .228 (5.79) |                        |                          |
|            | S | RG-55/U<br>RG-142/U | P-249-1958-000 | LITTLE<br>CAESAR | .592 (15.04) | .130 (3.30) | .238 (6.04) | CA58073<br>CCT-HX3-156 | CET-C8<br>(323-7011-000) |
|            |   |                     | S-249-1959-000 |                  |              | .120 (3.05) | .228 (5.79) |                        |                          |
|            | T | RG-59/U<br>RG-62/U  | P-249-1960-000 | LITTLE<br>CAESAR | .592 (15.04) | .158 (4.01) | .238 (6.04) |                        |                          |
|            |   |                     | S-249-1961-000 |                  |              | .148 (3.76) | .228 (5.79) |                        |                          |

Codes G



|            |   |         |                |                  |              |             |             |                         |                          |
|------------|---|---------|----------------|------------------|--------------|-------------|-------------|-------------------------|--------------------------|
| W8<br>32W4 | G | RG-58/U | P-249-1631-000 | LITTLE<br>CAESAR | .500 (12.70) | .130 (3.30) | .211 (5.36) | CCT-HX4-524<br>CCT-408M | CET-C8<br>(323-7011-000) |
|            |   |         | S-249-1632-000 |                  |              | .120 (3.05) | .201 (5.10) |                         |                          |

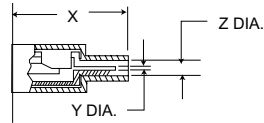
Codes J



|                               |   |         |                |          |             |             |             |        |                         |
|-------------------------------|---|---------|----------------|----------|-------------|-------------|-------------|--------|-------------------------|
| W16W3<br>25W3<br>32W2<br>40W1 | J | RG-58/U | P-249-1388-000 | Ring Loc | 798 (20.27) | .130 (3.30) | .273 (6.93) | Solder | CET-C4<br>(038869-0004) |
|                               |   |         | S-249-1390-000 |          |             | .120 (3.05) | .263 (6.68) |        |                         |

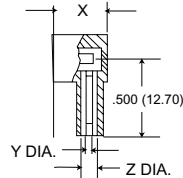
## Coaxial Contacts

## CODE K



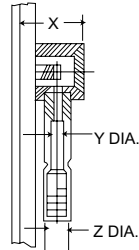
| Arr. Used In | Code Letter | Cable Accommodation | Part Number*   | Contact Retention | X Max.       | Y Dia.      | Z Dia.      | Crimp Tool | Extraction Tool         |
|--------------|-------------|---------------------|----------------|-------------------|--------------|-------------|-------------|------------|-------------------------|
| B16W3        | K           | RG-178/U            | P-249-1384-000 | Ring Loc          | .906 (23.01) | .045 (1.14) | .098 (2.49) | Solder     | CET-C4<br>(038869-0004) |
| 25W3         |             | RG-196/U            | S-249-1413-000 |                   |              |             |             |            |                         |
| 32W2         |             |                     |                |                   |              |             |             |            |                         |
| 40W1         |             |                     |                |                   |              |             |             |            |                         |

## CODE L



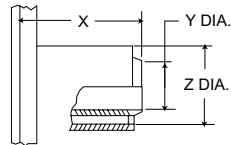
|       |   |          |                |          |              |             |             |        |                         |
|-------|---|----------|----------------|----------|--------------|-------------|-------------|--------|-------------------------|
| B16W3 | L | RG-178/U | P-249-1386-000 | Ring Loc | .518 (13.16) | .045 (1.14) | .098 (2.49) | Solder | CET-C4<br>(038869-0004) |
| 25W3  |   | RG-196/U | S-249-1414-000 |          |              |             |             |        |                         |
| 32W2  |   |          |                |          |              |             |             |        |                         |
| 40W1  |   |          |                |          |              |             |             |        |                         |

## CODE U



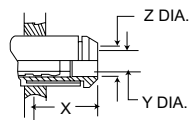
|    |   |                    |                |               |              |             |             |         |                         |
|----|---|--------------------|----------------|---------------|--------------|-------------|-------------|---------|-------------------------|
| W8 | U | RG-174/U, RG-187/U | S-249-1883-000 | LITTLE CAESAR | .425 (10.80) | .069 (1.75) | .117 (2.97) | CCT-C10 | CET-C8<br>(038869-0004) |
|    |   | RG-179/U, RG-188/U |                |               |              | .059 (1.50) | .107 (2.72) |         |                         |

## CODE V, AC



|      |    |          |                |               |              |             |             |                    |                           |
|------|----|----------|----------------|---------------|--------------|-------------|-------------|--------------------|---------------------------|
| 10W3 | V  | RG-115/U | P-249-1956-000 | LITTLE CAESAR | .800 (20.32) | .260 (6.60) | .356 (9.04) | Buchanan<br>612991 | CET 4-8<br>(323-7008-000) |
|      |    |          | S-249-1957-000 |               |              | .254 (6.45) | .349 (8.86) |                    |                           |
|      | AC | RG-58/U  | S-249-1977-000 | LITTLE CAESAR | .800 (20.32) | .205 (5.21) | .356 (9.04) |                    |                           |
|      |    |          |                |               |              | .199 (5.05) | .349 (8.86) |                    |                           |

## CODE AA, AB, AD, AE, AF, AG



|            |    |                                          |                                  |                  |              |                            |                            |                    |                          |
|------------|----|------------------------------------------|----------------------------------|------------------|--------------|----------------------------|----------------------------|--------------------|--------------------------|
| W8<br>32W4 | AA | RG-178/U<br>RG-196/U                     | P-249-1968-000                   | LITTLE<br>CAESAR | .260 (6.60)  | .088 (2.24)<br>.084 (2.13) | .126 (3.20)<br>.122 (3.10) | T & B #WT400       |                          |
|            | AB | RG-180/U<br>RG-195/U                     | P-249-1982-000<br>S-249-1983-000 |                  |              |                            |                            |                    |                          |
|            | AD | RG-58/U                                  | P-249-2017-000<br>S-249-2018-001 |                  |              |                            |                            |                    |                          |
|            | AE | RG-142/U                                 | P-249-2019-001<br>S-249-2020-001 | LITTLE<br>CAESAR | .575 (14.60) | .114 (2.90)<br>.104 (2.64) | .168 (4.27)<br>.158 (4.01) | Daniels<br>HX4-210 | CET-C8<br>(323-7011-000) |
|            | AF | RG-174/U, RG-187/U<br>RG-179/U, RG-188/U | P-249-1633-004<br>S-249-1634-003 |                  |              |                            |                            |                    |                          |
|            | AG | RG-178/U<br>RG-196/U                     | P-249-2061-000<br>S-249-2062-001 |                  |              |                            |                            |                    |                          |
|            |    |                                          |                                  |                  |              |                            |                            |                    |                          |
|            |    |                                          |                                  |                  |              |                            |                            |                    |                          |
|            |    |                                          |                                  |                  |              |                            |                            |                    |                          |
|            |    |                                          |                                  |                  |              |                            |                            |                    |                          |

## DPX\*MA/ME Coaxial Contact Data (for environmental requirements)

## Components/Accessories

NOTE: The A32W2 & A40W1 (Ring Type Retention); AW8 & A32W4 (LITTLE CAESAR Retention) Coaxial Contact arrangements have been redesigned to provide ease of insertion/removal of the coaxial contacts. Sealing is accomplished with the addition of sealing sleeves provided with the coaxial contact assembly.

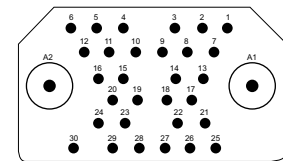
## RING TYPE RETENTION (A32W2 &amp; A40W1 CONTACT ARRANGEMENTS)

| Part Number*      |                | Cable Accommodation |                | Ins. Dia.<br>Size/Max. | 'A' Trim<br>Dim. | Crimp<br>Tool |
|-------------------|----------------|---------------------|----------------|------------------------|------------------|---------------|
| Without Seal (MA) | Sealed (ME)    | Seal 1              | Seal 2         |                        |                  |               |
| P-249-1397-001    | P-249-1397-002 | X                   | RG59B, RG62A   | .249 (6.32)            | .435 (11.05)     | CA58073       |
| S-249-1398-003    | S-249-1398-002 |                     |                |                        | .415 (10.54)     |               |
| P-249-1399-001    | P-249-1399-002 | RG58B               | X              | .200 (5.08)            | .460 (11.68)     | CA58073       |
| S-249-1400-003    | S-249-1400-002 |                     |                |                        | .440 (11.18)     |               |
| P-249-1401-001    | P-249-1401-002 | RG195               | RG180B         | .158 (4.01)            | .460 (11.68)     | CA58073       |
| S-249-1402-003    | S-249-1402-002 |                     |                |                        | .440 (11.18)     |               |
| P-249-1403-001    | P-249-1403-002 | RG179B              | RG174, RG179B, | .113 (2.87)            | .460 (11.68)     | CCT-406M      |
| S-249-1404-003    | S-249-1404-002 |                     | RG316          |                        | .440 (11.18)     |               |
| P-249-1405-001    | P-249-1405-002 | RG179B, RG196       | X              | .083 (2.11)            | .480 (12.19)     | CCT-406M      |
| S-249-1406-003    | S-249-1406-002 |                     |                |                        | .460 (11.68)     |               |

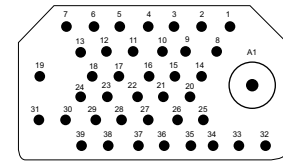
\*P for pin, S for socket

†Unsealed accommodates both Seal 1 & Seal 2 Cables.

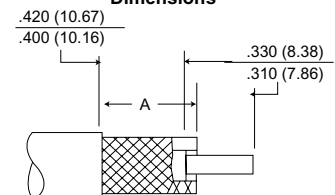
††For use with connectors supplied less grommet (Code 29\*\*, etc.)



32W2 (MA Version)  
A32W2 (ME Version)



40W1 (MA Version)  
A40W1 (ME Version)

Cable Trim  
Dimensions

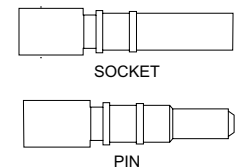
## Coaxial Contact Assembly Recommendations

(For Codes A, B, C, D, E, J, K, L and P)

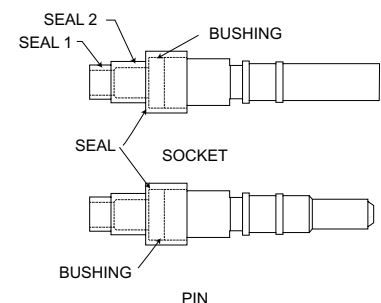
- Center contact, rear insulator, crimp ring, support bushing and seal sleeve are packaged separately and shipped with the coaxial assembly.
- Use impact extraction tool no. CET-C4 (038869-0004). An insertion tool is not required. (See Item 4).
- Cable Assembly Instructions
  - If applicable, determine which portion of seal sleeve should be used. If seal 2 is used, cut off seal 1 portion
  - In sequence, place seal sleeve, support bushing and crimp ring over cable jacket.
  - Trim cable per illustration.
  - Place rear insulator over dielectric.
  - Solder innerconductor to center contact.
  - Insert soldered cable firmly into coaxial with shielding over coaxial shell.
  - Pull crimp ring forward until stopped and crimped.
  - Insert coaxial assembly into connector until engaged. Push support bushing into grommet until shoulder rest on tubular extension. Then pull seal sleeve forward until it is snug against grommet.
- To extract coaxial, push back seal sleeve and support bushing. Then push out coaxial from engaging end with CET-C4 (038869-0004) impact tool.
- When crimping with CA58073 crimp tool, care should be taken to avoid flaring the front end of the crimp ring. Place Crimp jaw so that the second tooth of the indentors is over the end of the crimp ring.
- To facilitate extraction of contacts and avoid splaying the length of free cable adjacent to the rear surface of the connector should not be less than 2.000 (50.80).

## WITHOUT SEAL

(For Codes A, B, C, D, E, J, K, L and P)

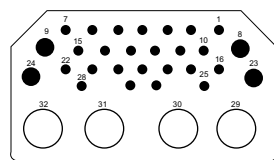


## SEALED

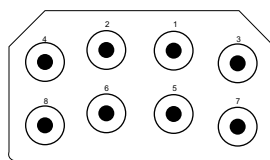


## DPX\*MA/ME Coaxial Contact Data (for environmental requirements)

## Components/Accessories

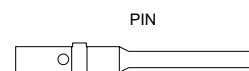
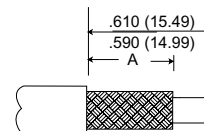


32W4\*\* (MA Version)  
A32W4 (ME Version)



W8\*\* (MA Version)  
AW8 (ME Version)

## Cable Trim Dimensions



## LITTLE CAESAR® CONTACT RETENTION (A32W4 &amp; AW8 CONTACT ARRANGEMENTS)

| Part Number*        |                | Cable Accommodation† |               | Ins. Dia.<br>Size/Max. | 'A' Trim<br>Dim. |
|---------------------|----------------|----------------------|---------------|------------------------|------------------|
| Without Seal†† (MA) | Sealed (ME)    | Seal 1               | Seal 2        |                        |                  |
| P-249-1633-004      | P-249-1633-003 | RG178                | RG174, RG316, | .111 (2.82)            | .350 (8.89)      |
| S-249-1634-003      | S-249-1634-002 |                      | RG179B        |                        | .330 (8.38)      |
| P-249-1982-000      | P-249-1982-001 | RG180B               | RG195         | .158 (8.89)            | .260 (6.60)      |
| S-249-1983-000      | S-249-1983-001 |                      |               |                        | .250 (6.35)      |
| P-249-2017-001      | P-249-2017-000 | RG58C                | X             | .196 (4.98)            | .260 (6.60)      |
| S-249-2018-001      | S-249-2018-000 |                      |               |                        | .250 (6.35)      |
| P-249-2019-001      | P-249-2019-000 | RG142B               | X             | .196 (4.98)            | .260 (6.60)      |
| S-249-2020-001      | S-249-2020-000 |                      |               |                        | .250 (6.35)      |
| P-249-2061-001      | P-249-2061-000 | RG178B               | X             | .075 (1.90)            | .260 (6.60)      |
| S-249-2062-001      | S-249-2062-000 |                      |               |                        | .250 (6.35)      |

\*P for Pin. S for Socket

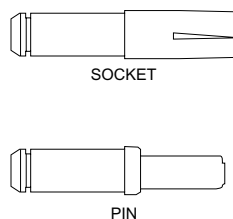
Unsealed accommodates both Seal 1 & Seal 2 cables.

For use with connector supplied less grommet (Code-29\*\*, etc.).

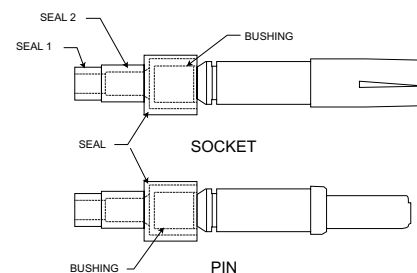
## Coaxial Contact Assembly and Extraction Recommendations

- Use Crimp Tool No. DIE Y211 (995-0002-249), Tool M22520 / 5-01 (995-0001-761).
- Use extraction tool No. CET-C8. An insertion tool is not required. (See Note 5).
- Center contact, rear insulator, crimp ring, support bushing (not applicable to RG58/RG142 coaxials), seal sleeve, front insulator, shell and ferrule are shipped unassembled in a common container.
- Cable Assembly Instructions:
  - If applicable, determine which portion of seal sleeve should be used. If seal 2 is used, cut off seal 1 portion.
  - In sequence, place seal sleeve, support bushing and crimp ring over cable jacket.
  - Trim cable per illustration.
  - Comb out braid and flare out ends to permit entry of ferrule.
  - Complete termination per illustration. (See below)
- To extract: coaxial, push back seal sleeve and support bushing. Slip cable into extraction tool. Push tool into insert until it contacts coaxial retaining shoulder. Grip both cable and tool with one hand and pull coaxial rearward out of insert cavity.

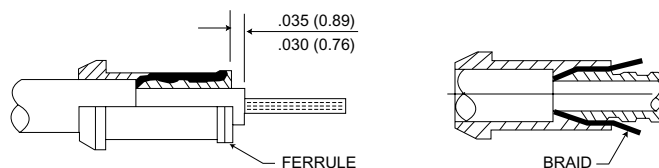
## WITHOUT SEAL



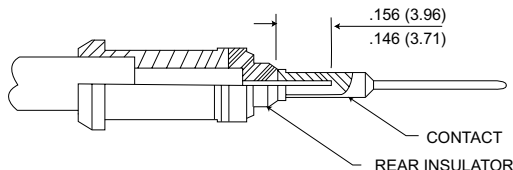
## SEALED



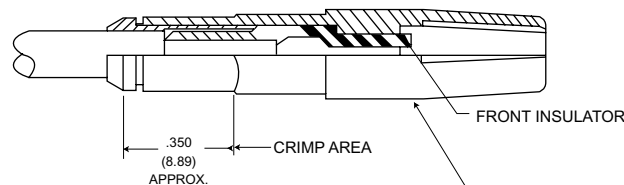
- To facilitate extraction of contacts and avoid splaying, the length of free cable adjacent to the rear surface of the connector should not be less than 2.000 (50.80).



- Carefully push inner conductor through rear insulator.
- While holding rear insulator firmly against ferrule, trim conductor to .156 (3.96)/.146 (3.71) dimension.
- Place contact over conductor and solder.



- Push ferrule under braid as far as it will go. Trim off braid extending beyond shoulder of ferrule, if necessary.
- While holding ferrule in place pull crimp sleeve forward over braid until it is tight against shoulder of ferrule. Pull firmly against face of ferrule to make sure it is up tight.
- Trim dielectric to the .035 (0.89)/.030 (0.76) dimension.



- Place front insulator over contact and then push assembly into coaxial shell.
- Place parts in jaw of crimp tool. Locate jaws at start of chamfer on crimp sleeve. Press sleeve firmly into coaxial shell and crimp.
- After assembled coaxial is inserted into connector, push support bushing into grommet until shoulder rests on tubular extension. Then pull sealing sleeve forward until it is snug on grommet.

## Coaxial Cable Assembly Recommendations

### LITTLE CAESAR Contact Assembly Data

#### For Codes F, S and T

1. Strip and trim cable as shown on page 56.
2. Solder inner conductor to coaxial contact with crimp ring over braid and rear insulator over inner conductor.
3. Insert cable into coaxial with shell under braid. Crimp ring with Cannon crimp tool CA58073.

#### For Codes G, H and R

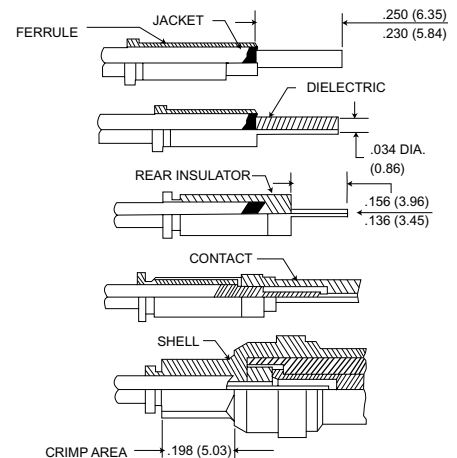
1. Strip and trim cable as shown on page 56.
2. Solder inner connector to coaxial contact with crimp ring pushed back on cable.
3. Insert cable into coaxial and pull ring forward over braid. Crimp ring with Cannon crimp tool CA58073-0001 or CCT-408M. After crimping, crimp ring must not exceed .252 (6.40) diameter.

#### For Codes U

1. Strip and trim cable as shown on page 56.
2. Slide crimp ring over braid and jacket of cable.
3. Unbraid exposed portion of braid and fold braid wires backward over outside of crimp ring.
4. Insert prepared wire into right angle fitting of shell assembly. Conductor should be aligned in slot of the center contact. Crimp with Cannon tool CCT/C10.
5. Solder center conductor of cable to contact. Insert cap and solder in place.

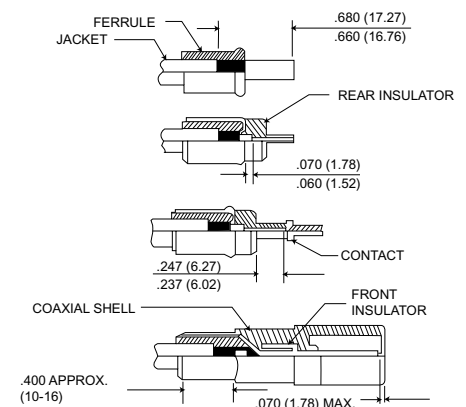
#### For Codes AA

1. Slip ferrule over cable jacket. Trim outer jacket. Comb out braid as shown. Retrim braid.
2. Bend up combed out braid at right angles to cable. Slide ferrule up to bend and fold braid back against ferrule.
3. Slide rear insulator over dielectric as shown. Press insulator firmly against folded back braid and trim dielectric flush with insulator. Then cut inner conductor to length shown.
4. Place contact over conductor. Press contact and insulator firmly against braid and solder contact to conductor.
5. Push cable assembly into shell, pressing against rear of ferrule and crimp area shown with T. & B. #WT-400 Crimp Tool while making sure parts do not move out of place.



#### For Codes AC

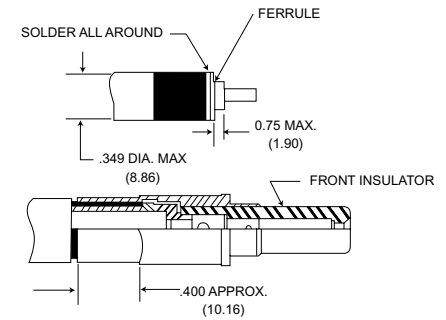
1. Trim jacket to .680 (17.27)/.660 (16.76) dimension. Then slide ferrule over braid until it stops against jacket, and comb out exposed portion of braid.
2. Fold combed braid over ferrule as shown. Then trim dielectric to .070 (1.78)/.060 (1.52) dimension and slide rear insulator over dielectric until it presses against braid.
3. Press insulator against braid and trim inner conductor to .247 (6.27)/.237 (6.02) dimension. Then place contact over conductor and crimp with MS3191-3 (do not use MS3191-1). Press parts firmly against locator during crimping operation.
4. Place front insulator over contact. Push parts into coaxial shell. While holding parts firmly against stop shoulder in coaxial shell, place jaw of crimp tool at back end of shell and crimp. Use Buchanan crimp tool #612991 (.343 [8.71] across hex).



## Coaxial Cable Assembly Recommendations (Continued)

## For Code V

1. Trim cable to dimensions shown below.
  - A. Push ferrule under braid as far as it will go and press braid down tightly around ferrule.
  - B. Solder ends of braid to ferrule by applying a small amount of solder. Avoid excess solder as it would cause braid to swell up.
  - C. Remove any solder exceeding the .349 (8.86) max. diameter.
  - D. Check the .075 (1.90) max. dielectric extension, retrim if necessary.
3. A. Place rear insulator over dielectric and conductor into contact.
  - B. Solder contact to conductor through access hole.
  - C. Remove excess solder from outside of contact.
4. A. Place front insulator over contact.
  - B. Push parts into coaxial shell.
  - C. While holding parts firmly against stop shoulder in coaxial shell, place jaw of crimp tool at back end of shell and crimp, use Buchanan crimp tool #612991 [.343 (8.71) across hex].



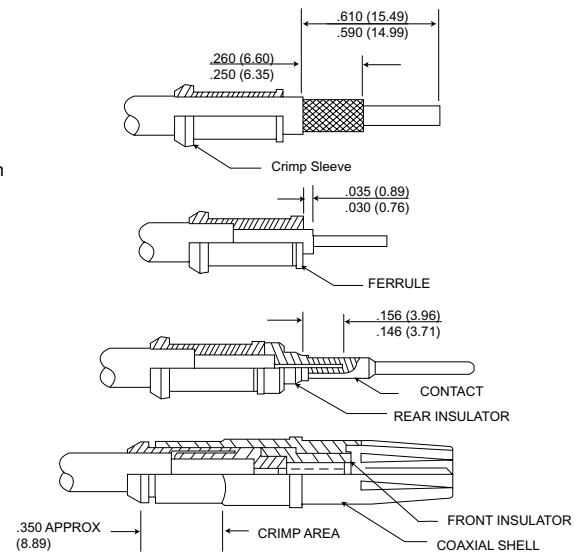
## For Codes AB, AD, AE, AF and AG

Step 1 - Trim cable as shown.

Step 2 - Flare out ends of braid to permit entry of ferrule.

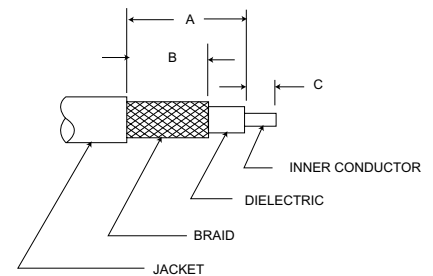
Step 3 - Complete termination per instructions as shown below.

- a. Push ferrule under braid as far as it will go. Trim off braid extending beyond shoulder of ferrule, if necessary.
- b. While holding ferrule in place pull crimp sleeve forward over braid until it is tight against shoulder on ferrule. Push firmly against face of ferrule to make sure it is up tight.
- c. Trim dielectric to the .035 (0.89)/.030 (0.76) dimension.
- d. Carefully push inner conductor through rear insulator.
- e. While holding rear insulator firmly against ferrule, trim conductor to .156 (3.96)/.146 (3.71) dimension.
- f. Place contact over conductor and solder.
- g. Place front insulator over contact and then push assembly into coaxial shell.
- h. Place parts in jaw of crimp tool. Locate jaws at start of chamfer on crimp sleeve. Press Sleeve firmly into coaxial shell and crimp. Use Daniels crimp tool HX4-210.



## Cable Trim Dimensions

| Code Letter        | Inches    |           |                            | Millimeters |             |           |
|--------------------|-----------|-----------|----------------------------|-------------|-------------|-----------|
|                    | A         | B         | C                          | A           | B           | C         |
| A                  | .420/.400 | .432/.415 | .330/.310                  | 10.67/10.16 | 11.05/10.54 | 8.38/7.87 |
| B, C, D & P        | .420/.400 | .460/.440 | .330/.310                  | 10.67/10.16 | 11.68/11.18 | 8.38/7.87 |
| E                  | .420/.400 | .480/.460 | .330/.310                  | 10.67/10.16 | 12.19/11.68 | 8.38/7.87 |
| F                  | .785/.745 | .275/.255 | .228/.208                  | 19.94/18.92 | 6.98/6.48   | 5.79/5.28 |
| G                  | .490/.470 | .275/.255 | .156/.136                  | 12.45/11.94 | 6.98/6.48   | 3.96/3.45 |
| H & R              | .581/.561 | .345/.325 | .156/.136                  | 14.76/14.25 | 8.76/8.26   | 3.96/3.45 |
| J                  | .326/.306 | .250/.230 | .088/.068                  | 8.28/7.77   | 6.35/5.84   | 2.24/1.73 |
| K                  | .410/.390 | .290/.270 | .088/.068                  | 10.41/9.91  | 7.37/6.86   | 2.24/1.73 |
| L                  | .385/.365 | .244/.224 | .074/.064                  | 9.78/9.27   | 6.20/5.69   | 1.88/1.63 |
| S                  | .678/.658 | .275/.255 | .156/.136                  | 17.22/16.71 | 6.98/6.48   | 3.96/3.45 |
| U                  | .940/.920 | .760/.740 | .080/.060                  | 23.88/23.37 | 19.30/18.80 | 2.03/1.52 |
| V                  | .550/.540 | .415/.405 | .250/.240                  | 13.97/13.72 | 10.54/10.29 | 6.35/6.10 |
| T                  | .598/.578 | .300/.280 | .228/.208                  | 15.19/14.68 | 7.62/7.11   | 5.79/5.28 |
| AA, AC             |           |           | See page 62 for dimensions |             |             |           |
| AB, AD, AE, AF, AG |           |           | See page 63 for dimensions |             |             |           |



## Modifications Codes

### DPXA Modifications Codes

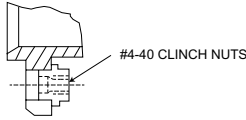
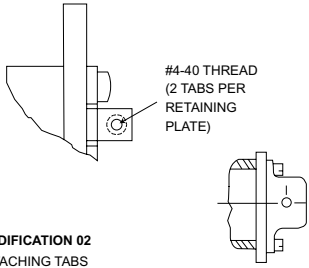
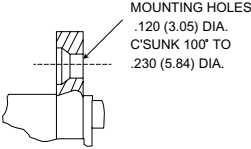
- 4. Mounting holes .120 (3.05) dia. c'sink 100° to .225 (5.72) dia.
- 5. 4-40 clinch nuts.
- 6. Removable insert retainer plate.
- 7. Mounting holes .120 (3.05) dia. c'sink 82° to .230 (5.84) dia.
- 12. Mounting holes .132 (3.35)/.125 (3.18).
- 16. A106 insert with separator.
- 17. With grommet and mounting holes .120 (3.05) dia. countersunk 100° to .225 (5.72) dia.
- 70. Standard mounting with (LIF) contacts.
- 77. Same as -7 except with low insertion force (LIF) contacts (for LIF contact data).

### DPXB and DPX2/3/4 Modification Codes

Some of the modification numbers used in the DPX lines apply to all types and some are applicable for

only certain types. The following chart gives the modification number, the description, and the shell

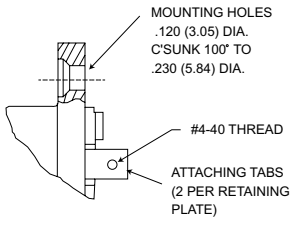
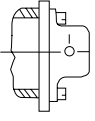
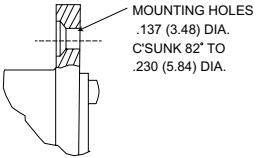
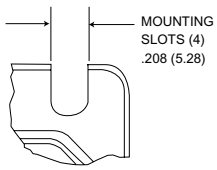
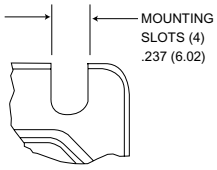
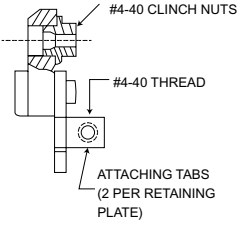
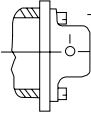
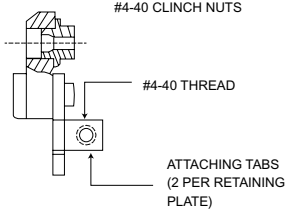
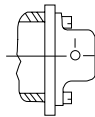
type in which they may be used (-33 is for plug shells, -34 is for receptacle shells).

|                                                                                                                                                                                                                   | Modification | Applicable Series                                                                                                        | Definition                                                                                            |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------|--------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------|
| <p>DESCRIBES STANDARD CONNECTOR HOUSING</p> <p>MODIFICATION 00</p>                                                                                                                                                | - 00**       | DPX2-33 and 34<br>DPX2-33A<br>DPX2-33F and 34F<br>DPX2-33M and 34M                                                       | Standard construction, mounting holes .120 (3.05) dia. and with tabs for junction shells.             |
|                                                                                                                                                                                                                   | - 00         | DPX2-34A                                                                                                                 | Standard construction - six floating eyelets and tabs for junction shells,                            |
|                                                                                                                                                                                                                   | - 00         | DPX2-33B<br>DPXB-33<br>DPX3-33<br>DPX4-33                                                                                | Standard construction, mounting holes .120 (3.05) dia. countersunk 82° to .230 (5.84) dia. - no tabs. |
|                                                                                                                                                                                                                   | - 00         | DPX2-34B<br>DPXB-34<br>DPX3-34<br>DPX4-34                                                                                | Standard construction, mounting holes 120 (3.05) dia. - no tabs.                                      |
|  <p>#4-40 CLINCH NUTS</p> <p>MODIFICATION 01</p>                                                                               | - 01         | DPX2-33 and 34<br>DPX2-33A<br>DPX2-34A<br>DPX2-33F and 34F<br>DPX2-33M-34M                                               | Standard construction and with standard junction shells.                                              |
|                                                                                                                                                                                                                   | - 01         | DPX2-34B/33B<br>DPXB-34                                                                                                  | With four #4-40 clinch nuts in mounting holes.                                                        |
|                                                                                                                                                                                                                   | - 01         | DPX3-34                                                                                                                  | With six #4-40 clinch nuts in mounting holes.                                                         |
|                                                                                                                                                                                                                   | - 01         | DPX4-34                                                                                                                  | With ten #440 clinch nuts in mounting holes.                                                          |
|  <p>#4-40 THREAD<br/>(2 TABS PER<br/>RETAINING<br/>PLATE)</p> <p>MODIFICATION 02<br/>ATTACHING TABS</p> <p>ALTERNATE STYLE</p> | - 02         | DPX2-33 and 34<br>DPX2-33A<br>DPX2-34A<br>DPX2-33F and 34F<br>DPX2-33M and 34M                                           | Standard construction and with 90° junction shells.                                                   |
|                                                                                                                                                                                                                   | - 02         | DPX2-33B and 34B<br>DPXB-33 and 34<br>DPX3-33 and 34<br>DPX4-33 and 34                                                   | Standard construction and with tabs for attaching junction shells.                                    |
|                                                                                                                                                                                                                   | - 02         | DPXBME-33 and 34<br>DPX2ME-33 and 34<br>DPX3ME-33 and 34<br>DPX4ME-33 and 34                                             | Standard construction and with tabs for attaching junction shells.                                    |
|                                                                                                                                                                                                                   | - 03         | DPX2-33 and 34<br>DPX2-33A<br>DPX2-33F and 34F<br>DPX2-33M and 34M<br>DPXB-33 and 34<br>DPX3-33 and 34<br>DPX4-33 and 34 | Mounting holes .120 (3.05) dia. countersunk 100° to .230(5.84) dia.                                   |
|  <p>MOUNTING HOLES<br/>.120 (3.05) DIA.<br/>C'SUNK 100° TO<br/>.230 (5.84) DIA.</p> <p>MODIFICATION 03</p>                     |              |                                                                                                                          |                                                                                                       |

⚠ Applicable for all MA, ME, NA & NE Series Connectors.

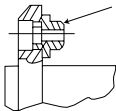
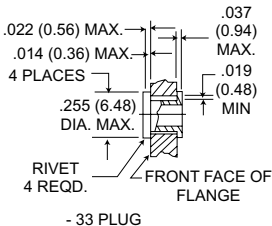
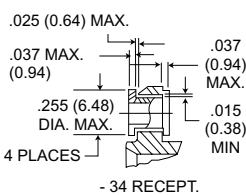
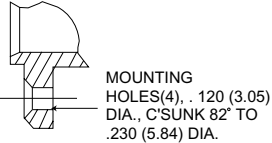
⚠ Applicable to NE Series also.

## Modification Codes

|                                                                                                                                                                                                                                                                              | Modification | Applicable Series                                                | Definition                                                                                                   |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------|------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------|
|  <p>MOUNTING HOLES<br/>.120 (3.05) DIA.<br/>C'SUNK 100° TO<br/>.230 (5.84) DIA.</p> <p>#4-40 THREAD</p> <p>ATTACHING TABS<br/>(2 PER RETAINING<br/>PLATE)</p> <p><b>MODIFICATION 04</b></p> | - 04**       | DPX2-33B<br>DPXB-33<br>DPX3-33<br>DPX4-33                        | .120 (3.05) dia. mounting holes countersunk 100° to .230 (5.84) dia. and tabs for attaching junction shells. |
|  <p><b>ALTERNATE STYLE</b></p>                                                                                                                                                              |              |                                                                  |                                                                                                              |
|  <p>MOUNTING HOLES<br/>.137 (3.48) DIA.<br/>C'SUNK 82° TO<br/>.230 (5.84) DIA.</p> <p><b>MODIFICATION 08</b></p>                                                                            | - 08         | DPX2-33 and 34<br>DPX2-33F and 34F                               | Mounting holes .137 (3.48) dia. countersunk 82° to .230 (5.84) dia.                                          |
|  <p>MOUNTING<br/>SLOTS (4)<br/>.208 (5.28)</p> <p><b>MODIFICATION 12</b></p>                                                                                                                | - 12         | DPX2-34B<br>DPXB-34                                              | With mounting slots .208 (5.28) wide.                                                                        |
|  <p>MOUNTING<br/>SLOTS (4)<br/>.237 (6.02)</p> <p><b>MODIFICATION 13</b></p>                                                                                                               | - 13         | DPX2-34B<br>DPXB-34                                              | With mounting slots .237 (6.02) wide.                                                                        |
| (SEE PAGE 58 FOR JUNCTION SHELL CONFIGURATIONS)                                                                                                                                                                                                                              | - 14         | DPX2-33B<br>DPXB-33<br>DPX2-34B<br>DPXB-34<br>DPX3-33<br>DPX3-34 | With straight junction shelf. (Not available on DPX4)                                                        |
|  <p>#4-40 CLINCH NUTS</p> <p>#4-40 THREAD</p> <p>ATTACHING TABS<br/>(2 PER RETAINING<br/>PLATE)</p> <p><b>MODIFICATION 17</b></p>                                                         | - 17         | DPX2-33B<br>DPXB-33<br>DPX2-34B<br>DPXB-34                       | With four #4-40 clinch nuts in mounting holes and tabs for attaching junction shells.                        |
|  <p><b>ALTERNATE STYLE</b></p>                                                                                                                                                            | - 17         | DPX3-34                                                          | With six #4-40 clinch nuts in mounting holes and tabs for attaching junction shells.                         |
|                                                                                                                                                                                                                                                                              | - 17         | DPX4-34                                                          | With ten #4-40 clinch nuts in mounting holes and tabs for attaching junction shells.                         |
|  <p>#4-40 CLINCH NUTS</p> <p>#4-40 THREAD</p> <p>ATTACHING TABS<br/>(2 PER RETAINING<br/>PLATE)</p> <p><b>MODIFICATION 18</b></p>                                                         | - 18         | DPX2-33B<br>DPXB-33<br>DPX2-34B<br>DPXB-34<br>DPX3-34            | With six #4-40 clinch nuts in mounting holes and tabs for attaching junction shells.                         |
|  <p><b>ALTERNATE STYLE</b></p>                                                                                                                                                            |              |                                                                  |                                                                                                              |

 Applicable for all MA, ME, NA & NE Series Connectors.

## Modification Codes

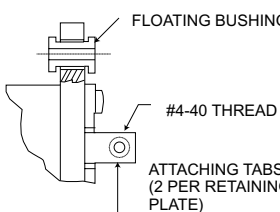
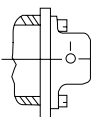
|                                                                                                                                          | Modification | Applicable Series                                                                                                                                   | Definition                                                                                                      |
|------------------------------------------------------------------------------------------------------------------------------------------|--------------|-----------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------|
|  <p>#4-40 CLINCH NUTS</p> <p><b>MODIFICATION 19</b></p> | - 19**       | DPX2-33B<br>DPXB-33<br>DPX2-34B<br>DPXB-34<br>DPX3-33<br>DPX3-34 (Same as Code -01)                                                                 | With six #4-40 clinch nuts in mounting holes.<br><br>Do not assign - use -01 code                               |
|                                                                                                                                          | - 20         | DPX2-33A<br>DPX2-34A                                                                                                                                | Standard construction without tabs on insert retaining plate.                                                   |
| <p><b>MODIFICATION 20</b></p> <p>SUPERSEDED BY<br/>01 MOD.</p> <p><b>MODIFICATION 22</b></p>                                             | - 22         | DPX2-33 and 34<br>DPX2-33A<br>DPX2-33B<br>DPXB-33<br>DPX2-33M and 34M<br>DPX3-33<br>DPXBME, DPX2ME, DPX3ME,<br>DPX4ME - 33 only<br>DPX2-33F and 34F | With eight #4-40 clinch nuts in mounting holes.<br><br>Same as 01. 01 Recommended                               |
|                                                                                                                                          | - 23         | DPX2-33 and 34<br>DPX2-33A<br>DPX2-33B<br>DPXB-33<br>DPX2-34B<br>DPXB-34<br>DPX3-33 and 34<br>DPX4-33 and 34<br>DPX2-33F and 34F                    | With floating eyelets.                                                                                          |
|  <p><b>MODIFICATION 23</b></p>                          | - 24         | DPX2-34A<br>DPX2-33B                                                                                                                                | With six mounting holes .208 (5.28) dia. (Floating eyelets omitted)                                             |
|  <p><b>MODIFICATION 25</b></p>                          | - 25         | DPX2-34B<br>DPXB-34                                                                                                                                 | With four mounting holes .157 (3.99)/.155 (3.94) dia. (Clinch nuts omitted)                                     |
|                                                                                                                                          | - 26         | DPX2-34B<br>DPXB-34<br>DPX3-34                                                                                                                      | Mounting holes .120 (3.05) dia. countersunk 82° to .230 (5.84) dia. and has tabs for attaching junction shells. |
|  <p><b>MODIFICATION 26</b></p>                        | - 29         | DPX2-34A                                                                                                                                            | With interfacial seal (if pins) without junction shell tabs and military gold plating on the contact.           |
| <p><b>MODIFICATION 25</b></p>                                                                                                            | - 29         | DPXBME-34P & 33S<br>DPX2ME-34P & 33S<br>DPX3ME-34P & 33S<br>DPX4ME-34P & 33S                                                                        | Standard except less grommet*                                                                                   |
|                                                                                                                                          | - 30         | DPXBME-34P<br>DPX2ME-34P<br>DPX3ME-34P<br>DPX4ME-34P                                                                                                | Standard except less grommet and with tabs for attaching junction shells. (-34 pin only)                        |
|                                                                                                                                          | - 31         | DPXBME-34P<br>DPX2ME-34P<br>DPX3ME-34P<br>DPX4ME-34P                                                                                                | Standard except less grommet and with floating bushings. (Slatted shells).                                      |
|                                                                                                                                          | - 33         | DPXBME-34P<br>DPX2ME-34P<br>DPX3ME-34P<br>DPX4ME-34P                                                                                                | Standard except less grommet and with clinch nuts in mounting holes.                                            |
|                                                                                                                                          | - 37         | DPXBME-34P<br>DPX2ME-34P<br>DPX3ME-34P<br>DPX4ME-34P                                                                                                | Standard less grommet and with clinch nuts in mounting holes and with tabs for attaching junction shells.       |
|                                                                                                                                          | - 29         |                                                                                                                                                     | * On the A106S layout the grommet is replaced by the separator.                                                 |
|                                                                                                                                          | - 30         |                                                                                                                                                     |                                                                                                                 |

△ Applicable for all MA, ME, NA and NE Series Connectors.



\*\*Indicates polarizing position. (See page 68)

## Modification Codes

| Modification                                                                                                                                                                                                                                             | Applicable Series                                                                                                                                                                                                                | Definition                                                                                                                                                      |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------|
|  <p><b>MODIFICATION 39</b></p>                                                                                                                                          | <p>- 39**</p> <p>DPXB-33 &amp; 34<br/>DPX2-33B<br/>DPX2-34B<br/>DPX3-33 &amp; 34<br/>DPX4-33 &amp; 34</p> <p></p> <p><b>ALTERNATE STYLE</b></p> | <p>With floating eyelets &amp; tabs for attaching junction shells.</p> <p></p> |
| <p>The -7*** and 8*** Modification Codes are reserved for connectors which have Low Insertion Force (LIF) Contacts. The LIF design is not applicable to thermocouple contacts, coaxial contacts and contacts larger than size 8 and Standard size 20</p> |                                                                                                                                                                                                                                  |                                                                                                                                                                 |
| - 70**                                                                                                                                                                                                                                                   | All DPX series with LITTLE CAESAR retention                                                                                                                                                                                      | Same as -00 with addition of LIF contacts<br>See Contact Section Page 54                                                                                        |
| - 71                                                                                                                                                                                                                                                     | All DPX series with LITTLE CAESAR retention                                                                                                                                                                                      | Same as -31 with addition of LIF contacts<br>See Contact Section Page 54                                                                                        |
| - 72                                                                                                                                                                                                                                                     | All DPX series with LITTLE CAESAR retention                                                                                                                                                                                      | Same as -01 with addition of LIF contacts<br>See Contact Section Page 54                                                                                        |
| - 73                                                                                                                                                                                                                                                     | All DPX series with LITTLE CAESAR retention                                                                                                                                                                                      | Same as -23 with addition of LIF contacts<br>See Contact Section Page 54                                                                                        |
| - 74                                                                                                                                                                                                                                                     | All DPX series with LITTLE CAESAR retention                                                                                                                                                                                      | Same as -33 with addition of LIF contacts<br>See Contact Section Page 54                                                                                        |
| - 75                                                                                                                                                                                                                                                     | All DPX series with LITTLE CAESAR retention                                                                                                                                                                                      | Same as -02 with addition of LIF contacts<br>See Contact Section Page 54                                                                                        |
| - 76                                                                                                                                                                                                                                                     | All DPX as listed for code -22                                                                                                                                                                                                   | Same as -22 with addition of LIF contacts                                                                                                                       |
| - 77                                                                                                                                                                                                                                                     | All DPXB series                                                                                                                                                                                                                  | Mounting holes .120 (3.05) dia. countersunk 82° to .230 (5.84) dia. and has LIF contacts.                                                                       |
| - 78                                                                                                                                                                                                                                                     |                                                                                                                                                                                                                                  |                                                                                                                                                                 |
| - 79                                                                                                                                                                                                                                                     | All DPX series with LITTLE CAESAR retention                                                                                                                                                                                      | Same as -29 with addition of LIF contacts                                                                                                                       |

 Applicable for all MA, ME, NA and NE Series Connectors.

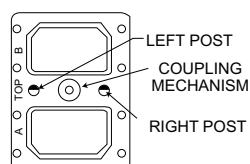
 Applicable for NE Series Also.

\*\*Indicates polarizing position. (See page 68)

## Polarization

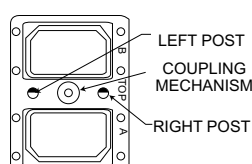
## Two Post Type

DPX2-33F  
or 33M



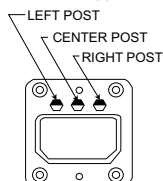
## Face View of Engaging End

DPX2-34F  
or 34M

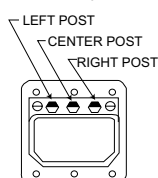


## Three Post Type

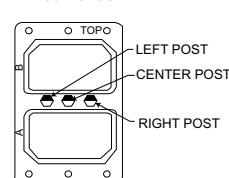
DPXB-33



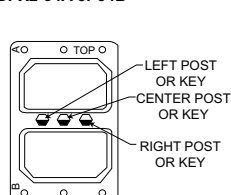
DPXB-34



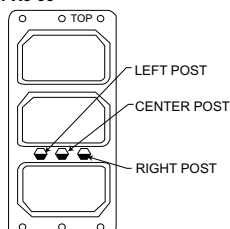
DPX2-33A or 33B



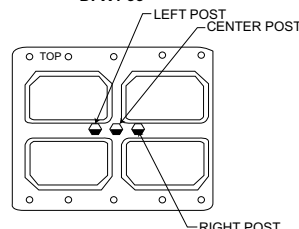
DPX2-34A or 34B



DPX3-33

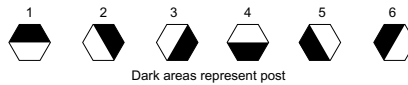


DPX4-33



## Polarization

## Positions



Dark areas represent post

## Two Post Type

| 33 PLUG MALE SHELL |           |            |          |           |            | 34 RECEPTACLE FEMALE SHELL |           |            |          |           |            |
|--------------------|-----------|------------|----------|-----------|------------|----------------------------|-----------|------------|----------|-----------|------------|
| Position           | Left Post | Right Post | Position | Left Post | Right Post | Position                   | Left Post | Right Post | Position | Left Post | Right Post |
| 01                 | 4         | 4          | 09       | 3         | 3          | 01                         | 1         | 1          | 09       | 2         | 2          |
| 02                 | 5         | 4          | 10       | 4         | 2          | 02                         | 1         | 6          | 10       | 3         | 1          |
| 03                 | 6         | 4          | 11       | 2         | 2          | 03                         | 1         | 5          | 11       | 3         | 3          |
| 04                 | 2         | 4          | 12       | 3         | 2          | 04                         | 1         | 3          | 12       | 3         | 2          |
| 05                 | 3         | 4          | 13       | 2         | 1          | 05                         | 1         | 2          | 13       | 4         | 3          |
| 06                 | 4         | 3          | 14       | 3         | 1          | 06                         | 2         | 1          | 14       | 4         | 2          |
| 07                 | 5         | 3          | 15       | 2         | 6          | 07                         | 2         | 6          | 15       | 5         | 3          |
| 08                 | 2         | 3          |          |           |            | 08                         | 2         | 3          |          |           |            |

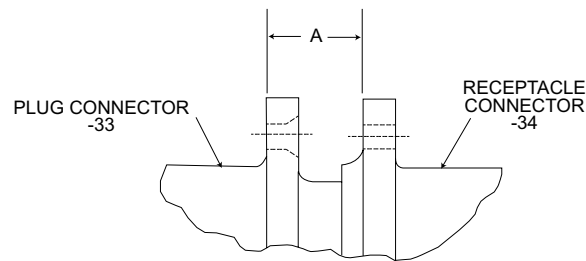
## Three Post Type

| PLUG SHELL |           |             |            |          |           |             |            | RECEPTACLE SHELL |           |             |            |          |           |             |            |
|------------|-----------|-------------|------------|----------|-----------|-------------|------------|------------------|-----------|-------------|------------|----------|-----------|-------------|------------|
| Position   | Left Post | Center Post | Right Post | Position | Left Post | Center Post | Right Post | Position         | Left Post | Center Post | Right Post | Position | Left Post | Center Post | Right Post |
| 01         | 1         | 1           | 1          | 51       | 3         | 2           | 5          | 01               | 4         | 4           | 4          | 51       | 6         | 3           | 2          |
| 02         | 2         | 1           | 1          | 52       | 4         | 2           | 5          | 02               | 4         | 4           | 3          | 52       | 6         | 3           | 1          |
| 03         | 3         | 1           | 1          | 53       | 5         | 2           | 5          | 03               | 4         | 4           | 2          | 53       | 6         | 3           | 6          |
| 04         | 4         | 1           | 1          | 54       | 6         | 2           | 5          | 04               | 4         | 4           | 1          | 54       | 6         | 3           | 5          |
| 05         | 5         | 1           | 1          | 55       | 1         | 2           | 4          | 05               | 4         | 4           | 6          | 55       | 1         | 3           | 4          |
| 06         | 6         | 1           | 1          | 56       | 2         | 2           | 4          | 06               | 4         | 4           | 5          | 56       | 1         | 3           | 3          |
| 07         | 1         | 1           | 6          | 57       | 3         | 2           | 4          | 07               | 5         | 4           | 4          | 57       | 1         | 3           | 2          |
| 08         | 2         | 1           | 6          | 58       | 4         | 2           | 4          | 08               | 5         | 4           | 3          | 58       | 1         | 3           | 1          |
| 09         | 3         | 1           | 6          | 59       | 5         | 2           | 4          | 09               | 5         | 4           | 2          | 59       | 1         | 3           | 6          |
| 10         | 4         | 1           | 6          | 60       | 6         | 2           | 4          | 10               | 5         | 4           | 1          | 60       | 1         | 3           | 5          |
| 11         | 5         | 1           | 6          | 61       | 1         | 2           | 3          | 11               | 5         | 4           | 6          | 61       | 2         | 3           | 4          |
| 12         | 6         | 1           | 6          | 62       | 2         | 2           | 3          | 12               | 5         | 4           | 5          | 62       | 2         | 3           | 3          |
| 13         | 1         | 1           | 5          | 63       | 3         | 2           | 3          | 13               | 6         | 4           | 4          | 63       | 2         | 3           | 2          |
| 14         | 2         | 1           | 5          | 64       | 4         | 2           | 3          | 14               | 6         | 4           | 3          | 64       | 2         | 3           | 1          |
| 15         | 3         | 1           | 5          | 65       | 5         | 2           | 3          | 15               | 6         | 4           | 2          | 65       | 2         | 3           | 6          |
| 16         | 4         | 1           | 5          | 66       | 6         | 2           | 3          | 16               | 6         | 4           | 1          | 66       | 2         | 3           | 5          |
| 17         | 5         | 1           | 5          | 67       | 1         | 2           | 2          | 17               | 6         | 4           | 6          | 67       | 3         | 3           | 4          |
| 18         | 6         | 1           | 5          | 68       | 2         | 2           | 2          | 18               | 6         | 4           | 5          | 68       | 3         | 3           | 3          |
| 19         | 1         | 1           | 4          | 69       | 3         | 2           | 2          | 19               | 1         | 4           | 4          | 69       | 3         | 3           | 2          |
| 20         | 2         | 1           | 4          | 70       | 4         | 2           | 2          | 20               | 1         | 4           | 3          | 70       | 3         | 3           | 1          |
| 21         | 3         | 1           | 4          | 71       | 5         | 2           | 2          | 21               | 1         | 4           | 2          | 71       | 3         | 3           | 6          |
| 22         | 4         | 1           | 4          | 72       | 6         | 2           | 2          | 22               | 1         | 4           | 1          | 72       | 3         | 3           | 5          |
| 23         | 5         | 1           | 4          | 73       | 1         | 3           | 1          | 23               | 1         | 4           | 6          | 73       | 4         | 2           | 4          |
| 24         | 6         | 1           | 4          | 74       | 2         | 3           | 1          | 24               | 1         | 4           | 5          | 74       | 4         | 2           | 3          |
| 25         | 1         | 1           | 3          | 75       | 3         | 3           | 1          | 25               | 2         | 4           | 4          | 75       | 4         | 2           | 2          |
| 26         | 2         | 1           | 3          | 76       | 4         | 3           | 1          | 26               | 2         | 4           | 3          | 76       | 4         | 2           | 1          |
| 27         | 3         | 1           | 3          | 77       | 5         | 3           | 1          | 27               | 2         | 4           | 2          | 77       | 4         | 2           | 6          |
| 28         | 4         | 1           | 3          | 78       | 6         | 3           | 1          | 28               | 2         | 4           | 1          | 78       | 4         | 2           | 5          |
| 29         | 5         | 1           | 3          | 79       | 1         | 3           | 6          | 29               | 2         | 4           | 6          | 79       | 5         | 2           | 4          |
| 30         | 6         | 1           | 3          | 80       | 2         | 3           | 6          | 30               | 2         | 4           | 5          | 80       | 5         | 2           | 3          |
| 31         | 1         | 1           | 2          | 81       | 3         | 3           | 6          | 31               | 3         | 4           | 4          | 81       | 5         | 2           | 2          |
| 32         | 2         | 1           | 2          | 82       | 4         | 3           | 6          | 32               | 3         | 4           | 3          | 82       | 5         | 2           | 1          |
| 33         | 3         | 1           | 2          | 83       | 5         | 3           | 6          | 33               | 3         | 4           | 2          | 83       | 5         | 2           | 6          |
| 34         | 4         | 1           | 2          | 84       | 6         | 3           | 6          | 34               | 3         | 4           | 1          | 84       | 5         | 2           | 5          |
| 35         | 5         | 1           | 2          | 85       | 1         | 3           | 5          | 35               | 3         | 4           | 6          | 85       | 6         | 2           | 4          |
| 36         | 6         | 1           | 2          | 86       | 2         | 3           | 5          | 36               | 3         | 4           | 5          | 86       | 6         | 2           | 3          |
| 37         | 1         | 2           | 1          | 87       | 3         | 3           | 5          | 37               | 4         | 3           | 4          | 87       | 6         | 2           | 2          |
| 38         | 2         | 2           | 1          | 88       | 4         | 3           | 5          | 38               | 4         | 3           | 3          | 88       | 6         | 2           | 1          |
| 39         | 3         | 2           | 1          | 89       | 5         | 3           | 5          | 39               | 4         | 3           | 2          | 89       | 6         | 2           | 6          |
| 40         | 4         | 2           | 1          | 90       | 6         | 3           | 5          | 40               | 4         | 3           | 1          | 90       | 6         | 2           | 5          |
| 41         | 5         | 2           | 1          | 91       | 1         | 3           | 4          | 41               | 4         | 3           | 6          | 91       | 1         | 2           | 4          |
| 42         | 6         | 2           | 1          | 92       | 2         | 3           | 4          | 42               | 4         | 3           | 5          | 92       | 1         | 2           | 3          |
| 43         | 1         | 2           | 6          | 93       | 3         | 3           | 4          | 43               | 5         | 3           | 4          | 93       | 1         | 2           | 2          |
| 44         | 2         | 2           | 6          | 94       | 4         | 3           | 4          | 44               | 5         | 3           | 3          | 94       | 1         | 2           | 1          |
| 45         | 3         | 2           | 6          | 95       | 5         | 3           | 4          | 45               | 5         | 3           | 2          | 95       | 1         | 2           | 6          |
| 46         | 4         | 2           | 6          | 96       | 6         | 3           | 4          | 46               | 5         | 3           | 1          | 96       | 1         | 2           | 5          |
| 47         | 5         | 2           | 6          | 97       | 1         | 3           | 3          | 47               | 5         | 3           | 6          | 97       | 2         | 2           | 4          |
| 48         | 6         | 2           | 6          | 98       | 2         | 3           | 3          | 48               | 5         | 3           | 5          | 98       | 2         | 2           | 3          |
| 49         | 1         | 2           | 5          | 99       | 3         | 3           | 3          | 49               | 6         | 3           | 4          | 99       | 2         | 2           | 2          |
| 50         | 2         | 2           | 5          |          |           |             |            | 50               | 6         | 3           | 3          |          |           |             |            |

The last two digits in the DPX nomenclature (ex: DPXB-8-33B-0014) refer to the polarizing post position. When the last two digits are omitted it means the polarizing posts will not be assembled and position number is not stamped on the connector. This allows the customer to position the posts themselves and then stamp the appropriate number on the shell. If the last two digits are made 00 it means the polarizing posts are deleted.

All tolerances are  $\pm .015$  (0.38) unless otherwise noted.

## Recommended Flange Spacing



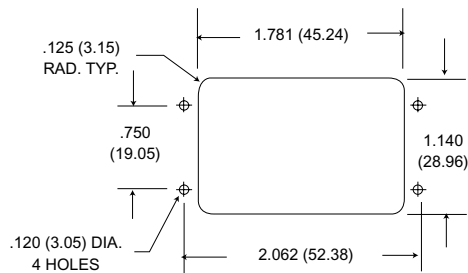
| Type Connector | Dim. A (mm)                  | Comments                                            |
|----------------|------------------------------|-----------------------------------------------------|
| DPXA           | .622 (15.80)<br>.549 (13.94) | For both solder & crimp type contacts               |
| DPXB           | .365 (9.27)<br>.292 (7.42)   | For both solder & crimp type contacts ARINC B Shell |
| DPX2- B        | .365 (9.27)<br>.292 (7.42)   | ARINC A Shell for both solder & crimp type contacts |
| DPX2           | .633 (16.08)<br>.560 (14.22) |                                                     |
| DPX2- A        | .633 (16.08)<br>.560 (14.22) | ARINC A Shell for both solder & crimp type contacts |
| DPX3           | .365 (9.27)<br>.292 (7.42)   | For both solder & crimp type contacts               |
| DPX4           | .365 (9.27)<br>.292 (7.42)   | For both solder & crimp type contacts               |

⚠ Flange spacing required for NE/NA by MIL-C-81659 [.297/.281 (7.54/7.14)]

⚠ For environmental ME with interfacial seal recommend flange spacing of [.321/.281 (8.15/7.14)]

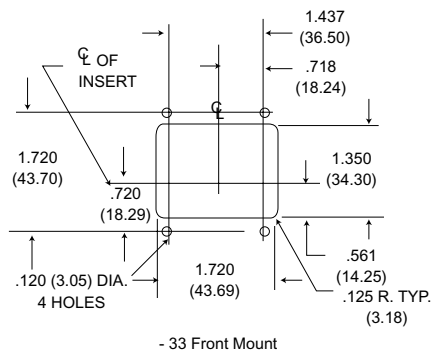
## Panel Cutouts

### DPXA

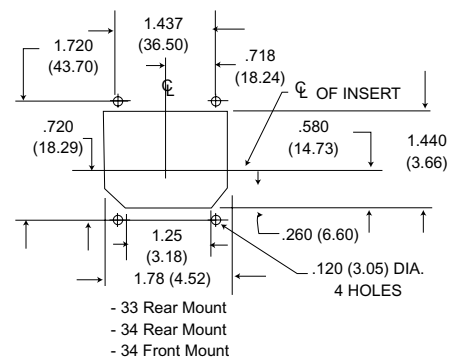


NOTE - WHEN USING THE -2301 FLOATING EYELET MODIFICATION, ADD .050 (1.27) TO THE CUTOUT SIZE TO ALLOW FOR FLOAT (EXCEPTION -34A)

### DPXB



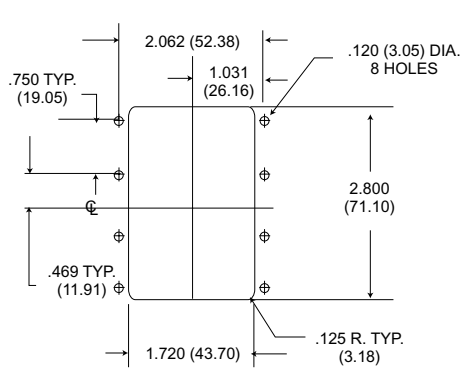
- 33 Front Mount



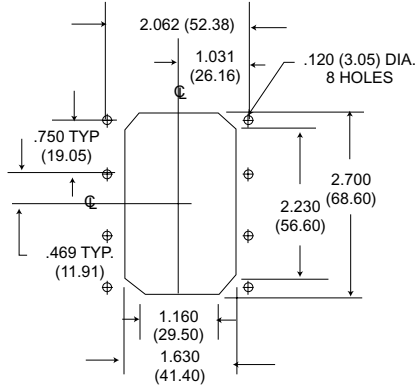
- 33 Rear Mount  
- 34 Rear Mount  
- 34 Front Mount

## Panel Cutouts

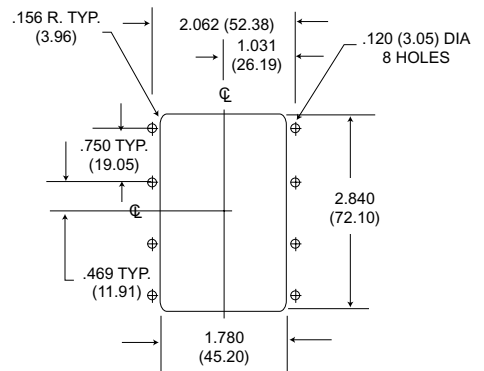
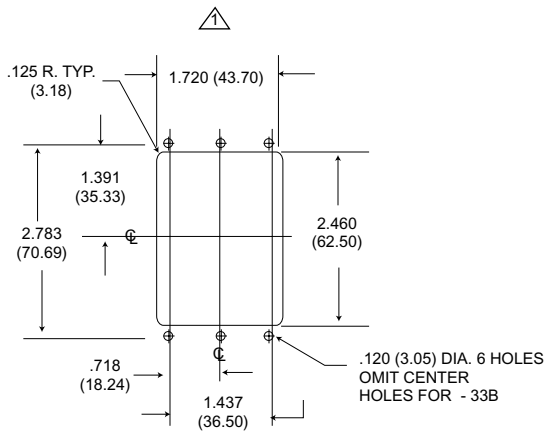
DPX2

All tolerances are  $\pm .015$  (0.38) unless otherwise noted.

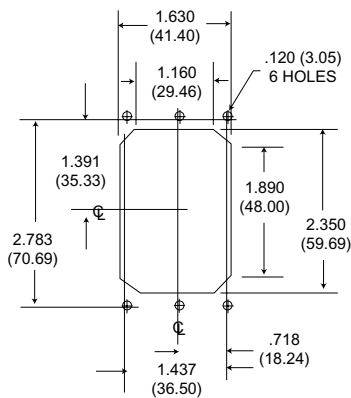
- 33 FRONT MOUNT



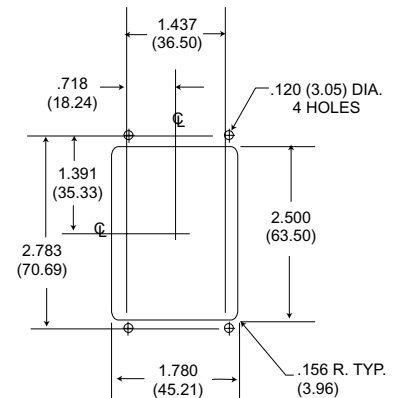
- 33 REAR MOUNT

- 34 FRONT  
OR REAR MOUNT

- 33A &amp; -33B FRONT MOUNT

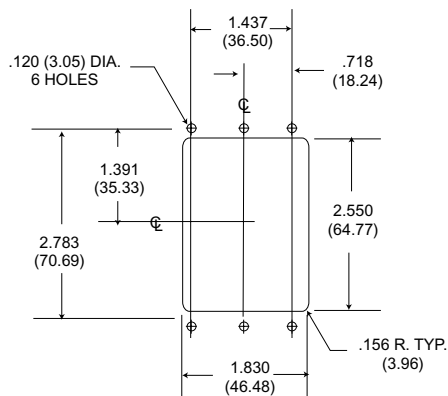
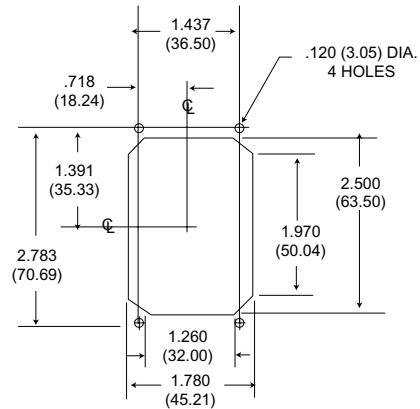


- 33A REAR MOUNT



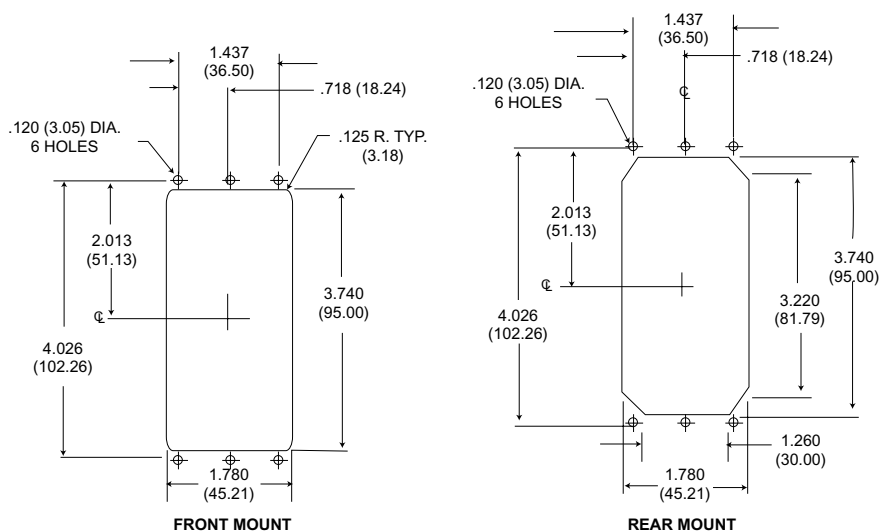
- 34B FRONT MOUNT

⚠ For - 23 float mtg. mod. 1.78 (45.21).

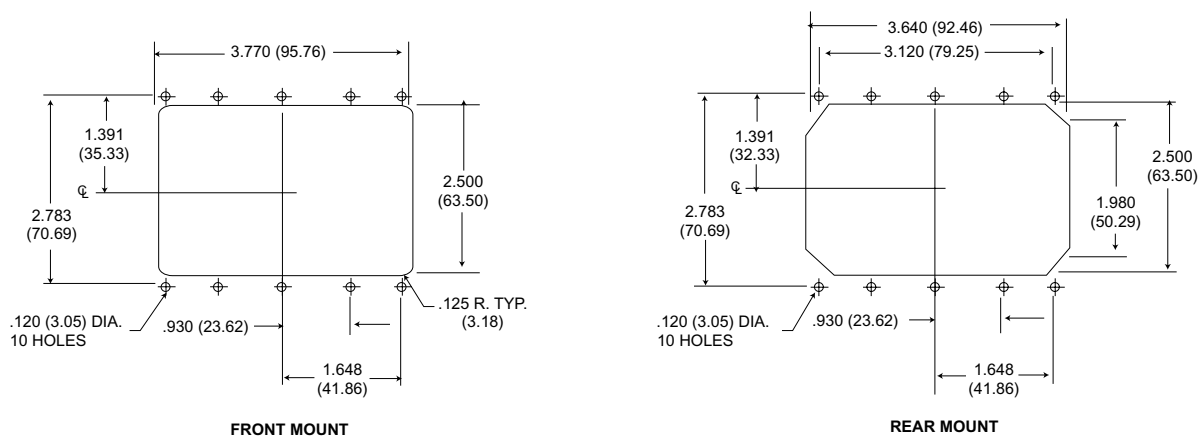
- 34A REAR MOUNT  
(-34A FRONT MOUNT CONSULT FACTORY)- 33B REAR MOUNT  
- 33B REAR MOUNT

## Panel Cutouts

DPX3

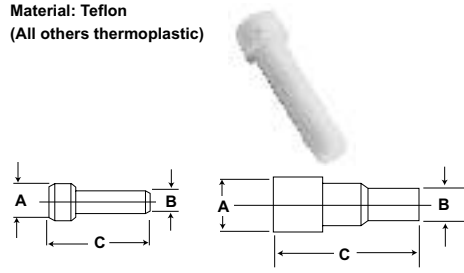
All tolerances are  $\pm .015$  (0.38) unless otherwise noted.

DPX4



## Sealing Plugs - DPX\*ME (for environmental requirements)

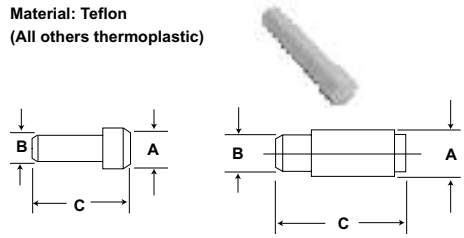
Material: Teflon  
(All others thermoplastic)



| Part Number  | Contact Size   | Color  | A          | B          | C           |
|--------------|----------------|--------|------------|------------|-------------|
| 225-1013-000 | 22             | Black  | .063 (1.6) | .040 (1.0) | .469 (11.9) |
| 225-0070-000 | 20             | Red    | .085 (2.2) | .065 (1.6) | .469 (11.9) |
| 225-0071-000 | 16             | Blue   | .115 (2.9) | .075 (1.9) | .469 (11.9) |
| 225-0072-000 | 12             | Yellow | .171 (4.3) | .121 (3.1) | .564 (14.3) |
| 225-0090-000 | #5 and #9 Coax | White  | .365 (9.3) | .287 (7.3) | .835 (21.2) |

## Filler Plugs - DPX\*

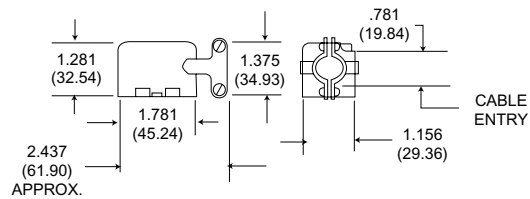
Material: Teflon  
(All others thermoplastic)



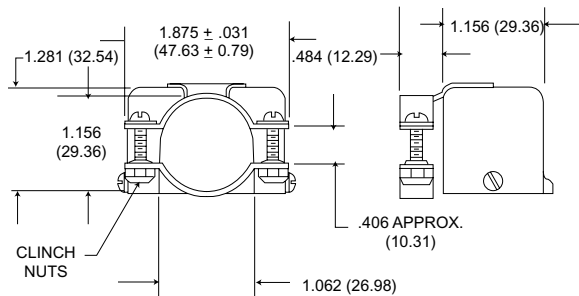
| Part Number  | Contact Size            | Color  | A          | B          | C            |
|--------------|-------------------------|--------|------------|------------|--------------|
| 225-0094-000 | 22                      | Black  | .069 (1.7) | .051 (1.3) | .420 (10.7)  |
| 225-0095-000 | 20                      | Red    | .083 (2.1) | .069 (1.7) | .350 (8.9)   |
| 225-0096-000 | 16                      | Blue   | .131 (3.3) | .108 (2.7) | .320 (8.1)   |
| 225-0097-000 | 12                      | Yellow | .187 (4.7) | .156 (4.0) | .320 (8.1)   |
| 225-0098-000 | #5 Coax (Pin)           | White  | .275 (7.0) | .251 (6.4) | .450 (11.4)  |
| 225-0099-000 | #5 and #9 Coax (Socket) | White  | .275 (7.0) | .251 (6.4) | 1.061 (26.9) |

## Junction Shells

## 90° Angle

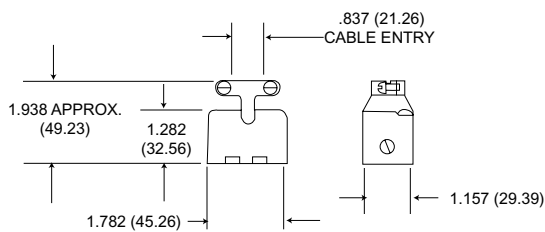


| Style        | Part Number |
|--------------|-------------|
| (Right) DPXA | 20745-22    |
| (Left) DPXA  | 20745-23    |
| (Right) DPX2 | 20745-10    |
| (Left) DPX2  | 20745-11    |

90° ANGLE DPX2  
JUNCTION SHELL (SIDE OUTLET)

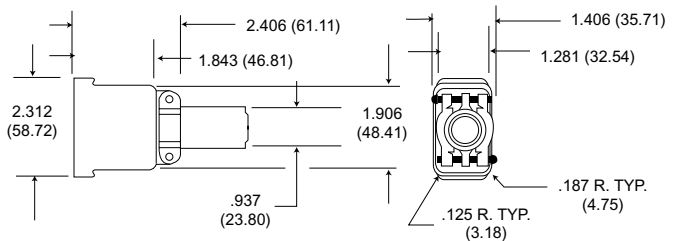
| Style | Part Number |
|-------|-------------|
| DPX2  | 20745-12    |

## STRAIGHT JUNCTION SHELL

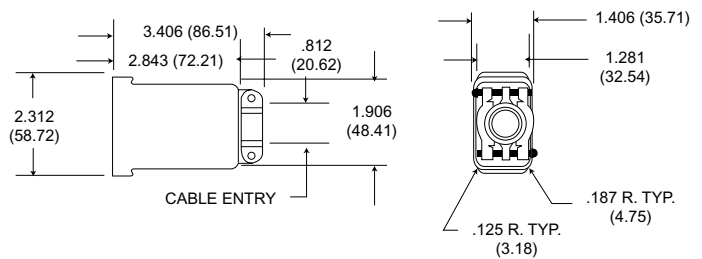


| Style | Part Number |
|-------|-------------|
| DPXA  | 20745-21    |
| DPX2  | 20745-8     |

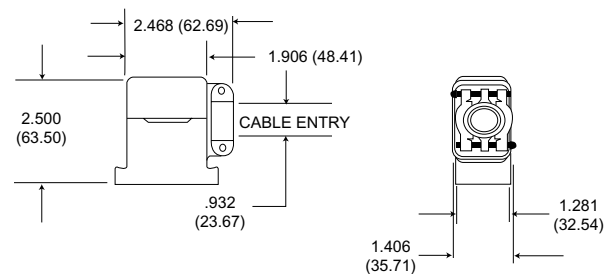
\* DPX2 Junction Shells are also used on DPXB connectors.

(DPXA ONLY)  
DIECAST STRAIGHT JUNCTION SHELL

| Style | Part Number |
|-------|-------------|
| DPXA  | 22017       |

(DPXA ONLY)  
DIECAST STRAIGHT JUNCTION SHELL

| Style | Part Number |
|-------|-------------|
| DPXA  | 22017-2     |

(DPXA ONLY)  
DIECAST 90° ANGLE JUNCTION SHELL

| Style | Part Number |
|-------|-------------|
| DPXA  | 22017-1     |

Diecast junction shells may be used on DPXA connectors. They have 4-40 NC-2B tapped mounting holes for attaching to the shell mounting hardware.

## Dust Caps



34

DPXA-60 for 34 Shells  
025-0762-000  
DPXB-60 for 34 Shells  
025-0767-000

## Conductive

DPXB-60-1 for 34 Shell  
Conductive Dust Caps  
025-0767-001  
Protect Against  
Static Electricity



33

DPXA-59 for 33 Shells  
025-0749-000  
also used DPXB-33

## Conductive

DPXA-59 for 33 Shells  
025-0749-001

## Coaxial Cable Reference Guide

For BKA\* DPX Series (Crimp, & Solder)  
Reference MIL-C-17D & DPX NE/NA MIL-C-81659 Series

| RG/U Type | Inner Conductor | Dielectric Material | DOD (Inch) | Jacket Material | O.D (Inch)            | Weight (lbs/ft) | Max Oper. Temp, Range ( C ) | Max Oper. Voltage (Volts RMS) | Suggested Alt Cable | Code Crimp Type Coax | Code Solder Type Coax | DPX NE/NA Military     | BKA* ARINC Type Coax       |
|-----------|-----------------|---------------------|------------|-----------------|-----------------------|-----------------|-----------------------------|-------------------------------|---------------------|----------------------|-----------------------|------------------------|----------------------------|
| 7         | 0.0359 "        | Air-space PE        | 0.250      | PVC             | 0.370                 | 0.080           | -40 + 80                    | 1,000                         | Use RG63B           | —                    | I                     | —                      | —                          |
| 9         | 0.0855"         | PE                  | 0.280      | PVC             | 0.420                 | 0.140           | -40 + 80                    | 4,000                         | Use RG214           | —                    | R,AC                  | —                      | Size 1(71W1)               |
| 55        | 0.0320 "        | PE                  | 0.116      | PE              | 0.206 Max.            | 0.032           | -55 + 80                    | 1,900                         | Use RG55B           | S                    | C, J                  | —                      | Size 1(71W1)               |
| 58        | 0.0320"BC       | PE                  | 0.116      | PVC             | 0.195                 | 0.029           | -40 + 80                    | 1,900                         | Use RG58B           | D,P,G JAC,AD         | C, J, Z AB            | Size 5/9 Seal 1        | Size 1(71W1) Size 5        |
| 59        | 0.0253 "        | PE                  | 0.146      | PVC             | 0.242                 | 0.032           | -40 + 80                    | 2,300                         | Use RG59B           | A,F,T                | D                     | —                      | —                          |
| 59B       | 0.0230"         | PE                  | 0.146      | PVC             | 0.242                 | 0.032           | -40 + 80                    | 2,300                         | Use up to 1000 MHz  | —                    | —                     | —                      | —                          |
| 62        | 0.0253"         | Air-space PE        | 0.146      | PVC             | 0.242                 | 0.038           | -40 + 80                    | 750                           | Use RG62A           | A,F,T                | E                     | —                      | —                          |
| 62A       | 0.0253"         | Air-space PE        | 0.146      | PVC             | 0.242                 | 0.038           | -40 + 80                    | 750                           | —                   | —                    | —                     | —                      | —                          |
| 71        | 0.0253"         | Air-space PE        | 0.146      | PVC             | 0.250 Max.            | 0.046           | -40 + 80                    | 750                           | Use RG71B           | —                    | E                     | —                      | —                          |
| 115       | 0.0840"         | PTFE                | 0.250      | FG Braid        | 0.375                 | 0.148           | -55 + 250                   | 5,000                         | Use RG115A          | V                    | —                     | —                      | Size 1(71W1)               |
| 142       | 0.0359"         | PTFE                | 0.116      | FG Braid        | 0.206 Max.            | 0.047           | -55 + 250                   | 1,900                         | Use RG142A          | S,AE                 | —                     | Size 5/9 Seal 1        | Size 1(71W1) Size 1(71W1A) |
| 142B      | 0.0390"         | PTFE                | 0.116      | FEP             | 0.195                 | 0.050           | -55 + 200                   | 1,900                         | —                   | —                    | —                     | —                      | Size 1(71W1A) Size 5       |
| 174       | 0.0189"         | PE                  | 0.060      | PVC             | 0.100                 | 0.008           | -40 + 80                    | 1,500                         | —                   | D,H,U, AF            | —                     | Size 5/9 Seal 2        | Size 5 Size 12             |
| 178       | 0.0120"         | PTFE                | 0.036      | KEL-F           | 0.079 Max.            | 0.0054          | -40 + 150                   | 1,000                         | Use RG178B          | ER,K,AG, L,M,AF      | —                     | Size 5/9 Seal 1        | Size 5                     |
| 179       | 0.0120 "        | PTFE                | 0.057      | KEL-F           | 0.094 Max.            | 0.010           | -55 + 150                   | 1,200                         | Use RG179B          | D,H,U, AF            | —                     | Size 5/9 Seal 1 Seal 2 | Size 5                     |
| 179B      | 0.0120"         | PTFE                | 0.063      | FEP             | 0.100                 | 0.010           | -55 + 200                   | 1,200                         | —                   | —                    | —                     | —                      | Size 5                     |
| 180       | 0.0120"         | PTFE                | 0.103      | KEL-F           | 0.141 Max. 0.145 Max. | 0.019           | -40 + 150                   | 1,500                         | Use RG180B          | CAB AB               | B                     | Size 5/9 Seal 1        | Size 5 Size 5              |
| 180B      | 0.0120"         | PTFE                | 0.102      | FEP             | 0.141 Max.            | 0.019           | -55 + 200                   | 1,500                         | —                   | —                    | —                     | —                      | Size 5                     |
| 187       | 0.0120"         | PTFE                | 0.060      | PTFE            | 0.110 Max.            | 0.010           | -55 + 250                   | 1,200                         | Use RG179B          | D,H,U, AF            | A,K                   | —                      | Size 5                     |
| 188       | 0.0201"         | PTFE                | 0.060      | PTFE            | 0.110 Max.            | 0.011           | -55 + 250                   | 1,200                         | Use RG316           | D,A,U AF             | A,K                   | —                      | —                          |
| 195       | 0.0120"         | PTFE                | 0.102      | PTFE            | 0.155 Max.            | 0.020           | -55 + 250                   | 1,500                         | Use RG180B          | CAB                  | B                     | —                      | Size 5                     |
| 196       | 0.0120"         | PTFE                | 0.034      | PTFE            | 0.080 Max.            | 0.006           | -55 + 250                   | 1,000                         | Use RG178B          | E,R,K, L,AA,AG       | AA                    | Size 5/9 Seal 1        | Size 5                     |
| 214       | 0.0888"         | PE                  | 0.285      | PVC             | 0.425                 | 0.126           | -40 + 80                    | 5,000                         | —                   | —                    | R,AC                  | —                      | Size 1(71W1) Size 1(71W1A) |
| 223       | 0.035 "         | pE                  | 0.116      | PVC             | 0.216 Max.            | 0.034           | -40 + 80                    | 1,900                         | —                   | —                    | C,J                   | —                      | —                          |
| 225       | 0.0936"         | PTFE                | 0.285      | FG Braid        | 0.430                 | 0.180           | -55 + 250                   | 5,000                         | —                   | —                    | —                     | Size 5/9 Seal 2        | Size 1(71W1)               |
| 316       | 0.0201          | PTFE                | 0.060      | FEP             | 0.102                 | 0.012           | -55 + 200                   | 1,200                         | Use RG188A          | —                    | —                     | Size 5/9 Seal 2        | —                          |
| 393       | 0.0936"         | PTFE                | 0.285      | FEP             | 0.390                 | 0.165           | -55 + 200                   | 5,000                         | Use RG225           | —                    | —                     | —                      | Size 1(71W1A)              |
| 400       | 0.0385"         | PTFE                | 0.116      | FEP             | 0.195                 | 0.050           | -55 + 200                   | 1,900                         | —                   | —                    | —                     | —                      | Size 1(71W1)               |
| 402       | 0.0360"         | PTFE                | 0.119      | None            | 0.141                 | 0.032           | -55 + 200                   | 2,500                         | Use RG142B          | —                    | —                     | —                      | Size 1(71W1A)              |

NOTE: This table is shown for reference only. ITT Cannon recommends that the above information be used as a guideline and may be subject to variation between various cable manufacturers. For specific information concerning the actual physical characteristics of a specific cable, contact the manufacturer.

### HIGH-PERFORMANCE MIL-C-83733 QUALIFIED Temperature Ranges of - 65 C to +200 C Environment - Resistant

The Cannon DPK series are high performance environment-resistant, rectangular connectors qualified to MIL-C-83733 (USAF). They feature crimp snap-in contacts in the dependable LITTLE CAESAR® rear release contact retention assembly. This field-proven assembly permits contacts to be inserted and extracted at the rear of the connector. Contacts are qualified to military specifications and are crimped with MIL-C-22520 crimp tools, using standard locators.

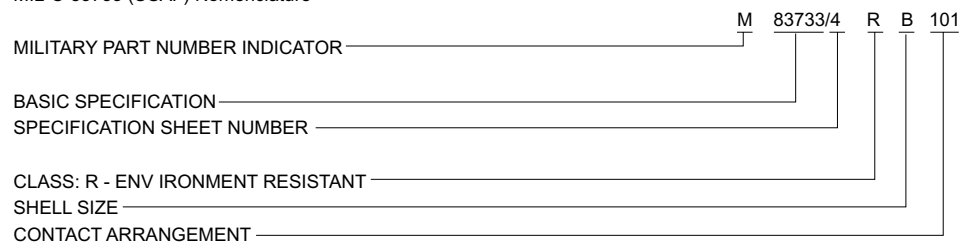
The versatile DPK Connector is suitable for many applications, particularly where environment or thermal protection is mandatory and high reliability is a design requirement.

These high performance connectors are available in two shell sizes with a variety of mounting configurations. There are 13 contact arrangements available accommodating from 18 to 185 standard contacts. The standard contacts are available in sizes 12, 16, 20 and 22D. Shells are a die-cast aluminum alloy with electroless nickel finish. Insulators are a high grade, glass reinforced, resin conforming to MIL-M-14 which meets or exceeds the requirements of MIL-C-83733. Silicone rubber is used for wire sealing grommets, interfacial and peripheral seals.



## How To Order

### MIL-C-83733 (USAF) Nomenclature



### SHELL SIZE

A - Small shell

B - Large shell

### CONTACT MODIFICATION

G-MIL-C-38999 contacts. Size 22D for DPKA-131 and DPKB-185 contact arrangements only.

W-MIL-C-38999 type contacts. Size 22D wrap posts for DPKA-131 and DPKB-185 layouts. .025 (0.63) square posts for .340 (8.64); extension from grommet face.

### CONTACT ARRANGEMENT

Shell Size A-18, 32, 51 and 131 (MIL-STD-1531).

Shell Size B-48, 64, 78, 101 59W7, 71, 71C15, 161 and 185 (MIL-STD-1532).

### CONTACT TYPE

P-Pin (Receptacle Connectors)

S-Socket (Plug Connectors)

### POLARIZATION

Six-position shell polarization accomplished with Polarizing pins mounted on each end of shell flange. Available on mounting style A only.

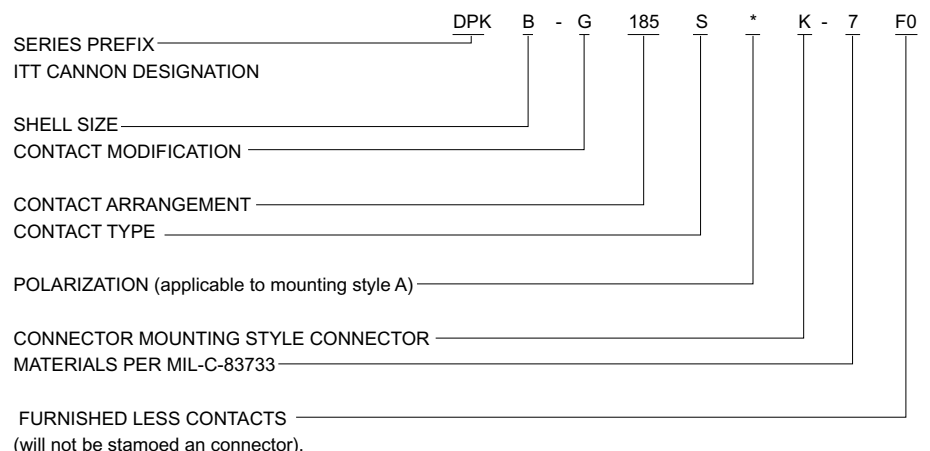
### MOUNTING STYLES

A - Two mounting holes .197(5.00) diameter (for either nuts or jackscrews ordered separately) and two polarizing posts. (Replaces Mounting Style B.)

C - Four MS24700-2 bushings, included for the receptacle (M83733/5).

F - Four (4) clinch nuts (No. 6-32 thread) M83733/6.

### ITT Cannon Nomenclature



G - Four .281(7.14) diameter holes (for MS24700-2 bushings or 231-0019-000 spring mounts) (M83733/1).

H - Two mounting hole flange. Two (231-0019-000) spring mounts on the plug and two MS24700-2 bushing mounts on the receptacle (M83733/10/12).

K - Four captivated, non-rotating spring mounts on the plug (M83733/4).

M - Two mounting hole flange. Two mounting holes .281(7.14) diameter (for MS24700-2 bushings or 231-0019-000 spring mounts) (M83733/9).

X - Two guide pins with two (231-0019-000) spring mounts on the plug and two guide sockets with two .197(5.00) diameter holes on the receptacle (M83733/2; /3)

Y - Two guide sockets with two (231-0019-000) spring mounts on the plug and two guide pins with .197(5.00) diameter holes on the receptacle (M83733/7; /8).

Z - Two staggered clinch nuts on the receptacle (No. 6-32 thread) (M83733/11).

### MATERIAL MOOIRCATION

- 7 standard product line, environment resistant per MIL-C-83733(USAF). QPL M83733

## Performance and Material Specifications

## MATERIALS

|                    |                                           |
|--------------------|-------------------------------------------|
| Shell              | Diecast aluminum alloy A-380 per QQ-A-591 |
| Insulator          | Thermosetting Plastic/Thermoplastic       |
| Contacts           | Copper alloy per QQ-C-533                 |
| Grommets and Seals | Silicone base elastomer                   |
| Mounting hardware  | Stainless steel/Alloy steel               |

## FINISHES

|          |                                                   |
|----------|---------------------------------------------------|
| Shell    | Electroless nickel plate per MIL-C-26074, Class 3 |
| Contacts | Gold over suitable underplate per MIL-C-39029     |
| Hardware | Passivate/Cadmium plate                           |

## MECHANICAL FEATURES

|                      |                                                             |
|----------------------|-------------------------------------------------------------|
| Shell Sizes          | A (DPKA); B (DPKB)                                          |
| Coupling             | Friction, spring mount or jackscrew-coupling nut            |
| Contact Arrangements | A-18,32,51,G131<br>B-48,64,78,101,59W7,71,71C15,161<br>G185 |
| Contact Termination  | Crimp                                                       |

## ELECTRICAL

| Contact Sizes | Wire Accommodation (AWG) | Sealing Range Wire Diameter |            |
|---------------|--------------------------|-----------------------------|------------|
|               |                          | Min.                        | Max.       |
| 22D           | 22,24,26                 | .030(0.76)                  | .060(1.52) |
| 20            | 20,22,24                 | .040(1.02)                  | .083(2.11) |
| 16            | 16,18                    | .063(1.60)                  | .103(2.62) |
| 12            | 12,14                    | .081(2.06)                  | .158(4.01) |
| 12            | RG-179/U                 | .081(2.06)                  | .158(4.01) |
| Shielded      |                          |                             |            |

Max. current carrying capacity of contacts

|               |     |     |     |     |
|---------------|-----|-----|-----|-----|
| Contact Size: | #12 | #16 | #20 | #22 |
| Amperage:     | 23  | 13  | 7.5 | 5.0 |

Test Voltages (AC-RMS)

| Altitude<br>(feet) | Equivalent<br>Pressure<br>(Torr) | Service Ratings (M&I) |      |         |      |                |
|--------------------|----------------------------------|-----------------------|------|---------|------|----------------|
|                    |                                  | Mated                 |      | Unmated |      | Unmated<br>161 |
|                    |                                  | M                     | I    | M       | I    | Arrangement    |
| Sea level          | -                                | 1300                  | 1800 | 1300    | 1800 | 1000           |
| 50,000             | 87.5                             | 800                   | 1000 | 550     | 600  | 350            |
| 70,000             | 35.5                             | 800                   | 1000 | 350     | 400  | 250            |
| 110,000            | 5.74                             | 800                   | 1000 | 200     | 200  | 150            |

## Cross Reference From Military to Cannon Part Numbers

| MIL-SPEC P/N  | ITTC P/N       | MIL-SPEC P/N  | ITTC P/N       | MIL-SPEC P/N  | ITTC P/N       | MIL-SPEC P/N   | ITTC P/N       |
|---------------|----------------|---------------|----------------|---------------|----------------|----------------|----------------|
| M83733/1RA018 | DPKA-18PG-7    | M83733/4RA018 | DPKA-18SK-7    | M83733/7RA018 | DPKA-18SY-7    | M83733/10RA018 | DPKA-18PH-7    |
| M83733/1RA032 | DPKA-32PG-7    | M83733/4RA032 | DPKA-32SK-7    | M83733/7RA032 | DPKA-32SY-7    | M83733/10RA032 | DPKA-32PH-7    |
| M83733/1RA051 | DPKA-51PG-7    | M83733/4RA051 | DPKA-51SK-7    | M83733/7RA051 | DPKA-51SY-7    | M83733/10RA051 | DPKA-51PH-7    |
| M83733/1RA131 | DPKA-G131PG-7  | M83733/4RA131 | DPKA-G131 SK-7 | M83733/7RA131 | DPKA-G131SY-7  | M83733/10RB048 | DPKB-48PH-7    |
| M83733/1RB048 | DPKB-48PG-7    | M83733/4RA048 | DPKB-48SK-7    | M83733/7RB048 | DPKB-48SY-7    | M83733/10RB064 | DPKB-64PH-7    |
| M83733/1RB064 | DPKB-64PG-7    | M83733/4RB064 | DPKB-64SK-7    | M83733/7RB064 | DPKB-64SY-7    | M83733/10RB071 | DPKB-71PH-7    |
| M83733/1RB071 | DPKB-71PG-7    | M83733/4RB071 | DPKB-71SK-7    | M83733/7RB071 | DPKB-72SY-7    | M83733/10RB71C | DPKB-71C15PH-7 |
| M83733/1RB71C | DPKB-71C15PG-7 | M83733/4RB71C | DPKB-71C15SK-7 | M83733/7RB71C | DPKB-71C15SY-7 | M83733/10RB078 | DPKB-78PH-7    |
| M83733/1RB078 | DPKB-78PG-7    | M83733/4RB078 | DPKB-78SK-7    | M83733/7RB078 | DPKB-78SY-7    | M83733/10RB101 | DPKB-101PH-7   |
| M83733/1RB101 | DPKB-101PG-7   | M83733/4RB101 | DPKB-101 SK-7  | M83733/7RB101 | DPKB-101 SY-7  | M83733/11RA018 | DPKA-18PZ-7    |
| M83733/1RB185 | DPKB-G185PG-7  | M83733/4RB185 | DPKB-G185SK-7  | M83733/8RA018 | DPKA-18PY-7    | M83733/11RA032 | DPKA-32PZ-7    |
| M83733/2RA018 | DPKA-18SX-7    | M83733/5RA018 | DPKA-18PC-7    | M83733/8RA032 | DPKA-32PY-7    | M83733/11RA051 | DPKA-51PZ-7    |
| M83733/2RA032 | DPKA-32SX-7    | M83733/5RA032 | DPKA-32PC-7    | M83733/8RA051 | DPKA-51PY-7    | M83733/11RB048 | DPKB-48PZ-7    |
| M83733/2RA051 | DPKA-51SX-7    | M83733/5RA051 | DPKA-51PC-7    | M83733/8RB048 | DPKB-48PY-7    | M83733/11RB064 | DPKB-64PZ-7    |
| M83733/2RA131 | DPKA-G131SX-7  | M83733/5RA131 | DPKA-G131 PC-7 | M83733/8RB064 | DPKB-64PY-7    | M83733/11RB071 | DPKB-71PZ-7    |
| M83733/2RB048 | DPKB-48SX-7    | M83733/5RB048 | DPKB-48PC-7    | M83733/8RB071 | DPKB-71PY-7    | M83733/11RB71C | DPKB-71C15PZ-7 |
| M83733/2RB064 | DPKB-64SX-7    | M83733/5RB064 | DPKB-64PC-7    | M83733/8RB71C | DPKB-71C15PY-7 | M83733/11RB078 | DPKB-78PZ-7    |
| M83733/2RB071 | DPKB-71SX-7    | M83733/5RB71C | DPKB-71C15PC-7 | M83733/8RB078 | DPKB-78PY-7    | M83733/11RB101 | DPKB-101 PZ-7  |
| M83733/2RB71C | DPKB-71C15SX-7 | M83733/5RB078 | DPKB-78PC-7    | M83733/8RB101 | DPKB-101PY-7   | M83733/12RA018 | DPKA-18SH-7    |
| M83733/2RB078 | DPKB-78SX-7    | M83733/5RB101 | DPKB-101PC-7   | M83733/9RA018 | DPKA-18PM-7    | M83733/12RA032 | DPKA-32SH-7    |
| M83733/2RB101 | DPKB-101SX-7   | M83733/5RB185 | DPKB-G185PC-7  | M83733/9RA032 | DPKA-32PM-7    | M83733/12RA051 | DPKA-51SH-7    |
| M83733/3RA018 | DPKA-18PX-7    | M83733/5RB071 | DPKB-71PC-7    | M83733/9RA051 | DPKA-51PM-7    | M83733/12RB048 | DPKB-48SH-7    |
| M83733/3RA032 | DPKA-32PX-7    | M83733/6RA018 | DPKA-18PF-7    | M83733/9RB048 | DPKB-48PM-7    | M83733/12RB064 | DPKB-64SH-7    |
| M83733/3RA051 | DPKA-51PX-7    | M83733/6RA032 | DPKA-32PF-7    | M83733/9RB064 | DPKB-64PM-7    | M83733/12RB071 | DPKB-71SH-7    |
| M83733/3RA131 | DPKA-G131PX-7  | M83733/6RA051 | DPKA-51PF-7    | M83733/9RB071 | DPKB-71PM-7    | M83733/12RB71C | DPKB-71C15SH-7 |
| M83733/3RB048 | DPKB-48PX-7    | M83733/6RA131 | DPKA-G131 PF-7 | M83733/9RB71C | DPKB-71C15PM-7 | M83733/12RB078 | DPKB-78SH-7    |
| M83733/3RB064 | DPKB-64PX-7    | M83733/6RB048 | DPKB-48PF-7    | M83733/9RB078 | DPKB-78PM-7    | M83733/12RB101 | DPKB-101SH-7   |
| M83733/3RB071 | DPKB-71PX-7    | M83733/6RB064 | DPKB-64PF-7    | M83733/9RB101 | DPKB-101PM-7   |                |                |
| M83733/3RB71C | DPKB-71C15PX-7 | M83733/6RB071 | DPKB-71PF-7    |               |                |                |                |
| M83733/3RB078 | DPKB-78PX-7    | M83733/6RB71C | DPKB-71C15PF-7 |               |                |                |                |
| M83733/3RB101 | DPK- 101PX-7   | M83733/6RB078 | DPKB-78PF-7    |               |                |                |                |
| M83733/3RB185 | DPKB-G185PX-7  | M83733/6RB101 | DPKB-101 PF-7  |               |                |                |                |
|               |                | M83733/6RB185 | DPKB-G185PF-7  |               |                |                |                |

## Test Data

The following is a presentation of the certified capabilities of Cannon's DPK, high performance, rectangular, rack and panel series connectors with respect to critical qualification performance and design requirements of MIL-C-83733. The data presented herein is a condensation of authentic qualification test data extracted from the original qualification reports on file at the ITT Cannon Test Laboratory.

The successful completion of the conducted qualification program clearly demonstrates the compliance of ITT Cannon, DPK series connectors and contacts to meet or exceed the performance requirements of MIL-C-83733.

### Identification of Qualification Specimens

The DPK connectors listed below represent the description and identification of the test specimens

subjected to the qualification test sequence of MIL-C-83733.

DPKA-G-131PC-7 (Receptacle) DPKB-G185PC-7 (Receptacle)  
 DPKA-G131SK-7 (Plug) DPKA-G185SK-7 (Plug)  
 DPKA-G-131PC-7 (Receptacle) DPKB-G185PC-7 (Receptacle)

Table I below, lists the conducted tests executed in accordance with the applicable test paragraphs of MIL-C-83733, with the Test Level, Parameter Limits and Measured Values listed in Table 11.

**TABLE 1 TEST PERFORMED**

| Test Description                 | Test Description                     | Test Description            | Test Description                   |
|----------------------------------|--------------------------------------|-----------------------------|------------------------------------|
| Examination Of Product           | Contact Separating Forces            | Low Leve Contact Resistance | Moisture Resistance                |
| visual Examination               | Connector Mating and Unmating Forces | Thermal Shock               | Altitude Immersion                 |
| Sample Preparation               | Contact Retention                    | Crimp Potential Drop        | Insert Retention                   |
| Insulation Resistance - 25°C     | Endurance                            | Vibration (Random)          | Corrosion                          |
| Withstanding Voltage - Sea Level | Gold Plating Porosity                | Physical Shock              | Analyses                           |
| Withstanding Voltage - Altitude  | Temperature Life                     | Ozone Exposure              | Service and Storage Life           |
| Contact Resistance               | Insulation Resistance - 200°C        | Fluid Immersion             | Gases and Toxic or Corrosive Fumes |

**TABLE II**

| Test or Environment                                                                                                                                                                             | Test Level or Special Requirments                                                                                                                                                                                                | Parameters Limits                                                                                | Measured Values or Comments                                                                                                                                              |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Examination Of Product<br>visual Examination<br>Sample Preparation<br>Insulation Resistance - 25°C<br>Withstanding Voltage - Sea Level<br>Withstanding Voltage - Altitude<br>Contact Resistance | Assure compliance with:<br>a) Applicable detail specifications and control drawings<br>b) Materials<br>c) Design and construction<br>d) Dimensional<br>e) Finish<br>f) Product identification<br>g) Workmanship                  | Compliance to applicable detail specification and control drawings.                              | Product submitted accompanied by Q.A.certificates of compliance, complied with the applicable acceptance requirements for qualification testing.                         |
| VISUAL EXAMINATION                                                                                                                                                                              | Visual examination of qualification test specimens for completeness, workmanship, identification and /or other detrimental conditions.                                                                                           | Visual examination acceptance.                                                                   | No visible detection of any condition detrimental to normal function.                                                                                                    |
| SAMPLE PREPARATION                                                                                                                                                                              | MIL-W-16878/4A, 28 AWG (min. dia.) and 22 AWG (max. dia.) wire. Daniels WA22A crimping tool. M22520/2-06 and M22520/2-09 contact positioner for resp.22D size socket and pin. MS7495A22M insertion and MS27495R22M removal tool. | Assemblies to conform with specified wiring and termination requirements.                        | Qualification test specimens prepared and terminated in accordance with specified wiring requirements. No difficulties encountered during wiring operation.              |
| INSULATION RESISTANCE [25°C (77 F)]                                                                                                                                                             | Unmated condition. 50% of contact complement measured. Between adjacent contact paris and each contact and connector shell.                                                                                                      | 5.1 Gigohms minimum at 500 Vdc.<br>Electrification Time 120 secs. maximum.                       | Insul. res. range (ohms) (25°C) DPKA<br>Adj. Cont. Cont./Shell<br>300G-1.0T 1.1T-1.8T<br>DPKB<br>400G-1.6T 1.1T-20T<br>(Ganged parallel test circuits)                   |
| DIELECTRIC WITHSTANDING VOLTAGE (SEA LEVEL)                                                                                                                                                     | Unmated condition. 50% of contact complement measured. Test voltage 1350 Vac/rms-60hz, applied between adjacent contact pairs and each contact and connector shell.                                                              | No electrical breakdown, flashover or excessive current leakage.Electrification 2 secs. minimum. | No evidence of breakdown or flashover Leakage ≤.5mA. (Ganged Parallel test circuits)                                                                                     |
| SALT SPRAY (CORROSION)                                                                                                                                                                          | Method 101, test condition B. (48 hours) unmated. Salt souldion 5% by weight. S.G. 1.026 to 1.040 at 22.8°C-23.9°C (73°F-75°F). Solution pH6.5 to 7.2 and chamber temp 33.9°C to 36.1°C (93°F to 97°F).                          | Visual examination. No degradatoin of normal connector functions.                                | No detrimental corrosive attack on connector's surface finish or contacts.                                                                                               |
| CONTACT RESISTANCE [AT 25°C AND 200°C (77 F AND 392 F)]                                                                                                                                         | Mated condition 20% of contact complement tested. Test circuit per Fig. 2 measured across points YY performed at 25°C and 200°C (77°F and 392°F).                                                                                | Max. Voltage Drop (MV)<br>Wire 25°C 200°C<br>Size (77°F) (392°F)<br>28 8 19<br>22 14 25          | MV-Drop Range. (25°C)<br>Wire Size Adc Range (mV) Avg. (mV)<br>28 1.5 2.3-5.2 3.8<br>22 5.0 6.3-10 8.2<br>(200°C)<br>28 1.5 9-17 11.8<br>22 5.0 16-21 17.8               |
| CONTACT SEPARATING FORCES                                                                                                                                                                       | 100% of socket contact complement measured. Separating force measured on steel test pin .0294 ±.0001 (0.747 ±0.002) dia. insertion depth .205 (5.21) min. from insert face.                                                      | Separating Force (ounce-force)<br>Min. Max.<br>0.6 4.9                                           | Separating force range (ounce-force)<br>DPKA Sep. Force Avg. Force<br>1.3-4.1 2.4<br>DPKB<br>1.0-2.9 2.0                                                                 |
| CONNECTOR MATING AND UNMATING FORCES                                                                                                                                                            | Mating dept. .390 (9.91) panel spacing. Total of 10 cycles mating and unmatings. Forces measured on 10th cycle.                                                                                                                  | Axial mating and unmating forces 175 pounds-force maximum.                                       | Mating/Unmating Force (pound-force)<br>Mate Unmated<br>DPKA 145 34<br>DPKB 150 72<br>Forces obtained on 10th cycle.                                                      |
| CONTACT RETENTION                                                                                                                                                                               | Unmated. 50% of contacts measured. 10.0 lbf applied to contact engaging end. Zero reference at 2.0 lbf preload. Displacement measured under spec. load.                                                                          | Max. contact displacement under 10.0 lbf load .011 (0.28) maximum.                               | Contact Displacement Range (inch)<br>DPKA Avg.<br>Pins 0.002-0.003 0.0027<br>Sockets 0.002-0.004 0.0031<br>DPKB<br>Pins 0.002-0.004 0.0027<br>Sockets 0.002-0.003 0.0026 |
| ENDURANCE (DURABILITY)                                                                                                                                                                          | Mating dept. .450 (11.43) panel spacing. Total of 500 cycles mating and unmating at a rate of 300 cycles/hour maximum.                                                                                                           | Withstand 500 cycles of durability conditioning without detrimental effects to function.         | No detrimental damage. Connectors fully functional.                                                                                                                      |

## Test Data (Continued)

(TABLE II Continued)

| Test or Environment                                   | Test Level or Special Requirments                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | Parameters Limits                                                                                                                                             | Measured Values or Comments                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
|-------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| THERMAL SHOCK                                         | Mated condition. Five continuous cycles of temperature change. 30 mins. exposure at each temp. extreme constitutes one cycle. Transfer time between chambers 2 mins. max. temp. extremes: - 54 ± 3° C and 200 ± 3° C (-??° + _ 5.4° F and 392 ± 5.4° F).                                                                                                                                                                                                                                                                                                                                                                                                                                    | Withstand temperatre cycling. No damage.                                                                                                                      | No apparent damage.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| CRIMP POTENTIAL DROP                                  | 20% of the contacts in each connector measured. Test circuit per Fig. 2 measured across points X-X and X'-X'.<br><div><div>Contact/Wire-size</div><div>22D/28</div><div>22D/22</div></div> <div><div>Test Current (Adc)</div><div>1.5</div><div>5.0</div></div>                                                                                                                                                                                                                                                                                                                                                                                                                             | Max. crimp potential drop:<br><div><div>Wire Size</div><div>28</div><div>22</div></div> <div><div>M.V.</div><div>2.8</div><div>7.0</div></div>                | Crimp mV drop range.<br>DPKA (sockets)<br><div><div>Adc</div><div>1.5</div></div> <div><div>Range</div><div>1.7-2.1</div></div> <div><div>Avg.</div><div>1.8</div></div><br><div><div>(Pins)</div><div>1.5</div></div> <div><div>Range</div><div>1.1-1.6</div></div> <div><div>Avg.</div><div>1.3</div></div><br>DPKB (sockets)<br><div><div>Adc</div><div>5.0</div></div> <div><div>Range</div><div>1.8-2.4</div></div> <div><div>Avg.</div><div>2.1</div></div><br><div><div>(Pins)</div><div>5.0</div></div> <div><div>Range</div><div>1.4-1.8</div></div> <div><div>Avg.</div><div>1.5</div></div>                                                                                                                                                                                                                                                                                                                                                                                      |
| DIELECTRIC WITHSTANDING VOLTAGE (ALTITUDE)            | Mated condition. 50% of contact complement measured. Performed at simulated altitude of 70,000 ft. (33.7 mm Hg pressure) Test voltage 825 Vac/rms-60 Hz, applied between adjacent contact pairs and each contact and connector shell.                                                                                                                                                                                                                                                                                                                                                                                                                                                       | Same as at sea level conditions.                                                                                                                              | No evidence of breakdown or flashover. Leakage ≤ 5mA. (Ganged Parallel test circuits)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| INSULATION RESISTANCE ELEVATED TEMP.[200° C (392° F)] | Unmated condition. 50% of contact complement measured. Test points identical to those measured at 25° C (77° F). Oven ambient controlled at 200° C (392° F). Stabilization period 30 minutes minimum.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | 204 Megohms minimum at 500 Vdc. Electrification time 120 secs. maximum,                                                                                       | Insul. Res. range (ohms) [200° C (392° F)]<br>DPKA<br><div><div>Adj. Cont.</div><div>1.4G-10G</div></div> <div><div>Cont./Shell</div><div>2.4G-4.0G</div></div><br>DPKB<br><div><div>0.75G-10G</div></div> <div><div>2.26G-5.0G</div></div><br>(Ganged parallel test circuits)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| VIBRATION (RANDOM)                                    | Method 214, Test condition II, Letter 'G'. Test level envelope per figure and table 214-2. Contact circuit senes wired for current discontinuity monitoring. Eight hours duration in each of three mutually peipendicular axes. Connector mating depth .450 (11.43) panel spacing.                                                                                                                                                                                                                                                                                                                                                                                                          | No current discontinuity ≥ 1.0 microsec. No cracking, breaking or loosening of connector parts.                                                               | Connectors met random vibration requirements. No electrical discontinuity detected.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| PHYSICAL SHOCK                                        | Mated condition, .450 111.43) panel spacing. Shock pulse duration I I ± 1 mS, waveshape terminal peak smooth, peak amplitude 20g. Contact circuit series wired for current discontinuity monitoring. One shock pulse in each of three mutually perp. axes.                                                                                                                                                                                                                                                                                                                                                                                                                                  | No current discontinuity ≥ 1.0 microsec. No cracking, breaking or loosening of connector parts.                                                               | Connectors met physical shock requirements. No electrical discontinuity or damage detected.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| MOISTURE RESISTANCE                                   | Method 106, (Step 7b) ommed) Mated condition. 10 days humidity and temperature cycling. At end Step 6 final cycle at 25° C (77° F) and 90-98% RH insulation resistance in asured 100% between each and all other contacts and the shell in parallel circuit.                                                                                                                                                                                                                                                                                                                                                                                                                                | Insulation resistance at final humidity cycle 102 Megohms minimum at 50 Vdc.                                                                                  | Insul. Res. range (ohms) final humidity cycle.<br>DPKA<br><div><div>1.66-500G</div><div>Avg: 224G</div></div> <div><div>DPKB</div><div>1.6-500G</div><div>Avg: 190G</div></div>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| ALTITUDE IMMERSION                                    | Mated condition. Immersed in 5% sail solution by weight. Unsealed wire ends exposed to chamber atmosphere. Simulated test altitude 75,000 ft, (1.0 inch Hg). 30 mins. at altitude followed by 15 mins. at room ambient, Repeat for total of 3 cycles. Insul. res. and OWV measured 100% of contact complement at room ambient and submerged.                                                                                                                                                                                                                                                                                                                                                | Insulation resistance 1.2 Gigohm minimum at 5 Vdc. DWV 1350 Vac/rms - 60 Hz, electrification time 60 secs. minimum. No breakdow, flashover or leadage ≤ 2 mA, | Final insul. Res ranges (ohms).<br>DPKA<br><div><div>1.5T-4.5T</div><div>Avg. 1.9T</div></div> <div><div>DPKB</div><div>0.7-3.5T</div><div>Avg: 1.3T</div></div><br>DWV - No evidence of insert movement and /or dislocation from normal position                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
| INSERT RETENTION                                      | Unmated. 46 1bf/in. <sup>2</sup> pressure lead applied to each inert face at 5 1bf/in <sup>2</sup> /sec., maintained for 5 secs. min. at specified load.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | No insert disiocation from normal position in the connector shell.                                                                                            | No evidence of insert movement and/or dislocation from normal position.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| OZONE EXPOSURE                                        | Unimated. Ozone concentration 0.010 to 0.015 percent by volume. Exposure period 2 hours minimum at room temperature.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | No deterioration.                                                                                                                                             | No evidence of ozone effects.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| FLUID IMMERSION                                       | Fluid immersion rest fluids and procedures per Table 4:<br><div><div>Sample No.</div><div>4-1P/R</div><div>4-2P/R</div><div>4-3P/R</div><div>4-4P/R</div><div>4-5P/R</div><div>4-6P/R</div><div>4-7P/R</div><div>4-8P/R</div><div>4-9P/R</div><div>4-10P/R</div><div>4-11P/R</div><div>4-12P/R</div></div> <div><div>Test Fluid</div><div>MIL-L-7808</div><div>MIL-L-23699</div><div>M2-V CHEVRON</div><div>MIL-H-5606</div><div>MIL-A-8243</div><div>MIL-C-25769</div><div>MIL-T-5624 (JP-5)</div><div>Coolanol-25</div><div>Regular (Leaded commercial auto-gasoline</div><div>Solvent (a) MIL-STD-202)</div><div>Solvent (b) MIL-STD-202)</div><div>Solvent (c) MIL-STD-202)</div></div> | No detrimental damage of effects to connector performance.<br>Axial<br>Mate and unimate forces after fluid immersion<br>175 1bf max.                          | Other than evidence of normal light swelling of the connector resilient seals, the samples did not exhibit any detirmental affects. Mateability was not impaired.<br><br><div><div>After Fluid Immersion Mating/Unmating forces (Pound-Force)</div><div><div>DPKA</div><div>Mate</div><div>Unmated</div><div>DPKB</div><div>Mate</div><div>Unmated</div></div><div><div>4-1P/R</div><div>125</div><div>27</div><div>4-7P/R</div><div>138</div><div>71</div></div><div><div>4-2P/R</div><div>125</div><div>31</div><div>4-8P/R</div><div>141</div><div>57</div></div><div><div>4-3P/R</div><div>127</div><div>35</div><div>4-9P/R</div><div>137</div><div>63.5</div></div><div><div>4-4P/R</div><div>132</div><div>35</div><div>4-10P/R</div><div>145</div><div>76</div></div><div><div>4-5P/R</div><div>132</div><div>63</div><div>4-11P/R</div><div>150</div><div>81</div></div><div><div>4-6P/R</div><div>123</div><div>55</div><div>4-12P/R</div><div>148</div><div>86</div></div></div> |
| GOLD PLATING POROSITY                                 | Unwired. wouissembled contact bodies. One part (by volume) concentrated Nitric Acid (S.G.-1.42) to we part distilled water. 30 secs. minimum immersion period.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | No visible reaction (bubbles forming) to reagent.                                                                                                             | No evidence of reaction to reagent.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| TEMPERATURE LIFE W/CONTACT LOADING                    | Wired mated condition, with contacts under specific load: #220 (5 lbs.); #16 12.5 lbs. A current of 100 MA was applied during life of test. Test duration, 1000 hours at temperature of + 200° C (392° F).                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | Withstand temp life. No damage. No discontinuity higher than 1.0 microsecond. No contact dislodging order load.                                               | No evidence of contact dislodging and/or electrical disconinuity of 1.0 microsecond or greater during the speified temperature life exposure under contact loading conditions. All post test requirements were met.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |

## Conclusion

All subject test specimens, connector components, materials, accessories and contacts covered by this report satisfied and/or exceeded the specified requirement.

The successful completion of the qualification program as reported herein, demonstrates the capabilities of the subject ITT Cannon DPK series connectors to comply with stringent verification

qualification requirements in accordance with MIL-C-83733. On the basis of testing, the DPK connector series was granted full OPI status to MIL-C-83733.

## Weights

The following are weights for DPK connector assemblies, mounting hardware, contacts, and sealing plugs. All connector weights are listed less contacts (FO) and mounting hardware. The total connector weight is obtained by adding mounting hardware, contacts, and sealing plugs weight to the connector assembly weight.

**Example:**

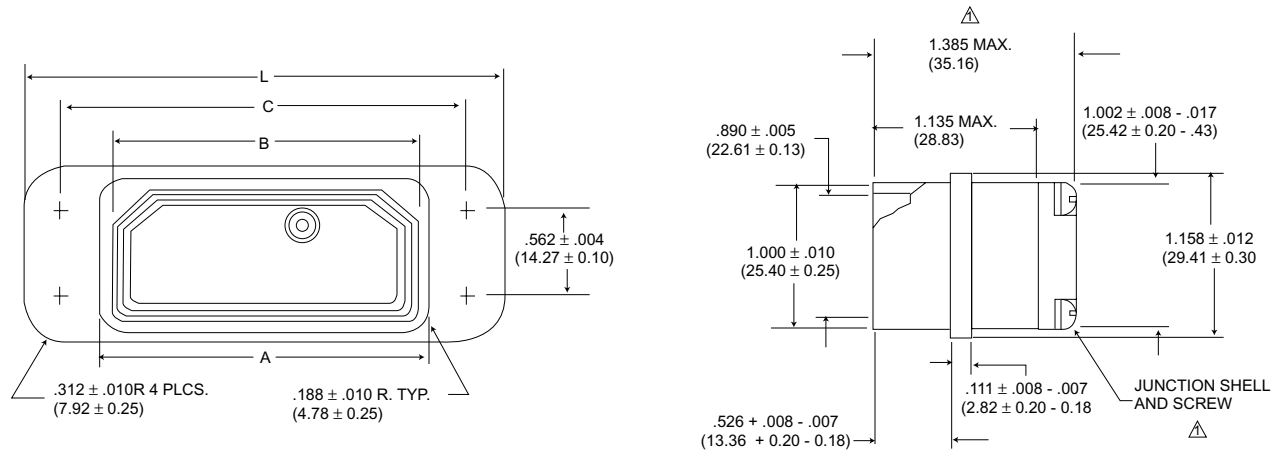
DPKB-101SK-7 (with 90 contacts and 11 sealing plugs)

|                              | Weight<br>Pounds | Weight<br>Grams |
|------------------------------|------------------|-----------------|
| DPKB-101SG-7-FO              | .2332            | 105.78          |
| Type K Spring Mount          | .0825            | 37.42           |
| 90 Number 20 Socket Contacts | .0639            | 28.98           |
| 11 Number 20 Sealing Plugs   | .0020            | .88             |
| Maximum Connector Weight     | .3816            | 173.06          |

| Part Number<br>(Description)            | Maximum Weight |        |
|-----------------------------------------|----------------|--------|
|                                         | Lbs.           | Grams  |
| DPKA-18PG-7-F0                          | .1474          | 66.86  |
| DPKA-18SG-7-F0                          | .1496          | 67.86  |
| DPKA-32PG-7-F0                          | .1496          | 67.86  |
| DPKA-18SG-7-F0                          | .1518          | 68.86  |
| DPKA-51PG-7-F0                          | .1529          | 69.35  |
| DPKA-51SG-7-F0                          | .1551          | 70.35  |
| DPKA-G131PG-7-F0                        | .1045          | 47.40  |
| DPKA-G131SG-7-F0                        | .1077          | 48.85  |
| DPKB-48PG-7-F0                          | .2398          | 108.77 |
| DPKB-48SG-7-F0                          | .2486          | 112.76 |
| DPKB-59W7PG-7-F0                        | .2354          | 106.78 |
| DPKB-59W7SG-7-F0                        | .2442          | 110.78 |
| DPKB-64PG-7-F0                          | .2354          | 106.78 |
| DPKB-64SG-7-F0                          | .2442          | 110.78 |
| DPKB-71PG-7-F0                          | .2288          | 103.78 |
| DPKB-71SG-7-F0                          | .2332          | 105.78 |
| DPKB-71C15PG-7-F0                       | .2288          | 103.78 |
| DPKB-71C15SG-7-F0                       | .2332          | 105.78 |
| DPKB-78PG-7-F0                          | .2266          | 102.78 |
| DPKB-78SG-7-F0                          | .2288          | 103.78 |
| DPKB-101PG-7-F0                         | .2288          | 103.78 |
| DPKB-101SG-7-F0                         | .2332          | 105.78 |
| DPKB-G185PG-7-F0                        | .1628          | 73.85  |
| DPKB-G185SG-7-F0                        | .1650          | 74.85  |
| #12 Pin, 030-9185-003                   | .00298         | 1.353  |
| #12 Skt, 030-9186-003                   | .00291         | 1.318  |
| #16 Pin, 030-9205-007                   | .00135         | .611   |
| #16 Skt, 030-9206-006                   | .00146         | .664   |
| #20 Pin, 030-9173-006                   | .00062         | .280   |
| #20 Skt, 031-9174-004                   | .00071         | .322   |
| #22D Pin, 030-2042-000                  | .00021         | .093   |
| #22D Skt, 031-1147-000                  | .00025         | .111   |
| #12 Shielded Pin, 249-1825-001          | .00206         | .943   |
| #12 Shielded Skt, 249-1826-000          | .00258         | 1.168  |
| #8 Coaxial Pin, 59W7 Layout             | .00420         | 1.910  |
| #8 Coaxial Skt, 59W7 Layout             | .00650         | 2.948  |
| Type C Bushing, 012-0515-000 (4 reqd)   | .00606         | 2.750  |
| Type K Spring Mtg Captive (non-rotate)  | .08250         | 37.42  |
| Type F Nut (4 reqd)                     | .00072         | .325   |
| Type G Spring Mtg 231-0019-000 (4 reqd) | .01180         | 5.350  |
| Size 22; 225-1013-000                   | .00006         | .027   |
| Size 20; 225-0070-000                   | .00018         | .080   |
| Size 16; 225-0071-000                   | .00036         | .163   |
| Size 12; 225-0072-000                   | .00064         | .291   |
| SEALING PLUGS                           |                |        |

## Receptacle (Pin Contacts)

## BASIC RECEPTACLE SHELL DIMENSIONS



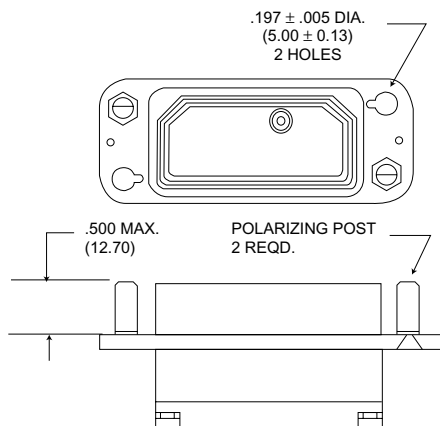
△ Junction shell and screws are not supplied on - G131 and -G185 layouts.

| SHELL SIZE | A             | B             | C             | L              | N<br>Staggered † |
|------------|---------------|---------------|---------------|----------------|------------------|
| DPKA*P**   | 2.085 (52.96) | 1.976 (50.19) | 2.580 (65.58) | 3.030 (76.96)  | 2.150 (54.61)    |
| DPKB*P**   | 2.072 (52.63) | 1.961 (49.81) | 2.570 (65.38) | 3.000 (76.20)  | 2.130 (54.10)    |
| DPKC*P**   | 3.385 (85.98) | 3.281 (83.34) | 3.880 (98.53) | 4.330 (109.98) | 3.450 (87.63)    |
| DPKE*P**   | 3.372 (85.65) | 3.261 (82.83) | 3.870 (98.32) | 4.300 (109.22) | 3.430 (87.12)    |

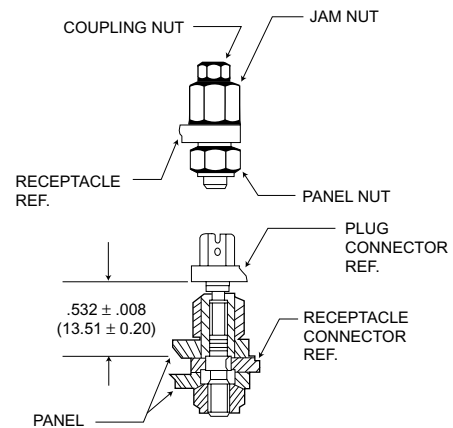
†See Page 81 Style M and Z

## DPK TYPES

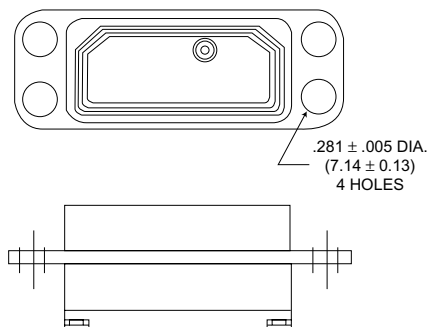
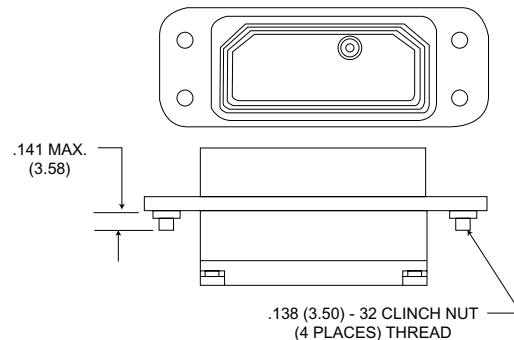
## Mounting Style A



## Mounting Dimensions for Coupling Nut Assemblies



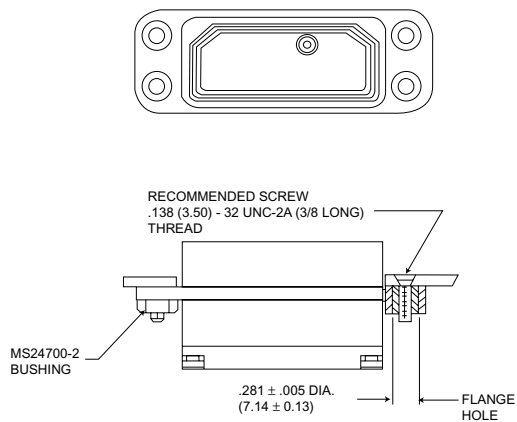
## DPK/MIL-C-83733 TYPES

Mounting Style G  
Standard Hole Mounting MIL-C-83733/1(USAF)Mounting Style F Clinch Nut Mounting  
MIL-C-83733/6(USAF)

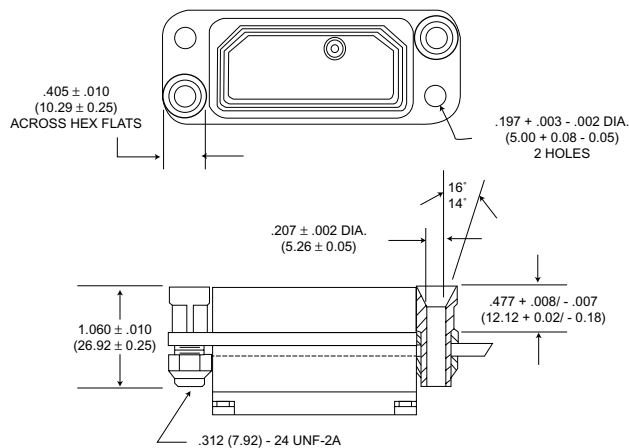
## Receptacle/Configurations (Pin Contacts)

## DPK/MIL-C-83733 TYPES

**Mounting Style C**  
Bushing Mounting MIL-C-83733/5(USAF)

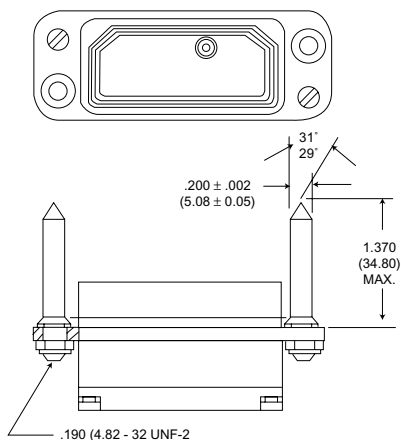


**Mounting Style X**  
With Guide Sockets MIL-C-83733/3(USAF)

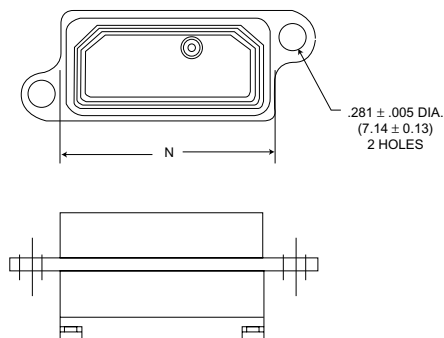


## DPK/MIL-C-83733 TYPES

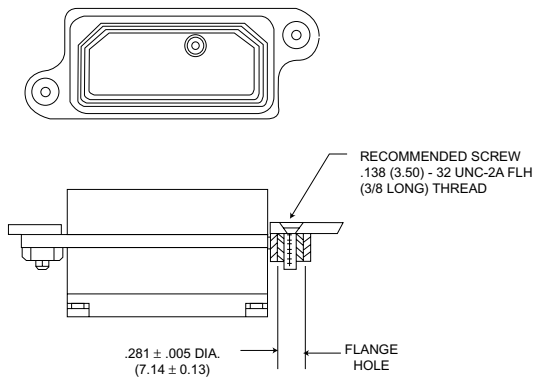
**Mounting Style Y**  
With Guide Pins MIL-C-83733/8(USAF)



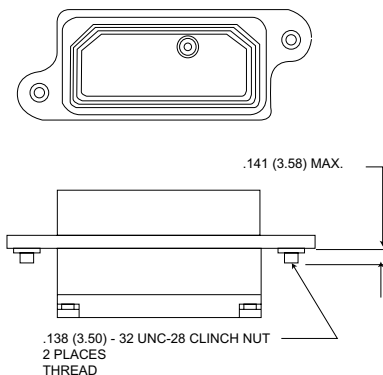
**Mounting Style M**  
Staggered Standard Hole Mounting MIL-C-83733/9(USAF)



**Mounting Style H**  
Staggered Bushing Mounting MIL-C-83733/10(USAF)

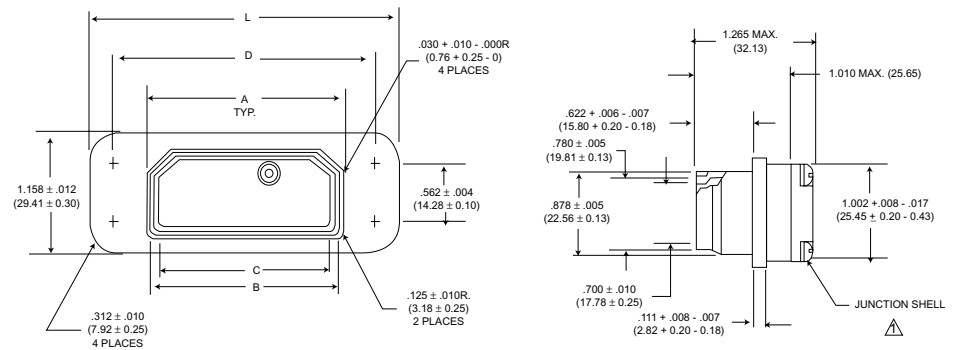


**Mounting Style Z**  
Staggered Clinch Nut Mounting MIL-C-83733/11(USAF)



## Plugs/Configurations (Socket Contacts)

### Basic Plug Shell Dimensions



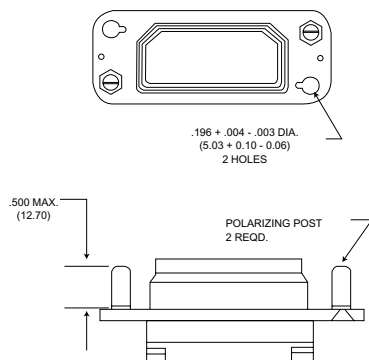
⚠ Junction shell and hardware are not supplied on -G131 and -G185 layouts.

† See page 83 Style M and H

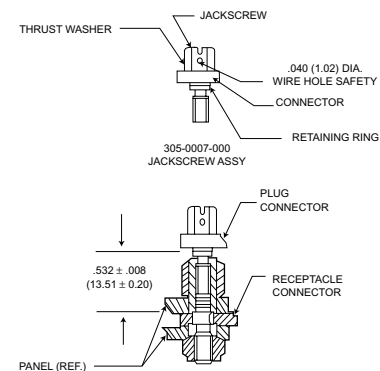
| SHELL SIZE | A             | B             | C             | D             | L              | N<br>Staggered † |
|------------|---------------|---------------|---------------|---------------|----------------|------------------|
| DPKA*S**   | 1.959 (49.76) | 1.864 (47.35) | 1.780 (45.21) | 2.580 (65.53) | 3.030 (76.96)  | 2.150 (54.61)    |
|            | 1.946 (49.43) | 1.853 (47.07) | 1.763 (44.78) | 2.570 (65.28) | 3.000 (76.20)  | 2.130 (54.10)    |
|            | 3.259 (82.78) | 3.164 (80.37) | 3.080 (78.23) | 3.880 (96.52) | 4.330 (109.98) | 3.450 (87.63)    |
| DPKB*S**   | 3.246 (82.45) | 3.153 (80.09) | 3.063 (77.80) | 3.870 (98.30) | 4.300 (109.22) | 3.430 (87.12)    |

### DPK Styles

#### Mounting Style A

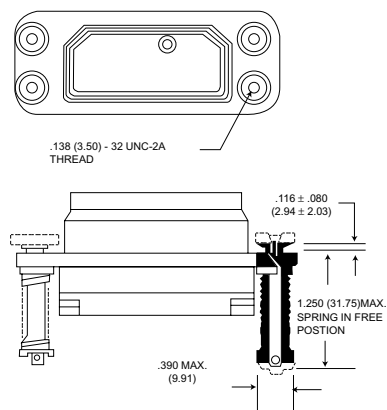


#### Mounting Spacing Dimensions For Jackscrew Assemblies



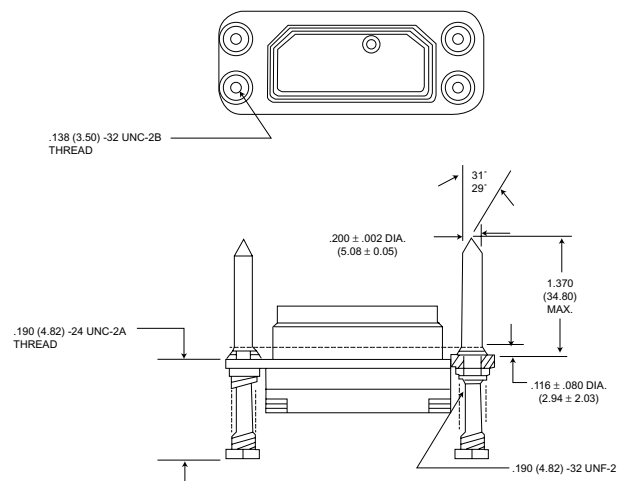
### DPK/MIL-C-83733 TYPES

#### Mounting Style K - MIL-C-83733/4(USAF) With Captive Springs



- NOTES:
1. Springs are pre-loaded to 25 pounds each in free position.
  2. Spring forces will be 118 pounds minimum at .500 (12.70) panel spacing and 176 pounds maximum at .390 (9.91) panel spacing

#### Mounting Style X - MIL-C-83733/2(USAF) With Guide Pins and Spring Mounting

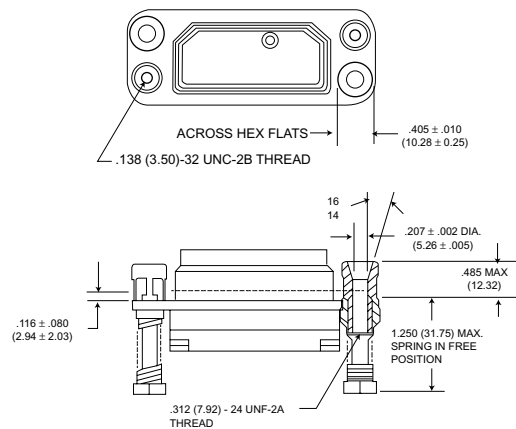


- NOTES:
1. Springs are pre-loaded to 25 pounds each in free position.
  2. Spring forces will be 59 pounds minimum at .500 (12.70) panel spacing and 88 pounds maximum at .390 (9.91) panel spacing
  3. This configuration must not be used on the 131 or 185 contact layouts.

## Plug/Configurations (Socket Contacts)

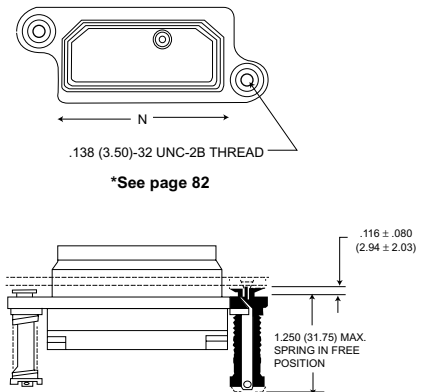
### DPK/MIL-C-83733 TYPES

#### Mounting Style Y - MIL-C-83733/7(USAF) With Guide Sockets and Spring Mounting



- NOTES: 1. Springs are pre-loaded to 25 pounds each in free position.  
2. Spring forces will be 59 pounds minimum at .500 (12.70) panel spacing and 88 pounds maximum at .390 (9.91) panel spacing

#### Mounting Style H - MIL-C-83733/12(USAF) Staggered Spring Mounting

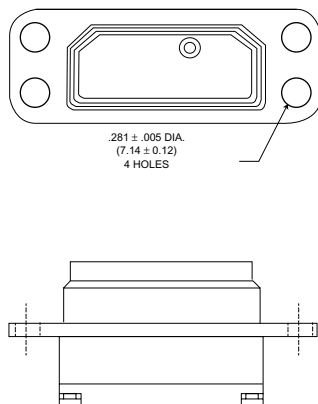


\*See page 82

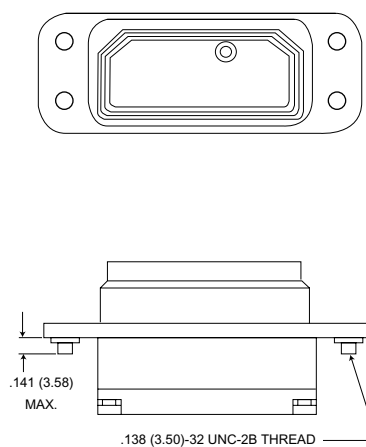
- NOTES: 1. Springs are pre-loaded to 25 pounds each in free position.  
2. Spring forces will be 59 pounds minimum at .500 (12.70) panel spacing and 88 pounds maximum at .390 (9.91) panel spacing  
3. This configuration must not be used on teh 131 or 185 contact layouts.

### DPK Commercial Types

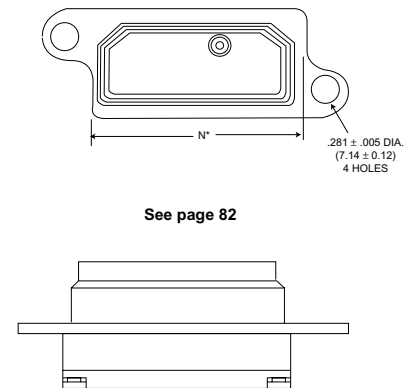
#### Mounting Style G Standard Hole Mounting



#### Mounting Style F Clinch Nut Mounting



#### Mounting Style M Mounting



See page 82

## Mounting Styles/Applications

DPK connectors for rectangular or staggered mounting are available in both two- and four-spring mount assemblies, or the same shelf style may be ordered to accommodate bushing assemblies. In the spring mount version the spring-loaded mechanism will compensate for a panel space variation of up to .070(1.78) while insuring electrical and environmental integrity.

DPK connectors are also available with polarizing posts, accommodations for jackscrews, and coupling nuts for cord-to-card and cord-to-panel applications. Another shelf style has two or four mounting holes fitted with captive clinch nuts. For mounting dimensions of the various mounting styles shown here please refer to page 87.

### Style A

Mounting style A is designed for cord-to-panel and cord-to-cord applications. Connectors are supplied with two polarizing posts installed and provisions for installation of two jackscrew assemblies or two coupling nut assemblies. (Replaces Mounting Style B.)



Plug  
Socket Contacts

Receptacle  
Pin Contacts

### Ordered Separately



Jackscrew Assembly  
305-0007-000

Coupling Nut Assembly  
335-0002-000

### Style C

Mounting style C is designed for cord-to-panel or rack-to-panel applications. Connectors are supplied with (4) MS24700-2 bushings on the receptacle and 4 spring mount assemblies on the plug.

M83733/5



Receptacle  
Pin Contacts

### Supplied with Connector



Bushing MS24700-2  
(Self-Locking)  
012-0515-000

Spring Mount Assembly  
MIL-C-83733/17  
231-00019-000

### Style F

Mounting Style F is designed for rack-to-panel applications. Connectors are supplied with four captive clinch nuts installed.

M83733/6



Receptacle  
Pin Contacts

### Style G

Mounting style G is designed for rack-to-panel applications. Connectors are supplied with four .281(7.14) diameter holes which will accommodate either four MS24700-2 bushings or four 231-0019-000 spring mounts,

M83733/1



Plug  
Socket Contacts



Receptacle  
Pin Contacts

### Ordered Separately



Bushing MS24700-2  
(Self-Locking)  
012-0515-000

Spring Mount Assembly  
MIL-C-83733/17  
231-0019-000

### Style H

Mounting style H is designed for rack-to-panel applications. Connectors are supplied with two .281(7.14) diameter holes which are staggered. Two spring mounts are on the plug end two MS24700-2 bushings are on the receptacle.

M83733-12



Plug  
Socket Contacts

M83733-10



Receptacle  
Pin Contacts

### Supplied with Connector



Bushing MS24700-2  
(Self-Locking)  
012-0515-000

Spring Mount Assembly  
MIL-C-83733/17  
231-0019-000

### Style K

Mounting style K is designed for rack-to-panel applications. Connectors are supplied with four activated, non-rotating spring mounts on the plug.

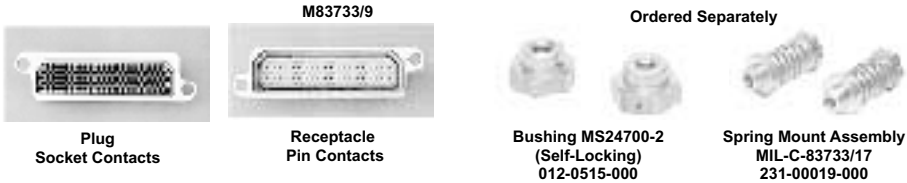
M83733/4



Plug  
Socket Contacts

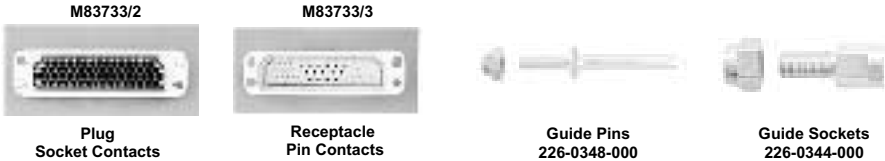
Style M

Mounting style M is designed for rack-to-panel applications. Connectors are supplied with two .281 (7,14) diameter holes which are staggered and will accommodate eight two MS24700-2 bushings or two 231-0019-000 spring mounts.



Style X

Mounting style X is designed for rack-to-panel applications where positive alignment is required before connectors are mated. Plug has two guide pins and two spring mounts (MIL-STO-1533); receptacle has two guide sockets and two .197 (5.00) dia. holes.



Style Y

Mounting style Y is identical to mounting style X, Xcept the guide sockets are on the plug and the guide pin and springs are on the receptacle.



Style Z

Mounting style Z is designed for use in rack-to-panel applications. Connectors are supplied with two captive clinch nuts which are staggered.



MIL-C-83733/DPK Mounting Style

| MIL-C-83733<br>Connector Type | DPK Mtg.<br>Style | Mating MIL-C-83733<br>Connector | DPK Mtg.<br>Style |
|-------------------------------|-------------------|---------------------------------|-------------------|
| M83733/1 RECEPTACLE           | G                 | M83733/4                        | K                 |
| M83733/2 PLUG                 | X                 | M83733/3                        | X                 |
| M83733/3 RECEPTACLE           | X                 | M83733/2                        | X                 |
| M83733/4 PLUG                 | K                 | M83733/1                        | G                 |
|                               |                   | M83733/5                        | C                 |
|                               |                   | M83733/6                        | F                 |
| M83733/5 RECEPTACLE           | C                 | M83733/4                        | K                 |
| M83733/6 RECEPTACLE           | F                 | M83733/4                        | K                 |
| M83733-07 PLUG                | Y                 | M83733/8                        | Y                 |
| M83733-08 RECEPTACLE          | Y                 | M83733/7                        | Y                 |
| M83733-09 RECEPTACLE*         | M                 | M83733/12                       | H                 |
| M83733-10 RECEPTACLE*         | H                 | M83733/12                       | H                 |
| M83733-11 RECEPTACLE*         | Z                 | M83733/12                       | H                 |
| M83733-12 RECEPTACLE          | H                 | M83733/9                        | M                 |
|                               |                   | M83733/10                       | H                 |
|                               |                   | M83733/11                       | Z                 |

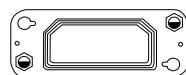
\*Not recommended for G131 and G185 layouts.

## Polarization (Mounting Style A only)

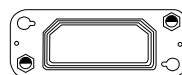
### Polarizing Post Alternate Positions

Pin inserts polarizing positions are 180° opposite socket insert polarizing positions. Shaded areas indicate extended portion of the polarizing post. Cord to panel DPK connectors are available in 35 alternate polarizing positions by changing indexing of the polarizing posts. Keystone corners and hexagonal posts provide this wide range of alternate positions.

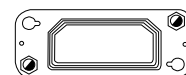
Face view of socket insert plug connector engaging end.



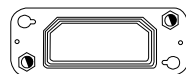
N



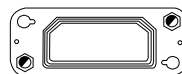
V



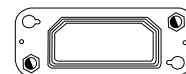
W



X



Y



Z

## Contact Data

### Standard Contacts

| Contact Size | Type     | Cannon Part Number           | MIL-C-39029 Military Part Number | Crimp Tool                                                                  | Insertion/ Extraction Tool | Grommet Sealing Plug Part Number (Color) |
|--------------|----------|------------------------------|----------------------------------|-----------------------------------------------------------------------------|----------------------------|------------------------------------------|
| 12           | Pin Skt. | 030-9185-003<br>031-9186-003 | M39029/4-113<br>M39029/5-118     | M22520/1-01 with<br>M22520/1-02 Turret                                      | MIL-I-81969/14-04          | 225-0072-000 (Yellow)                    |
| 16           | Pin Skt. | 030-9205-007<br>031-9206-006 | M39029/4-111<br>M39029/5-116     |                                                                             | MIL-I-81969/14-03          | 225-0071-000 (Blue)                      |
| 20           | Pin Skt. | 030-9173-006<br>031-9174-004 | M39029/4-110<br>M39029/5-115     | M22520/2-01 with<br>M22520/2-02 Turret                                      | MIL-I-81969/14-11          | 225-0070-000 (Red)                       |
| 22           | Pin Skt. | 030-1975-008<br>031-1113-008 | M39039/11-144<br>M39029/12-148   | M22520/2-01 with<br>M22520/2-23 Turret                                      | MIL-I-81969/14-01          | 225-1013-000 (Black)                     |
| 22D          | Pin Skt. | 030-2042-000<br>031-1147-000 | M39029/58-360<br>M39029/57-354   | M22520/2-01 with<br>M22520/2-06 (Socket) Turret<br>M22520/2-09 (Pin) Turret | MIL-I-81969/14-01          |                                          |

### Coaxial/Shielded Contacts

| Coaxial                                     | Type            | Prefix | Cannon Part Number           | Cable Accom. | DWV Voltage | Min./Max. O.D. Wire Accom. | Crimp Tool                                | Ins./ Ext. Tool | Grommet Sealing Plug Part Number (Color) |
|---------------------------------------------|-----------------|--------|------------------------------|--------------|-------------|----------------------------|-------------------------------------------|-----------------|------------------------------------------|
| Coaxial Contacts*<br>△59W7 Arrangement Only | Plug Receptacle | G<br>G | 249-5500-012<br>249-5500-013 | RG-316       | 500 VDC     | .122 (3.10)<br>.250 (6.35) | CCTC8 Outer<br>M22520/2-01<br>M22520/2-30 | CET-C8          | 225-0085-00 (White)                      |
|                                             | Plug Receptacle | F<br>F | 249-5500-010<br>249-5500-011 | RG-180/U     | 500 VDC     | .122/250                   | CCTC9 Outer<br>M22520/2-01<br>M22520/2-30 | CET-C8          |                                          |

\*Plug coaxials go into plug connectors (59W7S inserts with socket contacts). Receptacle coaxials go into receptacle connectors ("P" inserts) with pin contacts (59W7P inserts with pin contacts).

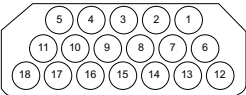
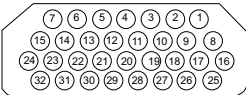
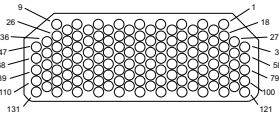
| Coaxial                              | Type          | Cannon Part Number           | MIL-C-39029 Part Number        | Cable Accom. | Min./Max Cable Dia.        | Crimp Tool                              | Locator                                 | Ins./ Ext. Tool | Grommet Sealing Plug Part Number (Color) |
|--------------------------------------|---------------|------------------------------|--------------------------------|--------------|----------------------------|-----------------------------------------|-----------------------------------------|-----------------|------------------------------------------|
| Size 12 Contact<br>71C15 Layout Only | Pin<br>Socket | 249-1825-001<br>249-1826-000 | M39029/50-340<br>M39029/51-341 | RG-179U      | .081 (2.06)<br>.158 (4.01) | .M22520/5-01 Outer<br>M22520/2-01 Inner | .M22520/5-08 Outer<br>M22520/2-30 Inner | CIET - 12       | 225-0072-000 (Yellow)                    |

\*Pin shielded contacts utilized in receptacle connectors (71C15P inserts).  
Socket shielded contacts utilized in plug connectors (71C15S inserts).

## Contact Arrangements

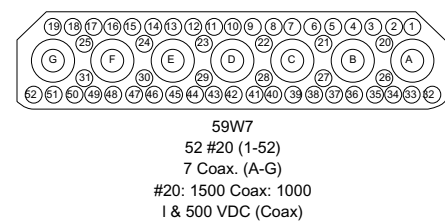
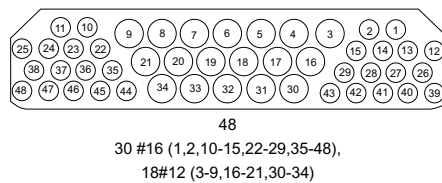
## DPKA

Face View Pin Insert Shown

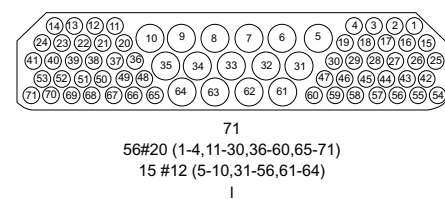
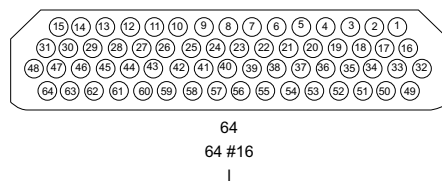
|                               |                                                                                   |                                                                                   |                                                                                    |                                                                                     |
|-------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
|                               |  |  |  |  |
| Layout                        | 18                                                                                | 32                                                                                | 51                                                                                 | G131                                                                                |
| No. of Contacts and Wire Size | 18 #12                                                                            | 32 #16                                                                            | 51 #20                                                                             | 131 #220                                                                            |
| Service Rating                | I                                                                                 | I                                                                                 | I                                                                                  | M                                                                                   |

## DPKB

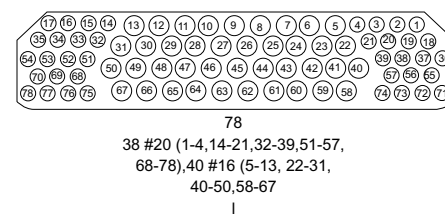
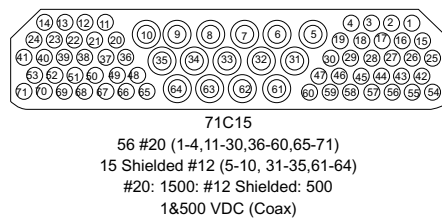
Layout  
No. of Contacts  
and Wire Size  
Service Rating



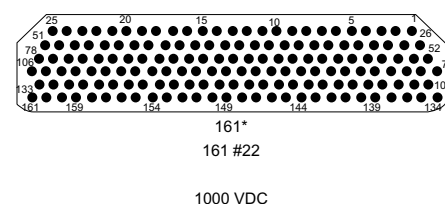
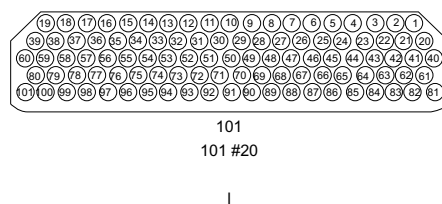
The 59W7 Layout is sold less coaxial contacts, see page 86 for contact part numbers.



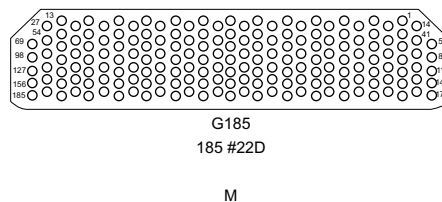
Layout  
No. of Contacts  
and Wire Size  
Service Rating



Layout  
No. of Contacts  
and Wire Size  
Service Rating



Layout  
No. of Contacts  
and Wire Size  
Service Rating



Layout  
No. of Contacts  
and Wire Size  
Service Rating

## \*POS-ALINE DESIGN

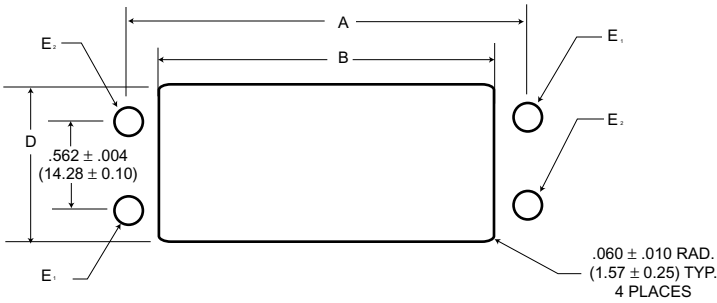
In the 161 contact arrangement, the entire pin contact is recessed in and individual cavity in the plug connector. The socket contact is exposed and extends from the connector receptacle face. (Pin insulator accepts socket contacts.)

Panel Cutout Dimensions

Mounting Styles

PG, SG SY, PY  
PC, PF, SF S\*A, S\*B  
SX, PX, SK P\*A, P\*B

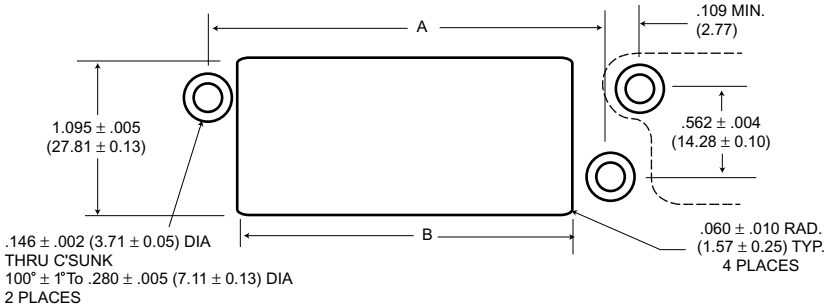
Figure 1.



Mounting Styles

SH, SM

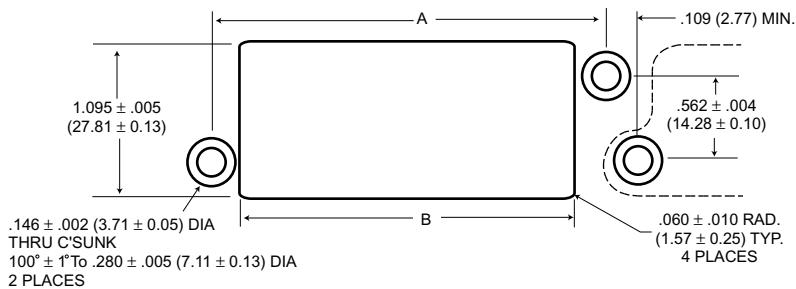
Figure 2.



Mounting Styles

PM, PH, PZ

Figure 3.

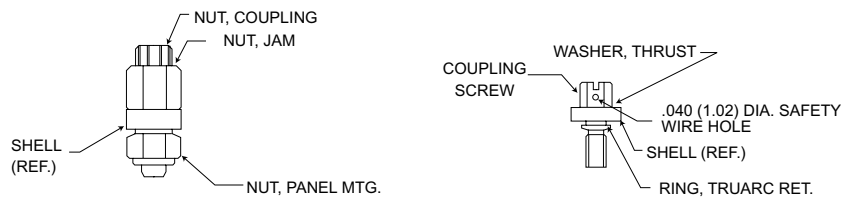


| MIL-C-83733<br>Part No./<br>Mounting Style | DPK<br>Mounting<br>Styles | Figure<br>Ref. | A<br>± .004(± 0.10) |                  | B<br>± .005(± 0.13) |                  | D<br>± .005(± 0.13) |                  | E <sub>1</sub>             |                            | E <sub>2</sub>               |                              |
|--------------------------------------------|---------------------------|----------------|---------------------|------------------|---------------------|------------------|---------------------|------------------|----------------------------|----------------------------|------------------------------|------------------------------|
|                                            |                           |                | Shell<br>Size A     | Shell<br>Size B  | Shell<br>Size A     | Shell<br>Size B  | Shell<br>Size A     | Shell<br>Size B  | Shell<br>Size A            | Shell<br>Size B            | Shell<br>Size A              | Shell<br>Size B              |
| M83733/1/5/6                               | PG, SG,<br>PC, PF,SF      | 1              | 2.578<br>(65.48)    | 3.875<br>(98.43) | 2.103<br>(51.13)    | 3.400<br>(86.36) | 1.022<br>(25.96)    | 1.022<br>(25.96) | .148 (3.76)<br>.144 (3.66) | .148 (3.76)<br>.144 (3.66) | .148 (3.76)<br>.144 (3.66)   | .148 (3.76)<br>.144 (3.66)   |
| M83733/2                                   | SX                        | 1              | 2.578<br>(65.48)    | 3.875<br>(98.43) | 2.103<br>(51.13)    | 3.465<br>(88.01) | 1.022<br>(25.96)    | 1.095<br>(27.81) | .148 (3.76)<br>.144 (3.66) | .148 (3.76)<br>.144 (3.66) | .260 (6.60)<br>.250 (6.35)   | .260 (6.60)<br>.250 (6.35)   |
| M83733/3                                   | PX                        | 1              | 2.578<br>(65.48)    | 3.875<br>(98.43) | 2.103<br>(51.13)    | 3.465<br>(88.01) | 1.022<br>(25.96)    | 1.095<br>(27.81) | .320 (8.13)<br>.315 (8.00) | .320 (8.13)<br>.315 (8.00) | .148 (3.76)<br>.144 (3.66)   | .148 (3.76)<br>.144 (3.66)   |
| M83733/4                                   | SK                        | 1              | 2.578<br>(65.48)    | 3.875<br>(98.43) | 2.167<br>(55.04)    | 3.465<br>(88.01) | 1.095<br>(27.81)    | 1.095<br>(27.81) | .148 (3.76)<br>.144 (3.66) | .148 (3.76)<br>.144 (3.66) | .148 (3.76)<br>.144 (3.66)   | .148 (3.76)<br>.144 (3.66)   |
| M8733/7                                    | SY                        | 1              | 2.578<br>(65.48)    | 3.875<br>(98.43) | 2.167<br>(55.04)    | 3.465<br>(88.01) | 1.095<br>(27.81)    | 1.095<br>(27.81) | .148 (3.76)<br>.144 (3.66) | .148 (3.76)<br>.144 (3.66) | .430 (10.92)<br>.420 (10.67) | .430 (10.92)<br>.420 (10.67) |
| M83733/8                                   | PY                        | 1              | 2.578<br>(65.48)    | 3.875<br>(98.43) | 2.167<br>(55.04)    | 3.465<br>(88.01) | 1.095<br>(27.81)    | 1.095<br>(27.81) | .380 (9.65)<br>.370 (9.40) | .380 (9.65)<br>.370 (9.40) | .148 (3.76)<br>.144 (3.66)   | .148 (3.76)<br>.144 (3.66)   |
| M83733/9/10/11                             | PM, PH<br>PZ              | 2              | 2.578<br>(65.48)    | 3.875<br>(98.43) | 2.167<br>(55.04)    | 3.465<br>(88.01) | 1.095<br>(27.81)    | 1.022<br>(25.96) | -                          | -                          | -                            | -                            |
| M83733/12                                  | SH, SM                    | 3              | 2.578<br>(65.48)    | 3.875<br>(98.43) | 2.095<br>(53.21)    | 3.400<br>(86.36) | 1.095<br>(27.81)    | 1.095<br>(27.81) | -                          | -                          | -                            | -                            |
| N/A                                        | S*A, S*B,<br>P*A, P*B     | 1              | 2.578<br>(65.48)    | 3.875<br>(98.43) | 2.103<br>(51.13)    | 3.465<br>(88.01) | 1.022<br>(25.96)    | 1.095<br>(27.81) | .301 (7.65)<br>.294 (7.45) | .301 (7.65)<br>.294 (7.45) | .301 (7.65)<br>.294 (7.45)   | .301 (7.65)<br>.294 (7.45)   |

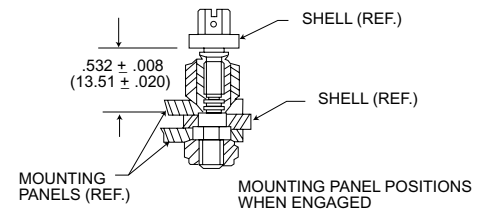
## Mounting Assembly-Jackscrew/Coupling Nut

Installatoin of jackscrew and coupling nuts in mounting style A and B.

CORD-TO-CORD INSTALLATION



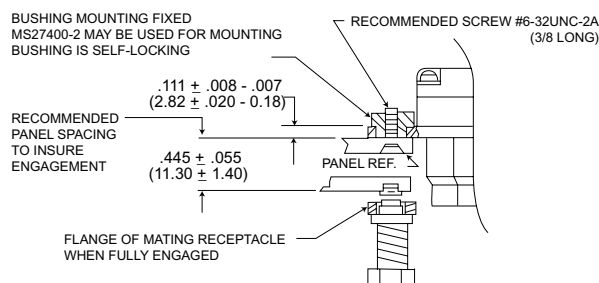
PANEL MOUNTING



## Mounting Assembly-Bushing/Spring Mount

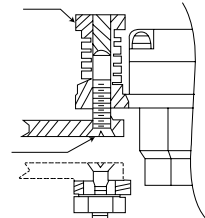
Installatoin of mounting styles utilizing bushing and spring mount assemblies.

### PLUGS

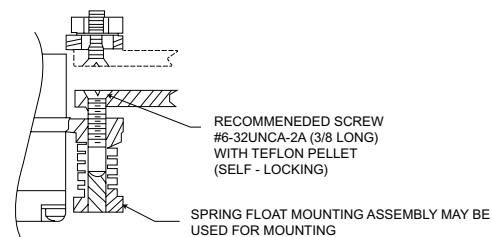
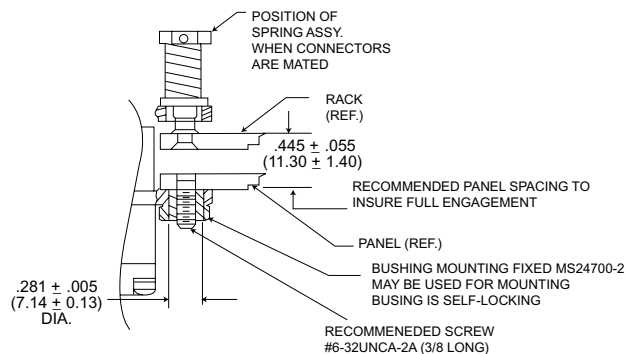


SPRING, FLOAT MOUNTING ASSEMBLY MAY BE USED FOR MOUNTING MIL-C-83733/17

RECOMMENDED SCREW #6-32UNC-2A (3/8 LONG) WITH TEFLON PELLET (SELF-LOCKING)



### RECEPTACLES



## Mating Forces

The axial forces required to fully mate or separated the plug and receptacle shall not exceed the values listed.

Mating force at .390 (9.91) minimum spacing

| Shell Size | Without mounting accessories | Spring mounting |        |
|------------|------------------------------|-----------------|--------|
|            |                              | Maximum         | Normal |
| A          | 70 max.                      | 176             | 145    |
| B          | 95 max.                      | 176             | 150    |

For connectors using spring mounting, the mating forces become a function of the spring loading. Values listed apply to connectors mounted as specified above at minimum panel spacing.

## Dust Covers

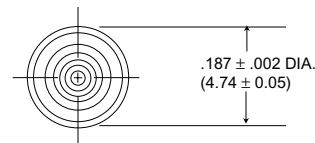
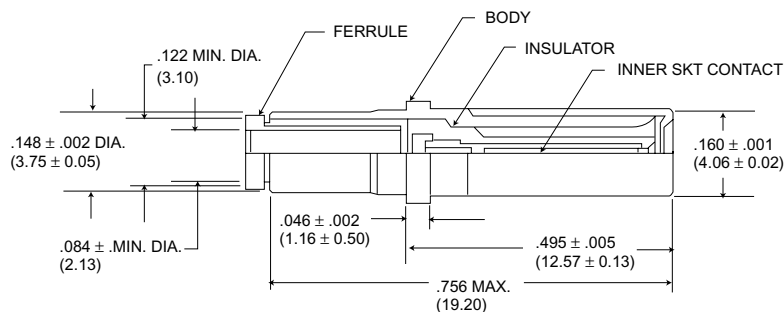
### PLASTIC TYPE

| Series | Style      |         | Standard     | Conductive   |
|--------|------------|---------|--------------|--------------|
| DPKA   | Receptacle | DPKA-60 | 025-0773-000 | 025-0773-001 |
|        | Plug       | DPKA-59 | 025-0772-000 | 025-0772-001 |
| DPKB   | Receptacle | DPKB-60 | 025-0774-000 | 025-0774-001 |
|        | Plug       | DPKB-59 | 025-0758-000 | 025-1195-000 |

## Assembly/Shielded Contacts

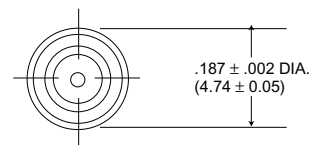
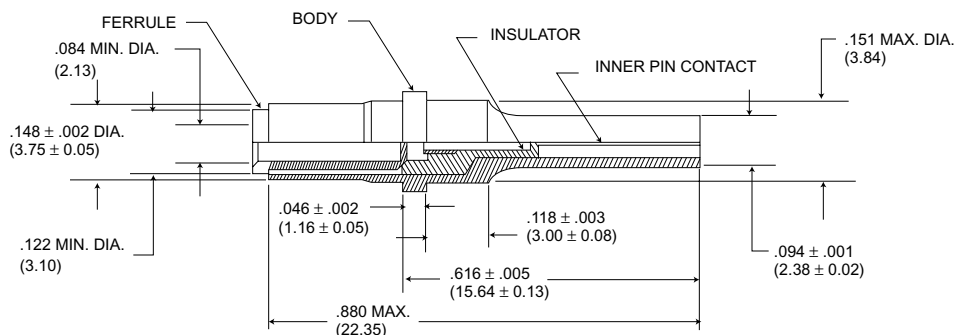
### Socket

249-1826-000/MIL-C-39029/51  
Size 12/RG-179B/U Cable (used in 71C15 layout)

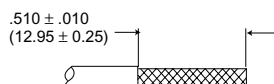


### Pin

249-1826-000/MIL-C-39029/50  
Size 12/RG-179B/U Cable (used in 71C15 layout)

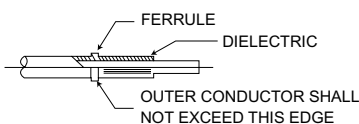


## Assembly Instructions



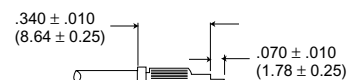
### Step 1.

Strip outer jacket to dimensions shown to expose outer conductor.



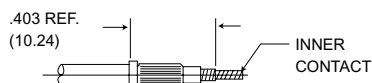
### Step 2.

Slip (or install) ferrule over outer conductor against cable jacket. Exposed portion of the outer conductor must be combed out then folded back over ferrule.



### Step 3.

Trim cable to dimensions, as shown. (Ferrule must butt against cable jacket).



### Step 4.

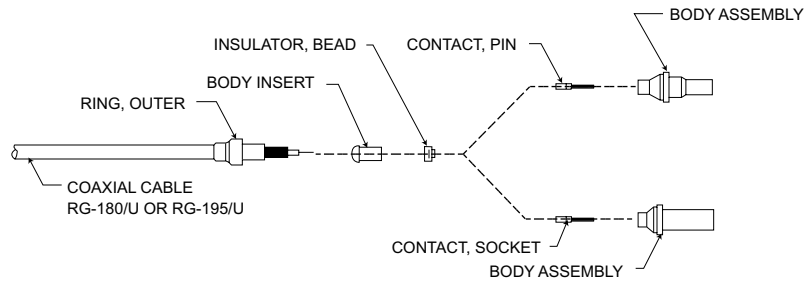
Install inner contact against dielectric then crimp contact and center conductor with a M22520/2-01 crimp tool using a M22520/2-30 locator.

### Step 5.

Insert cable, ferrule and inner contact to rear of shell and crimp into place with M22520/5-03 crimp tool.

## Coaxial Contact/Assembly

249-5500-010 Socket\*  
249-5500-011 PIN\*

**STEP 1.**

Slide outer ring over cable as shown (Figure 1).

**STEP 2.**

Strip cable as shown (Figure 1).

**STEP 3.**

Install body insert, insulator bead, and contact on cable as shown (Figure 2).

**STEP 4.**

With body insert, insulator bead, and contact firmly in place, crimp the contact with tool M22520/2-01 (setting number 3) and locator M22520/2-30 (Figure 2). Caution: The assembled components must be tightly in place after crimping.

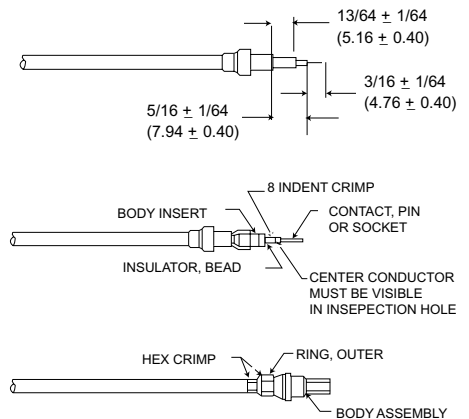
**STEP 5.**

Slide body assembly over components and under shield until firmly bottomed in place. Locate outer ring over shield and against body as shown (Figure 3).

**STEP 6.**

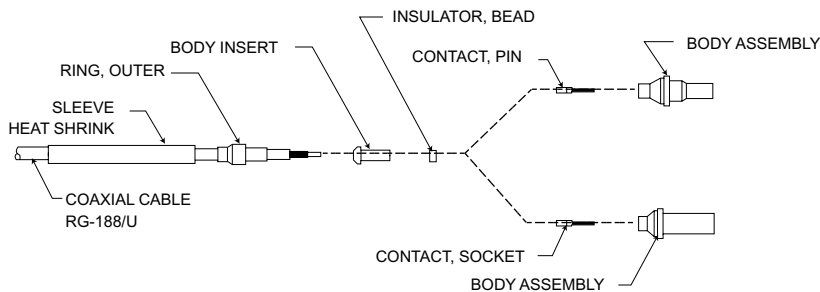
With cable and body assembly securely held together, hex crimp the outer ring with tool CCT-C9 (Figure 3). Important: For optimum hex crimp, firmly bottom the outer ring against the shoulder of the hex die before compressing the handles.

- NOTES:**
1. These assembly instructions apply to 249-5500-010, and 249-5500-011.
  2. The following assembly tools are required:
    - a) CCT-C9 hex crimp tool
    - b) MS3198-Q W/L-3198-C1 contact crimp tool and locator
    - c) 149 C(300 F) hot air gun (recommended): Regal heat Gun No. 9A)
    - d) Blades, scissors, and picks



\*These contacts are used in the F59C7 layout.

249-5500-012 Socket\*  
249-5500-013 PIN\*

**STEP 1.**

Slide heat-shrink sleeve and outer ring over cable as shown.

**STEP 2.**

Strip cable as shown (Figure 1). Caution: Do not nick shield wires.

**STEP 3.**

Install body insert, insulator bead, and contact on cable as shown.

**STEP 4.**

With body insert, insulator bead, and contact firmly in place, crimp the contact with tool M22520/2-01, using setting number 3 and locator M22520/2-30 (Figure 2). Caution: The assembled components must be tightly in place after crimping.

**STEP 5.**

Slide body assembly over components and under shield until firmly bottomed in place. Locate outer ring over shield and against body as shown (Figure 3).

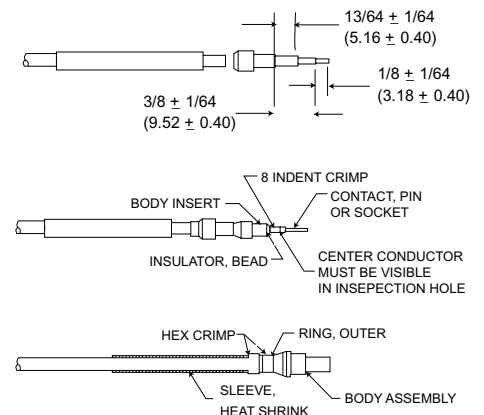
**STEP 6.**

With cable and body assembly securely held together, hex crimp the outer ring with tool CCT-C9 (Figure 3). Important: For optimum hex crimp, firmly bottom the outer ring against the shoulder of the hex die before compressing the handles.

**STEP 7.**

The final step is to shrink the heat sleeve in place with a hot air source of 149 C to 327 C (300 F to 621 F) (Figure 3).

- NOTES:**
1. These assembly instructions apply to 249-5500-010, and 249-5500-011.
  2. The following assembly tools are required:
    - a) CCT-C9 hex crimp tool
    - b) M22520/2-01 contact crimp tool and locator
    - c) 149 C(300 F) hot air gun (recommended): Regal heat Gun No. 9A)
    - d) Blades, scissors, and picks



\*These contacts are used in the G59C7 layout.

**DPA-Miniature Rack/Panel**

DPA plugs are rugged, miniature rack/panel plugs utilizing maximum insert space in a one-piece shell. Polarization is accomplished with a keystone cornered shell and the coupling means is friction. Operating temperature for the DPA is - 55 C to + 125 C (-67 F to + 257 F)

**DPAF - Float Mount Shells**

DPAF plugs are DPA plugs with four rivets with washers on the contact termination side of the connector. Floating rivets are .093 (2.36) I.D. with a minimum of .032 (0.81) float.

**DPAL - Large Flange Shells**

DPAL plugs are DPA plugs with a large flange.

**DPAMA - Little CAESAR' Contact Assembly**

DPAMA plugs are DPA plugs with the proven LITTLE CAESAR contact assembly for rear insertion, release and extraction of crimp type contacts. Insertion requires no tool; extraction requires an expendable plastic tool. Hard dielectric, closed-entry socket insert has lead-in chamfers for positive mating of pin contacts. Contacts are of simpler, stronger design for greater resistance to bending or damage and are crimpable with the M22520/1-01 tool.

**Material Specifications**

|           |             | DPA/DPAF/DPAL                      | DPAMA                              |
|-----------|-------------|------------------------------------|------------------------------------|
| Shell     | Material    | Aluminum alloy                     | Aluminum alloy                     |
|           | Finish      | Cadmium plate with yellow chromate | Cadmium plate with yellow chromate |
| Insulator | Material    | Melamine                           | Diallyl phthalate                  |
|           | Finish      |                                    |                                    |
| Contacts  | Material    | Copper alloy                       | Copper alloy                       |
|           | Finish      | Gold over copper alloy             | Gold over copper alloy             |
|           | Termination | Solder pot                         | Crimp                              |

**How to Order**

DPA - 24C2 - 34 P  
DPA H - 32 - 34 P -  
DPA MA - 32 - 33 S - \*

SERIES PREFIX \_\_\_\_\_  
CLASS \_\_\_\_\_  
CONTACT ARRANGEMENT \_\_\_\_\_  
SHELL TYPE \_\_\_\_\_  
CONTACT TYPE \_\_\_\_\_  
MOUNTING HOLE STYLE \_\_\_\_\_  
MODIFIER \_\_\_\_\_

**SERIES PREFIX****CLASS**

F - Float mount shell  
L - Large flange shell  
MA - LITTLE CAESAR contact assembly with crimp, snap in contacts

**CONTACT ARRANGEMENT****SHELL TYPE**

33 for male, 34 for female

**CONTACT TYPE**

P - Pin  
S - Socket

**MOUNTING HOLE STYLES****DPA**

No Dash - .093 (2.36) Dia.  
A - .093 (2.36) Dia., countersunk 82 to .173 (4.39) Dia.  
B - .120 (3.05) Dia., countersunk 100 to .225 (5.72) Dia.  
C - .093 (2.36) Dia., countersunk 100 to .182 (4.62) Dia.  
D - .136 (3.45) Dia.  
E - .120 (3.05) Dia.  
F - .100 (2.54) Dia.  
G - .120 (3.05) Dia., countersunk 82 to .203 (5.16) Dia.  
H - Tapped #4-40 NC-2  
J - .093 (2.36) Dia., countersunk 100 to .192 (4.88) Dia.

**DPAMA**

No Dash - .093 (2.36) Dia., countersunk 82 to .173 (4.39) Dia.  
A - .093 (2.36) Dia.  
B - .120 (3.05) Dia., countersunk 100 to .225 (5.72) Dia.  
C - .093 (2.36) Dia., countersunk 100 to .182 (4.62) Dia.  
D - .136 (3.45) Dia.  
E - .120 (3.05) Dia.  
F - .100 (2.54) Dia.  
G - .120 (3.05) Dia., countersunk 82 to .203 (5.16) Dia.  
H - Tapped #4-40 NC-2

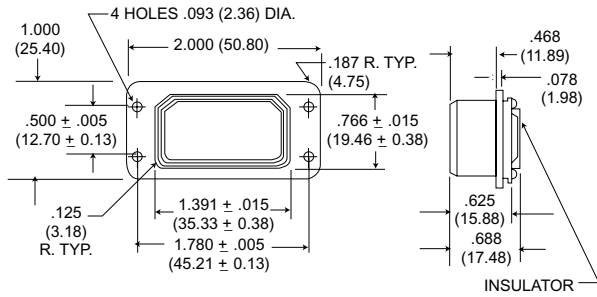
**MODIFIER**

Add FO to order connector less contacts. Consult factory for other modifications.

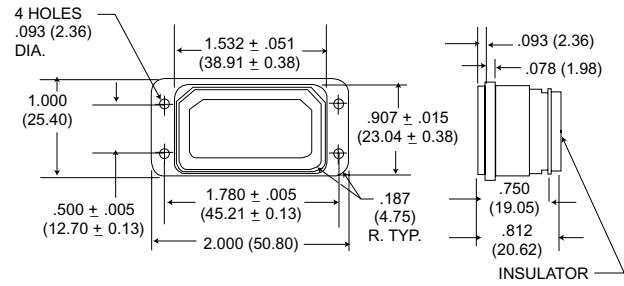
Arrangements with coax contacts, such as 24C2, may be ordered without coax contacts by substituting a "W" for the "C" e.g., DPA-24C2-34P with two coax contacts becomes DPA-24W2-34P with two cavities. The customer can then order separately any snap in coax contact shown on page 95. The customer is thus able to "create" arrangements with infinite combinations of coax contacts.

## Solid Shell

DPA-33

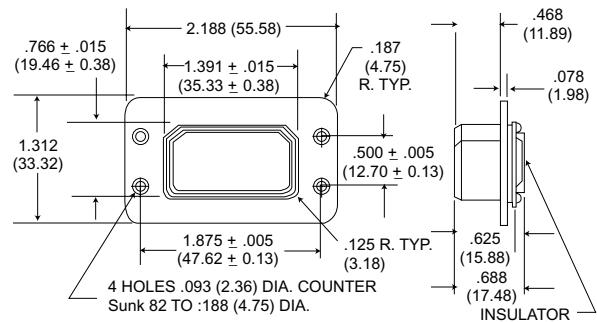


DPA-34

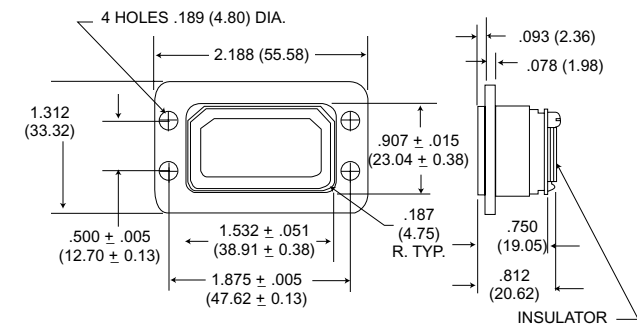


## Large Flange Shell

DPAL-33

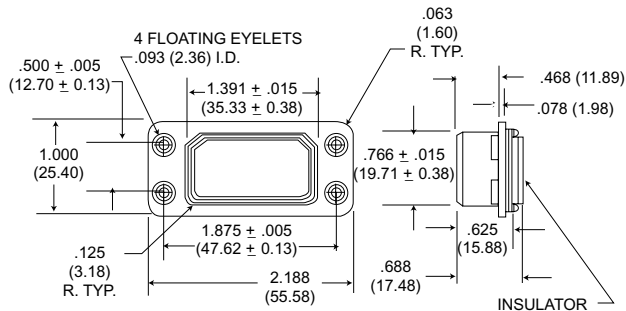


DPAL-34

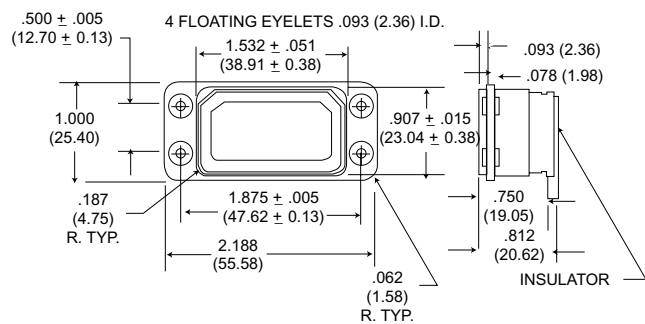


## Float Mount Shell

DPAF-33

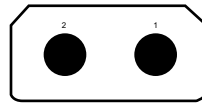


DPAF-34

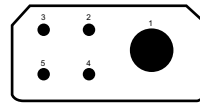


## Contact Arrangements

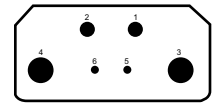
Face view of pin insert



2  
2 #4  
2900

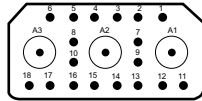


5  
1 #4, 4 #14  
2500

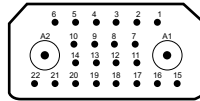


6  
2 #8, 2 #12, 2 #20  
2600 (5,6)

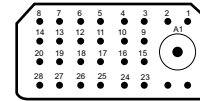
No. of contacts & Wire Size  
Test Voltage AC (RMS)



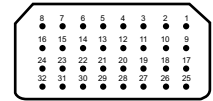
21C3  
18 #20, 3 coax  
1500 (1-18)  
1000 (A1, A2, A3)



24C2  
22 #20, 2 coax  
1500 (1-22)  
1000 (A1, A2)



29C1  
28 #20, 1 coax  
1500 (1-28), 1000 (A1)



32  
32 #20  
1500

No. of contacts & Wire Size  
Test Voltage AC (RMS)

Arrangement also available with LITTLE CAESAR contact assembly and may be employed in any shell type.

## Contact Arrangements

### DPA Coaxial Variations

| Termination Code | Variations of Basic Arrangements | Coaxial Type/Part Number | Max. Coaxial Extension From Rear of Flange |              |
|------------------|----------------------------------|--------------------------|--------------------------------------------|--------------|
|                  |                                  |                          | 34 Shell                                   | 33 Shell     |
| 1                | A21C3                            | *24C2                    | .953 (24.21)                               | .453 (11.51) |
| 2                | *21C3                            | D24C2                    | .859 (21.82)                               | .359 (9.12)  |
| 3*               | B21C3                            | L24C2                    | 1.031 (26.91)                              | .500 (12.70) |
| 4                | C21C3                            | P24C2                    | 1.094 (27.79)                              | .594 (15.09) |
| 5                | D21C3                            | K24C2                    | 1.047 (26.59)                              | .561 (14.28) |
| 6*               | E21C3                            | N24C2                    | 1.218 (30.94)                              | .670 (17.02) |
| 7                | F21C3                            | B24C2                    | 1.094 (27.79)                              | .594 (15.09) |
| 8                | F21C3                            | C24C2                    | 1.094 (27.79)                              | .609 (15.47) |
| 9                | H21C3                            | R24C2                    | 1.125 (28.98)                              | .625 (15.88) |
| 10               | 21HV3                            | 24HV2                    | 1.062(26.98)                               | .554 (14.07) |
| 11*              | J21C3                            | H24C2                    | 1.218 (30.94)                              | .670 (17.02) |
|                  | 21W3                             | 24W2                     | Coaxials Not Supplied                      |              |

\*Termination codes - 3, - 6, - 11 utilize snap - in nonremovable coaxials which are supplied with the connector. These coaxials may be ordered separately when ordering the connectors without coaxials (21W3 24W2 and 29W1 layouts).

### DPAMA Coaxial Variations

| Variations of Basic Arrangements | Coaxial Type/Part Number | Max. Coaxial Extension From Rear of Flange |              |
|----------------------------------|--------------------------|--------------------------------------------|--------------|
|                                  |                          | 34 Shell                                   | 33 Shell     |
| 24W2                             | 29W1                     | -                                          | -            |
| E24C2                            | B29C1                    | 1.239 (31.47)                              | .737 (18.72) |

\*DPAMA coaxials purchased separately may be ordered under the following part numbers: Pin (Plug): 249-1741-000  
Socket (receptacle): 249-9008-000  
Crimp Tool: CA58073-0000  
Extraction tool: CET-C11

NOTE: DPA snap in coaxials and DPAMA crimp coaxials are NOT interchangeable but are intermateable.

## Contact Terminations

All dimensions are  $\pm .010$  (0.25) unless indicated otherwise.

| Code | Cable Accommodation                |  |                  |
|------|------------------------------------|--|------------------|
| 1    | RG-59B/U<br>RG-62A/U               |  | .156 (3.96) DIA. |
| 2    | RG-187/U<br>RG-188/U               |  | .062 (1.58) DIA. |
| 3    | RG-58C/U                           |  | .145 (3.68) DIA. |
| 4    | RG-58C/U                           |  | .123 (3.12) DIA. |
| 5    | #20 captive contact                |  | #20 CONTACT      |
| 6    | RG-178A/U<br>RG-196/U              |  | .040 (1.02) DIA. |
| 7    | Special                            |  | .096 (2.44) DIA. |
| 8    | RG-187/U<br>RG-188/U               |  | .067 (1.70) DIA. |
| 9    | RG-178A/U<br>RG-196/U              |  | .040 (1.02) DIA. |
| 10   | High Voltage<br>wire accommodation |  | HV#20            |
| 11   | RG-187/U<br>RG-188/U               |  | .067 (1.70) DIA. |

### MAX. CONTACT EXTENSION from rear of insulator

| Contact Size |        | 20          | 18          | 14          | 12          | 8           | 4            |
|--------------|--------|-------------|-------------|-------------|-------------|-------------|--------------|
| Contact      | Pin    | .156 (3.96) | .140 (3.56) | .125 (3.18) | .218 (5.54) | .218 (5.54) | .250 (6.35)  |
| Extension    | Socket | .156 (3.96) | .250 (6.35) | .344 (8.74) | .218 (5.54) | .266 (6.76) | .531 (13.49) |

## Contact Arrangements

### Dust Caps



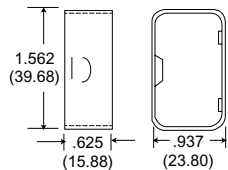
DPA-59 FOR 33 SHELLS  
025-0572-000



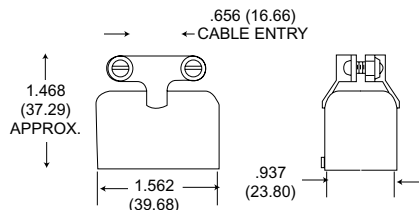
DPA-60 FOR 34 SHELLS  
025-0573-000

Conductive: DPA-60-1  
025-0573-001 (Protects  
Against Static Electricity)

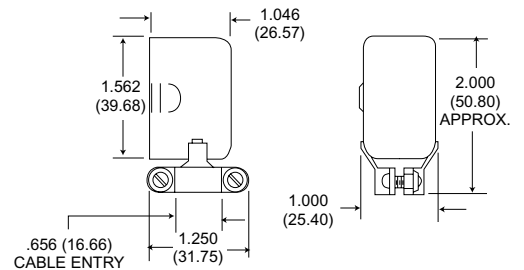
### 22054 Potting Shell



### 20746 Straight Junction Shell



### 20746-1 90° Angle Junction Shell



## Environmental, Rectangular Connectors for Aircraft, Missile and Ground Support Equipment Applications

Cannon's DPGM, DPJM, and DPJMB connectors are designed for applications where space and weight are prime considerations. Their rectangular shape provides maximum space utilization and permits easy removal of equipment for inspection and/or repair. DPGM and DPJM connectors feature crimp snap-in contacts with ring-type retention while DPJMB connectors feature the LITTLE CAESAR® rear release contact retention assembly (rear insertion, release and extraction of crimp snap-in contacts). They both have one piece diallyl phthalate insulators with polychloroprene wire sealing grommets. They also incorporate a peripheral seal design that allows an axial tolerance of up to .125 (3.175) while still effecting a seal. The 34 shell utilizes a rubber seal encased in such a way that the step down design of the mating 33 shell seats into and against it.

All of these connectors utilize keystone corners for polarization and are coupled by friction. Two shell styles with different mounting provisions are available.



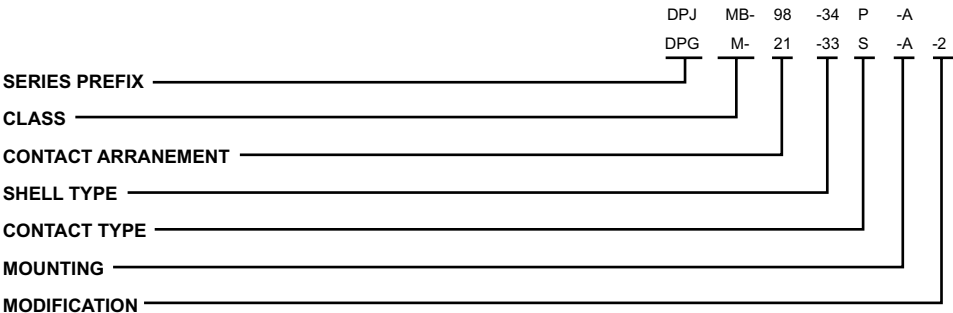
For all new applications, the referenced connectors will be available only with insulators in the normal position, that is, pin insulators in the 34 (receptacle) shells and socket insulators in the 33 (plug) shells.

For replacements it is suggested that where practical, customers using these connectors with reversed insulators change to connectors with insulators in the normal position. However, for those who are unable to change we will furnish connectors with reversed insulators to maintain their equipment usage.

## Standard Data

| DPGM/DPJM/DPJMB      |                 |                                        |
|----------------------|-----------------|----------------------------------------|
| Shell                | Material        | Aluminum alloy                         |
|                      | Finish          | Cadmium plate with olive drab irridite |
| Insulator            | Material        | Diallyl phthalate                      |
|                      | Material        | Copper alloy                           |
| Contacts             | Finish          | Gold plate                             |
|                      | Termination     | Crimp                                  |
| Contact Arrangements | No. of Contacts | 8, 12, 15, 16, 20, 21, 32, 59, 98      |

## How To Order



Contacts, coaxials and junction shells must be ordered separately, except for the DPJMB where the contacts are supplied with the connector. When (ordering or reordering) please specify the 3-4-3 contact part number as shown. We have cross-referenced these new part numbers with the previous part numbers (which have been obsoleted) for your convenience.

Example:

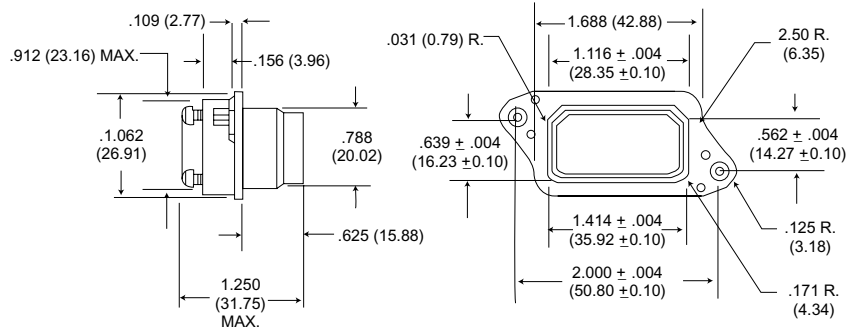
031-0900-001 new "3-4-3" part number  
038819-001 previous part number

- SERIES PREFIX**  
DPG, DPJ
- CLASS**  
M - One piece insulator ring - type retention  
MB - LITTLE CAESAR contact retention assembly
- CONTACT ARRANGEMENTS**  
DPGM - C8, 12, 15, 16, 20C4, 21 and 32  
DPJM - C21, 59, 59C10, and 98  
DPJMB - 59, 98

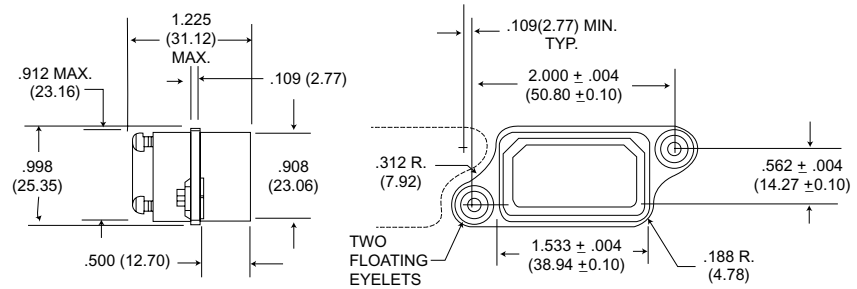
- SHELL TYPE**  
33 for plug, 34 for receptacle
- CONTACT TYPE**  
P for pin, S for socket
- MOUNTING**  
33-A-With 6-32 captive hex mtg. nuts  
33-B-Clearance holes for 6-32 screw  
34-A-Floating eyelet with 6-32 tapped I.D.  
34-B-Floating eyelet with .140 I.D.
- MODIFICATION**  
-2-.125 (3.18) removed from front lip of -33 shell

## Shell Dimensions - DPGM

### 33 SHELL

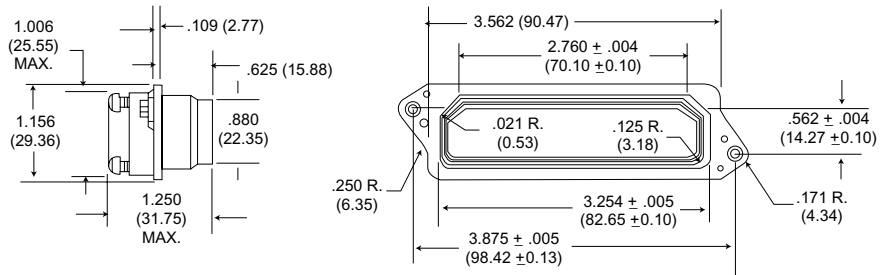


### 34 SHELL

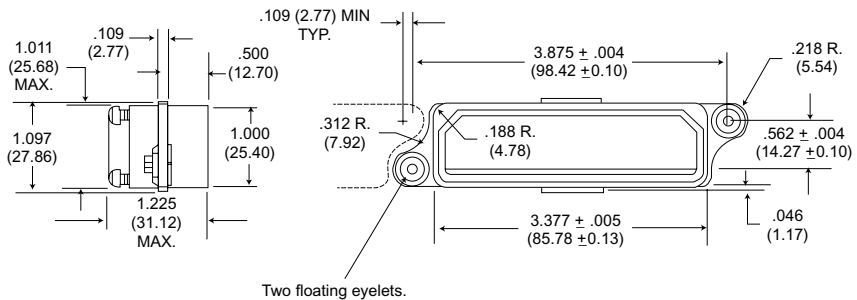


## Shell Dimensions -DPJM/DPJMB

### 33 SHELL

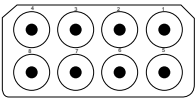


### 34 SHELL

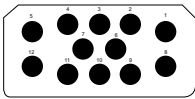


Contact Arrangements

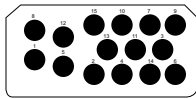
DPGM



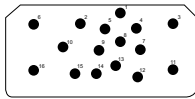
**C8\***  
8 coax (1-8)  
1000



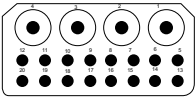
**12\***  
12 #16 (1-12)  
See note



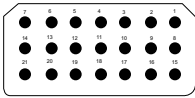
**15\***  
15 #16 (1-15)  
See note



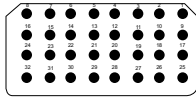
**16\***  
5 #20 (3,6,10,11 & 16)  
1500  
9 #20 (1,4,5,7-9, 13-15)  
1700  
(2 #20 (2&12)  
1500



**20C4\***  
16 #20 (5-20)  
1500  
4 COAX (1-4)  
1000



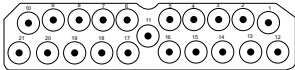
**21\***  
21 #20 (1-21)  
1500



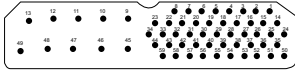
**32\***  
32 #20 (1-32)  
1500

\*All DPGM arrangements have a 1500 VAC test voltage except for arrangements 12 and 15, which is 3200 VAC for contact 1,5,8 and 12. The remaining contacts have a 2200 VAC test voltage. All coaxials have 1000 VAC rms test voltage.

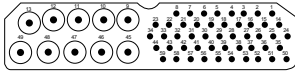
DPJM/DPJMB



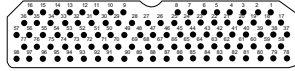
**C21\***  
21 COAX (#1-21)  
1000



**59**  
49 #20 (1-8,14-44 & 50-59)  
1500  
10 #12 (9-13 & 45-49)  
1500



**59C10\***  
49 #20 (1-8, 14-44&50-59)  
1700  
10 COAX (9-13&45-49)  
1000



**98\*†**  
98 #20 (1-98)  
1500

\* All DPJM and DPJMB power contact arrangements have a 1500 VAC rms test volstage. Coaxials have 1000 VAC rms voltage.  
†\* Available with LITTLE CAESAR contact assembly (DPJMB).

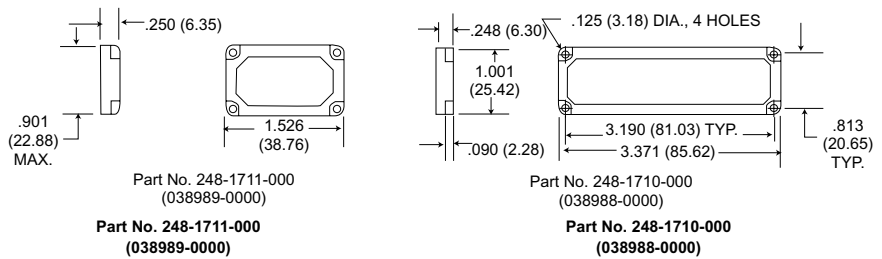
| Current Carrying Capacity of Wires and Cables |          |
|-----------------------------------------------|----------|
| Wire Size                                     | Amperage |
| #4                                            | 80       |
| #8                                            | 46       |
| #12                                           | 23       |
| #16                                           | 13       |
| #20                                           | 7.5      |

## Junction Shells

### DPGM

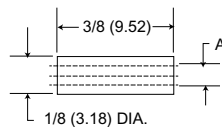
DPGM junction shells are essential for proper installation of connector and are ordered separately.

### DPJM/DPJMB



## Wire Bushings

Small wires should be provided with rubber bushings before crimping. Approximately 1/16 (1.59) of an inch of bushing is visible when installed into grommet. Grommets will seal with or without bushings or wire .096 (2.44) to .185 (4.70) to diameter.



### Sealing Wires on #12 and Coaxial Contacts

| New Part Number | Existing Part Number | Wire Size O.D. | I.D A |
|-----------------|----------------------|----------------|-------|
| 012-0319-000    | 021604-0002          | .040-.083      | .062  |
| 012-0435-000    | 021604-0004          | .080-.096      | .080  |

## Hole Fillers



All holes in grommet require filling either by a wire and contract, or by means of wire hole plugs.

| Contact Size | Part Number  |
|--------------|--------------|
| 20           | 225-0070-000 |
| 16           | 225-0071-000 |
| 12           | 225-0072-000 |
| Coaxial      | 225-0085-000 |

## Contact/Coaxial Data and Termination Tool

### DPJMB

| Contact Size | Wire Size Accom. | Contact Part Number |              | Crimp Tool Part No. | Locator     | Locator Color | Extraction Tool No. |
|--------------|------------------|---------------------|--------------|---------------------|-------------|---------------|---------------------|
|              |                  | Pin                 | Socket       |                     |             |               |                     |
| 20           | 20-24            | 030-9081-001        | 031-9082-001 | M22520/1-01         | M22520/1-02 | red           | CET 20-14           |
| 12           | 12-14            | 030-9185-002        | 031-9186-002 | M22520/1-01         | M22520/1-02 | yellow        | CET 12-4            |

### DPGM/DPJM

| Contact Size | Wire Size Accom. | Contact Part Number           |                               | Crimp Tool Part No. | Locator     | Locator Color | Extraction Tool No. |
|--------------|------------------|-------------------------------|-------------------------------|---------------------|-------------|---------------|---------------------|
|              |                  | Pin                           | Socket                        |                     |             |               |                     |
| 20           | 20-24            | 031-0905-000<br>(038820-0001) | 031-0900-001<br>(038819-0001) | M22520/1-01         | M22520/1-02 | CIT 20        | CET 20A             |
| 16           | 16-20            | 031-0944-000<br>(040370-0000) | 031-0945-000<br>(040371-0000) | M22520/1-01         | M22520/1-02 | CIT 16        | CET 16              |
| 12           | 12-14            | 031-0909-000<br>(038825-0000) | 031-0908-000<br>(038826-0000) | M22520/1-01         | M22520/1-02 | CIT 12        | CET 12              |
| 20-18        | 18               | 031-0907-000<br>(038820-0000) | 031-0906-000<br>(038819-0002) | M22520/1-01         | M22520/1-02 | CIT 18        | CET 20A             |

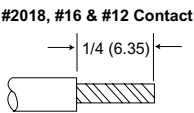
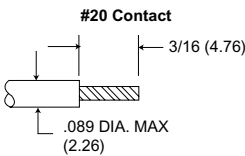
### Coaxials

| Contact Size | Wire Size Accom.     | Contact Part Number           |                               | Crimp Tool Part No.           | Insertion Tool No. | Extraction Tool No. |
|--------------|----------------------|-------------------------------|-------------------------------|-------------------------------|--------------------|---------------------|
|              |                      | Plug                          | Recept                        |                               |                    |                     |
| COAX         | 50 ohm<br>(RG 196/U) | 249-1178-001<br>(038834-0001) | 249-1177-001<br>(038833-0001) | M22520/5-01<br>with Y-193 Die | CIT C2             | CET C1              |
| COAX         | 75 ohm<br>(RG 1871U) | 249-1176-001<br>(038832-0001) | 249-1175-001<br>(038831-0001) | WT400<br>995-001-071          | CIT C2             | CET C1              |
| COAX         | 95 ohm<br>(RG 195/U) | 249-1174-001<br>(038830-0001) | 249-1173-001<br>(038829-0001) | WT402<br>HX3-138              | CIT C2             | CET C1              |
| COAX         | 150 ohm              | 249-1172-001<br>(038828-0001) | 249-1171-001<br>(038827-0001) | WT408                         | CIT C2             | CET C1              |

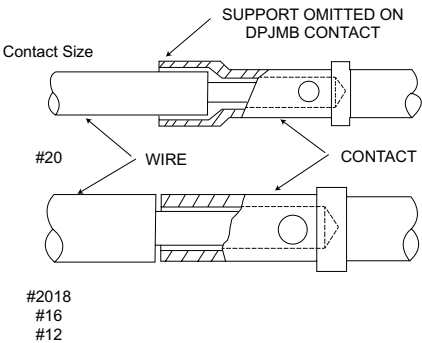
Assembly Procedures

Wiring and Crimping Contacts

Wires should be stripped to the dimension appropriate to the contact use



1. CONTACT INTO CRIMP TOOL  
Drop contact into crimp tool, it will locate on the contact shoulder.
2. WIRE INTO CONTACT  
Take wire stripped to dimensions above, and push into the contact crimp pot until it is completely home. Where outside diameter of wire in the #12 or COAXIAL contact is less than .096 (2.44), a rubber bushing must be slipped over the wire before crimping (see page 99).
3. CRIMP  
Squeeze the crimp tool to secure the wire into the contact. It is not possible to remove the contact from the crimp tool until crimp is completed.
4. REMOVED WIRED CONTACT FROM TOOL
5. INSPECT  
If wires are stripped and crimped correctly, the wire will be visible through the small inspection hole in the contact.



Contact Insertion (DPGM/DPJM)

Inserting #20 & #16  
Contacts



Inserting Coaxial & #12  
Contacts



After the contacts have been crimped, they should be threaded through the junction shell and inserted with the tools shown below. It is recommended that the contacts be inserted in the center horizontal row first, then work to the top and bottom horizontal rows.

| Contact                    | Tool Description | Assembly Number |
|----------------------------|------------------|-----------------|
| #20                        | CIT - 20         | 038894-0000     |
| #16                        | CIT - 16         | 038895-0000     |
| #12                        | CIT - 12         | 038896-0000     |
| Coaxial 50-75,95 & 150 ohm | CIT - C2         | 038901-0000     |

Contact Extraction (DPGM/DPJM)

Extracting #20 & #16  
Contacts



Extracting Coaxial & #12  
Contacts



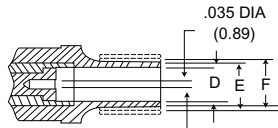
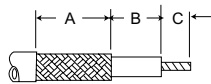
If it is necessary at any time to remove contacts, this may be accomplished with an impact extraction tool. Simply place the correct tool on the engaging end of the contact and push. A reversible tip is provided for pins and sockets.

| Contact                    | Tool Description | Assembly Number |
|----------------------------|------------------|-----------------|
| #20                        | CET - 20A        | 038889-0100     |
| #16                        | CET - 16         | 038888-0000     |
| #12                        | CET - 12         | 038890-0000     |
| Coaxial 50-75,95 & 150 ohm | CET - C1         | 038869-0000     |

## Assembly Procedures

### Coaxial Contact Assembly (DPGM/DPJM)

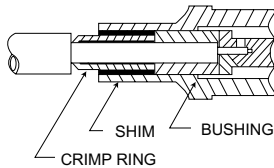
#### Cable Stripping



|         | Cable Trim Dimensions |             |             | Cable Entry Dimensions |                |                |
|---------|-----------------------|-------------|-------------|------------------------|----------------|----------------|
|         | A                     | B           | C           | D<br>min. dia.         | E<br>max. dia. | F<br>min. dia. |
| 150 ohm | 3/16 (4.76)           | 1/16 (1.59) | 5/32 (3.97) | .154 (3.91)            | .183 (4.65)    | .202 (5.13)    |
| 95 ohm  | 3/16 (4.76)           | 1/8 (3.18)  | 5/64 (1.98) | .106 (2.69)            | .139 (3.53)    | .153 (3.89)    |
| 75 ohm  | 3/16 (4.76)           | 1/8 (3.18)  | 5/64 (1.98) | .122 (3.10)            | .158 (4.01)    | .153 (3.89)    |
| 50 ohm  | 1/4 (6.35)            | 1/8 (3.18)  | 5/64 (1.98) | .106 (2.69)            | .136 (3.53)    |                |

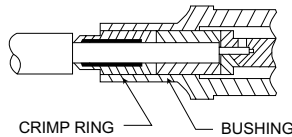
#### 50 Ohm Contact (RG-196U)

(assembly steps 1, 2, 3, 4, 5 & 8)



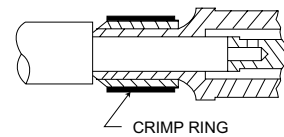
#### 75 Ohm Contact (RG-187U)

(assembly steps 1, 2, 3, 5 & 8)



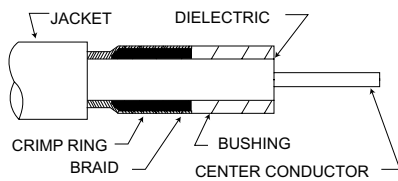
#### 95 Ohm Contact (RG-195U)

(assembly steps 1, 3, 6, 7 & 8)

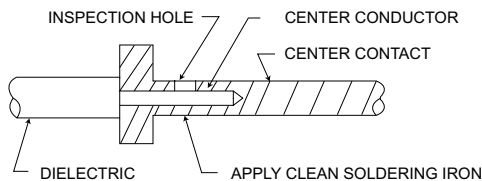


## Assembly Steps

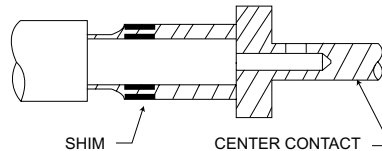
1. After the coaxial cable has been stripped to the proper dimensions, tin the center conductor. If O.D. of cable is less than .096 (2.44), slip rubber bushing over wire. (50, 75 & 95 ohm)
2. Assemble crimp ring under braid and add bushing to cable. (50 & 75 ohm)



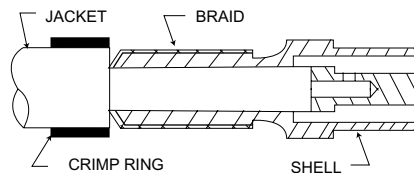
3. The center contact is supplied loose in the polyethylene bag. Insert the tinned conductor into the contact. Wire must be visible through inspection hole and dielectric pushed against contact shoulder. For 150 ohm contact shoulder must be flush against bushing. Heat contact with a clean soldering iron. Avoid solder outside contact, (50, 75, & 95 ohm)



4. Wrap shim around braid. (50 ohm)

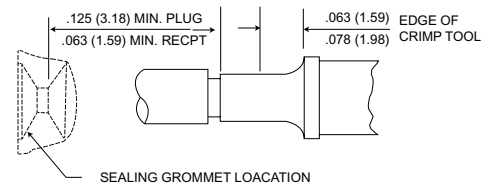


5. Feed cable and assembled parts into coaxial shell. Care is required if braid is to fit smoothly inside the shell. (50 & 75 ohm)
6. Thread crimp ring over cable. Feed center contact into coaxial shell with the shell between the dielectric and the braid. (95 ohm)



7. Slip crimp over the braid. (95 ohm)

8. Crimp - crimp tool must be located 1/16 (1.58) to 5/64 (1.98) from shoulder of coaxial. (50, 75 & 95 ohms)



## Junction Shell, Assembly of

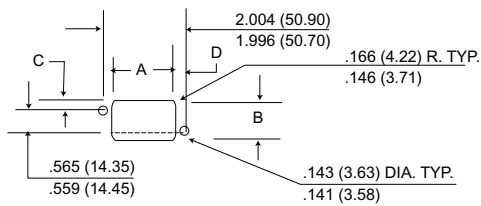


Slip junction shell over grommet and secure with four screws and lock washers.

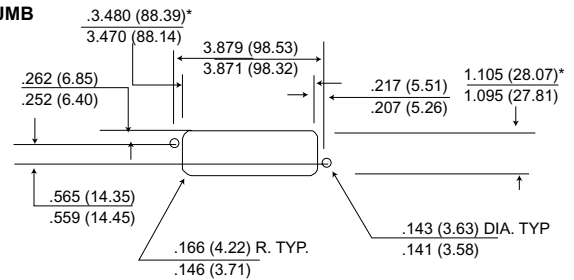
## Panel Cutouts

### 33 and 34 Shell Styles

#### DPGM



#### DPJM DPJMB

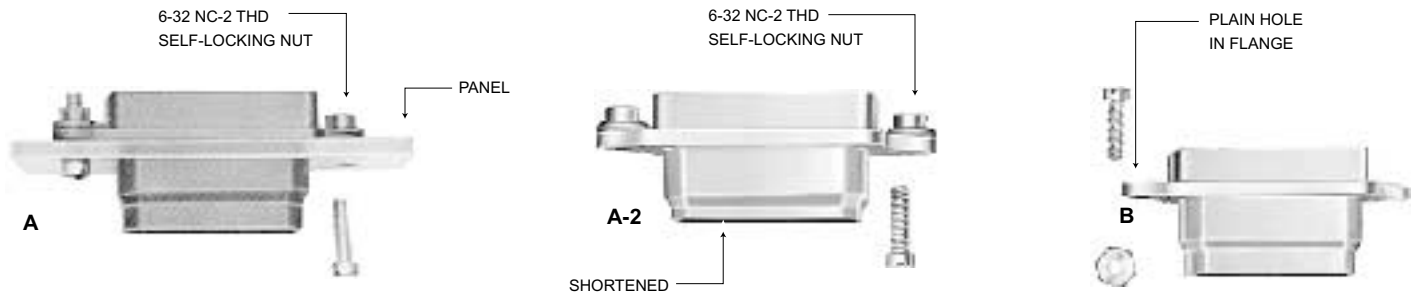


\*These dimensions allow for float mounting.

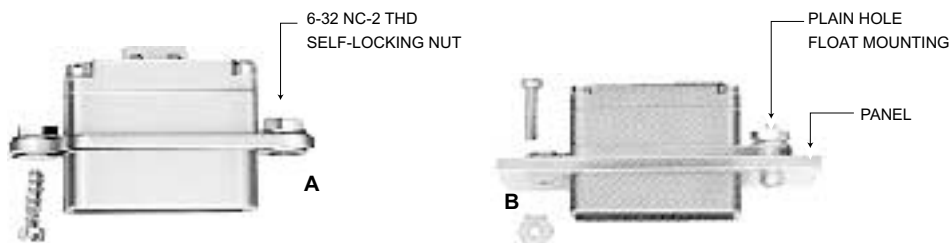
PANEL THICKNESS: Maximum sum of both panel thicknesses is 7/16 of an inch when 33 plug and 34 receptacle are back mounted. Shell style 33 modifications A and -2 can be back mounted ONLY. Shell style 33 modifications B and shell style 34 modifications B and H may be front or back mounted. Consult factory for additional information.

## Mounting Variations

### 33 Shell



### 34 Shell



- Rectangular Rack/Panel Connectors
- Non-Environmental Single and Two-Gang Configurations

Cannon's DPD Rack and Panel connectors are distinguished from other connector lines by their rectangular shape which provides maximum space utilization in a rack or chassis mounted equipment. The DPD is used in any commercial application where moisture/ environmental resistance is not required, such as I/O connector or computer panels, GFE test equipment, and GSE ground support equipment. For example, one-half of a connector assembly is mounted on a radio rack, or panel, and the mating connector is attached to a cable that

connects to another instrument or rack. The DPO has a temperature range of -55°C to +125°C (-67°F to +257°F).

In addition to standard DPD connectors with solder contacts, the DPDMA version has rear insertion, rear release crimp, snap-in contacts that feature the LITTLE CAESAR®, rear. release contact retention assembly used in many other ITT Cannon product lines.



DPD-33/DPDMA-33  
Plug



DPD-34/DPDMA-34  
Receptacle



DPD2-33/DPD2MA-33  
Plug



DPD2-34/DPD2MA-34  
Receptacle

## DPD - Standard Rack and Panel Connector Series

DPD connectors are the original rectangular rack and panel connectors with solder type contact termination, accommodating a wide range of contact arrangements and a variety of endbells and junction shells.

## DPDMA - LITTLE CAESAR® Contact Assembly

DPDMA connectors are DPD's with the LITTLE CAESAR contact assembly for rear insertion, release and extraction of crimp type contacts. Contacts are inserted by hand, and extraction is accomplished with the use of an expendable plastic

tool. Hard dielectric, closed-entry socket inserts have lead-in chamfers for positive mating of pin contacts during engagement. Both the DPD and DPDMA connectors are intermateable.

## DPD2 - Two Gang Version of DPD

DPD2 connectors are two-gang versions of the DPD solder type connectors designed to handle double the circuitry in instrument panel disconnect applications. The DPD2 is identical in shell style and materials to the DPD, but features a center coupling screw for positive engagement. Various coupling devices are shown on pages 110 and 111. The DPD2 may also be ordered without the engaging device by

omitting the letter code "M" as shown in the ordering nomenclature. Two optional polarizing posts give up to six alternate insert positions (page 112).

## DPD2MA - LITTLE CAESAR® Contact Assembly

DPD2MA connectors are DPD2 connectors with the LITTLE CAESAR contact assembly for rear insertion, release and extraction of crimp type contacts. Contact insertion is by hand and extraction is by an expendable plastic tool. Hard dielectric, closed-entry socket inserts have lead-in chamfers for positive mating of pin contacts during engagement. DPD2 and DPD2MA connectors are intermateable.

## Performance and Material Specifications

### MATERIALS AND FINISHES

|                             |             | DPD/DPD2                        | DPDMA/DPD2MA          | DPD/DPDMA Specifications |
|-----------------------------|-------------|---------------------------------|-----------------------|--------------------------|
| Shell/Polarization Hardware | Material    | Aluminum alloy                  | Aluminum alloy        | QQ-A-591/A380            |
|                             | Finish      | Natural cadmium plate           | Natural cadmium plate | QQ-P-416                 |
| Insulator                   | Material    | Melamine or fabricated phenolic | Diallyl phthalate     | MIL-M-14                 |
|                             | Material    | Copper alloy                    | Copper alloy          | QQ-C-533                 |
| Contacts                    | Finish      | Silver or gold plate*           | Silver or gold plate* | QQ-C-365 MIL-G-45204     |
|                             | Termination | Solder pot                      | Crimp                 | N/A                      |

\*Size 20 contacts have gold plate finish. All other sizes have silver plate finish. Tin alloy may be substituted for silver.

### VOLTAGE/CURRENT DATA

#### Insert Voltages/Test Results

There was no evidence of breakdown when the test voltages given were applied, for a period of one minute, between the contacts and between the shell and the contacts with spacings as noted.

#### Laboratory Conditions

|                     |                                  |
|---------------------|----------------------------------|
| Ambient Temperature | 23°C to 27°C (73°F to 80.6°F)    |
| Relative Humidity   | 69% to 73%                       |
| Barometric Pressure | 29.70 (754.38) to 29.75 (755.65) |

#### Current Carrying Capacity of Wire and Cables

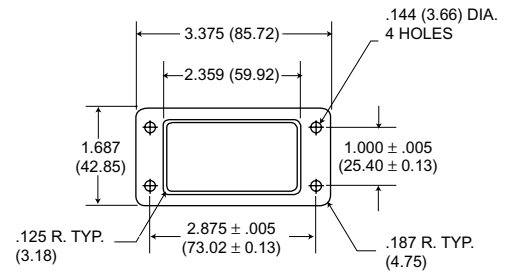
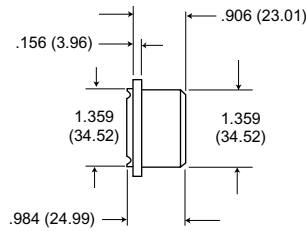
| Wire Size | #4  | #6 | #8 | #10 | #14 | #16 | #20 |
|-----------|-----|----|----|-----|-----|-----|-----|
| Amperage  | 100 | 80 | 60 | 35  | 25  | 20  | 7.5 |

| Contact Clearance | Test Voltage 60 cps (ac rms) | Contact Clearance | Test Voltage 60 cps (ac rms) |
|-------------------|------------------------------|-------------------|------------------------------|
| 1/64 (0.40)       | 540 Volts                    | 3/16 (4.76)       | 3650 Volts                   |
| 1/32 (0.79)       | 1000 Volts                   | 13/64 (5.16)      | 3850 Volts                   |
| 3/64 (1.19)       | 1300 Volts                   | 7/32 (5.56)       | 4050 Volts                   |
| 1/16 (0.59)       | 1700 Volts                   | 15/64 (5.95)      | 4240 Volts                   |
| 5/64 (1.98)       | 2050 Volts                   | 1/4 (6.35)        | 4420 Volts                   |
| 3/32 (2.38)       | 2350 Volts                   | 19/64 (7.54)      | 4940 Volts                   |
| 7/64 (2.78)       | 2600 Volts                   | 5/16 (7.94)       | 5100 Volts                   |
| 1/8 (3.18)        | 2900 Volts                   | 3/8 (9.52)        | 5750 Volts                   |
| 9/64 (3.57)       | 3050 Volts                   | 25/64 (9.92)      | 5890 Volts                   |
| 5/32 (3.97)       | 3250 Volts                   | 13/32 (10.32)     | 6020 Volts                   |
| 11/64 (4.37)      | 3450 Volts                   | 7/16 (11.11)      | 6300 Volts                   |
|                   |                              | 1/2 (12.70)       | 6800 Volts                   |



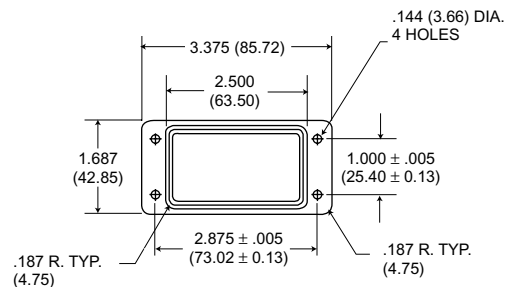
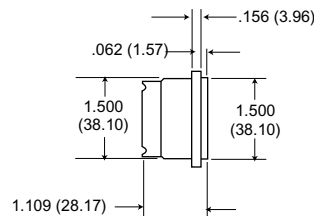
## Single Gang

33 Plug



For mounting hole variations, see page 104

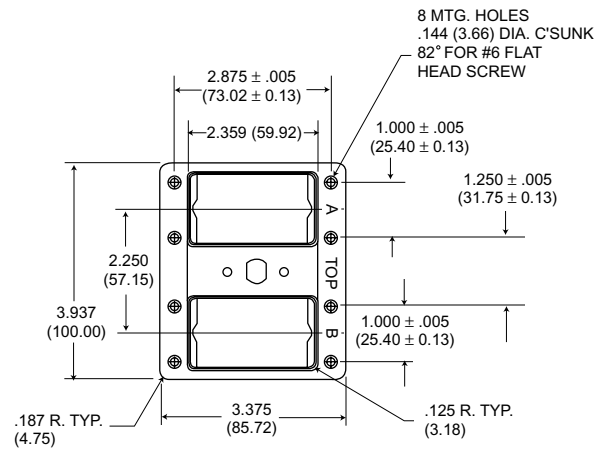
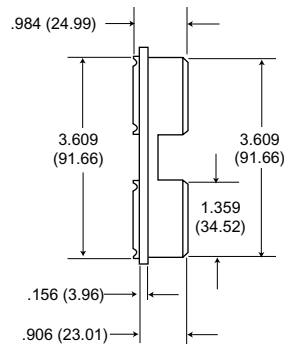
33 Receptacle



For mounting hole variations, see page 104

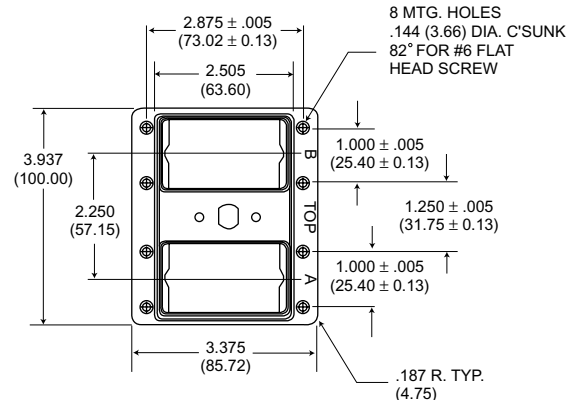
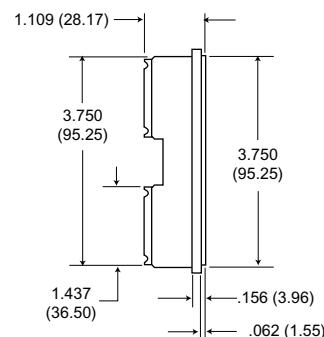
## Two Gang

33 Plug



For headscrew variations, see page 111

34 Receptacle



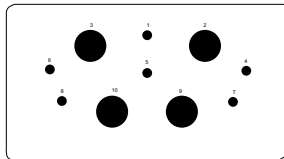
For headscrew variations, see page 111

## Contact Arrangements - DPD Solder

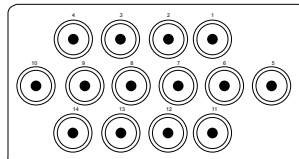
Face view of pin insert

Illustrations are not actual size

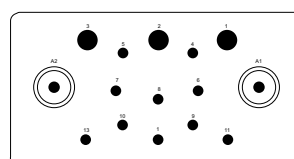
See page 103 for test voltage



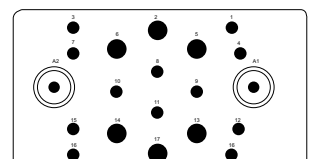
**MOLDED N10**  
TOTAL  
CONTACTS:10  
2-#16(#1,5) CLEARANCE 5/32 (3.97)  
4-#16(#4,6,7,8,) 9/64 (3.57)  
4-#4(#2,3,9,10) 9/64 (3.57)



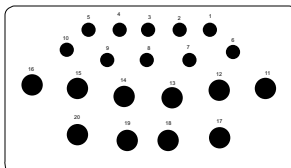
**MOLDED AJ14 for crimp**  
TOTAL  
CONTACTS:14  
14 min. coax. (#1-14) CLEARANCE 1/16 (1.59)



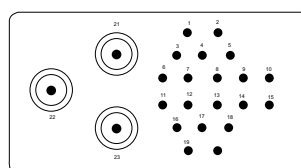
**MOLDED 15C2**  
TOTAL  
CONTACTS:15  
2-#14 (#4,5) CLEARANCE 3/16 (4.76)  
2-#14 (#6,7) 7/32 (5.56)  
2-#14 (#9,10) 1/4 (6.35)  
1-#14 (#8) 9/32 (7.14)  
3-#14 (#11-13) 13/64 (5.16)  
3-#10 (#1-3) 11/64 (4.37)  
2-coax, (A1,A2) grounded



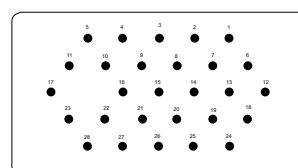
**MOLDED B20C2**  
TOTAL  
CONTACTS:20  
8-#16 (#1,3,4,7,12,15,16,18) CLEARANCE 3/64 (1.19)  
2-#16 (#8,11) 11/64 (4.37)  
2-#16 (#9,10) 5/32 (3.97)  
6-#14 (#2,5,6,13,14,17) 5/32 (3.97)  
2-coax, (A1,A2) grounded



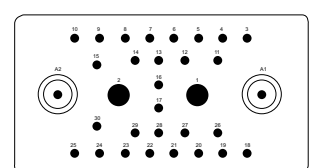
**MOLDED G20**  
TOTAL  
CONTACTS:20  
3-#14(#7,9) CLEARANCE 5/64 (1.98)  
7-#14(#1-6,10) 1/16 (1.59)  
2-#10(#18,19) 1/16 (1.59)  
8-#8(#11-17,20) 1/16 (1.59)



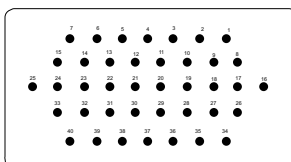
**MOLDED 23C3**  
TOTAL  
CONTACTS:23  
20-#16(#1-20) CLEARANCE 1/16 (1.59)  
3-coax.(#21-23) grounded



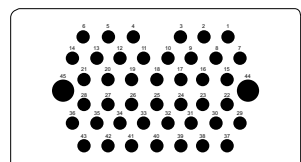
**MOLDED B28**  
TOTAL  
CONTACTS:28  
28-#16(#1-28) CLEARANCE 7/64 (2.78)



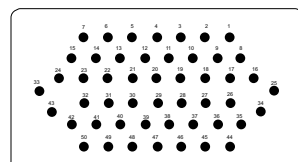
**MOLDED 32C2**  
TOTAL  
CONTACTS:32  
28-#16(#3-30) CLEARANCE 3/64 (1.19)  
2-#8(#1,2) (.156 Dia.) 3/64 (1.19)  
2-coax. (A1, A2) grounded



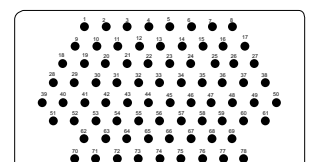
**FABRICATED 40**  
TOTAL  
CONTACTS:40  
40-#16(#1-40) CLEARANCE 1/16 (1.59)



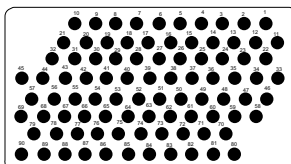
**MOLDED 45**  
TOTAL  
CONTACTS:45  
43-#16(#1-43) CLEARANCE 3/16 (1.19)  
2-#10(#44, 45) 3/64 (1.19)



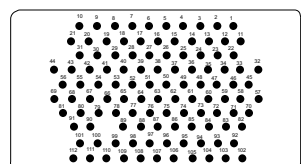
**MOLDED 50**  
TOTAL  
CONTACTS:50  
50-#16(#1-50) CLEARANCE 1/16 (1.59)



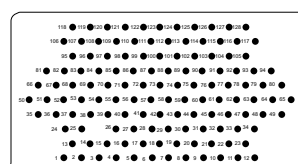
**MOLDED 78**  
TOTAL  
CONTACTS:78  
78-#16(#1-78) CLEARANCE 1/32 (0.79)



**MOLDED 90**  
TOTAL  
CONTACTS:90  
90-#16(#1-90) CLEARANCE 1/32 (0.79)



**FABRICATED 112**  
TOTAL  
CONTACTS:112  
112-#20(#1-112) CLEARANCE 3/64 (1.19)

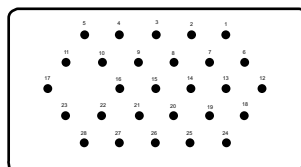


**FABRICATED 128**  
TOTAL  
CONTACTS:128  
128-#20(#1-128) CLEARANCE 3/64 (1.19)

## Contact Arrangements - DPDMA Crimp

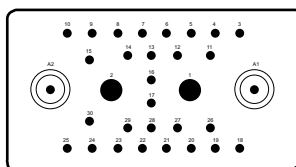
Face view of pin insert

Illustrations are not actual size



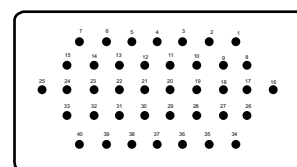
**MOLDED B28**

TOTAL  
CONTACTS:28  
28-#16(#1-28) CLEARANCE  
7/64 (2.78)



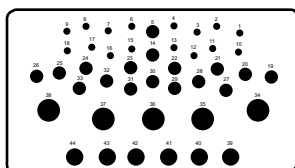
**MOLDED 32C2\***

TOTAL  
CONTACTS:32  
28-#16(#3-30) CLEARANCE  
2-#8(#1,2) (.156 Dia.) 3/64 (1.19)  
2-coax. (A1, A2) grounded



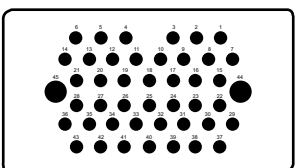
**MOLDED 40**

TOTAL  
CONTACTS:40  
40-#16(#1-40) CLEARANCE  
1/16 (1.59)



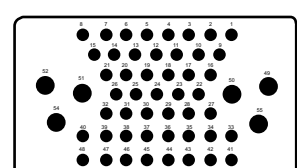
**MOLDED A44**

TOTAL  
CONTACTS:44  
16-#20(1-4, 5-13, 15-18) CLEARANCE  
17-#16(5,14,19-33) 3/64 (1.19)  
6-#12(39-44) 3/64 (1.19)  
5-#8(34-38)(.142 Dia.) 3/64 (1.19)



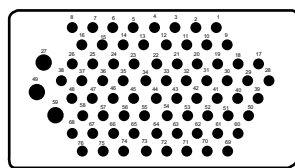
**MOLDED 45**

TOTAL  
CONTACTS:45  
43-#16(#1-43) CLEARANCE  
2-#10(#44, 45) 3/64 (1.19)



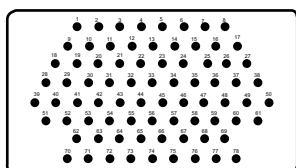
**MOLDED F54**

TOTAL  
CONTACTS:54  
48-#16(#1-48) CLEARANCE  
6-#12(49-54) 1/32 (0.79)  
1/16 (1.59)



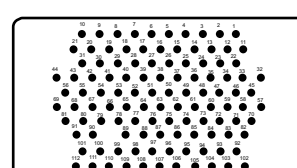
**MOLDED 76**

TOTAL  
CONTACTS:76  
73-#20(1-26,28-48, 50-58,60-76) CLEARANCE  
3-#16(27,49,59) 5/64 (1.98)



**MOLDED 78**

TOTAL  
CONTACTS:78  
78-#16(#1-78) CLEARANCE  
1/32 (0.79)



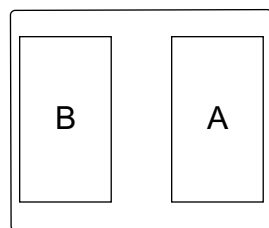
**FABRICATED 112**

TOTAL  
CONTACTS:112  
112-#20(#1-112) CLEARANCE  
3/64 (1.19)

\*32C2 arrangement may be purchased less coaxial contacts as -30. All contact variations shown for 32C2 may be purchased in the DPDMA.

## DPD2/DPD2MA

DPD2 Insert assemblies consist of two standard DPD insert mounted in a DPD2 shell. They are identified as insert "A" and insert "B". Any two inserts with similar contact arrangements can be used together.



DPD2/DPD2MA Insert Designations  
(face view - 34 shell)

The tabulation lists the DPD2 contact arrangement ordering number for the the combination of two inserts. For complete information on each insert, see page 109. Consult factory for combination layouts not shown.

| DPD2 Arr. No | Side A | Side B |
|--------------|--------|--------|
| N20          | N10    | N10    |
| G48          | G20    | B28    |
| B56          | B28    | B28    |
| 64           | 32     | 32     |
| 64C4         | 32C2   | 32C2   |
| B68          | 40     | B28    |
| 77           | 45     | 32     |
| 78           | 50     | 28     |
| 80           | 40     | 40     |
| 90           | 45     | 45     |
| B98C2        | B20C2  | 78     |
| G98          | 78     | G20    |

| DPD2 Arr. No | Side A | Side B |
|--------------|--------|--------|
| H98C2        | H20C2  | 78     |
| 100          | 50     | 50     |
| A110         | 32     | 78     |
| 123          | 45     | 78     |
| A123         | 78     | 45     |
| 152          | 76     | 76     |
| 156          | 78     | 78     |
| 180          | 90     | 90     |
| 190          | 78     | 112    |
| 224          | 112    | 112    |
| 256          | 128    | 128    |

## Contact Data

## Coaxial

| Type   | Part Number  | Description           | Cable    | Layout/Usage                  |
|--------|--------------|-----------------------|----------|-------------------------------|
| Pin    | 249-0365-000 | Plug, Straight        | RG-7/U   | 15C2<br>B20C2<br>23C2<br>32C2 |
| Socket | 249-0366-000 | Receptacle, Straight  |          |                               |
| Pin    | 249-0399-000 | Plug, Straight        | RG-59/U  |                               |
| Socket | 249-0398-000 | Receptacle, Straight  | RG-62/U  |                               |
| Pin    | 249-0409-000 | Plug, 90° Short       | RG-58/U  |                               |
| Socket | 249-0410-000 | Receptacle, 90° Short |          |                               |
| Pin    | 249-0228-000 | Plug, 90° Long        | RG-7/U   |                               |
| Socket | 249-0226-000 | Receptacle, 90° Long  |          |                               |
| Pin    | 249-0229-000 | Plug, 90° Short       |          |                               |
| Socket | 249-0227-000 | Receptacle, 90° Short |          |                               |
| Pin    | 249-1365-000 | Plug, Solder          | RG-195/U | AN14                          |
| Socket | 249-1357-000 | Receptacle, Solder    |          |                               |
| Pin    | 249-1333-000 | Plug, Solder          | RG-59/U  | AJ14                          |
| Socket | 249-1332-000 | Receptacle, Solder    | RG-62/U  |                               |
| Pin    | 249-1264-000 | Plug, Crimp           | RG-59/U  | AJ14                          |
| Socket | 249-1265-000 | Receptacle, Crimp     | RG-62/U  |                               |

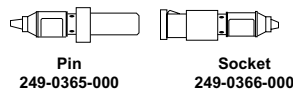
## Crimp

| Contact Size | Type   | Part Number  | Wire Size | Max. Wire Insul O.D | Crimp Tool Part Number          | Locator     | Extraction Tool Part Number | Layout/Usage                        |
|--------------|--------|--------------|-----------|---------------------|---------------------------------|-------------|-----------------------------|-------------------------------------|
| 20           | Pin    | 030-9081-000 | 20-24     | .084<br>(2.13)      | M22520/1-01                     | M22520/1-02 | CET 20-8                    | 76, 112, A44                        |
|              | Socket | 031-9134-001 |           |                     |                                 |             |                             |                                     |
| 16-20        | Pin    | 030-9123-000 | 20-24     | .084<br>(2.13)      | M22520/1-01                     | Blue        | CET 16-9<br>CET 16-15       | B28, 32C2, 40, A44, F54, 45, 76, 78 |
|              | Socket | 031-9203-002 |           |                     |                                 |             |                             |                                     |
| 16           | Pin    | 030-9083-000 | 16-20     | .110<br>(2.79)      | M22520/1-01                     | Blue        | CET 16-9<br>CET 16-15       | A44<br>F54                          |
|              | Socket | 031-9206-003 |           |                     |                                 |             |                             |                                     |
| 12           | Pin    | 030-1909-000 | 12-16     | .150<br>(3.81)      | M22520/1-01                     | Yellow      | CET 12-4                    | 45                                  |
|              | Socket | 031-1059-000 |           |                     |                                 |             |                             |                                     |
| 30A (#10)    | Pin    | 030-1757-000 | 10-12     | .206<br>(5.23)      | Solder Pot Type Only            |             | CET 10-1                    | 32C2                                |
|              | Socket | 030-1758-000 |           |                     |                                 |             |                             |                                     |
| 40A (#8)     | Pin    | 030-9175-000 | 8-10      | .250<br>(6.35)      |                                 |             |                             | A44                                 |
|              | Socket | 030-9176-000 |           |                     |                                 |             |                             |                                     |
| 8            | Pin    | 030-1908-000 | 8-10      | .250<br>(6.35)      | CBT-600B<br>CCH-8-1<br>CCHP-8-6 | -           | CET 8-2                     |                                     |
|              | Socket | 030-9201-003 |           |                     |                                 |             |                             |                                     |

## R Coaxial

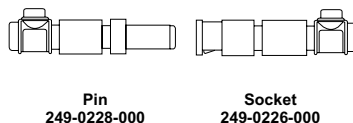
**R Coaxial**  
Contact Rating  
Cable Size  
Test Voltage

10 amps  
RG-7/U .250 (6.35) I.D.  
1000 rms AC



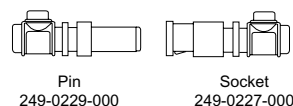
**R Coaxial 90° (long)**  
Contact Rating  
Cable Size  
Test Voltage

10 amps  
RG-7/U  
1000 rms AC



**R Coaxial 90° (short)**  
Contact Rating  
Cable Size  
Test Voltage

10 amps  
RG-7/U  
1000 rms AC



**HV CONTACT**  
Contact Rating  
Wire Size  
Test Voltage

10 amps  
#16  
7500 rms AC



Hi Voltage contacts fit the coaxial cavities. Must be disassembled in order to be soldered.

## R COAXIAL

Contact Rating

10 amps



**Pin**  
249-0399-000  
RG-59/U; RG-62/U

**Socket**  
249-0398-000

Coaxial Cable Size

X Cable Entry

RG-58/U

.127 (3.23)

RG-59/U

.157 (3.99)

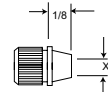
RG-62/U

.157 (3.99)

Test Voltage

1000 rms AC

## R COAXIAL ADAPTER



The adapter is shown for reference only. It is furnished as part of the complete coaxial contact Assy.

## R Coaxial 90° (short)

Contact Rating

10 amps



**Pin**  
249-0409-000

**Socket**  
249-0410-000

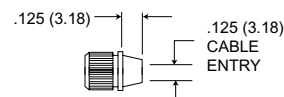
Coaxial Cable Size

RG-58/U

## R COAXIAL ADAPTER

Test Voltage

1300 rms AC



## REMOVABLES

Converts R Coaxial Cavity to hold #16, 14 and 8 amps contact.

Contact Ratings  
Wire Size

10 15 and 40 amps  
16, 14 and 8



## Contact Variations

The contact variations shown are modifications of the basic arrangement. For variations not shown please consult factory.

| Arr. No. | Basic Arr. | No. of Contacts (Wire Size) |    |    |    |   |  | Coax | Spl. | Notes/Modifications                                                                                                                     |
|----------|------------|-----------------------------|----|----|----|---|--|------|------|-----------------------------------------------------------------------------------------------------------------------------------------|
|          |            | 20                          | 16 | 14 | 10 | 8 |  |      |      |                                                                                                                                         |
| V14      | T14        |                             |    |    |    |   |  | 14   |      | Supplied less coaxial contacts (see pg.108 for avail.)                                                                                  |
| 20       | 32C2       |                             | 18 |    |    | 2 |  |      |      | #5, 7, 9, 12-17, 29, A1, A2 are open                                                                                                    |
| B20C2    | B20C2      |                             | 12 | 6  |    |   |  | 2    |      | Basic arr. str. coax RG-7/U, P249-0365-000; S249-0366-000                                                                               |
| C20C2    | B20C2      |                             | 12 | 6  |    |   |  | 2    |      | A1, A2-str. coax RG-59/U, RG-62/U, P249-0399-000, S249-0398-000                                                                         |
| G20      | G20        |                             |    | 10 | 2  | 8 |  |      |      | Basic arr.                                                                                                                              |
| B22C2    | 32C2       |                             | 18 |    |    | 2 |  | 2    |      | A1-90° Short coax RG-58/U, P249-0409-000, S249-0410-000; A2-Str. coax RG-58/U, P249-0257-000, S249-0258-000, #11-14, 16, 17, 26-29 open |
| 23C3     | 23C3       |                             | 20 |    |    |   |  | 3    |      | Basic arr. str. coax RG-7/U, P249-0365-000, S249-0366-000                                                                               |
| 23HV1    | 23C3       |                             | 20 |    |    | 2 |  |      | 1    | #21, 23-#8 removable; #22-HV kit 7.5K VAC: #16 wire, 20 amps                                                                            |
| G23C3    | 23C3       |                             | 20 |    |    |   |  | 3    |      | #21-23-str. coax RG-59/U, RG-62/U, P249-0399-000, S249-0398-000                                                                         |
| B28      | B28        |                             | 28 |    |    |   |  |      |      | Basic arr.                                                                                                                              |
| 30       | 32C2       |                             | 28 |    |    | 2 |  |      |      | A1, A2-open                                                                                                                             |
| 31       | 32C2       |                             | 28 |    |    | 3 |  |      |      | A1-open; A2-#8 removable                                                                                                                |
| B31C1    | 32C2       |                             | 28 |    |    | 2 |  | 1    |      | A1-open; A2-90° short coax, RG-58/U P249-0257-000, S249-0258-000                                                                        |
| 32       | 32C2       |                             | 28 |    |    | 4 |  |      |      | A1, A2-#8 removable                                                                                                                     |
| 32C1     | 32C2       |                             | 28 |    |    | 3 |  | 1    |      | A1-str. coax RG-7/U, P249-0365-000, S249-0366-000<br>A2-#8 removable                                                                    |
| 32C1HV1  | 32C2       |                             | 28 |    |    | 2 |  | 1    | 1    | A1-str. coax RG-7/U, P249-0365-000, S249-0366-000<br>A2-HV kit, 7.5K VAC, #16 wire, 10 amp                                              |
| 32C2     | 32C2       |                             | 28 |    |    | 2 |  | 2    |      | Basic arr.<br>A1, A2-str. coax RG-7/U, P249-0365-000, S249-0366-000                                                                     |
| A32      | 32C2       |                             | 30 |    |    | 2 |  |      |      | A1, A2-#16 removable                                                                                                                    |
| E32C2    | 32C2       |                             | 28 |    |    | 2 |  | 2    |      | A1, A2-str. coax. RG-58/U, P249-0257-000, S249-0258-000                                                                                 |
| T32C2    | 32C2       |                             | 28 |    |    | 2 |  | 2    |      | S/A E32C2 except RG-58/U insulated                                                                                                      |
| U32C2    | 32C2       |                             | 28 |    |    | 2 |  | 2    |      | A1, A2-str. coax RG-59/U, RG-62/U, P249-0399-000, S249-0398-000                                                                         |
| 40       | 40         |                             | 40 |    |    |   |  |      |      | Basic arr.                                                                                                                              |
| A44      | A44        | 16                          | 17 |    | 6  | 5 |  |      |      | Basic arr.                                                                                                                              |
| 45       | 45         |                             | 43 |    | 2  |   |  |      |      | Basic arr.                                                                                                                              |
| 50       | 50         |                             | 50 |    |    |   |  |      |      | Basic arr.                                                                                                                              |
| F54      | F54        |                             | 48 | 12 |    |   |  |      |      | Basic arr.                                                                                                                              |
| 76       | 76         | 73                          | 3  |    |    |   |  |      |      | Basic arr.                                                                                                                              |
| 78       | 78         |                             | 78 |    |    |   |  |      |      | Basic arr.                                                                                                                              |
| C78      | 78         |                             | 78 |    |    |   |  |      |      | Contacts accommodate 16-20 wire DPDMA only                                                                                              |
| 90       | 90         |                             | 90 |    |    |   |  |      |      | Basic arr.                                                                                                                              |
| 112      | 112        | 112                         |    |    |    |   |  |      |      | Basic arr.                                                                                                                              |
| 128      | 128        | 128                         |    |    |    |   |  |      |      | Basic arr.                                                                                                                              |

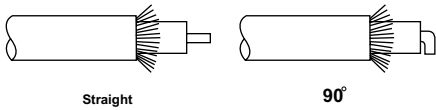
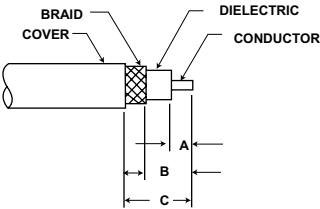
Stripping Instructions

ITT Cannon recommends resistance soldering for all solder contacts, particularly for RF cable where excessive heat will damage the dielectric. Wires should be pre-tinned. Shells, bushings, endbells and junction shells (where applicable) must be slipped over wire bundles before soldering or crimping is started. The mechanical steps in wiring coaxials are described below.

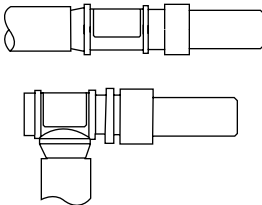
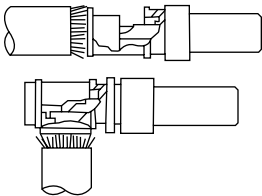
| Coax Type          | Cable Size | A           | Trim<br>B    | C            |
|--------------------|------------|-------------|--------------|--------------|
| Straight<br>R Coax | RG-7/U     | .171 (4.34) | .421 (10.69) | .515 (13.08) |
|                    | RG-59/U    | .171 (4.34) | .546 (13.87) | .671 (17.04) |
|                    | RG-62/U    | .171 (4.34) | .543 (13.87) | .671 (17.04) |
| 90°angle<br>R Coax | RG-7/U     | .218 (5.54) | .312 (7.92)  | .437 (11.10) |
|                    | RG-58/U    | .218 (5.54) | .531 (13.49) | .593 (15.06) |
|                    | RG-59/U    | .218 (5.54) | .531 (13.49) | .593 (15.06) |
|                    | RG-62/U    | .218 (5.54) | .531 (13.49) | .593 (15.06) |

R Coaxial (Straight and 90°)

1. Cut cable even. Trim to dimensions shown on tabulation. Care should be taken not to injure the conductor or dielectric.
2. Comb braid, tin conductor and remove flux. If a 90° contact is used, bend conductor 90° after tinning.



3. Remove solder pot cover. Insert cable and solder conductor to contact. If a straight contact is used, the dielectric should but against contact solder pot.
4. Replace solder pot cover and solder braid to ferrule.



Engaging Devices

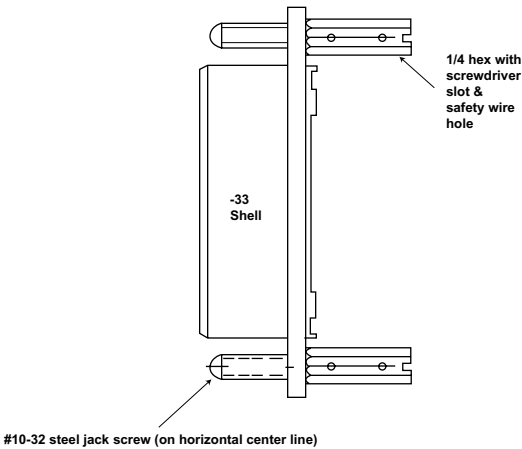
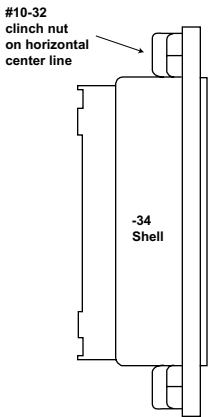
Single Gang - DPD/DPDMA

The DPD/DPDMA can be engaged by means of a No. 10-32 steel jack screw and clinch nut. This coupling device is designed to fasten connectors securely when they are used in other than standard rack/ panel applications. The jack screws and clinch nuts are mounted on the shell flanges at the factory. They may be called out on either -33 or -34 shells, although it is preferred to have jack screws on the -33 shell and the clinch nuts on the -34 shell. The device can be ordered on both DPD and DPDMA.

How to Order

|                 |                 |
|-----------------|-----------------|
| DPD-**-34*-1* N | DPD-**-33*-1* S |
| N = Clinch Nut  |                 |
| S = Jack Screw  |                 |

The suffix "N" or "S" is placed immediately after the mounting hole variation; i.e., -1AN, -1AS, etc.



Two Gang - DPD2/DPD2MA

The DPD2 is engaged by means of a variety of screw mechanisms. Engaging devices are interchangeable (within the thread group) with male or female mounting on either 33 or 34 shells. The accompanying tabulation lists the available engaging devices, male opposite female, with which they mate.

How to Order

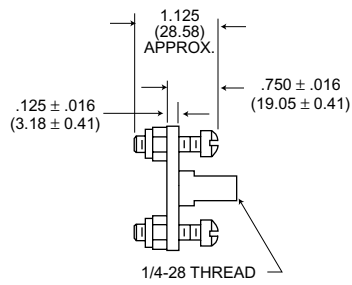
|                 |       |        |
|-----------------|-------|--------|
| DPD2            | -72C2 | -34PCM |
| Engaging Device |       |        |

| MALE ENGAGING DEVICES |                | FEMALE ENGAGING DEVICES |    |    |
|-----------------------|----------------|-------------------------|----|----|
| Part Number           | Used On        | F                       | CF | DF |
|                       | DPD2<br>DPD2MA |                         |    |    |
| M                     | •              | •                       |    |    |
| MA                    | •              | •                       |    |    |
| CM                    | •              |                         | •  |    |
| CMRA                  | •              |                         | •  |    |
| DM                    | •              |                         |    | •  |
| DM-1                  | •              |                         |    | •  |
| DM-2                  | •              |                         |    | •  |
| DM-3                  | •              |                         |    | •  |
| DM-7                  | •              |                         |    | •  |

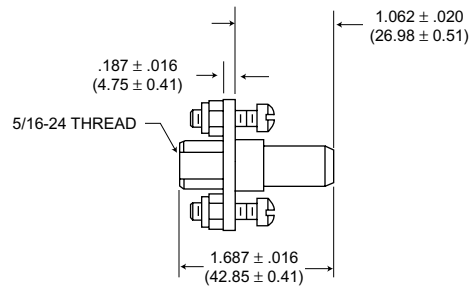


## Engaging Devices

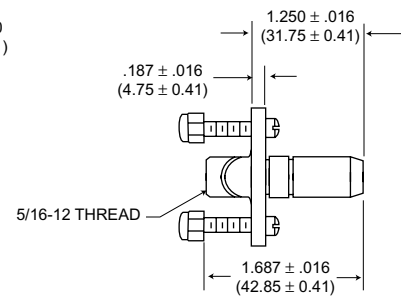
### Female



**P/N 013837-0010**  
**F**  
**1/4-28 UNF-2B Thread**

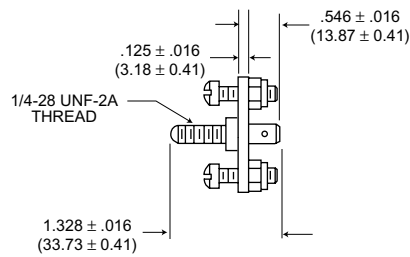


**P/N 013837-0003**  
**CF**  
**5/16-24 UNF-2B Thread**

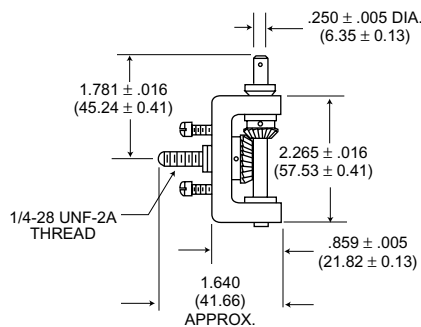


**P/N 013837-0013**  
**DF**  
**5/16-12 Quad Lead Thread**

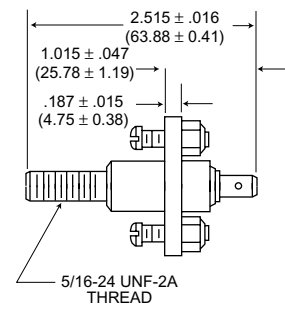
### Male



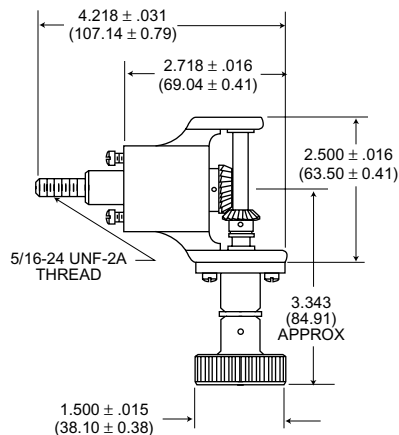
**P/N 013837-0008**  
**M**  
**1/4-28 UNF-2A Thread**



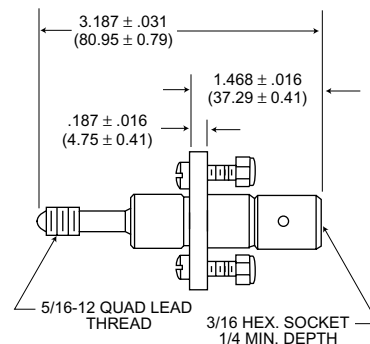
**P/N 013837-0001**  
**MA**  
**1/4-28 UNF-2A Thread**  
**NOT FOR USE**  
**WITH POLARIZING POST**



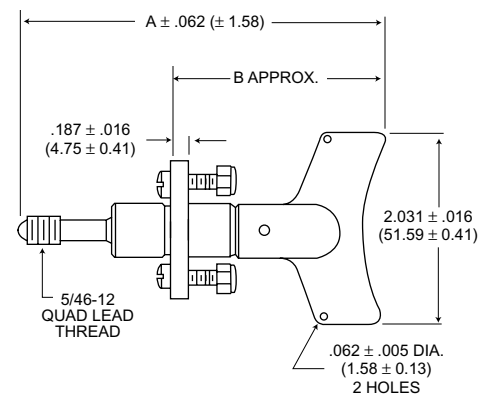
**P/N 013837-0005**  
**CM**  
**5/16-24 UNF-2A Thread**



**P/N 013837-0042**  
**CMRA**  
**5/16-24 UNF-2A Thread**  
**(Ratchet Lock)**



**P/N 013837-0012**  
**DM-2**  
**5/16-12 QUAD LEAD Thread**



**DM-\***

|                          | A                | B                |             |
|--------------------------|------------------|------------------|-------------|
| DM                       | 3-61/64 (100.41) | 2-9/32 (57.94)   | 013837-0011 |
| *DM-1                    | 5-23/64 (136.13) | 3-11/16 (93.86)  | 013837-0015 |
| *DM-3                    | 6-5/64 (154.38)  | 4-13/32 (111.92) | 013837-0027 |
| *DM-7                    | 7-11/64 (182.17) | 5-1/2 (139.70)   | 013837-0044 |
| 5/16-12 QUAD LEAD THREAD |                  |                  |             |

## Polarization

### DPD/DPDMA



DPD 33 with  
POLARIZING POSTS



DPD 34 with  
POLARIZING KEYWAYS

DPD connectors can be supplied with polarizing posts to provide six or more alternate positions. This feature prevents cross plugging where two identical connectors are mounted close together. Shells with polarizing posts can be ordered by adding the desired position to the part number; for example: DPD-12C4-34P-1A-POS. Y. Polarizing positions are shown below and are face view of the 33 (plug) shell.



POSITION N



POSITION V



POSITION W



POSITION X



POSITION Y



POSITION Z

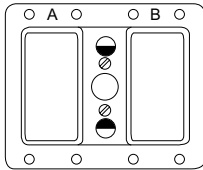
Shaded area indicates extended portion of polarizing post.

### DPD2/DPD2MA

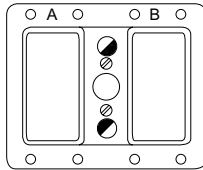
DPD2 series can be supplied with two polarizing posts to provide six or more alternate positions. This feature is designed to assist in preventing cross

plugging. At present shells are modified upon request only, by adding the desired position to the part number; e.g., DPD2-156-34PM-Pos. V. See

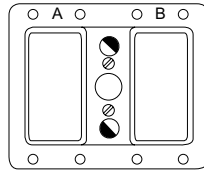
drawing below for available positions. Polarizing positions shown are face view of 33 shell.



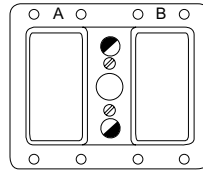
POSITION N



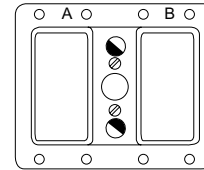
POSITION V



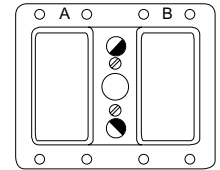
POSITION W



POSITION X



POSITION Y

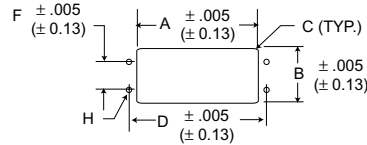


POSITION Z

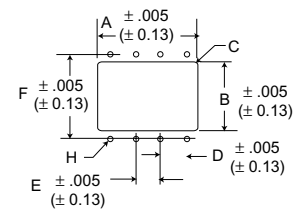
Shaded area indicates extended portion of polarizing post.

## Panel Cutouts

### DPD



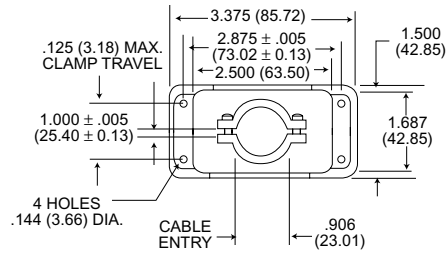
### DPD2



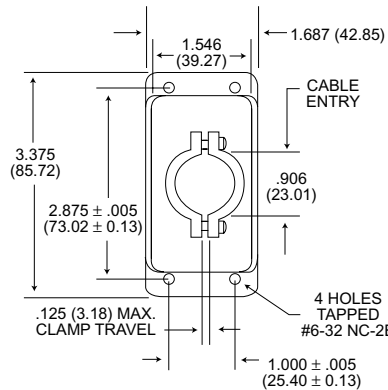
| Type      | Clearance Hole                        |                                      |                     | Mounting Hole |               |               | H<br>Dia.   | Gap<br>Between<br>Flanges<br>After Mating |
|-----------|---------------------------------------|--------------------------------------|---------------------|---------------|---------------|---------------|-------------|-------------------------------------------|
|           | A<br>Length<br>Front/Rear<br>Mounting | B<br>Width<br>Front/Rear<br>Mounting | C<br>Radius<br>Max. | D             | E             | F             |             |                                           |
|           |                                       |                                      |                     |               |               |               |             |                                           |
| DPD-34P   | 2.562 (65.07)                         | 1.562 (39.67)                        | .181 (4.60)         | 2.875 (73.02) | -             | 1.000 (25.40) | .144 (3.66) | .140 (3.56)                               |
| DPD-33S   | 2.421 (61.49)                         | 1.421 (36.09)                        | .125 (3.18)         | 2.875 (73.02) | -             | 1.000 (25.40) | .144 (3.66) | .140 (3.56)                               |
| DPD2-34-P | 3.781 (96.04)                         | 2.562 (65.07)                        | .187 (4.75)         | 1.000 (25.40) | 1.250 (31.75) | 2.875 (73.02) | .144 (3.66) | .140 (3.56)                               |
| DPD2-33S  | 3.671 (93.24)                         | 2.421 (61.49)                        | .125 (3.18)         | 1.000 (25.40) | 1.250 (31.75) | 2.875 (73.02) | .144 (3.66) | .140 (3.56)                               |

## Accessories-DPD Junction Shell

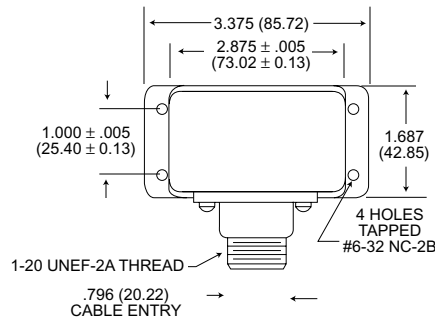
DPD-33  
11612



DPD-34  
12172



DPD 90°  
19929



All tolerances ± .015 (0.38) unless otherwise noted.

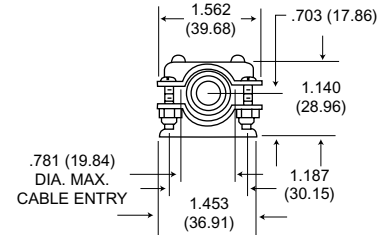
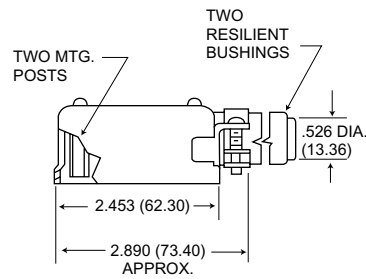
## Accessories-DPD Dust Cap

DPD/DPD2 025-0585-000

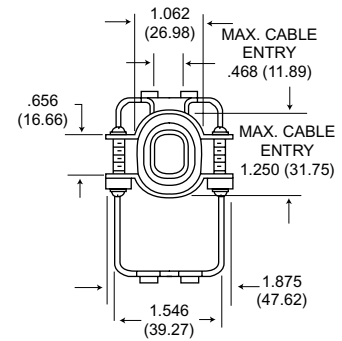
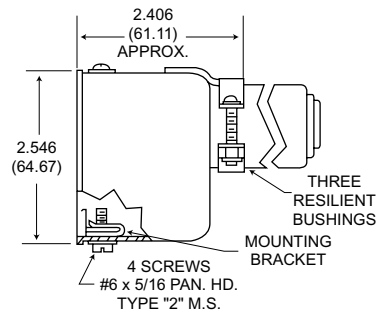


## Accessories-DPD2

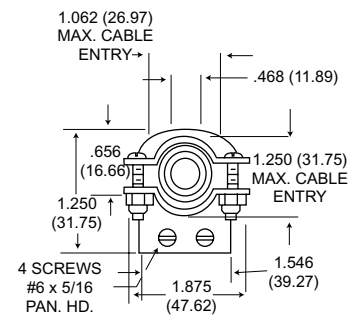
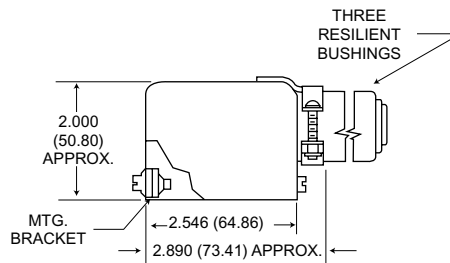
DPD2  
19941-1



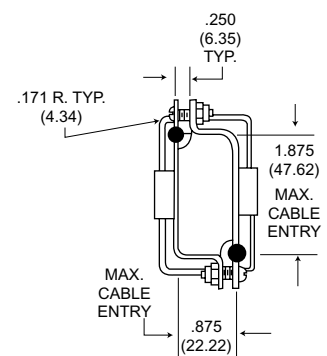
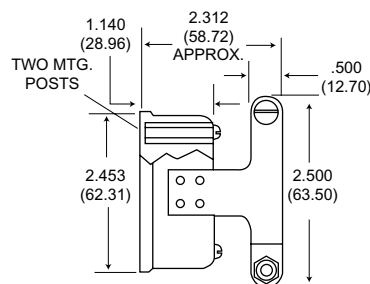
DPD2  
19941-2



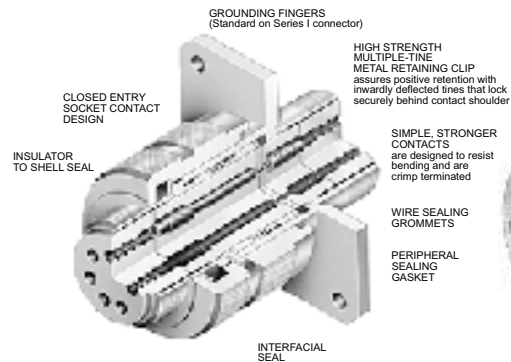
DPD2  
19941-3



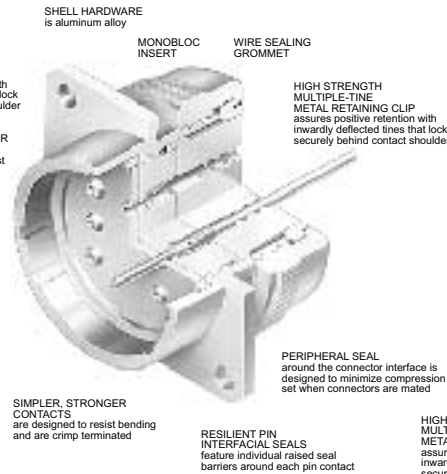
DPD2  
19941-7



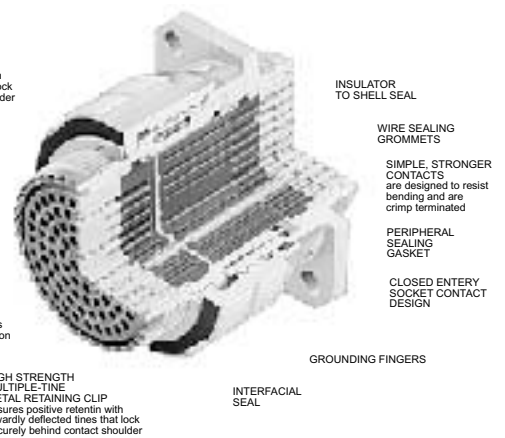
## SERIES I



## SERIES II



## SERIES III



- Corrosion-resistant shells of aluminum alloy with cadmium over nickel plating withstand a 500 hour salt spray exposure
- Rear release crimp snap-in contacts
- High contact density
- Standard MIL-C-39029 contacts, MIL-I-81969 application tools and MIL-STD 1560 insert arrangements
- Special/custom capabilities
- 100% scoop-proof - Series I and III
- Light weight /Low Profile - Series II
- Operates under severe high temperature vibration testing through 200 C - engineered for high density circuitry - Series III
- Interfacial seal helps prevent electrolytic erosion of contacts - Series III
- Superior EMI shielding provides outstanding protection up to 65dB at 10 GHZ. - Series III

## Specification Comparison

| Design Criteria          | Series I     | Series II  | Series III         |
|--------------------------|--------------|------------|--------------------|
| Low Profile/Light Weight | no           | yes        | no                 |
| Scoop Proof              | yes          | no         | yes                |
| Coupling System          | Bayonet      | Bayonet    | Triple Lead Thread |
| Electrolytic Erosion     | no           | no         | yes                |
| Durability (Cycles)      | 500          | 250        | 500                |
| High Impact Shock        | yes          | no         | yes                |
| External Bending Moment  |              |            |                    |
| Shell Size 25            | 650 in/lbs   | 150 in/lbs | 1000 in/lbs        |
| Random Vibration "J"     | Ambient      | Ambient    | 492 F              |
| Sine Vibration           | 30G, Ambient |            | 60G, -85 to +392 F |
| Sand, Dust, Ice          | yes          |            | yes                |
| Shell Size               | 9-25         | 8-24       | 9-25               |

## Contact Rating

| Contact Size | Test Current DC Test Amperage | Maximum Millivolt Drop* | Crimp Well Data |            |
|--------------|-------------------------------|-------------------------|-----------------|------------|
|              |                               |                         | Well Diameter   | Well Depth |
| 22D          | 5                             | 40                      | .0345 ± .0010   | .157/.141  |
| 22M*         | 3                             | 30                      | .0280 ± .0010   | .157/.141  |
| 22*          | 5                             | 40                      | .0365 ± .0010   | .157/.141  |
| 20           | 7.5                           | 35                      | .0470 ± .0010   | .229/.209  |
| 16           | 13                            | 25                      | .0670 ± .0010   | .229/.209  |
| 12           | 23                            | 25                      | .1000 ± .0020   | .229/.209  |

\* Maximum millivolt drop data is determined by measuring resistance of mated contacts from end to end.

• Inactive for new design, available from the factory.

## Performance and Material Specifications

## MATERIALS AND FINISHES

|                  | Receptacle               | Grounded Plug            |
|------------------|--------------------------|--------------------------|
| Shell            | Aluminum alloy           | Aluminum alloy*          |
| Insulator        | High grade plastic       | High grade plastic       |
| Contacts         | Copper alloy, gold plate | Copper alloy, gold plate |
| Grommet and Seal | Silicone base elastomer  | Silicone base elastomer  |
| Jam Nut          | Aluminum alloy           | -                        |
| Grounding Spring | -                        | Beryllium copper         |

\*Finish as noted in How To Order sections.

## ELECTRICAL DATA

Contact Size: 22D, 22M\*, 22\*, 20, 16 and 12

## Contact Rating and Wire Size Accomodation

| Wire Size | Contact Size and Test Amps |      |     |     |      |      |
|-----------|----------------------------|------|-----|-----|------|------|
|           | 22D                        | 22M* | 22* | 20  | 16   | 12   |
| 28        | 1.5                        | 1.5  | -   | -   | -    | -    |
| 26        | 2.0                        | 2.0  | 2.0 | -   | -    | -    |
| 24        | 3.0                        | 3.0  | 3.0 | 3.0 | -    | -    |
| 22        | 5.0                        | -    | 5.0 | 5.0 | -    | -    |
| 20        | -                          | -    | -   | 7.5 | 7.5  | -    |
| 18        | -                          | -    | -   | -   | 10.0 | -    |
| 16        | -                          | -    | -   | -   | 13.0 | -    |
| 14        | -                          | -    | -   | -   | -    | 17.0 |
| 12        | -                          | -    | -   | -   | -    | 23.0 |

## Service Rating (Unmated Condition)

| Test Voltages | Service Rating M | Service Rating I | Service Rating II |
|---------------|------------------|------------------|-------------------|
| Sea Level     | 1300             | 1800             | 2300              |
| 100,000 ft.   | 200              | 200              | 200               |

## Contact Termination; Crimp contact per MIL-C-39029

\*Inactive for new design

## Test Data

| Test Description                   | Parameters                                                                                                                                                                                                                                                                                                                                                                                       |
|------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Durability</b>                  | 500 cycles of mating and unmating, 250 cycles for Series II with spring fingers                                                                                                                                                                                                                                                                                                                  |
| <b>Temperature Range</b>           | Class F, C; - 65°C (-85°F) to + 200°C (+392°F)<br>Class W: - 65°C (-85°F) to + 175°C (+347°F)                                                                                                                                                                                                                                                                                                    |
| <b>Vibration</b>                   | Mated connectors are vibrated with weights to simulate rear accessory loads to the following levels:<br>Sine Vibration: Up to 60 G's - Series I & III (at rated temperature - Series III)<br>Not applicable for Series II.<br>Random Vibration: 43.7 Grms at rated temperature - Series III<br>49.5 Grms at Ambient Temperature - Series I & III<br>43.7 Grms at Ambient Temperature - Series II |
| <b>EMI Shielding Effectiveness</b> | Class F: EMI leakage attenuation, greater than 90dB at 100Mhz, greater than 65dB at 10 GHz.<br>Shell to shell conductivity, 1.0 millivolt max. resistance.<br>Class W: EMI leakage attenuation, greater than 90dB at 100 MHz, greater than 50dB at 10 GHz.<br>Shell to shell conductivity, 2.5 millivolt max.                                                                                    |
| <b>Corrosion Resistant</b>         | Class C, W, Y, will withstand 500 hours salt spray.<br>Class F, N, will withstand 48 hours salt spray.                                                                                                                                                                                                                                                                                           |
| <b>Fluid Immersion</b>             | Connectors are fluid resistant to many fuels, solvents, coolants and oils.                                                                                                                                                                                                                                                                                                                       |
| <b>High Impact Shock</b>           | Mated connectors terminated with MIL-C-915 cable and environmentally sealed backshells will withstand high impact shock per MIL-S-901. Applicable to Series I & III only.                                                                                                                                                                                                                        |
| <b>Altitude</b>                    | Designed to operate between sea level and 100,000 ft. above sea level.                                                                                                                                                                                                                                                                                                                           |
| <b>Other Environments</b>          | Mated connectors shall withstand sand and dust per method 110 of MIL-STD-202 and be ice resistant. Applicable to Series I & III only.                                                                                                                                                                                                                                                            |

NOTE: For hermetic standard or test data please consult ITT Cannon Canada.

## Insert Availability and Identification

| Series II | Series I & III | Service Rating | Total Con-<br>tacts | Contact Size |      |     |    |    |    |       |
|-----------|----------------|----------------|---------------------|--------------|------|-----|----|----|----|-------|
|           |                |                |                     | 22D          | 22M* | 22* | 20 | 16 | 12 | 8     |
| 8-6 •     | 9-6 •          | M              | 6                   |              | 6    |     |    |    |    |       |
| 8-35      | 9-35           | M              | 6                   | 6            |      |     |    |    |    |       |
| 8-98      | 9-98           | I              | 3                   |              |      |     | 3  |    |    |       |
|           | 11-4           | I              | 4                   |              |      |     | 4  |    |    |       |
| 10-5      | 11-5           | I              | 5                   |              |      |     | 5  |    |    |       |
| 10-13 •   | 11-13 •        | M              | 13                  |              | 13   |     |    |    |    |       |
| 10-35     | 11-35          | M              | 13                  | 13           |      |     |    |    |    |       |
| 10-98     | 11-98          | I              | 6                   |              |      |     | 6  |    |    |       |
| 10-99     | 11-99          | I              | 7                   |              |      |     | 7  |    |    |       |
| 12-3      |                | II             | 3                   |              |      |     |    | 3  |    |       |
| 12-4      | 13-4           | I              | 4                   |              |      |     |    | 4  |    |       |
| 12-8      | 13-8           | I              | 8                   |              |      |     | 8  |    |    |       |
| 12-22 •   | 13-22 •        | M              | 22                  |              | 22   |     |    |    |    |       |
| 12-35     | 13-35          | M              | 22                  | 22           |      |     |    |    |    |       |
| 12-98     | 13-98          | I              | 10                  |              |      |     | 10 |    |    |       |
| 14-5      | 15-5           | II             | 5                   |              |      |     |    | 5  |    |       |
| 14-15     | 15-15          | I              | 15                  |              |      |     | 14 | 1  |    |       |
| 14-18     | 15-18          | I              | 18                  |              |      |     | 18 |    |    |       |
|           | 15-19          | I              | 19                  |              |      |     | 19 |    |    |       |
| 14-35     | 15-35          | M              | 37                  | 37           |      |     |    |    |    |       |
| 14-37 •   | 15-37 •        | M              | 37                  |              | 37   |     |    |    |    |       |
| 14-97     | 15-97          | I              | 12                  |              |      |     | 8  | 4  |    |       |
| 16-6      | 17-6           | I              | 6                   |              |      |     |    |    |    | 6     |
| 16-8      | 17-8           | II             | 8                   |              |      |     |    | 8  |    |       |
| 16-26     | 17-26          | I              | 26                  |              |      |     | 26 |    |    |       |
| 16-35     | 17-35          | M              | 55                  | 55           |      |     |    |    |    |       |
| 16-42 •   |                | M              | 42                  |              |      | 42  |    |    |    |       |
| 16-55 •   | 17-55 •        | M              | 55                  |              | 55   |     |    |    |    |       |
| 16-99     | 17-99          | I              | 23                  |              |      |     | 21 | 2  |    |       |
| 18-11     | 19-11          | II             | 11                  |              |      |     |    | 11 |    |       |
| 18-28     | 19-28          | I              | 28                  |              |      |     | 26 | 2  |    |       |
| 18-30     | 19-30          | I              | 30                  |              |      |     | 29 | 1  |    |       |
| 18-32     | 19-32          | I              | 32                  |              |      |     | 32 |    |    |       |
| 18-35     | 19-35          | M              | 66                  | 66           |      |     |    |    |    |       |
| 18-53 •   |                | M              | 53                  |              |      | 53  |    |    |    |       |
| 18-66 •   | 19-66 •        | M              | 66                  |              | 66   |     |    |    |    |       |
| 20-1 •    | 21-1 •         | M              | 79                  |              | 79   |     |    |    |    |       |
| 20-2 •    |                | M              | 65                  |              |      | 65  |    |    |    |       |
|           | 21-11          | I              | 11                  |              |      |     |    |    | 11 |       |
| 20-16     | 21-16          | II             | 16                  |              |      |     |    | 16 |    |       |
| 20-35     | 21-35          | M              | 79                  | 79           |      |     |    |    |    |       |
| 20-39     | 21-39          | I              | 39                  |              |      |     | 37 | 2  |    |       |
| 20-41     | 21-41          | I              | 41                  |              |      |     | 41 |    |    |       |
|           | 21-75          | M              | 4                   |              |      |     |    |    |    | 4**†  |
| 22-1 •    | 23-1 •         | M              | 100                 |              | 100  |     |    |    |    |       |
| 22-2 •    | 23-2 •         | M              | 85                  |              |      | 85  |    |    |    |       |
| 22-21     | 23-21          | II             | 21                  |              |      |     |    | 21 |    |       |
| 22-32     | 23-32          | I              | 32                  |              |      |     | 32 |    |    |       |
| 22-35     | 23-35          | M              | 100                 | 100          |      |     |    |    |    |       |
| 22-53     | 23-53          | I              | 53                  |              |      |     | 53 |    |    |       |
| 22-55     | 23-55          | I              | 55                  |              |      |     | 55 |    |    |       |
| 24-1 •    | 25-1 •         | M              | 128                 |              | 128  |     |    |    |    |       |
| 24-2 •    | 25-2 •         | M              | 100                 |              |      | 100 |    |    |    |       |
| 24-4      | 25-4           | I              | 56                  |              |      |     | 48 | 8  |    |       |
|           | 25-19          | I              | 19                  |              |      |     |    |    |    | 19    |
| 24-24     | 25-24          | I              | 24                  |              |      |     |    | 12 | 12 |       |
| 24-29     | 25-29          | I              | 29                  |              |      |     |    | 29 |    |       |
| 24-35     | 25-35          | M              | 128                 | 128          |      |     |    |    |    |       |
|           | 25-37          | I              | 37                  |              |      |     |    | 37 |    |       |
|           | 25-43          | I              | 43                  |              |      |     | 23 | 20 |    |       |
|           | 25-46          | I, Coax        | 46                  |              |      |     | 40 | 4  |    | 2*†   |
|           | 25-8           | Coax           | 8                   |              |      |     |    |    |    | 8**** |
|           | 25-20          | N              | 30                  |              |      |     | 10 | 13 | 4* | 3**   |
|           | 25-42          | I, Coax        | 42                  |              |      |     | 38 |    |    | 4*    |
| 24-61     | 25-61          | I              | 61                  |              |      |     | 61 |    |    |       |
|           | 25-64          | I              | 64                  | 40           |      |     | 8  | 10 | 6  |       |
|           | 25-66          | I              | 66                  | 53           |      |     | 2  | 11 |    |       |

\* Coax

\*\* Twinax

\*\*\* Coax/Twinax

† For RG180/U and RG195/U cables only (check factory for other cable applications)

• Inactive for new design.

## How To Order

### Military Nomenclature

#### MS NUMBER SHELL STYLE

MS27466 - Wall Mounting Receptacle  
 MS27468 - Jam Nut Receptacle  
 MS27467 - Grounded Plug  
 MS27656 - Wall Mounting Receptacle (back panel mounting)  
 MS27505 - Box Mounting Receptacle (back panel) (Class E)

#### CLASS

E - Inactive for new design.  
 Superseded by Class T.  
 P - Environment - resistant with straight potting cup accessories  
 T - Environment - resistant with accessory threads and teeth, except MS27505 (without rear accessory) (Class T not applicable to MS27505)

MS NUMBER SHELL STYLE

CLASS

SHELL SIZE

HARDWARE FINISH

CONTACT ARRANGEMENT

CONTACT STYLE

ALTERNATE SHELL POSITION

#### SHELL SIZE

9, 11, 13, 15, 17, 19, 21, 23, and 25

#### HARDWARE FINISH STANDARD

A - Bright cadmium over electroless nickel plate, -85°F to +302°F (-65°C to +150°C)  
 B - Olive drab cadmium over electroless nickel plate, -85°F to +347°F (-65°C to +175°C)  
 F - Electroless nickel, -85°F to +392°F (-65°C to +200°C)

#### CONTACT ARRANGEMENT

See pages 132 and 133.

#### CONTACT STYLE

P - Pin  
 S - Socket  
 \*A - Less Pin Contact  
 \*B - Less Socket Contact  
 See pages 296-298 for fiber Optic contacts.

\*Used only when other than power contacts are to be installed (i.e. shielded, thermocouple, etc.)

#### ALTERNATE SHELL POSITION

A, B, C, and D. (Not required for normal). See page 131.

Note: To order MS connectors less standard power contacts, purchase order must state "Less Contacts"

### ITT Cannon Nomenclature

#### SERIES PERFIX

KJL - Series I-Scoop proof

#### SHELL STYLE

0 - Wall mounting receptacle  
 3 - Wall mounting receptacle (back panel mounting)  
 5 - Box mounting receptacle (back panel mounting)  
 6 - Straight plug, grounded  
 7 - Jam nut receptacle

#### CLASS

E - Inactive for new design.  
 Superseded by Class T.  
 F - Environment - resistant with strain relief accessory  
 P - Environment - resistant with straight potting cup accessory  
 T - Environment - resistant (without rear accessory) (Class T not applicable to KJL5)

SERIES PERFIX

SHELL STYLE

CLASS

SHELL SIZE

HARDWARE FINISH

CONTACT ARRANGEMENT

CONTACT STYLE

SHELL POSITION

LESS CONTACTS

NOTE: KJL supplied with exact complement of contacts.

#### SHELL SIZE

9, 11, 13, 15, 17, 19, 21, 23 and 25

#### HARDWARE FINISH STANDARD

A - Bright cadmium over electroless nickel plate, -85°F to +302°F (-65°C to +150°C)  
 B - Olive drab cadmium over electroless nickel plate, -85°F to +347°F (-65°C to +175°C)  
 N - Electroless nickel, -85°F to +392°F (-65°C to +200°C)

#### CONTACT ARRANGEMENT

See pages 132 and 133.

#### CONTACT STYLE

P - Pin  
 S - Socket  
 See pages 296-298 for Fiber Optic Contacts.

#### ALTERNATE SHELL POSITION

N (normal), A, B, C, D. See page 131.

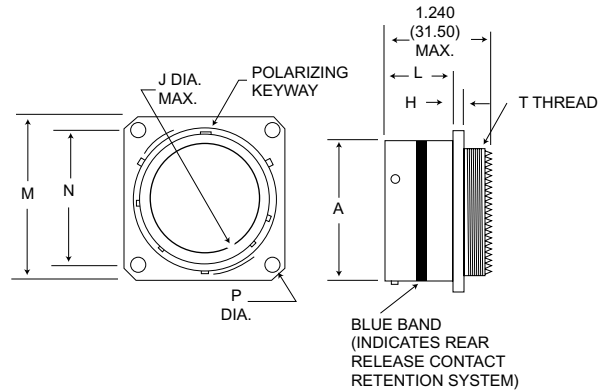
#### LESS CONTACTS

Use "L" when connectors are ordered less contacts, sealing plugs and insertion/extraction tool ("L" is not stamped on connectors).

## Wall Mounting Receptacle

MS27466  
(MS service class E, P, T)

KJL0



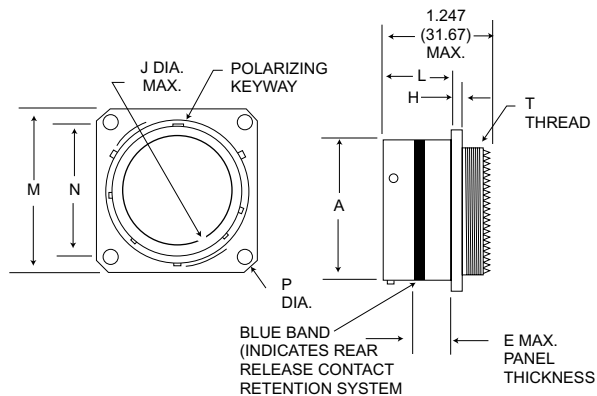
NOTE: For backshell dimensions and configurations, see pages 135 and 136.

| Shell Size | A Dia. Max.   | H Max.      | J Dia. Max.   | L Max.       | M Max.        | N T.P.        | P Dia. Max. | T Thread         | Overall Length With Backshells |                |
|------------|---------------|-------------|---------------|--------------|---------------|---------------|-------------|------------------|--------------------------------|----------------|
|            |               |             |               |              |               |               |             |                  | F Cable Clamp                  | P Potting Max. |
| 9          | .573 (14.55)  | .100 (2.54) | .662 (16.81)  | .632 (16.05) | .958 (24.33)  | .719 (18.26)  | .138 (3.51) | 7/16-28UNEF-2A   | 1.846 (46.89)                  | 1.451 (36.86)  |
| 11         | .701 (17.81)  | .100 (2.54) | .810 (20.57)  | .632 (16.05) | 1.051 (26.70) | .812 (20.62)  | .138 (3.51) | 9/16-24UNEF-2A   | 1.846 (46.89)                  | 1.451 (36.86)  |
| 13         | .851 (21.62)  | .100 (2.54) | .960 (24.38)  | .632 (16.05) | 1.145 (29.08) | .906 (23.01)  | .138 (3.51) | 11/16-24UNEF-2A  | 1.846 (46.89)                  | 1.451 (36.86)  |
| 15         | .976 (24.79)  | .100 (2.54) | 1.085 (27.56) | .632 (16.05) | 1.239 (31.47) | .969 (24.61)  | .138 (3.51) | 13/16-20UNEF-2A  | 1.846 (46.89)                  | 1.451 (36.86)  |
| 17         | 1.101 (27.97) | .100 (2.54) | 1.210 (30.73) | .632 (16.05) | 1.332 (33.83) | 1.062 (26.97) | .138 (3.51) | 15/16-20UNEF-2A  | 1.966 (49.94)                  | 1.451 (36.86)  |
| 19         | 1.208 (30.68) | .100 (2.54) | 1.317 (33.45) | .632 (16.05) | 1.458 (37.03) | 1.156 (29.36) | .138 (3.51) | 1-1/16-18UNEF-2A | 1.966 (50.70)                  | 1.451 (36.86)  |
| 21         | 1.333 (33.86) | .130 (3.30) | 1.442 (36.63) | .602 (15.29) | 1.582 (40.18) | 1.250 (31.75) | .138 (3.51) | 1-3/16-18UNEF-2A | 1.966 (50.70)                  | 1.451 (36.86)  |
| 23         | 1.458 (37.03) | .130 (3.30) | 1.567 (39.80) | .602 (15.29) | 1.708 (43.38) | 1.375 (34.93) | .157 (3.99) | 1-5/16-18UNEF-2A | 1.966 (50.70)                  | 1.451 (36.86)  |
| 25         | 1.583 (40.21) | .130 (3.30) | 1.692 (42.98) | .602 (15.29) | 1.832 (46.53) | 1.500 (38.10) | .157 (3.99) | 1-7/16-18UNEF-2A | 1.966 (50.70)                  | 1.451 (36.86)  |

## Wall Mounting Receptacle (Back Panel)

MS27656  
(MS service class E, P, T)

KJL3



NOTE: For backshell dimensions and configurations, see pages 135 and 136.

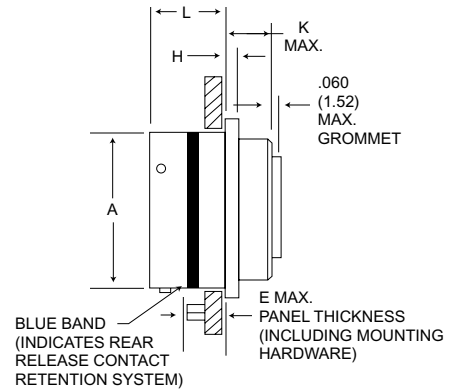
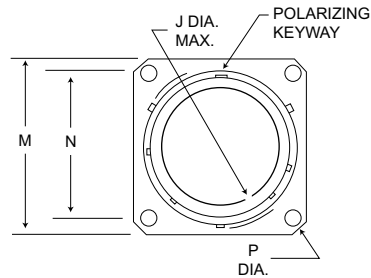
| Shell Size | A Dia. Max.   | E Max.      | H Dia. Max. | J Dia. Max.   | L Max.       | M Max.        | N T.P.        | P Dia. Max. | T Thread         | Overall Length With Backshells |                |
|------------|---------------|-------------|-------------|---------------|--------------|---------------|---------------|-------------|------------------|--------------------------------|----------------|
|            |               |             |             |               |              |               |               |             |                  | F Cable Clamp                  | P Potting Max. |
| 9          | .573 (14.55)  | .234 (5.94) | .100 (2.54) | .662 (16.81)  | .820 (20.83) | .958 (24.33)  | .719 (18.26)  | .138 (3.51) | 7/16-28UNEF-2A   | 1.805 (45.85)                  | 1.410 (35.81)  |
| 11         | .701 (17.81)  | .234 (5.94) | .100 (2.54) | .810 (20.57)  | .820 (20.83) | 1.051 (26.70) | .812 (20.62)  | .138 (3.51) | 9/16-24UNEF-2A   | 1.805 (45.85)                  | 1.410 (35.81)  |
| 13         | .851 (21.62)  | .234 (5.94) | .100 (2.54) | .960 (24.38)  | .820 (20.83) | 1.145 (29.08) | .906 (23.01)  | .138 (3.51) | 11/16-24UNEF-2A  | 1.805 (45.85)                  | 1.410 (35.81)  |
| 15         | .976 (24.79)  | .234 (5.94) | .100 (2.54) | 1.085 (27.56) | .820 (20.83) | 1.239 (31.47) | .969 (24.61)  | .138 (3.51) | 13/16-20UNEF-2A  | 1.805 (45.85)                  | 1.410 (35.81)  |
| 17         | 1.101 (27.97) | .234 (5.94) | .100 (2.54) | 1.210 (30.73) | .820 (20.83) | 1.332 (33.83) | 1.062 (26.97) | .138 (3.51) | 15/16-20UNEF-2A  | 1.935 (49.66)                  | 1.410 (35.81)  |
| 19         | 1.208 (30.68) | .234 (5.94) | .100 (2.54) | 1.317 (33.45) | .820 (20.83) | 1.458 (37.03) | 1.156 (29.36) | .138 (3.51) | 1-1/16-18UNEF-2A | 1.955 (49.66)                  | 1.410 (35.81)  |
| 21         | 1.333 (33.86) | .204 (5.18) | .130 (3.30) | 1.442 (36.63) | .790 (20.07) | 1.582 (40.18) | 1.250 (31.75) | .138 (3.51) | 1-3/16-18UNEF-2A | 1.955 (49.66)                  | 1.410 (35.81)  |
| 23         | 1.458 (37.03) | .204 (5.18) | .130 (3.30) | 1.567 (39.80) | .790 (20.07) | 1.708 (43.38) | 1.375 (34.93) | .157 (3.99) | 1-5/16-18UNEF-2A | 1.955 (49.66)                  | 1.410 (35.81)  |
| 25         | 1.583 (40.21) | .193 (4.90) | .130 (3.30) | 1.692 (42.98) | .790 (20.07) | 1.832 (46.53) | 1.500 (38.10) | .157 (3.99) | 1-7/16-18UNEF-2A | 1.955 (49.66)                  | 1.410 (35.81)  |

Performance Specifications-Pages 115-116 Contacts, Sealing Plugs, Assembly Tools - Pages 134, 136-137 Contact Arrangements - Pages 132-133

## Box Mounting Rectacle (Back Panel)

MS27505E  
(MS service class E)

KJL5E



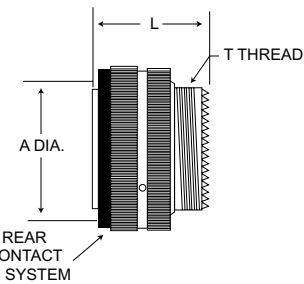
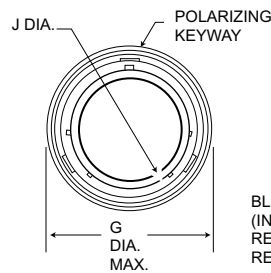
NOTE: This connector does not accommodate backshells.

| Shell Size | A Dia. Max.   | E Max.      | H Max.      | J Dia. Max.   | K Max.      | L Max.       | M Max.        | N T.P.        | P Dia. Max. |
|------------|---------------|-------------|-------------|---------------|-------------|--------------|---------------|---------------|-------------|
| 9          | .573 (14.55)  | .234 (5.94) | .100 (2.54) | .662 (16.81)  | .219 (5.56) | .820 (20.83) | .958 (24.33)  | .719 (18.26)  | .138 (3.51) |
| 11         | .701 (17.81)  | .234 (5.94) | .100 (2.54) | .810 (20.57)  | .219 (5.56) | .820 (20.83) | 1.051 (26.70) | .812 (20.62)  | .138 (3.51) |
| 13         | .851 (21.62)  | .234 (5.94) | .100 (2.54) | .960 (24.38)  | .219 (5.56) | .820 (20.83) | 1.145 (29.08) | .906 (23.01)  | .138 (3.51) |
| 15         | .976 (24.79)  | .234 (5.94) | .100 (2.54) | 1.085 (27.56) | .219 (5.56) | .820 (20.83) | 1.239 (31.47) | .969 (24.61)  | .138 (3.51) |
| 17         | 1.101 (27.97) | .234 (5.94) | .100 (2.54) | 1.210 (30.73) | .219 (5.56) | .820 (20.83) | 1.332 (33.83) | 1.062 (26.97) | .138 (3.51) |
| 19         | 1.208 (30.68) | .234 (5.94) | .100 (2.54) | 1.317 (33.45) | .219 (5.56) | .820 (20.83) | 1.458 (37.03) | 1.156 (29.36) | .138 (3.51) |
| 21         | 1.333 (33.86) | .204 (5.18) | .130 (3.30) | 1.442 (36.63) | .250 (6.35) | .790 (20.07) | 1.582 (40.18) | 1.250 (31.75) | .138 (3.51) |
| 23         | 1.458 (37.03) | .204 (5.18) | .130 (3.30) | 1.567 (39.80) | .250 (6.35) | .790 (20.07) | 1.708 (43.38) | 1.375 (34.93) | .157 (3.99) |
| 25         | 1.583 (40.21) | .193 (4.90) | .130 (3.30) | 1.692 (42.98) | .250 (6.35) | .790 (20.07) | 1.832 (46.53) | 1.500 (38.10) | .157 (3.99) |

## Straight Plug Grounded

MS27467  
(MS service class E, P, T)

KJL6



NOTE: For backshell dimensions and configurations, see pages 135 and 136.

| Shell Size | A Max.        | G Dia. Max.   | J Dia. Max.   | (Class T)     |                  | Overall Length With Backshells |                |
|------------|---------------|---------------|---------------|---------------|------------------|--------------------------------|----------------|
|            |               |               |               | L Max.        | T Thread         | F Cable Clamp                  | P Potting Max. |
| 9          | .585 (14.86)  | .859 (21.82)  | .483 (12.27)  | 1.234 (31.34) | 7/16-28UNEF-2A   | 1.793 (45.54)                  | 1.671 (42.44)  |
| 11         | .717 (18.21)  | .984 (24.99)  | .611 (15.52)  | 1.234 (31.34) | 9/16-24UNEF-2A   | 1.793 (45.54)                  | 1.671 (42.44)  |
| 13         | .866 (22.00)  | 1.156 (29.36) | .760 (19.30)  | 1.234 (31.34) | 11/16-24UNEF-2A  | 1.793 (45.54)                  | 1.671 (42.44)  |
| 15         | .990 (25.15)  | 1.281 (32.54) | .885 (22.48)  | 1.234 (31.34) | 13/16-20UNEF-2A  | 1.793 (45.54)                  | 1.671 (42.44)  |
| 17         | 1.115 (28.32) | 1.406 (35.71) | 1.010 (25.65) | 1.234 (31.34) | 15/16-20UNEF-2A  | 1.913 (48.59)                  | 1.671 (42.44)  |
| 19         | 1.222 (31.04) | 1.516 (38.51) | 1.115 (28.32) | 1.234 (31.34) | 1-1/16-18UNEF-2A | 1.943 (49.35)                  | 1.671 (42.44)  |
| 21         | 1.347 (34.21) | 1.641 (41.68) | 1.240 (31.50) | 1.234 (31.34) | 1-3/16-18UNEF-2A | 1.943 (49.35)                  | 1.766 (44.86)  |
| 23         | 1.472 (37.39) | 1.766 (44.86) | 1.365 (34.67) | 1.234 (31.34) | 1-5/16-18UNEF-2A | 1.943 (49.35)                  | 1.766 (44.86)  |
| 25         | 1.597 (40.56) | 1.891 (48.03) | 1.490 (37.85) | 1.234 (31.34) | 1-7/16-18UNEF-2A | 1.943 (49.35)                  | 1.766 (44.86)  |

Performance Specifications-Pages 115-116

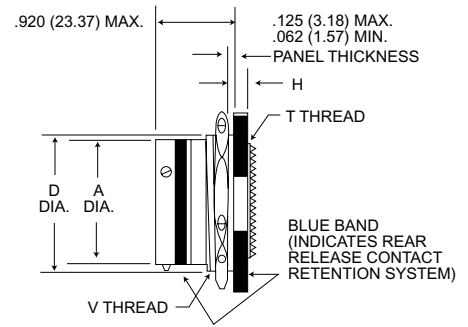
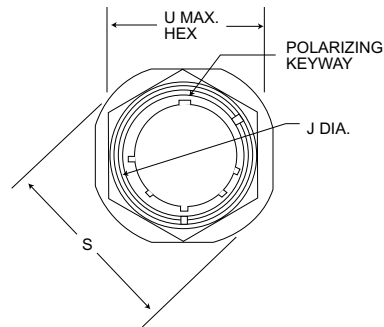
Contacts, Sealing Plugs, Assembly Tools - Pages 134, 136-137

Contact Arrangements - Pages 132-133

## Jam Nut Receptacle

MS27468

KJL7



NOTE: For backshell dimensions and configurations, see pages 135 and 136.

| Shell Size | A Dia. Max.   | D Max.        | H Max.      | J Dia. Max.   | S Dia. Max.   | T Thread         | U Max. Hex.   | V Thread Class 2A | Overall Length With Backshells |                |
|------------|---------------|---------------|-------------|---------------|---------------|------------------|---------------|-------------------|--------------------------------|----------------|
|            |               |               |             |               |               |                  |               |                   | F Cable Clamp                  | P Potting Max. |
| 9          | .573 (14.55)  | .655 (16.64)  | .120 (3.05) | .662 (16.81)  | 1.204 (30.58) | 7/16-28UNEF-2A   | .892 (22.66)  | 11/16-24UNEF      | 1.846 (46.89)                  | 1.451 (36.86)  |
| 11         | .701 (17.81)  | .755 (19.18)  | .120 (3.05) | .810 (20.57)  | 1.391 (35.33) | 9/16-24UNEF-2A   | 1.017 (25.83) | 13/16-24UNEF      | 1.846 (46.89)                  | 1.451 (36.86)  |
| 13         | .851 (21.62)  | .942 (23.93)  | .120 (3.05) | .960 (24.38)  | 1.516 (35.51) | 11/16-24UNEF-2A  | 1.205 (30.61) | 1-20UNEF          | 1.846 (46.89)                  | 1.451 (36.86)  |
| 15         | .976 (24.79)  | 1.066 (27.08) | .120 (3.05) | 1.085 (27.56) | 1.641 (41.68) | 13/16-20UNEF-2A  | 1.329 (33.76) | 1-1/8-18UNEF      | 1.846 (46.89)                  | 1.451 (36.86)  |
| 17         | 1.101 (27.97) | 1.191 (30.25) | .120 (3.05) | 1.210 (30.73) | 1.766 (44.86) | 15/16-20UNEF-2A  | 1.455 (36.96) | 1-1/4-18UNEF      | 1.966 (49.94)                  | 1.451 (36.86)  |
| 19         | 1.208 (30.68) | 1.316 (33.43) | .151 (3.84) | 1.317 (33.45) | 1.954 (49.63) | 1-1/16-18UNEF-2A | 1.579 (40.11) | 1-3/16-18UNEF     | 1.996 (50.70)                  | 1.451 (36.86)  |
| 21         | 1.333 (33.86) | 1.441 (36.60) | .151 (3.84) | 1.442 (36.63) | 2.078 (52.78) | 1-3/16-18UNEF-2A | 1.705 (43.31) | 1-1/2-18UNEF      | 1.996 (50.70)                  | 1.451 (36.86)  |
| 23         | 1.458 (37.03) | 1.566 (39.78) | .151 (3.84) | 1.567 (39.80) | 2.204 (55.98) | 1-5/16-18UNEF-2A | 1.829 (46.46) | 1-5/8-18UNEF      | 1.996 (50.70)                  | 1.451 (36.86)  |
| 25         | 1.583 (40.21) | 1.691 (42.95) | .151 (3.84) | 1.692 (42.98) | 2.328 (59.13) | 1-7/16-18UNEF-2A | 20.17 (51.23) | 1-3/4-18UNS       | 1.996 (50.70)                  | 1.451 (36.86)  |

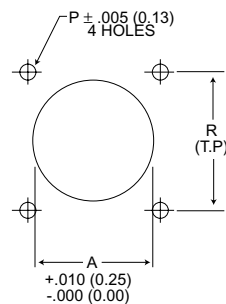
Performance Specifications - Pages 115-116

Contacts, Sealing Plugs, Assembly Tools - Pages 134, 136-137

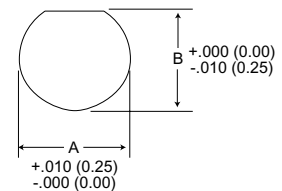
Contacts Arrangements - Pages 132-133

## Panel Cutouts

## Flange Mounted Receptacles



## Jam Nut Receptacles



| Shell Size | A Dia.        | P Dia.      | (Class T)     |            |
|------------|---------------|-------------|---------------|------------|
|            |               |             | R             | Mtg. Screw |
| 9          | .665 (16.89)  | 1.25 (3.18) | .719 (18.26)  | #4         |
| 11         | .812 (20.62)  | 1.25 (3.18) | .812 (20.62)  | #4         |
| 13         | .965 (24.51)  | 1.25 (3.18) | .906 (23.01)  | #4         |
| 15         | 1.085 (27.55) | 1.25 (3.18) | .969 (24.61)  | #4         |
| 17         | 1.210 (30.73) | 1.25 (3.18) | 1.062 (26.7)  | #4         |
| 19         | 1.322 (33.57) | 1.25 (3.18) | 1.156 (29.36) | #4         |
| 21         | 1.447 (36.75) | 1.25 (3.18) | 1.250 (31.75) | #4         |
| 23         | 1.569 (39.85) | 1.25 (3.18) | 1.375 (34.93) | #6         |
| 25         | 1.703 (43.25) | 1.25 (3.18) | 1.500 (38.10) | #6         |

| Shell Size | A Dia.        | B Dia.        |
|------------|---------------|---------------|
| 9          | .700 (17.28)  | .670 (17.02)  |
| 11         | .825 (20.96)  | .770 (19.59)  |
| 13         | 1.010 (25.65) | .955 (24.26)  |
| 15         | 1.135 (28.83) | 1.085 (27.56) |
| 17         | 1.260 (32.00) | 1.210 (30.73) |
| 19         | 1.385 (35.18) | 1.335 (33.91) |
| 21         | 1.510 (38.35) | 1.460 (37.08) |
| 23         | 1.635 (41.53) | 1.585 (40.26) |
| 25         | 1.760 (44.70) | 1.710 (43.43) |

## How To Order

## Military Nomenclature

## MS NUMBER SHELL STYLE

MS27472 - Wall Mounting Receptacle  
 MS27473 - Straight Plug  
 MS27474 - Jam Nut Receptacle  
 MS27484 - Grounded Plug  
 MS27497 - Wall Mounting Receptacle (back panel mounting)  
 MS27513 - Box Mounting Receptacle  
 MS27479 - Wall Mounting Receptacle (C Finish) - Inactive, use MS27472  
 MS27480 - Straight Plug (C Finish) - inactive, use MS27473  
 MS27481 - Jam Nut Receptacle (C Finish) - inactive, use MS27474  
 MS27499 - Box Mounting Receptacle (Class E)  
 MS27508 - Box Mounting (back panel mounting) (Class E)

## CLASS

E - Environment - resistant with rear accessory (without strain relief)  
 P - Environment - resistant with straight potting cup accessories  
 T - Environment - resistant (without rear accessory). (Class T not applicable to MS27499, MS27513, and MS27508.)

MS NUMBER SHELL STYLE

CLASS

SHELL SIZE

HARDWARE FINISH

CONTACT ARRANGEMENT

CONTACT STYLE

ALTERNATE SHELL POSITION

## SHELL SIZE

8, 10, 12, 14, 16, 18, 20, 22, 24.

## HARDWARE FINISH STANDARD

A - Bright cadmium over electroless nickel plates, - 85°F to + 302°F (- 65°C to + 150°C)  
 B - Olive drab cadmium over electroless nickel plate, - 85°F to + 347°F (- 65°C to + 175°C)  
 C - Anodic (non-conductive), - 85°F to + 392°F (-65°C to + 200°C).  
 Not applicable to MS27484.  
 F - Electroless nickel, - 85°F to + 392°F (-65°C to + 200°C)

## CONTACT ARRANGEMENT

See pages 132 and 133.

## CONTACT STYLE

P - Pin  
 S - Socket  
 \*A - Less Pin Contact  
 \*B - Less Socket Contact

\*Used only when other than power contacts are to be installed (i.e. shielded, thermocouple, etc.)

## ALTERNATE SHELL POSITION

A, B, C, and D (not required for normal). See page 131.

Note: To order MS connectors less standard power contacts, purchase order must state "Less Contacts".

## ITT Cannon Nomenclature

## SERIES PREFIX

KJ - Series II - Low Profile

## SHELL STYLE

0 - Wall mounting receptacle  
 2 - Box mounting receptacle (available as hermetic)  
 3 - Wall mounting receptacle (back panel mounting)  
 5 - Box mounting receptacle (back panel mounting)  
 6 - Straight plug  
 G6 - Straight plug, grounded  
 7 - Jam nut receptacle (available as hermetic)

## CLASS

E - Environment - resistant with rear accessory (without strain relief)  
 F - Environment - resistant with strain relief accessory  
 P - Environment - resistant with straight potting cup accessory  
 R - Environment - resistant with full grommet seal without rear accessory; shell styles 2 and 5 only  
 T - Environment - resistant (without rear accessory). (Class T not applicable to KJ2E, KJ2R, KJ5E and KJ5R.)

SERIES PREFIX

SHELL STYLE

CLASS

SHELL SIZE

HARDWARE FINISH

CONTACT ARRANGEMENT

CONTACT STYLE

SHELL POSITION

LESS CONTACTS

Note KJ supplied with exact complement of contacts.

## SHELL SIZE

8, 10, 12, 14, 16, 18, 20, 22, and 24.

## HARDWARE FINISH STANDARD

A - Bright cadmium over electroless nickel plates, - 85°F to + 302°F (- 65°C to + 150°C)  
 B - Olive drab cadmium over electroless nickel plate, - 85°F to + 347°F (- 65°C to + 175°C)  
 C - Anodic (non-conductive), - 85°F to + 392°F (-65°C to + 200°C). Not applicable to KJG6.  
 N - Electroless nickel, - 85°F to + 392°F (-65°C to + 200°C)

## CONTACT ARRANGEMENT

See pages 132 and 133.

## CONTACT STYLE

P - Pin  
 S - Socket

## ALTERNATE SHELL POSITION

N(normal), A, B, C, D, see page 131.

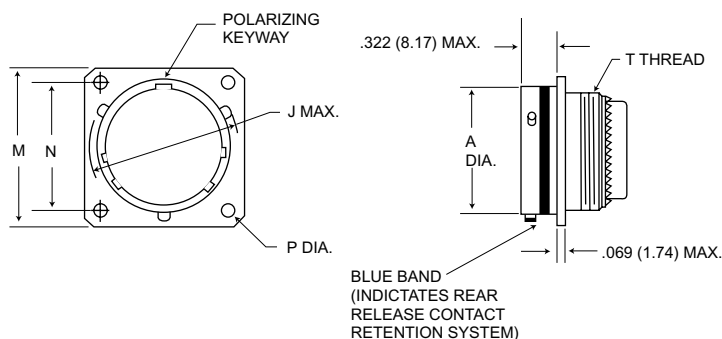
## LESS CONTACTS

Use "L" when connectors are ordered less contacts, sealing plugs and insertion/extraction tool. ("L" is not stamped on connectors.)

## Wall Mounting Receptacle

MS27472  
(MS service class E, P, T)

KJ0



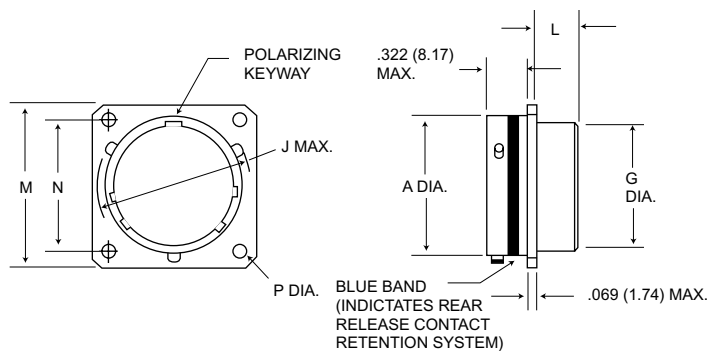
NOTE: For backshell dimensions and configurations, see page 135 and 136

| Shell Size | A Dia. Max.   | J Dia. Max.   | M Max.        | N T.P.        | P +.005 (0.13) - .010 (0.25) | T Thread         | Overall length With Backshells |               |                |
|------------|---------------|---------------|---------------|---------------|------------------------------|------------------|--------------------------------|---------------|----------------|
|            |               |               |               |               |                              |                  | E Straight                     | F Cable Clamp | P Potting Max. |
| 8          | .474 (12.04)  | .563 (14.30)  | .828 (21.03)  | .594 (15.09)  | .125 (3.18)                  | 7/16-28UNEF-2A   | .850 (21.59)                   | 1.555 (39.50) | 1.020 (25.91)  |
| 10         | .591 (15.01)  | .680 (17.27)  | .954 (24.23)  | .719 (18.26)  | .125 (3.18)                  | 9/16-24UNEF-2A   | .850 (21.59)                   | 1.555 (39.50) | 1.020 (25.91)  |
| 12         | .751 (19.08)  | .859 (21.82)  | 1.047 (26.59) | .812 (20.62)  | .125 (3.18)                  | 11/16-24UNEF-2A  | .850 (21.59)                   | 1.555 (39.50) | 1.020 (25.91)  |
| 14         | .876 (22.25)  | .984 (24.99)  | 1.141 (28.98) | .906 (23.01)  | .125 (3.18)                  | 13/16-20UNEF-2A  | .850 (21.59)                   | 1.790 (45.47) | 1.020 (25.91)  |
| 16         | 1.001 (25.43) | 1.108 (28.14) | 1.234 (31.34) | .969 (24.61)  | .125 (3.18)                  | 15/16-20UNEF-2A  | .850 (21.59)                   | 1.790 (45.47) | 1.020 (25.91)  |
| 18         | 1.126 (28.60) | 1.233 (31.32) | 1.328 (33.73) | 1.062 (26.97) | .125 (3.18)                  | 1-1/16-18UNEF-2A | .850 (21.59)                   | 1.790 (45.47) | 1.020 (25.91)  |
| 20         | 1.251 (31.78) | 1.358 (34.49) | 1.453 (36.91) | 1.156 (27.36) | .125 (3.18)                  | 1-3/16-18UNEF-2A | .850 (21.59)                   | 1.790 (45.47) | 1.020 (25.91)  |
| 22         | 1.376 (34.95) | 1.483 (37.67) | 1.578 (39.08) | 1.250 (31.76) | .125 (3.18)                  | 1-5/16-18UNEF-2A | .850 (21.59)                   | 1.930 (49.02) | 1.020 (25.91)  |
| 24         | 1.501 (38.13) | 1.610 (40.89) | 1.703 (43.26) | 1.375 (34.92) | .152 (3.86)                  | 1-7/16-18UNEF-2A | .850 (21.59)                   | 1.900 (48.26) | 1.080 (27.43)  |

## Box Mounting Receptacle

MS27499E  
(MS service class E)

KJ2E



NOTE: This connector does not accommodate backshells

| Shell Size | A Dia. Max.   | G Dia. Max.   | J Dia. Max.   | L Max.      | M Max.        | N T.P.        | P +.005 (0.13) - .010 (0.25) |
|------------|---------------|---------------|---------------|-------------|---------------|---------------|------------------------------|
|            |               |               |               |             |               |               |                              |
| 8          | .474 (12.04)  | .421 (10.69)  | .563 (14.30)  | .312 (7.92) | .828 (21.03)  | .594 (15.09)  | .125 (3.18)                  |
| 10         | .591 (15.01)  | .542 (13.77)  | .680 (17.27)  | .312 (7.92) | .954 (24.23)  | .719 (18.26)  | .125 (3.18)                  |
| 12         | .751 (19.08)  | .667 (16.94)  | .859 (21.82)  | .312 (7.92) | 1.047 (26.59) | .812 (20.62)  | .125 (3.18)                  |
| 14         | .876 (22.25)  | .791 (20.09)  | .984 (24.99)  | .312 (7.92) | 1.141 (28.98) | .906 (23.01)  | .125 (3.18)                  |
| 16         | 1.001 (25.43) | .916 (23.27)  | 1.108 (28.14) | .312 (7.92) | 1.234 (31.34) | .969 (24.61)  | .125 (3.18)                  |
| 18         | 1.126 (28.60) | 1.034 (26.26) | 1.233 (31.32) | .312 (7.92) | 1.328 (33.73) | 1.062 (26.97) | .125 (3.18)                  |
| 20         | 1.251 (31.78) | 1.158 (29.41) | 1.358 (34.49) | .312 (7.92) | 1.453 (36.81) | 1.156 (27.36) | .125 (3.18)                  |
| 22         | 1.376 (33.95) | 1.283 (32.59) | 1.483 (37.67) | .312 (7.92) | 1.578 (40.08) | 1.250 (31.75) | .125 (3.18)                  |
| 24         | 1.501 (38.13) | 1.408 (35.76) | 1.610 (40.89) | .312 (7.92) | 1.703 (43.26) | 1.375 (34.93) | .152 (3.86)                  |

Performance Specifications - Pages 115-116

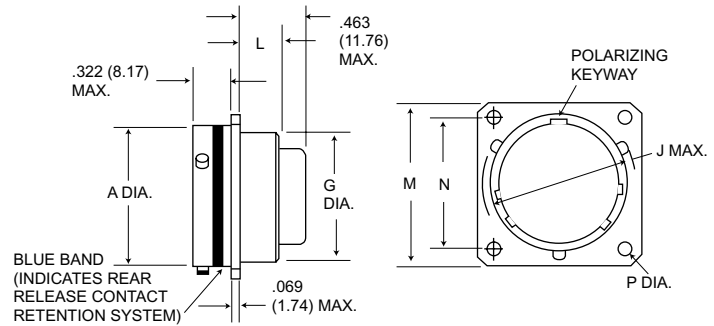
Contacts, Sealing Plugs, Assembly Tools - Pages 134, 136 - 137

Contact Arrangements - Pages 132 - 133

## Box Mounting Receptacle

MS27513E  
(MS service class E)

KJ2R



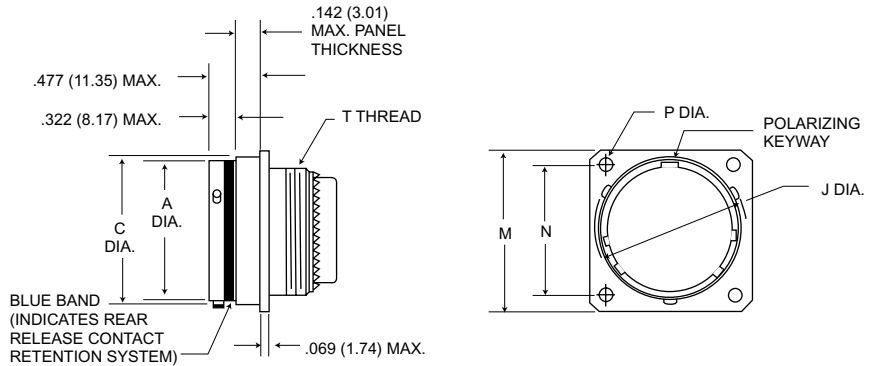
NOTE: This connector does not accommodate backshells

| Shell Size | A<br>Dia. Max. | G<br>Dia. Max. | J<br>Dia. Max. | L<br>Max.   | M<br>Max.     | N<br>T.P.     | P<br>+.005 (0.13)<br>-.010 (0.25) |
|------------|----------------|----------------|----------------|-------------|---------------|---------------|-----------------------------------|
| 8          | .474 (12.04)   | .421 (10.69)   | .563 (14.30)   | .312 (7.92) | .828 (21.03)  | .594 (15.09)  | .125 (3.18)                       |
| 10         | .591 (15.01)   | .542 (13.77)   | .680 (17.27)   | .312 (7.92) | .954 (24.23)  | .719 (18.26)  | .125 (3.18)                       |
| 12         | .751 (19.08)   | .667 (16.94)   | .859 (21.82)   | .312 (7.92) | 1.047 (26.59) | .812 (20.62)  | .125 (3.18)                       |
| 14         | .876 (22.25)   | .791 (20.09)   | .984 (24.99)   | .312 (7.92) | 1.141 (28.98) | .906 (23.01)  | .125 (3.18)                       |
| 16         | 1.001 (25.43)  | .916 (23.27)   | 1.108 (28.14)  | .312 (7.92) | 1.234 (31.34) | .969 (24.61)  | .125 (3.18)                       |
| 18         | 1.126 (28.60)  | 1.034 (26.26)  | 1.233 (31.32)  | .312 (7.92) | 1.328 (33.73) | 1.062 (26.97) | .125 (3.18)                       |
| 20         | 1.251 (31.78)  | 1.158 (29.41)  | 1.358 (34.49)  | .312 (7.92) | 1.453 (36.81) | 1.156 (27.36) | .125 (3.18)                       |
| 22         | 1.376 (33.95)  | 1.283 (32.59)  | 1.483 (27.67)  | .312 (7.92) | 1.578 (40.08) | 1.250 (31.75) | .125 (3.18)                       |
| 24         | 1.501 (38.13)  | 1.408 (35.76)  | 1.610 (40.89)  | .312 (7.92) | 1.703 (43.26) | 1.375 (34.93) | .152 (3.85)                       |

## Wall Mounting Receptacle

MS27497  
(MS service class E, P, T)

KJ3



NOTE: For backshell dimensions and configurations, see page 135 and 136

| Shell Size | A<br>Dia. Max. | C<br>Dia. Max. | J<br>Dia. Max. | M<br>Max.     | N<br>T.P.     | P<br>+.005 (0.13)<br>-.010 (0.25) | T<br>Thread      | Overall length With Backshells |                  |                   |
|------------|----------------|----------------|----------------|---------------|---------------|-----------------------------------|------------------|--------------------------------|------------------|-------------------|
|            |                |                |                |               |               |                                   |                  | E<br>Straight                  | F<br>Cable Clamp | P<br>Potting Max. |
| 8          | .474 (12.04)   | .522 (13.26)   | .563 (14.30)   | .828 (21.03)  | .594 (15.09)  | .125 (3.18)                       | 7/16-28UNEF-2A   | .855 (21.72)                   | 1.570 (39.88)    | 1.020 (25.91)     |
| 10         | .591 (15.01)   | .639 (16.23)   | .680 (17.27)   | .954 (24.23)  | .719 (18.26)  | .125 (3.18)                       | 9/16-24UNEF-2A   | .855 (21.72)                   | 1.570 (39.88)    | 1.020 (25.91)     |
| 12         | .751 (19.08)   | .808 (20.52)   | .859 (21.82)   | 1.047 (26.59) | .812 (20.62)  | .125 (3.18)                       | 11/16-24UNEF-2A  | .855 (21.72)                   | 1.570 (39.88)    | 1.020 (25.91)     |
| 14         | .876 (22.25)   | .935 (23.75)   | .984 (24.99)   | 1.141 (28.98) | .906 (23.01)  | .125 (3.18)                       | 13/16-20UNEF-2A  | .855 (21.72)                   | 1.780 (45.21)    | 1.020 (25.91)     |
| 16         | 1.001 (25.43)  | 1.058 (26.87)  | 1.108 (28.14)  | 1.234 (31.34) | .969 (24.61)  | .125 (3.18)                       | 15/16-20UNEF-2A  | .855 (21.72)                   | 1.780 (45.21)    | 1.020 (25.91)     |
| 18         | 1.126 (28.60)  | 1.183 (30.05)  | 1.233 (31.32)  | 1.328 (33.73) | 1.062 (26.97) | .125 (3.18)                       | 1-1/16-18UNEF-2A | .855 (21.72)                   | 1.780 (45.21)    | 1.020 (25.91)     |
| 20         | 1.251 (31.78)  | 1.308 (33.22)  | 1.358 (34.49)  | 1.453 (36.91) | 1.156 (29.36) | .125 (3.18)                       | 1-3/16-18UNEF-2A | .855 (21.72)                   | 1.780 (45.21)    | 1.020 (25.91)     |
| 22         | 1.376 (34.95)  | 1.433 (36.40)  | 1.483 (37.67)  | 1.578 (40.08) | 1.250 (31.75) | .125 (3.18)                       | 1-5/16-18UNEF-2A | .855 (21.72)                   | 1.960 (49.78)    | 1.020 (25.91)     |
| 24         | 1.501 (38.13)  | 1.568 (39.83)  | 1.610 (40.89)  | 1.703 (43.26) | 1.375 (34.93) | .152 (3.86)                       | 1-7/16-18UNEF-2A | .855 (21.72)                   | 1.960 (49.78)    | 1.080 (27.43)     |

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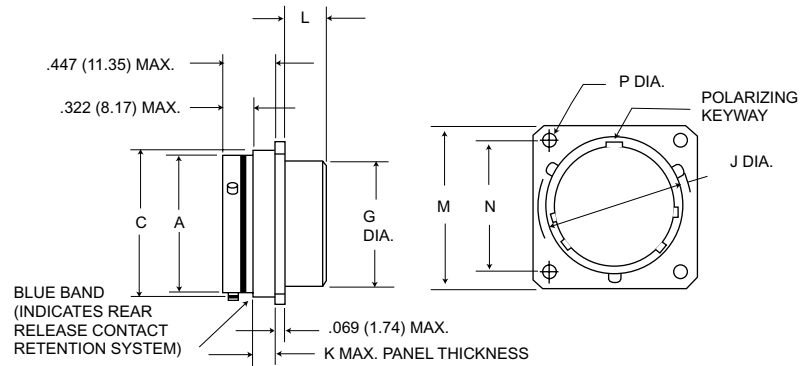
Contacts, Sealing Plugs, Assembly Tools - Pages 134, 136 - 137

Contact Arrangements - Pages 132 - 133

## Box Mounting Receptacle (Back Panel)

MS27508E  
(MS service class E)

KJ5E



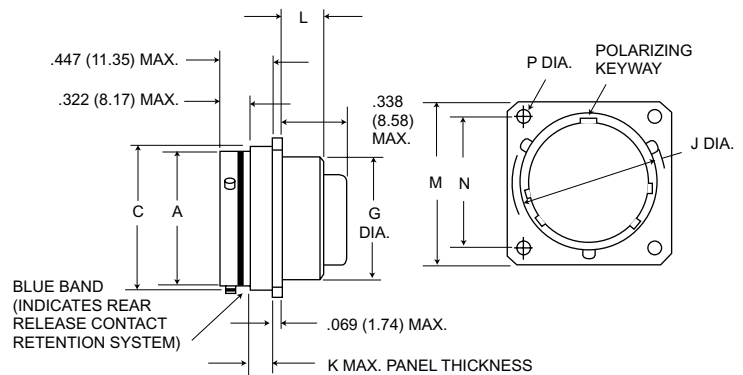
NOTE: This connector does not accommodate backshells

| Shell Size | A<br>Dia. Max. | C<br>Dia. Max. | G<br>Dia. Max. | J<br>Dia. Max. | K<br>Max.   | L<br>Max.   | M<br>Max.     | N<br>T.P      | P<br>+.005 (0.13)<br>-.010 (0.25) |
|------------|----------------|----------------|----------------|----------------|-------------|-------------|---------------|---------------|-----------------------------------|
| 8          | .474 (12.04)   | .522 (13.26)   | .421 (10.69)   | .563 (14.30)   | .147 (3.73) | .185 (4.70) | .828 (21.03)  | .594 (15.09)  | .125 (3.18)                       |
| 10         | .591 (15.01)   | .639 (16.23)   | .542 (13.77)   | .680 (17.27)   | .152 (3.86) | .185 (4.70) | .954 (24.23)  | .719 (18.26)  | .125 (3.18)                       |
| 12         | .751 (19.08)   | .808 (20.52)   | .667 (16.94)   | .859 (21.82)   | .152 (3.86) | .185 (4.70) | 1.047 (26.59) | .812 (20.62)  | .125 (3.18)                       |
| 14         | .876 (22.25)   | .935 (23.75)   | .791 (20.09)   | .984 (24.99)   | .152 (3.86) | .185 (4.70) | 1.141 (28.98) | .906 (23.01)  | .125 (3.18)                       |
| 16         | 1.001 (25.42)  | 1.058 (26.87)  | .916 (23.27)   | 1.108 (28.14)  | .152 (3.86) | .185 (4.70) | 1.234 (31.24) | .969 (24.61)  | .125 (3.18)                       |
| 18         | 1.126 (28.60)  | 1.183 (30.05)  | 1.034 (31.34)  | 1.233 (31.32)  | .152 (3.86) | .185 (4.70) | 1.328 (33.73) | 1.062 (26.97) | .125 (3.18)                       |
| 20         | 1.251 (31.77)  | 1.308 (33.22)  | 1.158 (34.52)  | 1.358 (34.49)  | .179 (4.55) | .185 (4.70) | 1.453 (36.91) | 1.156 (29.36) | .125 (3.18)                       |
| 22         | 1.376 (34.95)  | 1.433 (36.40)  | 1.283 (32.59)  | 1.483 (37.67)  | .179 (4.55) | .185 (4.70) | 1.578 (40.08) | 1.250 (31.75) | .125 (3.18)                       |
| 24         | 1.501 (38.13)  | 1.568 (39.83)  | 1.408 (35.76)  | 1.610 (40.89)  | .169 (4.29) | .185 (4.70) | 1.703 (43.66) | 1.375 (34.92) | .152 (3.86)                       |

## Box Mounting Receptacle (Back Panel)

No MS part number

KJ5R



NOTE: This connector does not accommodate backshells

| Shell Size | A<br>Dia. Max. | C<br>Dia. Max. | G<br>Dia. Max. | J<br>Dia. Max. | K<br>Max.   | L<br>Max.   | M<br>Max.     | N<br>T.P      | P<br>+.005 (0.13)<br>-.010 (0.25) |
|------------|----------------|----------------|----------------|----------------|-------------|-------------|---------------|---------------|-----------------------------------|
| 8          | .474 (12.04)   | .522 (13.26)   | .421 (10.69)   | .563 (14.30)   | .147 (3.73) | .185 (4.70) | .828 (21.03)  | .594 (15.09)  | .125 (3.18)                       |
| 10         | .591 (15.01)   | .639 (16.23)   | .542 (13.77)   | .680 (17.27)   | .152 (3.86) | .185 (4.70) | .954 (24.23)  | .719 (18.26)  | .125 (3.18)                       |
| 12         | .751 (19.08)   | .808 (20.52)   | .667 (16.94)   | .859 (21.82)   | .152 (3.86) | .185 (4.70) | 1.047 (26.59) | .812 (20.62)  | .125 (3.18)                       |
| 14         | .876 (22.25)   | .935 (23.75)   | .791 (20.09)   | .984 (24.99)   | .152 (3.86) | .185 (4.70) | 1.141 (28.98) | .906 (23.01)  | .125 (3.18)                       |
| 16         | 1.001 (25.42)  | 1.058 (26.87)  | .916 (23.27)   | 1.108 (28.14)  | .152 (3.86) | .185 (4.70) | 1.234 (31.24) | .969 (24.61)  | .125 (3.18)                       |
| 18         | 1.126 (28.60)  | 1.183 (30.05)  | 1.034 (31.34)  | 1.233 (31.32)  | .152 (3.86) | .185 (4.70) | 1.328 (33.73) | 1.062 (26.97) | .125 (3.18)                       |
| 20         | 1.251 (31.77)  | 1.308 (33.22)  | 1.158 (34.52)  | 1.358 (34.49)  | .179 (4.55) | .185 (4.70) | 1.453 (36.91) | 1.156 (29.36) | .125 (3.18)                       |
| 22         | 1.376 (34.95)  | 1.433 (36.40)  | 1.283 (32.59)  | 1.483 (37.67)  | .179 (4.55) | .185 (4.70) | 1.578 (40.08) | 1.250 (31.75) | .125 (3.18)                       |
| 24         | 1.501 (38.13)  | 1.568 (39.83)  | 1.408 (35.76)  | 1.610 (40.89)  | .169 (4.29) | .185 (4.70) | 1.703 (43.66) | 1.375 (34.92) | .152 (3.86)                       |

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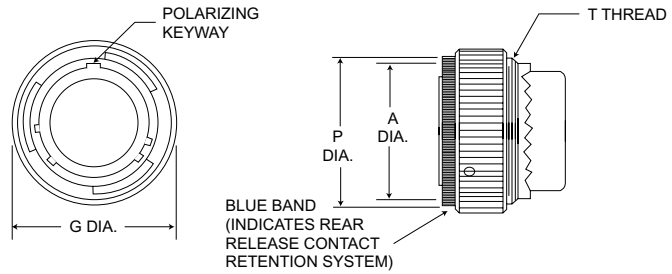
Contacts, Sealing Plugs, Assembly Tools - Pages 134, 136 - 137

Contact Arrangements - Pages 132 - 133

## Straight Plug

MS27473  
(MS service class E, P, T)

KJ6



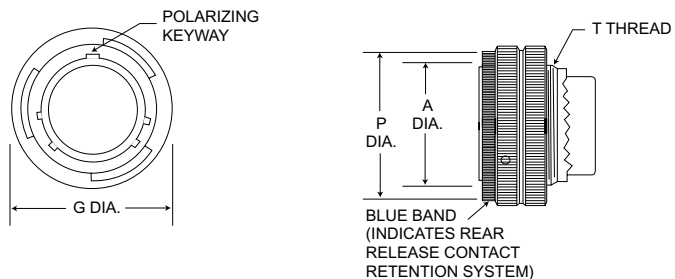
NOTE: For backshell dimensions and configurations, see pages 135 and 136.

| Shell Size | A Dia. Max.   | G Dia. Max.   | P Dia. Max.   | T Thread         | Overall Length With Backshells |               |                |
|------------|---------------|---------------|---------------|------------------|--------------------------------|---------------|----------------|
|            |               |               |               |                  | E Straight                     | F Cable Clamp | P Potting Max. |
| 8          | .485 (12.32)  | .749 (19.02)  | .630 (16.00)  | 7/16-28UNEF-2A   | 1.026 (26.06)                  | 1.555 (39.50) | 1.020 (25.91)  |
| 10         | .606 (15.39)  | .858 (21.79)  | .752 (19.10)  | 9/16-24UNEF-2A   | 1.026 (26.06)                  | 1.555 (39.50) | 1.020 (25.91)  |
| 12         | .765 (19.43)  | 1.030 (26.16) | .925 (23.50)  | 11/16-24UNEF-2A  | 1.026 (26.06)                  | 1.555 (39.50) | 1.020 (25.91)  |
| 14         | .890 (22.61)  | 1.155 (29.34) | 1.050 (26.67) | 13/16-20UNEF-2A  | 1.026 (26.06)                  | 1.790 (45.47) | 1.020 (25.91)  |
| 16         | 1.014 (25.76) | 1.280 (32.51) | 1.172 (29.77) | 15/16-20UNEF-2A  | 1.026 (26.06)                  | 1.790 (45.47) | 1.020 (25.91)  |
| 18         | 1.140 (28.96) | 1.405 (35.69) | 1.304 (33.12) | 1-1/16-18UNEF-2A | 1.026 (26.06)                  | 1.790 (45.47) | 1.020 (25.91)  |
| 20         | 1.264 (32.11) | 1.530 (38.86) | 1.435 (36.45) | 1-3/16-18UNEF-2A | 1.026 (26.06)                  | 1.790 (45.47) | 1.020 (25.91)  |
| 22         | 1.389 (35.28) | 1.640 (40.66) | 1.560 (39.62) | 1-5/16-18UNEF-2A | 1.026 (26.06)                  | 1.930 (49.02) | 1.020 (25.91)  |
| 24         | 1.514 (38.46) | 1.765 (44.83) | 1.688 (42.88) | 1-7/16-18UNEF-2A | 1.104 (28.04)                  | 1.930 (49.02) | 1.080 (27.43)  |

## Straight Plug Grounded

MS27484  
(MS service class E, P, T)

KJG6



NOTE: For backshell dimensions and configurations, see pages 135 and 136.

| Shell Size | A Dia. Max.   | G Dia. Max.   | P Dia. Max.   | T Thread         | Overall Length With Backshells |               |                |
|------------|---------------|---------------|---------------|------------------|--------------------------------|---------------|----------------|
|            |               |               |               |                  | E Straight                     | F Cable Clamp | P Potting Max. |
| 8          | .485 (12.32)  | .749 (19.02)  | .630 (16.00)  | 7/16-28UNEF-2A   | 1.026 (26.06)                  | 1.555 (39.50) | 1.020 (25.91)  |
| 10         | .606 (15.39)  | .858 (21.79)  | .752 (19.10)  | 9/16-24UNEF-2A   | 1.026 (26.06)                  | 1.555 (39.50) | 1.020 (25.91)  |
| 12         | .765 (19.43)  | 1.030 (26.16) | .925 (23.50)  | 11/16-24UNEF-2A  | 1.026 (26.06)                  | 1.555 (39.50) | 1.020 (25.91)  |
| 14         | .890 (22.61)  | 1.155 (29.34) | 1.050 (26.67) | 13/16-20UNEF-2A  | 1.026 (26.06)                  | 1.790 (45.47) | 1.020 (25.91)  |
| 16         | 1.014 (25.76) | 1.280 (32.51) | 1.172 (29.77) | 15/16-20UNEF-2A  | 1.026 (26.06)                  | 1.790 (45.47) | 1.020 (25.91)  |
| 18         | 1.140 (28.96) | 1.405 (35.69) | 1.304 (33.12) | 1-1/16-18UNEF-2A | 1.026 (26.06)                  | 1.790 (45.47) | 1.020 (25.91)  |
| 20         | 1.264 (32.11) | 1.530 (38.86) | 1.435 (36.45) | 1-3/16-18UNEF-2A | 1.026 (26.06)                  | 1.790 (45.47) | 1.020 (25.91)  |
| 22         | 1.389 (35.28) | 1.640 (40.66) | 1.560 (39.62) | 1-5/16-18UNEF-2A | 1.026 (26.06)                  | 1.930 (49.02) | 1.020 (25.91)  |
| 24         | 1.514 (38.46) | 1.765 (44.83) | 1.688 (42.88) | 1-7/16-18UNEF-2A | 1.104 (28.04)                  | 1.930 (49.02) | 1.080 (27.43)  |

Performance Specifications - Pages 115-116

Contacts, Sealing Plugs, Assembly Tools - Pages 134, 136 - 137

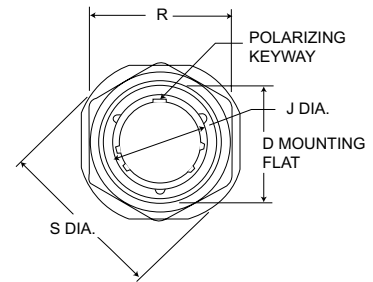
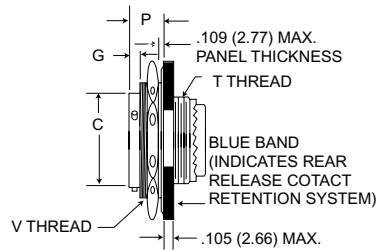
Contact Arrangements - Pages 132 - 133

## Straight Plug

MS27474

KJ7

(MS service class E, P, T)



NOTE: For backshell dimensions and configurations, see pages 135 and 136.

| Shell Size | C Dia. Max.   | D Max.        | G Max.      | J Max.        | P Max.       | R Max. Hex.   | S Dia. Max.   | T Thread          | V Thread        | Overall length With Backshells |               |                |
|------------|---------------|---------------|-------------|---------------|--------------|---------------|---------------|-------------------|-----------------|--------------------------------|---------------|----------------|
|            |               |               |             |               |              |               |               |                   |                 | E Straight                     | F Cable Clamp | P Potting Max. |
| 8          | .474 (12.04)  | .818 (20.78)  | .145 (3.68) | .563 (14.30)  | .443 (11.25) | 1.079 (27.41) | 1.381 (35.08) | 7/16-28UNEF-2A    | 7/8-20UNEF-2A   | .840 (21.34)                   | 1.555 (39.50) | 1.020 (25.91)  |
| 10         | .591 (15.01)  | .942 (23.93)  | .145 (3.68) | .680 (17.27)  | .443 (11.25) | 1.205 (30.61) | 1.506 (38.25) | 9/16-24UNEF-2A    | 1-20UNEF-2A     | .840 (21.34)                   | 1.555 (39.50) | 1.020 (25.91)  |
| 12         | .751 (19.08)  | 1.066 (27.08) | .145 (3.68) | .859 (21.82)  | .443 (11.25) | 1.329 (33.76) | 1.631 (41.43) | 11/16-24UNEF-2A   | 1-1/8-18UNEF-2A | .840 (21.34)                   | 1.555 (39.50) | 1.020 (25.91)  |
| 14         | .876 (22.25)  | 1.191 (30.25) | .145 (3.68) | .984 (24.99)  | .443 (11.25) | 1.455 (36.96) | 1.756 (44.60) | 13/16-20UNEF-2A   | 1-1/4-18UNEF-2A | .840 (21.34)                   | 1.790 (45.47) | 1.020 (25.91)  |
| 16         | 1.001 (25.43) | 1.321 (33.55) | .145 (3.68) | 1.108 (28.14) | .443 (11.25) | 1.579 (40.11) | 1.944 (49.38) | 1-15/16-20UNEF-2A | 1-3/8-18UNEF-2A | .840 (21.34)                   | 1.790 (45.47) | 1.020 (25.91)  |
| 18         | 1.126 (28.60) | 1.441 (36.60) | .145 (3.68) | 1.233 (31.32) | .443 (11.25) | 1.705 (43.31) | 2.022 (51.36) | 1-1/16-18UNEF-2A  | 1-1/2-18UNEF-2A | .840 (21.34)                   | 1.790 (45.47) | 1.020 (25.91)  |
| 20         | 1.251 (31.78) | 1.566 (39.78) | .171 (4.34) | 1.358 (34.49) | .469 (11.91) | 1.829 (46.46) | 2.147 (54.53) | 1-3/16-18UNEF-2A  | 1-5/8-18UNEF-2A | .840 (21.34)                   | 1.790 (45.47) | 1.020 (25.91)  |
| 22         | 1.376 (33.95) | 1.691 (42.95) | .171 (4.34) | 1.483 (37.67) | .469 (11.91) | 2.017 (51.23) | 2.271 (57.68) | 1-5/16-18UNEF-2A  | 1-3/4-18UNS-2A  | .840 (21.34)                   | 1.930 (49.02) | 1.020 (25.91)  |
| 24         | 1.501 (38.13) | 1.816 (46.13) | .171 (4.34) | 1.610 (40.89) | .469 (11.91) | 2.142 (54.41) | 2.396 (60.86) | 1-7/16-18UNEF-2A  | 1-7/8-18UNS-2A  | .860 (21.84)                   | 1.900 (48.26) | 1.080 (27.43)  |

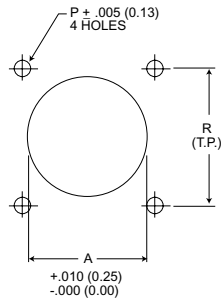
Performance Specifications - Pages 115-116

Contacts, Sealing Plugs, Assembly Tools - Pages 134, 136 - 137

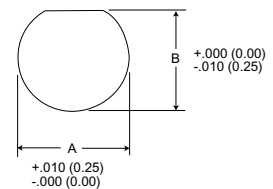
Contact Arrangements - Pages 132 - 133

## Panel Cutouts

## Flange Mounted Receptacle



## Jam Nut Receptacle



| Shell Size | A Dia.        | P Dia.      | R             | Mfg. Screw |
|------------|---------------|-------------|---------------|------------|
| 8          | .610 (15.49)  | .125 (3.18) | .594 (15.09)  | #4         |
| 10         | .734 (18.64)  | .125 (3.18) | .719 (18.26)  | #4         |
| 12         | .860 (21.84)  | .125 (3.18) | .812 (20.62)  | #4         |
| 14         | .985 (25.02)  | .125 (3.18) | .906 (23.01)  | #4         |
| 16         | 1.110 (28.19) | .125 (3.18) | .969 (24.61)  | #4         |
| 18         | 1.234 (31.34) | .125 (3.18) | 1.062 (26.97) | #4         |
| 20         | 1.360 (35.54) | .125 (3.18) | 1.156 (29.36) | #4         |
| 22         | 1.484 (37.69) | .125 (3.18) | 1.250 (31.75) | #4         |
| 24         | 1.611 (40.92) | .152 (3.86) | 1.375 (34.93) | #6         |

| Shell Size | A Dia.        | B Dia.        |
|------------|---------------|---------------|
| 8          | .885 (22.48)  | .830 (21.08)  |
| 10         | 1.010 (25.65) | .955 (24.26)  |
| 12         | 1.135 (28.82) | 1.085 (27.56) |
| 14         | 1.260 (32.00) | 1.210 (30.73) |
| 16         | 1.385 (35.18) | 1.335 (33.91) |
| 18         | 1.510 (38.35) | 1.460 (37.08) |
| 20         | 1.635 (41.53) | 1.585 (40.26) |
| 22         | 1.760 (44.70) | 1.710 (43.43) |
| 24         | 1.885 (47.88) | 1.835 (46.61) |

## How To Order

## Military Nomenclature

CONNECTOR TYPE \_\_\_\_\_ D38999  
 SHELL STYLE \_\_\_\_\_ 20  
 SERVICE CLASS \_\_\_\_\_ F  
 (HARDWARE FINISH) \_\_\_\_\_ C  
 SHELL SIZE \_\_\_\_\_ 35  
 CONTACT ARRANGEMENT \_\_\_\_\_ P  
 CONTACT STYLE \_\_\_\_\_ B  
 ALTERNATE POLARIZATION POSITIONS \_\_\_\_\_

## CONNECTOR TYPE

D38999/ - MIL-C-38999 Series III

## SHELL STYLE

D38999/20 - Wall mount receptacle  
 D38999/24 - Jam nut receptacle  
 D38999/26 - Straight Plug, Grounded

## SERVICE CLASS

(Hardware Finish)

F - Electroless nickel - 85°F to +392°F  
 (-65°C to +200°C)

W - Olive drab cadmium over electroless nickel  
 plate, -85°F to +347°F (-65°C to  
 +175°C)

## SHELL SIZE

| A | B  | C  | D  | E  | F  | G  | H  | J  | Military<br>Designation |
|---|----|----|----|----|----|----|----|----|-------------------------|
| 9 | 11 | 13 | 15 | 17 | 19 | 21 | 23 | 25 | Cannon<br>Designation   |

## CONTACT ARRANGEMENTS

See pages 132 and 133.

## CONTACT STYLE

P - Pin contacts  
 S - Socket contact  
 A - Less Pin contacts  
 B - Less Socket contact\*

See pages 296-298 for Fiber Optic Contacts.

\* Used only when other than power contacts are to be installed  
 (i.e., shielded, thermocouple, etc.)

## ALTERNATE POSITIONS

N (normal), A, B, C, D, E. See page 131.

Note: To order MS connectors less standard power  
 contacts, purchase order must state "Less  
 Contacts".

## ITT Cannon Nomenclature

SERIES PREFIX \_\_\_\_\_ KJA  
 SHELL STYLE \_\_\_\_\_ 0  
 CLASS \_\_\_\_\_ T  
 SHELL SIZE \_\_\_\_\_ 13  
 HARDWARE FINISH \_\_\_\_\_ F  
 CONTACT ARRANGEMENT \_\_\_\_\_ 35  
 CONTACT STYLE \_\_\_\_\_ P  
 ALTERNATE POLARIZATION POSITIONS \_\_\_\_\_ B  
 LESS CONTACTS \_\_\_\_\_ L

## SERIES PREFIX

KJA - Series III - Scoop proof, threaded coupling

## SHELL STYLE

0 - Wall mount receptacle  
 6 - Straight plug  
 7 - Jam nut receptacle

## CLASS

T - Environment-resistant (without rear accessory)

## SHELL SIZE

| 9 | 11 | 13 | 15 | 17 | 19 | 21 | 23 | 25 | Cannon<br>Designation   |
|---|----|----|----|----|----|----|----|----|-------------------------|
| A | B  | C  | D  | E  | F  | G  | H  | J  | Military<br>Designation |

## HARDWARE FINISH

F - Electroless nickel - 85°F to +392°F  
 (-65°C to +200°C)

W - Olive drab cadmium over electroless nickel  
 plate, -85°F to +347°F (-65°C to  
 +175°C)

## CONTACT ARRANGEMENTS

See pages 132 and 133.

## CONTACT STYLE

P - Pin contacts  
 S - Socket contacts  
 See pages 296-298 for Fiber Optic Contacts

## ALTERNATE POLARIZATION POSITIONS

N (normal), A, B, C, D, E. See page 131.

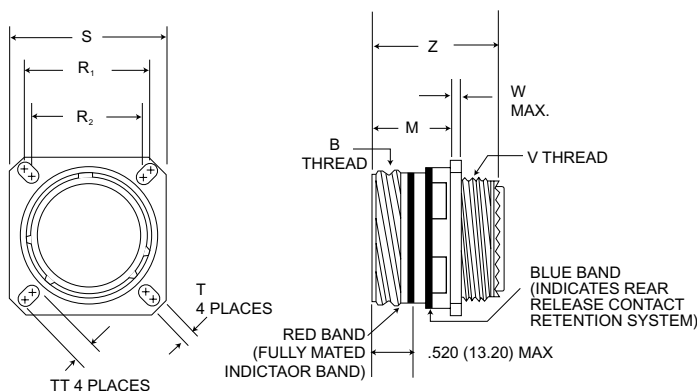
## LESS CONTACTS

Use "L" when connectors are ordered less con-  
 tacts, sealing plugs and insertion/extraction  
 tool. ("L" is not stamped on connectors.)

## Wall Mount Receptacle

D38999/20

KJA0T\*\*

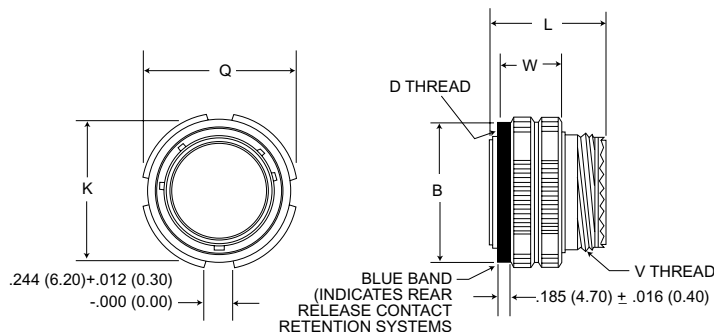


| Shell Size | MS Shell size Code | B Thread Class 2A (Plated) | M<br>+.000 (.000)<br>-.005 (.130) | R <sub>1</sub> | R <sub>2</sub> | S<br>+.012 (.300) | T<br>+.004 (.100)<br>-.002 (.050) | TT<br>+.004 (.100)<br>-.002 (.050) | Metric V Thread (Plated) | W<br>Max.   | Z<br>+.005 (.130)<br>-.010 (.250) |
|------------|--------------------|----------------------------|-----------------------------------|----------------|----------------|-------------------|-----------------------------------|------------------------------------|--------------------------|-------------|-----------------------------------|
| 9          | A                  | .6250-0.1P-0.3L-TS         | .820 (20.83)                      | .719 (18.26)   | .594 (15.09)   | .938 (23.83)      | .128 (3.25)                       | .216 (5.49)                        | M12X1-6g0.100R           | .098 (2.50) | 1.235 (31.36)                     |
| 11         | B                  | .7500-0.1P-0.3L-TS         | .820 (20.83)                      | .812 (20.62)   | .719 (18.26)   | 1.031 (26.19)     | .128 (3.25)                       | .194 (4.93)                        | M15X1-6g0.100R           | .098 (2.50) | 1.235 (31.36)                     |
| 13         | C                  | .8750-0.1P-0.3L-TS         | .820 (20.83)                      | .906 (23.01)   | .812 (20.62)   | 1.125 (28.58)     | .128 (3.25)                       | .194 (4.93)                        | M18X1-6g0.100R           | .098 (2.50) | 1.235 (31.36)                     |
| 15         | D                  | 1.0000-0.1P-0.3L-TS        | .820 (20.83)                      | .969 (24.61)   | .906 (23.01)   | 1.219 (30.96)     | .128 (3.25)                       | .173 (4.39)                        | M22X1-6g0.100R           | .098 (2.50) | 1.235 (31.36)                     |
| 17         | E                  | 1.1875-0.1P-0.3L-TS        | .820 (20.83)                      | 1.062 (26.97)  | .969 (24.61)   | 1.312 (33.32)     | .128 (3.25)                       | .194 (4.93)                        | M25X1-6g0.100R           | .098 (2.50) | 1.235 (31.36)                     |
| 19         | F                  | 1.2500-0.1P-0.3L-TS        | .820 (20.83)                      | 1.156 (29.36)  | 1.062 (26.97)  | 1.438 (36.53)     | .128 (3.25)                       | .194 (4.93)                        | M28X1-6g0.100R           | .098 (2.50) | 1.235 (31.36)                     |
| 21         | G                  | 1.3750-0.1P-0.3L-TS        | .790 (20.07)                      | 1.250 (31.75)  | 1.156 (29.36)  | 1.562 (39.67)     | .128 (3.25)                       | .194 (4.93)                        | M31X1-6g0.100R           | .126 (3.20) | 1.235 (31.36)                     |
| 23         | H                  | 1.5000-0.1P-0.3L-TS        | .790 (20.07)                      | 1.375 (34.92)  | 1.250 (31.75)  | 1.688 (42.88)     | .154 (3.91)                       | .242 (6.15)                        | M34X1-6g0.100R           | .126 (3.20) | 1.235 (31.36)                     |
| 25         | J                  | 1.6250-0.1P-0.3L-TS        | .790 (20.07)                      | 1.500 (38.10)  | 1.375 (34.92)  | 1.812 (46.02)     | .154 (3.91)                       | .242 (6.15)                        | M37X1-6g0.100R           | .126 (3.20) | 1.235 (31.36)                     |

## Straight Plug Grounded

D38999/26

KJA6T\*\*



| Shell Size | MS Shell size Code | B<br>+.008 (.200)<br>-.000 (.000) | D Thread Class 2B (Plated) | K<br>Max.     | L<br>Max.     | Q<br>Dia Max. | Metric V Thread (Plated) | W<br>+.008 (.200)<br>-.004 (.100) |
|------------|--------------------|-----------------------------------|----------------------------|---------------|---------------|---------------|--------------------------|-----------------------------------|
| 9          | A                  | .724 (18.40)                      | .6250-0.1P-0.3L-TS         | .748 (19.00)  | 1.234 (31.34) | .859 (21.82)  | M12X1-6g0.100R           | .760 (19.30)                      |
| 11         | B                  | .831 (21.10)                      | .7500-0.1P-0.3L-TS         | .862 (21.90)  | 1.234 (31.34) | .969 (24.61)  | M15X1-6g0.100R           | .760 (19.30)                      |
| 13         | C                  | 1.000 (25.40)                     | .8750-0.1P-0.3L-TS         | 1.027 (26.10) | 1.234 (31.34) | 1.141 (28.98) | M18X1-6g0.100R           | .760 (19.30)                      |
| 15         | D                  | 1.130 (28.70)                     | 1.0000-0.1P-0.3L-TS        | 1.153 (29.30) | 1.234 (31.34) | 1.266 (32.16) | M22X1-6g0.100R           | .760 (19.30)                      |
| 17         | E                  | 1.268 (32.20)                     | 1.1845-0.1P-0.3L-TS        | 1.291 (32.80) | 1.234 (31.34) | 1.391 (35.53) | M25X1-6g0.100R           | .760 (19.30)                      |
| 19         | F                  | 1.374 (34.90)                     | 1.2500-0.1P-0.3L-TS        | 1.398 (35.50) | 1.234 (31.34) | 1.500 (38.10) | M28X1-6g0.100R           | .760 (19.30)                      |
| 21         | G                  | 1.500 (38.10)                     | 1.3750-0.1P-0.3L-TS        | 1.524 (38.70) | 1.234 (31.34) | 1.625 (41.28) | M31X1-6g0.100R           | .760 (19.30)                      |
| 23         | H                  | 1.618 (41.40)                     | 1.5000-0.1P-0.3L-TS        | 1.642 (41.70) | 1.234 (31.34) | 1.750 (44.45) | M34X1-6g0.100R           | .760 (19.30)                      |
| 25         | J                  | 1.744 (44.30)                     | 1.6250-0.1P-0.3L-TS        | 1.768 (44.90) | 1.234 (31.34) | 1.875 (47.62) | M37X1-6g0.100R           | .760 (19.30)                      |

Performance Specifications - Pages 115-116

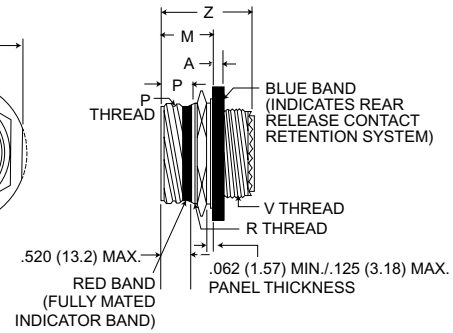
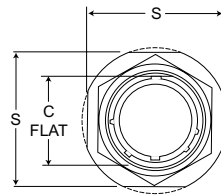
Contacts, Sealing Plugs, Assembly Tools - Pages 134, 136-137

Contact Arrangements - Pages 132 - 133

## Jam Nut Receptacle

D38999/24

KJA7T\*\*\*



| Shell Size | MS Shell size Code | A<br>+.010 (.250)<br>-.005 (.130) | B Thread<br>Class 2A<br>(Plated) | C<br>+.004 (.100)<br>-.010 (.250) | Z<br>+.005 (.130)<br>-.040 (.100) | M<br>+.005 (.130)<br>-.004 (.100) | P<br>+.016 (.410)<br>-.004 (.100) | S             | Metric R Thread<br>(Plated) | Metric V Thread<br>(Plated) |
|------------|--------------------|-----------------------------------|----------------------------------|-----------------------------------|-----------------------------------|-----------------------------------|-----------------------------------|---------------|-----------------------------|-----------------------------|
| 9          | A                  | .104 (2.64)                       | .6250-0.1P-0.3L-TS               | .651 (16.53)                      | 1.243 (31.57)                     | .871 (22.12)                      | .555 (14.10)                      | 1.062 (26.97) | M17X1-6g0.100R              | M12X1-6g0.100R              |
| 11         | B                  | .104 (2.64)                       | .7500-0.1P-0.3L-TS               | .751 (19.07)                      | 1.243 (31.57)                     | .871 (22.12)                      | .555 (14.10)                      | 1.250 (31.75) | M20X1-6g0.100R              | M15X1-6g0.100R              |
| 13         | C                  | .104 (2.64)                       | .8750-0.1P-0.3L-TS               | .938 (23.82)                      | 1.243 (31.57)                     | .878 (22.30)                      | .563 (14.30)                      | 1.375 (34.92) | M25X1-6g0.100R              | M18X1-6g0.100R              |
| 15         | D                  | .104 (2.64)                       | 1.0000-0.1P-0.3L-TS              | 1.062 (26.97)                     | 1.243 (31.57)                     | .878 (22.30)                      | .563 (14.30)                      | 1.500 (38.10) | M28X1-6g0.100R              | M22X1-6g0.100R              |
| 17         | E                  | .104 (2.64)                       | 1.1875-0.1P-0.3L-TS              | 1.187 (30.15)                     | 1.243 (31.57)                     | .878 (22.30)                      | .563 (14.30)                      | 1.625 (41.28) | M32X1-6g0.100R              | M25X1-6g0.100R              |
| 19         | F                  | .135 (3.43)                       | 1.2500-0.1P-0.3L-TS              | 1.312 (33.32)                     | 1.243 (31.57)                     | .878 (22.30)                      | .563 (14.30)                      | 1.812 (46.02) | M35X1-6g0.100R              | M28X1-6g0.100R              |
| 21         | G                  | .135 (3.43)                       | 1.3750-0.1P-0.3L-TS              | 1.437 (36.50)                     | 1.243 (31.57)                     | .878 (22.30)                      | .563 (14.30)                      | 1.938 (49.23) | M38X1-6g0.100R              | M31X1-6g0.100R              |
| 23         | H                  | .135 (3.43)                       | 1.5000-0.1P-0.3L-TS              | 1.562 (39.67)                     | 1.243 (31.57)                     | .878 (22.30)                      | .563 (14.30)                      | 2.062 (52.37) | M41X1-6g0.100R              | M34X1-6g0.100R              |
| 25         | J                  | .135 (3.43)                       | 1.6250-0.1P-0.3L-TS              | 1.687 (42.85)                     | 1.243 (31.57)                     | .878 (22.30)                      | .563 (14.30)                      | 2.188 (55.38) | M44X1-6g0.100R              | M37X1-6g0.100R              |

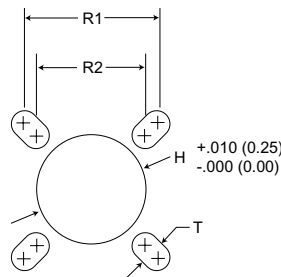
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Contacts, Sealing Plugs, Assembly Tools - Pages 134, 136-137

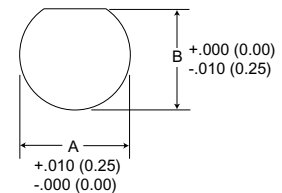
Contact Arrangements - Pages 132 - 133

## Panel Cutouts

## Wall Mounted Receptacle

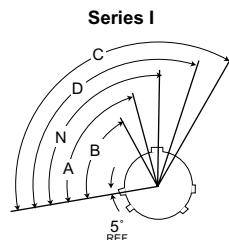


## Jam Nut Receptacle



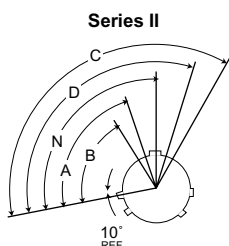
| Shell Size | A             | B             | H             | R1 (TP)       | R2 (TP)       | T (Max.)    |
|------------|---------------|---------------|---------------|---------------|---------------|-------------|
| 9          | .700 (17.78)  | .670 (17.02)  | .626 (15.90)  | .719 (18.26)  | .594 (15.09)  | .134 (3.40) |
| 11         | .825 (20.26)  | .770 (19.59)  | .751 (19.08)  | .812 (20.62)  | .719 (18.26)  | .134 (3.40) |
| 13         | 1.01 (25.65)  | .955 (24.26)  | .876 (22.25)  | .906 (23.01)  | .812 (20.62)  | .134 (3.40) |
| 15         | 1.135 (28.83) | 1.085 (27.56) | 1.001 (24.43) | .969 (24.61)  | .906 (23.01)  | .134 (3.40) |
| 17         | 1.260 (32.01) | 1.210 (30.73) | 1.188 (30.18) | 1.062 (26.97) | .969 (24.61)  | .134 (3.40) |
| 19         | 1.385 (35.18) | 1.335 (33.91) | 1.251 (31.78) | 1.156 (29.36) | 1.062 (26.97) | .134 (3.40) |
| 21         | 1.510 (38.35) | 1.460 (37.08) | 1.376 (34.95) | 1.250 (31.75) | 1.156 (29.36) | .134 (3.40) |
| 23         | 1.635 (41.53) | 1.585 (40.26) | 1.511 (38.38) | 1.375 (34.92) | 1.250 (31.75) | .160 (4.06) |
| 25         | 1.760 (44.70) | 1.710 (43.43) | 1.626 (41.30) | 1.500 (38.10) | 1.375 (34.92) | .160 (4.06) |

## Polarizing Positions



Front face of receptacle (plug opposite). Insert arrangement does not rotate with main key-keyway. The master key is rotated to provide shell polarization; the minor keys remain fixed.

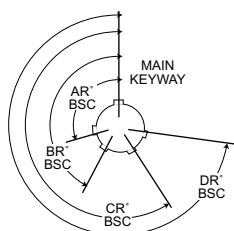
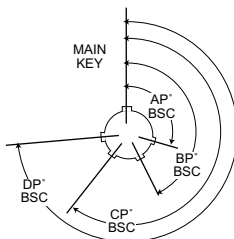
| Shell Size | Angle of Rotation (Degrees) |     |     |      |      |
|------------|-----------------------------|-----|-----|------|------|
|            | Normal                      | A   | B   | C    | D    |
| 9          | 95°                         | 77° | -   | -    | 113° |
| 11         | 95°                         | 81° | 67° | 123° | 109° |
| 13         | 95°                         | 75° | 63° | 127° | 115° |
| 15         | 95°                         | 74° | 61° | 129° | 116° |
| 17         | 95°                         | 77° | 65° | 125° | 113° |
| 19         | 95°                         | 77° | 65° | 125° | 113° |
| 21         | 95°                         | 77° | 65° | 125° | 113° |
| 23         | 95°                         | 80° | 69° | 121° | 110° |
| 25         | 95°                         | 80° | 69° | 121° | 110° |



Front face of receptacle (plug opposite). Insert arrangement does not rotate with main key-keyway. The master key is rotated to provide shell polarization; the minor keys remain fixed.

| Shell Size | Angle of Rotation (Degrees) |     |     |      |      |
|------------|-----------------------------|-----|-----|------|------|
|            | Normal                      | A   | B   | C    | D    |
| 8          | 100°                        | 82° | -   | -    | 118° |
| 10         | 100°                        | 86° | 72° | 128° | 114° |
| 12         | 100°                        | 80° | 68° | 132° | 120° |
| 14         | 100°                        | 79° | 66° | 134° | 121° |
| 16         | 100°                        | 82° | 70° | 130° | 118° |
| 18         | 100°                        | 82° | 70° | 130° | 118° |
| 20         | 100°                        | 82° | 70° | 130° | 118° |
| 22         | 100°                        | 85° | 74° | 126° | 115° |
| 24         | 100°                        | 85° | 74° | 126° | 115° |

## Series III

RECEPTACLE  
(Front face shown)PLUG  
(Front face shown)

## NOTES:

1. All Angles are BSC
2. The insert arrangement does not rotate with main key/keyway
3. All minor keys are rotated to provide shell polarization, the master key remains fixed at twelve o'clock position.
4. Polarization is different from Series I and II.

| Shell Size                   | Key & Keyway Arrangement identification Letter | Key Locations  |                |                |                |
|------------------------------|------------------------------------------------|----------------|----------------|----------------|----------------|
|                              |                                                | AR° or AP° BSC | BR° or BP° BSC | CR° or CP° BSC | DR° or DP° BSC |
| 9                            | N                                              | 105            | 140            | 215            | 265            |
|                              | A                                              | 102            | 132            | 248            | 320            |
|                              | B                                              | 80             | 118            | 230            | 312            |
|                              | C                                              | 35             | 140            | 205            | 275            |
|                              | D                                              | 64             | 155            | 234            | 304            |
|                              | E                                              | 91             | 131            | 197            | 240            |
| 11<br>and<br>13<br>and<br>15 | N                                              | 95             | 141            | 208            | 236            |
|                              | A                                              | 113            | 156            | 182            | 292            |
|                              | B                                              | 90             | 145            | 195            | 252            |
|                              | C                                              | 53             | 156            | 220            | 255            |
|                              | D                                              | 119            | 146            | 176            | 298            |
| 17<br>and<br>19              | E                                              | 51             | 141            | 184            | 242            |
|                              | N                                              | 80             | 142            | 196            | 293            |
|                              | A                                              | 135            | 170            | 200            | 310            |
|                              | B                                              | 49             | 169            | 200            | 244            |
|                              | C                                              | 66             | 140            | 200            | 257            |
| 21<br>and<br>23<br>and<br>25 | D                                              | 62             | 145            | 180            | 280            |
|                              | E                                              | 79             | 153            | 197            | 272            |
|                              | N                                              | 80             | 142            | 196            | 293            |
|                              | A                                              | 135            | 170            | 200            | 310            |
|                              | B                                              | 49             | 169            | 200            | 244            |
| 25                           | C                                              | 66             | 140            | 200            | 257            |
|                              | D                                              | 62             | 145            | 180            | 280            |
|                              | E                                              | 79             | 153            | 197            | 272            |

## Contact Arrangements (Engaging View Pin Insert)

\* Socket insert only

\*\* Pin insert only (Not available in socket insert Series I and III)

† Indicates layouts are available in all shell styles including MS27499, MS27508, KJ2E and KJ5E

• Consult factory MS27505E/KJL5E insert availability

For "inactive", use - 35 layout.

|                 |               |               |         |         |         |               |          |               |          |               |               |               |               |               |               |
|-----------------|---------------|---------------|---------|---------|---------|---------------|----------|---------------|----------|---------------|---------------|---------------|---------------|---------------|---------------|
|                 | Inactive      |               |         |         |         | Inactive      |          |               |          |               | Inactive      |               |               |               |               |
| Series III      |               |               |         |         |         |               |          |               |          |               |               |               |               |               |               |
| Series II       | 8-6†          | 9-98          | 8-35†   | -       | 10-13†  | 11-98         | 10-99†   | 11-35         | 10-35†   | -             | 12-4†         | -             | 12-8†         | 13-8          | 13-8          |
| Series I        | 9-6**         | 9-98          | 9-35    | 11-4    | 11-5    | 11-13**       | 11-98    | 11-99         | 11-35    | -             | 13-4**        | 13-8          | 13-8          | 13-8          | 13-8          |
| No. of Contacts | 6 #22M        | 3 #20         | 6 #22D  | 4 #20   | 5 #20   | 13 #22M       | 6 #20    | 7 #20         | 13 #22D  | 3 #16         | 4 #16         | 8 #20         | 8 #20         | 8 #20         | 8 #20         |
| Service Ratings | M             | I             | M       | I       | I       | M             | I        | I             | M        | II            | I             | I             | I             | I             | I             |
|                 | Inactive      |               |         |         |         | Inactive      |          |               |          |               | Inactive      |               |               |               |               |
| Series III      |               |               |         |         |         |               |          |               |          |               |               |               |               |               |               |
| Series II       | 13-98         | 12-98†        | 12-22†  | 12-35†  | 13-35   | 15-5          | 15-15    | 15-18         | 15-19    | 15-35         | 14-35†        | 14-37†        | 15-37**       | 15-37**       | 15-37**       |
| Series I        | 13-98         | 13-98         | 13-22** | 13-35   | 15-5    | 15-5          | 15-15    | 15-18         | 15-19    | 15-35         | 15-35         | 15-37**       | 15-37**       | 15-37**       | 15-37**       |
| No. of Contacts | 10 #20        | 22 #22M       | 22 #22M | 22 #22D | 5 #16   | 14 #20, 1 #16 | 18 #20   | 19 #20        | 37 #22D  | 37 #22D       | 37 #22D       | 37 #22D       | 37 #22D       | 37 #22D       | 37 #22D       |
| Service Ratings | I             | M             | M       | M       | II      | I             | I        | I             | I        | M             | M             | M             | M             | M             | M             |
|                 | Inactive      |               |         |         |         | Inactive      |          |               |          |               | Inactive      |               |               |               |               |
| Series III      |               |               |         |         |         |               |          |               |          |               |               |               |               |               |               |
| Series II       | 15-97         | 17-6          | 17-8    | 17-26   | 17-35   | 16-42†        | 16-55†   | 16-99†        | 17-55**  | 17-99**       | 17-99**       | 17-99**       | 17-99**       | 17-99**       | 17-99**       |
| Series I        | 15-97         | 16-6          | 16-8†   | 16-26   | 16-35†  | 17-35         | 17-35    | 17-35         | 17-55**  | 17-99**       | 17-99**       | 17-99**       | 17-99**       | 17-99**       | 17-99**       |
| No. of Contacts | 8 #20, 4 #16  | 6 #12         | 8 #16   | 26 #20  | 55 #22D | 42 #22        | 55 #22M  | 21 #20, 2 #16 | 55 #22M  | 21 #20, 2 #16 | 21 #20, 2 #16 | 21 #20, 2 #16 | 21 #20, 2 #16 | 21 #20, 2 #16 | 21 #20, 2 #16 |
| Service Ratings | I             | I             | II      | I       | M       | M             | M        | I             | M        | M             | M             | M             | M             | M             | M             |
|                 | Inactive      |               |         |         |         | Inactive      |          |               |          |               | Inactive      |               |               |               |               |
| Series III      |               |               |         |         |         |               |          |               |          |               |               |               |               |               |               |
| Series II       | 18-28         | 18-30         | 19-11   | 19-32   | 19-35   | 18-53         | 18-66†   | 19-66**       | 19-66**  | 19-66**       | 19-66**       | 19-66**       | 19-66**       | 19-66**       | 19-66**       |
| Series I        | 19-28**       | 19-30**       | 19-11   | 19-32   | 19-35   | -             | 19-66**  | 19-66**       | 19-66**  | 19-66**       | 19-66**       | 19-66**       | 19-66**       | 19-66**       | 19-66**       |
| No. of Contacts | 26 #20, 2 #16 | 29 #20, 1 #16 | 11 #16  | 32 #20  | 66 #22D | 53 #22        | 66 #22M  | 66 #22M       | 66 #22M  | 66 #22M       | 66 #22M       | 66 #22M       | 66 #22M       | 66 #22M       | 66 #22M       |
| Service Ratings | I             | I             | II      | I       | M       | M             | M        | M             | M        | M             | M             | M             | M             | M             | M             |
|                 | Inactive      |               |         |         |         | Inactive      |          |               |          |               | Inactive      |               |               |               |               |
| Series III      |               |               |         |         |         |               |          |               |          |               |               |               |               |               |               |
| Series II       | 20-1†         | 20-2†         | 21-11   | 21-16   | 21-35   | 21-39         | 21-41    | 21-41         | 21-41    | 21-41         | 21-41         | 21-41         | 21-41         | 21-41         | 21-41         |
| Series I        | 21-1**        | -             | 21-11   | 21-16   | 21-35   | 21-39         | 21-41    | 21-41         | 21-41    | 21-41         | 21-41         | 21-41         | 21-41         | 21-41         | 21-41         |
| No. of Contacts | 79 #22M       | 65 #22        | 11 #12  | 16 #16  | 79 #22D | 37 #20, 2 #16 | 41- #20  | 41- #20       | 41- #20  | 41- #20       | 41- #20       | 41- #20       | 41- #20       | 41- #20       | 41- #20       |
| Service Ratings | M             | M             | I       | II      | M       | I             | I        | I             | I        | I             | I             | I             | I             | I             | I             |
|                 | Inactive      |               |         |         |         | Inactive      |          |               |          |               | Inactive      |               |               |               |               |
| Series III      |               |               |         |         |         |               |          |               |          |               |               |               |               |               |               |
| Series II       | 21-75         | 22-1†         | 22-2†   | 23-21   | 23-32   | 23-35         | 23-35†   | 23-35         | 23-35    | 23-35         | 23-35         | 23-35         | 23-35         | 23-35         | 23-35         |
| Series I        | 21-75*        | 23-1**        | 23-2**  | 23-21   | 23-32   | 23-35         | 23-35    | 23-35         | 23-35    | 23-35         | 23-35         | 23-35         | 23-35         | 23-35         | 23-35         |
| No. of Contacts | 4 #8 Twinax   | 100 #22M      | 85 #22  | 21 #16  | 32 #20  | 100 #22D      | 100 #22D | 100 #22D      | 100 #22D | 100 #22D      | 100 #22D      | 100 #22D      | 100 #22D      | 100 #22D      | 100 #22D      |
| Service Ratings | M             | M             | M       | II      | I       | M             | M        | M             | M        | M             | M             | M             | M             | M             | M             |

Please consult factory for availability of layouts not shown.

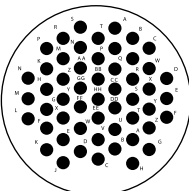
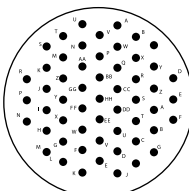
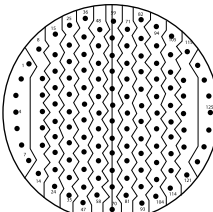
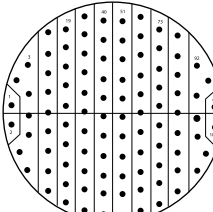
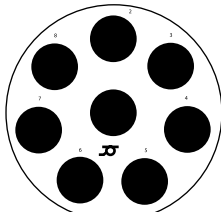
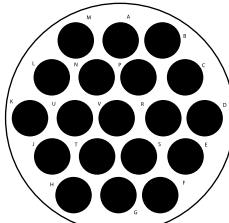
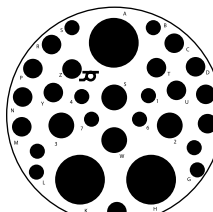
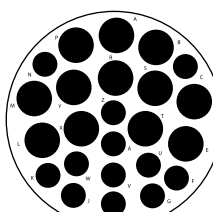
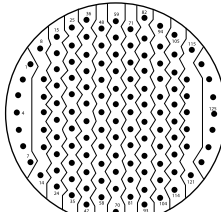
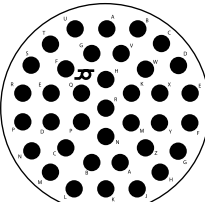
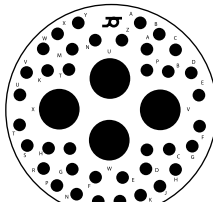
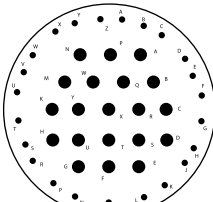
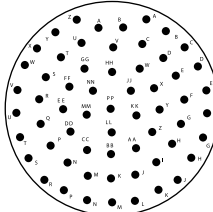
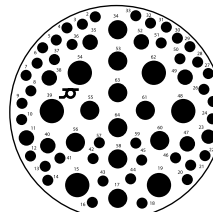
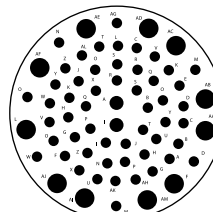
## Contact Arrangements (Engaging View Pin Insert)

\* Socket insert only

\*\* Pin insert only (Not available in socket insert Series I and III)

† Indicates layouts are available in all shell styles including MS27499, MS27508, KJ2E and KJ5E

• Consult factory for MS27505E/KJL5E insert availability for "inactive" layout, use-35.

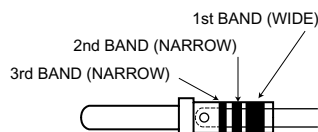
|                 |                                                                                     | Inactive                                                                             | Inactive                                                                              |                                                                                       |
|-----------------|-------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------|
|                 |    |     |     |    |
| Series III      | 23-53                                                                               | 23-55                                                                                | -                                                                                     | 25-4                                                                                  |
| Series II       | 22-53†                                                                              | 22-55†                                                                               | 24-1†                                                                                 | 24-4†                                                                                 |
| Series I        | 23-53                                                                               | 23-55                                                                                | 25-1**                                                                                | 25-4                                                                                  |
| No. of Contacts | 53 #20                                                                              | 55 #20                                                                               | 128 #22M                                                                              | 48 #20, 8 #16                                                                         |
| Service Ratings | I                                                                                   | I                                                                                    | M                                                                                     | I                                                                                     |
|                 |    |     |     |    |
| Series III      | 25-8                                                                                | 25-19                                                                                | 25-20                                                                                 | 25-24                                                                                 |
| Series II       | -                                                                                   | -                                                                                    | -                                                                                     | 24-24†                                                                                |
| Series I        | 25-8*                                                                               | 25-19                                                                                | 25-20*                                                                                | 25-24                                                                                 |
| No. of Contacts | 8 #8 Coax/Twinax                                                                    | 19 #12                                                                               | 3 #8 Twinax, 13 #16, 4 #12 Coax, 10 #20                                               | 12 #16, 12 #12                                                                        |
| Service Ratings | Coax                                                                                | I                                                                                    | N                                                                                     | I                                                                                     |
|                 |  |   |   |  |
| Series III      | 25-35                                                                               | 25-37                                                                                | 25-42                                                                                 | 25-43                                                                                 |
| Series II       | 24-35†                                                                              | -                                                                                    | -                                                                                     | -                                                                                     |
| Series I        | 25-35                                                                               | 25-37*                                                                               | 25-42*                                                                                | 25-43                                                                                 |
| No. of Contacts | 128 #22D                                                                            | 37 #16                                                                               | 38 #20, 4 #8 Coax                                                                     | 23 #20, 20 #16                                                                        |
| Service Ratings | M                                                                                   | I                                                                                    | I, Coax                                                                               | I                                                                                     |
|                 |  |  |  |                                                                                       |
| Series III      | 25-61                                                                               | 25-64*                                                                               | 25-66*                                                                                |                                                                                       |
| Series II       | 24-61†                                                                              | -                                                                                    | -                                                                                     |                                                                                       |
| Series I        | 25-61                                                                               | 25-64*                                                                               | 25-66*                                                                                |                                                                                       |
| No. of Contacts | 61 #20                                                                              | 40 #22D, 8 #20, 10 #16, 6 #12                                                        | 53 #22D, 2 #20, 11 #16                                                                |                                                                                       |
| Service Rating  | I                                                                                   | I                                                                                    | I                                                                                     |                                                                                       |

Please consult factory for availability of layouts not shown.

**Contacts-Pin (Series I/II/III)**

MIL-C-39029/58

KJL/KJ/KJA



| Conact Size | 1      | Color Bands 2 | 3      | Cannon Part Number | M39029 Military Part Number | Superseded Military Part Number |
|-------------|--------|---------------|--------|--------------------|-----------------------------|---------------------------------|
| 22D         | Orange | Blue          | Black  | 030-2042-000       | M39029/58-360               | MS27493-22D                     |
| *22M        | Orange | Blue          | Brown  | 030-1993-022       | M39029/58-361               | MS27493-22M                     |
| *22         | Orange | Blue          | Red    | 030-1999-022       | M39029/58-362               | MS27493-22                      |
| 20          | Orange | Blue          | Orange | 030-1997-020       | M39029/58-363               | MS27493-20                      |
| 16          | Orange | Blue          | Yellow | 030-1995-016       | M39029/58-364               | MS27493-16                      |
| 12          | Orange | Blue          | Green  | 030-2155-000       | M39029/58-365               | MS27493-12                      |

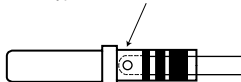
\*Inactive for new design.

**Contacts-Socket (Series II)**

MIL-C-39029/57

KJ

Manufacture identification Code Area - Typical all contacts



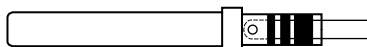
| Contact Size | 1      | Color Bands 2 | 3      | Cannon Part Number | M39029 Military Part Number | Superseded Military Part Number |
|--------------|--------|---------------|--------|--------------------|-----------------------------|---------------------------------|
| 22D          | Orange | Green         | Yellow | 031-1147-000       | M39029/57-354               | MS27491-22D                     |
| *22M         | Orange | Green         | Green  | 031-1122-022       | M39029/57-355               | MS27491-22M                     |
| *22          | Orange | Green         | Blue   | 031-1125-022       | M39029/57-356               | MS27491-22                      |
| 20           | Orange | Green         | Violet | 031-1124-031       | M39029/57-357               | MS27491-20                      |
| 16           | Orange | Green         | Gray   | 031-1123-016       | M39029/57-358               | MS27491-16                      |
| 12           | Orange | Green         | White  | 031-1238-000       | M39029/57-359               | MS27491-12                      |

\*Inactive for new design.

**Contacts-Socket (Series I & III)**

MIL-C-39029/56

KJL/KJA



| Contact Size | 1      | Color Bands 2 | 3      | Cannon Part Number | M39029 Military Part Number | Superseded Military Part Number |
|--------------|--------|---------------|--------|--------------------|-----------------------------|---------------------------------|
| 22D          | Orange | Yellow        | Gray   | 031-1147-007       | M39029/56-348               | MS27490-22D                     |
| 20           | Orange | Green         | Brown  | 031-1250-012       | M39029/56-351               | MS27490-20                      |
| 16           | Orange | Green         | Red    | 031-1251-001       | M39029/56-352               | MS27490-16                      |
| 12           | Orange | Green         | Orange | 031-1237-000       | M39029/56-353               | MS27490-12                      |

**Wire Sizes and Diameters****Wire sizes and diameters**

| Conact Size | Wire size (AWG)  | Finished wire outside dimensions |              |
|-------------|------------------|----------------------------------|--------------|
|             |                  | Minimum                          | Maximum      |
| 22D         | 28, 26, 24, 22   | 0.030 (0.76)                     | 0.054 (1.37) |
| 22M*        | 28, 26, 24       | 0.030 (0.76)                     | 0.050 (1.27) |
| 22*         | 26, 24, 22       | 0.034 (0.86)                     | 0.060 (1.52) |
| 20          | 24, 22, 20       | 0.040 (1.02)                     | 0.083 (2.11) |
| 16          | 20, 18, 16       | 0.065 (1.65)                     | 0.109 (2.77) |
| 12          | 14, 12           | 0.097 (2.46)                     | 0.142 (3.61) |
| 8           | M17/095-RG-180** | 0.135 (3.43)                     | 0.155 (3.94) |

\*Inactive for new design.

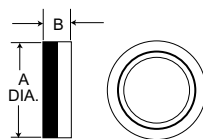
\*\* MIL-C-17

Connectors shall meet the requirements specified when:

- A full complement of wire of the applicable minimum or maximum insulation diameter is installed.
- Any combinations of wire diamters not exceeding dimensions of (a), above can be used.

Note: Contacts for printed circuit and wire wrap applications are also available. Consult ITT Cannon.

## Backshell - Type E (Straight), Series II only

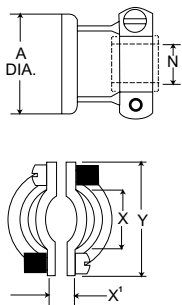


| Shell Size |               |             |
|------------|---------------|-------------|
| Series II  | A Dia. Max.   | B Dia. Max. |
| 8          | .580 (14.73)  | .328 (8.33) |
| 10         | .705 (17.91)  | .328 (8.33) |
| 12         | .830 (21.08)  | .328 (8.33) |
| 14         | .955 (24.26)  | .328 (8.33) |
| 16         | 1.080 (27.32) | .328 (8.33) |
| 18         | 1.205 (30.61) | .328 (8.33) |
| 20         | .330 (33.78)  | .328 (8.33) |
| 22         | 1.455 (36.96) | .328 (8.33) |
| 24         | 1.555 (39.50) | .270 (6.86) |

## How To Order

| Finishes   |                                     |                                   |                                 |                                   |
|------------|-------------------------------------|-----------------------------------|---------------------------------|-----------------------------------|
| Shell Size | A                                   | B                                 | C                               | N                                 |
| Series II  | Cadmium/Nickel-Clear<br>Part Number | Cadmium/Nickel-O.D<br>Part Number | Anodic Non-Cond.<br>Part Number | Electroless Nickel<br>Part Number |
| 8          | 057-0776-000                        | 057-0862-000                      | 057-0819-000                    | 057-0776-002                      |
| 10         | 057-0777-000                        | 057-0863-000                      | 057-0820-000                    | 057-0777-002                      |
| 12         | 057-0778-000                        | 057-0864-000                      | 057-0821-000                    | 057-0778-002                      |
| 14         | 057-0779-000                        | 057-0846-000                      | 057-0822-000                    | 057-0779-002                      |
| 16         | 057-0780-000                        | 057-0847-000                      | 057-0823-000                    | 057-0780-002                      |
| 18         | 057-0781-000                        | 057-0848-000                      | 057-0824-000                    | 057-0781-002                      |
| 20         | 057-0782-000                        | 057-0849-000                      | 057-0825-000                    | 057-0782-002                      |
| 22         | 057-0783-000                        | 057-0850-000                      | 057-0826-000                    | 057-0783-002                      |
| 24         | 057-0784-000                        | 057-0851-000                      | 057-0827-000                    | 057-0784-002                      |

## Backshell - Type F (Cable Clamp)



| Shell Size |           |               |              |              |              |               |
|------------|-----------|---------------|--------------|--------------|--------------|---------------|
| Series I   | Series II | A Max.        | N Dia. Max.  | X Dia. Min.  | X' Dia. Min. | Y Max.        |
| 9          | 8         | .508 (14.73)  | .135 (3.43)  | .234 (5.94)  | .187 (4.75)  | .829 (21.06)  |
| 11         | 10        | .705 (17.91)  | .198 (5.03)  | .297 (7.54)  | .187 (4.75)  | .891 (22.63)  |
| 13         | 12        | .830 (21.08)  | .322 (7.18)  | .422 (10.72) | .281 (7.14)  | 1.016 (25.81) |
| 15         | 14        | .955 (24.26)  | .385 (9.78)  | .547 (12.89) | .325 (8.26)  | 1.141 (28.98) |
| 17         | 16        | 1.080 (27.43) | .510 (12.95) | .609 (15.47) | .356 (9.04)  | 1.203 (30.56) |
| 19         | 18        | 1.205 (30.61) | .635 (16.13) | .734 (18.64) | .456 (11.58) | 1.469 (37.31) |
| 21         | 20        | 1.330 (33.78) | .635 (16.13) | .734 (18.64) | .519 (13.18) | 1.469 (37.31) |
| 23         | 22        | 1.455 (36.96) | .760 (19.30) | .922 (23.42) | .519 (13.18) | 1.656 (42.06) |
| 25         | 24        | 1.555 (39.50) | .810 (20.57) | .984 (24.99) | .657 (16.69) | 1.750 (44.45) |

## How To Order (MS Version)

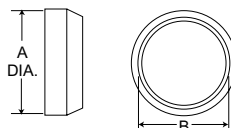
|                                                                                                             |   |   |   |   |   |   |
|-------------------------------------------------------------------------------------------------------------|---|---|---|---|---|---|
| MS27506                                                                                                     | - | A | - | 8 | - | 2 |
| Military Designation<br>MS27506 Type F Straight<br>with Cable Clamp                                         |   |   |   |   |   |   |
| Finish<br>A - Cad/Nickel (Clear)<br>B - Cad/Nickel (O.D)<br>F - Nickel (Electroless)                        |   |   |   |   |   |   |
| Shell Size<br>Series I - 9, 11, 13, 15, 17, 19, 21, 23, 25<br>Series II - 8, 10, 12, 14, 16, 18, 20, 22, 24 |   |   |   |   |   |   |
| Adapter<br>Geometry - 2                                                                                     |   |   |   |   |   |   |

| Shell Size |           |                   |                       |      | Finishes |      |   |      |   |
|------------|-----------|-------------------|-----------------------|------|----------|------|---|------|---|
| Series I   | Series II | MS<br>Part Number | Cannon<br>Part Number |      | A        | B    | N | F    |   |
| 9          | 8         | 27506-*8-2        | 057-3005-***          | -012 | A        | -013 | B | -015 | F |
| 11         | 10        | 27506-*10-2       | 057-3006-***          | -011 | A        | -012 | B | -014 | F |
| 13         | 12        | 27506-*12-2       | 057-3007-***          | -012 | A        | -013 | B | -015 | F |
| 15         | 14        | 27506-*14-2       | 057-3008-***          | -010 | A        | -011 | B | -013 | F |
| 17         | 16        | 27506-*16-2       | 057-3009-***          | -012 | A        | -013 | B | -015 | F |
| 19         | 18        | 27506-*18-2       | 057-3010-***          | -013 | A        | -014 | B | -016 | F |
| 21         | 20        | 27506-*20-2       | 057-3011-***          | -011 | A        | -013 | B | -015 | F |
| 23         | 22        | 27506-*22-2       | 057-3012-***          | -015 | A        | -016 | B | -018 | F |
| 25         | 24        | 27506-*24-2       | 057-3013-***          | -013 | A        | -014 | B | -017 | F |

\* MS Finish

\*\*\* Cannon Finish

## Backshell - Type P (Potting Boot)



| Shell Size |           | A Dia. Max.   | B Dia. Max.   |
|------------|-----------|---------------|---------------|
| Series I   | Series II |               |               |
| 9          | 8         | .598 (15.19)  | .434 (11.02)  |
| 11         | 10        | .723 (18.36)  | .548 (13.92)  |
| 13         | 12        | .847 (21.51)  | .673 (17.09)  |
| 15         | 14        | .969 (24.61)  | .798 (20.27)  |
| 17         | 16        | 1.087 (27.61) | .899 (22.83)  |
| 19         | 18        | 1.211 (30.76) | 1.024 (26.01) |
| 21         | 20        | 1.336 (33.93) | 1.141 (29.98) |
| 23         | 22        | 1.461 (37.11) | 1.274 (32.36) |
| 25         | 24        | 1.586 (40.28) | 1.399 (35.53) |

## How To Order (MS Version)

MS Designation \_\_\_\_\_  
 Shell Size \_\_\_\_\_  
 Series I - 9, 11, 13, 15, 17, 19, 21, 23, 25  
 Series II - 8, 10, 12, 14, 16, 18, 20, 22, 24  
 1 - Straight Cup

NOTE: When ordering the MS version you must specify both MS numbers for the Potting Boot and the Adapter Ring.

MS27486 - 9 - 1

| Shell Size |           | MS27486 Part Number | Cannon Part Number |
|------------|-----------|---------------------|--------------------|
| Series I   | Series II |                     |                    |
| 9          | 8         | 27486-**-1          | 040-0185-000       |
| 11         | 10        | 27486-**-1          | 040-0169-000       |
| 13         | 12        | 27486-**-1          | 040-0170-000       |
| 15         | 14        | 27486-**-1          | 040-0171-000       |
| 17         | 16        | 27486-**-1          | 040-0172-000       |
| 19         | 18        | 27486-**-1          | 040-0173-000       |
| 21         | 20        | 27486-**-1          | 040-0174-000       |
| 23         | 22        | 27486-**-1          | 040-0175-000       |
| 25         | 24        | 27486-**-1          | 040-0176-000       |

\*\* Specify applicable Series I or II, shell size.

## Adapter Ring

## How To Order (MS Version)

Military Designation \_\_\_\_\_  
 Finish \_\_\_\_\_  
 A - Cad/Nickel (Clear)  
 B - Cad/Nickel (O.D)  
 F - Nickel (Electroless)  
 Shell Size \_\_\_\_\_  
 Series I - 9, 11, 13, 15, 17, 19, 21, 23, 25  
 Series II - 8, 10, 12, 14, 16, 18, 20, 22, 24

NOTE: When ordering the MS version you must specify both MS numbers for the Potting Boot and the Adapter Ring.

MS27485 - A - 8

| Shell Size |           |                     |                    | Finishes             |    |                    |    |             |        |
|------------|-----------|---------------------|--------------------|----------------------|----|--------------------|----|-------------|--------|
|            |           |                     |                    | A                    |    | B                  |    | N           | F      |
|            |           |                     |                    | Cadmium/Nickel-Clear |    | Cadmium/Nickel-O.D |    | Electroless | Nickel |
| Series I   | Series II | MS27485 Part Number | Cannon Part Number | Cannon               | MS | Cannon             | MS | Cannon      | MS     |
| 9          | 8         | 27485-*.**          | 237-0887-***       | -000                 | A  | -001               | B  | -002        | F      |
| 11         | 10        | 27485-*.**          | 237-0874-***       | -000                 | A  | -001               | B  | -002        | F      |
| 13         | 12        | 27485-*.**          | 237-0875-***       | -000                 | A  | -001               | B  | -002        | F      |
| 15         | 14        | 27485-*.**          | 237-0876-***       | -000                 | A  | -001               | B  | -002        | F      |
| 17         | 16        | 27485-*.**          | 237-0877-***       | -000                 | A  | -001               | B  | -002        | F      |
| 19         | 18        | 27485-*.**          | 237-0878-***       | -000                 | A  | -001               | B  | -002        | F      |
| 21         | 20        | 27485-*.**          | 237-0879-***       | -000                 | A  | -001               | B  | -002        | F      |
| 23         | 22        | 27485-*.**          | 237-0880-***       | -000                 | A  | -001               | B  | -003        | F      |
| 25         | 24        | 27485-*.**          | 237-0881-***       | -000                 | A  | -001               | B  | -003        | F      |

\* MS Finish

\*\* Specify applicable Series I or II shell size

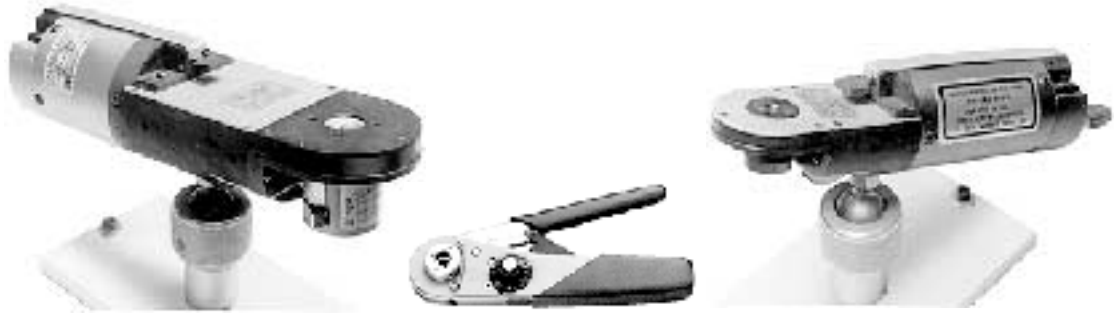
\*\*\* Cannon Finish

## Wire Sealing Plugs

| Series III Size | Series I & II Size | Part Number  |            | Color Code |
|-----------------|--------------------|--------------|------------|------------|
|                 |                    | ITT Cannon   | MS27488    |            |
| 22D             | 22D                | 225-1013-000 | MS27488-22 | Black      |
| 22M             | 22M                | 225-1013-000 | MS27488-22 | Black      |
| -               | 22                 | 225-1013-000 | MS27488-22 | Black      |
| 20              | 20                 | 225-0070-000 | MS27488-20 | Red        |
| 16              | 16                 | 225-0071-000 | MS27488-16 | Blue       |
| 12              | 12                 | 225-0072-000 | MS27488-12 | Yellow     |

Wire sealing plugs meet MS27488 standards. The plugs are color coded according to size for easy identification. Wire sealing plugs may be ordered separately.

## Tools - Crimp



M22520/1-01

CBT-530

M22520/2-01

CBT-565

| Contact Size | Pin Contact Series I/II/III |                               | Socket Contact Series II |                               | Socket Contact Series I & III |                               |
|--------------|-----------------------------|-------------------------------|--------------------------|-------------------------------|-------------------------------|-------------------------------|
|              | Crimp Tool Part Number      | Locator or Turret Part Number | Crimp Tool Part Number   | Locator or Turret Part Number | Crimp Tool Part Number        | Locator or Turret Part Number |
| 22D or 22M   | M22520/2-01                 | M22520/2-09                   | M22520/2-01              | M22520/2-06                   | M22520/2-01                   | M22520/2-07                   |
| 22           | M22520/2-01                 | M22520/2-09                   | M22520/2-01              | M22520/2-06                   | M22520/2-01                   | M22520/2-07                   |
| 20           | M22520/1-01                 | M22520/1-04 OR TH 187         | M22520/1-01              | M22520/1-04                   | M22520/1-01                   | M22520/1-04                   |
| 16           | M22520/1-01                 | M22520/1-04 OR TH 187         | M22520/1-01              | M22520/1-04                   | M22520/1-01                   | M22520/1-04                   |
| 12           | M22520/1-01                 | M22520/1-04                   | M22520/1-01              | M22520/1-04                   | M22520/1-01                   | M22520/1-04                   |

## Tools - Plastic



Insertion/Extraction

| Contact Size | Cannon Description | Cannon Part Number | M81969 Part Number | Superseded Military Part Number | Insertion Color Tip | Extraction Color Tip |
|--------------|--------------------|--------------------|--------------------|---------------------------------|---------------------|----------------------|
| 22D          | CIET-22D-01        | 274-7048-000       | M81969/14-01       | MS27534-22D                     | Green               | White                |
| 22M          | CIET-22D-01        | 274-7048-000       | M81969/14-01       | MS27534-22D                     | Green               | White                |
| 20           | CIET-20-10         | 274-7001-000       | M81969/14-10       | MS27534-20                      | Red                 | Orange               |
| 16           | CIET-16-03         | 274-7002-000       | M81969/14-03       | MS27534-216                     | Blue                | White                |
| 12           | CIET-12-04         | 274-7003-000       | M81969/14-04       | MS27534-12                      | Yellow              | White                |

## Tools - Metal (MS)



Insertion



Extraction

| Contact Size | Insertion           |                        |             | Extraction          |                        |             |       |
|--------------|---------------------|------------------------|-------------|---------------------|------------------------|-------------|-------|
|              | MS27495 Part Number | ITT CANNON Part Number | Color Band† | MS27495 Part Number | ITT CANNON Part Number | Color Band† | No.2  |
| 22D OR 22M*  | MS27495 A22M        | 995-0001-718           | Black       | MS27495 R22M        | 995-0001-719           | Black       | White |
| 22*          | MS27495 A22         | 995-0001-720           | Brown       | MS27495 R22         | 995-0001-721           | Brown       | White |
| 20           | MS27495 A20         | 995-0001-716           | Red         | MS27495 R20         | 995-0001-717           | Red         | White |
| 16           | MS27495 A16         | 995-0001-732           | Blue        | MS27495 R16         | 995-0001-731           | Blue        | White |

† Band No. 1 indicates tool size.

Band No. 2 indicates removal tool.

\* Replacement only, not recommended for new design.

## Wire Stripping

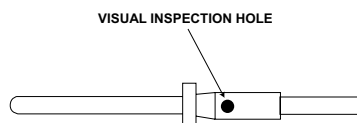
Strip insulation from end of wire to be crimped. (See table for proper stripping dimensions.) Do not cut or damage wire strands.



| Wire Size   | A           |
|-------------|-------------|
| 22D or 22M* | .125 (3.18) |
| 20          | .188 (4.77) |
| 16          | .188 (4.77) |
| 12          | .188 (4.77) |

\* Inactive, not recommended for new design, replacement only.

## Contact Crimping



1. Insert stripped wire into contact crimp pot. Wire must be visible thru inspection hole.



2. Using correct crimp tool and locator, cycle the tool once to be sure the indentors are open. Insert contact and wire into locator. Squeeze tool handles firmly and completely to insure a proper crimp. The tool will not release unless the crimp indentors in the tool head have been fully actuated.



3. Release crimped contact and wire from tool. Be certain the wire is visible thru inspection hole in contact.

## Contact Insertion



1. Remove hardware from plug or receptacle and slip over wire bundle in proper order for reassembly.



2. Using proper plastic or metal insertion tool for corresponding contact, position wire in tip of the tool so that the tool tip butts up against the contact shoulder.



3. Press tool against contact shoulder and, with firm and even pressure, insert wired contact and tool tip into center contact cavity. A slight click may be heard as metal retaining tines snap into place behind contact shoulder.



4. Remove tool and pull back lightly on wire to make sure contact is properly seated. Repeat operation with remainder of contacts to be inserted, beginning with the center cavity and working outward in alternating rows.



5. After all contacts are inserted, fill any empty cavities with wire sealing plugs. Reassemble plug or receptacle hardware.

## Contact Extraction



1. Remove hardware from plug or receptacle and slide hardware back along wire bundle.



2. Using plastic or metal extraction tool with proper color code corresponding to contact size, place wire in tool.



3. Insert tool into contact cavity until tool tip bottoms against the contact shoulder, expanding clip retaining tines.



4. Hold wire firmly in tool and extract wired contact and tool. Repeat operation for all contacts to be extracted.



5. Fill any empty wire cavities with wire sealing plugs, and



6. Reassemble plug or receptacle.

# MIL-C-38999 Series I, II, III Connectors

## MIL-C-38999 Specifications

The following excerpts are some of the parameter requirements of the MIL-C-3899 Specification.

| Test Description       | Paragraph Reference | Requirements                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
|------------------------|---------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Contact Retention      | 4.7.19              | After preloading to 3 pounds maximum, the force shall be applied at a rate of approximately 1 pound per second and maintained at full load for 5-10 seconds. No damage to contacts or insert shall result nor shall the contacts be dislocated from their normal position in the connector more than 0.012 inch under the given load. Failure to meet these requirements shall be cause for rejection.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
|                        |                     | Contact Size                      22M                      22D                      22                      20                      16                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
|                        |                     | Loads in Pounds $\pm$ 10%                      10                      10                      10                      15                      25                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| Coupling Torque        | 4.7.6               | For qualification testing, mating halves shall be coupled and uncoupled, measuring the torques necessary. The torques required to couple and uncouple mating connector halves shall fall within the limits specific as follows:                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
|                        |                     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
|                        |                     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
|                        |                     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
|                        |                     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| Durability             | 4.7.7               | Connector halves shall be mated and unmated 250 times for Series II with ground fingers and 500 times for Series I and III at a rate not exceeding 300 cycles per hour. The test may be performed by hand or by mechanical means, but the coupling ring shall be operated as in normal service. Failure to complete this test because of mechanical malfunction shall be cause for rejection.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
|                        |                     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
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|                        |                     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
|                        |                     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| Insulation Resistance  | 4.7.9               | An insulation resistance test shall be performed on unmated connectors in accordance with MIL-STD-202, Method 302, Test condition B. Measurement shall be made between three pairs of adjacent contacts and the shell. Failure to meet the minimum requirement of 50,000 megohms for Classes E, P, F, R, and T shall be cause for rejection.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| Vibration              | 4.7.22              | Wired, mated connectors shall be subjected to the vibration test of MIL-STD-202, Method 214, Test Condition II, except that the duration shall be one hour in each plane. Receptacles shall be mounted on the vibration fixture by normal means. All contacts shall be wired in a series circuit and 100-500 milliamperes of current shall be allowed to flow through the series circuit during vibration. Suitable means shall be employed to monitor the current flow and to indicate any discontinuity of more than 1 microsecond. The wire bundle shall be damped to the nonvibrating points at least 8 inches from the rear of the connector. Current discontinuity of 1 microsecond or more, disengagement of the mated connectors, evidence of cracking, breaking, or loosening of parts shall be cause for rejection.                                                                                                                                                                                                                                           |
| Shock                  | 4.7.23              | Wired mated connectors shall be subjected to one shock in each direction in each of three mutually perpendicular axes. The pulse shall be approximate half sine wave of $300g \pm 15\%$ magnitude with a duration of $3 \pm 1$ milliseconds. Receptacles shall be mounted on a shock fixture by normal means. All contacts shall be wired in a series circuit and 100-150 ma. of current shall flow through the series circuit during shock. Suitable means shall be employed to monitor the current flow and to indicate any discontinuity of more than 1 microsecond. The wire bundle shall be clamped to fixed points at least 8 inches from the rear of the connector. Current discontinuity of 1 microsecond or more, disengagement of the mated connectors, evidence of cracking, breaking, or loosening of parts shall be cause for rejection.                                                                                                                                                                                                                   |
| Thermal Shock          | 4.7.4               | Unmated receptacles shall be subject to 10 cycles of thermal shock in the following manner:<br>Step a. The receptacle shall be suspended for $10 \pm 1 - 0$ minutes in the center of a cold water bath with a volume of approximately one cubic foot. No dimension of the bath shall be less than 10 inches. The water temperature shall not exceed $4^{\circ}\text{C}$ ( $201^{\circ}\text{F}$ ).<br>Step b. The receptacle shall be suspended for $10 \pm 1 - 0$ minutes in the center of a hot water bath with a volume of approximately one cubic foot. No dimension of the bath shall be less than 10 inches. The water temperature shall be not less than $94^{\circ}\text{C}$ ( $201^{\circ}\text{F}$ ).<br>The time of transfer from one bath to the other shall not exceed 5 seconds. At the end of the tenth cycle, the receptacle shall have the excess moisture shaken off and shall then be dried in a forced air oven at $66 \pm 5^{\circ}\text{C}$ for $15 \pm 1$ minutes. Any evidence of damage resulting from this test shall be cause for rejection. |
| Altitude Immersion     | 4.7.8               | Mated connectors shall be placed in a container of water at approximately $20^{\circ}\text{C}$ and placed in an altitude chamber. All wire ends shall be located within the chamber and exposed to the chamber atmosphere, but not submerged. The exposed wire ends shall not be sealed. A quantity of salt, 5 percent by weight, shall be added to make the water conductive. The chamber pressure shall then be reduced to approximately one inch of mercury and maintained for thirty minutes. The chamber pressure shall then be slowly returned to atmospheric. This shall be considered one cycle. Two additional cycles shall be performed. At the end of the last cycle, while the mated connectors are still submerged, the Insulation Resistance Test (room temperature), and the High Potential Test (sea level voltages) shall be performed upon the same circuits. Failure to meet an insulation resistance minimum of 2,000 megohms or any evidence of dielectric breakdown or -flashover shall be cause for rejection.                                   |
| Solvent Immersion      | 4.7.29              | Unmated connectors shall be immersed fully in the applicable fluid specified below for 20 hours. After removal from the fluid, each connector shall remain for one hour in free air at room temperature.<br>a. Jet fuel JP-4 to MIL-J-5624      b. Aircraft lubricating oil to MIL-L-9236                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| Corrosion              | 4.7.12              | Unmated connectors and individual contact samples shall be subjected to the soft spray of MIL-STD-202, Method 101, Test Condition 8 (tin plated, Class Y receptacles-24 hours). Immediately after exposure, the surfaces of the specimens shall be thoroughly washed in tap water and dried in a circulatory oven at a temperature of $38 \pm 3^{\circ}\text{C}$ ( $100^{\circ}\text{F}$ ) for a period of approximately 12 hours. Any exposure of basis metal as a result of this test, shall be cause for rejection.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| Dynamic Salt Spray     | 4.7.12.2            | (Series I and 11, finish B; Series III, class W). The wired assembled plugs and receptacles shall be mated and unmated 50 cycles at a rate of 300 cycles per hour maximum. The mating and unmating shall be accomplished so that the plug and receptacle are completely separated during each cycle. The connectors shall then be subjected to the salt spray test in accordance with method 1001 of MIL-STD- 1344. The connectors shall be tested for 452 hours mated followed by 48 hours unmated. After the salt spray exposure the remaining number of durability cycles specified in 4.7.7 shall be completed.                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| Temperature Durability | 4.7.33              | Wired, mated connectors shall be subjected to the indicated ambient temperature for a period of 1,000 hours.<br>Series I and II (finish A) ..... $150 \begin{matrix} +3^{\circ} \\ -0^{\circ} \end{matrix} \text{C}$ ( $302^{\circ}\text{F}$ )      Series I and II (finish B) ..... $175 \begin{matrix} +3^{\circ} \\ -0^{\circ} \end{matrix} \text{C}$ ( $347^{\circ}\text{F}$ )<br>Series III (class W) ..... $175 \begin{matrix} +3^{\circ} \\ -0^{\circ} \end{matrix} \text{C}$ ( $347^{\circ}\text{F}$ )      All others finishes ..... $200 \begin{matrix} +3^{\circ} \\ -0^{\circ} \end{matrix} \text{C}$ ( $392^{\circ}\text{F}$ )                                                                                                                                                                                                                                                                                                                                                                                                                             |



Solder

Crimp

- General purpose
- Closed-entry socket contacts
- Solder termination

KPT connectors are a series of general - purpose, environment - resistant, miniature circular connectors, qualified for use in industrial applications calling for quick - disconnect connectors with fixed contacts for solder termination. These miniature circular connectors are grouped into two series ranging from general purpose solder pot connectors . . . to high performance, crimp connectors . . . to connectors with high contact density. This broad range provides the most complete family of 26482 connectors available today. The versatility of these connectors is proven by the fulfillment of requirements ranging from general purpose to space environmental.

In addition to the two basic series, connectors for special applications are also available. They include RFI filtering versions (with loss pass internal filter pin contacts), hermetic connectors for high pressure watertight requirements, and twist - on pull - off couplers for MIL-C-26482 plugs.

This series is intermateable and intermountable with all MIL-C-26482 connectors, whether solder or crimp type and is available with many materials, finishers and configurations.

## How to Order - KPT - Solder Contact Connectors

### SERIES PREFIX

KPT - ITT Cannon prefix  
MS - MIL-C-26482 prefix

### SHELL STYLE

- Cannon Designation
- 00 - wall mounting receptacle
  - 01 - cable connecting plug
  - 02 - box mounting receptacle (Class E only)
  - \* 03 - wall mounting receptacle without grommet, ferrule and endbell
  - \* 04 - cable connecting plug without grommet, ferrule and endbell
  - \* 05 - straight plug without grommet, ferrule, and endbell
  - 06 - straight plug
  - 07 - jam nut receptacle (available in hermetic version also)
  - 08 - 90° angle plug
  - B - thru-bulkhead receptacle (Class E only)

\* Consult factory for details

### SHELL STYLE (cont'd)

- MS Designation
- 3110 - wall mounting receptacle
  - 3111 - cable connecting plug
  - 3112 - box mounting receptacle (Class E only)
  - 3114 - jam nut receptacle
  - 3116 - straight plug
  - 3119 - thru-bulkhead receptacle (Class E only)

### SERIES PREFIX

### SHELL STYLE

### CLASS

### SHELL SIZE

### CONTACT ARRANGEMENT

### CONTACT STYLE

### ALTERNATE INSERT POSITION

### MODIFICATION CODE

### CLASS

- A - general duty (not MS approved)
- B - general duty with strain relief without grommet & ferrules (may be used for potting when strain relief is desired) (not MS approved)
- E - grommet seal except on 02 and 3112 (MS specification)
- F - grommet seal with strain relief (MS specification)
- J - water tight gland seal with strain relief for jacketed cable (MS specification)
- P - potted (MS specification)

### SHELL SIZE

8, 10, 12, 14, 16, 18, 20, 22, and 24

### CONTACT ARRANGEMENT

See contact arrangement page 149.

### CONTACT STYLE

P - pin; S - socket

### ALTERNATE INSERT POSITION

W, X, Y and Z. (Omit for normal.)

### MODIFICATION CODE

- Omit first (0) of shell style indication when using modifications code.
- 07 - clear chromate over cadmium
- 16 - twist-pull lanyard release coupler (applied cable to plug only).
- 23 - grounding springs fingers (applicable to plug only)

MS 3110 E 22-36 P Y  
KPT 00 E 22-36 P Y \*\*

## How to Order - KPTB Thru-Bulkhead Receptacle Connectors

- General Purpose
- Double ended pin and socket contacts
- Contains KPT socket insert
- Nonremovable contacts

KPT connectors are a series of general - purpose, miniature circular connectors, qualified for use in military applications. They are also widely used in industrial applications. The KPTB in a thru-bulkhead version with double faced pin and socket insert construction allowing mating from both ends. They contain KPT socket inserts with feed-thru (pin/socket) non-removable contacts.

The thru-bulkhead receptacle is provided for applications requiring the disconnection of a power source from either side of a panel. A typical connector to be used if air leakage requirements are critical.

SERIES PREFIX \_\_\_\_\_ KPTB 22 - 55 PS Y  
SHELL SIZE \_\_\_\_\_  
CONTACT ARRANGEMENT \_\_\_\_\_  
CONTACT STYLE (pin & socket) \_\_\_\_\_  
ALTERNATE INSERT POSITION \_\_\_\_\_

MIL-C-26482 PREFIX \_\_\_\_\_ MS3119 E 22 - 55 Y  
CLASS \_\_\_\_\_  
SHELL SIZE \_\_\_\_\_  
CONTACT ARRANGEMENT \_\_\_\_\_  
ALTERNATE INSERT POSITION \_\_\_\_\_

## How to Order - KPSE Crimp Contact Connectors

|                                |      |      |   |         |   |   |    |
|--------------------------------|------|------|---|---------|---|---|----|
| SERIES PREFIX _____            | MS   | 3120 | E | 18 - 32 | P | X |    |
| SHELL STYLE _____              | KPSE | 00   | E | 18 - 32 | P | X | ** |
| CLASS _____                    |      |      |   |         |   |   |    |
| SHELL SIZE _____               |      |      |   |         |   |   |    |
| CONTACT ARRANGEMENT _____      |      |      |   |         |   |   |    |
| CONTACT TYPE _____             |      |      |   |         |   |   |    |
| ALTERNTE INSERT POSITION _____ |      |      |   |         |   |   |    |
| MODIFICATION CODE _____        |      |      |   |         |   |   |    |

## SERIES PREFIX

KPSE - ITT Cannon prefix  
MS - MIL-C-26482 prefix

## SHELL STYLE

ITT Cannon Number:

00 - wall mounting receptacle  
01 - cable connecting plug

02 - box mounting receptacle (without wire seals)

\* 03 - wall mounting receptacle without ferrule and endbell

\* 04 - cable connector plug without ferrule and endbell

\* 05 - straight plug without ferrule and endbell

06 - straight plug

07 - jam nut receptacle

08 - 90° angle plug

\* Consult factory for details

## MS Designation

3120 - wall mounting receptacle

3121 - cable connecting plug

3122 - box mounting receptacle

3124 - jam nut receptacle

3126 - straight plug

## CLASS

A - general duty (not MS approved)

B - general duty with strain relief without grommet & ferrules (not MS approved)

E - grommet seal (MS specification)

F - grommet seal with strain relief (MS specification)

J - gland seal with strain relief for jacketed cable (not MS approved)

P - potted (MS specification)

## SHELL SIZE

10, 12, 14, 16, 18, 20, 22, and 24

## CONTACT ARRANGEMENT

See contact arrangements page 149.

## CONTACT STYLE

P - pin

S - socket

## ALTERNATE INSERT POSITION

W, X, Y and Z. (Omit for normal.)

## MODIFICATION CODE

Omit first (0) of shell style indication when using modifications code.

F0 - less contacts, not marked on connectors

07 - clear chromate over cadmium

16 - twist-pull lanyard release coupler (applied cable to plug only).

23 - grounding springs fingers (applicable to plug only)

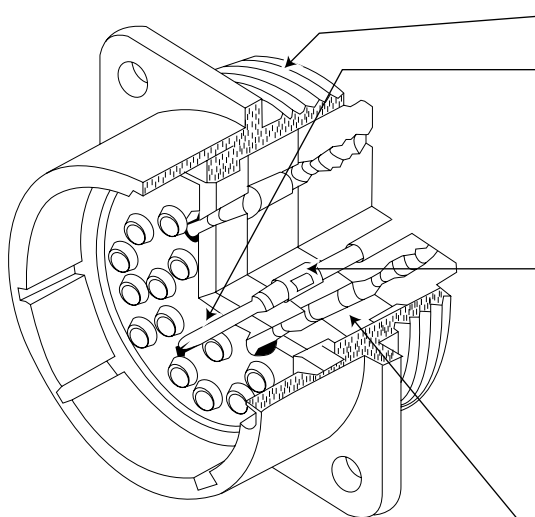
## KPSE High Performance Crimp Contact Connectors

- Environment -resistant
- Voidless integrally molded insulator
- Front-release, crimp snap-in contacts
- Closed entry socket contacts
- 4 moisture seals for complete sealing
- Contact clip protected in hard dielectric
- Positive insert-to-shell mechanical retention

KPSE environment-resistant, miniature circular, quick disconnect connectors, qualified to MIL-C-26482, are designed for the exacting requirements of today's electronic industry. The KPSE features an insulator which is mechanically retained in the shell by a positive, hard plastic-to-metal lock retention augmented by a reliable adhesive bond. Complete moisture sealing is achieved by four seal; shell, peripheral, interfacial and wire seals.

Crimp snap-in contacts are retained in clips that are completely encased in a tough hard dielectric wafer, thus protecting the clips tines from damage. Closed-entry socket contacts facilitate positive mating.

The KPSE series is intermateable, intermountable and interchangeable with all MIL-C-26482 connectors, whether crimp or solder type, and is available with many materials, finishes and configurations.



**STANDARD MIL-C-26482 HARDWARE** mates with any connector designed to MIL-C-26482.

**CRIMP, SNAP-IN CONTACTS** are designed to MIL-C-39029 and can be crimped with the standard M22520/1 crimp tool.

**CLOSED-ENTRY SOCKET CONTACTS** eliminate damage from abuse by test probes and help to correct any misaligned pins during engagement.

**CONTACT INSERTION** is accomplished from the rear of the connector.

When the contact is fully inserted, the clip tines snap securely behind the contact shoulder.

**CONTACT EXTRACTION** is accomplished with a front-inserted extraction tool. Pressing the tool plunger pushes the contact out thru the rear of the connector.

**CONTACT RETAINING CLIP** is completely encased in a tough plastic wafer to protect the clip from damage.

**COMPLETE MOISTURE SEALING** is achieved by combining four seals: shell, peripheral, interfacial and wire seals.

**SHELL SEAL** is effected when the plug shell pushes against the sealing ring in the receptacle when the connectors are mated.

**PERIPHERAL SEAL** around the edge of the pin insulator is designed so that mating the connector puts tension on the seal and greatly reduces compression set.

**INTERFACIAL SEAL** is achieved by the insulator faces meeting when the plug and receptacle are mated.

**WIRE SEAL** is accomplished by a multiple ripple design, exceeding the wire sealing requirements of MIL-C-26482.

**POSITIVE INSERT-TO-SHELL MECHANICAL RETENTION** with hard plastic wafer firmly locked into a groove in the shell, in addition to a strong adhesive bond between the insert and shell.

## Performance and Material Specifications

## STANDARD MATERIALS AND FINISHES

|                   |                                                                                       |
|-------------------|---------------------------------------------------------------------------------------|
| Shell             | aluminum alloy, conductive<br>olive drab chromate over<br>cadmium finish per QQ-P-416 |
| Insulator         | polychloroprene                                                                       |
| Grommet and Seal  | polychloroprene                                                                       |
| Contacts          | Copper alloy, gold plate<br>per MIL-G-45204 type II                                   |
| Temperature Range | - 55°C to +125°C                                                                      |

## MECHANICAL

|                        |                                                                                                                                                                                                                   |
|------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Shell Sizes            | 00 - wall mounting receptacle<br>01 - cable connecting plug<br>02 - box mounting receptacle<br>06 - straight plug<br>07 - jam nut receptacle<br>08 - 90° angle plug<br>B - thru-bulkhead receptacle<br>(KPT only) |
| Shell Sizes            | KPT 8 thru 24<br>KPSE 10 thru 24                                                                                                                                                                                  |
| Polarization/Coupling: | five keyway/three point bayonet                                                                                                                                                                                   |
| Service Classes        | A - general duty<br>B - general duty with strain relief<br>E - grommet seal<br>F - grommet seal with strain relief<br>J - gland nut with strain relief for jacketed cable<br>P - potted                           |

## ELECTRICAL

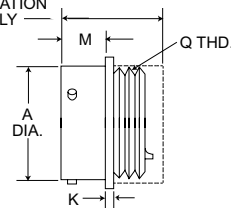
|                           |               |                        |              |                      |  |
|---------------------------|---------------|------------------------|--------------|----------------------|--|
| Contact Termination       |               | solder (KPT)           |              | crimp snap-in (KPSE) |  |
| Number of contacts        |               | KPT 2 thru 61          |              | KPSE 3 thru 61       |  |
| Wire size, AWG            |               | KPT 12 thru 24         |              | KPSE 16 thru 24      |  |
| Wire Range Accommodations |               | Insulation O.D. Limits |              |                      |  |
| Contact Size              | AWG Wire Size | Min. KPT               | Min. KPSE    | Max. KPT/ KPSE       |  |
| 20                        | 24, 22 and 20 | .060 (1.52)            | .047 (1.19)  | .083 (2.11)          |  |
| 16                        | 20, 18 and 16 | .066 (1.68)            | .066 (1.68)  | .109 (2.77)          |  |
| 12                        | 14 and 12     | .097 (2.46)            |              | .142 (3.61)          |  |
| Contact Rating            | Contact Size  | Rated Amps             | Test Current | Millivolt Drop       |  |
|                           | 20            | 7.5                    | 7.5          | less than 55         |  |
|                           | 16            | 22.0                   | 13.0         | less than 50         |  |
| Service Rating            | Test Volt     | Service                | AC(rms)      | DC                   |  |
|                           | Sea level     | 1                      | 1500         | 2100                 |  |
|                           |               | 2                      | 2300         | 3200                 |  |
|                           | 70,000 ft.    | 1                      | 375          | 535                  |  |
|                           |               | 2                      | 550          | 770                  |  |
| Maximum Operating Voltage | Sea level     | 1                      | 600          | 850                  |  |
|                           |               | 2                      | 1000         | 1275                 |  |

## Wall Mounting Receptacles

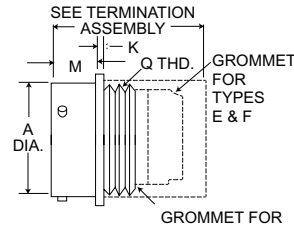
MS3110 (MS service class E, F, J, P)  
MS3120 (MS service class E, F, P)

KPT00  
KPSE00

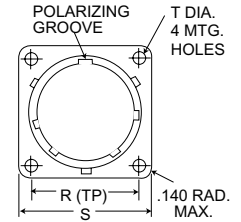
SEE TERMINATION  
ASSEMBLY



**SOLDER**  
KPT00/MS3110



**CRIMP**  
KPSE00/MS3120

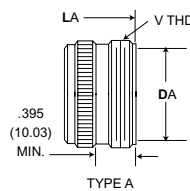


**RECEPTACLE ASSEMBLY**

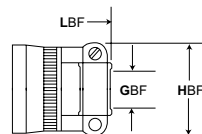
| Shell Size | A<br>± .003 (±.08) | K<br>± .016 (±.41) | M<br>+ .031 (+.79)<br>-.000 (-.00) | R*<br>(TP)    | S<br>Max.     | T<br>± .005 (±.13) | Q Thread<br>Class 2A |
|------------|--------------------|--------------------|------------------------------------|---------------|---------------|--------------------|----------------------|
| †8         | .471 (11.96)       | .062 (1.57)        | .431 (10.95)                       | .594 (15.09)  | .828 (21.03)  | .120 (3.05)        | 7/16-28UNEF          |
| 10         | .588 (14.96)       | .062 (1.57)        | .431 (10.95)                       | .719 (18.26)  | .954 (24.23)  | .120 (3.05)        | 9/16-24UNEF          |
| 12         | .748 (19.00)       | .062 (1.57)        | .431 (10.95)                       | .812 (20.62)  | 1.047 (26.59) | .120 (3.05)        | 11/16-24UNEF         |
| 14         | .873 (22.17)       | .062 (1.57)        | .431 (10.95)                       | .906 (23.01)  | 1.141 (28.98) | .120 (3.05)        | 13/16-20UNEF         |
| 16         | .998 (25.35)       | .062 (1.57)        | .431 (10.95)                       | .969 (24.61)  | 1.234 (31.34) | .120 (3.05)        | 15/16-20UNEF         |
| 18         | 1.123 (28.52)      | .062 (1.57)        | .431 (10.95)                       | 1.062 (26.97) | 1.328 (33.73) | .120 (3.05)        | 1-1/16-18UNEF        |
| 20         | 1.248 (31.70)      | .094 (2.39)        | .556 (14.12)                       | 1.156 (29.36) | 1.453 (36.91) | .120 (3.05)        | 1-3/16-18UNEF        |
| 22         | 1.373 (34.87)      | .094 (2.39)        | .556 (14.12)                       | 1.250 (31.75) | 1.578 (40.08) | .120 (3.05)        | 1-5/16-18UNEF        |
| 24         | 1.498 (38.05)      | .094 (2.39)        | .589 (14.96)                       | 1.375 (34.92) | 1.703 (43.26) | .147 (3.73)        | 1-7/16-18UNEF        |

†Not available in KPSE \* (TP) located within .010 T.P. with respect to diameter A and master keyway.

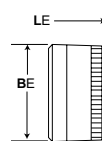
## Receptacles with Termination Assemblies



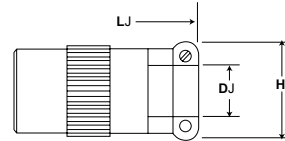
TYPE A



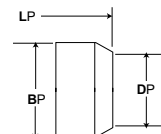
TYPE B AND F



TYPE E



TYPE J



TYPE P

| Shell Size | TYPE A        |               |                   | TYPE B and F |               |               | TYPE E        |               |
|------------|---------------|---------------|-------------------|--------------|---------------|---------------|---------------|---------------|
|            | DA Min.       | LA Max.       | V Thread Class 2A | GBF Min.     | HBF Max.      | LBF Max.      | BE Max.       | LE Max.       |
| †8         | .335 (8.15)   | 1.44 (36.68)  | 1/2-28UNEF        | .115 (2.92)  | .828 (21.03)  | 1.922 (48.82) | .608 (15.44)  | 1.328 (33.73) |
| 10         | .466 (11.84)  | 1.44 (36.68)  | 5/8-24UNEF        | .178 (4.52)  | .891 (22.63)  | 1.922 (48.82) | .734 (18.64)  | 1.328 (33.73) |
| 12         | .591 (15.01)  | 1.444 (36.68) | 3/4-20UNEF        | .302 (7.67)  | 1.016 (25.81) | 1.922 (48.82) | .858 (21.79)  | 1.328 (33.73) |
| 14         | .705 (19.05)  | 1.444 (36.68) | 7/8-20UNEF        | .365 (9.27)  | 1.141 (28.98) | 1.922 (48.82) | .984 (24.99)  | 1.328 (33.73) |
| 16         | .830 (21.08)  | 1.444 (36.68) | 1-20UNEF          | .490 (12.45) | 1.203 (30.56) | 2.047 (51.99) | 1.110 (28.19) | 1.328 (33.73) |
| 18         | .948 (24.08)  | 1.444 (36.68) | 1-3/16-18UNEF     | .615 (15.62) | 1.469 (37.31) | 2.078 (52.78) | 1.234 (31.34) | 1.328 (33.73) |
| 20         | 1.043 (26.49) | 1.728 (43.89) | 1-3/16-18UNEF     | .615 (15.62) | 1.469 (37.31) | 2.344 (59.54) | 1.360 (34.54) | 1.531 (38.89) |
| 22         | 1.198 (30.43) | 1.728 (43.89) | 1-7/16-18UNEF     | .740 (18.80) | 1.656 (42.06) | 1.344 (59.54) | 1.484 (37.69) | 1.531 (38.89) |
| 24         | 1.293 (32.84) | 1.738 (44.15) | 1-7/16-18UNEF     | .790 (20.07) | 1.750 (44.45) | 2.406 (61.11) | 1.610 (40.89) | 1.594 (40.49) |

| Shell Size | TYPE J                  |               |                | TYPE P        |               |               |
|------------|-------------------------|---------------|----------------|---------------|---------------|---------------|
|            | DJ Max./Min.            | HJ Max.       | LJ Max.        | BP Max.       | DP Min.       | LP Max.       |
| †8         | .230/.168 (5.84/4.27)   | .828 (21.03)  | 2.271 (57.68)  | .608 (15.44)  | .317 (8.05)   | 1.453 (36.91) |
| 10         | .312/.205 (7.92/5.21)   | .891 (22.63)  | 2.271 (57.68)  | .734 (18.64)  | .434 (11.02)  | 1.453 (36.91) |
| 12         | .442/.338 (11.23/8.59)  | 1.016 (25.81) | 2.411 (61.24)  | .858 (21.79)  | .548 (13.92)  | 1.453 (36.91) |
| 14         | .539/.416 (13.56/10.57) | 1.141 (28.98) | 2.599 (66.01)  | .984 (24.99)  | .673 (17.09)  | 1.453 (36.91) |
| 16         | .616/.550 (15.65/13.97) | 1.203 (30.56) | 2.943 (74.75)  | 1.110 (28.19) | .798 (20.27)  | 1.453 (36.91) |
| 18         | .672/.600 (17.07/15.24) | 1.469 (37.31) | 3.172 (80.57)  | 1.234 (31.34) | .899 (22.83)  | 1.453 (36.91) |
| 20         | .747/.634 (18.97/16.13) | 1.469 (37.31) | 3.610 (91.69)  | 1.360 (34.54) | 1.024 (26.01) | 1.672 (42.47) |
| 22         | .846/.670 (21.49/17.02) | 1.656 (42.06) | 3.766 (95.66)  | 1.484 (37.69) | 1.149 (29.18) | 1.672 (42.47) |
| 24         | .894/.740 (22.71/18.80) | 1.750 (44.45) | 3.985 (101.22) | 1.610 (40.89) | 1.274 (32.36) | 1.734 (44.04) |

†Not available in KPSE

Performance Specifications - Page 142

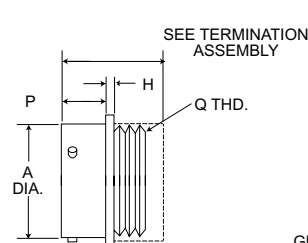
Contacts, Sealing Plugs, Assembly Tools - Page 154

Contact Arrangements - Page 149

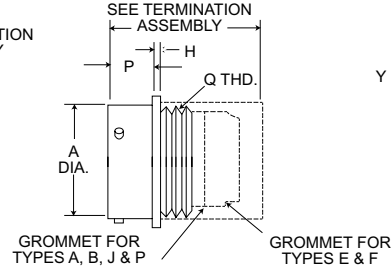
## Cable Connecting Plugs

MS3111  
(MS service class E, F, J, P)  
MS3121  
(MS service class E, F, P)

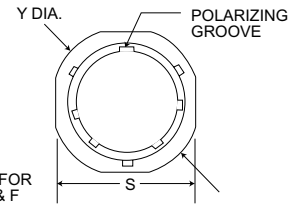
KPT01  
KPSE01



**SOLDER**  
**KPT01/MS3111**



**CRIMP**  
**KPSE01/MS3121**

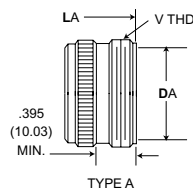


**PLUG ASSEMBLY**

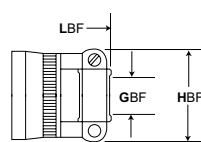
| Shell Size | A<br>± .003 (±.08) | H<br>± .016 (±.41) | P<br>+ .031 (+.79)<br>-.000 (-.00) | S<br>Max.     | Y<br>Max.     | Q Thread<br>Class 2A |
|------------|--------------------|--------------------|------------------------------------|---------------|---------------|----------------------|
| †8         | .471 (11.96)       | .094 (2.39)        | .400 (10.16)                       | .828 (21.03)  | .958 (24.33)  | 7/16-28UNEF          |
| 10         | .588 (14.94)       | .094 (2.39)        | .400 (10.16)                       | .954 (24.23)  | 1.082 (27.48) | 9/16-24UNEF          |
| 12         | .748 (19.00)       | .094 (2.39)        | .400 (10.16)                       | 1.047 (26.59) | 1.176 (29.87) | 11/16-24UNEF         |
| 14         | .873 (22.17)       | .094 (2.39)        | .400 (10.16)                       | 1.141 (28.98) | 1.270 (32.26) | 13/16-20UNEF         |
| 16         | .998 (25.35)       | .094 (2.39)        | .400 (10.16)                       | 1.234 (31.34) | 1.364 (34.65) | 15/16-20UNEF         |
| 18         | 1.123 (28.52)      | .094 (2.39)        | .400 (10.16)                       | 1.328 (33.73) | 1.458 (37.03) | 1-1/16-18UNEF        |
| 20         | 1.248 (31.70)      | .115 (2.92)        | .535 (13.59)                       | 1.453 (36.91) | 1.582 (40.18) | 1-3/16-18UNEF        |
| 22         | 1.373 (34.87)      | .115 (2.92)        | .535 (13.59)                       | 1.578 (40.08) | 1.708 (43.38) | 1-5/16-18UNEF        |
| 24         | 1.498 (38.05)      | .115 (2.92)        | .558 (14.43)                       | 1.703 (43.26) | 1.832 (46.53) | 1-7/16-18UNEF        |

†Not available in KPSE \*(TP) located within .010T.P. with respect to diameters A and master keyway.

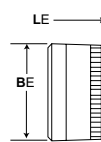
## Cable Connecting Plugs With Termination Assemblies



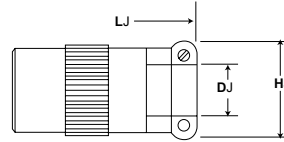
TYPE A



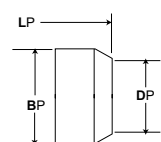
TYPE B AND F



TYPE E



TYPE J



TYPE P

## With Termination Assemblies

| Shell Size | TYPE A        |               |                   | TYPE B and F |               |               | TYPE E        |               |
|------------|---------------|---------------|-------------------|--------------|---------------|---------------|---------------|---------------|
|            | DA Min.       | LA Max.       | V Thread Class 2A | GBF Min.     | HBF Max.      | LBF Max.      | BE Max.       | LE Max.       |
| †8         | .335 (8.15)   | 1.44 (36.68)  | 1/2-28UNEF        | .115 (2.92)  | .828 (21.03)  | 1.922 (48.82) | .608 (15.44)  | 1.328 (33.73) |
| 10         | .466 (11.84)  | 1.44 (36.68)  | 5/8-24UNEF        | .178 (4.52)  | .891 (22.63)  | 1.922 (48.82) | .734 (18.64)  | 1.328 (33.73) |
| 12         | .591 (15.01)  | 1.44 (36.68)  | 3/4-20UNEF        | .302 (7.67)  | 1.016 (25.81) | 1.922 (48.82) | .858 (21.79)  | 1.328 (33.73) |
| 14         | .705 (19.05)  | 1.44 (36.68)  | 7/8-20UNEF        | .365 (9.27)  | 1.141 (28.98) | 1.922 (48.82) | .984 (24.99)  | 1.328 (33.73) |
| 16         | .830 (21.08)  | 1.44 (36.68)  | 1-20UNEF          | .490 (12.45) | 1.203 (30.56) | 2.047 (51.99) | 1.110 (28.19) | 1.328 (33.73) |
| 18         | .948 (24.08)  | 1.44 (36.68)  | 1-3/16-18UNEF     | .615 (15.62) | 1.469 (37.31) | 2.078 (52.78) | 1.234 (31.34) | 1.328 (33.73) |
| 20         | 1.043 (26.49) | 1.728 (43.89) | 1-3/16-18UNEF     | .615 (15.62) | 1.469 (37.31) | 2.344 (59.54) | 1.360 (34.54) | 1.531 (38.89) |
| 22         | 1.198 (30.43) | 1.728 (43.89) | 1-7/16-18UNEF     | .740 (18.80) | 1.656 (42.06) | 1.344 (59.54) | 1.484 (37.69) | 1.531 (38.89) |
| 24         | 1.293 (32.84) | 1.738 (44.15) | 1-7/16-18UNEF     | .790 (20.07) | 1.750 (44.45) | 2.406 (61.11) | 1.610 (40.89) | 1.594 (40.49) |

| Shell Size | TYPE J                  |               |                | TYPE P        |               |               |
|------------|-------------------------|---------------|----------------|---------------|---------------|---------------|
|            | DJ Max./Min.            | HJ Max.       | LJ Max.        | BP Max.       | DP Min.       | LP Max.       |
| †8         | .230/.168 (5.84/4.27)   | .828 (21.03)  | 2.271 (57.68)  | .608 (15.44)  | .317 (8.05)   | 1.453 (36.91) |
| 10         | .312/.205 (7.92/5.21)   | .891 (22.63)  | 2.271 (57.68)  | .734 (18.64)  | .434 (11.02)  | 1.453 (36.91) |
| 12         | .442/.338 (11.23/8.59)  | 1.016 (25.81) | 2.411 (61.24)  | .858 (21.79)  | .548 (13.92)  | 1.453 (36.91) |
| 14         | .539/.416 (13.56/10.57) | 1.141 (28.98) | 2.599 (66.01)  | .984 (24.99)  | .673 (17.09)  | 1.453 (36.91) |
| 16         | .616/.550 (15.65/13.97) | 1.203 (30.56) | 2.943 (74.75)  | 1.110 (28.19) | .798 (20.27)  | 1.453 (36.91) |
| 18         | .672/.600 (17.07/15.24) | 1.469 (37.31) | 3.172 (80.57)  | 1.234 (31.34) | .899 (22.83)  | 1.453 (36.91) |
| 20         | .747/.634 (18.97/16.13) | 1.469 (37.31) | 3.610 (91.69)  | 1.360 (34.54) | 1.024 (26.01) | 1.672 (42.47) |
| 22         | .846/.670 (21.49/17.02) | 1.656 (42.06) | 3.766 (95.66)  | 1.484 (37.69) | 1.149 (29.18) | 1.672 (42.47) |
| 24         | .894/.740 (22.71/18.80) | 1.750 (44.45) | 3.985 (101.22) | 1.610 (40.89) | 1.274 (32.36) | 1.734 (44.04) |

†Not available in KPSE

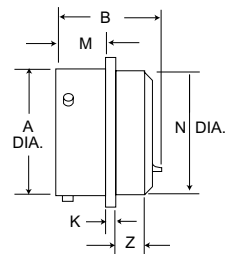
Performance Specifications - Page 142  
Contacts, Sealing Plugs, Assembly Tools - Page 154

Contact Arrangements - Page 149

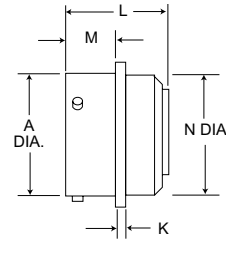
## Box Mounting Receptacles

MS3112  
(MS service class E)  
MS3122  
(MS service class E)

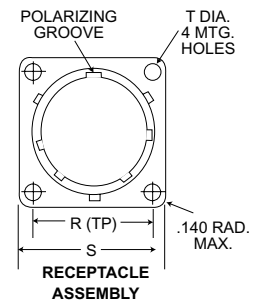
KPT02  
KPSE02



SOLDER  
KPT02/MS3112



CRIMP  
KPSE02/MS3122



RECEPTACLE  
ASSEMBLY

Note: Connector does not accommodate backshell.

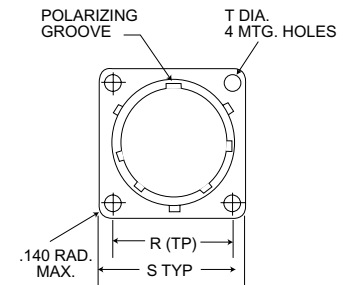
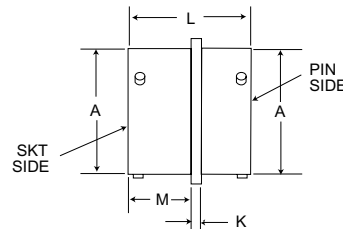
| Shell Size | A<br>± .003 (±.08) | B<br>Max      | K<br>± .016 (±.41) | L<br>Max.     | M<br>+ .031 (+.79)<br>-.000 (-.00) | N<br>Dia.<br>Max. | R*<br>(TP)    | S<br>Max.     | T<br>± .005 | Z<br>Max.    |
|------------|--------------------|---------------|--------------------|---------------|------------------------------------|-------------------|---------------|---------------|-------------|--------------|
| †8         | .471 (11.96)       | .978 (12.14)  | .062 (1.57)        | 1.320 (33.07) | .431 (10.95)                       | .469 (11.91)      | .594 (15.09)  | .828 (21.03)  | .120 (3.05) | .354 (8.99)  |
| 10         | .588 (14.96)       | .978 (12.14)  | .062 (1.57)        | 1.320 (33.07) | .431 (10.95)                       | .593 (15.06)      | .719 (18.26)  | .954 (24.23)  | .120 (3.05) | .354 (8.99)  |
| 12         | .748 (19.00)       | .978 (12.14)  | .062 (1.57)        | 1.320 (33.07) | .431 (10.95)                       | .719 (18.26)      | .812 (20.62)  | 1.047 (26.59) | .120 (3.05) | .354 (8.99)  |
| 14         | .873 (22.17)       | .978 (12.14)  | .062 (1.57)        | 1.320 (33.07) | .431 (10.95)                       | .843 (21.41)      | .906 (23.01)  | 1.141 (28.98) | .120 (3.05) | .354 (8.99)  |
| 16         | .998 (25.35)       | .978 (12.14)  | .062 (1.57)        | 1.320 (33.07) | .431 (10.95)                       | .969 (24.61)      | .969 (24.61)  | 1.234 (31.34) | .120 (3.05) | .354 (8.99)  |
| 18         | 1.123 (28.52)      | .978 (12.14)  | .062 (1.57)        | 1.320 (33.07) | .431 (10.95)                       | 1.093 (27.76)     | 1.062 (26.97) | 1.328 (33.73) | .120 (3.05) | .354 (8.99)  |
| 20         | 1.248 (31.70)      | 1.196 (30.38) | .094 (2.39)        | 1.367 (34.72) | .556 (14.12)                       | 1.219 (30.96)     | 1.156 (29.36) | 1.453 (36.91) | .120 (3.05) | .417 (10.59) |
| 22         | 1.373 (34.87)      | 1.196 (30.38) | .094 (2.39)        | 1.367 (34.72) | .556 (14.12)                       | 1.343 (34.11)     | 1.250 (31.75) | 1.578 (40.08) | .120 (3.05) | .417 (10.59) |
| 24         | 1.498 (38.05)      | 1.196 (30.98) | .094 (2.39)        | 1.418 (36.02) | .589 (14.96)                       | 1.469 (37.31)     | 1.375 (34.92) | 1.703 (43.26) | .147 (3.73) | .445 (11.30) |

†Not available in KPSE \* (TP) located within .010 T.P. with respect to diameter A and master keyway.

## Thru-Bulkhead Receptacles

MS3119  
(MS service class E)

KPTB



\*(T.P) located within .010 T.P. with respect to diameter A and master keyway.

| Shell Size | A Dia.<br>± .003 (±.08) | K<br>± .016 (±.406) | L<br>Max.     | M<br>+ .031 (+.79)<br>-.000 (-.00) | R*<br>(TP)    | S<br>Max.     | T<br>± .005 (± .127) |
|------------|-------------------------|---------------------|---------------|------------------------------------|---------------|---------------|----------------------|
| †8         | .471 (11.96)            | .062 (1.57)         | 1.125 (28.58) | .562 (14.27)                       | .594 (15.09)  | .828 (21.03)  | .120 (3.05)          |
| 10         | .588 (14.94)            | .062 (1.57)         | 1.125 (28.58) | .562 (14.27)                       | .719 (18.26)  | .954 (24.23)  | .120 (3.05)          |
| 12         | .748 (18.00)            | .062 (1.57)         | 1.125 (28.58) | .562 (14.27)                       | .812 (20.62)  | 1.047 (26.59) | .120 (3.05)          |
| 14         | .873 (22.17)            | .062 (1.57)         | 1.125 (28.58) | .562 (14.27)                       | .906 (23.01)  | 1.141 (28.98) | .120 (3.05)          |
| 16         | .998 (25.35)            | .062 (1.57)         | 1.125 (28.58) | .562 (14.27)                       | .969 (24.61)  | 1.234 (31.34) | .120 (3.05)          |
| 18         | 1.123 (28.52)           | .062 (1.57)         | 1.125 (28.58) | .562 (14.27)                       | 1.062 (26.97) | 1.328 (33.73) | .120 (3.05)          |
| 20         | 1.248 (31.70)           | .094 (2.39)         | 1.406 (35.71) | .688 (17.48)                       | 1.156 (29.36) | 1.453 (36.91) | .120 (3.05)          |
| 22         | 1.373 (34.87)           | .094 (2.39)         | 1.406 (35.71) | .688 (17.48)                       | 1.250 (31.76) | 1.578 (40.08) | .120 (3.05)          |
| 24         | 1.498 (38.05)           | .094 (2.39)         | 1.406 (35.71) | .688 (17.48)                       | 1.375 (34.92) | 1.703 (43.26) | .147 (3.73)          |

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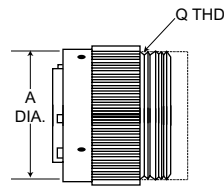
Contacts, Sealing Plugs, Assembly Tools - Page 154

Contact Arrangements - Page 149

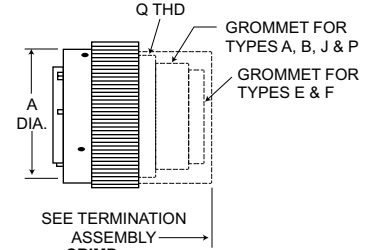
## Straight Plugs

MS3116  
(MS service class E, F, J, P)  
MS3126  
(MS service class E, F, P)

KPT06  
KPSE06



SOLDER  
KPT06/MS3116

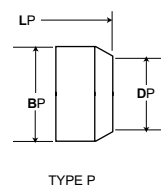
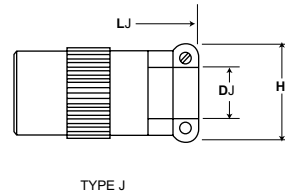
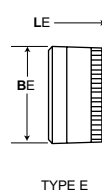
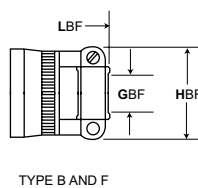
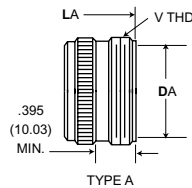


KPSE06/MS3126

| Shell Size | A dia. Max.   | G Max.        | J $\pm .010 (+0.25)$ | Q Thread Class 2A |
|------------|---------------|---------------|----------------------|-------------------|
| †8         | .765 (19.43)  | .782 (19.86)  | .353 (8.99)          | 7/16-28UNEF       |
| 10         | .840 (21.34)  | .926 (23.52)  | .353 (8.99)          | 9/16-24UNEF       |
| 12         | .999 (25.38)  | 1.043 (26.49) | .353 (8.99)          | 11/16-24UNEF      |
| 14         | 1.139 (28.93) | 1.183 (30.05) | .353 (8.99)          | 13/16-20UNEF      |
| 16         | 1.261 (32.03) | 1.305 (33.15) | .353 (8.99)          | 15/16-20UNEF      |
| 18         | 1.337 (33.96) | 1.391 (35.33) | .353 (8.99)          | 1-1/16-18UNEF     |
| 20         | 1.477 (37.52) | 1.531 (38.89) | .415 (10.54)         | 1-3/16-18UNEF     |
| 22         | 1.602 (40.69) | 1.656 (42.06) | .415 (10.54)         | 1-5/16-18UNEF     |
| 24         | 1.723 (43.76) | 1.77 (45.14)  | .415 (10.54)         | 1-7/16-18UNEF     |

†Not available in KPSE

## Straight Plugs With Termination Assemblies



| Shell Size | TYPE A        |               |                   | TYPE B and F  |               |              | TYPE E        |               |
|------------|---------------|---------------|-------------------|---------------|---------------|--------------|---------------|---------------|
|            | LA Max.       | DA Min.       | V Thread Class 2A | LBF Max.      | HBF Max.      | GBF Min.     | BE Max.       | LE Max.       |
| †8         | 1.440 (36.58) | .335 (8.51)   | 1/2-28UNEF        | 1.906 (48.41) | .828 (21.03)  | .115 (2.02)  | .608 (15.44)  | 1.328 (33.73) |
| 10         | 1.440 (36.58) | .466 (11.84)  | 5/8-24UNEF        | 1.906 (48.41) | .891 (22.63)  | .178 (4.52)  | .734 (18.64)  | 1.328 (33.73) |
| 12         | 1.440 (36.58) | .591 (15.01)  | 3/4-20UNEF        | 1.906 (48.41) | 1.016 (25.81) | .302 (7.67)  | .858 (21.79)  | 1.328 (33.73) |
| 14         | 1.440 (36.58) | .705 (19.05)  | 7/8-20UNEF        | 1.906 (48.41) | 1.141 (28.98) | .365 (9.27)  | .984 (24.99)  | 1.328 (33.73) |
| 16         | 1.440 (36.58) | .830 (21.08)  | 1-20UNEF          | 2.047 (51.99) | 1.203 (30.56) | .490 (12.45) | 1.110 (28.19) | 1.328 (33.73) |
| 18         | 1.662 (42.21) | .948 (24.08)  | 1-3/16-18UNEF     | 2.078 (52.78) | 1.469 (37.31) | .615 (15.62) | 1.234 (31.34) | 1.328 (33.73) |
| 20         | 1.662 (42.21) | 1.043 (26.49) | 1-3/16-18UNEF     | 2.250 (57.15) | 1.469 (37.31) | .615 (15.62) | 1.360 (34.54) | 1.453 (36.91) |
| 22         | 1.662 (42.21) | 1.198 (30.43) | 1-7/16-18UNEF     | 2.250 (57.15) | 1.656 (42.06) | .740 (18.80) | 1.484 (37.69) | 1.453 (36.91) |
| 24         | 1.672 (42.47) | 1.293 (32.84) | 1-7/16-18UNEF     | 2.312 (58.72) | 1.750 (44.45) | .790 (20.07) | 1.610 (40.89) | 1.510 (38.54) |

| Shell Size | TYPE J         |               |                         | TYPE P        |               |               |
|------------|----------------|---------------|-------------------------|---------------|---------------|---------------|
|            | LJ Max.        | HJ Max.       | DJ Max./Min.            | LP Max.       | DP Min.       | BP Max.       |
| †8         | 2.271 (57.68)  | .828 (21.03)  | .230/.168 (5.84/4.27)   | 1.500 (38.10) | .317 (8.05)   | .608 (15.44)  |
| 10         | 2.271 (57.68)  | .891 (22.63)  | .312/.205 (7.92/5.21)   | 1.500 (38.10) | .434 (11.02)  | .734 (18.64)  |
| 12         | 2.411 (61.24)  | 1.016 (25.81) | .442/.338 (11.23/8.59)  | 1.500 (38.10) | .548 (13.92)  | .858 (21.79)  |
| 14         | 2.599 (66.01)  | 1.141 (28.98) | .539/.416 (13.56/10.57) | 1.500 (38.10) | .673 (17.09)  | .984 (24.99)  |
| 16         | 2.943 (74.75)  | 1.203 (30.56) | .616/.550 (15.65/13.97) | 1.500 (38.10) | .798 (20.27)  | 1.110 (28.19) |
| 18         | 3.172 (80.57)  | 1.469 (37.31) | .672/.600 (17.07/15.24) | 1.500 (38.10) | .899 (22.83)  | 1.234 (31.34) |
| 20         | 3.610 (91.69)  | 1.469 (37.31) | .747/.634 (18.97/16.13) | 1.609 (40.87) | 1.024 (26.01) | 1.360 (34.54) |
| 22         | 3.766 (95.66)  | 1.656 (42.06) | .846/.670 (21.49/17.02) | 1.609 (40.87) | 1.149 (29.18) | 1.484 (37.69) |
| 24         | 3.985 (101.22) | 1.750 (44.45) | .894/.740 (22.71/18.80) | 1.687 (42.85) | 1.274 (32.36) | 1.610 (40.89) |

†Not available in KPSE

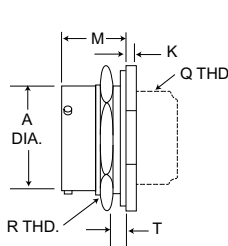
Performance Specifications - Page 142  
Contacts, Sealing Plugs, Assembly Tools - Page 154  
Contact Arrangements - Page 149

## Jam Nut Receptacles

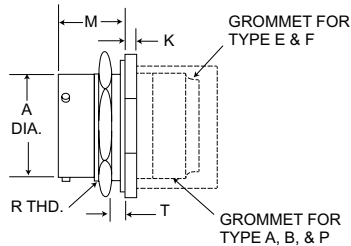
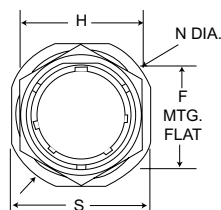
MS3114  
(MS service class E, F, P)  
MS3124  
(MS service class E, F, P)

KPT07

KPSE07



**SOLDER**  
KPT07/MS3114

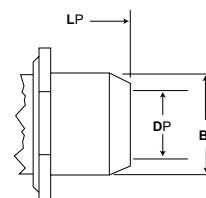
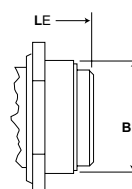
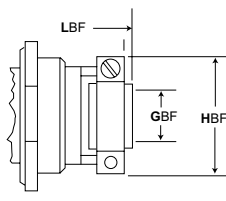
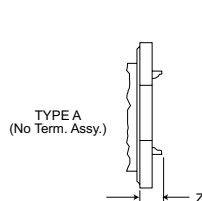


**CRIMP**  
KPSE07/MS3124

| Shell Size | A<br>±.003 (±0.08) | A<br>±.005 (0.130) | H<br>±.017 (±0.43) | K<br>±.020 (±.05) | M<br>+.031 (+.08)<br>-.000 (-.00) | N<br>Max.     | S<br>Max.     | T<br>Panel Thickness<br>Min. Max. | R thread<br>Class 2A |
|------------|--------------------|--------------------|--------------------|-------------------|-----------------------------------|---------------|---------------|-----------------------------------|----------------------|
| †8         | .471 (11.96)       | .525 (13.34)       | .750 (19.05)       | .117 (2.97)       | .691 (17.55)                      | 1.078 (27.38) | .954 (24.23)  | .062 (1.57) .125 (3.17)           | 9/16-24UNEF          |
| 10         | .588 (14.93)       | .650 (16.51)       | .875 (22.22)       | .117 (2.97)       | .691 (17.55)                      | 1.206 (30.56) | 1.078 (27.38) | .062 (1.57) .125 (3.17)           | 11/16-24UNEF         |
| 12         | .748 (19.00)       | .813 (20.65)       | 1.062 (26.97)      | .117 (2.97)       | .691 (17.55)                      | 1.319 (35.33) | 1.266 (32.16) | .062 (1.57) .125 (3.17)           | 7/8-20UNEF           |
| 14         | .873 (22.17)       | .937 (23.80)       | 1.188 (30.17)      | .117 (2.97)       | .691 (17.55)                      | 1.516 (38.51) | 1.391 (35.33) | .062 (1.57) .125 (3.17)           | 1-20UNEF             |
| 16         | .988 (25.35)       | 1.061 (26.95)      | 1.312 (33.32)      | .117 (2.97)       | .691 (17.55)                      | 1.641 (41.68) | 1.516 (38.51) | .062 (1.57) .125 (3.17)           | 1-1/8-18UNEF         |
| 18         | 1.123 (28.52)      | 1.186 (30.12)      | 1.438 (36.25)      | .117 (2.97)       | .691 (17.55)                      | 1.766 (44.86) | 1.41 (41.68)  | .062 (1.57) .125 (3.17)           | 1-1/4-18UNEF         |
| 20         | 1.248 (31.70)      | 1.311 (33.30)      | 1.562 (39.67)      | .148 (3.76)       | .879 (22.33)                      | 1.954 (49.63) | 1.828 (46.43) | .062 (1.57) .250 (6.35)           | 1-3/8-18UNEF         |
| 22         | 1.373 (34.87)      | 1.436 (36.47)      | 1.688 (42.87)      | .148 (3.76)       | .879 (22.33)                      | 2.078 (52.78) | 1.954 (49.63) | .062 (1.57) .250 (6.35)           | 1-1/2-18UNEF         |
| 24         | 1.498 (38.05)      | 1.561 (39.65)      | 1.812 (46.02)      | .148 (3.76)       | .912 (23.16)                      | 2.203 (55.96) | 2.078 (52.78) | .062 (1.57) .250 (6.35)           | 1-5/8-18UNEF         |

†Not available in KPSE

## Jam Nut Receptacles With Termination Assemblies



| Shell Size | TYPE A      | TYPE B AND F  |              |               | TYPE E        |               | TYPE P        |               |               |
|------------|-------------|---------------|--------------|---------------|---------------|---------------|---------------|---------------|---------------|
|            | Z<br>Max.   | HBF<br>Max.   | GBF<br>Min.  | LBF<br>Max.   | BE<br>Max.    | LE<br>Max.    | BP<br>Max.    | DP<br>Min.    | LP<br>Max.    |
| †8         | .312 (7.92) | .828 (21.03)  | .115 (2.02)  | 1.906 (48.41) | .608 (15.44)  | 1.344 (34.14) | .608 (15.44)  | .317 (8.05)   | 1.391 (35.33) |
| 10         | .312 (7.92) | .891 (22.63)  | .178 (4.52)  | 1.906 (48.41) | .734 (18.64)  | 1.344 (34.14) | .734 (18.64)  | .434 (11.02)  | 1.391 (35.33) |
| 12         | .312 (7.92) | 1.016 (25.81) | .302 (7.67)  | 1.906 (48.41) | .858 (21.79)  | 1.344 (34.14) | .858 (21.79)  | .548 (13.92)  | 1.391 (35.33) |
| 14         | .312 (7.92) | 1.141 (28.98) | .365 (9.27)  | 1.906 (48.41) | .984 (24.99)  | 1.344 (34.14) | .984 (24.99)  | .673 (17.09)  | 1.391 (35.33) |
| 16         | .312 (7.92) | 1.203 (30.56) | .490 (12.45) | 2.047 (51.99) | 1.110 (28.19) | 1.344 (34.14) | 1.110 (28.19) | .798 (20.27)  | 1.391 (35.33) |
| 18         | .312 (7.92) | 1.469 (37.31) | .615 (15.62) | 2.078 (52.78) | 1.234 (31.34) | 1.344 (34.14) | 1.234 (31.34) | .899 (22.83)  | 1.391 (35.33) |
| 20         | 1.93 (4.90) | 1.469 (37.31) | .615 (15.62) | 2.328 (59.13) | 1.360 (34.54) | 1.594 (40.49) | 1.360 (34.54) | 1.024 (26.01) | 1.641 (41.68) |
| 22         | 1.93 (4.90) | 1.656 (42.06) | .740 (18.80) | 2.328 (59.13) | 1.484 (37.69) | 1.594 (40.49) | 1.484 (37.69) | 1.149 (29.18) | 1.641 (41.68) |
| 24         | .150 (3.81) | 1.750 (44.45) | .790 (20.07) | 2.453 (62.31) | 1.610 (40.89) | 1.641 (41.68) | 1.610 (40.89) | 1.274 (32.36) | 1.703 (43.26) |

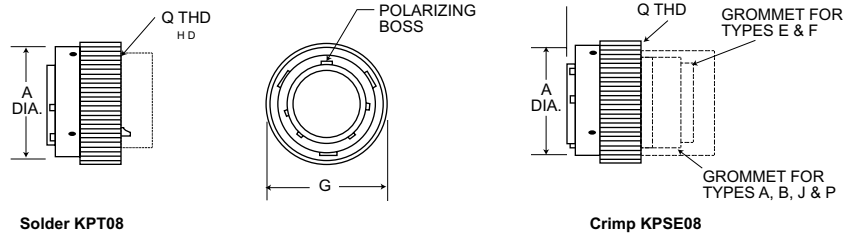
Performacne Specifications - Page 142

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## Right Angle Plugs

KPT08/KPSE08

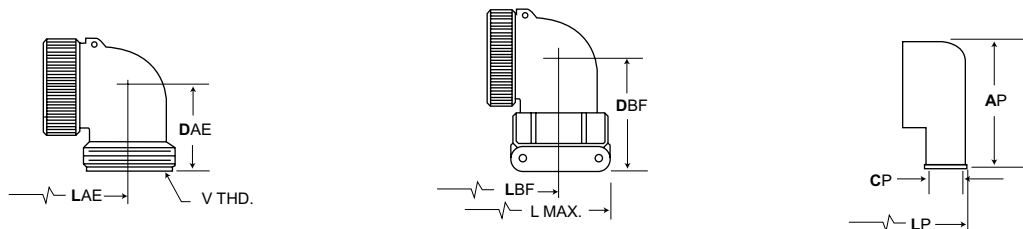


| Shell Size | KPT/KPSE      |               | Q Thread Class 2A |
|------------|---------------|---------------|-------------------|
|            | A Dia. Max.   | G Max.        |                   |
| †8         | .765 (19.43)  | .782 (19.86)  | 7/16-28UNEF       |
| 10         | .840 (21.34)  | .926 (23.52)  | 9/16-24UNEF       |
| 12         | .999 (25.38)  | 1.043 (26.49) | 11/16-24UNEF      |
| 14         | 1.139 (28.93) | 1.183 (30.05) | 13/16-20UNEF      |
| 16         | 1.261 (32.03) | 1.305 (33.15) | 15/16-20UNEF      |
| 18         | 1.337 (33.96) | 1.391 (35.33) | 1-1/16-18UNEF     |
| 20         | 1.477 (37.52) | 1.531 (38.89) | 1-3/16-18UNEF     |
| 22         | 1.602 (40.69) | 1.656 (42.09) | 1-5/16-18UNEF     |
| 24         | 1.723 (43.76) | 1.777 (45.13) | 1-7/16-18UNEF     |

†Not available in KPSE.

NOTE: for size 10 and 24 consult factory for availability in type A, B, E and F,  
For size 8 consult factory for availability in Type P.

## Right Angle Plugs With Termination Assemblies



| Shell Size | TYPE A AND E  |               |                   | TYPE B AND F  |               |               |                   | TYPE P        |               |              |                   |
|------------|---------------|---------------|-------------------|---------------|---------------|---------------|-------------------|---------------|---------------|--------------|-------------------|
|            | LAE Max.      | DAE Max.      | V Thread Class 2A | DBF Max.      | LBF Max.      | L Max.        | V Thread Class 2A | AP Max.       | LP Max.       | CP Min.      | V Thread Class 2A |
| †8         | 1.421 (36.09) | .822 (20.88)  | 1/2-28UNEF        | 1.238 (31.44) | 1.421 (36.09) | 1.842 (46.79) | 1/2-28UNEF        | -(-)          | -(-)          | -(-)         | 1/2-28UNEF        |
| 10         | 1.484 (37.69) | .853 (21.67)  | 5/8-28UNEF        | 1.269 (32.24) | 1.484 (37.69) | 1.937 (49.20) | 5/8-28UNEF        | 1.030 (26.16) | 1.380 (35.05) | .252 (6.40)  | 5/8-28UNEF        |
| 12         | 1.546 (39.27) | .916 (23.27)  | 3/4-20UNEF        | 1.395 (35.43) | 1.546 (39.27) | 1.937 (49.20) | 3/4-20UNEF        | 1.030 (26.16) | 1.567 (39.80) | .252 (6.40)  | 3/4-20UNEF        |
| 14         | 1.577 (40.05) | .978 (24.84)  | 7/8-20UNEF        | 1.519 (38.58) | 1.577 (40.05) | 2.124 (53.95) | 7/8-20UNEF        | 1.030 (26.16) | 1.567 (39.80) | .283 (7.19)  | 7/8-20UNEF        |
| 16         | 1.609 (40.87) | 1.041 (26.44) | 1-20UNEF          | 1.582 (40.18) | 1.609 (40.87) | 2.203 (55.96) | 1-20UNEF          | 1.280 (32.51) | 1.567 (39.80) | .355 (9.02)  | 1-20UNEF          |
| 18         | 1.734 (44.04) | 1.103 (28.70) | 1-3/16-18UNEF     | 1.644 (41.76) | 1.734 (44.04) | 2.380 (60.45) | 1-3/16-18UNEF     | 1.280 (32.51) | 1.755 (44.58) | .530 (13.46) | 1-3/16-18UNEF     |
| 20         | 1.879 (47.73) | 1.166 (29.62) | 1-5/16-18UNEF     | 1.707 (43.36) | 1.879 (47.73) | 2.629 (66.78) | 1-5/16-18UNEF     | 1.530 (38.86) | 1.782 (45.26) | .562 (14.27) | 1-5/16-18UNEF     |
| 22         | 2.035 (51.69) | 1.245 (31.62) | 1-7/16-18UNEF     | 1.884 (47.85) | 2.035 (51.69) | 2.629 (66.78) | 1-7/16-18UNEF     | 1.530 (38.86) | 1.782 (45.26) | .562 (14.27) | 1-7/16-18UNEF     |
| 24         | 2.035 (51.69) | 1.322 (33.58) | 1-7/16-18UNEF     | 1.963 (49.86) | 2.035 (51.69) | 2.895 (73.53) | 1-7/16-18UNEF     | 1.780 (45.21) | 2.087 (53.01) | .610 (15.49) | 1-7/16-18UNEF     |

†Not available in KPSE. NOTE: For size 10 and 24 consult factory for availability in type A, B, E and F, For size 8 consult factory for availability in Type P.

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## Contact Arrangements

## LEGEND

- ▲ KPT
- ◆ KPSE
- △ Authorized per MIL-C-26482 (NAVY)
- Not MS approved ITTC proprietary

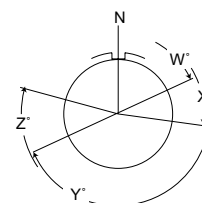
Drawing not to scale; face view of pin insert shown (socket view is opposite)

|  |  |                                   |                             |                                     |                                   |
|--|--|-----------------------------------|-----------------------------|-------------------------------------|-----------------------------------|
|  |  | Shell Size 8                      |                             |                                     |                                   |
|  |  |                                   |                             |                                     |                                   |
|  |  | ▲ △<br>8-2<br>2-#20<br>I          | ▲ △<br>8-3<br>3-#20<br>I    | ▲ △<br>8-4<br>4-#20<br>I            | ▲ △<br>8-33<br>3-#20<br>I         |
|  |  |                                   |                             |                                     |                                   |
|  |  | Shell Size 10                     |                             | Shell Size 12                       |                                   |
|  |  |                                   |                             |                                     |                                   |
|  |  | ▲ △<br>10-6<br>6-#20<br>I         | ▲ △<br>10-98<br>6-#20<br>I  | ▲ △<br>12-3<br>3-#16<br>II          | ▲ △<br>12-8<br>8-#20<br>I         |
|  |  |                                   |                             |                                     |                                   |
|  |  |                                   |                             | ▲ △<br>12-10<br>10-#20<br>I         |                                   |
|  |  |                                   |                             | Shell Size 14                       |                                   |
|  |  |                                   |                             |                                     |                                   |
|  |  |                                   |                             | ▲ △<br>14-5<br>5-#16<br>II          | ▲ △<br>14-12<br>8-#20 4-#16<br>I  |
|  |  |                                   |                             |                                     |                                   |
|  |  |                                   |                             |                                     | ▲ △<br>14-15<br>14-#20 1-#16<br>I |
|  |  |                                   |                             |                                     |                                   |
|  |  |                                   |                             | Shell Size 16                       |                                   |
|  |  |                                   |                             |                                     |                                   |
|  |  | ▲ △<br>14-18<br>18-#20<br>I       | ▲ △<br>14-19<br>19-#20<br>I | ▲ △<br>16-8<br>8-#16<br>II          | ▲ △<br>16-23<br>22-#20 1-#16<br>I |
|  |  |                                   |                             |                                     |                                   |
|  |  |                                   |                             | ▲ △<br>16-26<br>26-#20<br>I         |                                   |
|  |  |                                   |                             |                                     |                                   |
|  |  |                                   |                             | ▲ △<br>16-99<br>21-#20 2-#16<br>I   |                                   |
|  |  |                                   |                             | Shell Size 18                       |                                   |
|  |  |                                   |                             |                                     |                                   |
|  |  |                                   |                             | ▲ △<br>18-11<br>11-#16<br>II        | ▲ ●<br>18A28<br>26-#20 2-#16<br>I |
|  |  |                                   |                             |                                     |                                   |
|  |  |                                   |                             | Shell Size 20                       |                                   |
|  |  |                                   |                             |                                     |                                   |
|  |  | ▲ △<br>18-30<br>29-#20 1-#16<br>I | ▲ △<br>18-32<br>32-#20<br>I | ▲ △<br>20-16<br>16-#16<br>II        | ▲ △<br>20-24<br>24-#20<br>I       |
|  |  |                                   |                             |                                     |                                   |
|  |  |                                   |                             | ▲ △<br>20-39<br>37-#20 2-#16<br>I   | ▲ △<br>20-41<br>41-#20<br>I       |
|  |  |                                   |                             |                                     |                                   |
|  |  | Shell Size 22                     |                             |                                     |                                   |
|  |  |                                   |                             |                                     |                                   |
|  |  | ▲ △<br>22-21<br>21-#16<br>II      | ▲ △<br>22-32<br>32-#20<br>I | ▲ △<br>22-34<br>34-#20<br>I         | ▲ ●<br>22-36<br>36-#20<br>I       |
|  |  |                                   |                             |                                     |                                   |
|  |  |                                   |                             | ▲ △<br>22-41<br>27-#20 14-#16<br>II | ▲ △<br>22-55<br>55-#20<br>I       |
|  |  |                                   |                             |                                     |                                   |
|  |  | Shell Size 24                     |                             |                                     |                                   |
|  |  |                                   |                             |                                     |                                   |
|  |  | ▲ ●<br>24A57<br>55-#20 2-#12<br>I | ▲ △<br>24-61<br>61-#20<br>I |                                     |                                   |

(See page 150 for Alternate Insert Positions.)

## Alternate Insert Positions

Face view of pin inserts



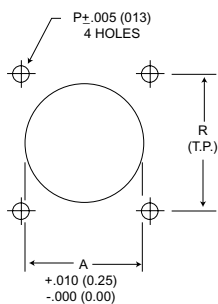
The five positions (W, X, Y, Z and Normal) differ in degree of rotation for various sizes and arrangements.

| NO. OF CONTACTS | SHELL SIZE | ARR. NO. | W   | Degrees of Rotation |     |     |
|-----------------|------------|----------|-----|---------------------|-----|-----|
|                 |            |          |     | X                   | Y   | Z   |
| 2               | 8          | 8-2      | 58  | 122                 | -   | -   |
|                 | 8          | 8-3      | 60  | 210                 | -   | -   |
| 3               | 8          | 8-33     | 90  | -                   | -   | -   |
|                 | 12         | 12-3     | -   | -                   | 180 | -   |
| 4               | 8          | 8-4      | 45  | -                   | -   | -   |
| 5               | 14         | 14-5     | 40  | 92                  | 184 | 273 |
| 6               | 10         | 10-6     | 90  | -                   | -   | -   |
|                 | 10         | 10-98    | 90  | 180                 | 240 | 270 |
| 8               | 12         | 12-8     | 90  | 112                 | 203 | 292 |
|                 | 16         | 16-8     | 54  | 152                 | 180 | 331 |
| 10              | 12         | 12-10    | 60  | 155                 | 270 | 295 |
| 11              | 18         | 18-11    | 62  | 119                 | 241 | 340 |
| 12              | 14         | 14-12    | 43  | 90                  | -   | -   |
| 15              | 14         | 14-15    | 17  | 110                 | 155 | 234 |
| 16              | 20         | 20-16    | 238 | 318                 | 333 | 347 |
| 18              | 14         | 14-18    | 15  | 90                  | 180 | 270 |
| 19              | 14         | 14-19    | 30  | 165                 | 315 | -   |
| 21              | 22         | 22-21    | 16  | 135                 | 175 | 349 |
| 23              | 16         | 16-23    | 158 | 270                 | -   | -   |
|                 | 16         | 16-99    | 66  | 156                 | 223 | 340 |
| 24              | 20         | 20-24    | 70  | 145                 | 215 | 290 |
| 26              | 16         | 16-26    | 60  | -                   | 275 | 338 |
| 28              | 18         | 18A28    | -   | -                   | -   | -   |
| 30              | 18         | 18-30    | 180 | 193                 | 285 | 350 |
| 32              | 18         | 18-32    | 85  | 138                 | 222 | 265 |
|                 | 22         | 22-32    | 72  | 145                 | 215 | 288 |
| 34              | 22         | 22-34    | 62  | 142                 | 218 | 298 |
| 36              | 22         | 22-36    | 72  | 144                 | 216 | 288 |
| 39              | 20         | 20-39    | 63  | 144                 | 252 | 333 |
| 41              | 20         | 20-41    | 45  | 126                 | 225 | -   |
|                 | 22         | 22-41    | 39  | 135                 | 264 | -   |
| 55              | 22         | 22-55    | 30  | 142                 | 226 | 314 |
| 57              | 24         | 24A57    | 90  | 180                 | 270 | 324 |
| 61              | 24         | 24-61    | 90  | 180                 | 270 | 324 |

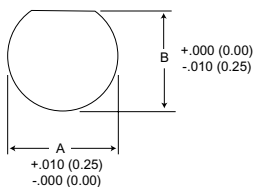
Numbers in bold face indicate contact arrangements are not to MIL-C-26482.

## Panel Cutouts

### Box and Wall Mounting Receptacle



### Jam Nut Receptacle



| Shell Size | FLANGE (FRONT MOUNTING)<br>KPT/KPSE |               | MOUNTING HOLE DIA.<br>KPT/KPSE |       |
|------------|-------------------------------------|---------------|--------------------------------|-------|
|            | A Dia.                              | R             | P ± .005                       | Screw |
| †8         | .618 (15.70)                        | .594 (15.09)  | .125 (3.17)                    | #4    |
| 10         | .735 (18.67)                        | .719 (18.26)  | .125 (3.17)                    | #4    |
| 12         | .859 (21.82)                        | .812 (20.62)  | .125 (3.17)                    | #4    |
| 14         | .985 (25.02)                        | .906 (23.01)  | .125 (3.17)                    | #4    |
| 16         | 1.113 (28.27)                       | .969 (24.61)  | .125 (3.17)                    | #4    |
| 18         | 1.235 (31.37)                       | 1.062 (26.97) | .125 (3.17)                    | #4    |
| 20         | 1.361 (34.57)                       | 1.156 (29.36) | .125 (3.17)                    | #4    |
| 22         | 1.485 (37.72)                       | 1.250 (31.75) | .125 (3.17)                    | #4    |
| 24         | 1.611 (40.92)                       | 1.375 (34.92) | .155 (3.94)                    | #6    |

†Not Available in KPSE connectors.

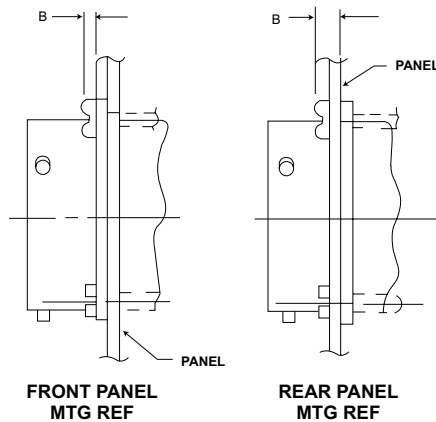
| Shell Size | KPT/KPSE      |               |
|------------|---------------|---------------|
|            | A             | B             |
| †8         | .578 (14.68)  | .540 (13.72)  |
| 10         | .703 (17.86)  | .665 (16.89)  |
| 12         | .890 (22.61)  | .828 (21.02)  |
| 14         | 1.015 (25.78) | .952 (24.18)  |
| 16         | 1.140 (28.96) | 1.076 (27.33) |
| 18         | 1.265 (32.13) | 1.201 (30.51) |
| 20         | 1.390 (35.31) | 1.326 (33.68) |
| 22         | 1.515 (38.48) | 1.451 (36.86) |
| 24         | 1.640 (41.66) | 1.576 (40.03) |

†Not Available in KPSE connectors.

## Panel Thickness

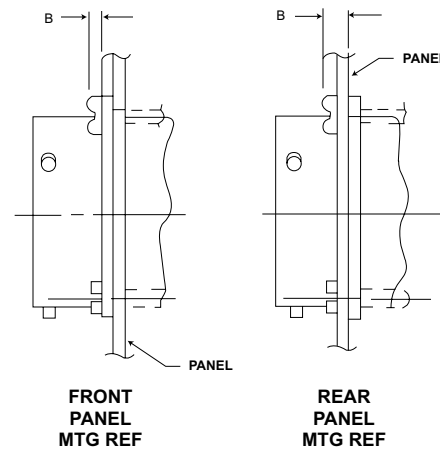
Maximum panel thickness dimensions allowable to ensure complete connector operation for the Wall Mounting Receptacle, Box Mounting Receptacle, and Thru-Bulkhead Receptacle.

### Wall Mounting and Box Mounting Receptacle



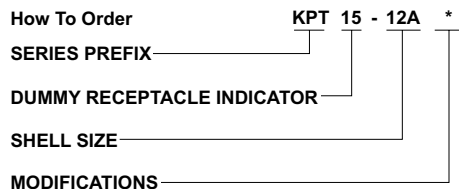
| Size | B Max          |
|------|----------------|
| 8    | .087<br>(2.21) |
| 10   |                |
| 12   |                |
| 14   |                |
| 16   |                |
| 18   | .212<br>(5.38) |
| 20   |                |
| 22   |                |
| 24   |                |

### Thru-Bulkhead Receptacle



| Size | B Max panel and screw head |
|------|----------------------------|
| 8    | .218<br>(5.54)             |
| 10   |                            |
| 12   |                            |
| 14   |                            |
| 16   |                            |
| 18   | .334<br>(8.74)             |
| 20   |                            |
| 22   |                            |
| 24   |                            |

## Dummy Receptacles



### SERIES PREFIX

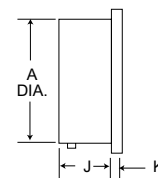
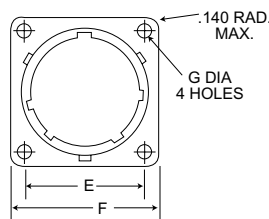
KPT - ITT Cannon Prefix

### SHELL SIZE

8 thru 24

### MODIFICATIONS

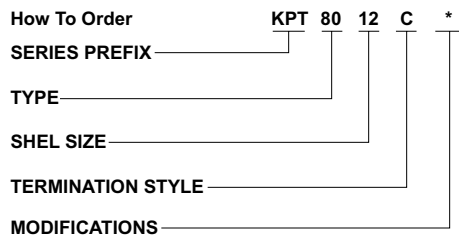
None - Olive drab chromate over cadmium



NOTE: For MS Version and additional finishes see PV catalog.

| Shell Size | A<br>± .003 (.08) | E<br>Basic    | F<br>Max.     | G<br>± .005 (.13) | J<br>+.031 (.79)<br>-.000 (.00) | K<br>± .016 (.41) |
|------------|-------------------|---------------|---------------|-------------------|---------------------------------|-------------------|
| 8          | .471 (11.96)      | .594 (15.09)  | .828 (21.03)  | .120 (3.05)       | .412 (10.46)                    | .062 (1.57)       |
| 10         | .588 (14.94)      | .719 (18.26)  | .954 (24.23)  | .120 (3.05)       | .412 (10.46)                    | .062 (1.57)       |
| 12         | .748 (19.00)      | .812 (20.62)  | 1.047 (26.60) | .120 (3.05)       | .412 (10.46)                    | .062 (1.57)       |
| 14         | .873 (22.17)      | .906 (23.01)  | 1.141 (28.98) | .120 (3.05)       | .412 (10.46)                    | .062 (1.57)       |
| 16         | .998 (25.35)      | .969 (24.61)  | 1.234 (31.34) | .120 (3.05)       | .412 (10.46)                    | .062 (1.57)       |
| 18         | 1.123 (28.52)     | 1.157 (26.97) | 1.328 (33.73) | .120 (3.05)       | .462 (11.73)                    | .062 (1.57)       |
| 20         | 1.248 (31.70)     | 1.156 (23.96) | 1.453 (36.91) | .120 (3.05)       | .556 (14.12)                    | .094 (2.39)       |
| 22         | 1.373 (34.87)     | 1.250 (31.75) | 1.578 (40.08) | .120 (3.05)       | .556 (14.12)                    | .094 (2.39)       |
| 24         | 1.498 (38.05)     | 1.375 (34.93) | 1.703 (43.26) | .147 (3.73)       | .589 (14.96)                    | .094 (2.39)       |

## Protective Caps



### SERIES PREFIX

KPT - ITT Cannon Prefix

### TYPE

80 - Plug Cap

81 - Receptacle Cap

### SHELL SIZE

8 thru 24

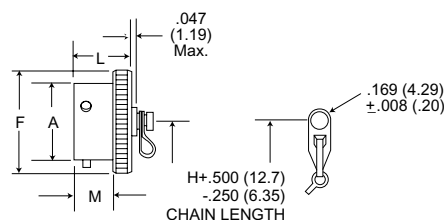
### TERMINATION STYLE

C - Sash Chain

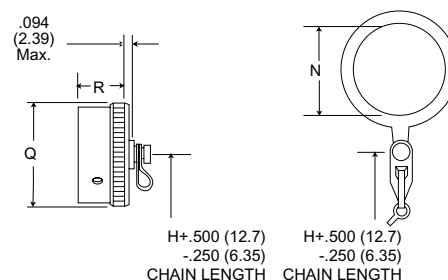
N - Sash Chain with Ring (81 type only)

NOTE: For MS version and additional finishes see PV catalog.  
(N Style use Primarily for Jam Nut Receptacle)

80 - cap for plugs



81 - cap for receptacle



| Shell Size | A<br>± .003 (.08) | F<br>Max.     | H              | L<br>Max.    | M<br>+.031 (.79)<br>-.000 (.00) | N<br>Min.     | Q<br>Max.     | R<br>Max.    |
|------------|-------------------|---------------|----------------|--------------|---------------------------------|---------------|---------------|--------------|
| 8          | .471 (11.96)      | .719 (18.26)  | 3.000 (76.20)  | .562 (14.27) | .368 (9.35)                     | .578 (14.68)  | .734 (18.64)  | .562 (14.27) |
| 10         | .588 (14.94)      | .844 (21.44)  | 3.000 (76.20)  | .562 (14.27) | .368 (9.35)                     | .703 (17.86)  | .859 (21.82)  | .562 (14.27) |
| 12         | .748 (19.00)      | 1.000 (25.40) | 3.500 (88.90)  | .562 (14.27) | .368 (9.35)                     | .891 (22.63)  | 1.000 (24.40) | .562 (14.27) |
| 14         | .873 (22.17)      | 1.125 (28.58) | 3.500 (88.90)  | .562 (14.27) | .368 (9.35)                     | 1.016 (25.81) | 1.125 (28.58) | .562 (14.27) |
| 16         | .998 (25.35)      | 1.250 (31.75) | 3.500 (88.90)  | .562 (14.27) | .368 (9.35)                     | 1.141 (28.98) | 1.250 (31.75) | .562 (14.27) |
| 18         | 1.123 (28.52)     | 1.375 (34.93) | 3.500 (88.90)  | .562 (14.27) | .368 (9.35)                     | 1.266 (32.16) | 1.375 (34.93) | .562 (14.27) |
| 20         | 1.248 (31.70)     | 1.500 (38.10) | 4.000 (101.60) | .625 (15.88) | .430 (10.92)                    | 1.391 (35.33) | 1.500 (38.10) | .562 (14.27) |
| 22         | 1.373 (34.87)     | 1.625 (41.26) | 4.000 (101.60) | .625 (15.88) | .430 (10.92)                    | 1.516 (38.51) | 1.625 (41.26) | .562 (14.27) |
| 24         | 1.498 (38.05)     | 1.750 (44.45) | 4.000 (101.60) | .658 (16.71) | .463 (11.76)                    | 1.641 (41.68) | 1.750 (44.45) | .602 (15.29) |

## MATERIALS AND FINISHES

| KPT            |                                                |
|----------------|------------------------------------------------|
| Protective Cap | aluminum alloy, olive drab finish per QQ-P-416 |
| Sash Chain     | stainless steel                                |
| Ring/Rivet     | stainless steel                                |
| Gasket         | polychloroprene                                |

## MIL-C-26482 Specifications

The following excerpts are some of the parameter requirements of the MIL-C-26482 specification.

| Test Description                         | Paragraph Reference | Requirements                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
|------------------------------------------|---------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Contact Retention                        | 4.6.32.1            | After preloading to 3 pounds maximum, the force shall be applied at a rate of approximately 1 pound per second and maintained at full load for 5-10 seconds. No damage to contacts or insert shall result nor shall the contacts be dislocated from their normal position in the connector more than 0.012 inch under giveload for KPSE and within 1 minute after the load is removed for KPT.                                                                                                                                                                                                                                                                                                                                                                         |
|                                          |                     | Contact Size201612                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
|                                          |                     | Load in Pounds Min.152525                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| Contact Insertion/Extraction (KPSE only) | 4.6.11              | When using the proper insertion and extraction tools the forces required to insert or extract the contact shall not exceed 20 lbs. Connectors shall be less endbell.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| Coupling Torque                          | 4.6.3               | For qualification testing, mating halves shall be coupled and uncoupled, measuring the torques necessary. The torques required to couple and uncouple mating connectors halves shall fall within the limits specified as follows:                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
|                                          |                     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
|                                          |                     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| Durability                               | 4.6.17              | Connector halves shall be mated and unmated 500 times at a rate of 200 ± 100 cycles per hour. The test may be performed by hand or by mechanical means, but the coupling ring shall be operated as in normal service. Failure to complete this test because of mechanical malfunction shall be cause for rejection.                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
|                                          |                     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
|                                          |                     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| Insert Retention                         | 4.6.29              | Connectors with the endbells and grommets (if possible) removed shall be subjected to a 75 psi load on the insulator in both directions. The load shall be applied at a rate of 10lb/sec. and held for 5 to 10 secs. Insulators shall not be dislogged from their original position.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| Insulation Resistance                    | 4.6.7.1             | On unmated connectors at 25°C±3°C a potential of 500 VDC ± 10% shall be applied between all, but not more than 6, pairs of adjacent contacts and between all, but not more than 6, contacts and the shell. Failure to meet a minimum requirement of 5,000 megohms shall be cause for rejection.                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| Vibration                                | 4.6.21              | Wired, mated connectors shall be subjected to the vibration test of MIL-STD-1344, Method 2005, Test Condition II. Receptacles shall be mounted on the vibration fixture by normal means. All contacts shall be wired in a series circuit and 100 max. milliamperes of current shall be allowed to flow through the series circuit during vibration. Suitable means shall be employed to monitor the current flow and to indicate any discontinuity of more than 10 microseconds. The wire bundle shall be clamped to nonvibrating points at least 8 inches from the rear of the connector. Current discontinuity of 10 microsecond or more, disengagement of the mated connectors, evidence of cracking, breaking, or loosening of parts shall be cause for rejection. |
| Shock                                    | 4.6.23              | Wired, mated connectors shall be subjected to one shock in each direction in each of three mutually perpendicular axes. The pulse shall be approximate half sine wave of 50g±15% magnitude with a duration of 11 ±1 milliseconds. Receptacles shall be mounted on a shock fixture by normal means. All contacts shall be wired in a series circuit and 90-110 ma, of current shall flow through the series circuit during shock. Suitable means shall be employed to Monitor the current flow and to indicate any discontinuity of more than 10 microseconds. Current discontinuity of 10 microseconds or more, disengagement of the mated connectors, evidence of cracking, breaking, or loosening of parts shall be cause for rejection.                             |
| Thermal Shock                            | 4.6.12              | Wired, unmated plug and receptacle shall be subjected to 5 cycles of hot and cold temperatures. Maximum temperature shall be + 125°C and the minimum shall be -55°C. Duration at each temperature extreme shall be 1/2 hour minimum. Cracking, breaking or loosening of parts shall be cause for rejection.                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| Humidity                                 | 4.6.25              | The connectors shall be subjected to varying humidity, 50% to 95%, conditions for a period of 10 days KPSE or 20 days KPT. The insulation resistance shall not be less than 100 megohms.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| Air Leakage (KPT Only)                   | 4.6.15.1            | A 30 psi pressure differential shall be applied across the connector for 30 minutes. The leak rate, in either direction, shall be no greater than 1 atmosphere cubic inch per hour (4.55 X 10 <sup>-3</sup> cm <sup>3</sup> /S) at - 67°F (- 55°C).                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| Salt Spray (Corrosion)                   | 4.6.19              | Unmated and wired connectors shall be subject to a salt fog for 48 hours. These shall be no exposure of base metal, the connector shall be functional and meet the contact resistance requirement.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| Fluid Immersion                          | 4.6.27              | At least one connector, unmated and wired, shall be immersed in each fluid for a period of 20 hours then dried at room conditions for hour. Connectors shall be able to mate and meet the coupling torque requirements.<br>a) Hydraulic Fluid per MIL-H-5606, b) Lubricating Oil per MIL-L-7808                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |

Tooling, Crimp

M22520/1-01 CRIMP TOOL  
M22520/1-02 Turret



CBT-520/530

Tooling, Insertion/Extraction



KPSE Insertion

| Contact Size |            |
|--------------|------------|
| 20           | MS24256A20 |
| 16           | MS24256A16 |



KPSE Extraction

| Contact Size |            |
|--------------|------------|
| 20           | MS24256R20 |
| 16           | MS24256R16 |

Contacts

| Contact Size/Type | Military Part Number | Color Bands |        |        | ITT Cannon Part Number |
|-------------------|----------------------|-------------|--------|--------|------------------------|
|                   |                      | 1st         | 2nd    | 3rd    |                        |
| 20 Socket         | M39029/32-259        | Red         | Green  | White  | 031-9074-002           |
| 20 Pin            | M39029/31-240        | Red         | Yellow | Black  | 030-9036-000           |
| 16 Socket         | M39029/32-247        | Red         | Yellow | Violet | 031-9095-003           |
| 16 Pin            | M39029/31-228        | Red         | Red    | Grey   | 030-9032-003           |

#20

Contacts for printed circuit applicaitons also available

Wire Hole Fillers/Grommets Sealing Plugs

| Contact Size | Part Number  |           | Color Code |
|--------------|--------------|-----------|------------|
|              | Cannon       | Military  |            |
| 20           | 225-1012-000 | MS3187A20 | Red        |
| 16           | 225-1011-000 | MS3187-16 | Blue       |

## KPSE Assembly Instructions

| Contact Size | Wire Size AWG | Strip Insulation |
|--------------|---------------|------------------|
| 20           | #20-#24       | 3/16"            |
| 16           | #16-#20       | 1/4"             |

Right

Wrong



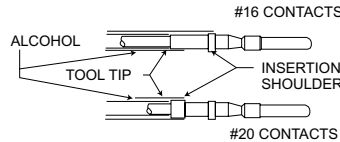
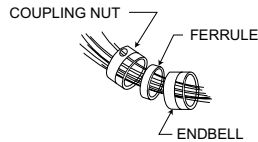
### CRIMPING CONTACTS

1. Strip wires according to the table above taking care not to cut or nick strands.

2. Insert stripped wire into contact crimp pot. Wire must be visible thru inspection hole.

3. Using correct crimp tool and locator select proper crimp setting for wire size to be crimped; cycle the tool once to be sure the indentors are open. Insert contact and wire into locator. Squeeze tool handles firmly and completely to insure a proper crimp. The tool will not release unless the crimp indentors in the tool head have been fully actuated. Release crimped contact and wire from tool. Be certain the wire is visible thru inspection hole in contact.

CAUTION: Check that none of the contacts are bent or damaged in any way after crimping.



### CONTACT INSERTION

1. Remove hardware from plug and receptacle. Slide hardware over wire bundle in proper order for reassembly.

2. Use the proper contact insertion tool and slide the tool over the terminal end of the contact. The size 16 contact lies in the tool and the tool tip butts against the contact shoulder. The rear, or insulation support of the size 20 contact butts against an internal shoulder in the tool tip.

NOTE: Apply a small amount of isopropyl alcohol to the insertion tool tip while installing contacts.

3. Beginning from center cavity and working outwards in a circular pattern, insert wired contacts into rear of connector by hand until the front of the contact shoulder is no more than 1/8" from the grommet. Holding the connector horizontally, position tool behind contact. Push tool straight into contact cavity until contact snaps into position. A light pull on wire will assure that contact is locked securely. Repeat for remaining contacts.



| Size           | Torque in/lbs. |
|----------------|----------------|
| 8,10,12 and 14 | 10-15          |
| 16 and 18      | 15-25          |
| 20,22 and 24   | 25-35          |

4. Use contacts and grommet sealing plugs to fill any empty cavities.

### COMPLETION

1. Check face of plug or receptacle for proper contact installation.

2. Using mating connector with contacts installed, mate both connector halves together.

3. Assemble ferrule over the grommet by hand as far as possible.

4 Assemble endbell over ferrule and loosely tighten endbell. Partially loosen (1/4 turn) and retighten to recommended torque limits.



2nd Index Line  
Socket Contacts

1st Index Line  
Pin Contacts



### CONTACT EXTRACTION

1. Slide hardware back over wire bundle. Using proper extraction tool or extraction end of proper insertion/extraction tool, proceed as follows:

KPSE: There are two lines on the clip sleeve which are vital to the contact removal process. The first index line is used for removing pin contacts while the second index line is for removing socket contacts.

Carefully place the tool tip over the contact to be extracted until the tool tip touches the insulator face. Carefully rotate the tool until the index line is slightly below the insulator face. Keep an even pressure against tool body; push plunger forward with thumb and index finger, and push the contact out through the clip. Carefully remove extraction tool from connector. Pull wire by hand to complete the removal of the contact.

How to Order - Special Termination Connectors



PREFIX \_\_\_\_\_

SHELL STYLE \_\_\_\_\_

DASH (No Class required, less rear termination) \_\_\_\_\_

SHELL SIZE \_\_\_\_\_

CONTACT ARRANGEMENT \_\_\_\_\_

CONTACT TYPE \_\_\_\_\_

    P - PIN

    S - Socket

ALTERNATE INSERT POSITION \_\_\_\_\_

|      |    |   |    |   |    |   |   |
|------|----|---|----|---|----|---|---|
| KPT  | 03 | - | 18 | - | 32 | P | W |
| KPT  | 04 | - | 18 | - | 32 | P | W |
| KPT  | 05 | - | 18 | - | 32 | P | W |
| KPSE | 03 | - | 18 | - | 32 | P | W |
| KPSE | 04 | - | 18 | - | 32 | P | W |
| KPSE | 05 | - | 18 | - | 32 | P | W |

Contact ITT Cannon for additional Information

Solder Type KPT03/04/05-Supplied less endbell, ferrule and grommet.

KPT03

KPT04



KPT05



Solder Type KPSE03/04/05-Supplied less endbell, ferrule.

KPSE03



KPSE04

KPSE05



Twist Pull Lanyard Release Coupler Plug

KPT06/KPSE06



PREFIX \_\_\_\_\_

SHELL STYLE \_\_\_\_\_

SERVICE TYPE \_\_\_\_\_

SHELL SIZE \_\_\_\_\_

CONTACT ARRANGEMENT \_\_\_\_\_

CONTACT TYPE \_\_\_\_\_

POLARIZATION \_\_\_\_\_

MODIFICATION CODE\* \_\_\_\_\_

|      |   |   |    |   |    |   |   |    |
|------|---|---|----|---|----|---|---|----|
| KPT  | 6 | A | 22 | - | 55 | P | W | 16 |
| KPSE | 6 | E | 22 | - | 55 | S | Z | 16 |

\*Omit (0) of shell style indication when using this modification code.

16 = Overall length of connector including lanyard to be 6.0 (152.40) ± .125 (3.18) when measured over a 1.0 (25.40) ± .005 (0.13) diameter mandrel.

Printed Circuit Termination

KPT02E



KPT07



- Intermatable with MIL-C-26482 Series I
- Operating temperature - 55°C to + 200°C

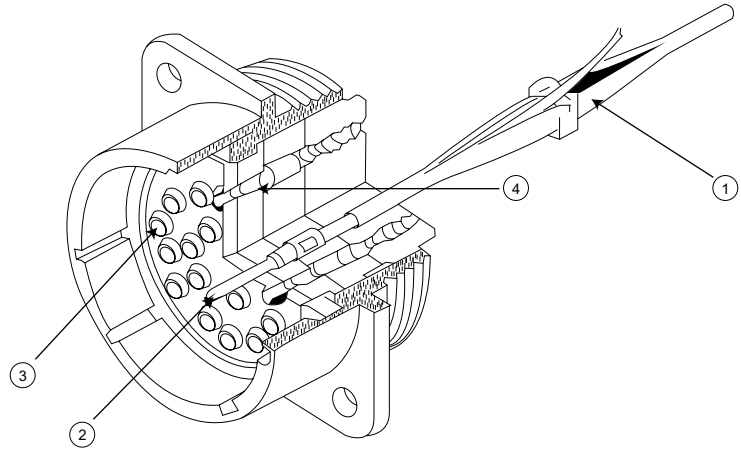
The PV connector is designed to meet the rugged requirements of MIL-C-26482, Series 2/MIL-C-83723 Series I\*, the specification which delineates the critical requirements of space-age applications. PV connectors have been used extensively on major aerospace programs requiring general-purpose, miniature cylindrical bayonet coupling connectors such as Space Shuttle, Apollo, ATM, OWS Minuteman, Skylab, Thor-Delta, Titan IIIC, and Viking.

The PV series is an important member of the Universal Interconnect System (UIS) - the only system that can perform all interconnection missions. This system is adaptable for use with connectors of all shapes and sizes, including circular and rectangular configurations, standard, miniature and subminiature sizes. UIS is a rear servicing system that evolved from the LITTLE CAESAR® rear release contact retention assembly, pioneered and developed by ITT Cannon. Since this time, ITT Cannon, and its licensees, have supplied to industry over 250 million interconnections utilizing this system.

PV7 connectors are available under numerous industrial specifications, some of which are listed below:

- CS512089 Jet Propulsion Laboratory
- 40M39569 NASA, George C. Marshall Space Flight Center
- 81D52 Martin Marietta, Denver Division
- MG414-0365 Rockwell International Space Division
- AC414-0013 Rockwell International Autonetics Division
- STS0003 McDonnell Douglas Astronautics

This connector series is manufactured to accommodate the following backshells: M85049/31 (MS3416), M85049/51 (MS3418) and M85049/52 (MS3417). Backshells are not included with connector and must be ordered separately. Backshells on page 161 are Non-MS type.



**Universal Insertion / Extraction Tool Style** - A single, expendable plastic tool is used for insertion and extraction of both pins and sockets.

**Simple, Strong Contact Design** - One basic configuration eliminates undercuts and maximizes bend resistance for positive contact mating.

**Closed-Entry Socket Insert** - Hard dielectric socket face of mating connector has lead-in chamfers for positive alignment of pins and sockets.



**Interfacial Pin Insert Seal** - Universal interconnect permits design of raised moisture barriers around each pin which mate into lead-in chambers of hard face sockets insert for individual contact sealing. Interfacial sealing is never touched by service tools.

**Superior Contact Stability** - Rear Contact Release System (LITTLE CAESAR contact assembly) features a stamped metal retaining clip captivated by molded-in shoulders of each contact cavity in the insulator. A rear-inserted plastic tool expands the tines beyond the contact shoulder, releasing the contact.

**Polarized Backshells** - Interlocking teeth on the front of the backshell and rear portion of the shell allow endbells to be positioned as desired, eliminating chafing of wire during assembly.

## Military Specification Cross Reference

| PV7 and MIL-C-26482<br>(Series 2) Replacement for | MS Standards | ITT Cannon Prefix<br>Commercial<br>Design | MIL-C-83723*<br>Slash Sheet |            | Description                 |
|---------------------------------------------------|--------------|-------------------------------------------|-----------------------------|------------|-----------------------------|
| <b>MIL-C-26482 (Series 1)</b>                     |              | <b>MIL-C-26482</b>                        | <b>Socket</b>               | <b>Pin</b> |                             |
| MS3110,MS3120                                     | MS3470       | PV70                                      | /1                          | /2         | Narrow Flange Receptacle    |
| MS3111,MS3121                                     | MS3471       | PV71                                      | /7                          | /8         | Cable Connecting Receptacle |
| MS3112,MS3122                                     | MS3470       | PV70                                      | /1                          | /12        | Narrow Flange Receptacle    |
| MS3114,MS3124                                     | MS3474       | PV74                                      | /5                          | /6         | Jam Nut Receptacle          |
| MS3116,MS3126                                     | MS3476       | PV76                                      | /13                         | /14        | Straight Plug               |
|                                                   | MS3472       | PV72                                      | /3                          | /4         | Wide Flange Receptacle      |
|                                                   | MS3475       | PV75                                      | /43                         | /42        | Straight Plug, RFI Shielded |
| <b>NAS1599</b>                                    |              |                                           |                             |            |                             |
| NAS1650,NAS1699                                   | MS3470       |                                           | /1                          | /2         | Narrow Flange Receptacle    |
| NAS1651,NAS1700                                   | MS3472       |                                           | /3                          | /4         | Wide Flange Receptacle      |
| NAS1652,NAS1701                                   | MS3474       |                                           | /5                          | /6         | Jam Nut Receptacle          |
| NAS1653,NAS1702                                   | MS3476       |                                           | /13                         | /14        | Straight Plug               |

\*NOTE: M83723 series has been superseded by MIL-C-26482 Series 2.

## Performance and Material Specifications

## MATERIALS AND FINISHES

| Description                                         | Material                                                                      | Finish                                                                                        |
|-----------------------------------------------------|-------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------|
| Shell                                               | Aluminum alloy per QQ-A-367, QQ-A-591 or QQ-A-225                             | Electroless nickel per MIL-C-26074, anodized per MIL-A-8625 or olive drab cadmium over nickel |
| Insulators                                          | Rigid dielectric                                                              | None                                                                                          |
| Elastomers (grommets, interfacial and O ring seals) | Silicone rubber (ITT Cannon blend) or Fluorosilicone rubber (ITT Cannon blen) | None<br>None                                                                                  |
| Contacts                                            | Copper alloy                                                                  | Gold page per MIL-G-45204                                                                     |
| Coupling Nut                                        | Aluminum alloy per QQ-A-591                                                   | Electroless nickel per MIL-C-26074, anodized per MIL-A-8625 or olive drab cadmium over nickel |
| Jam Nut (on PV74)                                   | Aluminum alloy per QQ-A-225                                                   | Electroless nickel per MIL-C-26074, anodized per MIL-A-8625 or olive drab cadmium over nickel |

## ELECTRICAL

| Contact Size | Wire Size | Insulation O.D. Limits, inch (mm) |             | Max Current for Test (amps) | Potential Drop (Millivolts at 25°C) |
|--------------|-----------|-----------------------------------|-------------|-----------------------------|-------------------------------------|
|              |           | min.                              | max.        |                             |                                     |
| 12           | 12        | .097 (2.46)                       | .158 (4.01) | 23                          | 50                                  |
|              | 14        |                                   |             | 17                          | 45                                  |
| 16           | 16        | .053 (1.53)                       | .103 (2.62) | 13                          | 50                                  |
|              | 20        |                                   |             | 7.5                         | 45                                  |
| 20           | 20        | .040 (1.02)                       | .083 (2.11) | 7.5                         | 55                                  |
|              | 24        |                                   |             | 3.0                         | 45                                  |

| Dielectric Withstanding Voltage (Test Volatge) |              |                     |                      |  |
|------------------------------------------------|--------------|---------------------|----------------------|--|
| Service Rating                                 | Sea Level    | 70,000 ft. Altitude | (25°C)               |  |
| I                                              | 1500 Vac rms | 375 Vac rms         | 5000 megohms minimum |  |
| II                                             | 2300 Vac rms | 500 Vac rms         | 5000 megohms minimum |  |

## How to Order

PV MS 70 3470 L 18 -32 P W L  
 L 18 -32 P W L

SERIES PREFIX \_\_\_\_\_  
 SHELL STYLE \_\_\_\_\_  
 CLASS \_\_\_\_\_  
 SIZE \_\_\_\_\_  
 CONTACT ARRANGEMENT \_\_\_\_\_  
 CONTACT TYPE \_\_\_\_\_  
 ALTERNATE INSERT POSITIONS \_\_\_\_\_  
 LESS COMPONENTS \_\_\_\_\_

## SERIES PREFIX

MS - Complies with MIL-C-26482 Series 2  
 PV - ITT Cannon Interchangeable with  
 MIL-C-26482, Series 2

## SHELL STYLE

| ITT Cannon Part No. | Military No. | Description                   |
|---------------------|--------------|-------------------------------|
| PV70                | MS3470       | - Narrow Flange Receptacle    |
| PV71                | MS3471       | - Cable Connecting Receptacle |
| PV72                | MS3472       | - Wide Flange Receptacle      |
| PV74                | MS3474       | - Jam Nut Receptacle          |
| PV75                | MS3475       | - Straight Plug, RFI Shielded |
| PV76                | MS3476       | - Straight Plug               |

## CLASS

(PV Series and MS Series)  
 \*A - Fluid resistant, 200°C, non-conductive (anodized)  
 L - Fluid resistant, 200°C, conductive, finish (nickely)  
 W - Corrosive and fluid resistant, 175°C (cadmium over nickel)

## SHELL SIZE

8, 10, 12, 14, 16, 18, 20, 22 and 24  
 (Size 8 available in PV70 & 76 only)

## CONTACT ARRANGEMENTS

See page 162.

## CONTACT TYPE

P - Pin contact  
 S - Socket contact  
 A - Less pin contact\* (MS only)  
 B - Less socket contacts\* (MS only)  
 \* The "A" and "B" designators are used only when other than power contacts are ato be installed (i.e. shielded, coaxial and thermocouple contacts).

## ALTERNATE INSERT POSITIONS

No designation required for normal position.  
 Standard MS alternate positions available.

## LESS COMPONENTS

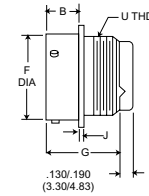
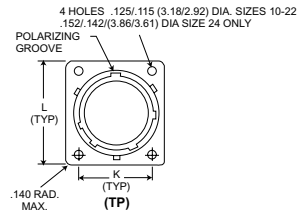
Use "L" if PV connectors are ordered less contacts, sealing plugs and insertion/extraction tool ("L" is not stamped on connectors). To order MS connectors less contacts, purchase order must state less contacts.

\*Consult factory for availability.

## Narrow Flange Receptacle

MS3470

PV70

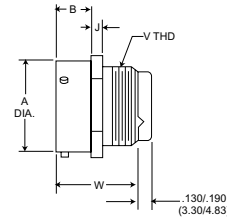
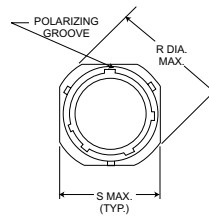


| Shell Size* | B Max        | F Max         | G Max         | J Max       | K             | L             | U Thread<br>UNEF<br>Class 2A |
|-------------|--------------|---------------|---------------|-------------|---------------|---------------|------------------------------|
| 8           | .462 (11.73) | .474 (12.04)  | 1.215 (30.85) | .078 (1.98) | .594 (15.09)  | .828 (21.03)  | 1/2-20                       |
| 10          | .462 (11.73) | .594 (15.01)  | 1.215 (30.85) | .078 (1.98) | .719 (18.26)  | .954 (24.23)  | 5/8-24                       |
| 12          | .462 (11.73) | .751 (19.08)  | 1.215 (30.85) | .078 (1.98) | .812 (20.62)  | 1.047 (26.59) | 3/4-20                       |
| 14          | .462 (11.73) | .876 (22.25)  | 1.215 (30.85) | .078 (1.98) | .906 (23.01)  | 1.141 (28.98) | 7/8-20                       |
| 16          | .462 (11.73) | 1.001 (25.43) | 1.215 (30.85) | .078 (1.98) | .969 (24.61)  | 1.234 (31.34) | 1-20                         |
| 18          | .462 (11.73) | 1.126 (28.60) | 1.215 (30.85) | .078 (1.98) | 1.062 (26.97) | 1.328 (33.73) | 1-1/16-18                    |
| 20          | .587 (14.91) | 1.251 (31.78) | 1.275 (32.40) | .110 (2.79) | 1.156 (29.36) | 1.453 (36.91) | 1-3/16-18                    |
| 22          | .587 (14.91) | 1.376 (34.95) | 1.275 (32.40) | .110 (2.79) | 1.250 (31.75) | 1.578 (40.08) | 1-5/16-18                    |
| 24          | .620 (15.75) | 1.501 (38.13) | 1.275 (32.40) | .110 (2.79) | 1.375 (34.93) | 1.703 (43.26) | 1-7/16-18                    |

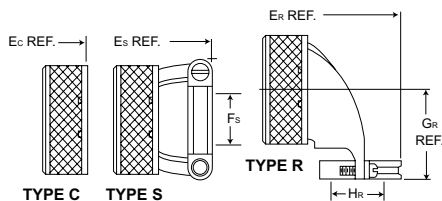
## Cable Connecting Receptacle

MS3471

PV71



| Shell Size* | A Max         | B Max        | J Max       | R Dia. Max    | S Max         | W Max         | U Thread<br>UNEF<br>Class 2A |
|-------------|---------------|--------------|-------------|---------------|---------------|---------------|------------------------------|
| 10          | .591 (15.01)  | .462 (11.73) | .078 (1.98) | 1.082 (27.48) | .954 (24.23)  | 1.215 (30.86) | 5/8-24                       |
| 12          | .751 (19.08)  | .462 (11.73) | .078 (1.98) | 1.176 (29.87) | 1.047 (26.59) | 1.215 (30.86) | 3/4-20                       |
| 14          | .876 (22.25)  | .462 (11.73) | .078 (1.98) | 1.270 (32.26) | 1.141 (28.98) | 1.215 (30.86) | 7/8-20                       |
| 16          | 1.001 (25.43) | .462 (11.73) | .078 (1.98) | 1.364 (34.64) | 1.234 (31.34) | 1.215 (30.86) | 1-20                         |
| 18          | 1.126 (28.60) | .462 (11.73) | .078 (1.98) | 1.458 (37.03) | 1.328 (33.73) | 1.215 (30.86) | 1-1/16-18                    |
| 20          | 1.251 (31.78) | .587 (14.91) | .110 (2.79) | 1.708 (43.38) | 1.578 (40.08) | 1.275 (32.38) | 1-5/16-18                    |
| 22          | 1.376 (34.95) | .587 (14.91) | .110 (2.79) | 1.708 (43.38) | 1.578 (40.08) | 1.275 (32.38) | 1-5/16-18                    |
| 24          | 1.501 (38.13) | .620 (15.75) | .110 (2.79) | 1.832 (46.53) | 1.703 (43.26) | 1.275 (32.38) | 1-7/16-18                    |



Backshell Assemblies not supplied with MS connectors.

Performance Specifications - Page 158

Contacts, Sealing Plugs, Assembly Tools - Pages 163, 165

Contacts Arrangements - Page 162

## Receptacle Assembly With Backshell†

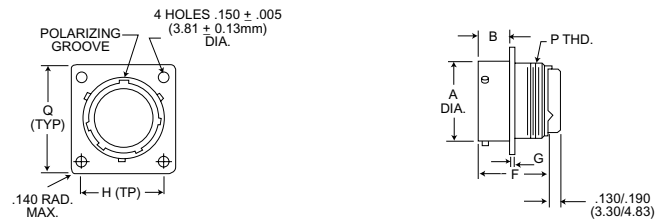
| Shell Size* | TYPE C<br>Ec<br>Max. | TYPE S<br>Fs<br>Max. | Es<br>Max.    | Gr<br>Max.    | TYPE R<br>Hr<br>Max. | Er<br>Max.    |
|-------------|----------------------|----------------------|---------------|---------------|----------------------|---------------|
| 10          | 1.492 (37.90)        | .286 (7.26)          | 1.842 (46.79) | .880 (23.35)  | .286 (7.26)          | 2.115 (53.72) |
| 12          | 1.492 (37.90)        | .416 (10.57)         | 1.842 (46.79) | .950 (24.13)  | .416 (10.57)         | 2.250 (57.15) |
| 14          | 1.492 (37.90)        | .476 (12.09)         | 2.077 (52.76) | 1.010 (25.65) | .476 (12.09)         | 2.340 (59.44) |
| 16          | 1.492 (37.90)        | .626 (15.90)         | 2.077 (52.76) | 1.070 (27.18) | .626 (15.90)         | 2.475 (62.87) |
| 18          | 1.492 (37.90)        | .706 (17.93)         | 2.077 (52.76) | 1.130 (28.70) | .706 (17.93)         | 2.574 (65.38) |
| 20          | 1.552 (39.42)        | .831 (21.11)         | 2.137 (54.28) | 1.190 (30.23) | .831 (21.11)         | 2.767 (70.28) |
| 22          | 1.552 (39.42)        | .956 (24.28)         | 2.137 (54.28) | 1.260 (32.00) | .956 (24.28)         | 2.890 (73.41) |
| 24          | 1.552 (39.42)        | 1.081 (27.46)        | 2.137 (54.28) | 1.320 (33.53) | 1.081 (27.46)        | 3.012 (76.50) |

\*See page 158 for part numbers.† To order backshell assemblies separately, see page 161.

## Wide Flange Receptacle

MS3472

PV72

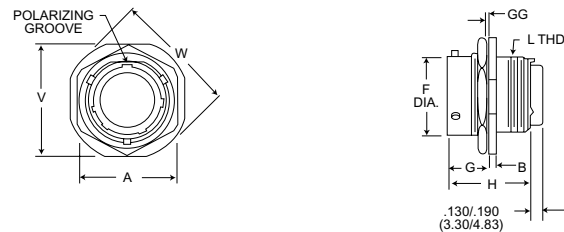


| Shell Size* | A Max.        | B Max.       | F Max.        | G Max.      | H Max.        | Q Max.        | P Thread<br>UNEF<br>Class A |
|-------------|---------------|--------------|---------------|-------------|---------------|---------------|-----------------------------|
| 10          | .591 (15.01)  | .493 (12.52) | 1.215 (30.85) | .078 (1.98) | .812 (20.62)  | 1.141 (28.98) | 5/8-24                      |
| 12          | .751 (19.08)  | .493 (12.52) | 1.215 (30.85) | .078 (1.98) | .938 (23.83)  | 1.266 (32.16) | 3/4-20                      |
| 14          | .876 (22.25)  | .493 (12.52) | 1.215 (30.85) | .078 (1.98) | 1.031 (26.19) | 1.360 (34.54) | 7/8-20                      |
| 16          | 1.001 (25.43) | .493 (12.52) | 1.215 (30.85) | .078 (1.98) | 1.125 (28.58) | 1.453 (36.91) | 1-20                        |
| 18          | 1.126 (28.60) | .493 (12.52) | 1.215 (30.85) | .078 (1.98) | 1.203 (30.56) | 1.532 (38.91) | 1-1/16-18                   |
| 20          | 1.251 (31.78) | .587 (14.91) | 1.275 (32.40) | .110 (1.98) | 1.297 (32.94) | 1.688 (42.88) | 1-3/16-18                   |
| 22          | 1.376 (34.95) | .587 (14.91) | 1.275 (32.40) | .110 (1.98) | 1.375 (34.93) | 1.766 (44.86) | 1-5/16-18                   |
| 24          | 1.501 (38.13) | .620 (15.75) | 1.275 (32.40) | .110 (1.98) | 1.500 (38.10) | 1.891 (48.03) | 1-7/16-18                   |

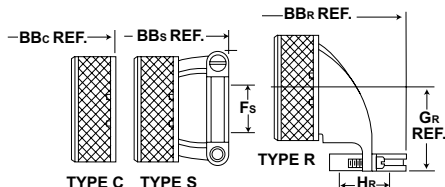
## Jam Nut Receptacle

MS3474

PV74



| Shell Size* | V Max.        | A Max.        | B Max.      | F Max.        | G Max.       | GG Panel Thickness    | H Max.        | W Dia. Max.   | L Thread<br>UNEF<br>Class 2 |
|-------------|---------------|---------------|-------------|---------------|--------------|-----------------------|---------------|---------------|-----------------------------|
| 8           | .954 (24.23)  | .767 (19.48)  | .113 (2.87) | .474 (12.04)  | .707 (17.96) | .187/.062 (4.75/1.57) | 1.215 (30.86) | 1.078 (27.38) | 1/2-20                      |
| 10          | 1.078 (27.38) | .892 (22.66)  | .113 (2.87) | .591 (15.01)  | .707 (17.96) | .187/.062 (4.75/1.57) | 1.215 (30.85) | 1.203 (30.56) | 5/8-24                      |
| 12          | 1.266 (32.16) | 1.079 (27.41) | .113 (2.87) | .751 (19.08)  | .707 (17.96) | .187/.062 (4.75/1.57) | 1.215 (30.85) | 1.391 (35.33) | 3/4-20                      |
| 14          | 1.391 (35.33) | 1.205 (30.61) | .113 (2.87) | .876 (22.25)  | .707 (17.96) | .187/.062 (4.75/1.57) | 1.215 (30.85) | 1.516 (38.51) | 7/8-20                      |
| 16          | 1.516 (38.51) | 1.329 (33.76) | .113 (2.87) | 1.001 (25.43) | .707 (17.96) | .187/.062 (4.75/1.57) | 1.215 (30.85) | 1.641 (41.68) | 1-20                        |
| 18          | 1.641 (41.68) | 1.455 (36.96) | .113 (2.87) | 1.126 (28.60) | .707 (17.96) | .187/.062 (4.75/1.57) | 1.215 (30.85) | 1.766 (44.86) | 1-1/16-18                   |
| 20          | 1.828 (46.43) | 1.579 (40.11) | .148 (3.76) | 1.251 (31.78) | .772 (19.61) | .250/.062 (6.35/1.57) | 1.275 (32.40) | 1.954 (49.63) | 1-3/16-18                   |
| 22          | 1.954 (49.63) | 1.705 (40.11) | .148 (3.76) | 1.376 (34.95) | .772 (19.61) | .250/.062 (6.35/1.57) | 1.275 (32.40) | 2.078 (52.78) | 1-5/16-18                   |
| 24          | 2.078 (52.78) | 1.829 (46.46) | .148 (3.76) | 1.501 (38.13) | .772 (19.61) | .219/.062 (5.56/1.57) | 1.275 (32.40) | 2.203 (55.96) | 1-7/16-18                   |



Backshell Assemblies not supplied with MS connectors.

Performance Specifications - Page 158

Contacts, Sealing Plugs, Assembly Tools - Pages 163, 165

Contact Arrangements - Page 162

## Receptacle Assembly With Backshell†

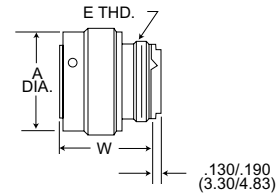
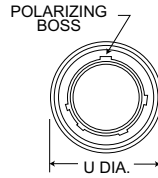
| Shell Size* | TYPE C<br>BBc<br>Max. | TYPE S<br>BBs<br>Max. | Fs<br>Max.    | TYPE R<br>Gr<br>Max. | Hr<br>Max.    |
|-------------|-----------------------|-----------------------|---------------|----------------------|---------------|
| 10          | 1.492 (37.90)         | 1.842 (46.79)         | .286 (7.26)   | 2.115 (53.72)        | .286 (7.26)   |
| 12          | 1.492 (37.90)         | 1.842 (46.79)         | .416 (10.57)  | 2.250 (57.15)        | .416 (10.57)  |
| 14          | 1.492 (37.90)         | 2.077 (52.76)         | .476 (12.09)  | 2.340 (59.44)        | .476 (12.09)  |
| 16          | 1.492 (37.90)         | 2.077 (52.76)         | .626 (15.90)  | 2.475 (62.87)        | .626 (15.90)  |
| 18          | 1.492 (37.90)         | 2.077 (52.76)         | .706 (17.93)  | 2.574 (65.38)        | .706 (17.93)  |
| 20          | 1.552 (39.42)         | 2.137 (54.28)         | .831 (21.11)  | 2.767 (70.28)        | .831 (21.11)  |
| 22          | 1.552 (39.42)         | 2.137 (54.28)         | .956 (24.28)  | 2.890 (73.41)        | .956 (24.28)  |
| 24          | 1.552 (39.42)         | 2.137 (54.28)         | 1.081 (27.46) | 3.012 (76.50)        | 1.081 (27.46) |

\* See page 158 for part numbers. † To order backshell assemblies separately, see page 161.

## Straight Plug

MS3476

PV76



| Shell Size* | A Dia. Max.   | U Max.        | W Max.        | E Thread UNEF Class 2A |
|-------------|---------------|---------------|---------------|------------------------|
| 8           | .765 (19.43)  | .782 (19.86)  | 1.230 (31.24) | 1/2-20                 |
| 10          | .840 (21.34)  | .926 (23.52)  | 1.230 (31.24) | 5/8-24                 |
| 12          | .999 (25.37)  | 1.043 (26.49) | 1.230 (31.24) | 3/4-20                 |
| 14          | 1.139 (28.93) | 1.183 (30.05) | 1.230 (31.24) | 7/8-20                 |
| 16          | 1.261 (32.03) | 1.305 (33.15) | 1.230 (31.24) | 1-20                   |
| 18          | 1.337 (33.96) | 1.391 (35.33) | 1.230 (31.24) | 1-1/16-18              |
| 20          | 1.477 (37.52) | 1.531 (38.89) | 1.230 (31.24) | 1-3/16-18              |
| 22          | 1.602 (40.69) | 1.656 (42.06) | 1.230 (31.24) | 1-5/16-18              |
| 24          | 1.723 (43.76) | 1.777 (45.14) | 1.230 (31.24) | 1-7/16-18              |

MS34745

PV75

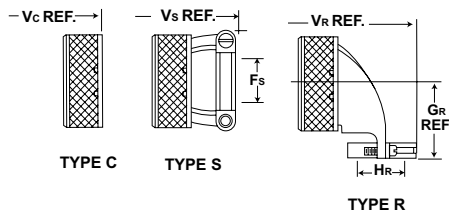
Straight Plug, RFI Shielded



| Shell Size* | E Thread UNEF Class 2A | A Dia. Max.   | U Max.        | W Max.        |
|-------------|------------------------|---------------|---------------|---------------|
| 10          | 5/8-24                 | .840 (21.34)  | .926 (21.72)  | 1.230 (31.24) |
| 12          | 3/4-20                 | .999 (25.37)  | 1.043 (26.42) | 1.230 (31.24) |
| 14          | 7/8-20                 | 1.139 (28.93) | 1.183 (29.97) | 1.230 (31.24) |
| 16          | 1-20                   | 1.261 (32.03) | 1.305 (33.15) | 1.230 (31.24) |
| 18          | 1-1/16-18              | 1.337 (33.96) | 1.391 (35.33) | 1.230 (31.24) |
| 20          | 1-3/16-18              | 1.477 (37.52) | 1.531 (38.89) | 1.230 (31.24) |
| 22          | 1-5/16-18              | 1.602 (40.69) | 1.656 (42.06) | 1.230 (31.24) |
| 24          | 1-7/16-18              | 1.723 (43.76) | 1.777 (45.14) | 1.230 (31.24) |

\* See page 158 for part numbers.

## Plug Assemblies with Backshell †



Backshell Assemblies not supplied with MS connectors.

Performance Specifications - Page 158

Contacts, Sealing Plugs, Assembly Tools - Pages 163, 165

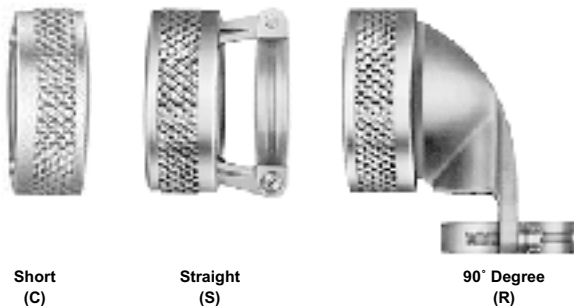
Contact Arrangements - Page 162

| Shell Size* | TYPE C        | TYPE S        |               | Gr Max.       | TYPE R        | Vr Max.       |
|-------------|---------------|---------------|---------------|---------------|---------------|---------------|
|             | Vc Max.       | Fs Max.       | Vs Max.       |               | Hr Max.       |               |
| 8           |               |               |               |               |               |               |
| 10          | 1.507 (38.28) | .286 (7.26)   | 1.857 (47.17) | .880 (22.35)  | .286 (7.26)   | 2.130 (54.10) |
| 12          | 1.507 (38.28) | .416 (10.57)  | 1.857 (47.17) | .950 (24.13)  | .416 (10.57)  | 2.265 (57.53) |
| 14          | 1.507 (38.28) | .476 (12.09)  | 2.092 (53.14) | 1.010 (25.65) | .476 (12.09)  | 2.355 (59.82) |
| 16          | 1.507 (38.28) | .626 (15.90)  | 2.092 (53.14) | 1.070 (27.18) | .626 (15.90)  | 2.490 (63.25) |
| 18          | 1.507 (38.28) | .706 (17.93)  | 2.092 (53.14) | 1.130 (28.70) | .706 (17.93)  | 2.589 (65.76) |
| 20          | 1.507 (38.28) | .831 (21.11)  | 2.092 (53.14) | 1.190 (30.23) | .831 (21.11)  | 2.722 (69.14) |
| 22          | 1.507 (38.28) | .956 (24.28)  | 2.092 (53.14) | 1.260 (32.00) | .956 (24.28)  | 2.845 (72.26) |
| 24          | 1.507 (38.28) | 1.081 (27.46) | 2.092 (52.14) | 1.320 (33.53) | 1.081 (27.46) | 2.967 (75.36) |

\* See page 158 for part numbers. † To order backshell assemblies separately, see page 161.

## Backshells (Non-MS)

(Not supplied with MS Connectors)

Short  
(C)Straight  
(S)90° Degree  
(R)

|             | TYPE C (SHORT)                        | TYPE S (Straight)                     | TYPE R (90°)                          |
|-------------|---------------------------------------|---------------------------------------|---------------------------------------|
| Shell Size* | ITT CANNON Conductive (Nickel finish) | ITT CANNON Conductive (Nickel finish) | ITT CANNON Conductive (Nickel finish) |
| 10          | 057-0716-002                          | 057-0683-002                          | 057-0704-001                          |
| 12          | 057-0717-002                          | 057-0684-002                          | 057-0705-001                          |
| 14          | 057-0718-002                          | 057-0685-002                          | 057-0706-001                          |
| 16          | 057-0719-002                          | 057-0686-002                          | 057-0707-001                          |
| 18          | 057-0720-002                          | 057-0687-002                          | 057-0708-001                          |
| 20          | 057-0721-002                          | 057-0688-002                          | 057-0709-001                          |
| 22          | 057-0722-002                          | 057-0689-002                          | 057-0710-001                          |
| 24          | 057-0723-002                          | 057-0731-002                          | 057-0711-001                          |

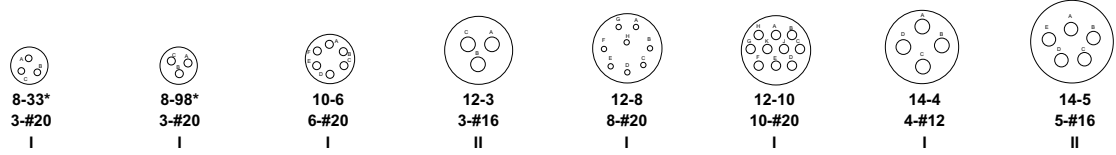
Dimensions are shown in inches (millimeters).  
Dimensions subject to change.

www.ittcannon.com

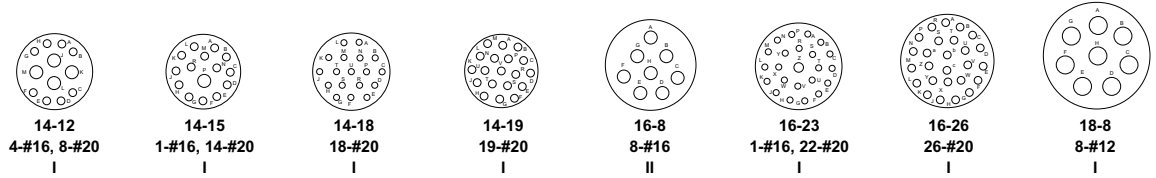
## Contact Arrangements

Face view, pin insert

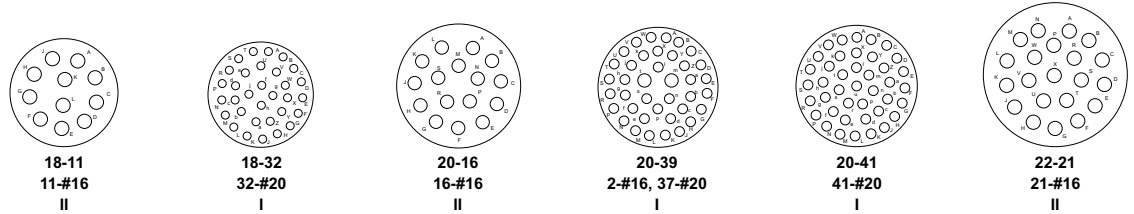
Shell Size  
No. of Contacts  
Service Rating



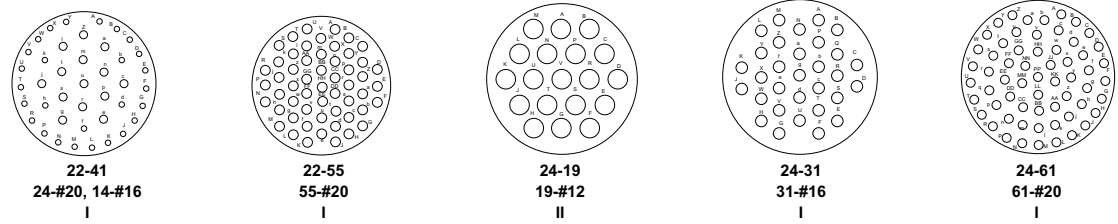
Shell Size  
No. of Contacts  
Service Rating



Shell Size  
No. of Contacts  
Service Rating



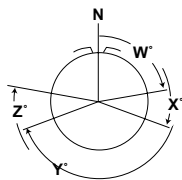
Shell Size  
No. of Contacts  
Service Rating



\* Layouts are available in shell styles MS3470 and MS3476 only.

## Alternate Insert Positions

Face view, pin insert



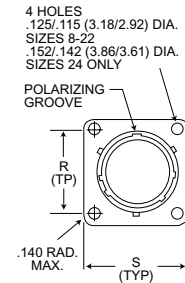
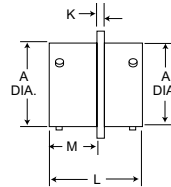
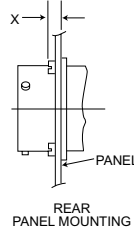
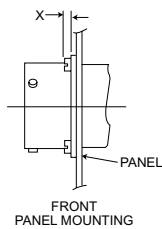
Contact arrangements requiring reduced diameter for lead-in chamfer on outer row of contact cavities as indicated below.

| Shell | Contact Arrangements | Contact Cavities                                                     |
|-------|----------------------|----------------------------------------------------------------------|
| 8     | 33, 38               | A, B, C                                                              |
| 12    | 10                   | C, G                                                                 |
| 14    | 12                   | A, B, C, D, E, F, G, and H                                           |
| 14    | 18                   | A, C, E, G, J, and L                                                 |
| 14    | 19                   | B, D, F, H, K, and M                                                 |
| 16    | 26                   | A, B, C, D, E, F, G, H, J, K, L, M, N, P, and R)                     |
| 18    | 32                   | A, B, C, D, E, F, G, H, J, K, L, M, N, P, R, S, and T                |
| 22    | 41                   | A, B, C, D, E, F, G, H, J, K, L, M, N, P, R, S, T, U, V, W, X, and Y |

| SHELL SIZE | ARRANGEMENT | N  | W    | POS CODE X | Y    | Z    |
|------------|-------------|----|------|------------|------|------|
| 8          | 33          | 0° | 90°  | -          | -    | -    |
|            | 98          | 0° | -    | -          | -    | -    |
| 10         | 6           | 0° | 90°  | -          | -    | -    |
|            | 3           | 0° | -    | -          | 180° | -    |
| 12         | 8           | 0° | 90°  | 112°       | 203° | 292° |
|            | 10          | 0° | 60°  | 155°       | 270° | 295° |
| 14         | 4           | 0° | 45°  | -          | -    | -    |
|            | 5           | 0° | 40°  | 92°        | 184° | 273° |
|            | 12          | 0° | 43°  | 90°        | -    | -    |
|            | 15          | 0° | 17°  | 110°       | 155° | 234° |
|            | 18          | 0° | 15°  | 90°        | 180° | 270° |
| 16         | 19          | 0° | 30°  | 165°       | 315° | -    |
|            | 8           | 0° | 54°  | 152°       | 180° | 331° |
|            | 23          | 0° | 158° | 270°       | -    | -    |
|            | 26          | 0° | 60°  | -          | 275° | 338° |
| 18         | 8           | 0° | 180° | -          | -    | -    |
|            | 11          | 0° | 62°  | 119°       | 241° | 340° |
| 20         | 32          | 0° | 85°  | 138°       | 222° | 265° |
|            | 16          | 0° | 238° | 318°       | 333° | 347° |
|            | 39          | 0° | 63°  | 144°       | 252° | 333° |
|            | 41          | 0° | 45°  | 126°       | 225° | -    |
| 22         | 21          | 0° | 16°  | 135°       | 175° | 349° |
|            | 41          | 0° | 39°  | 135°       | 264° | -    |
|            | 55          | 0° | 30°  | 142°       | 226° | 314° |
| 24         | 19          | 0° | 30°  | 165°       | 315° | -    |
|            | 31          | 0° | 90°  | 225°       | 225° | -    |
|            | 61          | 0° | 90°  | 180°       | 270° | 324° |

## Thru-Bulkhead Receptacle

## PV-TBF



| Shell Size | A<br>Dia $\pm .003$ (0.08) | K<br>$\pm .016$ (0.41) | L<br>Max.     | M<br>$\pm .016$ (0.41) | R<br>(TP)     | S<br>Max.     | X<br>Max.   |
|------------|----------------------------|------------------------|---------------|------------------------|---------------|---------------|-------------|
| 8          | .471 (11.96)               | .062 (1.57)            | 1.125 (28.58) | .577 (14.66)           | .594 (15.09)  | .828 (21.03)  | .218 (5.54) |
| 10         | .588 (14.94)               | .062 (1.57)            | 1.125 (28.58) | .577 (14.66)           | .719 (18.26)  | .954 (24.23)  | .218 (5.54) |
| 12         | .748 (19.00)               | .062 (1.57)            | 1.125 (28.58) | .577 (14.66)           | .812 (20.62)  | 1.047 (26.59) | .218 (5.54) |
| 14         | .873 (22.17)               | .062 (1.57)            | 1.125 (28.58) | .577 (14.66)           | .906 (23.01)  | 1.141 (28.98) | .218 (5.54) |
| 16         | .998 (25.35)               | .062 (1.57)            | 1.125 (28.58) | .577 (14.66)           | .969 (24.61)  | 1.234 (31.34) | .218 (5.54) |
| 18         | 1.123 (28.52)              | .062 (1.57)            | 1.125 (28.58) | .577 (14.66)           | 1.062 (26.97) | 1.328 (33.73) | .218 (5.54) |
| 20         | 1.248 (31.70)              | .094 (2.39)            | 1.406 (35.71) | .703 (17.86)           | 1.156 (29.36) | 1.453 (36.91) | .344 (8.74) |
| 22         | 1.373 (34.87)              | .094 (2.39)            | 1.406 (35.71) | .703 (17.86)           | 1.250 (31.75) | 1.578 (40.08) | .344 (8.74) |
| 24         | 1.498 (38.05)              | .094 (2.39)            | 1.406 (35.71) | .703 (17.86)           | 1.375 (34.92) | 1.703 (43.26) | .311 (7.90) |

Notes: 1) Shell available in conductive (nickel finish) only.

2) Contacts are nonremovable.

## How to Order - PV-TBF

## SERIES PREFIX

PV-TBF - ITT Cannon prefix

## SHELL SIZE

8 through 24

## INSERT ARRANGEMENTS

10-6, 14-19, 16-8, 16-26, 18-32, 20-39, 20-41, 22-41, 22-55, 24-61.

## SERIES PREFIX

## SHELL SIZE

## INSERT ARRANGEMENTS

## CONTACT STYLE

## ALTERNATE POLARIZING POSITION

## CONTACT STYLE

Pin and socket

## ALTERNATE POLARIZING POSITION

No designation required for normal. Standard MS alternate positions available.

Notes: 1) Shell available in conductive (nickel finish) only.

2) Contacts are nonremovable.

3) Designed to MS3119 configuration and meets the performance requirements of MIL-C-26482 Series 2.

PV-TBF 10 -6 PS W

## Tooling



**Crimp Tool**  
M22520/1-01 Crimp Tool  
with M22520/1-02 Turret



**Insertion/Extraction Tools**

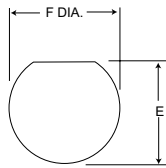


**CBT 520/530**

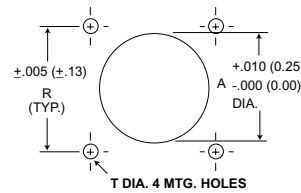
| Contact Size | Wire Contact Tools           |                    |                     |                      |                                   | Unwired Contact Tools<br>Cannon Pt. No. |
|--------------|------------------------------|--------------------|---------------------|----------------------|-----------------------------------|-----------------------------------------|
|              | Cannon Part Number           | M81969 Part Number | Insertion Color Tip | Extraction Color Tip | Superseded Mil. Pt. No.           |                                         |
| 20           | CIET-20-11<br>(274-7001-006) | M81969/14-11       | Red                 | White                | MS27534-20, MS3447-20, NAS1664-20 | 274-7007-000                            |
| 16           | CIET-16-03<br>(274-7002-000) | M81969/14-03       | Blue                | White                | MS27534-16, MS3447-16, NAS1664-16 | 274-7008-000                            |
| 12           | CIET-12-04<br>(274-7003-000) | M81969/14-04       | Yellow              | White                | MS27534-12, MS3447-12, NAS1664-12 | 274-7009-000                            |

## Panel Cutouts

## Jam Nut Receptacle



## Narrow Flange and Thru-Bulkhead/Wide Flange



| Shell Size | E<br>±.005 (0.13) | F Dia.<br>±.005 (0.13) |
|------------|-------------------|------------------------|
| 10         | .661 (16.79)      | .697 (17.70)           |
| 12         | .824 (20.93)      | .895 (22.73)           |
| 14         | .948 (24.08)      | 1.010 (25.65)          |
| 16         | 1.072 (27.23)     | 1.135 (28.33)          |
| 18         | 1.197 (30.40)     | 1.260 (32.00)          |
| 20         | 1.322 (33.58)     | 1.385 (35.18)          |
| 22         | 1.447 (36.75)     | 1.510 (38.35)          |
| 24         | 1.572 (39.93)     | 1.635 (41.53)          |

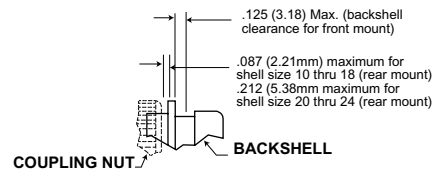
| Shell Size | A Dia.        | R             | T Dia.      | Screw Size |
|------------|---------------|---------------|-------------|------------|
| 8          | .620 (15.75)  | .594 (18.26)  | .125 (3.14) | #4         |
| 10         | .740 (18.80)  | .719 (18.26)  | .125 (3.17) | #4         |
| 12         | .864 (21.95)  | .812 (20.62)  | .125 (3.17) | #4         |
| 14         | .990 (25.15)  | .906 (23.01)  | .125 (3.17) | #4         |
| 16         | 1.118 (28.40) | .969 (24.61)  | .125 (3.17) | #4         |
| 18         | 1.240 (31.50) | 1.062 (26.97) | .125 (3.17) | #4         |
| 20         | 1.366 (34.70) | 1.156 (29.36) | .125 (3.17) | #4         |
| 22         | 1.490 (37.85) | 1.250 (31.75) | .125 (3.17) | #4         |
| 24         | 1.616 (41.05) | 1.375 (34.92) | .155 (3.97) | #6         |

| Shell Size | A Dia.        | R             | T Dia.      | Screw Size |
|------------|---------------|---------------|-------------|------------|
| 10         | .740 (18.80)  | .812 (20.62)  | .155 (3.97) | #6         |
| 12         | .864 (21.95)  | .938 (23.93)  | .155 (3.97) | #6         |
| 14         | .990 (25.15)  | 1.031 (26.19) | .155 (3.97) | #6         |
| 16         | 1.118 (28.40) | 1.125 (28.58) | .155 (3.97) | #6         |
| 18         | 1.240 (31.50) | 1.203 (30.56) | .155 (3.97) | #6         |
| 20         | 1.366 (34.70) | 1.297 (32.94) | .155 (3.97) | #6         |
| 22         | 1.490 (37.85) | 1.375 (34.92) | .155 (3.97) | #6         |
| 24         | 1.616 (41.05) | 1.500 (38.10) | .155 (3.97) | #6         |

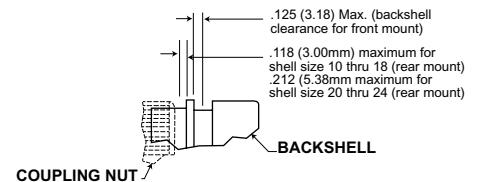
## Panel Thickness

Shown here are the maximum panel thickness including screw head height allowable to ensure complete connector operation.

## Narrow Flange Receptacle



## Wide Flange Receptacle



## Dummy Stowage Receptacles

## How to Order

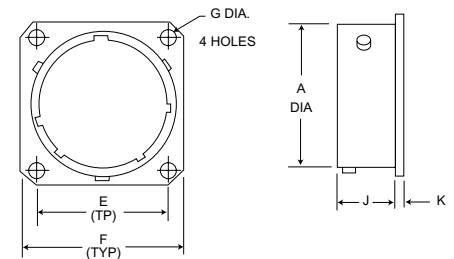
## PV DESCRIPTION

**SERIES PREFIX** PVS - ITT Cannon prefix  
**DUMMY RECEPTACLE INDICATOR** - 15 -PV  
**CLASS** G - Conductive finish (nickel)  
 A - Nonconductive finish (anodized)  
**SHELL SIZE** 8 through 24

## MS DESCRIPTION

**SERIES PREFIX** MS - Complies with MIL-C-26482  
**MS STANDARD** 3115 - Dummy receptacle  
**SHELL SIZE** 8 through 24  
**CLASS** L - Conductive finish (nickel)  
 A - Nonconductive finish (anodized)

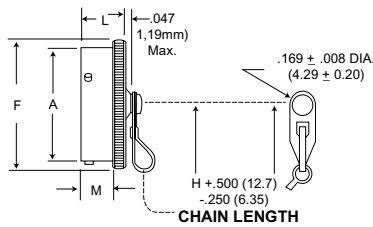
NOTE: Usable on KPT/KPSE series also.



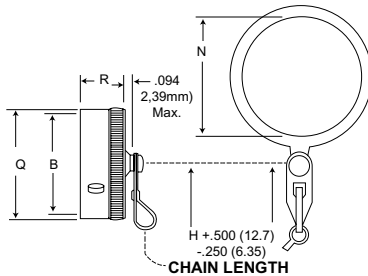
| Shell Size | A Dia. Max.   | E (TYP)       | F Max.        | G Max.      | J Max.       | K Max.      |
|------------|---------------|---------------|---------------|-------------|--------------|-------------|
| 8          | .474 (12.04)  | .594 (15.09)  | .828 (21.03)  | .125 (3.18) | .493 (12.52) | .078 (1.98) |
| 10         | .591 (15.01)  | .719 (18.26)  | .954 (24.23)  | .125 (3.18) | .493 (12.52) | .078 (1.98) |
| 12         | .751 (19.08)  | .812 (20.62)  | 1.047 (26.59) | .125 (3.18) | .493 (12.52) | .078 (1.98) |
| 14         | .876 (22.25)  | .906 (23.01)  | 1.141 (28.98) | .125 (3.18) | .493 (12.52) | .078 (1.98) |
| 16         | 1.001 (25.43) | .969 (24.61)  | 1.234 (31.34) | .125 (3.18) | .493 (12.52) | .078 (1.98) |
| 18         | 1.126 (28.60) | 1.062 (26.97) | 1.328 (33.73) | .125 (3.18) | .493 (12.52) | .078 (1.98) |
| 20         | 1.251 (31.78) | 1.156 (29.36) | 1.453 (36.91) | .125 (3.16) | .587 (14.91) | .110 (2.79) |
| 22         | 1.376 (34.95) | 1.250 (31.75) | 1.578 (40.08) | .125 (3.18) | .587 (14.91) | .110 (2.79) |
| 24         | 1.501 (38.13) | 1.375 (34.92) | 1.703 (43.26) | .152 (3.86) | .620 (15.75) | .110 (2.79) |

## Protective Metal Caps

## Plugs



## Receptacles



## SERIES PREFIX

PVS - ITT Cannon Prefix  
MS - Complies with MIL-C-26482 (Series 2)

## TYPE

80 or 3180 - Plug Cap  
81 or 3181 - Receptacle Cap

## SHELL SIZE

8 thru 24

## TERMINATION STYLE

C - Sash chain (MS approved)  
N - Sash chain with ring (81 or 3181 type only) MS approved

## FINISH

A - Hard anodic, non-conductive (MS approved)  
G - Nickel, conductive (not MS) (PVS only)

NOTE: Usable on KPT/KPSE series also.

N style used primarily on Jam Nut Receptacle.

PVS 80 -12 C A  
MS 3180 -12 C A

| Shell Size | A<br>Max. Dia. | B<br>Max.     | F<br>Max. Dia. | H              | L<br>Max.    | M<br>Max.    | N<br>Min. Dia. | Q<br>Max.     | R<br>Max.    |
|------------|----------------|---------------|----------------|----------------|--------------|--------------|----------------|---------------|--------------|
| 8          | .474 (12.04)   | .486 (12.34)  | .719 (18.26)   | 3.000 (76.20)  | .562 (14.27) | .399 (10.13) | .578 (14.68)   | .734 (18.64)  | .562 (14.27) |
| 10         | .591 (15.01)   | .607 (15.42)  | .844 (21.44)   | 3.000 (76.20)  | .562 (14.27) | .399 (10.13) | .703 (17.86)   | .859 (21.82)  | .562 (14.27) |
| 12         | .751 (19.08)   | .766 (19.46)  | 1.000 (25.40)  | 3.500 (76.20)  | .562 (14.27) | .399 (10.13) | .891 (22.63)   | 1.000 (25.40) | .562 (14.27) |
| 14         | .876 (22.25)   | .890 (22.60)  | 1.125 (28.58)  | 3.500 (88.90)  | .562 (14.27) | .399 (10.13) | 1.016 (25.81)  | 1.125 (28.58) | .562 (14.27) |
| 16         | 1.001 (25.43)  | 1.015 (25.78) | 1.250 (31.75)  | 3.500 (88.90)  | .562 (14.27) | .399 (10.13) | 1.141 (28.98)  | 1.250 (31.75) | .562 (14.27) |
| 18         | 1.126 (28.60)  | 1.141 (28.98) | 1.375 (34.93)  | 3.500 (88.90)  | .562 (14.27) | .399 (10.13) | 1.266 (32.16)  | 1.375 (34.93) | .562 (14.27) |
| 20         | 1.251 (31.78)  | 1.265 (32.13) | 1.500 (38.10)  | 4.000 (101.60) | .625 (15.88) | .461 (11.71) | 1.391 (35.33)  | 1.500 (38.10) | .562 (14.27) |
| 22         | 1.376 (34.96)  | 1.390 (35.31) | 1.625 (41.26)  | 4.000 (101.60) | .625 (15.88) | .461 (11.71) | 1.516 (38.51)  | 1.625 (41.26) | .562 (14.27) |
| 24         | 1.501 (38.13)  | 1.515 (38.48) | 1.750 (44.45)  | 4.000 (101.60) | .658 (16.71) | .494 (12.55) | 1.641 (41.68)  | 1.750 (44.45) | .602 (15.29) |

## Contacts

| Contact Size | Type   | M39029 Number | Color Brands |       |        | ITT Cannon   |
|--------------|--------|---------------|--------------|-------|--------|--------------|
|              |        |               | 1st          | 2nd   | 3rd    |              |
| 20           | Socket | M39029/5-115  | Brown        | Brown | Green  | 031-9174-004 |
| 20           | Pin    | M39029/4-110  | Brown        | Brown | Black  | 030-9173-006 |
| 16           | Socket | M39029/5-116  | Brown        | Brown | Blue   | 031-9206-006 |
| 16           | Pin    | M39029/4-111  | Brown        | Brown | Brown  | 030-9205-007 |
| 12           | Socket | M39029/5-118  | Brown        | Brown | Grey   | 031-9186-003 |
| 12           | Pin    | M39029/4-113  | Brown        | Brown | Orange | 030-9185-003 |

## Thermocouple Contacts

| Contact Size | Alumel       | Chromal      |
|--------------|--------------|--------------|
| 20 Pin       | 030-1831-000 | 030-1832-000 |
| 20 Socket    | 031-1013-000 | 031-1014-000 |

Contacts for printed circuit applications are also available. Consult factory.

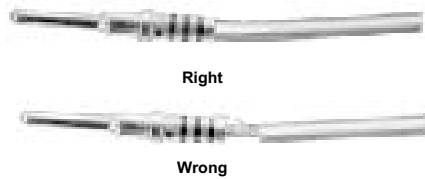
## Wire Hole Fillers



| Contact Size | Part Number  |            | Superseded Mil. Pt. No.   | Color Code |
|--------------|--------------|------------|---------------------------|------------|
|              | Cannon       | Military   |                           |            |
| 20           | 225-0070-000 | MS27488-20 | MS3187-20<br>M83723/28-20 | Red        |
| 16           | 225-0071-000 | MS27488-16 | MS3187-16<br>M83723/28-16 | Blue       |
| 12           | 225-0072-000 | MS27488-12 | MS3187-12<br>M83723/28-12 | Yellow     |

## Assembly Procedures

### STRIPPING AND CRIMPING



1. Strip wires according to contact size: 3/16" for #20 and 9/32" for #16 and #12. #20 contacts accommodate AWG wire sizes 20, 22, or 24; #16 accommodates 16, 18 or 20; and #12 accommodates 12 or 14.

2. Insert wire into rear of contact. Wire insulation must butt against rear of contact. Wire must be visible thru inspection hole.

3. Use M22520/1-01 crimp tool with proper crimp locator M22520/1-02. The color code hand on the contact (red for #20, blue for #16 and yellow for #12) must match the color code of the locator and the insertion tool throughout the crimping and assembly operations.



### CONTACT INSERTION



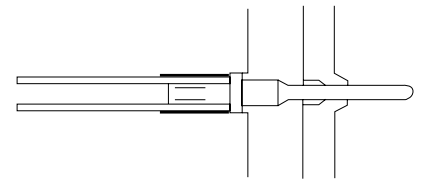
### OPENING

### COLORED END FOR INSERTION

4. Insert contact and wire into tool jaws. To crimp, squeeze handles together fully until ratchet release and allows handles to expand; otherwise, contact cannot be extracted from tool jaws. Maintain slight insertion pressure on wire while crimping contact to wire.

1. Remove backshell and put wired contacts thru cable clamp opening.

2. Used colored end of CIET tool for insertion. Place wire into tool at large opening. To facilitate contact insertion, a 6-in. min. free length of wire is recommended.



3. Slide back tool on wire while holding thumb against wire at opening. Wire will slip into tool.

**NOTE: Socket contacts should be inserted partially into grommet by hand before using insertion tool.**

4. With tool pressed against shoulder of contact, starting at the center cavity, insert wired contact and tool into properly identified cavity at rear of plug with firm, even pressure. Do not use excessive pressure.

5. When contact bottoms, a slight click can be heard as tines of metal retaining clip snaps into place behind contact shoulder.



6. Withdraw tool from rear of plug. To be sure that contact is locked, pull back lightly on wire. Then remove tool from wire and proceed with other contacts.



7. After all contacts are inserted, fill unwired cavities with sealing plugs (insert head last and leave end protruding for ease of removal), assemble backshell on rear of connector.

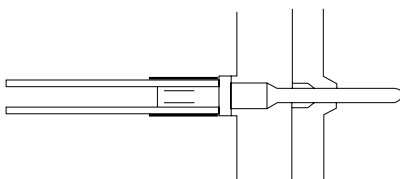
### CONTACT EXTRACTION



1. Remove backshell and slide back along wires to allow access. To extract a contact, use white end of CIET tool. Place wire into tool at large opening. Slide back tool on wire while holding thumb against wire at opening. Wire will slip into tool.

### COMPLETION

### BROKEN CIRCLE



2. Push tool into rear of plug until it bottoms. At this point, tool releases tines on retaining clip so that contact can be extracted.



3. While maintaining slight insertion force on tool, firmly hold wire against serrated shoulder at center of tool and extract both wired contact and tool from plug.

4. Check face of plug or receptacle for proper contact installation. In socket inserts with a large number of contact, cavities are identified in a spiral pattern. A projecting line from the spiral indicates omission of a letter; a broken circle around a cavity indicates transition between capitals and lower case and double letters.

### BREAK

ITT Cannon is the foremost manufacturer of MS and MS type connectors with the widest range of connector styles, sizes and variations in the industry. These connectors utilize the finest materials, which, along with precision manufacturing and rigid quality control, assure ITT Cannon customers of the finest quality connectors.

These circular connectors were originally designed for aircraft, but are now widely used in many other fields. They are particularly suitable for commercial applications requiring low cost and high reliability.



#### ENVIRONMENTAL RESISTANT MS-E, MS-F, MS-R AND F80 (Solder/Crimp Termination)

MS-E, MS-F and MS-R are similar to MS-A and MS-B connectors but have resilient insulators and wire sealing grommets for extreme environmental conditions and high altitude sealing. MS-E's and MS-F's have a mechanical cable clamp; the MS-R has a shorter, lighter weight endbell without the cable clamp. Both the MS-F and MS-R have 0 rings to supplement the interfacial seal. Shells are aluminum alloy. Contacts are silver plated copper alloy. The F80 modification (crimp contact termination) is available in E, R, F and BFR styles with resilient insulators.



#### POTTING ER CONNECTORS (Solder Contact Termination)

These lightweight potting connectors provide resistance to salt water, fuels, etc., and will withstand the effects of high vibration. 3100 and 3106 connectors with plastic potting cups and resilient inserts meet the requirements of MS3103 and MS25183. Contacts are silver plated copper or brass. ER insulators are resilient; shells are aluminum alloy. A 90° plug (3108ER) is also available.



#### ACCESSORIES

Accessories to fit MS connectors include junction shells, protective caps, dummy or stowage receptacles, cable clamps, telescoping bushings.

## How to Order

In the latest revision of MIL-C-5015, a new class of environment-resistant connectors was added. This new class F connector supersedes the previous class E connector. The MS3106F is identical to the MS3106E except that the MS3106F has an "0" ring under the coupling nut. The class E will still be available upon request for existing programs, and upon ordering will also bear the E nomenclature on the shell.

MS-F and MS-R connectors are designed to operate in the extreme environmental conditions of high altitude flight and must be completely sealed to withstand moisture, condensation, vibration, corona and flashover caused by high altitude environments. They have resilient grommet with internal restrictions in the wire cavities which act as O rings around the wires. This allows the wires to slide thru the grommet with a minimum of friction, yet when the ferrule is seated and the endbell tightened it provides a perfect wire seal thru a wide variety of wire diameters. This seal at the rear, plus the interfacial seal at the front, effects a completely environment-resistant assembly when the plug is mated to an F or R receptacle. Sockets are of the closed-entry type.

The temperature range for this connector is -55°C (-67°F) to +125°C (+257°F) and meets the requirements of MIL-C-5015.

The F80 modification (crimp contact termination) is available in resilient insulators in the E, R, F, and BFR styles, creating a large selection of insert assemblies and hardware. Components are identical to the MS-5015 except that the contacts are modified for crimp termination providing an inexpensive crimp contact connector with the proven reliability of and complete interchangeability with the MS-5015 series. See page 187 for assembly instructions. Cable clamps have been integrally designed with the endbell on MS-E and MS-F connectors. Class R is without the cable clamp.

PREFIX \_\_\_\_\_

SHELL STYLE \_\_\_\_\_

CLASS \_\_\_\_\_

SHELL SIZE \_\_\_\_\_

CONTACT ARRANGEMENT \_\_\_\_\_

CONTACT TYPE \_\_\_\_\_

ALTERNATE INSERT POSITION \_\_\_\_\_

MODIFICATION CODE \_\_\_\_\_

#### PREFIX

MS - Conforms to latest MIL-C-5015 revision  
CA - Cannon designation (for any modification)

#### SHELL STYLE

3100 - Wall mounting receptacle  
3101 - Cable connecting plug  
3102 - Box mounting receptacle  
\* 3106 - Straight plug  
3108 - 90° angle plug

#### CLASS

E/F - Environmental with resilient insulators and integral cable clamp.  
R - Environmental with resilient insulators and shortened light weight endbell; also additional sealing with O ring seal under coupling nut in styles 3106 and 3108

\* When ordering MS3106F to the Cannon part number, designate CA06R. See pages 177 and 181.

CA 3106 R 20 - 27 P W \*  
MS 3106 R 20 - 27 P W -

#### SHELL SIZE

Coupling thread diameter in sixteenths of an inch

#### CONTACT ARRANGEMENTS

See pages 171-174

#### CONTACT TYPE

P for Pin; S for Socket

#### ALTERNATE INSERT POSITION

W, X, Y and Z (omit for "Normal")

#### MODIFICATION CODE

(applies to CA numbers only, not MS)  
F80 - Crimp type contacts. See page 187 for assembly instructions.

## Performance and Material Specifications

### MATERIALS AND FINISHES

|                  |             |                                            |
|------------------|-------------|--------------------------------------------|
| <b>Shell</b>     | Material    | Aluminum alloy                             |
|                  | Finish      | O.D. Chromate coating over cadmium plating |
| <b>Insulator</b> | Material    | Polychloroprene (resilient)                |
| <b>Contacts</b>  | Material    | Brass or copper alloy                      |
|                  | Finish      | Silver plate                               |
|                  | Termination | Tinned solder pot                          |

### WIRING

For class E, R and F connectors, satisfactory moisture sealing will be obtained if AWG and MS wire sizes and insulation outside diameters are governed by this table.

| Contact Size | Wire Size (MIL-W-5086) | Insulation OD Limit (inches)           |
|--------------|------------------------|----------------------------------------|
| 16           | 16 thru 20             | .064 (1.63) min. to .130 (3.30) max.   |
| 12           | 12 thru 14             | .114 (2.90) min. to .170 (4.32) max.   |
| 8            | 8 thru 10              | .164 (4.17) min. to .255 (6.48) max.   |
| 4            | 4 thru 6               | .275 (6.98) min. to .370 (9.40) max.   |
| 0            | 0 thru 2               | .415 (10.54) min. to .550 (13.97) max. |

### ELECTRICAL SERVICE DATA

Test current ratings of contacts and allowable voltage drop under test conditions when assembled as in service are shown below. Maximum total current to be carried per connector is the same as the allowable in wire bundles as specified in MIL-W-5088.

| Contact Size | Test Current (amps) | Potential Drop (millivolts) |
|--------------|---------------------|-----------------------------|
| 16           | 13                  | 49                          |
| 12           | 23                  | 42                          |
| 8            | 46                  | 26                          |
| 4            | 80                  | 23                          |
| 0            | 150                 | 21                          |

### CONTACTS

Pin and socket contacts are designed to resist severe vibration and repeated connection and disconnection. The average force to either engage or separate pin and socket contacts will not exceed the average values given in the latest revision of MIL-C-5015.

| FORCE In lbs. | 16   | 12   | 8     | 4     | 0     |
|---------------|------|------|-------|-------|-------|
| Maximum       | 3.00 | 5.00 | 10.00 | 15.00 | 20.00 |
| Average       | 2.10 | 3.50 | 7.00  | 10.50 | 14.00 |
| Minimum       | .25  | .50  | .75   | 1.00  | 2.00  |

### THERMOCOUPLE CONTACTS

Sizes 12 and 16 contacts, machined from matching thermocouple lead wire alloys, can be supplied in ITT Cannon connectors. These thermocouple contacts maintain continuity from thermal-sensor leads thru a bulkhead of other closures in temperature measuring applications.

These contacts for matching lead wires are detailed by the standards of the Instrument Society of America (I.S.A.);

| I.S.A Standards | Material              |
|-----------------|-----------------------|
| J and Y         | Iron and constantan   |
| K               | Chromel and alumel    |
| T               | Copper and constantan |

Since the thermocouple connector applications determines the soldering methods and materials to be used, thermocouple contacts, identified by permanent markings, are normally supplied with untinned solder pots. Thermocouple contacts are supplied only in connectors having resilient insulators.

### HIGH POTENTIAL TEST VOLTAGE

MS connectors show no evidence of breakdown when the test voltage given below is applied between the two closest contacts and between the shell and the contacts closest to the shell for a period of one minute.

| MS Service Rating | Test Voltage (RMS) 60 cps | Suggested * Operating Voltages |          | Air Spacing Nom. (inches) | Creepage Distance Nom. (inches) |
|-------------------|---------------------------|--------------------------------|----------|---------------------------|---------------------------------|
|                   |                           | DC                             | AC (rms) |                           |                                 |
| Inst.             | 1000                      | 250                            | 200      |                           | 1/16                            |
| A                 | 2000                      | 700                            | 500      | 1/16                      | 1/8                             |
| D                 | 2800                      | 1250                           | 900      | 1/8                       | 3/16                            |
| E                 | 3500                      | 1750                           | 1250     | 3/16                      | 1/4                             |
| B                 | 4500                      | 2450                           | 1750     | 1/4                       | 5/16                            |
| C                 | 7000                      | 4200                           | 3000     | 5/16                      | 1                               |

\* As indicated in previous MS Specification and to be used by designer only as a guide.

## High Voltage Cartridges for MS-E and MS-R (HV310\*E/R Series)



- Standard contact arrangements are adaptable to high voltage applications.
- Eliminates need for a separate high voltage connector.
- Assembly time is reduced.

High voltage conductors as well as power and/or control signal conductors can now be connected simultaneously in standard MS connectors. Previously, MS connectors involved in high voltage circuitry required individual design considerations and could only be ordered as a "special." The new high voltage cartridge allows conversion of a standard connectors to one capable of handling up to 15,000 volts DC (Test Voltage - mated), operating voltage - See level 5,000 VDC or 3,500 VAC. These cartridges are molded of nylon and provide as high degree of arc-over protection between adjacent contacts or between a contact and the connector shell. Unmated, each cartridge provides a nylon isolating barrier capable of withstanding up to 10,000 volts DC (or peak).

The contact within the cartridge is a 7.5 amp. size 20, crimp snap-in type with dielectric rear release clip retention. This contact is removable with the plastic CIET20 insertion/extraction tool provided the insulation is .084 (22.45) or less. The contact may be crimped with the standard MS-3191 tool and MS-3191-20A locator and hand inserted into the nylon cartridge. The cartridge body is installed in the connector at the factory.

High voltage cartridges now available fit the space normally occupied by a #4 or #8 size contact in an MS-E, MS-R or MS-F type connector.

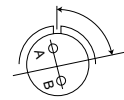
Over forty-nine contact arrangements are currently available in which these high voltage cartridges may be used. Consult factory for ordering information.

## MS Alternate Insert Positions

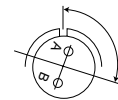
All views are looking into front of pin insert or rear of socket insert.



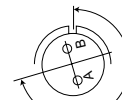
Normal Position



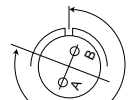
Position W



Position X



Position Y



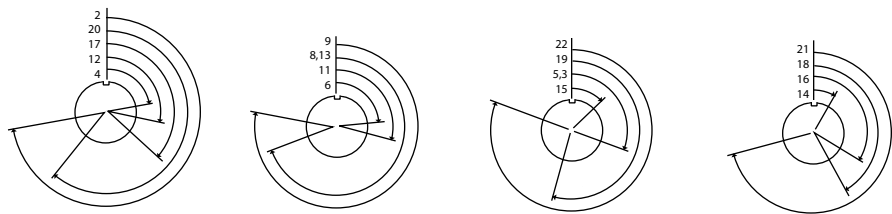
Position Z

| Contact    |             |           |                             |     |     |     |         | Contact    |             |               |                             |     |     |     |     | Contact    |             |               |                             |                 |     |     |     |     |     |
|------------|-------------|-----------|-----------------------------|-----|-----|-----|---------|------------|-------------|---------------|-----------------------------|-----|-----|-----|-----|------------|-------------|---------------|-----------------------------|-----------------|-----|-----|-----|-----|-----|
| Shell Size | Arrangement | Wire Size | Alternate Positions-Degrees |     |     |     |         | Shell Size | Arrangement | Wire Size     | Alternate Positions-Degrees |     |     |     |     | Shell Size | Arrangement | Wire Size     | Alternate Positions-Degrees |                 |     |     |     |     |     |
|            |             |           | Service Rating              | W   | X   | Y   | Z       |            |             |               | Service Rating              | W   | X   | Y   | Z   |            |             |               | Service Rating              | W               | X   | Y   | Z   |     |     |
| 8S         | 8S-1        | 1 #16     | A                           | -   | -   | -   | -       | 20         | 20-22       | 3 #16         | A                           | 80  | 110 | 250 | 280 | 28         | 28-10       | 3 #12         | D(G)                        | 80              | 110 | 250 | 280 |     |     |
| 10S        | 10S-2       | 1 #16     | A                           | -   | -   | -   | -       |            |             | 3 #8          |                             |     |     |     |     |            |             | A(all others) |                             |                 |     |     |     |     |     |
|            | 10SL-4      | 2 #16     | A                           | -   | -   | -   | -       | 20-23      | 2 #8        | A             | 35                          | 110 | 250 | 325 |     |            |             | 2 #4          |                             |                 |     |     |     |     |     |
|            | 10SL-3      | 3 #16     | A                           | -   | -   | -   | -       | 20-24      | 2 #16       | A             | 35                          | 110 | 250 | 325 |     |            |             | 28-11         | 18 #16                      | A               | 80  | 110 | 250 | 280 |     |
| 12         | 12-5        | 1 #12     | D                           | -   | -   | -   | -       |            |             | 2 #8          |                             |     |     |     |     |            |             | 4 #12         |                             |                 |     |     |     |     |     |
| 12S        | 12S-4       | 1 #16     | D                           | -   | -   | -   | -       | 20-27      | 14 #16      | A             | 35                          | 110 | 250 | 325 |     |            |             | 28-12         | 26 #16                      | A               | 90  | 180 | 270 | -   |     |
|            | 12S-3       | 2 #16     | A                           | 70  | 145 | 215 | 290     | 20-29      | 17 #16      | A             | 80                          | -   | -   | -   | 280 |            |             | 28-15         | 35 #16                      | A               | 80  | 110 | 250 | 280 |     |
|            |             |           |                             |     |     |     |         | 20-33      | 11 #16      | A             | -                           | -   | -   | -   |     |            | 28-16       | 20 #16        | A                           | 80              | 110 | 250 | 280 |     |     |
| 14         | 14-3        | 1 #8      | A                           | -   | -   | -   | -       | 22         | 22-2        | 3 #8          | D                           | 70  | 145 | 215 | 290 |            |             | * 28-17       | 15 #16                      | A(A-L),B(R)     | 80  | 110 | 250 | 280 |     |
| 14S        | 14S-1       | 3 #16     | A                           | -   | -   | -   | -       | * 22-4     | 2 #12       | A             | 35                          | 110 | 250 | 325 |     |            |             | * 28-19       | 6 #16                       | A(C,E,G,J,K,L)  | 80  | 110 | 250 | 280 |     |
|            | 14S-2       | 4 #16     | Inst.                       | -   | 120 | 240 | -       |            | 2 #8        |               |                             |     |     |     |     |            |             | 4 #12         | B(H,M), D(A,B)              |                 |     |     |     |     |     |
|            | 14S-5       | 5 #16     | Inst.                       | -   | 110 | -   | -       | 22-5       | 4 #16       | D             | 35                          | 110 | 250 | 325 |     |            |             | 4 #16         | A                           | 80              | 110 | 250 | 280 |     |     |
|            | 14S-6       | 6 #16     | Inst.                       | -   | -   | -   | -       |            | 2 #12       |               |                             |     |     |     |     |            |             | 10 #16        |                             |                 |     |     |     |     |     |
|            | 14S-7       | 3 #16     | A                           | 90  | 180 | 270 | -       | * 22-6     | 1 #16       | D             | 80                          | 110 | 250 | 280 |     |            |             | * 28-21       | 37 #16                      | A               | 80  | 110 | 250 | 280 |     |
|            | 14S-9       | 2 #16     | A                           | 70  | 145 | 215 | 290     |            | 2 #8        |               |                             |     |     |     |     |            | * 28-22     | 3 #16         | D                           | 70              | 145 | 215 | 290 |     |     |
| 16         | 16-9        | 2 #16     | A                           | 35  | 110 | 250 | 325     | 22-7       | 1 #0        | E             | -                           | -   | -   | -   |     |            |             |               |                             |                 |     |     |     |     |     |
|            |             | 2 #12     |                             |     |     |     |         | 22-9       | 3 #12       | E             | 70                          | 145 | 215 | 290 |     |            |             | 32-1          | 3 #12                       | E(A)            | 80  | 110 | 250 | 280 |     |
|            | 16-10       | 3 #12     | A                           | 90  | 180 | 270 | -       | 22-10      | 4 #16       | E             | 35                          | 110 | 250 | 325 |     |            |             | * 32-6        | 16 #16                      | D(all others)   | 80  | 110 | 250 | 280 |     |
|            | 16-12       | 1 #4      | A                           | -   | -   | -   | -       | 22-11      | 2 #16       | B             | 35                          | 110 | 250 | 325 |     |            |             |               | 2 #12                       | A               |     |     |     |     |     |
|            | 16-11       | 2 #12     | A                           | 35  | 110 | 250 | 325     | 22-12      | 3 #16       | D             | 80                          | 110 | 250 | 280 |     |            |             |               | 3 #8                        |                 |     |     |     |     |     |
| 16-13      | 2 #12       | A         | 35                          | 110 | 250 | 325 |         |            | 2 #8        |               |                             |     |     |     |     |            |             | 2 #4          |                             |                 |     |     |     |     |     |
| 16S        | 16S-1       | 7 #16     | A                           | 80  | -   | -   | 280     | 22-13      | 1 #16       | A(A-D)        | 35                          | 110 | 250 | 325 |     |            |             | 32-7          | 28 #16                      | Inst. (A,B,h,j) | 80  | 125 | 235 | 280 |     |
|            | * 16S-4     | 2 #16     | D                           | 35  | 110 | 250 | 325     |            | 4 #12       | D(E)          |                             |     |     |     |     |            |             | 7 #12         | A(all others)               |                 |     |     |     |     |     |
|            | 16S-5       | 3 #16     | A                           | 70  | 145 | 215 | 290     | 22-14      | 19 #16      | A             | 80                          | -   | -   | 280 |     |            |             | 24 #16        | A                           | 80              | 125 | 235 | 280 |     |     |
|            | 16S-6       | 3 #16     | A                           | 90  | 180 | 270 | -       | * 22-15    | 1 #16       | A(A-C,E,F)    | 80                          | 110 | 250 | 280 |     |            |             | * 32-9        | 12 #16                      | D               | 80  | 110 | 250 | 280 |     |
|            | 16S-8       | 5 #16     | A                           | -   | 170 | 265 | -       | 22-17      | 8 #16       | E(D)          | 80                          | 110 | 250 | 280 |     |            |             | 2 #4          |                             |                 |     |     |     |     |     |
| 18         | 18-1        | 10 #16    | A(B,C,F,G)                  | 70  | 145 | 215 | 290     |            | 1 #12       | A(all others) |                             |     |     |     |     |            |             | 32-15         | 2 #0                        | D               | 35  | 110 | 250 | 280 |     |
|            |             |           | Inst.(all others)           |     |     |     |         | 22-18      | 8 #16       | A(C-E)        | 80                          | 110 | 250 | 280 |     |            |             | 6 #12         |                             |                 |     |     |     |     |     |
|            | 18-3        | 2 #12     | D                           | 35  | 110 | 250 | 325     |            |             | D(all others) |                             |     |     |     |     |            |             | 32-17         | 4 #4                        | D               | 45  | 110 | 250 | -   |     |
|            | 18-4        | 4 #16     | D                           | 35  | 110 | 250 | 325     | 22-19      | 14 #16      | A             | 80                          | 110 | 250 | 280 |     |            |             | * 36-4        | 3 #0                        | A(B,C)          | 70  | 145 | 215 | 290 |     |
|            | 18-5        | 1 #16     | D                           | 80  | 110 | 250 | 280     | 22-20      | 9 #16       | A             | 35                          | 110 | 250 | 325 |     |            |             | 36-5          | 4 #0                        | D(A)            | -   | 120 | 240 | -   |     |
|            |             | 2 #12     |                             |     |     |     |         | 22-22      | 4 #8        | A             | -                           | 110 | 250 | -   |     |            |             | 36-6          | 4 #4                        | A               | 35  | 110 | 250 | 325 |     |
|            | 18-7        | 1 #8      | B                           | -   | -   | -   | -       | 22-23      | 8 #12       | D(H)          | 35                          | -   | 250 | -   |     |            |             | 2 #0          |                             |                 |     |     |     |     |     |
|            | 18-8        | 7 #16     | A                           | 70  | -   | -   | 290     |            |             | A(all others) |                             |     |     |     |     |            |             | 40 #16        | A                           | 80              | 110 | 250 | 280 |     |     |
|            |             | 1 #12     |                             |     |     |     |         | * 22-27    | 8 #16       | D(J)          | 80                          | -   | 250 | 280 |     |            |             | 7 #12         |                             |                 |     |     |     |     |     |
|            | 18-9        | 5 #16     | Inst.                       | 80  | 110 | 250 | 280     |            | 1 #8        | A(all others) |                             |     |     |     |     |            |             | 46 #16        | A                           | 80              | 110 | 250 | 280 |     |     |
| 18-10      | 2 #12       |           |                             |     |     |     | 22-28   | 7 #12      | A           | 80            | -                           | -   | 280 |     |     |            | 1 #12       |               |                             |                 |     |     |     |     |     |
| 18-11      | 4 #12       | A         | -                           | 120 | 240 | -   | 24      | 24-2       | 7 #12       | D             | 80                          | -   | -   | 280 |     |            |             | 14 #16        | A                           | 80              | 125 | 235 | 280 |     |     |
| 18-12      | 5 #12       | A         | -                           | 170 | 265 | -   | * 24-5  | 16 #16     | A           | 80            | 110                         | 250 | 280 |     |     |            | 2 #8        |               |                             |                 |     |     |     |     |     |
| 18-12      | 6 #16       | A         | 80                          | -   | -   | 280 | * 24-6  | 8 #12      | D(A,G,H)    | 80            | 110                         | 250 | 280 |     |     |            | 1 #4        |               |                             |                 |     |     |     |     |     |
| * 18-13    | 3 #12       | A         | 80                          | 110 | 250 | 280 |         | 24-7       | 14 #16      | A             | 80                          | 110 | 250 | 280 |     |            |             | 48 #16        | A                           | 80              | 125 | 235 | 280 |     |     |
|            | 1 #8        |           |                             |     |     |     |         |            | 2 #12       |               |                             |     |     |     |     |            |             | 5 #12         |                             |                 |     |     |     |     |     |
| * 18-15    | 4 #12       | A         | -                           | 120 | 240 | -   |         |            | 2 #4        | A             | 35                          | 110 | 250 | 325 |     |            |             | 36-10         | 48 #16                      | A               | 80  | 125 | 235 | 280 |     |
| 18-19      | 10 #16      | A         | -                           | 120 | 240 | -   | * 24-9  | 7 #8       | A           | 80            | -                           | -   | 280 |     |     |            | 36-14       | 6 #16         | D                           | 90              | 180 | 270 | -   |     |     |
| * 18-22    | 3 #16       | D         | 70                          | 145 | 215 | 290 | * 24-11 | 6 #12      | A           | 35            | 110                         | 250 | 325 |     |     |            | * 36-15     | 35 #16        | D (m)                       | 60              | 125 | 245 | 305 |     |     |
| 20         | 20-2        | 1 #0      | D                           | -   | -   | -   | -       |            |             | 3 #8          |                             |     |     |     |     |            |             |               |                             |                 |     |     |     |     |     |
|            | 20-3        | 3 #12     | D                           | 70  | 145 | 215 | 290     | 24-12      | 3 #12       | A             | 80                          | 110 | 250 | 280 |     |            |             | 40            | 40-10                       | 16 #16          | A   | 65  | 125 | 225 | 310 |
|            | 20-4        | 4 #12     | D                           | 45  | 110 | 250 | -       |            | 2 #4        |               |                             |     |     |     |     |            |             | * 40-56       | 85 #16                      | A               | 72  | 144 | 216 | 288 |     |
|            | 20-7        | 8 #16     | A(C-F)                      | 80  | 110 | 250 | 280     | 24-20      | 9 #16       | D             | 80                          | 110 | 250 | 280 |     |            |             |               | 4 #4                        |                 |     |     |     |     |     |
|            |             |           | D(A,B,G,H)                  |     |     |     |         | 24-22      | 2 #12       |               |                             |     |     |     |     |            |             |               |                             |                 |     |     |     |     |     |
| 20-8       | 4 #16       | Inst.     | 80                          | 110 | 250 | 280 |         |            | 4 #8        | D             | 45                          | 110 | 250 | -   |     |            |             | 9 #8          |                             |                 |     |     |     |     |     |
| 20-14      | 3 #12       | A         | 80                          | 110 | 250 | 280 | 24-27   | 7 #16      | E           | 80            | -                           | -   | 280 |     |     |            | 4 #4        |               |                             |                 |     |     |     |     |     |
|            | 2 #8        |           |                             |     |     |     | 24-28   | 24 #16     | Inst.       | 80            | 110                         | 250 | 280 |     |     |            | 85 #16      | A             | 72                          | 144             | 216 | 288 |     |     |     |
| 20-15      | 7 #12       | A         | 80                          | -   | -   | 280 | 28      | 28-1       | 6 #12       | D(A,E,J)      | 80                          | 110 | 250 | 280 |     |            |             | 44            | 44-1                        | 36 #16          | D   | 65  | 125 | 225 | 310 |
| 20-16      | 7 #16       | A         | 80                          | 110 | 250 | 280 |         |            | 3 #8        | A(all others) |                             |     |     |     |     |            |             |               | 6 #12                       |                 |     |     |     |     |     |
|            | 2 #12       |           |                             |     |     |     | * 28-2  | 12 #16     | D           | 35            | 110                         | 250 | 325 |     |     |            | 48          | 48-5          | 90 #16                      | A               | 65  | 125 | 225 | 310 |     |
| 20-17      | 1 #16       | A         | 90                          | 180 | 270 | -   |         |            | 2 #12       |               |                             |     |     |     |     |            |             | 1 #8          |                             |                 |     |     |     |     |     |
|            | 5 #12       |           |                             |     |     |     |         |            | 2 #4        | D             | 35                          | 110 | 250 | 325 |     |            |             | 9 #12         |                             |                 |     |     |     |     |     |
| 20-18      | 6 #16       | A         | 35                          | 110 | 250 | 325 |         |            | 6 #16       |               | 80                          | 110 | 250 | 280 |     |            |             |               |                             |                 |     |     |     |     |     |
|            | 3 #12       |           |                             |     |     |     |         |            | 6 #12       | D             |                             |     |     |     |     |            |             |               |                             |                 |     |     |     |     |     |
| 20-19      | 3 #8        | A         | 90                          | 180 | 270 | -   |         |            |             |               |                             |     |     |     |     |            |             |               |                             |                 |     |     |     |     |     |

\* Not MSA/B insert arrangements and polarization.

ITT Cannon Designated Alternate Insert Positions

Not MS approved



NOTE: Front view of pin insulator rotates as shown.

| Shell Size | Contact Arrangement | Wire Size | Service Rating | Available Position |    |    |    |    |    |          |
|------------|---------------------|-----------|----------------|--------------------|----|----|----|----|----|----------|
| 10SL       | 10SLA4              | 5 #20     | A              | 2                  | 3  | 5  | 8  | 12 | 13 |          |
| 12S        | 12SA10              | 4 #16     | Inst.          | 3                  | 5  | 8  | 13 |    |    |          |
| 20         | 20A37               | 4 #8      | D              |                    |    |    |    |    |    |          |
| 24         | 24A24               | 12 #12    | A              | 2                  | 4  | 9  | 12 |    |    |          |
| 28         | 28A16               | 5 #16     | A              | 2                  | 3  | 5  | 8  | 9  | 13 |          |
|            | 28A51               | 4 #4      |                |                    |    |    |    |    |    |          |
|            |                     | 43 #16    | A              | 3                  | 4  | 5  | 8  | 9  | 12 | 13       |
| 32         | 32A10               | 54 #16    | A              | 2                  | 3  | 4  | 5  | 8  | 9  | 12 13    |
|            | 32A47               | 47 #16    | A              | 2                  | 3  | 4  | 5  | 8  | 9  | 12 13    |
| 36         | 36A16               | 18 #12    | A              | 2                  | 3  | 4  | 5  | 8  | 9  | 12 13 15 |
|            | 36A34               | 52 #16    | A              | 2                  | 3  | 4  | 5  | 8  | 9  | 12 13 20 |
|            | 36A46               | 27 #12    | A              | 2                  | 3  | 4  | 5  | 8  | 9  | 12 13    |
|            | 36A66               | 52 #16    | A              | 2                  | 3  | 5  | 8  | 9  | 13 | 17 18    |
|            |                     | 4 #12     |                |                    |    |    |    |    |    |          |
| 40         | 40A27               | 60 #16    | A              | 4                  | 14 | 17 | 20 | 22 |    |          |
|            | 40A33               | 7 #8      | A              | 2                  | 3  | 5  | 8  | 13 |    |          |
|            |                     | 6 #4      |                |                    |    |    |    |    |    |          |

Note: For ITT Cannon contact arrangements not listed, consult factory.

| Position | Angle (degrees) |
|----------|-----------------|
| Normal   | 0               |
| 2        | 260             |
| 3        | 110             |
| 4        | 80              |
| 5        | use pos. 3      |
| 6        | 85              |
| 8        | 250             |
| 9        | 280             |
| 11       | 105             |
| 12       | 100             |
| 13       | use pos. 8      |
| 14       | 30              |
| 15       | 45              |
| 16       | 120             |
| 17       | 130             |
| 18       | 150             |
| 19       | 195             |
| 20       | 220             |
| 21       | 255             |
| 22       | 290             |
| 23       | 165             |
| 24       | 330             |
| 25       | 235             |
| 26       | 125             |

## Contact Arrangements (Face View Pin Insert)

## LEGEND

- Resilient only  
▲ Resilient & Plastic

⌀ High Volume Layouts - readily available from Cannon Distributors

|                                                 |                                                   |                                             |                                                        |                                             |                                                  |                                                            |                                               |                         |                                                     |                       |                         |
|-------------------------------------------------|---------------------------------------------------|---------------------------------------------|--------------------------------------------------------|---------------------------------------------|--------------------------------------------------|------------------------------------------------------------|-----------------------------------------------|-------------------------|-----------------------------------------------------|-----------------------|-------------------------|
| Shell Size<br>No. of Contacts<br>Service Rating | <br>8S-1<br>1 #16<br>A                            | <br>10S-2<br>1 #16<br>A                     | <br>10SL-4<br>2 #16<br>A                               | <br>10SL-3<br>3 #16<br>A                    | <br>10SLA4<br>5 #20<br>A                         | <br>12S-4<br>1 #16<br>D                                    | <br>12-5<br>1 #12<br>D                        | <br>12S-3<br>2 #16<br>A | <br>12SA10<br>4 #16<br>Inst.                        | <br>14-3<br>1 #8<br>A | <br>14S-9<br>2 #16<br>A |
| Shell Size<br>No. of Contacts<br>Service Rating | <br>14S-1<br>3 #16<br>A                           | <br>14S-7<br>3 #16<br>A                     | <br>14S-2<br>4 #16<br>Inst.                            | <br>14S-5<br>5 #16<br>Inst.                 | <br>14S-6<br>6 #16<br>Inst.                      | <br>16-12<br>1 #4<br>A                                     | <br>16-11<br>2 #12<br>A                       | <br>16S-4<br>2 #16<br>D | <br>16-13<br>2 #12<br>(A-Iron<br>B-Constantan)<br>A |                       |                         |
| Shell Size<br>No. of Contacts<br>Service Rating | <br>16S-5<br>3 #16<br>A                           | <br>16S-6<br>3 #16<br>A                     | <br>16-10<br>3 #12<br>A                                | <br>16-9<br>2 #16 (B,D)<br>2 #12 (A,C)<br>A | <br>16S-8<br>5 #16<br>A                          | <br>16S-1<br>7 #16<br>A                                    | <br>18-7<br>1 #8<br>B                         | <br>18-3<br>2 #12<br>D  |                                                     |                       |                         |
| Shell Size<br>No. of Contacts<br>Service Rating | <br>18-5<br>1 #16(A)<br>2 #12(B,C)<br>D           | <br>18-22<br>3 #16<br>D                     | <br>18-4<br>4 #16<br>D                                 | <br>18-10<br>4 #12<br>A                     | <br>18-13<br>3 #12 (B,C,C)<br>1 #8(A)<br>A       | <br>18-15<br>4 #12<br>(A, C-Iron;<br>B, D-Constantan)<br>A | <br>18-11<br>5 #12<br>A                       | <br>18-12<br>6 #16<br>A |                                                     |                       |                         |
| Shell Size<br>No. of Contacts<br>Service Rating | <br>18-9<br>5 #16(B,C,E-G)<br>2 #12(A,D)<br>Inst. | <br>18-8<br>7 #16(A-G)<br>1 #12(H)<br>A     | <br>18-1<br>10 #16<br>A(B,C,F,G)<br>Inst. (all others) | <br>18-19<br>10 #16<br>A                    | <br>20-2<br>1 #0<br>D                            | <br>20-23<br>2 #8<br>A                                     | <br>20-3<br>3 #12<br>D                        | <br>20-19<br>3 #8<br>A  |                                                     |                       |                         |
| Shell Size<br>No. of Contacts<br>Service Rating | <br>20-4<br>4 #12<br>D                            | <br>20-24<br>2 #16 (A,C)<br>2 #8 (B,D)<br>A | <br>20A37<br>ITT Cannon pos.<br>#8 of 20-4<br>D        | <br>20-14<br>3 #12(C,D,E)<br>2 #8(A,B)<br>A | <br>20-8<br>4 #16(B,C,E,F)<br>2 #8(A,D)<br>Inst. | <br>20-17<br>1 #16(F)<br>5 #12(A-E)<br>A                   | <br>20-22<br>3 #16(B,D,F)<br>3 #8(A,C,E)<br>A | <br>20-15<br>7 #12<br>A |                                                     |                       |                         |

## Contact Arrangements (Continued)

## LEGEND

- Resilient only  
▲ Resilient & Plastic

♂ High Volume Layouts - readily  
available from Cannon Distributors

|                 |                        |                              |                                  |                              |                         |                           |                            |                             |
|-----------------|------------------------|------------------------------|----------------------------------|------------------------------|-------------------------|---------------------------|----------------------------|-----------------------------|
|                 |                        |                              |                                  |                              |                         |                           |                            |                             |
| Shell Size      | 20-7                   | 20-16                        | 20-18                            | 20-33                        | 20-11                   | 20-27                     | 20-29                      | 22-7                        |
| No. of Contacts | 8 #16                  | 7 #16(A-G)<br>2 #12(H,I)     | 6 #16(A,C-E,G,H)<br>3 #12(B,F,I) | 11 #16                       | 13 #16                  | 14 #16                    | 17 #16                     | 1 #0                        |
| Service Rating  | A(C-F)<br>D(A,B,G,H)   | A                            | A                                | A                            | Inst.                   | A                         | A                          | E                           |
|                 |                        |                              |                                  |                              |                         |                           |                            |                             |
| Shell Size      | 22-11                  | 22-2                         | 22-6                             | 22-9                         | 22-4                    | 22-10                     | 22-22                      | 22-12                       |
| No. of Contacts | 2 #16                  | 3 #8                         | 1 #16(B)<br>2 #8(A,C)            | 3 #12                        | 2 #12(A,C)<br>2 #8(B,D) | 4 #16                     | 4 #8                       | 3 #16(A,C,D)<br>2 #8(B,E)   |
| Service Rating  | B                      | D                            | D                                | E                            | A                       | E                         | A                          | D                           |
|                 |                        |                              |                                  |                              |                         |                           |                            |                             |
| Shell Size      | 22-13                  | 22-5                         | 22-15                            | 22-28                        | 22-18                   | 22-23                     | 22-17                      | 22-20                       |
| No. of Contacts | 1 #16(E)<br>4 #12(A-D) | 4 #16(A,C,D,F)<br>2 #12(B,E) | 1 #16(D)<br>5 #12(A-C,E,F)       | 7 #12                        | 8 #16                   | 8 #12                     | 8 #16(A-D,F-J)<br>1 #12(E) | 9 #16                       |
| Service Rating  | A(A-D), D(E)           | D                            | A(A-C,E,F), E(D)                 | A                            | A(C-E)<br>D(all others) | D(H)<br>A(all others)     | D(A), A(all others)        | A                           |
|                 |                        |                              |                                  |                              |                         |                           |                            |                             |
| Shell Size      | 22-27                  | 22-19                        | 22-14                            | 24-9                         | 24-22                   | 24-12                     | 24-2                       | 24-10                       |
| No. of Contacts | 8 #16(A-H)<br>1 #8(J)  | 14 #16                       | 19 #16                           | 2 #4                         | 4 #8                    | 3 #12(B,D,E)<br>2 #4(A,C) | 7 #12                      | 7 #8                        |
| Service Rating  | D(J), A (all others)   | A                            | A                                | A                            | D                       | A                         | D                          | A                           |
|                 |                        |                              |                                  |                              |                         |                           |                            |                             |
| Shell Size      | 24-27                  | 24-6                         | 24-11                            | 24-20                        | 24-19                   | 24A24                     | 24-5                       | 24-7                        |
| No. of Contacts | 7 #16                  | 8 #12                        | 6 #12(A-C,G-I)<br>3 #8(D-F)      | 9 #16(A-D,G-L)<br>2 #12(E,F) | 12 #16<br>6 #12(B-G)    | 12 #12                    | 16 #16                     | 14 #16(A-M,O)<br>2 #12(P,N) |
| Service Rating  | E                      | D(A,G,H)<br>A(all others)    | A                                | D                            | A                       | A                         | A                          | A                           |

## Contact Arrangements (Continued)

## LEGEND

- Resilient only  
▲ Resilient & Plastic

ϕ High Volume Layouts - readily available from Cannon Distributors

|                 |                                                         |                                                |                                   |                                        |                                 |                                 |                                    |
|-----------------|---------------------------------------------------------|------------------------------------------------|-----------------------------------|----------------------------------------|---------------------------------|---------------------------------|------------------------------------|
|                 |                                                         |                                                |                                   |                                        |                                 |                                 |                                    |
| Shell Size      | 24-28                                                   | 28-7                                           | 28-22                             | 28-10                                  | 28-1                            | 28A16                           | 28-19                              |
| No. of Contacts | 24 #16                                                  | 2 #4                                           | 3 #16(D-F)<br>3 #4(A-C)           | 3 #12(A,F,G)<br>2 #8(B,E)<br>2 #4(C,D) | 6 #12(A,B,D-F,H)<br>3 #8(C,J,G) | 5 #16(A,D-F,J)<br>4 #4(B,C,G,H) | 6 #16(A-C,H,L,M)<br>4 #12(E,G,J,K) |
| Service Rating  | Inst.                                                   | D                                              | D                                 | D(G), A(all others)                    | D(A,E,J)<br>A(all others)       | A                               | A(C,E,G,J,K,L)<br>B(H,M),D(A,B)    |
|                 |                                                         |                                                |                                   |                                        |                                 |                                 |                                    |
| Shell Size      | 28-9                                                    | 28-2                                           | 28-20                             | 28-17                                  | 28-16                           | 28-11                           | 28-12                              |
| No. of Contacts | 6 #16(A,H-M)<br>6 #12(B-G)                              | 12 #16(A,L,N)<br>2 #12(M,P)                    | 4 #16(K-N)<br>10 #12(A-J,P)       | 15 #16                                 | 20 #16                          | 18 #16(A-I, N-X)<br>4 #12(J-M)  | 26 #16                             |
| Service Rating  | D                                                       | D                                              | A                                 | A(A-L), B(R)<br>D(M-P)                 | A                               | A                               | A                                  |
|                 |                                                         |                                                |                                   |                                        |                                 |                                 |                                    |
| Shell Size      | 28-15                                                   | 28-21                                          | 28A51                             | 32-17                                  | 32-1                            | 32-15                           | 32-9                               |
| No. of Contacts | 35 #16                                                  | 37 #16                                         | 43 #16                            | 4 #4                                   | 3 #12(A,C,D)<br>2 #0(B,E)       | 2 #0(A,G)<br>6 #12(B,C,D,E,F,H) | 12 #16(C-N)<br>2 #4(A,B)           |
| Service Rating  | A<br>For MIL equip design, use 28-21                    | A                                              | A                                 | D                                      | E(A),D(all others)              | D                               | D                                  |
|                 |                                                         |                                                |                                   |                                        |                                 |                                 |                                    |
| Shell Size      | 32-6                                                    | 32-8                                           | 32-7                              | 32A47                                  | 32A10                           | 36-4                            |                                    |
| No. of Contacts | 16 #16(A-O,S)<br>2 #12(U,V)<br>3 #8(P,R,T)<br>2 #4(W,X) | 24 #16(A-L,T-Z,a-e)<br>6 #12(M-S)<br>2 #8(O,R) | 28 #16(A-N,W-Z,a-k)<br>7 #12(O-V) | 47 #16                                 | 54 #16                          | 3 #0                            |                                    |
| Service Rating  | A                                                       | A<br>For new MIL equip. design, use 32-7       | Inst. (A,B,h,j)<br>A(all others)  | A                                      | A                               | A(B,C),C(A)                     |                                    |

\*NOTE: Additional layouts are the same as shown but in unique alternate positions. Please consult the factory.

## Contact Arrangements (Continued)

## LEGEND

- Resilient only  
▲ Resilient & Plastic

ϕ High Volume Layouts - readily available from Cannon Distributors

† Grommet not available. Consult factory for ordering connectors with this arrangement.

|                               |                                       |                                                                                         |                                                                |                                                                                 |                                                                          |                                                                    |
|-------------------------------|---------------------------------------|-----------------------------------------------------------------------------------------|----------------------------------------------------------------|---------------------------------------------------------------------------------|--------------------------------------------------------------------------|--------------------------------------------------------------------|
| Shell Size<br>No. of Contacts | 36-5<br>4 #0                          | 36-6<br>4 #4(B,C,E,F)<br>2 #0(A,D)                                                      | 36-14<br>6 #16(K-N,P,Q)<br>5 #12(B,D,F,H,J)<br>5 #8(A,C,E,G,I) | 36A16<br>18 #12<br>(B,C,V,J,K,M,N,<br>R, T-Iron; A,D-F,H,L<br>P,S,U-Constantan) | 36A46<br>27 #12                                                          | 36-9<br>14 #16(A-G,Z-f)<br>14 #12(H-N,S-Y)<br>2 #8(O,R)<br>1 #4(P) |
| Service Rating                | A                                     | A                                                                                       | D                                                              | A                                                                               | A                                                                        | A                                                                  |
| Shell Size<br>No. of Contacts | 36-15<br>35 #16                       | 36-7<br>40 #16(A-Z,a-s)<br>7 #12(t-z)                                                   | 36-8<br>46 #16(A-X,Z-z)<br>1 #12(Y)                            | 36-10<br>48 #16                                                                 | 36A34<br>52 #16                                                          | 36A66<br>52 #16(A-c,h-AK)<br>4 #12(d,e,f,g)                        |
| Service Rating                | D(m), A (all others)                  | A                                                                                       | A                                                              | A                                                                               | A                                                                        | A                                                                  |
| Shell Size<br>No. of Contacts | 40A33<br>7 #8(G-N)<br>6 #4(A-F)       | 40-10<br>16 #16(A,B,E-H,M,N,P<br>Q,V-Y,b,c)<br>9 #8(C,D,I,L,O,R,U,Z,a)<br>4 #4(K,J,S,T) | 40A27<br>60 #16                                                | 40-56<br>85 #16                                                                 |                                                                          |                                                                    |
| Service Rating                | A                                     | A                                                                                       | A                                                              | A                                                                               |                                                                          |                                                                    |
| Shell Size<br>No. of Contacts | 44-1<br>36 #16(A-S,Z-t)<br>6 #12(T-Y) |                                                                                         |                                                                |                                                                                 | 48-5<br>90 #16(A-BL,BN-BT,BW,BX)<br>1 #8(CD)<br>9 #12(BM,BU,BV,BY-CC,CE) |                                                                    |
| Service Rating                | D                                     |                                                                                         |                                                                |                                                                                 | A                                                                        |                                                                    |

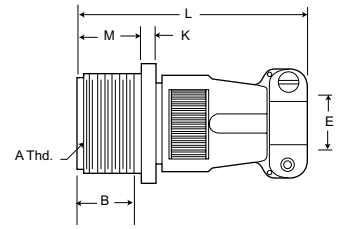
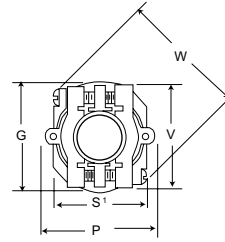
## Cable Connecting Plug (Receptacle with no mounting flange)

MS3101E/MS3101F  
Integral Cable Clamp

CA3101E/CA3101E

MS3101E cable connecting plugs are used for cable extension requirements, where mounting provisions are unnecessary.

MS3101E plugs mate with 3106, 3107 and 3108 plugs. Note: the D revision of MIL-C-5015 has changed the nomenclature of the 3101 from receptacle to plug.

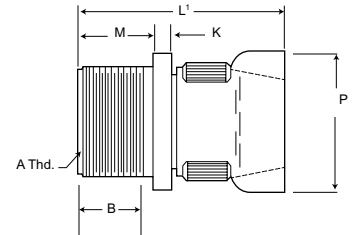
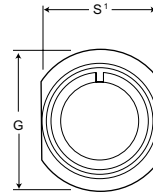


MS3101R



CA3101R

MS3101R cable connecting plug is identical in purpose to the MS3101E. The MS3101R features a shorter lightweight endbell and mates with 3106, 3107 and 3108 plugs. Note: The D revision of the MIL-C-5015 specification has changed the nomenclature of the 3101 from receptacle to plug.



| Shell Size | B Min.       | E Max.        | E Min.       | G Max.        | K Max.      | L Max.         | L' Max.        | M +.031(0.79) - .000(0.00) | P Max.        | S' Max.       | V Max.        | W Max.        |
|------------|--------------|---------------|--------------|---------------|-------------|----------------|----------------|----------------------------|---------------|---------------|---------------|---------------|
| 8S         | .375 (9.53)  | .235 (5.97)   | .102 (2.59)  | .844 (21.44)  | .125 (3.18) | 2.250 (57.15)  | 1.838 (46.69)  | .562 (14.27)               | .890 (22.61)  | .515 (13.08)  | .840 (21.34)  | 1.046 (26.57) |
| 10S        | .375 (9.53)  | .235 (5.97)   | .102 (2.59)  | .969 (24.61)  | .125 (3.18) | 2.250 (57.15)  | 1.838 (46.69)  | .562 (14.27)               | .890 (22.61)  | .640 (16.26)  | .840 (21.34)  | 1.046 (26.57) |
| 10SL       | .375 (9.53)  | .297 (7.54)   | .140 (3.56)  | 1.062 (26.97) | .125 (3.18) | 2.250 (57.15)  | 1.838 (46.69)  | .562 (14.27)               | .970 (24.64)  | .640 (16.26)  | .900 (22.86)  | 1.125 (28.58) |
| 12S        | .375 (9.53)  | .297 (7.54)   | .140 (3.56)  | 1.062 (26.97) | .140 (3.56) | 2.250 (57.15)  | 1.838 (46.69)  | .562 (14.27)               | .970 (24.64)  | .765 (19.43)  | .900 (22.86)  | 1.125 (28.58) |
| 14S        | .375 (9.53)  | .422 (10.72)  | .195 (4.95)  | 1.156 (29.36) | .140 (3.56) | 2.250 (57.15)  | 1.838 (46.69)  | .562 (14.27)               | 1.150 (29.21) | .890 (22.61)  | 1.00 (27.94)  | 1.343 (34.11) |
| 16S        | .375 (9.53)  | .547 (13.89)  | .255 (6.48)  | 1.281 (32.54) | .140 (3.56) | 2.250 (57.15)  | 1.838 (46.69)  | .562 (14.27)               | 1.250 (31.75) | 1.015 (25.78) | 1.200 (30.48) | 1.484 (37.69) |
| 12         | .625 (15.88) | .297 (7.54)   | .140 (3.56)  | 1.062 (26.97) | .146 (3.71) | 2.625 (66.68)  | 2.181 (55.40)  | .750 (19.05)               | .970 (24.64)  | .765 (19.43)  | .900 (22.86)  | 1.125 (28.58) |
| 14         | .625 (15.88) | .422 (10.72)  | .195 (4.95)  | 1.156 (29.36) | .146 (3.71) | 2.625 (66.58)  | 2.181 (55.40)  | .750 (19.05)               | 1.150 (29.21) | .890 (22.61)  | 1.100 (27.94) | 1.343 (34.11) |
| 16         | .625 (15.88) | .547 (13.89)  | .255 (6.48)  | 1.281 (32.54) | .146 (3.71) | 2.625 (66.58)  | 2.181 (55.40)  | .750 (19.05)               | 1.250 (31.75) | 1.015 (25.78) | 1.200 (30.48) | 1.484 (37.69) |
| 18         | .625 (15.88) | .610 (15.49)  | .285 (7.24)  | 1.344 (34.14) | .180 (4.57) | 2.688 (68.28)  | 2.281 (55.40)  | .750 (19.05)               | 1.450 (36.83) | 1.140 (28.96) | 1.300 (33.02) | 1.609 (40.87) |
| 20         | .625 (15.88) | .735 (18.67)  | .350 (8.89)  | 1.500 (38.10) | .180 (4.57) | 2.750 (69.85)  | 2.281 (55.40)  | .750 (19.05)               | 1.570 (39.88) | 1.265 (32.13) | 1.500 (38.10) | 1.890 (48.01) |
| 22         | .625 (15.88) | .740 (18.80)  | .350 (8.89)  | 1.625 (41.28) | .180 (4.57) | 2.750 (69.85)  | 2.281 (55.40)  | .750 (19.05)               | 1.570 (39.88) | 1.390 (35.31) | 1.500 (38.10) | 1.890 (48.01) |
| 24         | .625 (15.88) | .922 (23.42)  | .468 (11.89) | 1.750 (44.45) | .203 (5.16) | 2.969 (75.44)  | 2.281 (55.40)  | .812 (20.62)               | 1.880 (47.75) | 1.515 (38.48) | 1.740 (44.20) | 2.170 (55.12) |
| 28         | .625 (15.88) | .922 (23.42)  | .468 (11.89) | 2.000 (50.80) | .203 (5.16) | 3.031 (76.99)  | 2.281 (55.40)  | .812 (20.62)               | 1.880 (47.75) | 1.765 (44.83) | 1.740 (44.20) | 2.170 (55.12) |
| 32         | .625 (15.88) | 1.235 (31.37) | .664 (15.87) | 2.250 (57.15) | .203 (5.16) | 3.031 (76.99)  | 2.322 (58.98)  | .875 (22.23)               | 2.205 (56.01) | 2.015 (51.18) | 2.075 (52.71) | 2.656 (67.46) |
| 36         | .625 (15.88) | 1.360 (34.54) | .694 (17.63) | 2.500 (63.50) | .203 (5.16) | 3.281 (83.34)  | 2.322 (58.98)  | .875 (22.23)               | 2.400 (60.96) | 2.270 (57.66) | 2.300 (58.42) | 2.922 (74.22) |
| *40        | .625 (15.88) | 1.628 (41.35) | .911 (23.14) | 2.750 (69.85) | .203 (5.16) | 3.560 (89.66)† | 2.427 (61.65)† | .875 (22.23)               | 2.840 (72.14) | 2.427 (61.65) | 2.688 (68.28) | -             |

†Not to MS specification

\*Not Available in MS3101E and MS3101R.

| Shell Size | A Thread      |
|------------|---------------|
| 8S         | 1/2-28UNEF-2A |
| 10S        | 5/8-24UNEF-2A |
| 10SL       | 5/8-24UNEF-2A |
| 12S        | 3/4-20UNEF-2A |
| 14S        | 7/8-20UNEF-2A |
| 16S        | 1-20UNEF-2A   |
| 12         | 3/4-20UNEF-2A |
| 14         | 7/8-20UNEF-2A |

| Shell Size | A Thread        |
|------------|-----------------|
| 16         | 1-20UNEF-2A     |
| 18         | 1-1/8-18UNEF-2A |
| 20         | 1-1/4-18UNEF-2A |
| 22         | 1-3/8-18UNEF-2A |
| 24         | 1-1/2-18UNEF-2A |
| 28         | 1-3/4-18UNS-2A  |
| 32         | 2-18UNS-2A      |
| 36         | 2-1/4-16UN-2A   |
| 40         | 2-1/2-16UN-2A   |

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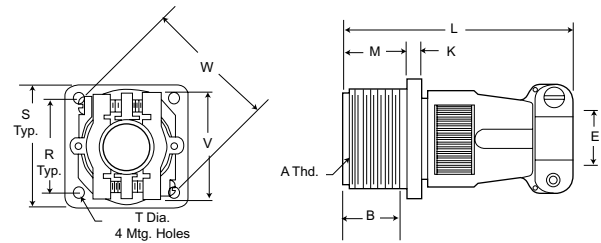
## Wall Mounting Receptacle

MS3100E/MS3100F  
Integral Cable Clamp

CA3100E/CA3100F

MS3100F wall mounting receptacles are used to carry wires thru walls or bulkheads, or to provide a means of disconnection at a bulkhead. MS3100F receptacles mate with 3106 and 3108 plugs.

MS3100E is identical to MS3100F and is available upon request. For new equipment, customer should specify MS3100F.

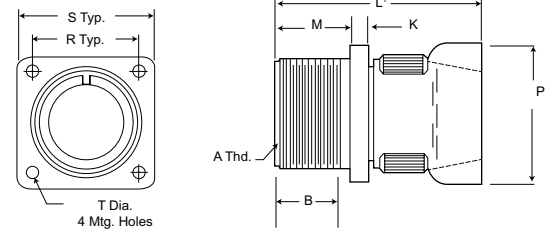


MS3100R



CA3100R

The MS3100R receptacle is identical in purpose to the MS3100F. The MS3100R features a shorter light weight endbell and mates with 3106 and 3108 plugs.



| Shell Size | B Min.       | E Max.        | E Min.       | K Max.      | L Max.         | L' Max.        | M +.031 - .000 | P Max.        | R ±.005       | S ±.031       | T +.010 - .005 | V Max.        | W Max.        |
|------------|--------------|---------------|--------------|-------------|----------------|----------------|----------------|---------------|---------------|---------------|----------------|---------------|---------------|
| 8S         | .375 (9.53)  | .235 (5.97)   | .102 (2.59)  | .125 (3.18) | 2.250 (57.15)  | 1.838 (46.69)  | .562 (14.27)   | .890 (22.61)  | .594 (15.09)  | .875 (22.23)  | .120 (3.05)    | .840 (21.34)  | 1.046 (26.57) |
| 10S        | .375 (9.53)  | .235 (5.97)   | .102 (2.59)  | .125 (3.18) | 2.250 (57.15)  | 1.838 (46.69)  | .562 (14.27)   | .890 (22.61)  | .719 (18.26)  | 1.000 (25.40) | .120 (3.05)    | .840 (21.34)  | 1.046 (26.57) |
| 10SL       | .375 (9.53)  | .297 (7.54)   | .140 (3.56)  | .125 (3.18) | 2.250 (57.15)  | 1.838 (46.69)  | .562 (14.27)   | .970 (24.64)  | .719 (18.26)  | 1.000 (25.40) | .120 (3.05)    | .900 (22.86)  | 1.125 (28.58) |
| 12S        | .375 (9.53)  | .297 (7.54)   | .140 (3.56)  | .140 (3.56) | 2.250 (57.15)  | 1.838 (46.69)  | .562 (14.27)   | .970 (24.64)  | .812 (20.62)  | 1.094 (27.79) | .120 (3.05)    | .900 (22.86)  | 1.125 (28.58) |
| 14S        | .375 (9.53)  | .422 (10.72)  | .195 (4.95)  | .140 (3.56) | 2.250 (57.15)  | 1.838 (46.69)  | .562 (14.27)   | 1.150 (29.21) | .906 (23.01)  | 1.188 (30.18) | .120 (3.05)    | 1.100 (27.94) | 1.343 (34.11) |
| 16S        | .375 (9.53)  | .547 (13.89)  | .255 (6.48)  | .140 (3.56) | 2.250 (57.15)  | 1.838 (46.69)  | .562 (14.27)   | 1.250 (31.75) | .969 (24.61)  | 1.281 (32.54) | .120 (3.05)    | 1.200 (30.48) | 1.484 (37.69) |
| 12         | .625 (15.88) | .297 (7.54)   | .140 (3.56)  | .146 (3.71) | 2.625 (66.68)  | 2.181 (55.40)  | .750 (19.05)   | .970 (24.64)  | .812 (20.62)  | 1.094 (27.79) | .120 (3.05)    | .900 (22.86)  | 1.125 (28.58) |
| 14         | .625 (15.88) | .422 (10.72)  | .195 (4.95)  | .146 (3.71) | 2.625 (66.58)  | 2.181 (55.40)  | .750 (19.05)   | 1.150 (29.21) | .906 (23.01)  | 1.188 (30.18) | .120 (3.05)    | 1.100 (27.94) | 1.343 (34.11) |
| 16         | .625 (15.88) | .547 (13.89)  | .255 (6.48)  | .146 (3.71) | 2.625 (66.58)  | 2.181 (55.40)  | .750 (19.05)   | 1.250 (31.75) | .969 (24.61)  | 1.281 (32.54) | .120 (3.05)    | 1.200 (30.48) | 1.484 (37.69) |
| 18         | .625 (15.88) | .610 (15.49)  | .285 (7.24)  | .180 (4.57) | 2.688 (68.28)  | 2.281 (55.40)  | .750 (19.05)   | 1.450 (36.83) | 1.062 (26.97) | 1.375 (34.93) | .120 (3.05)    | 1.300 (33.02) | 1.609 (40.87) |
| 20         | .625 (15.88) | .735 (18.67)  | .350 (8.89)  | .180 (4.57) | 2.750 (69.85)  | 2.281 (55.40)  | .750 (19.05)   | 1.570 (39.88) | 1.156 (29.36) | 1.500 (38.10) | .120 (3.05)    | 1.500 (38.10) | 1.890 (48.01) |
| 22         | .625 (15.88) | .740 (18.80)  | .350 (8.89)  | .180 (4.57) | 2.750 (69.85)  | 2.281 (55.40)  | .750 (19.05)   | 1.570 (39.88) | 1.250 (31.75) | 1.625 (41.28) | .120 (3.05)    | 1.500 (38.10) | 1.890 (48.01) |
| 24         | .625 (15.88) | .922 (23.42)  | .468 (11.89) | .203 (5.16) | 2.969 (75.44)  | 2.281 (55.40)  | .812 (20.62)   | 1.880 (47.75) | 1.375 (34.93) | 1.750 (44.45) | .147 (3.73)    | 1.740 (44.20) | 2.170 (55.12) |
| 28         | .625 (15.88) | .922 (23.42)  | .468 (11.89) | .203 (5.16) | 3.031 (76.99)  | 2.281 (55.40)  | .812 (20.62)   | 1.880 (47.75) | 1.562 (39.67) | 2.000 (50.80) | .147 (3.73)    | 1.740 (44.20) | 2.170 (55.12) |
| 32         | .625 (15.88) | 1.235 (31.37) | .664 (15.87) | .203 (5.16) | 3.031 (76.99)  | 2.322 (58.98)  | .875 (22.23)   | 2.205 (56.01) | 1.750 (44.45) | 2.250 (57.15) | .173 (4.39)    | 2.075 (52.71) | 2.656 (67.46) |
| 36         | .625 (15.88) | 1.360 (34.54) | .694 (17.63) | .203 (5.16) | 3.281 (83.34)  | 2.322 (58.98)  | .875 (22.23)   | 2.400 (60.96) | 1.938 (49.23) | 2.500 (63.50) | .173 (4.39)    | 2.300 (58.42) | 2.922 (74.22) |
| *40        | .625 (15.88) | 1.628 (41.35) | .911 (23.14) | .203 (5.16) | 3.560 (89.66)† | 2.427 (61.65)† | .875 (22.23)   | 2.840 (72.14) | 2.188 (55.58) | 2.750 (69.85) | .173 (4.39)    | 2.688 (68.28) | -             |

†Not to MS specification

\*Not Available in MS3101E and MS3101R.

| Shell Size | A Thread      |
|------------|---------------|
| 8S         | 1/2-28UNEF-2A |
| 10S        | 5/8-24UNEF-2A |
| 10SL       | 5/8-24UNEF-2A |
| 12S        | 3/4-20UNEF-2A |
| 14S        | 7/8-20UNEF-2A |
| 16S        | 1-20UNEF-2A   |
| 12         | 3/4-20UNEF-2A |
| 14         | 7/8-20UNEF-2A |

| Shell Size | A Thread        |
|------------|-----------------|
| 16         | 1-20UNEF-2A     |
| 18         | 1-1/8-18UNEF-2A |
| 20         | 1-1/4-18UNEF-2A |
| 22         | 1-3/8-18UNEF-2A |
| 24         | 1-1/2-18UNEF-2A |
| 28         | 1-3/4-18UNEF-2A |
| 32         | 2-18UNEF-2A     |
| 36         | 2-1/4-16UNEF-2A |
| 40         | 2-1/2-16UNEF-2A |

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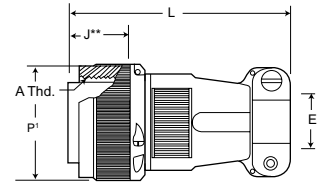
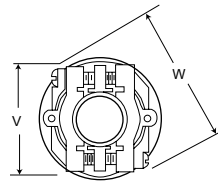
## Straight Plug

MS3106E/MS3106F  
Integral Cable Clamp

CA3106E/CA06R

MS3106F straight plugs mate with 3100 and 3102 receptacles and 3101 plugs.

The MS3106E is available upon request. For new equipment, customer should specify. MS3106F. MS3106E is identical to MS3106F except to O ring under the coupling nut.

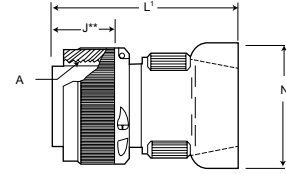
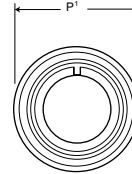


MS3106R



CA3106R

The MS3106R straight plug is identical in purpose to the MS3106F. The MS3106R has the shorter endbell. This plug will mate with 3100 and 3102 receptacles and 3101 plugs.



| Shell Size | E Max.        | E Min.       | J** Max.     | L Max.         | L' Max.        | N Max.        | P' Max.        | V Max.        | W Max.        |
|------------|---------------|--------------|--------------|----------------|----------------|---------------|----------------|---------------|---------------|
| 8S         | .235 (5.97)   | .102 (2.59)  | .536 (13.61) | 2.250 (57.15)  | 1.838 (46.69)  | .890 (22.61)  | .844 (21.44)   | .840 (21.34)  | 1.046 (26.57) |
| 10S        | .235 (5.97)   | .102 (2.59)  | .536 (13.61) | 2.250 (57.15)  | 1.838 (46.69)  | .890 (22.61)  | .969 (24.61)   | .840 (21.34)  | 1.046 (26.57) |
| 10SL       | .297 (7.54)   | .140 (3.56)  | .536 (13.61) | 2.250 (57.15)  | 1.838 (46.69)  | .970 (24.64)  | .969 (24.61)   | .900 (22.86)  | 1.125 (28.58) |
| 12S        | .297 (7.54)   | .140 (3.56)  | .536 (13.61) | 2.250 (57.15)  | 1.838 (46.69)  | .970 (24.64)  | 1.062 (26.97)  | .900 (22.86)  | 1.125 (28.58) |
| 14S        | .422 (10.72)  | .195 (4.95)  | .536 (13.61) | 2.250 (57.15)  | 1.838 (46.69)  | 1.150 (29.21) | 1.156 (29.36)  | 1.00 (27.94)  | 1.343 (34.11) |
| 16S        | .547 (13.89)  | .255 (6.48)  | .536 (13.61) | 2.250 (57.15)  | 1.838 (46.69)  | 1.250 (31.75) | 1.250 (31.75)  | 1.200 (30.48) | 1.484 (37.69) |
| 12         | .297 (7.54)   | .140 (3.56)  | .724 (18.39) | 2.625 (66.68)  | 2.181 (55.40)  | .970 (24.64)  | 1.062 (26.97)  | .900 (22.86)  | 1.125 (28.58) |
| 14         | .422 (10.72)  | .195 (4.95)  | .724 (18.39) | 2.625 (66.68)  | 2.181 (55.40)  | 1.150 (29.21) | 1.156 (29.36)  | 1.100 (27.94) | 1.343 (34.11) |
| 16         | .547 (13.89)  | .255 (6.48)  | .724 (18.39) | 2.625 (66.68)  | 2.181 (55.40)  | 1.250 (31.75) | 1.250 (31.75)  | 1.200 (30.48) | 1.484 (37.69) |
| 18         | .610 (15.49)  | .285 (7.24)  | .724 (18.39) | 2.688 (68.28)  | 2.281 (55.40)  | 1.450 (36.83) | 1.344 (34.14)  | 1.300 (33.02) | 1.609 (40.87) |
| 20         | .735 (18.67)  | .350 (8.89)  | .724 (18.39) | 2.750 (69.85)  | 2.281 (55.40)  | 1.570 (39.88) | 1.469 (37.31)  | 1.500 (38.10) | 1.890 (48.01) |
| 22         | .740 (18.80)  | .350 (8.89)  | .724 (18.39) | 2.750 (69.85)  | 2.281 (55.40)  | 1.570 (39.88) | 1.594 (40.49)  | 1.500 (38.10) | 1.890 (48.01) |
| 24         | .922 (23.42)  | .468 (11.89) | .724 (18.39) | 2.969 (75.41)  | 2.281 (55.40)  | 1.880 (47.75) | 1.719 (43.66)  | 1.740 (44.20) | 2.170 (55.12) |
| 28         | .922 (23.42)  | .468 (11.89) | .724 (18.39) | 3.031 (76.99)  | 2.281 (55.40)  | 1.880 (47.75) | 1.969 (50.01)  | 1.740 (44.20) | 2.170 (55.12) |
| 32         | 1.235 (31.37) | .664 (15.87) | .724 (18.39) | 3.031 (76.99)  | 2.322 (58.98)  | 2.205 (56.01) | 2.219 (56.36)  | 2.075 (52.71) | 2.656 (67.46) |
| 36         | 1.360 (34.54) | .694 (17.63) | .724 (18.39) | 3.281 (83.34)  | 2.322 (58.98)  | 2.400 (60.96) | 2.469 (62.71)  | 2.300 (58.42) | 2.922 (74.22) |
| * 40       | 1.628 (41.35) | .911 (23.14) | .724 (18.39) | 3.560 (89.66)† | 2.427 (61.65)† | 2.840 (72.14) | 2.723 (69.16)† | 2.688 (68.28) | -             |

†Not to MS specification

\*\* Barrel engaging face to shoulder.

| Shell Size | A Thread      |
|------------|---------------|
| 8S         | 1/2-28UNEF-2B |
| 10S        | 5/8-24UNEF-2B |
| 10SL       | 5/8-24UNEF-2B |
| 12S        | 3/4-20UNEF-2B |
| 14S        | 7/8-20UNEF-2B |
| 16S        | 1-20UNEF-2B   |
| 12         | 3/4-20UNEF-2B |
| 14         | 7/8-20UNEF-2B |

| Shell Size | A Thread        |
|------------|-----------------|
| 16         | 1-20UNEF-2B     |
| 18         | 1-1/8-18UNEF-2B |
| 20         | 1-1/4-18UNEF-2B |
| 22         | 1-3/8-18UNEF-2B |
| 24         | 1-1/2-18UNEF-2B |
| 28         | 1-3/4-18UNS-2B  |
| 32         | 2-18UNS-2B      |
| 36         | 2-1/4-16UN-2B   |
| 40         | 2-1/2-16UN-2B   |

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## Box Mounting Receptacle

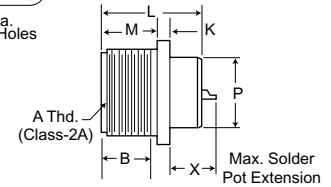
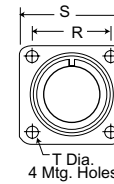
MS3102E/MS3102R

CA3102E/CA3102R



MS3102E and MS3102R box mounting receptacles are used in junction boxes or as an integral part of equipment. These connectors are identical in construction and will mate with 3106, 3107 and 3108 plugs. For new equipment, customer should specify MS3102R.

| X DIMENSION                          |      |      |      |      |      |
|--------------------------------------|------|------|------|------|------|
| Max. Solder Pot Ext. - Pin or Socket |      |      |      |      |      |
| Shell Size                           | 16   | 12   | 8    | 4    | 0    |
| 8S, 10S, 10SL                        | .534 | -    | -    | -    | -    |
| 12S, 14S, 16S                        | .518 | -    | -    | -    | -    |
| 12                                   | .705 | .705 | -    | -    | -    |
| 14                                   | .705 | .705 | .767 | -    | -    |
| 16                                   | .705 | .705 | .767 | .767 | -    |
| 18                                   | .674 | .674 | .736 | .736 | -    |
| 20,22                                | .674 | .674 | .736 | .736 | .971 |
| 24,28                                | .612 | .612 | .674 | .674 | .909 |
| 32,36                                | .549 | .549 | .611 | .611 | .846 |



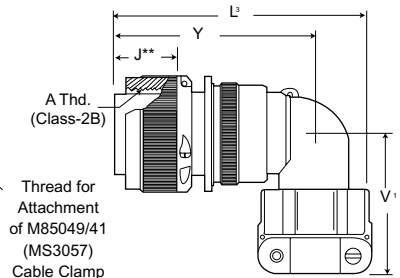
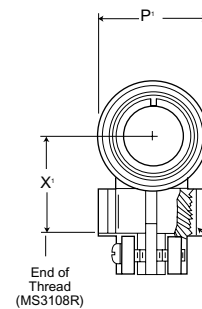
## 90° Angle Plug

MS3108E/MS3108R

CA3108E/CA3108R



MS3108R 90° angle plugs with O ring seal less cable clamp) and the MS3108E 90° angle plugs (less O ring seal with cable clamp) are used where there is limited space and where wires must be brought at abrupt angles. This plugs will mate with 3100 and 3102 receptacles and 3101 plugs.



See page 185 for cable clamp dimensions.

| Shell Size | B Min.       | J** Max.     | K Max.      | L Max.        | L' Max.         | M<br>+.031 (0.79)<br>-.000 (0.00) | P Max.        | P' Max.        | R<br>±.005    | S<br>±.031    | T<br>+.010<br>-.005 | V' Max.        | X' Max.       | Y Max.         |
|------------|--------------|--------------|-------------|---------------|-----------------|-----------------------------------|---------------|----------------|---------------|---------------|---------------------|----------------|---------------|----------------|
| 8S         | .375 (9.53)  | .536 (13.61) | .125 (3.18) | 1.040 (26.42) | 2.156 (54.76)   | .562 (14.27)                      | .426 (10.82)  | .844 (21.44)   | .594 (15.09)  | .875 (22.23)  | .120 (3.05)         | 1.281 (30.94)  | .811 (20.60)  | 1.640 (41.66)  |
| 10S        | .375 (9.53)  | .536 (13.61) | .125 (3.18) | 1.040 (26.42) | 2.156 (54.76)   | .562 (14.27)                      | .520 (13.21)  | .969 (24.61)   | .719 (18.26)  | 1.000 (25.40) | .120 (3.05)         | 1.250 (31.75)  | .842 (21.39)  | 1.640 (41.66)  |
| 10SL       | .375 (9.53)  | .536 (13.61) | .125 (3.18) | 1.040 (26.42) | 2.188 (55.58)   | .562 (14.27)                      | .614 (15.60)  | .969 (24.61)   | .719 (18.26)  | 1.000 (25.40) | .120 (3.05)         | 1.281 (32.54)  | .873 (22.17)  | 1.703 (43.26)  |
| 12S        | .375 (9.53)  | .536 (13.61) | .140 (3.56) | 1.040 (26.42) | 2.188 (55.58)   | .562 (14.27)                      | .614 (15.60)  | 1.062 (26.97)  | .812 (20.62)  | 1.094 (27.79) | .120 (3.05)         | 1.281 (32.54)  | .873 (22.17)  | 1.703 (43.26)  |
| 14S        | .375 (9.53)  | .536 (13.61) | .140 (3.56) | 1.040 (26.42) | 2.312 (58.72)   | .562 (14.27)                      | .739 (18.77)  | 1.156 (29.36)  | .906 (23.01)  | 1.188 (30.18) | .120 (3.05)         | 1.406 (35.71)  | .936 (23.77)  | 1.765 (44.83)  |
| 16S        | .375 (9.53)  | .536 (13.61) | .140 (3.56) | 1.040 (26.42) | 2.406 (61.11)   | .562 (14.27)                      | .864 (21.95)  | 1.250 (31.75)  | .969 (24.61)  | 1.281 (32.54) | .120 (3.05)         | 1.531 (38.89)  | .998 (25.35)  | 1.796 (45.62)  |
| 12         | .625 (15.88) | .724 (18.39) | .146 (3.71) | 1.400 (35.56) | 2.531 (64.29)   | .750 (19.05)                      | .614 (15.60)  | 1.062 (26.97)  | .812 (20.62)  | 1.094 (27.79) | .120 (3.05)         | 1.281 (32.54)  | .873 (22.17)  | 2.062 (52.37)  |
| 14         | .625 (15.88) | .724 (18.39) | .146 (3.71) | 1.400 (35.56) | 2.688 (68.28)   | .750 (19.05)                      | .739 (18.77)  | 1.156 (29.36)  | .906 (23.01)  | 1.188 (30.18) | .120 (3.05)         | 1.406 (35.71)  | .936 (23.77)  | 2.125 (53.98)  |
| 16         | .625 (15.88) | .724 (18.39) | .146 (3.71) | 1.400 (35.56) | 2.781 (70.64)   | .750 (19.05)                      | .864 (21.95)  | 1.250 (31.75)  | .969 (24.61)  | 1.281 (32.54) | .120 (3.05)         | 1.531 (38.89)  | .998 (25.35)  | 2.156 (54.76)  |
| 18         | .625 (15.88) | .724 (18.39) | .180 (4.57) | 1.400 (35.56) | 2.844 (72.24)   | .750 (19.05)                      | .989 (25.12)  | 1.344 (34.14)  | 1.062 (26.97) | 1.375 (34.93) | .120 (3.05)         | 1.593 (40.46)  | 1.061 (26.95) | 2.250 (57.15)  |
| 20         | .625 (15.88) | .724 (18.39) | .180 (4.57) | 1.400 (35.56) | 3.250 (82.55)   | .750 (19.05)                      | 1.145 (29.08) | 1.469 (37.31)  | 1.156 (29.36) | 1.500 (38.10) | .120 (3.05)         | 1.656 (42.06)  | 1.123 (28.52) | 2.312 (58.72)  |
| 22         | .625 (15.88) | .724 (18.39) | .180 (4.57) | 1.400 (35.56) | 3.250 (82.55)   | .750 (19.05)                      | 1.270 (32.26) | 1.594 (40.49)  | 1.250 (31.75) | 1.625 (41.28) | .120 (3.05)         | 1.718 (43.64)  | 1.186 (30.12) | 2.312 (58.72)  |
| 24         | .625 (15.88) | .724 (18.39) | .203 (5.16) | 1.400 (35.56) | 3.719 (94.46)   | .812 (20.62)                      | 1.395 (35.43) | 1.719 (43.66)  | 1.375 (34.93) | 1.750 (44.45) | .147 (3.73)         | 1.890 (48.01)  | 1.263 (32.08) | 2.531 (64.29)  |
| 28         | .625 (15.88) | .724 (18.39) | .203 (5.16) | 1.400 (35.56) | 3.719 (94.46)   | .812 (20.62)                      | 1.614 (41.00) | 1.969 (50.01)  | 1.562 (39.67) | 2.000 (50.80) | .147 (3.73)         | 1.968 (49.99)  | 1.342 (34.09) | 2.531 (64.29)  |
| 32         | .625 (15.88) | .724 (18.39) | .203 (5.16) | 1.400 (35.56) | 4.188 (106.38)  | .875 (22.23)                      | 1.864 (47.35) | 2.219 (56.36)  | 1.750 (44.45) | 2.250 (57.15) | .173 (4.39)         | 2.187 (55.55)  | 1.561 (39.65) | 2.750 (69.85)  |
| 36         | .625 (15.88) | .724 (18.39) | .203 (5.16) | 1.400 (35.56) | 4.297 (109.14)  | .875 (22.23)                      | 2.051 (52.10) | 2.469 (62.71)  | 1.938 (49.23) | 2.500 (63.50) | .173 (4.39)         | 2.406 (61.11)  | 1.780 (45.21) | 2.875 (73.02)  |
| 40         | .625 (15.88) | .724 (18.39) | .203 (5.16) | 1.400 (35.56) | 7.211 (183.16)† | .875 (22.23)                      | 2.390 (60.71) | 2.723 (69.16)† | 2.188 (55.58) | 2.750 (69.85) | .173 (4.39)         | 5.875 (149.22) | -             | 5.690 (144.53) |

†Not to MS specification

\*\* Barrel engaging face to shoulder.

| Shell Size | A Thread                |                |
|------------|-------------------------|----------------|
|            | Box Mounting Receptacle | 90° Angle Plug |
| 8S         | 1/2-28UNEF-2A           | 1/2-28UNEF-2B  |
| 10S        | 5/8-24UNEF-2A           | 5/8-24UNEF-2B  |
| 10SL       | 5/8-24UNEF-2A           | 5/8-24UNEF-2B  |
| 12S        | 3/4-20UNEF-2A           | 3/4-20UNEF-2B  |
| 14S        | 7/8-20UNEF-2A           | 7/8-20UNEF-2B  |
| 16S        | 1-20UNEF-2A             | 1-20UNEF-2B    |
| 12         | 3/4-20UNEF-2A           | 3/4-20UNEF-2B  |
| 14         | 7/8-20UNEF-2A           | 7/8-20UNEF-2B  |

| Shell Size | A Thread                |                 |
|------------|-------------------------|-----------------|
|            | Box Mounting Receptacle | 90° Angle Plug  |
| 16         | 1-20UNEF-2A             | 1-20UNEF-2B     |
| 18         | 1-1/8-18UNEF-2A         | 1-1/8-18UNEF-2B |
| 20         | 1-1/4-18UNEF-2A         | 1-1/4-18UNEF-2B |
| 22         | 1-3/8-18UNEF-2A         | 1-3/8-18UNEF-2B |
| 24         | 1-1/2-18UNEF-2A         | 1-1/2-18UNEF-2B |
| 28         | 1-3/4-18UNS-2A          | 1-3/4-18UNS-2B  |
| 32         | 2-18UNS-2A              | 2-18UNS-2B      |
| 36         | 2-1/4-16UN-2A           | 2-1/4-16UN-2B   |
| 40         | 2-1/2-16UN-2A           | 2-1/2-16UN-2B   |

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Contact Arrangements - Page 171-174

## How to Order

MS type potting connectors are available with nylon cups, 00 and 06 shell styles with plastic cups and resilient insulators meet the requirements of MS3103 and MS25183. Also available is the 08 plug with resilient insulator and 90° angle nylon potting cup.

ITT Cannon provides for a 1/4" clearance for potting on all contact sizes.

|                                  |                 |           |                |          |
|----------------------------------|-----------------|-----------|----------------|----------|
| <b>PREFIX</b> _____              | <b>MS 25183</b> | <b>-</b>  | <b>18 - 10</b> | <b>P</b> |
| <b>SHELL STYLE</b> _____         | <b>MS 3103</b>  | <b>-</b>  | <b>18 - 10</b> | <b>P</b> |
| <b>CLASS</b> _____               | <b>CA 3100</b>  | <b>ER</b> | <b>18 - 10</b> | <b>P</b> |
| <b>SHELL SIZE</b> _____          |                 |           |                |          |
| <b>CONTACT ARRANGEMENT</b> _____ |                 |           |                |          |
| <b>CONTACT TYPE</b> _____        |                 |           |                |          |

**PREFIX**

CA - ITT Cannon prefix indicating special application or variation of MS

**SHELL STYLE**

3100 - Wall mounting receptacle (MS3103)  
 3106 - Straight plug (MS25183)  
 3108 - 90° angle plug

**CLASS**

ER - Resilient insulator, nylon potting cup and thread attachment ring  
 No class designator for MS types.

**SHELL STYLE**

Coupling thread diameter figured in sixteenths of an inch

**COTNACT ARRANGEMENTS**

See pages 171-174

**COTNACT TYPE**

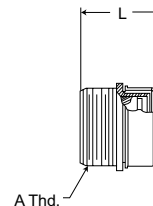
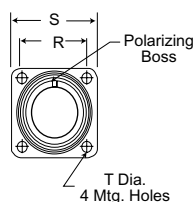
P for Pin: S for Socket

## Wall Mounting Receptacle

**MS3103**  
**Nylon Potting Cup**  
**Threaded Attachment Ring**



**CA3100ER**



The CA3100ER receptacle (MS3103) is supplied with a resilient insulator and nylon potting cup with a threaded attachment ring. This receptacle mates with 3106, 3107, and 3108 plugs.

| Shell Size | L<br>Max.     | R<br>±.005 (+0.13) | S<br>Max.     | R<br>+.010 (+0.25)<br>-.005 (+0.13) | A<br>Thread    |
|------------|---------------|--------------------|---------------|-------------------------------------|----------------|
| 8S         | 1.531 (38.89) | .594 (15.09)       | .906 (23.01)  | .120 (3.05)                         | 1/2-28UNEF-2A  |
| 10S        | 1.531 (38.89) | .719 (18.26)       | 1.031 (26.19) | .120 (3.05)                         | 5/8-24NEF-2A   |
| 10SL       | 1.531 (38.89) | .719 (18.26)       | 1.031 (26.19) | .120 (3.05)                         | 5/8-24NEF-2A   |
| 12S        | 1.531 (38.89) | .812 (20.62)       | 1.125 (28.58) | .120 (3.05)                         | 3/4-20UNEF-2A  |
| 14S        | 1.531 (38.89) | .906 (23.01)       | 1.219 (30.96) | .120 (3.05)                         | 7/8-20UNEF-2A  |
| 16S        | 1.531 (38.89) | .969 (24.61)       | 1.312 (33.32) | .120 (3.05)                         | 1-20UNEF-2A    |
| 12         | 1.968 (49.99) | .812 (20.62)       | 1.125 (28.58) | .120 (3.05)                         | 3/4-20UNEF-2A  |
| 14         | 1.968 (49.99) | .906 (23.01)       | 1.219 (30.96) | .120 (3.05)                         | 3/4-20UNEF-2A  |
| 16         | 1.968 (49.99) | .968 (24.59)       | 1.312 (33.32) | .120 (3.05)                         | 1-20UNEF-2A    |
| 18         | 1.968 (49.99) | 1.062 (26.97)      | 1.406 (35.71) | .120 (3.05)                         | 1-1/8-18NEF-2A |
| 20         | 2.188 (55.58) | 1.156 (29.36)      | 1.531 (38.89) | .120 (3.05)                         | 1-1/4-18NEF-2A |
| 22         | 2.188 (55.58) | 1.250 (31.75)      | 1.656 (42.06) | .120 (3.05)                         | 1-3/8-18NEF-2A |
| 24         | 2.188 (55.58) | 1.375 (34.92)      | 1.781 (45.24) | .147 (3.73)                         | 1-1/2-18NEF-2A |
| 28         | 2.188 (55.58) | 1.562 (39.67)      | 2.031 (51.59) | .147 (3.73)                         | 1-3/4-18NS-2A  |
| 32         | 2.188 (55.58) | 1.750 (44.45)      | 2.281 (57.94) | .173 (4.39)                         | 2-18NS-2A      |
| 36         | 2.188 (55.58) | 1.938 (49.23)      | 2.531 (64.29) | .173 (4.39)                         | 2-1/4-16UN-2A  |

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Contact, Sealing Plugs, Assembly Tools - Page

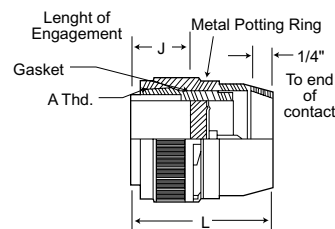
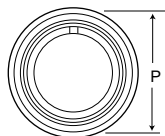
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Contact Arrangements - Page 171-174

## Straight Plug

MS25183  
Nylon Potting Cup  
Rubber Gasket

CA3106ER

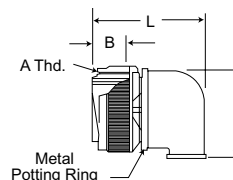
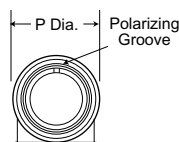


The CA3106ER plug is supplied with resilient insulators, nylon potting cups with threaded attachment rings, and a rubber gasket under the coupling nut. This plug mates with 3100 and 3102 receptacles and 3101 plugs.

## 90° Angle Plug

Nylon Potting Cup  
Rubber Gasket

CA3108ER



The CA3108ER is supplied with resilient insulator, 90° nylon potting cup and threaded attachment ring with a rubber gasket under the coupling nut. This plug mates with 3100 and 3102 receptacles and 3101 plugs.

## CA3106ER

## CA3108ER

| Shell Size | J Max.       | L Max.        | P Max.        | A Thread        | L Max.       |               |                               |                             |               |                 |
|------------|--------------|---------------|---------------|-----------------|--------------|---------------|-------------------------------|-----------------------------|---------------|-----------------|
|            |              |               |               |                 | B Max.       | D Max.        | For Arr. w/#16 & #12 Contacts | For Arr. w/#8 & #4 Contacts | P Max.        | A Thread        |
| 8S         | .536 (13.61) | 1.562 (39.67) | .844 (21.44)  | 1/2-28UNEF-2B   | -            | -             | -                             | -                           | -             | -               |
| 10S        | .536 (13.61) | 1.562 (39.67) | .969 (24.61)  | 5/8-24UNEF-2B   | -            | -             | -                             | -                           | -             | -               |
| 10SL       | .536 (13.61) | 1.562 (39.67) | .969 (24.61)  | 5/8-24UNEF-2B   | .563 (13.61) | 1.040 (26.42) | 1.463 (37.16)                 | -                           | .969 (24.61)  | 5/8-24UNEF-2B   |
| 12S        | .536 (13.61) | 1.562 (39.67) | 1.062 (26.97) | 3/4-20UNEF-2B   | .563 (13.61) | 1.040 (26.42) | 1.600 (40.64)                 | -                           | 1.062 (26.97) | 3/4-24UNEF-2B   |
| 14S        | .536 (13.61) | 1.562 (39.67) | 1.156 (29.36) | 7/8-20UNEF-2B   | .563 (13.61) | 1.040 (26.42) | 1.600 (40.64)                 | 2.300 (58.42)               | 1.156 (29.36) | 7/8-20UNEF-2B   |
| 16S        | .536 (13.61) | 1.562 (39.67) | 1.250 (31.75) | 1-20UNEF-2B     | .563 (13.61) | 1.290 (32.77) | 1.600 (40.64)                 | 2.550 (64.77)               | 1.250 (31.75) | 1-20UNEF-2B     |
| 12         | .724 (18.39) | 2.000 (50.80) | 1.062 (26.97) | 3/4-20UNEF-2B   | .724 (18.39) | 1.040 (26.42) | 1.910 (48.51)                 | -                           | 1.062 (26.97) | 3/4-20UNEF-2B   |
| 14         | .724 (18.39) | 2.000 (50.80) | 1.156 (29.36) | 7/8-20UNEF-2B   | .724 (18.39) | 1.040 (26.42) | 1.910 (48.51)                 | 2.610 (66.29)               | 1.156 (29.36) | 7/8-20UNEF-2B   |
| 16         | .724 (18.39) | 2.000 (50.80) | 1.250 (31.75) | 1-20UNEF-2B     | .724 (18.39) | 1.290 (32.77) | 1.910 (48.51)                 | 2.850 (72.39)               | 1.250 (31.75) | 1-20UNEF-2B     |
| 18         | .724 (18.39) | 2.000 (50.80) | 1.344 (34.14) | 1-1/8-18UNEF-2B | .724 (18.39) | 1.290 (32.77) | 2.100 (53.34)                 | 2.850 (72.39)               | 1.344 (34.14) | 1-1/8-18UNEF-2B |
| 20         | .724 (18.39) | 2.125 (53.98) | 1.469 (37.31) | 1-1/4-18UNEF-2B | .724 (18.39) | 1.540 (39.12) | 2.100 (53.34)                 | 2.850 (72.39)               | 1.469 (37.31) | 1-1/4-18UNEF-2B |
| 22         | .724 (18.39) | 2.125 (53.98) | 1.594 (40.49) | 1-3/8-18UNEF-2B | .724 (18.39) | 1.540 (39.12) | 2.100 (53.34)                 | 2.850 (72.39)               | 1.594 (40.49) | 1-3/8-18UNEF-2B |
| 24         | .724 (18.39) | 2.125 (53.98) | 1.719 (43.66) | 1-1/2-18UNEF-2B | .724 (18.39) | 1.790 (45.47) | 2.281 (57.94)                 | 2.985 (75.82)               | 1.719 (43.66) | 1-1/2-18UNEF-2B |
| 28         | .724 (18.39) | 2.125 (53.98) | 1.969 (50.01) | 1-3/4-18UNS-2B  | .724 (18.39) | 2.040 (51.82) | 2.485 (63.12)                 | 2.985 (75.82)               | 1.969 (50.01) | 1-3/4-18UNS-2B  |
| 32         | .724 (18.39) | 2.180 (55.37) | 1.219 (30.96) | 2-18UNS-2B      | .724 (18.39) | 2.290 (58.17) | 2.485 (63.12)                 | 2.985 (75.82)               | 1.219 (30.96) | 2-18UNS-2B      |
| 36         | .724 (18.39) | 2.180 (55.37) | 2.469 (62.71) | 2-1/4-16UN-2B   | .724 (18.39) | 2.540 (64.52) | 2.485 (63.12)                 | 2.985 (75.82)               | 2.469 (62.71) | 2-1/4-16UN-2B   |
| 40         | .724 (18.39) | 2.180 (55.37) | 2.723 (69.16) | 2-1/2-16UN-2B   |              |               |                               |                             |               |                 |

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Contact Arrangements - Page 171-174

Components

| MS3106R<br>CA3106R<br>Straight Plug | MS3106F<br>CA06R<br>Straight Plug | MS3106E*<br>CA3106E<br>Straight Plug | MS3108E<br>CA3108E<br>90° Angle Plug | MS3108R<br>CA3108R<br>90° Angle Plug |
|-------------------------------------|-----------------------------------|--------------------------------------|--------------------------------------|--------------------------------------|
| Endbell                             |                                   |                                      |                                      |                                      |
|                                     |                                   |                                      |                                      |                                      |
| Ferrule                             |                                   |                                      |                                      |                                      |
|                                     |                                   |                                      |                                      |                                      |
| Grommet                             |                                   |                                      |                                      |                                      |
|                                     |                                   |                                      |                                      |                                      |
| Pin Contacts                        |                                   |                                      |                                      |                                      |
|                                     |                                   |                                      |                                      |                                      |
| Insulator                           |                                   |                                      |                                      |                                      |
|                                     |                                   |                                      |                                      |                                      |
| Coupling Nut                        |                                   |                                      |                                      |                                      |
|                                     |                                   |                                      |                                      |                                      |
| Barrel                              |                                   |                                      |                                      |                                      |
|                                     |                                   |                                      |                                      |                                      |
| O Ring                              |                                   |                                      |                                      |                                      |
|                                     |                                   |                                      |                                      |                                      |

Note: Class F is not applicable to MS3108 shell style.

\* Class E inactive for new design. Use Class F or R.

## How to Order

TBF and BFR pressurized bulkhead receptacles mate with standard MS type plugs (3106,3107 and 3108) if contact arrangements correspond. Both the BFR and TBF have resilient insulators. The TBF (thru-bulkhead fitting) version has a double-faced construction allowing mating from both ends. An O ring is supplied as standard on both the BFR and the TBF. Contacts are silver plated copper or brass alloy. Shells are aluminum alloy.

**PREFIX** \_\_\_\_\_  
**CLASS** \_\_\_\_\_  
**SHELL SIZE** \_\_\_\_\_  
**CONTACT ARRANGEMENT** \_\_\_\_\_  
**CONTACT TYPE** \_\_\_\_\_  
**ALTERNATE POSITION** \_\_\_\_\_  
**MOUNTING (BFR ONLY)** \_\_\_\_\_

## PREFIX

BF - Bulkhead Fittings  
TBF - Thru bulkhead fittings

## CLASS

\* R - Resilient insulators  
H - Hermetic; see page 327  
\*Letter designator "R" not required for TBF.

## SHELL SIZE

Coupling thread diameter figured in sixteenths of an inch

## CONTACT ARRANGEMENTS

See pages 171 - 174.

## CONTACT TYPE

P for Pin; S for Socket; PS for Pin and Socket (TBF only)

## ALTERNATE POSITION

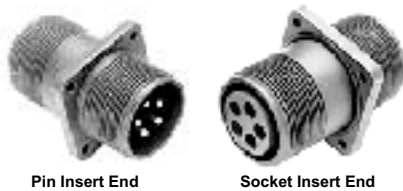
(Consult factory for available alternate positions.)

## MOUNTING

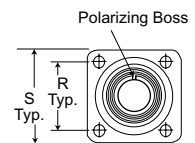
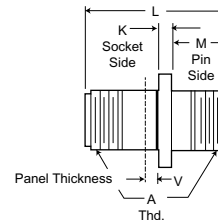
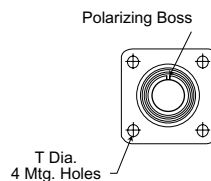
BFR only; see chart on page 183

## Thru-Bulkhead Receptacle

## TBF - Resilient Insulator



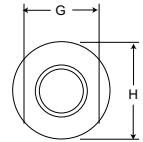
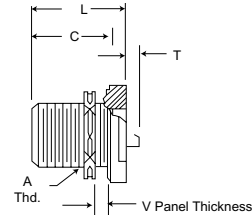
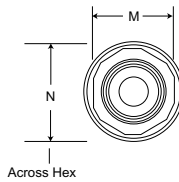
TBF thru-bulkhead fittings have pressurized resilient insulators. Special double-face pin and socket contact construction permits cable components to be wired and tested in the shop and then to be plugged into the mounted TBF plug to complete the installation. The TBF mates with 3106, 3107 and 3108 plugs.



| Shell Size | K Max.      | L Max.        | M<br>+.031 (0.79)<br>-.000 (0.00) | R<br>±.005 (0.13) | S<br>±.031 (0.79) | T<br>+.010 (0.25)<br>-.005 (0.13) | V Max.       | A Thread        |
|------------|-------------|---------------|-----------------------------------|-------------------|-------------------|-----------------------------------|--------------|-----------------|
| 8S         | .125 (3.18) | 1.482 (37.64) | .562 (14.27)                      | .594 (15.09)      | .875 (22.22)      | .120 (3.05)                       | .325 (8.26)  | 1/2-28UNEF-2A   |
| 10S        | .125 (3.18) | 1.482 (37.64) | .562 (14.27)                      | .179 (18.26)      | 1.000 (25.40)     | .120 (3.05)                       | .325 (8.26)  | 5/8-24UNEF-2A   |
| 10SL       | .125 (3.18) | 1.482 (37.64) | .562 (14.27)                      | .179 (18.26)      | 1.000 (25.40)     | .120 (3.05)                       | .325 (8.26)  | 5/8-24UNEF-2A   |
| 12S        | .140 (3.56) | 1.482 (37.64) | .562 (14.27)                      | .812 (20.62)      | 1.094 (27.79)     | .120 (3.05)                       | .325 (8.26)  | 3/4-20UNEF-2A   |
| 14S        | .140 (3.56) | 1.482 (37.64) | .562 (14.27)                      | .906 (23.01)      | 1.188 (30.18)     | .120 (3.05)                       | .325 (8.26)  | 7/8-20UNEF-2A   |
| 16S        | .140 (3.56) | 1.482 (37.64) | .562 (14.27)                      | .968 (24.59)      | 1.281 (32.54)     | .120 (3.05)                       | .325 (8.26)  | 1-20UNEF-2A     |
| 12         | .146 (3.71) | 2.030 (51.56) | .750 (19.05)                      | .812 (20.62)      | 1.094 (27.79)     | .120 (3.05)                       | .445 (11.30) | 3/4-20UNEF-2A   |
| 14         | .146 (3.71) | 2.030 (51.56) | .750 (19.05)                      | .906 (23.01)      | 1.188 (30.18)     | .120 (3.05)                       | .445 (11.30) | 7/8-20UNEF-2A   |
| 16         | .146 (3.71) | 2.030 (51.56) | .750 (19.05)                      | .968 (24.59)      | 1.281 (32.54)     | .120 (3.05)                       | .445 (11.30) | 1-20UNEF-2A     |
| 18         | .180 (4.57) | 2.030 (51.56) | .750 (19.05)                      | 1.062 (26.97)     | 1.375 (34.92)     | .120 (3.05)                       | .445 (11.30) | 1/18-18UNEF-2A  |
| 20         | .180 (4.57) | 2.030 (51.56) | .750 (19.05)                      | 1.156 (29.36)     | 1.500 (38.10)     | .120 (3.05)                       | .445 (11.30) | 1-1/4-18UNEF-2A |
| 22         | .180 (4.57) | 2.030 (51.56) | .750 (19.05)                      | 1.250 (31.75)     | 1.625 (41.28)     | .120 (3.05)                       | .445 (11.30) | 1-3/8-18UNEF-2A |
| 24         | .203 (5.16) | 2.030 (51.56) | .812 (20.62)                      | 1.375 (34.92)     | 1.750 (44.45)     | .147 (3.73)                       | .383 (9.73)  | 1-1/2-18UNEF-2A |
| 28         | .203 (5.16) | 2.030 (51.56) | .812 (20.62)                      | 1.562 (39.67)     | 2.000 (50.80)     | .147 (3.73)                       | .383 (9.73)  | 1-3/4-18UNEF-2A |
| 32         | .203 (5.16) | 2.030 (51.56) | .875 (22.22)                      | 1.750 (44.45)     | 2.250 (57.15)     | .173 (4.39)                       | .320 (8.13)  | 2-18UNEF-2A     |
| 36         | .203 (5.16) | 2.030 (51.56) | .812 (20.62)                      | 1.938 (49.23)     | 2.500 (63.50)     | .173 (4.39)                       | .383 (9.73)  | 2-1/4-16UNEF-2A |
| 40         | .203 (5.16) | 2.030 (51.56) | .875 (22.22)                      | 2.188 (55.58)     | 2.750 (69.85)     | .173 (4.39)                       | .383 (9.73)  |                 |

## Pressurized Bulkhead Receptacle

BFR



**Standard Position**  
Pin is 3/32" Dia.

BFR pressurized bulkhead receptacles withstand the air leakage requirement of MIL-C-5015 not to exceed 1 cu. in. of air per hour when subjected to a pressure differential of 30 psi at - 55°C. Insulators are resilient material bonded to aluminum shell. Both pin and socket assemblies are available. The BFR will mate with standard MS type 3106, 3107, 3108 plugs.

## TYPE 1

**Shell** Standard  
**Insulator** Polychloroprene  
**Lock Nut** Hex with 6 wire holes  
**O Ring** Neoprene  
**Position Pin** Standard  
**Mounting** Figure 1 or 2  
**Part No. Example:** BFR14S-5P-1

| Shell Size | C Max.        | G Max.        | H Max.        | L Max.        | M Max.        | N Max.        | T<br>Max. Solder Pot Ext. |             |             |             |             | V Max.      |
|------------|---------------|---------------|---------------|---------------|---------------|---------------|---------------------------|-------------|-------------|-------------|-------------|-------------|
|            |               |               |               |               |               |               | #16                       | #12         | #8          | #4          | #0          |             |
| 8S         | .853 (21.67)  | .895 (22.73)  | 1.077 (27.36) | 1.087 (27.61) | .702 (17.83)  | .820 (20.83)  | .140 (3.56)               | -           | -           | -           | -           | .250 (6.35) |
| 10S        | .853 (21.67)  | 1.015 (25.78) | 1.203 (30.56) | 1.087 (27.61) | .822 (20.88)  | .960 (24.38)  | .140 (3.56)               | -           | -           | -           | -           | .250 (6.35) |
| 10SL       | .853 (21.67)  | 1.015 (25.78) | 1.203 (30.56) | 1.087 (27.61) | .822 (20.88)  | .960 (24.38)  | .140 (3.56)               | -           | -           | -           | -           | .250 (6.35) |
| 12S        | .853 (21.67)  | 1.077 (27.36) | 1.327 (33.71) | 1.087 (27.61) | .955 (24.26)  | 1.110 (28.19) | .140 (3.56)               | -           | -           | -           | -           | .250 (6.35) |
| 14S        | .853 (21.67)  | 1.203 (30.56) | 1.453 (36.91) | 1.087 (27.61) | 1.072 (27.23) | 1.250 (31.75) | .140 (3.56)               | -           | -           | -           | -           | .375 (9.52) |
| 16S        | .853 (21.67)  | 1.327 (33.71) | 1.577 (40.06) | 1.087 (27.61) | 1.265 (32.13) | 1.460 (37.08) | .140 (3.56)               | -           | -           | -           | -           | .375 (9.52) |
| 12         | 1.244 (31.60) | 1.077 (27.36) | 1.327 (33.71) | 1.525 (38.74) | .955 (24.26)  | 1.110 (28.19) | .062 (1.57)               | .062 (1.57) | -           | -           | -           | .375 (9.52) |
| 14         | 1.244 (31.60) | 1.203 (30.56) | 1.453 (36.91) | 1.525 (38.74) | 1.072 (27.23) | 1.250 (31.75) | .062 (1.57)               | .062 (1.57) | .125 (3.18) | -           | -           | .375 (9.52) |
| 16         | 1.244 (31.60) | 1.327 (33.71) | 1.577 (40.06) | 1.525 (38.74) | 1.265 (32.13) | 1.460 (37.08) | .062 (1.57)               | .062 (1.57) | .125 (3.18) | .125 (3.18) | -           | .375 (9.52) |
| 18         | 1.244 (31.60) | 1.453 (36.91) | 1.703 (43.26) | 1.525 (38.74) | 1.395 (35.43) | 1.610 (40.89) | .062 (1.57)               | .062 (1.57) | .125 (3.18) | .125 (3.18) | -           | .375 (9.52) |
| 20         | 1.244 (31.60) | 1.577 (40.06) | 1.827 (46.41) | 1.525 (38.74) | 1.515 (38.48) | 1.750 (44.45) | .062 (1.57)               | .062 (1.57) | .125 (3.18) | .125 (3.18) | .359 (9.12) | .375 (9.52) |
| 22         | 1.244 (31.60) | 1.577 (40.06) | 1.953 (49.61) | 1.525 (38.74) | 1.635 (41.53) | 1.900 (48.26) | .062 (1.57)               | .062 (1.57) | .125 (3.18) | .125 (3.18) | .359 (9.12) | .375 (9.52) |
| 24         | 1.244 (31.60) | 1.827 (46.41) | 2.077 (52.76) | 1.525 (38.74) | 1.765 (44.83) | 2.030 (51.56) | .062 (1.57)               | .062 (1.57) | .125 (3.18) | .125 (3.18) | .359 (9.12) | .375 (9.52) |
| 28         | 1.244 (31.60) | 1.953 (49.61) | 2.327 (59.11) | 1.525 (38.74) | 2.015 (51.18) | 2.330 (59.18) | .062 (1.57)               | .062 (1.57) | .125 (3.18) | .125 (3.18) | .359 (9.12) | .375 (9.52) |
| 32         | 1.244 (31.60) | 2.203 (55.96) | 2.577 (65.46) | 1.525 (38.74) | 2.205 (56.01) | 2.550 (64.77) | .062 (1.57)               | .062 (1.57) | .125 (3.18) | .125 (3.18) | .359 (9.12) | .375 (9.52) |
| 36         | 1.244 (31.60) | 2.577 (65.46) | 2.827 (71.81) | 1.525 (38.74) | 2.455 (62.36) | 2.840 (72.14) | .062 (1.57)               | .062 (1.57) | .125 (3.18) | .125 (3.18) | .359 (9.12) | .312 (7.92) |

| Shell Size | A Thread      |
|------------|---------------|
| 8S         | 1/2-28UNEF-2A |
| 10S        | 5/8-24UNEF-2A |
| 10SL       | 5/8-24UNEF-2A |
| 12S        | 3/4-20UNEF-2A |
| 14S        | 7/8-20UNEF-2A |
| 16S        | 1-20UNEF-2A   |
| 12         | 3/4-20UNEF-2A |
| 14         | 7/8-20UNEF-2A |

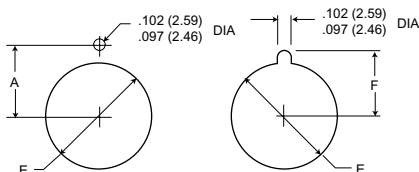
| Shell Size | A Thread        |
|------------|-----------------|
| 16         | 1-20UNEF-2A     |
| 18         | 1-1/8-18UNEF-2A |
| 20         | 1-1/4-18UNEF-2A |
| 22         | 1-3/8-18UNEF-2A |
| 24         | 1-1/2-18UNEF-2A |
| 28         | 1-3/4-18UNS-2A  |
| 32         | 2-18UNS-2A      |
| 36         | 2-1/4-16UN-2A   |

Performance Specifications - Page 168

Contacts, Sealing Plugs, Assembly Tool - Page 187

Contact Arrangements - Page 171-174

## Mounting Dimensions



| Shell Size | A<br>±.005<br>(0.13) | E<br>+.015 (0.38)<br>-.000 (0.00) | F<br>±.005<br>(0.13) |
|------------|----------------------|-----------------------------------|----------------------|
| 8S         | .323 (8.20)          | .500 (12.70)                      | .373 (9.47)          |
| 10S, 10SL  | .385 (9.78)          | .625 (15.88)                      | .435 (11.05)         |
| 12S, 12    | .448 (11.38)         | .750 (19.05)                      | .498 (12.65)         |
| 14S, 14    | .510 (12.95)         | .875 (22.22)                      | .560 (14.22)         |
| 16S, 16    | .573 (14.55)         | 1.000 (25.40)                     | .623 (15.82)         |
| 18         | .635 (16.13)         | 1.125 (28.58)                     | .685 (17.40)         |

| Shell Size | A<br>±.005<br>(0.13) | E<br>+.015 (0.38)<br>-.000 (0.00) | F<br>±.005<br>(0.13) |
|------------|----------------------|-----------------------------------|----------------------|
| 20         | .698 (17.73)         | 1.250 (31.75)                     | .748 (19.00)         |
| 22         | .760 (19.30)         | 1.375 (34.92)                     | .810 (20.57)         |
| 24         | .823 (20.90)         | 1.500 (38.10)                     | .873 (22.17)         |
| 28         | .948 (24.08)         | 1.750 (44.45)                     | .998 (25.35)         |
| 32         | 1.073 (27.25)        | 2.000 (50.80)                     | 1.123 (28.52)        |
| 36         | 1.198 (30.43)        | 2.250 (57.15)                     | 1.248 (31.70)        |

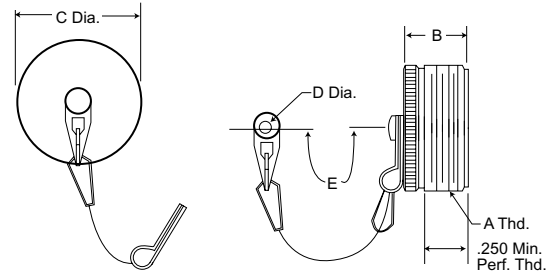
## Pressurized Bulkhead Receptacle

MS25042

CA17530  
CA19741

## For 06 and 08 Style Plugs

These externally threaded metal dust caps are used to protect the MS3106 and MS3108 plugs. Material is aluminum alloy. They are furnished with sash chain or less sash chain.



## Part Number

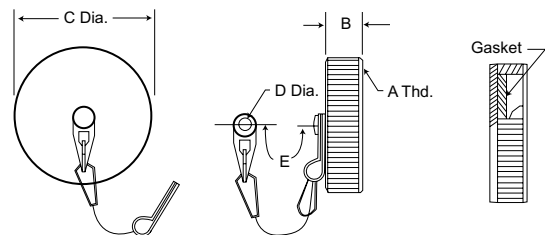
| Black Anodized Finish With Sash Chain |              | Olive Drab Chromate Over Cadmium Finish With Sash Chain |                                            | Olive Drab Chromate Over Cadmium Finish, Without Sash Chain |           | Fits Shell Size | B Max.        | C Dia. Max.    | E Max.      | D Dia. Max.     | A Thread |
|---------------------------------------|--------------|---------------------------------------------------------|--------------------------------------------|-------------------------------------------------------------|-----------|-----------------|---------------|----------------|-------------|-----------------|----------|
| MS                                    | ITT Cannon   | Superseded MS Number (Ref)                              | May Still be Purchased by ITTC Part Number | Without Sash Chain ITTC Part Number                         |           |                 |               |                |             |                 |          |
| MS25042-8DA                           | CA17530-8000 | MS25042-8D                                              | CA17530-5100                               | CA19741-8                                                   | 8S        | .656 (16.66)    | .562 (14.27)  | 4.500 (114.30) | .166 (4.22) | 1/2-28UNEF-2A   |          |
| MS25042-10DA                          | CA17530-8001 | MS25042-10D                                             | CA17530-5101                               | CA19741-10                                                  | 10S, 10SL | .656 (16.66)    | .687 (17.45)  | 4.500 (114.30) | .166 (4.22) | 5/8-24UNEF-2A   |          |
| MS25042-12DA                          | CA17530-8002 | MS25042-12D                                             | CA17530-5102                               | CA19741-12                                                  | 12, 12S   | .844 (21.44)    | .812 (20.62)  | 5.000 (127.00) | .166 (4.22) | 3/4-20UNEF-2A   |          |
| MS25042-14DA                          | CA17530-8003 | MS25042-14D                                             | CA17530-5103                               | CA19741-14                                                  | 14, 14S   | .844 (21.44)    | .937 (23.80)  | 5.000 (127.00) | .166 (4.22) | 7/8-20UNEF-2A   |          |
| MS25042-16DA                          | CA17530-8004 | MS25042-16D                                             | CA17530-5104                               | CA19741-16                                                  | 16, 16S   | .844 (21.44)    | 1.062 (26.97) | 5.000 (127.00) | .166 (4.22) | 1-20UNEF-2A     |          |
| MS25042-18DA                          | CA17530-8005 | MS25042-18D                                             | CA17530-5105                               | CA19741-18                                                  | 18        | .844 (21.44)    | 1.187 (30.15) | 5.000 (127.00) | .166 (4.22) | 1-1/8-18UNEF-2A |          |
| MS25042-20DA                          | CA17530-8006 | MS25042-20D                                             | CA17530-5106                               | CA19741-20                                                  | 20        | .844 (21.44)    | 1.312 (33.32) | 5.500 (139.70) | .197 (5.00) | 1-1/4-18UNEF-2A |          |
| MS25042-22DA                          | CA17530-8007 | MS25042-22D                                             | CA17530-5107                               | CA19741-22                                                  | 22        | .844 (21.44)    | 1.437 (36.50) | 5.500 (139.70) | .197 (5.00) | 1-3/8-18UNEF-2A |          |
| MS25042-24DA                          | CA17530-8008 | MS25042-24D                                             | CA17530-5108                               | CA19741-24                                                  | 24        | .844 (21.44)    | 1.562 (39.67) | 6.000 (152.40) | .197 (5.00) | 1-1/2-18UNEF-2A |          |
| MS25042-28DA                          | CA17530-8009 | MS25042-28D                                             | CA17530-5109                               | CA19741-28                                                  | 28        | .844 (21.44)    | 1.812 (46.02) | 8.250 (209.55) | .197 (5.00) | 1-3/4-18UNEF-2A |          |
| MS25042-32DA                          | CA17530-8010 | MS25042-32D                                             | CA17530-5110                               | CA19741-32                                                  | 32        | .844 (21.44)    | 2.062 (52.37) | 8.250 (209.55) | .228 (5.79) | 2-18UNEF-2A     |          |
| MS25042-36DA                          | CA17530-8011 | MS25042-36D                                             | CA17530-5111                               | CA19741-36                                                  | 36        | .844 (21.44)    | 2.312 (58.72) | 8.250 (209.55) | .228 (5.79) | 2-1/4-16UN-2A   |          |
| MS25042-40DA                          | CA17530-8012 | MS25042-40D                                             | CA17530-5112                               | CA19741-40                                                  | 40        | .844 (21.44)    | 2.562 (65.07) | 8.250 (209.55) | .228 (5.79) | 2-1/2-16UN-2A   |          |
| MS25042-44DA                          | CA17530-8013 | MS25042-44D                                             | CA17530-5113                               | CA19741-44                                                  | 44        | .844 (21.44)    | 2.812 (71.42) | 8.250 (209.55) | .228 (5.79) | 2-3/4-16UN-2A   |          |
| MS25042-48DA                          | CA17530-8014 | MS25042-48D                                             | CA17530-5114                               | CA19741-48                                                  | 48        | .844 (21.44)    | 3.062 (77.77) | 8.250 (209.55) | .228 (5.79) | 3-16UN-2A       |          |

MS25043

CA2209  
CA2322

## For 00, 01 and 02 Style Receptacles

These internally threaded metal dust caps are used to protect MS3100, MS3101 and MS3102 receptacles. Material is aluminum alloy. They are furnished with sash chain or less sash chain.



## Part Number

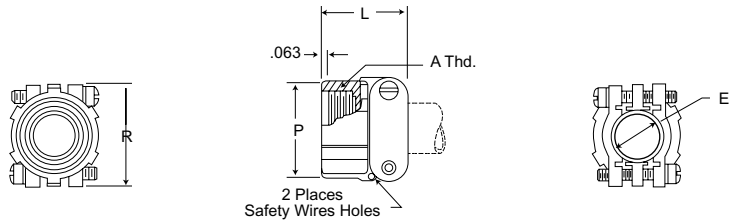
| Black Anodized Finish With Sash Chain |             | Olive Drab Chromate Over Cadmium Finish With Sash Chain |                                            | Olive Drab Chromate Over Cadmium Finish, Without Sash Chain |           | Fits Shell Size | B Max.        | C Dia. Max.    | E Max.      | D Dia. Max.     | A Thread |
|---------------------------------------|-------------|---------------------------------------------------------|--------------------------------------------|-------------------------------------------------------------|-----------|-----------------|---------------|----------------|-------------|-----------------|----------|
| MS                                    | ITT Cannon  | Superseded MS Number (Ref)                              | May Still be Purchased by ITTC Part Number | Without Sash Chain ITTC Part Number                         |           |                 |               |                |             |                 |          |
| MS25043-8DA                           | CA2209-8000 | MS25043-8D                                              | CA2209-5100                                | CA2322-1                                                    | 8S        | 4.69 (11.91)    | .688 (17.48)  | 4.500 (114.30) | .150 (3.81) | 1/2-28UNEF-2B   |          |
| MS25043-10DA                          | CA2209-8001 | MS25043-10D                                             | CA2209-5101                                | CA2322-2                                                    | 10S, 10SL | 4.69 (11.91)    | .815 (20.70)  | 4.500 (114.30) | .150 (3.81) | 5/8-24UNEF-2B   |          |
| MS25043-12DA                          | CA2209-8002 | MS25043-12D                                             | CA2209-5102                                | CA2322-3                                                    | 12, 12S   | 4.69 (11.91)    | 1.000 (25.40) | 5.000 (127.00) | .150 (3.81) | 3/4-20UNEF-2B   |          |
| MS25043-14DA                          | CA2209-8003 | MS25043-14D                                             | CA2209-5103                                | CA2322-4                                                    | 14, 14S   | 4.69 (11.91)    | 1.125 (28.58) | 5.000 (127.00) | .150 (3.81) | 7/8-20UNEF-2B   |          |
| MS25043-16DA                          | CA2209-8004 | MS25043-16D                                             | CA2209-5104                                | CA2322-5                                                    | 16, 16S   | 4.69 (11.91)    | 1.188 (30.18) | 5.000 (127.00) | .150 (3.81) | 1-20UNEF-2B     |          |
| MS25043-18DA                          | CA2209-8005 | MS25043-18D                                             | CA2209-5105                                | CA2322-6                                                    | 18        | 4.69 (11.91)    | 1.344 (34.14) | 5.000 (127.00) | .150 (3.81) | 1-1/8-18UNEF-2B |          |
| MS25043-20DA                          | CA2209-8006 | MS25043-20D                                             | CA2209-5106                                | CA2322-7                                                    | 20        | 4.69 (11.91)    | 1.469 (37.31) | 5.500 (139.70) | .150 (3.81) | 1-1/4-18UNEF-2B |          |
| MS25043-22DA                          | CA2209-8007 | MS25043-22D                                             | CA2209-5107                                | CA2322-8                                                    | 22        | 4.69 (11.91)    | 1.594 (40.49) | 5.500 (139.70) | .150 (3.81) | 1-3/8-18UNEF-2B |          |
| MS25043-24DA                          | CA2209-8008 | MS25043-24D                                             | CA2209-5108                                | CA2322-9                                                    | 24        | 4.69 (11.91)    | 1.719 (43.66) | 6.000 (152.40) | .181 (4.60) | 1-1/2-18UNEF-2B |          |
| MS25043-28DA                          | CA2209-8009 | MS25043-28D                                             | CA2209-5109                                | CA2322-10                                                   | 28        | .531 (13.49)    | 1.969 (50.01) | 8.250 (209.55) | .181 (4.60) | 1-3/4-18UNS-2B  |          |
| MS25043-32DA                          | CA2209-8010 | MS25043-32D                                             | CA2209-5110                                | CA2322-11                                                   | 32        | .531 (13.49)    | 2.219 (56.36) | 8.250 (209.55) | .197 (5.00) | 2-18UNS-2B      |          |
| MS25043-36DA                          | CA2209-8011 | MS25043-36D                                             | CA2209-5111                                | CA2322-12                                                   | 36        | .531 (13.49)    | 2.469 (62.71) | 8.250 (209.55) | .197 (5.00) | 2-1/4-16UN-2B   |          |
| MS25043-40DA                          | CA2209-8012 | MS25043-40D                                             | CA2209-5112                                | CA2322-13                                                   | 40        | .531 (13.49)    | 2.719 (69.06) | 8.250 (209.55) | .197 (5.00) | 2-1/2-16UN-2B   |          |
| MS25043-44DA                          | CA2209-8013 | MS25043-44D                                             | CA2209-5113                                | CA2322-14                                                   | 44        | .531 (13.49)    | 2.969 (75.41) | 8.250 (209.55) | .197 (5.00) | 2-3/4-16UN-2B   |          |
| MS25043-48DA                          | CA2209-8014 | MS25043-48D                                             | CA2209-5114                                | CA2322-15                                                   | 48        | .531 (13.49)    | 3.188 (80.98) | 8.250 (209.55) | .197 (5.00) | 3-16UN-2B       |          |

## Cable Clamp

**M85049/41**  
With or Without Bushing



The M85049/41 cable clamp is made for plugs and receptacles that have an endbell with external conduit threads. The double clamping action provides a balanced, positive hold on the wires and greatly reduces moisture transmission. Provision is made for safety wiring. This clamp is supplied without bushing; to order bushing; add "with bushing" after part number.



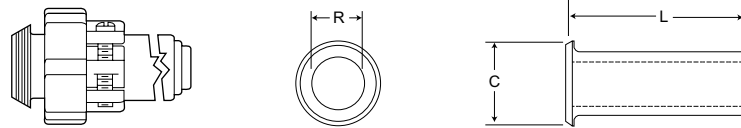
| Part Number*  | Superseded Part Number* | Fits Shell Size      | Accommodates MS Bushings | E Min.       | E Max.        | L $\pm 0.31$ (0.79) | P $\pm 0.31$ (0.79) | R $\pm 0.31$ (0.79) | A Thread         |
|---------------|-------------------------|----------------------|--------------------------|--------------|---------------|---------------------|---------------------|---------------------|------------------|
| M85049/41-3A  | MS3057-3A               | <b>8S-10S</b>        | MS3420-3                 | .102 (2.59)  | .250 (6.35)   | .812 (20.62)        | .688 (17.48)        | .812 (20.62)        | 1/2-28UNEF-2B    |
| M85049/41-4A  | MS3057-4A               | <b>10SL, 12S, 12</b> | MS3420-4                 | .140 (3.56)  | .312 (7.92)   | .812 (20.62)        | .812 (20.62)        | .875 (22.22)        | 5/8-24UNEF-2B    |
| M85049/41-6A  | MS3057-6A               | <b>14S, 14</b>       | MS3420-6                 | .195 (4.95)  | .438 (11.13)  | .875 (22.22)        | .969 (24.61)        | 1.062 (26.97)       | 3/4-20UNEF-2B    |
| M85049/41-8A  | MS3057-8A               | <b>16S, 16</b>       | MS3420-8                 | .255 (6.48)  | .562 (14.27)  | .938 (23.83)        | 1.094 (27.79)       | 1.156 (29.36)       | 7/8-20UNEF-2B    |
| M85049/41-10A | MS3057-10A              | <b>18</b>            | MS3420-10                | .285 (7.24)  | .625 (15.88)  | .938 (23.83)        | 1.188 (30.18)       | 1.250 (31.75)       | 1-20UNEF-2B      |
| M85049/41-12A | MS3057-12A              | <b>20, 22</b>        | MS3420-12                | .350 (8.89)  | .750 (19.05)  | .938 (23.83)        | 1.375 (34.92)       | 1.469 (37.31)       | 1-3/16-18UNEF-2B |
| M85049/41-16A | MS3057-16A              | <b>24, 28</b>        | MS3420-16, 12            | .468 (11.89) | .938 (23.83)  | 1.031 (26.19)       | 1.656 (42.06)       | 1.688 (42.88)       | 1-7/16-18UNEF-2B |
| M85049/41-20A | MS3057-20A              | <b>32</b>            | MS3420-20, 16            | .664 (16.87) | 1.250 (31.75) | 1.094 (27.79)       | 2.031 (51.59)       | 2.031 (51.59)       | 1-3/4-18UNS-2B   |
| M85049/41-24A | MS3057-24A              | <b>36</b>            | MS3420-24, 20            | .694 (17.63) | 1.375 (34.92) | 1.156 (29.36)       | 2.219 (56.36)       | 2.281 (57.94)       | 2-18UNS-2B       |
| M85049/41-28A | MS3057-28A              | <b>40</b>            | MS3420-24, 20            | .911 (23.14) | 1.625 (41.28) | 1.688 (42.88)       | 2.500 (63.50)       | 2.688 (68.28)       | 2-1/4-16UN-2B    |
| M85049/41-32A | MS3057-32A              | <b>44</b>            | MS3420-32, 28, 24        | -            | 1.875 (47.62) | 1.750 (44.45)       | 2.781 (70.64)       | 2.938 (74.63)       | 2-1/2-16UN-2B    |
| M85049/41-40A | MS3057-40A              | <b>48</b>            | MS3420-40, 32, 28        | -            | 2.375 (60.32) | 1.750 (44.45)       | 3.281 (83.34)       | 3.500 (88.90)       | 3-16UN-2B        |

\*To order cable clamp with bushing, add "with bushing" after part number.

## Telescoping Bushing

**MS3420/  
MS39056(REF.)**

**CA18220**



Telescoping bushing with  
M85049/41 cable clamp

Telescoping gland bushing (used with M85049/41 cable clamp) keep dirt, oil and moisture out of endbell. Taping or wrapping wires is eliminated since bushing protects wires going thru clamp. Combinations of bushings may be used to decrease cable entry diameter to improve sealing.

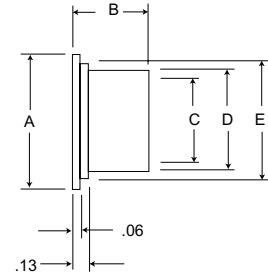
| MS Part Number | Superseded MS Part Number | ITT Cannon Part Number | Fits Shell Size      | C $\pm 0.16$ (0.41) | L $\pm 0.31$ (0.79) | R $\pm 0.16$ (0.41) |
|----------------|---------------------------|------------------------|----------------------|---------------------|---------------------|---------------------|
| MS3420-3       | MS39056-1                 | CA18220-3              | <b>8S-10S</b>        | .379 (9.63)         | 2.875 (73.02)       | 1.30 (3.30)         |
| MS3420-4       | MS39056-2                 | CA18220-4              | <b>10SL, 12S, 12</b> | .505 (12.83)        | 2.750 (69.85)       | .200 (5.09)         |
| MS3420-6       | MS39056-3                 | CA18220-6              | <b>14S, 14</b>       | .619 (15.72)        | 2.625 (66.68)       | .312 (7.92)         |
| MS3420-8       | MS39056-4                 | CA18220-8              | <b>16S, 16</b>       | .744 (18.90)        | 2.500 (63.50)       | .437 (11.10)        |
| MS3420-10      | MS39056-5                 | CA18220-10             | <b>18</b>            | .869 (22.07)        | 2.375 (60.32)       | .562 (14.27)        |
| MS3420-12      | MS39056-6                 | CA18220-12             | <b>20, 22</b>        | 1.064 (27.03)       | 2.250 (57.15)       | .625 (15.88)        |
| MS3420-16      | MS39056-7                 | CA18220-16             | <b>24, 28</b>        | 1.314 (33.38)       | 2.125 (53.98)       | .750 (19.05)        |
| MS3420-20      | MS39056-8                 | CA18220-20             | <b>32</b>            | 1.596 (40.54)       | 2.000 (50.80)       | .937 (23.80)        |
| MS3420-24      | MS39056-9                 | CA18220-24             | <b>36</b>            | 1.847 (46.91)       | 1.875 (47.62)       | 1.250 (31.75)       |
| MS3420-28      | MS39056-10                | CA18220-28             | <b>40</b>            | 2.085 (52.96)       | 1.750 (44.45)       | 1.375 (34.92)       |
| MS3420-32      | MS39056-11                | CA18220-32             | <b>44</b>            | 2.335 (59.31)       | 1.625 (41.28)       | 1.624 (41.25)       |
| MS3420-40      | MS39056-12                | CA18220-40             | <b>48</b>            | 2.835 (72.01)       | 1.500 (38.10)       | 1.874 (47.60)       |

## Plastic Protective Caps



025-XXXX-000

Protective dust caps are designed to cover the coupling and conduit ends of MS connectors where there is a possibility of foreign matter accumulating on the interior of the connector or of damage to the threaded parts. Material is red polyethylene. Plastic dust caps can be reused, but are not intended to replace the standard aluminum dust caps shown on preceding pages.



| Part Number* | MS3100F,R    |                | MS3102F,R    |                | MS-F (only)<br>Solder Pot End | MS3106/MS3108<br>F,R |                | Dimensions |        |        |        |        |         |
|--------------|--------------|----------------|--------------|----------------|-------------------------------|----------------------|----------------|------------|--------|--------|--------|--------|---------|
|              | Coupling End | Solder Pot End | Coupling End | Solder Pot End |                               | Coupling End         | Solder Pot End | A Max.     | B Max. | C Max. | D Max. | E Max. | Wt. Lb. |
| 025-0458-000 |              |                |              | 8S             |                               | 8S                   |                | .673       | .440   | .430   | .486   | .583   | .0012   |
| 025-0459-000 | 8S           | 8S, 10S        | 8S           | 8S, 10S        | 10S                           |                      | 8S, 10S        | .734       | .440   | .490   | .546   | .644   | .0014   |
| 025-0460-000 | 10S, 10SL    | 10SL, 12S, 12  | 10S, 10SL    | 10SL, 12S, 12  |                               | 10SL, 12S, 12        | 10SL, 12S, 12  | .848       | .700   | .600   | .656   | .758   | .0022   |
| 025-0462-000 | 12S, 12      | 14S, 14        | 12S, 12      | 14S, 14        |                               |                      | 14S, 14        | .973       | .700   | .730   | .786   | .883   | .0028   |
| 025-0463-000 | 14S, 14      | 16S, 16        | 14S, 14      | 16S, 16        |                               |                      | 16S, 16        | 1.098      | .700   | .850   | .908   | 1.008  | .0033   |
| 025-0466-000 |              |                |              | 18             | 18                            |                      |                | 1.209      | .700   | .950   | 1.016  | 1.119  | .0042   |
| 025-0467-000 |              |                |              | 20             |                               | 20                   |                | 1.396      | .700   | 1.150  | 1.216  | 1.308  | .0054   |
| 025-0468-000 | 20           |                | 20           | 22             | 22                            |                      |                | 1.500      | .700   | 1.240  | 1.306  | 1.405  | .0060   |
| 025-0469-000 | 22           |                | 22           | 24             | 24                            |                      |                | 1.625      | .700   | 1.360  | 1.426  | 1.530  | .0067   |
| 025-0470-000 |              |                |              | 28             |                               |                      |                | 1.870      | .700   | 1.610  | 1.676  | 1.775  | .0087   |
| 025-0471-000 |              |                |              | 32             |                               |                      |                | 2.120      | .700   | 1.860  | 1.926  | 2.025  | .0103   |
| 025-0472-000 |              |                |              | 36             |                               |                      |                | 2.370      | .700   | 2.110  | 2.176  | 2.275  | .0141   |
| 025-0473-000 |              |                |              | 40             |                               |                      |                | 2.501      | .700   | 2.310  | 2.380  | 2.491  | .0164   |
| 025-0474-000 |              |                |              | 44             |                               |                      |                | 2.872      | .700   | 2.590  | 2.660  | 2.772  | .0186   |
| 025-0475-000 |              |                |              | 48             |                               |                      |                | 3.122      | .700   | 2.840  | 2.910  | 3.022  | .0222   |
| 025-0477-000 |              |                |              |                |                               | 10S, 10SL            |                | .802       | .491   | .550   | .616   | .712   | .0017   |
| 025-0478-000 |              |                |              |                |                               | 12S, 12              |                | .911       | .571   | .669   | .725   | .821   | .0022   |
| 025-0479-000 |              |                |              |                |                               | 14S, 14              |                | 1.036      | .571   | .794   | .850   | .946   | .0027   |
| 025-0480-000 |              |                |              |                |                               | 16S, 16              |                | 1.161      | .571   | .919   | .975   | 1.071  | .0033   |
| 025-0484-000 |              |                |              |                |                               | 18                   |                | 1.290      | .576   | 1.028  | 1.094  | 1.195  | .0044   |
| 025-0486-000 |              |                |              |                |                               | 22                   |                | 1.540      | .576   | 1.278  | 1.344  | 1.445  | .0058   |
| 025-0487-000 |              |                |              |                |                               | 24                   |                | 1.665      | .576   | 1.403  | 1.469  | 1.570  | .0066   |
| 025-0488-000 |              |                |              |                |                               | 28                   |                | 1.907      | .576   | 1.645  | 1.711  | 1.812  | .0084   |
| 025-0489-000 |              |                |              |                |                               | 32                   |                | 2.157      | .576   | 1.895  | 1.961  | 2.062  | .0102   |
| 025-0490-000 |              |                |              |                |                               | 36                   |                | 2.412      | .576   | 2.140  | 2.216  | 2.317  | .0132   |
| 025-0491-000 |              |                |              |                |                               | 40                   |                | 2.672      | .576   | 2.390  | 2.466  | 2.572  | .0163   |
| 025-0492-000 |              |                |              |                |                               | 44                   |                | 2.922      | .576   | 2.640  | 2.716  | 2.822  | .0186   |
| 025-0493-000 |              |                |              |                |                               | 48                   |                | 3.172      | .576   | 2.890  | 2.966  | 3.072  | .0213   |
| 025-0498-000 | 16S, 16      | 18             | 16S, 16      | 48             |                               |                      | 18             | 1.240      | .700   | .990   | 1.056  | 1.150  | .0044   |
| 025-0499-000 |              | 20, 22         |              | 36             |                               | 22                   | 20, 22         | 1.427      | .700   | 1.117  | 1.183  | 1.337  | .0055   |
| 025-0500-000 |              | 24, 28         |              | 40             |                               |                      | 24, 28         | 1.677      | .700   | 1.420  | 1.486  | 1.587  | .0072   |
| 025-0501-000 | 28           | 32             | 28           | 44             |                               |                      | 32             | 1.985      | .700   | 1.730  | 1.796  | 1.895  | .0095   |
| 025-0502-000 | 32           | 36             | 32           | 32             |                               |                      | 36             | 2.245      | .700   | 1.980  | 2.046  | 2.155  | .0114   |
| 025-0503-000 | 36           | 40             | 36           | 24, 28         |                               |                      | 40             | 2.495      | .700   | 2.230  | 2.296  | 2.400  | .0134   |
| 025-0504-000 | 40           | 44             | 40           | 20, 22         |                               |                      | 44             | 2.742      | .700   | 2.480  | 2.546  | 2.652  | .0186   |
| 025-0505-000 | 48           |                | 48           | 18             |                               |                      | 48             | 3.257      | .700   | 2.980  | 3.046  | 3.157  | .0233   |
| 025-0507-000 | 18           |                | 18           |                | 20                            |                      |                | 1.365      | .700   | 1.110  | 1.176  | 1.275  | .0050   |
| 025-0510-000 | 24           |                | 24           |                |                               |                      |                | 1.740      | .700   | 1.490  | 1.556  | 1.650  | .0077   |
| 025-0511-000 | 44           | 48             | 44           |                |                               |                      |                | 3.007      | .700   | 2.730  | 2.796  | 2.907  | .0220   |
| 025-0608-000 |              |                |              |                | 8S                            |                      |                | .643       | .440   | .400   | .456   | .553   | .0011   |
| 025-0609-000 |              |                |              |                | 10SL, 12S, 12                 |                      |                | .829       | .700   | .580   | .636   | .739   | .0021   |
| 025-0610-000 |              |                |              |                | 14S, 14                       |                      |                | .954       | .700   | .710   | .766   | .864   | .0028   |
| 025-0611-000 |              |                |              |                | 16S, 16                       |                      |                | 1.079      | .700   | .830   | .886   | .989   | .0032   |
| 025-0612-000 |              |                |              |                | 28                            |                      |                | 1.839      | .700   | 1.570  | 1.626  | 1.744  | .0088   |
| 025-0613-000 |              |                |              |                | 32                            |                      |                | 2.089      | .700   | 1.820  | 1.876  | 1.994  | .0100   |
| 025-0614-000 |              |                |              |                | 36                            |                      |                | 2.376      | .700   | 2.010  | 2.066  | 2.231  | .0132   |

## F80 Assembly Instructions

ITT Cannon provides a complete line of crimp insertion and extraction tooling to be used with CA-F80 contacts as follows.

| Contact Size | Hand Crimp Tool* | Locator | Power Crimp Tool** | Crimp Head | Locator   | Gauge   |
|--------------|------------------|---------|--------------------|------------|-----------|---------|
| 16           | M-22520/1-01     | TH-70-1 | CBT-530            |            |           |         |
| 12           | M-22520/1-01     | TP567   | CBT-600/600B       | CCH-12-7   | CCHP-12-2 | -       |
| 8            | -                | -       | CBT-600/600B       | CCH-8-1    | CCHP-8-1  | CCH-8-1 |
| 4            | -                | -       | CBT-600/600B       | CCH-4-1    | CCHP-4-1  | CCH-4-1 |
| 0            | -                | -       | CBT-600B           | CCH-0-1    | CCHP-0-9  | CCH-0   |

\*The M-22520/1-01 is the MIL standard crimp tool for #12 thru #20 contacts and when used with crimp #12, 16 and 20 contacts for the CA-F80.

\*\*The CBT-600 is recommended for crimping of #4 thru #12 contacts. The CBT-600B for #0 thru #8. The appropriate locators and crimp heads are available as shown above



CBT-600



CBT-520/530

### Crimp Tool



### Crimping Contacts

1. Check the crimp tool to be sure that the proper crimp head locator is used
2. Cycle the tool to be sure the indentors are open.
3. Place the contact, mating end first, into the tool.
4. Insert the stripped wire into the hollow end of the contact. Be sure the wire is inserted as far as it will go.
5. Close the tool completely to crimp. Unless the tool is closed completely, the tool will not release the contact.
6. Remove the crimped contact from the tool. Check the inspection hole to verify that the wire is fully inserted.

### Insertion/Extraction Tools



Insertion and extraction tools used for these connectors are available for contact sizes 16 thru 0 as shown.

| Contact Size | Insertion Tools         | Extraction Tools          | Handle Color |
|--------------|-------------------------|---------------------------|--------------|
| 16           | CIT-16<br>(038895-0000) | CET-16-4<br>(038888-0004) | Blue         |
| 12           | CIT-12<br>(038896-0000) | CET-12-2<br>(038890-0002) | Yellow       |
| 8            | CIT-8                   | CET-8                     | Red          |
| 4            | CIT-4                   | CET-4                     | Blue         |
| 0            | CIT-0                   | CET-0                     | Yellow       |

### Insertion of Contacts

1. Before inserting the contacts, remove the endbell, grommets, and ferrule from the receptacle. Remove the endbell, grommet, ferrule, and coupling nut from the plug. Slide the hardware over the wire bundle in the proper order for reassembly after all the contacts are inserted.
2. To assist insertion of contacts, lubricate insert cavities with isopropyl alcohol. Alcohol will evaporate and will not leave a conductive film.  
**Caution: Never use any lubricant other than isopropyl alcohol.** Hold the plug or receptacle body firmly and insert the wired contacts as far as possible by hand. Starting at one side of the insulator, work progressively from contact to contact across the layout. When inserting socket contacts, be sure to provide fixture space below the front face to permit length of guide pins for #16 and #12 contacts to clear insulator face.
3. Place the correct insertion tool on the contact so that the wire runs along the groove in the tool. (Tool tip will butt against the shoulder.)
4. Beginning with a cavity on the outer edge of the plug, apply a slow, even pressure perpendicular to the insulator face until the contact snaps into position. If contacts are not inserted all the way prior to removing insertion tool, do not try to reinsert the insertion tool. Instead, using the extraction tool, push the contact back to position it was in when the insertion tool was originally placed over the contact for push-in; other wise the inside of contact cavity may be damaged by reinserting the insertion tool.
5. Inspect the front end of the insulator to assure that the contacts are inserted to the proper depth.

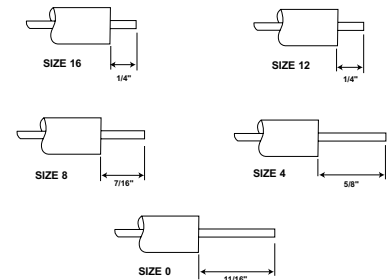
### Completion

After all the cavities have been filled, slide the hardware back into position on the barrel. Tighten the endbell until the ferrule and endbell are flush. Compression of the grommet in this manner results in maximum sealing characteristics of the plug.

### Extraction of Contacts

1. Select the appropriate tool. (Tool tips are reversible for either pin or socket.) Place the extraction tool over the pin or into the socket.
2. Apply a slow, even pressure to push the contact out of the rear of the insulator.

### Recommended Wire Stripping



### Contacts

| Contact Part Numbers |              |              |
|----------------------|--------------|--------------|
| F80                  |              |              |
| Contact Size         | Pin          | Socket       |
| 16S                  | 330-0345-016 | 031-0554-161 |
| 16                   | 330-0351-016 | 031-0560-161 |
| 12                   | 330-0351-012 | 031-0560-121 |
| 8                    | 330-0351-008 | 031-0560-081 |
| 4                    | 330-0351-004 | 031-0560-041 |
| 0                    | 330-0351-000 | 031-0560-001 |

### Guide Pins

Guide pins are used to assist insertion of socket contact Sizes #16 and #12. Larger sizes do not require guide pins.

| Contact | Guide Pin    |
|---------|--------------|
| #16     | 226-1017-000 |
| #12     | 226-1018-000 |

### Wire Hole Fillers

| Size | ITT Cannon Part Numbe | MS Number  |
|------|-----------------------|------------|
| 16   | 225-0017-000          | MS25251-16 |
| 12   | 225-0018-000          | MS25251-12 |
| 8    | 225-0019-000          | MS25251-8  |

**Standard Circular High Environmental Connectors** - These connectors are available for many applications, from commercial/industrial and mass transportation systems to the most stringent high reliability military and space requirements.

The MS/CV345\* connector manufactured by ITT Cannon to MIL-C-5015 (Navy) is a threaded coupling, removable rear release crimp contact type. Fully interchangeable with existing MIL-C-5015 and threaded MIL-C-83723 Series II (USAF) type connectors, they provide for minimum effort and high economy upgrades for existing applications. In addition, they offer simplified design for new and interphase equipment.

MS/CV connectors covered under MIL-C-5015 (Navy) utilize fluid resistant elastomers to provide maximum protection against degrading fuels, oils, coolants and cleansers.

Temperature withstanding capabilities range from -55°C to +200°C depending upon the class. The use of electroless nickel and cadmium plating for hardware finishes gives the connectors maximum protection from the above factors. High quality manufacturing processes and materials combine to insure the optimum performance and reliability under and extreme range of environmental conditions

The MS/CV connector manufactured by ITT Cannon is available in five shell styles and 72 contact arrangements accommodating from 1 to 52 contact (sizes 0, 4, 8, 12 and 16.)

This connectors series is manufactured to accommodate the followings backshells: M85049/43 (MS3415), M85049/31 or /60 (MS3416), M85049/52 (MS3417). M85049/51 (MS3418) and M85049/26 (MS3419).

Shell polarization is effected by a single keyway and key, and stanared MS polarization positions are available to prevent mismatching.

\* For information regarding MIL-C-83723, Series II (CVA), connectors, please call ITT Canon, 714-557-4700.

## Features

**Universal Insertion/Extraction Tool Style** - A Single, expendable plastic tool is used for insertion and extraction of both pins and sockets. Tool never touches engaging ends of contacts, cannot damage insert.

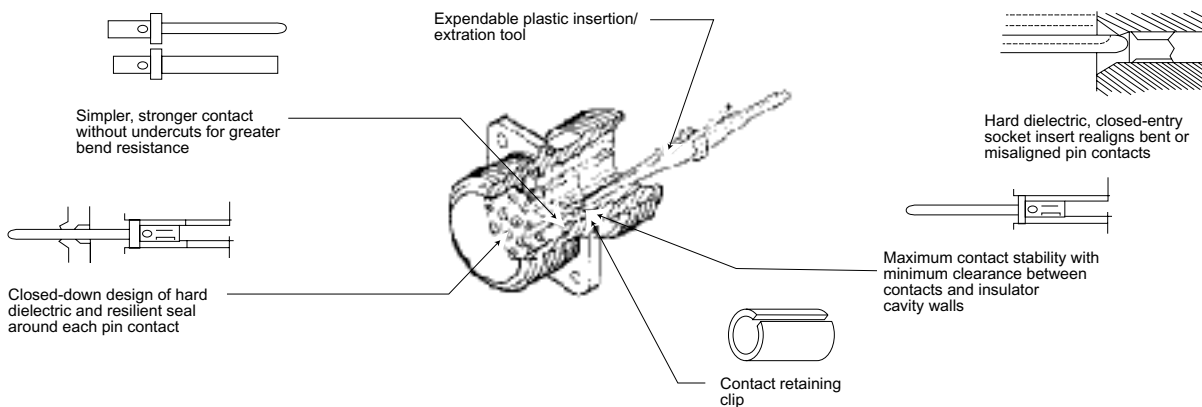
**Simple, Strong Contact Design** - One basic configuration eliminates undercuts, maximizes bend resistance for positive contact mating.

**Interfacial Pin Insert Seal** - Universal interconnect permits design of raised moisture barriers around each pin which mate into lead-in chamfers of hard face socket insert for individual contact sealing. Interfacial seal is never touched by service tools.

**Superior Contact Stability** - "Closed-down" design of each contact cavity in the insulator support each contact, minimizes contact splaying.

**Closed Entry Socket Insert** - Hard dielectric socket face of mating connector has lead-in chamfers for positive alignment of pins and sockets.

**Simplified Assembly Operations** - One standard procedure for assembling connectors and contacts.. standard MS crimp tools...all servicing of contacts accomplished from the rear of the connector.



## How to Order

### PREFIX

MS - Complies with MIL-C-5015

CV - ITT Cannon Prefix

### SHELL STYLES

MS3450 - Wall Mounting Receptacle

MS3451 - Cable Connecting Receptacle

MS3452 - Box Mounting Receptacle

MS3456 - Cable Connecting Plug

MS3459 - Cable Connecting Plug with Self-Locking Coupling Nut

CV3450 - Wall Mounting Receptacle

CV3451 - Cable Connecting Receptacle

CV3452 - Box Mounting Receptacle

CV3456 - Cable Connecting Plug

CV3459 - Cable Connecting Plug with Self-Locking Coupling Nut

### CONNECTOR CLASSES

Class KT, KS - Firewall

Class L, LS - High Temperature, Fluid Resistant

Class W - General Purpose

### SHELL SIZE

See pages 190-192.

PREFIX

SERIES

SHELL STYLE

CONNECTOR CLASS

SHELL SIZE

CONTACT ARRANGEMENT

CONTACT SEX

ALTERNATE INSERT POSITION

LESS CONTACTS

CONTACT ARRANGEMENT

See page 193 and 194.

CONTACT SEX

P - Pin

S - Socket

\*A - Less Pin Contact

\*B - Less Socket Contact

\* Used only when other than power contacts are to be installed (i.e., Shielded, thermocouple, etc.)

CV 345 6 L 18 - 9 P W \*  
MS 345 6 L 18 - 9 P W

ALTERNATE INSERT POSITION

W, X, Y and Z (Omit for "Normal")

LESS CONTACTS

Use "FO" when connectors are ordered less contacts, sealing plug and insertion/extraction tool ("FO" is not stamped on connector).

## Performance Specifications

| Class         | Temp. °C | Moisture, Fluid and Fuel Resistant | Shell Material                    | Finish                    |
|---------------|----------|------------------------------------|-----------------------------------|---------------------------|
| W             | +175 -55 | Yes                                | Aluminum per QQ-A-225 or QQ-A-591 | Olive drab over cad plate |
| L & M83723/** | +200 -55 | Yes                                |                                   | Electroless nickel        |
| KT            | +175 -55 | Yes                                | Steel per QQ-S-637                | Olive drab over cad plate |
| KS LS         | +200 -55 | Yes                                | Stainless Steel                   | Passivate                 |

NOTE: Resistant to hydraulic fluid per MIL-H-5606 or Skydrol (LD), lubricating oils per MIL-L-7808 and MIL-L-23699, cleaners CeeBee A694 or Aerosafe 2300, jet engine fuel per MIL-J-5624 Grade JP-5, Ethylene Glycol, and Collanol 25.

### Contacts (Crimp Removable Rear Release)

Material - Copper Alloy  
Finish - Size 16 - Gold over Nickel  
Size 12, 8, 4, 0 and 0-silver plated

### Wire Range Accommodations

| Contact Size | Wire Size  | O.D of Finished Wire (Inch) <sup>1</sup> |              |
|--------------|------------|------------------------------------------|--------------|
|              |            | Minimum                                  | Maximum      |
| 16-16        | 20, 18, 16 | .053 (1.35)                              | .103 (2.62)  |
| 12-12        | 14, 12     | .085 (2.16)                              | .158 (4.01)  |
| 8-8          | 10, 8      | .132 (3.35)                              | .255 (6.48)  |
| 4-4          | 6, 4       | .237 (6.02)                              | .370 (9.40)  |
| 0-0          | 2, 0       | .360 (9.14)                              | .550 (13.97) |

<sup>1</sup>Wire Reference - MIL-W-16878, MIL-W-22759, MIL-W-81381, MIL-C-915, MIL-C-24145 and MIL-C-2194.

<sup>2</sup>MS3348 Bushing required in crimp barrel to accommodate 10, 6 and 2 wire sizes - they are ordered separately, consult factory.

## Test Data

### High Potential Test Voltage

MS/CV connectors show no evidence of breakdown when the test voltage given below is applied between the two closest contacts and between, the shell and the contacts closest to the shell for a period of one minute.

| Service Rating | Test Voltage (rms) 60cps | Suggested Operating Voltage* |          |
|----------------|--------------------------|------------------------------|----------|
|                |                          | DC                           | AC (rms) |
| Inst.          | 1000                     | 250                          | 200      |
| A              | 2000                     | 700                          | 500      |
| D              | 2800                     | 1250                         | 900      |
| E              | 3500                     | 1750                         | 1250     |
| B              | 4500                     | 2450                         | 1750     |
| C              | 7000                     | 4200                         | 3000     |

\* As indicated in previous MS Specification and to be used by the designer only as a guide.

### Test Current

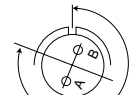
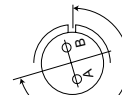
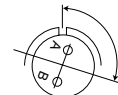
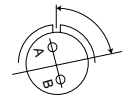
Test current ratings of contacts and allowable voltage drop under test conditions when assembled as in service are shown below. Maximum total current to be carried per connector is the same as that allowable in wire bundles as specified in MIL-W-5088.

### Current Rating with Silver Plated Wire (MIL-C-5015 test method)

| Contact Size | Test Current (amps) | Potential Drop (millivolts) |
|--------------|---------------------|-----------------------------|
| 16           | 13                  | 49                          |
| 12           | 23                  | 42                          |
| 8            | 46                  | 26                          |
| 4            | 80                  | 23                          |
| 0            | 150                 | 21                          |

## MS Alternate Positions

All views are looking into front of pin insert or rear of socket insert.



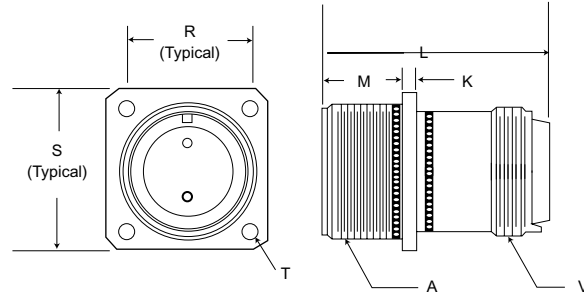
| Shell Size | No. of Contacts | Contact Arr. | Degrees |     |     |     |
|------------|-----------------|--------------|---------|-----|-----|-----|
|            |                 |              | W       | X   | Y   | Z   |
| 8S         | 1 #16           | 8S-1         | -       | -   | -   | -   |
| 10S        | 1 #16           | 10S-2        | -       | -   | -   | -   |
| 10SL       | 2 #16           | 10SL-4       | -       | -   | -   | -   |
| 12         | 1 #12           | 12-5         | -       | -   | -   | -   |
| 12S        | 2 #16           | 12S-3        | 70      | 145 | 215 | 290 |
| 14S        | 2 #16           | 14S-9        | 70      | 145 | 215 | 290 |
|            | 3 #16           | 14S-7        | 90      | 180 | 270 | -   |
|            | 4 #16           | 14S-2        | -       | 120 | 240 | -   |
|            | 5 #16           | 14S-5        | -       | 110 | -   | -   |
|            | 6 #16           | 14S-6        | -       | -   | -   | -   |
| 16S        | 2 #16           | 16S-4        | 35      | 110 | 250 | 325 |
|            | 5 #16           | 16S-8        | -       | 170 | 265 | -   |
|            | 7 #16           | 16S-1        | 80      | -   | -   | 280 |
| 16         | 2 #12           | 16-11        | 35      | 110 | 250 | 325 |
|            | 3 #12           | 16-10        | 90      | 180 | 270 | -   |
|            | 2 #16, 2 #12    | 16-9         | 35      | 110 | 250 | 325 |
|            | 2 #16, 1 #8     | 16-7         | 80      | 110 | 250 | 280 |
|            | 4 #16           | 16-4         | 35      | 110 | 250 | 325 |
| 18         | 4 #12           | 18-10        | -       | 120 | 240 | -   |
|            | 3 #16           | 18-22        | 70      | 145 | 215 | 290 |
|            | 5 #12           | 18-11        | -       | 170 | 265 | -   |
|            | 6 #12           | 18-12        | 80      | -   | -   | 280 |
|            | 5 #16, 2 #12    | 18-9         | 80      | 110 | 250 | 280 |
|            | 7 #16, 1 #12    | 18-8         | 70      | -   | -   | 290 |
|            | 10 #16          | 18-1         | 70      | 145 | 215 | 290 |
| 20         | 1 #0            | 20-2         | -       | -   | -   | -   |
|            | 4 #12           | 20-4         | 45      | 110 | 250 | -   |
|            | 8 #16           | 20-7         | 80      | 110 | 250 | 280 |
|            | 7 #16, 2 #12    | 20-16        | 80      | 110 | 250 | 280 |
|            | 14 #16          | 20-27        | 35      | 110 | 250 | 325 |
|            | 17 #16          | 20-29        | 80      | -   | -   | 280 |
|            | 3 #12, 2 #8     | 20-14        | 80      | 110 | 250 | 280 |
|            | 6 #16, 3 #12    | 20-18        | 35      | 110 | 250 | 325 |
|            | 7 #12           | 20-15        | 80      | -   | -   | 280 |
|            | 3 #8            | 22-2         | 70      | 145 | 215 | 290 |
| 22         | 4 #8            | 22-22        | -       | 110 | 250 | -   |
|            | 1 #16, 4 #12    | 22-13        | 35      | 110 | 250 | 325 |
|            | 4 #16, 2 #12    | 22-5         | 35      | 110 | 250 | 325 |
|            | 8 #16           | 22-18        | 80      | 110 | 250 | 280 |
|            | 6 #16, 3 #12    | 22-16        | 80      | 110 | 250 | 280 |
| 24         | 14 #16          | 22-19        | 80      | 110 | 250 | 280 |
|            | 19 #16          | 22-14        | 80      | -   | -   | 280 |
|            | 9 #16, 2 #12    | 24-20        | 80      | 110 | 250 | 280 |
|            | 3 #16, 1 #0     | 24-4         | 80      | 110 | 250 | 280 |
|            | 4 #8            | 24-22        | 45      | 110 | 250 | -   |
|            | 7 #8            | 24-10        | 80      | -   | -   | 280 |
|            | 6 #12, 3 #8     | 24-11        | 35      | 110 | 250 | 325 |
| 26         | 14 #16, 2 #12   | 24-7         | 80      | 110 | 250 | 280 |
|            | 24 #16          | 24-28        | 80      | 110 | 250 | 280 |
|            | 24 #16, 6 #12   | 40-1         | 65      | 130 | 235 | 300 |

\*20-29 is an auth. position but it is possible to cross mate to normal position.

## Wall Mounting Receptacle

MS3450

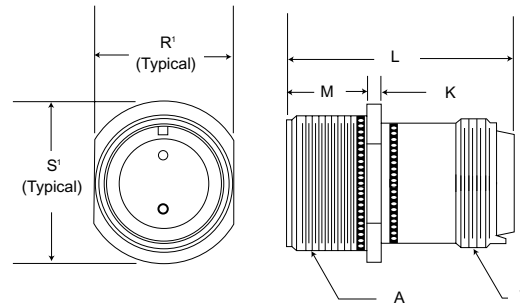
CV3450



## Cable Connecting Receptacle

MS3451  
(Class L and W only)

CV3451



| L Max.     |                       |               |                  |                                 |                  |               |                   |                    | T Dia. +.015/-0.000 | (+0.38/-0.00)   |
|------------|-----------------------|---------------|------------------|---------------------------------|------------------|---------------|-------------------|--------------------|---------------------|-----------------|
| Shell Size | Contact #16,#12,#8,#4 | Contact #0    | K<br>±.015 (.38) | M<br>+.031 (.79)<br>-.000 (.00) | R<br>±.005 (.13) | R'<br>Max.    | S<br>±.031 (7.87) | S'<br>±.031 (7.87) | Class<br>L, W, LS   | Class<br>KT, KS |
| 8S         | 1.750 (44.45)         | --            | .053 (2.11)      | .562 (14.27)                    | .594 (15.09)     | .504 (12.80)  | .875 (22.22)      | .729 (18.52)       | .115 (2.92)         | .145 (3.68)     |
| 10S        | 1.750 (44.45)         | --            | .053 (2.11)      | .562 (14.27)                    | .562 (14.27)     | .629 (15.98)  | 1.000 (25.40)     | .854 (21.69)       | .115 (2.92)         | .145 (3.68)     |
| 10SL       | 1.750 (44.45)         | --            | .053 (2.11)      | .562 (14.27)                    | .719 (18.26)     | .629 (15.98)  | 1.00 (25.40)      | .854 (21.69)       | .115 (2.92)         | .145 (3.68)     |
| 12S        | 1.750 (44.45)         | --            | .053 (2.11)      | .562 (14.27)                    | .812 (20.62)     | .754 (19.15)  | 1.094 (27.79)     | .974 (24.74)       | .115 (2.92)         | .145 (3.68)     |
| 12         | 2.100 (53.34)         | --            | .053 (2.11)      | .750 (19.05)                    | .812 (20.62)     | .754 (19.15)  | 1.094 (27.79)     | .974 (24.74)       | .115 (2.92)         | .145 (3.68)     |
| 14S        | 1.750 (44.45)         | --            | .053 (2.11)      | .562 (14.27)                    | .906 (23.01)     | .879 (22.33)  | 1.188 (30.18)     | 1.099 (27.91)      | .115 (2.92)         | .145 (3.68)     |
| 14         | 2.100 (53.34)         | --            | .053 (2.11)      | .750 (19.05)                    | .906 (23.01)     | .879 (22.33)  | 1.188 (20.18)     | 1.099 (27.91)      | .115 (2.92)         | .145 (3.68)     |
| 16S        | 1.750 (44.45)         | --            | .053 (2.11)      | .562 (14.27)                    | .969 (24.61)     | 1.005 (25.53) | 1.281 (32.54)     | 1.224 (31.09)      | .115 (2.92)         | .145 (3.68)     |
| 16         | 2.100 (53.34)         | --            | .053 (2.11)      | .750 (19.05)                    | .969 (24.61)     | 1.005 (25.53) | 1.281 (32.54)     | 1.224 (31.09)      | .115 (2.92)         | .145 (3.68)     |
| 18         | 2.100 (53.34)         | --            | .125 (3.18)      | .750 (19.05)                    | 1.062 (26.97)    | 1.131 (28.73) | 1.375 (34.92)     | 1.349 (34.26)      | .115 (2.92)         | .172 (4.37)     |
| 20         | 2.100 (53.34)         | 2.250 (57.15) | .125 (3.18)      | .750 (19.05)                    | 1.156 (29.36)    | 1.256 (31.90) | 1.500 (38.10)     | 1.474 (37.44)      | .115 (2.92)         | .172 (4.37)     |
| 22         | 2.100 (53.34)         | 2.250 (57.15) | .125 (3.18)      | .750 (19.05)                    | 1.250 (31.75)    | 1.381 (35.08) | 1.625 (41.28)     | 1.599 (40.61)      | .115 (2.92)         | .172 (4.37)     |
| 24         | 2.100 (53.34)         | 2.250 (57.15) | .125 (3.18)      | .812 (20.62)                    | 1.375 (34.92)    | 1.506 (38.25) | 1.750 (44.45)     | 1.715 (43.56)      | .142 (3.61)         | .172 (4.37)     |
| 28         | 2.100 (53.34)         | 2.250 (57.15) | .125 (3.18)      | .812 (20.62)                    | 1.562 (39.67)    | 1.756 (44.60) | 2.000 (50.80)     | 1.974 (50.14)      | .142 (3.61)         | .172 (4.37)     |
| 32         | 2.100 (53.34)         | 2.250 (57.15) | .125 (3.18)      | .875 (22.22)                    | 1.750 (44.45)    | 2.007 (50.98) | 2.250 (57.18)     | 2.224 (56.49)      | .168 (4.27)         | .204 (5.18)     |
| 36         | 2.100 (53.34)         | 2.250 (57.15) | .125 (3.18)      | .875 (22.22)                    | 1.938 (49.23)    | 2.257 (57.33) | 2.500 (63.50)     | 2.474 (62.84)      | .168 (4.27)         | .204 (5.18)     |
| 40         | 2.100 (53.34)         | 2.250 (57.15) | .125 (3.18)      | .875 (22.22)                    | 2.188 (55.58)    | 2.511 (63.78) | 2.750 (69.85)     | 2.724 (69.19)      | .168 (4.27)         | .204 (5.18)     |
| 44         | 2.100 (53.34)         | 2.250 (57.15) | .125 (3.18)      | .875 (22.22)                    | 2.375 (60.32)    | 2.761 (70.13) | 3.000 (76.20)     | 2.974 (75.54)      | .168 (4.27)         | .204 (5.18)     |
| 48         | 2.100 (53.34)         | 2.250 (57.15) | .125 (3.18)      | .875 (22.22)                    | 2.625 (66.68)    | 3.011 (76.48) | 3.250 (82.55)     | 3.224 (81.89)      | .168 (4.27)         | .204 (5.18)     |

| Size Shell | A Thread Class 2A | V Thread Class 2A |
|------------|-------------------|-------------------|
| 8S         | 1/2-28UNEF        | 1/2-20UNEF        |
| 10S        | 5/8-24UNEF        | 5/8-24UNEF        |
| 10SL       | 5/8-24UNEF        | 5/8-24UNEF        |
| 12S        | 3/4-20UNEF        | 3/4-20UNEF        |
| 12         | 3/4-20UNEF        | 3/4-20UNEF        |
| 14S        | 7/8-20UNEF        | 7/8-20UNEF        |
| 14         | 7/8-20UNEF        | 7/8-20UNEF        |
| 16S        | 1-20UNEF          | 1-20UNEF          |
| 16         | 1-20UNEF          | 1-20UNEF          |

| Size Shell | A Thread Class 2A | V Thread Class 2A |
|------------|-------------------|-------------------|
| 18         | 1-1/8-18UNEF      | 1-1/16-18UNEF     |
| 20         | 1-1/4-18UNEF      | 1-3/16-18UNEF     |
| 22         | 1-3/8-18UNEF      | 1-5/16-18UNEF     |
| 24         | 1-1/2-18UNEF      | 1-7/16-18UNEF     |
| 28         | 1-3/4-18UNS       | 1-3/4-18UNS       |
| 32         | 2-18UNS           | 2-18UNS           |
| 36         | 2-1/4-16UN        | 2-1/4-16UN        |
| 40         | 2-1/2-16UN        | 2-1/2-16UN        |
| 44         | 2-3/4-16UN        | 2-3/4-16UN        |
| 48         | 3-16UN            | 3-16UN            |

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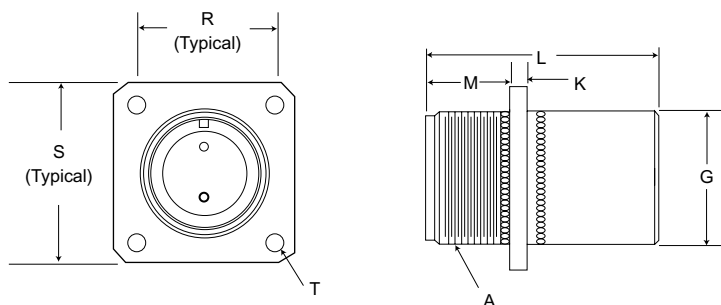
Contacts, Sealing Plugs, Assembly Tools - Page 195

Contact Arrangements - Page 193-194

## Box Mounting Receptacle

MS3452  
Class L and W only

CV3452



| Shell Size | G Dia.<br>±.016 (0.41) | K<br>±.015 (0.38) | L Max.        |               | M<br>+.031/ (.79/<br>-.000 -.00) | R<br>±.005 (.13) | S<br>±.031 (0.79) | T Dia.<br>+.015/- .000<br>(+.038/-0.00)<br>Class L, W | A Thread<br>Class 2A |
|------------|------------------------|-------------------|---------------|---------------|----------------------------------|------------------|-------------------|-------------------------------------------------------|----------------------|
| 8S         | .500 (12.70)           | .083 (2.11)       | .1662 (42.21) | --            | .562 (14.27)                     | .594 (15.09)     | .875 (22.22)      | .115 (2.92)                                           | 1/2-28UNEF           |
| 10S        | .625 (15.88)           | .083 (2.11)       | .1662 (42.21) | --            | .562 (14.27)                     | .719 (18.26)     | 1.000 (25.40)     | .115 (2.92)                                           | 5/8-24UNEF           |
| 10SL       | .625 (15.88)           | .083 (2.11)       | .1662 (42.21) | --            | .562 (14.27)                     | .719 (18.26)     | 1.00 (25.40)      | .115 (2.92)                                           | 5/8-24UNEF           |
| 12S        | .750 (19.05)           | .083 (2.11)       | .1662 (42.21) | --            | .562 (14.27)                     | .812 (20.62)     | 1.094 (27.79)     | .115 (2.92)                                           | 3/4-20UNEF           |
| 12         | .750 (19.05)           | .083 (2.11)       | .1662 (42.21) | --            | .750 (19.05)                     | .812 (20.62)     | 1.094 (27.79)     | .115 (2.92)                                           | 3/4-20UNEF           |
| 14S        | .875 (22.22)           | .083 (2.11)       | .1662 (42.21) | --            | .562 (14.27)                     | .906 (23.01)     | 1.188 (30.18)     | .115 (2.92)                                           | 7/8-20UNEF           |
| 14         | .875 (22.22)           | .083 (2.11)       | .1662 (42.21) | --            | .750 (19.05)                     | .906 (23.01)     | 1.188 (20.18)     | .115 (2.92)                                           | 7/8-20UNEF           |
| 16S        | 1.000 (25.40)          | .083 (2.11)       | .1662 (42.21) | --            | .562 (14.27)                     | .969 (24.61)     | 1.281 (32.54)     | .115 (2.92)                                           | 1-20UNEF             |
| 16         | 1.000 (25.40)          | .083 (2.11)       | .1662 (42.21) | 1.937 (49.20) | .750 (19.05)                     | .969 (24.61)     | 1.281 (32.54)     | .115 (2.92)                                           | 1-20UNEF             |
| 18         | 1.062 (26.67)          | .125 (3.18)       | .1662 (42.21) | 1.937 (49.20) | .750 (19.05)                     | 1.062 (26.97)    | 1.375 (34.92)     | .115 (2.92)                                           | 1-1/8-18UNEF         |
| 20         | 1.187 (30.15)          | .125 (3.18)       | .1662 (42.21) | 1.937 (49.20) | .750 (19.05)                     | 1.156 (29.36)    | 1.500 (38.10)     | .115 (2.92)                                           | 1-1/4-18UNEF         |
| 22         | 1.312 (33.32)          | .125 (3.18)       | .1662 (42.21) | 1.937 (49.20) | .750 (19.05)                     | 1.250 (31.75)    | 1.625 (41.28)     | .115 (2.92)                                           | 1-3/8-18UNEF         |
| 24         | 1.437 (36.50)          | .125 (3.18)       | .1662 (42.21) | 1.937 (49.20) | .812 (20.62)                     | 1.375 (34.92)    | 1.750 (44.45)     | .142 (3.61)                                           | 1-1/2-18UNEF         |
| 28         | 1.750 (44.45)          | .125 (3.18)       | .1662 (42.21) | 1.937 (49.20) | .812 (20.62)                     | 1.562 (39.67)    | 2.000 (50.80)     | .142 (3.61)                                           | 1-3/4-18UNS          |
| 32         | 2.000 (50.80)          | .125 (3.18)       | .1662 (42.21) | 1.937 (49.20) | .875 (22.22)                     | 1.750 (44.45)    | 2.250 (57.18)     | .168 (4.27)                                           | 2-18UNS              |
| 36         | 2.250 (57.15)          | .125 (3.18)       | .1662 (42.21) | 1.937 (49.20) | .875 (22.22)                     | 1.938 (49.23)    | 2.500 (63.50)     | .168 (4.27)                                           | 2-1/4-16UN           |
| 40         | 2.500 (63.50)          | .125 (3.18)       | .1662 (42.21) | 1.937 (49.20) | .875 (22.22)                     | 2.188 (55.58)    | 2.750 (69.85)     | .168 (4.27)                                           | 2-1/2-16UN           |
| 44         | 2.750 (69.85)          | .125 (3.18)       | .1662 (42.21) | 1.937 (49.20) | .875 (22.22)                     | 2.375 (60.32)    | 3.000 (76.20)     | .168 (4.27)                                           | 2-3/4-16UN           |
| 48         | 3.000 (76.20)          | .125 (3.18)       | .1662 (42.21) | 1.937 (49.20) | .875 (22.22)                     | 2.625 (66.68)    | 3.250 (82.55)     | .168 (4.27)                                           | 3-16UN               |

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Contacts, Sealing Plugs, Assembly Tools - Page

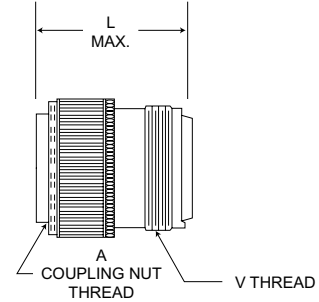
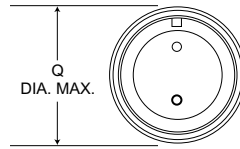
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## Cable Connecting Plug

MS3456

CV3456



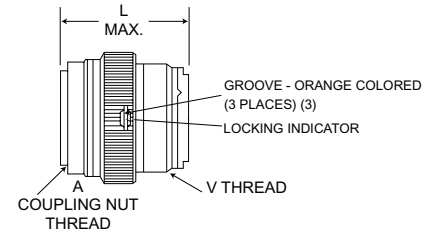
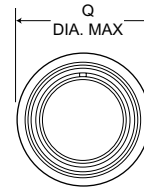
| L Max.     |                          |            |               |                   |                   | L Max.     |                          |               |               |                   |                   |
|------------|--------------------------|------------|---------------|-------------------|-------------------|------------|--------------------------|---------------|---------------|-------------------|-------------------|
| Shell Size | Contact #16, #12, #8, #4 | Contact #0 | Q Dia. Max.   | A Thread Class 2B | V Thread Class 2A | Shell Size | Contact #16, #12, #8, #4 | Contact #0    | Q Dia. Max.   | A Thread Class 2B | V Thread Class 2A |
| 8S         | 1.750 (44.45)            | --         | .844 (21.44)  | 1/2-28UNEF        | 1/2-20UNEF        | 18         | 2.100 (53.34)            | --            | 1.344 (34.14) | 1-1/8-18UNEF      | 1-1/16-18UNEF     |
| 10S        | 1.750 (44.45)            | --         | .969 (24.61)  | 5/8-24UNEF        | 5/8-24UNEF        | 20         | 2.100 (53.34)            | 2.250 (57.15) | 1.469 (37.31) | 1-1/4-18UNEF      | 1-3/16-18UNEF     |
| 10SL       | 1.750 (44.45)            | --         | .969 (24.61)  | 5/8-24UNEF        | 5/8-24UNEF        | 22         | 2.100 (53.34)            | 2.250 (57.15) | 1.594 (40.49) | 1-3/8-18UNEF      | 1-5/16-18UNEF     |
| 12S        | 1.750 (44.45)            | --         | 1.062 (26.97) | 3/4-20UNEF        | 3/4-20UNEF        | 24         | 2.100 (53.34)            | 2.250 (57.15) | 1.719 (43.66) | 1-1/2-18UNEF      | 1-7/16-18UNEF     |
| 12         | 2.100 (53.34)            | --         | 1.062 (26.97) | 3/4-20UNEF        | 3/4-20UNEF        | 28         | 2.100 (53.34)            | 2.250 (57.15) | 1.969 (50.01) | 1-3/4-18UNS       | 1-3/4-18UNS       |
| 14S        | 1.750 (44.45)            | --         | 1.156 (29.36) | 7/8-20UNEF        | 7/8-20UNEF        | 32         | 2.100 (53.34)            | 2.250 (57.15) | 2.219 (56.36) | 2-18UNS           | 2-18UNS           |
| 14         | 2.100 (53.34)            | --         | 1.156 (29.36) | 7/8-20UNEF        | 7/8-20UNEF        | 36         | 2.100 (53.34)            | 2.250 (57.15) | 2.469 (62.71) | 2-1/4-16UN        | 2-1/4-16UN        |
| 16S        | 1.750 (44.45)            | --         | 1.250 (31.75) | 1-20UNEF          | 1-20UNEF          | 40         | 2.100 (53.34)            | 2.250 (57.15) | 2.719 (69.06) | 2-1/2-16UN        | 2-1/2-16UN        |
| 16         | 2.100 (53.34)            | --         | 1.250 (31.75) | 1-20UNEF          | 1-20UNEF          | 44         | 2.100 (53.34)            | 2.250 (57.15) | 2.969 (75.41) | 2-3/4-16UN        | 2-3/4-16UN        |
|            |                          |            |               |                   |                   | 48         | 2.100 (53.34)            | 2.250 (57.15) | 3.219 (81.76) | 3-16UN            | 3-16UN            |

## Cable Connecting Plug

MS3459

CV3459

Self-Locking Coupling Nut



| L Max.     |                          |            |               |                   |                   | L Max.     |                          |               |               |                   |                   |
|------------|--------------------------|------------|---------------|-------------------|-------------------|------------|--------------------------|---------------|---------------|-------------------|-------------------|
| Shell Size | Contact #16, #12, #8, #4 | Contact #0 | Q Dia. Max.   | A Thread Class 2B | V Thread Class 2A | Shell Size | Contact #16, #12, #8, #4 | Contact #0    | Q Dia. Max.   | A Thread Class 2B | V Thread Class 2A |
| 8S         | 1.750 (44.45)            | --         | .963 (24.46)  | 1/2-28UNEF        | 1/2-20UNEF        | 16         | 2.100 (53.34)            | --            | 1.463 (37.16) | 1-20UNEF          | 1-20UNEF          |
| 10S        | 1.750 (44.45)            | --         | 1.088 (27.64) | 5/8-24UNEF        | 5/8-24UNEF        | 18         | 2.100 (53.34)            | --            | 1.588 (40.34) | 1-1/8-18UNEF      | 1-1/16-18UNEF     |
| 10SL       | 1.750 (44.45)            | --         | 1.088 (27.64) | 5/8-24UNEF        | 5/8-24UNEF        | 20         | 2.100 (53.34)            | 2.250 (57.15) | 1.713 (43.51) | 1-1/4-18UNEF      | 1-3/16-18UNEF     |
| 12S        | 1.750 (44.45)            | --         | 1.213 (30.8)  | 3/4-20UNEF        | 3/4-20UNEF        | 22         | 2.100 (53.34)            | 2.250 (57.15) | 1.788 (45.42) | 1-3/8-18UNEF      | 1-5/16-18UNEF     |
| 12         | 2.100 (53.34)            | --         | 1.213 (30.8)  | 3/4-20UNEF        | 3/4-20UNEF        | 24         | 2.100 (53.34)            | 2.250 (57.15) | 1.963 (49.86) | 1-1/2-18UNEF      | 1-7/16-18UNEF     |
| 14S        | 1.750 (44.45)            | --         | 1.358 (34.49) | 7/8-20UNEF        | 7/8-20UNEF        | 28         | 2.100 (53.34)            | 2.250 (57.15) | 2.213 (56.21) | 1-3/4-18UNS       | 1-3/4-18UNS       |
| 14         | 2.100 (53.34)            | --         | 1.358 (34.49) | 7/8-20UNEF        | 7/8-20UNEF        | 32         | 2.100 (53.34)            | 2.250 (57.15) | 2.463 (62.56) | 2-18UNS           | 2-18UNS           |
| 16S        | 1.750 (44.45)            | --         | 1.463 (37.16) | 1-20UNEF          | 1-20UNEF          | 36         | 2.100 (53.34)            | 2.250 (57.15) | 2.713 (68.91) | 2-1/4-16UN        | 2-1/4-16UN        |
|            |                          |            |               |                   |                   | 40         | 2.100 (53.34)            | 2.250 (57.15) | 2.963 (75.26) | 2-1/2-16UN        | 2-1/2-16UN        |

Performance Specifications - Page 189

Contacts, Sealing Plugs, Assembly Tools - Page 195

Contact Arrangements - Page 193-194

## Contact Arrangements

Face view, Pin insert

|                 |       |       |        |        |       |       |       |       |
|-----------------|-------|-------|--------|--------|-------|-------|-------|-------|
|                 |       |       |        |        |       |       |       |       |
| Shell Size      | 8S-1  | 10S-2 | 10SL-4 | 10SL-3 | 12-5  | 12S-3 | 14S-9 | 14S-7 |
| No. of Contacts | 1 #16 | 1 #16 | 2 #16  | 3 #16  | 1 #12 | 2 #16 | 2 #16 | 3 #16 |
| Service Rating  | A     | A     | A      | A      | D     | A     | A     | A     |

|                 |       |       |       |       |       |                         |             |                            |
|-----------------|-------|-------|-------|-------|-------|-------------------------|-------------|----------------------------|
|                 |       |       |       |       |       |                         |             |                            |
| Shell Size      | 14S-2 | 14S-5 | 14S-6 | 16S-4 | 16-11 | 16-7                    | 16-10       | 16-9                       |
| No. of Contacts | 4 #16 | 5 #16 | 6 #16 | 2 #16 | 2 #12 | 2 #16 (A,B)<br>1 #8 (C) | 3 #12 (A-C) | 2 #16 (B,D)<br>2 #12 (A,C) |
| Service Rating  | Inst. | Inst. | Inst. | D     | A     | A                       | A           | A                          |

## Socket Only

|                 |       |       |       |       |                                         |       |                                         |                                |
|-----------------|-------|-------|-------|-------|-----------------------------------------|-------|-----------------------------------------|--------------------------------|
|                 |       |       |       |       |                                         |       |                                         |                                |
| Shell Size      | 16S-8 | 16S-1 | 18-22 | 18-4  | 18-10                                   | 18-11 | 18-12                                   | 18-9                           |
| No. of Contacts | 5 #16 | 7 #16 | 3 #16 | 4 #16 | 4 #12                                   | 5 #12 | 6 #16                                   | 5 #16 (B,C,E-G)<br>2 #12 (A,D) |
| Service Rating  | A     | A     | D     | D     | A                                       | A     | A                                       | Inst.                          |
|                 |       |       |       |       | For new MIL equip.<br>design, use 18-11 |       | For new MIL equip.<br>design, use 16S-1 |                                |

|                 |                          |                                  |      |       |                             |       |                      |                            |
|-----------------|--------------------------|----------------------------------|------|-------|-----------------------------|-------|----------------------|----------------------------|
|                 |                          |                                  |      |       |                             |       |                      |                            |
| Shell Size      | 18-8                     | 18-1                             | 20-2 | 20-4  | 20-14                       | 20-15 | 20-7                 | 20-16                      |
| No. of Contacts | 7 #16 (A-G)<br>1 #12 (H) | 10 #16                           | 1 #0 | 4 #12 | 3 #12 (C,D,E)<br>2 #8 (A,B) | 7 #12 | 8 #16                | 7 #16 (A-G)<br>2 #12 (H,I) |
| Service Rating  | A                        | A(B,C,F,G)<br>Inst. (all others) | D    | D     | A                           | A     | A(C-F)<br>D(A,B,G,H) | A                          |

## Pin Only

|                 |                                       |        |        |      |       |                          |                                   |                         |
|-----------------|---------------------------------------|--------|--------|------|-------|--------------------------|-----------------------------------|-------------------------|
|                 |                                       |        |        |      |       |                          |                                   |                         |
| Shell Size      | 20-18                                 | 20-27  | 20-29  | 22-2 | 22-22 | 22-13                    | 22-5                              | 22-18                   |
| No. of Contacts | 6 #16<br>(A,C-E,G,H)<br>3 #12 (B,F,I) | 14 #16 | 17 #16 | 3 #8 | 4 #8  | 1 #16 (E)<br>4 #12 (A-D) | 4 #16<br>(A,C,D,F)<br>2 #12 (B,E) | 8 #16                   |
| Service Rating  | A                                     | A      | A      | D    | A     | A(A-D), D(E)             | D                                 | A(C-E)<br>D(all others) |

## Socket Only

|                 |                                   |        |        |                           |       |       |                               |                                |
|-----------------|-----------------------------------|--------|--------|---------------------------|-------|-------|-------------------------------|--------------------------------|
|                 |                                   |        |        |                           |       |       |                               |                                |
| Shell Size      | 22-16                             | 22-19  | 22-14  | 24-4                      | 24-22 | 24-10 | 24-11                         | 24-20                          |
| No. of Contacts | 6 #16<br>(A,B,F-J)<br>3 #12 (C-E) | 14 #16 | 19 #16 | 3 #16 (B,C,D)<br>1 #0 (A) | 4 #8  | 7 #8  | 6 #12 (A-C,G-I)<br>3 #8 (D-F) | 9 #16 (A-D,G-L)<br>2 #12 (E,F) |
| Service Rating  | A                                 | A      | A      | D                         | D     | A     | A                             | D                              |

## Contact Arrangements (Continued)

Face view, pin insert

|                 |                               |        |                             |                                         |
|-----------------|-------------------------------|--------|-----------------------------|-----------------------------------------|
|                 |                               |        |                             |                                         |
| Shell Size      | 24-7                          | 24-28  | 28-9                        | 28-18                                   |
| No. of Contacts | 14 #16(A-M, O)<br>2 #12(P, N) | 24 #16 | 6 #16(A, H-M)<br>6 #12(B-G) | 12 #                                    |
| Service Rating  | A                             | Inst.  | D                           | A (A, B) C(M)<br>D (G-L)<br>inst. (C-F) |

---

|                 |                                |                     |                                |        |                                         |        |
|-----------------|--------------------------------|---------------------|--------------------------------|--------|-----------------------------------------|--------|
|                 |                                |                     |                                |        |                                         |        |
| Shell Size      | 28-2                           | 28-17               | 28-11                          | 28-12  | 28-15                                   | 28-21  |
| No. of Contacts | 12 #16(A, L, N)<br>2 #12(M, P) | 15 #16              | 18 #16(A-I, N-X)<br>4 #12(J-M) | 26 #16 | 35 #16                                  | 37 #16 |
| Service Rating  | D                              | A(A-L), B(R) D(M-P) | A                              | A      | A<br>For MIL equip<br>design, use 28-21 | A      |

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|                 |       |                           |                                                     |                                                        |                                  |                                     |
|-----------------|-------|---------------------------|-----------------------------------------------------|--------------------------------------------------------|----------------------------------|-------------------------------------|
|                 |       |                           |                                                     |                                                        |                                  |                                     |
| Shell Size      | 32-17 | 32-9                      | 32-12                                               | 32-6                                                   | 32-13                            | 32-7                                |
| No. of Contacts | 4 #4  | 12 #16(C-N)<br>2 #4(A, B) | 10 #16 (A-D, F, G, L, N-P)<br>5 #12 (E, H, J, K, M) | 16 #16(A-O, S) 2 #12(U, V)<br>3 #8(P, R, T) 2 #4(W, X) | 18 #16 (A-D, K-Z)<br>5 #12 (E-J) | 28 #16(A-N, W-Z, a-k)<br>7 #12(O-V) |
| Service Rating  | D     | D                         | A (C-G), D (all others)                             | A                                                      | D                                | Inst. (A, B, h, j)<br>A(all others) |

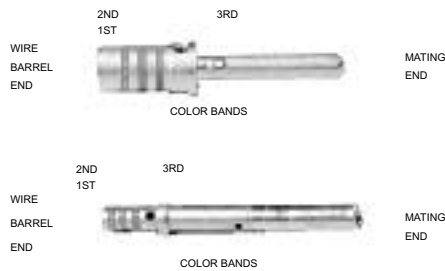
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|                 |      |                                   |                                    |                                |                              |
|-----------------|------|-----------------------------------|------------------------------------|--------------------------------|------------------------------|
|                 |      |                                   |                                    |                                |                              |
| Shell Size      | 36-5 | 36-3                              | 36-6                               | 36-7                           | 36-8                         |
| No. of Contacts | 4 #0 | 3 #12 (A, C, E)<br>3 #0 (B, D, F) | 4 #4<br>(B, C, E, F)<br>2 #0(A, D) | 40 #16(A-Z, a-s)<br>7 #12(t-z) | 46 #16(A-X, Z-z)<br>1 #12(Y) |
| Service Rating  | A    | D                                 | A                                  | A                              | A                            |

---

|                 |        |        |                                  |
|-----------------|--------|--------|----------------------------------|
|                 |        |        |                                  |
| Shell Size      | 36-10  | 36-52  | 40-1                             |
| No. of Contacts | 48 #16 | 52 #16 | 24 #16 (A-L, T-e)<br>6 #12 (M-S) |
| Service Rating  | A      | A      | D                                |

## Contacts



### Pin, MIL-C-39029/29

| BIN Code | Military Part Number | Color Bands |       |        | Mating End Size | Wire Barrel Size | ITT Cannon Part Number |
|----------|----------------------|-------------|-------|--------|-----------------|------------------|------------------------|
|          |                      | 1st         | 2nd   | 3rd    |                 |                  |                        |
| 212      | M39029/29-212        | Red         | Brown | Red    | 16              | 16               | 030-3196-008           |
| 213      | M39029/29-213        | Red         | Brown | Orange | 12              | 12               | 030-3197-007           |
| 214      | M39029/29-214        | Red         | Brown | Yellow | 8               | 8                | 030-3198-003           |
| 215      | M39029/29-215        | Red         | Brown | Green  | 4               | 4                | 030-3199-004           |
| 216      | M39029/29-216        | Red         | Brown | Blue   | 0               | 0                | 030-3200-003           |

### Wire Hole Fillers

| Contact Size | ITT Cannon Part Number | MS27488 Part Number | Color Code |
|--------------|------------------------|---------------------|------------|
| 16           | 225-0071-000           | MS27488-16          | Blue       |
| 12           | 225-0072-000           | MS27488-12          | Yellow     |
| *8           | 225-1009-000           | MS27488-8           | Red        |
| *4           | 225-1008-000           | MS27488-4           | Blue       |
| *0           | 225-1007-000           | MS27488-0           | Yellow     |

\* Consult factory for availability.

### Socket, MIL-C-39029/30

| BIN Code | Military Part Number | Color Bands |       |        | Mating End Size | Wire Barrel Size | ITT Cannon Part Number |
|----------|----------------------|-------------|-------|--------|-----------------|------------------|------------------------|
|          |                      | 1st         | 2nd   | 3rd    |                 |                  |                        |
| 217      | M39029/30-217        | Red         | Brown | Violet | 16S             | 16               | 031-3113-005           |
| 218      | M39029/30-218        | Red         | Brown | Gray   | 16              | 16               | 031-3114-008           |
| 219      | M39029/30-219        | Red         | Brown | White  | 12              | 12               | 031-3115-006           |
| 220      | M39029/30-220        | Red         | Red   | Black  | 8               | 8                | 031-3116-003           |
| 212      | M39029/30-221        | Red         | Red   | Brown  | 4               | 4                | 031-3117-003           |
| 222      | M39029/30-222        | Red         | Red   | Red    | 0               | 0                | 031-3118-003           |

### Thermocouple

| Contact Size | Alumel       |              | Chromel      |              |
|--------------|--------------|--------------|--------------|--------------|
|              | Pin          | Socket       | Pin          | Socket       |
| 16S*         | 030-3196-015 | 031-3113-011 | 030-3196-016 | 031-3113-012 |
| 16           | 030-3196-015 | 031-3114-014 | 030-3196-016 | 031-3114-015 |
| 12           | 030-3197-011 | 031-3115-009 | 030-3197-012 | 031-3115-010 |

\*16S type socket contacts are for use in 8S, 10S, 10SL, 12S, 14S, and 16S shell size connectors.

## Tooling

A complete line of crimp, insertion and extraction tools is provided for MIL-C-5015 connectors. Crimp tools are made from high quality metal and are designed for long life and trouble-free service. Insertion and extraction tools are made of a durable plastic and are inexpensive and expendable.



M22520/1-01



CIET-16

| Contact Size | Insertion/Extraction Tools |              |                |          |                |                                                               | Crimp Tool   | Unwired Contact |
|--------------|----------------------------|--------------|----------------|----------|----------------|---------------------------------------------------------------|--------------|-----------------|
|              | Plastic                    |              |                | Metal    |                |                                                               |              |                 |
|              | MS No.                     | Part Number  | ITT Cannon No. | MS No.   | ITT Cannon No. |                                                               |              |                 |
| 16           | M81969/14-03               | 274-7002-000 | CIET-16-03     | -        | -              | M22520/1-01 with M22520/1-02 Turret                           | 274-7008-000 |                 |
| 12           | M81969/14-04               | 274-7003-000 | CIET-12-04     | -        | -              | CBT 520/530                                                   | 274-7009-000 |                 |
| 8            | MS3165-8<br>M83723/32-8    |              | CET 8-2        | MS3483-1 | CET-CVR-8      | CBT 600B Power Unit<br>CCH-8-1 Crimp Head<br>CCHP-8-6 Locator | -<br>-<br>-  |                 |
| 4            | MS3165-4<br>M83723/32-4    |              | CET 4-8        | MS3483-2 | CET-CVR-4      | CBT 600B Power Unit<br>CCH-4-1 Crimp Head<br>CCHP-4-8 Locator | -<br>-<br>-  |                 |
| 0            | MS3165-0<br>M83723/32-0    |              | CET 0-1        | MS3483-3 | CET-00-CV      | CBT 600B Power Unit<br>CCH-0-1 Crimp Head<br>CCHP-0-8 Locator | -<br>-<br>-  |                 |



CBT-520/530



CBT-600

Cannon's MR waterproof connectors, designed to meet the requirements of MIL-C-5015, withstand conditions involving mud, ice, and water. They are particularly suited for missile ground support equipment, radar installations, heavy construction installations, and outdoor applications involving rapid transit, radio/tv stations, and marine equipment.

Maximum resistance to severe environmental conditions is assured by an O-ring seal around the mated insert faces, and a gland seal at the cable

entry which provides a cable strain relief as well. When properly terminated to a jacketed cable, a mated pair of MR connectors can be immersed in depths of 150 feet in fresh water. For other immersion media consult factory.

The MR connector series is supplied with MIL-C-5015 resilient insulators and solder pot contacts. For crimp type contacts refer to the ordering information below. MS contact arrangements, coupling threads, and sizes are standard to

MIL-C-5015. Simple maintenance under severe conditions is possible with a convenient, long, knurled coupling nut and endbell that can be easily removed by standard open end wrenches. Dust caps have attached head chains to prevent kinking.

Operating temperature range of connectors - 55°C (-67°F) to 125°C (257°F). The upper temperature is the maximum internal hot spot temperature resulting from any combination of electrical load and ambient temperature.

## Performance and Material Specifications

### MATERIALS

Shell - Aluminum alloy  
Insulator - Synthetic elastomer  
Contacts - Copper alloy

### FINISHES

Shell - Clear anodized  
Contacts - Silver plate

### MECHANICAL FEATURES

Shell Styles  
00 - Wall Mounting Receptacle  
01 - Cable Connecting Receptacle  
02 - Chassis Mounting Receptacle  
06 - Cable Connecting Straight Plug  
Shell Size - 14S thru 36  
Coupling - Threaded  
Cable Entry - 00, 01, and 06 accommodate cables from - 3 (3/16") to -28 (1-3/4") in sixteenths of an inch. Shell style 02 requires no jacketed cable seal.  
Polarization - Single keyway

### ELECTRICAL DATA

Number of Contacts - 1 thru 66

### TEST CURRENT

Maximum current ratings of contacts and maximum allowable voltage drop under test conditions when assembled as in service are shown below. Maximum total current to be carried per connector is the same as the allowable in wire bundles as specified in MIL-W-5088.

| Contact Size | Test Current (Amps) | Potential Drop (millivolts) |
|--------------|---------------------|-----------------------------|
| 16           | 20                  | 21                          |
| 12           | 35                  | 20                          |
| 8            | 60                  | 12                          |
| 4            | 110                 | 10                          |
| 0            | 200                 | 10                          |

### HIGH POTENTIAL TEST VOLTAGE

MS connectors show no evidence of breakdown when the test voltage given below is applied between the two closest contacts and between the shell and the contact closest to the shell for a period of one minute.

| MS Service Rating | Test Voltage (rms) 60 cps | Suggested Operating Voltage* DC | Suggested Operating Voltage* AC (rms) | Air Spacing nom. in. |
|-------------------|---------------------------|---------------------------------|---------------------------------------|----------------------|
| Inst.             | 1000                      | 250                             | 200                                   | -                    |
| A                 | 2000                      | 700                             | 500                                   | 1/16                 |
| D                 | 2800                      | 1250                            | 900                                   | 1/8                  |
| E                 | 3500                      | 1750                            | 1250                                  | 3/16                 |
| B                 | 4500                      | 2450                            | 1750                                  | 1/4                  |
| C                 | 7000                      | 4200                            | 3000                                  | 5/16                 |

\* As indicated in MS Specifications and to be used by the designer only as a guide

## How to Order

### SERIES PREFIX

MR - Resilient Insulator

### SHELL STYLE

00 - Wall Mounting Receptacle  
01 - Cable Connecting Receptacle  
02 - Chassis Mounting Receptacle  
06 - Cable Connecting Straight Plug

### SHELL SIZE

14S, 16S, 18, 20, 22, 24, 28, 32, and 36

### CONTACT ARRANGEMENTS

1 to 56 contacts  
(See pages 171-174 for MSE/R)

### SERIES PREFIX

### SHELL STYLE

### SHELL SIZE

### CONTACT ARRANGEMENTS

### CONTACT TYPE

### ALTERNATE INSERT POSITION

### CABLE ENTRY

### MODIFICATIONS

### CONTACT TYPE

P for Pin; S for socket

### ALTERNATE INSERT POSITION

W, X, Y, and Z per MIL-C-5015

### CABLE ENTRY

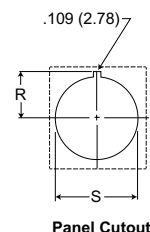
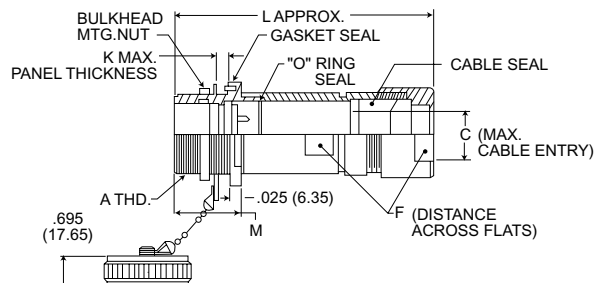
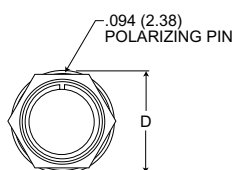
00, 01, and 06 shell styles accommodate cables from - 3 (3/16") to - 28 (1-3/4") graduated in sixteenths of an inch. The 02 shell style requires no jacketed cable seal.

### MODIFICATIONS

FO - Less contacts  
A66 - Olive drab cadmium  
A105 - Clear Cadmium  
F80 - Crimp contacts  
F111 - Stainless steel 303 hardware & link chain (F135)  
F135 - Stainless steel link chain  
F150 - Less dust cap and chain  
For other modifications, such as cable grips and peripheral ground adapters, consult the factory.

## Wall Mounting Receptacle

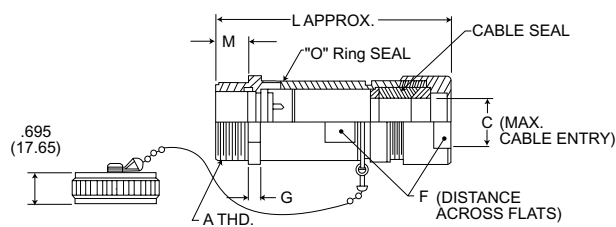
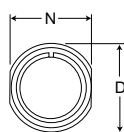
MR00



| Shell Size | A Thread       | C                              | D             | F             | K           | L              | M             | R             | S             |
|------------|----------------|--------------------------------|---------------|---------------|-------------|----------------|---------------|---------------|---------------|
| 14S        | 7/8-20NEF-2A   | .187 to .480 (4.76 to 12.20)   | 1.375 (34.92) | .745 (18.92)  | .156 (3.97) | 4.125 (104.78) | 1.063 (26.99) | .546 (13.89)  | .906 (23.02)  |
| 16S        | 1-20NEF-2A     | .250 to .563 (6.35 to 14.29)   | 1.500 (38.10) | .870 (22.10)  | .156 (3.97) | 4.250 (107.95) | 1.063 (26.99) | .609 (15.47)  | 1.031 (26.19) |
| 18         | 1-1/8-18NEF-2A | .250 to .750 (6.35 to 19.05)   | 1.625 (41.28) | .995 (25.27)  | .250 (6.35) | 5.063 (128.59) | 1.406 (35.72) | .671 (17.06)  | 1.156 (29.37) |
| 20         | 1-1/4-18NEF-2A | .250 to .750 (6.35 to 19.05)   | 1.750 (44.45) | .995 (25.27)  | .250 (6.35) | 5.188 (131.76) | 1.406 (35.72) | .734 (18.64)  | 1.281 (32.54) |
| 22         | 1-3/8-18NEF-2A | .250 to 1.000 (6.35 to 25.40)  | 1.875 (47.62) | 1.245 (31.62) | .250 (6.35) | 5.313 (134.94) | 1.406 (35.72) | .796 (20.22)  | 1.406 (35.72) |
| 24         | 1-1/2-18NEF-2A | .250 to 1.00 (6.35 to 25.40)   | 2.000 (50.80) | 1.245 (31.62) | .219 (5.56) | 5.438 (138.11) | 1.406 (35.72) | .857 (21.82)  | 1.531 (38.89) |
| 28         | 1-3/4-18NS-2A  | .312 to 1.250 (7.94 to 31.75)  | 2.250 (57.15) | 1.495 (37.97) | .219 (5.56) | 5.563 (141.29) | 1.406 (35.72) | .989 (24.99)  | 1.781 (45.24) |
| 32         | 2-18NS-2A      | .750 to 1.500 (19.05 to 38.10) | 2.500 (63.50) | 1.807 (45.90) | .219 (5.56) | 5.688 (144.46) | 1.406 (35.72) | 1.109 (26.17) | 2.031 (51.59) |
| 36         | 2-1/4-16UN-2A  | .750 to 1.750 (19.05 to 44.45) | 2.750 (69.85) | 2.058 (52.27) | .156 (3.97) | 5.750 (146.05) | 1.406 (35.72) | 1.234 (31.34) | 2.281 (57.94) |

## Cabel Connecting Plug

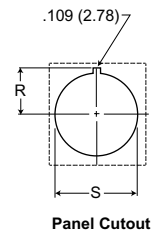
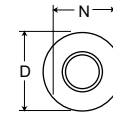
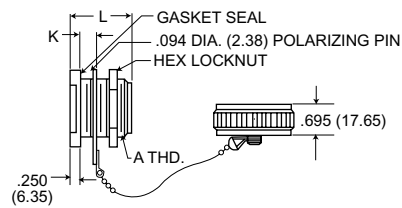
MR01



| Shell Size | A Thread       | C                              | D             | F             | G           | L              | M            | N             |
|------------|----------------|--------------------------------|---------------|---------------|-------------|----------------|--------------|---------------|
| 14S        | 7/8-20NEF-2A   | .187 to .480 (4.76 to 12.20)   | 1.094 (27.78) | .745 (18.92)  | .180 (4.57) | 3.656 (92.87)  | .496 (11.91) | .875 (23.22)  |
| 16S        | 1-20NEF-2A     | .250 to .563 (6.35 to 14.29)   | 1.219 (30.96) | .870 (22.10)  | .250 (6.35) | 4.000 (101.60) | .531 (13.49) | 1.000 (25.40) |
| 18         | 1-1/8-18NEF-2A | .250 to .750 (6.35 to 19.05)   | 1.344 (34.13) | .995 (25.27)  | .250 (6.35) | 4.625 (117.48) | .719 (18.26) | 1.125 (28.58) |
| 20         | 1-1/4-18NEF-2A | .250 to .750 (6.35 to 19.05)   | 1.469 (37.31) | .995 (25.27)  | .250 (6.35) | 4.750 (120.65) | .719 (18.26) | 1.250 (31.75) |
| 22         | 1-3/8-18NEF-2A | .250 to 1.000 (6.35 to 25.40)  | 1.594 (40.48) | 1.245 (31.62) | .250 (6.35) | 4.875 (123.83) | .719 (18.26) | 1.375 (34.92) |
| 24         | 1-1/2-18NEF-2A | .250 to 1.00 (6.35 to 25.40)   | 1.719 (43.66) | 1.245 (31.62) | .250 (6.35) | 5.000 (127.00) | .719 (18.26) | 1.500 (38.10) |
| 28         | 1-3/4-18NS-2A  | .312 to 1.250 (7.94 to 31.75)  | 1.969 (50.01) | 1.495 (37.97) | .250 (6.35) | 5.125 (130.18) | .719 (18.26) | 1.750 (44.45) |
| 32         | 2-18NS-2A      | .750 to 1.500 (19.05 to 38.10) | 2.219 (56.36) | 1.807 (45.90) | .250 (6.35) | 5.250 (133.35) | .719 (18.26) | 2.000 (50.80) |
| 36         | 2-1/4-16UN-2A  | .750 to 1.750 (19.05 to 44.45) | 2.469 (62.71) | 2.058 (52.27) | .250 (6.35) | 5.375 (136.52) | .719 (18.26) | 2.250 (57.15) |

## Chassis Mounting Receptacle

MR02

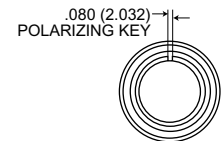
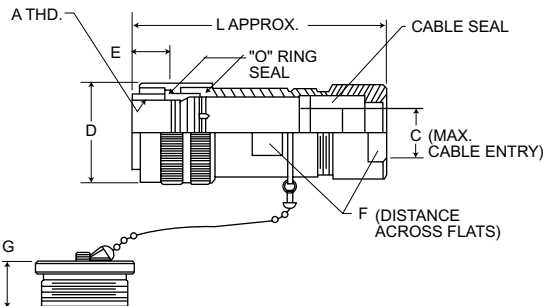


Panel Cutout

| Shell Size | A Thread       | D             | K           | L             | N             | R             | S             |
|------------|----------------|---------------|-------------|---------------|---------------|---------------|---------------|
| 14S        | 7/8-20NEF-2A   | 1.375 (34.92) | .156 (3.97) | 1.063 (26.99) | 1.125 (28.56) | .546 (13.89)  | .906 (23.02)  |
| 16S        | 1-20NEF-2A     | 1.500 (38.10) | .156 (3.97) | 1.063 (26.99) | 1.250 (31.75) | .609 (15.47)  | 1.031 (26.19) |
| 18         | 1-1/8-18NEF-2A | 1.625 (41.28) | .250 (6.35) | 1.406 (35.72) | 1.375 (34.92) | .671 (17.06)  | 1.156 (29.37) |
| 20         | 1-1/4-18NEF-2A | 1.750 (44.45) | .250 (6.35) | 1.406 (35.72) | 1.438 (36.51) | .734 (18.64)  | 1.281 (32.54) |
| 22         | 1-3/8-18NEF-2A | 1.875 (47.62) | .250 (6.35) | 1.406 (35.72) | 1.500 (38.10) | .796 (20.22)  | 1.406 (35.72) |
| 24         | 1-1/2-18NEF-2A | 2.000 (50.80) | .219 (5.56) | 1.406 (35.72) | 1.625 (41.28) | .857 (21.82)  | 1.531 (38.89) |
| 28         | 1-3/4-18NS-2A  | 2.250 (57.15) | .219 (5.56) | 1.406 (35.72) | 1.750 (44.45) | .989 (24.99)  | 1.781 (45.24) |
| 32         | 2-18NS-2A      | 2.500 (63.50) | .219 (5.56) | 1.406 (35.72) | 2.000 (50.80) | 1.109 (26.17) | 2.031 (51.59) |
| 36         | 2-1/4-16UN-2A  | 2.750 (69.85) | .156 (3.97) | 1.406 (35.72) | 2.375 (60.32) | 1.234 (31.34) | 2.281 (57.94) |

## Cord Connecting Straight Plug

MR06



| Shell Size | A Thread       | C                              | D             | E            | F             | G            | L              |
|------------|----------------|--------------------------------|---------------|--------------|---------------|--------------|----------------|
| 14S        | 7/8-20NEF-2B   | .187 to .480 (4.76 to 12.20)   | 1.125 (28.58) | .531 (13.49) | .745 (18.92)  | .712 (18.09) | 3.750 (95.25)  |
| 16S        | 1-20NEF-2B     | .250 to .563 (6.35 to 14.29)   | 1.250 (31.75) | .531 (13.49) | .870 (22.10)  | .712 (18.09) | 3.875 (98.42)  |
| 18         | 1-1/8-18NEF-2B | .250 to .750 (6.35 to 19.05)   | 1.375 (34.92) | .718 (18.24) | .995 (25.27)  | .900 (22.86) | 4.563 (115.59) |
| 20         | 1-1/4-18NEF-2B | .250 to .750 (6.35 to 19.05)   | 1.500 (38.10) | .718 (18.24) | .995 (25.27)  | .900 (22.86) | 4.688 (119.06) |
| 22         | 1-3/8-18NEF-2B | .250 to 1.000 (6.35 to 25.40)  | 1.625 (41.28) | .718 (18.24) | 1.245 (31.62) | .900 (22.86) | 4.813 (122.24) |
| 24         | 1-1/2-18NEF-2B | .250 to 1.00 (6.35 to 25.40)   | 1.750 (44.45) | .718 (18.24) | 1.245 (31.62) | .900 (22.86) | 4.938 (125.41) |
| 28         | 1-3/4-18NS-2B  | .312 to 1.250 (7.94 to 31.75)  | 2.000 (50.80) | .718 (18.24) | 1.495 (37.97) | .900 (22.86) | 5.063 (128.59) |
| 32         | 2-18NS-2B      | .750 to 1.500 (19.05 to 38.10) | 2.250 (57.15) | .718 (18.24) | 1.807 (45.90) | .900 (22.86) | 5.188 (131.76) |
| 36         | 2-1/4-16UN-2B  | .750 to 1.750 (19.05 to 44.45) | 2.500 (63.50) | .718 (18.24) | 2.058 (52.27) | .900 (22.86) | 5.313 (134.94) |

CA-A connectors were originally designed and approved under Military Specifications for use in military aircraft. Since then, commercial and industrial demand for these connectors has grown because of their uniform quality, dependability, and interchangeability as prescribed in MIL-C-5015.

CA-A connectors are available as plugs or receptacles. The term plug applies to any assembly fixed to

the end of a cable. The term receptacle applies to any assembly mounted to a wall or box. CA shells will accept either pin or socket insert assemblies. Socket contacts are the closed-entry type.

Each contact arrangement is available with pin or socket contacts and will mate with all MS type connectors having the same size and contact arrangements.

## Performance and Material Specifications

### ELECTRICAL

Maximum current ratings of contacts and maximum allowable voltage drop under test conditions when assembled as in service are shown below.

| Contact Size | Test Current (amps) | Potential Drop (millivolts) |
|--------------|---------------------|-----------------------------|
| 16           | 13                  | 49                          |
| 12           | 23                  | 42                          |
| 8            | 46                  | 26                          |
| 4            | 80                  | 23                          |
| 0            | 150                 | 21                          |

### MATERIALS AND FINISHES

|           |             |                                                        |
|-----------|-------------|--------------------------------------------------------|
| Shell     | Material    | Aluminum alloy                                         |
|           | Finish      | Olive drab chromate coating over cadmium plating       |
| Insulator | Material    | Thermoset Plastic (resilient insulators are available) |
|           | Finish      | Silver plate                                           |
| Contacts  | Material    | Brass or copper alloy                                  |
|           | Termination | Tinned solder pot                                      |

## How to Order

|                           |    |      |   |    |    |   |   |
|---------------------------|----|------|---|----|----|---|---|
|                           | CA | 3106 | A | 18 | -8 | P | X |
| PREFIX                    |    |      |   |    |    |   |   |
| SHELL STYLE               |    |      |   |    |    |   |   |
| CLASS                     |    |      |   |    |    |   |   |
| SHELL SIZE                |    |      |   |    |    |   |   |
| CONTACT ARRANGEMENT       |    |      |   |    |    |   |   |
| CONTACT TYPE              |    |      |   |    |    |   |   |
| ALTERNATE INSERT POSITION |    |      |   |    |    |   |   |

### PREFIX

CA - ITT Cannon prefix.

### SHELL STYLE

3102 - Box mounting receptacle  
3106 - Straight plug  
Consult factory for additional shell styles.

### CLASS

A - Solid or one-piece endbell

### SHELL SIZE

Coupling thread diameter in sixteenths of an inch

### CONTACT ARRANGEMENTS

See page 201.  
Consult factory for additional layouts.

### CONTACT ARRANGEMENTS

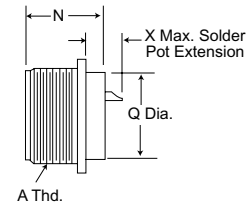
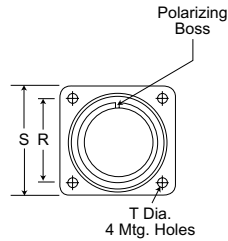
P for Pin; S for Socket

### ALTERNATE INSERT POSITIONS

Consult factory

## Box Mounting Receptacle

CA3102A (Available with plastic or resilient insulators)

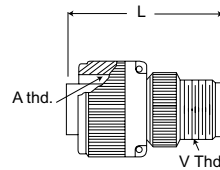
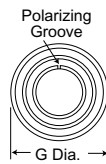


The CA3102A box mounting receptacles are used on boxes and equipment cases where no cable support is required.

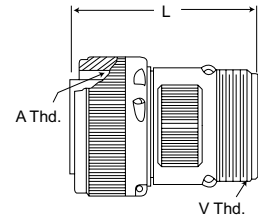
## Straight Plug

CA3102A

Solid Endbell



Sizes 10SL thru 16S



Sizes 18 thru 24

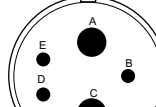
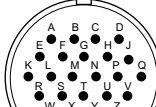
CA3106A straight plugs are used with 3100 and 3102 receptacles and 3101 plugs.

| Shell Size | G Max.        | L Max.        | N Max.        | Q Max.        | R $\pm .005$  | S Max.        | T $\pm .010 - .005$ | A Thread       | V Thread        |
|------------|---------------|---------------|---------------|---------------|---------------|---------------|---------------------|----------------|-----------------|
| 10SL       | .969 (24.62)  | 1.531 (38.89) | 1.000 (25.40) | .630 (16.00)  | .719 (18.26)  | 1.031 (26.19) | .120 (3.05)         | 5/8-24NEF-2B   | 5/8-24NEF-2A    |
| 12S        | 1.062 (26.97) | 1.688 (42.88) | 1.000 (25.40) | .630 (16.00)  | .812 (20.62)  | 1.125 (28.58) | .120 (3.05)         | 3/4-20UNEF-2B  | 5/8-24NEF-2A    |
| 14S        | 1.156 (29.36) | 1.688 (42.88) | 1.000 (25.40) | .755 (19.18)  | .906 (23.01)  | 1.219 (30.96) | .120 (3.05)         | 7/8-20UNEF-2B  | 3/4-20UNEF-2A   |
| 16S        | 1.250 (31.75) | 1.688 (42.88) | 1.000 (25.40) | .880 (22.35)  | .969 (24.62)  | 1.312 (33.32) | .120 (3.05)         | 1-20UNEF-2B    | 7/8-20UNEF-2A   |
| 18         | 1.344 (34.14) | 2.062 (52.37) | 1.205 (30.61) | .989 (25.13)  | 1.062 (26.97) | 1.406 (35.71) | .120 (3.05)         | 1-1/8-18NEF-2B | 1-20UNEF-2A     |
| 20         | 1.469 (37.31) | 2.188 (55.58) | 1.205 (30.61) | 1.176 (29.87) | 1.156 (29.36) | 1.531 (38.89) | .120 (3.05)         | 1-1/4-18NEF-2B | 1-3/16-18NEF-2A |
| 22         | 1.594 (40.49) | 2.188 (55.58) | 1.205 (30.61) | 1.270 (32.26) | 1.250 (31.75) | 1.656 (42.06) | .120 (3.05)         | 1-3/8-18NEF-2B | 1-3/16-18NEF-2A |
| 24         | 1.719 (43.66) | 2.312 (58.72) | 1.375 (34.92) | 1.395 (35.43) | 1.375 (34.92) | 1.781 (45.24) | .147 (3.73)         | 1-1/2-18NEF-2B | 1-7/16-18NEF-2A |

X DIMENSION  
Max. Solder Pot Ext. - Pin or Socket

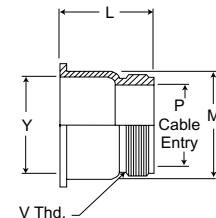
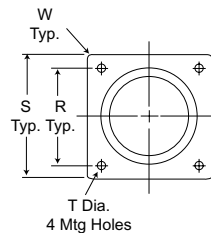
| Shell Size | Contact Size |             |             |             |             |
|------------|--------------|-------------|-------------|-------------|-------------|
|            | 16           | 12          | 8           | 4           | 0           |
| 10SL-16S   | .50 (12.70)  | -           | -           | -           | -           |
| 18-22      | .50 (12.70)  | .59 (14.99) | .72 (18.29) | .86 (21.84) | .86 (21.84) |
| 24         | .59 (14.99)  | .65 (16.51) | .76 (19.30) | .90 (22.86) | .90 (22.86) |

## Contact Arrangements (Face View, Pin Insert)

|                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |
|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
|  |  |  |  |   |  |  |
| Shell Size<br>No. of Contacts<br>Service Rating                                   | Shell Size<br>No. of Contacts<br>Service Rating                                   | Shell Size<br>No. of Contacts<br>Service Rating                                   | Shell Size<br>No. of Contacts<br>Service Rating                                   | Shell Size<br>No. of Contacts<br>Service Rating                                     | Shell Size<br>No. of Contacts<br>Service Rating                                     | Shell Size<br>No. of Contacts<br>Service Rating                                     |
| 10SL-4<br>2 #16<br>A                                                              | 10SL-3<br>3 #16<br>A                                                              | 12S-3<br>2 #16<br>A                                                               | 14S-9<br>2 #16<br>A                                                               | 14S-1<br>3 #16<br>A                                                                 | 14S-7<br>3 #16<br>A                                                                 | 14S-2<br>4 #16<br>Inst.                                                             |
|  |  |  |  |   |  |  |
| Shell Size<br>No. of Contacts<br>Service Rating                                   | Shell Size<br>No. of Contacts<br>Service Rating                                   | Shell Size<br>No. of Contacts<br>Service Rating                                   | Shell Size<br>No. of Contacts<br>Service Rating                                   | Shell Size<br>No. of Contacts<br>Service Rating                                     | Shell Size<br>No. of Contacts<br>Service Rating                                     | Shell Size<br>No. of Contacts<br>Service Rating                                     |
| 14S-5<br>5 #16<br>Inst.                                                           | 14-6<br>6 #16<br>Inst.                                                            | 16S-4<br>2 #16<br>D                                                               | 16S-1<br>7 #16<br>A                                                               | 18-4<br>4 #16<br>D                                                                  | 18-12<br>6 #16<br>A                                                                 | 18-8<br>7 #16(A-G)<br>1 #12(H)<br>A                                                 |
|  |  |  |  |  |  |                                                                                     |
| Shell Size<br>No. of Contacts<br>Service Rating                                   | Shell Size<br>No. of Contacts<br>Service Rating                                   | Shell Size<br>No. of Contacts<br>Service Rating                                   | Shell Size<br>No. of Contacts<br>Service Rating                                   | Shell Size<br>No. of Contacts<br>Service Rating                                     | Shell Size<br>No. of Contacts<br>Service Rating                                     |                                                                                     |
| 18-1<br>10 #16<br>A(B,C,F,G)<br>Inst. (all others)                                | 20-27<br>14 #16<br>A                                                              | 20-29<br>17 #16<br>A                                                              | 22-14<br>19 #16<br>A                                                              | 24-12<br>3 #12(B,D,E)<br>2 #4(A,C,<br>A                                             | 24-28<br>24 #16<br>Inst.                                                            |                                                                                     |

## Junction Shell

CA2120



The CA2120 straight junction shell is used with CA3102 box mounting receptacle to protect and enclose the wires behind a panel or bulkhead and to connect flexible or rigid conduit. Material in aluminum alloy; finish is olive drab chromate over cadmium plate.

| Part Number | Fits Shell Size | L Max.        | M Max.        | P Max.        | R $\pm .005$  | S Max.        | T $+ .010$<br>$- .005$ | Y Max.        | V thread         | W Rad. Max. |
|-------------|-----------------|---------------|---------------|---------------|---------------|---------------|------------------------|---------------|------------------|-------------|
| CA2120-2A   | <b>10SL</b>     | .749 (19.02)  | .782 (19.86)  | .430 (10.92)  | .718 (18.24)  | 1.031 (26.19) | .120 (3.05)            | .655 (16.64)  | 5/8-24UNEF-2A    | .155 (3.68) |
| CA2120-3    | <b>12S</b>      | .811 (20.60)  | .782 (19.86)  | .430 (10.92)  | .813 (20.62)  | 1.125 (28.58) | .120 (3.05)            | .655 (16.64)  | 5/8-24UNEF-2A    | .155 (3.68) |
| CA2120-4    | <b>14S</b>      | .812 (20.62)  | .906 (23.01)  | .550 (13.97)  | .906 (23.01)  | 1.219 (30.96) | .120 (3.05)            | .772 (19.61)  | 3/4-20UNEF-2A    | .155 (3.68) |
| CA2120-5    | <b>16S</b>      | .890 (22.61)  | 1.032 (26.21) | .679 (17.25)  | .968 (24.59)  | 1.312 (33.32) | .120 (3.05)            | .896 (22.76)  | 7/8-20UNEF-2A    | .155 (3.68) |
| CA2120-9    | <b>18</b>       | 1.119 (28.42) | 1.156 (29.36) | .780 (19.81)  | 1.062 (26.97) | 1.406 (35.71) | .120 (3.05)            | 1.004 (25.50) | 1-20UNEF-2A      | .175 (4.44) |
| CA2120-10   | <b>20</b>       | 1.276 (32.41) | 1.282 (32.56) | .890 (22.61)  | 1.156 (29.36) | 1.531 (38.89) | .120 (3.05)            | 1.192 (30.28) | 1-3/16-18UNEF-2A | .185 (4.70) |
| CA2120-11   | <b>22</b>       | 1.244 (31.60) | 1.406 (35.71) | .900 (22.86)  | 1.250 (31.75) | 1.656 (42.06) | .120 (3.05)            | 1.285 (32.64) | 1-3/16-18UNEF-2A | 2.05 (5.21) |
| CA2120-12   | <b>24</b>       | 1.354 (34.39) | 1.532 (38.92) | 1.150 (29.21) | 1.375 (34.92) | 1.781 (45.24) | .147 (3.73)            | 1.411 (35.84) | 1-7/16-18UNEF-2A | .205 (5.21) |

MS-K firewall connectors have met and are qualified to the fireproof test of MIL-C-5015. This test requires that a connector mounted to a firewall will continue to operate for 5 minutes in case of fire and

prevent the passage of flame for 20 minutes. These connectors are not environmentally sealed but operate continuously at temperature up to +177°C (+350°F). MS-K connectors have crimp type con-

tacts; thermocouple contacts must be ordered separately and are solder type unless otherwise requested on order. Cavities that will contain the thermocouple contacts and contact material must be specified when ordering.

## Performance and Material Specifications

### MATERIALS

Shell - Steel  
Insulator - Glass-filled epoxy or glass-filled melamine or melamine glass cloth laminate  
Contacts - Copper alloy

### FINISHES

Shell - Olive drab over cadmium plate  
Contacts - Silver plate

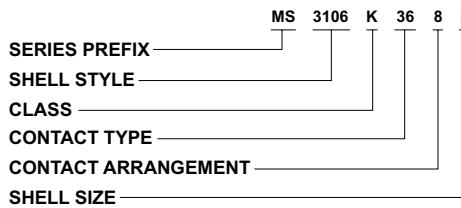
### MECHANICAL FEATURES

Shell Size - In sixteenths of an inch  
Coupling - Threaded  
Contact Arrangements - See pages 216-217

### ELECTRICAL DATA

Number of Contacts - 1 thru 37

## How to Order



### SERIES PREFIX

MS

### SHELL STYLE

See pages 202-204

### CLASS

K per MIL-C-5015

### SHELL SIZE

8S to 36

### CONTACT ARRANGEMENT

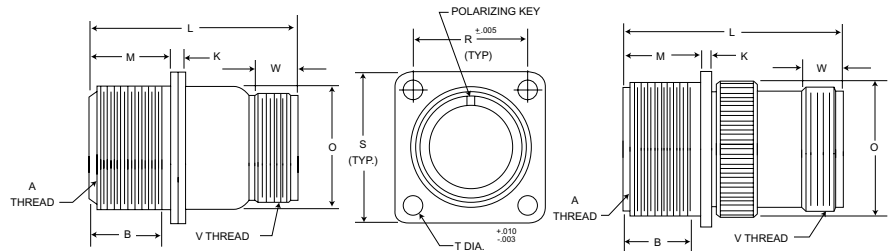
See pages 216-217

### CONTACT TYPE

P for pin; S for socket

## Wall Mounting Receptacle

### MS3100K



Sizes 8S to 18 have junction shell

Sizes 20 to 36 have endbell

| Part Number    | B            | K           | L             | M            | O       | R       | S      | T           | W            |
|----------------|--------------|-------------|---------------|--------------|---------|---------|--------|-------------|--------------|
| MS3100K8S-†    | .375 (9.52)  | .125 (3.18) | 1.453 (36.91) | .563 (14.30) | 17/32   | 19/32   | 7/8    | .150 (3.81) | .375 (9.52)  |
| •MS3100K10SL-† | .375 (9.52)  | .125 (3.18) | 1.109 (28.17) | .563 (14.30) | 25/32   | 23/32   | 1      | .150 (3.81) | .375 (9.52)  |
| MS3100K12S-†   | .375 (9.52)  | .125 (3.18) | 1.515 (38.48) | .563 (14.30) | 25/32   | 13/16   | 1-3/32 | .150 (3.81) | .375 (9.52)  |
| MS3100K14S-†   | .375 (9.52)  | .125 (3.18) | 1.515 (38.48) | .563 (14.30) | 29/32   | 29/32   | 1-3/16 | .150 (3.81) | .375 (9.52)  |
| MS3100K16S-†   | .375 (9.52)  | .125 (3.18) | 1.703 (43.26) | .563 (14.30) | 1-1/32  | 31/32   | 1-9/32 | .150 (3.81) | .375 (9.52)  |
| MS3100K16-†    | .625 (15.88) | .125 (3.18) | 1.703 (43.26) | .750 (19.05) | 1-1/32  | 31/32   | 1-9/32 | .150 (3.81) | .375 (9.52)  |
| MS3100K18-†    | .625 (15.88) | .125 (3.18) | 1.921 (48.79) | .750 (19.05) | 1-5/32  | 1-1/16  | 1-3/8  | .177 (4.50) | .375 (9.52)  |
| MS3100K20-†    | .625 (15.88) | .078 (1.98) | 2.109 (53.57) | .750 (19.05) | 1-21/64 | 1-5/32  | 1-1/2  | .177 (4.50) | .375 (9.52)  |
| MS3100K22-†    | .625 (15.88) | .078 (1.98) | 2.031 (51.59) | .750 (19.05) | 1-25/64 | 1-1/4   | 1-5/8  | .177 (4.50) | .375 (9.52)  |
| MS3100K24-†    | .625 (15.88) | .078 (1.98) | 2.328 (59.13) | .813 (20.65) | 1-37/64 | 1-3/8   | 1-3/4  | .177 (4.50) | .375 (9.52)  |
| MS3100K28-†    | .625 (15.88) | .078 (1.98) | 2.025 (51.44) | .813 (20.65) | 1-49/64 | 1-9/16  | 2      | .177 (4.50) | .375 (9.52)  |
| MS3100K32-†    | .625 (15.88) | .078 (1.98) | 2.453 (62.31) | .875 (22.22) | 2-1/64  | 1-3/4   | 2-1/4  | .209 (5.31) | .438 (11.13) |
| MS3100K36-†    | .625 (15.88) | .125 (3.18) | 2.594 (65.89) | .875 (22.22) | 2-17/64 | 1-15/16 | 2-1/2  | .209 (5.31) | .500 (12.70) |

\* Receptacles in size 10SL are available with pin inserts only.

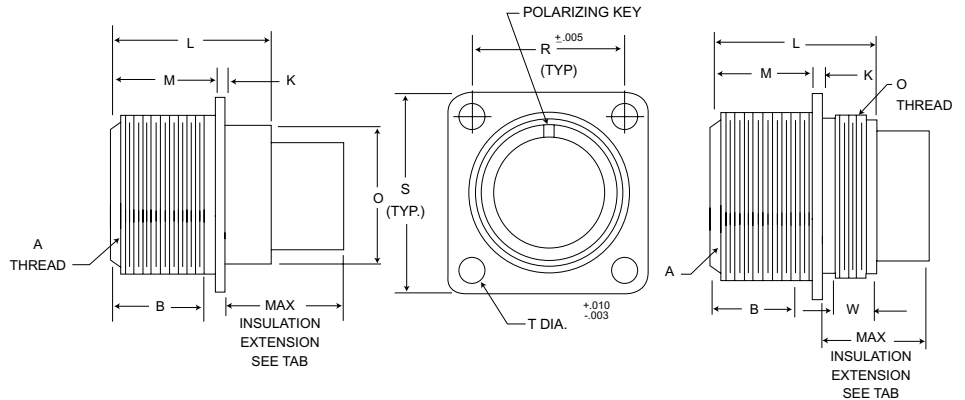
\* Add contact arrangement. See pages 216-217.

† Add contact type: P - pin; S - socket.

| Part Number   | A Thread        | V Thread         |
|---------------|-----------------|------------------|
| MS3100K8S-†   | 1/2-28UNEF-2A   | 1/2-28UNEF-2A    |
| MS3100K10SL-† | 5/8-24UNEF-2A   | 5/8-24UNEF-2A    |
| MS3100K12S-†  | 3/4-20UNEF-2A   | 5/8-24UNEF-2A    |
| MS3100K14S-†  | 7/8-20UNEF-2A   | 3/4-20UNEF-2A    |
| MS3100K16S-†  | 1-20UNEF-2A     | 7/8-20UNEF-2A    |
| MS3100K16-†   | 1-20UNEF-2A     | 7/8-20UNEF-2A    |
| MS3100K18-†   | 1-1/8-18UNEF-2A | 1-20UNEF-2A      |
| MS3100K20-†   | 1-1/4-18UNEF-2A | 1-3/16-18UNEF-2A |
| MS3100K22-†   | 1-3/8-18UNEF-2A | 1-3/16-18UNEF-2A |
| MS3100K24-†   | 1-1/2-18UNEF-2A | 1-7/16-18UNEF-2A |
| MS3100K28-†   | 1-3/4-18UNS-2A  | 1-7/16-18UNEF-2A |
| MS3100K32-†   | 2-18UNS-2A      | 13/4-18UNS-2A    |
| MS3100K36-†   | 2-1/4-16UN-2A   | 2-18UNS-2A       |

## Box Mounting Receptacle

MS3102K



Sizes 8S to 18 have plain rear skirt

Sizes 20 to 36 have threaded rear skirt

## Maximum Insulation Extensions

| Shell Size | Contact Size |       |       |        |        |
|------------|--------------|-------|-------|--------|--------|
|            | 16           | 12    | 8     | 4      | 0      |
| 8S         | 11/16        | -     | -     | -      | -      |
| 10SL-16S   | 51/64        | 7/8   | -     | -      | -      |
| 16-18      | 13/16        | 7/8   | 7/8   | 1-3/32 | -      |
| 20-22      | 13/16        | 7/8   | 7/8   | 1-3/32 | 1-9/64 |
| 24         | 47/64        | 13/16 | 13/16 | 1-3/32 | 1-3/32 |
| 28         | 47/64        | 13/16 | 13/16 | 1-3/32 | 1-3/32 |
| 32         | 47/64        | 47/64 | 47/64 | 61/64  | 1-1/32 |
| 36         | 39/64        | 43/64 | 43/64 | 57/64  | 61/64  |

| Part Number    | A Thread        | B            | K           | L       | M            | O Thread         | R       | S      | T           | W           |
|----------------|-----------------|--------------|-------------|---------|--------------|------------------|---------|--------|-------------|-------------|
| MS3102K8S-†    | 1/2-28UNEF-2A   | .375 (9.52)  | .063 (1.90) | 59/64   | .563 (14.30) | 7/16             | 19/32   | 7/8    | .150 (3.81) | -           |
| •MS3102K10SL-† | 5/8-24UNEF-2A   | .375 (9.52)  | .063 (1.90) | 61/64   | .563 (14.30) | 39/64            | 23/32   | 1      | .150 (3.81) | -           |
| MS3102K12S-†   | 3/4-20UNEF-2A   | .375 (9.52)  | .063 (1.90) | 61/64   | .563 (14.30) | 21/32            | 13/16   | 1-3/32 | .150 (3.81) | -           |
| MS3102K14S-†   | 7/8-20UNEF-2A   | .375 (9.52)  | .063 (1.90) | 61/64   | .563 (14.30) | 23/32            | 29/32   | 1-3/16 | .150 (3.81) | -           |
| MS3102K16S-†   | 1-20UNEF-2A     | .375 (9.52)  | .063 (1.90) | 61/64   | .563 (14.30) | 27/32            | 31/32   | 1-9/32 | .150 (3.81) | -           |
| MS3102K16-†    | 1-20UNEF-2A     | .625 (15.88) | .063 (1.90) | 1-9/64  | .750 (19.05) | 27/32            | 31/32   | 1-9/32 | .150 (3.81) | -           |
| MS3102K18-†    | 1-1/8-18UNEF-2A | .625 (15.88) | .063 (1.90) | 1-9/64  | .750 (19.05) | 31/32            | 1-1/16  | 1-3/8  | .177 (4.50) | -           |
| MS3102K20-†    | 1-1/4-18UNEF-2A | .625 (15.88) | .078 (1.98) | 1-15/64 | .750 (19.05) | 1-3/16-18UNEF-2A | 1-5/32  | 1-1/2  | .177 (4.50) | .141 (3.58) |
| MS3102K22-†    | 1-3/8-18UNEF-2A | .625 (15.88) | .078 (1.98) | 1-18/64 | .750 (19.05) | 1-1/4-18UNEF-2A  | 1-1/4   | 1-5/8  | .177 (4.50) | .141 (3.58) |
| MS3102K24-†    | 1-1/2-18UNEF-2A | .625 (15.88) | .078 (1.98) | 1-18/64 | .813 (20.65) | 1-7/16 18UNEF-2A | 1-3/8   | 1-3/4  | .177 (4.50) | .141 (3.58) |
| MS3102K28-†    | 1-3/4-18UNS-2A  | .625 (15.88) | .078 (1.98) | 1-18/64 | .813 (20.65) | 1-5/8-18UNEF-2A  | 1-9/16  | 2      | .177 (4.50) | .141 (3.58) |
| MS3102K32-†    | 2-18UNS-2A      | .625 (15.88) | .078 (1.98) | 1-3/8   | .875 (22.22) | 1-7/8-16UN-2A    | 1-3/4   | 2-1/4  | .209 (5.31) | .313 (7.95) |
| MS3102K36-†    | 2-1/4-16UN-2A   | .625 (15.88) | .125 (3.18) | 1-29/64 | .875 (22.22) | 2-1/8-16UN-2A    | 1-15/16 | 2-1/2  | .209 (5.31) | .344 (8.74) |

• Receptacles in size 10SL are available with pin inserts only.

† Add contact type: P - pin; S - socket.

\* Add contact arrangements. See pages 216-217.

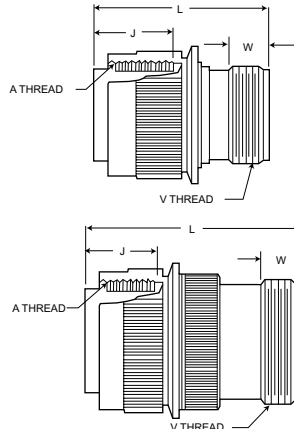
## Straight Plug

## MS3106K

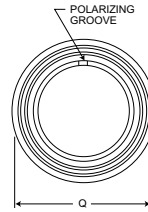
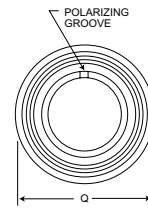
## Pin Insert



## Socket Insert



Sizes 8S to 16 - one piece construction



Sizes 18 to 36 - two piece construction

| Part Number   | A Thread        | J            | L       | Q       | V Thread         | W            |
|---------------|-----------------|--------------|---------|---------|------------------|--------------|
| MS3106K8S-†   | 1/2-28UNEF-2B   | .531 (13.49) | 1-1/4   | 3/4     | 1/2-28UNEF-2A    | .375 (9.52)  |
| MS3106K10SL-† | 5/8-24UNEF-2B   | .531 (13.49) | 1-7/16  | 31/32   | 5/8-24UNEF-2A    | .375 (9.52)  |
| MS3106K12S-†  | 3/4-20UNEF-2B   | .531 (13.49) | 1-7/16  | 1       | 5/8-24UNEF-2A    | .375 (9.52)  |
| MS3106K14S-†  | 7/8-20UNEF-2B   | .531 (13.49) | 1-7/16  | 1-1/8   | 3/4-20UNEF-2A    | .375 (9.52)  |
| MS3106K16S-†  | 1-20UNEF-2B     | .531 (13.49) | 1-7/16  | 1-1/4   | 7/8-20UNEF-2A    | .375 (9.52)  |
| MS3106K16-†   | 1-20UNEF-2B     | .719 (18.26) | 1-5/8   | 1-1/4   | 7/8-20UNEF-2A    | .375 (9.52)  |
| MS3106K18-†   | 1-1/8-18UNEF-2B | .719 (18.26) | 2-1/16  | 1-11/32 | 1-20UNEF-2A      | .375 (9.52)  |
| MS3106K20-†   | 1-1/4-18UNEF-2B | .719 (18.26) | 2-11/64 | 1-15/32 | 1-3/16-18UNEF-2A | .375 (9.52)  |
| MS3106K22-†   | 1-3/8-18UNEF-2B | .719 (18.26) | 2-5/32  | 1-19/32 | 1-3/16-18UNEF-2A | .375 (9.52)  |
| MS3106K24-†   | 1-1/2-18UNEF-2B | .719 (18.26) | 2-21/64 | 1-23/32 | 1-7/16-18UNEF-2A | .375 (9.52)  |
| MS3106K28-†   | 1-3/4-18UNS-2B  | .719 (18.26) | 2-5/16  | 1-31/32 | 1-7/16-18UNEF-2A | .375 (9.52)  |
| MS3106K32-†   | 2-18UNS-2B      | .719 (18.26) | 2-25/64 | 2-7/32  | 1-3/4-18UNS-2A   | .438 (11.13) |
| MS3106K36-†   | 2-1/4-16UN-2B   | .719 (18.26) | 2-17/32 | 2-15/32 | 2-18UNS-2A       | .500 (12.70) |

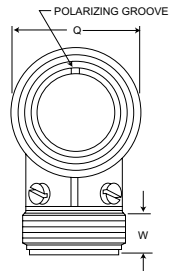
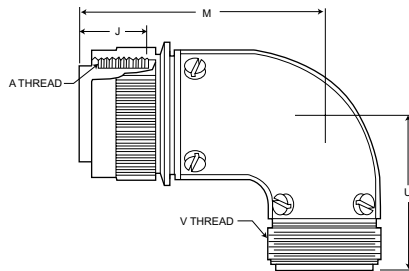
• Plugs in size 10SL are available with socket inserts only.

† Add contact type: P - pin; S - socket.

\* Add contact arrangements. See pages 216-217.

## 90° Angle Plug

## MS3108K



| Part Number   | A Thread        | J            | M       | Q       | U       | V Thread         | W            |
|---------------|-----------------|--------------|---------|---------|---------|------------------|--------------|
| MS3108K10SL-† | 5/8-24UNEF-2B   | .531 (13.49) | 1-41/64 | 31/32   | 1-21/64 | 5/8-24UNEF-2A    | .375 (9.52)  |
| MS3108K12S-†  | 3/4-20UNEF-2B   | .531 (13.49) | 1-41/64 | 1       | 1-21/64 | 5/8-24UNEF-2A    | .375 (9.52)  |
| MS3108K14S-†  | 7/8-20UNEF-2B   | .531 (13.49) | 1-29/32 | 1-1/8   | 1-27/64 | 3/4-20UNEF-2A    | .375 (9.52)  |
| MS3108K16S-†  | 1-20UNEF-2B     | .531 (13.49) | 1-29/32 | 1-1/4   | 1-27/64 | 7/8-20UNEF-2A    | .375 (9.52)  |
| MS3108K16-†   | 1-20UNEF-2B     | .719 (18.26) | 2-3/32  | 1-1/4   | 1-27/64 | 7/8-20UNEF-2A    | .375 (9.52)  |
| MS3108K18-†   | 1-1/8-18UNEF-2B | .719 (18.26) | 2-15/64 | 1-11/32 | 1-31/64 | 1-20UNEF-2A      | .375 (9.52)  |
| MS3108K20-†   | 1-1/4-18UNEF-2B | .719 (18.26) | 2-19/32 | 1-15/32 | 1-21/32 | 1-3/16-18UNEF-2A | .375 (9.52)  |
| MS3108K22-†   | 1-3/8-18UNEF-2B | .719 (18.26) | 2-19/32 | 1-19/32 | 1-21/32 | 1-3/16-18UNEF-2A | .375 (9.52)  |
| MS3108K24-†   | 1-1/2-18UNEF-2B | .719 (18.26) | 2-49/64 | 1-23/32 | 1-63/64 | 1-7/16-18UNEF-2A | .375 (9.52)  |
| MS3108K28-†   | 1-3/4-18UNS-2B  | .719 (18.26) | 2-49/64 | 1-31/32 | 1-63/64 | 1-7/16-18UNEF-2A | .375 (9.52)  |
| MS3108K32-†   | 2-18UNS-2B      | .719 (18.26) | 3-1/4   | 2-7/32  | 2-7/32  | 1-3/4-18UNS-2A   | .438 (11.13) |
| MS3108K36-†   | 2-1/4-16UN-2B   | .719 (18.26) | 3-1/4   | 2-15/32 | 2-9/32  | 2-18-UNS-2A      | .500 (12.70) |

• Plugs in size 10SL are available with socket inserts only.

† Add contact type: P - pin; S - socket.

\* Add contact arrangement. See pages 216-217.

## Assembly Instructions

### Recommended Procedures

- \* 1. Remove Formica retaining ring (or the ceramic retaining ring) from contact (Figure 1).
2. Crimp contact to wire.
3. Slip endbell (or junction shell), retaining ring, and washer over wire bundle.
4. Push contact thru rear insulator. (Contact should extend sufficiently to accomplish Step 5.)
5. Attach Formica retaining ring onto the contact (see Figure 1).
6. Seat each contact securely in rear insulator.
7. Assemble front insulator on engaging end of contact.
8. Slide insulator assembly into hardware.
9. Slide washer and insulator retaining ring into place, making sure that insulator retaining is fully seated in groove.
10. Slide endbell or junction shell down wire bundle and attach to shell (or barrel).

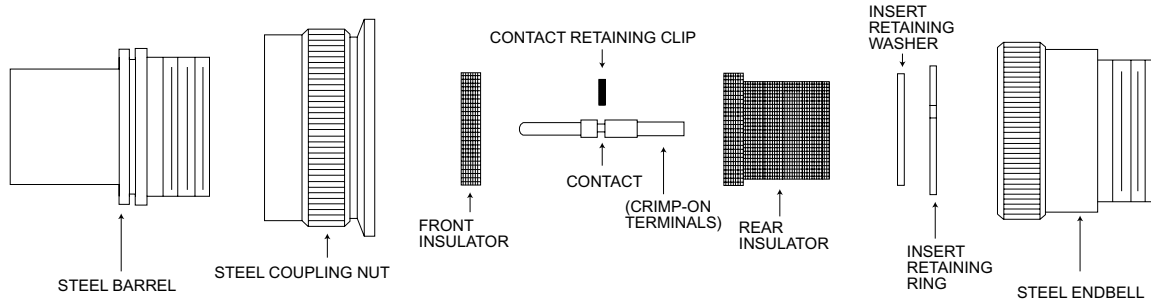


FIGURE 1

\*NOTE: For MS-K Assembly it is not necessary to remove the ceramic retaining ring used on sizes 16 and 12 contacts for MS-K **providing** that the crimp tool M22520/1-01 is used with the TH119 turret. However, the formica ring must be removed if using the crimp tools listed below.

When using the MS3191-1 (or CCT-1612) crimp tool with property locator, both the ceramic or formica retaining ring for sizes 16 and 12 contacts must be removed. For sizes 8, 4, and 0 contacts, the ceramic or formica retaining rings must be removed before crimping.

## Contacts, Crimp Tools, Contact Kit Part Numbers

### MS-K Contacts and Crimp Tools can be ordered separately

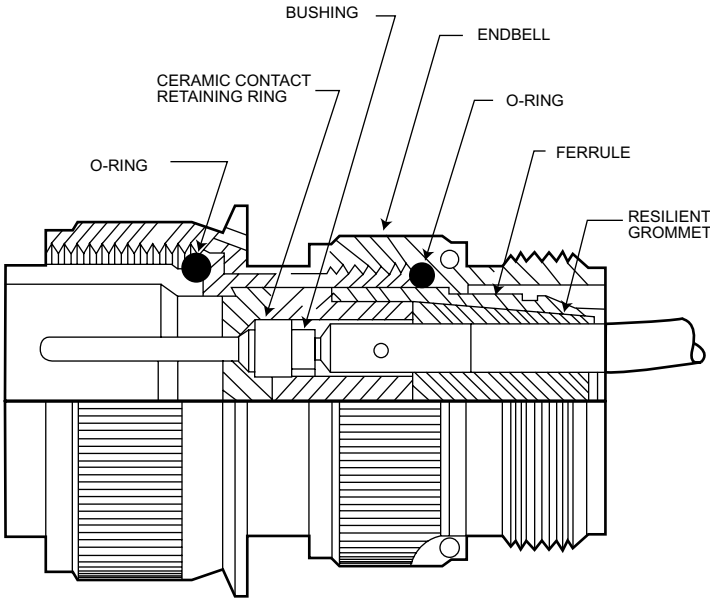
| Contact Size | Part Number  | Wire Accom. | Crimp Tool        | Locator      | Crimp Head† | MS-K Contacts Assembly Kit With Contact and Retaining Ring |
|--------------|--------------|-------------|-------------------|--------------|-------------|------------------------------------------------------------|
| 16-Pin       | 330-0187-000 | 16-18-20    | MS22520/1-01      | TH119 Turret | -           | 16-Pin                                                     |
| 8S-36        |              |             | MS3191-1          | L16-3191-8   |             | 320-0002-000                                               |
| 16 Pin*      | 030-1154-000 | 16-18-20    | MS22520/1-01      | TH119 Turret | -           | 16 Pin*                                                    |
| 8S-36        |              |             | MS3191-1          | L16-3191-8   |             | 320-0001-000                                               |
| 16 Socket    | 031-0497-000 | 16-18-20    | MS22520/1-01      | TH119 Turret | -           | 16 Socket                                                  |
| 8S-16S       |              |             | MS3191-1          | L16-3191-8   |             | 320-0013-000                                               |
| 16 Socket    | 031-0498-000 | 16-18-20    | MS22520/1-01      | TH119 Turret | -           | 16 Socket                                                  |
| 12-36        |              |             | MS3191-1          | L16-3191-7   |             | 320-0005-000                                               |
| 16 Socket*   | 031-0728-000 | 16-18-20    | MS22520/1-01      | TH119 Turret | -           | 16 Socket*                                                 |
| 12-36        |              |             | MS3191-1          | L16-3191-7   |             | 320-0008-000                                               |
| 12 Pin       | 330-0188-000 | 12-14       | MS22520/1-01      | TH119 Turret | -           | 12 Pin                                                     |
|              |              |             | MS3191-1          | L12-3191-4   |             | 320-0009-000                                               |
| 12 Socket    | 031-0499-000 | 12-14       | MS22520/1-01      | TH119 Turret | -           | 12 Socket                                                  |
|              |              |             | MS3191-1          | L12-3191-4   |             | 320-0007-000                                               |
| 8 Pin        | 330-0189-000 | 8           | CBT600B or CBT600 | CCHP8        | CCH8-1      | 8 Pin                                                      |
|              |              |             |                   |              |             | 320-0010-000                                               |
| 8 Socket     | 031-0500-000 | 8           | CBT600B or CBT600 | CCHP8        | CCH8-1      | 8 Socket                                                   |
|              |              |             |                   |              |             | 320-0014-000                                               |
| 4 Pin        | 330-0190-000 | 4           | CBT600B or CBT600 | CCHP4        | CCH4-1      | 4 Pin                                                      |
|              |              |             |                   |              |             | 320-0011-000                                               |
| 4 Socket     | 031-0501-000 | 4           | CBT600B or CBT600 | CCHP4        | CCH4-1      | 4 Socket                                                   |
|              |              |             |                   |              |             | 320-0006-000                                               |
| 0 Pin        | 330-0191-000 | 0           | CBT600B           | CCHP0-6      | CCH0-1      | 0 Pin                                                      |
|              |              |             |                   |              |             | 320-0012-000                                               |
| 0 Socket     | 031-0502-000 | 0           | CBT600B           | CCHP0-6      | CCH0-1      | 0 Socket                                                   |
|              |              |             |                   |              |             | 320-0015-000                                               |

\*These contacts must be used when ordering contact arrangements 24-28 pin or socket, 28-21 pin or socket, and 20-27 socket only.

†Crimp heads are only applicable for contact sizes 8, 4, and 0.

Washing, fuel spillage, and atmospheric variations are responsible for the development of firewall connectors that combine moisture resistance with fireproof characteristics. The CA-KE series provide enviornmental resistance to meet the moisture problems as well as emergency fire conditions defined by MIL-C-5015. CA-KE connectors are fully interchangeable and intermateable with other 5015 type of connectors. In order to maintain the moisture seal and fire resistance, however, they must mate with corresponding CA-KE connectors.

Continous opserating temperature of +177°C (+350°F) - crimp contacts. Moisture resistant connector for use with sealable wires. Modifications of MS31\*\*K configuration.



Performance and Material Specifications

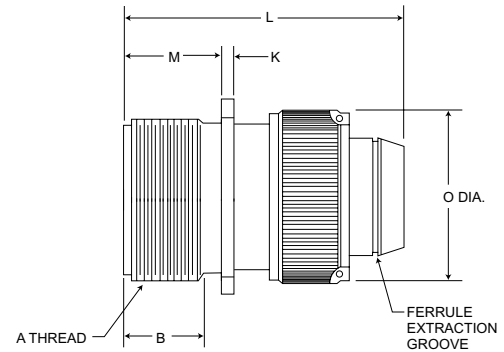
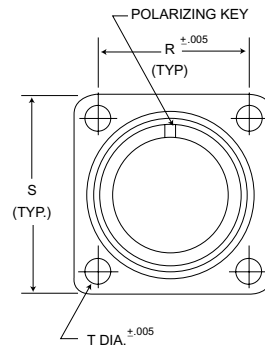
| MATERIALS          |                                               | FINISHES                   |                                 |
|--------------------|-----------------------------------------------|----------------------------|---------------------------------|
| Shell              | - Steel                                       | Shell                      | - Olive drab over cadmium plate |
| Insulator          | - Glass-filled epoxy or glass-filled melamine | Contacts                   | - Silver Plate                  |
| Contacts           | - Copper alloy                                | Accessory Hardware         | - Olive drab over cadmium plate |
| Grommet and O Ring | - Fuel-resistant silicone rubber              | <b>MECHANICAL FEATURES</b> |                                 |
| Accessory Hardware | - Steel                                       | Shell Size                 | - In sixteenths of an inch      |
|                    |                                               | Coupling                   | - Threaded                      |
|                    |                                               | Contact Arrangements       | - See pages 216-217             |
|                    |                                               | <b>ELECTRICAL DATA</b>     |                                 |
|                    |                                               | Number of Contacts         | - 1 thru 47                     |

How to Order

|                                                                                                                                                                                          |    |                                                               |    |    |    |   |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----|---------------------------------------------------------------|----|----|----|---|
| SERIES PREFIX                                                                                                                                                                            | CA | 00                                                            | KE | 24 | 28 | S |
| SHELL STYLE                                                                                                                                                                              |    |                                                               |    |    |    |   |
| CLASS                                                                                                                                                                                    |    |                                                               |    |    |    |   |
| SHELL SIZE                                                                                                                                                                               |    |                                                               |    |    |    |   |
| CONTACT ARRANGEMENT                                                                                                                                                                      |    |                                                               |    |    |    |   |
| CONTACT TYPE                                                                                                                                                                             |    |                                                               |    |    |    |   |
| <b>SERIES PREFIX</b><br>CA                                                                                                                                                               |    | <b>CLASS</b><br>KE - Environment-resistant firewall connector |    |    |    |   |
| <b>SHELL STYLE</b><br>00 - Wall mounting receptacle (without conduit threads)<br>06 - Straight plug (without conduit threads)<br>3100 - Wall mounting receptacle<br>3106 - Straight plug |    | <b>SHELL SIZE</b><br>8S to 36                                 |    |    |    |   |
|                                                                                                                                                                                          |    | <b>CONTACT ARRANGEMENT</b><br>See pages 216-217.              |    |    |    |   |
|                                                                                                                                                                                          |    | <b>CONTACT TYPE</b><br>P for pin; S for socket                |    |    |    |   |

## Wall Mounting Receptacle

## CA00KE



| Part Number  | A Thread        | B            | K           | L             | M            | O             | R             | S             | T           |
|--------------|-----------------|--------------|-------------|---------------|--------------|---------------|---------------|---------------|-------------|
| CA00KE8S-†   | 1/2-28UNEF-2A   | .375 (9.52)  | .063 (1.60) | 1.687 (42.85) | .578 (14.68) | .531 (13.49)  | 5.94 (15.09)  | .875 (22.22)  | .150 (3.81) |
| CA00KE10S-†  | 5/8-24UNEF-2A   | .375 (9.52)  | .063 (1.60) | 1.687 (42.85) | .578 (14.68) | .687 (17.45)  | .719 (18.26)  | 1.000 (25.40) | .150 (3.81) |
| *CA00KE10S-† | 5/8-24UNEF-2A   | .375 (9.52)  | .063 (1.60) | 1.781 (45.24) | .578 (14.68) | .687 (17.45)  | .719 (18.26)  | 1.000 (25.40) | .150 (3.81) |
| CA00KE12S-†  | 3/4-20UNEF-2A   | .375 (9.52)  | .063 (1.60) | 1.687 (42.85) | .578 (14.68) | .781 (19.84)  | .812 (20.62)  | 1.094 (27.79) | .150 (3.81) |
| CA00KE14S-†  | 7/8-20UNEF-2A   | .375 (9.52)  | .063 (1.60) | 1.687 (42.85) | .578 (14.68) | .906 (23.01)  | .906 (23.01)  | 1.188 (30.18) | .150 (3.81) |
| CA00KE16S-†  | 1-20UNEF-2A     | .375 (9.52)  | .063 (1.60) | 1.687 (42.85) | .578 (14.68) | 1.031 (26.19) | .969 (24.62)  | 1.281 (32.54) | .150 (3.81) |
| CA00KE16-†   | 1-20UNEF-2A     | .625 (15.88) | .078 (1.98) | 2.094 (53.19) | .766 (19.46) | 1.031 (29.36) | .969 (24.62)  | 1.281 (32.54) | .150 (3.81) |
| CA00KE18-†   | 1-1/8-18UNEF-2A | .625 (15.88) | .078 (1.98) | 2.250 (57.15) | .766 (19.46) | 1.156 (29.36) | 1.062 (26.97) | 1.375 (34.92) | .177 (4.50) |
| CA00KE20-†   | 1-1/4-18UNEF-2A | .625 (15.88) | .078 (1.98) | 2.250 (57.15) | .766 (19.46) | 1.344 (34.14) | 1.156 (29.36) | 1.500 (38.10) | .177 (4.50) |
| CA00KE22-†   | 1-3/8-18UNEF-2A | .625 (15.88) | .078 (1.98) | 2.250 (57.15) | .828 (21.03) | 1.406 (35.71) | 1.250 (31.75) | 1.625 (41.28) | .177 (4.50) |
| CA00KE24-†   | 1-1/2-18UNEF-2A | .625 (15.88) | .078 (1.98) | 2.250 (57.15) | .828 (21.03) | 1.625 (41.28) | 1.375 (34.92) | 1.750 (44.45) | .177 (4.50) |
| CA00KE28-†   | 1-3/4-18UNS-2A  | .625 (15.88) | .078 (1.98) | 2.250 (57.15) | .891 (22.63) | 1.781 (45.24) | 1.562 (39.67) | 2.000 (50.80) | .177 (4.50) |
| CA00KE32-†   | 2-18UNS-2A      | .625 (15.88) | .078 (1.98) | 2.250 (57.15) | .891 (22.63) | 2.031 (51.59) | 1.750 (44.45) | 2.250 (57.15) | .209 (5.31) |
| CA00KE36-†   | 2-1/4-16UNS-2A  | .625 (15.88) | .094 (2.39) | 2.250 (57.15) | .891 (22.63) | 2.281 (57.94) | 1.938 (49.23) | 2.500 (63.50) | .209 (5.31) |

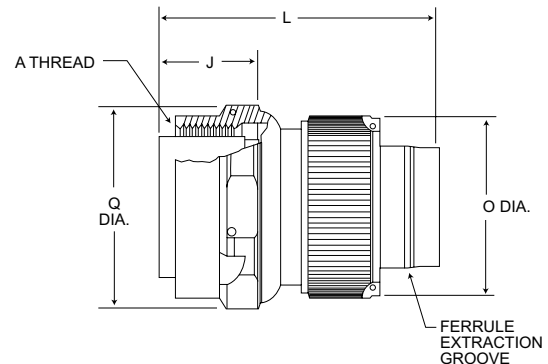
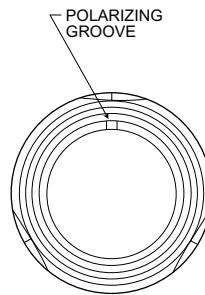
\* Receptacles in size 10SL are available with pin inserts only.

† Add contact type: P - pin; S - socket.

\* Add contact arrangement. See pages 216-217.

## Straight Plug (Without Conduit Threads)

## CA06KE



| Part Number  | A Thread        | J            | L             | O             | Q             |
|--------------|-----------------|--------------|---------------|---------------|---------------|
| CA06KE8S-†   | 1/2-28UNEF-2B   | .531 (13.49) | 1.687 (42.85) | .531 (13.49)  | .828 (21.03)  |
| CA06KE10S-†  | 5/8-24UNEF-2B   | .531 (13.49) | 1.687 (42.85) | .687 (17.45)  | .969 (24.62)  |
| *CA06KE10S-† | 5/8-24UNEF-2B   | .531 (13.49) | 1.687 (42.85) | .781 (19.84)  | .969 (24.62)  |
| CA06KE12S-†  | 3/4-20UNEF-2B   | .531 (13.49) | 1.687 (42.85) | .781 (19.84)  | 1.047 (26.59) |
| CA06KE14S-†  | 7/8-20UNEF-2B   | .531 (13.49) | 1.687 (42.85) | .906 (23.01)  | 1.125 (28.58) |
| CA06KE16S-†  | 1-20UNEF-2B     | .531 (13.49) | 1.687 (42.85) | 1.031 (26.19) | 1.250 (31.75) |
| CA06KE16-†   | 1-20UNEF-2B     | .719 (18.26) | 2.094 (53.19) | 1.031 (26.19) | 1.250 (31.75) |
| CA06KE18-†   | 1-1/8-18UNEF-2B | .719 (18.26) | 2.250 (57.15) | 1.156 (29.36) | 1.344 (34.14) |
| CA06KE20-†   | 1-1/4-18UNEF-2B | .719 (18.26) | 2.250 (57.15) | 1.344 (34.14) | 1.484 (37.69) |
| CA06KE22-†   | 1-3/8-18UNEF-2B | .719 (18.26) | 2.250 (57.15) | 1.406 (35.71) | 1.609 (40.87) |
| CA06KE24-†   | 1-1/2-18UNEF-2B | .719 (18.26) | 2.250 (57.15) | 1.625 (41.28) | 1.734 (44.04) |
| CA06KE28-†   | 1-3/4-18UNS-2B  | .719 (18.26) | 2.250 (57.15) | 1.781 (45.24) | 1.984 (50.39) |
| CA06KE32-†   | 2-18UNS-2B      | .719 (18.26) | 2.250 (57.15) | 2.031 (51.59) | 2.234 (56.74) |
| CA06KE36-†   | 2-1/4-16UNS-2B  | .719 (18.26) | 2.250 (57.15) | 2.281 (57.94) | 2.484 (63.09) |

\* Plugs in size 10SL are available with socket inserts only.

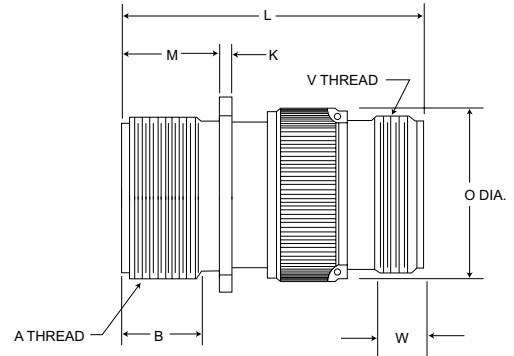
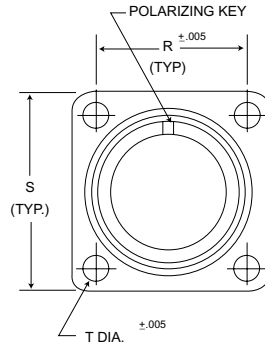
† Add contact type: P - pin; S - socket.

\* Add contact arrangement. See pages 216-217.

NOTE: Coupling nut has hex configuration on sizes 8S, 10S, 10SL, 12 and 24; knurled configuration on all others.

## Wall Mounting Receptacle

## CA3100KE



| Part Number      | A Thread        | B            | K           | L             | M            | O             | R             | S             | T           | V Thread         | W            |
|------------------|-----------------|--------------|-------------|---------------|--------------|---------------|---------------|---------------|-------------|------------------|--------------|
| CA3100KE8S-†     | 1/2-28UNEF-2A   | .375 (9.52)  | .063 (1.60) | 2.000 (50.80) | .578 (14.68) | .531 (13.49)  | .594 (15.09)  | .875 (22.22)  | .150 (3.81) | 1/2-28UNEF-2A    | .375 (9.52)  |
| CA3100KE10S-†    | 5/8-24UNEF-2A   | .375 (9.52)  | .063 (1.60) | 2.000 (50.80) | .578 (14.68) | .687 (17.45)  | .719 (18.26)  | 1.000 (25.40) | .150 (3.81) | 1/2-24UNEF-2A    | .375 (9.52)  |
| • CA3100KE10SL-† | 5/8-24UNEF-2A   | .375 (9.52)  | .063 (1.60) | 2.000 (50.80) | .578 (14.68) | .781 (19.84)  | .719 (18.26)  | 1.000 (25.40) | .150 (3.81) | 5/8-24UNEF-2A    | .375 (9.52)  |
| CA3100KE12S-†    | 3/4-20UNEF-2A   | .375 (9.52)  | .063 (1.60) | 2.000 (50.80) | .578 (14.68) | .781 (19.84)  | .812 (20.62)  | 1.094 (27.79) | .150 (3.81) | 5/8-20UNEF-2A    | .375 (9.52)  |
| CA3100KE14S-†    | 7/8-20UNEF-2A   | .375 (9.52)  | .063 (1.60) | 2.000 (50.80) | .578 (14.68) | .906 (23.01)  | .906 (23.01)  | 1.188 (30.18) | .150 (3.81) | 3/4-20UNEF-2A    | .375 (9.52)  |
| CA3100KE16S-†    | 1-20UNEF-2A     | .375 (9.52)  | .063 (1.60) | 2.000 (50.80) | .578 (14.68) | 1.031 (26.19) | .969 (24.62)  | 1.281 (32.54) | .150 (3.81) | 7/8-20UNEF-2A    | .375 (9.52)  |
| CA3100KE16-†     | 1-20UNEF-2A     | .625 (15.88) | .078 (1.98) | 2.188 (55.58) | .766 (19.46) | 1.031 (26.19) | .969 (24.62)  | 1.281 (32.54) | .150 (3.81) | 7/8-20UNEF-2A    | .375 (9.52)  |
| CA3100KE18-†     | 1-1/8-18UNEF-2A | .625 (15.88) | .078 (1.98) | 2.250 (57.15) | .766 (19.46) | 1.156 (29.36) | 1.062 (26.97) | 1.375 (34.92) | .177 (4.50) | 1-20UNEF-2A      | .375 (9.52)  |
| CA3100KE20-†     | 1-1/4-18UNEF-2A | .625 (15.88) | .078 (1.98) | 2.313 (58.75) | .766 (19.46) | 1.344 (34.14) | 1.156 (29.36) | 1.500 (38.10) | .177 (4.50) | 1-3/16-18UNEF-2A | .375 (9.52)  |
| CA3100KE22-†     | 1-3/8-18UNEF-2A | .625 (15.88) | .078 (1.98) | 2.313 (58.75) | .828 (21.03) | 1.406 (35.71) | 1.250 (31.75) | 1.625 (41.28) | .177 (4.50) | 1-3/16-18UNEF-2A | .375 (9.52)  |
| CA3100KE24-†     | 1-1/2-18UNEF-2A | .625 (15.88) | .078 (1.98) | 2.313 (58.75) | .828 (21.03) | 1.625 (41.28) | 1.375 (34.92) | 1.750 (44.45) | .177 (4.50) | 1-7/16-18UNEF-2A | .375 (9.52)  |
| CA3100KE28-†     | 1-3/4-18UNS-2A  | .625 (15.88) | .078 (1.98) | 2.688 (68.28) | .891 (22.63) | 1.781 (45.24) | 1.562 (39.67) | 2.000 (50.80) | .177 (4.50) | 1-7/16-18UNS-2A  | .375 (9.52)  |
| CA3100KE32-†     | 2-18UNS-2A      | .625 (15.88) | .078 (1.98) | 2.375 (60.32) | .891 (22.63) | 2.031 (51.59) | 1.750 (44.45) | 2.250 (57.15) | .209 (5.31) | 1-3/4-18UNS-2A   | .437 (11.10) |
| CA3100KE36-†     | 2-1/4-16UN-2A   | .625 (15.88) | .094 (2.39) | 2.438 (61.93) | .891 (22.63) | 2.281 (57.94) | 1.938 (49.23) | 2.500 (63.50) | .209 (5.31) | 2-18UNS-2A       | .500 (12.70) |

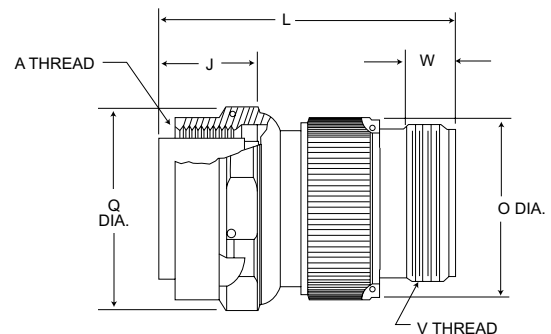
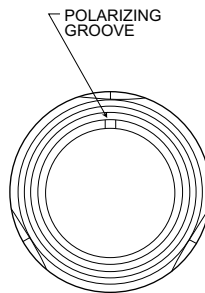
• Receptacles in size 10SL are available with pin inserts only.

† Add contact type: P - pin; S - socket.

\* Add contact arrangements. See pages 216-217.

## Straight Plug

## CA3106KE



| Part Number      | A Thread        | J            | L             | O             | Q             | V Thread         | W            |
|------------------|-----------------|--------------|---------------|---------------|---------------|------------------|--------------|
| CA3106KE8S-†     | 1/2-28UNEF-2B   | .531 (13.49) | 2.000 (50.80) | .531 (13.49)  | .828 (21.03)  | 1/2-28UNEF-2A    | .375 (9.52)  |
| CA3106KE10S-†    | 5/8-24UNEF-2B   | .531 (13.49) | 2.000 (50.80) | .687 (17.45)  | .969 (24.62)  | 1/2-24UNEF-2A    | .375 (9.52)  |
| • CA3106KE10SL-† | 5/8-24UNEF-2B   | .531 (13.49) | 2.000 (50.80) | .781 (19.84)  | .969 (24.62)  | 5/8-24UNEF-2A    | .375 (9.52)  |
| CA3106KE12S-†    | 3/4-20UNEF-2B   | .531 (13.49) | 2.000 (50.80) | .781 (19.84)  | 1.047 (26.59) | 5/8-20UNEF-2A    | .375 (9.52)  |
| CA3106KE14S-†    | 7/8-20UNEF-2B   | .531 (13.49) | 2.000 (50.80) | .906 (23.01)  | 1.125 (28.58) | 3/4-20UNEF-2A    | .375 (9.52)  |
| CA3106KE16S-†    | 1-20UNEF-2B     | .531 (13.49) | 2.000 (50.80) | 1.031 (26.19) | 1.250 (31.75) | 7/8-20UNEF-2A    | .375 (9.52)  |
| CA3106KE16-†     | 1-20UNEF-2B     | .719 (18.26) | 2.188 (55.58) | 1.031 (26.19) | 1.250 (31.75) | 7/8-20UNEF-2A    | .375 (9.52)  |
| CA3106KE18-†     | 1-1/8-18UNEF-2B | .719 (18.26) | 2.250 (57.15) | 1.156 (29.36) | 1.344 (34.14) | 1-20UNEF-2A      | .375 (9.52)  |
| CA3106KE20-†     | 1-1/4-18UNEF-2B | .719 (18.26) | 2.313 (58.75) | 1.344 (34.14) | 1.484 (37.69) | 1-3/16-18UNEF-2A | .375 (9.52)  |
| CA3106KE22-†     | 1-3/8-18UNEF-2B | .719 (18.26) | 2.313 (58.75) | 1.406 (35.71) | 1.609 (40.87) | 1-3/16-18UNEF-2A | .375 (9.52)  |
| CA3106KE24-†     | 1-1/2-18UNEF-2B | .719 (18.26) | 2.313 (58.75) | 1.625 (41.28) | 1.734 (44.04) | 1-7/16-18UNEF-2A | .375 (9.52)  |
| CA3106KE28-†     | 1-3/4-18UNS-2B  | .719 (18.26) | 2.688 (68.28) | 1.781 (45.24) | 1.984 (50.39) | 1-7/16-18UNF-2A  | .375 (9.52)  |
| CA3106KE32-†     | 2-18UNS-2B      | .719 (18.26) | 2.375 (60.32) | 2.031 (51.59) | 2.234 (56.74) | 1-3/4-18UNS-2A   | .437 (11.10) |
| CA3106KE36-†     | 2-1/4-16UNS-2B  | .719 (18.26) | 2.438 (61.93) | 2.81 (57.94)  | 2.484 (63.09) | 2-18UNS-2A       | .500 (12.70) |

• Plugs in size 10SL are available with socket inserts only.

† Add contact type: P - pin; S - socket.

\* Add contact arrangement. See pages 216-217.

NOTE: Coupling nut has hex configuration on sizes 8S, 10S, 10SL, 12 and 24; knurled configuration on all others.

## Assembly Instructions

- Disassemble the connector. See Figure 1 for component parts relationship for reassembly after wiring.
- Remove ceramic retaining ring from contact by sliding the retaining ring back, compressing the bushing until the ring can be slipped away from the contact (see Figure 2).
- Crimp pin or socket contact to wire.
- Slip endbell or ferrule retaining nut (whichever is used) over wire bundle (see Figure 3).
- Slip ferrule over wire bundle (see Figure 3).
- Push contact (pin or socket) thru rear of grommet and rear insulator. (Note that the contact is inserted into the end of the grommet that shows the layout identification.) Contact should extend sufficiently to accomplish Step 7.
- After the wired contacts have been inserted thru the rear insulator and grommet, install the ceramic contact retaining ring (Figure 2). Slip on the small diameter of the contact (diameter B). Push the ceramic ring up and onto the larger diameter of the contact (diameter A). The ceramic ring should then be in place. The rubber bushing (which is already on the contact) compresses to allow this assembly, and also keeps the ceramic ring in place after assembly.
- Seat each contact individually in rear insulator (see Figure 4). Pulling rear insulator so it is tight against the grommet.
- Assemble front insulator onto engaging end of contacts.
- Slide ferrule down wire bundle over grommet, making sure that grommet is lubricated per assembly drawing (see Figure 4).
- Insert this assembly into shell or barrel (whichever is applicable) being careful to polarize correctly.
- Slide endbell or ferrule retaining nut down wire bundle and screw onto shell/barrel. When properly assembled the layout identification will be visible.

Fig. 1

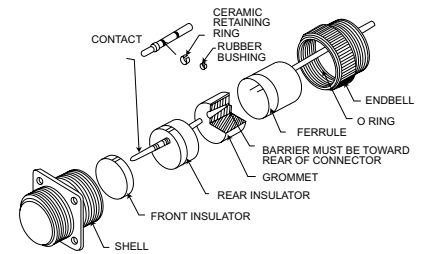


Fig. 2

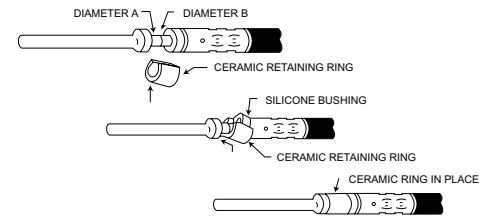


Fig. 3

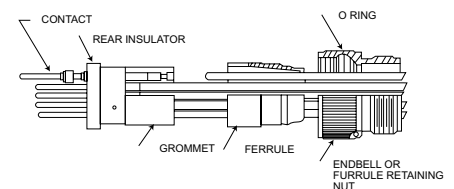
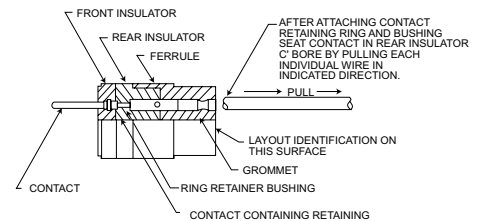


Fig. 4



**\*NOTE: For CA-KE Assembly** it is not necessary to remove the ceramic retaining ring used on size 16 and 12 contacts for CA-KE providing that the crimp tool M22520/1-01 is used with the TH118 turret. However, the formica ring must be removed if using the crimp tools.

When using the MS3191-1 (or CCT-1612) crimp tool with property locator, both the ceramic or formica retaining ring for sizes 16 and 12 contacts must be removed. For sizes 8, 4, and 0 contacts, the ceramic or formica retaining rings must be removed before crimping.

## Contacts, Crimp Tools, Contact Part Numbers

| Contacts and Crimp Tools |              |             |                         |                          |             | Contact Assembly Kit With Retaining Ring and Bushing |                 |
|--------------------------|--------------|-------------|-------------------------|--------------------------|-------------|------------------------------------------------------|-----------------|
| Contact Size             | Part Number  | Wire Accom. | Crimp Tool              | Locator                  | Crimp Head* | Contact Size                                         | Kit Part Number |
| 16 Pin/8S-16S            | 030-1133-000 | 16-18-20    | M22520/1-01 or MS3191-1 | TH118 Turret/L16-3191-2  | -           | 16 Pin/8S-16S                                        | 038586-0000     |
| 16 Pin/12-36             | 030-1082-000 | 16-18-20    | M22520/1-01 or MS3191-1 | TH118 Turret/L16-3191-9  | -           | 16 Pin/12-36                                         | 038588-0000     |
| 16 Socket/8S-16S         | 031-0731-000 | 16-18-20    | M22520/1-01 or MS3191-1 | TH118 Turret/L16-3191-2  | -           | 16 Socket/8S-16S                                     | 038587-0000     |
| 16 Socket/12-36          | 031-0706-000 | 16-18-20    | M22520/1-01 or MS3191-1 | TH118 Turret/L16-3191-11 | -           | 16 Socket/12-36                                      | 038589-0000     |
| 12 Pin                   | 030-1134-000 | 12-14       | M22520/1-01 or MS3191-1 | TH118 Turret/L12-3191-5  | -           | 12 Pin                                               | 038590-0000     |
| 12 Socket                | 031-0732-000 | 12-14       | M22520/1-01 or MS3191-1 | TH118 Turret/L12-3191-1  | -           | 12 Socket                                            | 038591-0000     |
| 8 Pin                    | 030-1135-000 | 8           | CBT600B or CBT600       | CCHP8-7                  | CCH8-1      | 8 Pin                                                | 038592-0000     |
| 8 Socket                 | 031-0733-000 | 8           | CBT600B or CBT600       | CCHP8-7                  | CCH8-1      | 8 Socket                                             | 038593-0000     |
| 4 Pin                    | 030-1212-000 | 4           | CBT600B or CBT600       | CCHP4-7                  | CCH4-1      | 4 Pin                                                | 038594-0000     |
| 4 Socket                 | 031-0770-000 | 4           | CBT600B or CBT600       | CCHP4-7                  | CCH4-1      | 4 Socket                                             | 038595-0000     |
| 0 Pin                    | 030-1734-000 | 0           | 6BT600B                 | CCHP0-7                  | CCH0-1      | 0 Pin                                                | 031-1176-000    |
| 0 Socket                 | 031-0975-000 | 0           | 6BT600B                 | CCHP0-7                  | CCH0-1      | 0 Socket                                             | 031-1177-000    |

\* Crimp heads are applicable for contact sizes 8, 4, and 0.



FRF/FVF Fire wall connectors are designed to meet the requirements of MIL-C-5015 and prevent the passage of +1093°C (+2000°F) flames for 20 minutes. They incorporate the latest sophisticated design improvements necessary to meet the exacting demands of supersonic flight applications. Some of these features are temperature capabilities to +204°C (+392°F) for more than 1000 hours, lighter weight, small than other MIL-C-5015 firewall connectors, and crimp front release contacts.

Firewall connectors fulfill the very important application of providing a means to penetrate the engine firewall of military and commercial aircraft with

electrical circuits, and still maintain the integrity of the flame barrier requirements of the aircraft firewall. These connectors provide protection against high temperatures, emergency fire-retardant conditions, moisture, atmospheric changes, and are resistant to fuels, cleaning agents, coolants, and hydraulic fluids. Materials of connector arrangements are designed to meet the requirements of MIL-C-5015 Class K connectors.

The maximum operating temperature noted for these connectors is the maximum internal hot spot resulting from any combination of electrical load and ambient conditions.

## How to Order

|                     |     |   |   |     |   |   |   |     |
|---------------------|-----|---|---|-----|---|---|---|-----|
|                     | FRF | 6 | E | 12S | 3 | P | X | -01 |
|                     | FVF | 0 | A | 12S | 3 | S | X |     |
|                     | FRA | 0 | - | 12S | 3 | P |   |     |
|                     | FVA | 6 | - | 12S | 3 | S |   | F0  |
| SERIES PREFIX       |     |   |   |     |   |   |   |     |
| SHELL STYLE         |     |   |   |     |   |   |   |     |
| ACCESSORY HARDWARE  |     |   |   |     |   |   |   |     |
| SHELL SIZE          |     |   |   |     |   |   |   |     |
| CONTACT ARRANGEMENT |     |   |   |     |   |   |   |     |
| CONTACT TYPE        |     |   |   |     |   |   |   |     |
| INSERT PLARIZATION  |     |   |   |     |   |   |   |     |
| LESS CONTACTS       |     |   |   |     |   |   |   |     |
| MODIFIERS           |     |   |   |     |   |   |   |     |

**SERIES PREFIX**  
FRF - Fluorosilicone elastomers, steel hardware with clear chromate (A105) finish  
FVF - Silicone elastomers, steel hardware with clear chromate (A105) finish  
FRA - Same as FRF except aluminum hardware  
FVA - Same as FVF except aluminum hardware

**SHELL STYLE**  
6 - Plug  
0 - Receptacle, flange mounting

**ACCESSORY HARDWARE (ALUMINUM)**  
E (FRF/FRA) - Endbell with cable clamp  
E (FVF/FVA) - Endbell with cable clamp with ferrules  
A (FRF/FRA) - Endbell adapter threaded for conduit  
A (FVF/FVA) - Endbell adapter threaded for conduit with ferrules  
- Use dash (-) for connectors less accessories (Dash must be included in description)

**SHELL SIZE**  
10SL, 12S, 14S, 16S, 16, 18, 20, 22, 24, 28, 32 and 36

**CONTACT ARRANGEMENT**  
See pages 216-217

**CONTACT ARRANGEMENT**  
P for pin; S for socket

**INSERT POLARIZATION**  
W, X, Y or Z in accordance with MIL-C-5015. No designator required for normal

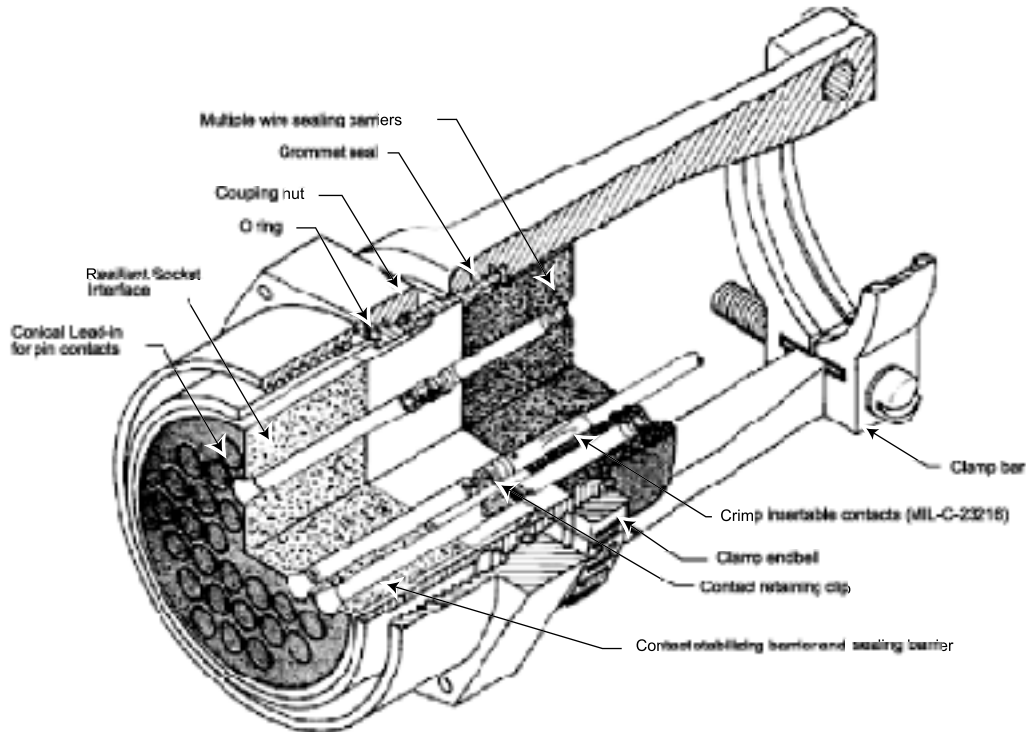
**LESS CONTACT**  
FO - (Will not be stamped on connectors)

**MODIFIERS**  
01 - Ball, self-locking knurled coupling nut (see note 1 below)  
02 - Size 16 contacts to accommodate size 20 wire  
03 - Clinch nut mounting recptacles (F28)  
04 - Obsolete  
05 - Knurled coupling nut  
06 - Combination 01 and 02 codes  
07 - Ferrules only (see note 4 below)  
08 - Combination 01 and 07 codes (see note 4 below)  
09 - Combination 05 and 07 codes (see note 4 below)  
10 - Anchor nut plates on receptacle shells  
11 - MS3057 type "A" endbell clamp, less bushing

**MODIFIERS (continued)**  
12 - Combination 07 and 10 codes  
13 - 01 code, with safety wire holes on coupling nut  
14 - 90° endbell (with saddle clamp and ferrule)  
15 - Combination 01 and 14 codes  
16 - 03 code plus ferrules (code 07)  
17 - Obsolete  
18 - 01 code and steel conduit adapter  
19 - FRFO/FVFO recaptacle with steel conduit adapter  
A72 - Black chromate finish (by customer request)

**NOTES**  
1. Modifier 01: Used for high vibration/shock applications  
2. Less Contacts: Use the Modifier "-FO" or "L". The modifier will not be stamped on the connector. Modifier "-FO" is preferred.  
3. Numerical FRA/FRF modifiers are assigned consecutively as needed and there is no significance to numerical order.  
4. The basic FRA and FRF connectors were designed for use without ferrules. Ferrules are suggested when undersized wire is used so that the grommet seals will not spread apart (i.e. opened) when the wires are flexed as the wire maybe too stiff for its bend to be completely damped out by the endbell cable clamp.

## Design Features

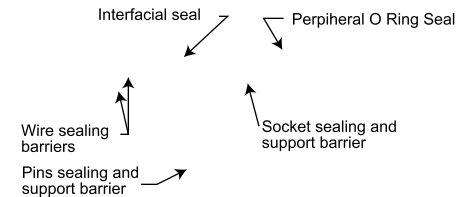


### Complete Moisture Sealing

An improved shell-to-barrel O ring seals against pressure differential to 15 psi before and after exposure to +204°C (+392°F).

Positive interfacial sealing is accomplished with a pin and socket interlocking barrier design.

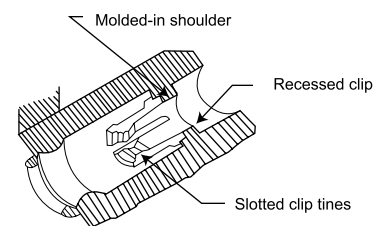
A highly reliable grommet sealing system incorporates multiple wire sealing barriers and a grommet-to-shell seal.



### Rugged Metal Clip Retention System

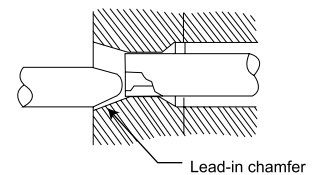
These clips are one-piece metal parts with slotted, inwardly deflected tines assuring positive contact retention. They are retained and positively located in the hard insulator contact cavities by a molded-in shoulder providing strength where the greatest load from mating and unmating occurs.

Contacts are seated on the clip shoulder, and the contact retaining clip locks on the taper retention undercut of the contact.



### Improved Contact Alignment and Stability

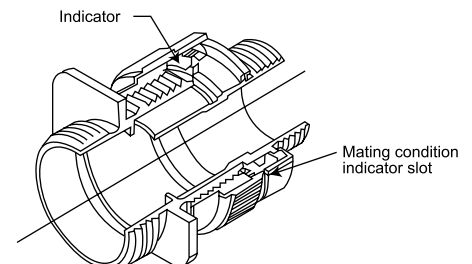
The large lead-in chamfer on the semi-resilient insert provides positive contact alignment by "guiding" the tip of the pin contact into the mating socket. This chamfer provides maximum contact centering without restricting contact float or tool insertion.



### Optional Self-Locking Coupling Nut

The mechanism employs a spring-loaded detent system that is free running until near full engagement. At this point torque valves increase causing the mechanism to produce an audible clicking until full engagement. The mechanism is effective even when coupling stops at a position between detents.

When full mating is achieved, a color appears in the indicator window on the periphery of the coupling nut. The indicator is serrated so that full mating can be determined in a blind installation by feel, with a probe approximately .0312 (0.79) diameter.



## Performance and Material Specifications

## ELECTRICAL DATA

| Contact Size | Wire Size<br>(MIL-W-5086) | Insulation OD Limit |              |
|--------------|---------------------------|---------------------|--------------|
|              |                           | min.                | max.         |
| 16           | 16 thru 20                | .068 (1.73)         | .135 (3.43)  |
| 12           | 12 thru 14                | .092 (2.34)         | .200 (5.08)  |
| 8            | 8 thru 10                 | .132 (3.35)         | .300 (7.62)  |
| 4            | 4 thru 6                  | .227 (5.77)         | .425 (10.80) |
| 0            | 0 thru 2                  | .390 (9.91)         | .590 (14.99) |

## MATERIALS AND FINISHES

Shell - Machined cadmium plated steel (FRF/FVF)  
- Aluminum (FRA/FVA)

Insulator - Glass filled epoxy

Grommets and Interfacial Seals-FRF-Flourosilicone/FVF-Silicone

Contacts† - Copper alloy, gold plating per MIL-C-39029

Clip - Copper alloy

## MECHANICAL FEATURES

Coupling - Threaded

Polarization - Single keyway per MIL-C-5015

Contact Retention - Metal Clip

## Test Data (FRF and FVF Only)

Moisture Resistance - Exceed MIL-STD-202E,  
Method 106D

Fire Test - Exceeds MIL-C-5051G, Para. 4.6.16

Fluid Emersion - Per MIL-C-5015G,  
Para. 4.6.15.3

| Fluid           | Use               | Fluid        | Use              |
|-----------------|-------------------|--------------|------------------|
| JP-4            | Aviation fuel     | Navee 427    | Alkaline cleaner |
| Kerosene        | Aviation fuel     | MIL-L-23699  | Turbine lube oil |
| MIL-H-5606      | Hydraulic fluid   | Skydrol 500A | Hydraulic fluid  |
| Ethylene Glycol | Synthetic coolant | MIL-L-7808D  | Turbine lube oil |
| Cee-Bee A-693   | Alkaline cleaner  | Texaco 6256  | Turbine lube oil |

## Contacts

## Pin and Socket

Pin and socket contacts are machined from bar stock to assure precision operation. They are designed to resist severe vibration and repeated connection and disconnection. The average force to either engage or separate pin and socket contacts will not exceed the average values given in the latest revision of MIL-C-39029.

| Force<br>in oz. | Contact Sizes |    |     |      |     |
|-----------------|---------------|----|-----|------|-----|
|                 | 16            | 12 | 8   | 4    | 0   |
| Maximum         | 30            | 30 | 160 | 240  | 320 |
| Average         | 24            | 24 | 7   | 10.5 | 15  |
| Minimum         | 2             | 3  | 5   | 10   | 14  |

## Thermocouple Contacts

Size 12 and 16 contacts, machined from matching thermocouple lead wire alloys, can be supplied in ITT Cannon connectors. These thermocouple contacts maintain continuity from thermal-sensor leads through a bulkhead or other closures in temperature measuring applications.

These contacts for matching lead wires are detailed by the standards of the Instrument Society of America (I.S.A.).

| I.S.A. Standards | Material              |
|------------------|-----------------------|
| J                | Iron and constantan   |
| K                | Chromel and alumel    |
| T                | Copper and constantan |

## Service Data

Maximum current ratings of contacts and maximum allowable voltage drop under test conditions when assembled as in service are shown. Maximum total current to be carried per connector is the same as that allowable in wire bundles as specified in MIL-W-5088.

## Current Rating with Silver Plated Wire

| Contact Size | Test Current (amps) | Potential Drop (millivolts) |
|--------------|---------------------|-----------------------------|
| 16           | 13                  | 49                          |
| 12           | 23                  | 42                          |
| 8            | 46                  | 26                          |
| 4            | 80                  | 23                          |
| 0            | 150                 | 21                          |

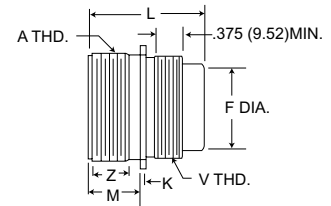
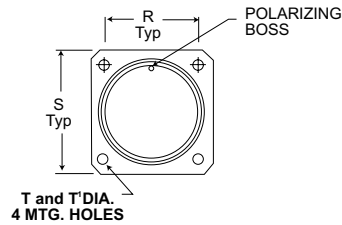
## High Potential Test Data

These connectors show no evidence of breakdown when the test voltage indicated is applied between the two closest contacts and between the shell and the contacts closest to the shell for a period of one minute.

| MS Service Rating | TEST Voltage (RMS) 60 cps | Operating Voltages Suggested |          | Air Spacing nom. inches | Creepage Distance nom. inches |
|-------------------|---------------------------|------------------------------|----------|-------------------------|-------------------------------|
|                   |                           | DC                           | AC (rms) |                         |                               |
| Inst.             | 1000                      | 250                          | 200      | -                       | 1/16                          |
| A                 | 2000                      | 700                          | 500      | 1/16                    | 1/8                           |
| D                 | 2800                      | 1250                         | 900      | 1/8                     | 3/16                          |
| E                 | 3500                      | 1750                         | 1250     | 3/16                    | 1/4                           |
| B                 | 4500                      | 2450                         | 1750     | 1/4                     | 5/16                          |
| C                 | 7000                      | 4200                         | 3000     | 5/16                    | 1                             |

## Wall Mounting Receptacle

FRF0/FVF0



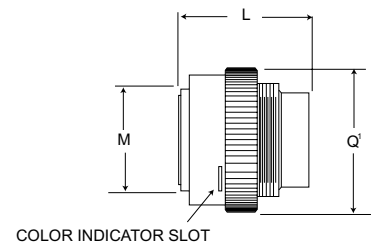
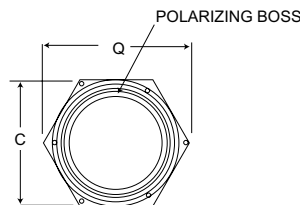
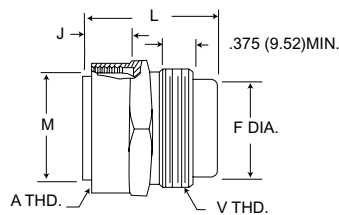
(T' is FRA/FVA dim. only)

| Shell Size | A Thread        | L Max.         |               |               | F Max.        | K Max.      | M<br>+.031<br>-.000 | R<br>+.005    | S Max.        | T<br>+.010<br>-.005 | T'<br>+.010<br>-.005 | V Thread        | Z Min.       |
|------------|-----------------|----------------|---------------|---------------|---------------|-------------|---------------------|---------------|---------------|---------------------|----------------------|-----------------|--------------|
|            |                 | #16<br>#12     | #8<br>#4      | #0            |               |             |                     |               |               |                     |                      |                 |              |
| 10SL       | 5/8-24UNEF-2A   | 1.685 (42.80)* | -             | -             | .455 (11.30)  | .098 (2.49) | .562 (14.27)        | .719 (18.26)  | 1.031 (26.19) | .150 (3.81)         | .120 (3.04)          | 5/8-24UNEF-2A   | .375 (9.52)  |
| 12S        | 3/4-20UNEF-2A   | 1.875 (47.62)  | -             | -             | .445 (11.30)  | .098 (2.49) | .562 (14.27)        | .812 (20.62)  | 1.125 (28.58) | .150 (3.81)         | .120 (3.04)          | 5/8-24UNEF-2A   | .375 (9.52)  |
| 14S        | 7/8-20UNEF-2A   | 1.875 (47.62)  | -             | -             | .522 (13.26)  | .098 (2.49) | .562 (14.27)        | .906 (23.01)  | 1.219 (30.96) | .150 (3.81)         | .120 (3.04)          | 3/4-20UNEF-2A   | .375 (9.52)  |
| 16S        | 1-20UNEF-2A     | 1.875 (47.62)  | -             | -             | .647 (16.43)  | .098 (2.49) | .562 (14.27)        | .969 (24.61)  | 1.312 (33.32) | .150 (3.81)         | .120 (3.04)          | 7/8-20UNEF-2A   | .375 (9.52)  |
| 16         | 1-20UNEF-2A     | 1.922 (48.82)  | 2.141 (54.38) | -             | .647 (16.43)  | .098 (2.49) | .750 (19.05)        | .969 (24.61)  | 1.312 (33.32) | .150 (3.81)         | .120 (3.04)          | 7/8-20UNEF-2A   | .625 (15.86) |
| 20         | 1-1/4-18UNEF-2A | 1.922 (48.82)  | 2.141 (54.38) | 2.422 (61.52) | .921 (23.39)  | .140 (3.56) | .750 (19.05)        | 1.156 (29.36) | 1.531 (38.89) | .177 (4.50)         | .120 (3.04)          | 1-1/8-18UNEF-2A | .625 (15.86) |
| 22         | 1-3/8-UNEF-2A   | 1.922 (48.82)  | 2.141 (54.38) | 2.422 (61.52) | 1.016 (25.81) | .140 (3.56) | .750 (19.05)        | 1.250 (31.75) | 1.656 (42.06) | .177 (4.50)         | .120 (3.04)          | 1-1/4-18UNEF-2A | .625 (15.86) |
| 24         | 1-1/2-18UNEF-2A | 1.922 (48.82)  | 2.141 (54.38) | 2.422 (61.52) | 1.141 (28.98) | .140 (3.56) | .812 (20.62)        | 1.375 (34.92) | 1.781 (45.24) | .177 (4.50)         | .147 (3.73)          | 1-3/8-18UNEF-2A | .625 (15.86) |
| 28         | 1-3/4-18UNS-2A  | 1.922 (48.82)  | 2.141 (54.38) | 2.422 (61.52) | 1.361 (34.57) | .140 (3.56) | .812 (20.62)        | 1.562 (39.67) | 2.031 (51.59) | .177 (4.50)         | .147 (3.73)          | 1-5/8-18UNEF-2A | .625 (15.86) |
| 32         | 2-18UNS-2A      | 1.922 (48.82)  | 2.141 (54.38) | 2.422 (61.52) | 1.611 (40.92) | .140 (3.56) | .875 (22.22)        | 1.750 (44.45) | 2.281 (57.94) | .290 (5.31)         | .173 (4.39)          | 1-7/8-16UN-2A   | .625 (15.86) |
| 36         | 2-1/4-16UN-2A   | 1.922 (48.82)  | 2.141 (54.38) | 2.422 (61.52) | 1.826 (46.38) | .140 (3.56) | .875 (22.22)        | 1.938 (49.23) | 2.531 (64.29) | .209 (5.31)         | .173 (4.39)          | 2-1/8-16UN-2A   | .625 (15.86) |

\*Available with pin inserts only.

## Straight Plug

FRF6/FVF6

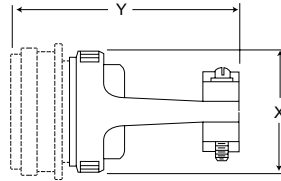
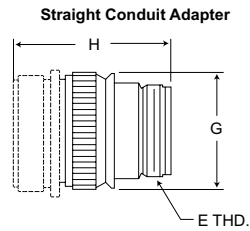


| Shell Size | A Thread        | L Max.        |               |               | C Hex.        | F Max.        | J Max.       | M Max.        | Q Max.        | Q' Max.       | V Thread        |
|------------|-----------------|---------------|---------------|---------------|---------------|---------------|--------------|---------------|---------------|---------------|-----------------|
|            |                 | #16<br>#12    | #8<br>#4      | #0            |               |               |              |               |               |               |                 |
| 10SL       | 5/8-24UNEF-2B   | 1.819 (46.20) | -             | -             | .812 (20.62)  | .455 (11.30)  | .564 (14.33) | .446 (11.33)  | .950 (24.13)  | .970 (24.64)  | 5/8-24UNEF-2A   |
| 12S        | 3/4-20UNEF-2B   | 1.875 (47.62) | -             | -             | .937 (23.80)  | .445 (11.30)  | .564 (14.33) | .555 (14.10)  | 1.094 (27.79) | 1.092 (27.74) | 5/8-24UNEF-2A   |
| 14S        | 7/8-20UNEF-2B   | 1.875 (47.62) | -             | -             | 1.000 (25.40) | .522 (13.26)  | .264 (14.33) | .675 (17.14)  | 1.167 (29.64) | 1.240 (31.50) | 3/4-20UNEF-2A   |
| 16S        | 1-20UNEF-2B     | 1.875 (47.62) | -             | -             | 1.125 (28.58) | .647 (16.43)  | .564 (14.33) | .805 (20.45)  | 1.311 (33.30) | 1.386 (35.20) | 7/8-20UNEF-2A   |
| 16         | 1-20UNEF-2B     | 1.922 (48.82) | 2.141 (54.38) | -             | 1.125 (28.58) | .647 (16.43)  | .754 (19.15) | .805 (20.45)  | 1.311 (33.30) | 1.386 (35.20) | 7/8-20UNEF-2A   |
| 20         | 1-1/4-18UNEF-2B | 1.922 (48.82) | 2.141 (54.38) | 2.422 (61.52) | 1.375 (34.92) | .921 (23.39)  | .754 (19.15) | 1.050 (26.67) | 1.600 (40.64) | 1.650 (41.91) | 1-1/8-18UNEF-2A |
| 22         | 1-3/8-UNEF-2B   | 1.922 (48.82) | 2.141 (54.38) | 2.422 (61.52) | 1.500 (38.10) | 1.016 (25.81) | .754 (19.15) | 1.175 (29.84) | 1.744 (44.30) | 1.745 (44.32) | 1-1/4-18UNEF-2A |
| 24         | 1-1/2-18UNEF-2B | 1.922 (48.82) | 2.141 (54.38) | 2.422 (61.52) | 1.625 (41.28) | 1.141 (28.98) | .754 (19.15) | 1.300 (33.02) | 1.833 (46.56) | 1.962 (49.83) | 1-3/8-18UNEF-2A |
| 28         | 1-3/4-18UNS-2B  | 1.922 (48.82) | 2.141 (54.38) | 2.422 (61.52) | 1.875 (47.62) | 1.361 (34.57) | .754 (19.15) | 1.520 (38.61) | 2.177 (55.30) | 2.125 (53.98) | 1-5/8-18UNEF-2A |
| 32         | 2-18UNS-2B      | 1.922 (48.82) | 2.141 (54.38) | 2.422 (61.52) | 2.125 (43.96) | 1.611 (40.92) | .754 (19.15) | 1.770 (44.96) | 2.466 (62.64) | 2.385 (60.58) | 1-7/8-16UN-2A   |
| 36         | 2-1/4-16UN-2B   | 1.922 (48.82) | 2.141 (54.38) | 2.422 (61.52) | 2.375 (60.33) | 1.826 (46.38) | .754 (19.15) | 1.980 (50.29) | 2.754 (69.95) | 2.585 (65.66) | 2-1/8-16UN-2A   |

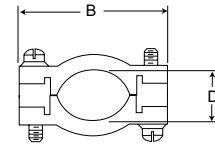
\*Available with socket inserts only.

## Accessory Hardware

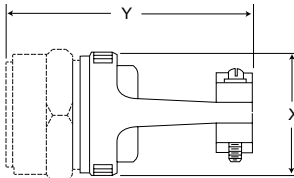
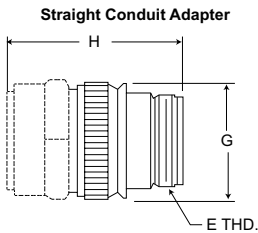
## FRF0/FVF0



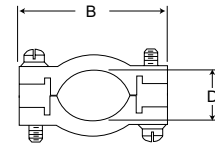
Straight Cable Clamp



## FRF6/FVF6



Straight Cable Clamp



| Shell Size | E Thread         | B Max.        | D Min.        | H G Max.      | Max. #16,#0   | X Max.        | Y Max.         |
|------------|------------------|---------------|---------------|---------------|---------------|---------------|----------------|
| 10SL       | 5/8-24UNEF-2A    | 1.00 (25.40)  | .312 (7.92)   | .883 (22.43)  | 2.350 (59.69) | .953 (24.21)  | 2.940 (74.68)  |
| 12S        | 5/8-24UNEF-2A    | 1.00 (25.40)  | .312 (7.92)   | .883 (22.43)  | 2.350 (59.69) | .953 (24.21)  | 2.940 (74.68)  |
| 14S        | 3/4-20UNEF-2A    | 1.190 (30.23) | .438 (11.12)  | 1.003 (25.48) | 2.350 (59.69) | 1.078 (27.38) | 3.090 (78.49)  |
| 16S        | 7/8-20UNEF-2A    | 1.280 (35.51) | .561 (14.25)  | 1.133 (28.78) | 2.350 (59.69) | 1.203 (30.56) | 3.410 (86.61)  |
| 16         | 7/8-20UNEF-2A    | 1.280 (32.51) | .561 (14.25)  | 1.133 (28.78) | 2.500 (63.50) | 1.203 (30.56) | 3.560 (90.42)  |
| 20         | 1-3/16-18UNEF-2A | 1.530 (38.86) | .750 (19.05)  | 1.430 (36.32) | 3.000 (76.20) | 1.453 (36.91) | 3.560 (90.42)  |
| 22         | 1-3/16-18UNEF-2A | 1.630 (41.40) | .750 (19.05)  | 1.497 (38.02) | 3.260 (82.80) | 1.578 (40.08) | 3.560 (90.42)  |
| 24         | 1-7/16-18UNEF-2A | 1.775 (45.08) | .937 (23.80)  | 1.573 (39.95) | 3.260 (82.80) | 1.703 (43.26) | 3.900 (99.06)  |
| 28         | 1-7/16-18UNEF-2A | 2.025 (51.44) | 1.187 (30.15) | 1.792 (45.52) | 3.260 (82.80) | 1.953 (49.61) | 3.900 (99.06)  |
| 32         | 1-3/4-18UNS-2A   | 2.265 (57.53) | 1.250 (31.75) | 2.121 (53.87) | 3.260 (82.80) | 2.203 (55.96) | 4.400 (111.76) |
| 36         | 2-18UNS-2A       | 2.525 (64.14) | 1.375 (34.92) | 2.308 (58.62) | 3.300 (83.82) | 2.453 (62.31) | 4.650 (118.11) |

## Tooling



| Contact Size | Crimp Tool  | Crimp Head  | Locator Number | Insertion Tool                  | Extraction Tool |
|--------------|-------------|-------------|----------------|---------------------------------|-----------------|
| 16           | M22520/1-01 | M22520/1-02 |                | MS90455-16 or MIL-I-81969/17-01 | CET-FRF-16-22A  |
| 12           |             |             |                | MS90455-12 or MIL-I-81960/17-02 | CET-FRF-12      |
| 8            | CBT-600B    | CCH-8-1     | CCHP-8-6       | Not Req'd                       | CET-FRF-8       |
| 4            | CBT-600B    | CCH-4-1     | CCHP-4-8       | Not Req'd                       | CEF-FRF-4       |
| 0            | CBT-600B    | CCH-0-1     | CCHP-0-8       | Not Req'd                       | CET-FRF-0       |

## Contact/Wire Seal Plugs

| Contact Size* | Part Number  |              | Wire Seal Plugs | Colors |
|---------------|--------------|--------------|-----------------|--------|
|               | Pin          | Socket       |                 |        |
| 16            | 030-1878-001 | 031-1040-001 | 225-0071-000    | Blue   |
| 12            | 030-1879-003 | 031-1041-003 | 225-0072-000    | Yellow |
| 8             | 030-1880-001 | 031-1042-001 | 225-1009-000    | Red    |
| 4             | 030-1881-001 | 031-1043-001 | 225-1008-000    | Blue   |
| 0             | 030-8011-747 | 031-8012-747 | 225-1007-000    | Yellow |

\*Consult factory for variations in contact finish, wire accommodation, and thermocouple materials.

## Wire Stripping

Using proper assembly tools (see page 214), strip insulation from end of wire to be crimped. (See table for proper stripping dimensions.) Do not cut or damage wire strands.



| Contact Size | A            |              |
|--------------|--------------|--------------|
|              | Max.         | Min.         |
| 16           | .250 (6.35)  | .220 (5.59)  |
| 12           | .250 (6.35)  | .220 (5.59)  |
| 8            | .250 (6.35)  | .220 (5.59)  |
| 4            | .480 (12.18) | .450 (11.43) |
| 0            | .630 (16.00) | .600 (15.24) |

## Assembly Instructions

### Contact Crimping

Insert wire into rear of contact. Wire insulation must butt against rear of contact. Wire must be visible thru inspection hole. Using M22520/1-01 crimp tool with proper locator, insert wire and contact into locator jaws. Squeeze tool handle together until ratchet releases. When using CBT 600B crimp tool, follow instructions supplied with tool. Inspect crimped contact to be sure proper crimp has been made.



### Contact Insertion



1. Slide conduit adapter or clamp bars over wire bundle in proper order for re-assembly.

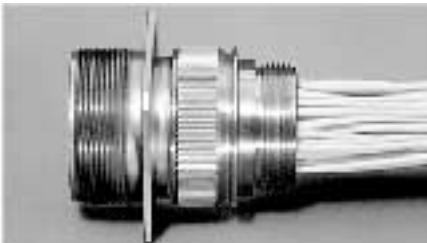


2. Slide wired contact into proper insertion tool so that tip of tool butts against contact shoulder.



3. Inset wired contacts into cavities from rear of insulator until contact "clicks" into retaining clip. A slight pull on wire will assure that contact is securely seated.

### Contact Extraction



4. After all contacts are inserted, assemble conduit adapter or clamp bars.



1. Remove conduit adapter or clamp bars from connector assembly.



2. Using proper extraction tool, insert tool around contact from front of insulator until tool tip butts against contact shoulder. Push plunger to release contact.



3. Pull wired contact out from rear of insulator.



4. After replacing contact, re-assemble conduit adapter or cable clamp.

## Contact Arrangements

### LEGEND

- Available in MS-K (page 202)  
 ● Available in FRF (page 210)  
 □ Available in CA-KE (page 206)  
 † Available with MS polarization

|                 |                             |                                       |                                  |        |                        |                                  |        |        |
|-----------------|-----------------------------|---------------------------------------|----------------------------------|--------|------------------------|----------------------------------|--------|--------|
| Shell Size      | 8S-1                        | 10S-2                                 | 10SL-3                           | 10SL-4 | 12S-3†                 | 12S-4                            | 14S-1  | 14S-2† |
| No. of Contacts | 1 #16                       | 1 #16                                 | 3 #16                            | 2 #16  | 2 #16                  | 1 #16                            | 3 #16  | 4 #16  |
| Service Rating  | A                           | A                                     |                                  | A      | A                      | D                                |        |        |
| Shell Size      | 14S-5†                      | 14S-6                                 | 14S-9†                           | 16S-1† | 16S-8†                 | 16-9†                            | 16-11† |        |
| No. of Contacts | 5 #16                       | 6 #16                                 | 2- #16                           | 7 #16  | 5 #16                  | 2 #16 (B,D)<br>2 #12 (A,C)       | 2 #12  |        |
| Service Rating  | Inst.                       | Inst.                                 | A                                | A      | A                      |                                  | A      |        |
| Shell Size      | 16-12†                      | 16-13†                                | 18-1†                            | 18-12† | 20-17†                 | 20-18†                           | 20-27† |        |
| No. of Contacts | 1 #4                        | 2 #12<br>(A-Iron; B-<br>B-Constantan) | 10 #16                           | 6 #16  | 1 #16(F)<br>5 #12(A-E) | 6 #16(A,C-E,G,H)<br>3 #12(B,F,I) | 14 #16 |        |
| Service Rating  | A                           | A                                     | A(B,C,F,G)<br>Inst. (all others) | A      | A                      | A                                | A      |        |
| Shell Size      | 22-14†                      | 22-19†                                | 22-22†                           | 24-5†  | 24-10†                 | 24-28†                           |        |        |
| No. of Contacts | 19 #16                      | 14 #16                                | 4 #8                             | 16 #16 | 7 #8                   | 24 #16                           |        |        |
| Service Rating  | A                           | A                                     |                                  | A      | A                      | Inst.                            |        |        |
| Shell Size      | 28-2†                       | 28-11†                                | 28-12†                           | 28-15† | 28-21†                 | 28-22†                           |        |        |
| No. of Contacts | 12 #16(A,L,N)<br>2 #12(M,P) | 18 #16(A-I, N-X)<br>4 #12(J-M)        | 26 #16                           | 35 #16 | 37 #16                 | 3 #16(D-F)<br>3 #4(A-C)          |        |        |
| Service Rating  | D                           | A                                     | A                                | A      | A                      | D                                |        |        |

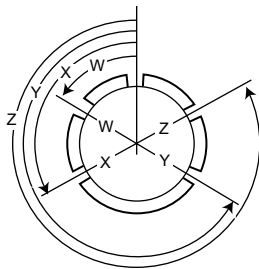
## Contact Arrangements

|                 |                           |       |                                                         |                                                                       |                                                     |
|-----------------|---------------------------|-------|---------------------------------------------------------|-----------------------------------------------------------------------|-----------------------------------------------------|
|                 |                           |       |                                                         |                                                                       |                                                     |
| Shell Size      | 32-1†                     | 32-5† | 32-6†                                                   | 32-7†                                                                 | 32-8†                                               |
| No. of Contacts | 3 #12(A,C,D)<br>2 #0(B,E) | 2 #0  | 16 #16(A-O,S)<br>2 #12(U,V)<br>3 #8(P-T) 2 #4(W,X)<br>A | 28 #16(A-N,W-Z,a-k)<br>7 #12(O-V)<br>Inst. (A,B,h,j)<br>A(all others) | 24 #16(A-L,T-Z,a-e)<br>6 #12(M-S)<br>2 #8(O,R)<br>A |
| Service Rating  | E(A),D(all others)        | D     |                                                         |                                                                       |                                                     |

|                 |        |                                  |       |                                  |
|-----------------|--------|----------------------------------|-------|----------------------------------|
|                 |        |                                  |       |                                  |
| Shell Size      | 32-17† | 36-3†                            | 36-5† | 36-8†                            |
| No. of Contacts | 4 #4   | 3 #12(A,C,E)<br>3 #0(B,D,F)<br>D | 4 #0  | 46 #16(A-X,Z-z)<br>1 #12(Y)<br>A |
| Service Rating  |        |                                  |       |                                  |

## Alternate Positions

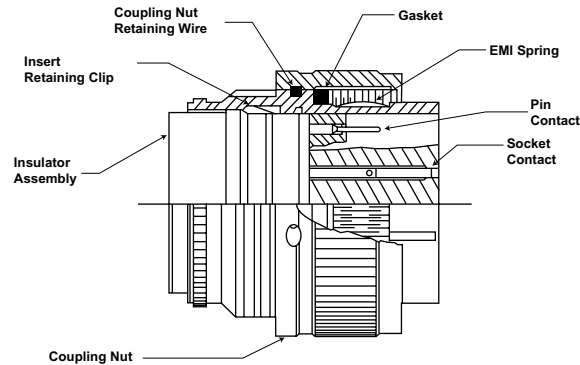
Pin front view;  
Shell rotation



| No. of Contacts | Contact Arrangement | Degrees |     |     |     | No. of Contacts | Contact Arrangement | Degrees |     |     |     |
|-----------------|---------------------|---------|-----|-----|-----|-----------------|---------------------|---------|-----|-----|-----|
|                 |                     | W       | X   | Y   | Z   |                 |                     | W       | X   | Y   | Z   |
| 2               | 12S-3               | 70      | 145 | 215 | 290 | 9               | 20-18               | 35      | 110 | 250 | 325 |
|                 | 14S-9               | 70      | 145 | 215 | 290 | 10              | 18-1                | 70      | 145 | 215 | 290 |
|                 | 16-11               | 35      | 110 | 250 | 325 | 14              | 20-27               | 35      | 110 | 250 | 325 |
|                 | 16-13               | 35      | 110 | 250 | 325 |                 | 22-19               | 80      | 110 | 250 | 280 |
| 4               | 32-5                | 35      | 110 | 250 | 325 |                 | 28-2                | 35      | 110 | 250 | 325 |
|                 | 14S-2               | -       | 120 | 240 | -   | 16              | 24-5                | 80      | 110 | 250 | 280 |
|                 | 16-9                | 35      | 110 | 250 | 325 |                 | 22-14               | 80      | -   | -   | 280 |
|                 | 22-22               | -       | 110 | 250 | -   | 22              | 28-11               | 80      | 110 | 250 | 280 |
|                 | 32-17               | 45      | 110 | 250 | -   |                 | 32-6                | 80      | 110 | 250 | 280 |
| 5               | 36-5                | -       | 120 | 240 | -   | 23              | 24-28               | 80      | 110 | 250 | 280 |
|                 | 14S-5               | -       | 110 | -   | -   | 24              | 28-12               | 90      | 180 | 270 | -   |
|                 | 16S-8               | -       | 170 | 265 | -   |                 | 32-8                | 80      | 125 | 235 | 280 |
| 6               | 32-1                | 80      | 110 | 250 | 280 | 30              | 28-15               | 80      | 110 | 250 | 280 |
|                 | 18-12               | 80      | -   | -   | 280 |                 | 32-7                | 80      | 125 | 235 | 280 |
|                 | 20-17               | 90      | 180 | 270 | -   | 37              | 28-21               | 80      | 110 | 250 | 280 |
|                 | 28-22               | 70      | 145 | 215 | 290 |                 | 36-8                | 80      | 110 | 250 | 280 |
| 7               | 36-3                | 70      | 145 | 215 | 290 |                 |                     |         |     |     |     |
|                 | 16S-1               | 80      | -   | -   | 280 |                 |                     |         |     |     |     |
|                 | 24-10               | 80      | -   | -   | 280 |                 |                     |         |     |     |     |



## Design Features



## Front Release System using standard MS tooling

Cannon's M28840/KFS connectors are designed to meet the rigid specifications of MIL-C-28840. These circular, threaded coupling connectors feature high contact density, front release crimp contacts, high impact shock resistance, and are designed for use with navy shipboard cable MIL-C-915, MIL-C-24640, MIL-C-24643 and MIL-W-16878 wire.

M28840/KFS connectors utilize fluid resistant, fluorosilicone elastomers to provide maximum protection against fuels, oils, coolants and cleansers.

High quality manufacturing processes and materials combine to ensure the optimum in performance and reliability under an extreme range of environmental conditions, which include high impact shock, corrosion, vibration, moisture-resistance and water pressure. Temperature withstanding capabilities range from -55°C to +200°C (-67°F to +392°F)

M28840/KFS connectors are available in nine shell sizes, accommodating from seven contacts in shell size 11 up to 155 contacts in shell size 33, and have a multiple keying arrangement to prevent mismatching.

Also available as KFS connectors are printed circuit contacts for a variety of P.C. board/flex circuit applications, 16 AWG contact sizes,\* EMP adapters/EMI RFI filters, connector savers, press fit solder pins and fiber optic contacts, high performance EMI version and thru-bulkhead fittings.

## EMI Shielding

EMI suppression is obtained by means of spring fingers located on the plug. During mating, multiple spring fingers make contact with the receptacle at least .040 (1.02) before pin and socket electrical engagement occurs. In addition, a metal to metal shield is obtained when accessories are attached to the rear of the connector through a unique spline and ramp system. This total system provides the most effective EMI protection in the industry.

## Scoop Proof

100% scoop-proof protection on all connectors eliminates bent pins as well as inadvertent electrical contact whether pins are mounted in the plug or receptacle.

## Multiple Keying

Locksmith keying allows alternate polarizations eliminating the possibility of mismatching.

## Quick Engagement

Double start-rapid advance thread provides rapid engagement and disengagement of connector in 1-1/2 turns.

## High Density

Maximum density of contacts is obtained without sacrificing ruggedness required for high shock and vibration while holding size to a minimum.

## Corrosion Resistant\*\*

Standard finish - olive drab chromate over cadmium over nickel finish provides in excess of 500 hours of protection from salt spray without degradation of connector performance. Stainless steel with black chromate over cadmium over nickel finish provides protection in areas of direct salt exposure.

\* Consult factory

\*\*KFS connectors are available using alternate materials which will exceed a ten thousand hour (10,000 hrs.) salt spray. These connectors are interchangeable & intermountable with both aluminum and stainless steel connectors from ITT Cannon.

## Contact Arrangements

| Shell Size Designator and Insert Arrangement | A-1   | B-1    | C-1    | D-1    | E-1    | F-1    | G-1    | H-1     | J-1     |
|----------------------------------------------|-------|--------|--------|--------|--------|--------|--------|---------|---------|
| Shell Size                                   | 11    | 13     | 15     | 17     | 19     | 23     | 25     | 29      | 33      |
| Number of Contacts                           | 7 #20 | 12 #20 | 21 #20 | 31 #20 | 42 #20 | 64 #20 | 92 #20 | 121 #20 | 155 #20 |

## Components - Standard

## Standard Contact Part Numbers

| Mating End Size | Wire Barrel Size | MS Contact Part Number |               | Cannon Contact Part Number |              |
|-----------------|------------------|------------------------|---------------|----------------------------|--------------|
|                 |                  | Pin                    | Socket        | Pin                        | Socket       |
| 20              | 20               | M39029/83-508          | M39029/84-509 | 030-8085-700               | 031-8005-700 |
| 20              | 22               | M39029/83-450          | M39029/84-452 | 030-8008-800               | 031-8004-300 |
| 20              | 28               | M39029/83-451          | M39029/84-453 | 030-8009-100               | 031-8004-400 |

## Seal Plug Part Numbers

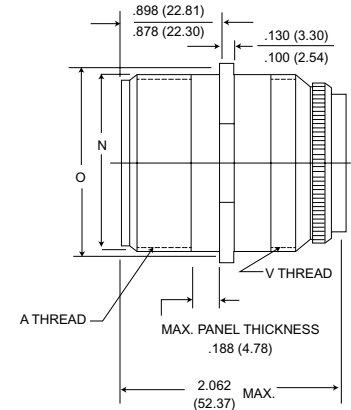
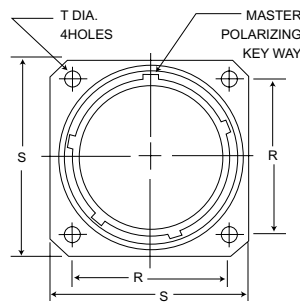
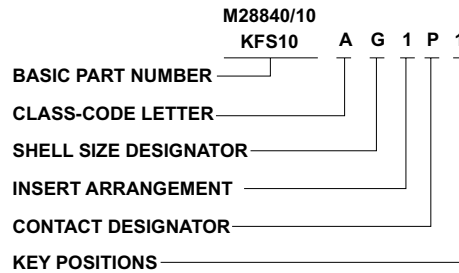
| MS Seal Plug Part Number | Cannon Seal Plug Part Number |
|--------------------------|------------------------------|
| MS27186                  | 980-8003-000                 |
| MS27186                  | 980-8003-000                 |
| MS27186                  | 980-8003-000                 |

## 219

## Wall Mounting Receptacle

M28840/10  
(Class D and DS)

KFS10

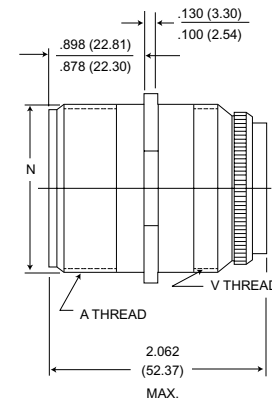
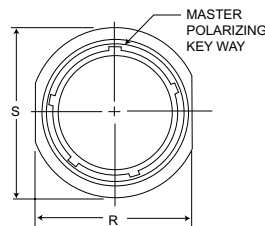
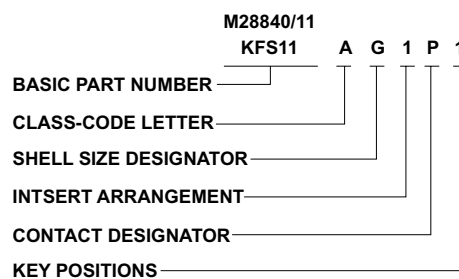


| Shell Size Designator | Shell Size | A Thread Class 2A  | V Thread Class 2A | N Dia. Max.   | O Dia. (Ref. Mtg. Hole) | R T.P.        | S $\pm .020$ (0.51) | T Dia. $\pm .015$ (0.38) - .000 (0.00) |
|-----------------------|------------|--------------------|-------------------|---------------|-------------------------|---------------|---------------------|----------------------------------------|
| A                     | -11        | .750 -1P-.2L-D.S.  | 3/4-20 UNEF       | .750 (19.05)  | .812 (20.62)            | .750 (19.05)  | 1.023 (25.98)       | .115 (2.92)                            |
| B                     | -13        | .875 -1P-.2L-D.S.  | 7/8-20 UNEF       | .875 (22.22)  | .937 (23.80)            | .843 (21.41)  | 1.138 (28.91)       | .115 (2.92)                            |
| C                     | -15        | 1.062 -1P-.2L-D.S. | 1-20 UNEF         | 1.062 (26.97) | 1.124 (28.55)           | .968 (24.59)  | 1.258 (31.95)       | .115 (2.92)                            |
| D                     | -17        | 1.125 -1P-.2L-D.S. | 1-1/8-18 UNEF     | 1.125 (28.58) | 1.187 (30.15)           | 1.015 (25.78) | 1.383 (35.13)       | .115 (2.92)                            |
| E                     | -19        | 1.312 -1P-.2L-D.S. | 1-1/4-18 UNEF     | 1.312 (33.32) | 1.374 (34.90)           | 1.140 (28.96) | 1.508 (38.30)       | .115 (2.92)                            |
| F                     | -23        | 1.500 -1P-.2L-D.S. | 1-7/16-18 UNEF    | 1.500 (38.10) | 1.562 (39.67)           | 1.281 (32.54) | 1.718 (43.64)       | .115 (2.92)                            |
| G                     | -25        | 1.625 -1P-.2L-D.S. | 1-9/16-18 UNEF    | 1.625 (41.28) | 1.687 (42.85)           | 1.392 (35.36) | 1.818 (46.18)       | .142 (3.61)                            |
| H                     | -29        | 1.812 -1P-.2L-D.S. | 1-7/8-16 UN       | 1.812 (46.02) | 1.937 (49.20)           | 1.568 (39.83) | 2.138 (54.31)       | .142 (3.61)                            |
| J                     | -33        | 2.000 -1P-.2L-D.S. | 2-1/16-16 UNS     | 2.000 (50.80) | 2.124 (53.95)           | 1.734 (44.04) | 2.328 (59.13)       | .168 (4.27)                            |

## Cable Connecting Receptacle

M28840/11  
(Class D and DS)

KFS11



| Shell Size Designator | Shell Size | A Thread Class 2A  | V Thread Class 2A | N Dia. Max.   | R $\pm .005$ (0.13) | S $\pm .010$ (0.25) |
|-----------------------|------------|--------------------|-------------------|---------------|---------------------|---------------------|
| A                     | -11        | .750 -1P-.2L-D.S.  | 3/4-20 UNEF       | .750 (19.05)  | .763 (19.38)        | .953 (24.21)        |
| B                     | -13        | .875 -1P-.2L-D.S.  | 7/8-20 UNEF       | .875 (22.22)  | .888 (25.56)        | 1.078 (27.38)       |
| C                     | -15        | 1.062 -1P-.2L-D.S. | 1-20 UNEF         | 1.062 (26.97) | 1.075 (27.30)       | 1.265 (32.13)       |
| D                     | -17        | 1.125 -1P-.2L-D.S. | 1-1/8-18 UNEF     | 1.125 (28.58) | 1.138 (28.91)       | 1.328 (33.73)       |
| E                     | -19        | 1.312 -1P-.2L-D.S. | 1-1/4-18 UNEF     | 1.312 (33.32) | 1.325 (33.66)       | 1.515 (38.48)       |
| F                     | -23        | 1.500 -1P-.2L-D.S. | 1-7/16-18 UNEF    | 1.500 (38.10) | 1.513 (38.43)       | 1.703 (43.26)       |
| G                     | -25        | 1.625 -1P-.2L-D.S. | 1-9/16-18 UNEF    | 1.625 (41.28) | 1.638 (41.61)       | 1.828 (46.43)       |
| H                     | -29        | 1.812 -1P-.2L-D.S. | 1-7/8-16 UN       | 1.812 (46.02) | 1.888 (47.96)       | 2.078 (52.78)       |
| J                     | -33        | 2.000 -1P-.2L-D.S. | 2-1/16-16 UNS     | 2.000 (50.80) | 2.075 (52.70)       | 2.265 (57.53)       |

## Box Mounting Receptacle

M28840/12  
(Class D and DS)

KFS12

**M28840/12**  
**KFS12**    **A G 1 P 1**

**BASIC PART NUMBER** \_\_\_\_\_

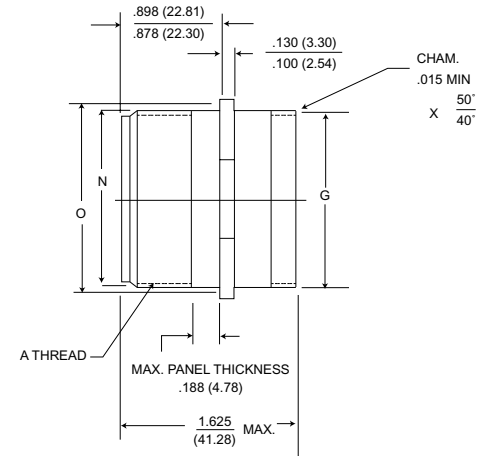
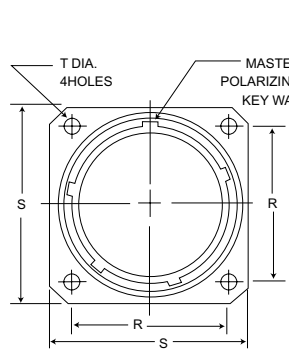
**CLASS-CODE LETTER** \_\_\_\_\_

**SHELL SIZE DESIGNATOR** \_\_\_\_\_

**INSERT ARRANGEMENT** \_\_\_\_\_

**CONTACT DESIGNATOR** \_\_\_\_\_

**KEY POSITIONS** \_\_\_\_\_



| Shell Size Designator | Shell Size | A Thread Class 2A  | N Dia. Max.   | O Dia. (Ref. Mtg. Hole) | R T.P.        | S ±.020 (0.51) | T Dia. +.015 (0.38) - .000 (0.00) | G Max.        |
|-----------------------|------------|--------------------|---------------|-------------------------|---------------|----------------|-----------------------------------|---------------|
| A                     | -11        | .750 -1P-.2L-D.S.  | .750 (19.05)  | .812 (20.62)            | .750 (19.05)  | 1.023 (25.98)  | .115 (2.92)                       | .755 (19.18)  |
| B                     | -13        | .875 -1P-.2L-D.S.  | .875 (22.22)  | .937 (23.80)            | .843 (21.41)  | 1.138 (28.91)  | .115 (2.92)                       | .880 (22.35)  |
| C                     | -15        | 1.062 -1P-.2L-D.S. | 1.062 (26.97) | 1.124 (28.55)           | .968 (24.59)  | 1.258 (31.95)  | .115 (2.92)                       | 1.005 (25.53) |
| D                     | -17        | 1.125 -1P-.2L-D.S. | 1.125 (28.58) | 1.187 (30.15)           | 1.015 (25.78) | 1.383 (35.13)  | .115 (2.92)                       | 1.130 (28.70) |
| E                     | -19        | 1.312 -1P-.2L-D.S. | 1.312 (33.32) | 1.374 (34.90)           | 1.140 (28.96) | 1.508 (38.30)  | .115 (2.92)                       | 1.255 (31.88) |
| F                     | -23        | 1.500 -1P-.2L-D.S. | 1.500 (38.10) | 1.562 (39.67)           | 1.281 (32.54) | 1.718 (43.64)  | .115 (2.92)                       | 1.443 (36.65) |
| G                     | -25        | 1.625 -1P-.2L-D.S. | 1.625 (41.28) | 1.687 (42.85)           | 1.392 (35.36) | 1.818 (46.18)  | .142 (3.61)                       | 1.567 (39.80) |
| H                     | -29        | 1.812 -1P-.2L-D.S. | 1.812 (46.02) | 1.937 (49.20)           | 1.568 (39.83) | 2.138 (54.31)  | .142 (3.61)                       | 1.880 (47.75) |
| J                     | -33        | 2.000 -1P-.2L-D.S. | 2.000 (50.80) | 2.124 (53.95)           | 1.734 (44.04) | 2.328 (59.13)  | .168 (4.27)                       | 2.067 (52.50) |

## Jam Nut Receptacle

M28840/14  
(Class D and DS)

KFS14

**M28840/14**  
**KFS14**    **A G 1 P 1**

**BASIC PART NUMBER** \_\_\_\_\_

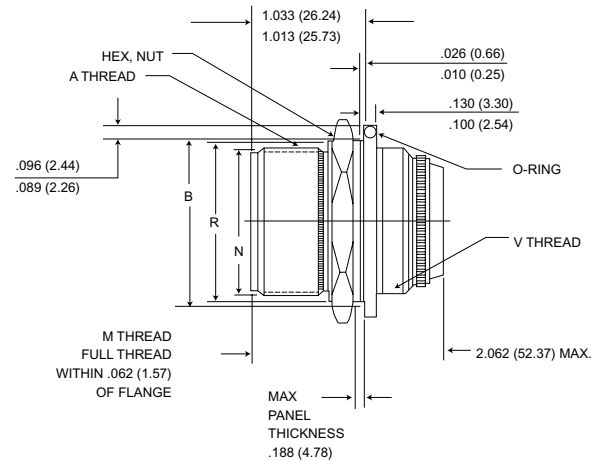
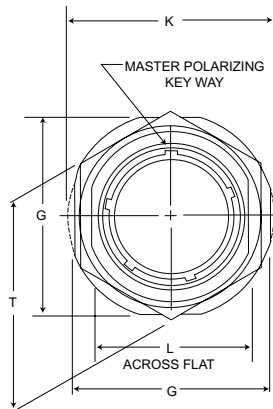
**CLASS-CODE LETTER** \_\_\_\_\_

**SHELL SIZE DESIGNATOR** \_\_\_\_\_

**INTSERT ARRANGEMENT** \_\_\_\_\_

**CONTACT DESIGNATOR** \_\_\_\_\_

**KEY POSITIONS** \_\_\_\_\_

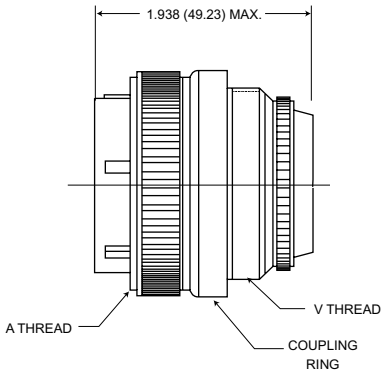
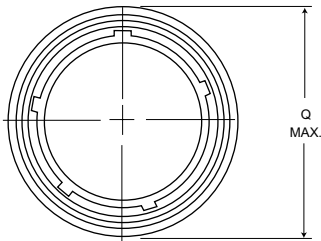
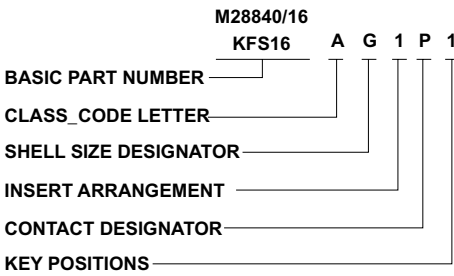


| Shell Size Designator | Shell Size | A Thread Class 2A  | M Thread Class 2A | V Thread Class 2A | G ±.010 (0.25) | K ±.010 (0.25) | L +.009 (0.23) - .000 (0.00) | N Max.        | R Max.        | B ±.005 (0.13) | T ±.017 (0.43) |
|-----------------------|------------|--------------------|-------------------|-------------------|----------------|----------------|------------------------------|---------------|---------------|----------------|----------------|
| A                     | -11        | .750 -1P-.2L-D.S.  | 7/8-20 UNEF       | 3/4-20 UNEF       | 1.264 (32.11)  | 1.358 (34.49)  | .832 (21.13)                 | .750 (19.05)  | .875 (22.22)  | .974 (24.74)   | 1.062 (26.97)  |
| B                     | -13        | .875 -1P-.2L-D.S.  | 1-20 UNEF         | 7/8-20 UNEF       | 1.389 (35.28)  | 1.498 (38.05)  | .957 (24.31)                 | .875 (22.22)  | 1.000 (25.40) | 1.099 (27.91)  | 1.188 (30.18)  |
| C                     | -15        | 1.062 -1P-.2L-D.S. | 1-3/16-18 UNEF    | 1-20 UNEF         | 1.577 (40.06)  | 1.671 (42.44)  | 1.144 (29.06)                | 1.062 (26.97) | 1.188 (30.18) | 1.287 (32.69)  | 1.375 (34.92)  |
| D                     | -17        | 1.125 -1P-.2L-D.S. | 1-1/4-18 UNEF     | 1-1/8-18 UNEF     | 1.639 (41.63)  | 1.733 (44.02)  | 1.207 (30.66)                | 1.125 (28.58) | 1.250 (31.75) | 1.349 (34.26)  | 1.438 (36.53)  |
| E                     | -19        | 1.312 -1P-.2L-D.S. | 1-7/16-18 UNEF    | 1-1/4-18 UNEF     | 1.827 (46.41)  | 1.921 (48.79)  | 1.394 (35.41)                | 1.312 (33.32) | 1.438 (36.53) | 1.537 (39.04)  | 1.625 (41.28)  |
| F                     | -23        | 1.500 -1P-.2L-D.S. | 1-5/8-18 UNEF     | 1-7/16-18 UNEF    | 2.014 (51.16)  | 2.108 (53.54)  | 1.582 (40.18)                | 1.500 (38.10) | 1.625 (41.28) | 1.724 (43.79)  | 1.812 (46.02)  |
| G                     | -25        | 1.625 -1P-.2L-D.S. | 1-3/4-18 UNS      | 1-9/16-18 UNEF    | 2.139 (54.33)  | 2.233 (56.72)  | 1.707 (43.36)                | 1.625 (41.28) | 1.750 (44.45) | 1.849 (46.96)  | 2.000 (50.80)  |
| H                     | -29        | 1.812 -1P-.2L-D.S. | 1-15/16-16 UN     | 1-7/8-16 UN       | 2.327 (59.11)  | 2.425 (61.60)  | 1.894 (48.11)                | 1.812 (46.02) | 1.938 (49.23) | 2.037 (51.74)  | 2.188 (55.58)  |
| J                     | -33        | 2.000 -1P-.2L-D.S. | 2-1/8-16 UN       | 2-1/16-16 UNS     | 2.514 (63.86)  | 2.608 (66.24)  | 2.082 (52.88)                | 2.000 (50.80) | 2.125 (54.98) | 2.224 (56.49)  | 2.375 (60.32)  |

Cable Connecting Plug

M28840/16  
(Class D and DS)

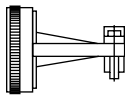
KFS16



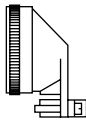
| Shell Size Designator | Shell Size | A Thread Class 2B   | V Thread Class 2A | Q Dia. Max.   |
|-----------------------|------------|---------------------|-------------------|---------------|
| A                     | -11        | .750 -.1P-.2L-D.S.  | 3/4-20 UNEF       | 1.028 (26.11) |
| B                     | -13        | .875 -.1P-.2L-D.S.  | 7/8-20 UNEF       | 1.141 (28.98) |
| C                     | -15        | 1.062 -.1P-.2L-D.S. | 1-20 UNEF         | 1.263 (32.08) |
| D                     | -17        | 1.125 -.1P-.2L-D.S. | 1-1/8-18 UNEF     | 1.387 (35.23) |
| E                     | -19        | 1.312 -.1P-.2L-D.S. | 1-1/4-18 UNEF     | 1.513 (38.43) |
| F                     | -23        | 1.500 -.1P-.2L-D.S. | 1-7/16-18 UNEF    | 1.703 (43.26) |
| G                     | -25        | 1.625 -.1P-.2L-D.S. | 1-9/16-18 UNEF    | 1.825 (46.36) |
| H                     | -29        | 1.812 -.1P-.2L-D.S. | 1-7/8-16 UN       | 2.143 (54.43) |
| J                     | -33        | 2.000 -.1P-.2L-D.S. | 2-1/16-16 UNS     | 2.329 (59.16) |

Backshell Styles

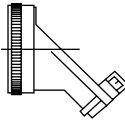
M28840



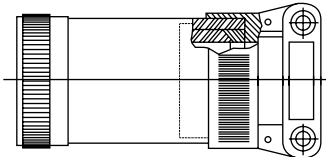
M28840/1



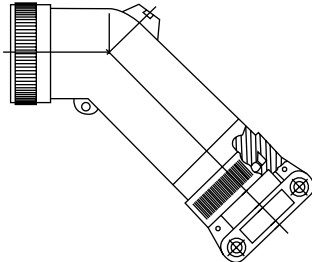
M28840/2



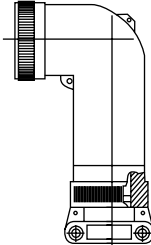
M28840/3



M28840/6

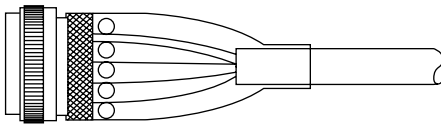


M28840/9

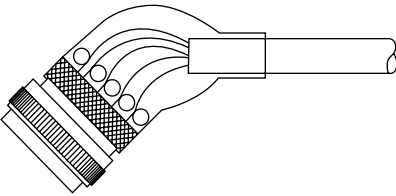


M28840/8

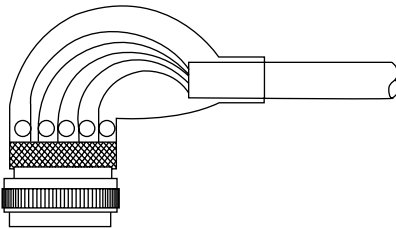
KFS-UBK/KFS-RBK/KFS-TBK  
Spin coupling adapter and heat shrinkable boots.  
(For UBK - Unshielded Boot, RBK - Shielded Boot, TBK - \*Tinel-Lock-Shielded Boot.)



Straight (-00°)



45° (-45°)

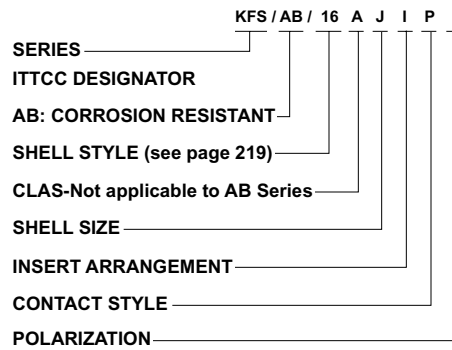


Right Angle (-90°)

Consult ITT Cannon Canada for ordering information.  
\*Trademark of Raychem

## KFS Aluminum Bronze (AB)Series, Corrosion Resistant

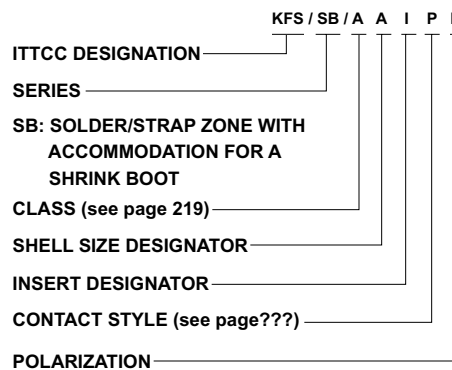
The KFS/AB/series of connecting devices has been developed specifically for long term corrosion resistance without sacrificing mechanical strength or electrical requirements. The AB series is capable of withstanding at least 10,000 hours of salt spray without noticeable change in performance and is completely intermatable/intermountable with their aluminum and stainless steel counterparts. All MIL-C-28840 parameters have been maintained. Applications include - Navy shipboard, both above and below decks, submersibles including ROV's, towed bodies and submarines for military/defence and R&D/leisure applications.



## KFS/SB Series

This series features a solder zone for braided cable and a lip to accommodate a shrink boot. The standard M28840 is threaded to accept a large metal backshell for the very heavy MIL-C-915 type cables. Recently, low smoke, halogen free cable has been introduced which is quite flexible and does not need a heavy backshell. EMI shielding effectiveness has been greatly enhanced by soldering the braid directly to the connector.

Note: All M28840 parameters (including tooling) have been maintained.



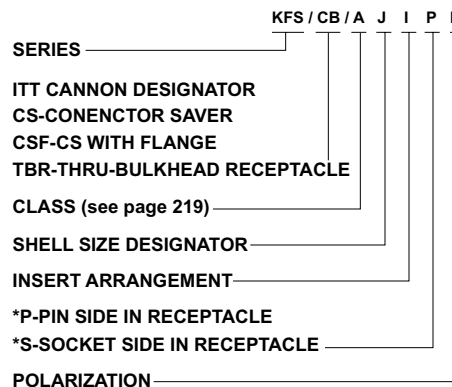
## KFS/CB Connector Saver Series

### KFS/CSF Connector Saver with flange

### KFS/TBR Connector Saver thru-bulkhead receptacle

This series of connecting devices is used to protect the M28840/KFS receptacle interface (either pin or socket) from damage. The TBR series is a thru-bulkhead receptacle which allows cable plugs to be wired and tested prior to final assembly. Plugs are then mated to the mounted TBR connector to complete the installation.

The connector saver, connector saver with flange and thru-bulkhead receptacle all feature a hard dielectric insert assembly with lead-in chamfers for positive alignment of pins and sockets. Environmental sealing is maintained per MIL-C-28840 by way of a gasket seal under the coupling nut mechanism. The series conforms to all parameters outlined in MIL-C-28840 and is intended to be used in areas of extreme abuse. A clear cadmium over nickel plate identifies the CS series from standard product.

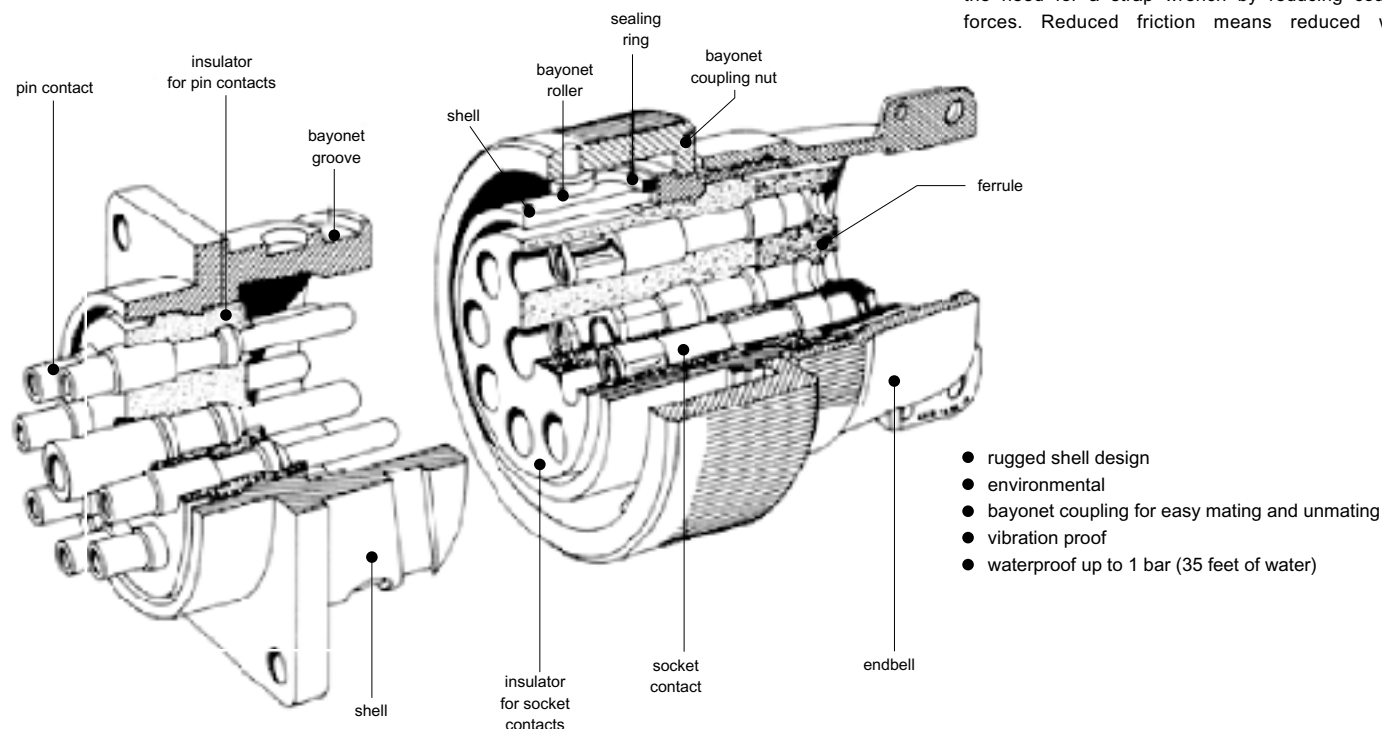


ITT Cannon's circular bayonet coupling connectors are basically MIL-C-5015 type connectors that provide superior performance.

Cannon's CA Bayonet is designed for the most difficult environmental conditions.

The insulators, grommets and o-rings are all made of high quality polychloroprene or high performance fuel resistant fluoroelelastomers that can withstand temperature extremes from -55û to +200ûC.

Cannon designed the CA Bayonet with a gradual slope of the coupling ramp and unique roller bolt (not a fixed stud) bayonet pins. A quick 120 degrees turn of the coupling nut and the roller bolt audibly locks into place. The locked position is marked with colored arrows. The roller bolt feature eliminates the need for a strap wrench by reducing coupling forces. Reduced friction means reduced wear.



## Performance and Material Specifications - CA Bayonet

### MATERIALS AND FINISHES

| Item      | Material        | Finish                                                                                                                  |
|-----------|-----------------|-------------------------------------------------------------------------------------------------------------------------|
| Shell     | Aluminum Alloy  | Olive drap chromate coating over cadmium plating.<br>Special Finish: A 105 clear chromate coating over cadmium plating. |
| Insulator | Polychloroprene | -                                                                                                                       |
| Grommets  | Polychloroprene | -                                                                                                                       |
| Contacts  | Copper Alloy    | Hard Silver<br>Special Finish: A 176 nickel and hard gold plating.                                                      |

### MECHANICAL FEATURES

|                             |                                                             |
|-----------------------------|-------------------------------------------------------------|
| <b>Ambient temperature:</b> | -55/125ûC (-67/257ûF)                                       |
| <b>Safety provisions:</b>   | IP 67 according to DIN 40050 (1 bar pressure after 12 hrs.) |
| <b>Vibration test:</b>      | 200 m/s <sup>2</sup> at 10 to 2000 Hz                       |
| <b>Mating cycles:</b>       | Min. 500                                                    |

### ELECTRICAL DATA

Contact rating at 68ûF (+20ûC)

| Contact Size Awg/Metric | Max Current A |
|-------------------------|---------------|
| 10                      | 8             |
| 16S/15S                 | 22            |
| 16/15                   | 22            |
| 12/25                   | 41            |
| 8/60/100                | 74            |
| 4/160                   | 135           |
| 0/500                   | 245           |

### Test Voltage

According to VG95319 Part 2, Test Nr. 5.13 and VG 95210 Part 31. Test voltage for service rating:

| Service rating | Test voltage Vrms |
|----------------|-------------------|
| Instruments    | 1050              |
| A              | 1600              |
| B              | 4000              |
| D              | 2500              |
| E              | 3000              |

### Contact Resistance

Contact resistance tested according to VG95319 Part 2, Test Nr.5.10.1

| Contact Size (Metric) | Max. Contact Resistance AWG | M½  |
|-----------------------|-----------------------------|-----|
| 10                    | -                           | 12  |
| 15S/15                | 16S/16                      | 6   |
| 25                    | 12                          | 3   |
| 60/100                | 8                           | 1   |
| 160                   | 4                           | 0,3 |
| 500                   | 0                           | 0.2 |

## How to Order - CA Bayonet

|                                                                                                                                                                                                                                                                          |    |      |   |      |   |   |   |   |    |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----|------|---|------|---|---|---|---|----|
|                                                                                                                                                                                                                                                                          | CA | 3106 | E | 18-1 | S | * | B | - | ** |
| SERIES                                                                                                                                                                                                                                                                   |    |      |   |      |   |   |   |   |    |
| SHELL STYLE                                                                                                                                                                                                                                                              |    |      |   |      |   |   |   |   |    |
| CLASS                                                                                                                                                                                                                                                                    |    |      |   |      |   |   |   |   |    |
| SHELL SIZE                                                                                                                                                                                                                                                               |    |      |   |      |   |   |   |   |    |
| CONTACT ARRANGEMENT                                                                                                                                                                                                                                                      |    |      |   |      |   |   |   |   |    |
| TYPE OF CONTACT                                                                                                                                                                                                                                                          |    |      |   |      |   |   |   |   |    |
| POLARIZATION                                                                                                                                                                                                                                                             |    |      |   |      |   |   |   |   |    |
| CONNECTORS WITH BAYONET COUPLING                                                                                                                                                                                                                                         |    |      |   |      |   |   |   |   |    |
| DASH                                                                                                                                                                                                                                                                     |    |      |   |      |   |   |   |   |    |
| MODIFICATION                                                                                                                                                                                                                                                             |    |      |   |      |   |   |   |   |    |
| POLARIZATION                                                                                                                                                                                                                                                             |    |      |   |      |   |   |   |   |    |
| * Insert letter W, X, Y or Z                                                                                                                                                                                                                                             |    |      |   |      |   |   |   |   |    |
| On all CA connectors, MIL-C-5015 polarization is available. Polarization will be used to prevent mismatching. Polarization is achieved by turning the insulators clockwise (pin) and counterclockwise (socket) against the normal position of the shells. (See page 228) |    |      |   |      |   |   |   |   |    |
| BAYONET COUPLING                                                                                                                                                                                                                                                         |    |      |   |      |   |   |   |   |    |
| B - Bayonet coupling                                                                                                                                                                                                                                                     |    |      |   |      |   |   |   |   |    |
| DASH                                                                                                                                                                                                                                                                     |    |      |   |      |   |   |   |   |    |
| MODIFICATION                                                                                                                                                                                                                                                             |    |      |   |      |   |   |   |   |    |
| All CA Bayonet connectors come with installed solder contacts unless a modification code is added to the part number.                                                                                                                                                    |    |      |   |      |   |   |   |   |    |
| 01 - Metric crimp contacts                                                                                                                                                                                                                                               |    |      |   |      |   |   |   |   |    |
| 02 - Adapter for shrink boots, AWG crimp contacts                                                                                                                                                                                                                        |    |      |   |      |   |   |   |   |    |
| 03 - Adapter for shrink boots, metric crimp contacts                                                                                                                                                                                                                     |    |      |   |      |   |   |   |   |    |
| 04 - Rear mounting, threaded holes, metric crimp contacts                                                                                                                                                                                                                |    |      |   |      |   |   |   |   |    |
| 05 - Rear mounting, through holes in flange                                                                                                                                                                                                                              |    |      |   |      |   |   |   |   |    |
| 06 - Adapter for shrink boots                                                                                                                                                                                                                                            |    |      |   |      |   |   |   |   |    |
| 08 - 90° angle shell, threaded holes in flange*                                                                                                                                                                                                                          |    |      |   |      |   |   |   |   |    |
| 09 - 90° end bell, 4 through holes*                                                                                                                                                                                                                                      |    |      |   |      |   |   |   |   |    |
| 13 - Endbell for shielded cables and heat shrink boots, solder contacts                                                                                                                                                                                                  |    |      |   |      |   |   |   |   |    |
| 14 - Endbell for shielded cables and heat shrink boots, metric crimp contacts                                                                                                                                                                                            |    |      |   |      |   |   |   |   |    |
| 15 - Endbell for shielded cables and heat shrink boots, AWG crimp contacts                                                                                                                                                                                               |    |      |   |      |   |   |   |   |    |
| 109 - F 80 rear mount with four threaded holes**                                                                                                                                                                                                                         |    |      |   |      |   |   |   |   |    |
| 111 - Rear mount with four threaded holes***                                                                                                                                                                                                                             |    |      |   |      |   |   |   |   |    |
| F 80 - AWG crimp contacts                                                                                                                                                                                                                                                |    |      |   |      |   |   |   |   |    |
| F 42 - Less ferrule, grommet and backshell                                                                                                                                                                                                                               |    |      |   |      |   |   |   |   |    |
| * for CA 3100 only                                                                                                                                                                                                                                                       |    |      |   |      |   |   |   |   |    |
| ** For receptacles only                                                                                                                                                                                                                                                  |    |      |   |      |   |   |   |   |    |

|                                                                                |
|--------------------------------------------------------------------------------|
| <b>SERIES</b>                                                                  |
| CA - Circular Connectors                                                       |
| <b>SHELL STYLE</b>                                                             |
| 3100 Wall mounting receptacle                                                  |
| 3101 Cable connecting plug                                                     |
| 3102 Box mounting receptacle                                                   |
| 3106 Plug, straight                                                            |
| 3107 Jam nut receptacle (upon request)                                         |
| 3108 Plug 90                                                                   |
| <b>CLASS</b>                                                                   |
| E - Environmental with resilient insulators and endbell with clamp and bushing |
| F - Environmental with resilient insulator and endbell for flex tube           |
| R - Environmental with resilient insulator and shortened light-weight enbell   |
| <b>SHELL SIZE</b>                                                              |
| Size 10 SL to 36 are available.                                                |
| <b>CONTACT ARRANGEMENT</b>                                                     |
| See page 227.                                                                  |
| <b>CONTACT TYPE</b>                                                            |
| P - Pin contact                                                                |
| S - Socket                                                                     |

CA-COM and CA-COM-B connectors meet the requirements of MIL-C-5015. They were developed especially for industrial usage. CA-COM series connectors offer the same mounting dimensions and contact arrangements as MIL-C-5015 and VG 95234 connectors.

CA-COM and CA-COM-B connectors are available as:

- Wall mounting receptacle
- Cable connecting plug
- Box mounting receptacle
- Plug straight
- Plug 90°

Wall mounting receptacles and cable connecting plugs (straight and 90°) are available with:

- Endbell with cable clamp
- Endbell for flex tubes
- Adapter combined for PG termination e.cc. to DIN46320 and
- Adapter for heat shrink boots

ITT Cannon also provides you with appropriate accessories like:

- Protective metal caps with sash chain
- Cable clamps
- Cable bushings
- Sealings gaskets



## Advantages

- threaded coupling - CA-COM/bayonet coupling
- CA-COM-B
- mateable with MIL-C-5015 connectors
- solder or crimp contacts
- contact arrangements with 1 to 61 contacts available
- wire size: 1.5mm² up to 50 mm²
- aluminum alloy shells withstand great mechanical strain
- surface protected by a nickel plating
- resilient insulator (Polychloroprene) for extreme temperatures (from - 55° to + 125°C)
- resistant against aggressive fluids like fuel, oil etc.
- environmental - with adapter for PG termination or heat shrink boots
- at least 500 mating cycles
- spray-water proof - CA-COM/waterproof (1 bar, 12 hours) - CA-COM-B (with modification - 44 which includes seal ring and grommet).

## Performance and Material Specifications-CA-COM

### MATERIALS

|                        |                               |
|------------------------|-------------------------------|
| Shell                  | Aluminum alloy, nickel plated |
| Contacts               | Copper alloy, tin plated      |
| Insulator and grommets | Polychloroprene               |

### ELECTRICAL

| Rated Current<br>20°C ambient temperature |                                 |
|-------------------------------------------|---------------------------------|
| Contact Size                              | Max. Rated Current <sup>①</sup> |
| 16S/15S                                   | 22A                             |
| 16/15                                     | 22A                             |
| 12/25                                     | 41A                             |

Other sizes, see Page 224

<sup>①</sup> This applies only to the max. rated current for one contact. If several contacts in one arrangement are loaded with higher current the specific heat and the ambient temperature may not exceed +125°C.

### MECHANICAL

|                            |            |
|----------------------------|------------|
| Max. operating temperature | - 55/125°C |
| Mating cycles              | min. 500   |

## How to Order-CA-COM

### SERIES

CA - ITT Cannon designation

### SHELL STYLE

- 00 - wall mounting receptacle
- 01 - cable connecting plug
- 02 - box mounting receptacle
- 20 - box mounting receptacle for rear mounting (only bayonet version)
- 06 - straight plug
- 08 - 90° plug

### CLASS

- COM-E - endbell with cable clamp
- COM-F - endbell for flex tube
- COM-PG - adapter for heat shrink boots and PG termination, environmental
- COM-L - solder termination for printed circuits

### SHELL SIZE

- 10SL, 12S, 14S, 16S, 16, 18,
- 20, 22, 24, 28, 32, 36

### SERIES

### SHELL STYLE

### CLASS

### SHELL SIZE

### CONTACT ARRANGEMENT

### CONTACT TYPE

### ALTERNATE INSERT POSITION

### BAYONET COUPLING\*

### MODIFICATION

\* Do not use for CA-COM with thread coupling

### CONTACT ARRANGEMENT

See page 227

### CONTACT TYPE

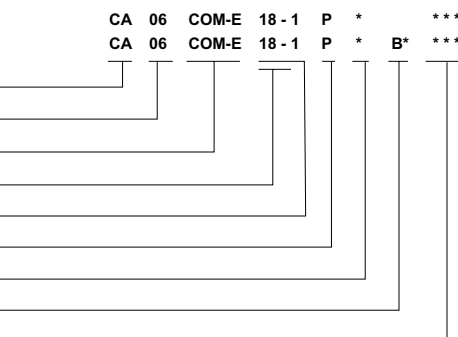
- P - pin contact
- S - socket contact

### ALTERNATE INSERT POSITION

Insert positions of insulator, see page 228

### COUPLING B

- with bayonet coupling
- without designation: with threaded coupling



### MODIFICATION\*

- 01 - metric crimp contacts
- 03 - adapter for heat shrink and metric crimp contacts (Mod. for bayonet coupling)
- 06 - adapter for heat shrink and solder contacts (Mod. for bayonet coupling)
- DN - adapter for heat shrink boots solder contacts (Mod. for bayonet coupling)
- F80 - AWG crimp contacts

\* All CA Bayonet connectors come with installed solder contacts unless a modification code is added to the part number.

## Contact Arrangements-CA Bayonet/CA-COM

| Shell Size | Contact Arrangement | No. of contacts | Contact Size AWG | Shell Size | Contact Arrangement | No. of contacts | Contact Size AWG | Shell Size | Contact Arrangement | No. of contacts | Contact Size AWG |
|------------|---------------------|-----------------|------------------|------------|---------------------|-----------------|------------------|------------|---------------------|-----------------|------------------|
| 10SL       | 10SL-3▲             | 3               | 16               | 18         | 18-22               | 3               | 16               | 24         | 24-22               | 4               | 8                |
|            | 10SL-4▲             | 2               | 16               |            | 18-23*              | 10              | 16               |            | 24-28               | 24              | 16               |
| 12S        | 12S-1*              | 2               | 16               |            | 18-24*              | 10              | 16               | 28         | 24A24               | 12              | 12               |
|            | 12S-2*              | 2               | 16               |            | 18-25*              | 2               | 12               |            | 24A35               | 2               | 12               |
|            | 12S-3               | 2               | 16               |            | 18-27*              | 2               | 12               |            |                     | 14              | 16               |
|            | 12S-4               | 1               | 16               |            |                     | 1               | 16               |            | 28-11▲              | 4               | 12               |
|            | 12SA10              | 4               | 16               |            | 18A31*              | 10              | 16               |            |                     | 18              | 16               |
| 14S        | 14S-1               | 3               | 16               | 20         | 20-2▲               | 1               | 0                |            | 28-12               | 26              | 16               |
|            | 14S-2               | 4               | 16               |            | 24-4                | 4               | 12               |            | 28-13*              | 26              | 16               |
|            | 14S-4               | 1               | 16               |            | 20-6                | 3               | 16               |            | 28-15               | 35              | 16               |
|            | 14S-5               | 5               | 16               |            | 20-7                | 8               | 16               |            | 28-16               | 20              | 16               |
|            | 14S-6▲              | 6               | 16               |            | 20-8▲               | 2               | 8                |            | 28-20▲              | 10              | 12               |
|            | 14S-7               | 3               | 16               |            |                     | 4               | 16               |            |                     | 4               | 16               |
|            | 14S-9               | 2               | 16               |            | 20-11               | 13              | 16               |            | 28-21▲              | 37              | 16               |
|            | 14S-10              | 4               | 16               |            | 20-15▲              | 7               | 12               |            | 28-22               | 3               | 4                |
|            | 14S-11*             | 4               | 16               |            | 20-16               | 2               | 12               |            |                     | 3               | 16               |
|            | 14S-12*             | 3               | 16               |            |                     | 7               | 16               |            | 28A16               | 4               | 4                |
|            | 14S-13*             | 3               | 16               |            | 20-19               | 3               | 8                |            |                     | 5               | 16               |
|            | 14S-14*             | 4               | 16               |            | 20-24               | 2               | 8                |            | 28A63▲              | 9               | 12               |
| 16S        | 16S-1▲              | 7               | 16               |            |                     | 2               | 16               | 32         |                     | 19              | 16               |
|            | 16S-4               | 2               | 16               |            | 20-25               | 13              | 16               |            | 32-1▲               | 2               | 0                |
|            | 16S-5               | 3               | 16               |            | 20-27               | 14              | 16               |            |                     | 3               | 12               |
|            | 16S-8               | 5               | 16               |            | 20-29               | 17              | 16               |            | 32-5                | 2               | 0                |
|            | 16S-15*             | 2               | 16               |            | 20-30*              | 13              | 16               |            | 32-6▲               | 2               | 4                |
|            | 16S-16*             | 2               | 16               |            | 20-32*              | 8               | 16               |            |                     | 3               | 8                |
|            | 16SA18*             | 7               | 16               |            | 20-33               | 11              | 16               |            |                     | 2               | 12               |
|            | 16SA19*             | 7               | 16               |            | 20A9▲               | 9               | 12               |            |                     | 16              | 16               |
|            | 16SA20*             | 7               | 16               |            | 20A16               | 13              | 16               |            | 32-7▲               | 7               | 12               |
|            | 16SA21*             | 7               | 16               |            | 20A48▲              | 19              | 16               |            |                     | 28              | 16               |
| 16         | 16-7                | 2               | 16               | 22         | 21-1                | 2               | 8                |            | 32-8                | 6               | 12               |
|            |                     | 1               | 8                |            | 22-2▲               | 3               | 8                |            |                     | 24              | 16               |
|            | 16-9                | 2               | 12               |            | 22-7                | 1               | 0                |            | 32-13               | 5               | 12               |
|            |                     | 2               | 16               |            | 22-9                | 3               | 12               |            |                     | 18              | 16               |
|            | 16-10▲              | 3               | 12               |            | 22-12▲              | 2               | 8                |            | 32-15               | 2               | 0                |
|            | 16-11               | 2               | 12               |            |                     | 3               | 16               |            |                     | 6               | 12               |
| 18         | 16-12▲              | 1               | 4                |            | 22-14▲              | 19              | 16               | 36         | 32-16*              | 2               | 4                |
|            | 18-1▲               | 10              | 16               |            | 22-15               | 5               | 12               |            |                     | 3               | 8                |
|            | 18-3                | 2               | 12               |            |                     | 1               | 16               |            |                     | 2               | 12               |
|            | 18-4                | 4               | 16               |            | 22-19               | 14              | 16               |            |                     | 16              | 16               |
|            | 18-5                | 2               | 12               |            | 22-20               | 9               | 16               |            | 32-17               | 4               | 4                |
|            |                     | 1               | 16               |            | 22-22▲              | 4               | 8                |            | 32-19*              | 2               | 0                |
|            | 18-6                | 1               | 4                |            | 22-23               | 8               | 12               |            |                     | 3               | 12               |
|            | 18-8                | 1               | 12               |            | 22-27▲              | 1               | 8                |            | 32-20*              | 2               | 4                |
|            |                     | 7               | 16               |            |                     | 8               | 16               |            |                     | 3               | 8                |
|            | 18-9                | 2               | 12               | 24         | 22-30*              | 19              | 16               |            |                     | 2               | 12               |
|            |                     | 5               | 16               |            | 24-2                | 7               | 12               |            |                     | 16              | 16               |
|            | 18-10               | 4               | 12               |            |                     |                 |                  |            | 32A10               | 54              | 16               |
|            | 18-11▲              | 5               | 12               |            | 24-7                | 2               | 12               |            | 32A30*              | 2               | 0                |
|            | 18-12               | 6               | 16               |            |                     | 14              | 16               |            |                     | 3               | 12               |
|            | 18-13               | 1               | 8                |            | 24-9                | 2               | 4                |            | 32A69▲              | 20              | -                |
|            |                     | 3               | 12               |            | 24-10▲              | 7               | 8                |            |                     | 41              | -                |
|            | 18-17*              | 2               | 12               |            | 24-11▲              | 3               | 8                |            | 36-3                | 3               | 0                |
|            |                     | 5               | 16               |            |                     | 6               | 12               |            |                     | 3               | 12               |
|            | 18-19               | 10              | 16               |            | 24-12▲              | 2               | 4                |            | 36-5▲               | 4               | 0                |
|            | 18-20               | 5               | 16               |            |                     | 3               | 12               |            | 36-10▲              | 48              | 16               |
| 18-21      | 3                   | 12              |                  |            | 24-19               | 12              | 16               |            | 36-11*              | 48              | 16               |
|            |                     |                 |                  |            | 24-20               | 2               | 12               |            | 36-12*              | 48              | 16               |
|            |                     |                 |                  |            |                     | 9               | 16               |            | 36-14               | 5               | 8                |
|            |                     |                 |                  |            |                     |                 |                  |            |                     | 5               | 12               |
|            |                     |                 |                  |            |                     |                 |                  |            |                     | 6               | 16               |
|            |                     |                 |                  |            |                     |                 |                  |            | 36-15               | 35              | 16               |
|            |                     |                 |                  |            |                     |                 |                  |            | 36A98               | 8               | 8                |
|            |                     |                 |                  |            |                     |                 |                  |            |                     | 31              | 16               |

▲ VG 95234 contact arrangement

\* Standard contact arrangement with specail alternation of contact insert

## Alternate Insert Positions-CA Bayonet/CA-COM

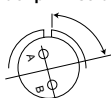
## Standard Inserts

X and Y are insert positions in accordance with VG 95234\*

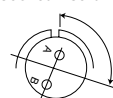
All views are looking into front of pin insert or rear of socket insert.



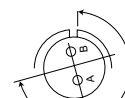
Normal Position



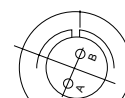
Position W



Position X



Position Y



Position Z

| Contact arrangement | W° | X°  | Y°  | Z°  |
|---------------------|----|-----|-----|-----|
| 10SL-3              |    |     |     |     |
| 10SL-4              |    |     |     |     |
| 12S-3               | 70 | 145 | 215 | 290 |
| 12SA-10             |    |     |     |     |
| 14S-1               |    |     |     |     |
| 14S-2               |    | 120 | 240 |     |
| 14S-4               |    |     |     |     |
| 14S-5               |    | 110 |     |     |
| 14S-6               |    |     |     |     |
| 14S-7               | 90 | 180 | 270 |     |
| 14S-9               | 70 | 145 | 215 | 290 |
| 16S-1               | 80 |     |     | 280 |
| 16S-4               | 35 | 110 | 250 | 325 |
| 16S-5               | 70 | 145 | 215 | 290 |
| 16S-8               |    | 170 | 265 |     |
| 16-7                | 80 | 110 | 250 | 280 |
| 16-9                | 35 | 110 | 250 | 325 |
| 16-10               | 90 | 180 | 270 |     |
| 16-11               | 35 | 110 | 250 | 325 |
| 16-12               |    |     |     |     |
| 18-1                | 70 | 145 | 215 | 290 |
| 18-3                | 35 | 110 | 250 | 325 |
| 18-4                | 35 | 110 | 250 | 325 |
| 18-5                | 80 | 110 | 250 | 280 |
| 18-6                |    |     |     |     |
| 18-8                | 70 |     |     | 290 |
| 18-9                | 80 | 110 | 250 | 280 |
| 18-10               |    | 120 | 240 |     |
| 18-11               |    | 170 | 265 |     |
| 18-12               | 80 |     |     | 280 |
| 18-13               | 80 | 110 | 250 | 280 |
| 18-19               |    |     |     |     |
| 18-20               | 90 | 180 | 270 |     |
| 18-21               |    |     |     |     |
| 18-22               | 70 | 145 | 215 | 290 |
| 20-2                |    |     |     |     |
| 20-4                | 45 | 110 | 250 |     |
| 20-6                |    |     |     |     |
| 20-7                | 80 | 110 | 250 | 280 |
| 20-8                | 80 | 110 | 250 | 280 |
| 20-11               |    |     |     |     |
| 20-16               |    |     |     |     |
| 20-19               | 90 | 180 | 270 |     |
| 20-24               | 35 | 110 | 250 | 325 |
| 20-27               | 35 | 110 | 250 | 325 |
| 20-29               | 80 |     |     | 280 |
| 20-33               |    |     |     |     |
| 20A9                |    | 110 | 250 |     |
| 20A48               |    | 80  | 280 |     |

| Contact arrangement | W° | X°  | Y°  | Z°  |
|---------------------|----|-----|-----|-----|
| 22-1                | 35 | 110 | 250 | 325 |
| 22-2                | 70 | 145 | 215 | 290 |
| 22-7                |    |     |     |     |
| 22-9                | 70 | 145 | 215 | 290 |
| 22-12               | 80 | 110 | 250 | 280 |
| 22-14               | 80 |     |     | 280 |
| 22-15               | 80 | 110 | 250 | 280 |
| 22-19               | 80 | 110 | 250 | 280 |
| 22-20               | 35 | 110 | 250 | 325 |
| 22-22               |    | 110 | 250 |     |
| 22-23               | 35 |     | 250 |     |
| 22-27               | 80 |     | 250 | 280 |
| 22B22               |    | 110 | 250 |     |
| 24-2                | 80 |     |     | 280 |
| 24-7                | 80 | 110 | 250 | 280 |
| 24-9                | 35 | 110 | 250 | 325 |
| 24-10               | 80 |     |     | 280 |
| 24-11               | 35 | 110 | 250 | 325 |
| 24-19               |    |     |     |     |
| 24-20               | 80 | 110 | 250 | 280 |
| 24-22               | 45 | 110 | 250 |     |
| 24-28               | 80 | 110 | 250 | 280 |
| 24A24               |    |     |     |     |
| 28-11               | 80 | 110 | 250 | 280 |
| 28-12               | 90 | 180 | 270 |     |
| 28-15               | 80 | 110 | 250 | 280 |
| 28-16               | 80 | 110 | 250 | 280 |
| 28-20               | 80 | 110 | 250 | 280 |
| 28-21               | 80 | 110 | 250 | 280 |
| 28-22               | 70 | 145 | 215 | 290 |
| 28A16               |    |     |     |     |
| 28A63               |    | 100 | 260 |     |
| 32-1                | 80 | 110 | 250 | 280 |
| 32-5                | 35 | 110 | 250 | 325 |
| 32-6                | 80 | 110 | 250 | 280 |
| 32-7                | 80 | 125 | 235 | 280 |
| 32-8                | 80 | 125 | 235 | 280 |
| 32-13               | 80 | 110 | 250 | 280 |
| 32-15               | 35 | 110 | 250 | 325 |
| 32-17               | 45 | 110 | 250 |     |
| 32A69               |    | 110 | 250 |     |
| 36-3                | 70 | 145 | 215 | 290 |
| 36-5                |    | 120 | 240 |     |
| 36-10               | 80 | 125 | 235 | 280 |
| 36-14               |    |     |     |     |
| 36-15               | 60 | 125 | 245 | 305 |
| 36A98               |    |     |     |     |

\* The degree figures indicate the angular position of the layout towards the polarizing key clockwise in view of the mating side of the pin or the termination side of socket contact insulators.

Tolerances of insert positions:

shell size 10 SL to 22 ± 2°

shell size 24 to 26 ± 1,5°

Exception: Contact arrangement 32 A 69 ± 1°

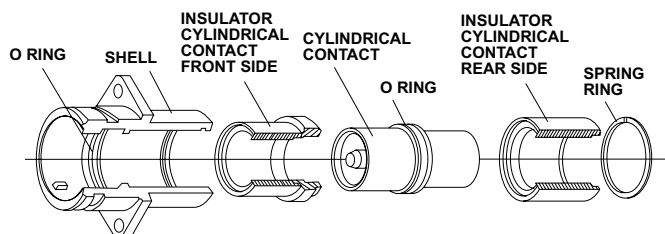
These connectors are used to transmit very high current at low voltage, as for example in the electrical equipment of military land and sea-borne vehicles and in industrial facilities. The connectors meet the mating dimensions, mechanical features and rear panel installation requirements of VG 95234. Ultraflexible, shielded weld cables are terminated to the connectors.

These high power connectors feature one contact in a two-piece rigid insulator. The aluminum shell has a chromate finish over cadmium. The operating temperature ranges from -55°C to +125°C (-67°F to +257°F). The contacts of copper or copper alloy with hard silver finish are designed for crimping or termination to solid copper conductors with threaded bolts. The mechanical durability is a minimum of 500 mating cycles. The crimp contacts accept wires per DIN 46438 (25-240 sq. mm).

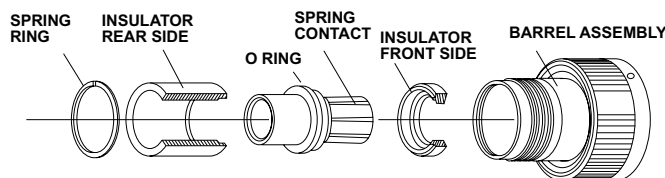
Contact retention is achieved by the two-piece insulator which is fixed to the shell with a snap-in ring. This allows unlimited exchange of the crimp contacts. The bayonet coupling assures fast coupling and uncoupling. Color-coded snap-in points indicate positive mating. Plugs and receptacles are waterproof in mated conditions up to 1 bar (35 feet of water).

## Conector Design - CGE

Receptacle CGE2...B-04



Plug CGE6...B-03



## How To Order - CGE

### SERIES

CGE - ITT Cannon Prefix

### SHELL STYLE

- 0 - Wall mounting receptacle with mounting flange
- 1 - Cable connecting plug
- 2 - Box mounting receptacle with mounting flange
- 6 - Straight plug
- 8 - 90° angle plug

### CLASS

E - Environmental, class JP 07, according to DIN 40050

### SHELL SIZE

16 - 18 - 22 - 28 - 32

### CONTACT ARRANGEMENT

- 16H2 - Shell size 16, 1 contact H2
- 18H5 - Shell size 18, 1 contact H5
- 22H9 - Shell size 22, 1 contact H9
- 28H15 - Shell size 28, 1 contact H15
- 32H24 - Shell size 32, 1 contact H24

### SERIES

### SHELL STYLE

### CLASS

### SHELL SIZE

### CONTACT ARRANGEMENT

### CONTACT SIZE

### CONTACT TYPE

### ALTERNATE KEYWAY POLARIZATION

### BAYONET COUPLING

### MODIFICATION

### CONTACT SIZE

- H2 - 3 AWG
- H5 - 0 AWG
- H9 - 000 AWG
- H15 - 250 MCM
- H24 - 400 MCM

### CONTACT TYPE

- F - Spring contact
- Z - Cylindrical contact

### ALTERNATE KEYWAY POLARIZATION

- Standard - 180°
- W - 120°

CGE 6 E 32 H 24 F W B \*\*\*

### BAYONET COUPLING

- B - Bayonet coupling

### MODIFICATIONS

- 05 - Through holes in flange
- 03 - Adapter for heat shrink boots, metric size crimp contact
- 04 - Rear panel mounting, four threaded holes, metric size crimp contact
- 04-05 - Same as 04, however with four through holes
- 14 - shielded version, metric size crimp contact
- 16 - Thread bolt termination, front panel mounting, O-ring for sealing between wall and receptacle (only for style CGE2EB)

## Performance and Material Specifications -CGE

## MECHANICAL

|                                |                                                                                             |
|--------------------------------|---------------------------------------------------------------------------------------------|
| Admissible ambient temperature | - 55°C to +125°C                                                                            |
| Class                          | IP 67 according to DIN 40050<br>Test pressure: 1 bar overpressure<br>Test duration 12 hours |
| Vibration                      | 200 m/s <sup>2</sup> for 10 to 2000 Hz                                                      |
| Mechanical durability          | 500 mating cycles                                                                           |

## COUPLING TORQUE

(IN WIRED CONDITION ACC. TO VG 95319 Part 2, Test No. 5.8.2.)

| Shell Size | max. closing/opening torque |       | min. opening torque |      |
|------------|-----------------------------|-------|---------------------|------|
|            | Nm                          | ozm   | Nm                  | ozm  |
| 16         | 5.5                         | 19.78 | 0,5                 | 1.80 |
| 18         | 8.0                         | 28.78 | 0,6                 | 2.16 |
| 22         | 11.0                        | 39.57 | 0,8                 | 2.88 |
| 28         | 17.0                        | 61.15 | 0,9                 | 3.24 |
| 32         | 19.0                        | 68.34 | 1,0                 | 3.60 |

3,597 = (Oz &amp; Ozm)

## CONTACT RETENTION

(ACC. TO VG 95319, PART 2. TEST NO. 5.4)

| Contact Size | Metric Wire Size (mm <sup>2</sup> ) | American Wire Size (AWG) or (MCM) | Test Force |            |
|--------------|-------------------------------------|-----------------------------------|------------|------------|
|              |                                     |                                   | (N min.)   | (Oz. min.) |
| H2           | 25                                  | 3 AWG                             | 100        | 359.70     |
| H5           | 50                                  | 0 AWG                             | 120        | 431.64     |
| H9           | 95                                  | 000 AWG                           | 140        | 503.58     |
| H15          | 150                                 | 250 AWG                           | 160        | 575.52     |
| H24          | 240                                 | 400 AWG                           | 200        | 719.4      |

## ELECTRICAL DATA

## CONTACT RATING

(amps) at 125°C ambient temperature:

|              |    |    |    |     |     |
|--------------|----|----|----|-----|-----|
| Shell size   | 16 | 18 | 22 | 28  | 32  |
| Contact size | H2 | H5 | H9 | H15 | H24 |

|                                                         |     |     |     |     |      |
|---------------------------------------------------------|-----|-----|-----|-----|------|
| Max. current rating (amps at 125°C ambient temperature) | 250 | 300 | 500 | 650 | 1000 |
|---------------------------------------------------------|-----|-----|-----|-----|------|

|                                                   |     |      |      |      |      |
|---------------------------------------------------|-----|------|------|------|------|
| Max. short-time load approx. 0,5 - 1 sec. (amps.) | 750 | 1000 | 2000 | 3000 | 5000 |
|---------------------------------------------------|-----|------|------|------|------|

## AIR AND CREEPAGE PATHS

Air path .118 (3.00) min.

Creepage path .197 (5.00) min.

## CONTACT RESISTANCE

|                                |     |     |      |     |      |
|--------------------------------|-----|-----|------|-----|------|
| Contact Size                   | H2  | H5  | H9   | H15 | H24  |
| Contact resistance (mOhm max.) | 0,6 | 0,3 | 0,15 | 0,1 | 0,07 |

## INSULATOR RESISTANCE

min. 5000 MOhm

## MATERIALS AND FINISHES

|           |                             |
|-----------|-----------------------------|
| Shell     | Aluminum alloy              |
| Finish    | Olive chromate over cadmium |
| Insulator | PTFE                        |
| Contact   | Copper and copper alloy     |
| Finish    | Hard silver                 |
| O-Rings   | Viton                       |

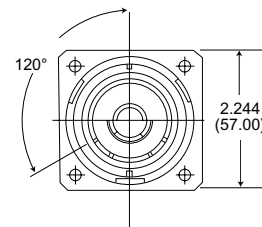
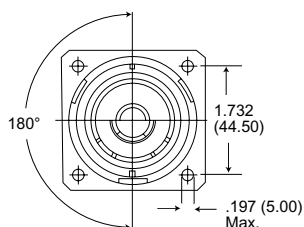
## Alternate Keyway Positions - CGE

To avoid mismatching of identical connectors, the keyway of the CGE connectors is available in two different positions:

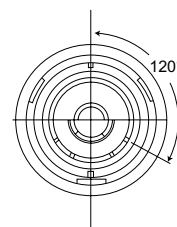
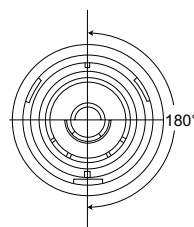
Standard Keyway position = 180°

Keyway position W = 120°

Keyway position of receptacles and cable connecting plugs.



Keyway position of straight and 90° angle plugs.



# The Micro Line - .050" Contact Spacing



The Cannon MICRO Series established the standards for performance and reliability in miniature interconnects. Exceptionally versatile, MICRO connectors are available in rectangular, circular, and strip configurations, with 3 amp MICROPIN™/MICROSOCKET™ contacts on .050(1.27) centers, or with special arrangements of power and coaxial contacts.

The heart of the Cannon MICROPIN/MICROSOCKET contact system is a multi-element Twist Pin Contact recessed with an insulating housing. The rugged, cylindrical sockets are mounted in the exposed half of the connector. When connector

halves are mated, the chamfered sockets are first aligned by the connector body, then guide the spiral MICROPIN contacts into proper and positive alignment, even under worst-case tolerance conditions. This is Cannon's POS-A-LINE connectors design.

The multiple spring elements of the MICROPIN, then under compression, form a multi-point contact system of high mechanical and electrical integrity. Contacts will provide a high degree of reliability over hundreds of mating and unmating cycles, and have proven themselves in applications that range from commercial products to equipment that has been landed on the moon.

- Contact rating - 3 amps max.
- Contact centers - .050(1.27).
- Wire sizes - #24 thru #32 AWG, stranded or solid.
- Contact termination - multiple indent crimp.
- Contact retention - fixed via epoxy.
- Contact materials and finish - Copper alloy, gold-plated per MIL-G-45204, Type II, Grade C, Class 1 over copper flash.
- Mating/unmating force - 8 oz. per contact, max./0.5 oz. per contact min.

## Test Data

The table below summarizes the results of key tests performed in accordance with MIL-STD-1344, where applicable. Data is applicable to standard connectors with standard termination. Variations may affect this data, so please consult the factory for further information on your requirements.

| Test                             | Method                                                    | Criteria of Acceptance                                                            |
|----------------------------------|-----------------------------------------------------------|-----------------------------------------------------------------------------------|
| Dielectric Withstanding Voltage  | Method 3001:                                              |                                                                                   |
|                                  | 900 VAC at sea level                                      | No breakdown                                                                      |
|                                  | 300 VAC at 70,00' altitude                                | No breakdown                                                                      |
|                                  | Solder Pots and Shielded Cable 600 VAC at sea level       | No breakdown                                                                      |
|                                  | 150 VAC at 70,000' altitude                               | No breakdown                                                                      |
| Insulation Resistance            | Method 3003                                               | 5,000 megohms minimum                                                             |
| Thermal Shock                    | Method 1003, Condition A:<br>- 55°C to +125°C             | No physical damage                                                                |
| Physical Shock                   | Method 2004, Condition E:                                 | No physical damage                                                                |
|                                  | 50 G's, 3 axes, 6 millisecond duration sawtooth pulse     | No loss of continuity > 1 µsec                                                    |
| Vibration                        | Method 2005, Condition IV:<br>20 G's, 10-2,000 Hz. 12 hrs | No physical damage<br>No loss of continuity > 1 µsec                              |
| Durability                       | 500 cycles of mating and unmating, 500 CPH max.           | No mechanical or electrical defects                                               |
| Moisture Resistance              | Method 1002, Type II omit steps 7a & 7B                   | Insulation resistance > 100 megohms                                               |
| Salt Spray                       | Method 1001, Condition B:<br>48 hours                     | Shall be capable of mating and unmating, and meet contact resistance requirements |
| Contact Resistance (MIL-STD-202) | Method 307                                                |                                                                                   |
|                                  | At 3 amps<br>At 1 milliamps                               | 8 milliohms maximum<br>10 milliohms maximum                                       |
| Contact Retention                | Per MIL-C-83513                                           | 5 lb. minimum axial load                                                          |



MDM connectors are used in applications requiring highly reliable, extremely small, lightweight connectors with higher density contact configurations than available in traditional rectangular connectors. They are available in 8 shell sizes accommodating from 9 to 100 contacts, and special arrangements of power and coaxial contacts.

These connectors are designed to meet the rapidly increasing demands for an environmental, high performance, rugged, moisture-sealed microminiature connector. This connector employs size 24 MICRO-

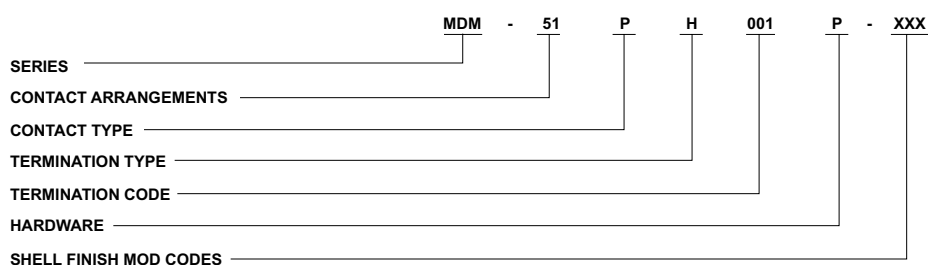
PIN®/MICROSOCKET® contacts on .050(1.27\_ centers in a contact density identical to the standard MICRO-D connector series, but with these additional features:

¥ Aluminum shells to provide greater strength, prevent chipping, cracking or breaking, offer electromagnetic (EMI) and RFI shielding.

¥ Silicone elastomer compression interfacial seal to provide a moisture and humidity seal between each contact and between contacts and shell.

## How to Order

MIL-C-83513 ordering information- pages 240 and 241



### SERIES

MDM (size 9-100): Liquid Crystal Ploymer (LCP)  
MDM (Combo Layout): Diallyl Phthalate insulator  
Material

### CONTACT ARRANGEMENTS

9-15-21-25-31-37-51-100 (standard)  
7C2, 24C42 (coaxial) } or combination of  
7P2, 24P4 (power) } coax and power

### CONTACT TYPE

P - Pin  
S - Socket

### TERMINATION TYPE

H - Harness-insulated wire.  
L - Solid-uninsulated wire.  
S - Solder pot to accept #26 AWG MAX.  
harness wire. (Not available with power  
contact arrangements.)

### TERMINATION CODE\*

(H) 001 - 18", 7/34 strand, #26 AWG,  
MIL-W-16878/4, Type E Teflon,  
yellow.  
(H) 003 - 18", 7/34 strand, #26 AWG,  
MIL-W-16878/4, Type E Teflon,  
color coded to MIL-STD-681  
System I.  
(L) 1 - 1/2" uninsulated solid #25  
AWG gold plated copper.  
(L) 2 - 1" uninsulated solid #25 AWG  
gold plated copper.

### HARDWARE

M - Military specification hardware, see  
page 237.  
P - Jackpost  
K - Jackscrew-standard  
L - Jackscrew-low profile

F - Float mount

B - No hardware standard  
.091 (2.31) dia. hole for sizes 9-51;  
.120 (3.05) dia. hole for size 100.  
A - .125 (3.18) dia. mounting holes fo  
sizes 9-51;  
.166 (4.22) dia. hole for size 100.  
B1 - .1475 (3.75) dia. hole for size 100  
(Per MIL-C-83513)

### SHELL FINISH MOD CODES\*\*

No  
Number - Standard Cadmium/yellow chromate  
A174 - Electroless nickel  
A172 - Gold over nickel  
A141 - Irridite/alodine  
A30 - Black anodize

\*See Termination Codes page 233 for additional length  
Modification codes.

\*\*For other modifications not listed, consult the factory.

## Performance and Material Specifications

### STANDARD MATERIALS AND FINISHES

|                         |                                                                                                    |
|-------------------------|----------------------------------------------------------------------------------------------------|
| Shell                   | - Aluminum alloy per QQ-A-200/8 (6061-T6), yellow chromate/cadmium per QQ-P-416, Type II, class 3. |
| Insulator               | - MIL-M-24519, Type GLCP-30F Glass-filled diallyl phthalate per MIL-M-14, Type SDGF                |
| Contacts                | - Copper alloy, gold plate                                                                         |
| Mounting Hardware       | - 300 Series stainless steel, passivate                                                            |
| Kit, Jackpost (3) items | - 300 Series stainless steel, passivate                                                            |
| Washer                  | - 400 Series stainless steel, passivate                                                            |
| Standard Epoxy          | - Hysol EE4198 with HD3561 hardener, color green or EE4215 with HD3561, color black                |

### MECHANICAL FEATURES

|                     |                                                                                                                 |
|---------------------|-----------------------------------------------------------------------------------------------------------------|
| Coupling            | - Friction/jackscrews                                                                                           |
| Polarization        | - Keystone-shaped shells                                                                                        |
| Contact Spacing     | - .050 (1.27)                                                                                                   |
| Centers             |                                                                                                                 |
| Shell Styles        | - Plug and receptacle                                                                                           |
| No. of Contacts     | - 9 thru 100 standard;<br>5 signal/2 coaxial;<br>5 signal/2 power.<br>20 signal/4 coaxial;<br>20 signal/4 power |
| Coaxial Cable       | - RG - 178/U                                                                                                    |
| Wire Size           | - #24 thru #32 AWG                                                                                              |
| Contact Termination | - Multiple indent crimp                                                                                         |

### ELECTRICAL DATA - page 231

## Standard Wire Termination Codes

## Cannon Modification Code (Not MS)

The following termination codes are listed for your information. For lengths not shown, consult factory for proper modification code. All wire lengths are minimum.

## Harness TYPE (H)

#26 AWG per MIL-W-16878/4, 7/34 strand, type E Teflon, stranded.

| Length       | All Yellow | Color Coded* |
|--------------|------------|--------------|
| 3 (76.2)     | H020       | H027         |
| 6 (152.4)    | H019       | H016         |
| 8 (203.2)    | H026       | H034         |
| 10 (254.0)   | H029       | H025         |
| 12 (304.8)   | H028       | H002         |
| 18 (457.2)   | H001       | H003         |
| 20 (508.0)   | H038       | H023         |
| 24 (609.6)   | H009       | H004         |
| 30 (762.0)   | H010       | H005         |
| 36 (914.4)   | H011       | H006         |
| 48 (1219.2)  | H013       | H048         |
| 72 (1828.8)  | H017       | H046         |
| 120 (3048.0) | H042       | H041         |

\* Cavity #1 black

## Solid Uninsulated Type (L)

#25 AWG gold plated copper

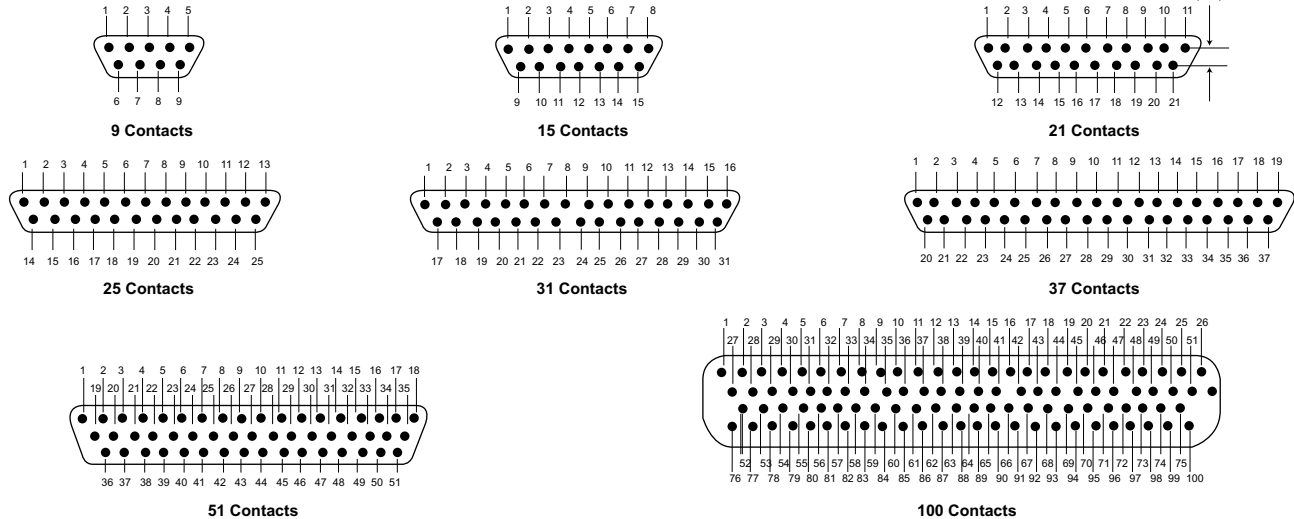
| Termination Code | Length        |
|------------------|---------------|
| L61              | .125 (3.18)   |
| L56              | .150 (3.81)   |
| L57              | .190 (4.83)   |
| L39              | .250 (6.35)   |
| L58              | .375 (9.52)   |
| L1               | .500 (12.70)  |
| L14              | .750 (19.05)  |
| L2               | 1.000 (25.40) |
| L7               | 1.500 (38.10) |
| L6               | 2.000 (50.80) |
| L16              | 2.500 (63.50) |
| L10              | 3.000 (76.20) |

Millimeters are in parentheses.

## Contact Arrangements

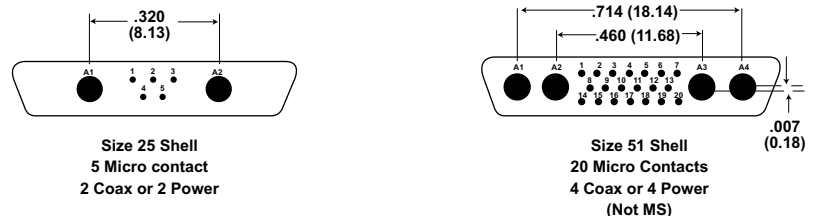
(Face View of Pin Insert - Use Reverse Order for Socket Side)

## Standard



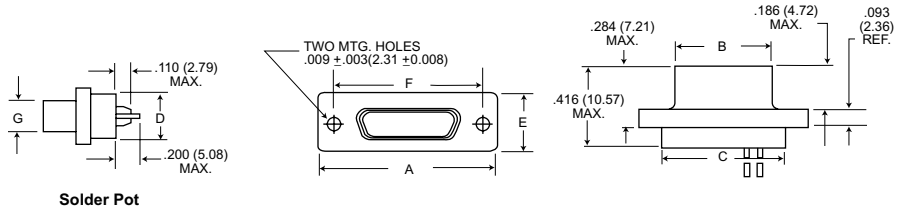
Contact identification numbers are for reference only and do not appear on insulator or connector body.

## Coaxial



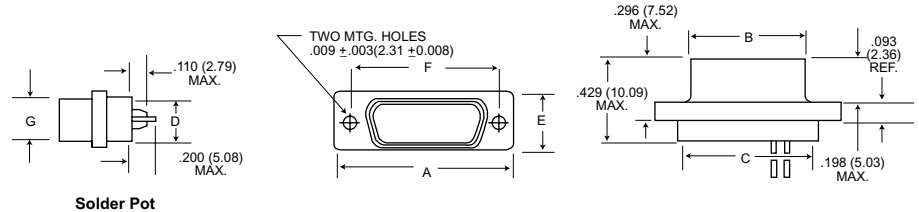
## Shell Dimensions (Conforms to MIL-C-83513)

## Plug



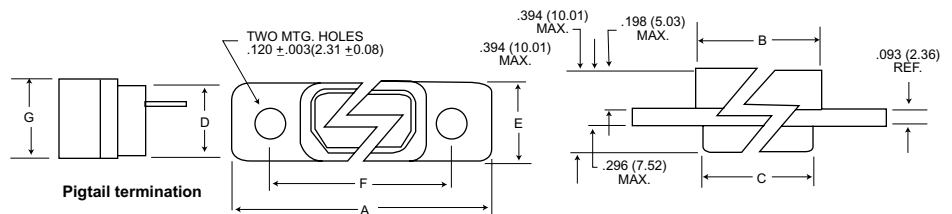
Solder Pot

## Receptacle



Solder Pot

## Receptacle (MDM-100 only)



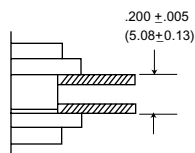
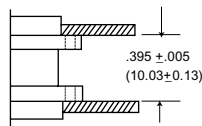
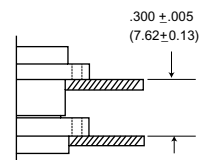
Pigtail termination

| Part Number<br>By Shell Size | A<br>Max.     | B<br>Max.     | C<br>Max.     | D<br>Max.   | E<br>Max.    | F<br>±.005<br>(0.13) | G<br>Max.    | Average Weights**<br>oz. (gm.) ±5% |
|------------------------------|---------------|---------------|---------------|-------------|--------------|----------------------|--------------|------------------------------------|
| MDM-9P*                      | .785 (19.94)  | .334 (8.48)   | .400 (10.16)  | .270 (6.86) | .308 (7.82)  | .565 (14.35)         | .185 (4.70)  | .063 (1.79)                        |
| MDM-9S*                      | .785 (19.94)  | .402 (10.21)  | .400 (10.16)  | .270 (6.86) | .308 (7.82)  | .565 (14.35)         | .253 (6.43)  | .063 (1.79)                        |
| MDM-15P*                     | .935 (23.75)  | .484 (12.29)  | .550 (13.97)  | .270 (6.86) | .308 (7.82)  | .715 (18.16)         | .185 (4.70)  | .084 (2.39)                        |
| MDM-15S*                     | .935 (23.75)  | .552 (13.97)  | .550 (13.97)  | .270 (6.86) | .308 (7.82)  | .715 (18.16)         | .253 (6.43)  | .083 (2.37)                        |
| MDM-21P*                     | 1.085 (27.56) | .634 (16.10)  | .700 (17.78)  | .270 (6.86) | .308 (7.82)  | .865 (21.97)         | .185 (4.70)  | .105 (2.99)                        |
| MDM-21P*                     | 1.085 (27.56) | .702 (17.83)  | .700 (17.78)  | .270 (6.86) | .308 (7.82)  | .865 (21.97)         | .253 (6.43)  | .104 (2.97)                        |
| MDM-25P*                     | 1.185 (30.10) | .734 (18.64)  | .800 (20.32)  | .270 (6.86) | .308 (7.82)  | .965 (24.51)         | .185 (4.70)  | .119 (3.39)                        |
| MDM-25S*                     | 1.185 (30.10) | .802 (20.37)  | .800 (20.32)  | .270 (6.86) | .308 (7.82)  | .965 (24.51)         | .253 (6.43)  | .118 (3.36)                        |
| MDM-31P*                     | 1.335 (33.91) | .884 (22.45)  | .950 (24.13)  | .270 (6.86) | .308 (7.82)  | 1.115 (28.32)        | .185 (4.70)  | .140 (3.99)                        |
| MDM-31S*                     | 1.335 (33.91) | .952 (24.18)  | .950 (24.13)  | .270 (6.86) | .308 (7.82)  | 1.115 (28.32)        | .253 (6.43)  | .139 (3.96)                        |
| MDM-37P*                     | 1.485 (37.72) | 1.034 (26.26) | 1.100 (27.94) | .270 (6.86) | .308 (7.82)  | 1.265 (32.13)        | .185 (4.70)  | .161 (4.59)                        |
| MDM-37S*                     | 1.485 (37.72) | 1.102 (27.99) | 1.100 (27.94) | .270 (6.86) | .308 (7.82)  | 1.265 (32.13)        | .253 (6.43)  | .160 (4.56)                        |
| MDM-51P*                     | 1.435 (36.45) | .984 (24.99)  | 1.050 (26.67) | .310 (7.87) | .351 (8.92)  | 1.215 (30.86)        | .228 (5.79)  | .193 (5.50)                        |
| MDM-51S*                     | 1.435 (36.45) | 1.052 (26.72) | 1.050 (26.67) | .310 (7.87) | .351 (8.92)  | 1.215 (30.86)        | .296 (7.52)  | .188 (5.35)                        |
| MDM-100P*                    | 2.170 (55.12) | 1.384 (35.15) | 1.442 (36.63) | .360 (9.14) | .394 (10.01) | 1.800 (45.72)        | .271 (6.88)  | .500 (14.3)                        |
| MDM-100S*                    | 2.170 (55.12) | 1.508 (38.10) | 1.442 (36.63) | .360 (9.14) | .394 (10.01) | 1.800 (45.72)        | .394 (10.01) | 1.040 (29.5)                       |

\*Add lead type and length; see How To Order.

\*\*\*Weight given is 1/2", uninsulated, solid, #25 AWG gold plated copper pigtails.

## Panel Mounting Dimensions (Sizes 9 - 100)

Plug and Receptacle  
Rear MountedPlug and Receptacle  
Front MountedPlug Front Mounted  
Receptacle Rear Mounted

## Panel Cutouts

NOTE: See page 237 for rear panel mounting configuration.

### Shell Sizes 9 thru 51

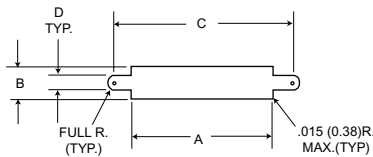


Figure 1  
Front Mounting

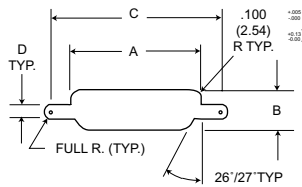


Figure 2  
Rear Mounting

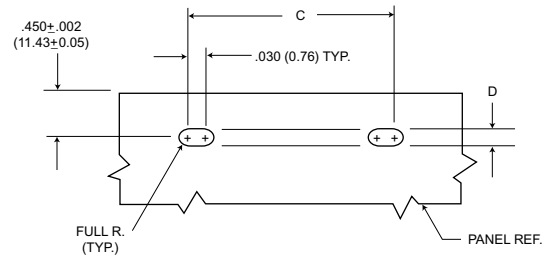


Figure 3  
Edgeboard Mounting

### Shell Size 100

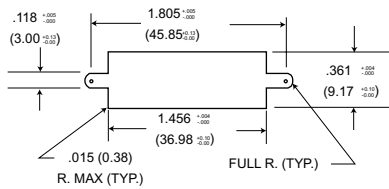


Figure 1  
Front Mounting

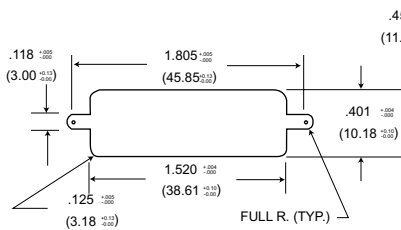


Figure 2  
Rear Mounting

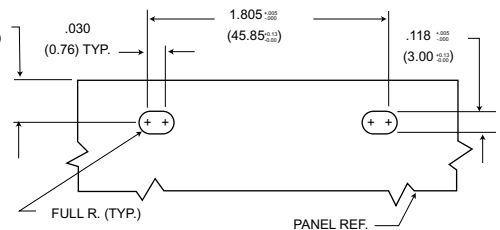


Figure 3  
Edgeboard Mounting

### For 9-51 Shell Sizes

#### NOTES:

1. Front mounting (figure 1) and rear mounting (figure 2) accommodates #2-56 screws
2. Front mounting is preferred. However, when rear mounting is necessary, use figure 2 dimensions when jackscrews are used. See detail on page 24 when jackpost are used.
3. Edgeboard mounting bracket (figure 3) uses #2-56 screws. Dimension .450±.002 (11.43±0.05) locates the MDM receptacle flush with the end of the board.

### For 100 Shell Size

#### NOTES:

1. Front mounting (figure 1) and rear mounting (figure 2) accommodates #4-40 screws.
2. Edgeboard mounting bracket (figure 3) uses #4-40 screws. Dimension .450±.002 (11.43±0.05) locates the MDM receptacle flush with the end of the board.
3. Front mounting is preferred. However, when rear mounting is necessary, use figure 2 dimensions.

| Shell Size | Cutout Figure | A<br>+.004 (0.10)<br>-.000 (0.00) | B<br>+.004 (0.10)<br>-.000 (0.00) | C<br>+.005 (0.13)<br>-.000 (0.00) | D<br>+.005 (0.13)<br>-.000 (0.00) |
|------------|---------------|-----------------------------------|-----------------------------------|-----------------------------------|-----------------------------------|
| 9          | 1             | .408 (10.36)                      | .271 (6.88)                       | .570 (14.48)                      | .089 (2.26)                       |
|            | 2             | .401 (10.19)                      | .252 (6.40)                       | .570 (14.48)                      | .089 (2.26)                       |
|            | 3             | -                                 | -                                 | .570 (14.48)                      | .089 (2.26)                       |
| 15         | 1             | .558 (14.17)                      | .271 (6.88)                       | .720 (18.29)                      | .089 (2.26)                       |
|            | 2             | .551 (14.00)                      | .252 (6.40)                       | .720 (18.29)                      | .089 (2.26)                       |
|            | 3             | -                                 | -                                 | .720 (18.29)                      | .089 (2.26)                       |
| 21         | 1             | .708 (17.98)                      | .271 (6.88)                       | .870 (22.10)                      | .089 (2.26)                       |
|            | 2             | .701 (17.81)                      | .252 (6.40)                       | .870 (22.10)                      | .089 (2.26)                       |
|            | 3             | -                                 | -                                 | .870 (22.10)                      | .089 (2.26)                       |
| 25         | 1             | .808 (20.52)                      | .271 (6.88)                       | .970 (24.64)                      | .089 (2.26)                       |
|            | 2             | .801 (20.34)                      | .252 (6.40)                       | .970 (24.64)                      | .089 (2.26)                       |
|            | 3             | -                                 | -                                 | .970 (24.64)                      | .089 (2.26)                       |
| 31         | 1             | .958 (24.33)                      | .271 (6.88)                       | 1.120 (28.45)                     | .089 (2.26)                       |
|            | 2             | .951 (24.16)                      | .252 (6.40)                       | 1.120 (28.45)                     | .089 (2.26)                       |
|            | 3             | -                                 | -                                 | 1.120 (28.48)                     | .089 (2.26)                       |
| 37         | 1             | 1.108 (28.14)                     | .271 (6.88)                       | 1.270 (32.26)                     | .089 (2.26)                       |
|            | 2             | 1.101 (27.97)                     | .252 (6.40)                       | 1.270 (32.26)                     | .089 (2.26)                       |
|            | 3             | -                                 | -                                 | 1.270 (32.26)                     | .089 (2.26)                       |
| 51         | 1             | 1.058 (26.87)                     | .315 (8.00)                       | 1.220 (30.99)                     | .089 (2.26)                       |
|            | 2             | 1.051 (26.70)                     | .295 (7.49)                       | 1.220 (30.99)                     | .089 (2.26)                       |
|            | 3             | -                                 | -                                 | 1.220 (30.99)                     | .089 (2.26)                       |

## Mounting Hardware Views (for sizes 9-51)

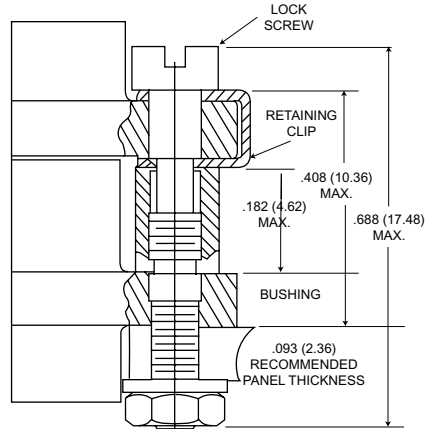
This hardware supplied unassembled.



Screw Lock Assembly

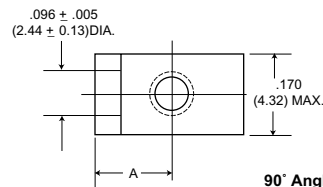


90° Angle Mounting Bracket

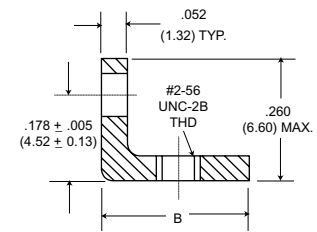
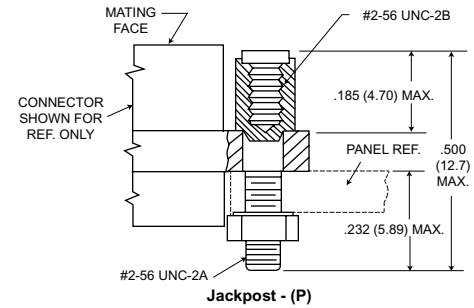


Screw Lock Assembly\*

\*NOTE Torque value is 2.5 in/lbs max.



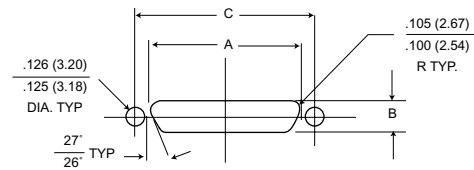
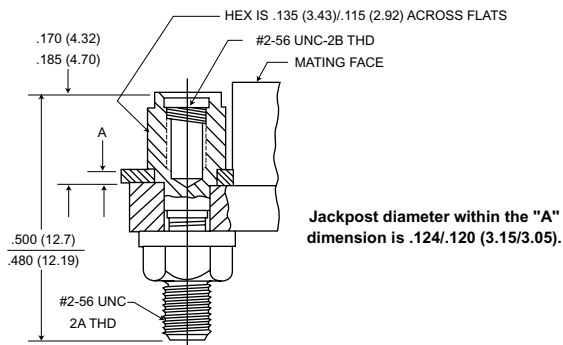
90° Angle Mounting Bracket



| Description                                           | Part Number  | A<br>±.005 (±0.13) | B<br>Max.   |
|-------------------------------------------------------|--------------|--------------------|-------------|
| Screw Lock Assembly                                   | 322-9500-000 |                    | N/A         |
| Jackpost kit                                          | 320-9505-000 |                    | N/A         |
| Mounting Bracket 90° MDM<br>for 9 thru 37 Shell Sizes | 015-9516-002 | .147 (3.73)        | .308 (7.82) |
| Mounting Bracket 90° MDM<br>fo 51 Shell Size          | 015-9516-003 | .169 (4.29)        | .350 (8.89) |

NOTES: Screw lock assembly (322-9500-000) can be used for front mounting only. Jackpot kit (320-9505-000) consists of two assemblies, shipped unassembled.

## Jackpost Bushing (for rear panel mounting-for sizes 9-51)



## Plug and Rectacle Dimensions

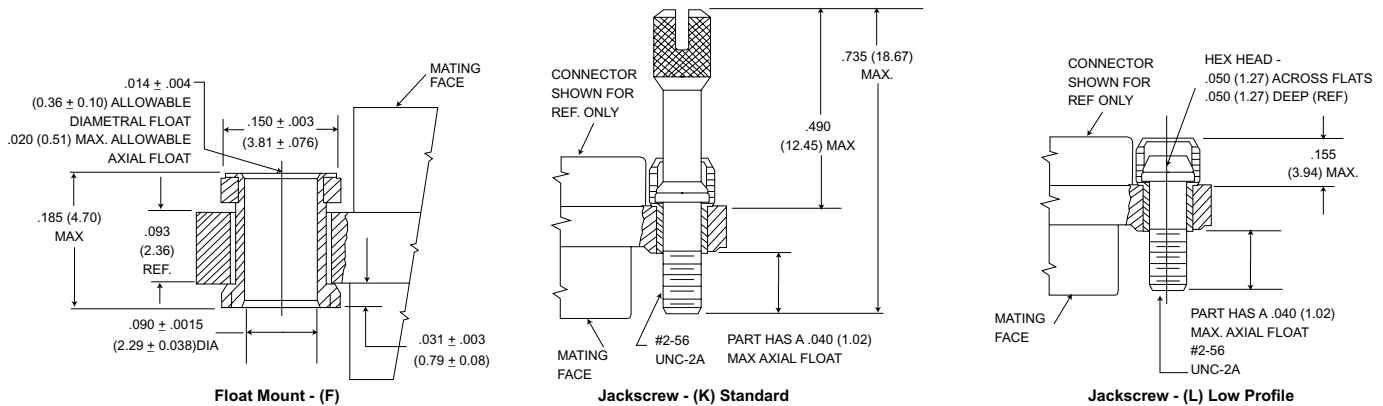
| Shell Size | A<br>+.004 (0.10)<br>-.000 (0.00) | B<br>+.004 (0.10)<br>-.000 (0.00) | C<br>±.005 (0.13) |
|------------|-----------------------------------|-----------------------------------|-------------------|
| 9          | .401 (10.19)                      | .252 (6.40)                       | .565 (14.35)      |
| 15         | .551 (14.00)                      | .252 (6.40)                       | .715 (18.16)      |
| 21         | .701 (17.81)                      | .252 (6.40)                       | .865 (21.97)      |
| 25         | .801 (20.34)                      | .252 (6.40)                       | .965 (24.51)      |
| 31         | .951 (24.16)                      | .252 (6.40)                       | 1.115 (28.34)     |
| 37         | 1.101 (27.97)                     | .252 (6.40)                       | 1.265 (32.13)     |
| 51         | 1.051 (26.70)                     | .295 (7.49)                       | 1.215 (30.86)     |

| Panel A Thickness | A<br>+.005 (0.13)<br>-.000 (0.00) | Jackpost Kit Number* |
|-------------------|-----------------------------------|----------------------|
| 3/32 (2.4)        | .087 (2.21)                       | 320-9505-007         |
| 1/16 (1.6)        | .056 (1.42)                       | 320-9505-006         |
| 3/64 (1.2)        | .042 (1.07)                       | 320-9505-005         |
| 1/32 (0.8)        | .025 (0.64)                       | 320-9505-004         |

\*A kit consists of 2 jackpost, 2 nuts, 2 washers.

## Mounting Hardware Views (sizes 9-51)

This hardware is factory installed.



Shown here is a cutaway view of the float mount for the MD connector. The basic shell dimensions are the same for the float mount and the screw mounting hole configurations. View shown is for standard float mount front panel mounting. Reverse mounting is available on request.

\* NOTE: Torque vales are as follows:  
Low Profile Jackscrew (L)-2.5 in/lbs  
Standard Jackscrew (K)-2.5 in/lbs

Repair kit available-consult factory.

## Mounting Hardware to Military Specification (for sizes 9 - 100) per MIL-C-83513/5

This hardware supplied in kits unassembled (2 pieces of each item).

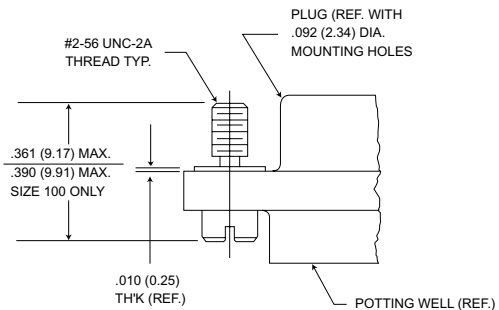


Figure 1. Jackscrew - Low profile  
Slotted Head  
Size 9-51  
Size 100\*

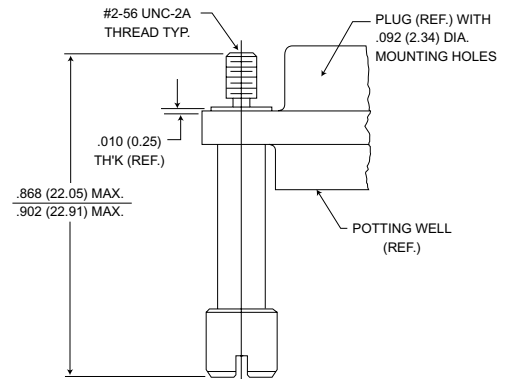
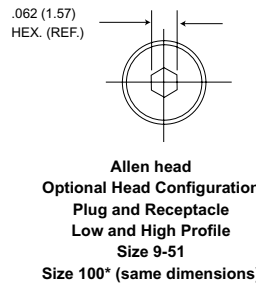


Figure 2. Jackscrew - High Profile  
Slotted Head  
Size 9-51  
Size 100\*

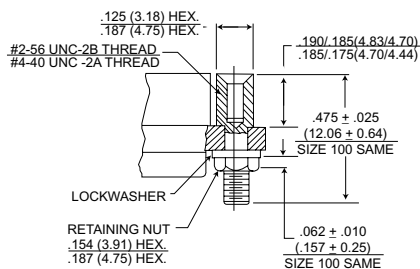


Figure 3. Jackpost Assembly  
Size 9-51  
Size 100\*

To order hardware kits separately, order either by M83513/5-\*\* or by 320-950X-XXX.

| Description                                        | Size 9-51            | ** | Size 100*            | ** |
|----------------------------------------------------|----------------------|----|----------------------|----|
|                                                    | Mod Code Part Number |    | Mod Code Part Number |    |
| Slotted Head Jackscrew Assy Low Profile (Figure 1) | M5 320-9508-025      | 05 | M15 320-9508-021     | 15 |
| Slotted Head Jackscrew Assy Low Profile (Figure 2) | M6 320-9508-027      | 06 | M16 320-9508-023     | 16 |
| Allen Head Jackscrew Assy Low Profile (Figure 1)   | M2 320-9508-026      | 02 | M12 320-9508-022     | 12 |
| Allen Head Jackscrew Assy High Profile (Figure 2)  | M3 320-9508-028      | 03 | M13 320-9508-024     | 13 |
| Jackpost Assy (Figure 3)                           | M7 320-9505-033      | 07 | M17 320-9505-030     | 17 |

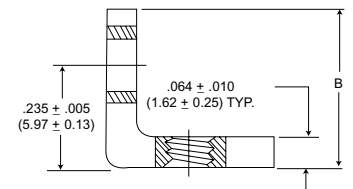
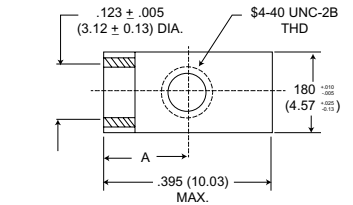
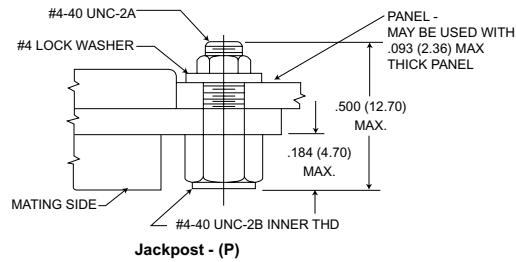
\*Size 100 requires B1 size mounting holes.

## Mounting Hardware Views (for size 100)

This hardware supplied unassembled.



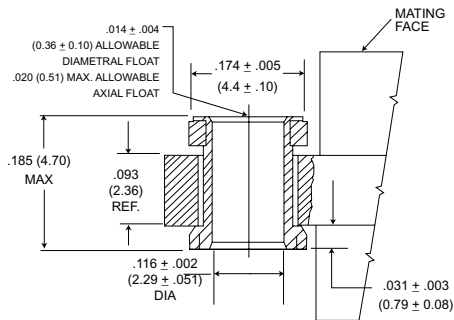
90° Angle Mounting Bracket



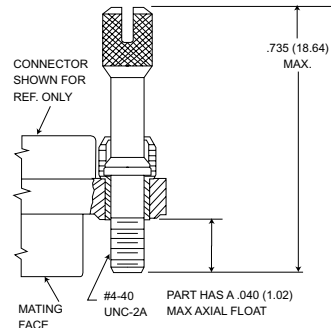
90° Angle Mounting Bracket

| Description              | Part Number  | A<br>± .005 (0.13) | B<br>Max.   |
|--------------------------|--------------|--------------------|-------------|
| Jackpost kit             | 320-9505-015 | N/A                |             |
| Mounting Bracket 90° MDM | 015-9528-000 | .191 (4.85)        | .370 (9.40) |

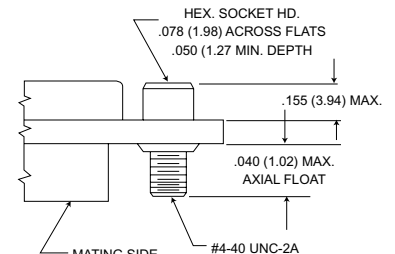
This hardware is factory installed.



Float Mount - (F) Std.



Jackscrew - (K) Standard



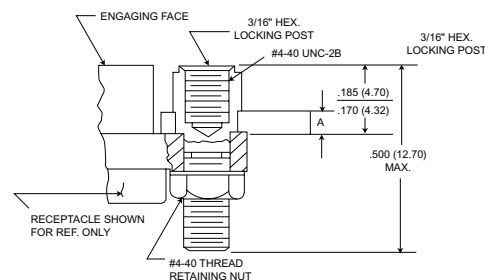
Jackscrew - (L) (Low Profile)

\*NOTE: Torque vales are as follows:  
Low Profile Jackscrew (L)-4.0 in/lbs  
Standard Jackscrew (K)-4.0 in/lbs

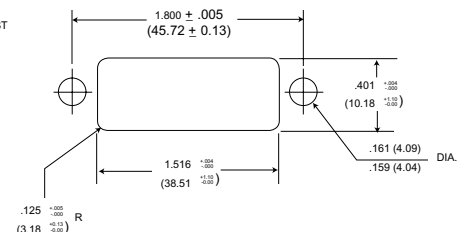
## Jackpost Bushing (for Rear Panel Mounting)

| Panel Thickness | A<br>+ .005 (0.13)<br>- .000 (0.00) | Jackpost Kit Number* |
|-----------------|-------------------------------------|----------------------|
| 3/32 (2.4)      | .087 (2.21)                         | 320-9505-013         |
| 1/16 (1.6)      | .058 (1.42)                         | 320-9505-012         |
| 1/32 (0.8)      | .025 (0.64)                         | 320-9505-010         |
| 3/64 (1.2)      | .042 (1.07)                         | 320-9505-011         |

\*2 jackposts, 2 nuts, 2 washers



## Dimensions for Rear Panel Mounting

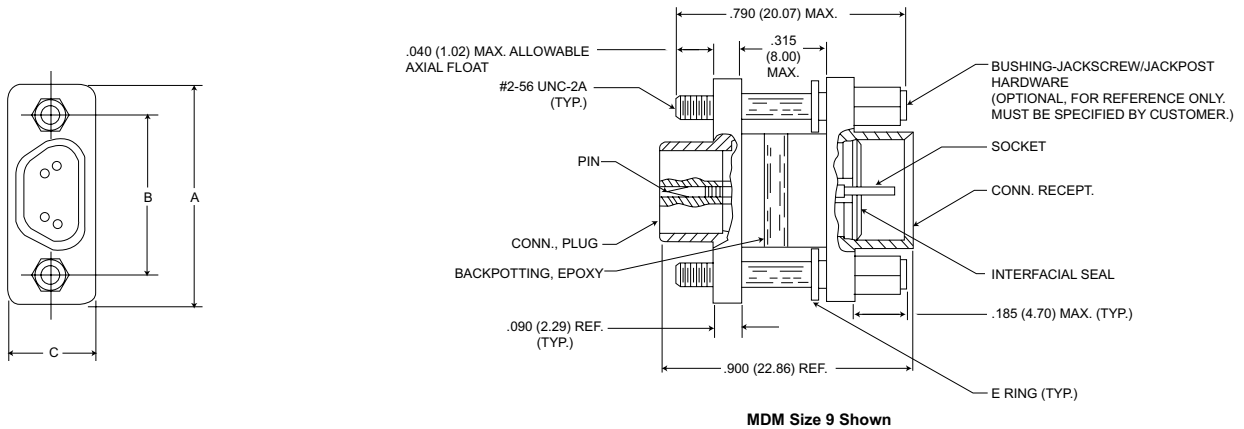


## Connector Saver

Save wear and tear on your equipment and systems connectors by using the "Connector Saver".

The multi-matings and unmatings experienced by most connectors during testing and final check out can be eliminated.

Simply mate the "Connectors Saver" to your unit and use the opposite side for your testing interface... less wear, less tear, less chance of damage. It is available in all seven standard MDM layouts. Mating hardware is available and can be ordered either separately or included with the connector saver.



| Size | A174 Electroless Nickel |              | Cadmium Plated |               | *Hardware Kits  | A<br>Max.     | B<br>± .005 (0.13) | C<br>Max.    |
|------|-------------------------|--------------|----------------|---------------|-----------------|---------------|--------------------|--------------|
|      | With Hardware           | W/O Hardware | With Hardware  | W/O Hardware  |                 |               |                    |              |
| 9    | MDM98479-86             | MDM98479-18  | MDM98479-78    | MDM-97294-371 | 320-9505-014**  | .785 (19.94)  | .565 (14.35)       | .308 (7.82)  |
| 15   | MDM98479-87             | MDM98479-19  | MDM98479-79    | MDM-97294-372 | 320-9505-014**  | .935 (23.75)  | .715 (18.16)       | .308 (7.82)  |
| 21   | MDM98479-88             | MDM98479-20  | MDM98479-80    | MDM-97294-373 | 320-9505-014**  | 1.085 (27.56) | .865 (21.97)       | .308 (7.82)  |
| 25   | MDM98479-89             | MDM98479-21  | MDM98479-81    | MDM-97294-374 | 320-9505-014**  | 1.185 (30.10) | .965 (24.51)       | .308 (7.82)  |
| 31   | MDM98479-90             | MDM98479-14  | MDM98479-82    | MDM-97294-375 | 320-9505-014**  | 1.335 (33.91) | 1.115 (28.32)      | .308 (7.82)  |
| 37   | MDM98479-91             | MDM98479-15  | MDM98479-83    | MDM-97294-376 | 320-9505-014**  | 1.485 (37.72) | 1.265 (32.13)      | .308 (7.82)  |
| 51   | MDM98479-92             | MDM98479-16  | MDM98479-84    | MDM-97294-377 | 320-9505-014**  | 1.435 (36.45) | 1.215 (30.86)      | .351 (8.91)  |
| 100  | MDM98479-93             | MDM98479-17  | MDM98479-85    | MDM-97294-717 | 320-9508-014*** | 2.170 (55.12) | 1.800 (45.72)      | .394 (10.01) |

\* Kit contains 2 bushings-jackpost/jackscrew and 2 E rings.

\*\* Size 9-51-#2-56 UNC2B Thread

\*\*\* Size 100-#4-40 UNC2B Thread

How to Order - ITT Cannon Part Number Nomenclature to MIL-C-83513 

|                                        |   |                                                      |            |             |      |   |    |     |  |
|----------------------------------------|---|------------------------------------------------------|------------|-------------|------|---|----|-----|--|
|                                        |   | MD**                                                 | 01         | -           | H100 | - | ** | *** |  |
| ITT CANNON SERIES                      |   |                                                      |            |             |      |   |    |     |  |
| MDM                                    | - | Metal Shell, Liquid Crystal Polymer (LCP)            |            |             |      |   |    |     |  |
| MDB                                    | - | Diallyl Phthalate Insulator                          |            |             |      |   |    |     |  |
| MDVB                                   | - | Polyester Insulator                                  |            |             |      |   |    |     |  |
| MIL-C-83513 SLASH SHEET                |   |                                                      |            |             |      |   |    |     |  |
| 01                                     | - | Plug, Connector, Solderpot                           | }          | Metal Shell |      |   |    |     |  |
| 02                                     | - | Receptacle, Connector, Solderpot                     |            |             |      |   |    |     |  |
| 03                                     | - | Plug, Connector, Crimp Type                          |            |             |      |   |    |     |  |
| 04                                     | - | Receptacle, Connector, Crimp Type                    |            |             |      |   |    |     |  |
| 05                                     | - | Hardware Only                                        | △          |             |      |   |    |     |  |
| 06                                     | - | Plug, Connector, Solderpot                           | }          | Plastic △   |      |   |    |     |  |
| 07                                     | - | Receptacle, Connector, Solderpot                     |            |             |      |   |    |     |  |
| 08                                     | - | Plug, Connector, Crimp Type                          |            |             |      |   |    |     |  |
| 09                                     | - | Receptacle, Connector, Crimp Type                    |            |             |      |   |    |     |  |
| INSERT ARRANGEMENT                     |   |                                                      |            |             |      |   |    |     |  |
|                                        |   | METAL SHELL                                          | PLASTIC    |             |      |   |    |     |  |
| A9                                     | - | 9 Contact                                            | 9 Contact  |             |      |   |    |     |  |
| B15                                    | - | 15 Contact                                           | 15 Contact |             |      |   |    |     |  |
| C21                                    | - | 21 Contact                                           | 21 Contact |             |      |   |    |     |  |
| D25                                    | - | 25 Contact                                           | 25 Contact |             |      |   |    |     |  |
| E31                                    | - | 31 Contact                                           | 31 Contact |             |      |   |    |     |  |
| F37                                    | - | 37 Contact                                           | 37 Contact |             |      |   |    |     |  |
| G51                                    | - | 51 Contact                                           | 51 Contact |             |      |   |    |     |  |
| H100                                   | - | 100 Contact                                          |            | △           |      |   |    |     |  |
| WIRE TYPE                              |   |                                                      |            |             |      |   |    |     |  |
| No Number - For Solderpot              |   |                                                      |            |             |      |   |    |     |  |
| 01                                     | - | 18" long, #26 AWG per MIL-W-22759/11-26-9            |            |             |      |   |    |     |  |
| 02                                     | - | 36" long, #26 AWG per MIL-W-22759/11-26-9            |            |             |      |   |    |     |  |
| 03                                     | - | 18" long, #26 AWG per MIL-W-22759/11-26-9            |            |             |      |   |    | △   |  |
|                                        |   | Color Coded per MIL-STD-681, System 1                |            |             |      |   |    |     |  |
| 04                                     | - | 36" long, #26 AWG per MIL-W-22759/11-26-9            |            |             |      |   |    | △   |  |
|                                        |   | Color Coded per MIL-STD-681, System 1                |            |             |      |   |    | △   |  |
| 05                                     | - | .5" long, #25 AWG, type S per QQ-W-343, Gold Plated  |            |             |      |   |    |     |  |
| 06                                     | - | 1.0" long, #25 AWG, type S per QQ-W-343, Gold Plated |            |             |      |   |    |     |  |
| 07                                     | - | .5" long, #25 AWG, type S per QQ-W-343, Tin Plated   |            |             |      |   |    |     |  |
| 08                                     | - | 1.0" long, #25 AWG, type S per QQ-W-343, Tin Plated  |            |             |      |   |    |     |  |
| 09                                     | - | 18" long, #26 AWG per MIL-W-22759/33-26-9            |            |             |      |   |    | △   |  |
| 10                                     | - | 36" long, #26 AWG per MIL-W-22759/33-26-9            |            |             |      |   |    | △   |  |
| 11                                     | - | 18" long, #26 AWG per MIL-W-22759/33-26-9            |            |             |      |   |    | △   |  |
|                                        |   | Color Coded per MIL-STD-681, System 1                |            |             |      |   |    | △   |  |
| 12                                     | - | 36" long, #26 AWG per MIL-W-22759/33-26-9            |            |             |      |   |    | △   |  |
|                                        |   | Color Coded per MIL-STD-681, System 1                |            |             |      |   |    | △   |  |
| 13                                     | - | 72" long, #26 AWG per MIL-W-22759/11-26-9            |            |             |      |   |    | △   |  |
| 14                                     | - | 72" long, #26 AWG per MIL-W-22759/11-26-9            |            |             |      |   |    | △   |  |
|                                        |   | Color Coded per MIL-STD-681, System 1                |            |             |      |   |    | △   |  |
| 15                                     | - | 72" long, #26 AWG per MIL-W-22759/33-26-9            |            |             |      |   |    | △   |  |
| 16                                     | - | 72" long, #26 AWG per MIL-W-22759/33-26-9            |            |             |      |   |    | △   |  |
|                                        |   | Color Coded per MIL-STD-681, System 1                |            |             |      |   |    | △   |  |
| SHELL FINISH                           |   |                                                      |            |             |      |   |    |     |  |
| No number - for plastic type connector |   |                                                      |            |             |      |   |    |     |  |
| No number - for Cadmium                |   |                                                      |            |             |      |   |    |     |  |
| A174 - Electroless Nickel              |   | △                                                    |            |             |      |   |    |     |  |

**NOTES:**

(Specify when ordering, if necessary.)

 - For every Mil-Spec P/N, ITT has one corresponding part numbers.  
Example: ITT P/N's MDM01-A9

2 - Tolerance on wire lengths-18", 36" and 72" long,  
+1.00"/-0.00"  
.5" and 1.00" + .200"/-.000"

 - For space application, connector shell finish must be "A174" and wire must be per MIL-W-22759/33-26.

4 - Any deviations to these P/N's will result in assignment of a special P/N, consult factory.

 - No size 100 in plastic type connector.

 - Color coding in accordance with MIL-STD-681, System 1 except the appropriate color code is the individual contact cavity number minus 1 for contact positions.

 - For mounting hardware to Military Specification (sizes 9 to 100) see page 238.

Qualification to slash sheets 10 thru 27 for the PCB connector will be announced when completed.

How to Order - MIL-C-83513 Part Number Nomenclature 

|                                                                                                            |                                                                                                                                                                  |                                                                                               |                                                                                       |                                                                                       |   |   |    |   |
|------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------|---|---|----|---|
|                                                                                                            |                                                                                                                                                                  | M83513/ -                                                                                     |                                                                                       | 01                                                                                    | - | A | ** | C |
| <b>SERIES</b>                                                                                              |                                                                                                                                                                  |                                                                                               |                                                                                       |                                                                                       |   |   |    |   |
| Connector, Electrical, Rectangular<br>Microminiature, Polarized Shell                                      |                                                                                                                                                                  |                                                                                               |                                                                                       |                                                                                       |   |   |    |   |
| <b>MIL-C-83513 SLASH SHEET</b>                                                                             |                                                                                                                                                                  |                                                                                               |                                                                                       |                                                                                       |   |   |    |   |
| 01                                                                                                         | - Plug, Connector, Solderpot                                                                                                                                     |                                                                                               |                                                                                       |                                                                                       |   |   |    |   |
| 02                                                                                                         | - Receptacle, Connector, Solderpot                                                                                                                               | } Metal Shell                                                                                 |                                                                                       |                                                                                       |   |   |    |   |
| 03                                                                                                         | - Plug, Connector, Crimp Type                                                                                                                                    |                                                                                               |                                                                                       |                                                                                       |   |   |    |   |
| 04                                                                                                         | - Receptacle, Connector, Crimp Type                                                                                                                              |                                                                                               |                                                                                       |                                                                                       |   |   |    |   |
| 05                                                                                                         | - Hardware Only                                                                 |                                                                                               |                                                                                       |                                                                                       |   |   |    |   |
| 06                                                                                                         | - Plug, Connector, Solderpot                                                                                                                                     |                                                                                               |                                                                                       |                                                                                       |   |   |    |   |
| 07                                                                                                         | - Receptacle, Connector, Solderpot                                                                                                                               | } Plastic  |                                                                                       |                                                                                       |   |   |    |   |
| 08                                                                                                         | - Plug, Connector, Crimp Type                                                                                                                                    |                                                                                               |                                                                                       |                                                                                       |   |   |    |   |
| 09                                                                                                         | - Receptacle, Connector, Crimp Type                                                                                                                              |                                                                                               |                                                                                       |                                                                                       |   |   |    |   |
| <b>INSERT ARRANGEMENT</b>                                                                                  |                                                                                                                                                                  |                                                                                               |                                                                                       |                                                                                       |   |   |    |   |
|                                                                                                            | <u>METAL SHELL</u>                                                                                                                                               |                                                                                               | <u>PLASTIC</u>                                                                        |                                                                                       |   |   |    |   |
| A                                                                                                          | - 9 Contact                                                                                                                                                      |                                                                                               | 9 Contact                                                                             |                                                                                       |   |   |    |   |
| B                                                                                                          | - 15 Contact                                                                                                                                                     |                                                                                               | 15 Contact                                                                            |                                                                                       |   |   |    |   |
| C                                                                                                          | - 21 Contact                                                                                                                                                     |                                                                                               | 21 Contact                                                                            |                                                                                       |   |   |    |   |
| D                                                                                                          | - 25 Contact                                                                                                                                                     |                                                                                               | 25 Contact                                                                            |                                                                                       |   |   |    |   |
| E                                                                                                          | - 31 Contact                                                                                                                                                     |                                                                                               | 31 Contact                                                                            |                                                                                       |   |   |    |   |
| F                                                                                                          | - 37 Contact                                                                                                                                                     |                                                                                               | 37 Contact                                                                            |                                                                                       |   |   |    |   |
| G                                                                                                          | - 51 Contact                                                                                                                                                     |                                                                                               | 51 Contact                                                                            |                                                                                       |   |   |    |   |
| H                                                                                                          | - 100 Contact                                                                                                                                                    |                                                                                               |    |                                                                                       |   |   |    |   |
| <b>WIRE TYPE</b>                                                                                           |                                                                                                                                                                  |                                                                                               |                                                                                       |                                                                                       |   |   |    |   |
| No Number - For Solderpot                                                                                  |                                                                                                                                                                  |                                                                                               |                                                                                       |                                                                                       |   |   |    |   |
| 01                                                                                                         | - 18" long, #26 AWG per MIL-W-22759/11-26-9                                                                                                                      |                                                                                               |                                                                                       |                                                                                       |   |   |    |   |
| 02                                                                                                         | - 36" long, #26 AWG per MIL-W-22759/11-26-9                                                                                                                      |                                                                                               |                                                                                       |                                                                                       |   |   |    |   |
| 03                                                                                                         | - 18" long, #26 AWG per MIL-W-22759/11-26<br>Color Coded per MIL-STD-681, System 1                                                                               |                                                                                               |  |                                                                                       |   |   |    |   |
| 04                                                                                                         | - 36" long, #26 AWG per MIL-W-22759/11-26<br>Color Coded per MIL-STD-681, System 1                                                                               |                                                                                               |  |                                                                                       |   |   |    |   |
| 05                                                                                                         | - .5" long, #25 AWG, type S per QQ-W-343,<br>Gold Plated                                                                                                         |                                                                                               |                                                                                       |                                                                                       |   |   |    |   |
| 06                                                                                                         | - 1.0" long, #25 AWG, type S per QQ-W-343,<br>Gold Plated                                                                                                        |                                                                                               |                                                                                       |                                                                                       |   |   |    |   |
| 07                                                                                                         | - .5" long, #25 AWG, type S per QQ-W-343,<br>Tin Plated                                                                                                          |                                                                                               |                                                                                       |                                                                                       |   |   |    |   |
| 08                                                                                                         | - 1.0" long, #25 AWG, type S per QQ-W-343,<br>Tin Plated                                                                                                         |                                                                                               |                                                                                       |                                                                                       |   |   |    |   |
| 09                                                                                                         | - 18" long, #26 AWG per MIL-W-22759/33-26-9                                                                                                                      |                                                                                               |  |                                                                                       |   |   |    |   |
| 10                                                                                                         | - 36" long, #26 AWG per MIL-W-22759/33-26-9                                                                                                                      |                                                                                               |  |                                                                                       |   |   |    |   |
| 11                                                                                                         | - 18" long, #26 AWG per MIL-W-22759/33-26<br>Color Coded per MIL-STD-681, System 1                                                                               |                                                                                               |  |  |   |   |    |   |
| 12                                                                                                         | - 36" long, #26 AWG per MIL-W-22759/33-26<br>Color Coded per MIL-STD-681, System 1                                                                               |                                                                                               |  |  |   |   |    |   |
| 13                                                                                                         | - 72" long, #26 AWG per MIL-W-22759/11-26-9                                                                                                                      |                                                                                               |                                                                                       |                                                                                       |   |   |    |   |
| 14                                                                                                         | - 72" long, #26 AWG per MIL-W-22759/11-26<br>Color Coded per MIL-STD-681, System 1                                                                               |                                                                                               |  |                                                                                       |   |   |    |   |
| 15                                                                                                         | - 72" long, #26 AWG per MIL-W-22759/33-26-9                                                                                                                      |                                                                                               |  |                                                                                       |   |   |    |   |
| 16                                                                                                         | - 72" long, #26 AWG per MIL-W-22759/33-26<br>Color Coded per MIL-STD-681, System 1                                                                               |                                                                                               |  |  |   |   |    |   |
| <b>NOTES:</b><br>(Specify when ordering, if necessary.)                                                    |                                                                                                                                                                  |                                                                                               |                                                                                       |                                                                                       |   |   |    |   |
|                         | - For every Mil-Spec P/N, ITT has one corresponding part numbers.<br>Example: ITT P/N's MDM01-A9                                                                 |                                                                                               |                                                                                       |                                                                                       |   |   |    |   |
| 2                                                                                                          | - Tolerance on wire lengths-18", 36" and 72" long,<br>+1.00"/-0.00"<br>.5" and 1.00" + .200"/-.000"                                                              |                                                                                               |                                                                                       |                                                                                       |   |   |    |   |
|                         | - For space application, connector shell finish must be "N" and wire must be per MIL-W-22759/33-26.                                                              |                                                                                               |                                                                                       |                                                                                       |   |   |    |   |
| 4                                                                                                          | - Any deviations to these P/N's will result in assignment of a special P/N, consult factory.                                                                     |                                                                                               |                                                                                       |                                                                                       |   |   |    |   |
|                         | - No size 100 in plastic type connector.                                                                                                                         |                                                                                               |                                                                                       |                                                                                       |   |   |    |   |
|                         | - Color coding in accordance with MIL-STD-681, System 1 except the appropriate color code is the individual contact cavity number minus 1 for contact positions. |                                                                                               |                                                                                       |                                                                                       |   |   |    |   |
|                         | - For mounting hardware to Military Specification (sizes 9 to 100) see page 238.                                                                                 |                                                                                               |                                                                                       |                                                                                       |   |   |    |   |
| <b>SHELL FINISH</b>                                                                                        |                                                                                                                                                                  |                                                                                               |                                                                                       |                                                                                       |   |   |    |   |
| No letter - for plastic type connector                                                                     |                                                                                                                                                                  |                                                                                               |                                                                                       |                                                                                       |   |   |    |   |
| C - Cadmium                                                                                                |                                                                                                                                                                  |                                                                                               |                                                                                       |                                                                                       |   |   |    |   |
| N - Electroless Nickel  |                                                                                                                                                                  |                                                                                               |                                                                                       |                                                                                       |   |   |    |   |

Qualification to slash sheets 10 thru 27 for the PCB connectors will be announced when completed.



MDM-PCB connectors are designed for use with flex circuitry, flat cable and printed circuit boards or multi-layer boards. They use the standard MDM metal shell and provide high density and high reliability in board-to-board, board-to-cable and cable-to-cable applications.

MDM-PCB connectors are available in 8 shell sizes with 9 to 100 contacts. Terminations may be straight (BS) or at 90° (BR, CBR) board thickness. Jackpost mounting for use with locking hardware is also available.

## How to Order - MDM-PCB Series

|                                           |     |   |   |    |   |    |   |   |   |     |      |
|-------------------------------------------|-----|---|---|----|---|----|---|---|---|-----|------|
|                                           | MDM | * | - | 25 | P | BS | P | - | T | L39 | A174 |
| SERIES                                    |     |   |   |    |   |    |   |   |   |     |      |
| INSULATOR MATERIAL                        |     |   |   |    |   |    |   |   |   |     |      |
| CONTACT ARRANGEMENT                       |     |   |   |    |   |    |   |   |   |     |      |
| CONTACT TYPE                              |     |   |   |    |   |    |   |   |   |     |      |
| TERMINATION TYPE                          |     |   |   |    |   |    |   |   |   |     |      |
| MOUNTING HARDWARE (Shell Flange)          |     |   |   |    |   |    |   |   |   |     |      |
| MOUNTING HARDWARE FOR PCB                 |     |   |   |    |   |    |   |   |   |     |      |
| TERMINATION TAIL LENGTH MODIFICATION CODE |     |   |   |    |   |    |   |   |   |     |      |
| SHELL FINISH MODIFICATION CODES           |     |   |   |    |   |    |   |   |   |     |      |

### SERIES

MDM - Microm "D" Metal Shell

### INSULATOR MATERIAL

Liquid Crystal Polymer (LCP)

### CONTACT ARRANGEMENT

9, 15, 21, 25, 31, 37, 51, and 100  
Size 100 not available in "BR"

### CONTACT TYPE

P - Pin (Plug)  
S - Socket (Receptacle)

### TERMINATION TYPE

BS - Straight PCB Termination  
BR - 90° PCB Termination  
CBR - 90° Narrow Profile PCB Terminations

### MOUNTING HARDWARE (Shell Flange)

P - Jackposts  
M7 - Jackposts  
M83513/5-07 (Sizes 9-51)  
M17 - Jackposts  
M83513/5-17 (Size 100)  
No letter - none

### MOUNTING HARDWARE FOR PCB

T - Threaded Insert  
#2-56 Thd for Shell Sizes 9 thru 51  
#4-40 Thd for Shell Size 100  
No letter - none

### TERMINATION TAIL LENGTH MODIFICATION CODE

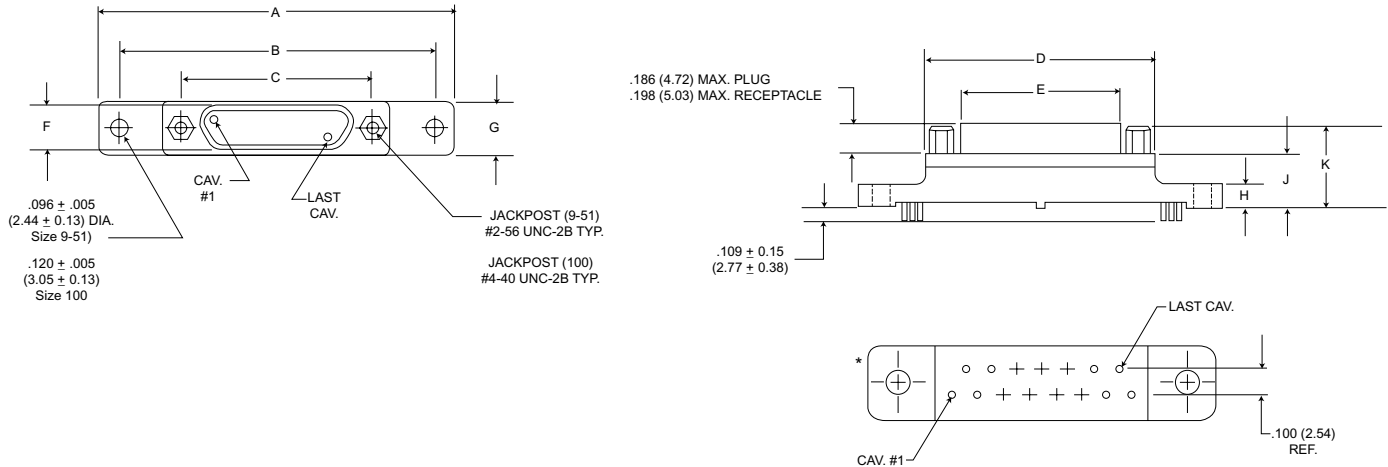
None - .109 (2.77)  $\pm$  .015 (0.38) Standard  
L61 - .125 (3.18)  
L56 - .150 (3.81)  
L57 - .190 (4.83)  
L39 - .250 (6.35)  
L58 - .375 (9.52)

### SHELL FINISH MODIFICATION CODES

None - Yellow Chromate/Cadmium over Nickel  
A174 - Electroless Nickel  
A172 - Gold over Nickel  
A141 - Iridite/Alodine  
A30 - Black Anodize  
(For special modification codes, consult factory.)

**NOTE:** Back molding material - Epoxy Hysol #MG40FS

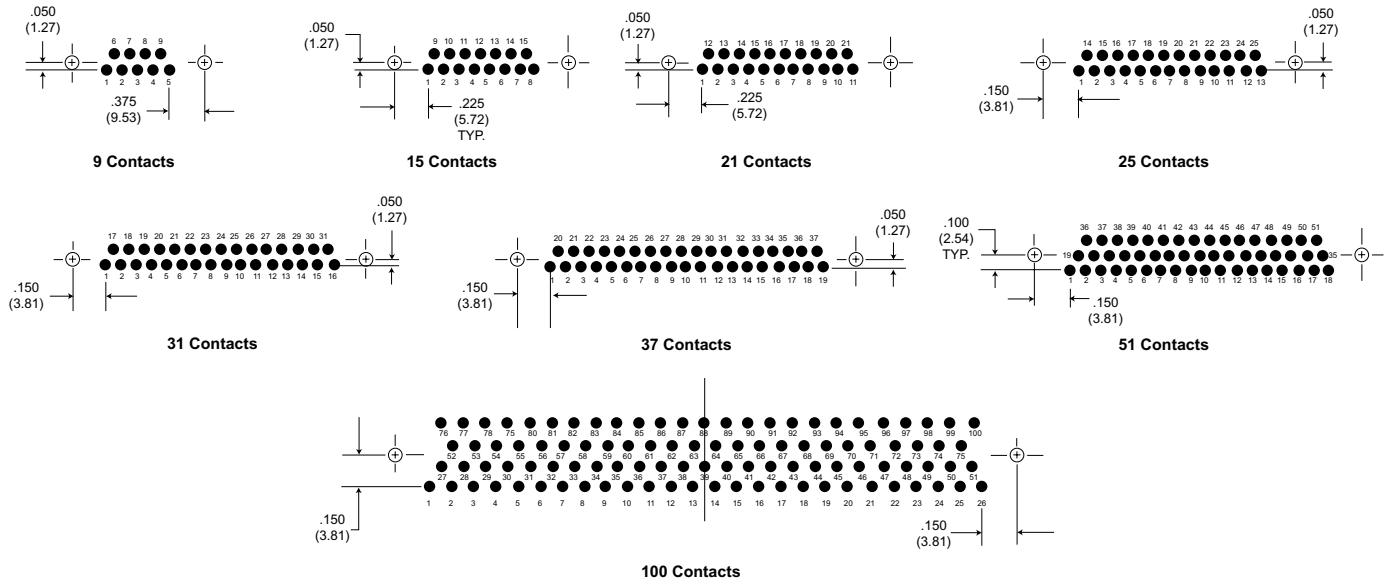
## BS (Board Straight) Series



## PCB Termination Arrangements\* (Viewed from PCB solder side)

Identification number shown for plug connector, use reverse order for socket connector.

NOTE: Dimensions shown are for reference only-consult factory for final design dimensions.



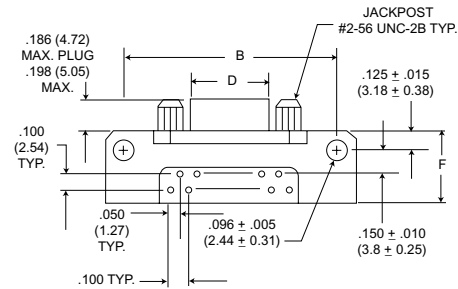
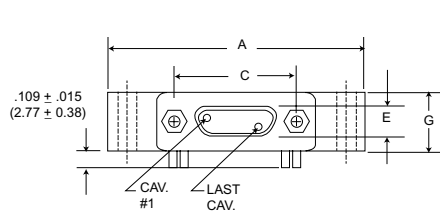
NOTE: Standard lead termination is #24 AWG, solid copper, solder or tin dipped

All Termination Configurations .100 (2.54) x .100 (2.54) Grid Pattern, Offset .050 (1.27)

| Part Number<br>By Shell Size | A<br>Max.     | B<br>±.007 (.018) | C<br>±.005 (.013) | D<br>Max.     | E<br>Max.     | F<br>Max.    | G<br>Max.    | H<br>Max.   | J<br>Max.    | K<br>Max.    |
|------------------------------|---------------|-------------------|-------------------|---------------|---------------|--------------|--------------|-------------|--------------|--------------|
| MDM-9PBS*                    | 1.390 (35.31) | 1.150 (29.21)     | .565 (14.35)      | .785 (19.94)  | .334 (8.48)   | .185 (4.70)  | .308 (7.82)  | .165 (4.19) | .355 (9.02)  | .555 (14.10) |
| MDM-9SBS*                    | 1.390 (35.31) | 1.150 (29.21)     | .565 (14.35)      | .785 (19.94)  | .402 (10.21)  | .253 (6.43)  | .308 (7.82)  | .165 (4.19) | .355 (9.02)  | .555 (14.10) |
| MDM-15PBS*                   | 1.390 (35.31) | 1.150 (29.21)     | .715 (18.16)      | .935 (23.75)  | .484 (12.29)  | .185 (4.70)  | .308 (7.82)  | .165 (4.19) | .355 (9.02)  | .555 (14.10) |
| MDM-15SBS*                   | 1.390 (35.31) | 1.150 (29.21)     | .715 (18.16)      | .935 (23.75)  | .552 (13.97)  | .253 (6.43)  | .308 (7.82)  | .165 (4.19) | .355 (9.02)  | .555 (14.10) |
| MDM-21PBS*                   | 1.690 (43.93) | 1.450 (36.83)     | .865 (21.97)      | 1.085 (27.56) | .634 (16.10)  | .185 (4.70)  | .308 (7.82)  | .165 (4.19) | .355 (9.02)  | .555 (14.10) |
| MDM-21SBS*                   | 1.690 (43.93) | 1.450 (36.83)     | .865 (21.97)      | 1.085 (27.56) | .702 (17.83)  | .253 (6.43)  | .308 (7.82)  | .165 (4.19) | .355 (9.02)  | .555 (14.10) |
| MDM-25PBS                    | 1.740 (44.20) | 1.500 (38.10)     | .965 (24.51)      | 1.185 (30.10) | .734 (18.64)  | .185 (4.70)  | .308 (7.82)  | .165 (4.19) | .355 (9.02)  | .555 (14.10) |
| MDM-25SBS*                   | 1.740 (44.20) | 1.500 (38.10)     | .965 (24.51)      | 1.185 (30.10) | .802 (20.37)  | .253 (6.43)  | .308 (7.82)  | .165 (4.19) | .355 (9.02)  | .555 (14.10) |
| MDM-31PBS*                   | 2.040 (51.82) | 1.800 (45.72)     | 1.115 (28.32)     | 1.335 (33.91) | .884 (22.45)  | .185 (4.70)  | .308 (7.82)  | .165 (4.19) | .355 (9.02)  | .555 (14.10) |
| MDM-31SBS*                   | 2.040 (51.82) | 1.800 (45.72)     | 1.115 (28.32)     | 1.335 (33.91) | .952 (24.18)  | .253 (6.43)  | .308 (7.82)  | .165 (4.19) | .355 (9.02)  | .555 (14.10) |
| MDM-37PBS*                   | 2.340 (59.44) | 2.100 (53.34)     | 1.265 (32.13)     | 1.485 (37.72) | 1.034 (26.26) | .185 (4.70)  | .308 (7.82)  | .165 (4.19) | .355 (9.02)  | .555 (14.10) |
| MDM-37SBS*                   | 2.340 (59.44) | 2.100 (53.34)     | 1.265 (32.13)     | 1.485 (37.72) | 1.102 (27.99) | .253 (6.43)  | .308 (7.82)  | .165 (4.19) | .355 (9.02)  | .555 (14.10) |
| MDM-51PBS*                   | 2.270 (57.66) | 2.000 (50.80)     | 1.215 (30.86)     | 1.435 (36.45) | .984 (24.99)  | .228 (5.79)  | .351 (8.92)  | .165 (4.19) | .355 (9.02)  | .555 (14.10) |
| MDM-51SBS*                   | 2.270 (57.66) | 2.000 (50.80)     | 1.215 (30.86)     | 1.435 (36.45) | 1.052 (26.72) | .296 (7.52)  | .351 (8.92)  | .165 (4.19) | .355 (9.02)  | .555 (14.10) |
| MDM-100PBS*                  | 3.070 (77.98) | 2.800 (71.12)     | 1.800 (45.72)     | 2.175 (55.24) | 1.384 (35.15) | .271 (6.88)  | .460 (11.68) | .303 (7.70) | .550 (12.70) | .686 (17.42) |
| MDM-100SBS*                  | 3.070 (77.98) | 2.800 (71.12)     | 1.800 (45.72)     | 2.175 (55.24) | 1.508 (38.30) | .394 (10.01) | .460 (11.68) | .303 (7.70) | .550 (12.70) | .686 (17.75) |

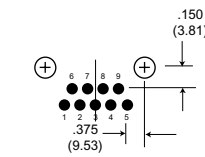
\*For jackpost, add letter "P" or "M7" for sizes 9-51, "M17" for size 100.

## BR (Board Right Angle) Series

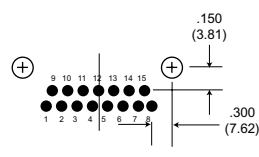


## PCB Termination Arrangements (Viewed from bottom of connector, PCB solder side.)

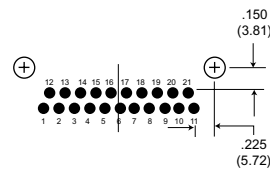
Identification number shown for plug connector, use reverse order for socket connector.



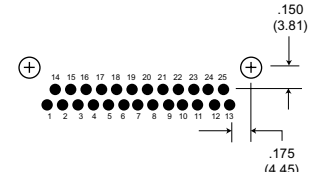
9 Contacts



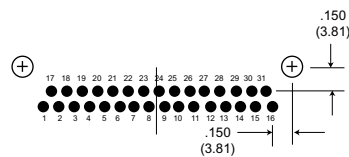
15 Contacts



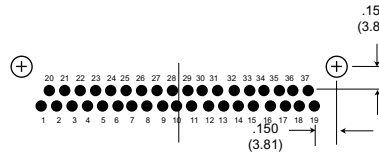
21 Contacts



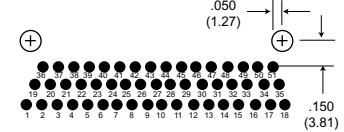
25 Contacts



31 Contacts



37 Contacts



51 Contacts

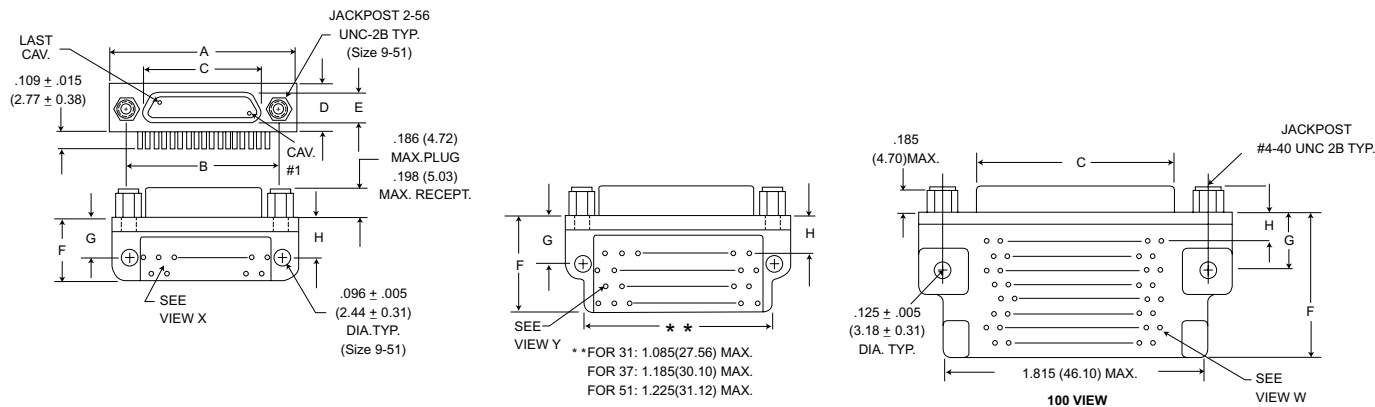
NOTE: Standard lead termination is #24 AWG, gold plated, solid copper, solder or tin dripped.

All Termination Configurations .100 (2.54) x .100 (2.54) Grid Pattern, Offset .050 (1.27).

| Part Number<br>By Shell Size | A<br>Max.     | B<br>± .007 (.018) | C<br>± .005 (.013) | D<br>Max.     | E<br>Max.   | F<br>Max.    | G<br>Max.   |
|------------------------------|---------------|--------------------|--------------------|---------------|-------------|--------------|-------------|
| MDM-9PBR*                    | 1.390 (35.31) | 1.150 (29.21)      | .565 (14.35)       | .334 (8.48)   | .185 (4.70) | .455 (11.56) | .308 (7.82) |
| MDM-9SBR*                    | 1.390 (35.31) | 1.150 (29.21)      | .565 (14.35)       | .402 (10.21)  | .253 (6.43) | .455 (11.56) | .308 (7.82) |
| MDM-15PBR*                   | 1.540 (39.12) | 1.300 (33.02)      | .715 (18.16)       | .484 (12.29)  | .185 (4.70) | .455 (11.56) | .308 (7.82) |
| MDM-15SBR*                   | 1.540 (39.12) | 1.300 (33.02)      | .715 (18.16)       | .552 (13.97)  | .253 (6.43) | .455 (11.56) | .308 (7.82) |
| MDM-21PBR*                   | 1.690 (42.93) | 1.450 (36.83)      | .865 (21.97)       | .634 (16.10)  | .185 (4.70) | .455 (11.56) | .308 (7.82) |
| MDM-21SBR*                   | 1.690 (42.93) | 1.450 (36.83)      | .865 (21.97)       | .702 (17.83)  | .253 (6.43) | .455 (11.56) | .308 (7.82) |
| MDM-25PBR*                   | 1.790 (45.47) | 1.550 (39.37)      | .965 (24.51)       | .734 (18.64)  | .185 (4.70) | .455 (11.56) | .308 (7.82) |
| MDM-25SBR*                   | 1.790 (45.47) | 1.550 (39.37)      | .965 (24.51)       | .802 (20.37)  | .253 (6.43) | .455 (11.56) | .308 (7.82) |
| MDM-31PBR*                   | 2.040 (51.82) | 1.800 (45.72)      | 1.115 (28.32)      | .884 (22.45)  | .185 (4.70) | .455 (11.56) | .308 (7.82) |
| MDM-31SBR*                   | 2.040 (51.82) | 1.800 (45.72)      | 1.115 (28.32)      | .952 (24.18)  | .253 (6.43) | .455 (11.56) | .308 (7.82) |
| MDM-37PBR*                   | 2.340 (59.44) | 2.100 (53.34)      | 1.265 (32.13)      | 1.034 (26.26) | .185 (4.70) | .455 (11.56) | .308 (7.82) |
| MDM-37SBR*                   | 2.340 (59.44) | 2.100 (53.34)      | 1.265 (32.13)      | 1.102 (27.99) | .253 (6.43) | .455 (11.56) | .308 (7.82) |
| MDM-51PBR*                   | 1.875 (47.63) | 1.600 (40.64)      | 1.215 (30.86)      | .984 (24.99)  | .228 (5.79) | .565 (14.35) | .351 (8.92) |
| MDM-51SBR*                   | 1.875 (47.63) | 1.600 (40.64)      | 1.215 (30.86)      | 1.052 (26.72) | .296 (7.52) | .565 (14.35) | .351 (8.92) |

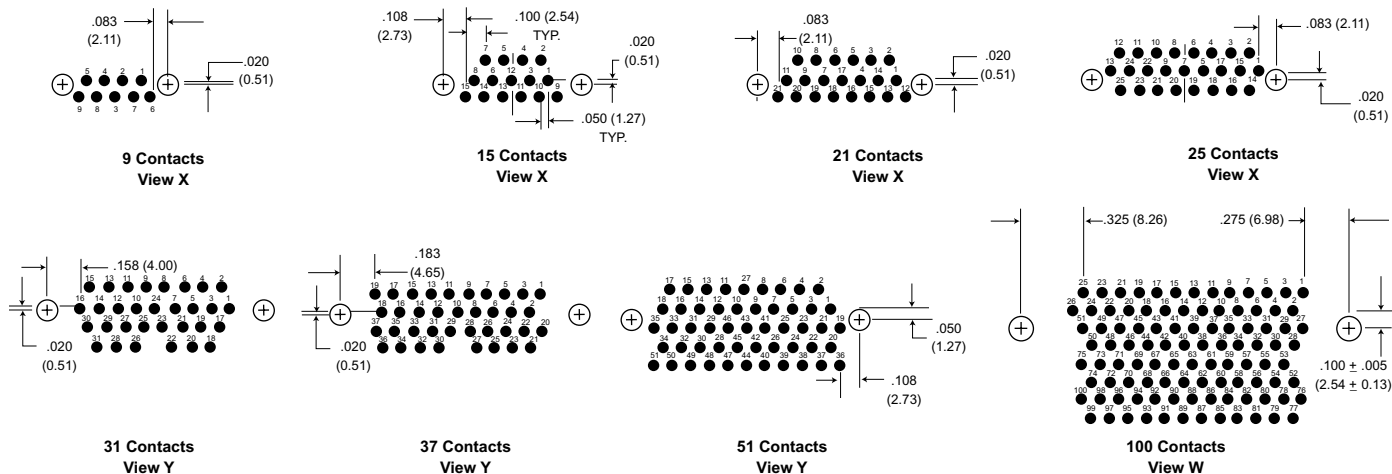
\*For jackpost, add letter "P" or "M7" for sizes 9-51, "M17" for size 100.

## CBR (Condensed Board Right Angle) Series



## PCB Termination Arrangements (Viewed from bottom of connector, PCB solder side.)

Identification number shown for plug connector, use reverse order for socket connector.



All Termination Configurations .100 (2.54) x .100 (2.54) Grid Pattern, Offset .050 (1.27).

NOTE: Standard lead termination is #24 AWG, solid copper, solder or tin dripped.

| Part Number<br>By Shell Size | A<br>Max.     | B<br>± .005 (.013) | C<br>Max.     | D<br>Max.    | E<br>Max.    | F<br>Max.     | G<br>± .010 (.025) | H<br>± .010 (.025) |
|------------------------------|---------------|--------------------|---------------|--------------|--------------|---------------|--------------------|--------------------|
| MDM-9PCBR*                   | .785 (19.94)  | .565 (14.35)       | .334 (8.48)   | .308 (7.82)  | .185 (4.70)  | .420 (10.67)  | .250 (6.35)        | .230 (5.81)        |
| MDM-9SCBR*                   | .785 (19.94)  | .565 (14.35)       | .402 (10.21)  | .308 (7.82)  | .253 (6.43)  | .420 (10.67)  | .250 (6.35)        | .230 (5.81)        |
| MDM-15PCBR*                  | .935 (23.75)  | .715 (18.16)       | .484 (12.29)  | .308 (7.82)  | .185 (4.70)  | .420 (10.67)  | .250 (6.35)        | .130 (3.30)        |
| MDM-15SCBR*                  | .935 (23.75)  | .715 (18.16)       | .552 (13.97)  | .308 (7.82)  | .253 (6.43)  | .420 (10.67)  | .250 (6.35)        | .130 (3.30)        |
| MDM-21PCBR*                  | 1.085 (27.56) | .865 (21.97)       | .634 (16.10)  | .308 (7.82)  | .185 (4.70)  | .420 (10.67)  | .250 (6.35)        | .130 (3.30)        |
| MDM-21SCBR*                  | 1.085 (27.56) | .865 (21.97)       | .702 (17.83)  | .308 (7.82)  | .253 (6.43)  | .420 (10.67)  | .250 (6.35)        | .130 (3.30)        |
| MDM-25PCBR*                  | 1.185 (30.10) | .965 (24.51)       | .734 (18.64)  | .308 (7.82)  | .184 (4.70)  | .420 (10.67)  | .250 (6.35)        | .130 (3.30)        |
| MDM-25SCBR*                  | 1.185 (30.10) | .965 (24.51)       | .802 (20.37)  | .308 (7.82)  | .253 (6.43)  | .420 (10.67)  | .250 (6.35)        | .130 (3.30)        |
| MDM-31PCBR*                  | 1.335 (33.91) | 1.115 (28.32)      | .884 (22.45)  | .308 (7.82)  | .185 (4.70)  | .520 (13.21)  | .250 (6.35)        | .130 (3.30)        |
| MDM-31SCBR*                  | 1.335 (33.91) | 1.115 (28.32)      | .952 (24.18)  | .308 (7.82)  | .253 (6.43)  | .520 (13.21)  | .250 (6.35)        | .130 (3.30)        |
| MDM-37PCBR*                  | 1.485 (37.72) | 1.265 (32.13)      | 1.034 (26.26) | .308 (7.82)  | .185 (4.70)  | .520 (13.21)  | .250 (6.35)        | .130 (3.30)        |
| MDM-37SCBR*                  | 1.485 (37.72) | 1.265 (32.13)      | 1.102 (27.99) | .308 (7.82)  | .253 (6.43)  | .520 (13.21)  | .250 (6.35)        | .130 (3.30)        |
| MDM-51PCBR*                  | 1.435 (36.45) | 1.215 (30.86)      | .984 (24.99)  | .351 (8.92)  | .228 (5.79)  | .650 (16.15)  | .300 (7.62)        | .150 (3.81)        |
| MDM-51SCBR*                  | 1.435 (36.45) | 1.215 (30.86)      | 1.052 (26.72) | .351 (8.92)  | .296 (7.52)  | .650 (16.15)  | .300 (7.62)        | .150 (3.81)        |
| MDM-100PCBR*                 | 2.170 (55.12) | 1.800 (45.72)      | 1.384 (35.15) | .394 (10.01) | .271 (6.88)  | 1.000 (25.40) | .400 (10.16)       | .200 (5.08)        |
| MDM-100SCBR*                 | 2.170 (55.12) | 1.800 (45.72)      | 1.508 (38.10) | .394 (10.01) | .394 (10.01) | 1.000 (25.40) | .400 (10.16)       | .200 (5.08)        |

\*For jackpost, add letter "P" or "M7" for sizes 9-51, "M17" for size 100.



## MDM Coaxial

The MDM Metal Shell Connectors have been tooled in several coaxial layouts and offer the versatility of combining coaxial and signal lines in the same connector. Any modifications to these layouts or new requirements, please consult the factory. For ordering information see page 232. For contact layouts see page 233. Standard coax is RG178 white.

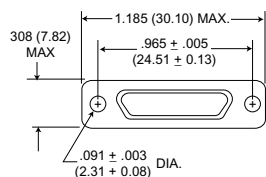
## MDM Power

The same insulator that is used with coaxial contacts is available with power contacts. This offers the versatility of combining power and signal lines in the same connector.

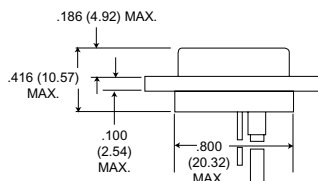
## MDM Coaxial/Power

Power and coaxial contacts can be interchanged as desired. Power contacts are rated at 13 amps, 24V rms, AWG #16 stranded.

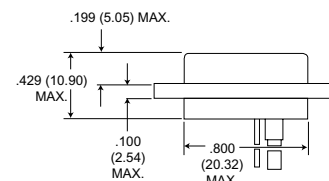
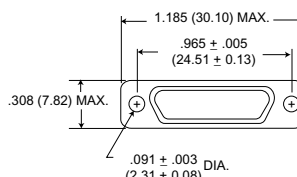
### 7C2/7P2



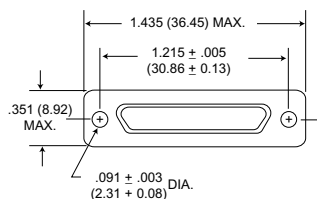
Plug



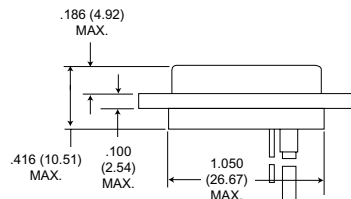
Receptacle



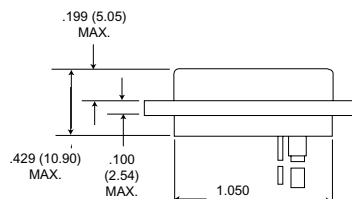
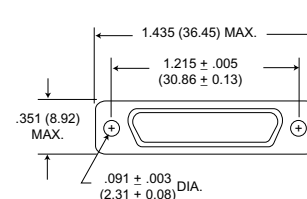
### 24C4/24P4



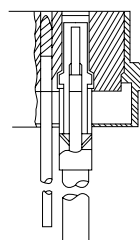
Plug



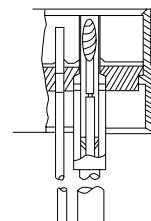
Receptacle



## Coaxial Contacts

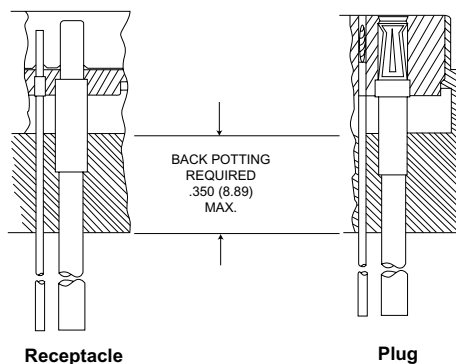


Plug



Receptacle

## Power Contacts



Receptacle

Plug

**Microminiature Rectangular Connectors with MICRO-Pin Contacts on .050 (1.27) centers.**

MICRO-D microminiature rack/panel connectors are used in applications requiring highly reliable, extremely small, lightweight connectors.

These connectors are available in 2 insulator materials, 2 mounting variations, 7 shell sizes accommodating from 9 to 51 contacts and a special arrangement of 5 micro contacts and 2 coaxials. The insulator materials listed give the MICRO-D connector wide versatility in most applications required by industry.

ITT Cannon can also terminate a wide variety of stranded or solid wire directly to MICRO-D contacts, which is often desirable in high density arrangements.

MICRO-D connectors can also be custom harnessed to meet any customer requirement of single or multiple connectors. Pigtail lead and harness description must be given by the customer. A typical description would be: ".5" #25 AWG, gold plated copper leads or 18" of #26 yellow, Teflon-insulated, Type E wire. Shown below are various methods of termination. Consult the factory for any routine or complex harnessing of MICRO-D connectors.

• Glass-filled diallyl phthalate-a thermoset material used in high temperature applications that is immune to cleaning solvents. It also has excellent dielectric properties. Temperature range: -65°F to +300°F (-55°C to +149°C).

• Glass-filled polyester-a thermoplastic that is not affected by cleaning solvents and exhibits excellent dielectric properties. Temperature range: -55°F to +257°F (-65°C to +125°C).

**How to Order**

PCB ordering information - page 242

|                                 |       |       |       |       |       |       |       |
|---------------------------------|-------|-------|-------|-------|-------|-------|-------|
|                                 | MD**  | 1-    | 9     | P     | H     | 001   | P     |
| SERIES-INSULATOR STYLE-MATERIAL | _____ | _____ | _____ | _____ | _____ | _____ | _____ |
| CONTACT SPACING                 | _____ | _____ | _____ | _____ | _____ | _____ | _____ |
| CONTACT ARRANGEMENT             | _____ | _____ | _____ | _____ | _____ | _____ | _____ |
| CONTACT TYPE                    | _____ | _____ | _____ | _____ | _____ | _____ | _____ |
| TERMINATION TYPE                | _____ | _____ | _____ | _____ | _____ | _____ | _____ |
| TERMINATION CODE                | _____ | _____ | _____ | _____ | _____ | _____ | _____ |
| LOCKING HARDWARE                | _____ | _____ | _____ | _____ | _____ | _____ | _____ |

**SERIES-INSULATOR STYLE-MATERIAL**

MD - Clip mounting -Diallyl phthalate  
 MDB - Screw mounting-Diallyl phthalate  
 MDV - Clip mounting-Polyester  
 MDVB - Screw mounting-Polyester

**CONTACT SPACING**

1 - .050 (1.27) centers

**CONTACT ARRANGEMENT**

9-15-21-25-31\*-37-51. See page 233.

**CONTACT TYPE**

P - Pin  
 S - Socket

**TERMINATION TYPE**

H - Insulated solid or stranded wire  
 L - Uninsulated solid wire  
 S - Solder pot to accept #26 AWG max. harness wire.

**TERMINATION CODE\*\***

(H) 001 - 18", 7/34 strand, #26 AWG,  
 MIL-W-16878/4, Type E Teflon, Yellow.  
 (H) 003 - 18", 7/34 strand, #26 AWG,  
 MIL-W-16878/4, Type E Teflon, color  
 coded to MIL-STD-681 System I.  
 (L) 1 - 1/2" uninsulated solid #25 AWG gold  
 plated copper.  
 (L) 2 - 1" uninsulated solid #25 AWG gold  
 plated copper.

**LOCKING HARDWARE (SCREW MOUNTING ONLY)**

P - Jackpost  
 K - Jackscrew-standard  
 L - Jackscrew-low profile  
 F - Float mount  
 M - Military specification hardware, see page  
 237.  
 No designator - No hardware - standard mounting  
 .091 (2.31) hole diameter

\* Not available in clip mounting.

\*\* See table below for additional codes.

**Standard Wire Termination Codes**

For lengths not shown, consult factory for proper modification code. All wire lengths are minimum.

**Harness Type (H)**

#26 AWG per MIL-W-16878 Type E Teflon, stranded.

| Length       | All Yellow | Color Coded* |
|--------------|------------|--------------|
| 3 (76.2)     | H020       | H027         |
| 6 (152.4)    | H019       | H016         |
| 8 (203.2)    | H026       | H034         |
| 10 (254.0)   | H029       | H025         |
| 12 (304.8)   | H028       | H002         |
| 18 (457.2)   | H001       | H003         |
| 20 (508.0)   | H038       | H023         |
| 24 (609.6)   | H009       | H004         |
| 30 (762.0)   | H010       | H005         |
| 36 (914.4)   | H011       | H006         |
| 48 (1219.2)  | H013       | H048         |
| 72 (1828.8)  | H017       | H046         |
| 120 (3048.0) | H042       | H041         |

\* Cavity #1 black

**Solid Uninsulated Type (L)**

#25 AWG Gold Plated Copper

| Termination Code | Length        |
|------------------|---------------|
| L61              | .125 (3.18)   |
| L56              | .150 (3.81)   |
| L57              | .190 (4.83)   |
| L39              | .250 (6.35)   |
| L58              | .375 (9.52)   |
| L1               | .500 (12.70)  |
| L14              | .750 (19.05)  |
| L2               | 1.000 (25.40) |
| L7               | 1.500 (38.10) |
| L6               | 2.000 (50.80) |
| L16              | 2.500 (63.50) |
| L10              | 3.000 (76.20) |

## Performance and Material Specifications

## MATERIALS AND FINISHES

|                             |                                                                   |
|-----------------------------|-------------------------------------------------------------------|
| Shell/Insulator (One Piece) | MD/MDB: Glass-filled thermoset plastic<br>MDV/MDVB: Thermoplastic |
| Contacts                    | - Copper alloy, gold plate                                        |

## ELECTRICAL DATA

|                     |                                                                                |
|---------------------|--------------------------------------------------------------------------------|
| No of Contacts      | - 9 to 51: (1 arrangement of 5 contacts and 2 coaxials - for screw mount only) |
| Coaxial Cable       | - RG-178/U (Not available for MD clip mount)                                   |
| Wire Size           | - #24 thru #32 AWG                                                             |
| Contact Termination | - Crimp stationary                                                             |

## MECHANICAL FEATURES

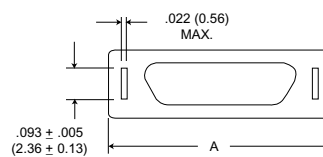
|                                   |                          |
|-----------------------------------|--------------------------|
| Size or Length                    | - 7 sizes                |
| Coupling                          | - Friction/jackscrews    |
| Polarization                      | - Keystone-shaped shells |
| Contact Spacing Centers           | -.050 (1.27mm)           |
| Shell Styles                      | - Plug and receptacle    |
| Consult factory for availability. |                          |

## With Clip Mounting Slots

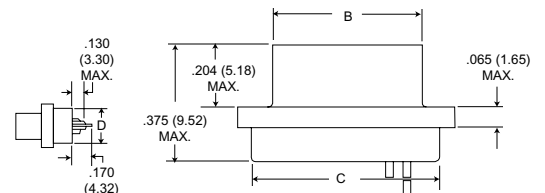
## Plug



MD Glass-filled Diallyl Phthalate Plastic Insulator

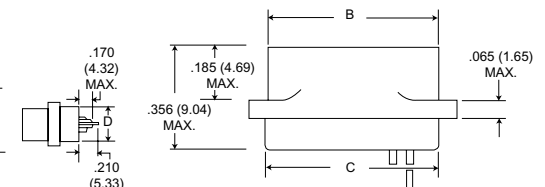
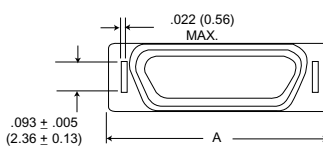


MDV Glass-filled Polyester Plastic Insulator



Solder Pot

## Receptacle



Solder Pot

| Part Number by Shell Size |            | A Max.        | B Max.        | C Max.        | D Max.      | E Max.      | Avg. Weight***<br>±5% (oz.)/±5% (gm.) |
|---------------------------|------------|---------------|---------------|---------------|-------------|-------------|---------------------------------------|
| MD1-9P**                  | MDV1-9-P** | .512 (13.00)  | .292 (7.42)   | .405 (10.29)  | .170 (4.32) | .215 (5.46) | .026 (0.73)                           |
| MD1-9S**                  | MDV1-9S**  | .512 (13.00)  | .376 (9.55)   | .405 (10.29)  | .170 (4.32) | .215 (5.46) | .026 (0.73)                           |
| MD1-15P**                 | MDV1-15P** | .662 (16.81)  | .442 (11.23)  | .555 (14.10)  | .170 (4.32) | .215 (5.46) | .038 (1.10)                           |
| MD1-15S**                 | MDV1-15S** | .662 (16.81)  | .526 (13.36)  | .555 (14.10)  | .170 (4.32) | .215 (5.46) | .035 (1.00)                           |
| MD1-21P**                 | MDV1-21P** | .812 (20.62)  | .592 (15.04)  | .705 (17.91)  | .170 (4.32) | .215 (5.46) | .053 (1.50)                           |
| MD1-21S**                 | MDV1-21S** | .812 (20.62)  | .676 (17.17)  | .705 (17.91)  | .170 (4.32) | .215 (5.46) | .050 (1.40)                           |
| MD1-25P**                 | MDV1-25P** | .912 (23.16)  | .692 (17.58)  | .805 (20.45)  | .170 (4.32) | .215 (5.46) | .063 (1.80)                           |
| MD1-25S**                 | MDV1-25S** | .912 (23.16)  | .776 (19.71)  | .805 (20.45)  | .170 (4.32) | .215 (5.46) | .056 (1.60)                           |
| MD1-37P**                 | MDV1-37P** | 1.212 (30.78) | .992 (25.20)  | 1.105 (28.07) | .170 (4.32) | .215 (5.46) | .086 (2.45)                           |
| MD1-37S**                 | MDV1-37S** | 1.212 (30.78) | 1.076 (27.33) | 1.105 (28.07) | .170 (4.32) | .215 (5.46) | .076 (2.15)                           |
| MD1-51P**                 | MDV1-51P** | 1.162 (29.51) | .942 (23.93)  | 1.055 (26.80) | .213 (5.41) | .258 (6.55) | .109 (3.10)                           |
| MD1-51S**                 | MDV1-51S** | 1.162 (29.51) | 1.026 (26.06) | 1.055 (26.80) | .213 (5.41) | .258 (6.55) | .093 (2.65)                           |

\*\* Add lead type and length, see Part Number Explanation.

\*\*\* Weight given is with 1/2", uninsulated solid #25 AWG gold plated copper pigtailed.

## Panel Mounting Hardware

### Clip Mounting

Illustrated is the recommended method of front mounting with metal panel mounting keys. Panel mounting keys are available with or without coupling retention clips.

For front mounting, place the rear of the connector thru the panel cutout. With the mounting flange against the panel, fully insert the panel mounting keys thru the slots in the flange and thru the panel cutout. Retaining the keys in this position, bend them outward against the rear of the panel. When mating a front mounted connector with an unmounted connector, a coupling retention clip assembly may be used to securely lock the two together. Mounting screw brackets are available and may be used instead of the panel mounting keys.

| Description                             | Part Number  |
|-----------------------------------------|--------------|
| Panel Mounting Key                      | 201-9100-000 |
| Mounting Key and Coupling Clip Assembly | 294-9100-000 |
| Mounting Screw Bracket                  | 015-9100-000 |
| * Edgeboard Mounting Bracket            | 015-5009-000 |

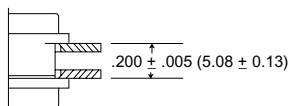
\*\* Edgeboard Mounting Bracket and

Coupling Clip Assembly MD51428-1

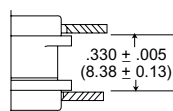
\* Must be ordered separately; specify left and right hand for complete assembly.

\*\* Must be ordered separately; assembly contains set of left and right hand types.

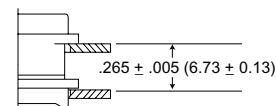
### Dimensions (Clip Mounting Only)



Plug and Receptacle  
Rear Mounted



Plug and Receptacle  
Front Mounted



Plug Front Mounted  
Receptacle Rear Mounted



Coupling Retention Clip  
(see Figure 2)



Mounting Screw Brackets  
(see Figures 1 and 3)



Edgeboard Mounted  
(see Figure 4)



Panel  
Mounting Key

## Panel Cutouts

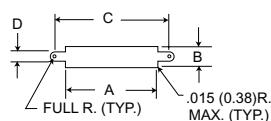


Figure 1

Front Mounting

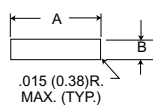


Figure 2

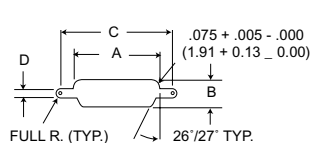


Figure 3

Rear Mounting

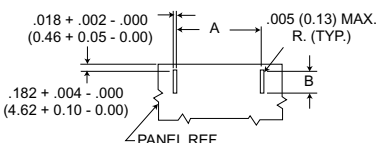


Figure 4

Edgeboard Mounting

1. A panel thickness of 1/8" (3.17mm) maximum is recommended for ease of tab bending when a panel mounting key & clip assembly or edgeboard mounting brackets are used.
2. Front mounting is preferred. However, when rear mounting is necessary, use figure 3 for dimensions.
3. Figure 4 is for edge board mounting bracket or edgeboard clip assembly. The .184 ± .002 (2.67 ± 0.05) dimension locates the MD socket insulator flus with the end of the board.
4. Screw brackets (015-9100-000) will accommodate #2-56 screws.
5. Front mounting (Fig. 1) and rear mounting (Fig. 3) accommodate #2-56 screws when jackscrews are used. See details on page 24 when jackposts are used.

| Shell Size | Cutout Figure | A<br>+ .004 (0.10)<br>- .000 (0.00) | B<br>+ .004 (0.10)<br>- .000 (0.00) | C<br>+ .004 (0.10)<br>- .000 (0.00) | D<br>+ .005 (0.13)<br>- .000 (0.00) |
|------------|---------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|
| 9          | 1             | .408 (10.36)                        | .172 (4.37)                         | .650 (16.51)                        | .089 (2.26)                         |
|            | 2             | .408 (10.36)                        | .172 (4.37)                         | -                                   | -                                   |
|            | 3             | .378 (9.60)                         | .217 (5.51)                         | .650 (16.51)                        | .089 (2.26)                         |
|            | 4             | .400 (10.16)                        | .091 (2.31)                         | -                                   | -                                   |
| 15         | 1             | .588 (14.94)                        | .172 (4.37)                         | .795 (20.19)                        | .089 (2.26)                         |
|            | 2             | .588 (14.94)                        | .172 (4.37)                         | -                                   | -                                   |
|            | 3             | .528 (13.28)                        | .217 (5.51)                         | .795 (20.19)                        | .089 (2.26)                         |
|            | 4             | .550 (13.97)                        | .091 (2.31)                         | -                                   | -                                   |
| 21         | 1             | .738 (18.75)                        | .172 (4.37)                         | .945 (24.00)                        | .089 (2.26)                         |
|            | 2             | .738 (18.75)                        | .172 (4.37)                         | -                                   | -                                   |
|            | 3             | .678 (17.27)                        | .217 (5.51)                         | .945 (24.00)                        | .089 (2.26)                         |
|            | 4             | .700 (17.78)                        | .091 (2.31)                         | -                                   | -                                   |
| 25         | 1             | .838 (21.29)                        | .172 (4.37)                         | 1.045 (26.54)                       | .089 (2.26)                         |
|            | 2             | .838 (21.29)                        | .172 (4.37)                         | -                                   | -                                   |
|            | 3             | .778 (19.76)                        | .217 (5.51)                         | 1.045 (26.54)                       | .089 (2.26)                         |
|            | 4             | .800 (20.32)                        | .091 (2.31)                         | -                                   | -                                   |
| 37         | 1             | 1.138 (28.91)                       | .172 (4.37)                         | 1.345 (34.16)                       | .089 (2.26)                         |
|            | 2             | 1.138 (28.91)                       | .172 (4.37)                         | -                                   | -                                   |
|            | 3             | 1.078 (27.38)                       | .217 (5.51)                         | 1.345 (34.16)                       | .089 (2.26)                         |
|            | 4             | 1.100 (27.94)                       | .091 (2.31)                         | -                                   | -                                   |
| 51         | 1             | 1.088 (27.64)                       | .215 (5.46)                         | 1.295 (32.89)                       | .089 (2.26)                         |
|            | 2             | 1.088 (27.64)                       | .215 (5.46)                         | -                                   | -                                   |
|            | 3             | 1.028 (26.11)                       | .260 (6.60)                         | 1.295 (32.89)                       | .089 (2.26)                         |
|            | 4             | 1.050 (26.67)                       | .091 (2.31)                         | -                                   | -                                   |

## With Screw Mounting Holes (Conforms to MIL-C-83513)

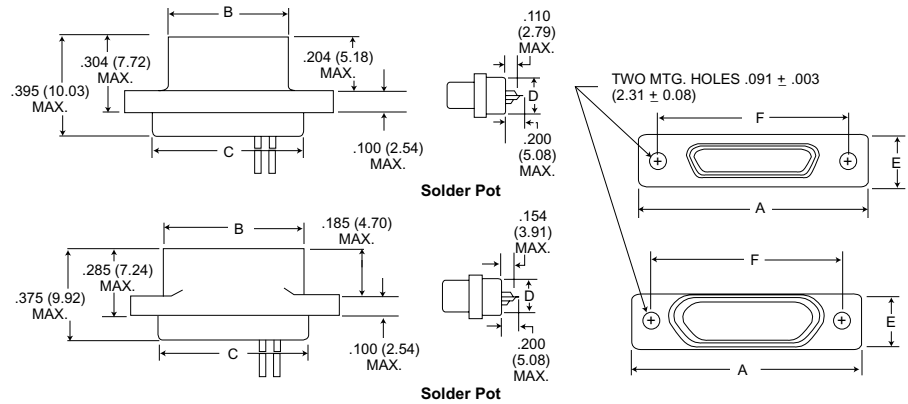
## Plug



## Receptacle



MDB Glass-filled Diallyl Phthalate Plastic Insulator MDVB Glass-filled Polyester Plastic Insulator



| Part Number by Shell Size |             | A<br>Max.     | B<br>Max.     | C<br>Max.     | D<br>Max.   | E<br>Max.   | F<br>±.005    | Avg.<br>Weight***<br>±5% (oz.)<br>±5% (gm.) |
|---------------------------|-------------|---------------|---------------|---------------|-------------|-------------|---------------|---------------------------------------------|
| MDB1-9P**                 | MDVB1-9P**  | .788 (20.02)  | .292 (7.42)   | .408 (10.36)  | .173 (4.39) | .218 (5.54) | .565 (14.35)  | .026 (0.73)                                 |
| MDB1-9S**                 | MDVB1-9S**  | .788 (20.02)  | .380 (9.65)   | .408 (10.36)  | .173 (4.39) | .218 (5.54) | .565 (14.35)  | .025 (0.70)                                 |
| MDB1-15P**                | MDVB1-15P** | .938 (23.82)  | .442 (11.23)  | .588 (14.17)  | .173 (4.39) | .218 (5.54) | .715 (18.16)  | .038 (1.10)                                 |
| MDB1-15S**                | MDVB1-15S** | .938 (23.82)  | .530 (13.46)  | .588 (14.17)  | .173 (4.39) | .218 (5.54) | .715 (18.16)  | .035 (1.00)                                 |
| MDB1-21P**                | MDVB1-21P** | 1.088 (27.64) | .592 (15.04)  | .708 (17.98)  | .173 (4.39) | .218 (5.54) | .865 (21.97)  | .053 (1.50)                                 |
| MDB1-21S**                | MDVB1-21S** | 1.088 (27.64) | .680 (17.27)  | .708 (17.98)  | .173 (4.39) | .218 (5.54) | .865 (21.97)  | .050 (1.40)                                 |
| MDB1-25P**                | MDVB1-25P** | 1.188 (30.18) | .692 (17.58)  | .808 (20.56)  | .173 (4.39) | .218 (5.54) | .965 (24.51)  | .063 (1.80)                                 |
| MDB1-25S**                | MDVB1-25S** | 1.188 (30.18) | .780 (19.81)  | .808 (20.56)  | .173 (4.39) | .218 (5.54) | .965 (24.51)  | .056 (1.60)                                 |
| MDB1-31P**                | MDVB1-31P** | 1.338 (33.98) | .842 (21.39)  | .958 (24.33)  | .173 (4.39) | .218 (5.54) | 1.115 (28.32) | .080 (2.30)                                 |
| MDB1-31S**                | MDVB1-31S** | 1.338 (33.98) | .930 (23.62)  | .958 (24.33)  | .173 (4.39) | .218 (5.54) | 1.115 (28.32) | .073 (2.10)                                 |
| MDB1-37P**                | MDVB1-37P** | 1.488 (37.80) | .992 (25.20)  | 1.108 (28.14) | .173 (4.39) | .218 (5.54) | 1.265 (32.13) | .086 (2.45)                                 |
| MDB1-37S**                | MDVB1-37S** | 1.488 (37.80) | 1.080 (27.43) | 1.108 (28.14) | .173 (4.39) | .218 (5.54) | 1.265 (32.13) | .076 (2.15)                                 |
| MDB1-51P**                | MDVB1-51P** | 1.438 (36.52) | .942 (23.93)  | 1.058 (26.87) | .220 (5.59) | .260 (6.60) | 1.215 (30.86) | .109 (3.10)                                 |
| MDB1-51S**                | MDVB1-51S** | 1.438 (36.52) | 1.030 (26.16) | 1.058 (26.87) | .220 (5.59) | .260 (6.60) | 1.215 (30.86) | .093 (2.64)                                 |

\*\* Add lead type and length, see Part Number Explanation.

\*\*\* Weight given is with 1/2", uninsulated solid #25 AWG gold plated copper pigtailed.

MD\*B-PCB connectors use standard MD\*B all plastic shells and are designed for use with flex circuitry, printed circuit and multi-layer boards. They are easily mounted and soldered and provide high density/high reliability in board-to-board and board-to-cable applications. While being similar to the MDM-PCB connectors, the MD\*B-PCB connectors are all plastic, extremely small, and lightweight yet rugged enough for use in the most demanding applications.

MD\*B-PCB connectors are available in seven shell sizes with 9 to 51 contacts in the popular 90° narrow profile PCB termination, with a variety of tail lengths for varying board thickness.

Jackpost mounting for use with locking hardware is also available.

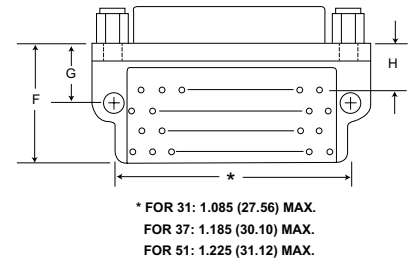
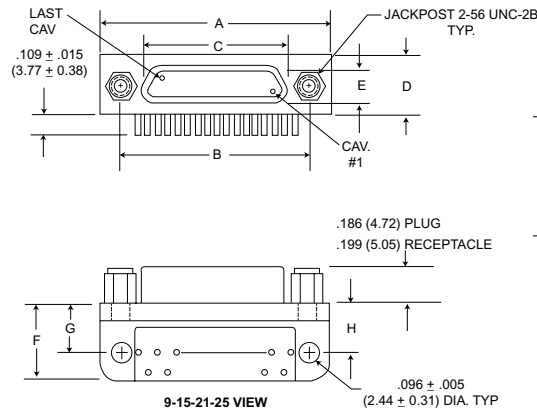
If the connectors shown in the catalog do not meet the requirements of your applications, a special shape, size or layout using the basic all plastic shell can be made available. For further technical and applications information, contact your nearest ITT Cannon Technical sales office.



## How to Order

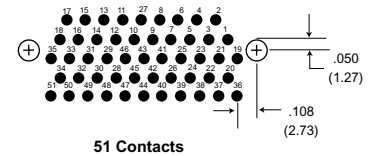
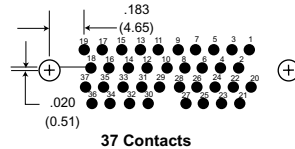
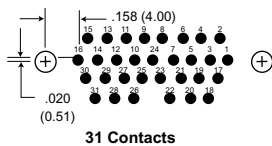
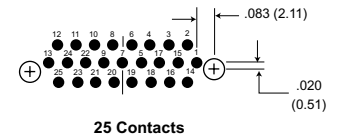
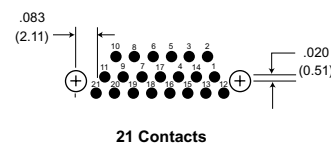
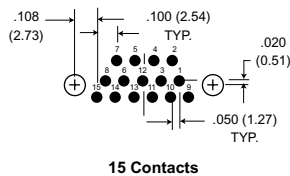
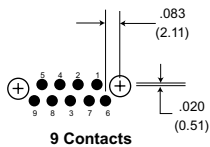
|                                                                                                                                                                                    |      |   |    |   |     |   |     |   |     |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------|---|----|---|-----|---|-----|---|-----|
|                                                                                                                                                                                    | MD*B | - | 37 | S | CBR | * | L39 | - | *** |
| SERIES                                                                                                                                                                             |      |   |    |   |     |   |     |   |     |
| CONTACT ARRANGEMENT                                                                                                                                                                |      |   |    |   |     |   |     |   |     |
| CONTACT TYPE                                                                                                                                                                       |      |   |    |   |     |   |     |   |     |
| TERMINATION TYPE                                                                                                                                                                   |      |   |    |   |     |   |     |   |     |
| HARDWARE                                                                                                                                                                           |      |   |    |   |     |   |     |   |     |
| TERMINATION TAIL LENGTH                                                                                                                                                            |      |   |    |   |     |   |     |   |     |
| MODIFICATION CODES<br>(Consult Factory)                                                                                                                                            |      |   |    |   |     |   |     |   |     |
| CONNECTOR SERIES<br>MDVB, MDB                                                                                                                                                      |      |   |    |   |     |   |     |   |     |
| CONNECTOR SERIES<br>9, 15, 21, 25, 31, 37, 51                                                                                                                                      |      |   |    |   |     |   |     |   |     |
| CONTACT TYPE<br>S = Socket<br>P = Pin                                                                                                                                              |      |   |    |   |     |   |     |   |     |
| TERMINATION TYPE<br>CBR = 90° Narrow Profile PCB Terminations                                                                                                                      |      |   |    |   |     |   |     |   |     |
| HARDWARE<br>P = Jackpost<br>M7 = Jackposts, M83513/5-07<br>No Letter = Less Hardware                                                                                               |      |   |    |   |     |   |     |   |     |
| TERMINATION TAIL LENGTH CODES<br>None - .109 (2.77) ± 0.15 (0.38) Standard<br>L61 - .125 (3.18)<br>L56 - .150 (3.81)<br>L57 - .190 (4.83)<br>L39 - .250 (6.35)<br>L5 - .375 (9.52) |      |   |    |   |     |   |     |   |     |

## CBR Series (90° Mounting Narrow Profile)



## PCB Termination Arrangements (Viewed from bottom of connector, on PCB solder side.)

Identification number shown for plug connector, use reverse order for socket connector.



## All Termination Configurations .100 (2.54) x .100 (2.54) Grid Pattern, Offset .050 (1.27)

| Part Number<br>By Shell Size | A<br>Max.     | B<br>± .005 (0.13) | C<br>Max.     | D<br>Max.   | E<br>Max.   | F<br>Max.    | G<br>± .010 (0.25) | H<br>± .010 (0.25) |
|------------------------------|---------------|--------------------|---------------|-------------|-------------|--------------|--------------------|--------------------|
| MD*B-9PCBR*                  | .788 (20.01)  | .565 (14.35)       | .292 (7.42)   | .218 (5.54) | .134 (3.40) | .420 (10.67) | .250 (6.35)        | .230 (5.84)        |
| MD*B-9SCBR*                  | .788 (20.01)  | .565 (14.35)       | .375 (9.52)   | .218 (5.54) | .218 (5.54) | .420 (10.67) | .250 (6.35)        | .230 (5.84)        |
| MD*B-15PCBR*                 | .938 (23.82)  | .715 (18.16)       | .442 (11.23)  | .218 (5.54) | .134 (3.40) | .420 (10.67) | .250 (6.35)        | .130 (3.30)        |
| MD*B-15SCBR*                 | .938 (23.82)  | .715 (18.16)       | .525 (13.34)  | .218 (5.54) | .218 (5.54) | .420 (10.67) | .250 (6.35)        | .130 (3.30)        |
| MD*B-21PCBR*                 | 1.088 (27.63) | .865 (21.97)       | .592 (15.04)  | .218 (5.54) | .134 (3.40) | .420 (10.67) | .250 (6.35)        | .130 (3.30)        |
| MD*B-21SCBR*                 | 1.088 (27.63) | .865 (21.97)       | .675 (17.14)  | .218 (5.54) | .218 (5.54) | .420 (10.67) | .250 (6.35)        | .130 (3.30)        |
| MD*B-25PCBR*                 | 1.188 (30.17) | .965 (24.51)       | .692 (17.58)  | .218 (5.54) | .134 (3.40) | .420 (10.67) | .250 (6.35)        | .130 (3.30)        |
| MD*B-25SCBR*                 | 1.188 (30.17) | .965 (24.51)       | .775 (19.68)  | .218 (5.54) | .218 (5.54) | .420 (10.67) | .250 (6.35)        | .130 (3.30)        |
| MD*B-31PCBR*                 | 1.338 (33.98) | 1.115 (28.32)      | .842 (21.39)  | .218 (5.54) | .134 (3.40) | .420 (10.67) | .250 (6.35)        | .130 (3.30)        |
| MD*B-31SCBR*                 | 1.338 (33.98) | 1.115 (28.32)      | .925 (23.50)  | .218 (5.54) | .218 (5.54) | .420 (10.67) | .250 (6.35)        | .130 (3.30)        |
| MD*B-37PCBR*                 | 1.488 (37.79) | 1.265 (32.13)      | .994 (25.25)  | .218 (5.54) | .134 (3.40) | .520 (13.21) | .250 (6.35)        | .130 (3.30)        |
| MD*B-37SCBR                  | 1.488 (37.79) | 1.265 (32.13)      | 1.075 (27.30) | .218 (5.54) | .218 (5.54) | .520 (13.21) | .250 (6.35)        | .130 (3.30)        |
| MD*B-51PCBR*                 | 1.438 (36.52) | 1.215 (30.86)      | .942 (23.93)  | .258 (6.55) | .177 (4.50) | .550 (13.97) | .300 (7.62)        | .150 (3.81)        |
| MD*B-51SCBR                  | 1.438 (36.52) | 1.215 (30.86)      | 1.026 (26.06) | .258 (6.55) | .258 (6.55) | .550 (13.97) | .300 (7.62)        | .150 (3.81)        |

\* For jackpost locking add letter "P" or "M7".

NOTE: Standard lead termination is #24 AWG, solid copper, solder or tin dipped.

MDB connectors with two coaxial and five MICRO-PIN™/MICROSOCKET™ contacts. Crimp-type coaxial contacts accommodate RG-178/U cables. A plastic insertion/extraction tool is supplied with each connector assembly having removable coaxial assembly.

[illegible]

### Micro-D Coaxial

1 - .050 (1.27) centers

TOTAL CONTACT CAVITIES 7

**NUMBER OF COAXIALS** .....2

No Letter - Coaxial assembly installed and nonremovable  
RO - coaxial assembly ordered separately  
RA - Coaxial shipped assembled but uninstalled

P - Pin  
S - Socket

L - Uninsulated, solid wire  
H - Insulated, solid or stranded  
S -Solder pot\*

See Standard Wire Termination

Code on page 247. Coaxial cable will be RG-178U unless otherwise specified; length will be same as wire modification.

## Consult factory

No letter - No hardware  
standard mounting. .091 (2.31) hole diameter  
F - Float  
K - Jackscrew (standard)  
L - Jackscrew (low profile)  
P - Jackpost

\* Not available with removalbe coax cable type connectors RO and RA

**SERIES** \_\_\_\_\_ **MD** **CC** **S** **\*** **\*\*\***  
**COAXIAL CABLE** \_\_\_\_\_  
**CONTACT TYPE** \_\_\_\_\_  
**COAXIAL CABLE TYPE** \_\_\_\_\_  
**COAXIAL CABLE LENGTH** \_\_\_\_\_

## ITT Cannon Prefix

## CC

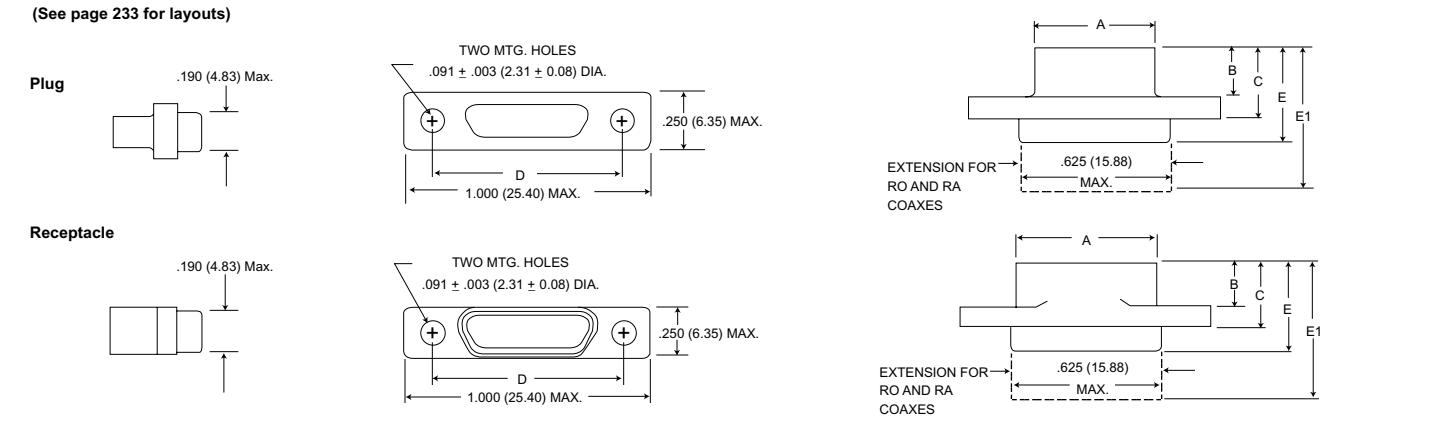
P - Pin  
(used with socket side connection)  
S - Socket  
(used with pin type connection)

1 - RG178/U

See Standard Wire Termination

Codes on page 247. Coaxial cable will be RG-178U unless otherwise specified; length will be the same as wire modification.

Dimension - MDB Coaxial Series



| Part Number<br>by Shell Size | A<br>Max.    | B<br>Max.   | C<br>Max.   | D<br>± .005 (0.13) | E<br>Max.    | E1<br>Max.   | Avg. Weight**<br>(oz) ± 5% (gm.) ± 5% |
|------------------------------|--------------|-------------|-------------|--------------------|--------------|--------------|---------------------------------------|
| MDB1-7C2P*                   | .510 (12.95) | .204 (5.18) | .298 (7.57) | .782 (19.86)       | .395 (10.03) | .510 (12.95) | .290 (8.30)                           |
| MDB1-7C2S*                   | .602 (15.29) | .185 (4.70) | .279 (7.09) | .782 (19.86)       | .375 (9.52)  | .540 (13.72) | .273 (7.80)                           |

\* Add lead type and length, see Part Number Explanation.  
\*\* Weight given is with 7 inch (177.80) insulated leads, #26 AWG silver plated copper pigtails and RG178/U coaxials.

## Mounting Hardware Views (Sizes 9-51)

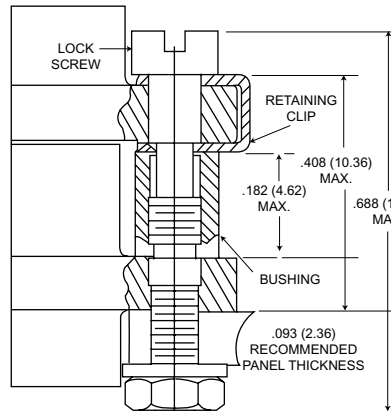
This hardware supplied unassembled.



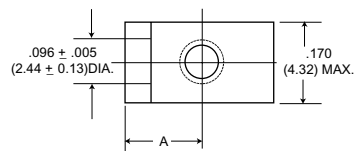
Screw Lock Assembly



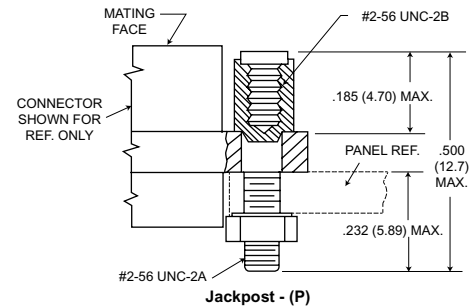
90° Angle Mounting Bracket



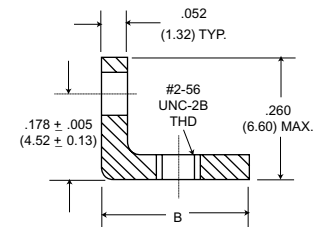
Screw Lock Assembly\*



90° Angle Mounting Bracket



Jackpost - (P)

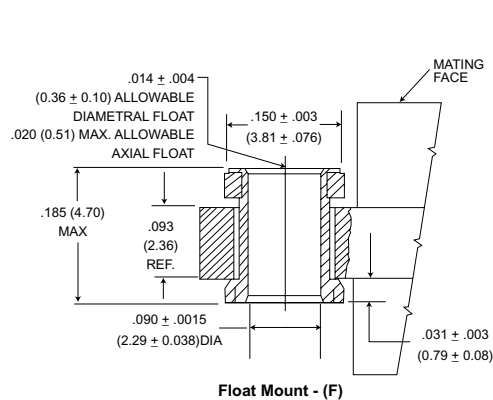


\*NOTE: Torque value is 4.0 in/lbs max.

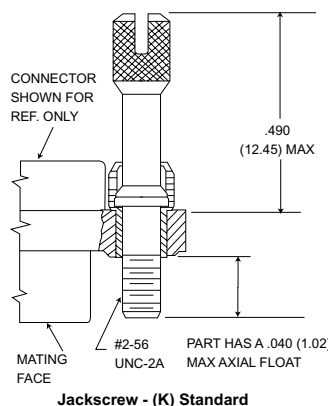
| Description                                                       | Part Number  | A<br>± .005 (0.13) | B<br>Max.      |
|-------------------------------------------------------------------|--------------|--------------------|----------------|
| Screw Lock Assembly                                               | 322-9500-000 |                    |                |
| Jackpost Kit                                                      | 320-9505-000 |                    |                |
| Mounting Bracket, 90° Angle-<br>MD*1<br>for 9 thru 37 Shell Sizes | 015-9516-000 | .100<br>(2.54)     | .215<br>(5.46) |
| MD*1<br>for 51 Shell Size                                         | 015-9516-000 | .122<br>(3.10)     | .257<br>(6.53) |

NOTES: Screw lock assembly (322-9500-000) can be used for front front mounting. Jackpost kit (320-9505-000) consists of 2 assemblies, shipped unassembled.

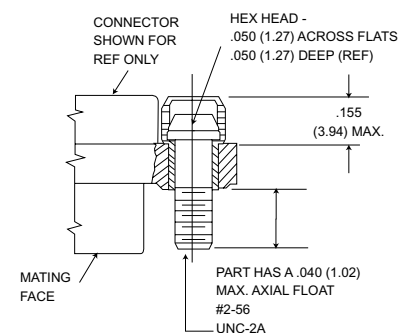
This hardware is factory installed.



Float Mount - (F)



Jackscrew - (K) Standard



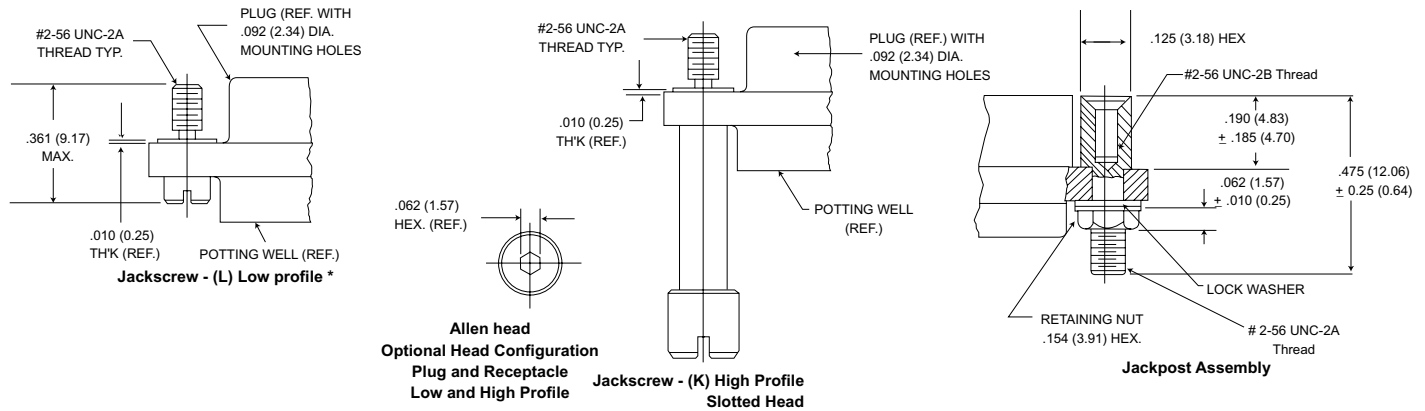
Jackscrew - (L) Low Profile

\* NOTE: Torque vales are as follows:  
Low Profile Jackscrew (L)-2.5 in/lbs  
Standard Jackscrew (K)-2.5 in/lbs

Shown here is a cutaway view of the float mount for the MD connector. The basic shell dimensions are the same for the float mount and the screw mounting hole configurations. Veiw shown is for standard float mount front panel mounting. Reverse mounting is available on request.

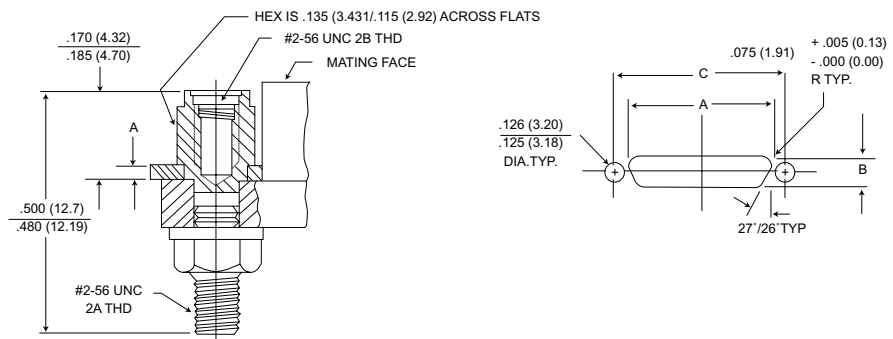
## Mounting Hardware to Military Specification (Sizes 9 - 51) PER MIL-C-83513/5

This hardware supplied unassembled.



| Description                              | M83513/5 | Mode Code | Part Number  |
|------------------------------------------|----------|-----------|--------------|
| Slotted Head Jackscrew Assy Low Profile  | -05      | M5        | 320-9508-025 |
| Slotted Head Jackscrew Assy High Profile | -06      | M6        | 320-9508-027 |
| Allen Head Jackscrew Assy Low Profile    | -02      | M2        | 320-9508-026 |
| Allen Head Jackscrew Assy High Profile   | -03      | M3        | 320-9508-028 |
| Jackpost Assy                            | -07      | M7        | 320-9505-033 |

## Jackpost Bushing (For Rear Panel Mounting)



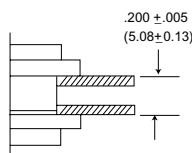
| Panel Thickness | A Dim.                | Jackpost Kit Number* |
|-----------------|-----------------------|----------------------|
| 3/32 (2.4)      | .092/.087 (2.34/2.21) | 320-9505-007         |
| 1/16 (1.6)      | .061/.056 (2.34/1.42) | 320-9505-006         |
| 3/64 (1.2)      | .047/.042 (1.19/1.07) | 320-9505-005         |
| 1/32 (0.8)      | .030/.025 (0.76/0.64) | 320-9505-004         |

\*2 Jackposts, 2 nuts, 2 washers.

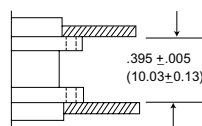
## Plug and Receptacle Dimensions

|            | A<br>+ .004 (0.10)<br>- .000 (0.00) | B<br>+ .004 (0.10)<br>- .000 (0.00) | C<br>± .005 (0.13) |
|------------|-------------------------------------|-------------------------------------|--------------------|
| Shell Size |                                     |                                     |                    |
| 9          | .379 (9.63)                         | .219 (5.56)                         | .565 (14.35)       |
| 15         | .529 (13.44)                        | .219 (5.56)                         | .715 (18.16)       |
| 21         | .679 (17.25)                        | .219 (5.56)                         | .865 (21.97)       |
| 25         | .779 (19.79)                        | .219 (5.56)                         | .965 (24.51)       |
| 31         | .929 (23.60)                        | .219 (5.56)                         | 1.115 (28.32)      |
| 37         | 1.079 (27.41)                       | .219 (5.56)                         | 1.265 (32.13)      |
| 51         | 1.029 (26.14)                       | .261 (6.63)                         | 1.215 (30.86)      |

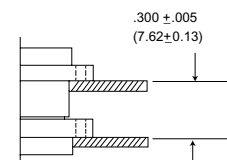
## Panel Mounting Dimensions



Plug and Receptacle  
Rear Mounted



Plug and Receptacle  
Front Mounted



Plug Front Mounted  
Receptacle Rear Mounted

## Panel Cutouts

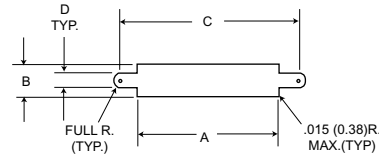


Figure 1  
Front Mounting

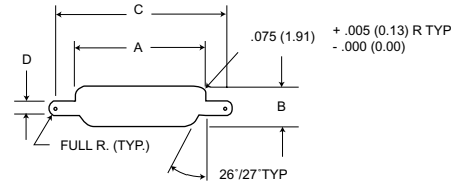


Figure 2  
Rear Mounting

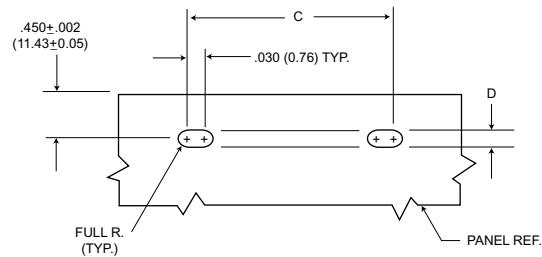


Figure 3  
Edgeboard Mounting

| Size | Cutout Figure | A                              | B                              | C                              | D                              |
|------|---------------|--------------------------------|--------------------------------|--------------------------------|--------------------------------|
|      |               | + .004 (0.10)<br>- .000 (0.00) | + .004 (0.10)<br>- .000 (0.00) | + .005 (0.13)<br>- .000 (0.00) | + .005 (0.13)<br>- .000 (0.00) |
| 9    | 1             | .409 (10.39)                   | .172 (4.37)                    | .570 (14.48)                   | .089 (2.26)                    |
|      | 2             | .379 (9.63)                    | .219 (5.56)                    | .570 (14.48)                   | .089 (2.26)                    |
|      | 3             | -                              | -                              | .570 (14.48)                   | .089 (2.26)                    |
| 15   | 1             | .559 (14.20)                   | .172 (4.37)                    | .720 (18.29)                   | .089 (2.26)                    |
|      | 2             | .529 (13.44)                   | .219 (5.56)                    | .720 (18.29)                   | .089 (2.26)                    |
|      | 3             | -                              | -                              | .720 (18.29)                   | .089 (2.26)                    |
| 21   | 1             | .709 (18.00)                   | .172 (4.37)                    | .870 (22.10)                   | .089 (2.26)                    |
|      | 2             | .679 (17.25)                   | .219 (5.56)                    | .870 (22.10)                   | .089 (2.26)                    |
|      | 3             | -                              | -                              | .870 (22.10)                   | .089 (2.26)                    |
| 25   | 1             | .809 (20.55)                   | .172 (4.37)                    | .970 (24.64)                   | .089 (2.26)                    |
|      | 2             | .779 (19.79)                   | .219 (5.56)                    | .970 (24.64)                   | .089 (2.26)                    |
|      | 3             | -                              | -                              | .970 (24.64)                   | .089 (2.26)                    |
| 31   | 1             | .959 (24.36)                   | .172 (4.37)                    | 1.120 (28.45)                  | .089 (2.26)                    |
|      | 2             | .929 (23.60)                   | .219 (5.56)                    | 1.120 (28.45)                  | .089 (2.26)                    |
|      | 3             | -                              | -                              | 1.120 (28.45)                  | .089 (2.26)                    |
| 37   | 1             | 1.109 (28.17)                  | .172 (4.37)                    | 1.270 (32.26)                  | .089 (2.26)                    |
|      | 2             | 1.079 (27.41)                  | .219 (5.56)                    | 1.270 (32.26)                  | .089 (2.26)                    |
|      | 3             | -                              | -                              | 1.270 (32.26)                  | .089 (2.26)                    |
| 51   | 1             | 1.059 (26.90)                  | .215 (5.46)                    | 1.220 (30.99)                  | .089 (2.26)                    |
|      | 2             | 1.029 (26.14)                  | .261 (6.63)                    | 1.220 (30.99)                  | .089 (2.26)                    |
|      | 3             | -                              | -                              | 1.220 (30.99)                  | .089 (2.26)                    |

## NOTES:

1. Front mounting (figure 1) and rear mounting (figure 2) accommodates #2-56 screws when jackscrew are used. See detail on page 24 when jackposts are used.
2. Front mounting is preferred. However, when rear mounting is necessary, use figure 2 dimensions.
3. Edgeboard mounting bracket (figure 3) uses #2-56 screws. Dimension .450 ± .002 (11.43 ± 0.05) locates the MD receptacle flush with the end of the board.



The MJS jackscrew series provides a reliable interconnect for board-to-board, board-to-cable and in-line cable-to-cable applications. Layouts accommodating up to 76 MICROPIN/MICROSOCKET™

contacts are available, with the same wide range of options as are offered with the other MICRO Line products offered in this catalog.

## How to Order

SERIES \_\_\_\_\_ MJS \* - 26 P H 001  
 INSULATOR MATERIAL \_\_\_\_\_  
 CONTACT ARRANGEMENT \_\_\_\_\_  
 CONTACT TYPE \_\_\_\_\_  
 TERMINATION TYPE \_\_\_\_\_  
 TERMINATION CODES \_\_\_\_\_

### SERIES

MJS - Micro Center Jackscrew

### INSULATOR MATERIAL

B - Diallyl phthalate  
 V - Polyester  
 U - Polyetherimide  
 R - Polyphenylene sulfide

### CONTACT ARRANGEMENTS

Unshrouded Receptacle: 10, 26, 51, 66  
 Shrouded Receptacle: 10, 34, 42, 76  
 Low Profile Plug and Receptacle  
 (shrouded): 28

### CONTACT TYPE

P - Pin  
 S - Socket

### TERMINATION TYPE

H - Insulated wire harness.  
 I - Integral tail (MJSV-28S only).  
 L - Solid - uninsulated wire.  
 S - Solder pot to accept #26 AWG harness wire.  
 T - Thru bundle pigtail (MJSV-28P only).

### TERMINATION CODE\*

(H) 001 - 18" , 7/34 strand, #26 AWG, MIL-W-16878/4, Type E Teflon, yellow.  
 (H) 003 - 18" , 7/34 strand, #26 AWG, MIL-W-16878/4, Type E Teflon, color coded to MIL-STD-681 System I.  
 (L) 1 - 1/2" uninsulated solid #25 AWG gold plated copper.  
 (L) 2 - 1" uninsulated solid #25 AWG gold plated copper.

\* See Termination Codes shown below for additional length modification codes.

## Standard Wire Termination Codes

The following termination codes are listed for you information. For lengths not shown, consult factory for proper modification code. **All wire lengths are minimum.**

### Harness Type (H)

#26 AWG per MIL-W-16878/4 Type E Teflon, 7/34 stranded.

| Length     | All Yellow | Color Coded |
|------------|------------|-------------|
| 3 (76.2)   | H 020      | H 027       |
| 6 (152.4)  | H 019      | H 016       |
| 8 (203.2)  | H 026      | H 034       |
| 10 (254.0) | H 029      | H 025       |
| 12 (304.8) | H 028      | H 002       |
| 18 (457.2) | H 001      | H 003       |
| 20 (508.0) | H 038      | H 023       |

### Solid Uninsulated Type (L)

#25 AWG gold plated copper.

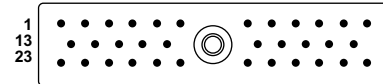
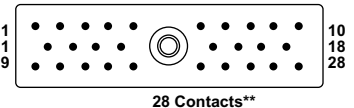
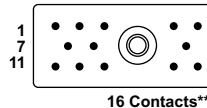
| Termination Code | Length       | Termination Code | Length        |
|------------------|--------------|------------------|---------------|
| L61              | .125 (3.18)  | L14              | .750 (19.05)  |
| L56              | .150 (3.81)  | L2               | 1.000 (25.40) |
| L57              | .190 (4.83)  | L7               | 1.500 (38.10) |
| L39              | .250 (6.35)  | L6               | 2.000 (50.80) |
| L58              | .375 (9.53)  | L16              | 2.500 (63.50) |
| L1               | .500 (12.70) | L10              | 3.000 (76.20) |

## Contact Arrangements

Face view of pin-use reverse order for socket



MJSB/MJSU



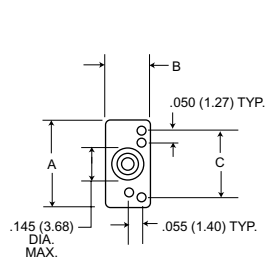
MJSV

Identification numbers are for reference only and do not appear on connectors.

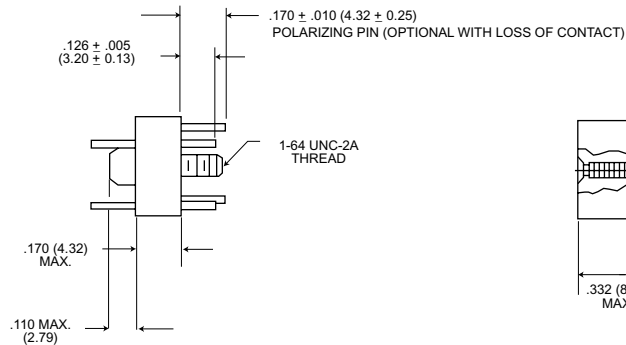
\*Low profile configuration  
 \*\*MJSV & MJSR

## Unshrouded Receptacle (10-26-51-66)

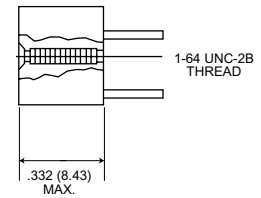
MJSB/MJSU



Rear View



Receptacle



Plug

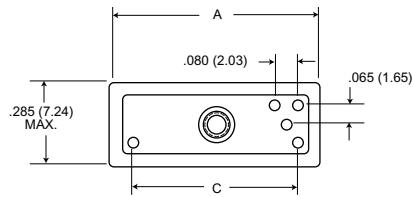
## STANDARD MATERIALS AND FINISHES

|                     |                                                                    |
|---------------------|--------------------------------------------------------------------|
| Micropin            | Copper alloy, 50 micro-inch gold                                   |
| Microsocket         | Copper alloy, 50 micro-inch gold                                   |
| Insulator           | Diallyl phthalate, green color<br>or polyetherimide, natural color |
| Jackscrew           | Stainless steel, passivated & lubricated                           |
| Retainer, Jackscrew | Stainless steel, passivated                                        |
| Insert, Threaded    | Stainless steel, passivated                                        |
| Post, Polarizing    | Stainless steel, passivated                                        |

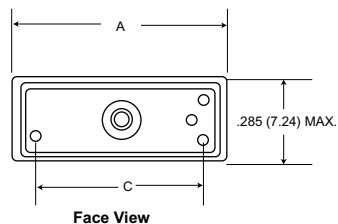
| Part Number      | A<br>Max.     | B<br>Max.   | C<br>Bsc.     |
|------------------|---------------|-------------|---------------|
| MJSB or MJSU-10P | .378 (9.60)   | .190 (4.83) | .290 (7.37)   |
| MJSB or MJSU-10S | .378 (9.60)   | .190 (4.83) | .290 (7.37)   |
| MJSB or MJSU-26P | .778 (19.76)  | .190 (4.83) | .690 (17.53)  |
| MJSB or MJSU-26S | .778 (19.76)  | .190 (4.83) | .690 (17.53)  |
| MJSB or MJSU-51P | 1.028 (26.11) | .260 (6.60) | .940 (23.88)  |
| MJSB or MJSU-51S | 1.028 (26.11) | .260 (6.60) | .940 (23.88)  |
| MJSB or MJSU-66P | 1.280 (32.51) | .260 (6.60) | 1.190 (30.23) |
| MJSB or MJSU-66S | 1.280 (32.51) | .260 (6.60) | 1.190 (30.23) |

## Shrouded Receptacle (16-28\*-34)

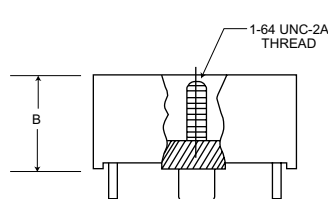
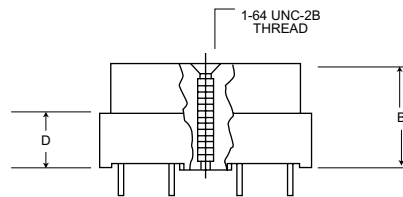
MJSV/MJSR



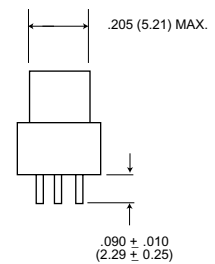
Face View



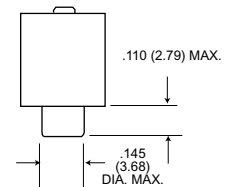
Face View



Plug



Receptacle



## STANDARD MATERIALS AND FINISHES

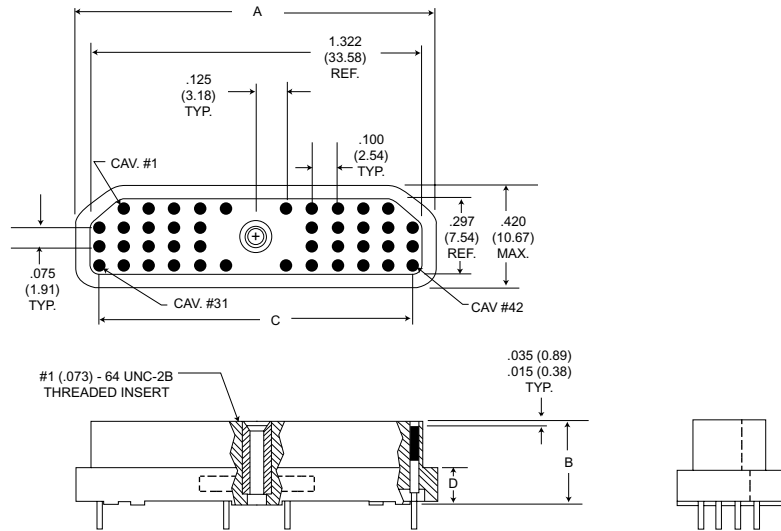
|                     |                                                              |
|---------------------|--------------------------------------------------------------|
| Micropin            | Copper alloy, 50 micro-inch gold                             |
| Microsocket         | Copper alloy, 50 micro-inch gold                             |
| Insulator           | Polyester, black color<br>Polyphenylene sulfide, black color |
| Jackscrew           | Stainless steel, passivated & lubricated                     |
| Retainer, Jackscrew | Stainless steel, passivated                                  |
| Insert, Threaded    | Stainless steel, passivated                                  |
| Post, Polarizing    | Stainless steel, passivated                                  |

| Part Number      | A<br>Max.     | B<br>Max.   | C<br>Ref.     | D<br>± .006 (0.15) |
|------------------|---------------|-------------|---------------|--------------------|
| MJSV or MJSR-16P | .700 (17.78)  | .345 (8.76) | .545 (13.84)  | .175 (4.45)        |
| MJSV or MJSR-16S | .700 (17.78)  | .320 (8.13) | .545 (13.84)  | -                  |
| MJSV-28P*        | 1.020 (25.91) | .232 (5.89) | .865 (21.97)  | .062 (1.57)        |
| MJSV-28S*        | 1.020 (25.91) | .246 (6.25) | .865 (21.97)  | -                  |
| MJSV-34P         | 1.180 (29.97) | .330 (8.38) | 1.025 (26.04) | .160 (4.06)        |
| MJSV-34S         | 1.180 (29.97) | .305 (7.75) | 1.025 (26.04) | -                  |

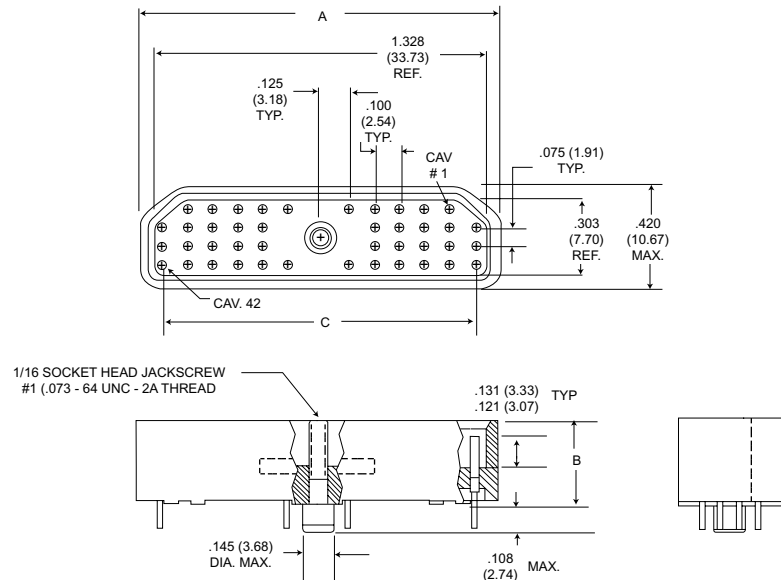
\*Low profile configuration, for "L" (uninsulated solid wire) termination add .090 (2.29) to the "B" dimension. For "H" (insulated wire) termination add .200 (5.08) to the "B" dimension.

## Shrouded Receptacle (42)

MJSR-42P



MJSR-42S



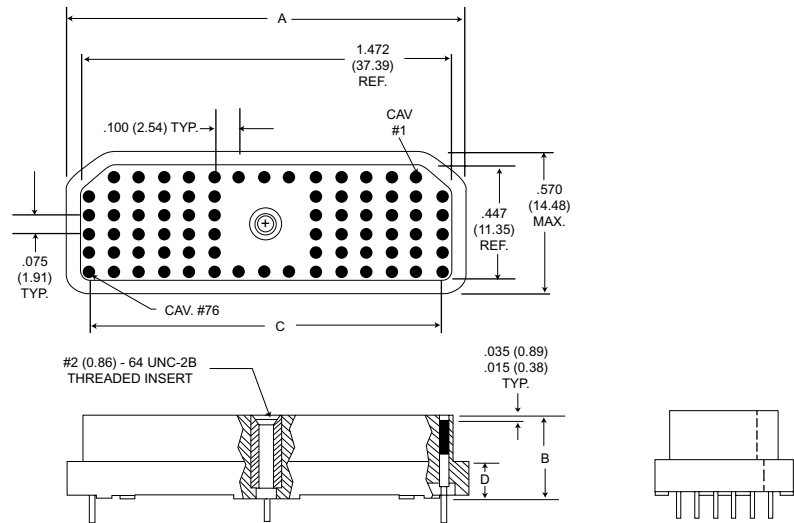
| Part Number | A<br>Max.     | B<br>Max.   | C<br>Ref.     | D<br>±.006 (0.15) |
|-------------|---------------|-------------|---------------|-------------------|
| MJSR-42P    | 1.445 (36.70) | .345 (8.76) | 1.250 (31.75) | .142 (3.61)       |
| MJSR-42S    | 1.445 (36.70) | .357 (9.07) | 1.250 (31.75) | -                 |

## STANDARD MATERIALS AND FINISHES

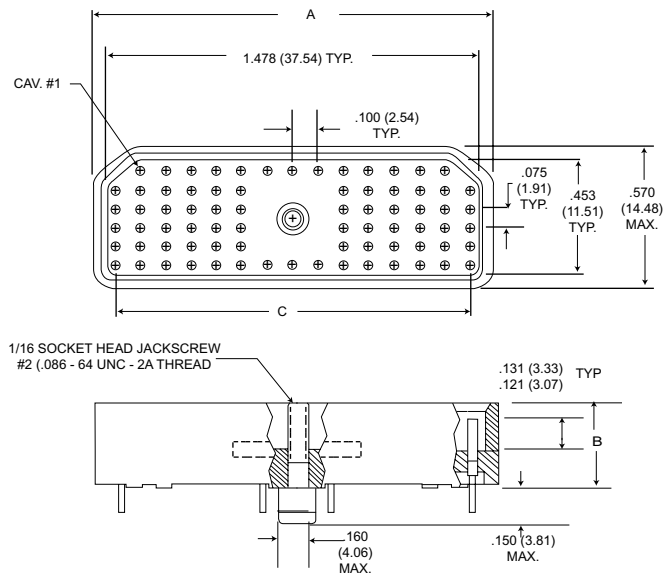
|                     |                                          |
|---------------------|------------------------------------------|
| Micropin            | Copper alloy, 50 micro-inch gold         |
| Microsocket         | Copper alloy, 50 micro-inch gold         |
| Insulator           | Polyphenylene sulfide, black color       |
| Jackscrew           | Stainless steel, passivated & lubricated |
| Retainer, Jackscrew | Stainless steel, passivated              |
| Insert, Threaded    | Stainless steel, passivated              |
| Post, Polarizing    | Stainless steel, passivated              |

## Shrouded Receptacle (76)

MJSR-76P



MJSR-76S



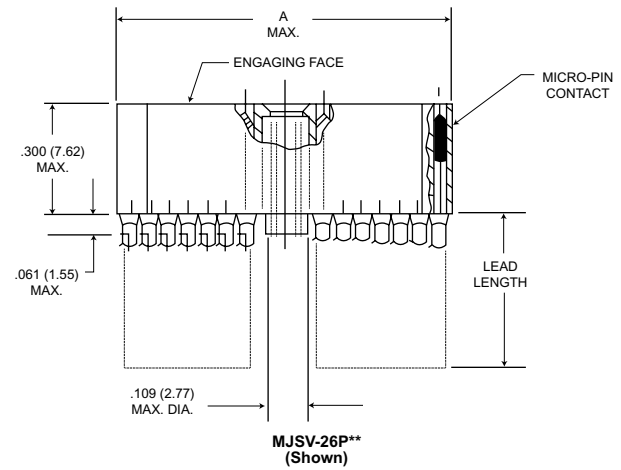
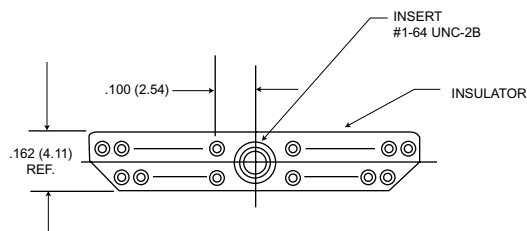
| Part Number | A<br>Max.     | B<br>Max.   | C<br>Ref.     | D<br>±.006 (0.15) |
|-------------|---------------|-------------|---------------|-------------------|
| MJSR-76P    | 1.595 (40.51) | .345 (8.76) | 1.400 (35.56) | .142 (3.61)       |
| MJSR-76S    | 1.595 (40.51) | .357 (9.07) | 1.400 (35.56) | -                 |

## STANDARD MATERIALS AND FINISHES

|                     |                                          |
|---------------------|------------------------------------------|
| Micropin            | Copper alloy, 50 micro-inch gold         |
| Microsocket         | Copper alloy, 50 micro-inch gold         |
| Insulator           | Polyphenylene sulfide, black color       |
| Jackscrew           | Stainless steel, passivated & lubricated |
| Retainer, Jackscrew | Stainless steel, passivated              |
| Insert, Threaded    | Stainless steel, passivated              |
| Post, Polarizing    | Stainless steel, passivated              |

## Plug (Molded-In Insert - Special)

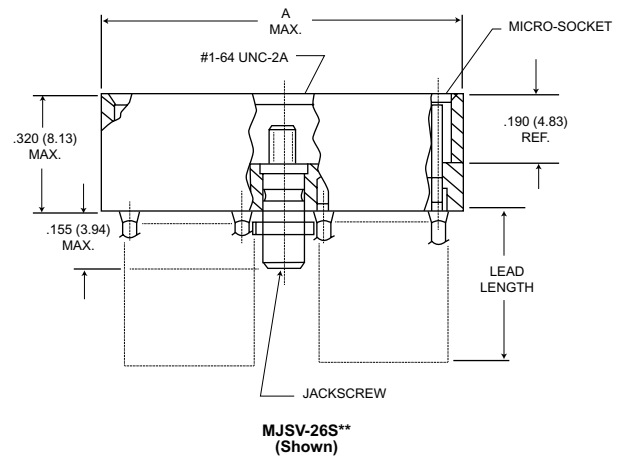
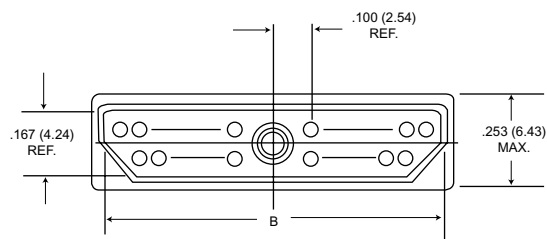
MJSV\*\*P



| Part Number | A Ref.        |
|-------------|---------------|
| MJSV-26P**  | .868 (22.05)  |
| MJSV-38P**  | 1.168 (29.67) |

## Receptacle (Special)

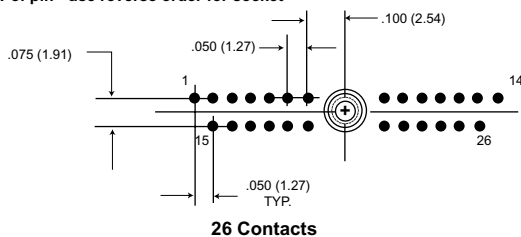
MJSV\*\*S\*



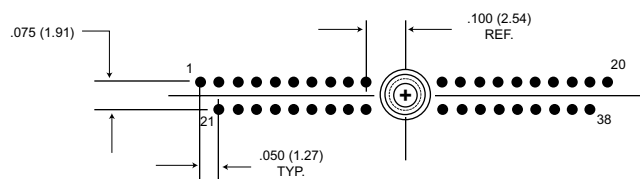
| Part Number | A Max.        | B Ref.        |
|-------------|---------------|---------------|
| MJSV-26S**  | .943 (23.95)  | .874 (22.20)  |
| MJSV-38S**  | 1.243 (31.57) | 1.174 (29.82) |

## Contact Arrangements

Face view of pin - use reverse order for socket



26 Contacts



38 Contacts

Identification numbers are for reference and do not appear on connectors.

MICRO-K microminiature circular connectors are rugged yet lightweight - and meet or exceed the applicable requirements of MIL-C-83513. Applications include computers, biomedical, instrumentation and miniature black boxes.

**MIK:** Accommodate up to 55 contacts on .050 (1.27) centers (equivalent to 420 contacts per square inch). Five keyway polarization prevents cross plugging. The threaded coupling nuts provide strong, reliable coupling. MIK receptacles can be either front or back panel mounted; in back mounting applications, panel thickness of up to 3/32" can be used on the larger sizes. Maximum temperature range - 55°C to + 105°C.

Standard MIK connectors are available in two shell sizes accommodating two contact arrangements pre-wired to your specific requirements.

**MIKM:** Similar to our MIK, except has a steel shell and receptacle for improved ruggedness and RFI resistance. It accommodates up to 85 twist pin contacts. Maximum temperature range - 55°C to + 105°C.

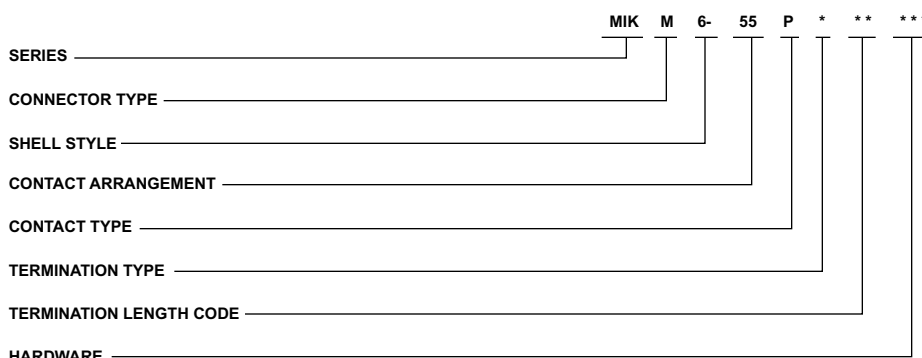
**MIKQ:** A quick disconnect metal shell and receptacle version that can be instantaneously disconnected yet provides a solid lock when engaged. Applications include commercial TV cameras, portable

radios, military gun sights, airborne landing systems and medical equipment. Maximum temperature range - 55°C to +125°C.

**MIKQP (All Plastic):** A lightweight, low-cost, all-plastic version of the MIKQ connector. The MIKQP design withstands the corrosive effects of soil, alkaline and chemicals commonly found in military, industrial and medical environments. It also has been ruggedized for use in impact applications.

For other variations of the basic MIK circular design, contact your nearest ITT Cannon field sales office or call our Microminiature Products Group.

## How to Order



### SERIES

MIK: Microminiature Circular

### CONNECTOR TYPES

- No Letter - Screw coupling, plastic shell
- M - Screw coupling, metal shell
- Q - Push/Pull, metal shell

### SHELL STYLES

- 0 - Wall mounting receptacle (MIK and MIKM only)
- 6 - Straight plug (MIK, MIKM and MIKQ)
- 7 - Jam nut mount (MIKQ only)
- 9 - Rear panel mounted receptacle (MIKQ)

### CONTACT ARRANGEMENTS

7, 19, 37, 55, 85

### CONTACT TYPE

- P - Pin
- S - Socket

### TERMINATION TYPES

- H - Insulated round hook-up wire
- L - Uninsulated round solid wire

### TERMINATION LENGTH CODE (STANDARDS)

- (H) 001 - 18", 7/34 strand, #26 AWG, MIL-W-16878/4, Type E Teflon, yellow.
- (H) 003 - 18", 7/34 strand, #26 AWG, MIL-W-16878/4, Type E Teflon, color coded to MIL-STD-681 System I.
- (L) 1 - 1/2" uninsulated solid #25 AWG gold plated copper.
- (L) 2 - 1" uninsulated solid #25 AWG gold plated copper.

### HARDWARE

- G - Cable nut and grip (MIKQ plug only)
- N - Nut only (MIKQ plug only)

NOTE: Contact types cannot be interchanged between shell styles.

See page 267 for MIKQP (All Plastic) ordering information.

## Performance Specifications

### STANDARD MATERIAL AND FINISHES

|              | MIK                                         | MIKM                                        | MIKQ                                        | MIKQP (All Plastic)                         |
|--------------|---------------------------------------------|---------------------------------------------|---------------------------------------------|---------------------------------------------|
| Shell        | Thermoplastic                               | Stainless Steel                             | Brass                                       | Ultem                                       |
| Coupling Nut | Stainless Steel<br>Passivated               | Stainless Steel<br>Passivated               | Brass, Electroless<br>Nickel Plated*        | Plastic                                     |
| Insulator    | Glass-reinforced<br>Thermoplastic           | Glass-reinforced<br>Thermoplastic           | Glass-reinforced<br>Thermoplastic           | Ultem                                       |
| Contacts     | 50 Microinch<br>Gold Plated<br>Copper Alloy | 50 Microinch<br>Gold Plated<br>Copper Alloy | 50 Microinch<br>Gold Plated<br>Copper Alloy | 50 Microinch<br>Gold Plated<br>Copper Alloy |

\*For plug only  
Electrodeposited for receptacle.

### ELECTRO/MECHANICAL FEATURES

|                     | MIK                            | MIKM                           | MIKQ                                                            | MIKQP (All Plastic)                                |
|---------------------|--------------------------------|--------------------------------|-----------------------------------------------------------------|----------------------------------------------------|
| No. of Contacts     | 7, 55                          | 7, 55, 85                      | 7, 19, 37                                                       | 11, 19                                             |
| Wire Size           | #26 AWG<br>thru #32 AWG        | #26 AWG<br>thru #32 AWG        | #26 AWG<br>thru #32 AWG                                         | #26 AWG<br>thru #32 AWG                            |
| Contact Termination | Crimp                          | Crimp                          | Crimp                                                           | Crimp                                              |
| Contact Rating      | 3 Amps                         | 3 Amps                         | 3 Amps                                                          | 3 Amps                                             |
| Coupling            | Threaded                       | Threaded                       | Push/Pull                                                       | Push/Pull                                          |
| Polarization        | Keyways                        | Keyways                        | Keyways                                                         | Keyways                                            |
| Contact Spacing     | .050 (1.27)<br>Centers         | .050 (1.27)<br>Centers         | .050 (1.27)<br>Centers                                          | .050 (1.27)<br>Centers                             |
| Shell Styles        | 0-Wall Mtg.<br>6-Straight Plug | 0-Wall Mtg.<br>6-Straight Plug | 7-Jam Nut<br>6-Straight Plug<br>9-Rear Panel<br>Mtg. Receptacle | 6-Straight Plug<br>9-Rear Panel<br>Mtg. Receptacle |

## Standard Wire Termination Codes

The following termination codes are listed for your information. For lengths not shown, consult factory for proper modification code. All wire lengths are minimum.

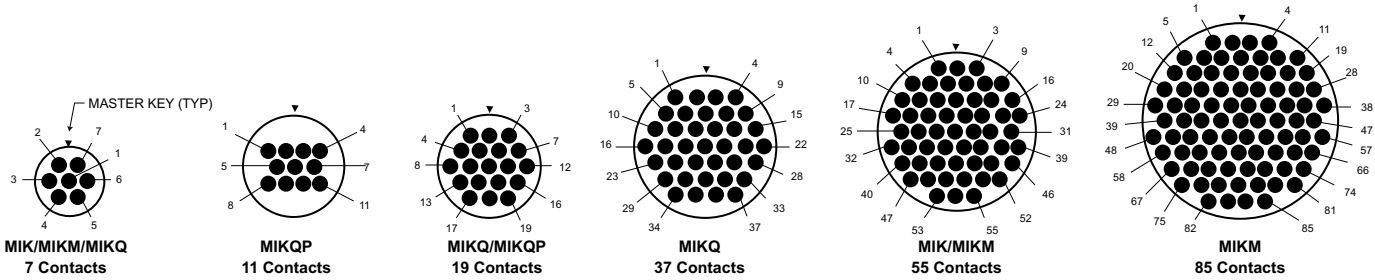
### HARNESS TYPES (H)

#26 AWG per MIL-W-16878 Type E, Teflon Stranded

| Length       | -All Yellow | Color Coded |
|--------------|-------------|-------------|
| 3 (76.2)     | 020         | 027         |
| 6 (152.4)    | 019         | 016         |
| 8 (203.2)    | 026         | 034         |
| 10 (254.0)   | 029         | 025         |
| 12 (304.8)   | 028         | 002         |
| 18 (457.2)   | 001         | 003         |
| 20 (508.0)   | 038         | 023         |
| 24 (609.6)   | 009         | 004         |
| 30 (762.0)   | 010         | 005         |
| 36 (914.4)   | 011         | 006         |
| 48 (1219.2)  | 013         | 048         |
| 72 (1828.8)  | 017         | 046         |
| 120 (3048.0) | 042         | 041         |

## Contact Arrangements

Face View, Pin Side-(Male Twist Pin Contacts)

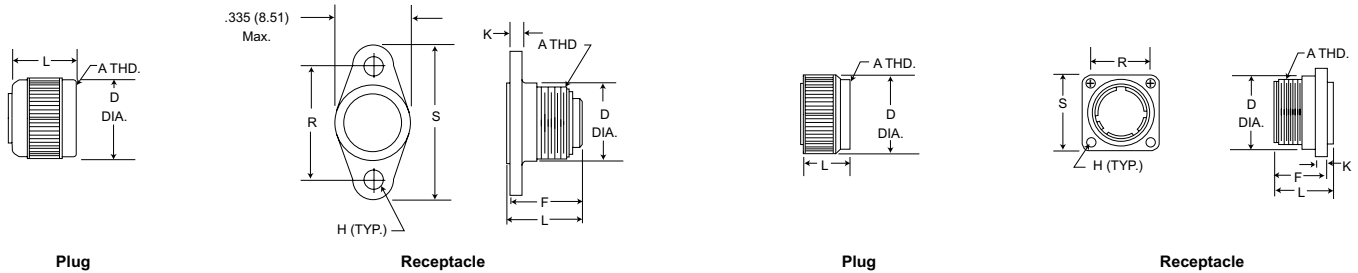


Cavity identification numbers are for reference only, they do not appear on connectors.

## Shell Dimensions

MIK (Rear Panel Mount Thickness - see Tabulation "T")

Weight given is 1/2" uninsulated, solid #25 AWG gold plated copper pigtailed



### Plug

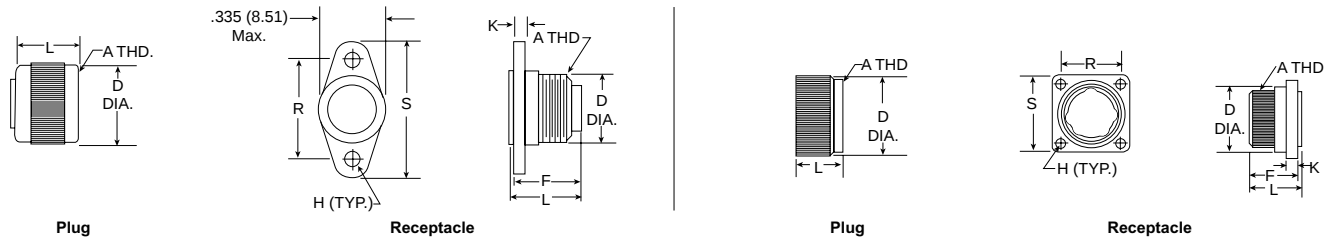
| Part Number by Shell Size | A Thread      | D Max.       | L Max.       | Avg. Weight oz. (gm.) ±5% |
|---------------------------|---------------|--------------|--------------|---------------------------|
| MIK6-7P                   | 5/16-24UNF-2B | .375 (9.52)  | .315 (8.00)  | .054 (1.54)               |
| MIK6-55P                  | 9/16-24UNF-2A | .755 (19.18) | .460 (11.68) | .202 (5.72)               |

### Receptacle

| Part Number by Shell Size | A Thread      | D ± .010 (0.25) | F Max.       | H ± .003 (0.08) | K ± .010 (0.25) | L Max.       | R ± .005 (0.13) | S Max.       | T Max.      | Avg. Weight oz. (gm.) ± 5% |
|---------------------------|---------------|-----------------|--------------|-----------------|-----------------|--------------|-----------------|--------------|-------------|----------------------------|
| MIKO-7S                   | 5/16-24UNF-2B | .325 (8.26)     | .315 (8.00)  | .078 (1.98)     | .062 (1.57)     | .355 (9.02)  | .460 (11.68)    | .630 (16.00) | .032 (0.81) | .022 (.635)                |
| MIKO-55S                  | 9/16-24UNF-2A | .625 (15.88)    | .440 (11.18) | .089 (2.26)     | .100 (2.54)     | .495 (12.57) | .580 (14.73)    | .760 (19.30) | .062 (1.57) | .134 (3.81)                |

## Shell Dimensions (Continued)

MIKM (Rear Panel Mount Thickness .335 (8.51) max. - see Tabulation "T")



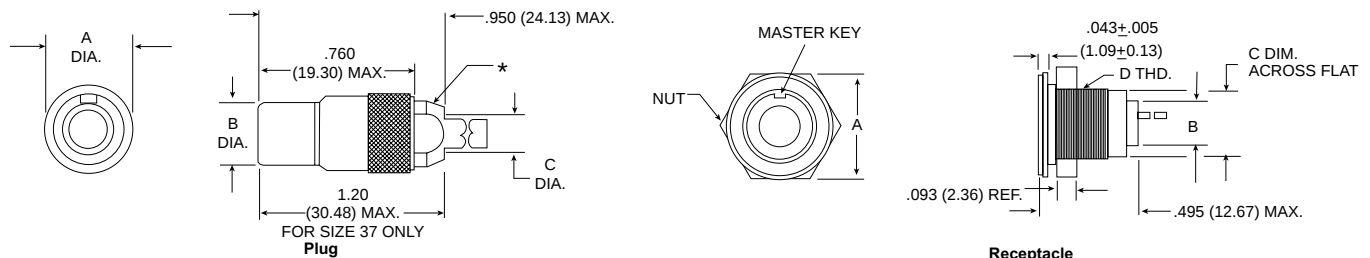
## Plug

| Part Number by Shell Size | A Thread        | D Max.       | L Max.       | Avg. Weight oz. (gm.)±5% |
|---------------------------|-----------------|--------------|--------------|--------------------------|
| MIKM6-7P                  | 5/16-24UNF-2A   | .375 (9.52)  | .315 (8.00)  | .054 (1.54)              |
| MIKM6-55P                 | 5/8-24UNEF-2B   | .775 (19.18) | .440 (11.18) | .333 (9.44)              |
| MIKM6-85P                 | 11/16-24UNEF-2B | .860 (21.84) | .460 (11.68) | .419 (11.88)             |

## Receptacle

| Part Number by Shell Size | A Thread        | D            | F Max.       | H ±.003 (0.08) | K           | L Max.       | R ±.005 (0.13) | S Max.       | T Max.      | Avg. Weight oz. (gm.)±5% |
|---------------------------|-----------------|--------------|--------------|----------------|-------------|--------------|----------------|--------------|-------------|--------------------------|
| MIKM0-7S                  | 5/16-24UNF-2A   | .325 (8.26)  | .320 (8.13)  | .078 (1.98)    | .062 (1.57) | .400 (10.16) | .460 (11.68)   | .630 (16.00) | .032 (0.81) | .051 (1.45)              |
| MIKM0-55S                 | 5/8-24UNEF-2A   | .625 (15.88) | .440 (11.18) | .091 (2.31)    | .062 (1.57) | .490 (12.45) | .580 (14.73)   | .760 (19.30) | .125 (3.18) | .269 (7.62)              |
| MIKM0-85S                 | 11/16-24UNEF-2A | .745 (18.92) | .440 (11.18) | .091 (2.31)    | .062 (1.57) | .490 (12.45) | .674 (17.12)   | .845 (21.46) | .125 (3.18) | .346 (9.80)              |

MIKQ (Front Panel Mounting Type Shown-.093 (2.36) Thickness)



## Plug

| Part Number by Shell Size | A MAX.       | B MAX.       | C Ref.      | Avg. Weight oz. (gm.)±5% |
|---------------------------|--------------|--------------|-------------|--------------------------|
| MIKQ6-7S                  | .385 (9.78)  | .305 (7.75)  | .180 (4.57) | .214 (6.08)              |
| MIKQ6-19S                 | .515 (13.08) | .405 (10.29) | .260 (6.60) | .376 (10.70)             |
| MIKQ6-37S                 | .760 (19.30) | .635 (16.13) | .350 (8.89) | .714 (20.23)             |

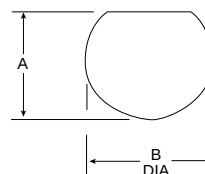
\*Std. Conn. not supplied with Cable Nut &amp; Grip, See Mod Codes.

Lanyard Release Is Available. Consult factory.

## Receptacle

| Part Number by Shell Size | A MAX.       | B MAX.       | C MAX.       | D Thread      | Avg. Weight oz. (gm.)±5% |
|---------------------------|--------------|--------------|--------------|---------------|--------------------------|
| MIKQ6-7S                  | .510 (12.95) | .245 (6.22)  | .359 (9.12)  | 3/8-32UNEF-2A | .128 (3.63)              |
| MIKQ7-19P                 | .575 (14.60) | .345 (8.76)  | .470 (11.94) | 1/2-28UNEF-2A | .214 (6.08)              |
| MIKQ7-37P                 | .855 (21.71) | .520 (13.20) | .740 (18.80) | 3/4-20UNEF-2A | .300 (8.52)              |

MIKQ Front Panel Mounting

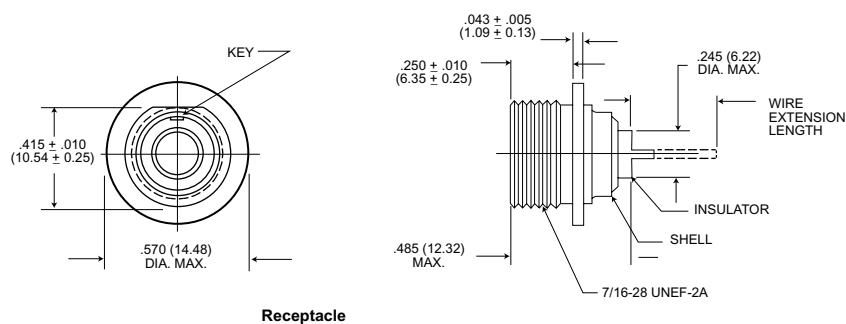


## Front Panel Mounting-MIKQ7

| Shell Size | A ±.005 (0.13) | B DIA.       |
|------------|----------------|--------------|
| MIKQ7-7P   | .364 (9.24)    | .390 (9.91)  |
| MIKQ7-19P  | .475 (12.06)   | .515 (13.08) |
| MIKQ7-37P  | .740 (18.78)   | .755 (19.17) |

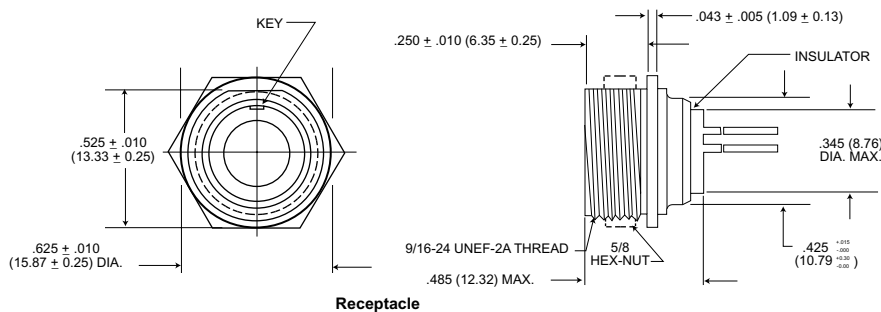
## Shell Dimensions (Continued)

### MIKQ9-7P (Back Panel Mounting)



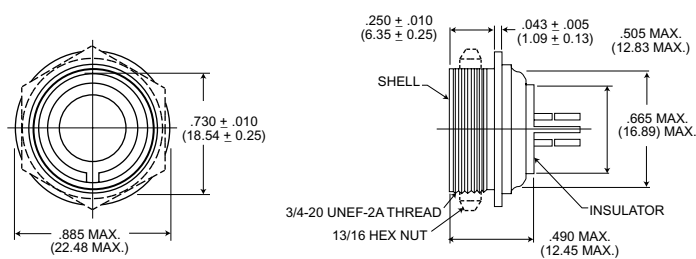
Receptacle

### MIKQ9-19P (Back Panel Mounting)



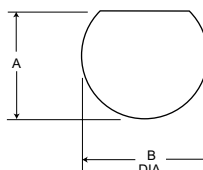
Receptacle

### MIKQ9-37P (Back Panel Mounting)



Receptacle

### MIKQ Rear Panel Mounting



### Rear Panel Mounting-MIKQ9

| Shell Size | A<br>± .005 (0.13) | B<br>Dia.    |
|------------|--------------------|--------------|
| MIKQ9-7P   | .425 (10.76)       | .440 (11.18) |
| MIKQ9-19P  | .535 (13.58)       | .564 (14.33) |
| MIKQ9-37P  | .740 (18.78)       | .755 (19.17) |

How to Order - MIKQP

All Plastic



MIKQP9-11PH\*\*\*

SERIES DESIGNATOR

MIK-Microminiature Circular

CLASS

Q - Quick Release (Push Pull)

MATERIAL DESIGNATOR

P - All Plastic

SHELL STYLE

9 - Rear Panel mounted receptacle  
6 - Cable plug

CONTACT ARRANGEMENT

Number of contacts: 11 & 19

CONTACT STYLE

P - Pin (Receptacle)  
S - Socket (Plug)

TERMINATION TYPE

H - Insulated harness wire  
L - Uninsulated solid lead

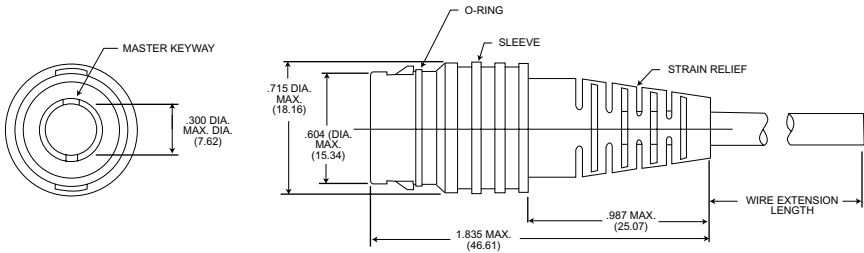
MODIFICATION CODE

Consult "L" and "H" modification codes for lead material and length.  
For special/custom termination, consult factory.

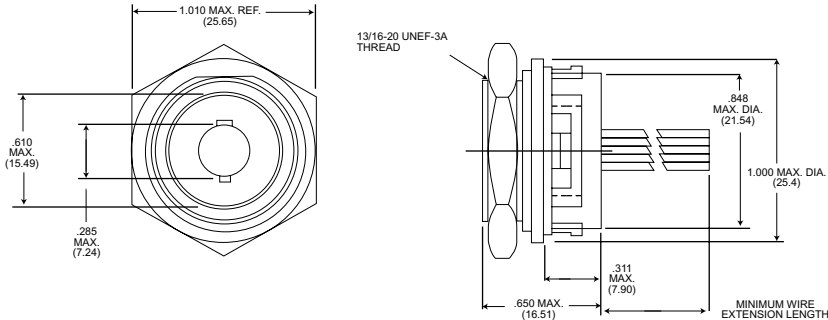
Shell Dimensions

MIKQP  
11 & 19 Contacts

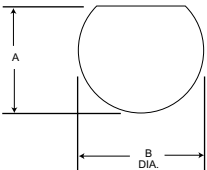
Plug



Receptacle



MIKQP Panel Mounting



| Shell Style | A<br>± .005 (0.13)           | B<br>Dia.                    |
|-------------|------------------------------|------------------------------|
| MIKQ9       | .853 (21.67)<br>.848 (21.54) | .887 (22.53)<br>.882 (22.40) |



## Printed Circuit Board and Card Mounting Frame Applications. Contacts on .050(1.27) centers.

50-MIL STRIP microminiature connectors are designed for space and weight saving applications in a space conscious industry. The strip configuration provides an extremely dense and reliable interconnection device in a minimum profile package, giving great application flexibility.

These connectors are available in many combinations of length, contact spacing and terminations to give designers maximum latitude in their packaging and interconnection solutions. They have been used successfully on printed circuit boards and card mounting frames. Because of its configuration, the 50-MIL STRIP connector is particularly suited for

mounting with high strength epoxy adhesive. In lengths over 2" (50.80) guides, rails or other systems should be used to assure alignment.

50-MIL STRIP connectors use either a flexible insulator of polyester that can be mounted on curved surfaces up to a radius of approximately eight inches, or a more rigid insulator of diallyl phthalate-giving the connector a higher temperature capability. Up to 120 micropin contacts can be held in a single strip on .050(1.27) centers. Guide pins and polarizing devices are available. Special termination with hookup wire is available to meet specific customer requirements. Crimping hookup wire to contacts before they are inserted is often desirable in high density contact arrangements. Color coded wires of any length in sizes #26 thru #30 AWG solid and #26 thru #30 AWG stranded can be harnessed by the factory.

## How to Order

### SERIES AND MATERIALS

MTB - Glass filled diallyl phthalate (149°C)  
MTV - Glass filled polyester (125°C)

### CONTACT SPACING

- 1 - .050 (1.27) centers, MTB1 and MTV1 only
- 2 - .100 (2.54) centers, MTB2 and MTV2 only

### NUMBER OF INSULATOR CAVITIES

MTV1 - 120 Max.  
MTV2 - 60 Max.  
MTB1 - 81 Max.  
MTB2 - 41 Max.

### CONTACT TYPE

P - Pin  
S - Socket

### TERMINATION TYPE

L - Uninsulated solid pigtail  
H - Insulated † \*  
S - Solder pots  
AL - PCB pigtail termination \*\*\*  
PCB termination code\*\*\*

### SERIES AND MATERIALS

### CONTACT SPACING

### NUMBER OF INSULATOR CAVITIES

### CONTACT TYPE

### PCB TERMINATION CODE\*\*\*

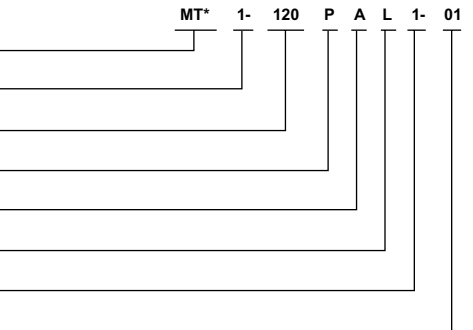
### TERMINATION TYPE

### TERMINATION CODE\*

### MODIFICATION\*\*

### TERMINATION CODE\*

- (H) 001 - 18", 7/34 strand, #26 AWG, MIL-W-16878/4, Type E Teflon, yellow.
- (H) 003 - 18", 7/34 strand, #26 AWG, MIL-W-16878/4, Type E Teflon, color coded to MIL-STD-681 System I.
- (L) 1 - 1/2" uninsulated solid #25 AWG gold plated copper.
- (L) 2 - 1" uninsulated solid #25 AWG gold plated copper.



### MODIFICATION\*\*

- 01 - Guide posts each end of socket strip-blank cavities each end of pinstrips.

\*See Termination Codes for additional length modification codes.  
\*\*Consult factory for variations from standard not shown.  
\*\*\*PCB terminations performed at 90° increments of .050" (1.27) to bend from rear of insulator on solid uninsulated leads aer available. Consult factory for proper ordering nomenclature.  
†NOTE: MT Strips are not to be terminated with insulated wire in more than 41 cavities without added backpotting support on socket side.

## Standard Wire Termination Codes

The following termination codes are listed for your information. For lengths not shown, consult factory for proper modification code. All wire lengths are minimum.

### Harness Type - (H)

#26 AWG per MIL-W-16878 Type E; Teflon Stranded

| Length       | All Yellow | Color Coded |
|--------------|------------|-------------|
| 3 (76.2)     | H020       | H027        |
| 6 (152.4)    | H019       | H016        |
| 8 (203.2)    | H026       | H034        |
| 10 (254.0)   | H029       | H025        |
| 12 (304.8)   | H028       | H002        |
| 18 (457.2)   | H001       | H003        |
| 20 (508.0)   | H033       | H023        |
| 24 (609.6)   | H009       | H004        |
| 30 (762.0)   | H010       | H005        |
| 36 (914.4)   | H011       | H006        |
| 48 (1219.2)  | H013       | H048        |
| 72 (1828.5)  | H017       | H046        |
| 120 (3048.0) | H042       | H041        |

### Solid Uninsulated Type - (L)

#25 AWG Gold Plated Copper

| Termination Code | Length        |
|------------------|---------------|
| L61              | .125 (3.18)   |
| L56              | .150 (3.81)   |
| L57              | .190 (4.83)   |
| L39              | .250 (6.35)   |
| L58              | .375 (9.52)   |
| L1               | .500 (12.70)  |
| L14              | .750 (19.05)  |
| L2               | 1.000 (25.40) |
| L7               | 1.500 (38.10) |
| L6               | 2.000 (50.80) |
| L16              | 2.500 (63.50) |
| L10              | 3.000 (76.20) |

## Performance and Material Specifications

### WEIGHT

|                                                    |                 | lbs.    | gms.    |
|----------------------------------------------------|-----------------|---------|---------|
| <b>Contact</b><br>(with std. 1/2" copper pigtails) | pin             | .000088 | .040    |
|                                                    | socket          | .000088 | .040    |
| <b>Insulator</b><br>(per contact cavity)           | MTB             | pin     | .000046 |
|                                                    |                 | socket  | .000013 |
|                                                    | MTV             | pin     | .000031 |
|                                                    |                 | socket  | .000009 |
| <b>Guide Post</b>                                  | Stainless Steel | .000079 | .035    |

### MATERIALS AND FINISHES

|                      |                                                                   |
|----------------------|-------------------------------------------------------------------|
| One-piece insulator: | MTB: glass-filled dially phthalate<br>MTV: glass-filled polyester |
| Contacts:            | Copper alloy, gold plate                                          |

### MECHANICAL FEATURES

|                      |                                                                          |
|----------------------|--------------------------------------------------------------------------|
| No. of Contacts;     | MTV: 120 max.<br>MTB: 81 max.                                            |
| Wire Size:           | Solid: #24 thru #30 AWG<br>Stranded: #26 thru #30 AWG                    |
| Contact Termination: | Crimp Stationary                                                         |
| Size or Length:      | MTV: 6.04" (153.42) max. "yardage"<br>MTB: 4.09" (103.89) max. "yardage" |
| Coupling:            | Friction                                                                 |
| Polarization:        | Guide posts                                                              |
| Contact Spacing      |                                                                          |
| Centers:             | .050" (1.27) and .100" (2.54)                                            |

### LENGTH

Contact cavities in 50-MIL STRIP connectors are in a single row and located on .050" (1.27) centers or increments thereof. MTV connectors can be supplied in lengths up to 6.04 inches (157.42) with a maximum of 120 contacts on .050" (1.27) centers. MTB connectors can be supplied in lengths up to 4.09 inches (103.89) with a maximum of 81 contacts on .050" (1.27) centers. Lengths of connectors can be calculated as follows:

**L = number of contacts times .050 (1.27) plus .020 (0.51)**

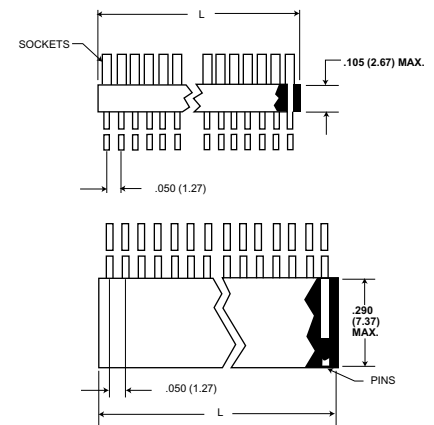
EXAMPLE:

50 contacts (installed in each cavity):

$$L = (50 \times .050") + .020" = 2.52" \text{ length of strip}$$

$$L = (50 \times 1.27\text{mm}) + (0.51\text{mm}) = (64.01\text{mm}) \text{ length of strip}$$

NOTES: MT not to be terminated with insulated wire in more than 41 cavities without adding backpotting support on socket side.



## Test Data

### CONTACT RESISTANCE

Test give constant resistance readings from 10μa to 3 amps on individually mated contacts. The maximum allowable contact resistance, measured on the wire at the rear of the contact, is 8 milliohms. The average contact resistance is 6 milliohms.

Current Rating - 3 amps max.

Max. Voltage Drop - 24 millivolts at 3 amps.

Average Voltage Drop - 12 millivolts at 3 amps.

Low Level Contact Resistance - Measured voltage drop is .24 x 10<sup>-6</sup> volts at 10 x 10<sup>-6</sup> amps.

### DIELECTRIC WITHSTANDING VOLTAGE

Min. Flashover voltage (at room temp.) at 60 cps rms 50% R.H.

Sea Level - 900 VAC, 70,000 feet. - 250 VAC

Solder Pot Contacts

Sea Level - 600 VAC, 70,000 feet-150 VAC

### VIBRATION AND SHOCK

No discontinuity detected (in excess of 1 micro second) after twelve 15-min. sweeps from 10 to 2000 cps at .060" (1.52mm) double aptitude or 20g, or after twenty shocks of 50g. Connectors were mounted to simulate service condition. Test conducted to MIL-STD-202, Method 204A, Condition D and Method 213, Condition G.

### TEMPERATURE RANGE

MTB: - 55°C to +149°C

MTV: - 55°C to +125°C

### ENGAGING AND SEPARATING FORCE

For an individual contact the maximum engaging force is 8 ounces (226,80 grams). Minimum separating force is 0.5 ounces (14,17 grams) per contact. Test conducted using min./max. bushings.

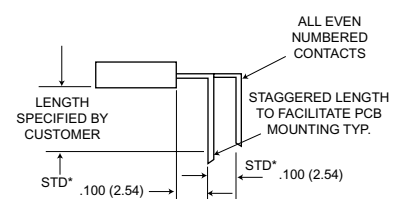
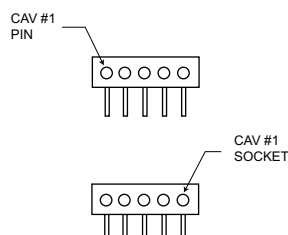
### SALT SPRAY

No damage or unacceptable increase in contact resistance after mated sample subjected to 48 hours of salt spray per MIL-STD-202, Method 101C, 5% solution, Condition B.

### CONTACT AND INSERT RETENTION

Over 5 lbs. (2,72 kg.) min. axial load.

## PCB Terminations

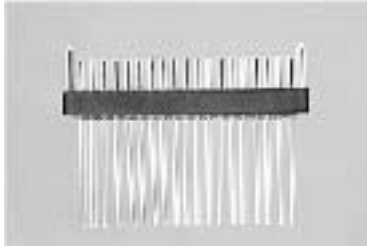


\*Consult factory for variations.

Dimensions are shown in inches (millimeters).  
Dimensions subject to change.

www.ittcannon.com

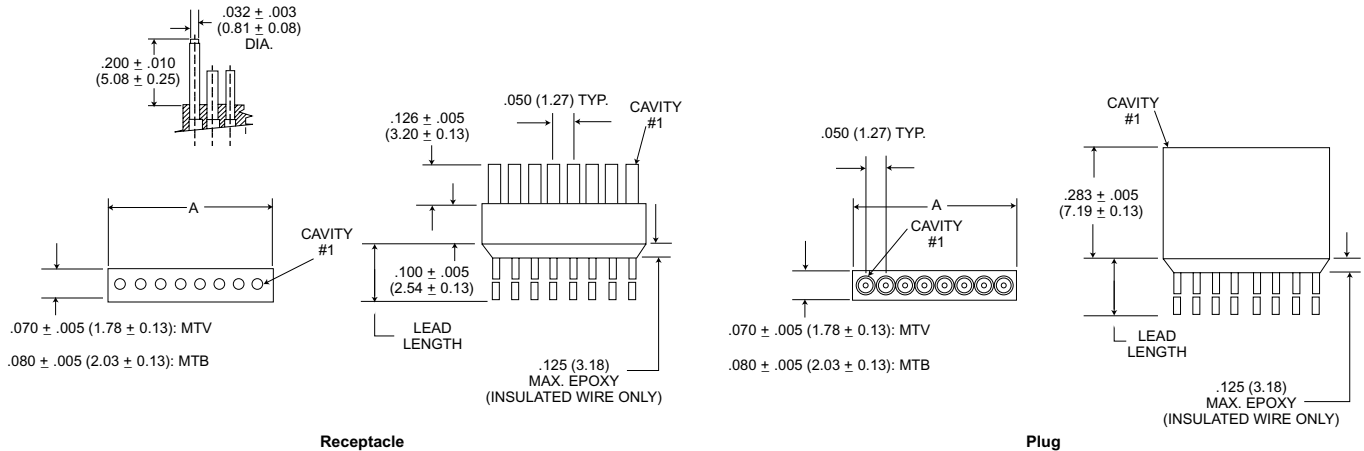
## Polarization



Modification code "-01" in the part number refers to guide posts located on both ends of the socket side of the 50-MIL STRIP connector and blank cavities on the pin side to accept the guide posts.

Although in many cases it is not necessary to polarize 50-MIL STRIP connectors, there are several ways to prevent cross plugging. One method is the use of guide posts that can be located in specified cavities to assure that the contacts will align when these post are positioned before mating.

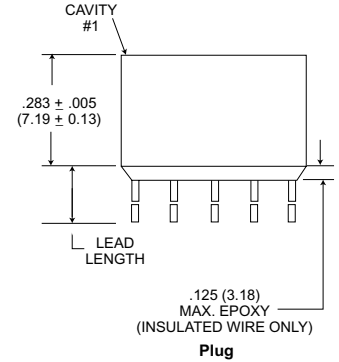
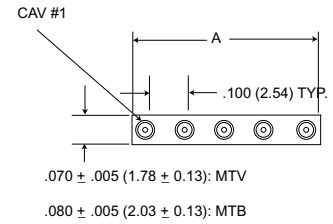
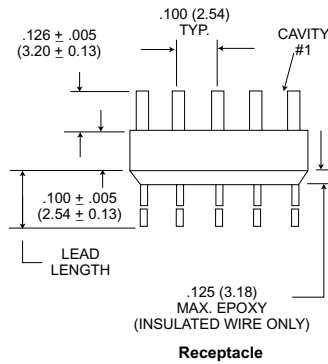
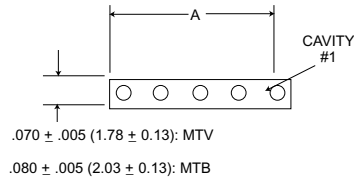
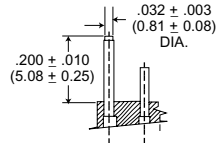
## MTB1 and MTV1 - .050 (1.27) Contact Centers



| Part Number by Size | A<br>±.015 (0.38) | Part Number by Size | A<br>±.015 (0.38) | Part Number by Size | A<br>±.015 (0.38) | Part Number by Size | A<br>±.015 (0.38) | Part Number by Size | A<br>±.015 (0.38) | Part Number by Size | A<br>±.015 (0.38) |
|---------------------|-------------------|---------------------|-------------------|---------------------|-------------------|---------------------|-------------------|---------------------|-------------------|---------------------|-------------------|
| MT*1-1**            | .070 (1.78)       | MT*1-21**           | 1.070 (27.18)     | MT*1-41**           | 2.070 (52.58)     | MT*1-61**           | 3.070 (77.98)     | MT*1-81**           | 4.070 (103.38)    | MT*1-101**          | 5.070 (128.78)    |
| MT*1-2**            | .120 (3.05)       | MT*1-22**           | 1.120 (28.45)     | MT*1-42**           | 2.120 (53.85)     | MT*1-62**           | 3.120 (79.25)     | MT*1-82**           | 4.120 (104.65)    | MT*1-102**          | 5.120 (130.05)    |
| MT*1-3**            | .170 (4.32)       | MT*1-23**           | 1.170 (29.72)     | MT*1-43**           | 2.170 (55.12)     | MT*1-63**           | 3.170 (80.52)     | MT*1-83**           | 4.170 (105.92)    | MT*1-103**          | 5.170 (131.32)    |
| MT*1-4**            | .220 (5.59)       | MT*1-24**           | 1.220 (30.99)     | MT*1-44**           | 2.220 (56.39)     | MT*1-64**           | 3.220 (81.79)     | MT*1-84**           | 4.220 (107.19)    | MT*1-104**          | 5.220 (132.59)    |
| MT*1-5**            | .270 (6.85)       | MT*1-25**           | 1.270 (32.36)     | MT*1-45**           | 2.270 (57.66)     | MT*1-65**           | 3.270 (83.06)     | MT*1-85**           | 4.270 (108.46)    | MT*1-105**          | 5.270 (133.86)    |
| MT*1-6**            | .320 (8.13)       | MT*1-26**           | 1.320 (33.53)     | MT*1-46**           | 2.320 (58.93)     | MT*1-66**           | 3.320 (84.33)     | MT*1-86**           | 4.320 (109.73)    | MT*1-106**          | 5.320 (135.13)    |
| MT*1-7**            | .370 (9.40)       | MT*1-27**           | 1.370 (34.80)     | MT*1-47**           | 2.370 (60.20)     | MT*1-67**           | 3.370 (85.60)     | MT*1-87**           | 4.370 (111.00)    | MT*1-107**          | 5.370 (136.40)    |
| MT*1-8**            | .420 (10.67)      | MT*1-28**           | 1.420 (36.07)     | MT*1-48**           | 2.420 (61.47)     | MT*1-68**           | 3.420 (86.87)     | MT*1-88**           | 4.420 (112.27)    | MT*1-108**          | 5.420 (137.67)    |
| MT*1-9**            | .470 (11.94)      | MT*1-29**           | 1.470 (37.34)     | MT*1-49**           | 2.470 (62.74)     | MT*1-69**           | 3.470 (88.14)     | MT*1-89**           | 4.470 (113.54)    | MT*1-109**          | 5.470 (138.94)    |
| MT*1-10**           | .520 (13.60)      | MT*1-30**           | 1.520 (38.61)     | MT*1-50**           | 2.520 (64.01)     | MT*1-70**           | 3.520 (89.41)     | MT*1-90**           | 4.520 (114.81)    | MT*1-110**          | 5.520 (140.21)    |
| MT*1-11**           | .570 (14.48)      | MT*1-31**           | 1.570 (39.88)     | MT*1-51**           | 2.570 (65.28)     | MT*1-71**           | 3.570 (90.68)     | MT*1-91**           | 4.570 (116.08)    | MT*1-111**          | 5.570 (141.48)    |
| MT*1-12**           | .620 (15.75)      | MT*1-32**           | 1.620 (41.15)     | MT*1-52**           | 2.620 (66.55)     | MT*1-72**           | 3.620 (91.95)     | MT*1-92**           | 4.620 (117.35)    | MT*1-112**          | 5.620 (142.75)    |
| MT*1-13**           | .670 (17.02)      | MT*1-33**           | 1.670 (42.42)     | MT*1-53**           | 2.670 (67.82)     | MT*1-73**           | 3.670 (93.22)     | MT*1-93**           | 4.670 (118.62)    | MT*1-113**          | 5.670 (144.02)    |
| MT*1-14**           | .720 (18.29)      | MT*1-34**           | 1.720 (43.69)     | MT*1-54**           | 2.720 (69.09)     | MT*1-74**           | 3.720 (94.49)     | MT*1-94**           | 4.720 (119.89)    | MT*1-114**          | 5.720 (145.29)    |
| MT*1-15**           | .770 (19.56)      | MT*1-35**           | 1.770 (44.96)     | MT*1-55**           | 2.770 (70.36)     | MT*1-75**           | 3.770 (95.76)     | MT*1-95**           | 4.770 (121.16)    | MT*1-115**          | 5.770 (146.56)    |
| MT*1-16**           | .820 (20.83)      | MT*1-36**           | 1.820 (46.23)     | MT*1-56**           | 2.820 (71.63)     | MT*1-76**           | 3.820 (97.03)     | MT*1-96**           | 4.820 (122.43)    | MT*1-116**          | 5.820 (147.83)    |
| MT*1-17**           | .870 (22.10)      | MT*1-37**           | 1.870 (47.50)     | MT*1-57**           | 2.870 (72.90)     | MT*1-77**           | 3.870 (98.30)     | MT*1-97**           | 4.870 (123.70)    | MT*1-117**          | 5.870 (149.10)    |
| MT*1-18**           | .920 (23.37)      | MT*1-38**           | 1.920 (48.77)     | MT*1-58**           | 2.920 (74.17)     | MT*1-78**           | 3.920 (99.57)     | MT*1-98**           | 4.920 (124.97)    | MT*1-118**          | 5.920 (150.37)    |
| MT*1-19**           | .970 (24.64)      | MT*1-39**           | 1.970 (50.04)     | MT*1-59**           | 2.970 (75.44)     | MT*1-79**           | 3.970 (100.84)    | MT*1-99**           | 4.970 (126.24)    | MT*1-119**          | 5.970 (151.64)    |
| MT*1-20**           | 1.020 (25.91)     | MT*1-40**           | 2.020 (51.31)     | MT*1-60**           | 3.020 (76.71)     | MT*1-80**           | 4.020 (102.11)    | MT*1-100**          | 5.020 (127.50)    | MT*1-120**          | 6.020 (152.91)    |

NOTE: MTB1 available in up to 81 contacts.

## MTB2 and MTV2 - .100 (2.54) Contact Centers



| Part Number by Size | A<br>±.015 (0.38) | Part Number by Size | A<br>±.015 (0.38) |
|---------------------|-------------------|---------------------|-------------------|
| MT*2-1**            | .070 (1.78)       | MT*2-31**           | 3.070 (77.98)     |
| MT*2-2**            | .170 (4.32)       | MT*2-32**           | 3.170 (80.52)     |
| MT*2-3**            | .270 (6.86)       | MT*2-33**           | 3.270 (83.06)     |
| MT*2-4**            | .370 (9.40)       | MT*2-34**           | 3.370 (85.60)     |
| MT*2-5**            | .470 (11.94)      | MT*2-35**           | 3.470 (88.14)     |
| MT*2-6**            | .570 (14.48)      | MT*2-36**           | 3.570 (90.68)     |
| MT*2-7**            | .670 (17.02)      | MT*2-37**           | 3.670 (93.22)     |
| MT*2-8**            | .770 (19.56)      | MT*2-38**           | 3.770 (95.76)     |
| MT*2-9**            | .870 (22.10)      | MT*2-39**           | 3.870 (98.30)     |
| MT*2-10**           | .970 (24.64)      | MT*2-40**           | 3.970 (100.84)    |
| MT*2-11**           | 1.070 (27.18)     | MT*2-41**           | 4.070 (103.38)    |
| MT*2-12**           | 1.170 (29.72)     | MT*2-42**           | 4.170 (105.92)    |
| MT*2-13**           | 1.270 (32.26)     | MT*2-43**           | 4.270 (108.46)    |
| MT*2-14**           | 1.370 (34.80)     | MT*2-44**           | 4.370 (111.00)    |
| MT*2-15**           | 1.470 (37.34)     | MT*2-45**           | 4.470 (113.54)    |
| MT*2-16**           | 1.570 (39.88)     | MT*2-46**           | 4.570 (116.08)    |
| MT*2-17**           | 1.670 (42.42)     | MT*2-47**           | 4.670 (118.62)    |
| MT*2-18**           | 1.770 (44.96)     | MT*2-48**           | 4.770 (121.16)    |
| MT*2-19**           | 1.870 (47.50)     | MT*2-49**           | 4.870 (123.70)    |
| MT*2-20**           | 1.970 (50.04)     | MT*2-50**           | 4.970 (126.24)    |
| MT*2-21**           | 2.070 (52.58)     | MT*2-51**           | 5.070 (128.78)    |
| MT*2-22**           | 2.170 (55.12)     | MT*2-52**           | 5.170 (131.32)    |
| MT*2-23**           | 2.270 (57.66)     | MT*2-53**           | 5.270 (133.86)    |
| MT*2-24**           | 2.370 (60.20)     | MT*2-54**           | 5.370 (136.40)    |
| MT*2-25**           | 2.470 (62.74)     | MT*2-55**           | 5.470 (138.94)    |
| MT*2-26**           | 2.570 (65.28)     | MT*2-56**           | 5.570 (141.48)    |
| MT*2-27**           | 2.670 (67.82)     | MT*2-57**           | 5.670 (144.02)    |
| MT*2-28**           | 2.770 (70.36)     | MT*2-58**           | 5.770 (146.56)    |
| MT*2-29**           | 2.870 (72.90)     | MT*2-59**           | 5.870 (149.10)    |
| MT*2-30**           | 2.970 (75.44)     | MT*2-60**           | 5.970 (151.64)    |

The Micro Edgeboard (MEB) connector series provides a combination of high density and high reliability for applications in airborne and space systems, computers and peripherals, and industrial/commercial control systems. This series incorporates the proven MICROPIN™/MICROSOCKET™ contact. This contact has an outstanding record of high reliability and millions of contacts are in use in various applications where electrical interconnects are used.

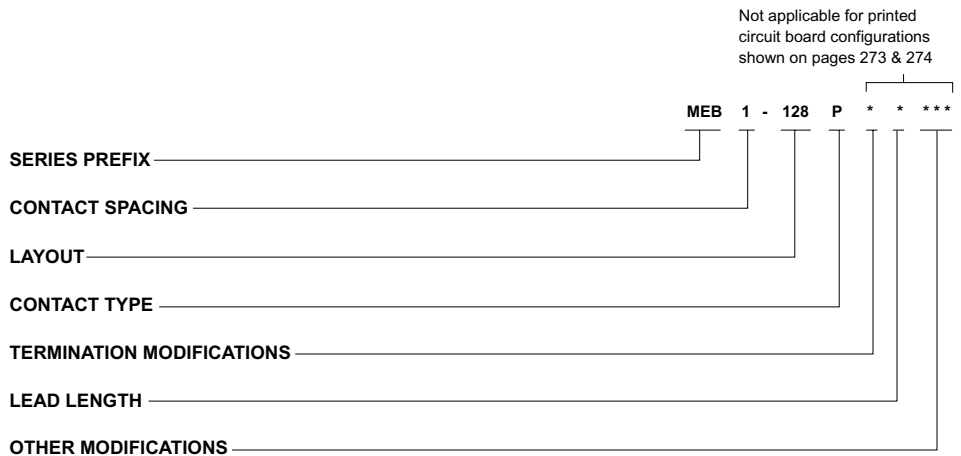
The MEB has machined aluminum shells for ruggedness, diallyl phthalate insulator for top electrical performance and a 36-position polarization key system to prevent cross plugging. Contacts are on .050 (1.27) center spacings. A variety of termina-

tion types are available, including 90° pigtailed for multi-layered P.C. boards, "coke bottle" termination for double-sided P.C. boards, and .025 (0.64) square wire wrap post termination. Harnessing capability is also available for both pin and socket sides.

The MEB, including the SBR 90° variation available for multi-layer boards, can be mounted on the female (daughter) side of double or single-sided P.C. boards. The mating male (mother) board side can have the terminations formed to meet the application demands. Wire-wrapping, using .025 X .025 (0.64 X 0.64) square posts is also available.

Conforms to MIL-C-55302/120 thru 123.

## How to Order



### SERIES PREFIX

- MEB - Micro edgeboard, plug with twist pin contacts or recept. with microsocket contacts.
- MEBL - Micro edgeboard, plug with stamped Low Insertion Force (LIF) contacts. Pin side only.

### CONTACT SPACING

- 1 - .050 (1.27) centers 128/184
- 2 - .100 (2.54) centers 64/92 (alternate contact holes)

### LAYOUT

64, 92, 128, 184

### CONTACT TYPE

- P - Pin
- S - Socket

\* For other contact spacing accommodations consult factory.

### TERMINATION MODIFICATIONS

- L - Uninsulated solid wire
- H - Insulated stranded round harness wire
- S - Solder pots
- BR - PC board right angle, socket side only
- W - Wire wrap post, pin side only

### LEAD LENGTH

Consult factory for wire lead modification codes.

### OTHER MODIFICATIONS

Consult factory

## Performance and Material Specifications

### MATERIALS AND FINISHES

|                          |                                                                                                                                                                                                                 |
|--------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Shell:                   | 6061-T6 Aluminum Alloy per QQ-A-200/8 or QQ-A-225/8, electroless nickel per MIL-C-26074, Class 4, grade A except .0010 to .0015 (0.03 to 0.04) thick or conversion coating per MIL-C-5541, Class 3, color gold. |
| Contact, Pin and Socket: | Copper Alloy, 50 microinch gold per MIL-G-45204, Type II, Class 1, over copper flash                                                                                                                            |
| Jackscrew/Jackpost:      | 303 stainless steel, passivated per QQ-P-35.                                                                                                                                                                    |
| Insulator:               | Glass-filled diallyl phthalate per MIL-M-14, Type SDG-F, color green<br>Polyester per MIL-M-24519, Type GET-30F, color black available for MEB-12B upon request.                                                |

### TERMINATION TYPES

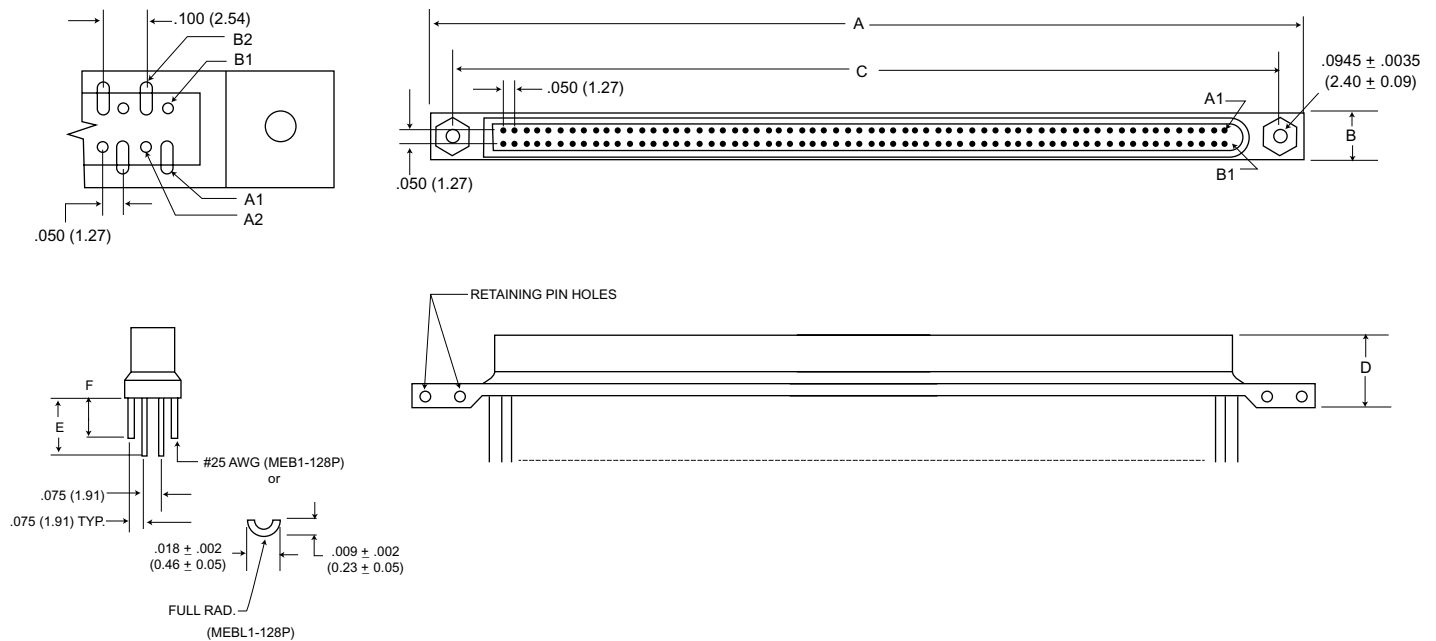
Consult factory for stranded wire lead modification codes.

### MECHANICAL FEATURES

|                          |                                        |
|--------------------------|----------------------------------------|
| Size or Length:          | 2 sizes                                |
| Coupling:                | Friction/Jackscrew                     |
| Polarization:            | Shells, polarizing keys (36 positions) |
| Contact Spacing Centers: | .050 (1.27)                            |
| Shell Styles:            | Plug and receptacle                    |

## Plug (Mother Board)

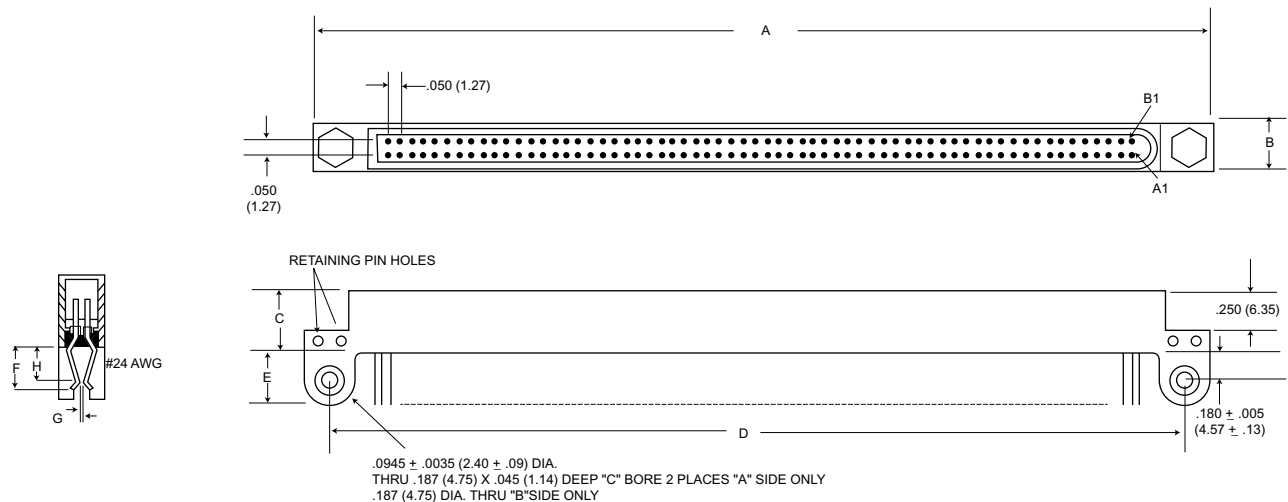
MEB1-128 or MEBL1-128BP



| Part No. | Weight<br>oz. (gm.) Max. | A<br>±.015 (0.38) | B<br>±.010 (0.25) | C<br>±.010 (0.25) | D<br>±.010 (0.25) | E<br>±.025 (0.64) | F<br>±.025 (0.64) |
|----------|--------------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|
| 128P     | .5 (14.17)               | 3.950 (100.33)    | .250 (6.35)       | 3.700 (93.98)     | .400 (10.16)      | .350 (8.89)       | .275 (6.99)       |
| 128PW    | 1.5 (42.52)              |                   |                   |                   |                   |                   |                   |

## Receptacle (Daughter Board)

MEB1-128S

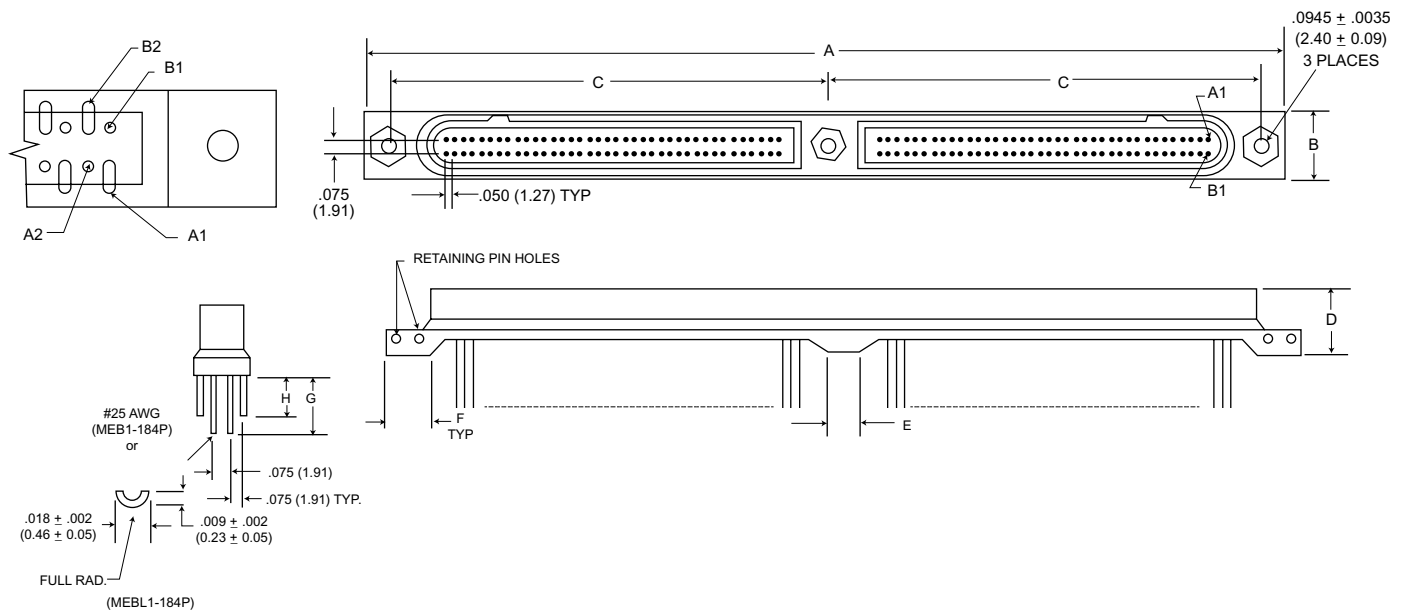


| Part No. | Weight<br>oz. (gm.) Max. | A<br>±.015 (0.38) | B<br>±.010 (0.25) | C<br>±.010 (0.25) | D<br>±.010 (0.25) | E<br>±.010 (0.25) | F<br>Max.   | G*<br>Max.  | H<br>±.020 (0.51) |
|----------|--------------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------|-------------|-------------------|
| 128S     | .5 (14.17)               | 3.950 (100.33)    | .250 (6.35)       | .400 (10.16)      | 3.700 (93.98)     | .300 (7.62)       | .280 (7.11) | .030 (0.76) | .200 (5.08)       |
| 128SBR   | .5 (14.17)               |                   |                   |                   |                   |                   |             |             |                   |

\*Will accept up to .093 (2.36) thick P.C. Board with shell modifications.

## Plug (Mother Board)

MEB1-184P or MEBL1-184P

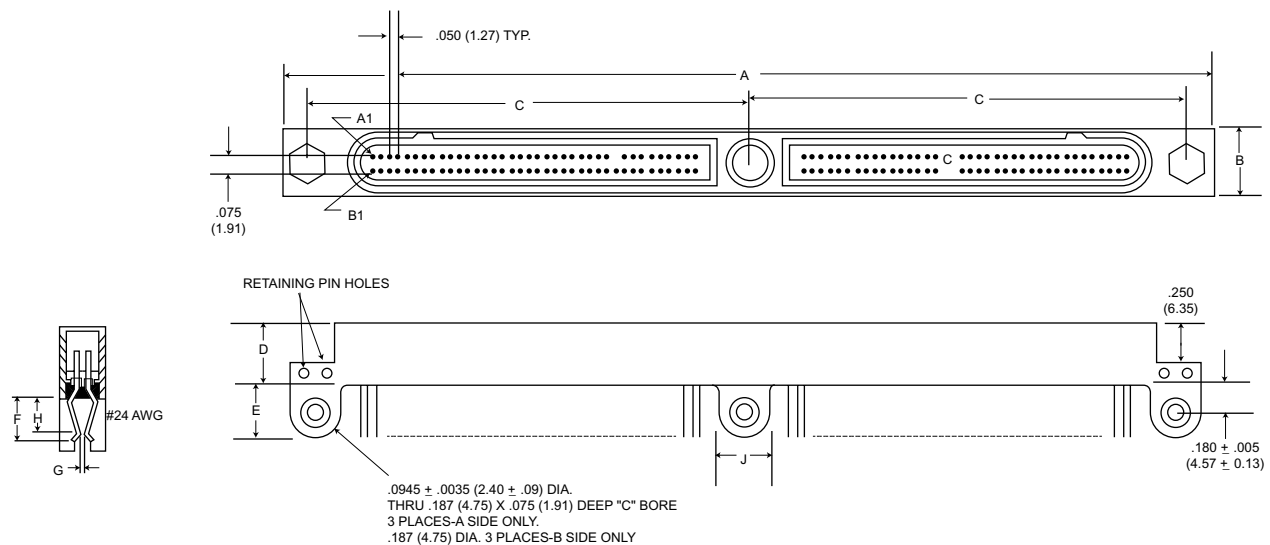


| Part No. | Weight<br>oz. (gm.) Max. | A<br>±.015 (0.38) | B<br>±.010 (0.25) | C<br>±.005 (0.13) | D<br>±.010 (0.25) | E<br>±.010 (0.25) | F<br>±.010 (0.25) | G<br>±.025 (0.64) | H<br>±.025 (0.64) |
|----------|--------------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|
| 184P     | 1.0 (28.35)              | 5.800 (147.32)    | .343 (8.71)       | 2.775 (70.49)     | .400 (10.16)      | .250 (6.35)       | .280 (7.11)       | .350 (8.89)       | .275 (6.99)       |
| 184PW    | 2.0 (56.70)              |                   |                   |                   |                   |                   |                   |                   |                   |

Wire-wrap termination similar to the MEB1-128PW wire-wrap will be available for MEB1-184P connector. Consult the factory for specific information.

## Receptacle (Daughter Board)

MEB1-184S



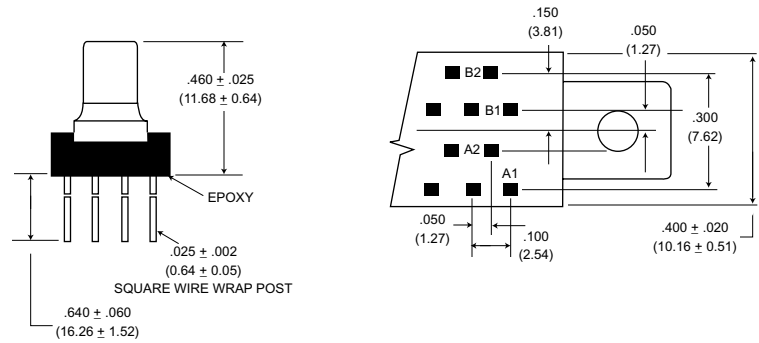
| Part No. | Weight<br>oz. (gm.) Max. | A<br>±.015 (0.38) | B<br>±.010 (0.25) | C<br>±.005 (0.13) | D<br>±.010 (0.25) | E<br>±.010 (0.25) | F<br>Max.   | G<br>Max.   | H<br>±.020 (0.51) | J<br>±.010 (0.25) |
|----------|--------------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------|-------------|-------------------|-------------------|
| 184S     | 1.0 (28.35)              | 5.800 (147.32)    | .343 (8.71)       | 2.775 (70.49)     | .400 (10.16)      | .300 (7.62)       | .280 (7.11) | .030 (0.76) | .200 (5.08)       | .250 (6.35)       |
| 184SBR   | 1.0 (28.35)              |                   |                   |                   |                   |                   |             |             |                   |                   |

All round pigtail #25 AWG wire termination designs available for the MEB1-12B receptacle will apply on the MEB1-184 series also.

\*Will accept up to .093 (2.36) thick P.C. Board with shell modifications.

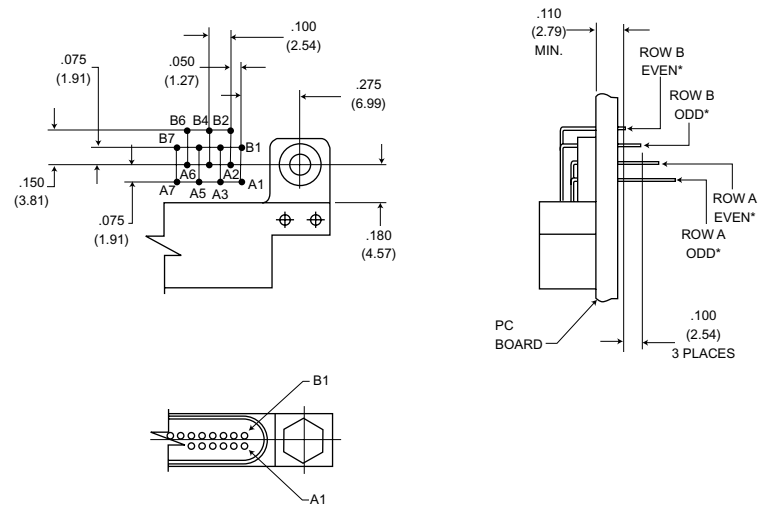
## Wire Wrap Post

MEB1-128PW



## PC Board Right Angle

MEB1-128SBR



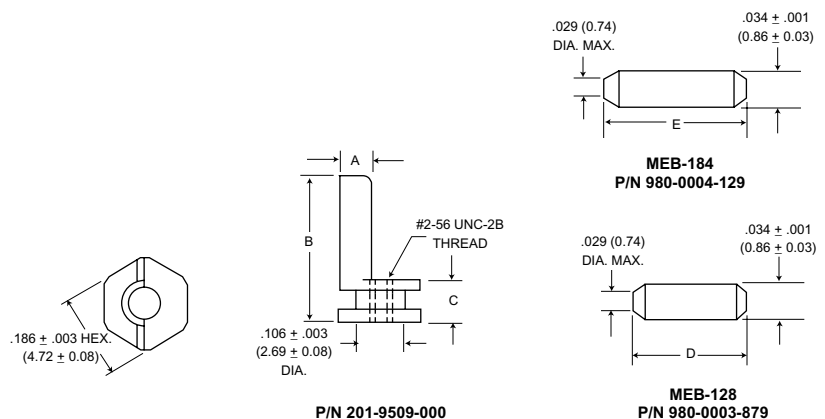
## Keying Accessory - Key and Retaining Pin

Polarizing Hardware Kit

MEB-128-P/N 320-9514-003

MEB-184-P/N 320-9514-002

Contains 2 polarizing keys and 4 spiral pins.



| A             | B             | C             | D             | E             |
|---------------|---------------|---------------|---------------|---------------|
| ± .003 (0.08) | ± .005 (0.13) | ± .003 (0.08) | ± .010 (0.25) | ± .010 (0.25) |
| .081 (2.06)   | .325 (8.26)   | .089 (2.26)   | .250 (6.35)   | .313 (7.95)   |

## Jackscrew/ Jackpost Assembly (MEB 64 & 128 Sizes Only)

### Jackpost Kit

MEB plug or receptacle-P/N 320-9514-001

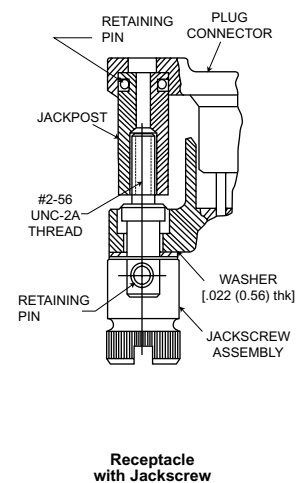
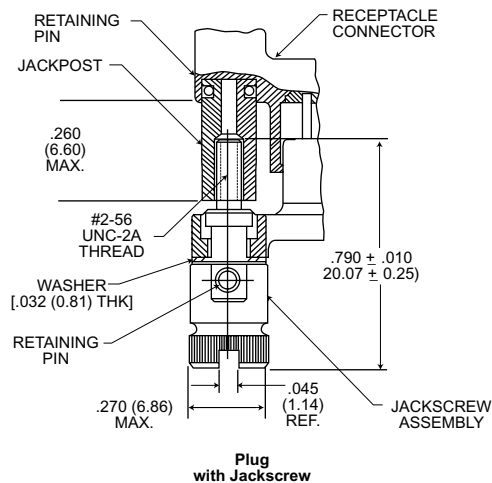
Contains 2 bushings and 4 spirals pins

### Jackscrew Kit

MEB plug-P/N 320-9521-001

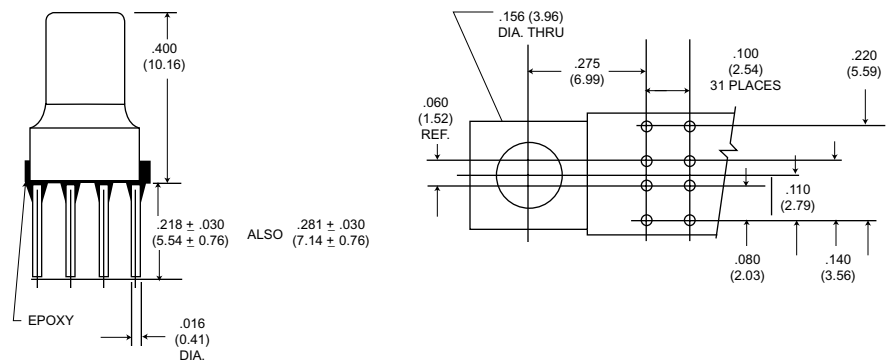
MEB receptacle-P/N 320-9521-000

Contains 2 jackscrew assemblies

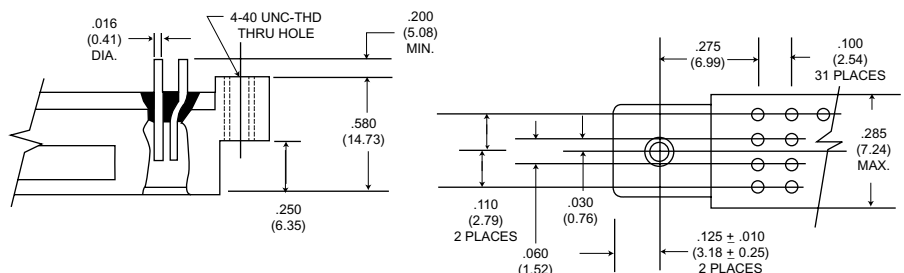


## Special Variations

### Alternative Plug Lead Configuration



### Alternative Receptacle Configuration



# The Centi Line - .075" Contact Spacing



ITT Cannon Centi connectors are especially suitable for commercial applications such as computers, instrumentation, model airplane R/C equipment, calculators, communications and audio equipment. They are available in D subminiature size metal shell rectangular, plastic shell rectangular and strip configurations.

All Centi connectors use the reliable twist pin contact design in a 5 amp version terminated on .075 (1.91) and .100 (2.54) centers. This larger contact is crimp removable, so Centi Series connectors are available in connector kits and as bulk parts for customer assembly. Standard crimp and assembly tools are available.

The twist pin contact is recessed within the insulator housing while the rugged cylindrical socket is exposed. When the connector halves are mated, the chamfered sockets guide the pins into positive alignment. The Centipin™ contact, now under compression, forms a multi-point contact with the Centisocket™ to provide a high degree of reliability.

## Standard Data

- Contact rating: 5 amps max, except BR Series (2 amps max.)
- Minimum contact centers: 0.075 (1.91).
- Wire sizes: #22 thru #26 AWG, stranded or solid.
- Contact termination: Multiple indent crimp.
- Contact retention: Crimp snap-in/removable.
- Contact materials and finish: Copper alloy, gold-plated per MIL-G-45204, Type II, Class 0, over copper flash.
- Mating/unmating force: 12 oz. per contact, max.

## Performance Specifications

The table below summarizes the results of key tests performed in accordance with MIL-STD-202, where specified. Data is applicable to standard connectors with standard terminations. Variations may affect this data, so please consult the factory for further information on your requirements.

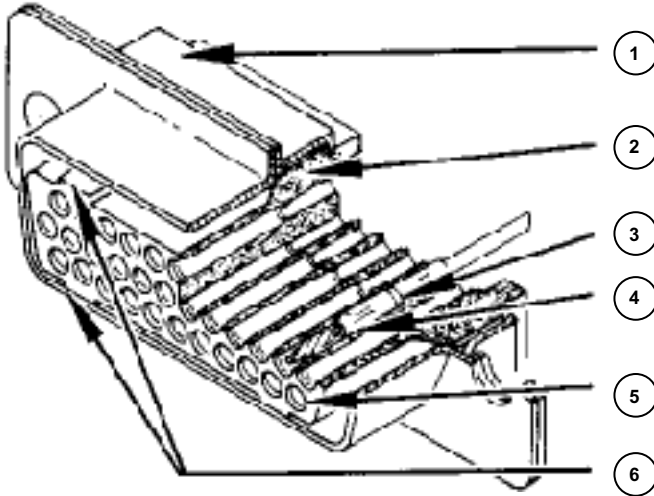
| Test                            | Method                                                                                | Criteria of Acceptance                                                           |
|---------------------------------|---------------------------------------------------------------------------------------|----------------------------------------------------------------------------------|
| Dielectric Withstanding Voltage | Method 301:<br>1,000 VAC at sea level<br>300 VAC at 70,000' altitude                  | No breakdown<br>No breakdown                                                     |
| Insulation Resistance           | Method 302, Condition A                                                               | 5,000 megohms minimum                                                            |
| Thermal Shock                   | Method 107, Condition A<br>+55°C to +85°C                                             | No physical damage                                                               |
| Physical Shock                  | Method 213, Condition I:<br>100 G's, 3 axes, 6 millisecond<br>duration sawtooth pulse | No physical damage<br>No loss of continuity > 1μsec                              |
| Vibration                       | Method 204, Condition B:<br>15 G's, 10-2,000 Hz, 12 hours                             | No physical damage<br>No loss of continuity > 1μsec                              |
| Durability                      | 500 cycles of mating and unmating, 500 CPH max.                                       | No mechanical or electrical defects                                              |
| Moisture Resistance             | Method 106, Omit 7a and 7b                                                            | Insulation resistance > 100 megohms                                              |
| Salt Spray                      | Method 101, Condition B:<br>48 hours                                                  | Shall be capable of mating and unmating and meet contact resistance requirements |
| Contact Resistance              | Method 307:<br>At 5 amps                                                              | 9 milliohms maximum                                                              |
| Contact Retention               | -                                                                                     | 4 lb. minimum axial load                                                         |

The Double Density D is a rectangular connector in the popular D Subminiature shell configuration featuring double the contact density in the same insert area. The Double Density D connector can thus accommodate up to 100 contacts instead of 50. This double contact density is achieved by using field-proven, highly reliable Centipin™/Centisocket™ contacts on .075 (1.91) centers, in the positive contact alignment design. In this design contact

positions are reversed; the flexible Centipin™ contacts are recessed in the insulator and the more rugged Centisocket™ contacts are exposed. This reversal of positions, and the chamfered-entry of the sockets, assures positive mating even under severe misalignment conditions. The contacts are retained in the monobloc insulator by a resilient internal shoulder that snaps into a locking groove in the contact. The chamfered front of the contact will

not damage the internal shoulder in the insulator. Contacts are crimp removable type.

The Double Density D connector is available in the five popular shell and insert sizes accommodating up to 100 contacts. These connectors mate exclusively with other Double Density D connectors. A wide range of accessories can be used, including junction shells, potting cups, switching shells, guide pin plates, and dust caps.



#### 1. STANDARD D HARDWARE-

Including full range of D Subminiature accessories

#### 2. ONE PIECE TYPE INSULATOR-

glass-filled nylon material

#### 3. CONTACT RETENTION-

thermoplastic internal shoulder snaps into a locking groove in the contact.

**Retention Force:** 8 lbs. min. initially, 4 lbs. min. after 10 cycle.

#### 4. TWIST PIN CONTACTS-

seven outer wiping surfaces assure electrical continuity even under severe shock and vibration

#### 5. POSTIVE CONTACT ALIGNMENT-

flexible pin is recessed in insulator cavity and rugged socket is exposed

#### 6. GUIDE-IN KEYS AND KEYWAYS-

assure alignment during mating and prevent scooping

## How to Order

|                                  |    |   |    |      |
|----------------------------------|----|---|----|------|
| <b>SERIES</b> _____              | 2D | E | 19 | S    |
| <b>SHELL SIZE</b> _____          | 2D | A | F  | 31   |
| <b>FLOAT MOUNTS</b> _____        |    |   |    | P    |
| <b>CONTACT ARRANGEMENT</b> _____ |    |   |    | BR   |
| <b>CONTACT TYPE</b> _____        |    |   |    | **** |
| <b>TERMINATION</b> _____         |    |   |    |      |
| <b>MODIFICATION</b> _____        |    |   |    |      |

NOTE: Connectors may be ordered less contacts by adding the mod callout "FO" at end of number. Contacts are then supplied in bulk form. For type of contacts and installation/assembly tools refer to page 13.

#### SERIES

2D - Double Density D - ITT Cannon prefix

#### SHELL SIZE

E, A, B, C and D

#### FLOAT MOUNTS

Omit if not required

#### CONTACT ARRANGEMENT

19, 31, 52, 79 and 100

#### CONTACT TYPE\*

P - Pin  
S - Socket

#### TERMINATION

BR - 90° PCB mounting  
(For BR Series use "P" to designate jackpost)

#### MODIFICATION

F171 - Jackpost assembly  
F172 - Standard jackscrew  
F173 - Low profile jackscrew  
For other modifications consult factory

\* Accommodates AWG #26 thru #22

## Performance and Material Specifications

### WEIGHT

| Part Number<br>by shell size | Weight (in gr.)    |                    | Weight (in oz.)    |                    |
|------------------------------|--------------------|--------------------|--------------------|--------------------|
|                              | Less With Contacts | Less With Contacts | Less With Contacts | Less With Contacts |
| 2DE19P                       | 4.05               | 5.02               | .142               | .177               |
| 2DE19S                       | 3.75               | 5.17               | .133               | .182               |
| 2DA31P                       | 5.20               | 6.78               | .183               | .239               |
| 2DA31S                       | 4.90               | 7.22               | .173               | .255               |
| 2DB52P                       | 8.75               | 11.40              | .308               | .402               |
| 2DB52S                       | 7.15               | 11.05              | .252               | .390               |
| 2DC79P                       | 11.70              | 15.73              | .413               | .555               |
| 2DC79S                       | 9.70               | 15.62              | .342               | .551               |
| 2DD100P                      | 12.85              | 17.95              | .453               | .633               |
| 2DD100S                      | 10.95              | 18.45              | .386               | .651               |

### MATERIALS AND FINISHES

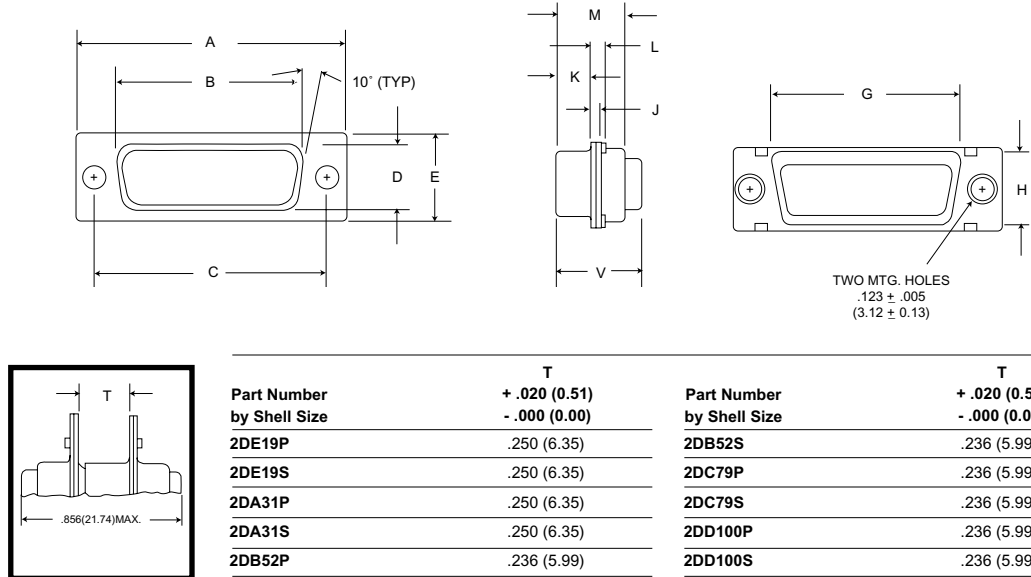
|                                    |                                                                    |
|------------------------------------|--------------------------------------------------------------------|
| *Shell                             | - Steel, cadmium plated with yellow chromate supplementary coating |
| Mounting Hardware and Float Mounts | - Stainless steel                                                  |
| Insulator                          | - Glass-filled nylon                                               |
| Contacts                           | - Copper alloy, gold plate                                         |
| Alternate finish,                  | - A106 Gold over brass                                             |
| Modification Code                  | A156 Gold over brass<br>A197 Tin/Lead over steel                   |

\*Brass non-magnetic also available

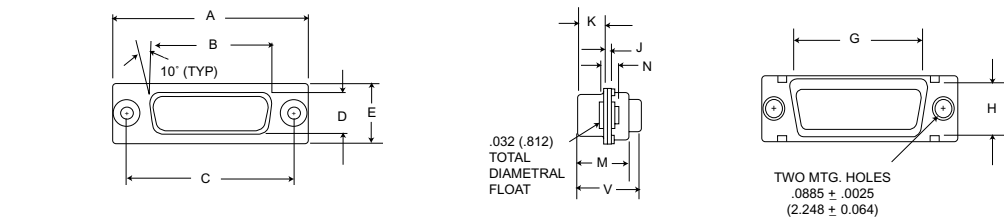
### MECHANICAL FEATURES

|                     |                                       |
|---------------------|---------------------------------------|
| Sizes               | - Five shell sizes: E, A, B, C, and D |
| Coupling            | - Friction or jackscrew               |
| Polarization        | - Keystone-shaped shells              |
| Contact Spacing     | - .075 (1.91)                         |
| Contact Termination | - Crimp snap-in                       |

## Standard Shell



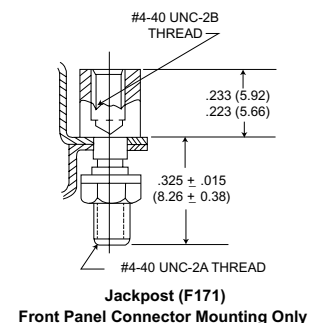
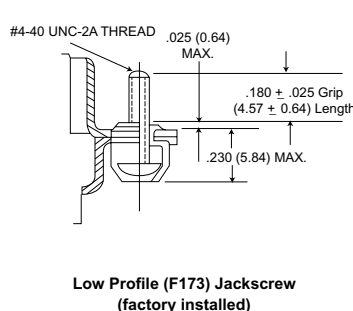
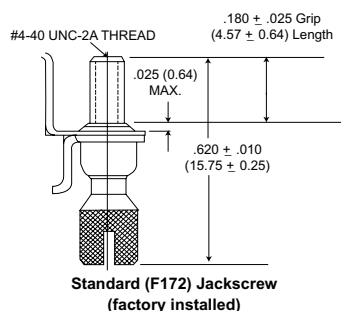
## Float Mount



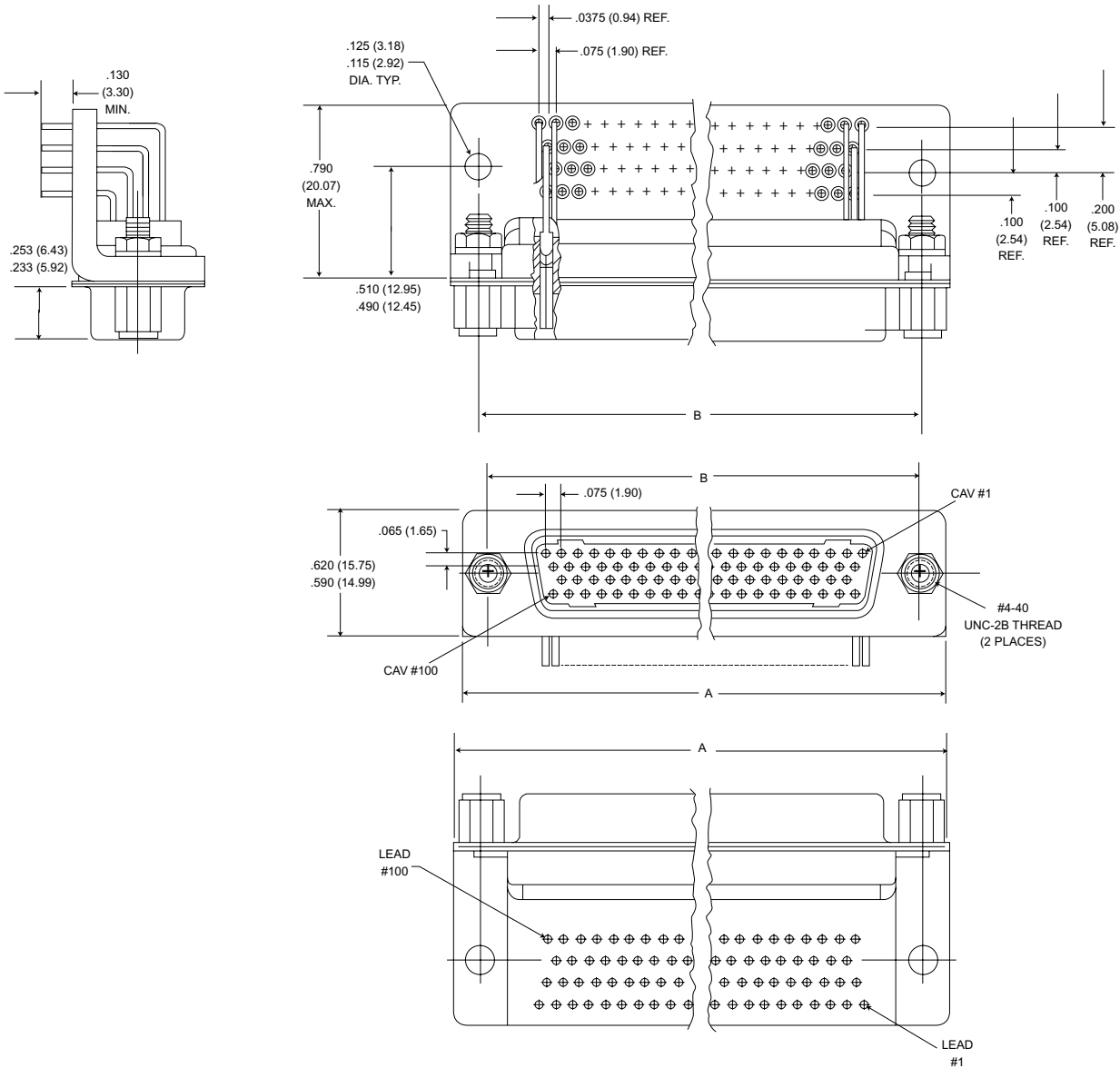
| Part Number<br>by Shell Size | A<br>± .015 (0.38) | B<br>± .010 (0.25) | C<br>± .010 (0.25) | D<br>± .010 (0.25) | E<br>± .015 (0.38) | G<br>± .010 (0.25) | H<br>± .010 (0.25) | J<br>± .010 (0.25) | K<br>± .010 (0.25) | L<br>± .010 (0.25) | M<br>± .010 (0.25) | N<br>± .010 (0.25) | V<br>Max.    |
|------------------------------|--------------------|--------------------|--------------------|--------------------|--------------------|--------------------|--------------------|--------------------|--------------------|--------------------|--------------------|--------------------|--------------|
| 2DE19P                       | 1.213 (30.81)      | .697 (17.70)       | .984 (24.99)       | .360 (9.14)        | .494 (12.55)       | .759 (19.28)       | .422 (10.72)       | .036 (.914)        | .236 (5.99)        | .055 (1.40)        | .422 (10.72)       | .120 (3.05)        | .555 (14.10) |
| 2DE19S                       | 1.213 (30.81)      | .640 (16.26)       | .984 (24.99)       | .308 (7.82)        | .494 (12.55)       | .759 (19.28)       | .422 (10.72)       | .032 (.812)        | .243 (6.17)        | .047 (1.19)        | .429 (10.90)       | .120 (3.05)        | .555 (14.10) |
| 2DA31P                       | 1.541 (39.14)      | 1.025 (26.03)      | 1.312 (33.32)      | .360 (9.14)        | .494 (12.55)       | 1.083 (27.51)      | .422 (10.72)       | .036 (.914)        | .236 (5.99)        | .055 (1.40)        | .422 (10.72)       | .120 (3.05)        | .555 (14.10) |
| 2DA31S                       | 1.541 (39.14)      | .968 (24.58)       | 1.312 (33.32)      | .308 (7.82)        | .494 (12.55)       | 1.083 (27.51)      | .422 (10.72)       | .032 (.812)        | .243 (6.17)        | .047 (1.19)        | .429 (10.90)       | .120 (3.05)        | .555 (14.10) |
| 2DB52P                       | 2.088 (53.03)      | 1.583 (40.21)      | 1.852 (47.04)      | .378 (9.60)        | .494 (12.55)       | 1.625 (41.27)      | .422 (10.72)       | .036 (.914)        | .231 (5.87)        | .055 (1.40)        | .426 (10.82)       | .129 (3.28)        | .555 (14.10) |
| 2DB52S                       | 2.088 (53.03)      | 1.508 (38.30)      | 1.852 (47.04)      | .308 (7.82)        | .494 (12.55)       | 1.625 (41.27)      | .422 (10.72)       | .032 (.812)        | .243 (6.17)        | .047 (1.19)        | .429 (10.90)       | .120 (3.05)        | .555 (14.10) |
| 2DC79P                       | 2.729 (69.31)      | 2.231 (56.67)      | 2.500 (63.50)      | .378 (9.60)        | .494 (12.55)       | 2.272 (57.71)      | .422 (10.72)       | .036 (.914)        | .231 (5.87)        | .055 (1.40)        | .426 (10.82)       | .129 (3.28)        | .555 (14.10) |
| 2DC79S                       | 2.729 (69.31)      | 2.156 (54.76)      | 2.500 (63.50)      | .308 (7.82)        | .494 (12.55)       | 2.272 (57.71)      | .422 (10.72)       | .032 (.812)        | .243 (6.17)        | .047 (1.19)        | .429 (10.90)       | .120 (3.05)        | .555 (14.10) |
| 2DD100P                      | 2.635 (66.92)      | 2.127 (54.02)      | 2.406 (61.11)      | .484 (12.29)       | .605 (15.37)       | 2.178 (55.32)      | .534 (13.56)       | .036 (.914)        | .231 (5.87)        | .055 (1.40)        | .426 (10.82)       | .129 (3.28)        | .555 (14.10) |
| 2DD100S                      | 2.635 (66.92)      | 2.062 (52.37)      | 2.406 (61.11)      | .420 (10.67)       | .605 (15.37)       | 2.178 (55.32)      | .534 (13.56)       | .032 (.812)        | .243 (6.17)        | .047 (1.19)        | .429 (10.90)       | .120 (3.05)        | .555 (14.10) |

For shell with float mounts, add letter F after shell size, e.g., 2DEF19P.

## Jackscrew/Jackpost Assembly



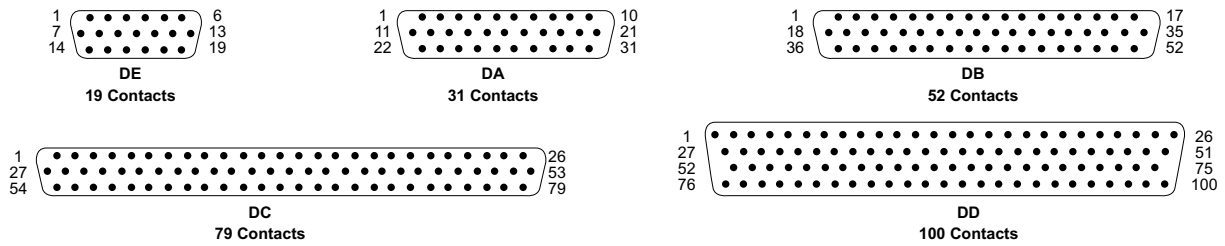
90° PCB Mounting - 4 Row



| Part Number<br>by Shell Size | A<br>± .015 (0.38) | B<br>± .010 (0.25) | C<br>Max.    |
|------------------------------|--------------------|--------------------|--------------|
| 2DD100SBRP                   | 2.635 (66.93)      | 2.406 (61.11)      | .790 (20.07) |

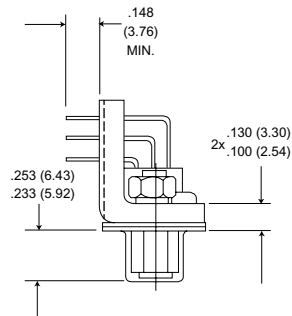
## Contact Arrangements

All views are pin front face. Use reverse order for socket side.



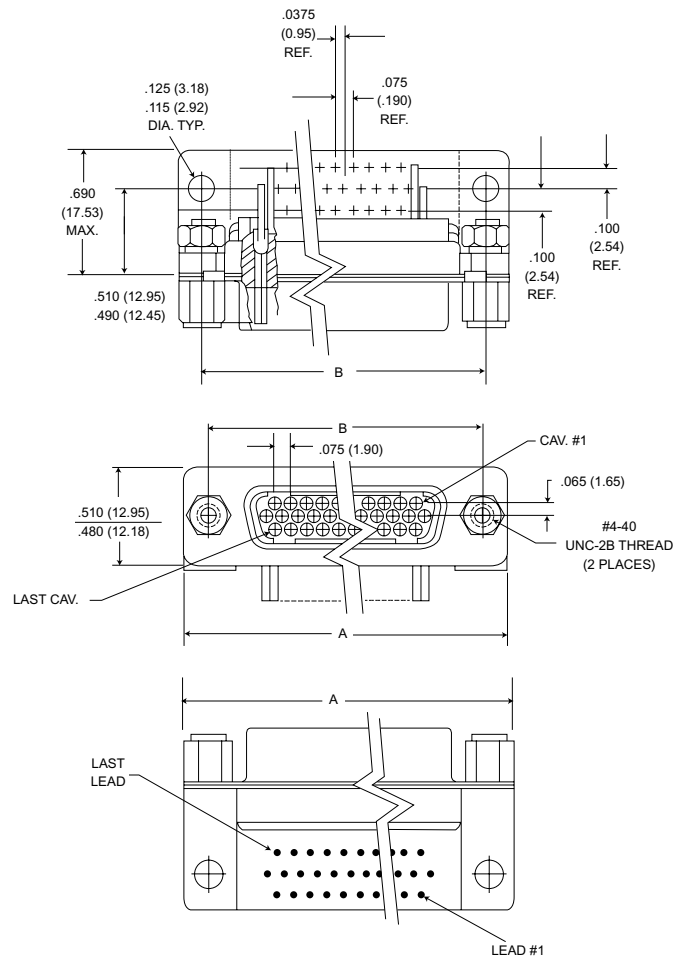
Cavity identification numbers are shown for reference only and do not appear on insulator front face. However they do appear on rear of insulator.

## 90° PCB Mounting - 3 Row



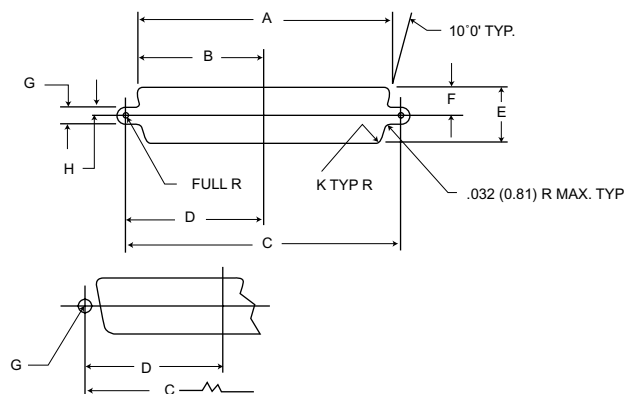
**PCB Termination Leads**  
(all contact arrangements)  
.024 (6.10) to .028 (7.11).

**Suggested finished PC hole**  
Size .033 (8.38)  $\pm$  .003 (0.08)



| Part Number<br>by Shell Size | A<br>$\pm$ .015 (0.38) | B<br>$\pm$ .010 (0.25) | C<br>Max.    |
|------------------------------|------------------------|------------------------|--------------|
| 2DE19SBRP                    | 1.215 (30.86)          | .984 (24.99)           | .690 (17.53) |
| 2DA31SBRP                    | 1.540 (39.12)          | 1.312 (33.32)          | .690 (17.53) |
| 2DB52SBRP                    | 2.090 (53.09)          | 1.852 (47.04)          | .690 (17.53) |
| 2DC79SBRP                    | 2.730 (69.34)          | 2.500 (63.50)          | .690 (17.53) |

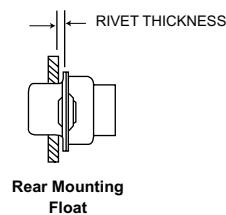
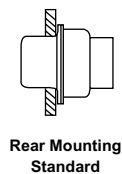
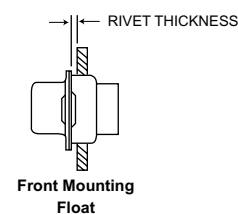
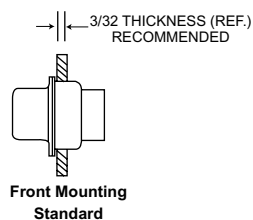
## Panel Cutouts



| Conn. | Mtg. Method | A<br>± .005 (0.13) | B<br>± .005 (0.13) | C<br>± .005 (0.13) | D<br>± .005 (0.13) | E<br>± .005 (0.13) | F<br>± .005 (0.13) | G<br>± .002 (0.05) | H<br>± .002 (0.05) | K<br>± .002 (0.05) |
|-------|-------------|--------------------|--------------------|--------------------|--------------------|--------------------|--------------------|--------------------|--------------------|--------------------|
| 2DE   | Front       | .874 (22.20)       | .437 (11.10)       | .984 (24.99)       | .492 (12.50)       | .513 (13.03)       | .257 (6.53)        | .120 (3.05)        | .060 (1.52)        | .083 (2.11)        |
|       | Rear        | .806 (20.47)       | .403 (10.24)       | .984 (24.99)       | .492 (12.50)       | .449 (11.40)       | .225 (5.71)        | .120 (3.05)        | .060 (1.52)        | .132 (3.35)        |
| 2DA   | Front       | 1.202 (30.53)      | .601 (15.26)       | 1.312 (33.32)      | .656 (16.66)       | .513 (13.03)       | .257 (6.53)        | .120 (3.05)        | .060 (1.52)        | .083 (2.11)        |
|       | Rear        | 1.134 (28.80)      | .567 (14.40)       | 1.312 (33.32)      | .656 (16.66)       | .449 (11.40)       | .225 (5.71)        | .120 (3.05)        | .060 (1.52)        | .132 (3.35)        |
| 2DB   | Front       | 1.743 (44.27)      | .872 (22.15)       | 1.852 (47.04)      | .926 (23.52)       | .513 (13.03)       | .257 (6.53)        | .120 (3.05)        | .060 (1.52)        | .083 (2.11)        |
|       | Rear        | 1.674 (42.52)      | .837 (21.26)       | 1.852 (47.04)      | .926 (23.52)       | .449 (11.40)       | .225 (5.71)        | .120 (3.05)        | .060 (1.52)        | .132 (3.35)        |
| 2DC   | Front       | 2.391 (60.73)      | 1.196 (30.38)      | 2.500 (63.50)      | 1.250 (31.75)      | .513 (13.03)       | .257 (6.53)        | .120 (3.05)        | .060 (1.52)        | .083 (2.11)        |
|       | Rear        | 2.326 (59.08)      | 1.163 (29.54)      | 2.500 (63.50)      | 1.250 (31.75)      | .449 (11.40)       | .225 (5.71)        | .120 (3.05)        | .060 (1.52)        | .132 (3.35)        |
| 2DD   | Front       | 2.297 (58.34)      | 1.149 (29.18)      | 2.406 (61.11)      | 1.203 (30.56)      | .623 (15.82)       | .312 (7.92)        | .120 (3.05)        | .060 (1.52)        | .083 (2.11)        |
|       | Rear        | 2.218 (56.34)      | 1.109 (28.17)      | 2.406 (61.11)      | 1.203 (30.56)      | .555 (14.10)       | .278 (7.06)        | .120 (3.05)        | .060 (1.52)        | .132 (3.35)        |

For contact part numbers, termination tooling and assembly see pages 288-290.

## Panel Mounting



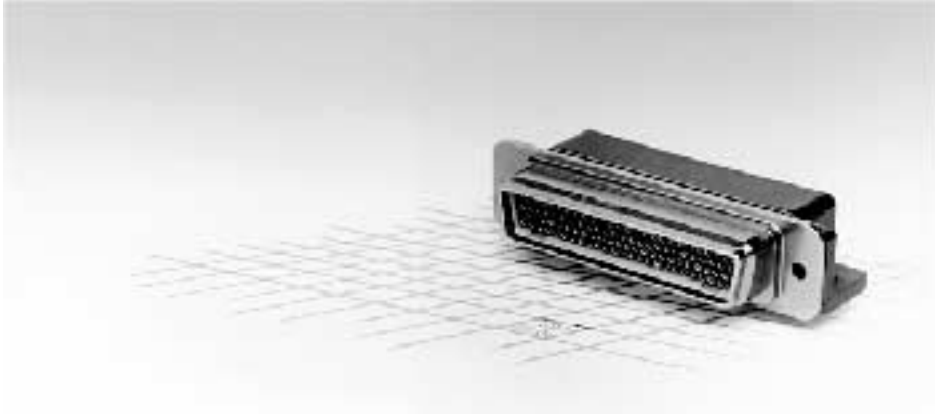
Environmentally sealed Double Density D connector offers superior vibration and moisture resistant characteristics.

The connector features superior environmental sealing which makes it suitable for any application where severe environmental protection is critical.

The connector's contact density design was achieved by using field proven, highly reliable Centipin/Centisocket contacts on .075" centers.

Designed to maximize positive contact mating, the contact positions are reversed, leaving the flexible Centipin contacts recessed in the insulator while the more ruggedized centisocket contacts are exposed.

This reversal of positions and the chamfered-entry of the sockets assures positive mating even under severe conditions where misalignment of mismatching of the connector might occur.



High reliability and protection of the contacts is assured through superior environmental sealing. The socket contacts as well as the Centipin contacts, which feature ITT Cannon's reliable Twist Pin contact design, are retained in the connector body.

A rubber grommet seal the signal wires and connector from external contaminants and moisture. The 90° PCB mounting 2D\*D is potted behind the grommet for additional sealing.

How to Order

2D

D

D

100

P

-

\*\*\*

-

\*\*\*

SERIES

SHELL SIZES

CLASS

CONTACT ARRANGEMENT

CONTACT STYLE

MODIFICATION CODES

SERIES:  
2D-Double Density "D"

SHELL SIZES:  
D\*  
Consult factory for size E, A, B, C

CLASS:  
D - Environmental

CONTACT ARRANGEMENT  
100\*  
Consult factory for sizes 19, 31, 52, 79

CONTACT STYLE  
P - Centi-Loc pin (receptacle shell config.)  
S - Centi-Lock socket (plug shell config.)

MODIFICATION CODES  
\*\*\* (Two 3-digit codes permissible)  
F0 - Connector without contacts  
(F0 will not be printed on the connector)  
6 - Environmental D 90° PCB mounting  
(socket configuration only)

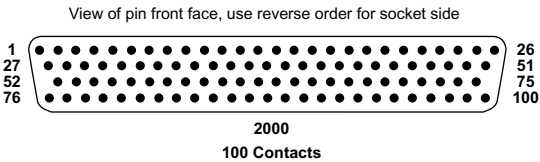
\* ITT Cannon is currently tooled in size D 100 contact version only.

Standard Data

**Contacts:**  
Insertable/removalbe gold-plated size 22 centi-loc crimp contacts (wire sizes #22 thru #26 AWG, stranded or solid).

| MATERIALS AND FINISHES |                                                    |
|------------------------|----------------------------------------------------|
| Housings               | Aluminum alloy, yellow chromate over cadmium plate |
| Peripheral Seal        | Silicone                                           |
| Insulators             | Diallyl Phthalate                                  |
| Contacts Retainer      | Nylon                                              |
| Grommet                | Polychloroprene (bonded to housing)                |

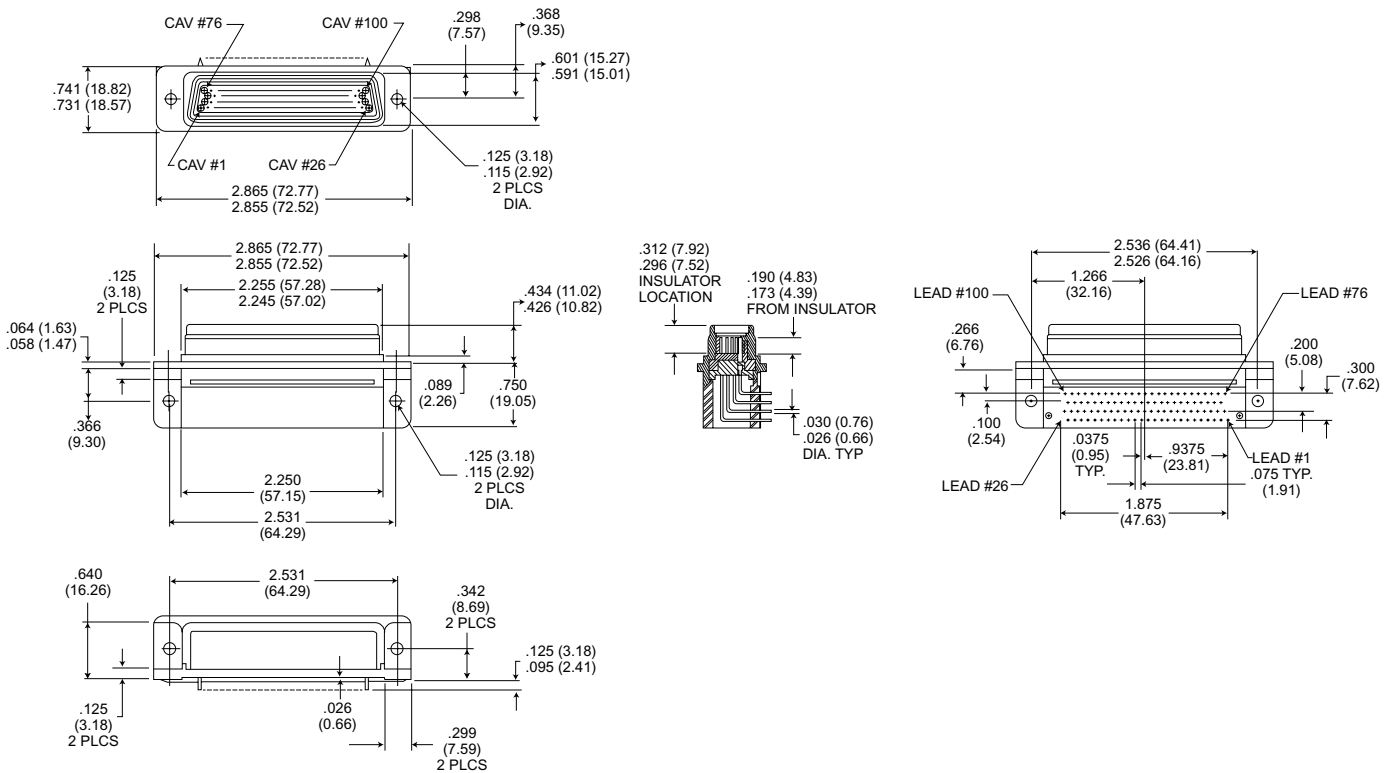
Contact Arrangement



## 90° PCB Mounting

### Plug/Socket Connector

### 2DDD100S-6

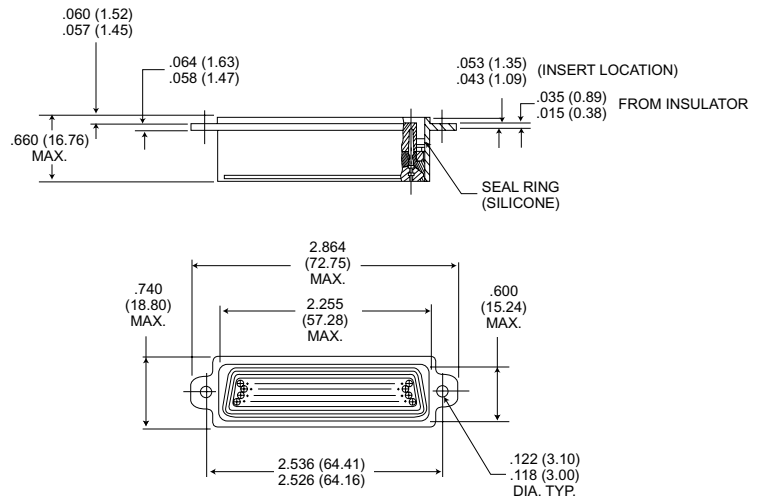


All tolerance are  $\pm .010$  (0.25) unless otherwise noted.

## Standard Mount

### Receptacle/Pin Connector

### 2DDD100P

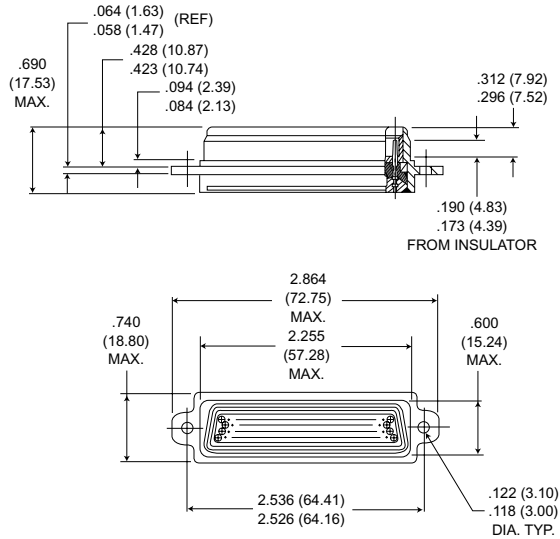


All tolerance are  $\pm .010$  (0.25) unless otherwise noted.

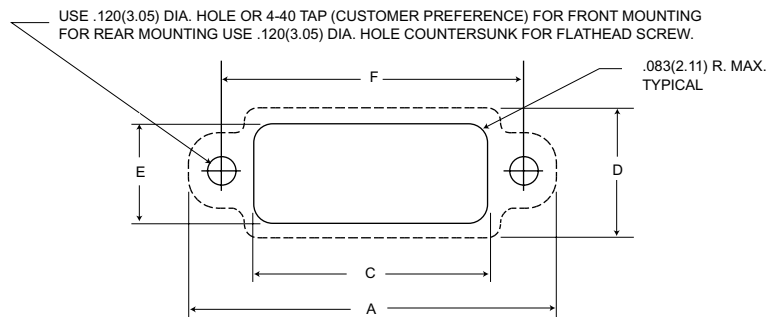
## Standard Mount (Continued)

Plug/Socket Connector

2DDD100S

All tolerances are  $\pm .010$  (0.25) unless noted otherwise.

## Panel Cutout



| Shell Size | A<br>$\pm .010$ (0.25) | C<br>Min.     | D<br>$\pm .010$ (0.25) | E<br>Min.    | F<br>$\pm .006$ (0.15) |
|------------|------------------------|---------------|------------------------|--------------|------------------------|
| 2DDD-100   | 2.859 (72.62)          | 2.265 (57.53) | .735 (18.67)           | .610 (15.49) | 2.531 (64.29)          |

Note: Panel cutout does not allow for potting cup clearance.

## Mounting Dimensions

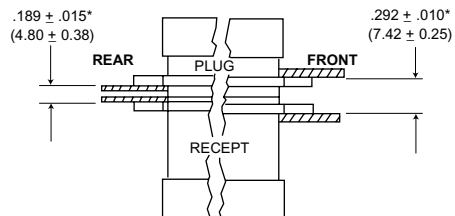


Figure 1

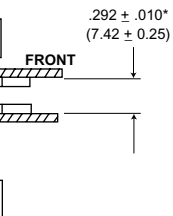


Figure 2

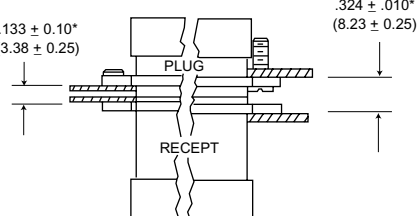


Figure 3

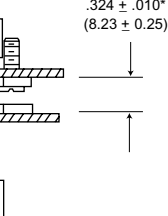


Figure 4

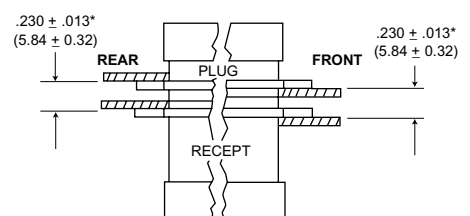


Figure 5

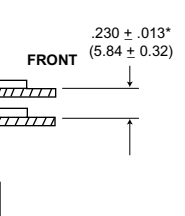


Figure 6

1. With both connectors rear mounted, use #4-40 flat head screws flush with the panel.
2. With both connectors front mounted, use #4-40 binder or pan head screws.

3. With both connectors rear mounted (float mounting on either plug or receptacle side), use #4-40 flat head screws, flush with the panels.

4. With both connectors front mounted (float mounting on either plug or receptacle side), use #4-40 binder or pan head screws.

- 5/6. With plug assembly front mounted and receptacle assembly rear mounted, use hardware from Figures 5 and 6. If float mounting is desired, use Figure 3 or 4 for the float mounted connector.

\*Dimensions between panels represent the recommended limit to be used in the design of the connector mounting method.

**NOTE:** Max. panel thickness is .125 (3.17) for non-floating rear panel mounting.

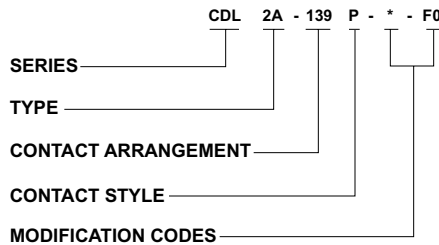


A subminiature all plastic high density "D" rectangular connector. The CDL is a general purpose connector with a peripheral o-ring and wire sealing gasket. Connector utilizes rear insertion, front release, crimp snap-in size 22, centi-loc contacts installable by the customer or, if preferred, by the factory.

## MATERAIL

|                    |                           |
|--------------------|---------------------------|
| Insulator:         | Black Nylon               |
| Dielectric Gasket: | Polychloroprene           |
| Contact:           | Copper Alloy, Gold Plated |
| Seal Ring:         | Silicone                  |

## How to Order



## SERIES

Centi-D Loc Series

## TYPE

- 1 - Snap
- 2 - No lock (mtg. holes)
- 3 - Ring lock
- 2A - No lock type with rear gasket

## CONTACT ARRANGEMENT

139  
(Consult factory for other sizes)

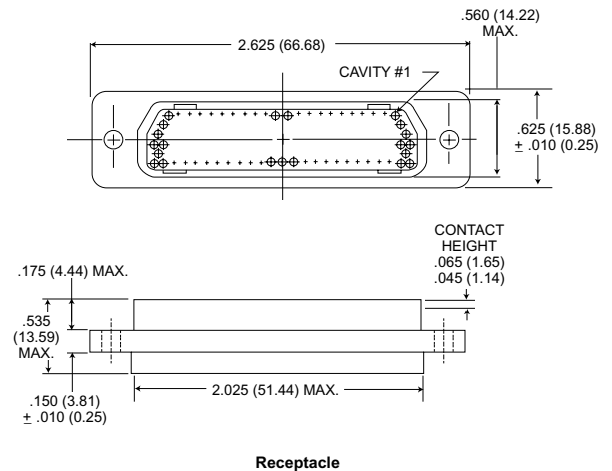
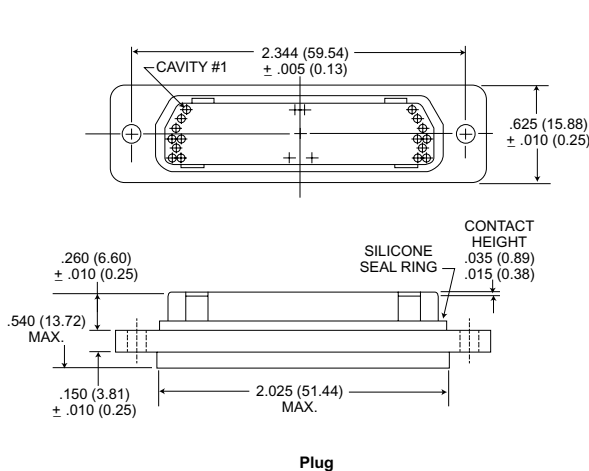
## CONTACT STYLE

- P - Centi-loc pin
- S - Centi-loc socket

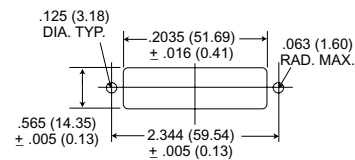
## MODIFICATION CODES

- 1 - Less lock ring
- F0 - Less contacts

## Plug

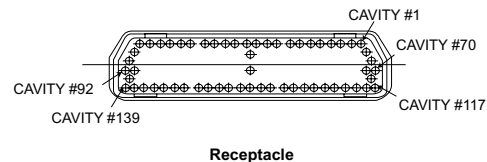
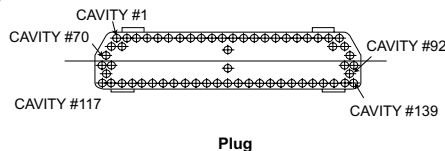


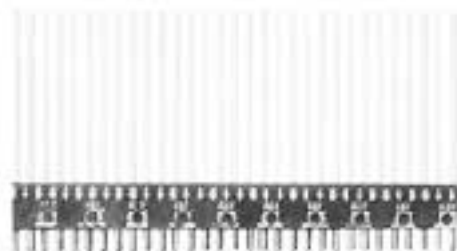
## Recommended Panel Cutouts



## Contact Arrangements

### Engaging Face View





CENTI-LOC connectors are low-cost nylon strip connectors designed for commercial applications such as computers, instrumentation, communications, calculators and medical equipment. They are available in "yardage" from up to a 6 (152.40) maximum length, accommodatin from 1 to 60 rear insertion, front release, crimp snap-in size 22 CENTIPIN™/CENTISOCKET™ contacts. These contacts utilize a proven positive contact alignment design, giving additional contact strength and positive contact alignment during mating.

These connectors can be ordered in kit or bulk form. The kit comprises all the parts necessary to assemble on complete 6-inch (152.40) strip connector with 60 contacts on .100 (2.54) centers or a 4-inch (101.60mm) strip with 53 contacts on .075 (1.91) centers. If more then one connector is required, the parts can be ordered in bulk and assembled as desired.

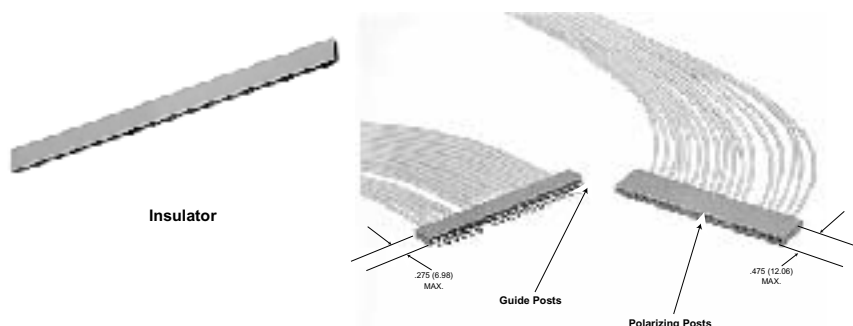
## Components and Accessories

The CENTI-LOC strip connector can be ordered in kit or bulk form. The kit includes mating insulators with a full compliment of contacts and two guide posts. If more than one connector is required, the parts can be ordered in bulk and assembled as desired.

### Kit Form

Kits include mating insulators with full complement of contacts and two guide posts.

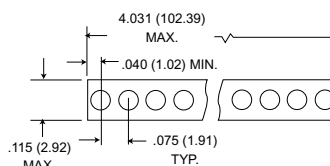
| Part Number   | Contact Center spacing    |
|---------------|---------------------------|
| CTA3-KIT      | .075 (1.91)               |
| CTA4-KIT      | .100 (2.54)               |
| CTA3-CTA4-KIT | .075 (1.91) & .100 (2.54) |



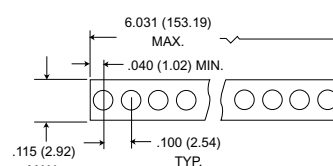
The guide posts and polarizing posts are inserted in the same manner as the contacts. The guide posts are inserted into the socket insulator and the polarizing posts are inserted into the pin insulator. The corresponding contact in the mating insulator must be removed for each. See assembly instructions.

|                 | Part Number | Contact Center Spacing | Type   | Material                   |
|-----------------|-------------|------------------------|--------|----------------------------|
| Insulator       | CTA3-IP-53  | .075 (1.91)            | Pin    | Nylon                      |
|                 | CTA3-IS-53  | .075 (1.91)            | Socket | Nylon                      |
|                 | CTA4-IP-60  | .100 (2.54)            | Pin    | Nylon                      |
|                 | CTA4-IS-60  | .100 (2.54)            | Socket | Nylon                      |
| Guide Post      | CTA-GP      | P/N 230-9507-000       |        | Passivated Stainless Steel |
| Polarizing Post | CTA-PP      | P/N 230-9506-000       |        | Passivated Stainless Steel |

## Dimensional Data



CTA3-.075(1.91) Centers



CTA4-.100(2.54) Centers

### Weights

| Part Number | No. of Contacts | Contacts Type | Avy. Weight oz. | ± 5% gm. |
|-------------|-----------------|---------------|-----------------|----------|
| CTA3        | 53              | pin           | .185            | 5.25     |
|             |                 | socket        | .203            | 5.75     |
| CTA4        | 60              | pin           | .230            | 6.30     |
|             |                 | socket        | .241            | 6.90     |

## Contacts



The contacts are retained in the insulator by means of a resilient internal shoulder that allows contact to snap into a locking groove.

The front of the contact is chamfered so that the internal shoulder in the insulator is not damaged as the contact is pushed thru.

### P.C. Tail Contacts

Subtract .064 (1.63)  $\pm$  .010 (.25) from pigtail length when used in 2D pin insulator for potting well of connector assembly.

Subtract .081 (2.08)  $\pm$  .010 (.25) from pigtail length when used in 2D socket insulator for potting well of connector assembly.

### Contact Part Number

| Part Number         |                     | Type                                                                           | Pin |  | Socket |
|---------------------|---------------------|--------------------------------------------------------------------------------|-----|--|--------|
| Pin                 | Socket              |                                                                                |     |  |        |
| 031-9540-000        | 030-9542-001        | Standard 30 $\mu$ in. plating                                                  |     |  |        |
| 031-9540-004        | 030-9542-002        | 50 $\mu$ in. plating                                                           |     |  |        |
| 031-9540-005        | 030-9542-004        | With inspection hole;<br>50 $\mu$ in. plating                                  |     |  |        |
| N/A                 | 030-9542-011        | P.C. tail<br>.026 dia. x .083 lg. Soc.                                         |     |  |        |
| *031-9540-013       | 030-9542-012        | P.C. tail<br>.020 dia. x .183 lg. Soc.<br>.183 lg. Pin                         |     |  |        |
| 031-9540-016        | 030-9542-014        | Long crimp<br>barrel **                                                        |     |  |        |
| 031-9540-022<br>*** | 030-9556-000<br>*** | Small crimp bore<br>For AWG #32 & 30                                           |     |  |        |
| 031-9540-007        | 030-9542-022        | Small crimp bore<br>For AWG #28 & 30                                           |     |  |        |
| *031-9540-015       | 030-9542-015        | P.C. tail<br>.020 dia. x .232 lg. Soc.<br>.255 lg. Pin                         |     |  |        |
| *031-9540-019       | 030-9542-016        | P.C. tail<br>.018 dia. x .444 lg. Soc.<br>.445 lg. Pin<br>50 $\mu$ in. plating |     |  |        |

NOTE: Plating, except as noted, is 30 micro-inch gold.

\* Consult factory for any tail size or plating requirements.

\*\* Special crimp locator required. Part number: 995-0001-714. (L3198-CL-PSL)

\*\*\* Use special insertion tip (323-9510-016 &-017).

## 2D and Centi-Loc Crimp and Assembly Tools



M22520/2-01

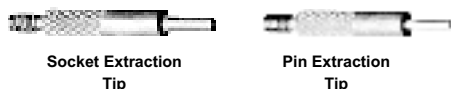


CIET-CTA  
Handle

Insertion Tips



CTA-AB  
Assembly Holding  
Block  
Part Number: 328-9508-000



Socket Extraction  
Tip

Pin Extraction  
Tip

| Description | Tool         | Locators     |              |
|-------------|--------------|--------------|--------------|
|             |              | Pin          | Socket       |
| M22520/2-01 |              | L3198-CLP    | L3198-CLS    |
| Part Number | 995-0001-584 | 995-0001-338 | 995-0001-353 |

### Insertion Tools For Standard Contact

| AWG<br>Size* | Kit Part Number<br>(handle and tip) | Tip<br>Part Number** | Handle<br>Part Number** |
|--------------|-------------------------------------|----------------------|-------------------------|
| 22           | CIT-PS-CTA-22                       | 323-9510-001         | 204-9500-000            |
| 24           | CIT-PS-CTA-24                       | 323-9510-002         | 204-9500-000            |
| 26           | CIT-PS-CTA-26                       | 323-9510-003         | 204-9500-000            |
| 28           | CIT-PS-CTA-28                       | 323-9510-004         | 204-9500-000            |
| 30/P.C. Tail | CIT-PS-CTA-30                       | 323-9510-005         | 204-9500-000            |

\* Based on wire size per MIL-W-16878 with Type E insulation, use smaller tool for wire with thin insulation, larger tool for wire having thick insulation.

\*\* The 5 insertion tips (part numbers 323-9510-001 thru -005), plus handle, and the pin and socket extraction tips maybe ordered as a SINGLE KIT by specifying the part number CIET-CTA-2. [Part number: 070143-0002].

### Insertion Tools For Long Crimp barrel Contacts

| AWG<br>Size* | Tip Part Number ***<br>Pin Contact | Tip Part Number ***<br>Socket Contact | Handle<br>Part Number*** |
|--------------|------------------------------------|---------------------------------------|--------------------------|
| 22           | 323-9510-008                       | 323-9510-012                          | 204-9500-000             |
| 24           | 323-9510-009                       | 323-9510-013                          | 204-9500-000             |
| 26           | 323-9510-010                       | 323-9510-014                          | 204-9500-000             |

\*\*\* To order the SINGLE KIT for the long crimp barrel contact (tip part numbers 323-9510-008 thru -014, handle and pin and socket extraction tips) please specify CIET-CTA-3.

### Extraction Tools

| Contact     | Description | Kit Part Number<br>(handle and tip) | Tip Part<br>Number | Handle Part<br>Number |
|-------------|-------------|-------------------------------------|--------------------|-----------------------|
| CENTIPIN    | CET-P-CTA-2 | 070112-0002                         | 324-9502-000       | 204-9500-000          |
| CENTISOCKET | CET-S-CTA-1 | 070113-0001                         | 324-9501-000       | 204-9500-000          |

## 2D/CTA CENTI-LOC™ Connectors Assembly Instructions

The Double Density D/CTA CENTI-LOC Connectors are highly reliable and simple connectors to use. There are a few helpful suggestions that will assure complete satisfaction when followed:

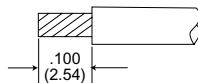
1. The following instructions should be followed.
2. The proper crimp tool and locator (if required) must be used. These tools have been designed for use with this product. Substitutions of crimping equipment may result in connector failure at the assembly operation.
3. After crimping a contact to a lead it is of vital importance that the proper tool be used to assure seating the contact in the insulator in the proper position. Any substitution of insertion tools may result in over or under insertion of the contact which will damage the retention system of the insulator.

4. The female (socket) side of the connector has been designed with a controlled float to allow for ease of mating. To avoid reducing this float or causing a splaying of the contacts, any unnecessary strain by clamping too close to the rear of the connector should be avoided.

Use of recommended tooling together with proper assembly techniques will pay dividends in reliability and reduced costs.

## 2D Assembly Instructions

### WIRE STRIPPING



Cut the wires to length required and strip .100" of insulation from the end to be crimped. Check for cut or broken wires and frayed insulation.

### CONTACT CRIMPING



Using the proper crimp tool and locator, insert the contact into the locator. Insert the stripped end of the wire into the contact crimp pot, and crimp the contact to the wire. Squeeze the handles firmly to insure a proper crimp (tool will not release if crimping is incomplete). NOTE: Contact stop must be changed in tool locator when crimping pin and socket contacts.

### CONTACT INSERTION



1. Place the proper insertion tip in the insertion/-extraction handle and put the tip over the wire as shown. The tool tip will butt up against the crimp pot. Connector must be firmly supported during both insertion and extraction operations.



2. Using a firm, steady pressure, push the contact into the cavity until the resilient internal shoulder in the insulator snaps into the locking groove in the contact. The shoulder of the tool tip bottoms against the rear of the insulator, preventing over-insertion. Repeat for balance of contacts.

### CONTACT EXTRACTION



1. For contact extraction, remove the insertion tool tip and replace it with the proper extraction tool tip. (The socket tip will fit into the socket, and the pin tip will slide over the pin bundle). Insert the tool tip into the contact cavity: (the pin tip will butt up against the shoulder of the pin contact, and the socket tip will bottom in the socket contact.)



2. Apply a firm, steady pressure until the contact is released from the internal shoulder in the insulator. The shoulder of the tool tip bottoms against the insulator face to prevent damage to the internal shoulder. Remove the tool tip and pull the contact from the rear of the connector. Repeat for the balance of contacts to be removed.

## CTA Assembly Instructions

### INSERTION



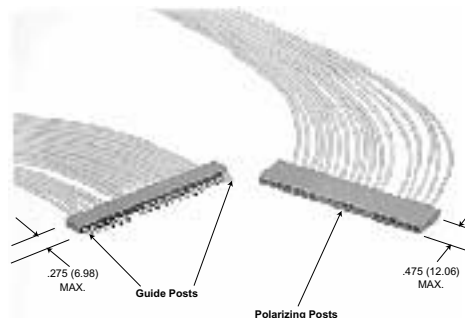
1. Place the connector into the slot in the assembly block with the arrows on the insulator pointing downward. The connector will bottom against the internal shoulder in the groove in the assembly block. Start contact insertion by placing the crimped contact in the cavity by hard.



2. Position the insertion tool tip on the rear of contact as shown. The insulation must be pulled back from the crimp pot approximately 1/32" to allow the tool tip to butt against the contact crimp pot.



3. With firm steady pressure, push the contact into the cavity until the resilient internal shoulder snaps into the locking groove in the contact. To prevent over insertion, the tool tip bottoms against the rear of the insulator.



4. The guide post and polarizing posts are inserted in the same manner as the contacts. The guide posts are inserted into the socket insulator, and the polarizing posts are inserted into the pin insulator. The corresponding contact in the mating insulator must be removed for each.

### EXTRACTION



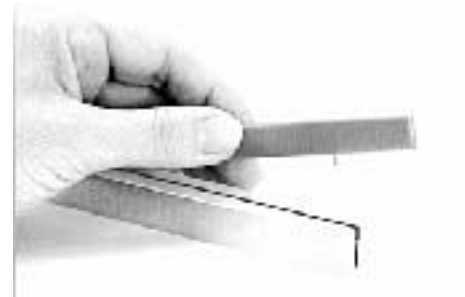
1. To extract the contacts, place the connector face up in the assembly block so that the contact to be extracted is in the end of the block that has a fully slotted opening.



2. The pin extraction tool tip is tubular, slides over the pin bundle and butts against the front shoulder of the pin. The socket extraction tool is a solid rod that fits into the socket contact, the external shoulder butts against the contact socket shoulder.



3. Insert the extraction tool into the cavity and apply firm pressure until the contact is pushed thru the rear of the connector.



4. Lift the insulator from the groove and pull the contact out. Repeat for balance of contacts to be removed.

# The NANO Line - .025" Contact Spacing



NANO contacts incorporate the highly reliable Twist Pin concept, which allows continuity in very dense areas and under severe shock and vibration, requiring low engagement and separation forces. Termination can consist of uninsulated pigtails or insulated wire all pre-harnessed at our factory to your specifications.

Due to various industry application requirements, the NANO line is available in several different

configurations: strip, metal shell and plastic, rectangular or circular configurations with center jack-screw, a 72 position circular connector with center-jackscrew, metal shell with combination layout, or discrete board-to-board stacking contact.

Successful applications for NANO connectors are many and varied, from the Air Force's AIRS program to actual human implantations in the medical research field.

## Performance and Material Specifications

| <ul style="list-style-type: none"><li>• Contact Rating - 1 amp max.</li><li>• Minimum contact centers - 0.025 (0.64).</li><li>• Wire sizes - #32 AWG stranded, #30 AWG solid.</li><li>• Contact termination - integral pigtails or multiple indent crimp.</li><li>• Contact retention - fixed via epoxy.</li><li>• Contact materials - socket: nickel silver.<br/>pin bundle: precious metal alloy or BeCu.<br/>pin Sleeve: nickel silver or cartridge brass.</li><li>• Mating/unmating force - 6oz. per contact max.</li></ul> | NTP                                                                             | NDM                                                                     | NJS                          | NTDP           | NJSC                      |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------|-------------------------------------------------------------------------|------------------------------|----------------|---------------------------|
| Type                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | Single Row Strip                                                                | Metal Shell Rectangular                                                 | Rectangular Center Jackscrew | Dual Row Strip | Circular Center Jackscrew |
| Shell                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |                                                                                 | Alum. alloy 2024 T351 per QQ-A-250 or 6061-T6 per QQ-A-200 nickel plate |                              |                |                           |
| Insulator                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | Phenolic                                                                        | Phenolic                                                                | Polyester                    | Phenolic       | Polyester                 |
| No. of Contacts                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | 1-40 Contacts                                                                   | 9, 15, 21, 25, 31, 37                                                   | 9, 24, 44                    | 90             | 27, 72, 266               |
| Pin Bundle Material                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | - Precious metal per ASTM B477 and ASTM B541, or BeCu per CDA alloy 172 & 102 - |                                                                         |                              |                |                           |
| Socket Sleeve Material                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | - Nickel silver/ASTM B122, Comp. B-                                             |                                                                         |                              |                |                           |
| Pin Sleeve Material                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | - Nickel silver per ASTM B122, Comp. B or Cartridge Brass per CDA alloy 260 -   |                                                                         |                              |                |                           |

## Test Data

The table below summarizes the results of key tests performed in accordance with MIL-STD-202, where applicable. Data is applicable to standard connec-

tor with standard terminations. Variations may affect this data, so please consult the factory for further information on your requirements.

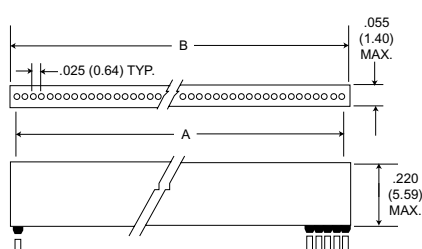
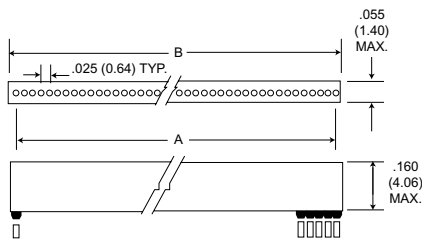
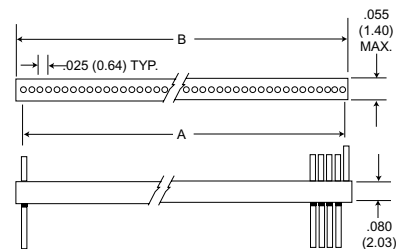
| Test                            | Method                                                                             | Criteria of Acceptance                                                                                                                                        |
|---------------------------------|------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Dielectric Withstanding Voltage | Method 301:<br>350 VAC at sea level<br>100 VAC at 70,000' altitude                 | No breakdown<br>No breakdown                                                                                                                                  |
| Insulation Resistance           | Method 302 Condition A                                                             | 5,000 megohms minimum                                                                                                                                         |
| Thermal Shock                   | Method 107, Condition B:<br>-65°C to +125°C                                        | No physical damage                                                                                                                                            |
| Physical Shock                  | Method 213, Condition I:<br>100 G's, 3-axes, 6 millisecond duration sawtooth pulse | No physical damage<br>No loss of continuity > 1 µ sec                                                                                                         |
| Vibration                       | Method 204, Condition D:<br>15 G's, 10-2,000 Hz, 12 hours                          | No physical damage<br>No loss of continuity > 1 µ sec                                                                                                         |
| Durability                      | 500 cycles of mating and unmating, 500 CPH max.                                    | No mechanical or electrical defect                                                                                                                            |
| Moisture Resistance             | Method 106, omit 7B                                                                | Insulation resistance > 100 megohms                                                                                                                           |
| Salt Spray                      | Method 101, Condition B:<br>48 hours                                               | Shall be capable of mating and unmating, and meet contact resistance requirements                                                                             |
| Contact Resistance              | Method 307:<br><br>At 1 amp<br>At 100 milliamps                                    | 30 milliohms maximum } With gold plated Be-Cu Nanopin contact.<br>60 milliohms maximum }<br>80 milliohms maximum } With precious metal alloy Nanopin contact. |
| Contact Retention               | -                                                                                  | 3 lb. minimum axial load                                                                                                                                      |

## How to Order - NT

|                                                                                                                                                                                                      |                                                                                                                                                                                                                                                             |                                                                                                                                                                                                                                                                                                                                                                                                                 |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <p><b>SERIES</b><br/>Nano Strip</p> <p><b>INSULATOR MATERIAL</b><br/>P - Phenolic</p> <p><b>CONTACT LOCATION</b><br/>1 - Contacts on .025 (0.64) centers<br/>2 - Contacts on .050 (1.27) centers</p> | <p><b>SERIES</b> _____</p> <p><b>INSULATOR MATERIAL</b> _____</p> <p><b>CONTACT LOCATION</b> _____</p> <p><b>CONTACT ARRANGEMENTS</b> _____</p> <p><b>CONTACT TYPE</b> _____</p> <p><b>TERMINATION TYPE</b> _____</p> <p><b>MODIFICATION CODE</b> _____</p> | <p><b>CONTACT ARRANGEMENTS</b><br/>40 Maximum - .025 (0.64) centers<br/>20 Maximum - .050 (1.27) centers</p> <p><b>CONTACT TYPE</b><br/>P - Pin (Plug)<br/>S - Socket (Receptacle)</p> <p><b>TERMINATION MODIFICATION</b><br/>L - Solid uninsulated wire<br/>T - One piece contact/lead<br/>H - Insulated harness wire</p> <p><b>MODIFICATION CODE</b><br/>For termination code, see NJS section, page 294.</p> |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

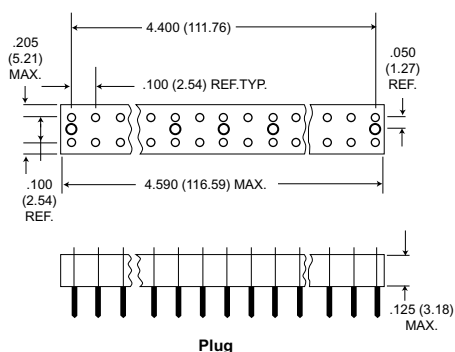
## Dimensions

## NTP

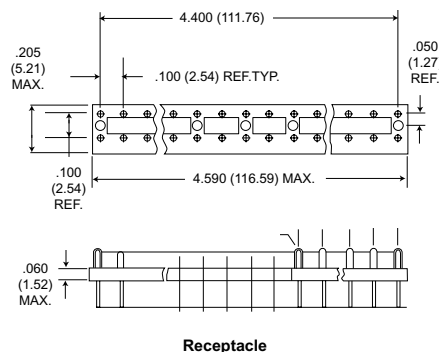
Plug - "H" and "L"  
Termination TypesPlug - "T"  
Termination TypesReceptacle - "H", "L", and "T"  
Termination Types

| Part Number<br>by Insulator Size | A<br>Ref.   | B<br>±.010 (0.25) | Part Number<br>by Insulator Size | A<br>Ref.    | B<br>±.010 (0.25) | Part Number<br>by Insulator Size | A<br>Ref.    | B<br>±.010 (0.25) | Part Number<br>by Insulator Size | A<br>Ref.    | B<br>±.010 (0.25) |
|----------------------------------|-------------|-------------------|----------------------------------|--------------|-------------------|----------------------------------|--------------|-------------------|----------------------------------|--------------|-------------------|
| NTPI-1*-**                       | -           | .050 (1.27)       | NTPI-11*-**                      | .250 (6.35)  | .300 (7.62)       | NTPI-21*-**                      | .500 (12.70) | .550 (13.97)      | NTPI-31*-**                      | .750 (19.05) | .800 (20.32)      |
| NTPI-2*-**                       | .025 (0.64) | .075 (1.91)       | NTPI-12*-**                      | .275 (6.99)  | .325 (8.26)       | NTPI-22*-**                      | .525 (13.34) | .575 (14.61)      | NTPI-32*-**                      | .775 (19.69) | .825 (20.96)      |
| NTPI-3*-**                       | .050 (1.27) | .100 (2.54)       | NTPI-13*-**                      | .300 (7.62)  | .350 (8.89)       | NTPI-23*-**                      | .550 (13.97) | .600 (15.24)      | NTPI-33*-**                      | .800 (20.32) | .850 (21.59)      |
| NTPI-4*-**                       | .075 (1.91) | .125 (3.18)       | NTPI-14*-**                      | .325 (8.26)  | .375 (9.53)       | NTPI-24*-**                      | .575 (14.61) | .625 (15.88)      | NTPI-34*-**                      | .825 (20.96) | .875 (22.23)      |
| NTPI-5*-**                       | .100 (2.54) | .150 (3.81)       | NTPI-15*-**                      | .350 (8.89)  | .400 (10.16)      | NTPI-25*-**                      | .600 (15.24) | .650 (16.51)      | NTPI-35*-**                      | .850 (21.59) | .900 (22.86)      |
| NTPI-6*-**                       | .125 (3.18) | .175 (4.45)       | NTPI-16*-**                      | .375 (9.53)  | .425 (10.80)      | NTPI-26*-**                      | .625 (15.88) | .675 (17.15)      | NTPI-36*-**                      | .875 (22.23) | .925 (23.50)      |
| NTPI-7*-**                       | .150 (3.81) | .200 (5.08)       | NTPI-17*-**                      | .400 (10.16) | .450 (11.43)      | NTPI-27*-**                      | .650 (16.51) | .700 (17.78)      | NTPI-37*-**                      | .900 (22.86) | .950 (24.13)      |
| NTPI-8*-**                       | .175 (4.45) | .225 (5.72)       | NTPI-18*-**                      | .425 (10.80) | .475 (12.07)      | NTPI-28*-**                      | .675 (17.15) | .725 (18.42)      | NTPI-38*-**                      | .925 (23.50) | .975 (24.77)      |
| NTPI-9*-**                       | .200 (5.08) | .250 (6.35)       | NTPI-19*-**                      | .450 (11.43) | .500 (12.70)      | NTPI-29*-**                      | .700 (17.78) | .750 (19.05)      | NTPI-39*-**                      | .950 (24.13) | 1.000 (25.40)     |
| NTPI-10*-**                      | .225 (5.72) | .275 (6.99)       | NTPI-20*-**                      | .475 (12.07) | .525 (13.34)      | NTPI-30*-**                      | .725 (18.42) | .775 (19.69)      | NTPI-40*-**                      | .975 (24.77) | 1.025 (26.04)     |

## NTDP3-90-ST\*



Plug



Receptacle

How to Order - NDM

SERIES

CONTACT ARRANGEMENTS

CONTACT TYPE

TERMINATION TYPE

MODIFICATION CODE

MDM - 9

P

T

\*\*

SERIES

CONTACT ARRANGEMENTS

CONTACT TYPE

NDM - NANO D Metal Shell

9, 15, 21, 25, 31, 37

P = Pin (Plug)  
S = Socket (Receptacle)

TERMINATION TYPE

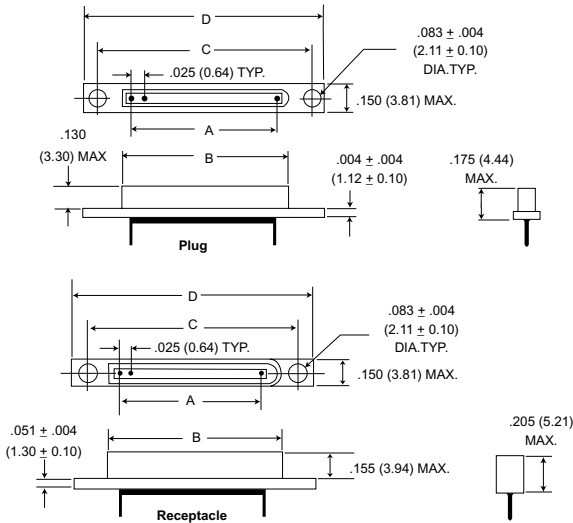
MODIFICATION CODE

H = Insulated harness wire  
L = Solid copper  
T = One piece contact/lead

To specify lead lengths, type and mechanical modifications consult factory.

Dimensions

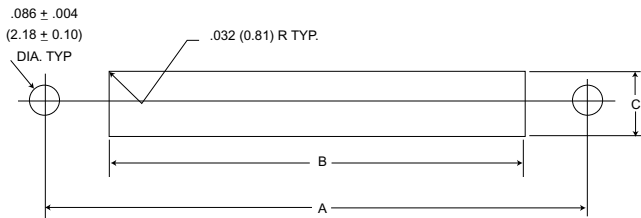
NDM



| Part Number<br>By Shell Size | A<br>Ref.    | Plug<br>B<br>Ref. | Receptacle<br>B<br>Ref. | C<br>±.005 (0.13) | D<br>Max.     |
|------------------------------|--------------|-------------------|-------------------------|-------------------|---------------|
| NDM-9P*/S*                   | .200 (5.08)  | .317 (8.05)       | .380 (9.65)             | .565 (14.35)      | .725 (18.42)  |
| NDM-15P*/S*                  | .350 (8.89)  | .467 (11.86)      | .530 (13.46)            | .715 (18.16)      | .875 (22.23)  |
| NDM-21P*/S*                  | .500 (12.7)  | .617 (15.67)      | .680 (17.27)            | .865 (21.97)      | 1.025 (26.04) |
| NDM-25P*/S8                  | .600 (15.24) | .717 (18.21)      | .780 (19.81)            | .965 (24.51)      | 1.125 (28.58) |
| NDM-31P*/S*                  | .750 (19.05) | .867 (22.02)      | .930 (23.62)            | 1.115 (28.32)     | 1.275 (32.39) |
| NDM-37P*/S*                  | .900 (22.86) | 1.017 (25.83)     | 1.080 (27.43)           | 1.265 (32.13)     | 1.425 (36.20) |

Consult factory for availability of other sizes.

Panel Mounting Dimensions



| Size | A             | B                            | C                            |
|------|---------------|------------------------------|------------------------------|
|      | ±.005 (0.13)  | +.005 (0.13)<br>-.000 (0.00) | +.005 (0.13)<br>-.000 (0.00) |
| 9    | .565 (14.35)  | .261 (6.63)                  | .095 (2.41)                  |
| 15   | .715 (18.16)  | .411 (10.44)                 | .095 (2.41)                  |
| 21   | .865 (21.97)  | .561 (14.25)                 | .095 (2.41)                  |
| 25   | .965 (24.51)  | .661 (16.79)                 | .095 (2.41)                  |
| 31   | 1.115 (28.32) | .811 (20.60)                 | .095 (2.41)                  |
| 37   | 1.265 (32.13) | .961 (24.41)                 | .095 (2.41)                  |

## How to Order - NJS

NJS - 24 P H \*\*\*

SERIES \_\_\_\_\_

CONTACT ARRANGEMENTS \_\_\_\_\_

CONTACT TYPE \_\_\_\_\_

TERMINATION TYPE \_\_\_\_\_

TERMINATION CODE \_\_\_\_\_

## SERIES

NJS - Nano center jackscrew rectangular (9, 24, 44)  
 NJSC - Nano center jackscrew circular (27, 72, 266)

## CONTACT ARRANGEMENTS

9, 24, 27, 44, 72, 266

## CONTACT TYPE

P = Pin (Plug)  
 S = Socket (Receptacle)

## TERMINATION TYPE

H = Insulated harness wire  
 L = Solid uninsulated wire  
 T = One piece contact/Lead

\* See Termination Codes shown below for additional length modification codes.

## TERMINATION CODE\*

(H) 001 = 18" #32 AWG 7/40 strd. Type "ET" Teflon per MIL-W-16878/6, color yellow.  
 (H) 003 = 18" #32 AWG 7/40 strd. Type "ET" Teflon per MIL-W-16878/6 color coded to MIL-STD-681, System 1.  
 (L) 1 = 1/2" uninsulated solid #30 AWG gold plated copper.  
 (L) 2 = 1" uninsulated solid #30 AWG gold plated copper  
 (T)\* = Consult factory

## Standard Wire Termination Codes

The following termination codes are listed for your information. For lengths not shown, consult factory for proper modification code. All wire lengths are minimum.

## Harness Type (H)

#32 AWG, 7/40 stranded, Type "ET" per MIL-W-16878/6

| Length     | All Yellow | Color Coded |
|------------|------------|-------------|
| 3 (76.2)   | H 020      | H 027       |
| 6 (152.4)  | H 019      | H 016       |
| 8 (203.2)  | H 026      | H 034       |
| 10 (254.0) | H 029      | H 025       |
| 12 (304.8) | H 028      | H 002       |
| 18 (457.2) | H 001      | H 003       |
| 20 (508.0) | H 038      | H 023       |

## Solid Uninsulated Type (L)

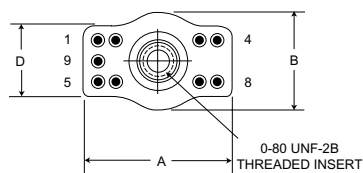
#32 AWG gold plated copper.

| Length       | All Yellow | Color Coded |
|--------------|------------|-------------|
| 24 (609.6)   | H 009      | H 004       |
| 30 (762.0)   | H 010      | H 005       |
| 36 (914.4)   | H 011      | H 006       |
| 48 (1219.2)  | H 013      | H 048       |
| 72 (1828.8)  | H 017      | H 046       |
| 120 (3048.0) | H 042      | H 041       |

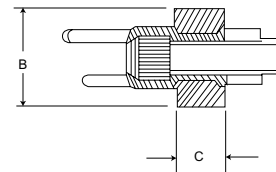
| Code | Length       | Code | Length        |
|------|--------------|------|---------------|
| L61  | .125 (3.18)  | L14  | .750 (19.05)  |
| L56  | .150 (3.81)  | L2   | 1.000 (25.40) |
| L57  | .190 (4.83)  | L7   | 1.500 (38.10) |
| L39  | .250 (6.35)  | L6   | 2.000 (50.80) |
| L58  | .375 (9.53)  | L16  | 2.500 (63.50) |
| L1   | .500 (12.70) | L10  | 3.000 (76.20) |

## Center Jackscrew/Rectangular

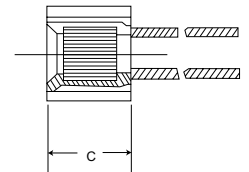
NJS-9 & NJS-24



Face View Pin Insert



Receptacle Side View

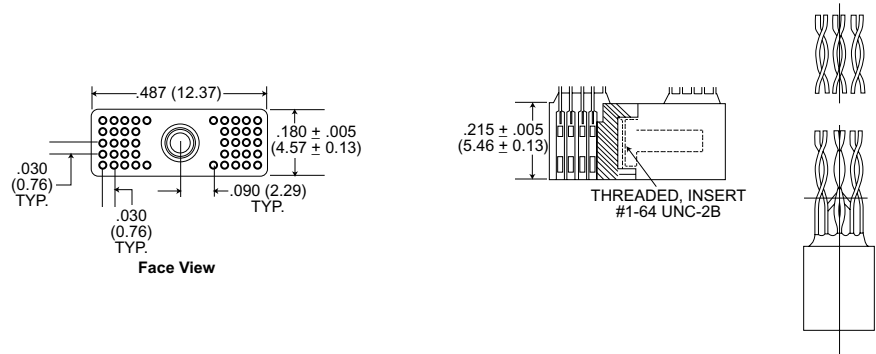


Plug Side View

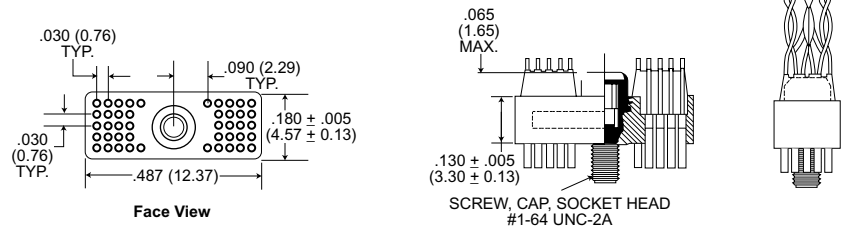
| Part Number | A<br>Max.    | B<br>Max.   | C<br>+.005 (0.13) | D<br>+.005 (0.13) |
|-------------|--------------|-------------|-------------------|-------------------|
| NJS-9P*     | .255 (6.48)  | .165 (4.19) | .138 (3.51)       | .116 (2.95)       |
| NJS-9S*     | .255 (6.48)  | .165 (4.19) | .078 (1.98)       | .116 (2.95)       |
| NJS-24P*    | .435 (11.05) | .165 (4.19) | .138 (3.51)       | .116 (2.95)       |
| NJS-24S*    | .435 (11.05) | .165 (4.19) | .078 (1.98)       | .116 (2.95)       |

## Center Jackscrew/Rectangular

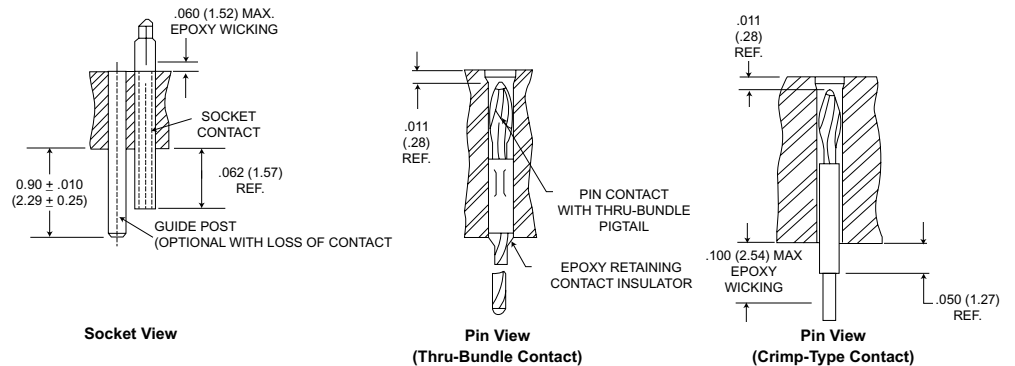
NJS-44P



NJS-44S



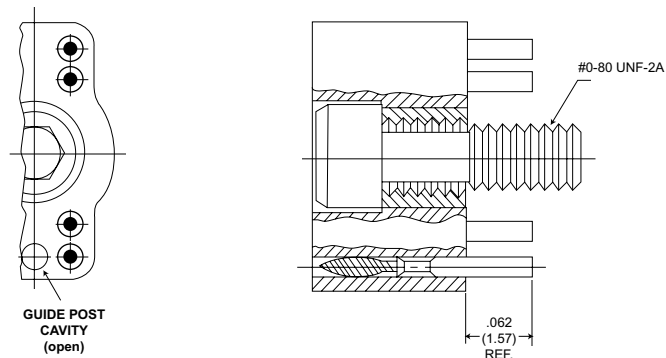
## Contacts



NOTE: Guide posts can be installed in any contact cavity for polarization purposes.

## Connector Saver

NJS-9P & S



ITT Cannon fiber optic contacts...a standard in the industry. We offer the most complete line of fiber optic contacts, engineered to fit today's MIL-Spec circular, rack and panel, edgecard/LRM, and D Subminiature connectors.

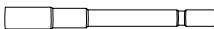
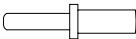
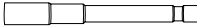
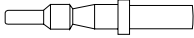
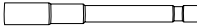
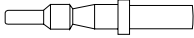
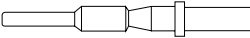
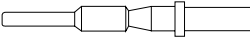
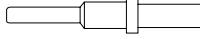
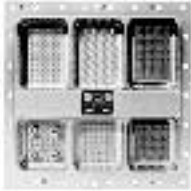
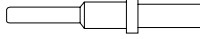
- Conforms to MIL-T-29504 fiber optic termini.
- Fits any size 16 cavity with no modification to connector.

- Designed for use with standard size 16 contact insertion/extraction tool.
- Both pin and socket contact end faces are easily cleaned.

## Fiber Optic Contact Performance Data

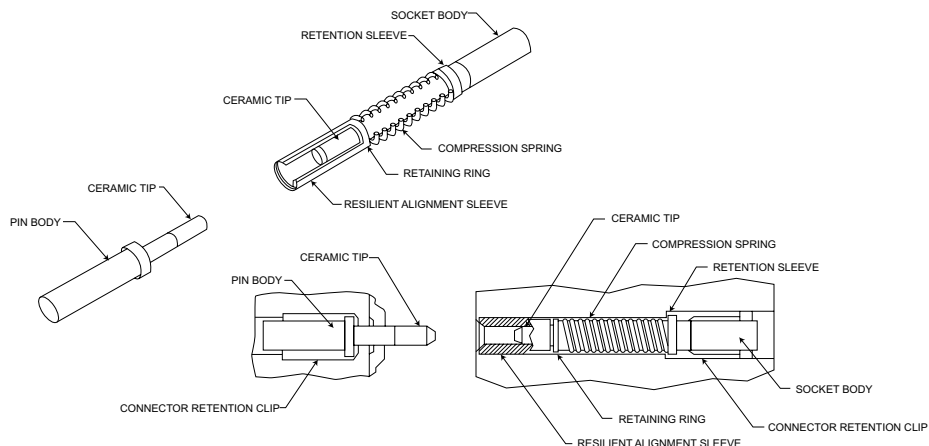
|                                           |                                                                            |
|-------------------------------------------|----------------------------------------------------------------------------|
| Durability                                | < 0.5 dB change after 500 matings                                          |
| Temperature Shock                         | < 0.5 dB change during and after test                                      |
| Operating Temperature                     | - 65°C to + 200°C (Cable/contact dependent)                                |
| Vibration, random<br>(16 hrs/MIL-C-38999) | < 0.5 dB change during and after test                                      |
| Optical Loss Performance                  | Typical 1.0 dB using 100/140 micron fiber-tested per EIA FOTP-34, Method A |

## Standard MIL-Spec Connector

| Standard Connector                                                                                                                                             | Cannon Designator  | Number of Size #16 Cavities Available<br>Dependent Upon Shell Size | Fiber Optic Contact                                                                                    |                                                                                                         |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------|--------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------|
|                                                                                                                                                                |                    |                                                                    | Socket (Body)                                                                                          | Pin (Body)                                                                                              |
| <br>MIL-C-38999 Series I                                                      | KJL                | 1-29                                                               | <br>MIL-T-29504/5    | <br>MIL-T-29504/4    |
| <br>MIL-C-38999 Series III<br>MIL-C-38999 Series IV                         | KJA                | 1-29                                                               | <br>MIL-T-29504/11 | <br>MIL-T-29504/10 |
| <br>MIL-C-26482 Series I                                                    | KPSE               | 1-31                                                               | <br>MIL-T-29504/11 | <br>MIL-T-29504/10 |
| <br>MIL-C-26482 Series II<br>MIL-C-83723 Series I<br>MIL-C-83723 Series III | PV7<br>PVA<br>HTMF | 1-31<br>1-31<br>1-52                                               | <br>MIL-T-29504/11 | <br>MIL-T-29504/10 |
| <br>MIL-C-83733                                                             | DPK                | Up to 64                                                           | <br>MIL-T-29504/9  | <br>MIL-T-29504/8  |
| <br>MIL-C-28840                                                             | KFS                | Up to 8                                                            | <br>MIL-T-29504/9  | <br>MIL-T-29504/8  |
| <br>ARINC 600                                                               | BKAD               | Up to 6                                                            | <br>MIL-T-29504/7  | <br>MIL-T-29504/6  |
| <br>MIL-C-83527                                                             | BKW                | Up to 30                                                           | <br>MIL-T-29504/7  | <br>MIL-T-29504/6  |

## Ceramic Tip Optical Contacts

ITT Cannon's new precision optical contacts offer superior coupling performance and a simplified termination process. Ceramic zirconia tips more accurately center the fiber within the contact body. A rugged thermoplastic alignment sleeve precisely aligns the mating contacts. Solid state epoxy retained within the contact eliminates any handling of epoxy



## How to Order Fiber Optic Hybrid Contacts

FOHC - P A 1422 J P  
 SERIES \_\_\_\_\_  
 GENDER \_\_\_\_\_  
 TERMINUS/CONNECTOR SERIES \_\_\_\_\_  
 HOLE SIZE (1422 means 142.2 microns) \_\_\_\_\_  
 ALIGNMENT SYSTEM \_\_\_\_\_  
 PREFORM \_\_\_\_\_

SERIES - Fiber Optic Hybrid Contacts

GENDER

P - Pin

S - Socket

### TERMINUS/CONNECTOR SERIES

- A - MIL-C-29504/4 & /5: For use in MIL-C-38999 Series I, III & IV Connectors.
- B - MIL-T-29504/10 & /11: For use in MIL-C-83723 Series I, III; MIL-C-83733; and MIL-C-26482 Series II Connectors.
- C - MIL-C-29504/6 & 7; For use in MIL-C-83527; MIL-C-81659; ARINC 600; and ARINC 404 Connectors.
- D - (No Terminus Spec): For use in MIL-C-26482 Series I & MIL-C-26500 Connectors.
- E - (No Terminus Spec): For use in MIL-C-83723 Series II & MIL-C-5015G Connectors.
- F - MIL-C-29504/8 & /9: For use in MIL-C-28840 Connectors.
- G - (No Terminus Spec): For use in MIL-C-83723 Series III/82, /83, /86 & /87 Connectors.
- H - (No Terminus spec): For use in D\*M Mark I, G06, E2P (DIN) Fiber Optic/Coaxial Housing.

### HOLE SIZE (MICRONS)\* - JEWEL

|      |      |      |      |      |      |      |      |
|------|------|------|------|------|------|------|------|
| 1219 | 1321 | 1422 | 1650 | 2200 | 2400 | 2600 | 2800 |
| 1245 | 1346 | 1447 | 1700 | 2250 | 2450 | 2650 |      |
| 1270 | 1372 | 1550 | 1750 | 2300 | 2500 | 2700 |      |
| 1295 | 1397 | 1600 | 1800 | 2350 | 2550 | 2750 |      |

### HOLE SIZE (MICRONS)\* - CERAMIC TIP

|      |      |      |
|------|------|------|
| 1250 | 1400 | 1700 |
| 1270 | 1420 | 1720 |
| 1290 | 1440 | 1740 |

### ALIGNMENT SYSTEM

J - Jewel, Synthetic Ruby

P - Precision Ceramic Tip

### PREFORM

P - Preform Epoxy Supplied (available for terminus/connector series A, B and G only)

N - No Preform Epoxy Supplied

\*For Size not listed, consult factory.

## How to Order Fiber Optic Receptacles (Mates with MIL-T-29504/4 Contacts)

FOHC - \* - \*  
 SERIES \_\_\_\_\_  
 SHELL STYLE \_\_\_\_\_  
 SEALING \_\_\_\_\_

SERIES - Fiber Optic Hybrid Contacts

### SHELL STYLE

- 3 - Receptacle, Device, PCB Mount
- 4 - Receptacle, Device, Flange Mount
- 7 - Receptacle, Adapter, In-Line Cable Panel Mount

### SEALING

N - Non-Sealed

S - Sealed



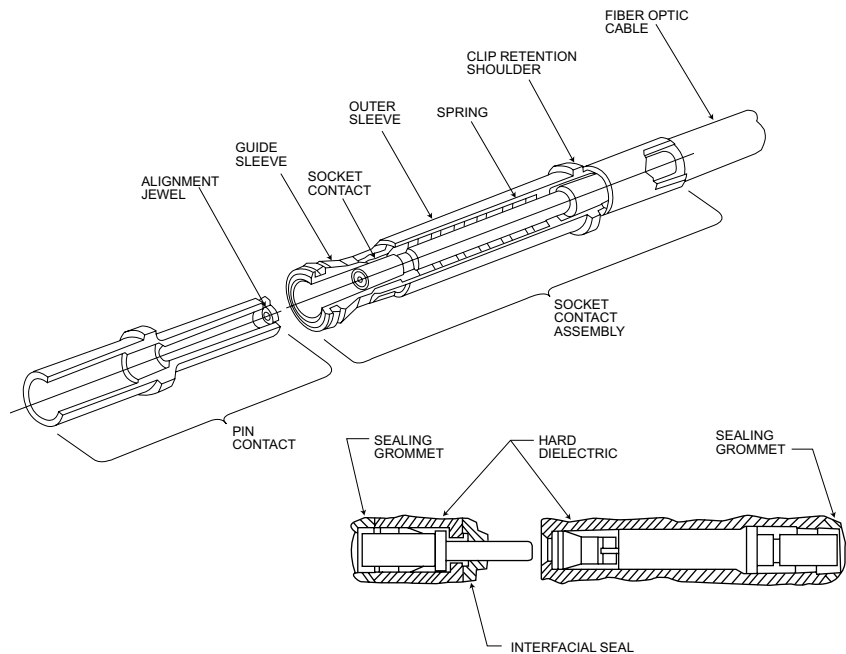
Adapter for in-line cable mechanical splice.



Receptacle for mounting T0-18/T0-46/T0-52 devices.

## Jewel Ferrule Alignment System

Cannon's patented\* optical contacts allow the use of all standard fibers via the field-proven jewel ferrule alignment system in a size 16 pin or socket contact. The jewel ferrule system provides precise alignment regardless of fiber size, accommodates fiber tolerances, eliminates the requirement for a minimum end gap, and allows for spring loading of contacts.



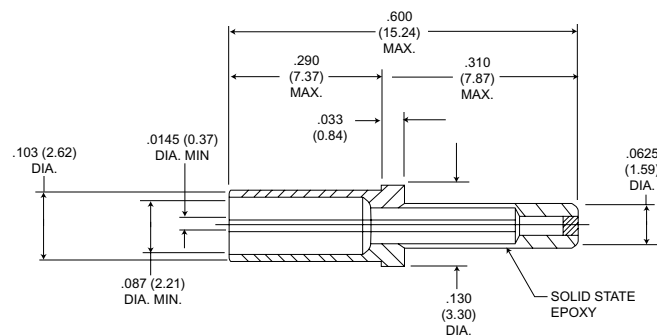
\*U.S. Patent No 4,351,586, No. 3,947,182, and No. 4,747,658

## Solid State Epoxy

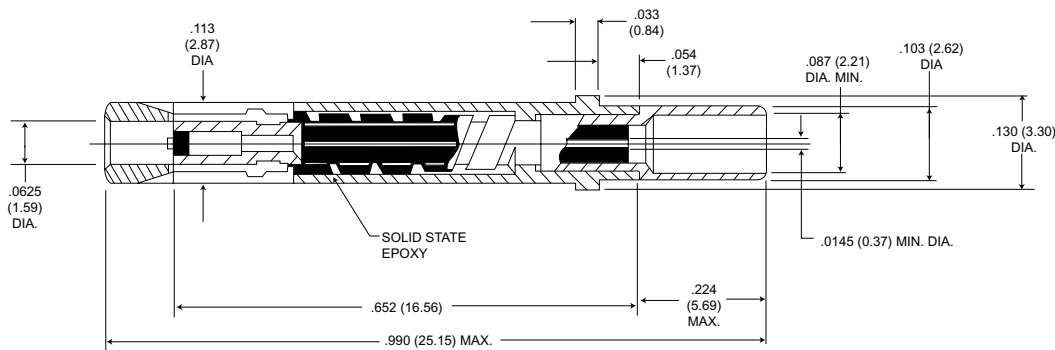
Since the advent of fiber optics, fibers have been terminated in optical contacts using messy two-part liquid epoxy. This process is cumbersome and not conducive to high volume production.

Optical contacts are now available with solid state epoxy. The fiber is inserted into the contact and the epoxy is reflowed in a cure fixture. No mixing of liquids is required; the volume and flow viscosity is controlled, resulting in a perfect bond and the elimination of clean-up.

Pin



Socket



Note: Dimensions are for 38999 contacts.

ITT Cannon's EOMC Series Fiber Optic connectors are designed to meet the needs of military and commercial customers who require a rugged environmental multifiber field connector. The FOMC combines features which provide the user with a connector that will withstand rough handling and weather extremes with features of elastomeric cable and interface sealing, scoop proof interface to prevent optical contact damage, removable front insert for easy optical contact cleaning, anodized shell finish, and a tough, strong dust cap with attaching stainless steel strap.

Hermaphroditic design means plugs will mate with an identical plug as well as receptacles. The removable insert assures correcting mating and alignment. In the FOMC, ruggedness is combined with good optical performance, rapid coupling and attractive pricing. Another plus feature for ITT Cannon's FOMC design is the fiber flexure chamber which prevents tensile loads from being applied to the terminated fiber. The chamber provides space for surplus fiber in a service loop of sufficient length to permit one retermination of one or more fibers in the plug and cable receptacle without reterminating the strength member at the same time. This versatility is an ITT Cannon exclusive.

The FOMC 2, 4, and 8 channel connector are available as a cable plug, and several receptacle shell configurations. The 8 channel can also be used with less contacts i.e. 6,4, or 2 channels. Sealing plugs are supplied with the 8 channel connector when using less than the full complement of contacts. This catalog provides complete ordering information on available shell types, contact layouts, fiber and cable dimensional and mechanical parameters.



State-of-the-art ceramic alignment tips on the contact provide maximum coupling performance - less than 1.0 dB average coupling loss.

Standard Data

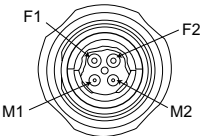
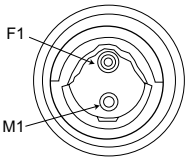
Fungus inert per requirement 4 of MIL-STD-454 Fluid resistant (elastomeric materials) per  
MIL-H-5606-Hydraulic fluid, petroleum base  
MIL-L7808-Lubricating oil, synthetic base  
MIL-G-3056-Gasoline  
MIL-A-8243-Ethylene glycol

| Description             | Materials                                         |
|-------------------------|---------------------------------------------------|
| Shell Hardware          | Aluminum Alloy                                    |
| Cable Clamp             | Aluminum Alloy                                    |
| Insert, Front Removable | Thermoplastic                                     |
| Interfacial Seal        | Elastomer                                         |
| Cable Seal              | Elastomer                                         |
| O Rings                 | Elastomer                                         |
| Alignment Guide         | Thermoplastic                                     |
| Strain Relief Spring    | Stell wire with black chrome finish               |
| Mandrel/Yoke            | Thermoplastic                                     |
| Receptacle Yoke         | Thermoplastic                                     |
| Dust Cap                | Elastomer                                         |
| Marking                 | Laser with clear chromate over exposed base metal |

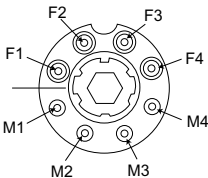
Contact Arrangements

Face Veiw of Insert

2 and 4 Channel



8 Channel



## How to Order

### SERIES

Fiber Optic Multi-Channel

### SHELL STYLE

2 - Square Flange Receptacle  
(2/4) channel only)

6 - Cable Plug

7 - Jam Nut Receptacle

### SHELL SIZE (Channels)

(Maximum number of contact positions)

2

4

8

### DUST CAP

W - Connector supplied with dust cap

X - Without dust cap

### CABLE TYPE

1 - Pigtail buffered fiber (receptacle only)

2 - Multi fiber strengthened cable

3 - Single fiber strengthened cables (8 channel only)

### SERIES

### SHELL STYLE

### SHELL SIZE

### DUST CAP

### CABLE TYPE

### CABLE SIZE (O.D)

### POLARIZATION POSITION

### MODIFICATION CODES

### CABLE SIZE (O.D)

A - .190 ±.015 (4.83 ±.38)

D - .236 ±.019 (6.0 ±.5)

F - .276 ±.015 (7.0 ±.4)

G - .374 ±.015 (9.50 ±.38)\*

H - .500 ±.015 (12.70 ±.38)\*

P - Pigtail buffered fiber

\*NOTE: Cable size G and H are for 8 channel FOMC Connector only

### POLARIZATION

(8 channel plug only. Omit for 2/4 channel)

0 - Not polarized

1 thru 6 - key position

### MODIFICATION CODES

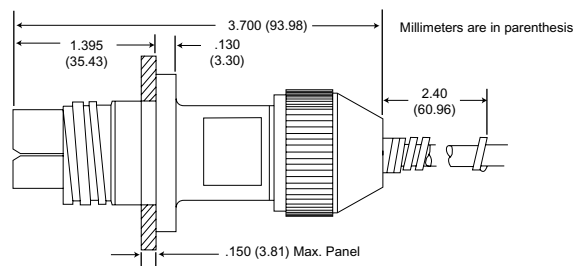
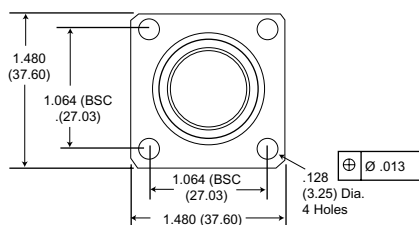
Consult factory

FOMC 6- 2 W 2 C \* \*\*\*

## 2 and 4 Channel

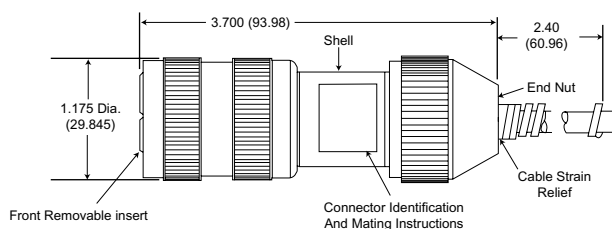
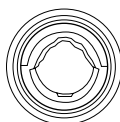
### Square Flange Receptacle

#### FOMC 2



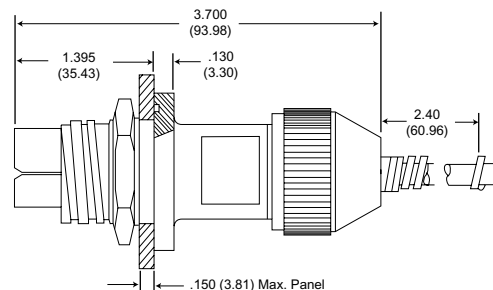
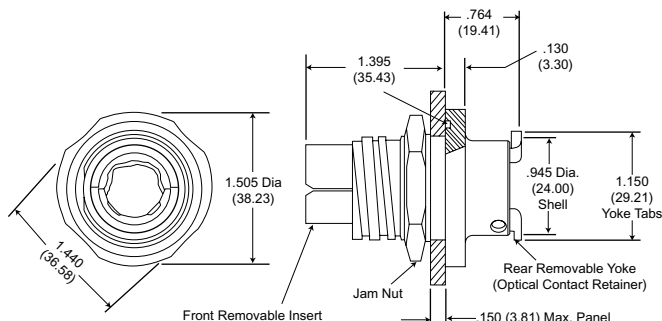
### Plug

#### FOMC 6



### Jam Nut Receptacle

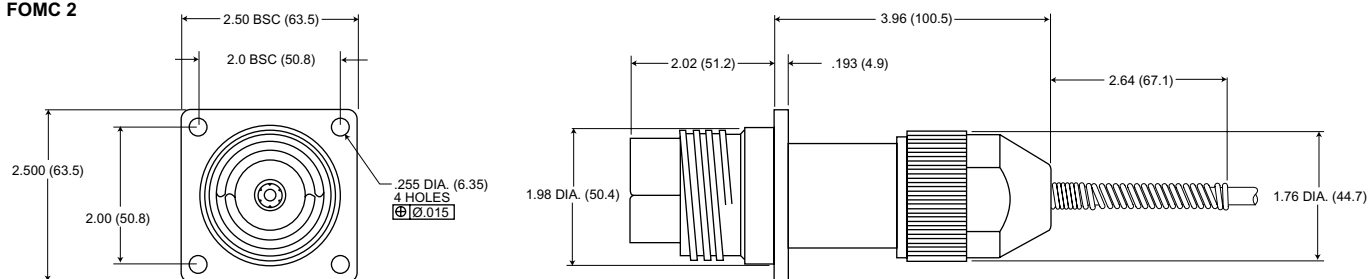
#### FOMC 7



## 8 Channel

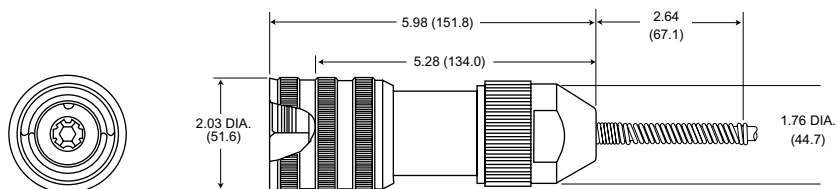
### Square Flange Receptacle

#### FOMC 2



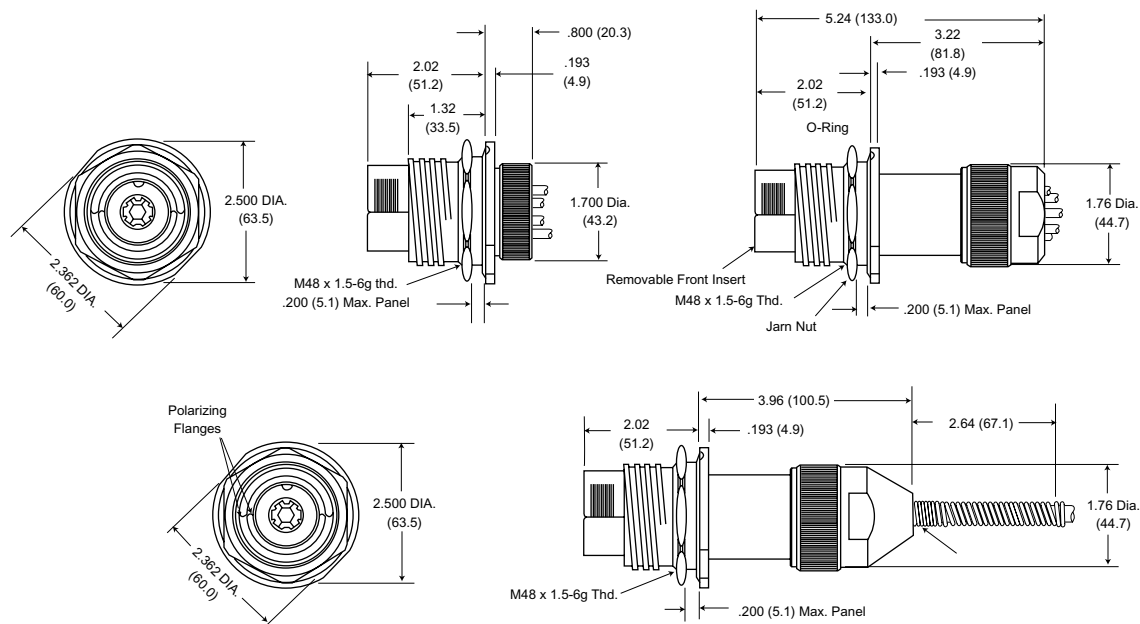
### Plug

#### FOMC 6



### Jam Nut Receptacle

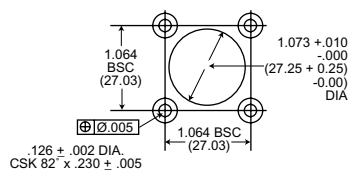
#### FOMC 7



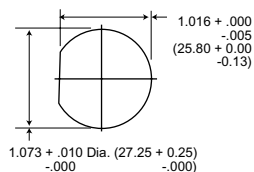
## Recommended Panel Cutouts

### 2 and 4 Channel

#### FOMC 2

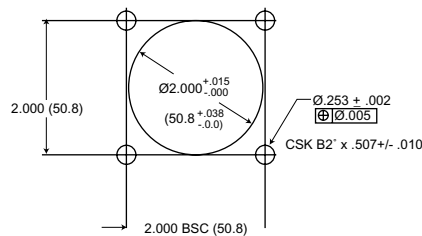


#### FOMC 7

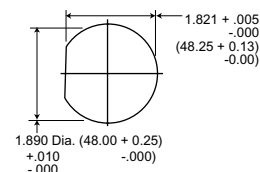


### 8 Channel

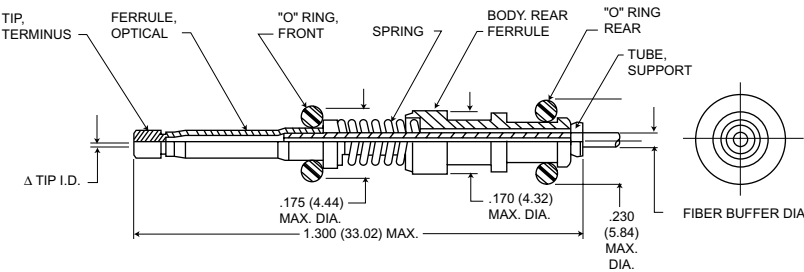
#### FOMC 2



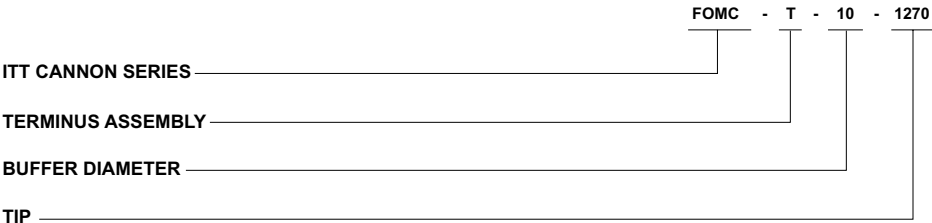
#### FOMC 7



Contact Assembly



How to Order - Contacts



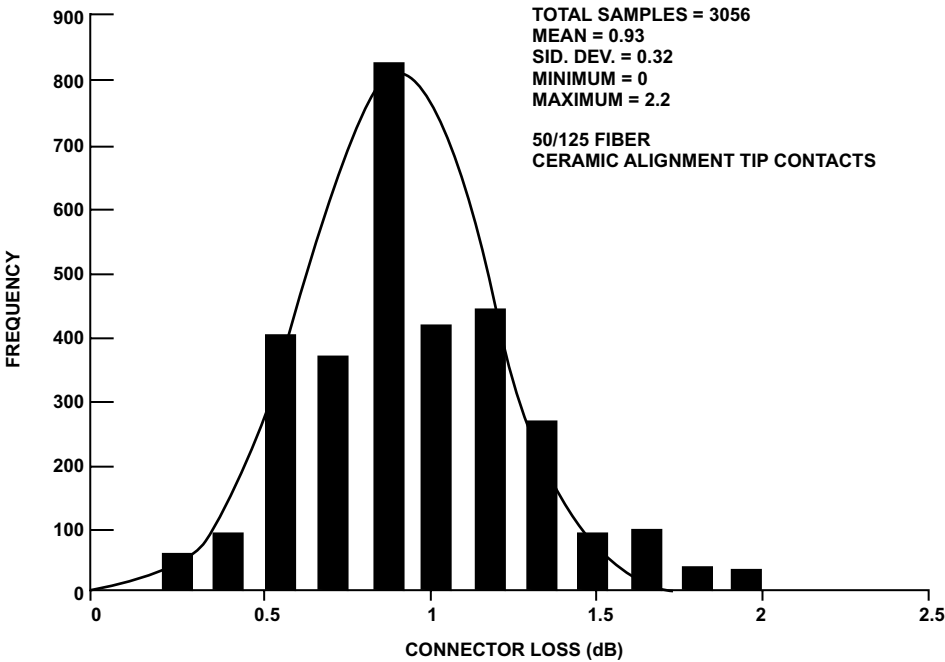
- SERIES**

FOMC - Fiber Optic Multi-Channel
- TERMINUS ASSEMBLY**

1270 - 127.0 μm min.  
1300 - 130.0 μm min.  
1440 - 144.0 μm min.
- BUFFER DIAMETER (in millimeters)**

05 - 0.5 mm Buffer  
10 - 1.0 mm Buffer  
11 - 1.1 mm Buffer

Coupling Performance

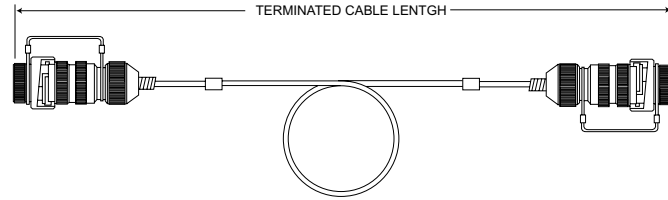


# Fiber Optic Cable Assemblies

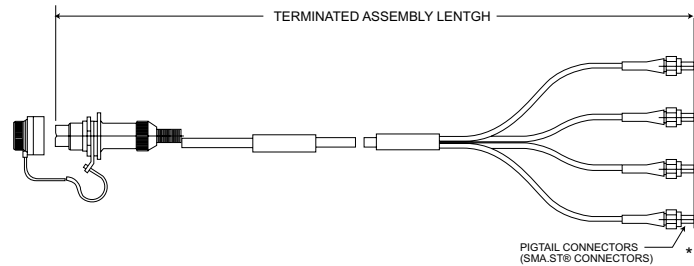
ITT Cannon is a major supplier of fiber optic cable assemblies for multichannel tactical ground based and avionics applications. Experienced includes de-

livery of more than 20,000 custom fiber optic links over the past twelve years. Cable assemblies are built to specific design requirements and are 100% optically tested.

## FOMC



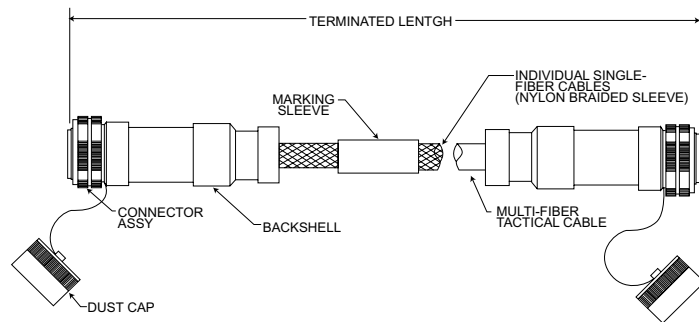
**FOMC Plug-to-Plug Assembly**



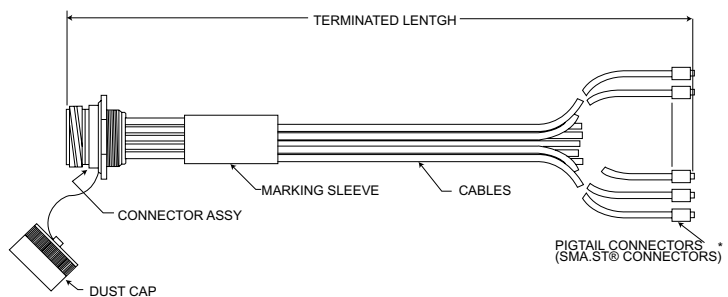
**FOMC Receptacle/Pigtail Assembly**

\*ST is a trademark of AT&T

## FOHC



**38999 F.O. Plug-to-Plug Assembly**



**38999 F.O. Receptacle/Pigtail Assembly**

\*ST is a trademark of AT&T



ITT Cannon has developed a line of filter connectors to meet the industry's demand for improved control of Radio Frequency and Electro-Magnetic Interference (RFI/EMI). These TD1\* filter connectors, have been designed to combine the functions of a standard electrical connector and feed-thru filters into one compact package. In addition to offering greater design flexibility and system reliability, they are designed for applications where space and weight are prime considerations. These connectors are interchangeable with all standard D subminiature

connectors. They are also interchangeable with MIL-C-24308 types and meet applicable portions of that specification.

ALL TD1\* filter contact assemblies are tested 100% during in-process and final inspection, for capacitance, insulation resistance and dielectric withstanding voltage. Attenuation is checked as required for each type of filter to assure performance to guaranteed levels.

Note: The TD1\* replaces the obsolete TD\*J and D\*J Series

## How to Order

|                                |   |   |   |   |   |   |   |   |   |   |
|--------------------------------|---|---|---|---|---|---|---|---|---|---|
|                                | T | D | 1 | E | 9 | L | P | H | - | C |
| <b>FILTER SERIES INDICATOR</b> |   |   |   |   |   |   |   |   |   |   |
| <b>SERIES PREFIX</b>           |   |   |   |   |   |   |   |   |   |   |
| <b>ONE (1) PIECE SHELL</b>     |   |   |   |   |   |   |   |   |   |   |
| <b>SHELL SIZE</b>              |   |   |   |   |   |   |   |   |   |   |
| <b>CONTACT ARRANGEMENTS</b>    |   |   |   |   |   |   |   |   |   |   |
| <b>FILTER TYPE</b>             |   |   |   |   |   |   |   |   |   |   |
| <b>CONTACT TYPE</b>            |   |   |   |   |   |   |   |   |   |   |
| <b>CONTACT TERMINATION</b>     |   |   |   |   |   |   |   |   |   |   |
| <b>MODIFIER</b>                |   |   |   |   |   |   |   |   |   |   |

### FILTER SERIES INDICATOR

T - Transverse Monolith

### SERIES PREFIX

D - Miniature, rectangular, solder termination

### SHELL SIZE (one piece shell)

E, A, B, C, D

### CONTACT ARRANGEMENTS

See page 305

### FILTER TYPE

L - Low frequency

M - Mid-range frequency

T - Standard frequency

H - High frequency

### CONTACT TYPE

P - Pin contacts

S - Socket contacts

### PRINTED CIRCUIT CONTACTS

Consult factory. Both 90° and straight types are available.

### CONTACT TERMINATION

See page 305

Lack of termination indicator signifies solder cup.

### MODIFIER

C - Clinch nut

## Performance and Material Specifications

### ELECTRICAL DATA

| Available Filter                                                                | Low Freq.                  | Mid Freq.                    | Std Freq.                    | High Freq.                   |
|---------------------------------------------------------------------------------|----------------------------|------------------------------|------------------------------|------------------------------|
| Catalog Indication - letter                                                     | L                          | M                            | T                            | H                            |
| Voltage Rating (working)                                                        | 100 VDC                    |                              | 200 VDC                      |                              |
| Current Rating (amp DC)                                                         | 7.5                        | 7.5                          | 7.5                          | 7.5                          |
| Insulation Resistance, 2 min. electrification<br>time max. at 25°C, and 100 VDC | 5000<br>megohms<br>minimum | 10,000<br>megohms<br>minimum | 10,000<br>megohms<br>minimum | 10,000<br>megohms<br>minimum |
| DWV, sea level, with 500 microamps max.<br>charge/discharge                     | 300 VDC                    | 500 VDC                      | 500 VDC                      | 500 VDC                      |
| Capacitance at 1 KHz, 0.1 V rms picofarads                                      | 50,000<br>minimum          | 7200<br>12,000               | 3000<br>5,000                | 780<br>1,300                 |
|                                                                                 | Freq. MHz                  |                              | Attenuation (dB)             |                              |
| Attenuation per MIL-STD-220<br>@ 25°C with no applied<br>voltage or current.    | 0.1                        | 2 min.                       | -                            | -                            |
|                                                                                 | 1                          | 15 min.                      | 2 min.                       | -                            |
|                                                                                 | 2                          | 20 min.                      | 5 min.                       | 2 min.                       |
|                                                                                 | 10                         | 35 min.                      | 15 min.                      | 9 min.                       |
|                                                                                 | 100                        | 60 min.                      | 55 min.                      | 50 min.                      |
|                                                                                 | 500 to 10,000              | 65 min.                      | 60 min.                      | 55 min.                      |
| Filter Type                                                                     | Pi                         | Pi                           | Pi                           | Pi                           |

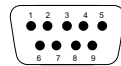
### MATERIALS AND FINISHES

| Description       | Material                                                               | Finish                                     |
|-------------------|------------------------------------------------------------------------|--------------------------------------------|
| Contacts          | Copper alloy                                                           | Gold plate per MIL-G-45204 Type 1, Class 1 |
| Shell             | Aluminum alloy 6061-T6 Electroless nickel per QQ-A-225/8 or QQ-A-200/8 | Electroless nickel per MIL-C-26074         |
| Insulator: Socket | Polyphenylene Sulfide/ Epoxy                                           | None                                       |
| Pin               | Epoxy                                                                  | None                                       |
| Ground Spring     | Beryllium Copper                                                       | Silver plate                               |

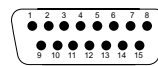
## Contact Arrangements

## Face View Pin Insert

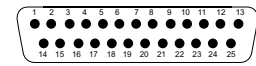
Shell Size  
Contact Arrangement  
Contact Size



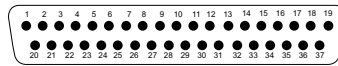
**E**  
**9**  
**#20**



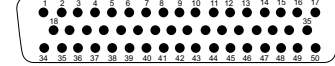
**A**  
**15**  
**#20**



**B**  
**25**  
**#20**



**C**  
**37**  
**#20**

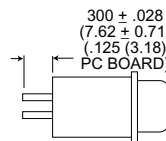


**D**  
**50**  
**#20**

Shell Size  
Contact Arrangement  
Contact Size

## Contacts

## Straight Printed Circuit

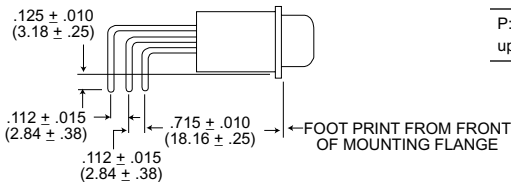
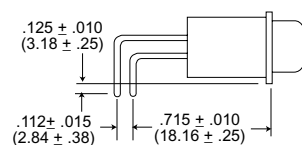


## Modifier

H: .040 (.102) Dia. terminals and accommodates up to 1/8 Max. thick P.C. boards.

M: .030 (.76) Dia. terminals and accommodates up to 1/8 Max. thick P.C. boards.

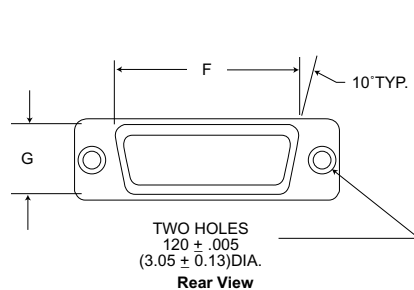
## Right Angle Printed Circuit



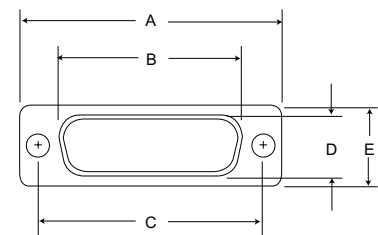
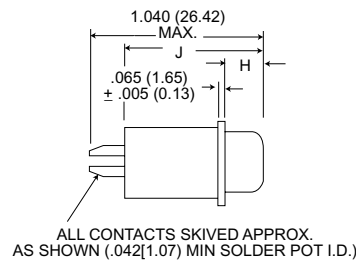
## Modifier

P: .030 (.76) Dia. terminals and accommodates P.C. boards up to 3/32 Max. Thickness.

## Standard Shell Dimensions



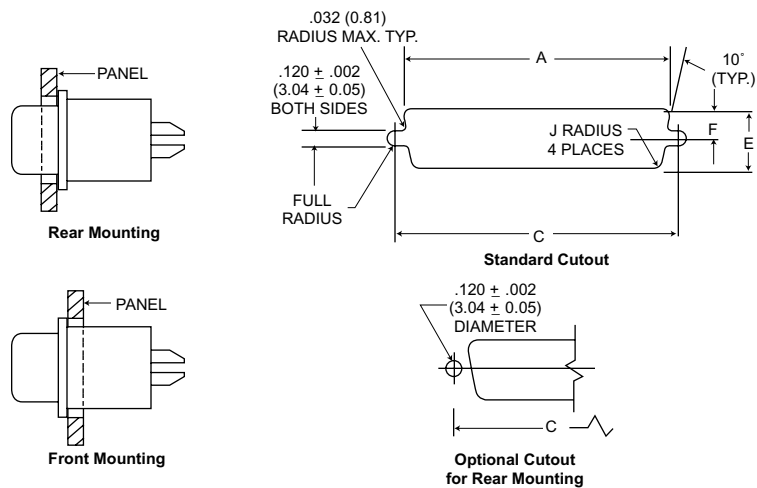
**Rear View**



**Front View**

| Shell Size | A<br>± .015 (0.38) | B<br>± .010 (0.25) | C<br>± .005 (0.13) | D<br>± .010 (0.25) | E<br>± .005 (0.13) | F<br>± .010 (0.25) | G<br>± .010 (0.25) | H<br>± .010 (0.25) | J<br>± .010 (0.25) |
|------------|--------------------|--------------------|--------------------|--------------------|--------------------|--------------------|--------------------|--------------------|--------------------|
| 9P         | 1.213 (30.81)      | .738 (18.75)       | .984 (24.99)       | .400 (10.16)       | .502 (12.75)       | .792 (20.12)       | .469 (11.91)       | .236 (5.99)        | .841 (21.36)       |
| 9S         | 1.213 (30.81)      | .642 (16.31)       | .984 (24.99)       | .310 (7.87)        | .502 (12.75)       | .792 (20.12)       | .469 (11.91)       | .243 (6.17)        | .852 (21.64)       |
| 15P        | 1.541 (39.14)      | 1.066 (27.08)      | 1.312 (33.32)      | .400 (10.16)       | .502 (12.75)       | 1.116 (28.35)      | .469 (11.91)       | .236 (5.99)        | .841 (21.36)       |
| 15S        | 1.541 (39.14)      | .970 (24.64)       | 1.312 (33.32)      | .310 (7.87)        | .502 (12.75)       | 1.116 (28.35)      | .469 (11.91)       | .243 (6.17)        | .852 (21.64)       |
| 25P        | 2.087 (53.01)      | 1.606 (40.79)      | 1.852 (47.04)      | .400 (10.16)       | .502 (12.75)       | 1.664 (42.27)      | .469 (11.91)       | .231 (5.87)        | .841 (21.36)       |
| 25S        | 2.087 (53.01)      | 1.510 (38.35)      | 1.852 (47.04)      | .310 (7.87)        | .502 (12.75)       | 1.664 (42.27)      | .469 (11.91)       | .243 (6.17)        | .852 (21.64)       |
| 37P        | 2.729 (69.32)      | 2.254 (57.25)      | 2.500 (63.50)      | .400 (10.16)       | .502 (12.75)       | 2.316 (58.83)      | .469 (11.91)       | .231 (5.87)        | .841 (21.36)       |
| 37S        | 2.729 (69.32)      | 2.158 (54.81)      | 2.500 (63.50)      | .310 (7.87)        | .502 (12.75)       | 2.316 (58.83)      | .469 (11.91)       | .243 (6.17)        | .852 (21.64)       |
| 50P        | 2.635 (66.93)      | 2.151 (54.64)      | 2.406 (61.11)      | .512 (13.00)       | .612 (15.54)       | 2.198 (55.83)      | .576 (14.63)       | .231 (5.87)        | .841 (21.36)       |
| 50S        | 2.635 (66.93)      | 2.064 (52.43)      | 2.406 (61.11)      | .422 (10.72)       | .612 (15.54)       | 2.198 (55.83)      | .576 (14.63)       | .243 (6.17)        | .852 (21.64)       |

Mounting Panel Cutout Dimensions



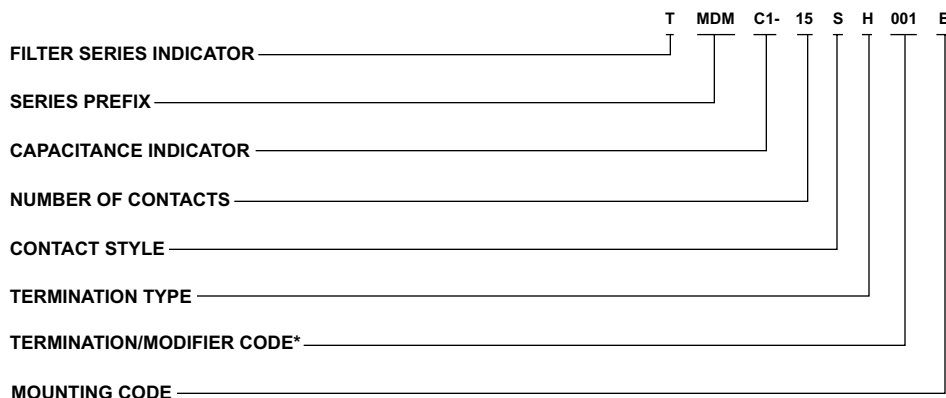
| Connector | Mounting Method | A                 | C                 | E                 | F                 | J                 |
|-----------|-----------------|-------------------|-------------------|-------------------|-------------------|-------------------|
|           |                 | $\pm .005 (0.13)$ | $\pm .005 (0.13)$ | $\pm .005 (0.13)$ | $\pm .005 (0.13)$ | $\pm .005 (0.13)$ |
| TD1E      | Front Mounting  | .833 (21.16)      | .984 (24.99)      | .485 (12.32)      | .243 (6.17)       | .065 (1.65)       |
|           | Rear Mounting   | .806 (20.47)      | .984 (24.99)      | .449 (11.40)      | .225 (5.72)       | .132 (3.35)       |
| TD1A      | Front Mounting  | 1.161 (29.49)     | 1.312 (33.32)     | .485 (12.32)      | .243 (6.17)       | .065 (1.65)       |
|           | Rear Mounting   | 1.134 (28.80)     | 1.312 (33.32)     | .449 (11.40)      | .225 (5.72)       | .132 (3.35)       |
| TD1B      | Front Mounting  | 1.700 (43.18)     | 1.852 (47.04)     | .485 (12.32)      | .243 (6.17)       | .065 (1.65)       |
|           | Rear Mounting   | 1.674 (42.52)     | 1.852 (47.04)     | .449 (11.40)      | .225 (5.72)       | .132 (3.35)       |
| TD1C      | Front Mounting  | 2.349 (59.66)     | 2.500 (63.50)     | .485 (12.32)      | .243 (6.17)       | .065 (1.65)       |
|           | Rear Mounting   | 2.326 (59.08)     | 2.500 (63.50)     | .449 (11.40)      | .225 (5.72)       | .132 (3.35)       |
| TD1D      | Front Mounting  | 2.254 (57.25)     | 2.406 (61.11)     | .593 (15.06)      | .297 (7.54)       | .065 (1.65)       |
|           | Rear Mounting   | 2.218 (56.34)     | 2.406 (61.11)     | .555 (14.09)      | .278 (7.06)       | .132 (3.35)       |



- Transverse monolith filter for EMI/RFI shielding
- Rugged aluminum one-piece shell
- Silicone interfacial environmental seal
- Glass-filled diallyl phthalate insulator
- Meets applicable portion of MIL-Spec.

TMDM connectors are extremely small filter connectors with higher contact density than traditional rectangular connectors making them ideally suited for applications where space is limited and EMI and RFI filtering is required. The TMDM receptacle accommodates from 9 to 37 size 24 socket contacts on .050 (1.27) centers and mates with the ITT Cannon MDM plug utilizing reliable, proven, "twist pin" contacts.

## How to Order



### FILTER SERIES INDICATOR

T - Transverse Monolith

### SERIES PREFIX

MDM - Micro "D" - Metal Housing

### CAPACITANCE INDICATOR

#### "C" Capacitor Type

- C1 150-250 pf capacitance
- C2 300-500 pf capacitance
- C3 700-1000 pf capacitance
- C4 1300-2000 pf capacitance

### NUMBER OF CONTACTS

9, 15, 21, 25, 31, 37 only

### CONTACT STYLE

S - Socket (Receptacle) only

### TERMINATION TYPE

- H - Harness, insulated solid or stranded wire
- L - Lead, solid uninsulated wire

### TERMINATION/MODIFIER CODE\*

Consult "L" & "H" modification codes for lead material and lead length.

### MOUNTING CODE

- A - Flange mounting (.125 (3.18) dia. mtg. holes)
- B - Flange mounting (.092 (2.34) dia. mtg. holes)
- K - Jackscrew (standard, slotted head)
- KL - Low profile jackscrew (slotted head)
- I - Low profile jackscrew (hex head)
- LS - Low profile jackscrew (spline head)
- M1 - Allen head lockscrew assy.
- M2 - Allen head jackscrew assy., low profile
- M3 - Allen head jackscrew assy., high profile
- M4 - Slot head lockscrew assy.
- M5 - Slot head jackscrew assy., low profile
- M6 - slot head jackscrew assy., high profile
- P - Jackpost
- S - Clinch nut, #2-56 stainless steel

\* See termination codes listed for additional length modification codes (page 308).

For other modifications not listed, consult factory.

## Performance and Material Specifications

### MATERIALS AND FINISHES

|                  |                                                                   |
|------------------|-------------------------------------------------------------------|
| Shell            | Aluminum alloy per QQ-A-200/8 with fused tin over copper          |
| Socket Contact   | Copper alloy, 50 microinch gold per MIL-G-45204, Type II, Class 1 |
| Insulator        | Glass-filled diallyl phthalated per MIL-M-14, type SDGF           |
| Interfacial Seal | Silicone base rubber                                              |

### ELECTRICAL DATA

|                                 |                         |
|---------------------------------|-------------------------|
| No. of Contacts                 | 9 thru 37               |
| Dielectric Withstanding Voltage | 300 VDC                 |
| Insulation Resistance           | 5,000 Megohms @ 100 VDC |
| Voltage Rating (Working)        | 100 VDC                 |
| Current Rating                  | 3 amps max.             |
| Max. Capacitance (Picofarads)   | 250, 500, 1000, 2000    |
| Filter Type                     | C                       |

### MECHANICAL FEATURES

|                 |                         |
|-----------------|-------------------------|
| Size or length  | 6 sizes                 |
| Coupling        | Friction/jackscrews     |
| Polarization    | Keystone-shaped shell   |
| Contact Spacing | .050 (1.27) centers     |
| Shell Style     | Single piece receptacle |

## Guaranteed Minimum Attenuation

| Filter Designation | Capacitance Range (pF) | Minimum Insertion Loss - Decibels |        |        |        |         |         |         |       |
|--------------------|------------------------|-----------------------------------|--------|--------|--------|---------|---------|---------|-------|
|                    |                        | 10 MHz                            | 15 MHz | 30 MHz | 50 MHz | 100 MHz | 200 MHz | 500 MHz | 1 GHz |
| C1                 | 150-250                |                                   |        |        | 4      | 6       | 15      | 20      | 35    |
| C2                 | 300-500                |                                   |        | 3      | 6      | 12      | 18      | 25      | 40    |
| C3                 | 700-1000               |                                   | 3      | 7      | 13     | 17      | 25      | 38      | 48    |
| C4                 | 1300-2000              | 5                                 | 8      | 13     | 18     | 23      | 30      | 40      | 50    |

## Standard Wire Termination Codes

**Harness Type (H) #26 AWG per MIL-W-16878/4 Type E Teflon, stranded.**

| Length       | All Yellow | Color Coded |
|--------------|------------|-------------|
| 3 (76.2)     | H020       | H027        |
| 6 (152.4)    | H019       | H016        |
| 8 (203.2)    | H026       | H034        |
| 10 (254.0)   | H029       | H025        |
| 12 (304.8)   | H028       | H002        |
| 18 (457.2)   | H001       | H003        |
| 20 (508.0)   | H038       | H023        |
| 24 (609.6)   | H009       | H004        |
| 30 (762.0)   | H010       | H005        |
| 36 (914.4)   | H011       | H006        |
| 48 (1219.2)  | H013       | H048        |
| 72 (1828.8)  | H017       | H046        |
| 120 (3048.0) | H042       | H041        |

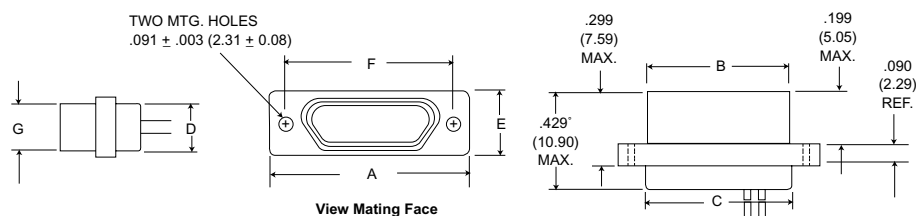
**Solid Uninsulated Type (L) #25 AWG gold plated copper**

| Code | Length        |
|------|---------------|
| L61  | .125 (.18)    |
| L56  | .150 (3.81)   |
| L57  | .190 (4.83)   |
| L39  | .250 (6.35)   |
| L58  | .375 (9.52)   |
| L1   | .500 (12.70)  |
| L14  | .750 (19.05)  |
| L2   | 1.000 (25.40) |
| L7   | 1.500 (38.10) |
| L6   | 2.000 (50.80) |
| L16  | 2.500 (63.50) |
| L10  | 3.000 (76.20) |

Cannon Modification Codes - (Not MS)

For lengths not shown, consult factory for proper modification code. All wire lengths are minimum.

## Shell Dimensions



\*.679 max. for terminated &amp; potted constructions

| Part Number by Shell Size | A Max.        | B Max.        | C Max.        | D Max.      | E Max.      | F ± .005 (0.13) | G Max.      |
|---------------------------|---------------|---------------|---------------|-------------|-------------|-----------------|-------------|
| TMDM-9S*                  | .785 (19.94)  | .400 (10.16)  | .400 (10.16)  | .270 (6.86) | .308 (7.82) | .565 (14.35)    | .251 (6.38) |
| TMDM-15S*                 | .935 (23.75)  | .550 (13.97)  | .550 (13.97)  | .270 (6.86) | .308 (7.82) | .715 (18.16)    | .251 (6.38) |
| TMDM-21S*                 | 1.085 (27.56) | .700 (17.78)  | .700 (17.78)  | .270 (6.86) | .308 (7.82) | .865 (21.97)    | .251 (6.38) |
| TMDM-25S*                 | 1.185 (30.10) | .800 (20.32)  | .800 (20.32)  | .270 (6.86) | .308 (7.82) | .965 (24.51)    | .251 (6.38) |
| TMDM-31S*                 | 1.335 (33.91) | .950 (24.13)  | .950 (24.13)  | .270 (6.86) | .308 (7.82) | 1.115 (28.32)   | .251 (6.38) |
| TMDM-37S*                 | 1.485 (37.72) | 1.100 (27.94) | 1.100 (27.94) | .270 (6.86) | .308 (7.82) | 1.265 (32.13)   | .251 (6.38) |

\* Add Filter type, Lead Type and Length; see How to Order.

NOTE: 1) Potting extension of .250 (6.35) Max. required for insulated wire termination.

2) PC tails of .019 (0.48 ± .002 (0.05) diameter are available. The PC tail length is to be specified from the rear of the shell to the end of the termination.

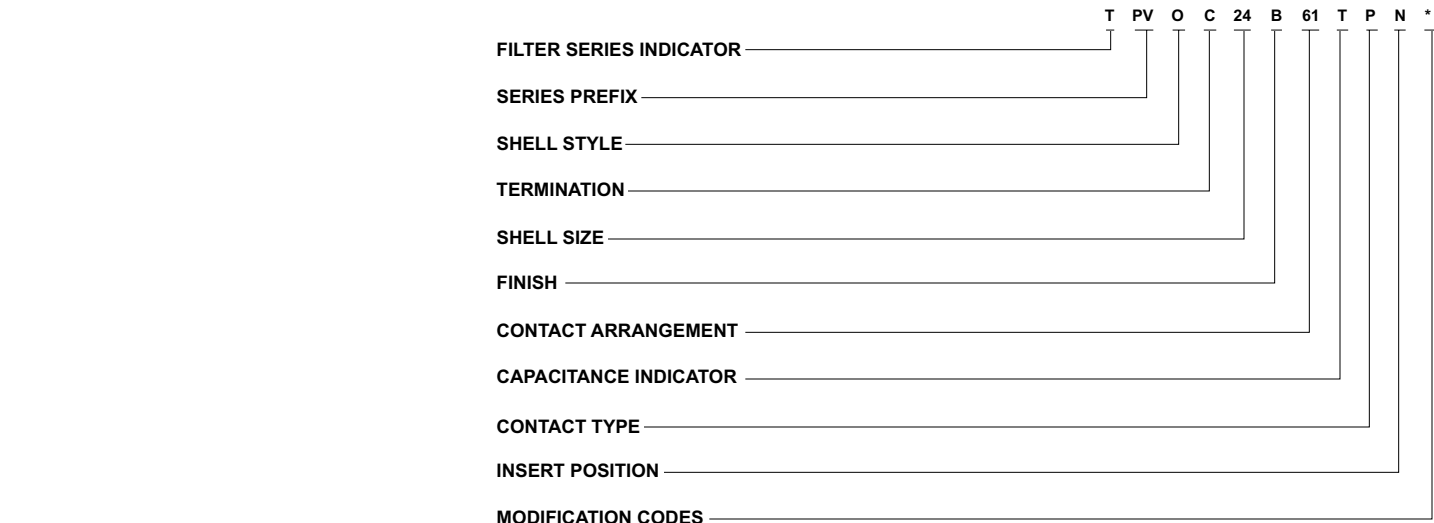


These miniature circular filter connectors are designed to combine the functions of a standard electrical connector and a feed-thru filter into one compact package.

TPV filter connectors are designed to meet the applicable portions of military specifications MIL-C-26482 and MIL-C-83723. They are also intermateable with the NAS1599 and the NASA 40M39569 type connectors. These connectors feature three-point bayonet lock coupling, five keyway polarization, and have contact arrangements that will accommodate up to 61 contacts in shell sizes, with both pin and socket contact versions available.

Note: The TPV replaces the obsolete PVJ Series

How to Order - TPV



- FILTER SERIES INDICATOR**  
T - Transverse monolith
- SERIES PREFIX**  
PV - MIL-C-26482 Series 2, MIL-C-83723 Series 1 type filter connectors, solder termination. ITT Cannon designation.
- SHELL STYLE**  
0 - Flange mounting receptacle  
7 - Jam nut mounting receptacle

- TERMINATION**  
C - Solder Pot Termination  
E - P.C. Tail  
S - Crimp Piggyback  
W - Wire Wraps
- SHELL SIZE**  
10, 12, 14, 16, 18, 20, 22, 24
- FINISH**  
A - Bright cadmium over nickel plate  
B - Olive drab chromate over cadmium finish  
G - Electorless nickel finish (preferred)

- CONTACT ARRANGEMENTS**  
See page 311
- CAPACITANCE INDICATOR**  
M - Mid-range frequency  
L - Low frequency  
T - Standard frequency  
H - High frequency
- CONTACT TYPE**  
P - Pin contacts  
S - Socket contacts
- INSERT POSITION**  
N - (Normal); Alternates - W, X, Y, Z  
See page 162.
- MODIFICATION CODES**  
For backshell assembly consult factory.

NOTES:

1) Backshell threads and teeh - none provided.

2) Hermetic versions of the filter connectors can be provided. Consult ITT Cannon for availability.

## Performance and Material Specification

## MATERIALS AND FINISHES

|                                  |           |                                                                                 |                                            |
|----------------------------------|-----------|---------------------------------------------------------------------------------|--------------------------------------------|
| Jam Nut                          | Material: | Aluminum Alloy                                                                  |                                            |
|                                  | Finish:   | Class "B" Series                                                                | Class "G" Series                           |
|                                  |           | Olive drab chromeplate over cadmium finish per QQ-P-416                         | Electroless nickel plating Per MIL-C-26074 |
| Coupling Pins                    | Material: | Copper Alloy                                                                    |                                            |
|                                  | Finish:   | Passivated                                                                      |                                            |
| Contacts                         | Material: | Copper Alloy                                                                    |                                            |
|                                  | Finish:   | Gold plated per MIL-G-45204, Type 1 Class 1 with nickel underplate per QQ-N-290 |                                            |
| Insulator                        | Material: | Suitable high temperature plastic/epoxy                                         |                                            |
|                                  | Finish:   | none                                                                            |                                            |
| Interfacial and Peripheral Seals | Material: | Fluorosilicone rubber (ITT Cannon blend)                                        |                                            |
|                                  | Finish:   | none                                                                            |                                            |
| O ring (Jam Nut Mounting Only)   | Material: | Silicone rubber (ITT Cannon blend)                                              |                                            |
|                                  | Finish:   | none                                                                            |                                            |
| Ground Spring                    | Material: | Beryllium Copper                                                                |                                            |
|                                  | Finish:   | Silver Plated                                                                   |                                            |

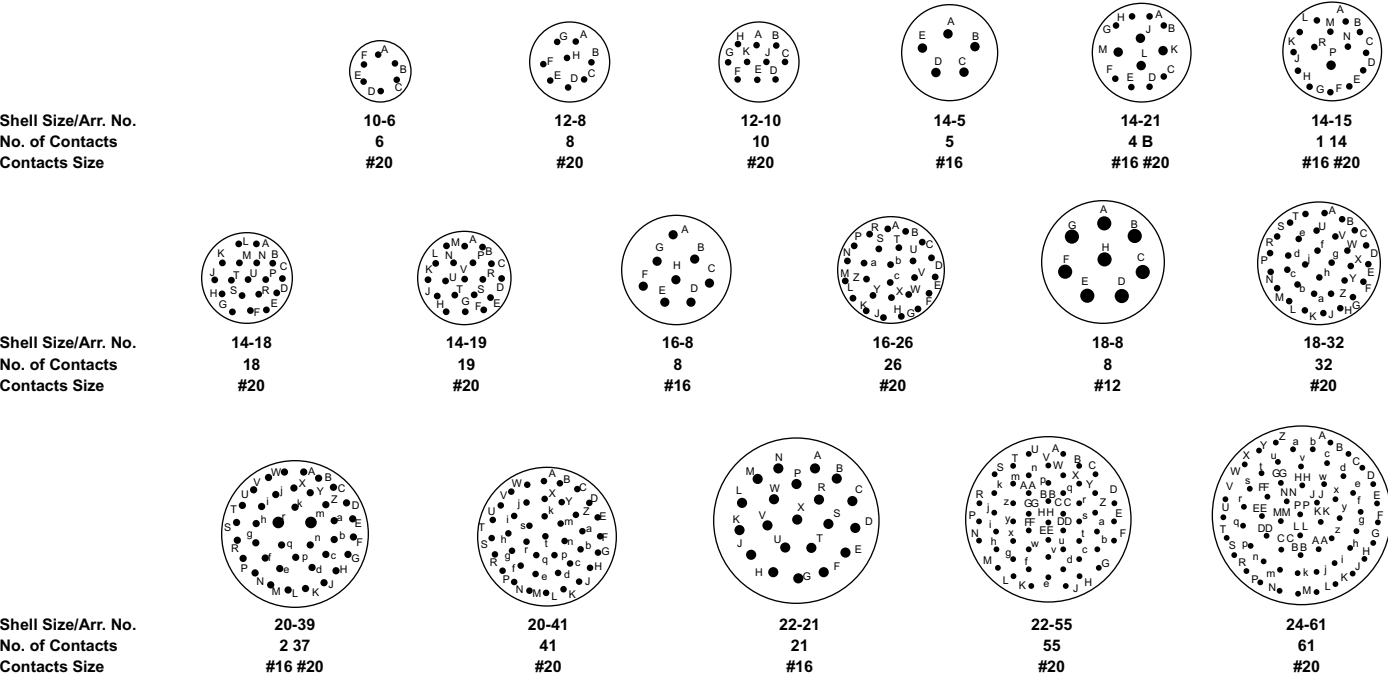
## ELECTRICAL (Size #16 and #20 Contacts)

| Filter Description                                                        | Low Freq.                        | Mid Freq. | Std. Freq. | High Freq. |
|---------------------------------------------------------------------------|----------------------------------|-----------|------------|------------|
| Catalog Indicator                                                         | L                                | M         | T          | H          |
| Voltage Rating                                                            | 200 VDC - 120 VAC rms 400 Hz     |           |            |            |
| Current Rating (amp DC)                                                   | 15 amp, size 16/7.5 amp, size 20 |           |            |            |
| Insulation Resistance, 2 min. electrification time max. at 25°C           | 5000, megohms min. @ 100 VDC     |           |            |            |
| DWV, sea level, with 500 microamps max. charge/discharge                  | 500 VDC size 16 & 20             |           | 500 VDC    |            |
| Capacitance at 1 KHz 0.1V rms Picofarads                                  | 32000                            | 8000      | 3300       | 850        |
|                                                                           | 45000                            | 12000     | 5000       | 1300       |
| Attenuation per MIL-STD-220<br>@ 25°C with no applied voltage or current. | Freq. MHz                        |           |            |            |
|                                                                           | 0.1                              | 2 min.    | -          | -          |
|                                                                           | 1.0                              | 10 min.   | 2 min.     | -          |
|                                                                           | 2                                | 16 min.   | 7 min.     | 2 min.     |
|                                                                           | 10                               | 40 min.   | 18 min.    | 8 min.     |
|                                                                           | 100                              | 60 min.   | 55 min.    | 45 min.    |
|                                                                           | 500 to 1000                      | 70 min.   | 60 min.    | 55 min.    |
| Filter Type/Construction                                                  | Pi                               | Pi        | Pi         | Pi         |

Consult factory for higher or mixed attenuation values and higher voltage ratings.

Contact Arrangements

(Face view, pin insert)



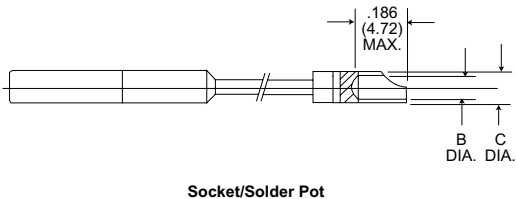
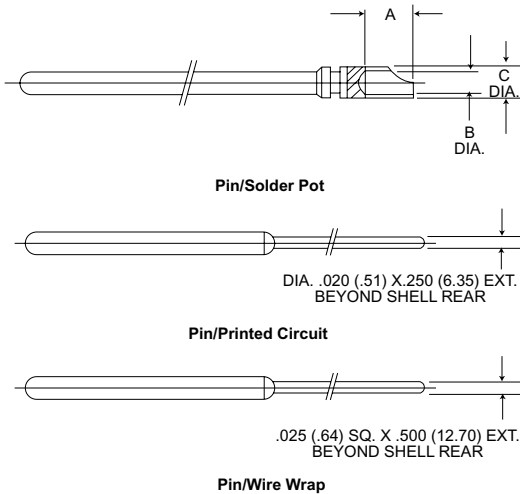
Consult factory for availability of other contact arrangements. Availabl for In-Line Adapters also.

Alternate Polarizing Positions - Page 162

Contact - Pin and Socket

Standard Contact Terminations

Finish: Gold plate per MIL-G-45204, Type 1,  
Class 1, over nickel plate per QQ-N-290.

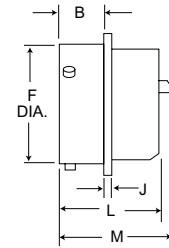
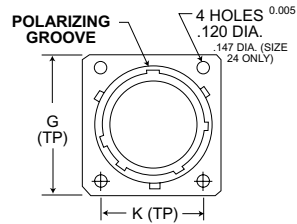


| Contact Size | A           | B Dia.      | C Dia.      |
|--------------|-------------|-------------|-------------|
| #20          | .125 (3.18) | .049 (1.24) | .073 (1.85) |
|              | .110 (2.79) | .045 (1.14) | .068 (1.73) |
| #16          | .160 (4.06) | .077 (1.96) | .104 (2.64) |
|              | .150 (3.81) | .068 (1.73) | .097 (2.46) |

Note: Solder pot extension typically will be .200 (5.08) max. beyond shell rear.

## Flange Mounting Receptacle

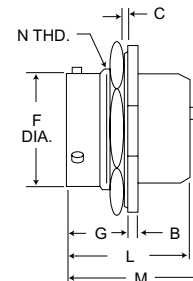
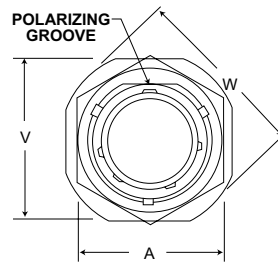
TPV0



| Shell Size | B Max.       | F Max.        | L Max.        | M Max.        | J Max.      | K Basic       | G Max.        |
|------------|--------------|---------------|---------------|---------------|-------------|---------------|---------------|
| 10         | .462 (11.73) | .591 (15.01)  | 1.215 (30.86) | 1.530 (38.86) | .078 (1.98) | .719 (18.26)  | .954 (24.23)  |
| 12         | .462 (11.73) | .751 (19.08)  | 1.215 (30.86) | 1.530 (38.86) | .078 (1.98) | .812 (20.62)  | 1.047 (26.59) |
| 14         | .462 (11.73) | .876 (22.25)  | 1.215 (30.86) | 1.530 (38.86) | .078 (1.98) | .906 (23.01)  | 1.141 (28.98) |
| 16         | .462 (11.73) | 1.001 (25.43) | 1.215 (30.86) | 1.530 (38.86) | .078 (1.98) | .969 (24.61)  | 1.234 (31.34) |
| 18         | .462 (11.73) | 1.126 (28.60) | 1.215 (30.86) | 1.530 (38.86) | .078 (1.98) | 1.062 (26.97) | 1.328 (33.73) |
| 20         | .587 (14.91) | 1.251 (31.78) | 1.275 (32.39) | 1.590 (40.38) | .110 (2.79) | 1.156 (29.36) | 1.453 (36.91) |
| 22         | .587 (14.91) | 1.376 (34.95) | 1.275 (32.39) | 1.590 (40.38) | .110 (2.79) | 1.250 (31.75) | 1.578 (40.08) |
| 24         | .620 (15.75) | 1.501 (38.13) | 1.275 (32.39) | 1.590 (40.38) | .110 (2.79) | 1.375 (34.93) | 1.703 (43.26) |

## Jam Nut Receptacle

TPV7



| Shell Size | V Max.        | A Max.        | B Max.      | F Max.        | G $\pm .009$ (0.23) | C Panel Thickness | L Max.        | M Max.        | W Dia.        | N Thread Class 2A |
|------------|---------------|---------------|-------------|---------------|---------------------|-------------------|---------------|---------------|---------------|-------------------|
| 10         | 1.078 (27.38) | .892 (22.66)  | .113 (2.87) | .591 (15.01)  | .698 (17.73)        | .187 (4.75)       | 1.215 (30.86) | 1.530 (38.86) | 1.203 (30.56) | 11/16-24UNEF      |
| 12         | 1.266 (32.16) | 1.079 (27.41) | .113 (2.87) | .751 (19.08)  | .698 (17.73)        | .187 (4.75)       | 1.215 (30.86) | 1.530 (38.86) | 1.391 (35.33) | 7/8-20 UNEF       |
| 14         | 1.391 (35.33) | 1.205 (30.61) | .113 (2.87) | .876 (22.25)  | .698 (17.73)        | .187 (4.75)       | 1.215 (30.86) | 1.530 (38.86) | 1.516 (38.51) | 1-20UNEF          |
| 16         | 1.516 (38.51) | 1.329 (33.76) | .113 (2.87) | 1.001 (25.43) | .698 (17.73)        | .187 (4.75)       | 1.215 (30.86) | 1.530 (38.86) | 1.641 (41.68) | 1-1/8-18UNEF      |
| 18         | 1.641 (41.68) | 1.455 (36.96) | .113 (2.87) | 1.126 (28.60) | .698 (17.73)        | .187 (4.75)       | 1.215 (30.86) | 1.530 (38.86) | 1.766 (44.86) | 1-1/4-18UNEF      |
| 20         | 1.828 (46.43) | 1.579 (40.11) | .148 (3.76) | 1.251 (31.78) | .763 (19.38)        | .250 (6.35)       | 1.275 (32.39) | 1.590 (40.39) | 1.954 (49.63) | 1-3/8-18UNEF      |
| 22         | 1.954 (49.63) | 1.705 (43.31) | .148 (3.76) | 1.376 (34.95) | .763 (19.38)        | .250 (6.35)       | 1.275 (32.39) | 1.590 (40.39) | 2.078 (52.78) | 1-1/2-18UNEF      |
| 24         | 2.078 (52.78) | 1.829 (46.46) | .148 (3.76) | 1.501 (38.13) | .763 (19.38)        | .219 (5.56)       | 1.275 (32.39) | 1.590 (40.39) | 2.203 (55.96) | 1-5/8-18UNEF      |

# MIL-C-38999 Series I, II, III, IV Filter Connectors



These miniature circular filter connectors are designed to combine the functions of a standard electrical connector and a feed-thru filter into one compact package. They are designed to meet the applicable portions of military specification MIL-C-38999 series I, II, III and IV. These connectors feature arrangements that will accommodate up to 12B contacts. Consult factory for socket versions.

Note: The TKJ replaces the obsolete KJJ Series

For detailed dimensional information, request a copy of the ITT Cannon *Filter Connectors* catalog.

## How to Order - TKJL/TKJ/TKJA/TKJB

|                          |   |    |   |   |   |   |   |   |   |   |   |   |
|--------------------------|---|----|---|---|---|---|---|---|---|---|---|---|
|                          | T | KJ | L | O | C | * | A | * | L | P | N | * |
| FILTER SERIES INDICATOR  |   |    |   |   |   |   |   |   |   |   |   |   |
| SERIES PREFIX            |   |    |   |   |   |   |   |   |   |   |   |   |
| MODIFIER                 |   |    |   |   |   |   |   |   |   |   |   |   |
| SHELL STYLE              |   |    |   |   |   |   |   |   |   |   |   |   |
| TERMINATION              |   |    |   |   |   |   |   |   |   |   |   |   |
| SHELL SIZE               |   |    |   |   |   |   |   |   |   |   |   |   |
| HARDWARE FINISH          |   |    |   |   |   |   |   |   |   |   |   |   |
| CONTACT ARRANGEMENTS     |   |    |   |   |   |   |   |   |   |   |   |   |
| CAPACITANCE INDICATOR    |   |    |   |   |   |   |   |   |   |   |   |   |
| CONTACT TYPE             |   |    |   |   |   |   |   |   |   |   |   |   |
| ALTERNATE SHELL POSITION |   |    |   |   |   |   |   |   |   |   |   |   |
| SPECIAL MODIFIERS        |   |    |   |   |   |   |   |   |   |   |   |   |

### FILTER SERIES INDICATOR

T - Transverse Monolith

### SERIES PREFIX

KJ - ITT Cannon prefix

### MODIFIER

L - Series I scoop-proof shell  
(omit if Series II desired)

A - Series III Triple Start Thread  
(omit if Series II desired)

B - Series IV - Available in receptacle only  
(omit if Series II desired)

### SHELL STYLE

0 - Wall mounting receptacle (front panel mounting)

2 - Box mounting (front panel mounting)

3 - Wall mounting (black panel mounting)

5 - Box mounting receptacle (back panel mounting)

7 - Jam nut receptacle

### NOTES:

1) Backshell thread and teeth.

Series I and II - Provided only on shell types indicated on dimension sheets.

Series III - No threads or teeth provided.

Series IV - Provided with threads and teeth.

2) Hermetic versions of the filter connectors can be provided. Consult ITT Cannon for availability.

3) Series III and IV can only be shell style 0 or 7.

### TERMINATION

C - Solder pot termination

E - P.C. tails

S - Crimp Piggyback

W - Wire wraps

### SHELL SIZE

Series I, III and IV:

11, 13, 15, 17, 19, 21, 23, and 25

Series II:

10, 12, 14, 16, 18, 20, 22, and 24

### HARDWARE FINISH

A - Bright cadmium over nickel plate

B - Olive drab cadmium over nickel plate

N - Electroless nickel plate (preferred)

### CONTACT ARRANGEMENTS

See page 315.

### CAPACITANCE INDICATOR\*

L - 32,000-45,000 PF

M - 8,000-12,000 PF

T - 3,300-5,000 PF

H - 850- 1,300 PF

### CONTACT TYPE

P-pin; S-socket (Consult factory for availability of sockets)

### ALTERNATE SHELL POSITION

N (normal), A, B, C, D

### SPECIAL MODIFIERS

Consult factory for definition and availability

# MIL-C-38999 Series I, II, III, IV Filter Connectors

## Performance and Material Specifications

### MATERIALS AND FINISHES

|                  |                                |
|------------------|--------------------------------|
| Shell            | Aluminum alloy*                |
| Insulator        | High grade plastic/epoxy       |
| Contacts         | Copper alloy, gold plate       |
| Grommet and Seal | Silicone base elastomer        |
| Jam Nut          | Aluminum alloy*                |
| Grounding Spring | Beryllium copper, silver plate |

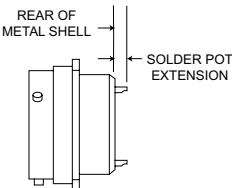
\*Finish as noted in How to Order section.

### ELECTRICAL (Size #16, #20 and #22)

| Filter Description                                                      | Low Freq.                                           | Mid Freq. | Std. Freq. | High Freq. |
|-------------------------------------------------------------------------|-----------------------------------------------------|-----------|------------|------------|
| Catalog Indicator                                                       | L                                                   | M         | T          | H          |
| Voltage Rating                                                          | 200 VDC - 120 VAC rms 400 Hz                        |           |            |            |
| Current Rating (amp DC)                                                 | 15 amp - size 16/7.5 amp - size 20/5.0 amp, size 22 |           |            |            |
| Insulation Resistance, 2 min. electrification time max. at 25°C         | 5,000 megohms min. @ 100 VDC                        |           |            |            |
| DWV, sea level, with 500 microamps max. charge/discharge                | 300 VDC size 22                                     | 500 VDC   |            |            |
| Attenuation per MIL-STD-220 at 25°C with no applied voltage or current. | 500 VDC size 16 & 20                                |           |            |            |
|                                                                         | Capacitance at 1 KHz, 0.1 V rms Picofarads          | 32,000    | 8,000      | 3300       |
|                                                                         |                                                     | 45,000    | 12,000     | 5000       |
|                                                                         |                                                     |           |            | 850        |
|                                                                         |                                                     |           |            | 1,300      |
| Freq. MHz                                                               |                                                     |           |            |            |
|                                                                         | 0.1                                                 | 2 min.    | -          | -          |
|                                                                         | 1                                                   | 10 min.   | 2 min.     | -          |
|                                                                         | 2                                                   | 16 min.   | 7 min.     | 2 min.     |
|                                                                         | 10                                                  | 40 min.   | 18 min.    | 8 min.     |
|                                                                         | 100                                                 | 60 min.   | 55 min.    | 45 min.    |
|                                                                         | 500 to 1000                                         | 70 min.   | 60 min.    | 55 min.    |
| Filter Type/Construction                                                | Pi                                                  | Pi        | Pi         | Pi         |

Consult factory for higher or mixed attenuation values and higher voltage ratings.

## Contact Extension - All Connectors

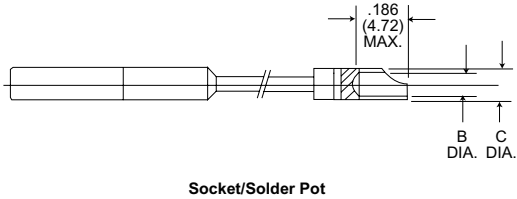
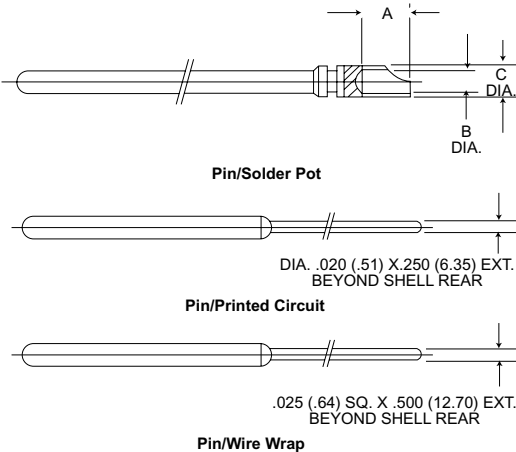


Note: Solder pot extension typically will be .200 (5.08) max. beyond shell rear.

## Contact - Pin and Sockets

### Standard Contact Terminations

**Finish:** Gold plate per MIL-G-45204, Type 1, Class 1, over nickel plate per QQ-N-290.



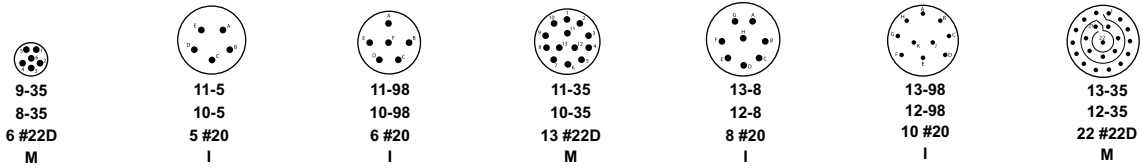
| Contact Size | A           | B Dia.      | C Dia.      |
|--------------|-------------|-------------|-------------|
| #22          | .115 (2.92) | .039 (0.97) | .056 (1.42) |
|              | .095 (2.41) | .035 (0.89) | .051 (1.30) |
| #20          | .125 (3.18) | .047 (1.19) | .066 (1.68) |
|              | .110 (2.79) | .042 (1.07) | .061 (1.55) |
| #16          | .170 (4.32) | .077 (1.96) | .104 (2.64) |
|              | .150 (3.81) | .068 (1.73) | .097 (2.46) |

# MIL-C-38999 Series I, II, III, IV Filter Connectors

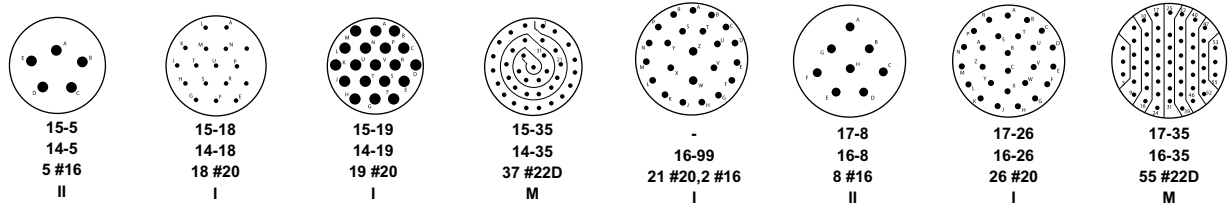
## Contact Arrangements

Engaging view, pin insert

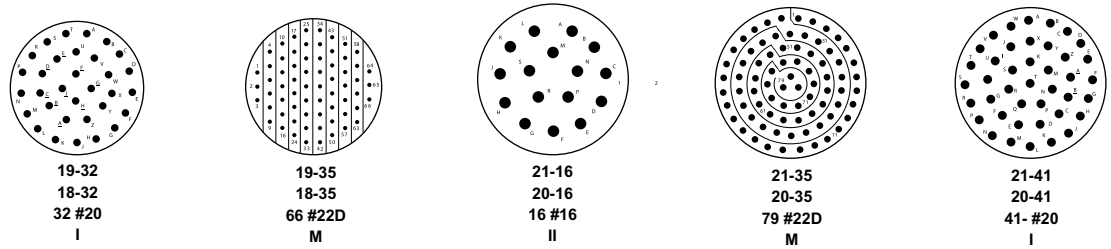
Series I, III & IV  
Series II  
No. of Contacts  
Service Ratings



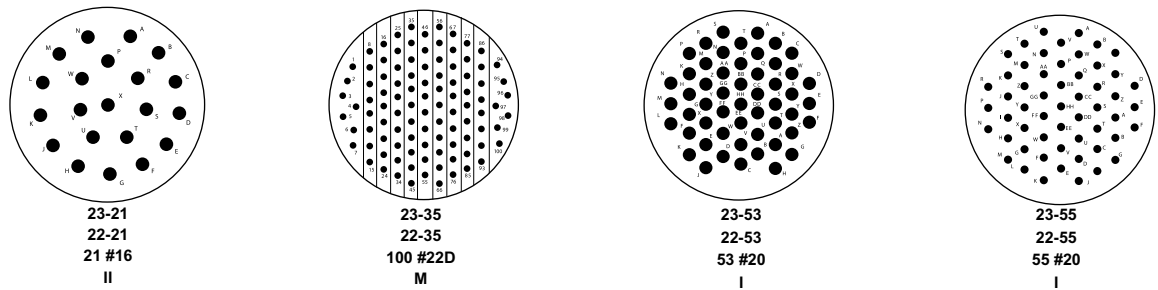
Series I, III & IV  
Series II  
No. of Contacts  
Service Ratings



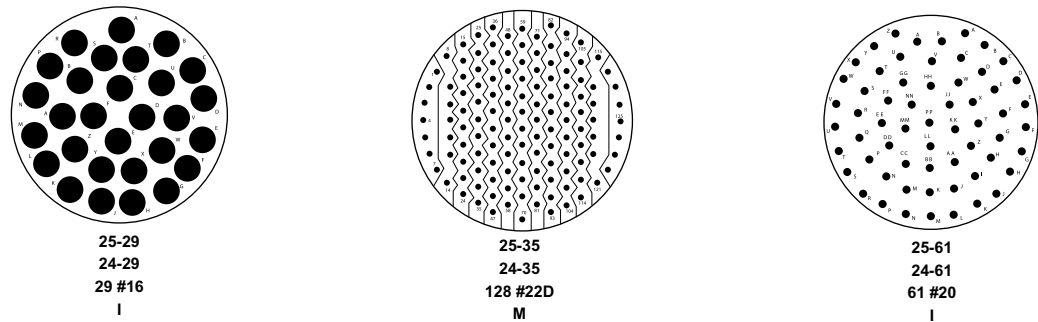
Series I, III & IV  
Series II  
No. of Contacts  
Service Ratings



Series I, III & IV  
Series II  
No. of Contacts  
Service Ratings

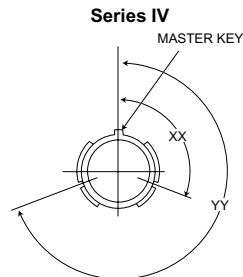


Series I, III & IV  
Series II  
No. of Contacts  
Service Ratings



Please consult factory for availability of layouts not shown.

## Polarizign Positions



Front face of receptacle shown. Polarizing keys are external.

| Key Arrangements | XX   | YY   |
|------------------|------|------|
| N                | 110° | 250° |
| A                | 100° | 260° |
| B                | 90°  | 270° |
| C                | 80°  | 280° |
| D                | 70°  | 290° |

See page 131 for Series I, II and III polarization.



TDPX filter connectors are used primarily on commercial and military aircraft for radio and instrumentation equipment and are available in single thru four gang version with standard ARINC shells and polarizing posts. They are intermateable with the standard DPX connectors and available in 9 contact arrangements.

Meets applicable portions of MIL-Spec.

Note: The TDPX replaces the obsolete DPXJ Series

## Performance and Material Specifications

### MATERIALS AND FINISHES

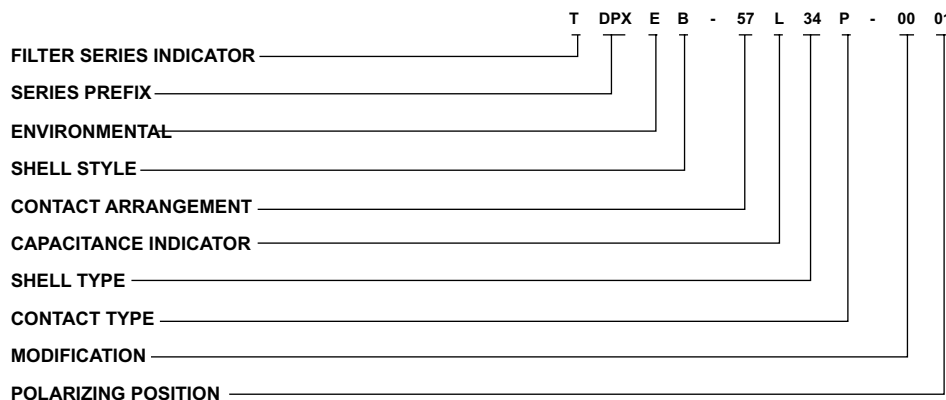
| Description                      | Material           | Finish                          |
|----------------------------------|--------------------|---------------------------------|
| Shell                            | Aluminum alloy     | Cadmium plate (yellow chromate) |
| Contacts                         | Copper alloy       | Gold over suitable underplate   |
| Insulator                        | High grade plastic | none                            |
| Interfacial and Peripheral Seals | Neoprene rubber    | none                            |
| Ground Plane                     | Beryllium copper   | Silver plate                    |
| Polarizing Posts                 | Stainless steel    | Passivate                       |

### ELECTRICAL

| Contacts Size                                                               | 20 & 22                         | 20, 16 & 22                           |                | 16           |                  |         |
|-----------------------------------------------------------------------------|---------------------------------|---------------------------------------|----------------|--------------|------------------|---------|
| Available Filter                                                            | Low Freq.                       | Mid Freq.                             | Std. Freq.     | High Freq.   | Low Freq.        |         |
| Catalog Reference                                                           | L                               | M                                     | T              | H            | L                |         |
| Voltage Rating                                                              | 200 VDC - 120 VAC rms 400 Hz    |                                       |                |              |                  |         |
| Current Rating (Amp DC)                                                     | 5 amp                           | 7.5 amp - size #20, 20 amp - size #16 |                |              | 20 amp           |         |
| Insulation Resistance, 2 min. electrification time max. at 25°C and 100 VDC | 5,000 megohms minimum @ 100 VDC |                                       |                |              |                  |         |
| DWV, sea level, with 500 microamps max. charge/discharge current            | 300 VDC                         | 500 VDC                               |                |              | 500 VDC          |         |
| Capacitance at 1 KHz, 0.1 V rms picofarads                                  | 32,000<br>45,000                | 8,000<br>12,000                       | 2,300<br>5,000 | 850<br>1,300 | 32,000<br>45,000 |         |
| Attenuation per MIL-STD-220 at 25°C with no applied voltage or current.     | Freq. MHz                       | Attenuation (dB)                      |                |              |                  |         |
|                                                                             | 0.1                             | 2 min.                                | -              | -            | -                | 2 min.  |
|                                                                             | 1                               | 15 min.                               | 2 min.         | -            | -                | 15 min. |
|                                                                             | 2                               | 20 min.                               | 5 min.         | 2 min.       | -                | 20 min. |
|                                                                             | 10                              | 35 min.                               | 20 min.        | 12 min.      | 2 min.           | 35 min. |
|                                                                             | 100                             | 60 min.                               | 55 min.        | 50 min.      | 30 min.          | 50 min. |
|                                                                             | 500 to 10,000                   | 65 min.                               | 60 min.        | 55 min.      | 50 min.          | 50 min. |
| Filter Type                                                                 | Pi                              | Pi                                    | Pi             | Pi           | Pi               |         |

†=Check Factory for availability of Size 22 "T" filters.

## How to Order - Single Gang



### FILTER SERIES INDICATOR

T - Transverse Monolith

### SERIES PREFIX

Single gang DPX

### ENVIRONMENTAL

E - For interfacial (pin)  
Delete for standard

### SHELL STYLE

B - Polarized ARINC B shell (preferred)  
D - DPXA flange (less polarizing posts)

### CONTACT ARRANGEMENT

See page 318.

### CAPACITANCE INDICATOR

L - Low Frequency  
M - Mid Frequency  
T - Standard Frequency  
Note: Use of "T" omitted in past nomenclature.  
H - High Frequency  
N - No filters this gang. Standard DPX insert assembly.

### SHELL TYPE

33 - Male (plug)  
34 - Female (receptacle)

### CONTACT TYPE

P-Pin; S-Socket

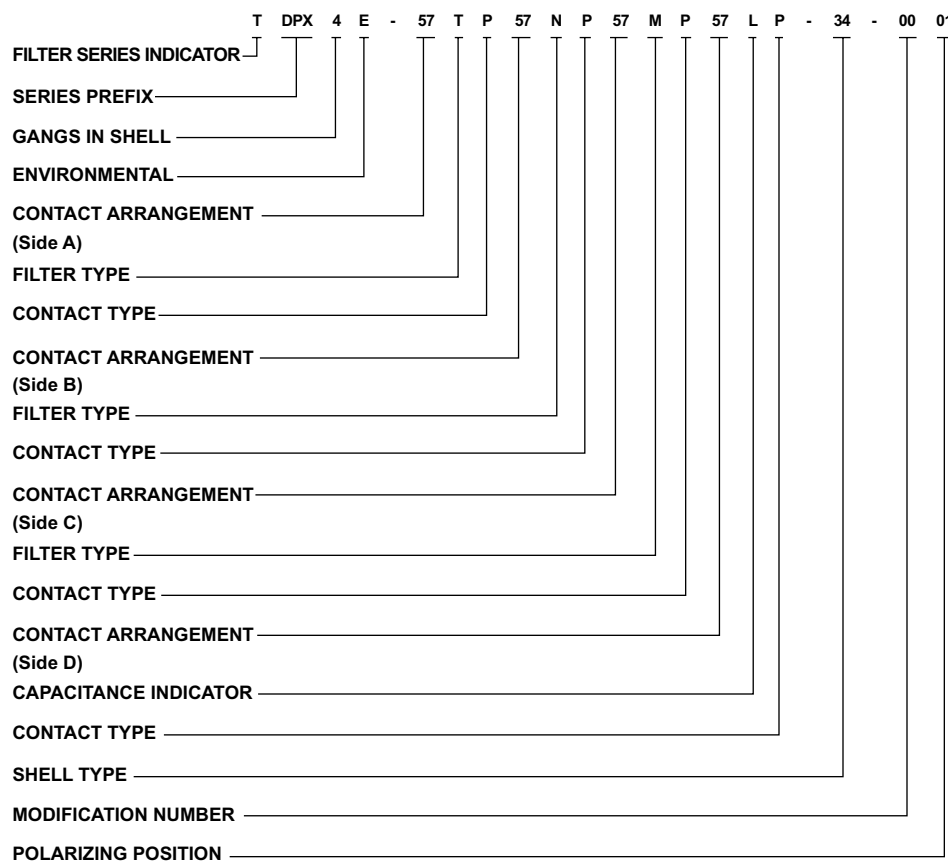
### MODIFICATION

TDPXD  
None  
TDPXB  
03 - Mounting holes countersunk 100' to .230 (5.84) dia.  
23 - With floating eyelets.  
Consult factory.

### POLARIZING POSITION

See pages 67 - 68.

## How to Order - Multiple Gang

**FILTER SERIES INDICATOR**

T - Transverse Monolith

**SERIES PREFIX**

DPX - DPX series with solder termination.

**GANGS IN SHELL**

2, 3, and 4 gang

**ENVIRONMENTAL**

E - For interfacial (pin)

Delete for standard.

**CONTACT ARRANGEMENT**

See page 31 for applicable arrangements. Please specify each arrangement number as indicated in ordering nomenclature for 2, 3, or 4 gang.

**CAPACITANCE INDICATOR (Each gang, as desired)\***

L - Low Frequency

M - Mid Frequency

T - Standard Frequency

Note: Use of "T" omitted in past nomenclature

H - High Frequency

N - No filter this gang. Standard DPX insert assembly.

**CONTACT TYPE**

P for pin; S for socket. Designation follows each arrangement as ordered for 2, 3, or 4 gang versions. (Printed circuit contact/termination is available. Consult factory for specifications.)

**SHELL TYPE**

33B for male (ARINC B)

34B for female (ARINC B)

33 for male

34 for female

Note: ARINC B specified for DPX2 only.

**POLARIZING POSITION (see pages 67-68)**

The last two digits in the four-digit dash number refer to the polarizing post position. When the last two digits are omitted, the polarizing posts will be assembled in position 01, but the position number is not stamped on the connector. This allows the customer to position the posts themselves and then stamp the appropriate number on the shell. If the last two digits are 00, the polarizing posts are deleted.

**MODIFICATION NUMBERS**

- 0001 indicates standard design for all styles.

**TDPX2-33B:**

- 0301 - Mounting holes .120 dia.  
Countersunk 100° to .230 dia.

**TDPX2-34:**

- 0101 - With #4-40 clinch nuts in mounting holes.

**TDPX3-34:**

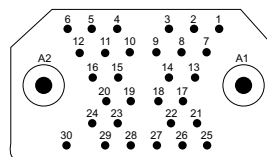
- 0101 - With 6 #4-40 clinch nuts in mounting holes.

**TDPX4-34:**

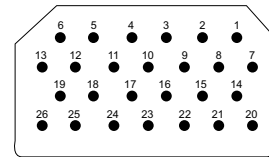
- 0101 - With 10 #4-40 clinch nuts in mounting holes.

## Contact Arrangements

Arrangement No.  
No. of Contacts & Wire Size

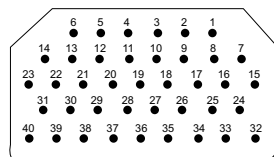


**32C2**  
**30 #20, 2 coax**

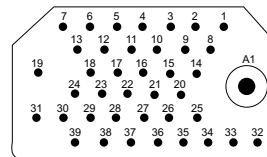


**26**  
**26 #16**

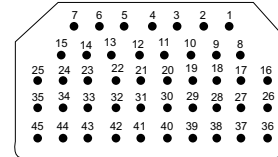
Arrangement No.  
No. of Contacts & Wire Size



**40**  
**40 #20**

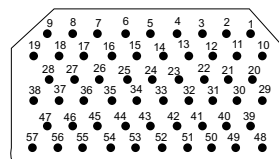


**40C1**  
**39 #20, 1 coax**

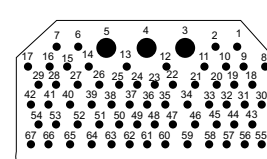


**45**  
**45 #20**

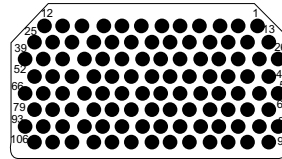
Arrangement No.  
No. of Contacts & Wire Size



**57**  
**57 #20**



**67**  
**64 #20, 3 #16**



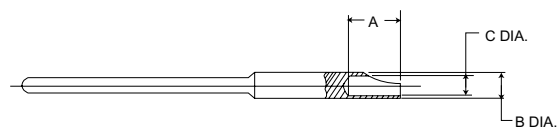
**106\***  
**106 #22**

NOTE: Consult factory for part numbers for special combinations of filter, group contacts and power contacts, and for availability of filter socket contacts, for each contact arrangement.

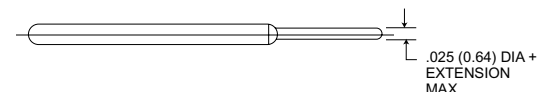
## Contacts - Pin and Socket

## Standard Contact Terminations

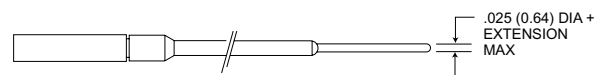
Finish: Gold plate per MIL-G-45204, Type 1, Class 1, over nickel plate per QQ-N-290.



Pin/Solder Pot



Pin/Printed Circuit

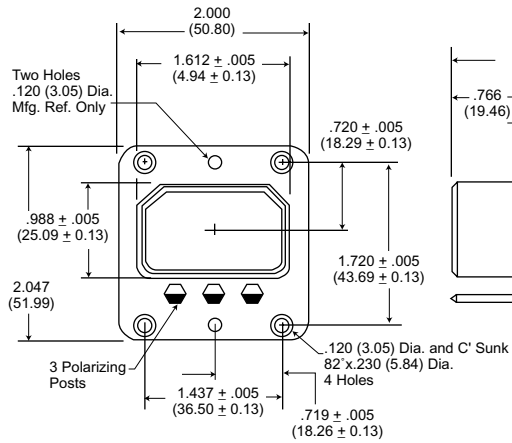


Socket/Printed Circuit

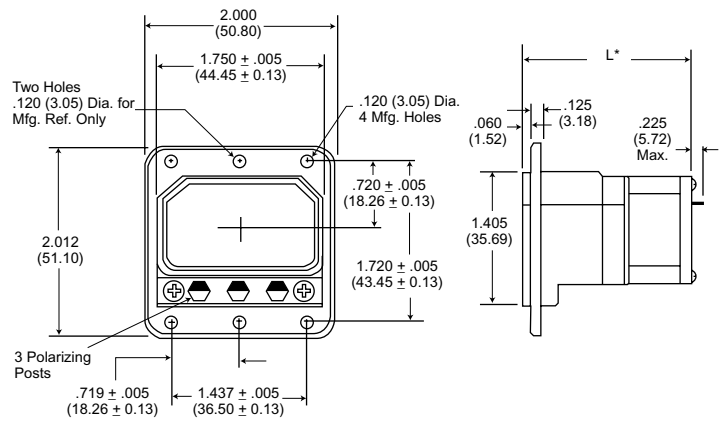
| Contact Size | A           | B           | C           | PC Tail Extension Max.                |
|--------------|-------------|-------------|-------------|---------------------------------------|
| 20           | .125 (3.18) | .065 (1.65) | .048 (1.22) | .200 (5.08), .285 (7.24), .375 (9.52) |
|              | .110 (2.79) | .061 (1.55) | .043 (1.09) |                                       |
| 16           | .170 (4.32) | .103 (2.62) | .078 (1.98) | .200 (5.08), .285 (7.24), .375 (9.52) |
|              | .150 (3.81) | .097 (2.46) | .069 (1.75) |                                       |
| 22           | .115 (2.92) | .005 (1.40) | .040 (1.02) | .200 (5.08), .285 (7.24), .375 (9.52) |
|              | .095 (2.41) | .051 (1.30) | .036 (0.91) |                                       |

## Single Gang

## TDPXB



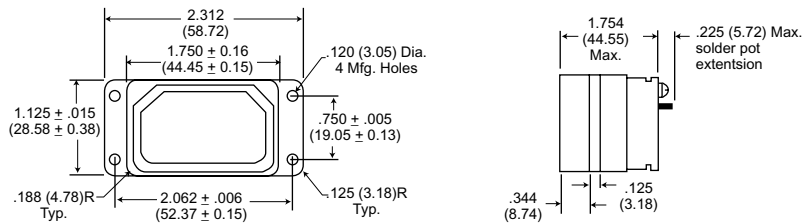
33 ARINC B Shell



34 ARINC B Shell

\* This length varies between the limits of 1.750 (44.45) and 1.437 (36.25) depending on the particular construction as determined by contact arrangement.

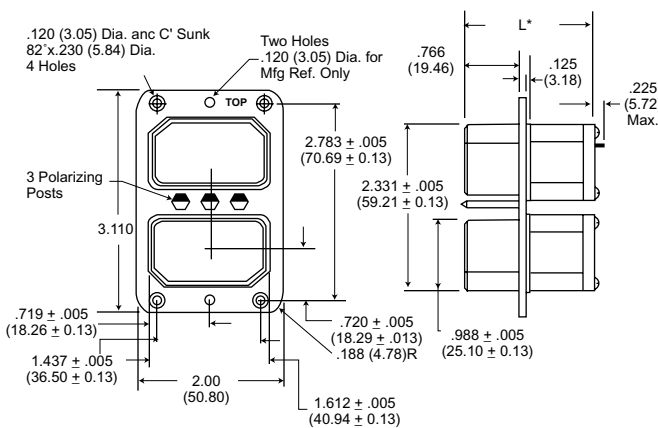
## TDPXD



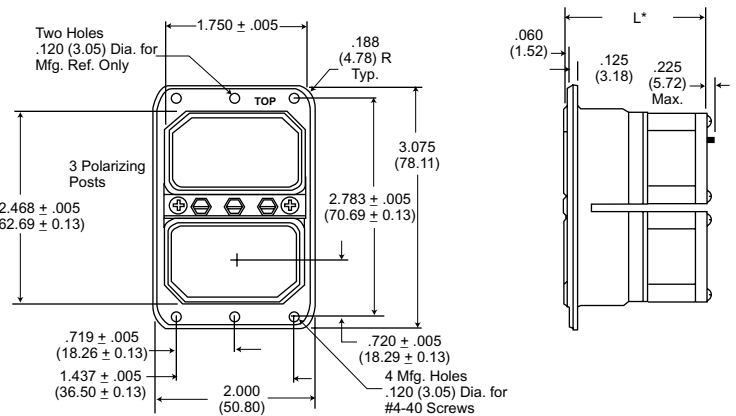
DPXA Shell Style

## Two Gang

## TDPX2



33B ARINC B Shell

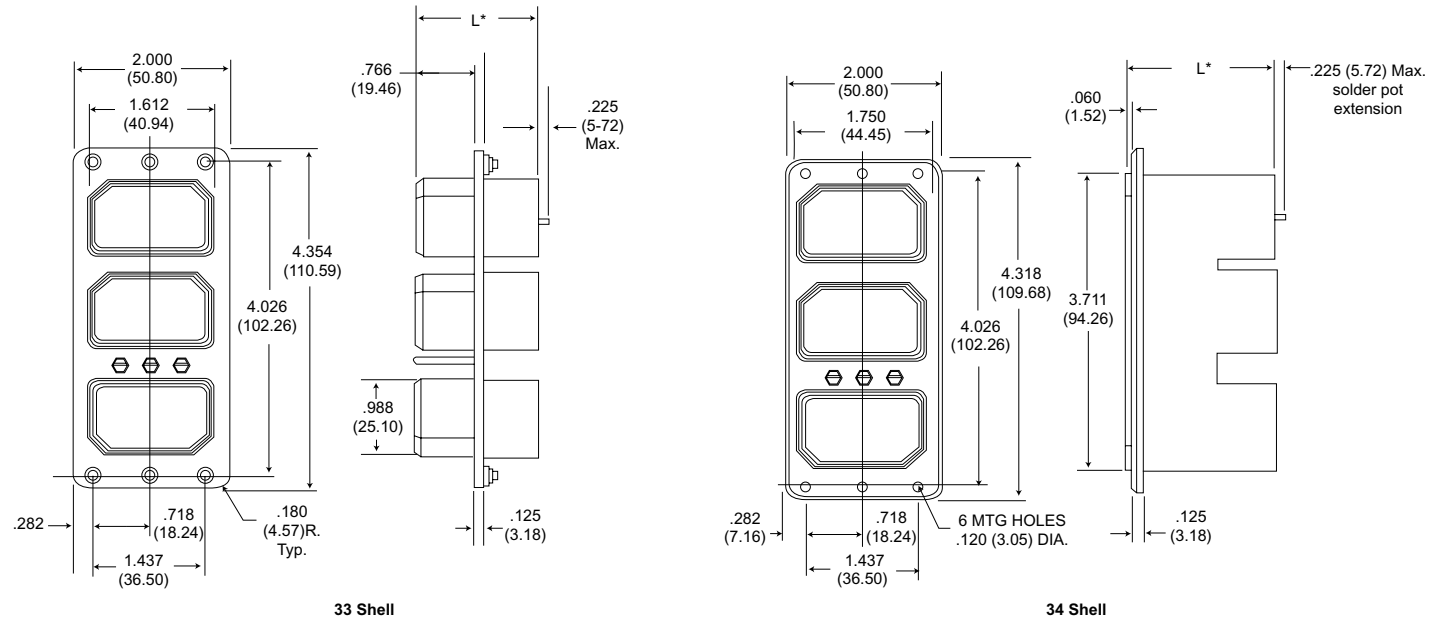


34B ARINC B Shell

\* This length varies between the limits of 1.750 (44.45) and 1.437 (36.25) depending on the particular construction as determined by contact arrangement.

## Three Gang

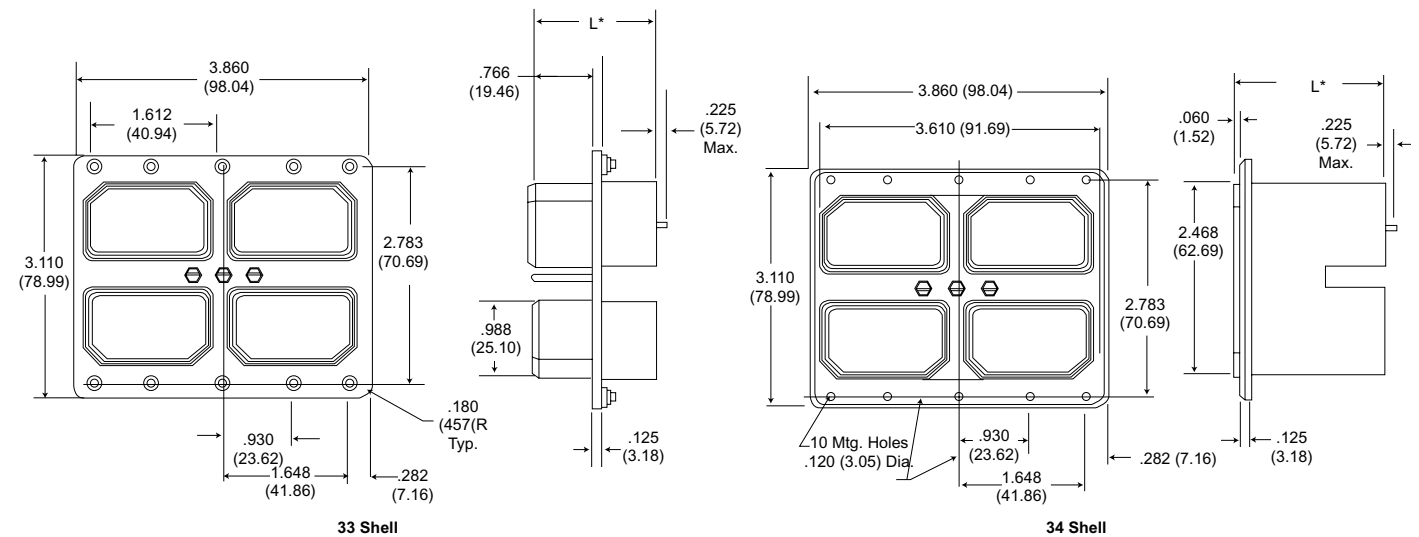
TDPX3



\* This length varies between the limits of 1.750 and 1.437 depending upon particular construction as determined by contact arrangement.

## Four Gang

TDPX4



\* This length varies between the limits of 44.45 and 36.25 depending upon particular construction as determined by contact arrangement.

Panel Cutouts - Pages 69-71.



TBKAD/E connectors represent a major milestone in presenting a new rack and panel connector for support of the air transportation market.

Several important design concerns have been addressed and solved in this series. High mating forces of pluggable modules in a rack have been reduced by approximately two-thirds. Filter adaptations include either single module or tandem (dual) module with crimp piggyback rear release contacts.

In the ARINC 600 connector series, size 22 contacts are the only size that utilize the Pos-Align Connector Construction feature. The hooded socket extends from its receptacle insulator in the filter design.

- Low insertion force contacts.
- Non-environmental versions.
- Polarizing posts that are removable from the mating face.
- Field replaceable inserts for size 22 and power contacts.
- Field replaceable filter modules with size 22 contacts.
- Up to 800 size 22 contacts in one connector.
- Crimp piggy back and pi contacts for filter module.
- Uses standard DPX crimp, insertion/extraction tooling.
- Waveguide connections available.

## How to Order

FILTER SERIES INDICATOR \_\_\_\_\_ T BKA D 2 100 M 4 80 81 \*  
 \*\* CONNECTOR SERIES \_\_\_\_\_  
 CLASS \_\_\_\_\_  
 SHELL SIZE \_\_\_\_\_  
 CONNECTOR LAYOUT DESCRIPTION \_\_\_\_\_  
 CAPACITANCE INDICATOR \_\_\_\_\_  
 SHELL STYLE \_\_\_\_\_  
 CONNECTOR MOUNTING MODIFIER \_\_\_\_\_  
 POLARIZING POSITION \_\_\_\_\_  
 SPECIAL MODIFIER \_\_\_\_\_

### FILTER SERIES INDICATOR

T - Transverse Monolith

### CONNECTOR SERIES

BKA (Per ARINC 600)

\*\* Consult factory for availability.

### CLASS

D - Non-environmental  
(rear release, crimp contacts)

### CONNECTOR LAYOUT DESCRIPTION

Three digit number contained within the shell layout indicates total number of contacts available

| Connector Layout | Shell Size | Shell Cavity Identification |     |     |     |     |     |
|------------------|------------|-----------------------------|-----|-----|-----|-----|-----|
|                  |            | A                           | B   | C   | D   | E   | F   |
| -060             | 1          | -                           | 60  | -   |     |     |     |
| -A060            | 1          | 60                          | -   | -   |     |     |     |
| -120             | 1          | 60                          | 60  | -   |     |     |     |
| -100             | 2          | -                           | -   | 100 |     |     |     |
| -300             | 2          | 150                         | 150 | -   |     |     |     |
| -400             | 2          | 150                         | 150 | 100 |     |     |     |
| -600             | 3          | 150                         | 150 | -   | 150 | 150 | -   |
| -800             | 3          | 150                         | 150 | 100 | 150 | 150 | 100 |

### SHELL SIZE

- 1-Max. contact capacity - 125
- 2-Max. contact capacity - 400
- 3-Max. contact capacity - 800

### CAPACITANCE INDICATOR

- L - 32,000-45,000 PF
- M - 8,000-12,000 PF
- T - 3,300-5,000 PF
- H - 850-1,300 PF

### SHELL STYLE

- 3-Plug (rack side) consult factory
- 4-Receptacle (box side)

### CONNECTOR MOUNTING MODIFIER

- 00-Standard design .148 dia. holes
- 01-With #6-32 ESMA (#12 NCFMA2-62) clinch nuts

| Connector Size | # of Clinch Nuts Receptacle |
|----------------|-----------------------------|
| 1              | 4                           |
| 2              | 6                           |
| 3              | 10                          |

02-Size 1 receptacle only - less 3 printed circuit board mounting lugs

03-With #4-40 ESMA (#22 NCFMA2-40) clinch nuts

| Connector Size | # of Clinch Nuts Receptacle |
|----------------|-----------------------------|
| 1              | 4                           |
| 2              | 6                           |
| 3              | 10                          |

08-Size 2 and 3 receptacle only-with #4-40 ESMA (#22 NCFMA2-40) clinch nuts (all mounting holes)

09-Size 2 and 3 receptacle only-with #6-32 ESMA (#12 NCFMA2062) clinch nuts (all mounting holes)

23-with floating eyelets (.048 min. radial float) 4 corner holes per connector

Consult factory if other modifications are required.

### POLARIZING POSITION

01 thru 99 (per ARINC 600)

Blank-Polarizing posts or keys not installed but supplied with connector

### SPECIAL MODIFIER

Consult factory

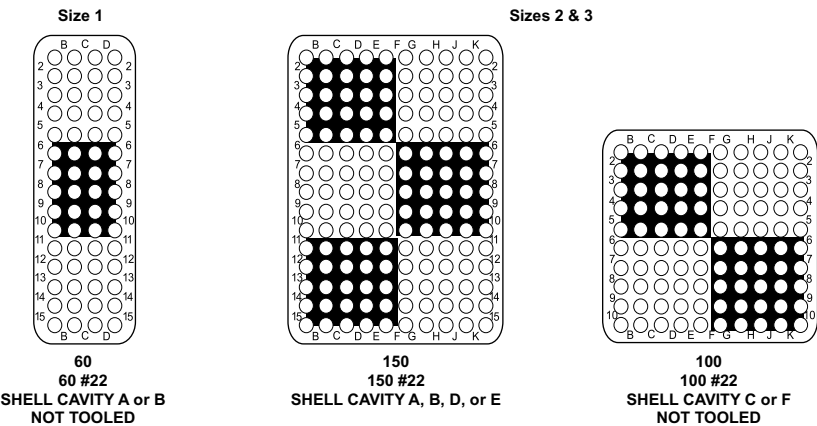
Performance and Material Specifications

| MATERIALS AND FINISHES |             | BKAD                        | SPECIFICATIONS |
|------------------------|-------------|-----------------------------|----------------|
| Shell                  | Material    | Aluminum Alloy              | QQ-A-591/A380  |
|                        | Finish      | Clear chromate over cadmium | QQ-P-416       |
| Insulator              | Material    | Thermoplastic               | N/A            |
| Contacts               | Material    | Copper alloy                | AA-C-533       |
|                        | Finish      | Gold over nickel            |                |
|                        | Termination | Crimp                       | N/A            |
| Ground Spring          | Material    | Coper alloy                 |                |
|                        | Finish      | Sliver                      |                |

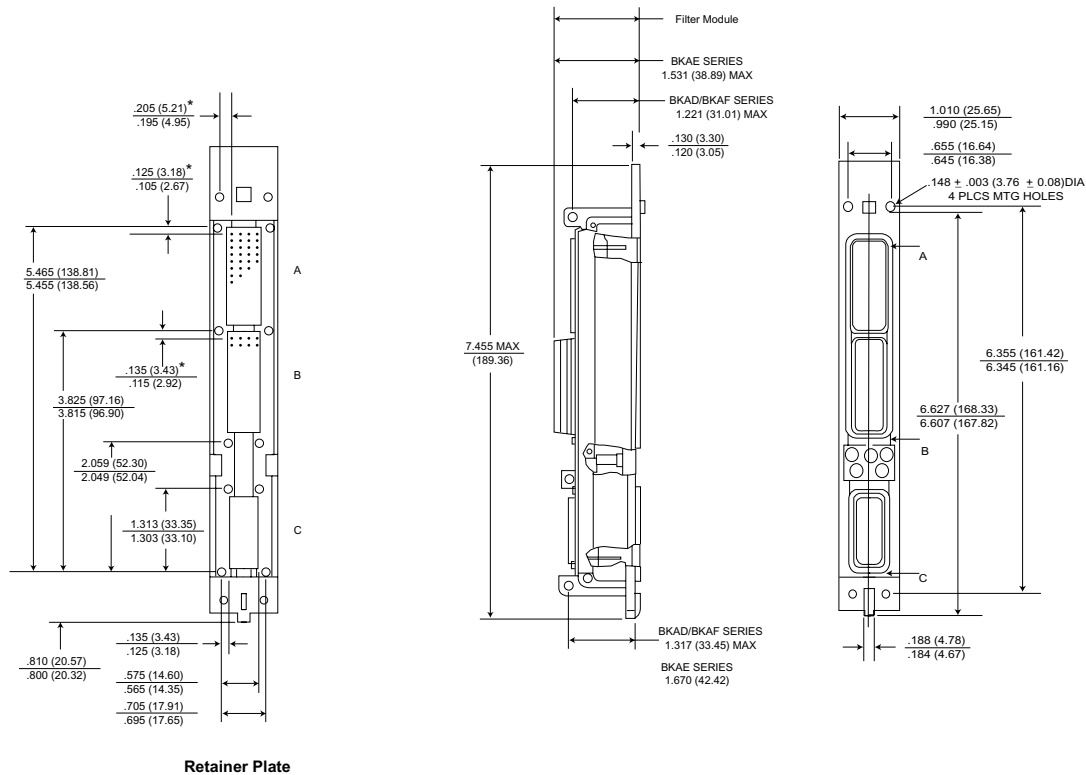
ELECTRICAL DATA (Size #16, Size #20 and Size #22)

|                                                                                    |                                              |           |           |            |
|------------------------------------------------------------------------------------|----------------------------------------------|-----------|-----------|------------|
| Filter Description                                                                 | Low Freq.                                    | Mid Freq. | Std Freq. | High Freq. |
| Catalog Indicator                                                                  | L                                            | M         | T         | H          |
| Voltage Rating                                                                     | 200 VDC-120 VAC rms 400 Hz                   |           |           |            |
| Current Rating (amp DC)                                                            | 15 amp size 16, 7.5 size 20, 5.0 amp size 22 |           |           |            |
| Insulation Resistance, 2 min. electrification time max. at 25°C                    | 5,000 megohms min. @ 100 VDC                 |           |           |            |
| DWV, sea level, with 500 microamps max. charge/discharge                           | 300V DC size 22<br>500V DC size 16 & 20      | 500VDC    | 500VDC    | 500VDC     |
| Capacitance at 1 KHz 0.1 V rms Picofarads                                          | 32000                                        | 8000      | 3300      | 850        |
|                                                                                    | 45000                                        | 12000     | 5000      | 1300       |
| Attenuation per MIL-STD-220 @ 25° C with no applied voltage or current             | Freq. MHz                                    |           |           |            |
|                                                                                    | 0.1                                          | 2 min.    | -         | -          |
|                                                                                    | 1.0                                          | 10 min.   | 2 min.    | -          |
|                                                                                    | 2                                            | 16 min.   | 7 min.    | 2 min.     |
|                                                                                    | 10                                           | 40 min.   | 18 min.   | 8 min.     |
|                                                                                    | 100                                          | 60 min.   | 55 min.   | 45 min.    |
|                                                                                    | 500 to 1000                                  | 65 min.   | 60 min.   | 55 min.    |
| Filter Type/Construction                                                           | Pi                                           | Pi        | Pi        | Pi         |
| Consult factory for higher or mixed attenuation values and higher voltage ratings. |                                              |           |           |            |

Contact Arrangements (Receptacle-Engaging Face Shown)

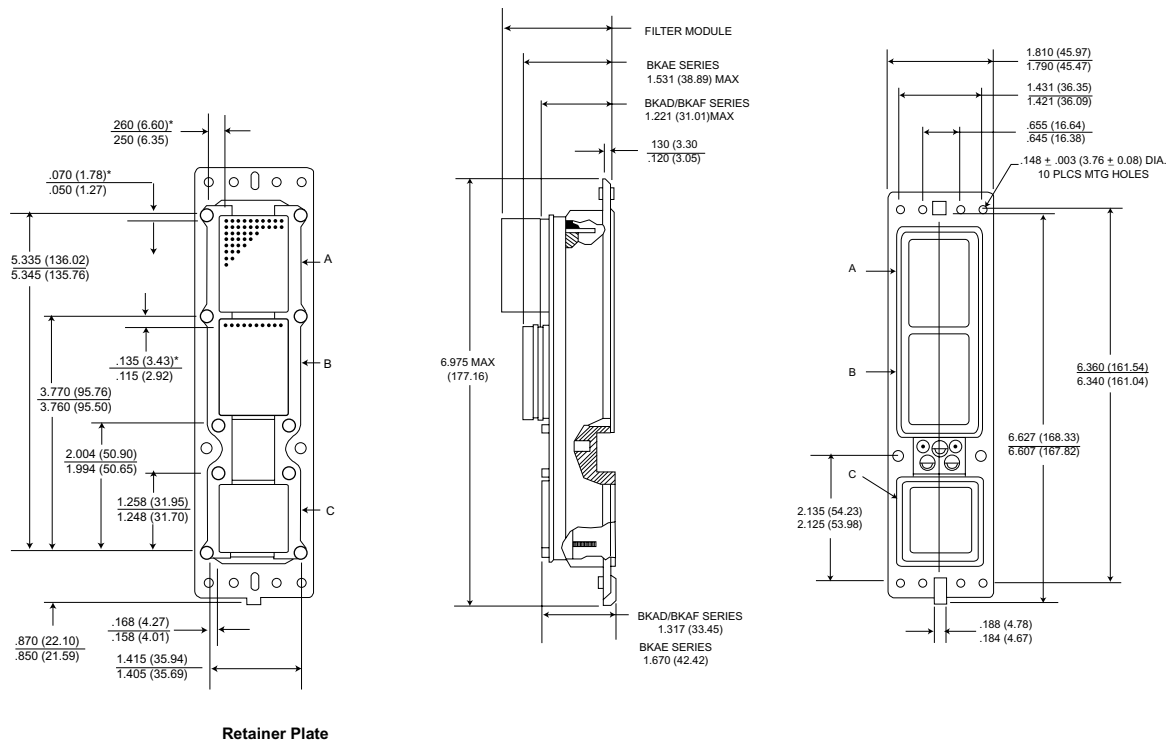


## Size 1 Receptacle



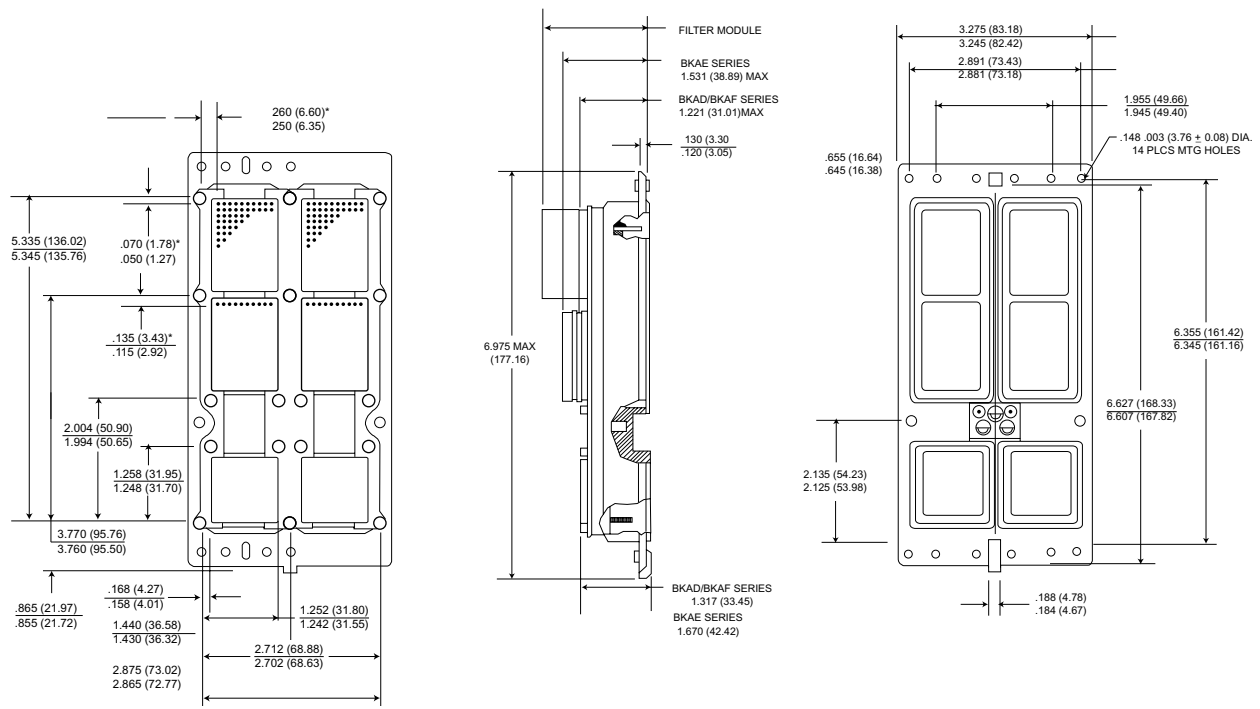
\* This dimension indicates distance from centerline of retaining screw to the centerline of first contact cavity.

## Size 2 Receptacle



\* This dimension indicates distance from centerline of retaining screw to the centerline of first contact cavity.

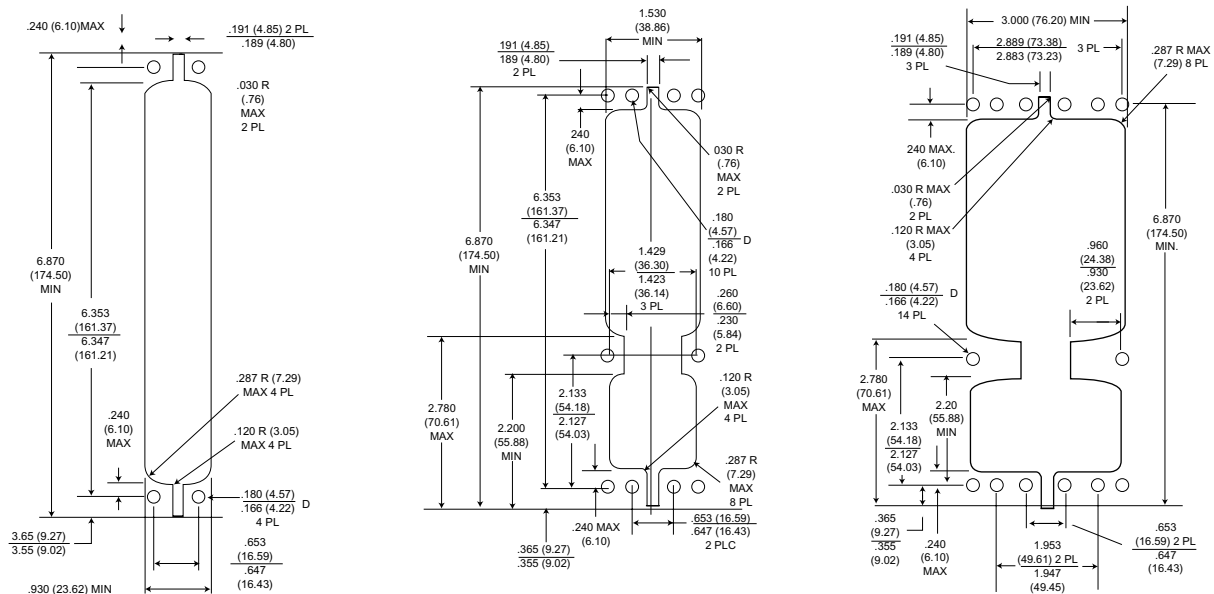
## Size 3 Receptacle



Retainer Plate

\* This dimension indicates distance from centerline of retaining screw to the centerline of first contact cavity.

## Panel Cutouts



Size 1 Receptacle

Size 2 Receptacle

Size 3 Receptacle

Meet applicable portions of MIL-Specs.



ITT Cannon has developed a new connector concept to satisfy the need to protect today's sophisticated electronic circuitry from electromagnetic pulses (EMP) generated by lightning, system transients, nuclear blast, or static discharges.

Transient suppression, built into the ITT Cannon PSP (Phoenix Surge Protector) connectors, is accomplished by the switching action of a silicon p-n junction device mounted on the connector contact which switches from a steady state standby condition into the avalanche condition. This device conducts when the voltage surge reaches a value sufficient to cause avalanche multiplication. The

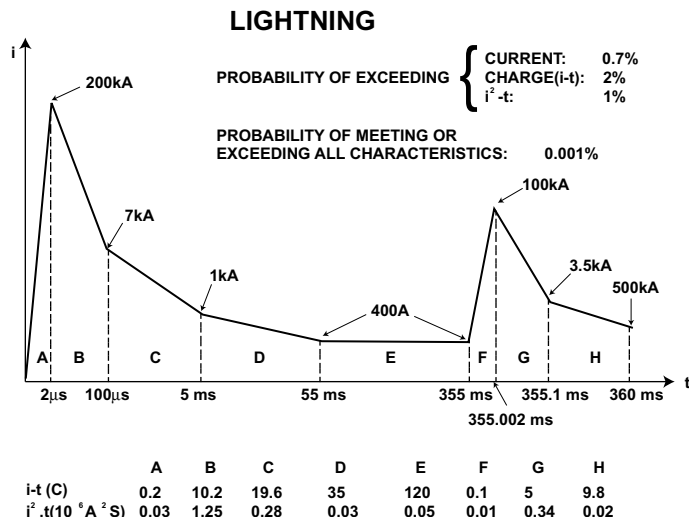
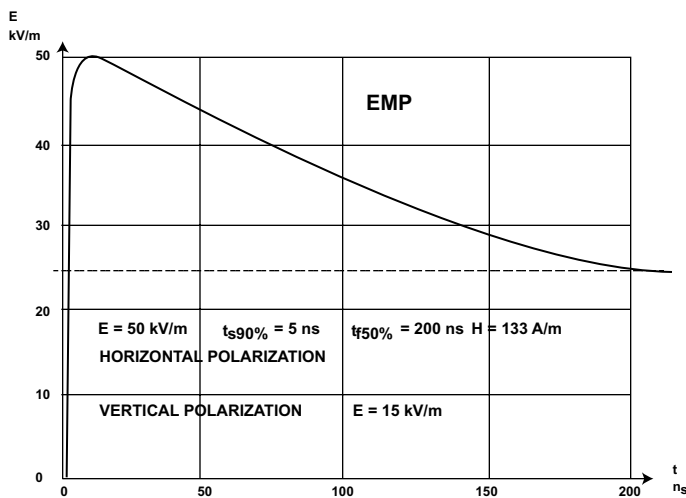
transient is shunted through the silicon device to the connector housing. Response time of the transient absorbing suppressor clamping action is better than  $1 \times 10^{-9}$  seconds with a peak pulse power dissipation of 500-1500 watts at 25°C depending on contact size.

Addition of the EMP suppression circuitry does not require changes in the connector diameter or interface dimensions.

The PSP connector is offered in MIL-C-38999 Series I, II, III, and IV, Mil-C-81659 (ARINC 404) and ARINC 600. All versions can be provided with EMP or EMP/EMI combinations.



## Standard Data



## Diode Breakdown Voltage

Typical electrical values for the two breakdown voltage extremes are as follows:

| Breakdown Voltage (BR) |          | Test Current<br>$I_T$ | Rated Stand Off Voltage<br>$V_{WM}$ | Max. Reverse Leakage Current<br>$I_D @ V_{WM}$ | Max. Peak Reverse Voltage<br>$V_C \text{ Max.} @ I_{PP}$ | Max. Peak Pulse Current<br>$I_{PP}$ | Max. Temp. Coefficient of $V_{BR}$ (TA) -55°C to 100°C |
|------------------------|----------|-----------------------|-------------------------------------|------------------------------------------------|----------------------------------------------------------|-------------------------------------|--------------------------------------------------------|
| Min.                   | Max.     |                       |                                     |                                                |                                                          |                                     |                                                        |
| $V_{DC}$               | $V_{DC}$ | mA DC                 | V                                   | $\mu A$ DC                                     | V                                                        | A                                   | %/°C                                                   |
| 6.4                    | 7.3      | 10.0                  | 5.0                                 | 600.0                                          | 9.6                                                      | 52.0                                | .057                                                   |
| 189.0                  | 209.0    | 1.0                   | 170.0                               | 1.0                                            | 275.0                                                    | 1.8                                 | .108                                                   |

Note: All values are based on an 8 x 20  $\mu s$  (microsecond) wave form.

## Contacts

Diode contacts are available in 500, 1,000 and 1,500 watts with breakdown voltage (VBR) values of 6.8 to 200 voltage D.C. The contacts can be provided in a positive, negative, or bi-junction polarity as required by operating line voltage.

The diagram illustrates the breakdown of a part number into its constituent fields. The fields are listed on the left, and their corresponding positions in the part number are indicated by lines pointing to the right. The part number is shown as a sequence of characters: P, S, P, L, 0, C, 11, B, 35, L, P, N, P6.8.

| Field                   | Position(s) |
|-------------------------|-------------|
| SERIES                  | PSP         |
| MODIFIER                | L           |
| SHELL STYLE             | 0           |
| TERMINATION             | C           |
| SHELL SIZE              | 11          |
| HARDWARE FINISH         | B           |
| CONTACT ARRANGEMENT     | 35          |
| CAPACITANCE INDICATOR   | L           |
| CONTACT TYPE            | P           |
| SHELL POSITION          | N           |
| DIODE BREAKDOWN VOLTAGE | P6.8        |

|          |          |
|----------|----------|
| 8/9-35   | 16/17-35 |
| 10/11-5  | 18/19-32 |
| 10/11-98 | 18/19-35 |
| 10/11-35 | 20/21-41 |
| 12/13-8  | 20/21-35 |
| 12/13-35 | 22/23-55 |
| 14/15-18 | 22/23-35 |
| 14/15-35 | 24/25-61 |
| 16/17-26 | 24/25-35 |

# Hermetic Connectors

Users around the world have found that ITT Cannon hermetic connectors function reliably under extreme environmental conditions. Hermetic connectors are impervious to most liquids and gases, including acids, alkalis, oils, gasoline, jet fuel and hydraulic fluids. They can take shock loads as high as 100 g's with no loss of hermeticity, and can take extremes of both heat and cold with no loss of performance.

## Manufacturing Expertise

Cannon compression glass seals are strong. A 50,000 psi compression stress generates a sealing force that can withstand up to 10,000 psi differential pressure (pressure varies with connector type). Since it is independent of adhesion, the seal has a temperature capability of -260° to +600° Fahrenheit. The seal has high radiation resistance and a leak rate of less than  $10^{-7}$  cc per second.

All Cannon hermetic connectors are 100% tested after fabrication. A stringent examination ensures that all military specifications are met. The product is tested for leak performance, dielectric withstanding voltage and insulation resistance.

## Custom Design Capabilities

Custom hermetic connectors can be manufactured to meet special requirements. Hermetic connectors have been developed to withstand exposure to propellants, high pressure and high temperature conditions for missiles, "sub-safe" connectors for penetration feed-thru on ships and submarines, connectors for aircraft engines, and space applications.

## KPTH/PVAH - Miniature Circular MIL-C-26482



ITT Cannon hermetically-sealed KPTH and PVAH (MIL-C-26482, Series I and II) connectors are designed for those applications and environments that require delicate mechanisms to be protected from variations in atmospheric pressure (leakage is less than 0.01 micron ft<sup>3</sup>/hr [ $10^{-7}$  cc/sec.])

The receptacles are available with pin contacts only and in three shell styles; box mounting KPT02H, solder mounting KPT01H, and jam nut KPT07H for Series I; box mounting PVA0, solder mounting PVA3, and jam nut PVA7 for series II. Contact arrangements are tooled in a full leak-free compression glass web.

## KJLY, KJY, KJAY - Miniature Circular MIL-C-38999 Series I, II, III



Cannon's KJLY/KJY/KJAY miniature circular connectors are hermetically sealed and designed to meet the critical performance and design requirements of MIL-C-38999 (leakage is less than 0.01 micron ft<sup>3</sup>/hour [ $10^{-7}$  cc/sec.]). Engineered for high density circuitry capabilities, these connectors are designed to operate at temperatures ranging from -85°F to +392°F (-65°C to +200°C); solder mounts 302°F (150°C). They are readily adaptable

to both commercial and space age requirements where size, weight, scoop proof/low-profile design and high reliability are key factors. KJLY/KJLY/KJAY connectors are offered in nine shell sizes. A total of 53 contact arrangements are available that will accommodate from 3 to 128 contacts using AWG wire sizes 16 through 28. Contacts are of nickel/iron alloy with gold plated finish.

## BFH/TBFH - Standard Circular MIL-C-5015

### TBFH-100/TBFH-200



### TBFH-110



The BFH is a hermetically sealed version of the BFR bulkhead fitting.

The TBFH-100 is a jam nut-mounted, thru-bulkhead receptacle for panel thicknesses of .187" thru .312". Sealing against the bulkhead is accomplished by an O ring seal.

The TBFH-200 is similar to the TBFH-100 with a longer overall length for panel thicknesses of .375" thru .750"

The TBFH-110 is the hermetically sealed version of the TBF thru-bulkhead receptacle. It is flange mounted and mates with 3106, 3107 and 3108 plugs. Contacts are sealed to achieve hermeticity preventing air leakage in excess of one micron cubic foot per hour ( $10^{-7}$  cc/sec.) at a pressure differential of one atmosphere. Receptacles with leakage rate of 0.01 micron cubic foot per hour ( $10^{-7}$  cc/sec.), and lower, are also available.

Contacts and shells are steel. Standard finish is clear chromate over cadmium. Other finishes are available for high temperature and special applications.

# Hermetic Connectors

## GS - Standard Circular MIL-C-5015

**GS02-00**  
Flangeless Receptacle



ITT Cannon hermetically sealed GS connectors are designed for applications where a vacuum, inert gas, or a constant or controlled pressure is required to eliminate adverse effects created by atmospheric changes.

GS connectors are hermetically sealed with compression glass to prevent air leakage in excess of  $1 \times 10^{-5}$  standard cubic centimeters per second at

**GS02-11**  
Square Flange Receptacle



1 atmosphere. Standard hermetic receptacles are available with either solder pot or eyelet contacts. Tube-type contacts for special solid wire feedthru applications (thermocouple) are also available.

The standard material for shells and contacts is steel with tin over cadmium finish on GS02 connectors. Other materials and finishes can be supplied to meet any specific application.

**GS02-25**  
Circular Flange Receptacle



GS connectors are manufactured to ITT Cannon specifications and meet the Instrument Service Voltage Rating of MIL-C-5015. Connectors with higher voltage ratings are also available upon request. Salt spray, shock and vibration requirements, and mating dimensions all approximate the requirements of MIL-C-5015 and can be contractually approved for military applications.

## D\*H - D Subminiature MIL-C-24308



D\*H hermetically sealed connectors are designed to meet environmental conditions of extreme pressure differential. These connectors are part of the ITT Cannon D subminiature series and are qualified to MIL-C-24308. The hermetic seal prevents leakage and subsequent accumulation of corrosive moisture behind the connector. There are five basic shell sizes in both standard and thru-bulkhead designs which can accommodate from 9 to 50 contacts. Polarization is achieved by the keystone shape of the shell, a feature of all connectors within the D Subminiature series.

Locking devices are available for all shell sizes. Size 20 pin contacts are standard and have a current rating of 5 amps. † Eyelet, solder pot, and feed-thru contact terminations are available and can accommodate stranded wire up to #20 AWG. Operating temperatures range from -54°C to 125°C (-65°F to 257°F).

Your inquiries are invited regarding custom brazed component variations and special modifications.

†Military rating of #20 contacts or wires is 1.5 mps average, and 7.5 amps maximum.

## MDMH - Microminiature MIL-C-83513



Contact Layout: 9, 15, 21, 25, 31, 37, 51, 100

### Hermetic Micro Seris Mates with MDM Rectangulars

MDMH Connectors are ideal for applications requiring an extremely small, hermetically sealed connector having a higher contact density than traditional rectangular connectors. The MDMH receptacle has from 9 to 100 socket contacts on .050" (1.27mm) centers and mates with ITT Cannon MICRO Division's MDM Series havign reliable, proven, "Twist Pin" contacts. The connector utilizes size 24 contacts that are compression glass-sealed through a steel shell and into a "front-end" insulator. AN interfacial seal provides environmental protection when mated. MDMH receptacles are soldered to achassis or container providing a completely leak-proof unit.

### Features:

- Hermetically sealed connector designed for those applications where a vacuum, inert gas, or a constant controlled pressure are required to eliminate adverse effects created by atmospheric changes.
- Steel shells to provide greater strength, prevent Chipping, cracking or breaking, offer electromagnetic (EMI) and RFI shielding.
- Silicone elastomer compression interfacial seal to provide a moisture and humidity seal between each contact and between contacts and shell.

### STANDARD MATERIALS AND FINISHES

|               |                                                                                                            |
|---------------|------------------------------------------------------------------------------------------------------------|
| Shell         | Mild steel, nickel plated                                                                                  |
| Insulator     | Glass-filled diallyl phthalate per MIL-M-14 type SDGF, or polyester per MIL-M-24519, or glass-filled epoxy |
| Contacts      | Copper alloy, gold plated sockets on mild steel, gold plated pins<br>Solder pots - mild steel, gold plated |
| Hermetic Seal | Compression glass                                                                                          |
| Leak Rate     | 1 micron cubic FT/Hr max ( $1.04 \times 10^{-5}$ cc/sec at 1 ATM, pressure differential                    |

### ELECTRICAL DATA

|                                 |                      |
|---------------------------------|----------------------|
| No. of Contacts                 | 9 thru 100           |
| Dielectric Withstanding Voltage | 150 VAC              |
| Insulation Resistance           | 5,000 Meg. Ohms Min. |
| Wire Size                       | #26 thru #30 AWG     |
| Contact Termination             | Solder pot           |

### MECHANICAL FEATURES

|                 |                            |
|-----------------|----------------------------|
| Size or length  | 8 sizes                    |
| Service Class   | Hermetically sealed        |
| Coupling        | Friction/jacks             |
| Polarization    | Keystone-shaped shells     |
| Contact Spacing | .050 (1.27 mm) centers     |
| Shell Style     | Receptacle, solder mounted |

# Battery Connectors

Battery Connectors are designed to eliminate the need for separate starting batteries on individual units of power driven equipment. The receptacle may be mounted on each unit and wired to the starting motor. While the plug with cable and battery, may be carried on a tractor, truck, or other portable or stationary source. This eliminates the need for batteries on each unit of equipment and save costly maintenance and replacement.

In addition, these connectors are used to connect auxiliary power equipment to electrical systems. This preserves the charge of aircraft batteries for any in-flight function.



## Mating Guide

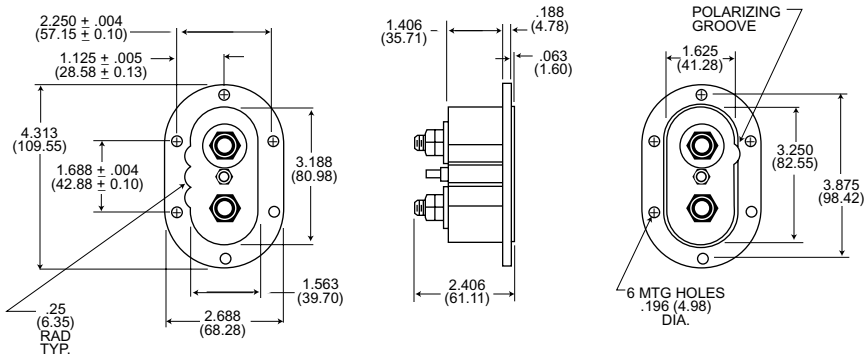
| No. of Contacts | Current Rating (Cont) | Plugs                    |                       |                                   | Receptacles |                       |                                   |
|-----------------|-----------------------|--------------------------|-----------------------|-----------------------------------|-------------|-----------------------|-----------------------------------|
|                 |                       | Part Number              | Recommended Wire Size | Cable Entry or Terminal Dimension | Part Number | Recommended Wire Size | Cable Entry or Terminal Dimension |
| 2               | 250a                  | GB-3-21CFS               | #3/0                  | 5/8" dia.                         | GB-3-34CDS  | #1/0                  | 3/8-24UNF-2A                      |
| 1               | 40a                   |                          | #10                   | 1/8" dia.                         |             | #10                   | 10-32NF-2A                        |
|                 |                       |                          | #3/0                  | 5/8" dia.                         |             |                       |                                   |
|                 |                       |                          | #10                   | 1/8" dia.                         |             |                       |                                   |
| 2               | 200a                  | CA2551C<br>(017193-0015) | #1/0                  | 3/4" dia.                         | CE9310-8    | #2/0<br>#12           | 3/8-16UNF-2A<br>10-32NF-2A        |
| 1               | 35a                   |                          | #12                   |                                   |             |                       |                                   |
| 2               | 200a                  |                          | #1/0                  | 51/64" dia.                       |             |                       |                                   |
| 1               | 35a                   |                          | #12                   |                                   |             |                       |                                   |
| 2               | 250a                  | CA2551D<br>(017193-0115) | #2/0                  | 3/4" dia.                         |             |                       |                                   |
| 1               | 35a                   |                          | #12                   |                                   |             |                       |                                   |
| 2               | 250a                  |                          | #2/0                  | 15/16" dia.                       |             |                       |                                   |
| 1               | 35a                   |                          | #12                   |                                   |             |                       |                                   |
| 2               | 400a                  | CA2551E<br>(017193-0000) | #4/0                  | 15/16" dia.                       | CA11749-1   | #2/0                  | 5/16-18UNC-2B                     |
| 1               | 40a                   |                          | #10                   |                                   |             |                       |                                   |
| 2               | 400a                  |                          | #4/0                  | 1-3/64" dia.                      |             |                       |                                   |
| 1               | 40a                   |                          | #10                   |                                   |             |                       |                                   |
| 2               | 600a*                 | CA11751-1                | #2/0                  | 5/16-18UNC-2B                     |             |                       |                                   |
| 4               | 200a                  | CE9183-1                 | #1/0                  | 27/32" dia.                       | CE9310-10   | #1/0<br>#12           | 11/16                             |
| 2               | 35a                   |                          | #12                   |                                   |             |                       |                                   |
| 4               | 200a                  |                          | #1/0                  | 45/64" dia.                       |             |                       |                                   |
| 2               | 35a                   |                          | #12                   | 1 entry, 5/8" dia.                |             |                       |                                   |
| 4               | 200a                  | CE9183-4                 | #1/0                  | 27/32" dia.                       |             |                       |                                   |
| 2               | 35a                   |                          | #12                   | 1 entry, 25/32" dia.              |             |                       |                                   |
| 4               | 200a                  |                          | #1/0                  |                                   |             |                       |                                   |
| 2               | 35a                   |                          | #12                   |                                   |             |                       |                                   |
| 1               | 250a                  | AA-BP                    | #2/0                  | 5/16-18UNC-2B                     | AA-BR       | #2/0                  | 3/8-16UNC-2A                      |
| 1               | 250a                  | C5-2                     | #2/0                  | 5/16-18UNC-2B                     | C5-1        | #2/0                  | 5/16-18UNC-2A                     |

\* Amperage rating of 600 amp is based on a maximum of 2 hours continuous service or before temperature rise of 120°C over 25°C ambient is reached.

## Receptacles

GB-3-34CDS

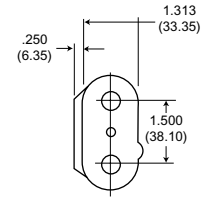
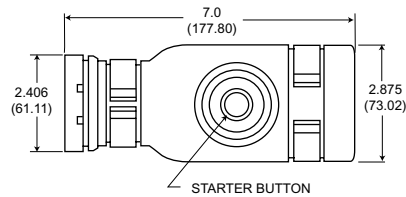
|               |                                                                                                                                                                                                          |
|---------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Shell:        | Aluminum alloy-Cadmium plate                                                                                                                                                                             |
| Insulation:   | Phenolic                                                                                                                                                                                                 |
| Weight:       | 1.031 lb.                                                                                                                                                                                                |
| Contact Data: | Copper alloy-Silver plate<br>2-250a - #1/0 wire • .375 (9.52)-24 T.P.I. Stud<br>1-40a - #10 wire • .313 (7.95) T.P.I. Stud<br>Top contact insulated from shell;<br>two lower contacts grounded to shell. |



# Battery Connectors

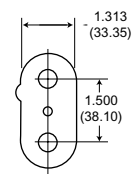
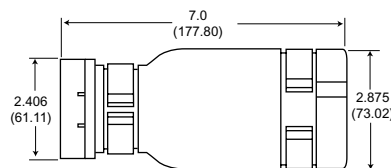
## Plugs (Continued)

GB-3-21-CFS



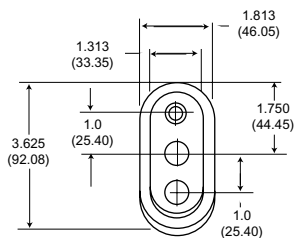
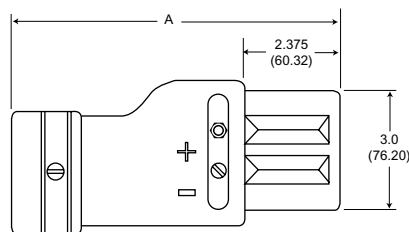
|                      |                                                                                                                   |
|----------------------|-------------------------------------------------------------------------------------------------------------------|
| <b>Shell:</b>        | Molded rubber                                                                                                     |
| <b>Clip:</b>         | Spring Steel•Cadmium plate                                                                                        |
| <b>Weight:</b>       | 1.116 lb.                                                                                                         |
| <b>Contact Data:</b> | Copper alloy•Silver plate<br>2-250a- #3/0 wire•Cable entry .750 (19.05)<br>1-40a-#10 wire•Cable entry .266 (6.76) |

GB-3-21-CF



|                      |                                                                                                                   |
|----------------------|-------------------------------------------------------------------------------------------------------------------|
| <b>Shell:</b>        | Molded rubber                                                                                                     |
| <b>Wheel:</b>        | Spring Steel•Cadmium plate                                                                                        |
| <b>Weight:</b>       | 1.050 lb.                                                                                                         |
| <b>Contact Data:</b> | Copper alloy•Silver plate<br>2-250a- #3/0 wire•Cable entry .750 (19.05)<br>1-40a-#10 wire•Cable entry .266 (6.76) |

CA2551



|                      |                            |
|----------------------|----------------------------|
| <b>Shell:</b>        | Molded rubber              |
| <b>Clip:</b>         | Spring steel•Cadmium plate |
| <b>Weight:</b>       | Consult factory            |
| <b>Contact Data:</b> | Copper alloy•Silver plate  |

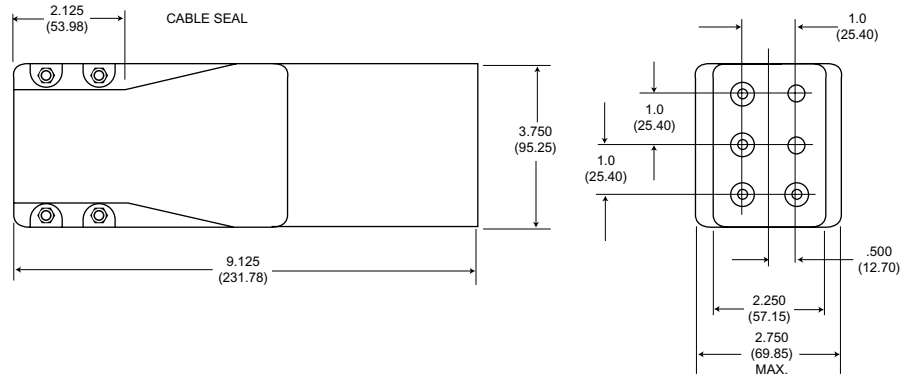
| Type            | Part Number | Number of Contacts | Wire Size | Current (Amps) | A              | Cable Entry   |
|-----------------|-------------|--------------------|-----------|----------------|----------------|---------------|
| CA2551C         | 017193-0015 | 2                  | #1/0      | 200            | 7.000 (177.80) | .750 (19.05)  |
|                 |             | 1                  | #12       | 35             |                |               |
| CA2551C Model A | 017193-0115 | 2                  | #1/0      | 200            | 8.125 (206.38) | .797 (20.24)  |
|                 |             | 1                  | #12       | 35             |                |               |
| CA2551C Model A | 017193-1000 | 2                  | #1/0      | 200            | 8.125 (206.38) | .938 (23.83)  |
|                 |             | 1                  | #12       | 35             |                |               |
| CA2551D         | 017193-0008 | 2                  | #2/0      | 250            | 7.000 (177.80) | .750 (19.05)  |
|                 |             | 1                  | #12       | 35             |                |               |
| CA2551D Model A | 017193-0108 | 2                  | #2/0      | 250            | 8.125 (206.38) | .938 (23.83)  |
|                 |             | 1                  | #12       | 35             |                |               |
| CA2551E         | 017193-0000 | 2                  | #4/0      | 400            | 8.125 (206.38) | .938 (23.83)  |
|                 |             | 1                  | #10       | 40             |                |               |
| CA2551E Model A | 017193-0100 | 2                  | #4/0      | 400            | 8.125 (206.38) | 1.047 (26.59) |
|                 |             | 1                  | #10       | 40             |                |               |

# Battery Connectors

## Plugs (Continued)



CE9183

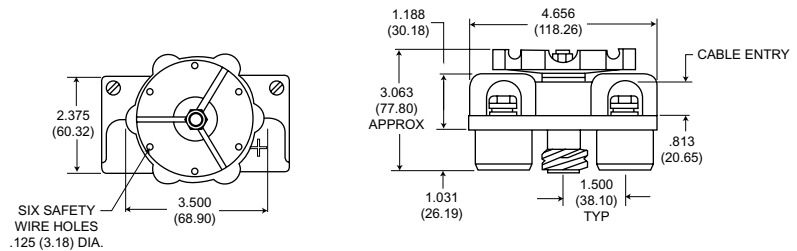


|                         |                                                            |
|-------------------------|------------------------------------------------------------|
| <b>Insulation:</b>      | Rubber molded one-piece construction                       |
| <b>Cable Seals:</b>     | Removable molded rubber                                    |
| <b>Power Contacts:</b>  | Removable snap in crimp or solder type                     |
| <b>Small Contacts:</b>  | Molded into insulation with removable crimp or solder pots |
| <b>Extraction Tool:</b> | #317-8037-000 power contacts                               |
| <b>Insertion Tool:</b>  | #317-8034-000 power contacts                               |
| <b>Insertion Tool:</b>  | #317-8035-000 small contacts                               |
| <b>Contacts:</b>        | Copper alloy, silver plate<br>Brass, silver plate          |

| Part Number | No. of Contacts | Wire Size | Current (Amps) | Cable Entry          |
|-------------|-----------------|-----------|----------------|----------------------|
| CE9183-1    | 4               | #1/0      | 200            | .844 (21.44)         |
|             | 2               | #12       | 35             | -                    |
| CE9183-4    | 4               | #1/0      | 200            | .703 (17.86)         |
|             | 2               | #12       | 35             | 1 entry .625 (15.88) |
| CE9183-6    | 4               | #1/0      | 200            | .844 (21.44)         |
|             | 2               | #12       | 35             | 1 entry .781 (19.84) |



CA11251-1



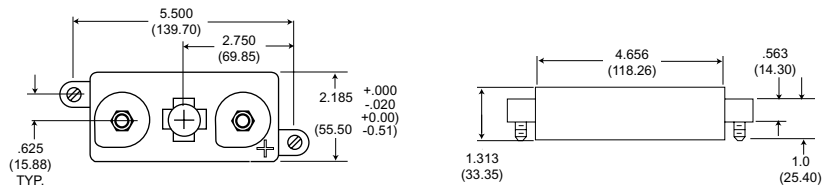
May be used on batteries conforming to MIL-B-6146.

|                      |                                                             |
|----------------------|-------------------------------------------------------------|
| <b>Shell:</b>        | Molded phenolic                                             |
| <b>Wheel:</b>        | Aluminum alloy                                              |
| <b>Weight:</b>       | 1.023 lb.                                                   |
| <b>Contact Data:</b> | Copper alloy<br>2-600a - #2/0 wire•Cable entry .813 (20.65) |

## Receptacles



CA11749-1



|                      |                                                                               |
|----------------------|-------------------------------------------------------------------------------|
| <b>Shell:</b>        | Aluminum alloy•Black acid-proof lacquer finished                              |
| <b>Weight:</b>       | .380 lb.                                                                      |
| <b>Contact Data:</b> | Copper alloy•2-600a-#2/0 wire<br>Pin contacts screw on battery•5/16-18 T.P.I. |

Amperage rating of 600 amp is based on a maximum of 2 hours continuous service or before temp. rise of 120° C over 25° C ambient is reached.

# High Reliability, Military D Subminiature, & Non-Magnetic/No-Outgas

Solder Cup



(See page 333)

Crimp



(See page 334-335)

Printed Circuit



(See page 336-338)

## Performance and Material Specifications

### MATERIALS AND FINISHES

|                      | Standard                                                                   |                                                          | Military                                                                   |                                                                                                                                     |
|----------------------|----------------------------------------------------------------------------|----------------------------------------------------------|----------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------|
|                      | Material                                                                   | Finish                                                   | Material                                                                   | Finish                                                                                                                              |
| Shell                | Steel per ASTM A-620                                                       | Yellow chromate over cadmium<br>QQ-P-416 Type II Class 2 | Steel per ASTM A-620                                                       | Yellow chromate over cadmium<br>QQ-P-416 Type II Class 2                                                                            |
| Insulator            | Diallyl phthalate glass-filled<br>per MIL-M-14, type SDG-F,<br>color green |                                                          | Diallyl phthalate glass-filled<br>per MIL-M-14, type SDG-F,<br>color green |                                                                                                                                     |
| Contact              | Copper alloy                                                               | Gold over nickel                                         | Copper Alloy<br>Crimp Socket has<br>stainless steel hood<br>passivated.    | Gold 50 microinches minimum thickness per<br>MIL-G-45204 Type II Grade C Class 1 over<br>copper per MIL-C-14550<br>Hood: Passivated |
| Float Mount Hardware | Stainless steel                                                            | Passivate per QQ-P-35                                    | Stainless steel                                                            | Passivate per QQ-P-35                                                                                                               |

### PERFORMANCE SPECIFICATIONS

|                                  |                                            |
|----------------------------------|--------------------------------------------|
| Wire Accommodation (AWG)         | Solder - #20 Max.<br>Crimp - #18- #30 Max. |
| Current Rating                   | #20; 5 Amp                                 |
| Temperature Rating               | -65°C to +150°C                            |
| Contact Resistance               | 55 @ 7.5 Amp<br>test current               |
| After Salt Spray, Millivolt Max. |                                            |

See pages 339 and 340 for complete M24308 cross reference.

### DIELECTRIC WITHSTANDING VOLTAGE

|                   | 90° and Straight (Solder/Crimp) |              |               |               |
|-------------------|---------------------------------|--------------|---------------|---------------|
|                   | Altitude (feet/m)               |              |               |               |
|                   | Sea Level                       | 20,000/6,096 | 50,000/15,240 | 70,000/21,336 |
| Average Flashover | 1700/1500                       | 1000/1000    | 650/500       | 500/500       |
| Test              | 1250/1000                       | 750/650      | 475/325       | 375/325       |

All voltage figures are rms AC 60 rms cps, measured at approximately +25°C, 50% rh. For additional performance specifications refer to MIL-C-24308 Test Extracts on page 385.

## Non-Magnetic/No-Outgas Options

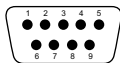
| Suffix Code | Residual Magnetism                                                                               | Shell Material (Finish)                                                                                              | Desired Results           |
|-------------|--------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------|---------------------------|
| NMB         | 200 Gamma Residual Magnetism Insulator. (Diallyl Phtalate per MIL-M-14 type SDG-F, color white.) | Bras Shells Per QQ-B-613 (Yellow Chromate over Cadmium per QQ-P-416. Type II, Class 2.)                              | Non-Magnetic<br>No-Outgas |
| NMB-K52     | 200 Gamma Residual Magnetism Insulator. (Diallyl Phtalate per MIL-M-14 type SDG-F, color white.) | Brass Shells Per QQ-B-613 (Gold over copper per MIL-G-45204, Type II, Grade C, Class 1 over copper per MIL-C-14550.) | Non-Magnetic<br>No-Outgas |

Note: Look for the **NM** symbol for orderign information.

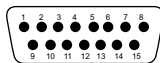
## Contact Arrangements

### Face View Pin Insert

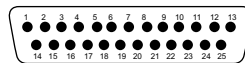
Shell Size  
Contact Arrangement  
Contact Size



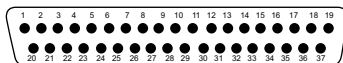
E  
9  
#20



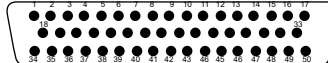
A  
15  
#20



B  
25  
#20



C  
37  
#20



D  
50  
#20

Shell Size  
Contact Arrangement  
Contact Size

## How to Order High Rel-Solder Cup Connectors (contacts are non-removable)



## Mounting Options Available:

4-40 Clinch Nut - Add "E" to Part Number After "M"

4-40 Flood Mount - Add "Y" to Part Number After "M"

(Can be used in front or rear panel mount applications)

Example: DBME25S DEMY9P  
DBMME25S DEMMY9P

Performance Specifications - Page 332.

## Receptacles (Includes Socket Contacts) With .120" Through-Mounting Holes

| Number of Contacts (Shell Size) | Standard | Military Version | M24308 Cross Reference |
|---------------------------------|----------|------------------|------------------------|
| 9 (E)                           | DEM9S    | DEMM9S           | M24308/1-1             |
| 15 (A)                          | DAM15S   | DAMM15S          | M24308/1-2             |
| 25 (B)                          | DBM25S   | DBMM25S          | M24308/1-3             |
| 37 (C)                          | DCM37S   | DCMM37S          | M24308/1-4             |
| 50 (D)                          | DDM50S   | DDMM50S          | M24308/1-5             |

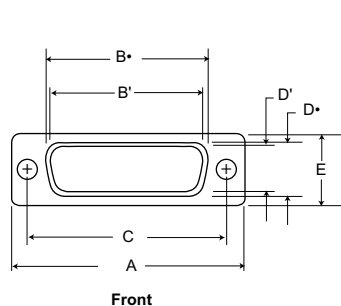
## Plugs (Includes Pin Contacts)\* With .120" Through-Mounting Holes

| Number of Contacts (Shell Size) | Standard | Military Version | M24308 Cross Reference |
|---------------------------------|----------|------------------|------------------------|
| 9 (E)                           | DEM9P    | DEMM9P           | M24308/3-1             |
| 15 (A)                          | DAM15P   | DAMM15P          | M24308/3-2             |
| 25 (B)                          | DBM25P   | DBMM25P          | M24308/3-3             |
| 37 (C)                          | DCM37P   | DCMM37P          | M24308/3-4             |
| 50 (D)                          | DDM50P   | DDMM50P          | M24308/3-5             |

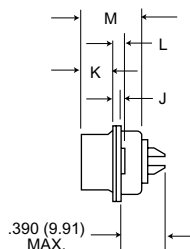
**NM** Non-Magnetic/No Outgas-Add desired suffix code with desired option to end of part number.

Example: DEMA9PSNMB  
DEMA9PSNMB-K52

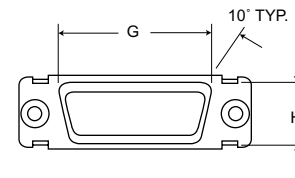
## Dimensions - High Rel Solder Cup Connectors



Front



.390 (9.91) MAX.



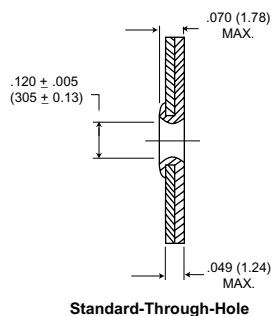
Rear

| Part Number by Shell Size | A             | B             | B'            | C             | D             | D'            | E             | G             | H             | J             | K             | L             | M             |
|---------------------------|---------------|---------------|---------------|---------------|---------------|---------------|---------------|---------------|---------------|---------------|---------------|---------------|---------------|
|                           | ± .015 (0.38) | ± .005 (0.13) | ± .005 (0.13) | ± .005 (0.31) | ± .005 (0.13) | ± .005 (0.13) | ± .015 (0.38) | ± .010 (0.25) | ± .010 (0.25) | ± .010 (0.25) | ± .006 (0.15) | ± .013 (0.33) | ± .010 (0.25) |
| DEM-9P                    | 1.213 (30.81) | -             | .666 (16.91)  | .984 (24.99)  | -             | .329 (8.36)   | .494 (12.55)  | .759 (19.28)  | .422 (10.72)  | .030 (0.76)   | .235 (5.94)   | .048 (1.22)   | .422 (10.72)  |
| DEM-9S                    | 1.213 (30.81) | .643 (16.33)  | -             | .984 (24.99)  | .311 (7.90)   | -             | .494 (12.55)  | .759 (19.28)  | .422 (10.72)  | .030 (0.76)   | .243 (6.17)   | .048 (1.22)   | .429 (10.90)  |
| DAM-15P                   | 1.541 (39.14) | -             | .994 (25.24)  | 1.312 (33.32) | -             | .329 (8.36)   | .494 (12.55)  | 1.083 (27.51) | .422 (10.72)  | .030 (0.76)   | .235 (5.97)   | .048 (1.22)   | .422 (10.72)  |
| DAM-15S                   | 1.541 (39.14) | .971 (24.66)  | -             | 1.312 (33.32) | .311 (7.90)   | -             | .494 (12.55)  | 1.083 (27.51) | .422 (10.72)  | .030 (0.76)   | .243 (6.17)   | .048 (1.22)   | .429 (10.90)  |
| DBM-25P                   | 2.088 (53.03) | -             | 1.534 (38.96) | 1.852 (47.04) | -             | .329 (8.36)   | .494 (12.55)  | 1.625 (41.27) | .422 (10.72)  | .039 (0.99)   | .230 (5.84)   | .060 (1.52)   | .426 (10.82)  |
| DBM-25S                   | 2.088 (53.03) | 1.511 (38.38) | -             | 1.852 (47.04) | .311 (7.90)   | -             | .494 (12.55)  | 1.625 (41.27) | .422 (10.72)  | .030 (0.76)   | .243 (6.17)   | .048 (1.22)   | .429 (10.90)  |
| DCM-37P                   | 2.729 (69.31) | -             | 2.182 (55.42) | 2.500 (63.50) | -             | .329 (8.36)   | .494 (12.55)  | 2.272 (57.71) | .422 (10.72)  | .039 (0.99)   | .230 (5.84)   | .060 (1.52)   | .426 (10.82)  |
| DCM-37S                   | 2.729 (69.31) | 2.159 (54.84) | -             | 2.500 (63.50) | .311 (7.90)   | -             | .494 (12.55)  | 2.272 (57.71) | .422 (10.72)  | .030 (0.76)   | .243 (6.17)   | .048 (1.22)   | .429 (10.90)  |
| DDM-50P                   | 2.635 (66.92) | -             | 2.079 (52.81) | 2.406 (61.11) | -             | .441 (11.20)  | .605 (15.37)  | 2.178 (55.32) | .534 (13.56)  | .039 (0.99)   | .230 (5.84)   | .060 (1.52)   | .426 (10.82)  |
| DDM-50S                   | 2.635 (66.92) | 2.064 (52.43) | -             | 2.406 (61.11) | .423 (10.74)  | -             | .605 (15.37)  | 2.178 (55.32) | .534 (13.56)  | .030 (0.76)   | .243 (6.17)   | .048 (1.22)   | .429 (10.90)  |

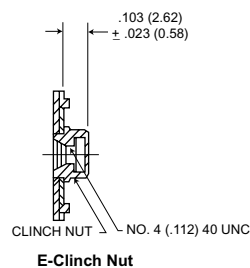
\*Dimensions B, D, G, and H are measured as outside dimensions at the bottom of the draw.

NOTE: B+ and D+ are the D.D. dims for socket side B' and D' are the I. D. dims. for pin side

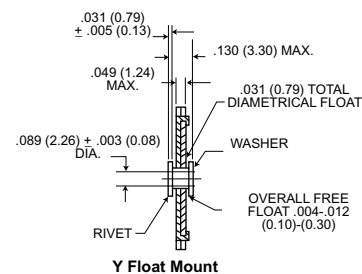
## Mounting Option Dimensions - Crimp Components



Standard-Through-Hole



E-Clinch Nut



Y Float Mount

It is recommended that only one assembly, either pin or socket, be float mounted.

Dimensions are shown in inches (millimeters).  
Dimensions subject to change.

## How to Order - Crimp Connectors (contacts are removable)



## Receptacles (Includes Socket Contacts) With .120" Through-Mounting Holes

| Number of Contacts (Shell Size) | Standard | Military Version | M24308 Cross Reference |
|---------------------------------|----------|------------------|------------------------|
| 9 (E)                           | DEMA9S   | DEMAM9S          | M24308/2-1             |
| 15 (A)                          | DAMA15S  | DAMAM15S         | M24308/2-2             |
| 25 (B)                          | DBMA25S  | DBMAM25S         | M24308/2-3             |
| 37 (C)                          | DCMA37S  | DCMAM37S         | M24308/2-4             |
| 50 (D)                          | DDMA50S  | DDMAM50S         | M24308/2-5             |

## Plugs (Includes Pin Contacts)\* With .120" Through-Mounting Holes

| Number of Contacts (Shell Size) | Standard | Military Version | M24308 Cross Reference |
|---------------------------------|----------|------------------|------------------------|
| 9 (E)                           | DEMA9P   | DEMAM9P          | M24308/4-1             |
| 15 (A)                          | DAMA15P  | DAMAM15P         | M24308/4-2             |
| 25 (B)                          | DBMA25P  | DBMAM25P         | M24308/4-3             |
| 37 (C)                          | DCMA37P  | DCMAM37P         | M24308/4-4             |
| 50 (D)                          | DDMA50P  | DDMAM50P         | M24308/4-5             |

To receive these connectors without contacts, add "F0" to end of part number.

Example: DBMA25SF0, DBMAM25SF0.

**NM** Non-Magnetic/No Outgas-Add desired suffix code with desired option to end of part number.

Example: DEMA9PSNMB  
DEMA9PSNMB-K52

Crimp Connectors without contacts, add F0 to end of the part number and change K52 to K47.

Assembly Instructions - Page 363.

Performance Specifications - Page 332.

## Mounting Options Available:

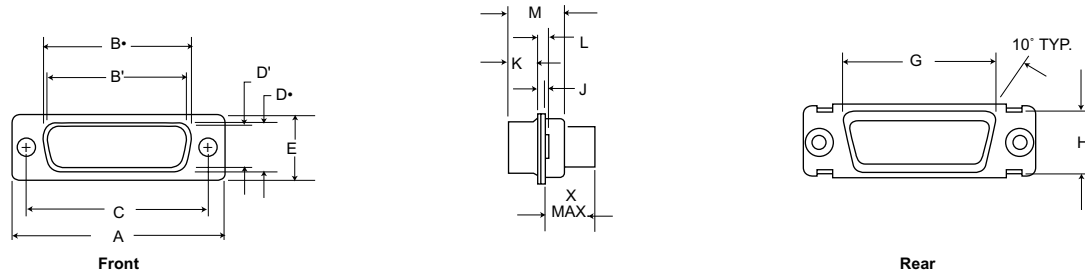
4-40 Clinch Nut - Add "E" to Part Number After "M" or "A"

4-40 Flood Mount - Add "Y" to Part Number After "M" or "A"

(Can be used in front or rear panel mount applications)

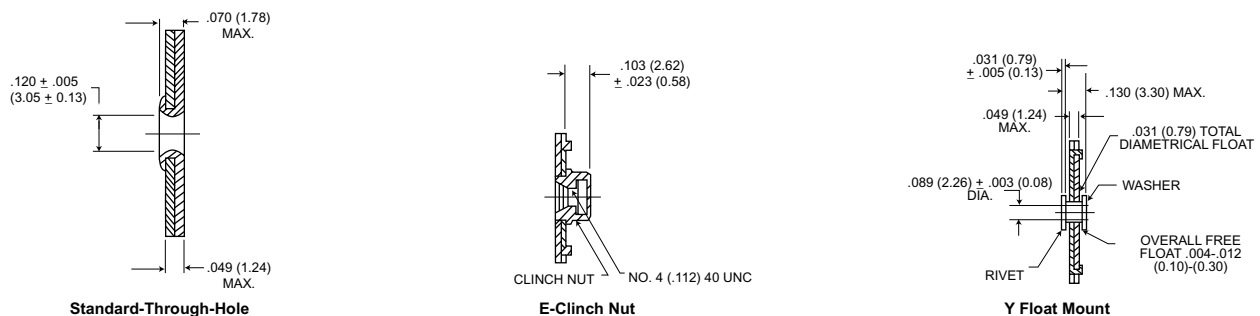
Example: DBMAE25S  
DBMAM25S  
DEMAY9P  
DBMAMY9P

## Dimensions - Crimp Connectors



| Part Number by Shell Size | A             | B             | B'            | C             | D            | D'           | E            | G             | H            | J           | K           | L           | M            | X Max.      |
|---------------------------|---------------|---------------|---------------|---------------|--------------|--------------|--------------|---------------|--------------|-------------|-------------|-------------|--------------|-------------|
| DEMA-9P                   | 1.213 (30.81) | -             | .666 (16.91)  | .984 (24.99)  | -            | .329 (8.36)  | .494 (12.55) | .759 (19.28)  | .422 (10.72) | .030 (0.76) | .235 (5.97) | .048 (1.22) | .422 (10.72) | .345 (8.76) |
| DEMA-9S                   | 1.213 (30.81) | .643 (16.33)  | -             | .984 (24.99)  | .311 (7.90)  | -            | .494 (12.55) | .759 (19.28)  | .422 (10.72) | .030 (0.76) | .243 (6.17) | .048 (1.22) | .429 (10.90) | .345 (8.76) |
| DAMA-15P                  | 1.541 (39.14) | -             | .994 (25.24)  | 1.312 (33.32) | -            | .329 (8.36)  | .494 (12.55) | 1.083 (27.51) | .422 (10.72) | .030 (0.76) | .235 (5.97) | .048 (1.22) | .422 (10.72) | .345 (8.76) |
| DAMA-15S                  | 1.541 (39.14) | .971 (24.66)  | -             | 1.312 (33.32) | .311 (7.90)  | -            | .494 (12.55) | 1.083 (27.51) | .422 (10.72) | .030 (0.76) | .243 (6.17) | .048 (1.22) | .429 (10.90) | .345 (8.76) |
| DBMA-25P                  | 2.088 (53.03) | -             | 1.534 (38.96) | 1.852 (47.04) | -            | .329 (8.36)  | .494 (12.55) | 1.625 (41.27) | .422 (10.72) | .039 (0.99) | .230 (5.84) | .060 (1.52) | .426 (10.82) | .345 (8.76) |
| DBMA-25S                  | 2.088 (53.03) | 1.511 (38.38) | -             | 1.852 (47.04) | .311 (7.90)  | -            | .494 (12.55) | 1.625 (41.27) | .422 (10.72) | .030 (0.76) | .243 (6.17) | .048 (1.22) | .429 (10.90) | .345 (8.76) |
| DCMA-37P                  | 2.729 (69.31) | -             | 2.182 (55.42) | 2.500 (63.50) | -            | .329 (8.36)  | .494 (12.55) | 2.272 (57.71) | .422 (10.72) | .039 (0.99) | .230 (5.84) | .060 (1.52) | .426 (10.82) | .345 (8.76) |
| DCMA-37S                  | 2.729 (69.31) | 2.159 (54.84) | -             | 2.500 (63.50) | .311 (7.90)  | -            | .494 (12.55) | 2.272 (57.71) | .422 (10.72) | .030 (0.76) | .243 (6.17) | .048 (1.22) | .429 (10.90) | .345 (8.76) |
| DDMA-50P                  | 2.635 (66.92) | -             | 2.079 (52.81) | 2.406 (61.11) | -            | .441 (11.20) | .605 (15.37) | 2.178 (55.32) | .534 (13.56) | .039 (0.99) | .230 (5.84) | .060 (1.52) | .426 (10.82) | .345 (8.76) |
| DDMA-50S                  | 2.635 (66.92) | 2.064 (52.43) | -             | 2.406 (61.11) | .423 (10.74) | -            | .605 (15.37) | 2.178 (55.32) | .534 (13.56) | .030 (0.76) | .243 (6.17) | .048 (1.22) | .429 (10.90) | .345 (8.76) |

## Mounting Option Dimensions - Crimp Components



It is recommended that only one assembly, either pin or socket, be float mounted.

Dimensions are shown in inches (millimeters).  
Dimensions subject to change.

## High Rel Crimp Contacts

## MATERIALS AND FINISHES

NM

| Contact Size | Wire Size Accom. | Standard Finish |              | Military Finish |               | NMB          |              |
|--------------|------------------|-----------------|--------------|-----------------|---------------|--------------|--------------|
|              |                  | Pin             | Socket       | Pin             | Socket        | Pin          | Socket       |
| 20           | 20, 22, 24       | 330-5291-000    | 031-1007-000 | 330-5291-037    | 031-1007-042  | 330-5291-037 | 031-1007-057 |
| 20-18        | 1 #18 & 2 #22    | 330-5291-001    | 031-1007-001 | 330-5291-055    | 031-1007-054  | -            | -            |
| 20-26        | 26, 28, 30       | 330-5291-004    | 031-1007-004 | 330-5291-050    | 031-1007-048  | -            | -            |
| 22D          | 22, 24, 26, 28   |                 |              | 030-2042-002*   | 031-1147-002* | -            | -            |

## MIL-C-39029 Cross-Reference

| Contact Size | Wire Size Accom. | M39029  | M24308 | Cannon Part No. |
|--------------|------------------|---------|--------|-----------------|
| 20 Pin       | 20/22/24         | /64-369 | /11-1  | 330-5291-037    |
| 20 Socket    | 20/22/24         | /36-368 | /10-1  | 031-1007-042    |
| 22D Pin      | 24/26/28         | /58-360 | /13-1  | 030-2042-000    |
| 22D Socket   | 22/24/26/28      | /57-354 | /12-1  | 031-1147-000    |

Assembly Instructions - Page 363

\*50 microinch AU over copper, no stripes.

## Tooling

## Insertion/Extraction Tools

## CIET-20HD

| Contact Size | AWG            | Plastic Insertion/Extraction |             | Plastic Extraction |             |
|--------------|----------------|------------------------------|-------------|--------------------|-------------|
|              |                | Part No.                     | Description | Part No.           | Description |
| 20           | 20, 22, 24     | 980-2000-426                 | CIET-20HD   | 323-7010-000       | CET-20-11   |
| 2026         | 26, 28, 30     | 980-2000-426                 | CIET 20HD   | 323-7010-000       | CET-20-11   |
| 2018         | 1 #18          | None                         | None        | 274-5016-002       | CET-20-15   |
|              | 2 #22          | None                         | None        | 274-5016-002       | CET-20-15   |
| 22D          | 22, 24, 26, 28 | 274-7048-000                 | CIET 22D    | None               | None        |
| High Power   | 12, 16         | 274-7003-000                 | CIET 12     | None               | None        |
| High Volt    | #20            | 274-7003-000                 | CIET 12     | None               | None        |

## Hand Crimp Tools



## M22520/1-01

## M22520/2-01

| Contact Size | AWG            | Crimp Tool   |             | Locator      |             |
|--------------|----------------|--------------|-------------|--------------|-------------|
|              |                | Part No.     | Description | Part No.     | Description |
|              |                | 995-0001-584 | M22520/2-01 | 995-0001-604 | M22520/2-08 |
| 20           | 20, 22, 24     | 995-0001-585 | M22520/2-01 | 995-0001-244 | TH25        |
| 2026         | 26, 28, 30     | 995-0001-584 | M22520/2-01 | 995-0001-325 | L3198-20HD  |
| 2018         | 1 #18          | 995-0001-584 | M22520/2-01 | 980-0005-722 | K250        |
|              | 2 #22          |              |             |              |             |
| 22D          | 22, 24, 26, 28 | 995-0001-584 | M22520/2-01 | 995-0001-739 | M22520/2-06 |

## Semi-Automatic Crimp Machines

The CBT-646, Vibra-Bowl Crimper is pneumatically powered, electronically controlled machine. It is designed to semi-automatically crimp closed barrel, machined contacts, as used in the aerospace and commercial industries. The machine will accommodate wire sizes 30 thru 12 AWG. The CBT-646 is actuated automatically upon insertion of a pre-stripped stranded or single conductor wire. The CBT-646 meets all Mil. Spec. requirements for crimping closed barrel contacts.

**Machine Crimp Rate:** 1300 + per hour

**Power Requirements:** Electrical = 115 Vac., 60 Hz, 5A  
Pneumatic = 85 psi., 2 cu. ft. per min.

Products: Most ITT Cannon Commercial and Aerospace closed barrel contacts, wire sizes 30 thru 12 AWG.  
(See connector line for part numbers.)

CBT-646

## How to Order - High-Rel Printed Circuit Mount Connectors

Straight PC Tail, Receptacles (Includes Socket Contacts) With .120 (3.15) Through-Mounting Holes.



| Number of Contacts (Shell Size) | PC Tails - .030 (0.76) Diameter     |                                     |                                     | Wire Wrap Post - .024 (0.61) Square             |                                                   |
|---------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------------------|---------------------------------------------------|
|                                 | .127 (3.23) ± .027 (0.69) Long Post | .158 (4.01) ± .027 (0.69) Long Post | .183 (4.65) ± .027 (0.69) Long Post | .405 (10.29) ± .027 (0.69) Long Post (Two Wrap) | .530 (13.46) ± .027 (0.69) Long Post (Three Wrap) |
| 9 (E) Standard                  | DEM9SE                              | DEM9SM                              | DEM9SZ                              | DEM9SF179                                       | DEM9SF179A                                        |
| 9 (E) Military                  | DEMM9SE                             | DEMM9SM                             | DEMM9SZ                             | DEMM9SF179                                      | DEMM9SF179A                                       |
| 15 (A) Standard                 | DAM15SE                             | DAM15SM                             | DAM15SZ                             | DAM15SF179                                      | DAM15SF179A                                       |
| 15 (A) Military                 | DAMM15SE                            | DAMM15SM                            | DAMM15SZ                            | DAMM15SF179                                     | DAMM15SF179A                                      |
| 25 (B) Standard                 | DBM25SE                             | DBM25SM                             | DBM25SZ                             | DBM25SF179                                      | DBM25SF179A                                       |
| 25 (B) Military                 | DBMM25SE                            | DBMM25SM                            | DBMM25SZ                            | DBMM25SF179                                     | DBMM25SF179A                                      |
| 37 (C) Standard                 | DCM37SE                             | DCM37SM                             | DCM37SZ                             | DCM37SF179                                      | DCM37SF179A                                       |
| 37 (C) Military                 | DCMM37SE                            | DCMM37SM                            | DCMM37SZ                            | DCMM37SF179                                     | DCMM37SF179A                                      |
| 50 (D) Standard                 | DDM50SE                             | DDM50SM                             | DDM50SZ                             | DDM50SF179                                      | DDM50SF179A                                       |
| 50 (D) Military                 | DDMM50SE                            | DDMM50SM                            | DDMM50SZ                            | DDMM50SF179                                     | DDMM50SF179A                                      |

**NM** Non-Magnetic/No-Outgas - Add desired suffix code (NMB, NM-K52) to end of part number. Example: DEM95ZNMB-K52

Straight PC Tail, Plug (Includes Pin Contacts) With .120 (3.15) Through-Mounting Holes

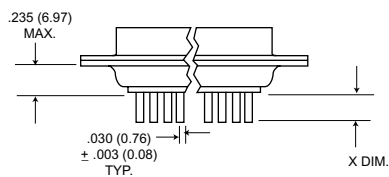


| Number of Contacts (Shell Size) | PC Tails - .030 (0.76) Diameter     |                                     |                                     | Wire Wrap Post - .024 (0.61) Square             |                                                   |
|---------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------------------|---------------------------------------------------|
|                                 | .127 (3.23) ± .027 (0.69) Long Post | .158 (4.01) ± .027 (0.69) Long Post | .183 (4.65) ± .027 (0.69) Long Post | .405 (10.29) ± .027 (0.69) Long Post (Two Wrap) | .530 (13.46) ± .027 (0.69) Long Post (Three Wrap) |
| 9 (E) Standard                  | DEM9PE                              | DEM9PM                              | DEM9PZ                              | DEM9PF179                                       | DEM9PF179A                                        |
| 9 (E) Military                  | DEMM9PE                             | DEMM9PM                             | DEMM9PZ                             | DEMM9PF179                                      | DEMM9PF179A                                       |
| 15 (A) Standard                 | DAM15PE                             | DAM15PM                             | DAM15PZ                             | DAM15PF179                                      | DAM15PF179A                                       |
| 15 (A) Military                 | DAMM15PE                            | DAMM15PM                            | DAMM15PZ                            | DAMM15PF179                                     | DAMM15PF179A                                      |
| 25 (B) Standard                 | DBM25PE                             | DBM25PM                             | DBM25PZ                             | DBM25PF179                                      | DBM25PF179A                                       |
| 25 (B) Military                 | DBMM25PE                            | DBMM25PM                            | DBMM25PZ                            | DBMM25PF179                                     | DBMM25PF179A                                      |
| 37 (C) Standard                 | DCM37PE                             | DCM37PM                             | DCM37PZ                             | DCM37PF179                                      | DCM37PF179A                                       |
| 37 (C) Military                 | DCMM37PE                            | DCMM37PM                            | DCMM37PZ                            | DCMM37PF179                                     | DCMM37PF179A                                      |
| 50 (D) Standard                 | DDM50PE                             | DDM50PM                             | DDM50PZ                             | DDM50PF179                                      | DDM50PF179A                                       |
| 50 (D) Military                 | DDMM50PE                            | DDMM50PM                            | DDMM50PZ                            | DDMM50PF179                                     | DDMM50PF179A                                      |

**NM** Non-Magnetic/No-Outgas - Add desired suffix cod (NMB, NM-K52) to end of part number. Example: DEM9PZNMB-K52

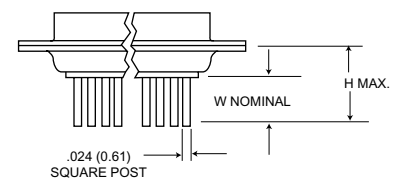
## Dimensions

## Printed Circuit Applications



\*All MIL-C-24308 connectors come with .250 (0.10) length spacers.

## Wire Wrapping Applications



| Code (Last Letter of Part Number) | Straight X ± .027 (0.69) |
|-----------------------------------|--------------------------|
| E                                 | .127 (3.22)              |
| M                                 | .158 (4.01)              |
| Z                                 | .183 (4.65)              |

| Modification Code | Number of Wraps | W            | H            |
|-------------------|-----------------|--------------|--------------|
| F179              | 2               | .405 (10.29) | .655 (16.64) |
| F179A             | 3               | .530 (13.46) | .780 (19.81) |

## How to Order - High-Rel Printed Circuit Mount Connectors

Right Angle PC Tail Receptacles, With Bracket  
(.120 (3.15) Through-Holes Only)

| Number of<br>Contacts<br>(Shell Size) | PC Tails - .030 (0.76) Diameter           |                                           |                                           |
|---------------------------------------|-------------------------------------------|-------------------------------------------|-------------------------------------------|
|                                       | .127 (3.23)<br>± .027 (0.69)<br>Long Post | .158 (4.01)<br>± .027 (0.69)<br>Long Post | .183 (4.65)<br>± .027 (0.69)<br>Long Post |
|                                       |                                           |                                           |                                           |
| 9 (E) Standard                        | DEM9SD                                    | DEM9SL                                    | DEM9SS                                    |
| 9 (E) <b>Military</b>                 | <b>DEMM9SD</b>                            | <b>DEMM9SL</b>                            | <b>DEMM9SS</b>                            |
| 15 (A) Standard                       | DAM15SD                                   | DAM15SL                                   | DAM15SS                                   |
| 15 (A) <b>Military</b>                | <b>DAMM15SD</b>                           | <b>DAMM15SL</b>                           | <b>DAMM15SS</b>                           |
| 25 (B) Standard                       | DBM25SD                                   | DBM25SL                                   | DBM25SS                                   |
| 25 (B) <b>Military</b>                | <b>DBMM25SD</b>                           | <b>DBMM25SL</b>                           | <b>DBMM25SS</b>                           |
| 37 (C) Standard                       | DCM37SD                                   | DCM37SL                                   | DCM37SS                                   |
| 37 (C) <b>Military</b>                | <b>DCMM37SD</b>                           | <b>DCMM37SL</b>                           | <b>DCMM37SS</b>                           |
| 50 (D) Standard                       | DDM50SD                                   | DDM50SL                                   | DDM50SS                                   |
| 50 (D) <b>Military</b>                | <b>DDMM50SD</b>                           | <b>DDMM50SL</b>                           | <b>DDMM50SS</b>                           |

**NM Non-Magnetic/No-Outgas** - Add desired suffix cod (NMB, NM-K52) to end of part number. Example: DEM9SLNMB-K52

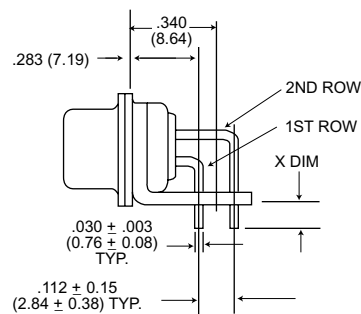
Right Angle PC Tail Plug, With Bracket (.120  
(3.15) Through-Holes Only)

| Number of<br>Contacts<br>(Shell Size) | PC Tails - .030 (0.76) Diameter           |                                           |                                           |
|---------------------------------------|-------------------------------------------|-------------------------------------------|-------------------------------------------|
|                                       | .127 (3.23)<br>± .027 (0.69)<br>Long Post | .158 (4.01)<br>± .027 (0.69)<br>Long Post | .183 (4.65)<br>± .027 (0.69)<br>Long Post |
|                                       |                                           |                                           |                                           |
| 9 (E) Standard                        | DEM9PD                                    | DEM9PL                                    | DEM9PS                                    |
| 9 (E) <b>Military</b>                 | <b>DEMM9PD</b>                            | <b>DEMM9PL</b>                            | <b>DEMM9PS</b>                            |
| 15 (A) Standard                       | DAM15PD                                   | DAM15PL                                   | DAM15PS                                   |
| 15 (A) <b>Military</b>                | <b>DAMM15PD</b>                           | <b>DAMM15PL</b>                           | <b>DAMM15PS</b>                           |
| 25 (B) Standard                       | DBM25PD                                   | DBM25PL                                   | DBM25PS                                   |
| 25 (B) <b>Military</b>                | <b>DBMM25PD</b>                           | <b>DBMM25PL</b>                           | <b>DBMM25PS</b>                           |
| 37 (C) Standard                       | DCM37PD                                   | DCM37PL                                   | DCM37PS                                   |
| 37 (C) <b>Military</b>                | <b>DCMM37PD</b>                           | <b>DCMM37PL</b>                           | <b>DCMM37PS</b>                           |
| 50 (D) Standard                       | DDM50PD                                   | DDM50PL                                   | DDM50PS                                   |
| 50 (D) <b>Military</b>                | <b>DDMM50PD</b>                           | <b>DDMM50PL</b>                           | <b>DDMM50PS</b>                           |

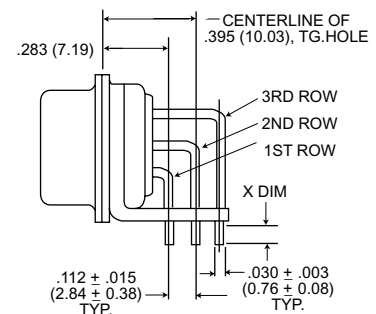
**NM Non-Magnetic/No-Outgas** - Add desired suffix cod (NMB, NM-K52) to end of part number. Example: DDM9SLNM-K52

## Dimensions-Right Angle 90° D Subminiature

Connectors with brackets cannot be ordered with float mounts or clinch nuts.



DE, DA, DB, DC Sizes

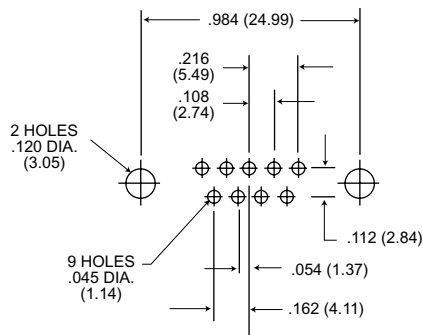


DD Size

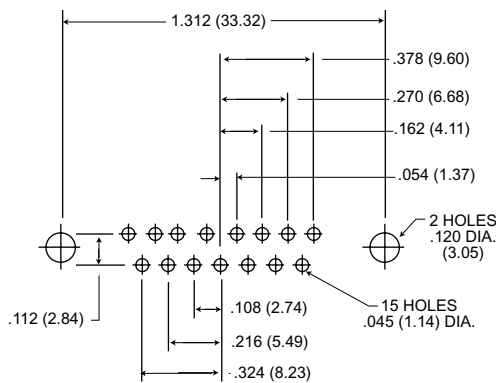
| Code<br>Last Letter<br>of P/N's | Right Angle<br>With<br>Bracket | X<br>± .027 (0.69) |
|---------------------------------|--------------------------------|--------------------|
| D                               | •                              | .127 (3.22)        |
| L                               | •                              | .158 (4.01)        |
| S                               | •                              | .183 (4.65)        |

Performance Specifications - Page 332.

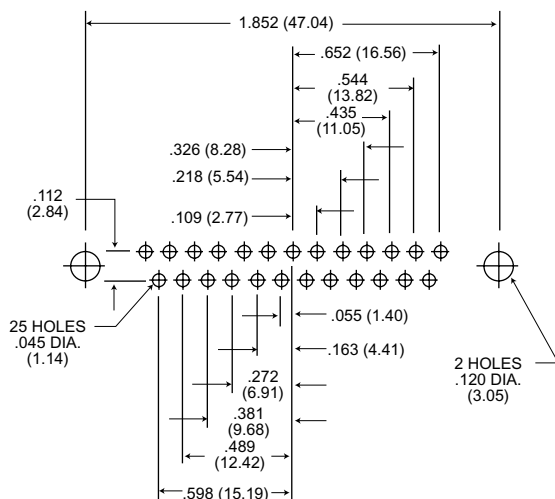
## PC Board Hole Patterns



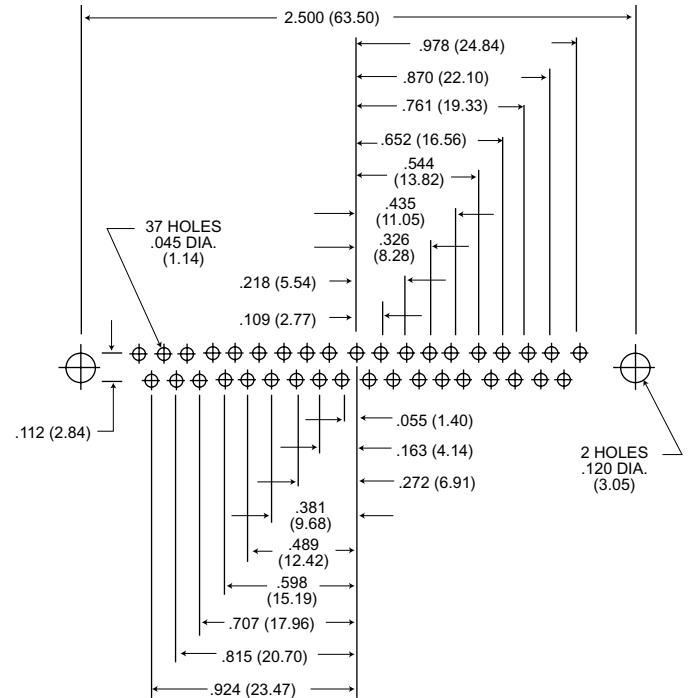
**DE Size**  
9 Positions



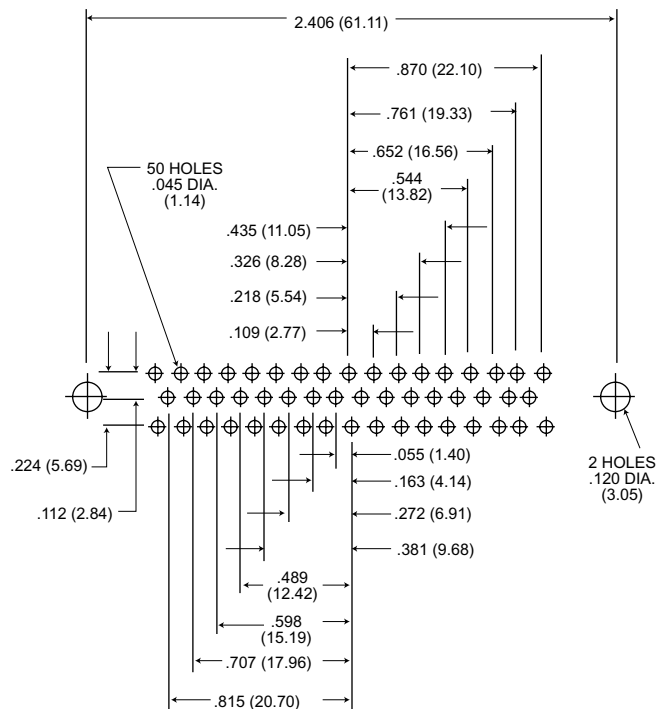
**DA Size**  
15 Positions



**DB Size**  
25 Positions



**DC Size**  
37 Positions



**DD Size**  
50 Positions

## MIL-C-24308 Cross Reference

| Military Part Number | Cannon Part Number | Military Part Number | Cannon Part Number | Military Part Number | Cannon Part Number |
|----------------------|--------------------|----------------------|--------------------|----------------------|--------------------|
| M24308/1-1           | DEMM9S             | M24308/2-485         | DCMAMY37S-F0       | M24308/6-5           | DDMAM50SNM         |
| M24308/1-2           | DAMM15S            | M24308/2-486         | DDMAMY50S-F0       | M24308/6-6           | DEMAMT9SNM         |
| M24308/1-3           | DBMM25S            | M24308/3-1           | DEMM9P             | M24308/6-7           | DAMAMT15SNM        |
| M24308/1-4           | DCMM37S            | M24308/3-2           | DAMM15P            | M24308/6-8           | DBMAMT25SNM        |
| M24308/1-5           | DDMM50S            | M24308/3-3           | DBMM25P            | M24308/6-9           | DCMAMT37SNM        |
| M24308/1-12          | DEMMF9s            | M24308/3-4           | DCMM37P            | M24308/6-10          | DDMAMT50SNM        |
| M24308/1-13          | DAMMF15S           | M24308/3-5           | DDMM50P            | M24308/6-15          | DDMAM78SNM         |
| M24308/1-14          | DBMMF25S           | M24308/3-12          | DEMMF9P            | M24308/6-259         | DEMAMF9SNM         |
| M24308/1-15          | DCMMF37S           | M24308/3-13          | DAMMF15P           | M24308/6-260         | DAMAMF15SNM        |
| M24308/1-16          | DDMMF50S           | M24308/3-14          | DBMMF25P           | M24308/6-261         | DBMAMF25SNM        |
| M24308/1-23          | DEMMY9S            | M24308/3-15          | DCMMF37P           | M24308/6-262         | DCMAMF37SNM        |
| M24308/1-24          | DAMMY15S           | M24308/3-16          | DDMMF50P           | M24308/6-263         | DDMAMF50SNM        |
| M24308/1-25          | DBMMY25S           | M24308/4-1           | DEMAM9P            | M24308/6-268         | DDMAMF78SNM        |
| M24308/1-26          | DCMMY37S           | M24308/4-2           | DAMAM15P           | M24308/6-270         | DEMAMFT9SNM        |
| M24308/1-27          | DDMMY50S           | M24308/4-3           | DBMAM25P           | M24308/6-271         | DAMAMFT15SNM       |
| M24308/2-1           | DEMAM9S            | M24308/4-4           | DCMAM37P           | M24308/6-272         | DBMAMFT25SNM       |
| M24308/2-2           | DAMAM15S           | M24308/4-5           | DDMAM50P           | M24308/4-5           | DEMAMFT37SNM       |
| M24308/2-3           | DBMAM25S           | M24308/4-6           | DEMAMT9P           | M24308/4-6           | DDMAMFT50SNM       |
| M24308/2-4           | DCMAM37S           | M24308/4-7           | DAMAMT15P          | M24308/4-7           | DEMAM9SNM-F0       |
| M24308/2-5           | DDMAM50S           | M24308/4-8           | DBMAMT25P          | M24308/4-8           | DAMAM15SNM-F0      |
| M24308/2-6           | DEMAMT9S           | M24308/4-9           | DCMAMT37P          | M24308/4-9           | DDMAM25SNM-F0      |
| M24308/2-7           | DAMAMT15S          | M24308/4-10          | DDMAMT50P          | M24308/4-10          | DCMAM37SNM-F0      |
| M24308/2-8           | DBMAMT25S          | M24308/4-15          | DDMAMT8P           | M24308/4-15          | DDMAM50SNM-F0      |
| M24308/2-9           | DCMAMT37S          | M24308/4-259         | DEMAM9P-F0         | M24308/4-259         | DDMAM78SUM-F0      |
| M24308/2-10          | DDMAMT50S          | M24308/4-260         | DAMAM15P-F0        | M24308/4-260         | DEMAMF9SNM-F0      |
| M24308/2-15          | DDMAM78S           | M24308/4-261         | DBMAM25P-F0        | M24308/4-261         | DAMAMF15SNM-F0     |
| M24308/2-23          | DEMAMF9S           | M24308/4-262         | DCMAM37P-F0        | M24308/4-262         | DBMAMF25SNM-F0     |
| M24308/2-24          | DAMAMF15S          | M24308/4-263         | DDMAM50P-F0        | M24308/4-263         | DCMAMF37SNM-F0     |
| M24308/2-25          | DBMAMF25S          | M24308/4-268         | DDMAM78P-F0        | M24308/4-268         | DDMAMF50SNM-F0     |
| M24308/2-26          | DCMAMF37S          | M24308/4-302         | DEMAMF9P           | M24308/4-302         | DDMAMF78SNM-F0     |
| M24308/2-27          | DDMAMF50S          | M24308/4-303         | DAMAMF15P          | M24308/4-303         | DEMAMY9SNM         |
| M24308/2-32          | DDMAMF78S          | M24308/4-304         | DBMAMF25P          | M24308/4-304         | DAMAMY15SNM        |
| M24308/2-34          | DEMAMFT9S          | M24308/4-305         | DCMAMF37P          | M24308/4-305         | DBMAMY25SNM        |
| M24308/2-35          | DAMAMFT15S         | M24308/4-306         | DDMAMF50P          | M24308/4-306         | DCMAMY37SNM        |
| M24308/2-36          | DBMAMFT25S         | M24308/4-311         | DCMAMF78P          | M24308/4-311         | DDMAMY50SNM        |
| M24308/2-37          | DCMAMFT37S         | M24308/4-313         | DEMAMFT9P          | M24308/4-313         | DDMEMYT9SNM        |
| M24308/2-38          | DDMAMFT50S         | M24308/4-314         | DAMAMFT15P         | M24308/4-314         | DAMAMYT15SNM       |
| M24308/2-281         | DEMAM9S-F0         | M24308/4-315         | DBMAMFT25P         | M24308/4-315         | DBMAMYT25SNM       |
| M24308/2-282         | DAMAM15S-F0        | M24308/4-316         | DCMAMFT37P         | M24308/4-316         | DCMAMYT37SNM       |
| M24308/2-283         | DBMAM25S-F0        | M24308/4-317         | DDMAMFT50P         | M24308/4-317         | DDMAMYT50SNM       |
| M24308/2-284         | DCMAM37S-F0        | M24308/4-324         | DEMAMF9P-F0        | M24308/4-324         | DEMAMY9SNM-F0      |
| M24308/2-285         | DDMAM50S-F0        | M24308/4-325         | DAMAMF15P-F0       | M24308/4-325         | DAMAMY15SNM-F0     |
| M24308/2-290         | DDMAM78S-F0        | M24308/4-326         | DBMAMF25P-F0       | M24308/4-326         | DBMAMY25SNM-F0     |
| M24308/2-292         | DEMAMF9S-F0        | M24308/4-327         | DCMAMF37P-F0       | M24308/4-327         | DCMAMY37SNM-F0     |
| M24308/2-293         | DAMAMF15S-F0       | M24308/4-328         | DDMAMF50P-F0       | M24308/4-328         | DDMAMY50SNM-F0     |
| M24308/2-294         | DBMAMF25S-F0       | M24308/4-333         | DDMAMF78P-F0       | M24308/7-1           | DEMM9PNM           |
| M24308/2-295         | DCMAMF37S-F0       | M24308/5-1           | DEMM9SNM           | M24308/7-2           | DAMM15PNM          |
| M24308/2-296         | DDMAMF50S-F0       | M24308/5-2           | DAMM15SNM          | M24308/7-3           | DBMM25PNM          |
| M24308/2-301         | DDMAMF78S-F0       | M24308/5-3           | DBMM25SNM          | M24308/7-4           | DCMM37PNM          |
| M24308/2-335         | DBMAMR25S          | M24308/5-4           | DCMM37SNM          | M24308/7-5           | DDMMS0PNM          |
| M24308/2-336         | DCMAMR37S          | M24308/5-5           | DDMM50SNM          | M24308/7-12          | DEMMF9PNM          |
| M24308/2-341         | DAMAMR15S          | M24308/5-12          | DEMMF9SNM          | M24308/7-13          | DAMMF15PNM         |
| M24308/2-342         | DEMAMY9S           | M24308/5-13          | DAMMF15SNM         | M24308/7-14          | DBMMF25PNM         |
| M24308/2-343         | DAMAMY15S          | M24308/5-14          | DBMMF25SNM         | M24308/7-15          | DCMMF37PNM         |
| M24308/2-344         | DBMAMY25S          | M24308/5-15          | DCMMF37SNM         | M24308/7-16          | DDMMF50PNM         |
| M24308/2-345         | DCMAMY37S          | M24308/5-16          | DDMMF50SNM         | M24308/8-1           | DEMAM9PNM          |
| M24308/2-346         | DDMAMY50S          | M24308/5-23          | DDMMY9SNM          | M24308/8-2           | DAMAM15PNM         |
| M24308/2-353         | DEMAMYT9S          | M24308/5-24          | DAMMY15SNM         | M24308/8-3           | DBMAM25PNM         |
| M24308/2-354         | DAMAMYT15S         | M24308/5-25          | DBMMY25SNM         | M24308/8-4           | DCMAM37PNM         |
| M24308/2-355         | DBMAMYT25S         | M24308/5-26          | DCMMY37SNM         | M24308/8-5           | DDMAM50PNM         |
| M24308/2-356         | DCMAMYT37S         | M24308/5-27          | DDMMY50SNM         | M24308/8-6           | DEMAMT9PNM         |
| M24308/2-357         | DDMAMYT50S         | M24308/6-1           | DEMAM9SNM          | M24308/8-7           | DAMAMT15PNM        |
| M24308/2-482         | DEMAMY9S-F0        | M24308/6-2           | DAMAM15SNM         | M24308/8-8           | DBMAMT25PNM        |
| M24308/2-483         | DEMAMY15S-F0       | M24308/6-3           | DBMAM25SNM         | M24308/8-9           | DCMAMT37PNM        |
| M24308/2-484         | DEMAMY25S-F0       | M24308/6-4           | DCMAM37SNM         | M24308/8-10          | DDMAMT50PNM        |

## MIL-C-24308 Cross Reference (Continued)

| Military Part Number | Cannon Part Number | Military Part Number | Cannon Part Number | Military Part Number | Cannon Part Number |
|----------------------|--------------------|----------------------|--------------------|----------------------|--------------------|
| M24308/8-15          | DDMAM78PNM         | M24308/23-8          | DAMM15SZ           | M24308/24-8          | DAMM15PZ           |
| M24308/8-259         | DEMAM9PNM-FO       | M24308/23-9          | DBMM25SZ           | M24308/24-9          | DBMM25PZ           |
| M24308/8-260         | DAMAM15PNM-FO      | M24308/23-10         | DCMM37SZ           | M24308/24-10         | DCMM37PZ           |
| M24308/8-261         | DBMAM25PNM-FO      | M24308/23-11         | DDMM50SZ           | M24308/24-11         | DDMM50PZ           |
| M24308/8-262         | DCMAM37PNM-FO      | M24308/23-13         | DEMM9SH            | M24308/24-13         | DEMM9PH            |
| M24308/8-263         | DDMAM50PNM-FO      | M24308/23-14         | DAMM15SH           | M24308/24-14         | DAMM15PH           |
| M24308/8-269         | DDMAM78PNM-FO      | M24308/23-15         | DBMM25SH           | M24308/24-15         | DBMM25PH           |
| M24308/8-302         | DEMAMF9PNM         | M24308/23-16         | DCMM37SH           | M24308/24-16         | DCMM37SH           |
| M24308/8-303         | DAMAMF15PNM        | M24308/23-17         | DDMM50SH           | M24308/24-17         | DDMM50PH           |
| M24308/8-304         | DBMAMF25PNM        | M24308/23-19         | DEMM9SX            | M24308/24-19         | DEMM9PX            |
| M24308/8-305         | DCMAMF37PNM        | M24308/23-20         | DAMM15SX           | M24308/24-20         | DAMM15FX           |
| M24308/8-306         | DDMAMF50PNM        | M24308/23-21         | DBMM25SX           | M24308/24-21         | DBMM25PX           |
| M24308/8-311         | DDMAMF78PNM        | M24308/23-22         | DCMM37SX           | M24308/24-22         | DCMM37PX           |
| M24308/8-313         | DEMAMFT9PNM        | M24308/23-23         | DDMM50SX           | M24308/24-23         | DDMM50PX           |
| M24308/8-314         | DAMAMFT15PNM       | M24308/23-25         | DEMM9SD            | M24308/24-25         | DEMM9PD            |
| M24308/8-315         | DBMAMFT25PNM       | M24308/23-26         | DAMM15SD           | M24308/24-26         | DAMM15PD           |
| M24308/8-316         | DCMAMFT37PNM       | M24308/23-27         | DBMM25SD           | M24308/24-27         | DBMM25PD           |
| M24308/8-317         | DDMAMFT50PNM       | M24308/23-28         | DCMM37SD           | M24308/24-28         | DCMM37PD           |
| M24308/8-324         | DEMAMF9PNM-FO      | M24308/23-29         | DDMM50SD           | M24308/24-29         | DDMM50PD           |
| M24308/8-325         | DAMAMF15PNM-FO     | M24308/23-31         | DEMM9SL            | M24308/24-31         | DEMM9PL            |
| M24308/8-326         | DBMAMF25PNM-FO     | M24308/23-32         | DAMM15SL           | M24308/24-32         | DAMM15PL           |
| M24308/8-327         | DCMAMF37PNM-FO     | M24308/23-33         | DBMM25SL           | M24308/24-33         | DBMM25PL           |
| M24308/8-328         | DDMAMF50PNM-FO     | M24308/23-34         | DCMM37SL           | M24308/24-34         | DCMM37PL           |
| M24308/3-333         | DDMAMF78PNM-FO     | M24308/23-35         | DDMM50SL           | M24308/24-35         | DDMM50PL           |
| M24308/9-1           | DEH9P002           | M24308/23-37         | DEMM9SA            | M24308/24-37         | DEMM9PA            |
| M24308/9-2           | DAH15P002          | M24308/23-38         | DAMM15SA           | M24308/24-38         | DAMM15PA           |
| M24308/9-3           | DBH25P002          | M24308/23-39         | DBMM25SA           | M24308/24-39         | DBMM25PA           |
| M24308/9-4           | DCH37P002          | M24308/23-40         | DCMM37SA           | M24308/24-40         | DCMM37PA           |
| M24308/9-5           | DDH50P002          | M24308/23-41         | DDMM50SA           | M24308/24-41         | DDMM50PA           |
| M24308/9-6           | DEH9P001           | M24308/23-43         | DEMM9SG            | M24308/24-43         | DEMM9PG            |
| M24308/9-7           | DAH1SP001          | M24308/23-44         | DAMM15SG           | M24308/24-44         | DAMM15PG           |
| M24308/9-8           | DBH25P001          | M24308/23-45         | DBMM25SG           | M24308/24-45         | DBMM25PG           |
| M24308/9-9           | DCH37P001          | M24308/23-46         | DCMM37SG           | M24308/24-46         | DCMM37PG           |
| M24308/9-10          | DDH50P001          | M24308/23-47         | DDMM50SG           | M24308/24-47         | DDMM50PG           |
| M24308/9-11          | DEH9P202           | M24308/23-49         | DEMM9SS            | M24308/24-49         | DEMM9PS            |
| M24308/9-12          | DAH15P202          | M24308/23-50         | DAMM15SS           | M24308/24-50         | DAMM15PS           |
| M24308/9-13          | DBH25P202          | M24308/23-51         | DBMM25SS           | M24308/24-51         | DBMM25PS           |
| M24308/9-14          | DCH37P202          | M24308/23-52         | DCMM37SS           | M24308/24-52         | DCMM37PS           |
| M24308/9-15          | DDH50P202          | M24308/23-53         | DDMM50SS           | M24308/24-53         | DDMM50PS           |
| M24308/9-16          | DEH9P201           | M24308/23-55         | DEMM9SW            | M24308/24-55         | DEMM9PW            |
| M24308/9-17          | DAH15P201          | M24308/23-56         | DAMM15SW           | M24308/24-56         | DAMM15PW           |
| M24308/9-18          | DBH25P201          | M24308/23-57         | DBMM25SW           | M24308/24-57         | DBMM25PW           |
| M24308/9-19          | DCH37P201          | M24308/23-58         | DCMM37SW           | M24308/24-58         | DCMM37PW           |
| M24308/9-20          | DDH50P201          | M24308/23-59         | DDMM50SW           | M24308/24-59         | DDMM50PW           |
| M24308/23-1          | DEMM9SM            | M24308/24-1          | DEMM9PM            | M24308/26-1          | D20418-2           |
| M24308/23-2          | DAMM15SM           | M24308/24-2          | DAMM15PM           | M24308/26-2          | D20418-39          |
| M24308/23-3          | DBMM25SM           | M24308/24-3          | DBMM25PM           |                      |                    |
| M24308/23-4          | DCMM37SM           | M24308/24-4          | DCMM37PM           |                      |                    |
| M24308/23-5          | DDMM50SM           | M24308/24-5          | DDMM50PM           |                      |                    |
| M24308/23-7          | DEMM9SZ            | M24308/24-7          | DEMM9PZ            |                      |                    |



Performance and Material Specifications

MATERIALS AND FINISHES

|                      | Standard                                                                  |                                                          | Military                                                                 |                                                                                                                                    |
|----------------------|---------------------------------------------------------------------------|----------------------------------------------------------|--------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------|
|                      | Material                                                                  | Finish                                                   | Material                                                                 | Finish                                                                                                                             |
| Shell                | Steel per ASTM A-620                                                      | Yellow chromate over cadmium<br>QQ-P-416 Type II Class 2 | Steel per ASTM A-620                                                     | Yellow chromate over cadmium<br>QQ-P-416 Type II Class 2                                                                           |
| Insulator            | Diallyl phthalate glass-filled<br>per MIL-M-14, type SDG-F<br>color green | -                                                        | Diallyl phthalate glas-filled<br>per MIL-M-14, type SDG-F<br>color green | -                                                                                                                                  |
| Contact              | Copper alloy                                                              | Gold over nickel                                         | Copper alloy<br>Crimp socket has<br>stainless steel hood                 | Gold 50 microinches minimum thicknes per<br>MIL-G-45204 Type II Grade C Class 1 over<br>copper per MIL-C-14550<br>Hood: Passivated |
| Float Mount Hardware | Stainless steel                                                           | Passivate per QQ-P-35                                    | Stainless steel                                                          | Passivate per QQ-P-35                                                                                                              |

PERFORMANCE SPECIFICATIONS

|                                                        |                            |
|--------------------------------------------------------|----------------------------|
| Wire Accommodation (AWG)                               | Crimp-#22-#28 AWG          |
| Current Rating                                         | #22: 5 Amp                 |
| Temperature Rating                                     | -65°C to +150°C            |
| Contact Resistance<br>After Salt Spray, Millivolt Max. | 55 @ 5 Amp<br>test current |

DIELECTRIC WITHSTANDING VOLTAGE

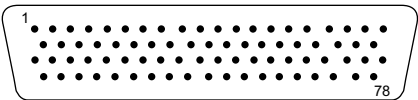
| Test | 90° and Straight (Solder/Crimp) |               |         |
|------|---------------------------------|---------------|---------|
|      | Altitude (feet/m)               |               |         |
|      | Sea Level                       | 70,000/21,336 | 100,000 |
|      | 1000                            | 325           | 175     |

All voltage figures are rms AC 60 rms cps, measured at approximately +25°C, 50% rh. For additional performance specifications refer to MIL-C-24308 Test Extracts on page 385.

Contact Arrangements

Face View Pin Insert

Shell Size  
Contact Arrangement  
Contact Size



D  
78  
#22

## How to Order - Crimp Connectors



## Receptacle (Includes Socket Contacts) With .120" Through-Mounting Holes

| Number<br>Contacts<br>(Shell Size) | Standard<br>Version | Military<br>Version |
|------------------------------------|---------------------|---------------------|
| 78 (D)                             | DDMA78S             | DDMAM78S            |

## Plugs (Includes Pin Contacts)\* With .120" Through-Mounting Holes

| Number<br>Contacts<br>(Shell Size) | Standard<br>Version | Military<br>Version |
|------------------------------------|---------------------|---------------------|
| 78 (D)                             | DDMA78P             | DDMAM78P            |

Note: 1) To receive the connector without contacts, add "FO" to end of part number.

Example: DBMA25SFO, DBMAM25SFO.

2) For loose contacts and tooling see page 5.

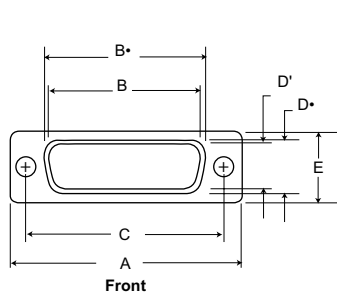
## Mounting Options Available:

4-40 Clinch Nut - ADD "E" to Part Number After "M" or "A"

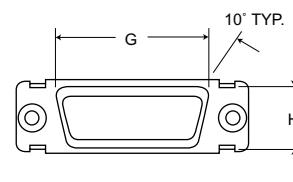
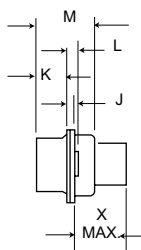
4-40 Float Mount - Add "Y" to Part Number After "M" or "A"

(Can be used in front or rear panel mount applications)

## Dimensions - Crimp Connectors



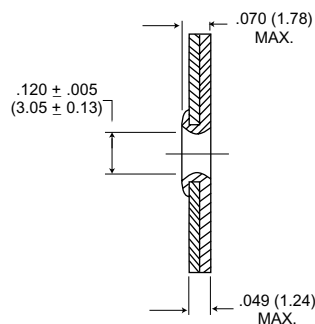
Front



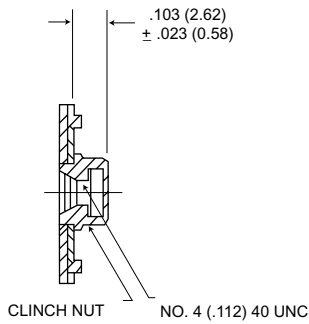
Rear

| Part Number<br>by Shell Size | A<br>± .015 (0.38) | B<br>± .010 (0.25) | B'<br>± .005 (0.13) | C<br>± .005 (0.13) | D<br>± .005 (0.13) | D'<br>± .010 (0.25) | E<br>± .015 (0.38) | G<br>± .010 (0.25) | H<br>± .010 (0.25) | J<br>± .010 (0.25) | K<br>± .006 (0.25) | L<br>± .013 (0.33) | M<br>± .010 (0.25) | X<br>Max    |
|------------------------------|--------------------|--------------------|---------------------|--------------------|--------------------|---------------------|--------------------|--------------------|--------------------|--------------------|--------------------|--------------------|--------------------|-------------|
| DDM78P                       | 2.635 (66.92)      | -                  | 2.079 (52.81)       | 2.406 (61.11)      | -                  | .441 (11.20)        | .605 (15.37)       | 2.178 (55.32)      | .534 (13.56)       | .039 (0.99)        | .231 (5.87)        | .060 (1.52)        | .426 (10.82)       | .345 (8.76) |
| DDM78S                       | 2.635 (66.92)      | 2.064 (52.43)      | -                   | 2.406 (61.11)      | .423 (10.41)       | -                   | .605 (15.37)       | 2.178 (55.32)      | .534 (13.56)       | .030 (0.76)        | .243 (6.17)        | .045 (1.14)        | .429 (10.90)       | .345 (8.76) |

## Mounting Option Dimensions

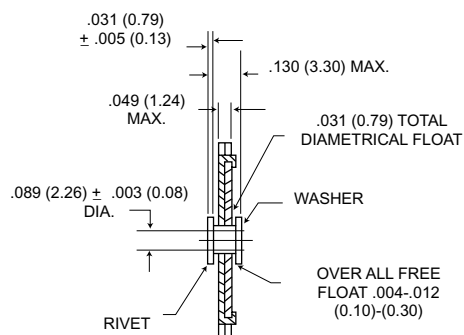


Standard - Through-Hole



E-Clinch Nut

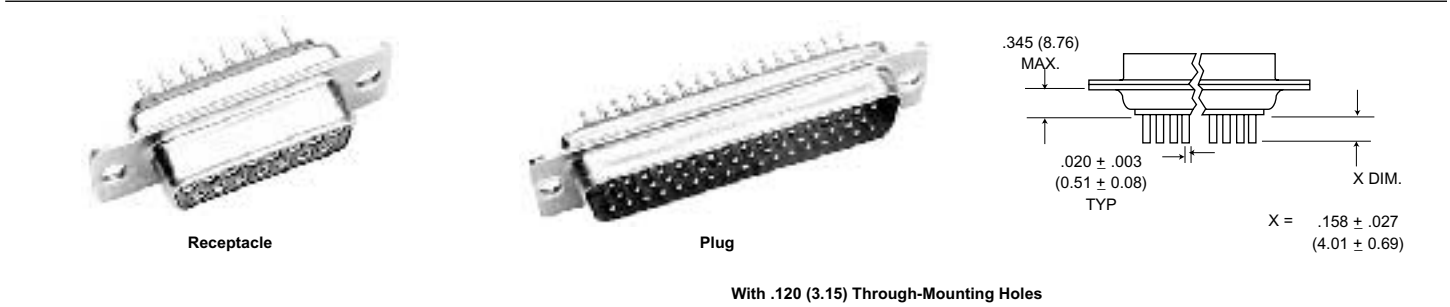
NO. 4 (.112) 40 UNC



Y-Float Mount

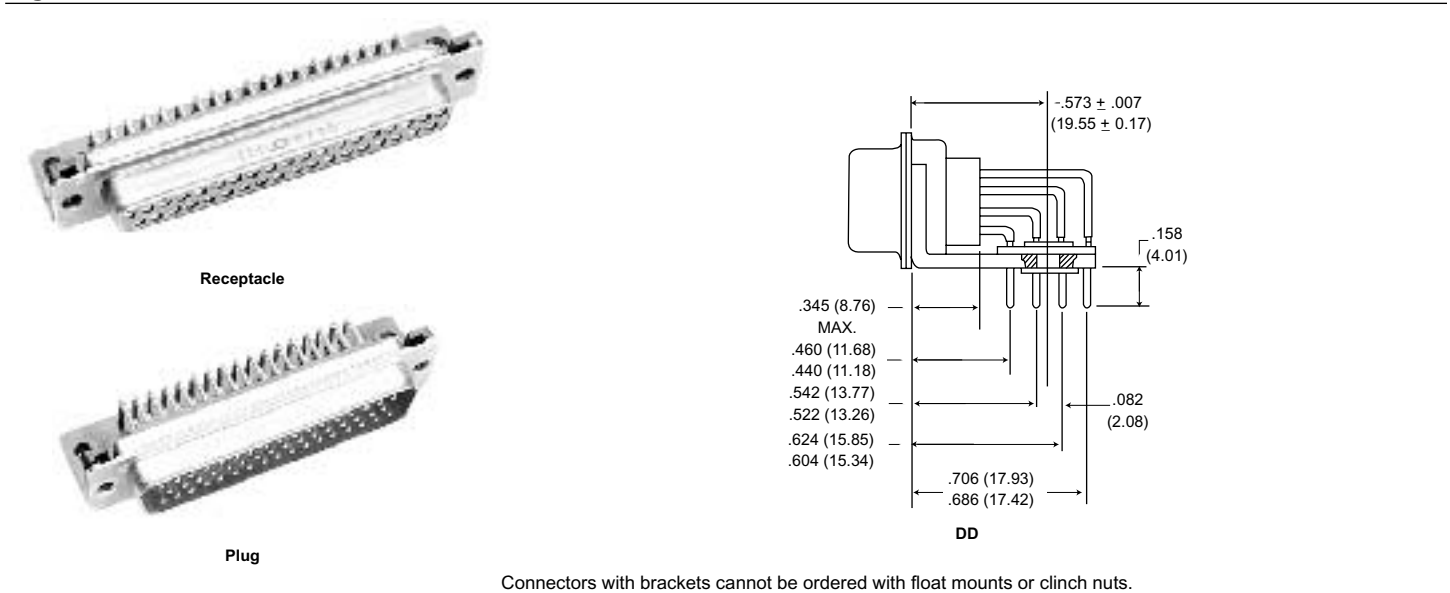
It is recommended that only on assembly, either pin or socket, be float mounted.

High Rel Printed Circuit Mount Connector - Straight PC Tail



| Number<br>Contacts<br>(Shell Size) |          |               | <i>NM</i><br>Non-Magnetic<br>Receptacle |               | <i>NM</i><br>Non-Magnetic<br>Plug |
|------------------------------------|----------|---------------|-----------------------------------------|---------------|-----------------------------------|
|                                    |          | Receptacle    |                                         | Plug          |                                   |
| 78 (D)                             | Standard | DDMA50913-499 | -                                       | DDMA50913-500 | -                                 |
| 78 (D)                             | Military | DDMA50913-439 | DDMA50913-445                           | DDMA50913-440 | DDMA50913-446                     |

High Rel 90° PCB Connectors



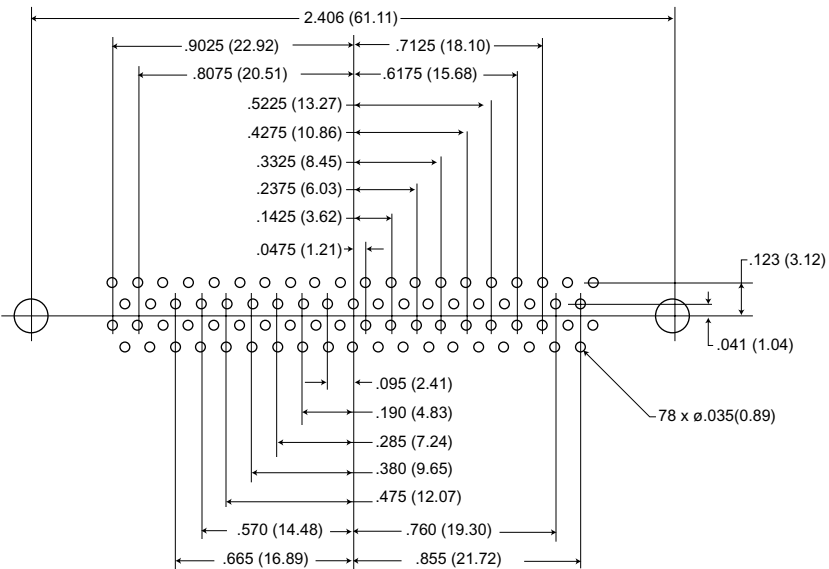
| Number<br>Contacts<br>(Shell Size) |          |               | <i>NM</i><br>Non-Magnetic<br>Receptacle |               | <i>NM</i><br>Non-Magnetic<br>Plug |
|------------------------------------|----------|---------------|-----------------------------------------|---------------|-----------------------------------|
|                                    |          | Receptacle    |                                         | Plug          |                                   |
| 78 (0)                             | Standard | DDMA50913-467 | -                                       | DDMA50913-468 | -                                 |
| 78 (0)                             | Military | DDMA50913-437 | DDMA50913-473                           | DDMA50913-438 | DDMA50913-474                     |

High Rel Crimp Contacts

| Contact<br>Size | Wire Size<br>Accommodation | Cannon Part Number |         |             |              |
|-----------------|----------------------------|--------------------|---------|-------------|--------------|
|                 |                            | M39029             | M24308* | Pin         | Socket       |
| 22D<br>Pin      | 22, 24, 26, 28             | /58-360            | /13-1   | 030-2042-00 | -            |
| 22D<br>Socket   | 22, 24, 26, 28             | /57-354            | /12-1   | -           | 031-1147-000 |

\* Superseded by M39029

Straight and 90° Board Hole Patterns



DD-78

Tooling

Hand Tools

| Contact Size | AWG            | Plastic Insertion/Extraction | Crimp Tool                  | Locator                     |
|--------------|----------------|------------------------------|-----------------------------|-----------------------------|
| 22D          | 22, 24, 26, 28 | 274-7048-000<br>CIET-22D     | 995-0001-584<br>M22520/2-01 | 995-0001-739<br>M22520/2-06 |

# Combo D®

Combination D Subminiature connectors are the fastest growing segment of the D Subminiature market. ITT Cannon engineering teams, in keeping pace with the demands of the industry, have developed the broadest selection of combination D Subminiature available.

We offer the ability to intergrade signal and coax, high power, and high voltage. You can mix red, green, and blue video lines with signal and up to 40 amps of power in the same package.

Design variations of the new Combo D connector, versus other packaging methods, include the proven ITT Cannon polarized "D" shape to prevent mismatching; dense, space-saving packaging; and diverse mounting options. Choose from a variety of cable and printed wiring board selections. Printed wiring board combos come pre-assembled with fixed contacts eliminating the need to buy several components.

This new line of connectors offers you **unlimited design versatility**.



Straight and right angle printed wiring board contacts are available in both coax and high power versions.

## Performance and Material Specifications

### CONNECTOR ASSEMBLIES

| Description                      | Material                                            | Finish                                                |
|----------------------------------|-----------------------------------------------------|-------------------------------------------------------|
| Shell                            | Steel or Brass                                      | Yellow Chromate Cadmium or Gold over Nickel           |
| Insulator                        | Thermoplastic or Diallyl Phthalate, UL 94V-0 rated. | None                                                  |
| Size 20 contacts when applicable | Copper alloy                                        | 50μ inches gold over copper or 100μ gold over copper. |
| Bracket                          | Steel                                               | Yellow Chromate over Cadmium                          |
| Rivnut                           | Steel or Copper alloy                               |                                                       |

### COAXIAL ASSEMBLY

|                     |              |                                                  |
|---------------------|--------------|--------------------------------------------------|
| Contacts and shells | Copper alloy | Gold over nickel or 50μ inches gold over copper. |
| Ring, retaining     | Copper alloy | Nickel or Gold                                   |
| Insulator           | Teflon       | None                                             |

U.L. File Number: E8572

### DIELECTRIC WITHSTANDING VOLTAGE

| Type of Contact                                       |                   | Altitude (feet/m) |          |             |          |              |          |             |          |
|-------------------------------------------------------|-------------------|-------------------|----------|-------------|----------|--------------|----------|-------------|----------|
|                                                       |                   | Sea Level         |          | 20,000/6096 |          | 50,000/15240 |          | 70,000/1336 |          |
|                                                       |                   | 90'               | Straight | 90'         | Straight | 90'          | Straight | 90'         | Straight |
| Center Conductor to Coaxial Shell                     | Average Flashover | 1200              | 1500     | 900         | 1000     | 600          | 700      | 400         | 500      |
|                                                       | Test              | 800               | 1000     | 600         | 650      | 400          | 475      | 275         | 325      |
| Coaxial Shell to Nearest Standard Solder Pot Contact  | Average Flashover | •                 | 1500     | •           | 1500     | •            | 900      | •           | 650      |
|                                                       | Test              | •                 | 1000     | •           | 1000     | •            | 600      | •           | 425      |
| High Power contact and/or Coaxial Shell to Plug Shell | Average Flashover | 1500              | 1500     | 1000        | 1000     | 500          | 500      | 500         | 500      |
|                                                       | Test              | 1000              | 1000     | 650         | 650      | 325          | 325      | 325         | 325      |
| #20 Signal                                            | Average Flashover | 1700              |          | 1000        |          | 650          |          | 500         |          |
|                                                       | Test              | 1250              |          | 750         |          | 475          |          | 375         |          |
| HV Contact to Nearest Contact or to Shell             | Average Flashover | 3800              | 3800     | 2300        | 2300     | 900          | 900      | 650         | 650      |
|                                                       | Test              | 2800              | 2800     | 1700        | 1700     | 675          | 675      | 475         | 475      |

All voltage figures are rms AC 60 rms cps, measured at approximately +25°C, 50% rh.

Impedance: 50 ohm

### PERFORMANCE DATA

|                               |                                       |
|-------------------------------|---------------------------------------|
| Signal Contact Current Rating | 5 Amp                                 |
| Temperature Rating            | -65°C to +150°C                       |
| Signal Contact Resistance     | 55 @ 7.5 Amp                          |
| millivolt max                 | test current                          |
| Coax Impedance                | 50 ohm                                |
| Coax VSWR                     | Less than 1.3-1.0 up to 500 megahertz |
| Coax Insertion Loss           | .1 db loss at 500 megahertz.          |

See *Commercial D Subminiature* catalog for additional Combo D options, including 75 ohm Coax.

# Combo D® - Coaxial/ 75 and 50 Ohm

## Coaxial Housing With Solder Cup Signal Contacts



- Cable combinations supplied with preloaded solder signal contacts
- 50 ohm coax contacts supplied separately (see pages 347-348)

Clinch Nut and Float Mount Options Available:

Add: E = 4-40 Clinch Nut

Y = Float Mounting

Example: DAMME3W3P

DANNT3W3P

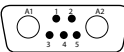
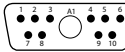
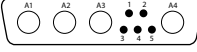
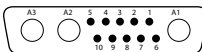
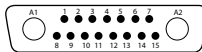
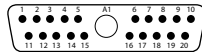
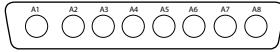
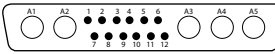
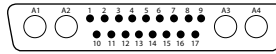
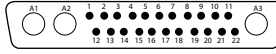
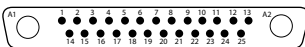
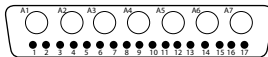
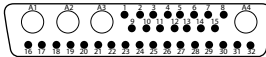
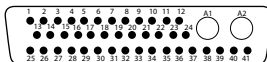
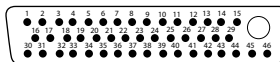
Mounting Method Detail - Page 334.

| Layout   | Military Socket | Military Pin | NM Non-Magnetic Socket | NM Non-Magnetic Pin |
|----------|-----------------|--------------|------------------------|---------------------|
| DE-5W1   | DEMM5W1S        | DMM5W1P      | DEM5W1S-NMB-K52        | DEM5W1P-NMB-K52     |
| DA-7W2   | DAMM7W2S        | DAMM7W2P     | DAM7W2S-NMB-K52        | DAM7W2P-NMB-K52     |
| DA-11W1  | DAMM11W1S       | DAMM11W1P    | DAM11W1S-NMB-K52       | DAM11W1P-NMB-K52    |
| DA-3W3   | DAMM3W3S        | DAMM3W3P     | DAM3W3S-NMB-K47        | DAM3W3P-NMB-K47     |
| DB-5W5   | DBMM5W5S        | DBMM5W5P     | DBM5W5S-NMB-K47        | DBM5W5P-NMB-K47     |
| DB-9W4   | DBMM9W4S        | DBMM9W4P     | DBM9W4S-NMB-K52        | DBM9W4P-NMB-K52     |
| DB-13W3  | DBMM13W3S       | DBMM13W3P    | DBM13W3S-NMB-K52       | DBM13W3P-NMB-K52    |
| DB-17W2  | DBMM17W2S       | DBMM17W2P    | DBM17W2S-NMB-K52       | DBM17W2P-NMB-K52    |
| DB-21W1  | DBMM21W1S       | DBMM21W1P    | DBM21W1S-NMB-K52       | DBM21W1P-NMB-K52    |
| DC-8W8   | DCMM8W8S        | DCMM8W8P     | DCM8W8S-NMB-K47        | DCM8W8P-NMB-K47     |
| DC-13W6  | DCMM13W6S       | DCMM13W6P    | DCM13W6S-NMB-K52       | DCM13W6P-NMB-K52    |
| DC-17W5  | DCMM17W5S       | DCMM17W5P    | DCM17W5S-NMB-K52       | DCM17W5P-NMB-K52    |
| DC-21WA4 | DCMM21WA4S      | DCMM21WA4P   | DCM21WA4S-NMB-K52      | DCM21WA4P-NMB-K52   |
| DC-25W3  | DCMM25W3S       | DCMM25W3P    | DCM25W3S-NMB-K52       | DCM25W3P-NMB-K52    |
| DC-27W2  | DCMM27W2S       | DCMM27W2P    | DCM27W2S-NMB-K52       | DCM27W2P-NMB-K52    |
| DD-24W7  | DDMM24W7S       | DDMM24W7P    | DDM24W7S-NMB-K52       | DDM24W7P-NMB-K52    |
| DD-36W4  | DDMM36W4S       | DDMM36W4P    | DDM36W4S-NMB-K52       | DDM36W4P-NMB-K52    |
| DD-43W2  | DDMM43W2S       | DDMM43W2P    | DDM43W2S-NMB-K52       | DDM43W2P-NMB-K52    |
| DD-47W1  | DDMM47W1S       | DDMM47W1P    | DDMC47W1S-NMB-K52      | DDM47W1P-NMB-K52    |

## Contact Arrangements

(Will accommodate Removable Coax, Power and/or High Voltage Contacts)

Note: Color Code - Pin Connector: Red, Socket Connector: Blue

|                                                                                        |                                                                                      |                                                                                       |                                                                                       |                                                                                      |                                                                                      |                        |
|----------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------|------------------------|
|      |    |     |     |  |  |                        |
| Shell Size<br>Contact Arrangement<br>No. of Signal Contacts<br>No. of Coaxial Contacts | E<br>5W1<br>4-#20<br>1                                                               | A<br>3W3<br>0<br>3                                                                    | A<br>7W2<br>5 #20<br>2                                                                | A<br>11W1<br>10 #20<br>1                                                             | B<br>5W5<br>0<br>5                                                                   | B<br>9W4<br>5 #20<br>4 |
|     |   |   |  |                                                                                      |                                                                                      |                        |
| Shell Size<br>Contact Arrangement<br>No. of Signal Contacts<br>No. of Coaxial Contacts | B<br>13W3<br>10 #20<br>3                                                             | B<br>17W2<br>15 #20<br>2                                                              | B<br>21W1<br>20 #20<br>1                                                              | C<br>8W8<br>0<br>8                                                                   |                                                                                      |                        |
|     |   |   |  |                                                                                      |                                                                                      |                        |
| Shell Size<br>Contact Arrangement<br>No. of Signal Contacts<br>No. of Coaxial Contacts | C<br>13W6<br>7 #20<br>6                                                              | C<br>17W5<br>12 #20<br>5                                                              | C<br>21WA4<br>17 #20<br>4                                                             | C<br>25W3<br>22 #20<br>3                                                             |                                                                                      |                        |
|     |  |  |                                                                                       |                                                                                      |                                                                                      |                        |
| Shell Size<br>Contact Arrangement<br>No. of Signal Contacts<br>No. of Coaxial Contacts | C<br>27W2<br>25 #20<br>2                                                             | D<br>24W7<br>17 #20<br>7                                                              | D<br>36W4<br>32 #20<br>4                                                              |                                                                                      |                                                                                      |                        |
|     |  |                                                                                       |                                                                                       |                                                                                      |                                                                                      |                        |
| Shell Size<br>Contact Arrangement<br>No. of Signal Contacts<br>No. of Coaxial Contacts | D<br>43W2<br>41 #20<br>2                                                             | D<br>47W1<br>46 #20<br>1                                                              |                                                                                       |                                                                                      |                                                                                      |                        |

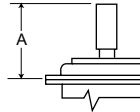
See Commerical D Subminiature catalog for additional Combo D options, including 75 ohm Coax.

# Combo D® - Coaxial/50 Ohm

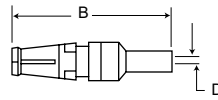
## Cable Combinations - 50 Ohm Coaxial Contacts

Color Code: Receptacle - Blue; Plug - Red

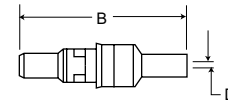
Straight Crimp Braid



(Dimensions include outer sleeve).



Receptacle

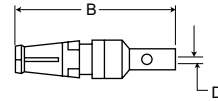
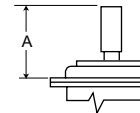


Plug

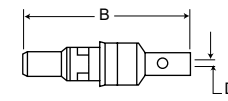
|            | Crimp/Crimp<br>Gold Over Nickel | Gold Over Nickel | 50μ in. Gold Over Copper | <i>NM</i> - Non-Magnetic<br>50μ in. Gold Over Copper | A<br>Max.   | B<br>Max.     | D<br>Min.   | RG Cable No. |        |
|------------|---------------------------------|------------------|--------------------------|------------------------------------------------------|-------------|---------------|-------------|--------------|--------|
|            |                                 |                  |                          |                                                      |             |               |             | Old          | New    |
| Plug       |                                 | DM53740          | DM53740-17               |                                                      | .739 (18.8) | .945 (24.00)  | .040 (1.00) | 196/U        | 178B/U |
| Plug       | DM53740-37*                     | DM53740-1        | DM53740-15               | DM53740-36                                           | .739 (18.8) | .945 (24.00)  | .067 (1.70) | 187/U        | 179B/U |
| Plug       |                                 | DM53740-35       |                          |                                                      | .739 (18.8) | .945 (24.00)  | .067 (1.70) | -            | RD316  |
| Plug       |                                 | DM53740-3        | DM53740-16               |                                                      | .847 (21.5) | 1.037 (26.34) | .110 (2.79) | 195/U        | 180B/U |
| Plug       |                                 | DM53740-5        | DM53740-18               |                                                      | .847 (21.5) | 1.037 (26.34) | .125 (3.18) | 58/U         | 58B/U  |
| Receptacle |                                 | DM53742          | DM53742-18               |                                                      | .739 (18.8) | .945 (24.00)  | .040 (1.00) | 196/U        | 178B/U |
| Receptacle | DM53742-38*                     | DM53742-1        | DM53742-16               | DM53742-37                                           | .739 (18.8) | .945 (24.00)  | .067 (1.70) | 187/U        | 179B/U |
| Receptacle |                                 | DM53742-36       |                          |                                                      | .739 (18.8) | .945 (24.00)  | .067 (1.70) | -            | RD316  |
| Receptacle |                                 | DM53742-3        | DM53742-17               |                                                      | .847 (21.5) | 1.037 (26.34) | .110 (2.79) | 195/U        | 180B/U |
| Receptacle |                                 | DM53742-5        | DM53742-19               |                                                      | .847 (21.5) | 1.037 (26.34) | .125 (3.18) | 58/U         | 58B/U  |

\* Consult factory for center contact crimp tooling.

Straight Crimp Braid



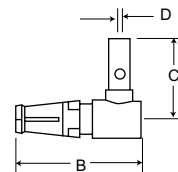
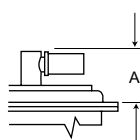
Receptacle



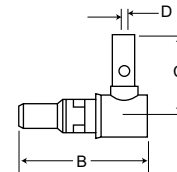
Plug

|                         | Gold Over Nickel | 50μ in. Gold Over Copper | <i>NM</i> - Non-Magnetic<br>50μ in. Gold Over Copper | A<br>Max.    | B<br>Max.     | D<br>Min.   | RG Cable No. |        |
|-------------------------|------------------|--------------------------|------------------------------------------------------|--------------|---------------|-------------|--------------|--------|
|                         |                  |                          |                                                      |              |               |             | Old          | New    |
| Plug                    | DM53740-5008     | DM53740-5105             |                                                      | .739 (18.8)  | .945 (24.00)  | .040 (1.00) | 196/U        | 178B/U |
| Plug                    | DM53740-5001     | DM53740-5099             | DM53740-5147                                         | .739 (18.8)  | .945 (24.00)  | .067 (1.70) | 187/U        | 179B/U |
| Plug                    | DM53740-5145     |                          |                                                      | .739 (18.8)  | .945 (24.00)  | .067 (1.70) | -            | RD316  |
| Plug                    | DM53740-5002     | DM53740-5104             |                                                      | .847 (21.5)  | 1.037 (26.34) | .110 (2.79) | 195/U        | 180B/U |
| Plug                    | DM53740-5005     | DM53740-5101             |                                                      | .847 (21.5)  | 1.037 (26.34) | .125 (3.18) | 58/U         | 58/U   |
| Receptacle              | DM53742-5006     | DM53742-5092             |                                                      | .739 (18.8)  | .945 (24.00)  | .040 (1.00) | 196/U        | 178B/U |
| Receptacle              | DM53742-5001     | DM53742-5089             | DM53742-5127                                         | .739 (18.8)  | .945 (24.00)  | .067 (1.70) | 187/U        | 179B/U |
| Receptacle              | DM53742-5126     |                          |                                                      | .739 (18.8)  | .945 (24.00)  | .067 (1.70) | -            | RD316  |
| Receptacle              | DM53742-5002     | DM53742-5091             |                                                      | .847 (21.5)  | 1.037 (26.34) | .110 (2.79) | 195/U        | 180B/U |
| Receptacle              | DM53742-5004     | DM53742-5086             |                                                      | .847 (21.5)  | 1.037 (26.34) | .125 (3.18) | 58/U         | 58/U   |
| Plug (Short Type)       | DM53740-5000     | DM53740-5100             | .670 (17.0)                                          | .874 (22.20) | .045 (1.14)   | .196/U      | 178B/U       |        |
| Receptacle (Short Type) | DM53742-5000     | DM53742-5085             | .670 (17.0)                                          | .874 (22.20) | .045 (1.14)   | .196/U      | 178B/U       |        |

Right Angle Solder Braid



Receptacle



Plug

|            | Gold Over Nickel | 50μ in. Gold Over Copper | A<br>Max.    | B<br>Max.    | C            | D<br>Min.   | RG Cable No.   |                  |
|------------|------------------|--------------------------|--------------|--------------|--------------|-------------|----------------|------------------|
|            |                  |                          |              |              |              |             | Old            | New              |
| Plug       | DM53741-5000     | DM53741-5059             | .530 (13.46) | .745 (18.92) | .544 (15.10) | .040 (1.00) | 196/U          | 178B/U           |
| Plug       | DM53741-5001     | DM53741-5062             | .530 (13.46) | .745 (18.92) | .544 (15.10) | .067 (1.70) | 187/U<br>188/U | 178B/U<br>316B/U |
| Plug       | DM53741-5003     | DM53741-5063             | .530 (13.46) | .745 (18.92) | .630 (16.00) | .110 (2.79) | 195/U          | 180B/U           |
| Plug       | DM53741-5004     | DM53741-5060             | .530 (13.46) | .745 (18.92) | .630 (16.00) | .125 (3.18) | 58/U           | 58/U             |
| Receptacle | DM53743-5000     | DM53743-5073             | .530 (13.46) | .745 (18.92) | .594 (15.09) | .040 (1.00) | 196/U          | 178B/U           |
| Receptacle | DM53743-5001     | DM53743-5076             | .530 (13.46) | .745 (18.92) | .594 (15.09) | .067 (1.70) | 187/U<br>188/U | 179B/U<br>316B/U |
| Receptacle | DM53743-5003     | DM53743-5077             | .530 (13.46) | .745 (18.92) | .630 (16.00) | .110 (2.79) | 195/U          | 180B/U           |
| Receptacle | DM53743-5004     | DM53743-5074             | .530 (13.46) | .745 (18.92) | .630 (16.00) | .125 (3.18) | 58/U           | 58B/U            |

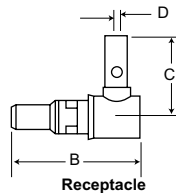
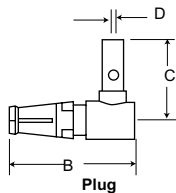
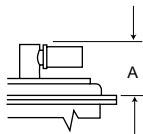
Highlighted part numbers indicate standard product; usually available with shorter lead times.

See *Commerical D Subminiature* catalog for additional Combo D options, including 75 ohm Coax.

# Combo D® - Coaxial/50 Ohm

## Cable Combinations - 50 Ohm Coaxial Contacts (Continued)

Right Angle Crimp Braid



(Dimensions include outer sleeve.)  
Color Code: Receptacle - Blue; Plug - Red

|            | Part Number      |                          | A<br>Max.    | B<br>Ref.    | C            | D<br>± .005 (0.13) | RG Cable No. |        |
|------------|------------------|--------------------------|--------------|--------------|--------------|--------------------|--------------|--------|
|            | Gold Over Nickel | 50μ in. Gold Over Copper |              |              |              |                    | Old          | New    |
| Plug       | DM53741          | DM53741-12               | .530 (13.46) | .745 (18.92) | .594 (15.10) | .045 (1.14)        | 196/U        | 178B/U |
| Plug       | DM53741-1        | DM53741-11               | .530 (13.46) | .745 (18.92) | .594 (15.10) | .072 (1.83)        | 187/U        | 179B/U |
|            |                  |                          |              |              |              |                    | 188/U        | 316B/U |
| Plug       | DM53741-3        | DM53741-10               | .530 (13.46) | .745 (18.92) | .630 (16.00) | .110 (2.79)        | 195/U        | 180B/U |
| Plug       | DM53741-4        | DM53741-13               | .530 (13.46) | .745 (18.92) | .630 (16.00) | .125 (3.18)        | 58/U         | 58B/U  |
| Receptacle | DM53743-2        | DM53743-18               | .530 (13.46) | .745 (18.92) | .594 (15.10) | .045 (1.14)        | 196/U        | 178B/U |
| Receptacle | DM53743-3        | DM53743-16               | .530 (13.46) | .745 (18.92) | .594 (15.10) | .072 (1.83)        | 187/U        | 179B/U |
|            |                  |                          |              |              |              |                    | 188/U        | 316B/U |
| Receptacle | DM53743-5        | DM53743-17               | .530 (13.46) | .745 (18.92) | .630 (16.00) | .110 (2.79)        | 195/U        | 180B/U |
| Receptacle | DM53743-6        | DM53743-19               | .530 (13.46) | .745 (18.92) | .630 (16.00) | .125 (3.18)        | 58/U         | 58B/U  |

### Insertion/Extractoin Instructions

Coaxial, High Power and High Voltage Contacts

#### Insertion

No insertion tool is required. The contact is easily snapped in from the rear of the connector.

RED COLOR CODED CONNECTOR  
ACCEPTS PLUG CONTACTS.

BLUE COLOR CODED CONNECTORS ACCEPTS RECEPTACLE  
CONTACTS INSERT FROM TERMINAL END AS SHOWN BELOW.

INSERT

INSERT

PLUG CONTACT  
D\*M PLUG

RECEPTACLE CONTACT  
D\*M RECEPTACLE

#### Extraction

##### CET-C6B

The CET-C6B tool extracts coaxial, high power and high voltage contacts (Plug and receptacle).  
Part number 070064-0000.

#### Operating Instructions:

To extract the coax contact, hold the tool by the body and insert the tip into the front of the contact cavity until it bottoms and closes the coax retaining ring. Holding the body in this position securely enough to keep coax retaining ring closed, push the plunger; contact will be pushed out of the rear of the assembly.

TOOL PLUNGER  
COAXIAL, H.V., OR  
POWER CONTACTS  
EXTRACT

TOOL TIP  
EXTRACTION TOOL CET-C6B

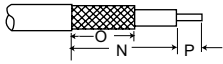
Hand Tool with intergral die set for all coax straight crimp braid. Part Number: 070051-0000 (CCT-DM)

See Commerical D Subminiature catalog for additional Combo D options, including 75 ohm Coax.

# Combo D® - Coaxial/50 Ohm

## Coax Assembly Instructions

### Trim Dimensions



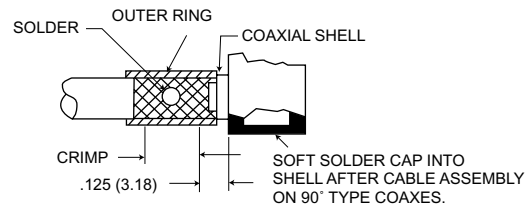
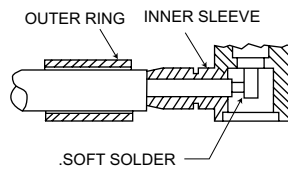
| RG Cable No.                                  | Straight    |             |             | Right Angle  |             |             |
|-----------------------------------------------|-------------|-------------|-------------|--------------|-------------|-------------|
|                                               | N           | O           | P           | N            | O           | P           |
| 196/U, 178B/U, 187/U<br>188/U, 179B/U, 316B/U | .312 (7.92) | .250 (6.35) | .078 (1.98) | .375 (9.52)  | .234 (5.94) | .062 (1.57) |
| 195/U, 180B/U<br>58/U, 58B/U                  | .375 (9.52) | .312 (7.92) | .078 (1.98) | .422 (10.69) | .312 (7.92) | .094 (2.39) |

All tolerances  $\pm .010$  (0.25)

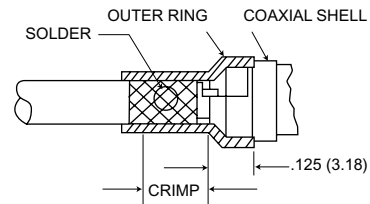
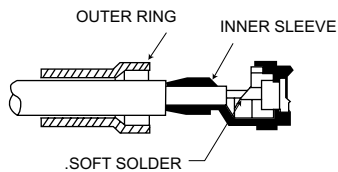
### Crimp Tooling

| RG Cable No.                   | Tool P/N    | Description | Closure |
|--------------------------------|-------------|-------------|---------|
| 196/U, 178B/U                  | 070051-0000 | CCT-DM      | C       |
| 187/U, 179B/U<br>188/U, 316B/U | 070051-0000 | CCT-DM      | B       |
| 195/U, 180B/U<br>58/U, 58B/U   | 070051-0000 | CCT-DM      | A       |

### 90° Coaxial



### Straight Coaxial



### STEP 1: Straight and 90° Coaxials

Slide the outer ring over the cable jacket. Trim the cable as specified in the table of Coax Cable Trim Dimensions. Insert the cable dielectric and center conductor into the inside diameter of the inner sleeve. Then solder the center conductor to the coax center contact.

### STEP 2: Straight and 90° Coaxials

Slide the outer ring forward until it is flush with the coax shell containing the braid between the outer ring and the inner sleeve. For solder types coaxes, soft solder the outer ring to the assembly thru the cross-drilled solder hold. For crimp type coaxes, crimp with the appropriate tool in the area defined.

See *Commerical D Subminiature* catalog for additional Combo D options, including 75 ohm Coax.

# Combo D® - Coaxial/50 Ohm

## Right Angle Receptacle for PCB Mounting



PCB Layouts - Page 352

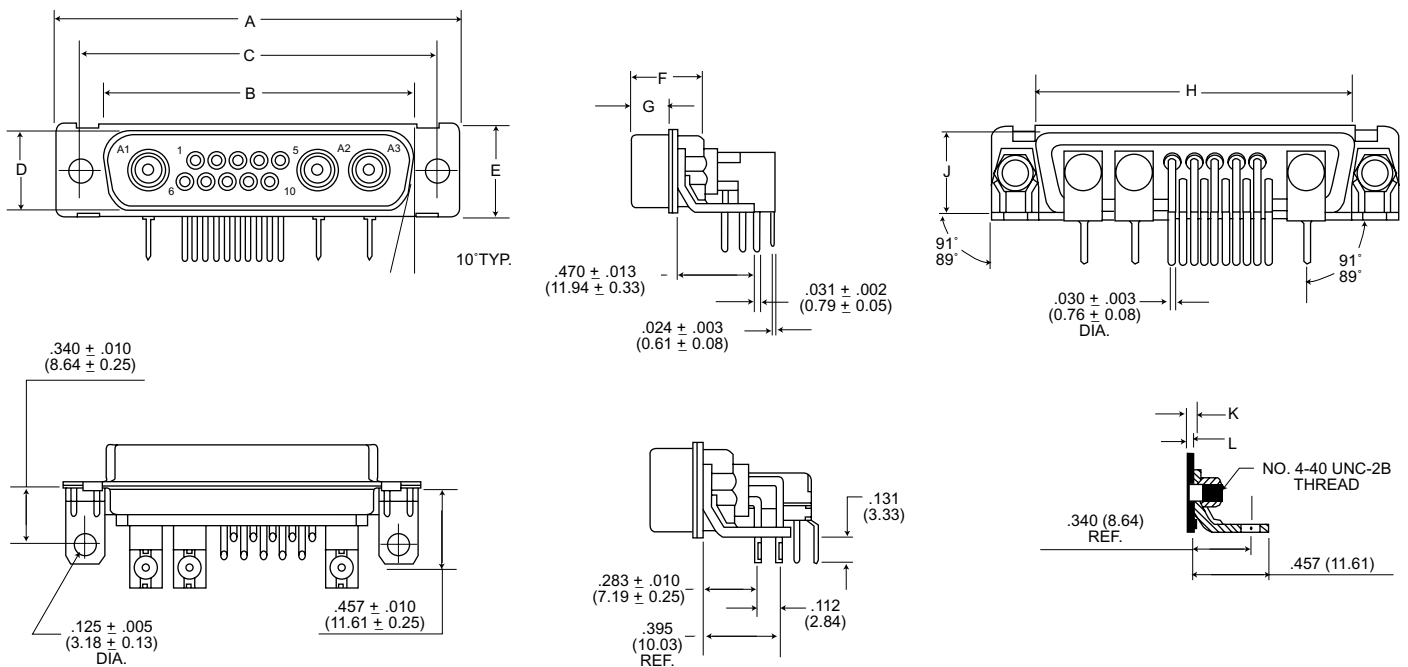
Military part numbers come complete with fixed, female, signal and coaxial contacts and right angle brackets.

Military part numbers come with coaxial contacts.

Non-magnetic part numbers must use coaxial contacts from Page 347 and do not come with brackets.

| Layout   | Military    | NM<br>Non-Magnetic |
|----------|-------------|--------------------|
| DE-5W1   | DEMP5X1SP   | DEM5W1SP-NMB-K52   |
| DA-7W2   | DAMP7X2SP   | DAM7W2SP-NMB-K52   |
| DA-11W1  | DAMP11X1SP  | DAM11W1SP-NMB-K52  |
| DA-3W3   | DAMP3X3SP   | DAM3W3SP-NMB-K47   |
| DB-5W5   | DBMP5X5SP   | DBM5W5SP-NMB-K47   |
| DB-9W4   | DBMP9X4SP   | DBM9W4SP-NMB-K52   |
| DB-13W3  | DBMP13X3SP  | DBM13W3SP-NMB-K52  |
| DB-17W2  | DBMP17X2SP  | DBM17W2SP-NMB-K52  |
| DB-21W1  | DBMP21X1SP  | DBM21W1SP-NMB-K52  |
| DC-8W8   | DCMP8X8SP   | DCM8W8SP-NMB-K47   |
| DC-13W6  | DCMP13X6SP  | DCM13W6SP-NMB-K52  |
| DC-17W5  | DCMP17X5SP  | DCM17W5SP-NMB-K52  |
| DC-21WA4 | DCMP21XA4SP | DCM21WA4SP-NMB-K52 |
| DC-25W3  | DCMP25X3SP  | DCM25W3SP-NMB-K52  |
| DC-27W2  | DCMP27X2SP  | DCM27W2SP-NMB-K52  |

## Dimensions



## SOCKET CONNECTOR ASSEMBLY (Female)

| Shell Size | A<br>± .015 (0.38) | B<br>± .005 (0.13) | C<br>± .005 (0.13) | D<br>± .005 (0.13) | E<br>± .015 (0.38) | F<br>± .005 (0.13) | G<br>± .005 (0.13) | H<br>± .010 (0.25) | J<br>± .010 (0.25) | K<br>± .013 (0.33) | L<br>± .010 (0.25) |
|------------|--------------------|--------------------|--------------------|--------------------|--------------------|--------------------|--------------------|--------------------|--------------------|--------------------|--------------------|
| DE         | 1.213 (30.81)      | .643 (16.33)       | .984 (24.99)       | .311 (7.90)        | .494 (12.55)       | .429 (10.90)       | .243 (6.17)        | .759 (19.28)       | .422 (10.72)       | .048 (1.22)        | .030 (0.76)        |
| DA         | 1.541 (39.14)      | .971 (24.66)       | 1.312 (33.32)      | .311 (7.90)        | .494 (12.55)       | .429 (10.90)       | .243 (6.17)        | 1.083 (27.51)      | .422 (10.72)       | .048 (1.22)        | .030 (0.76)        |
| DB         | 2.088 (53.03)      | 1.511 (38.38)      | 1.852 (47.04)      | .311 (7.90)        | .494 (12.55)       | .429 (10.90)       | .243 (6.17)        | 1.625 (41.27)      | .422 (10.72)       | .048 (1.22)        | .039 (0.99)        |
| DC         | 2.729 (69.31)      | 2.159 (54.84)      | 2.500 (63.50)      | .311 (7.90)        | .494 (12.55)       | .429 (10.90)       | .243 (6.17)        | 2.272 (57.71)      | .422 (10.72)       | .048 (1.22)        | .039 (0.99)        |

# Combo D® - Coaxial/50 Ohm

## Right Angle Plug for PCB Mounting



PCB Layouts - Page 352

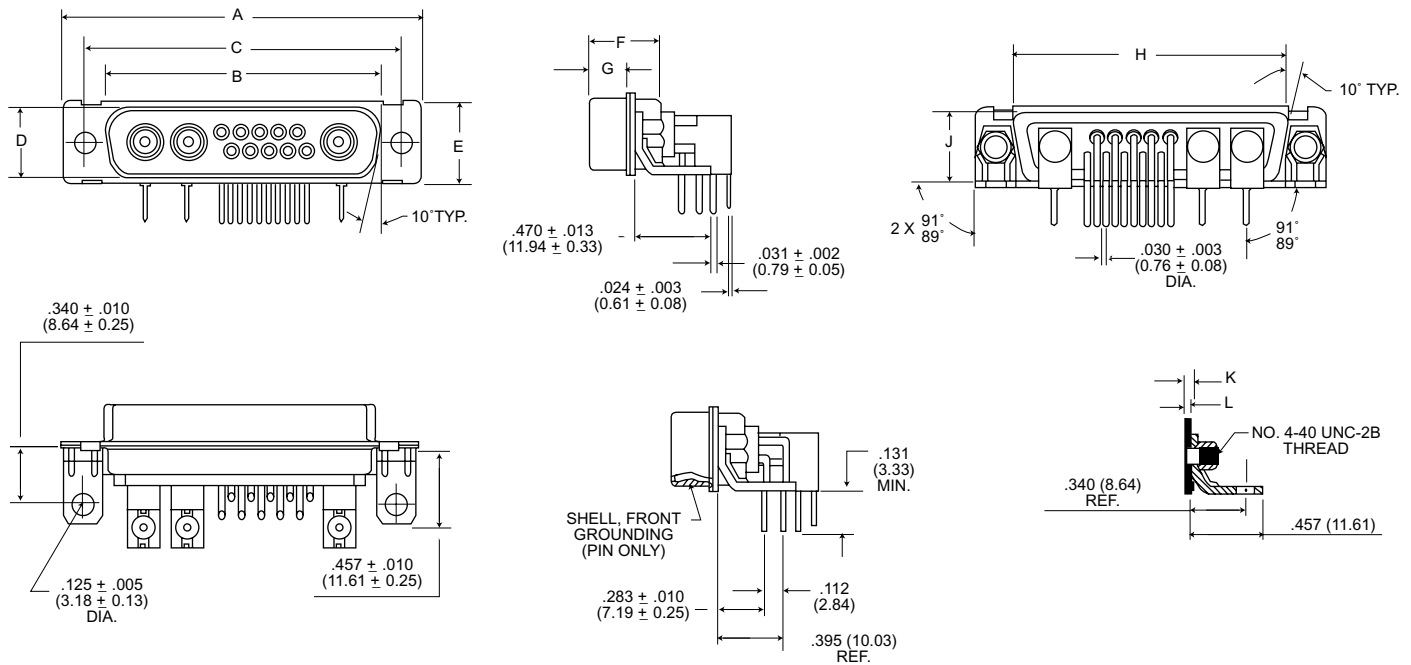
Military part numbers come complete with fixed, female, signal and right angle brackets.

Military part numbers come with coaxial contacts.

Non-magnetic part numbers must use coaxial contacts from Page 347 and do not come with brackets.

| Layout   | Military    | <b>NM</b><br>Non-Magnetic |
|----------|-------------|---------------------------|
| DE-5W1   | DEMMP5X1PP  | DEM5W1PP-NMB-K52          |
| DA-7W2   | DAMMP7X2PP  | DAM7W2PP-NMB-K52          |
| DA-11W1  | DAMM11X1PP  | DAM11W1PP-NMB-K52         |
| DA-3W3   | DAMM3X3PP   | DAM3W3P-NMB-K47           |
| DB-5W5   | DBMM5X5PP   | DBM5W5P-NMB-K47           |
| DB-9W4   | DBMM9X4PP   | DBM9W4PP-NMB-K52          |
| DB-13W3  | DBMM13X3PP  | DBM13W3PP-NMB-K52         |
| DB-17W2  | DBMM17X2PP  | DBM17W2PP-NMB-K52         |
| DB-21W1  | DBMM21X1PP  | DBM21W1PP-NMB-K52         |
| DC-8W8   | DCMM8X8PP   | DCM8W8P-NMB-K47           |
| DC-13W6  | DCMM13X6PP  | DCM13W6PP-NMB-K52         |
| DC-17W5  | DCMM17X5PP  | DCM17W5PP-NMB-K52         |
| DC-21WA4 | DCMM21XA4PP | DCM21WA4PP-NMB-K52        |
| DC-25W3  | DCMM25X3PP  | DCM25W3PP-NMB-K52         |
| DC-27W2  | DCMM27X2PP  | DCM27W2PP-NMB-K52         |

## Dimensions



## PLUG CONNECTOR ASSEMBLY (Male)

| Shell Size | A<br>+ .015 (0.38) | B<br>+ .005 (0.13) | C<br>+ .005 (0.13) | D<br>+ .005 (0.13) | E<br>+ .015 (0.38) | F<br>+ .005 (0.13) | G<br>+ .006 (0.15) | H<br>+ .010 (0.25) | J<br>+ .010 (0.25) | K<br>+ .013 (0.33) | L<br>+ .010 (0.25) |
|------------|--------------------|--------------------|--------------------|--------------------|--------------------|--------------------|--------------------|--------------------|--------------------|--------------------|--------------------|
| DE         | 1.213 (30.81)      | .666 (16.91)       | .984 (24.99)       | .329 (8.36)        | .494 (12.55)       | .422 (10.72)       | .236 (5.99)        | .759 (19.28)       | .422 (10.72)       | .048 (1.22)        | .030 (0.76)        |
| DA         | 1.541 (39.14)      | .994 (25.24)       | 1.312 (33.32)      | .329 (8.36)        | .494 (12.55)       | .422 (10.72)       | .236 (5.99)        | 1.083 (27.51)      | .422 (10.72)       | .048 (1.22)        | .030 (0.76)        |
| DB         | 2.088 (53.03)      | 1.534 (38.96)      | 1.852 (47.04)      | .329 (8.36)        | .494 (12.55)       | .426 (10.82)       | .231 (5.87)        | 1.625 (41.27)      | .422 (10.72)       | .060 (1.52)        | .039 (0.99)        |
| DC         | 2.729 (69.31)      | 2.182 (55.42)      | 2.500 (63.50)      | .329 (8.36)        | .494 (12.55)       | .426 (10.82)       | .231 (5.87)        | 2.272 (57.71)      | .422 (10.72)       | .060 (1.52)        | .039 (0.99)        |

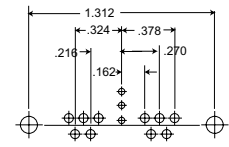
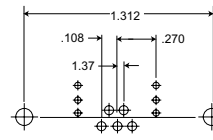
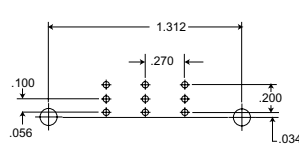
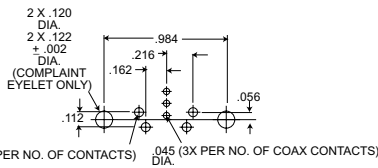
See *Commerical D Subminiature* catalog for additional Combo D options, including 75 ohm Coax.

# Combo D® - Coaxial

## Right Angle Printed Circuit Board Hole Patterns

Face view, pin insert

(for receptacle, hole pattern is a mirror image)



Shell Size

Contact Arrangement

No. of Signal Contacts

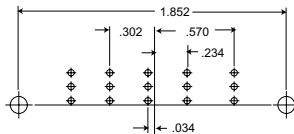
No. of Coaxial Contacts

E

5W1

4 #20

1

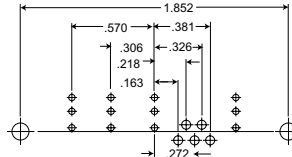


A

3W3

0

3



A

7W2

5 #20

2

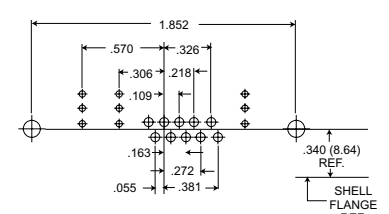


A

11W1

10 #20

1



Shell Size

Contact Arrangement

No. of Signal Contacts

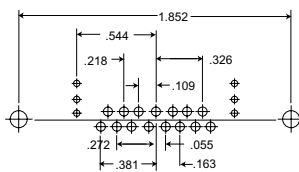
No. of Coaxial Contacts

B

5W5

0

5

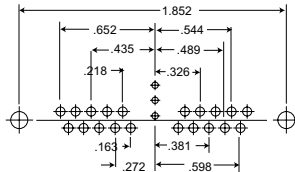


B

9W4

5 #20

4

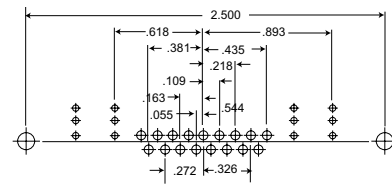


B

13W3

10 #20

3



Shell Size

Contact Arrangement

No. of Signal Contacts

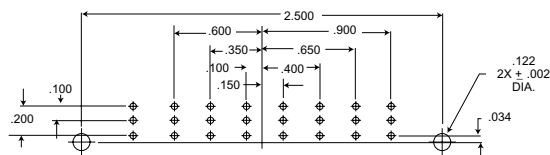
No. of Coaxial Contacts

B

17W2

15 #20

2

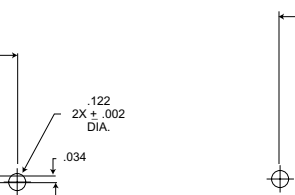


B

21W1

20 #20

1

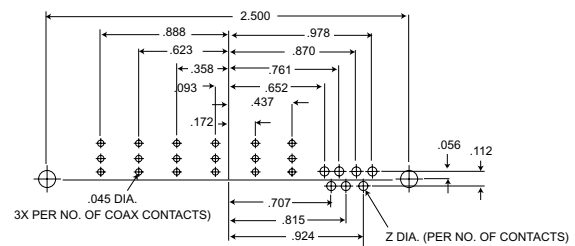


C.489

21WA4

17 #20

4



Shell Size

Contact Arrangement

No. of Signal Contacts

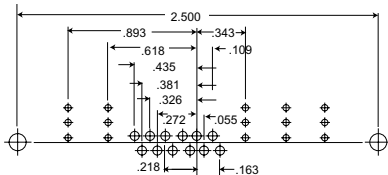
No. of Coaxial Contacts

C

8W8

0

8



Shell Size

Contact Arrangement

No. of Signal Contacts

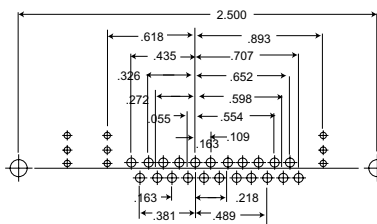
No. of Coaxial Contacts

C

17W5

12 #20

5

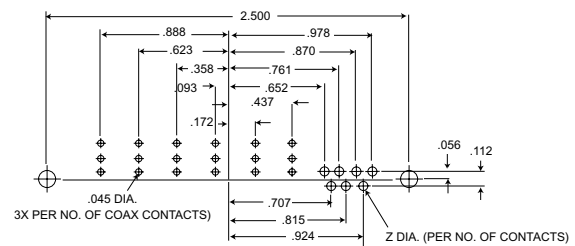


C

13W6

7 #20

6



Size #20  
Contact PC  
Tail Dia.

.030 (0.76)

Z  
Dia.

.045 (1.14)

See Commercial D Subminiature catalog for additional Combo D options, including 75 ohm Coax.

# Combo D® - Coaxial/50 Ohm

## Straight Receptacle for PCB Mounting



PCB Hole Patterns - Pages 354-355

Part numbers come complete with fixed, female, signal and coaxial contacts.

| Layout   | Military    | <b>NM</b>         |
|----------|-------------|-------------------|
|          |             | Non-Magnetic      |
| DE-5W1   | DEMM5X1SM   | DEM5X1SM-NM-K52   |
| DA-7W2   | DAMM7X2SM   | DAM7X2SM-NM-K52   |
| DA-11W1  | DAMM11X1SM  | DAM11X1SM-NM-K52  |
| DA-3W3   | DAMM3X3SM   | DAM3X3SM-NM-K52   |
| DB-5W5   | DBMM5X5SM   | DBM5X5SM-NM-K52   |
| DB-9W4   | DBMM9X4SM   | DBM9X4SM-NM-K52   |
| DB-13W3  | DBMM13X3SM  | DBM13X3SM-NM-K52  |
| DB-17W2  | DBMM17X2SM  | DBM17X2SM-NM-K52  |
| DB-21W1  | DBMM21X1SM  | DBM21X1SM-NM-K52  |
| DC-8W8   | DCMM8X8SM   | DCM8X8SM-NM-K52   |
| DC-13W6  | DCMM13X6SM  | DCM13X6SM-NM-K52  |
| DC-17W5  | DCMM17X5SM  | DCM17X5SM-NM-K52  |
| DC-21WA4 | DCMM21XA4SM | DCM21XA4SM-NM-K52 |
| DC-25W3  | DCMM25X3SM  | DCM25X3SM-NM-K52  |
| DD-24W7  | DCMM24X7SM  | DCM24X7SM-NM-K52  |
| DC-27W2  | DCMM27X2SM  | DCM27X2SM-NM-K52  |
| DD-24W7  | DDMM24X7SM  | DDM24X7SM-NM-K52  |
| DD-36W4  | DDMM36X4SM  | DDM36X4SM-NM-K52  |
| DD-43W2  | DDMM43X2SM  | DDM43X2SM-NM-K52  |
| DD-47W1  | DDMM47X1SM  | DDMC47X1SM-NM-K52 |

## Straight Plug for PCB Mounting (Board Thickness up to .125 [3.18])

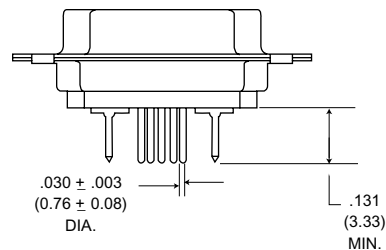


PCB Hole Patterns - Pages 354-355

Part numbers come complete with fixed, male, signal and coaxial contacts.

| Layout   | Military    | <b>NM</b>         |
|----------|-------------|-------------------|
|          |             | Non-Magnetic      |
| DE-5W1   | DEMM5X1PM   | DEM5X1PM-NM-K52   |
| DA-7W2   | DAMM7X2PM   | DAM7X2PM-NM-K52   |
| DA-11W1  | DAMM11X1PM  | DAM11X1PM-NM-K52  |
| DA-3W3   | DAMM3X3PM   | DAM3X3PM-NM-K52   |
| DB-5W5   | DBMM5X5PM   | DBM5X5PM-NM-K52   |
| DB-9W4   | DBMM9X4PM   | DBM9X4PM-NM-K52   |
| DB-13W3  | DBMM13X3PM  | DBM13X3PM-NM-K52  |
| DB-17W2  | DBMM17X2PM  | DBM17X2PM-NM-K52  |
| DB-21W1  | DBMM21X1PM  | DBM21X1PM-NM-K52  |
| DC-8W8   | DCMM8X8PM   | DCM8X8PM-NM-K52   |
| DC-13W6  | DCMM13X6PM  | DCM13X6PM-NM-K52  |
| DC-17W5  | DCMM17X5PM  | DCM17X5PM-NM-K52  |
| DC-21WA4 | DCMM21XA4PM | DCM21XA4PM-NM-K52 |
| DC-25W3  | DCMM25X3PM  | DCM25X3PM-NM-K52  |
| DC-27W2  | DCMM27X2PM  | DCM27X2PM-NM-K52  |
| DD-24W7  | DDMM24X7PM  | DDM24X7PM-NM-K52  |
| DD-36W4  | DDMM36X4PM  | DDM36X4PM-NM-K52  |
| DD-43W2  | DDMM43X2PM  | DDM43X2PM-NM-K52  |
| DD-47W1  | DDMM47X1PM  | DDM47X1PM-NM-K52  |

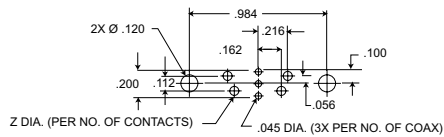
### Dimensions



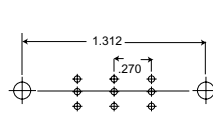
See *Commerical D Subminiature* catalog for additional Combo D options, including 75 ohm Coax.

## Straight Printed Circuit Board Hole Patterns

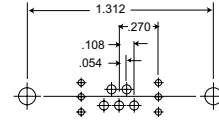
Face view, pin insert  
(for receptacle, hole pattern is a mirror image)



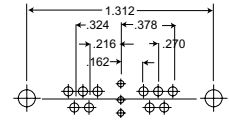
Shell Size **E**  
Contact Arrangement **5W1**  
No. of Signal Contacts **4 #20**  
No. of PC Coaxial Contacts **1**



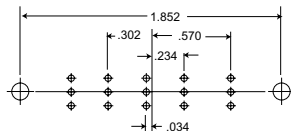
Shell Size **A**  
Contact Arrangement **3W3**  
No. of Signal Contacts **-**  
No. of PC Coaxial Contacts **3**



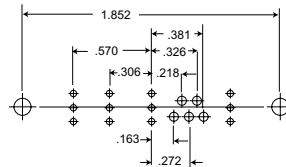
Shell Size **A**  
Contact Arrangement **7W2**  
No. of Signal Contacts **5 #20**  
No. of PC Coaxial Contacts **2**



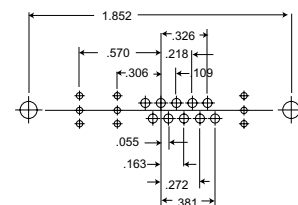
Shell Size **A**  
Contact Arrangement **11W1**  
No. of Signal Contacts **10 #20**  
No. of PC Coaxial Contacts **1**



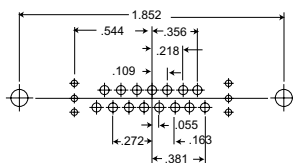
Shell Size **B**  
Contact Arrangement **5W5**  
No. of Signal Contacts **-**  
No. of PC Coaxial Contacts **5**



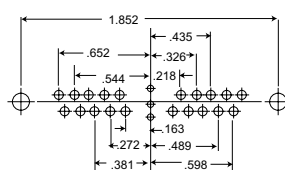
Shell Size **B**  
Contact Arrangement **9W4**  
No. of Signal Contacts **5 #20**  
No. of PC Coaxial Contacts **4**



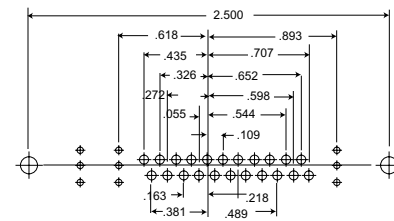
Shell Size **B**  
Contact Arrangement **13W3**  
No. of Signal Contacts **10 #20**  
No. of PC Coaxial Contacts **3**



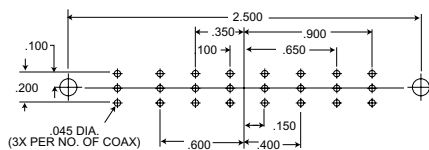
Shell Size **B**  
Contact Arrangement **17W2**  
No. of Signal Contacts **15 #20**  
No. of PC Coaxial Contacts **2**



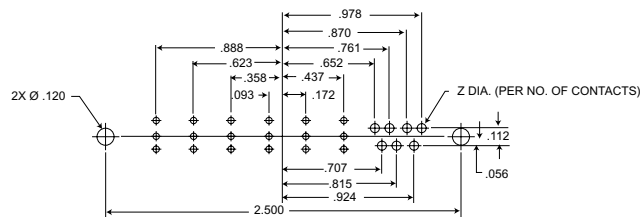
Shell Size **B**  
Contact Arrangement **21W1**  
No. of Signal Contacts **20 #20**  
No. of PC Coaxial Contacts **1**



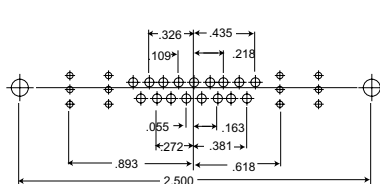
Shell Size **C**  
Contact Arrangement **25W3**  
No. of Signal Contacts **22 #20**  
No. of PC Coaxial Contacts **3**



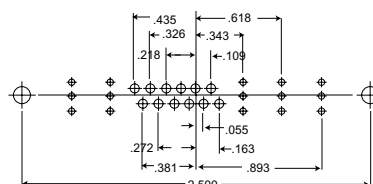
Shell Size **C**  
Contact Arrangement **8W8**  
No. of Signal Contacts **-**  
No. of PC Coaxial Contacts **8**



Shell Size **C**  
Contact Arrangement **13W6**  
No. of Signal Contacts **7 #20**  
No. of PC Coaxial Contacts **6**



Shell Size **C**  
Contact Arrangement **21WA4**  
No. of Signal Contacts **17 #20**  
No. of PC Coaxial Contacts **4**

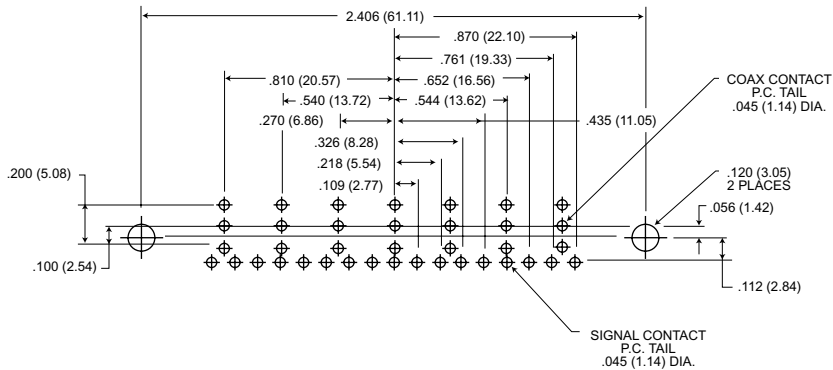


Shell Size **C**  
Contact Arrangement **17W5**  
No. of Signal Contacts **12 #20**  
No. of PC Coaxial Contacts **5**

| Size No. 20 | Contact PC | 2           |
|-------------|------------|-------------|
| Tail Dia.   |            | Dia.        |
| .030 (0.76) |            | .045 (1.14) |

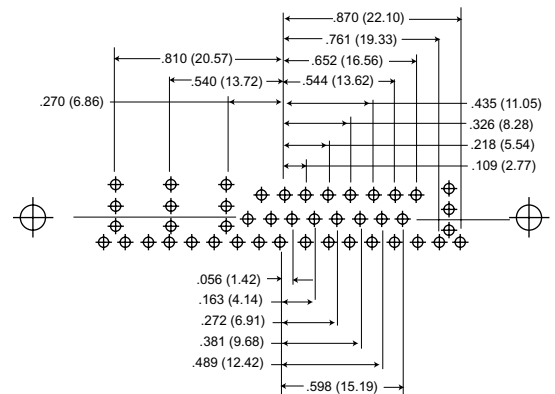
## Straight Printed Circuit Board Hole Patterns

Face view, pin insert  
(for receptacle, hole pattern is a mirror image)

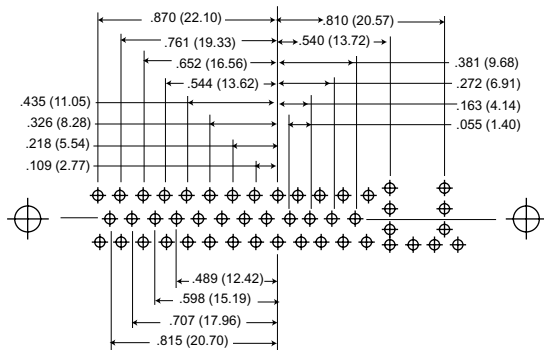


Shell Size  
Contact Arrangement  
No. of Signal Contacts  
No. of Coaxial Contacts

D  
24W7  
17 #20  
7

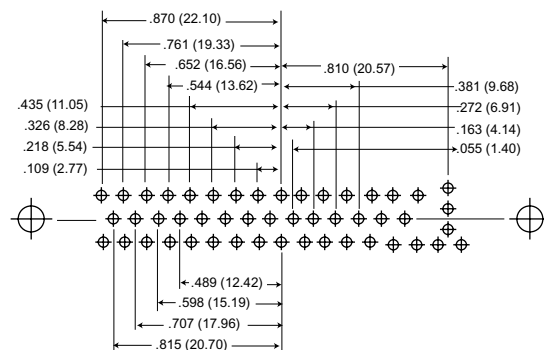


D  
36W4  
32 #20  
4



Shell Size  
Contact Arrangement  
No. of Signal Contacts  
No. of Coaxial Contacts

D  
43W2  
41 #20  
2



D  
47W1  
46 #20  
1

# Combo D® - High Voltage

## Coaxial Housings With Solder Cup Signal Contacts

High voltage contacts  
supplied separately.



Contact Arrangements: Page 346 of Coax section  
Performance Specifications: Page 345 of Coax section.

Clinch Nut and Float Mount Options Available:

Add: E = 4-40 Clinch Nut

Y = Float Mounting

Example: DAMME3W3P

DAMMY3W3P

See page 334 for Mounting Method Detail.

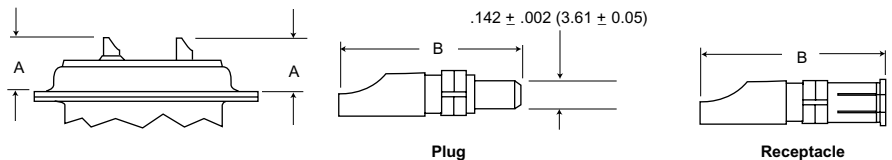
Cable Combinations supplied with preloaded solder signal contacts. High Power Contacts supplied separately, see below.

Extraction Tool for High Power Contacts are the same as for 50 Ohm Coaxial Contacts. See page 348.

| Layout   | Military Socket | Military Pin | NM - Non-Magnetic Socket | NM - Non-Magnetic Pin |
|----------|-----------------|--------------|--------------------------|-----------------------|
| DE-5W1   | DEMM5W1S        | DEMM5W1P     | DEM5W1S-NMB-K52          | DEM5W1P-NMB-K52       |
| DA-7W2   | DAMM7W2S        | DAMM7W2P     | DAM7W2S-NMB-K52          | DAM7W2P-NMB-K52       |
| DA-11W1  | DAMM11W1S       | DAMM11W1P    | DAM11W1S-NMB-K52         | DAM11W1P-NMB-K52      |
| DA-3W3   | DAMM3W3S        | DAMM3W3P     | DAM3W3S-NMB-K47          | DAM3W3P-NMB-K47       |
| DB-5W5   | DBMM5W5S        | DBMM5W5P     | DBM5W5S-NMB-K47          | DBM5W5P-NMB-K47       |
| DB-9W4   | DBMM9W4S        | DBMM9W4P     | DBM9W4S-NMB-K52          | DBM9W4P-NMB-K52       |
| DB-13W3  | DBMM13W3S       | DBMM13W3P    | DBM13W3S-NMB-K52         | DBM13W3P-NMB-K52      |
| DB-17W2  | DBMM17W2S       | DBMM17W2P    | DBM17W2S-NMB-K52         | DBM17W2P-NMB-K52      |
| DB-21W1  | DBMM21W1S       | DBMM21W1P    | DBM21W1S-NMB-K52         | DBM21W1P-NMB-K52      |
| DC-8W8   | DCMM8W8S        | DCMM8W8P     | DCM8W8S-NMB-K47          | DCM8W8P-NMB-K47       |
| DC-13W6  | DCMM13W6S       | DCMM13W6P    | DCM13W6S-NMB-K52         | DCM13W6P-NMB-K52      |
| DC-17W5  | DCMM17W5S       | DCMM17W5P    | DCM17W5S-NMB-K52         | DCM17W5P-NMB-K52      |
| DC-21WA4 | DCMM21WA4S      | DCMM21WA4P   | DCM21WA4S-NMB-K52        | DCM21WA4P-NMB-K52     |
| DC-25W3  | DCMM25W3S       | DCMM25W3P    | DCM25W3S-NMB-K52         | DCM25W3P-NMB-K52      |
| DC-27W2  | DCMM27W2S       | DCMM27W2P    | DCM27W2S-NMB-K52         | DCM27W2P-NMB-K52      |
| DD-24W7  | DDMM24W7S       | DDMM24W7P    | DDM24W7S-NMB-K52         | DDM24W7P-NMB-K52      |
| DD-36W4  | DDMM36W4S       | DDMM36W4P    | DDM36W4S-NMB-K52         | DDM36W4P-NMB-K52      |
| DD-43W2  | DDMM43W2S       | DDMM43W2P    | DDM43W2S-NMB-K52         | DDM43W2P-NMB-K52      |
| DD-47W1  | DDMM47W1S       | DDMM47W1P    | DDM47W1S-NMB-K52         | DDM47W1P-NMB-K52      |

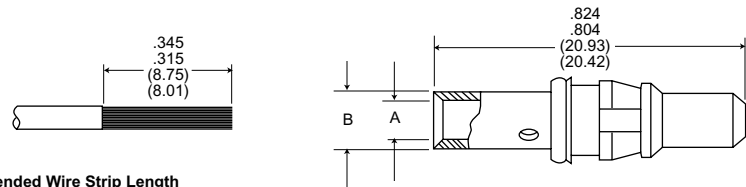
## High Power Contacts

Solder Type



|            | Gold over Nickel | 50µ in. Gold over Copper | NM - Non-Magnetic 50µ in. Gold over Copper | A Max.       | B Ref.       | Current Rating (Amps) | Wire Size |
|------------|------------------|--------------------------|--------------------------------------------|--------------|--------------|-----------------------|-----------|
| Plug       | DM53745-1        | DM53745-28               | DM53745-70                                 | .666 (16.92) | .866 (22.00) | 40                    | #8        |
| Plug       | DM53745-7        | DM53745-27               | DM53745-77                                 | .666 (16.92) | .866 (22.00) | 20                    | #12       |
| Plug       | DM53745-8        | DM53745-25               | DM53745-70                                 | .666 (16.92) | .866 (22.00) | 10                    | #16       |
| Receptacle | DM53744-1        | DM53744-21               | DM53744-62                                 | .666 (16.92) | .856 (21.74) | 40                    | #8        |
| Receptacle | DM53744-6        | DM53744-25               | DM53744-64                                 | .666 (16.92) | .856 (21.74) | 20                    | #12       |
| Receptacle | DM53744-7        | DM53744-24               | DM53744-63                                 | .666 (16.92) | .856 (21.74) | 10                    | #16       |

Crimp Type



Recommended Wire Strip Length

|            | Gold over Nickel | 50µ in. Gold over Copper | A Dia. Max. | B Dia. Max. | Current Rating (Amps) | Wire Size |
|------------|------------------|--------------------------|-------------|-------------|-----------------------|-----------|
| Plug       | DM130338-4       | DM130338                 | .181 (4.60) | .230 (5.84) | 40                    | #8        |
| Plug       | DM130339-4       | DN130339                 | .100 (2.54) | .218 (5.54) | 20                    | #12       |
| Plug       | DM130340-4       | DM130340                 | .067 (1.07) | .102 (2.59) | 10                    | #16       |
| Receptacle | DM130341-4       | DM130341                 | .181 (4.60) | .230 (5.84) | 40                    | #8        |
| Receptacle | DM130342-4       | DM130342                 | .100 (2.54) | .218 (5.54) | 20                    | #12       |
| Receptacle | DM130343-4       | DM130343                 | .067 (1.07) | .102 (2.59) | 10                    | #16       |

Crimp Tooling - Page 357.

See Commerical D Subminiature catalog for PCB High Power connectors.

# Combo D® - High Power

## Crimp High Power Contact Tooling

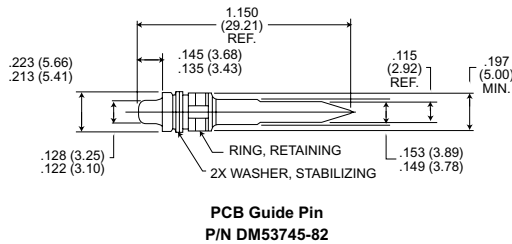
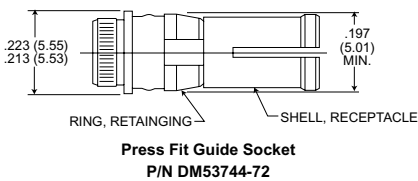
(For use with Crimp High Power Contacts on Page 356)

| Crimp Tool/Locator |                    |                          |          |
|--------------------|--------------------|--------------------------|----------|
| AWG Wire Size      | Daniels Crimp Tool | Tool Setting Number      | Locartor |
| 8-10               | M300-BT            | AWG 8 = 6<br>AWG 10 = 5  | TP968    |
| 12-14              | M300-BT            | AWG 12/14 = 1            | TP968    |
| 16-18              | FT-8               | AWG 16 = 6<br>AWG 18 = 5 | TH554    |

NOTE: Purchase tooling directly from Daniels.

## Combo D Guide Pin and Socket

Installs into any Combo D, size 8 Cavity. This patented guide pin and socket system is ideal for blind mate applications where space is limited.



| Description  | Material     | Finish           |
|--------------|--------------|------------------|
| Guide Pin    | Brass        | Gold over nickel |
| Guide Socket | Copper Alloy | Gold over nickel |

# Combo D® - High Voltage

## Coaxial Housings With Solder Cup Signal Contacts

High voltage contacts  
supplied separately.



Contact Arrangements: Page 346 of Coax section  
Performance Specifications: Page 345 of Coax section.

Clinch Nut and Float Mount Options Available:

Add: E = 4-40 Clinch Nut

Y = Float Mounting

Example: DAMME3W3P

DAMMY3W3P

Mouting Method Detail - Page 334.

Cable Combinations supplied with preloaded solder  
signal contacts. High Voltage Contacts supplied  
separately, see below.

Extraction Tool for High Voltage Contacts are the  
same as for 50 Ohm Coaxial Contacts. See page 348.

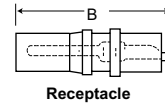
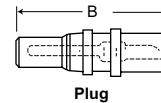
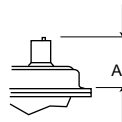
| Layout   | Military Socket | Military Pin |
|----------|-----------------|--------------|
| DE-5W1   | DEMM5W1S        | DEMM5W1P     |
| DA-7W2   | DAMM7W2S        | DAMM7W2P     |
| DA-11W1  | DAMM11W1S       | DAMM11W1P    |
| DA-3W3   | DAMM3W3S        | DAMM3W3P     |
| DB-5W5   | DBMM5W5S        | DBMM5W5P     |
| DB-9W4   | DBMM9W4S        | DBMM9W4P     |
| DB-13W3  | DBMM13W3S       | DBMM13W3P    |
| DB-17W2  | DBMM17W2S       | DBMM17W2P    |
| DB-21W1  | DBMM21W1S       | DBMM21W1P    |
| DC-8W8   | DCMM8W8S        | DCMM8W8P     |
| DC-13W6  | DCMM13W6S       | DCMM13W6P    |
| DC-17W5  | DCMM17W5S       | DCMM17W5P    |
| DC-21WA4 | DCMM21WA4S      | DCMM21WA4P   |
| DC-25W3  | DCMM25W3S       | DCMM25W3P    |
| DC-27W2  | DCMM27W2S       | DCMM27W2P    |
| DD-24W7  | DCMM24W7S       | DCMM24W7P    |
| DD-36W4  | DCMM36W4S       | DCMM36W4P    |
| DD-43W2  | DCMM43W2S       | DCMM43W2P    |
| DD-47W1  | DCMM47W1S       | DCMM47W1P    |

## High Voltage Combination Contacts

|                          |                 |
|--------------------------|-----------------|
| Wire Accommodation (AWG) | #20 Max.        |
| Current Rating           | 5 Amp           |
| Temperature Rating       | -55°C to +125°C |

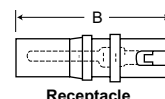
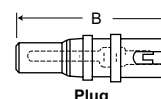
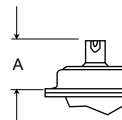
| Description     | Material      | Finish                                                |
|-----------------|---------------|-------------------------------------------------------|
| Contacts        | Copper Alloy  | Std: Gold over nickel<br>MIL-50μ in. Gold over copper |
| Insulator       | Thermoplastic | None                                                  |
| Ring, Retaining | Copper Alloy  | Nickel                                                |

### Straight



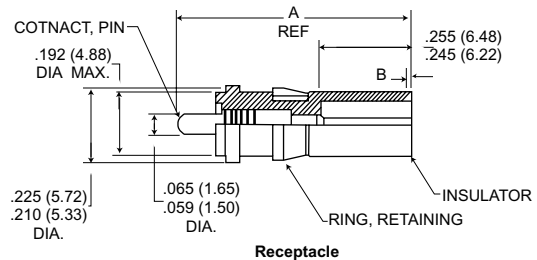
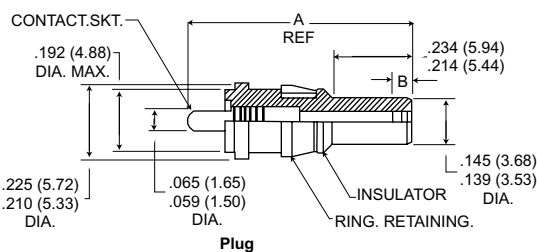
|            | Gold over Nickel | 50μ in. Gold | A<br>Max.    | B<br>Ref.    | Wire<br>Size |
|------------|------------------|--------------|--------------|--------------|--------------|
| Plug       | DM51157          | DM51157-8    | .539 (13.69) | .734 (18.64) | #20          |
| Receptacle | DM51155          | DM51155-7    | .539 (13.69) | .764 (19.41) | #20          |

### Right Angle



|            | Gold over Nickel | 50μ in. Gold | A<br>Max.    | B<br>Ref.    | Wire<br>Size |
|------------|------------------|--------------|--------------|--------------|--------------|
| Plug       | DM51157-5000     | DM51157-5005 | .491 (12.47) | .697 (17.70) | #20          |
| Receptacle | DM51155-5000     | DM51155-5004 | .491 (12.47) | .697 (17.70) | #20          |

### Straight PCB



|            | Standard Finish | Military Finish | A            | B                     |
|------------|-----------------|-----------------|--------------|-----------------------|
| Plug       | DM51157-13      | DM51157-14      | .628 (15.95) | .060/.050 (1.52/1.27) |
| Receptacle | DM51155-12      | DM51155-13      | .660 (16.76) | .010/.000 (0.25/0.00) |



The Cannon D\*D Environmental Series is designed to meet the demand for sealed subminiature rectangular plugs with superior vibration and moisture resistance characteristics for aircraft, missile, and ground support equipment applications.

Featuring a rugged aluminum shell and peripheral seal, the D\*D connector meets all applicable requirements of MIL-C-24308. Available in both solder

and crimp versions, all assemblies are provided with nylon potting cups and dust caps.

Solder type contacts are non-removable and are factory-installed. Crimp type connectors utilize the field-proven LITTLE CAESAR® rear insertion, rear-release retention system.

**PLEASE NOTE: The D\*D Series is not interchangeable with other D Subminiature connectors.**

## Performance and Material Specifications

|                                 |                                                                                                                                                                      |
|---------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Shell                           | Aluminum, cadmium plated with yellow chromate supplementary coating.                                                                                                 |
| Contacts                        | Solder pot: Copper alloy, gold plated .00002 (0.0005) over nickel .00004 (0.0010). Crimp type: Copper alloy, gold plated .00002 (0.0005) over nickel .00004 (0.0010) |
| Insulator                       | Diallyl phthalate, per MIL-M-14, Type MDG or SDG-F                                                                                                                   |
| Contact Termination             | Solder pot accommodating up to #20 AWG stranded wire. Crimp type accommodating #20, #22 and #24 AWG stranded wire.                                                   |
| Socket Type                     | Closed entry                                                                                                                                                         |
| Float Mounting Rivets & Washers | Stainless steel Passivated per QQ-P-35                                                                                                                               |

## Test Data

| Specifications                          |                                                                                                                                                                    |
|-----------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Voltage Rating                          | All voltage figures are AC (rms). 60 Hz measured at approximately 25.0°C 50% RH                                                                                    |
| Insulation Resistance (per MIL-C-24308) | Greater than 5,000 megohms, determined in accordance with MIL-STD-202A, Method 302.                                                                                |
| Contact Voltage Drop                    | 2.67 millivolts, maximum, per amp.                                                                                                                                 |
| Contact Separation Force                | 1 to 8 ounces when tested in accordance with MIL-C-24308.                                                                                                          |
| Air Leakage                             | When properly wired and potted, 1 cubic inch of air per hour max. when subjected to 30 PSI pressure differential in accordance with MIL-C-5015D, Paragraph 4.5.3.1 |
| Vibration (per MIL-C-24308)             | Exceeds test requirements of MIL-STD-202A, Method 204, Condition D.                                                                                                |
| Corrosion Resistance (per MIL-C-24308)  | Exceeds requirements of 50 hour exposure to salt spray in accordance with MIL-STD-202A, Method 101A, Condition B.                                                  |
| Moisture Resistance (per MIL-C-24308)   | Exceeds requirements of MIL-STD-202A, Method 106.                                                                                                                  |
| Shock                                   | Exceeds requirements of MIL-STD-202A, Method 213, Condition G                                                                                                      |
| Environmental Seal                      | Effective from full engagement to 1/16 short of full engagement.                                                                                                   |
| Contact Retention Force                 | (Crimp type) 8 pounds (35.6 newtons) minimum of first cycles: 5 pounds (22.2 newtons) minimum after tenth cycle.                                                   |
| Standard Layout Plugs                   | Measured from contact-to-contact, and contact-to-shell or unmated condition.                                                                                       |

| Altitude (Feet)    |           |        |        |        |
|--------------------|-----------|--------|--------|--------|
|                    | Sea Level | 20,000 | 50,000 | 70,000 |
| Average Flash-over | 1700      | 1000   | 650    | 500    |
| Test               | 1250      | 750    | 475    | 375    |

See Commercial D Subminiature catalog for additional Combo D options, including 75 ohm Coax.

How to Order

Solder Cup Terminals

SERIES PREFIX

SHELL SIZE

CLASS

CONTACT ARRANGEMENT

CONTACT TYPE

MOUNTING STYLE

MODIFICATION

D

A

D - 15

S

A -

SERIES PREFIX

ITT Cannon Designation

SHELL SIZE

A, B, C, D, E

CLASS

D - Environmental

CONTACT ARRANGEMENT

9, 15, 25, 37, 50

CONTACT TYPE

P - Pin

S -Socket

MOUNTING STYLE

A - Standard mounting holes

B - Float mounts supplied

MODIFICATION

Consult factory

Snap-In Crimp Terminals

SERIES PREFIX

SHELL SIZE

CLASS

MOUNTING STYLE

CONTACT ARRANGEMENT

CONTACT TYPE

MODIFICATION

D

A

DA F-

15 P-

F0

SERIES PREFIX

ITT Cannon Designation

SHELL SIZE

A, B, C, D, E

CLASS

DA - Enviromental, crimp type

MOUNTING STYLE

No Designator - Standard mounting

F - Float mounts supplied

CONTACT ARRANGEMENT

9, 15, 25, 37, 50

CONTACT TYPE

P - Pin

S - Socket

MODIFICATION

F0 - Connector supplied less contacts, for other modifications consult factory.

Contact Arrangements

Faces View Pin Insert

Shell Size

Contact Arrangement

Contact Size

1 2 3 4 5

6 7 8 9

E

9

#20

1 2 3 4 5 6 7 8

9 10 11 12 13 14 15

A

15

#20

1 2 3 4 5 6 7 8 9 10 11 12 13

14 15 16 17 18 19 20 21 22 23 24 25

B

25

#20

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19

20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37

C

37

#20

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17

18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48 49 50

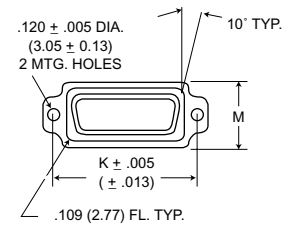
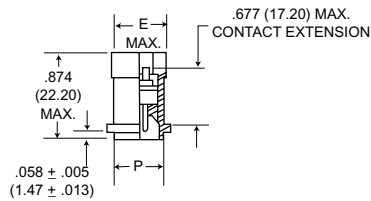
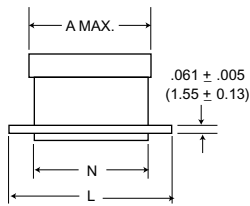
D

50

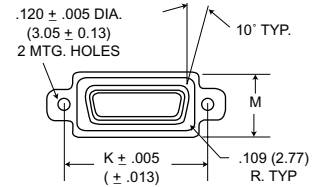
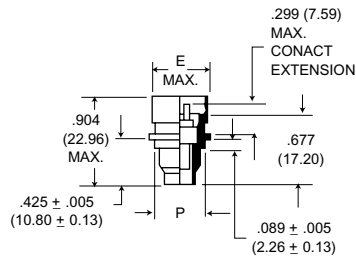
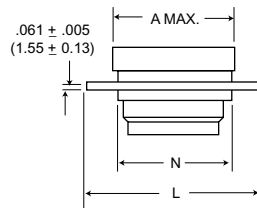
#20

## Shell Dimensions, Standard Mount

## Receptacle

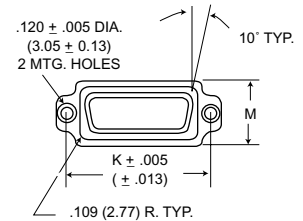
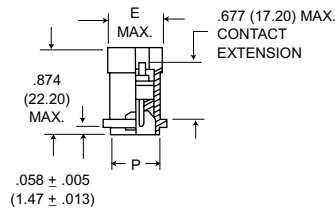
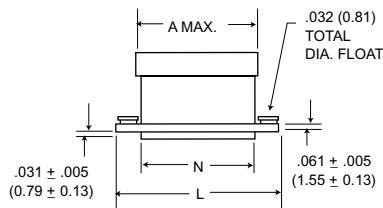


## Plug

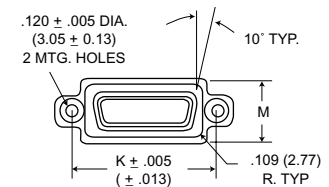
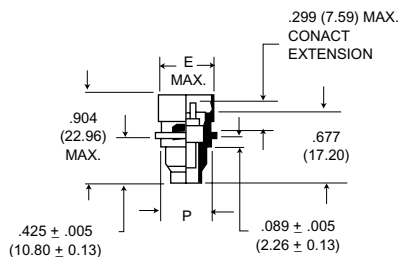
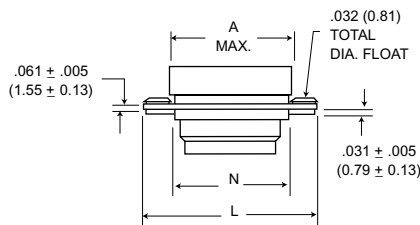


## Float Mount Dimensions

## Receptacle



## Plug



NOTE: All D\*D Environmental plugs and receptacles are provided with dust caps and removable potting cups.

| Shell Size | A<br>Max.     | E<br>Max.    | K<br>± .005 (0.13) | L<br>± .010 (0.25) | M<br>± .010 (0.25) | N<br>± .010 (0.25) | P<br>± .010 (0.25) |
|------------|---------------|--------------|--------------------|--------------------|--------------------|--------------------|--------------------|
| DED-9P     | .915 (23.24)  | .596 (15.14) | 1.125 (28.58)      | 1.442 (36.63)      | .614 (15.60)       | .825 (20.86)       | .483 (12.27)       |
| DED-9S     | .915 (23.24)  | .596 (15.14) | 1.125 (28.58)      | 1.442 (36.63)      | .614 (15.60)       | .825 (20.86)       | .483 (12.27)       |
| DAD-15P    | 1.233 (31.32) | .596 (15.14) | 1.437 (36.50)      | 1.755 (44.58)      | .614 (15.60)       | 1.143 (29.03)      | .483 (12.27)       |
| DAD-15S    | 1.233 (31.32) | .596 (15.14) | 1.437 (36.50)      | 1.755 (44.58)      | .614 (15.60)       | 1.143 (29.03)      | .483 (12.27)       |
| DBD-25P    | 1.786 (45.36) | .596 (15.14) | 1.993 (50.62)      | 2.295 (58.29)      | .614 (15.60)       | 1.683 (42.75)      | .483 (12.27)       |
| DBD-25S    | 1.786 (45.36) | .596 (15.14) | 1.993 (50.62)      | 2.295 (58.29)      | .614 (15.60)       | 1.683 (42.75)      | .483 (12.27)       |
| DCD-37P    | 2.458 (62.43) | .567 (14.40) | 2.625 (66.68)      | 2.937 (74.60)      | .614 (15.60)       | 2.343 (59.51)      | .483 (12.27)       |
| DCD-37S    | 2.458 (62.43) | .567 (14.40) | 2.625 (66.68)      | 2.937 (74.60)      | .614 (15.60)       | 2.343 (59.51)      | .483 (12.27)       |
| DDD-50P    | 2.390 (60.71) | .680 (17.27) | 2.531 (64.29)      | 2.859 (72.62)      | .735 (18.67)       | 2.251 (57.18)      | .596 (15.14)       |
| DDD-50S    | 2.390 (60.71) | .680 (17.27) | 2.531 (64.29)      | 2.859 (72.62)      | .735 (18.67)       | 2.251 (57.18)      | .596 (15.14)       |

All tolerances are ± .010 (0.24) unless noted otherwise.

## Mounting Dimensions

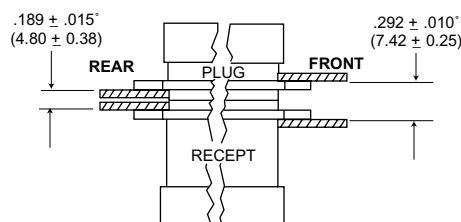


Figure 1

Figure 2

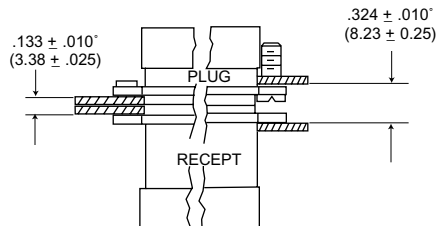


Figure 3

Figure 4

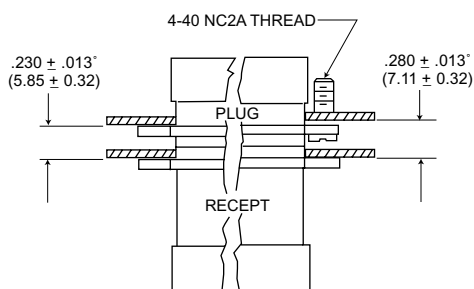


Figure 5

Figure 6

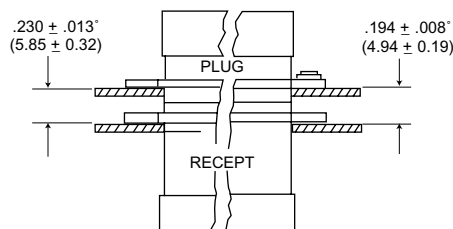


Figure 7

Figure 8

NOTE: Max panel thickness is .125 (3.17) for non-floating rear panel mounting.

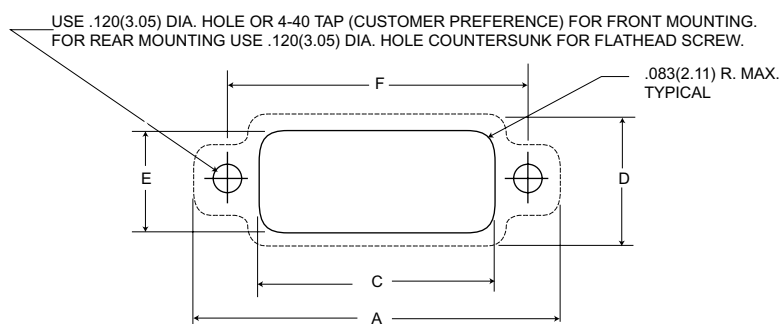
1. With both connectors rear mounted, use #4-40 flat head screws flush with the panel (Fig. 1).
2. With both connectors front mounted, use #4-40 binder or pan head screws (Fig. 2).
3. With both connectors rear mounted (float rivets on plug assembly side); use #4-40 flat head screws, flush with the panel (Fig. 3).
4. With both connectors front mounted (plug assembly has float mounting screw), use #4-40 binder or pan head screws for receptacle assembly (Fig. 4).

5. With plug assembly front mounted and receptacle assembly rear mounted, use hardware from Figures 5 and 6.
6. With plug assembly front mounted and receptacle assembly rear mounted (plug assembly has float mounting screw), use hardware from figure 1 for receptacle assembly.
- \* Dimensions between panels represent the recommended limit to be used in the design of the connector mounting method.
7. With plug assembly rear mounted and receptacle assembly front mounted, use hardware from Figures 1 and 2.

8. With plug assembly rear mounted (float rivets) and receptacle assembly front mounted, use hardware from Figures 2 and 3.
9. Electrical contact engagement when mounted per Figure 1 is .046 (1.17) min./0.070 (1.78) max.

NOTE: Float rivets are for rear mounting only and float screw for front mounting only. (Specify when ordering.)

## Panel Cutouts



| Shell Size | A<br>+ .010 (0.25) | C<br>Min.     | D<br>+ .010 (0.25) | E<br>Min.    | F<br>+ .006 (0.15) |
|------------|--------------------|---------------|--------------------|--------------|--------------------|
| DED-9      | 1.442 (36.63)      | .839 (21.31)  | .614 (15.60)       | .497 (12.62) | 1.125 (28.58)      |
| DAD-15     | 1.755 (44.58)      | 1.157 (29.39) | .614 (15.60)       | .497 (12.62) | 1.437 (36.50)      |
| DBD-25     | 2.295 (58.29)      | 1.697 (43.10) | .614 (15.60)       | .497 (12.62) | 1.993 (50.62)      |
| DCD-37     | 2.937 (74.60)      | 2.357 (59.87) | .614 (15.60)       | .497 (12.62) | 2.625 (66.68)      |
| DDD-50     | 2.859 (72.62)      | 2.265 (57.53) | .735 (18.67)       | .610 (15.49) | 2.531 (64.29)      |

Add .032 (0.81) to dimensions C and E for float mounting.  
Note: Panel cutout does not allow for potting cup clearance.

## Contact Crimping Information

### Crimp Type Contacts

| Contact Size | Wire Size Accom. | Standard Finish |              | Military Finish |              |
|--------------|------------------|-----------------|--------------|-----------------|--------------|
|              |                  | Pin             | Socket       | Pin             | Socket       |
| 20           | 20, 22, 24       | 330-5291-015    | 031-1007-000 | 330-5291-079    | 031-1007-042 |

### Semi-Automatic Crimp Machines

### Insertion/Extraction Tools

### CIET-20HD

| Contact Size | AWG        | Plastic Insertion/Extraction |             | Plastic Extraction |             |
|--------------|------------|------------------------------|-------------|--------------------|-------------|
|              |            | Part No.                     | Description | Part No.           | Description |
| 20           | 20, 22, 24 | 980-2000-426                 | CIET-20HD   | 323-7010-000       | CET-20-11   |

### CBT-646

The CBT-646, Vibra-Bowl Crimper is a pneumatically powered, electronically controlled machine. It is designed to semi-automatically crimp closed barrel, machined contacts, as used in the aerospace and commercial industries. The machine will accommodate wire sizes 30 thru 12 AWG. The CBT-646 is actuated automatically upon insertion of a pre-stripped stranded or single conductor wire. The CBT-646 meets all Mil. Spec. requirements for crimping closed barrel contacts.

### Hand Crimp Tools

### M22520/1-01

### M22520/2-01

| Contact Size | AWG        | Crimp Tool   |             | Locator      |             |
|--------------|------------|--------------|-------------|--------------|-------------|
|              |            | Part No.     | Description | Part No.     | Description |
| 20           | 20, 22, 24 | 995-0001-584 | M22520/2-01 | 995-0001-604 | M22520/2-08 |
|              |            | 995-0001-585 | M22520/1-01 | 995-0001-244 | TH25        |



**Machine Crimp Rate:** 1300 + per hour

### Power Requirements:

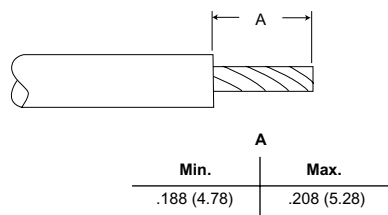
Electrical = 115 Vac, 60 Hz, 5A

Pneumatic = 85 psi, 2 cu. ft. per min.

**Products:** Most ITT Cannon Commercial and Aerospace closed-barrel contacts, wire sizes 30 thru 12 AWG. See connector line for part numbers.

## Assembly Instructions

### Wire Stripping-Machined Contacts



### Contact Crimping



### Contact Insertion



1. Cut wires to length. Strip insulation per above illustration. Check for broken or frayed wires.

2. Insert contact and wires into proper crimp tool (and locator, if required). Crimp contact to wires. Inspect crimp.

3. Center wired contact in groove of insertion tool with tool tip butting contact shoulder. Insert contact into cavity until a positive stop is felt. Inspection insertion.



4. To be sure contact is locked securely, pull back lightly on wire. Repeat for balance of contacts working row by row across the insulator.

### Contact Extraction



5. Place wire into extraction tool tip.



6. Insert tool tip into contact cavity until tip bottoms against contact shoulder, releasing tines. Hold wires against tool with finger and remove tool and contact. Repeat for balance of contacts.



- Environmental Protection
- MIL-C-24308 Compatibility
- Reliability and Versatility

GD\* connectors are ideal for aerospace, military, telecommunications and other applications requiring environmental protection and high reliability.

ITT Cannon developed GD\* connectors to meet the needs of the avionics industry. These connectors provide high-density and moisture protection.

Environmental protection is accomplished by the resilient grommet, interfacial seal, and bonded connector components.

## Performance and Material Specifications

### MATERIALS AND FINISHES

|                      | Materials                                            | Finishes                                                                                                                                                    |
|----------------------|------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Shell                | Low carbon steel per ASTM-A-620                      | Yellow chromate over cadmium per QQ-P-416, Type II, Class 2                                                                                                 |
| Insulator            | Diallyl phthalate per MIL-M-14 type SDF-F or GDI-30F | -                                                                                                                                                           |
| Contacts             | Copper alloy                                         | Standard finish: Gold over nickel<br>Military Finish: Gold 50 microinches thickness per MIL-G-45204, Type II, Grade C, Class 1, over copper per MIL-C-14550 |
| Float Mount Hardware | Stainless steel                                      | Passivated per QQ-P-35                                                                                                                                      |
| Grommets and Seals   | Silicone elastomer or Fluorosilicone                 |                                                                                                                                                             |
| Bonding Materials    | Epoxy                                                | -                                                                                                                                                           |

### MECHANICAL FEATURES

Wire Accommodation - Contact: #20, #22, #24 AWG.

Wire O.D. .071 (1.80) maximum, .038 (0.97) minimum.

Contact Retention - 9 lbs. minimum (40n) after 10 insertions.

### ELECTRICAL DATA

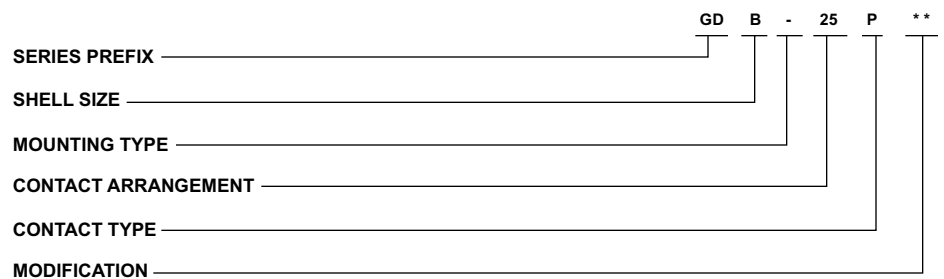
Test Voltage AC RMS 60 Hz

|                   | Sea Level | 20,000 Ft. | 50,000 Ft. | 70,000 Ft. |
|-------------------|-----------|------------|------------|------------|
| Average Flashover | 1,000     | 1,000      | 500        | 500        |
| Test              | 1,000     | 650        | 325        | 325        |

Maximum Current Carrying Capacity of Contacts - #20 Contacts: 5 Amps

Temperature Range - -65°C to +150°C (-53.9°F to +302°F)

## How to Order



#### SERIES PREFIX

GD - Grommet D

#### SHELL SIZE

E, A, B, D

#### MOUNTING TYPE

No Designator - .120 (3.05) Diameter Mounting Holes  
Y - Float Mount for Rear and Front Panel Mounting

#### CONTACT ARRANGEMENT

9, 15, 25, and 50

#### CONTACT TYPE

P - Pin, crimp termination  
S - Socket, crimp termination  
PB - Pin, Printed circuit termination with no-removable straight tails for .125 (3.18) maximum P.C. Board thickness

#### MODIFICATIONS (Typical Modifiers)

F0 - Connectors supplied Less Contacts  
A156 - Connectors supplied with contacts plated per MIL-G-45204 Type II Class 1 over copper per MIL-C-14550 (M24308 Finish)

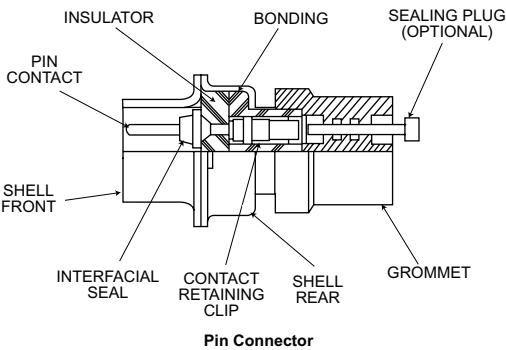
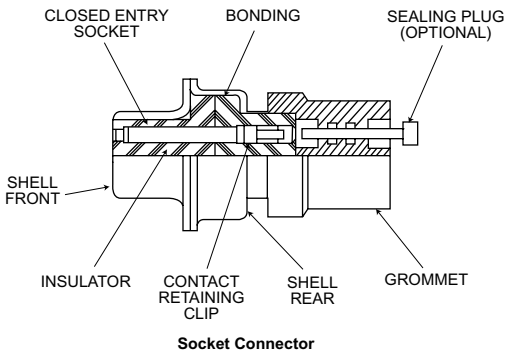
Test Data

GD\* connectors meet all applicable requirements of MIL-C-24308. The following are excerpts form ITT Cannon Test Report C82-78 applicable to environmental D subminiature GD\* series connectors. Refer to MIL-C-24308 Test Extracts on page 385.

| Test Description   | Test Method                                                                                                           | Results                                                                                                                                                                    |
|--------------------|-----------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Moisture Resistant | MIL-STD-1344<br>Method 1002.1 Type II                                                                                 | 1. No deterioration of performance.<br>2. Insulation resistance greater than 100 megohms<br>3. No evidence of flashover or breakdown during 1000 VAC DWV testing.          |
| Fluid Immersion    | 20 hours immersion in hydraulic fluid per MIL-H-5606 and lubricating fluid per MIL-L-23699                            | 1. No detrimental damage.<br>2. Able to meet requirements of mating and unmating forces test.                                                                              |
| Immersion          | Two hour Immersion tap water at a dept of 36.00 (914.40) in mated condition, per MIL-STD-810 Method 512, Procedure 1. | While still immersed, the mated connectors exceeded 100 megohm insulator resistance and exhibited no evidence of breakdown or flashover during 1000 VAC (RMS) DWV testing. |

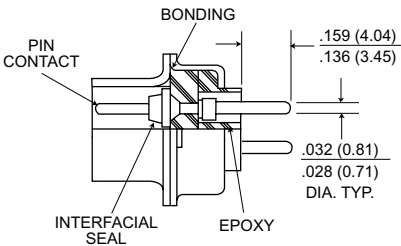
Design Features

- Resilient silicone grommets for wire sealing
- Interfacial seals
- Closed-entry socket contacts
- Bonded components to prevent moisture
- Optional sealing plugs
- Uses M39029 type contacts and termination tooling
- Intermateable with most M24308 type connectors
- Rear-release crimp contacts
- LITTLE CAESAR® contact retention assembly

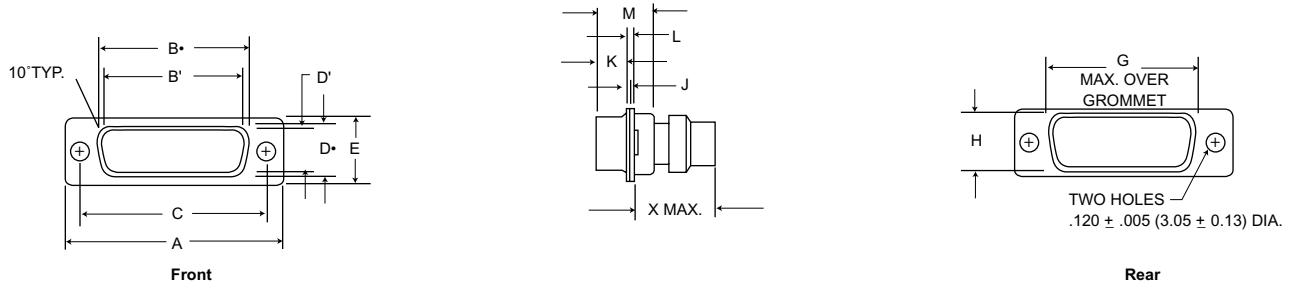


Printed Circuit Applications

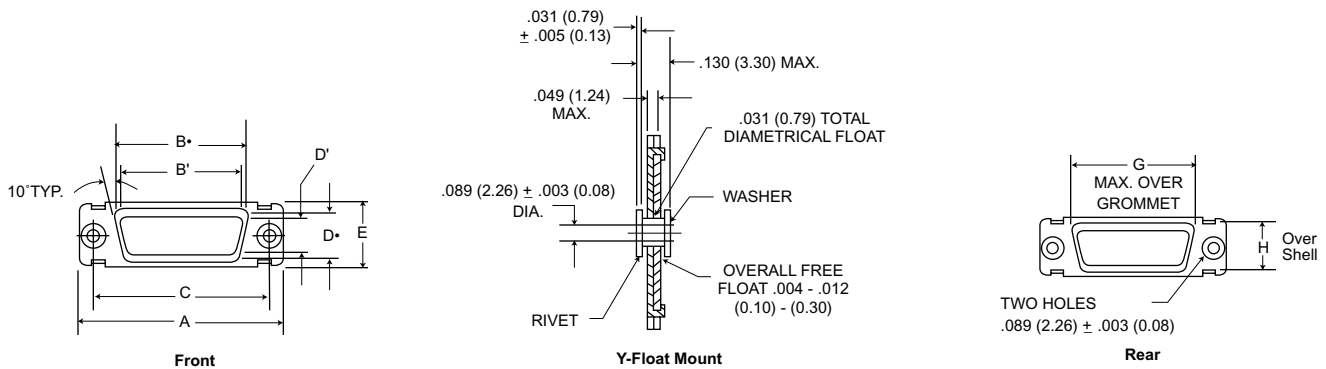
GD\* pin connectors are available wit pre-loaded, non-removable contacts for P.C. board termination. Typical Part No. GDB-25PB. Environmental sealing is accomplished by application of epoxy to each contact cavity, interfacial seals, and bonded connector components.



## Standard Shell Dimensions



## Shell With Float Mount Dimensions



It is recommended that only one assembly, either pin or socket, be float mounted. For front panel mounting use reverse float mount.

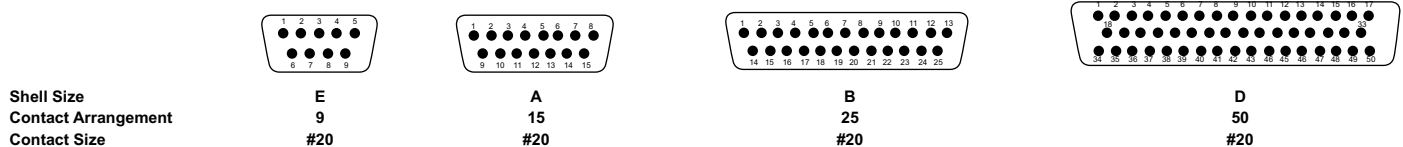
| Shell Size | A<br>± .015<br>(0.38) | B*<br>± .005<br>(0.13) | B'<br>± .005<br>(0.13) | C<br>± .005<br>(0.12) | D*<br>± .005<br>(0.13) | D'<br>± .005<br>(0.13) | E<br>± .015<br>(0.38) | G<br>Max.     | H<br>± .010<br>(0.25) | J<br>± .010<br>(0.25) | K<br>± .006<br>(0.13) | L<br>± .010<br>(0.25) | M<br>± .005<br>(0.13) | X<br>Max.    |
|------------|-----------------------|------------------------|------------------------|-----------------------|------------------------|------------------------|-----------------------|---------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|--------------|
| GDE-9P     | 1.213 (30.81)         | -                      | .666 (16.91)           | .984 (24.99)          | -                      | .329 (8.36)            | .494 (12.55)          | .750 (19.05)  | .422 (10.72)          | .030 (0.76)           | .235 (5.97)           | .045 (1.14)           | .422 (10.72)          | .718 (18.24) |
| GDE-9S     | 1.213 (30.81)         | .643 (16.33)           | -                      | .984 (24.99)          | .311 (7.90)            | -                      | .494 (12.55)          | .750 (19.05)  | .422 (10.72)          | .030 (0.76)           | .243 (6.17)           | .045 (1.14)           | .429 (10.90)          | .718 (18.24) |
| DGA-15P    | 1.541 (39.14)         | -                      | .994 (25.24)           | 1.312 (33.32)         | -                      | .329 (8.36)            | .494 (12.55)          | 1.093 (27.76) | .422 (10.72)          | .030 (0.76)           | .235 (5.97)           | .045 (1.14)           | .422 (10.72)          | .718 (18.24) |
| GDA-15S    | 1.541 (39.14)         | .971 (24.66)           | -                      | 1.312 (33.32)         | .311 (7.90)            | -                      | .494 (12.55)          | 1.093 (27.76) | .422 (10.72)          | .030 (0.76)           | .243 (6.17)           | .045 (1.14)           | .429 (10.90)          | .718 (18.24) |
| GDB-25P    | 2.088 (53.03)         | -                      | 1.534 (38.96)          | 1.852 (47.04)         | -                      | .329 (8.36)            | .494 (12.55)          | 1.625 (41.28) | .422 (10.72)          | .039 (0.99)           | .230 (5.84)           | .060 (1.52)           | .426 (10.82)          | .718 (18.24) |
| GDB-25S    | 2.088 (53.03)         | 1.511 (38.38)          | -                      | 1.852 (47.04)         | .311 (7.90)            | -                      | .494 (12.55)          | 1.625 (41.28) | .422 (10.72)          | .030 (0.76)           | .243 (6.17)           | .045 (1.14)           | .429 (10.90)          | .718 (18.24) |
| GDD-50P    | 2.635 (66.92)         | -                      | 2.079 (52.81)          | 2.406 (61.11)         | -                      | .441 (11.20)           | .605 (15.37)          | 2.162 (54.91) | .534 (13.56)          | .039 (0.99)           | .230 (5.84)           | .060 (1.52)           | .426 (10.82)          | .718 (18.24) |
| GDD-50S    | 2.635 (66.92)         | 2.064 (52.42)          | -                      | 2.406 (61.11)         | .423 (10.74)           | -                      | .605 (15.37)          | 2.162 (54.91) | .534 (13.56)          | .030 (0.76)           | .243 (6.17)           | .045 (1.14)           | .429 (10.90)          | .718 (18.24) |

\* dimensions B, D, and H are measured as outside dimensions at the bottom of draw.

NOTE: B\* and D\* are the outside dimensions for socket side, B' and D' are the inside dimensions for pin side.

## Contact Arrangements

## Face View Pin Insert



Contacts

| Finish      | Type       | ITT Cannon<br>Part Number | M39029<br>Part Number |
|-------------|------------|---------------------------|-----------------------|
| Standard    | Pin #20    | 330-5291-000              |                       |
| Gold/Nickel | Socket #20 | 031-1007-000              |                       |
| A156        | Pin #20    | 330-5291-037              | M39029/64-369         |
| Gold/Copper | Socket #20 | 031-1007-042              | M39029/63-368         |

Accessories

**SEALING PLUGS:** GD\* grommets are designed to accept MS27488-20 sealing plugs, ITT Cannon P/N 225-0070-000 ordered separately.

**LOCKING HARDWARE, DUST CAPS:** GD\* Connectors will accommodate most standard D Subminia-  
ture accessories.

Hand Crimp Tool

M22520/2-01 with M22520/2-08 locator. Semi-automatic and fully automatic tooling is also available.



Insertion/Extraction Tool (Plastic)

| Contact<br>Size | ITT Cannon<br>Description | ITT Cannon<br>Part Number | Insertion<br>Color Tip | Extraction<br>Color Tip |
|-----------------|---------------------------|---------------------------|------------------------|-------------------------|
| #20             | CIET-20HDL                | 274-7010-000              | White                  | Green                   |

# D Subminiature Accessories

ITT Cannon offers one of the broadest lines of accessories for the D Subminiature line of connectors in today's marketplace. The ITT Cannon accessory line offers unlimited design versatility. Choose from a variety of plastic, metal, EMI/RFI backshells, screwlocks, jackscrews, and spring latches.

## Backshell/Hardware Compatibility Chart

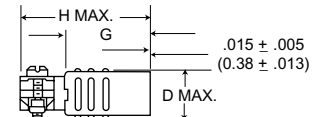
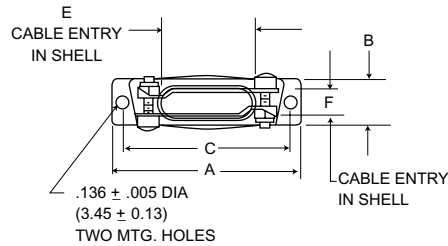
|                        |                                        | Locking Hardware                                                         |                                     |                           |                          |                                                  |                                 |                                        |                                                 |                 |
|------------------------|----------------------------------------|--------------------------------------------------------------------------|-------------------------------------|---------------------------|--------------------------|--------------------------------------------------|---------------------------------|----------------------------------------|-------------------------------------------------|-----------------|
|                        |                                        | Male<br>Screw<br>Locks<br>020419/<br>020420                              | Female<br>Screw-<br>Locks<br>D20418 | Jack-<br>screw<br>D110550 | Jack-<br>post<br>D110551 | Slide<br>Locks<br>DA51220-1<br>thru<br>DE51224-1 | Slide<br>Lock<br>Post<br>D53018 | Spring<br>Latch<br>D110277/<br>D110279 | Spring<br>Latch<br>Plate<br>D110279/<br>D110280 | Keying<br>Plate |
| MOUNTING<br>METHOD     | Front<br>Panel                         |                                                                          | •                                   |                           | •                        | •                                                | •                               | •                                      |                                                 | •               |
|                        | Rear<br>Panel                          |                                                                          | •                                   |                           |                          | •                                                | •                               | •                                      |                                                 |                 |
| METAL<br>BACKSHELLS    | Deep<br>Straight<br>Clamp              | •                                                                        | •                                   |                           | •                        | •                                                | •                               | •                                      | •                                               | •               |
|                        | Right<br>Angle                         |                                                                          | •                                   |                           |                          | •                                                | •                               | •                                      | •                                               | •               |
|                        | Round<br>Clamp                         | •                                                                        | •                                   |                           | •                        | •                                                | •                               | •                                      | •                                               | •               |
|                        | Straight<br>Clamp                      | •                                                                        | •                                   |                           | •                        | •                                                | •                               | •                                      | •                                               | •               |
| SHIELDED<br>BACKSHELLS | Plated<br>Plastic                      |                                                                          |                                     |                           |                          |                                                  |                                 |                                        |                                                 |                 |
|                        | Die-Cast<br>Zinc                       |                                                                          |                                     |                           |                          |                                                  |                                 |                                        |                                                 |                 |
| PLASTIC<br>BACKSHELLS  | Straight<br>& 90°<br>(D*5121X)         |                                                                          |                                     |                           |                          | •                                                | •                               | •                                      | •                                               | •               |
|                        | Universal<br>D*110963                  | •                                                                        | •                                   | •                         | •                        |                                                  |                                 | •                                      | •                                               |                 |
|                        | Snap-<br>Together<br>Universal         | •                                                                        | •                                   | •                         | •                        |                                                  |                                 | •                                      | •                                               |                 |
|                        | Dataphone<br>DB51226-1B                | Supplied with male screw locks.                                          |                                     |                           |                          |                                                  |                                 |                                        |                                                 |                 |
|                        | IDC<br>D*115386<br>STR/90°<br>D*115339 | Designed for use with quick-disconnect latching hardware (see page 376). |                                     |                           |                          |                                                  |                                 |                                        |                                                 |                 |
| POTTING<br>CUPS        | Plastic                                | •                                                                        | •                                   |                           | •                        | •                                                | •                               | •                                      | •                                               | •               |

Legend: • = Compatible

# Accessories - M85049 Backshells

## Deep Straight Clamp

- Positive strain relief



MIL-Spec.

Material: Low Carbon Steel per ASTM A-620

Finish: Yellow Chromate Over Cadmium per M85049 Specification

Non-Magnetic/No-Outgas\*

Material: Brass per QQ-B-613

Finish: Gold over copper per MIL-G-45204, Type II, Grade C, Class 1 or Electroless nickel per MIL-C-26074B

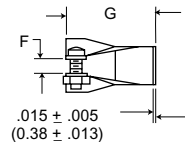
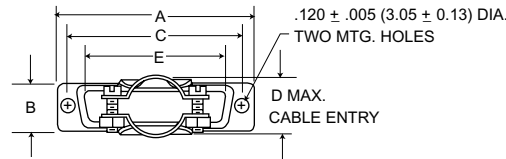
(Superseded MIL-Spec. No.: M24308/20-1 thru-5)

|        |             | <b>NM</b><br>Non-Magnetic/<br>No-Outgas* |         |     |     | A                | B                | C                | D           | E                | F                | G                | H            |
|--------|-------------|------------------------------------------|---------|-----|-----|------------------|------------------|------------------|-------------|------------------|------------------|------------------|--------------|
|        |             | Plating                                  |         |     |     | ± .015<br>(0.38) | ± .015<br>(0.38) | ± .005<br>(0.13) | Max.        | ± .015<br>(0.38) | ± .015<br>(0.38) | ± .015<br>(0.38) | Max.         |
| Layout | Part Number | Mil. Spec.                               | AU      | NI  |     |                  |                  |                  |             |                  |                  |                  |              |
| DE-9   | DE24657     | M85049/48-1-1                            | DE24657 | -16 | -27 | 1.203 (30.6)     | .484 (12.3)      | .984 (25.0)      | .578 (14.7) | .375 (9.5)       | .375 (9.5)       | 7.50 (19.0)      | 1.250 (31.7) |
| DA-15  | DA24658     | M85049/48-1-2                            | DA24658 | -15 | -25 | 1.531 (38.9)     | .484 (12.3)      | 1.312 (33.3)     | .578 (14.7) | .713 (18.1)      | .312 (7.9)       | 7.50 (19.0)      | 1.250 (31.7) |
| DB-25  | DB24659     | M85049/48-1-3                            | DB24659 | -15 | -25 | 2.078 (52.8)     | .484 (12.3)      | 1.852 (47.0)     | .578 (14.7) | 1.000 (25.4)     | .312 (7.9)       | 1.000 (25.4)     | 1.563 (39.7) |
| DC-37  | DC24660     | M85049/48-1-4                            | DC24660 | -16 | -25 | 2.718 (69.0)     | .484 (12.3)      | 2.500 (63.5)     | .578 (14.7) | 1.375 (34.9)     | .312 (7.9)       | 1.000 (25.4)     | 1.563 (39.7) |
| DD-50  | DD24661     | M85049/48-1-5                            | DD24661 | -13 | -23 | 2.625 (66.7)     | .593 (15.1)      | 2.406 (61.1)     | .687 (17.4) | 1.406 (35.7)     | .406 (10.3)      | 1.125 (28.6)     | 1.688 (42.9) |

\* Meet requirements of M85049

## Round Clamp

- Low profile
- Round cable applications



MIL-Spec.

Material: Low Carbon Steel per ASTM A-620

Finish: Yellow Chromate Over Cadmium per M85049 Specification

Non-Magnetic/No-Outgas\*

Material: Brass per QQ-B-613

Finish: Gold over copper per MIL-G-45204, Type II, Grade C, Class 1 or Electroless nickel per MIL-C-26074B

(Superseded MIL-Spec. No.: M24308/21-1 thru-5)

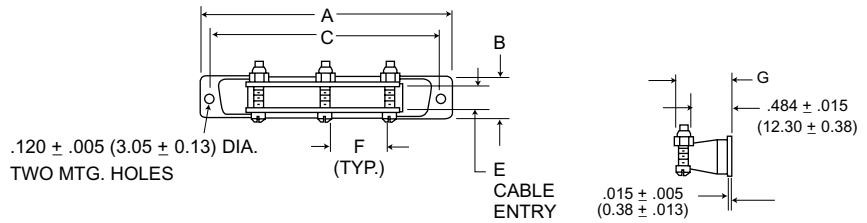
|        |             | <b>NM</b><br>Non-Magnetic/<br>No-Outgas* |         |     |     | A             | B             | C             | D           | E             | F             | G             |
|--------|-------------|------------------------------------------|---------|-----|-----|---------------|---------------|---------------|-------------|---------------|---------------|---------------|
|        |             | Plating                                  |         |     |     | ± .015 (0.38) | ± .015 (0.38) | ± .005 (0.13) | Max.        | ± .015 (0.38) | ± .015 (0.38) | ± .030 (0.76) |
| Layout | Part Number | Mil. Spec.                               | AU      | NI  |     |               |               |               |             |               |               |               |
| DE-9   | DE44994     | M85049/48-2-1                            | DE44994 | -2  | -13 | 1.208 (30.7)  | .500 (12.7)   | .984 (25.0)   | .406 (10.3) | .661 (16.8)   | .125 (3.2)    | 1.031 (26.2)  |
| DA-15  | DA20961     | M85049/48-2-2                            | DA20961 | -16 | -23 | 1.531 (38.9)  | .500 (12.7)   | 1.312 (33.3)  | .406 (10.3) | .984 (25.0)   | .125 (3.2)    | 1.031 (26.2)  |
| DB-25  | DB20962     | M85049/48-2-3                            | DB20962 | -18 | -27 | 2.078 (52.8)  | .500 (12.7)   | 1.852 (47.00) | .593 (15.1) | 1.515 (38.5)  | .187 (4.7)    | 1.062 (27.0)  |
| DC-37  | DC20963     | M85049/48-2-4                            | DC20963 | -17 | -26 | 2.718 (69.0)  | .500 (12.7)   | 2.500 (63.5)  | .718 (18.2) | 2.171 (55.1)  | .250 (6.3)    | 1.062 (27.0)  |
| DD-50  | DD20964     | M85049/48-2-5                            | DD20964 | -19 | -31 | 2.625 (66.7)  | .609 (15.5)   | 2.406 (61.1)  | .812 (20.6) | 2.093 (53.2)  | .312 (7.9)    | 1.062 (27.0)  |

\* Meet requirements of M85049

# Accessories - M85049 Backshells

## Straight Clamp

- Low profile
- Discrete wire application



MIL-Spec.

Material: Low Carbon Steel per ASTM A-620

Finish: Yellow Chromate Over Cadmium per M85049 Specification

Non-Magnetic/No-Outgas\*

Material: Brass per QQ-B-613

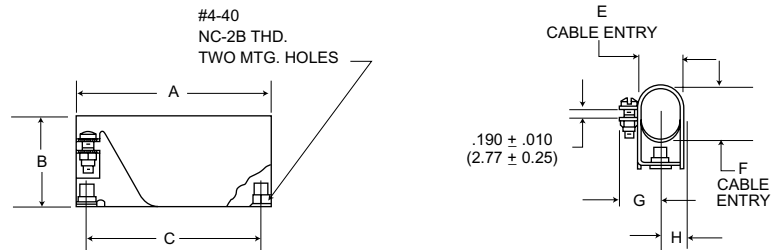
Finish: Gold over copper per MIL-G-45204, Type II, Grade C,  
Class 1 or Electroless nickel per MIL-C-26074B

(Superseded MIL-Spec. No.: M24308/22-1 thru-4)

| NM     |                |               |                             |           |                                        |                    |                    |                    |                    |                    |                    |
|--------|----------------|---------------|-----------------------------|-----------|----------------------------------------|--------------------|--------------------|--------------------|--------------------|--------------------|--------------------|
|        |                |               | Non-Magnetic/<br>No-Outgas* |           |                                        |                    |                    |                    |                    |                    |                    |
| Layout | Part<br>Number | Mil. Spec.    | Plating                     |           | No. of<br>Cable Locking<br>Screws Req. | A<br>± .015 (0.38) | B<br>± .015 (0.38) | C<br>± .005 (0.13) | E<br>± .015 (0.38) | F<br>± .015 (0.38) | G<br>± .035 (0.89) |
|        |                |               | AU                          | NI        |                                        |                    |                    |                    |                    |                    |                    |
| DA-15  | DA19678-1      | M85049/48-3-2 | DA19678                     | -167 -208 | 2                                      | 1.531 (38.9)       | .500 (12.7)        | 1.312 (33.3)       | .296 (7.5)         | .312 (7.9)         | .644 (16.36)       |
| DB-25  | DB19678-2      | M85049/48-3-3 | DB19678                     | -168 -209 | 2                                      | 2.078 (52.8)       | .500 (12.7)        | 1.852 (47.0)       | .296 (7.5)         | .796 (20.2)        | .644 (16.36)       |
| DC-37  | DC19678-3      | M85049/48-3-4 | DC19678                     | -138 -210 | 2                                      | 2.718 (69.0)       | .500 (12.7)        | 2.500 (63.5)       | .296 (7.5)         | .687 (17.4)        | .644 (16.36)       |
| DD-50  | DD19678-4      | M85049/48-3-5 | DD19678                     | -161 -211 | 3                                      | 2.625 (66.7)       | .609 (15.5)        | 2.406 (61.1)       | .390 (9.9)         | .687 (17.4)        | .694 (17.63)       |

## Right Angle

- Low profile
- Spaceborne applications



MIL-Spec.

Material: Low Carbon Steel per ASTM A-620

Finish: Yellow Chromate Over Cadmium per M85049 Specification

Non-Magnetic/No-Outgas\*

Material: Brass per QQ-B-613

Finish: Gold over copper per MIL-G-45204, Type II, Grade C,  
Class 1 or Electroless nickel per MIL-C-26074B

| Layout | Part Number | Mil. Spec.  | NM<br>Non-Magnetic/<br>No-Outgas* |         | A<br>± .015<br>(0.38) | B<br>± .030<br>(0.76) | C<br>± .005<br>(0.13) | E<br>± .030<br>(0.76) | F<br>± .030<br>(0.76) | G<br>± .030<br>(0.76) | H<br>± .030<br>(0.76) |
|--------|-------------|-------------|-----------------------------------|---------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|
|        |             |             | Plating                           |         |                       |                       |                       |                       |                       |                       |                       |
|        |             |             | AU                                | NI      |                       |                       |                       |                       |                       |                       |                       |
| DE-9   | DE19977-5   | M85049/50-1 | DE19977                           | -47 -63 | 1.203 (30.6)          | .718 (18.2)           | .984 (25.0)           | .437 (11.1)           | .437 (11.1)           | .468 (11.9)           | .281 (7.1)            |
| DA-15  | DA19977-1   | M85049/50-2 | DE19977                           | -40 -64 | 1.531 (38.9)          | .718 (18.2)           | 1.312 (33.3)          | .437 (11.1)           | .437 (11.1)           | .468 (11.9)           | .281 (7.1)            |
| DB-25  | DB19977-2   | M85049/50-3 | DE19977                           | -43 -52 | 2.078 (52.8)          | .968 (24.6)           | 1.852 (47.0)          | .437 (11.1)           | .625 (15.9)           | .468 (11.9)           | .281 (7.1)            |
| DC-37  | DC19977-3   | M85049/50-4 | DE19977                           | -45 -65 | 2.718 (69.0)          | 1.187 (30.10)         | 2.500 (63.5)          | .437 (11.1)           | .812 (20.6)           | .468 (11.9)           | .281 (7.1)            |
| DD-50  | DD19977-4   | M85049/50-5 | DE19977                           | -44 -66 | 2.625 (66.7)          | 1.250 (31.7)          | 2.406 (61.1)          | .562 (14.3)           | .906 (23.1)           | .531 (13.5)           | .343 (8.7)            |

\* Meet requirements of M85049

# Accessories - Shielded Metalized Plastic Backshells

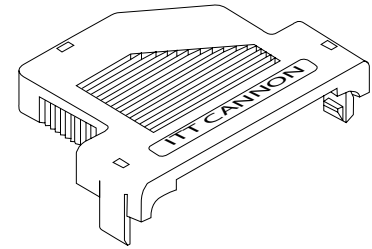
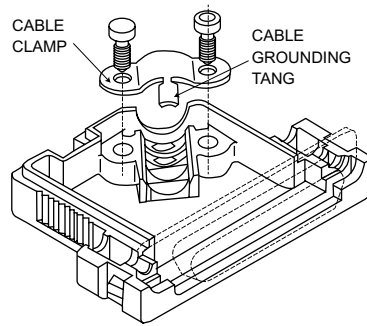
## Snap-Together

- Quick and simple assembly using snap-together design feature
- No complicated crimp ferrule tooling needed
- Helps to comply with FCC shielding requirements

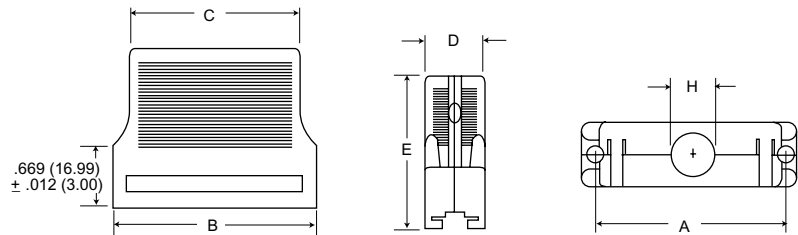
|                    |                    |
|--------------------|--------------------|
| Material:          | ABS Polymer        |
| Finish:            | Nickel over Copper |
| Temperature Range: | 20/80°C            |
| Attenuation:       | 44 DB @ 1000 MHZ   |

Design includes integral strain relieving cable clamp.

Backshell requires hardware - see page 372.

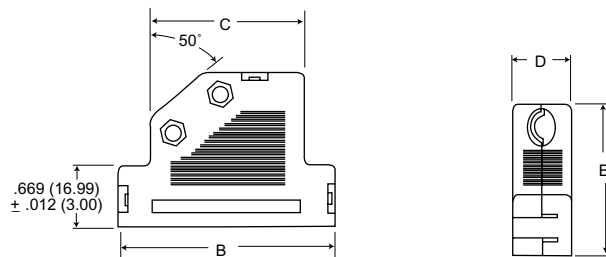


## Straight Exit



| Layout | Part Number  | A<br>+ .006 (0.15) | B<br>+ .012 (0.30) | C<br>+ .012 (0.30) | C<br>+ .012 (0.30) | E<br>+ .008 (0.20) | H<br>Max.    |
|--------|--------------|--------------------|--------------------|--------------------|--------------------|--------------------|--------------|
| DE-9   | DE121073-154 | .982 (24.95)       | 1.213 (30.8)       | .933 (23.7)        | .630 (16.0)        | 1.417 (36.0)       | .288 (7.32)  |
| DA-15  | DA121073-150 | 1.311 (33.30)      | 1.539 (39.1)       | 1.252 (31.8)       | .630 (16.0)        | 1.654 (42.0)       | .327 (8.31)  |
| DB-25  | DB121073-151 | 1.850 (47.00)      | 2.087 (53.0)       | 1.772 (45.0)       | .630 (16.0)        | 1.654 (42.0)       | .414 (10.52) |
| DC-37  | DC121073-152 | 2.498 (63.45)      | 2.728 (69.3)       | 2.374 (60.3)       | .630 (16.0)        | 1.654 (42.0)       | .485 (12.32) |

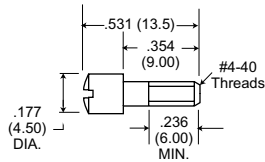
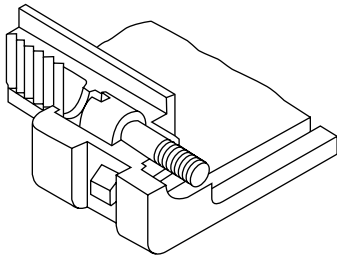
## 40° Exit



| Layout | Part Number | B<br>+ .012 (0.30) | C<br>+ .012 (0.30) | D<br>+ .012 (0.30) | E<br>+ .008 (0.20) | Cable Diameter |             |
|--------|-------------|--------------------|--------------------|--------------------|--------------------|----------------|-------------|
|        |             |                    |                    |                    |                    | Min.           | Max.        |
| DE-9   | DE121073-54 | 1.417 (36.0)       | .866 (22.0)        | .630 (16.0)        | 1.417 (36.0)       | .138 (3.5)     | .295 (7.5)  |
| DA-15  | DA121073-50 | 1.744 (44.3)       | 1.075 (27.3)       | .630 (16.0)        | 1.654 (42.0)       | .256 (6.5)     | .354 (9.0)  |
| DB-25  | DB121073-51 | 2.283 (58.0)       | 1.614 (41.0)       | .630 (16.0)        | 1.654 (42.0)       | .256 (6.5)     | .433 (11.0) |
| DC-37  | DC121073-52 | 2.933 (74.5)       | 2.264 (57.5)       | .630 (16.0)        | 1.654 (42.0)       | .256 (6.5)     | .433 (11.0) |
| DD-50  | DD121073-53 | 2.873 (73.0)       | 2.165 (55.0)       | .748 (19.0)        | 1.654 (42.0)       | .354 (9.0)     | .512 (13.0) |

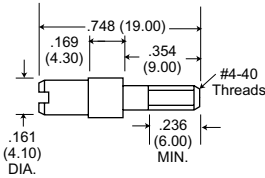
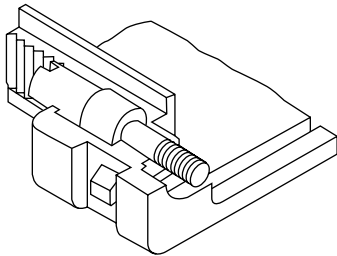
#4-40 Locking Hardware For Snap-Together Shielded Backshells

Recessed Jackscrew



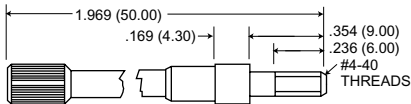
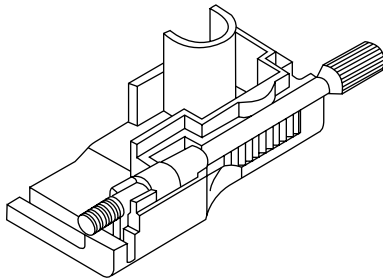
|                                  |              |
|----------------------------------|--------------|
| Part Number:                     | 250-8501-004 |
| Material:                        | Brass        |
| Finish:                          | Nickel       |
| Quantity Required per Backshell: | 2            |

Extended Jackscrew



|                                  |              |
|----------------------------------|--------------|
| Part Number:                     | 250-8501-010 |
| Material:                        | Brass        |
| Finish:                          | Nickel       |
| Quantity Required per Backshell: | 2            |

Thumbscrew



|                                  |              |
|----------------------------------|--------------|
| Part Number:                     | 250-8501-013 |
| Material:                        | Brass        |
| Finish:                          | Nickel       |
| Quantity Required per Backshell: | 2            |

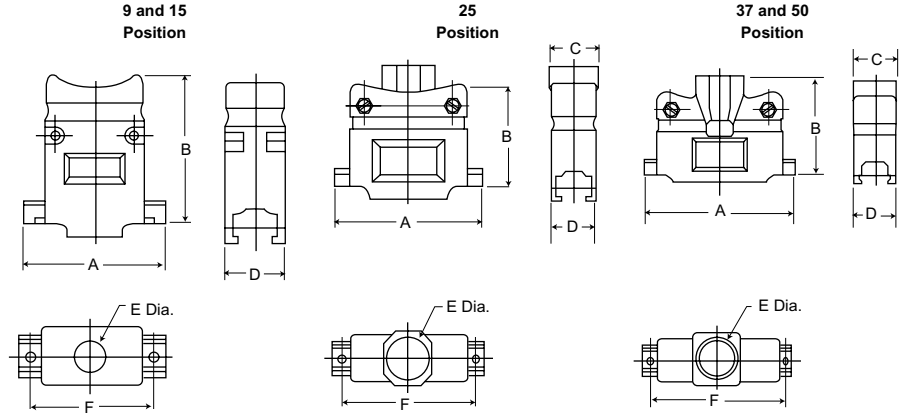
# Accessories - Shielded Backshells

## Metal Blackshell

### Straight Cable Exit



- EMI/RFI protection
- Integral grommet to protect against



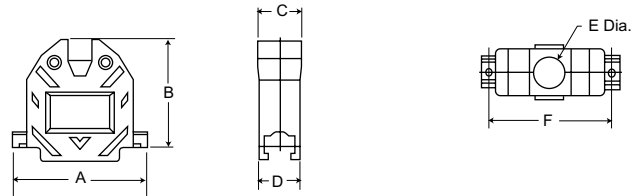
### MATERIAL SPECIFICATIONS

|           |                  |
|-----------|------------------|
| Cover:    | Die Cast Zinc    |
| Finish:   | Clear Zinc Plate |
| Inserts:  | PVC              |
| Hardware: | Steel            |
| Finish:   | Clear Zinc       |

| Size | Part Number  | A<br>± .005 (0.13) | B<br>± .005 (0.13) | C<br>± .005 (0.13) | D<br>± .005 (0.13) | E<br>± .005 (0.13) | F<br>± .005 (0.13) |
|------|--------------|--------------------|--------------------|--------------------|--------------------|--------------------|--------------------|
| 9    | 980-2000-345 | 1.225 (31.12)      | 1.465 (37.21)      | .620 (15.75)       | .620 (15.75)       | .400 (10.16)       | .984 (24.99)       |
| 15   | 980-2000-346 | 1.540 (39.12)      | 1.600 (40.64)      | .620 (15.75)       | .620 (15.75)       | .400 (10.16)       | 1.312 (33.32)      |
| 25   | 980-2000-347 | 2.090 (53.09)      | 1.550 (39.37)      | .690 (17.53)       | .620 (15.75)       | .525 (13.34)       | 1.857 (47.17)      |
| 37   | 980-2000-348 | 2.730 (69.34)      | 1.800 (45.72)      | .864 (21.95)       | .620 (15.75)       | .726 (18.44)       | 2.500 (63.50)      |
| 50   | 980-2000-349 | 2.626 (66.70)      | 1.800 (45.72)      | .864 (21.95)       | .730 (18.54)       | .726 (18.44)       | 2.406 (61.11)      |

## Metalized-Plastic Backshell

### Straight Cable Exit



### MATERIAL SPECIFICATIONS

|           |                    |
|-----------|--------------------|
| Cover:    | ABS Polymer        |
| Finish:   | Nickel over Copper |
| Inserts:  | PVC                |
| Hardware: | Steel              |
| Finish:   | Clear Zinc         |

| Size | Part Number  | A<br>± .005 (0.13) | B<br>± .005 (0.13) | C<br>± .005 (0.13) | D<br>± .005 (0.13) | E<br>± .005 (0.13) | F<br>± .005 (0.13) |
|------|--------------|--------------------|--------------------|--------------------|--------------------|--------------------|--------------------|
| 9    | 980-2000-350 | 1.217 (30.91)      | 1.547 (39.29)      | .640 (16.26)       | .640 (16.26)       | .400 (10.16)       | .984 (24.99)       |
| 15   | 980-2000-351 | 1.545 (39.29)      | 1.505 (38.23)      | .640 (16.26)       | .640 (16.26)       | .400 (10.16)       | 1.312 (33.32)      |
| 25   | 980-2000-352 | 2.090 (53.09)      | 1.655 (42.04)      | .710 (18.03)       | .640 (16.26)       | .522 (13.26)       | 1.857 (47.17)      |
| 37   | 980-2000-353 | 2.734 (69.44)      | 1.830 (46.48)      | .906 (23.01)       | .640 (16.26)       | .726 (18.44)       | 2.500 (63.50)      |
| 50   | 980-2000-354 | 2.645 (67.18)      | 1.855 (47.12)      | .940 (23.88)       | .770 (19.56)       | .726 (18.44)       | 2.406 (61.11)      |

Highlight part numbers indicate standard product; usally available with shorter lead times.

## Compression Inserts (Included With Backshell)

Accommodates a wide range of cable diameters-

9 position - .190/.350

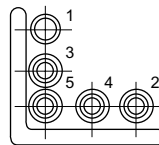
15 position - .190/.350

25 position - .190/.460

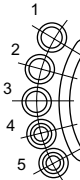
37 position - .300/.680

50 position - .300/.680

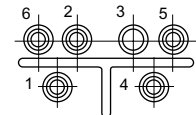
### 9 and 15 Position



### 25 Position



### 37 and 50 position



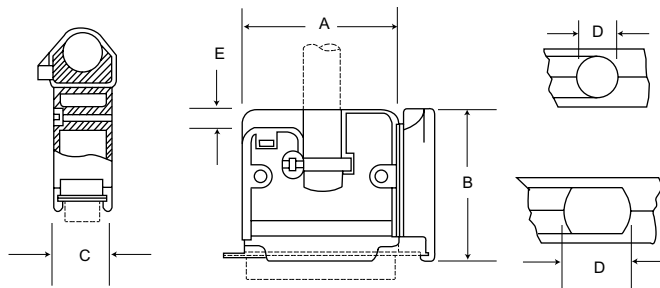
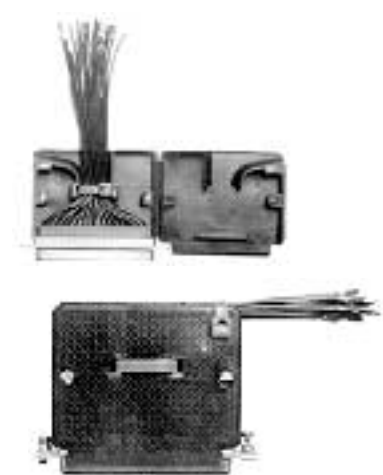
| Positions | #1            |               | #2            |               | #3            |               | #4            |               | #5            |               | #6            |              |
|-----------|---------------|---------------|---------------|---------------|---------------|---------------|---------------|---------------|---------------|---------------|---------------|--------------|
|           | O.D.          | I.D.          | O.D.          | I.D.          | O.D.          | I.D.          | O.D.          | I.D.          | O.D.          | I.D.          | O.D.          | I.D.         |
| 9, 15     | 0.475 (12.07) | 0.320 (8.13)  | 0.360 (9.14)  | 0.315 (8.000) | 0.360 (9.14)  | 0.255 (6.48)  | 0.360 (9.14)  | 0.285 (7.24)  | 0.360 (9.14)  | 0.210 (5.33)  | N/A           | N/A          |
| 25        | 0.600 (15.24) | 0.450 (11.43) | 0.450 (11.43) | 0.410 (10.41) | 0.450 (11.43) | 0.370 (9.40)  | 0.450 (11.43) | 0.300 (7.62)  | 0.450 (11.43) | 0.230 (5.84)  | N/A           | N/A          |
| 37, 50    | 0.655 (16.64) | 0.570 (14.48) | 0.700 (17.78) | 0.620 (15.75) | 0.810 (20.57) | 0.650 (16.51) | 0.655 (16.64) | 0.500 (12.70) | 0.655 (16.64) | 0.425 (10.80) | 0.655 (16.64) | 0.350 (8.89) |

# Accessories - Plastic Backshells

## Universal

- Economical design uses an adjustable tie-wrap for cable strain relief
- Compatible with male screw locks and spring latches
- U.L. rated 94V-2 (flame retardant)  
248-2670-001 Listing

### Straight

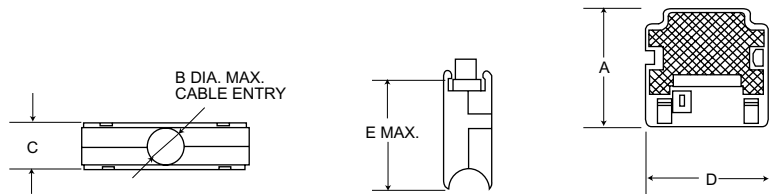


**Material:** Junction shell-polypropylene; Hardware-steel; Tie-wrap-nylon.  
**Finish:** Hardware-cadmium plate, yellow chromate.  
**Color:** Black (junction shell).

| Layout | Part Number | A<br>± .015 (0.38) | B<br>± .015 (0.38) | C<br>± .015 (0.13) | C<br>± .015 (0.38) | E<br>± .010 (0.25) |
|--------|-------------|--------------------|--------------------|--------------------|--------------------|--------------------|
| DE-9   | DE110963-1  | .765 (19.43)       | 1.400 (35.56)      | .600 (15.24)       | .250 (6.35)        | .125 (3.18)        |
| DA-15  | DA110963-2  | 1.097 (27.86)      | 1.569 (39.85)      | .600 (15.24)       | .375 (9.53)        | .161 (4.09)        |
| DB-25  | DB110963-3  | 1.641 (41.68)      | 1.651 (41.94)      | .600 (15.24)       | .410 (10.41)       | .205 (5.21)        |
| DC-37  | DC110963-4  | 2.279 (57.89)      | 1.899 (48.23)      | .600 (15.24)       | .593 (15.06)       | .205 (5.21)        |
| DD-50  | DD110963-5  | 2.063 (52.40)      | 1.925 (48.90)      | .710 (18.03)       | .670 (17.01)       | .285 (7.24)        |

## Snap-Together Universal

- A 2-piece snap-together design for quick assembly
- Customer furnishes tie-wrap

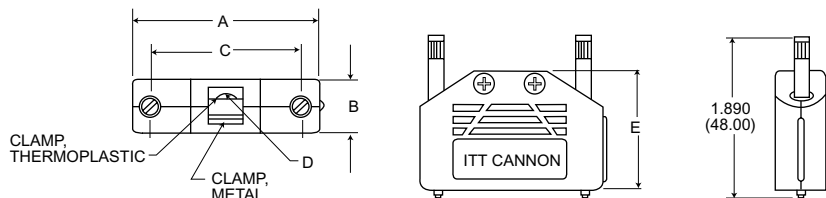


**Material:** Flame-retardant thermoplastic, UL 94V-0 rated.

| Layout | Part Number | A<br>± .008 (0.20) | B<br>Max.   | C<br>± .008 (0.20) | D<br>± .008 (0.20) | E<br>Max.    |
|--------|-------------|--------------------|-------------|--------------------|--------------------|--------------|
| DE-9   | DE115339-20 | 1.673 (42.5)       | .276 (7.0)  | .669 (17.0)        | .768 (19.5)        | 1.555 (39.5) |
| DA-15  | DA115339-21 | 1.673 (42.5)       | .378 (9.6)  | .669 (17.0)        | 1.094 (27.8)       | 1.555 (39.5) |
| DB-25  | DB115339-22 | 1.673 (42.5)       | .457 (11.6) | .669 (17.0)        | 1.638 (41.6)       | 1.555 (39.5) |
| DC-37  | DC115339-23 | 1.673 (42.5)       | .512 (13.0) | .669 (17.0)        | 2.283 (58.0)       | 1.555 (39.5) |
| DD-50  | DD115339-24 | 1.673 (42.5)       | .630 (16.0) | .780 (19.8)        | 2.060 (52.3)       | 1.555 (39.5) |

## One-Piece Snap Together

- Low cost
- Easy to assemble
- Aesthetically pleasing
- Includes: thumbscrews, cable clamps



**Material:** Specification: Plastic - polypropylene; Hardware - steel.  
**Finish:** Yellow chromate over zinc.

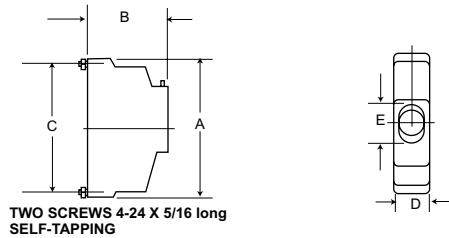
| Layout | Part Number | A             | B            | C             | D<br>Dia. Max. | E             |
|--------|-------------|---------------|--------------|---------------|----------------|---------------|
| DE-9   | DEBS-9      | 1.386 (35.20) | .638 (16.21) | .984 (24.99)  | .224 (5.69)    | 1.083 (27.51) |
| DA-15  | DABS-15     | 1.705 (43.31) | .638 (16.21) | 1.312 (33.32) | .224 (5.69)    | 1.228 (31.19) |
| DB-25  | DBBS-25     | 2.252 (57.20) | .638 (16.21) | 1.852 (47.04) | .256 (6.50)    | 1.508 (38.30) |

# Accessories - Plastic Backshells

## One Piece Plastic

- Straight or 90° cable exit
- Integral cable clamp and set screw
- Accommodates spring latches
- UL 94V-2 rated flame retardant
- Mounting hardware included

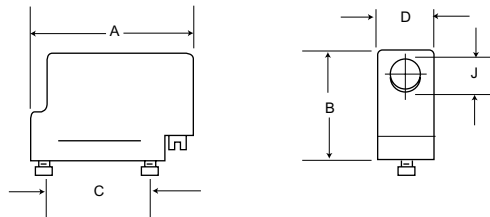
### Straight Cable Exit



**Material:** Thermoplastic UL 94V-2 rated  
**Color:** Black  
**Screws:** Steel, cadmium plated

| Layout | Part Number | A<br>+ .015 (0.38) | B<br>+ .015 (0.38) | C<br>+ .015 (0.13) | C<br>+ .015 (0.38) | E<br>+ .010 (0.25) |
|--------|-------------|--------------------|--------------------|--------------------|--------------------|--------------------|
| DE-9   | DE51218     | 1.218 (30.9)       | 1.000 (25.4)       | .984 (25.0)        | .500 (12.7)        | .281 (7.1)         |
| DA-15  | DA51210     | 1.546 (39.3)       | 1.000 (25.4)       | 1.312 (33.3)       | .500 (12.7)        | .360 (9.1)         |
| DB-25  | DB51212     | 2.093 (53.2)       | 1.250 (31.7)       | 1.852 (47.0)       | .500 (12.7)        | .493 (12.5)        |
| DC-37  | DC51214     | 2.734 (69.4)       | 1.500 (38.1)       | 2.500 (63.5)       | .500 (12.7)        | .967 (17.6)        |
| DD-50  | DD51216     | 2.640 (67.1)       | 1.500 (38.1)       | 2.406 (61.1)       | .609 (15.5)        | .734 (18.6)        |

- 90° Cable Exit
- Integral cable clamps & set screw
- UL 94V-2 rated flame retardant
- Mounting Hardware included

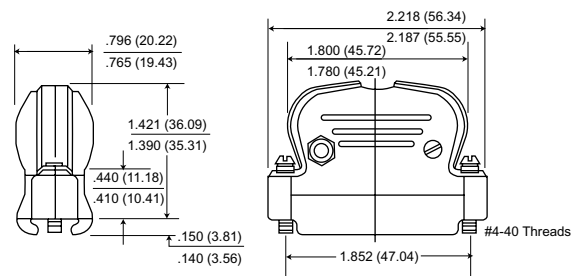


**Material:** Thermoplastic UL 94V-2 rated  
**Color:** Black  
**Screws:** Steel, cadmium plated

| Layout | Part Number | A<br>+ .015 (0.38) | B<br>+ .015 (0.38) | C<br>+ .015 (0.13) | C<br>+ .015 (0.38) | E<br>+ .010 (0.25) |
|--------|-------------|--------------------|--------------------|--------------------|--------------------|--------------------|
| DA-15  | DA51211     | 1.822 (46.3)       | 1.000 (25.4)       | 1.312 (33.3)       | .500 (12.7)        | .360 (9.1)         |
| DB-25  | DB51213     | 2.386 (60.1)       | 1.250 (31.7)       | 1.852 (47.0)       | .500 (12.7)        | .493 (12.5)        |
| DC-37  | DC51215     | 3.009 (76.4)       | 1.500 (38.1)       | 2.500 (63.5)       | .500 (12.7)        | .694 (17.6)        |
| DD-50  | DD51217     | 2.915 (74.0)       | 1.500 (38.1)       | 2.406 (61.1)       | .609 (15.5)        | .734 (18.6)        |

## Dataphone

- Available in 25 position only
- Supplied with screws



**Max. Cable Entry .312 (7.92)**

**Material:** Junction shell - Thermoplastic UL 94V-0 rated. Hardware - steel.  
**Finish:** Hardware - cadmium plate, clear chromate.  
**Color:** Black  
**Part Number:** DB51226-1B

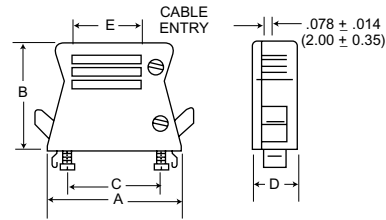
# Accessories - Plactic Backshells

## Quick-Disconnect Backshells for IDC Cable

### IDC

Order locking hardware separately.

- Optional Spring Clips provide quick disconnect for either flat IDC cable or round jacketed cable
- Designed for use with keying plates sold separately



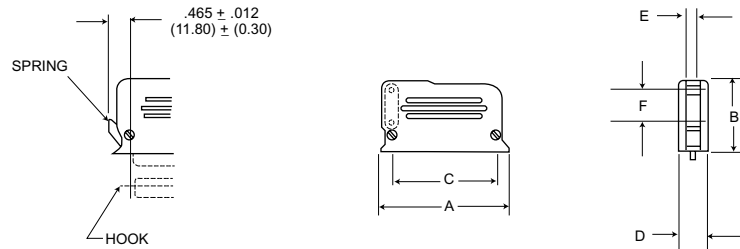
Material: Thermoplastic, UL 94V-0 rated  
Color; Black

| Layout | Part Number | A<br>Max.    | B<br>Max.    | C<br>± .005 (.013) | D<br>Max.   | E<br>± .008 (0.2) |
|--------|-------------|--------------|--------------|--------------------|-------------|-------------------|
| DE-9   | DE115386-1B | 1.623 (41.2) | 1.596 (40.5) | .984 (25.0)        | .642 (16.3) | .590 (15.0)       |
| DA-15  | DA115386-2B | 1.950 (49.5) | 1.596 (40.5) | 1.311 (33.3)       | .642 (16.3) | .917 (23.3)       |
| DB-25  | DB115386-3B | 2.490 (63.2) | 1.596 (40.5) | 1.852 (47.0)       | .642 (16.3) | 1.456 (37.0)      |
| DC-37  | DC115386-4B | 3.140 (79.7) | 1.596 (40.5) | 2.500 (63.5)       | .642 (16.3) | 2.106 (53.5)      |

## Quick-Disconnect Backshells for Round Cable

### Round Cable - Straight and 90° Exit

Order locking hardware separately.



Material: Thermoplastic, UL 94V-0 rated  
Color; Black

| Layout | Part Number | A<br>Max.    | B<br>Max.    | C<br>± .005 (.013) | D<br>Max.   | E<br>± .008 (0.2) | F<br>Min.   |
|--------|-------------|--------------|--------------|--------------------|-------------|-------------------|-------------|
| DE-9   | DE115339    | 1.623 (41.2) | 1.596 (40.5) | .984 (25.0)        | .642 (16.3) | .590 (15.0)       | .264 (6.7)  |
| DA-15  | DA115339-1  | 1.950 (49.5) | 1.596 (40.5) | 1.311 (33.3)       | .642 (16.3) | .917 (23.3)       | .264 (6.7)  |
| DB-25  | DB115339-2  | 2.490 (63.2) | 1.596 (40.5) | 1.852 (47.0)       | .642 (16.3) | 1.456 (37.0)      | .697 (17.7) |
| DC-37  | DC115339-3  | 3.140 (79.7) | 1.596 (40.5) | 2.500 (63.5)       | .642 (16.3) | 2.106 (53.5)      | .697 (17.7) |
| DD-50  | DD115339-4  | 3.023 (76.8) | 1.653 (42.0) | 2.405 (61.1)       | .748 (19.0) | .433 (11.0)       | .697 (17.7) |

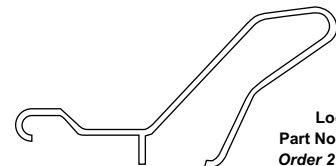
## Optional Locking Mechanism/Hardware

Material: Corrosion-resistant steel.

NOTE: When used with keying plate, order lock hook part number 015-8755-001.



Lock Hook  
Part No. 015-8755-000  
Order 2 per connector  
Note: Not for use on rear panel mounted connectors.



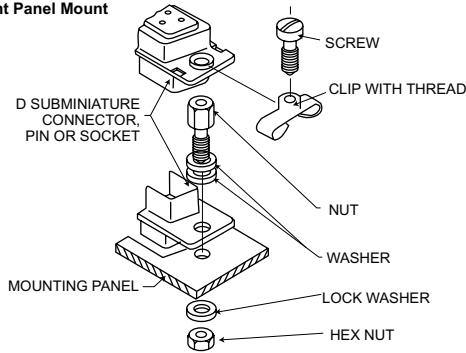
Lock Spring  
Part No. 259-8760-000  
Order 2 per connector

# Accessories - Locking Hardware

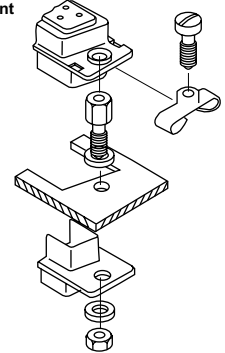
## Screw Locks

- ¥ Insures positive mating.
- ¥ Used for vibration applications.

Front Panel Mount



Rear Panel Mount

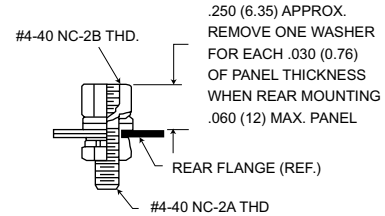
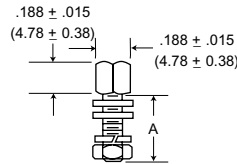


### Female Srew Locks



Order 2 per connector.

| Cadmium With Yellow Chromate | M24308 MIL-Spec. | A<br>± .015 (0.38) |
|------------------------------|------------------|--------------------|
| D20418-2                     | M24308/26-1      | .312 (7.92)        |
| D20418-50                    |                  | .500 (12.70)       |
| D20418-39                    | M24308/26-2      | .625 (15.88)       |
| D20418-74                    |                  | .750 (19.05)       |



Material: Cold rolled steel.

Finish: Cadmium plate, yellow chromate

NOTE: (1) A 6 inch/pound (female) and 4 inch/pound (male) maximum torque during assembly is recommended on steel screw lock assemblies.

(2) A third flat washer is supplied for front panel mounting of tab shell connectors.

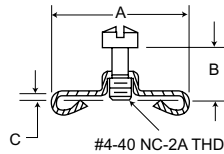
### NM For Use With Non-Magnetic/No-Dutgas Products

| NM Brass   | NM Stainless Steel | A<br>± .015 (0.38) |
|------------|--------------------|--------------------|
| D20418-52  | D20418-14          | .312 (7.92)        |
| N/A        | D20418-102         | .500 (12.70)       |
| D20418-101 | D20418 -77         | .625 (15.88)       |

### NM - Non-Magnetic Finish and Material:

Passivated (Stainless Steel). Gold over copper per MIL-G-45204, Type II, Class 2 (Brass)

### Male Srew Locks



Standard Material: Clip-sheet steel; hardware-cold rolled steel.

Standard Finis: Cadmium plate, yellow chromate.

Commercial: 100 microinch zinc minimum.

Passivated (Stainless Steel). Gold over copper per MIL-G45204, Type II, Class 2 (Brass).

Order 2 per connector.

| Cadmium With Yellow Chromate | NM Brass   | NM Stainless Steel | A<br>± .015 (0.38) | B<br>± .010 (0.25) | C<br>± .005 (0.13) | Connector Size        |
|------------------------------|------------|--------------------|--------------------|--------------------|--------------------|-----------------------|
| D20419                       | D20419-74  | N/A                | .555 (14.10)       | .250 (6.35)        | .048 (1.22)        | DE9, DA15, DB25, DC37 |
| D20419-18                    | D20419-103 | D20419-38          | .555 (14.10)       | .281 (7.14)        | .067 (1.70)        | DE9, DA15, DB25, DC37 |
| D20419-21                    | N/A        | D20419-80          | .555 (14.10)       | .281 (7.14)        | .092 (2.34)        | DE9, DA15, DB25, DC37 |
| D20419-104                   | N/A        | N/A                | .555 (14.10)       | .312 (7.92)        | .092 (2.34)        | DE9, DA15, DB25, DC37 |
| D20420                       | D20419-67  | N/A                | .656 (16.66)       | .250 (6.35)        | .048 (1.22)        | DD50                  |
| D20420-13                    | D20419-74  | D20419-108         | .656 (16.66)       | .281 (7.14)        | .067 (1.70)        | DD50                  |
| D20420-15                    | N/A        | D20419-70          | .656 (16.66)       | .281 (7.14)        | .092 (2.34)        | DD50                  |
| D20420-86                    | N/A        | N/A                | .656 (16.66)       | .312 (7.92)        | .092 (2.34)        | DD50                  |

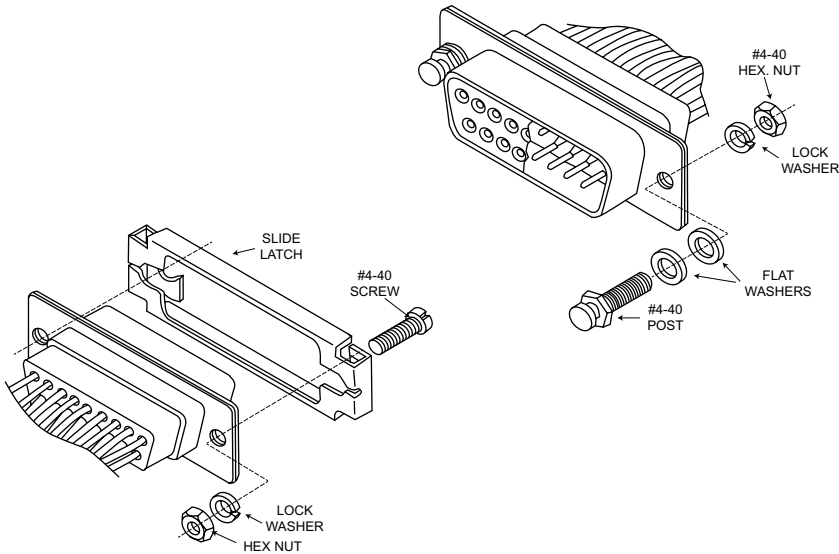
NM - Non-Magnetic Finish & Material: Passivated (Stainless Steel). Gold over copper per MIL-G-4520, Type II, Class 2 (Brass).

NOTE: (1) A 6 inch/pound (female) and 4 inch/pound (male) maximum torque during assembly is recommended on steel screw lock assemblies.

(2) A third flat washer is supplied for front panel mounting of tab shell connectors.

Highlighted part numbers indicate standard product; usually available with shorter lead times.

Slide Latch Assemblies



Slide Lock Post Kit

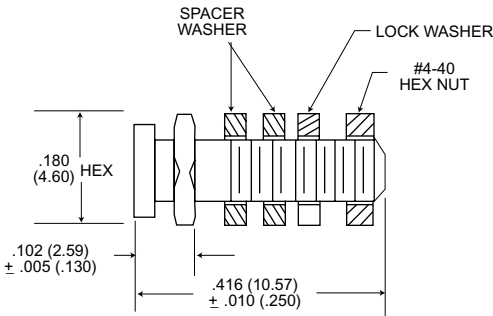


Kit consists of 1 post, 2 spacer washers, 1 lock washer and hex nut.

Order 2 per connector.

| Material | Cadmium With Yellow Chromate |
|----------|------------------------------|
| Steel    | D53018                       |
| Brass    | D53018-5                     |

NOTE: When rear-mounting connector to a 1/16" panel, delete the 2 spacer washer.



Slide Latch Kit

- Ideal for Ethernet Applications

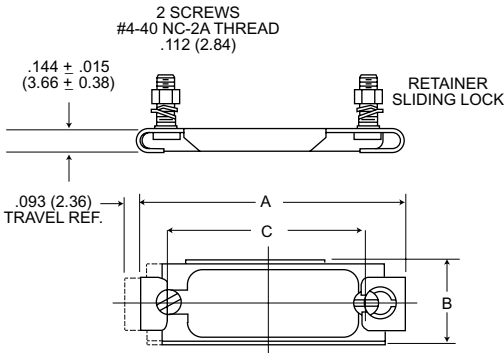


Kit consists of slide latch retainer, 2 screws, 2 nuts, 2 lock washer.

Order one per connector.

| Description           | Material                     | Finish                                                    |
|-----------------------|------------------------------|-----------------------------------------------------------|
| Retainer Sliding lock | Stainless Steel per QQ-S-766 | Passivated per QQ-P-35                                    |
| Screw, Mtg,           | Steel                        | Yellow chromate over 100 micro-inch cadmium per QQ-P-416. |
| Washer, Lock          |                              |                                                           |
| Nut, Hex              |                              |                                                           |

Highlighted part numbers indicated standard product; usually available with shorter lead times.



| Layout | Cadmium With Yellow Chromate | A<br>± .015 (0.38) | B<br>± .015 (0.38) | C<br>± .005 (0.13) |
|--------|------------------------------|--------------------|--------------------|--------------------|
| DE-9   | DE51224-1                    | 1.380 (35.05)      | .500 (12.70)       | .984 (25.00)       |
| DA-15  | DA51220-1                    | 1.720 (43.69)      | .500 (12.70)       | 1.312 (33.32)      |
| DB-25  | DB51221-1                    | 2.260 (57.40)      | .500 (12.70)       | 1.852 (47.04)      |
| DC-37  | DC51222-1                    | 2.908 (73.86)      | .500 (12.70)       | 2.500 (63.50)      |
| DD-50  | DD51223-1                    | 2.814 (71.47)      | .609 (15.47)       | 2.406 (61.11)      |

# Accessories - Locking Hardware

## Spring Latch Assemblies

Low cost  
Minimizes field connection time  
Positive lock between connectors

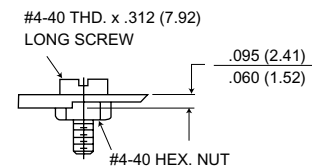
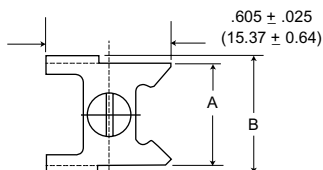
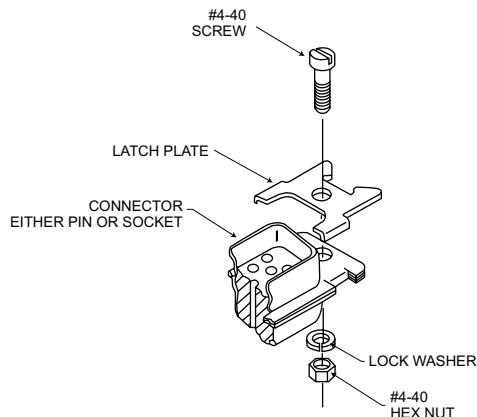
Locked

Unlocked

### Spring Latch Plate

Kit consists of 1 plate, 1 screw,  
1 lock washer, 1 nut.

Order two per connector.



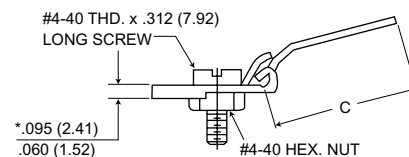
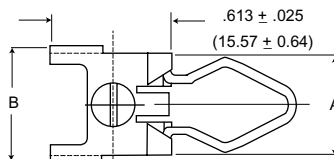
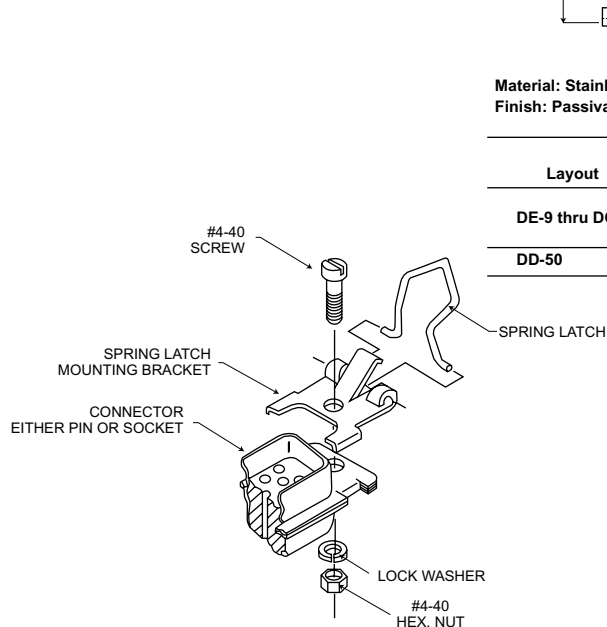
Material: Stainless Steel  
Finish: Passivated

| Layout          | Part Number | A<br>± .015 (0.38) | B<br>± .015 (0.38) |
|-----------------|-------------|--------------------|--------------------|
| DE-9 thru DC-37 | D110278     | .484 (12.29)       | .556 (14.12)       |
| DD-50 Only      | D110280     | .609 (15.49)       | .673 (17.09)       |

### Spring Latch

Kit consists of 1 spring, 1 screw,  
1 bracket, 1 lock washer, and  
1 hex nut.

Order two per connector.



\* Does not apply to rear panel mounting.

Material: Stainless Steel  
Finish: Passivated

| Layout          | Mounting    | Part Number | A<br>± .015 (0.38) | B<br>± .015 (0.38) | C<br>± .020 (0.51) |
|-----------------|-------------|-------------|--------------------|--------------------|--------------------|
| DE-9 thru DC-37 | Front Panel | DD10277     | .489 (12.42)       | .565 (14.35)       | .732 (18.59)       |
|                 | Rear Panel  | D110277-4   | .489 (12.42)       | .605 (15.37)       | .615 (15.62)       |
| DD-50           | Front Panel | D110279     | .609 (15.49)       | .673 (17.09)       | .732 (18.59)       |

Highlighted part numbers indicate standard product; usually available with shorter lead times.

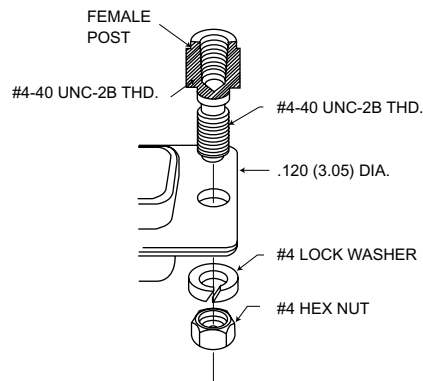
# Accessories - Locking Hardware

## Jackscrew/Jackpost Assemblies

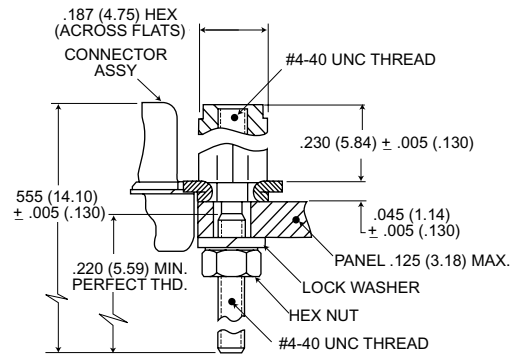
### Jackpost - P/N D110551

Kit consists of 2 posts, 2 nuts, 2 lockwashers.

**Order one per connector.**



JACKPOSTS ASSEMBLY



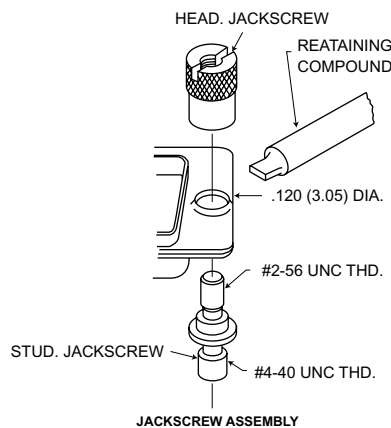
**Material: Stainless Steel per QQ-S-763**  
**Finish: Passivated per QQ-P-35**

Note: Jackpost is not compatible with rear-panel mounted connectors.

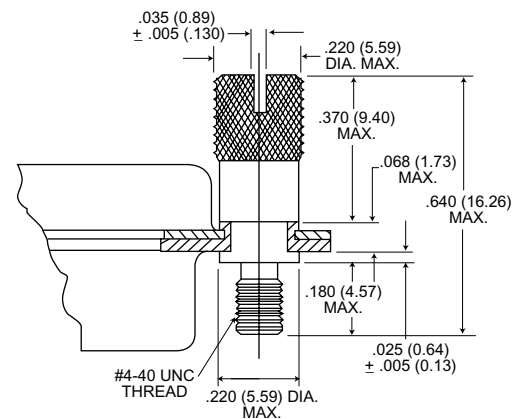
### Jackscrew - P/N D110550

Kit consists of 2 studs, 2 heads, and 1 tube retaining compound.

**Order one per connector.**



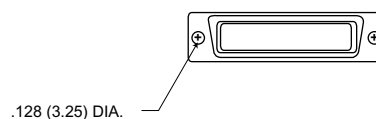
JACKSCREW ASSEMBLY



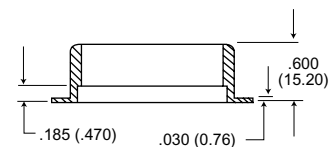
**Material: Stainless Steel per QQ-S-763**  
**Retaining Compound: per MIL-S-46163**  
**Finish: None**

## Jackscrew/Jackpost Assemblies

Nylon potting shells are molded with a thin flange .030 (0.76) to permit the use of D subminiature locking devices.  
Holds epoxy in place during curing.



**Material: Nylon**  
**Color: Natural (white)**



| Layout | Part Number |
|--------|-------------|
| DE-9   | DE50904-1   |
| DA-15  | DA50905-1   |
| DB-25  | DB50906-1   |
| DC-37  | DC50907-1   |
| DD-50  | DD50908-1   |

Highlighted part numbers indicated standard product; usually available with shorter lead times.

## Guide Pin Plates

Female

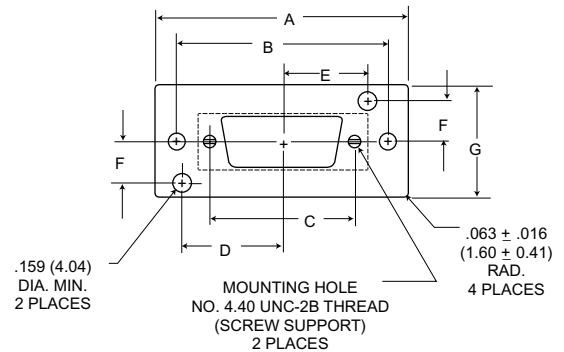
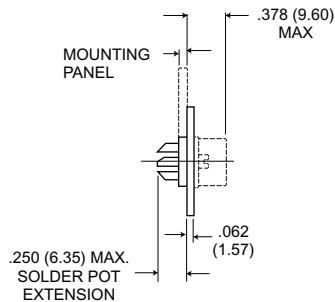
### Blind Mate Applications



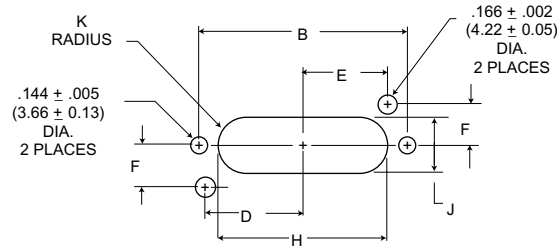
#### Materials

**Plate:** Cold rolled steel per ASTM A-620, yellow chromate over cadmium plate per QQ-P-416 Type II, Class 2

**Screw:** Steel, yellow chromate over 100 microinches cadmium minimum per QQ-P-416.



#### Recommended Panel Cutout



| Layout | Part Number | A<br>± .016 (0.41) | B<br>± .005 (0.13) | C<br>± .005 (0.13) | D<br>± .005 (0.13) | E<br>± .005 (0.13) | F<br>± .005 (0.13) | G<br>± .016 (0.41) | H<br>± .016 (0.41) | J<br>± .016 (0.41) | K<br>± .016 (0.41) |
|--------|-------------|--------------------|--------------------|--------------------|--------------------|--------------------|--------------------|--------------------|--------------------|--------------------|--------------------|
| DA-15  | DA22214     | 2.282 (57.96)      | 1.906 (48.41)      | 1.312 (33.32)      | .898 (22.81)       | .765 (19.43)       | .375 (9.52)        | 1.000 (25.40)      | 1.532 (38.91)      | .484 (12.29)       | .242 (6.15)        |
| DB-25  | DB22254     | 2.820 (71.63)      | 2.446 (62.13)      | 1.852 (47.04)      | 1.168 (29.67)      | 1.035 (26.29)      | .375 (9.52)        | 1.000 (25.40)      | 2.016 (51.21)      | .469 (11.91)       | .234 (5.94)        |
| DC-37  | DC22071     | 3.469 (88.11)      | 3.094 (78.59)      | 2.500 (63.50)      | 1.492 (37.90)      | 1.359 (34.52)      | .375 (9.52)        | 1.000 (25.40)      | 2.657 (67.49)      | .469 (11.91)       | .234 (5.94)        |
| DD-50  | DD21961     | 3.375 (85.72)      | 3.000 (76.20)      | 2.406 (61.11)      | 1.437 (36.50)      | 1.312 (33.32)      | .437 (11.10)       | 1.125 (28.58)      | 2.563 (65.10)      | .563 (14.30)       | .282 (7.16)        |

Consult factory for DC size.

Male

### Blind Mate Applications

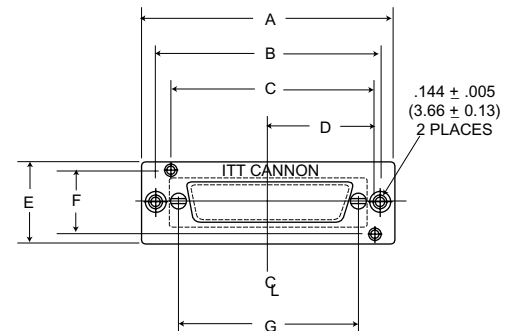
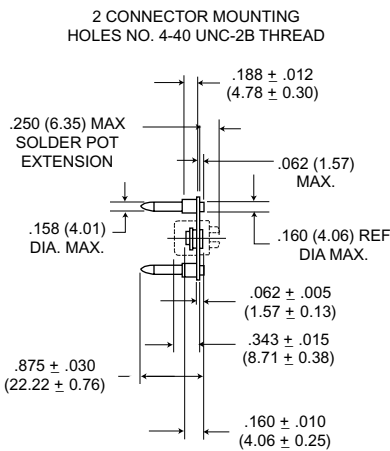


#### Materials

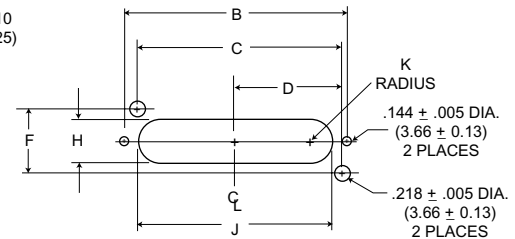
**Guide Pin:** 303 stainless steel per MIL-S-7720 Cond. A, passivated per QQ-P-35

**Screws, Rivets, Washers:** Steel, Yellow chromate over 100 microinches cadmium minimum per QQ-P-416

**Plate:** Cold rolled steel per ASTM A-620, yellow chromate over cadmium plate per QQ-P-416, Type II, Class 2



#### Recommended Panel Cutout



| Layout | Part Number | A<br>± .015 (0.38) | B<br>± .005 (0.13) | C<br>± .010 (0.23) | D<br>± .005 (0.13) | E<br>± .015 (0.38) | F<br>± .010 (0.23) | G<br>± .005 (0.13) | H<br>± .010 (0.25) | J<br>± .015 (0.38) | K<br>± .005 (0.13) |
|--------|-------------|--------------------|--------------------|--------------------|--------------------|--------------------|--------------------|--------------------|--------------------|--------------------|--------------------|
| DA-15  | DA22213     | 2.281 (57.94)      | 1.906 (48.41)      | 1.663 (42.24)      | .898 (22.81)       | 1.000 (25.40)      | .750 (19.05)       | 1.312 (33.32)      | .484 (12.29)       | 1.531 (38.89)      | .242 (6.15)        |
| DB-25  | DB22255     | 2.820 (71.63)      | 2.446 (62.13)      | 2.203 (55.96)      | 1.168 (29.67)      | 1.000 (25.40)      | .750 (19.05)       | 1.852 (47.04)      | .484 (12.29)       | 2.047 (51.99)      | .242 (6.15)        |
| DC-37  | DC22070     | 3.468 (88.09)      | 3.094 (78.42)      | 2.851 (72.42)      | 1.492 (37.90)      | 1.000 (25.40)      | .750 (19.05)       | 2.500 (63.50)      | .484 (12.29)       | 2.687 (68.25)      | .242 (6.15)        |
| DD-50  | DD21962     | 3.375 (85.72)      | 2.300 (58.42)      | 2.749 (69.82)      | 1.437 (36.50)      | 1.125 (28.58)      | .874 (22.20)       | 2.406 (61.11)      | .593 (15.06)       | 2.635 (66.93)      | .296 (7.52)        |

Consult factory for DC size.

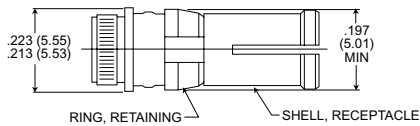
# Accessories

## Combo D Guide Pin and Socket

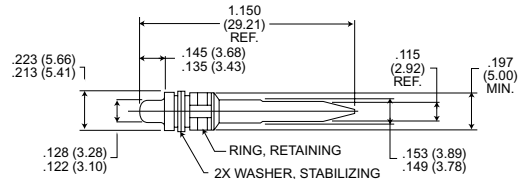
Installs into any Combo D, size 8 Cavity. This patented guide pin and socket system is ideal for blind mate applications where space is limited.



| Description  | Material     | Finish           |
|--------------|--------------|------------------|
| Guide Pin    | Brass        | Gold over nickel |
| Guide Socket | Copper Alloy | Gold over nickel |



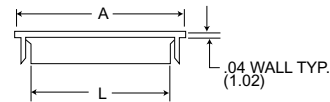
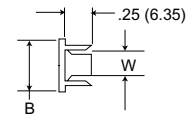
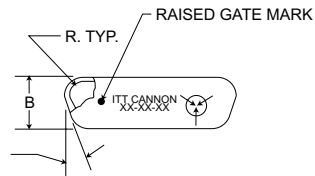
**Press Fit Guide Socket**  
P/N DM53744-72



**PCB Guide Pin**  
P/N DM53745-82

## Dust Caps

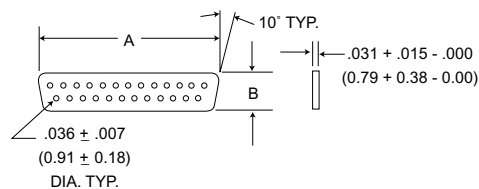
Anti-static conductive dust caps (black polypropylene) protect connectors and contacts from dust and moisture.



**NOTE:** L dim. applies at point of maximum internal interface length.

| Part Numbers | I.D.   | A            | B           | L             | W            |
|--------------|--------|--------------|-------------|---------------|--------------|
| DE-59-20     | Pin    | .80 (20.32)  | .45 (11.43) | .644 (16.36)  | .299 (7.59)  |
| DA-59-20     | Pin    | 1.12 (28.45) | .46 (11.68) | .968 (24.59)  | .300 (7.62)  |
| DB-59-20     | Pin    | 1.67 (42.42) | .46 (11.68) | 1.506 (38.25) | .295 (7.49)  |
| DC-59-20     | Pin    | 2.32 (58.93) | .46 (11.68) | 2.158 (54.81) | .290 (7.37)  |
| DD-59-20     | Pin    | 2.24 (56.90) | .57 (14.48) | 2.091 (53.11) | .410 (10.41) |
| DE-60-20     | Socket | .86 (21.84)  | .51 (12.95) | .700 (17.78)  | .351 (8.92)  |
| DA-60-20     | Socket | 1.20 (30.48) | .51 (12.95) | 1.044 (26.52) | .355 (9.02)  |
| DB-60-20     | Socket | 1.74 (44.20) | .53 (13.46) | 1.559 (39.60) | .358 (9.09)  |
| DC-60-20     | Socket | 2.39 (60.71) | .53 (13.46) | 2.240 (56.90) | .369 (9.37)  |
| DD-60-20     | Socket | 2.29 (58.17) | .63 (16.00) | 2.137 (54.28) | .474 (12.04) |

## Interfacial Seal



| Layout | Part Number | A            | B           |
|--------|-------------|--------------|-------------|
| DE-9   | DE53750     | .656 (16.7)  | .331 (8.4)  |
| DA-15  | DA53750-1   | .984 (25.0)  | .331 (8.4)  |
| DB-25  | DB53750-2   | 1.531 (38.9) | .331 (8.4)  |
| DC-37  | DC53750-3   | 2.171 (55.1) | .331 (8.4)  |
| DD-50  | DD53750-4   | 2.078 (52.8) | .437 (11.1) |

**Material:** Silastic sheet

Provides moisture resistance at the mating interface.

# Accessories - Gender Changers & Connector Savers

## Performance and Material Specifications

### MATERIALS AND FINISHES

|                             |     | Material       | Finish                      |
|-----------------------------|-----|----------------|-----------------------------|
| Contacts                    |     | Copper Alloy   | Gold Over Nickel            |
| Rivets                      |     | Copper Alloy   | Tin/Lead                    |
| Shells                      |     | Steel          | Tin/Lead                    |
| Insulator (Gender Changer): | M/M | Glass Epoxy    | -                           |
|                             | F/F | Thermo Plastic | -                           |
| Spacer                      |     | Zinc Alloy     | -                           |
| Locking Nut                 |     | Steel          | Clear Chromate Over Cadmium |
| Washers                     |     | Steel          | Clear Chromate Over Cadmium |
| Washer, Captive             |     | Mylar          | None                        |

### MECHANICAL FEATURES

Coupling - Friction and lock accessories

Polarization - Keystone-shaped shells

### PERFORMANCE SPECIFICATIONS

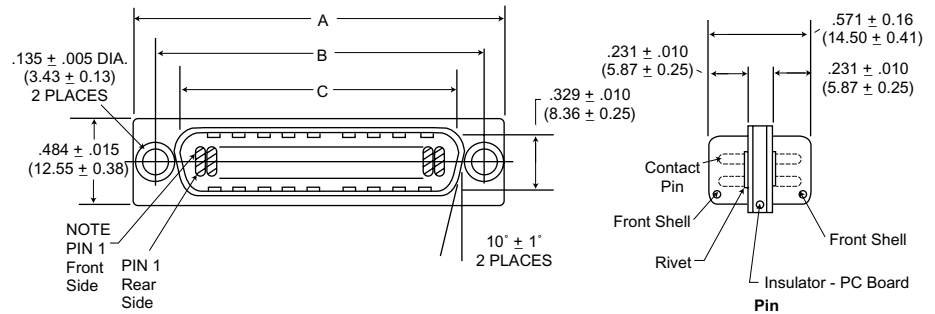
Temperature Rating: - 55° to +105° C

Current Rating: 3 Amp continuous

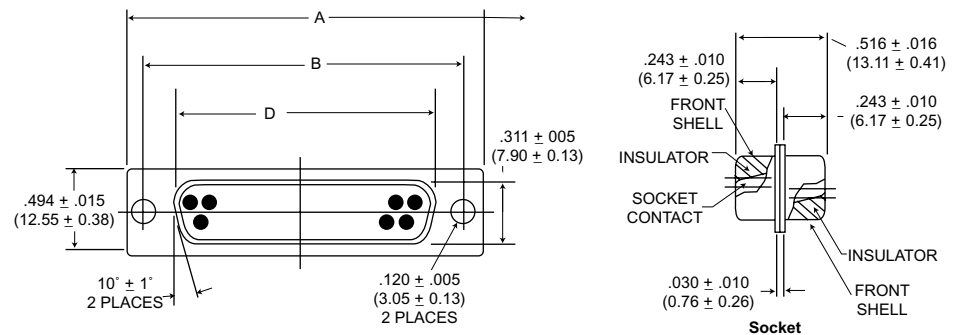
Dielectric Withstanding Voltage: 500 VAC at Sea Level

## Dimensions/Part Numbers

### Gender Changer Male/Male

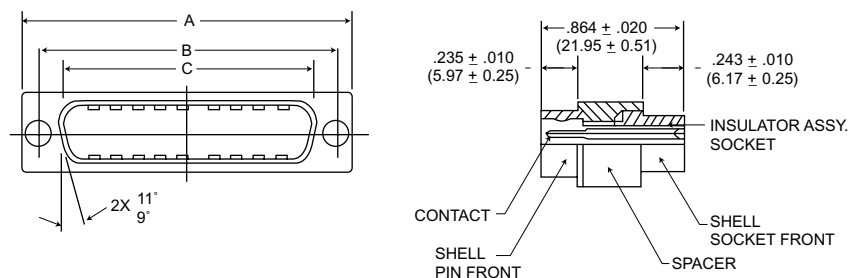


### Gender Changer Female/Female



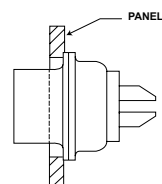
### Connector Saver

#### Engaging View, Pin Side

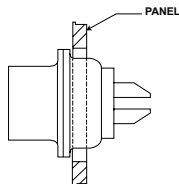


| Number of<br>Contacts<br>(Shell Size) | Gender Changer Part Numbers |                               |                     |                               | Connectors Saver<br>Part Numbers |                   |                    |                    |                    |
|---------------------------------------|-----------------------------|-------------------------------|---------------------|-------------------------------|----------------------------------|-------------------|--------------------|--------------------|--------------------|
|                                       | Male/Male                   |                               | Female/Female       |                               |                                  | A<br>± .015 (0.4) | B<br>± .010 (0.25) | C<br>± .010 (0.25) | D<br>± .005 (0.13) |
|                                       | Without<br>Hardware         | With<br>Hardware<br>Assembled | Without<br>Hardware | With<br>Hardware<br>Assembled |                                  |                   |                    |                    |                    |
|                                       | Male/Female                 |                               |                     |                               |                                  |                   |                    |                    |                    |
| 9 (E)                                 | DE111805-1                  | DE11805-5                     | DE111813            | DE111813-3                    | DEBU111515                       | 1.213 (30.81)     | .984 (24.99)       | .666 (16.92)       | .643 (16.33)       |
| 15 (A)                                | DE111806-1                  | DA11806-5                     | DA111810            | DA111810-3                    | DABU111512                       | 1.541 (39.14)     | 1.312 (33.32)      | .994 (25.25)       | .971 (24.66)       |
| 25 (B)                                | DE111807-1                  | DB11807-5                     | DB111811            | DB111811-2                    | DBBU111511                       | 2.088 (53.04)     | 1.852 (47.04)      | 1.534 (38.96)      | 1.511 (38.38)      |
| 37 (C)                                | DE111808-1                  | DC11808-5                     | Not Available       | Not Available                 | Not Available                    | 2.729 (69.32)     | 2.500 (63.50)      | 2.182 (55.42)      | ††                 |

## Panel Cutouts

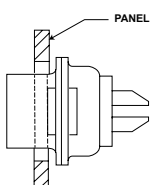
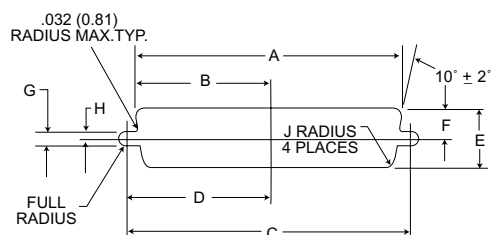


Rear mounting of  
standard shell

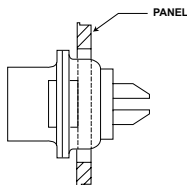


Front mounting of  
standard shell

Standard Cutout

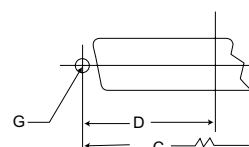


Rear mounting of  
float mount shell  
(Y-Code)



Front mounting of  
reverse mount shell  
(Y-Code)

Optional Cutout  
(For Rear Mounting)



| Connector Size | Mounting Method | A<br>± .005 (0.13) | B<br>± .005 (0.13) | C<br>± .005 (0.13) | D<br>± .005 (0.13) | E<br>± .005 (0.13) | F<br>± .005 (0.13) | G<br>± .002 (0.05) | H<br>± .002 (0.05) | J<br>± .002 (0.05) |
|----------------|-----------------|--------------------|--------------------|--------------------|--------------------|--------------------|--------------------|--------------------|--------------------|--------------------|
| A Standard     | Front Mounting  | 1.202 (30.53)      | .601 (15.26)       | 1.312 (33.32)      | .656 (16.66)       | .513 (13.03)       | .257 (6.52)        | .120 (3.04)        | .060 (1.52)        | .083 (2.10)        |
|                | Rear Mounting   | 1.134 (28.80)      | .567 (14.40)       | 1.312 (33.32)      | .656 (16.66)       | .449 (11.40)       | .225 (5.71)        | .120 (3.04)        | .060 (1.52)        | .132 (3.35)        |
| A Float        | Front Mounting  | 1.234 (31.34)      | .617 (15.67)       | 1.312 (33.32)      | .656 (16.66)       | .545 (13.84)       | .273 (6.93)        | .088 (2.23)        | .044 (1.11)        | .083 (2.10)        |
|                | Rear Mounting   | 1.166 (29.61)      | .583 (14.80)       | 1.312 (33.32)      | .656 (16.66)       | .481 (12.21)       | .241 (6.12)        | .088 (2.23)        | .044 (1.11)        | .132 (3.35)        |
| B Standard     | Front Mounting  | 1.743 (44.27)      | .872 (22.14)       | 1.852 (47.04)      | .926 (23.52)       | .513 (13.03)       | .257 (6.52)        | .120 (3.04)        | .060 (1.52)        | .083 (2.10)        |
|                | Rear Mounting   | 1.674 (42.51)      | .837 (21.25)       | 1.852 (47.04)      | .926 (23.52)       | .449 (11.40)       | .225 (5.71)        | .120 (3.04)        | .060 (1.52)        | .132 (3.35)        |
| B Float        | Front Mounting  | 1.775 (45.08)      | .888 (22.55)       | 1.852 (47.04)      | .926 (23.52)       | .545 (13.84)       | .273 (6.93)        | .088 (2.23)        | .044 (1.11)        | .083 (2.10)        |
|                | Rear Mounting   | 1.706 (43.33)      | .853 (21.66)       | 1.852 (47.04)      | .926 (23.52)       | .481 (12.21)       | .241 (6.12)        | .088 (2.23)        | .044 (1.11)        | .132 (3.35)        |
| C Standard     | Front Mounting  | 2.391 (60.73)      | 1.196 (30.37)      | 2.500 (63.50)      | 1.250 (31.75)      | .513 (13.03)       | .257 (6.52)        | .120 (3.04)        | .060 (1.52)        | .083 (2.10)        |
|                | Rear Mounting   | 2.326 (59.08)      | 1.163 (29.54)      | 2.500 (63.50)      | 1.250 (31.75)      | .449 (11.40)       | .225 (5.71)        | .120 (3.04)        | .060 (1.52)        | .132 (3.35)        |
| C Float        | Front Mounting  | 2.423 (61.54)      | 1.212 (30.78)      | 2.500 (63.50)      | 1.250 (31.75)      | .545 (13.84)       | .273 (6.93)        | .088 (2.23)        | .044 (1.11)        | .083 (2.10)        |
|                | Rear Mounting   | 2.354 (59.79)      | 1.177 (29.89)      | 2.500 (63.50)      | 1.250 (31.75)      | .481 (12.21)       | .241 (6.12)        | .088 (2.23)        | .044 (1.11)        | .132 (3.35)        |
| D Standard     | Front Mounting  | 2.297 (58.34)      | 1.149 (29.18)      | 2.406 (61.11)      | 1.203 (30.55)      | .623 (15.82)       | .312 (7.92)        | .120 (3.04)        | .060 (1.52)        | .083 (2.10)        |
|                | Rear Mounting   | 2.218 (56.33)      | 1.109 (28.16)      | 2.406 (61.11)      | 1.203 (30.55)      | .555 (14.09)       | .278 (7.06)        | .120 (3.04)        | .060 (1.52)        | .132 (3.35)        |
| D Float        | Front Mounting  | 2.329 (59.15)      | 1.165 (29.59)      | 2.406 (61.11)      | 1.203 (30.55)      | .655 (16.63)       | .328 (8.33)        | .088 (2.23)        | .044 (1.11)        | .083 (2.10)        |
|                | Rear Mounting   | 2.250 (57.15)      | 1.125 (28.57)      | 2.406 (61.11)      | 1.203 (30.55)      | .587 (14.90)       | .294 (7.46)        | .088 (2.23)        | .044 (1.11)        | .132 (3.35)        |
| E Standard     | Front Mounting  | .874 (22.19)       | .437 (11.09)       | .984 (24.99)       | .492 (12.49)       | .513 (13.03)       | .257 (6.52)        | .120 (3.04)        | .060 (1.52)        | .083 (2.10)        |
|                | Rear Mounting   | .806 (20.47)       | .403 (10.23)       | .984 (24.99)       | .492 (12.49)       | .449 (11.40)       | .225 (5.71)        | .120 (3.04)        | .060 (1.52)        | .132 (3.35)        |
| E Float        | Front Mounting  | .906 (23.01)       | .453 (11.50)       | .984 (24.99)       | .492 (12.49)       | .545 (13.84)       | .273 (6.93)        | .088 (2.23)        | .044 (1.11)        | .083 (2.10)        |
|                | Rear Mounting   | .838 (21.28)       | .419 (10.64)       | .984 (24.99)       | .492 (12.49)       | .481 (12.21)       | .241 (6.12)        | .088 (2.23)        | .044 (1.11)        | .132 (3.35)        |

## Panel Mounting

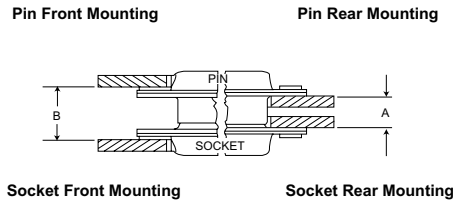


Figure 1A

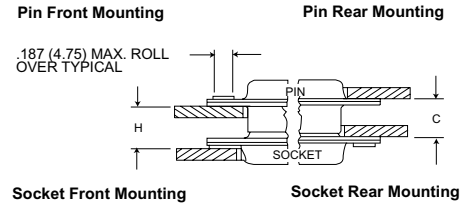


Figure 1B

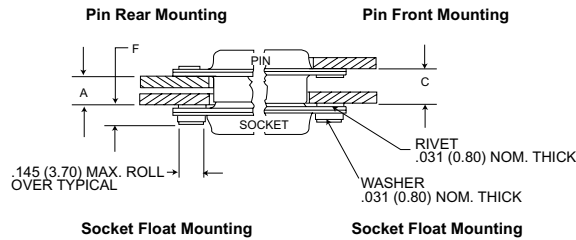


Figure 2

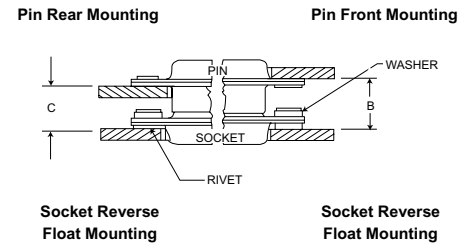


Figure 3

### NOTE:

1. A, B, C and H are dimensions between panels and represent the recommended limit to be used in the design of the connector mounting method.
2. It is recommended that only one assembly, either pin or socket, be float mounted.
3. Standard pin assemblies contained .015 (0.38) thick front shells on E and A sizes; .024 (.061) thick front shells on B, C, and D sizes.
4. Standard connectors accommodate a #4 screw. Float mount connectors accommodate a #2 screw.

| Combination of Mated Connectors |         |                      |                  | A                            | B                            | C                            | F             | H                            |
|---------------------------------|---------|----------------------|------------------|------------------------------|------------------------------|------------------------------|---------------|------------------------------|
| Fig. No.                        | Size    | Pin (See Note Below) | Socket           | + .030 (+0.76)<br>-.000 (-0) | + .030 (+0.76)<br>-.000 (-0) | + .030 (+0.76)<br>-.000 (-0) | ±.010 (±.025) | + .030 (+0.76)<br>-.000 (-0) |
| 1                               | A, E    | Standard             | Standard         | .250 (6.35)                  | .340 (8.63)                  | .295 (7.49)                  | -             | .295 (7.49)                  |
| 1                               | B, C, D | Standard             | Standard         | .238 (6.04)                  | .343 (8.71)                  | .298 (7.56)                  | -             | .283 (7.18)                  |
| 2                               | A, E    | Standard             | Float Mount      | .218 (5.53)                  | -                            | .263 (6.68)                  | .120 (3.04)   | -                            |
| 2                               | B, C, D | Standard             | Float Mount      | .206 (5.23)                  | -                            | .266 (6.75)                  | .120 (3.04)   | -                            |
| 2                               | A, E    | Float Mount          | Standard         | .218 (5.53)                  | -                            | .263 (6.68)                  | .120 (3.04)   | -                            |
| 2                               | B, C, D | Float Mount          | Standard         | .206 (5.23)                  | -                            | .251 (6.37)                  | .130 (3.30)   | -                            |
| 3                               | A, E    | Standard             | Rev. Float Mount | -                            | .358 (9.09)                  | .313 (7.95)                  | .120 (3.04)   | -                            |
| 3                               | B, C, D | Standard             | Rev. Float Mount | -                            | .361 (9.16)                  | .301 (7.64)                  | .120 (3.04)   | -                            |
| 3                               | A, E    | Rev. Float Mount     | Standard         | -                            | .358 (9.09)                  | .313 (7.95)                  | .120 (3.04)   | -                            |
| 3                               | B, C, D | Rev. Float Mount     | Standard         | -                            | .355 (9.01)                  | .310 (7.87)                  | .130 (3.30)   | -                            |

## MIL-C-24308 Test Extracts Applicable to Class G Connectors

| Test Descriptions      | Requirement                                                                                                                                                             | Method                                               |
|------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------|
| Mating/Unmating Force  | <b>Shell Size</b>                                                                                                                                                       | MIL-STD-1344<br>Method 2013                          |
|                        | <b>Max Unmating (LBS)</b>                                                                                                                                               |                                                      |
|                        | 1                                                                                                                                                                       |                                                      |
|                        | 2                                                                                                                                                                       |                                                      |
|                        | 3                                                                                                                                                                       |                                                      |
|                        | 4                                                                                                                                                                       |                                                      |
|                        | 5                                                                                                                                                                       |                                                      |
| Contact Retention      | Contacts shall be retained in their inserts by a 9 pound (minimum) force. The axial displacement of contacts shall not exceed .012 inch while under load.               | MIL-STD-1344<br>Method 2004                          |
| Insulation Resistance  | After humidity 1 Megohm (min)<br>All other conditions 5000 Megohm (mm).                                                                                                 | MIL-STD-1344<br>Method 3003                          |
| Contact Resistance     | After salt spray not to exceed 55 millivolts max.                                                                                                                       | #20 AWG, 7.5 Amp<br>MIL-STD-1344<br>Method 3004      |
| Vibration              | No damage and no loosening of parts due to vibration. No interruption of electrical continuity longer than 1 microsecond.                                               | MIL-STD-1344<br>Method 2005 Test Cond. 4             |
| Shock                  | No damage and no loosening of parts. No interruption of electrical continuity longer than 1 microsecond.                                                                | MIL-STD-1344<br>Method 2004 Test Cond. E             |
| Durability             | No electrical or mechanical defects after 500 cycles of mating and unmating                                                                                             | MIL-STD-1344<br>Method 2016<br>200 ± 100 cycles/hour |
| Salt Spray (Corrosion) | No exposure of base metal due to corrosion which will affect performance. Product will meet further test as specified.                                                  | MIL-STD-1344<br>Method 1001 Cond. B                  |
| Fluid Immersion        | 20 hours, immersion MIL-H-5606 Hydraulic Fluid<br>20 hours, immersion MIL-L-23659 Lubricating Fluid<br>Connectors shall meet mating/unmating force following immersion. | MIL-STD-1344<br>Method 1016                          |

# MIL-C-39029 Crimp Contacts

| Military Part Number | ITT Cannon Part Number | Contact Size | Contact Style | Product Line     | MIL Specification                    | Pages            |
|----------------------|------------------------|--------------|---------------|------------------|--------------------------------------|------------------|
| M39029/4-110         | 030-9173-006           | 20           | Pin           | DPK, PV          | MIL-C-83733<br>MIL-C-26482, Series 2 | 75-91<br>157-166 |
| M39029/4-111         | 030-9205-007           | 16           | Pin           | DPK, PV          |                                      |                  |
| M39029/4-113         | 030-9185-003           | 12           | Pin           | DPK, PV          |                                      |                  |
| M39029/5-115         | 031-9174-004           | 20           | Soc           | DPK, PV          |                                      |                  |
| M39029/5-116         | 031-9206-006           | 16           | Soc           | DPK, PV          |                                      |                  |
| M39029/5-118         | 031-9186-003           | 12           | Soc           | DPK, PV          |                                      |                  |
| M39029/11-144        | 030-1975-008           | 22           | Pin           | DPX*, DPK*       | MIL-C-81659                          | 25-40            |
| M39029/11-145        | 030-1892-004           | 20           | Pin           | DPX*             |                                      |                  |
| M39029/11-146        | 030-9083-012           | 16           | Pin           | DPX*             |                                      |                  |
| M39029/11-147        | 030-1909-002           | 12           | Pin           | DPX*             |                                      |                  |
| M39029/12-148        | 031-1113-008           | 22           | Soc           | DPX*             |                                      |                  |
| M39029/12-149        | 031-1047-003           | 20           | Soc           | DPX*             |                                      |                  |
| M39029/12-150        | 031-1271-000           | 16           | Soc           | DPX*             |                                      |                  |
| M39029/12-151        | 031-1059-003           | 12           | Soc           | DPX*             |                                      |                  |
| M39029/29-212        | 030-3196-008           | 16           | Pin           | MS/CV345*        | MIL-C-5015                           | 188-195          |
| M39029/29-213        | 030-3197-007           | 12           | Pin           | MS/CV345*        |                                      |                  |
| M39029/29-214        | 030-3198-003           | 8            | Pin           | MS/CV345*        |                                      |                  |
| M39029/29-215        | 030-3199-004           | 4            | Pin           | MS/CV345*        |                                      |                  |
| M39029/29-216        | 030-3200-003           | 0            | Pin           | MS/CV345*        |                                      |                  |
| M39029/30-217        | 031-3113-005           | 16S          | Soc           | MS/CV345*        |                                      |                  |
| M39029/30-218        | 031-3114-008           | 16           | Soc           | MS/CV345*        |                                      |                  |
| M39029/30-219        | 031-3115-006           | 12           | Soc           | MS/CV345*        |                                      |                  |
| M39029/30-220        | 031-3116-003           | 8            | Soc           | MS/CV345*        |                                      |                  |
| M39029/30-221        | 031-3117-003           | 4            | Soc           | MS/CV345*        |                                      |                  |
| M39029/30-222        | 031-3118-003           | 0            | Soc           | MS/CV345*        |                                      |                  |
| M39029/31-228        | 030-9032-003           | 16           | Pin           | KPSE             | MIL-C-26482, Series I                | 140-156          |
| M39029/31-240        | 030-9036-000           | 20           | Pin           | KPSE             |                                      |                  |
| M39029/32-247        | 031-9095-003           | 16           | Soc           | KPSE             |                                      |                  |
| M39029/32-259        | 031-9074-002           | 20           | Soc           | KPSE             |                                      |                  |
| M39029/50-340        | 249-1825-001           | 12           | Pin           | DPK (Coax)       | MIL-C-83733                          | 75-91            |
| M39029/51-341        | 249-1826-000           | 12           | Soc           | DPK (Coax)       |                                      |                  |
| M39029/56-348        | 031-1147-007           | 22D          | Soc           | KJL/KJA          | MIL-C-38999, Series I, II, III       | 115-139          |
| M39029/56-351        | 031-1250-001           | 20           | Soc           | KJL/KJA          |                                      |                  |
| M39029/56-352        | 031-1251-001           | 16           | Soc           | KJL/KJA          |                                      |                  |
| M39029/56-353        | 031-1237-000           | 12           | Soc           | KJL/KJA          |                                      |                  |
| M39029/57-354        | 031-1147-000           | 22D          | Soc           | KJ & DPK*        | MIL-C-38999, Series II               | 122-127          |
| M39029/57-355        | 031-1122-022           | 22M          | Soc           | KJ Only          |                                      |                  |
| M39029/57-356        | 031-1125-022           | 22           | Soc           | KJ Only          |                                      |                  |
| M39029/57-357        | 031-1124-020           | 20           | Soc           | KJ Only          |                                      |                  |
| M39029/57-358        | 031-1123-016           | 16           | Soc           | KJ Only          |                                      |                  |
| M39029/57-359        | 031-1238-000           | 12           | Soc           | KJ Only          |                                      |                  |
| M39029/58-360        | 030-2042-000           | 22D          | Pin           | KJL/KJ/KJA & DPK | MIL-C-38999, Series I, II, III       | 115-139          |
| M39029/58-361        | 030-1993-022           | 22M          | Pin           | KJL/KJ/KJA       |                                      |                  |
| M39029/58-362        | 030-1999-022           | 22           | Pin           | KJL/KJ/KJA       |                                      |                  |
| M39029/58-363        | 030-1997-020           | 20           | Pin           | KJL/KJ/KJA       |                                      |                  |
| M39029/58-364        | 030-1995-016           | 16           | Pin           | KJL/KJ/KJA       |                                      |                  |
| M39029/58-365        | 030-2155-000           | 12           | Pin           | KJL/KJ/KJA       |                                      |                  |
| M39029/63-368        | 031-1007-042           | 20           | Soc           | D*MA             | MIL-C-24308                          | 332-344          |
| M39029/64-369        | 330-5291-037           | 20           | Pin           | D*MA             |                                      |                  |
| M39029/83-450        | 030-8008-800           | 2022         | Pin           | KFS-(Canada)     | MIL-C-28840                          | 218-223          |
| M39029/83-451        | 030-8009-100           | 2028         | Pin           | KFS-(Canada)     |                                      |                  |
| M39029/83-508        | 030-8085-700           | 2020         | Pin           | KFS-(Canada)     |                                      |                  |
| M39029/84-452        | 031-8004-300           | 2022         | Soc           | KFS-(Canada)     |                                      |                  |
| M39029/84-453        | 031-8004-400           | 2028         | Soc           | KFS-(Canada)     |                                      |                  |
| M39029/84-509        | 031-8005-700           | 2020         | Soc           | KFS-(Canada)     |                                      |                  |