

# Amphenol® MIL-DTL-5015 and MIL-5015 Type Standard Cylindrical Connectors

12-020-18



# Amphenol

# MS/Standard

## how to order

### MIL-DTL-5015 and MIL-5015 Type (Solder Contacts)

MS   3102   A   18-3   P   W   (SR)  
**1**   **2**   **3**   **4**   **5**   **6**   **7**   **8**

1. Connector Type  
 MS designates Military Standard  
 CS\* designates service class A and C with proprietary special contact arrangements  
 SG\* designates service class E with proprietary special contact arrangements  
 SM\* designates service class F and R with proprietary special contact arrangements
2. Connector Style  
 3100 wall mounting receptacle  
 3101 cable connecting plug  
 3102 box mounting receptacle  
 3106 straight plug  
 3108 90° plug
3. Service Class  
 A solid shell for general, non-environmental applications  
 C solid shell for pressurized applications  
 E environmental resisting  
 F environmental resisting with strain relief (MS part number only)  
 R lightweight environmental resisting
- 4., 5. Shell size and insert arrangement - see tables, pages 22-24.
6. Contact Types  
 P designates pin contact  
 S designates socket contact
7. Insert Rotation  
 "W", "X", "Y", or "Z" designate that insert is rotated in its shell from normal position. No letter required for normal (no rotation) position.
8. (SR) strain relief for non-military connectors (For MS use "F" class)

\* For insert arrangements over 50 and shell size 40 and above.  
 Exceptions: 36-52, 40-1, 40-9 and 40-56 are MS approved.

Consult Amphenol, Sidney, NY for availability of alternate finishes, including black and olive drab zinc alloys.

### Proprietary (Crimp Contacts)

75 – 68   0   12-3   H  
**1**   **2**   **3**   **4**   **5**   **6**

1. Connector Type  
 75 – connector utilizing silver plated contacts  
 80 – less contacts  
 85 – contacts utilizing 50 micro-inches gold over silver plating
2. Service Class  
 68 service class A, general duty  
 474 service class F, environmental resisting  
 190 service class R, lightweight environmental resisting
3. Connector Style  
 0 wall mounting receptacle  
 1 cable connecting plug  
 2 box mounting receptacle  
 6 straight plug  
 8 90° plug
4. Shell Size Designator

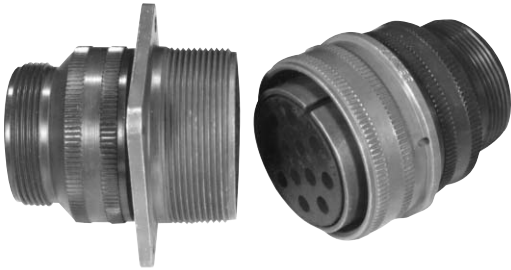
|                  |    |     |      |     |    |     |    |     |    |    |
|------------------|----|-----|------|-----|----|-----|----|-----|----|----|
| Shell Size       | 8S | 10S | 10SL | 12S | 12 | 14S | 14 | 16S | 16 | 18 |
| Shell Designator | 8  | 10  | 11   | 12  | 13 | 14  | 15 | 16  | 17 | 18 |

|                  |    |    |    |    |    |    |    |    |    |  |
|------------------|----|----|----|----|----|----|----|----|----|--|
| Shell Size       | 20 | 22 | 24 | 28 | 32 | 36 | 40 | 44 | 48 |  |
| Shell Designator | 20 | 22 | 24 | 28 | 32 | 36 | 40 | 44 | 48 |  |

5. Insert Arrangements  
 See page 22-24.
6. Contact Type/Alternate Insert Rotation  
 P designates pin, S designates socket for normal positioning of inserts. When an alternate position of the connector insert is required to prevent cross-mating, a different letter (other than P or S) is used. See page 25 for description of alternate positions, then convert to Amphenol® proprietary coding by the following charts:

| Pin Contacts |                 | Socket Contacts |                 |
|--------------|-----------------|-----------------|-----------------|
| MS Letter    | Amphenol Letter | MS Letter       | Amphenol Letter |
| PW           | G               | SW              | H               |
| PX           | I               | SX              | J               |
| PY           | K               | SY              | L               |
| PZ           | M               | SZ              | N               |

# Amphenol® MIL-DTL-5015 and MIL-5015 Type Standard Cylindrical Connectors



MS-A, MS-C



MS-E/F



MS-R

## DESIGN CHARACTERISTICS

- Medium to heavy weight cylindrical
- Durable, field-proven design
- Environmental resistant
- Resilient inserts
- Operating voltage to 3000 VAC (RMS) at sea level
- Threaded couplings
- Single key/keyway shell polarization
- Cost effective

## CUSTOMER OPTIONS

- Five shell styles
- Nineteen shell sizes
- 305 contact arrangements from 1 to 104 circuits
- Solder or crimp contacts, sizes 16-0 accepting 22-0 AWG.
- Coaxial and thermocouple contact options
- Five class designations
- Alternate insert positioning
- Hermetic configurations available
- Zinc alloy plating (cadmium-free) available

MS connectors meet the latest performance requirements of MIL-DTL-5015. These connectors represent well-proven electrical capability at an acceptable cost for most equipment where durability is important.

MIL-DTL-5015 features threaded couplings and single key/keyway polarization, representing maximum simplicity in design. Applications include military ground support equipment, ordnance and shipboard installations.

Amphenol Industrial Operations manufactures five classes of connectors to meet different requirements. Class designations and brief descriptions are listed below.

A – Solid Shell – for general, non-environmental applications.

C – Pressurized – for use on pressurized bulkheads or pressure barriers; limits air leakage regardless of type and class of plug mated with them.

E/F – Environmental Resisting with Strain Relief – designed for applications where the connector will be exposed to moisture, vibration, and rapid changes in pressure and temperature.

R – Lightweight Environmental Resisting – shorter in length and lighter in weight than the E and F classes, the MS-R offers a high degree of reliability under adverse conditions: recommended for new design applications.

# MS/Standard

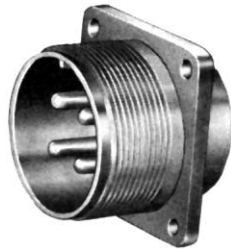
## MS-A and MS-C



**wall mounting receptacle**



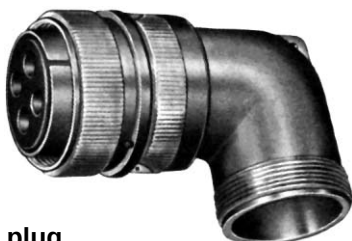
**cable connecting plug**



**box mounting receptacle**



**straight plug**



**90 degree plug**

### **MS-A and MS-C**

MS-A and MS-C class connectors perform many of the vital functions in powering, testing and ground support systems. Class A applications include communications equipment, computers and shipboard installations where mechanical forces and physical parameters are not subject to extreme or rapid environmental changes.

Class C connectors are most frequently used on pressurized bulkheads or pressure barriers at elevated altitudes or maritime applications. Air leakage is limited to one cubic inch per hour at a pressure differential of 30 lbs. per square inch.

#### **Shells:**

Shell components are fabricated from high grade aluminum alloy. Electrically conductive cadmium plate finish with an olive drab chromate after-treat offers corrosion resistance.

#### **Contacts:**

Contacts are available in both solder and crimp versions. Pins and sockets are machined from copper alloy with a silver plated finish. Size 16 and 12 socket contacts incorporate a closed entry design. Refer to pages 49, 67 and 68 for additional contact information.

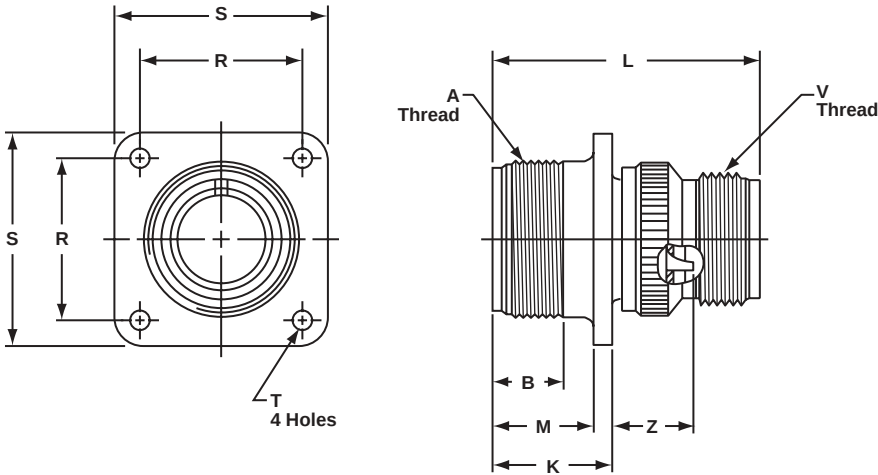
#### **Inserts:**

Inserts are resilient neoprene, offering high dielectric strength, high arc resistance and resistance to vibration. Proprietary design permits pressurization of either pin or socket insert.

# MS/Standard

## MS3100A or C

### wall mounting receptacle



To complete order number, see "how to order" pg. 70.  
 For solder well data, see page 67.

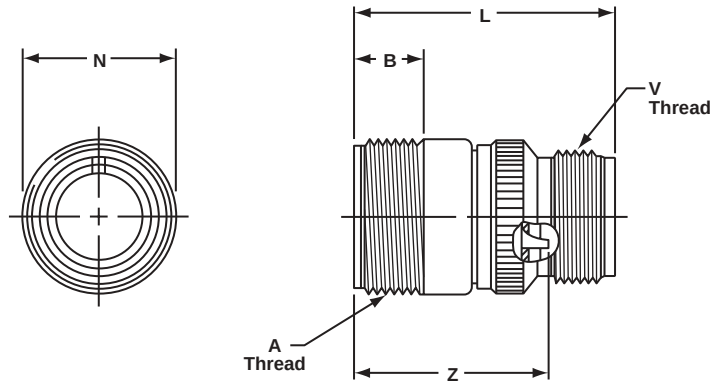
| Shell Size | A Thread<br>Class 2A | B Min Full Thread | K<br>+.020<br>-.010 | L<br>±.030 | M<br>+.010<br>-.000 | R<br>±.005 | S<br>±.031 | T Dia.<br>+.004<br>-.002 | V Thread<br>Class 2A | Z<br>+.050<br>-.060 |
|------------|----------------------|-------------------|---------------------|------------|---------------------|------------|------------|--------------------------|----------------------|---------------------|
| 8S         | .5000-28UNEF         | .391              | .672                | 1.391      | .562                | .594       | .875       | .120                     | .5000-28UNEF         | .422                |
| 10S        | .6250-24 UNF         | .391              | .672                | 1.468      | .562                | .719       | 1.000      | .120                     | .5000-28UNEF         | .422                |
| 10SL       | .6250-24 UNF         | .391              | .672                | 1.468      | .562                | .719       | 1.000      | .120                     | .6250-24NEF          | .422                |
| 12S        | .7500-20UNEF         | .450              | .672                | 1.468      | .562                | .812       | 1.094      | .120                     | .6250-24NEF          | .422                |
| 12         | .7500-20UNEF         | .625              | .860                | 1.843      | .750                | .812       | 1.094      | .120                     | .6250-24NEF          | .672                |
| 14S        | .8750-20UNEF         | .450              | .672                | 1.468      | .562                | .906       | 1.188      | .120                     | .7500-20UNEF         | .422                |
| 14         | .8750-20UNEF         | .625              | .860                | 1.843      | .750                | .906       | 1.188      | .120                     | .7500-20UNEF         | .672                |
| 16S        | 1.0000-20UNEF        | .450              | .672                | 1.468      | .562                | .969       | 1.281      | .120                     | .8750-20UNEF         | .422                |
| 16         | 1.0000-20UNEF        | .625              | .860                | 1.843      | .750                | .969       | 1.281      | .120                     | .8750-20UNEF         | .672                |
| 18         | 1.1250-18NEF         | .625              | .891                | 1.938      | .750                | 1.063      | 1.375      | .120                     | 1.0000-20UNEF        | .641*               |
| 20         | 1.2500-18NEF         | .625              | .891                | 1.844      | .750                | 1.156      | 1.500      | .120                     | 1.1875-18NEF         | .641*               |
| 22         | 1.3750-18NEF         | .625              | .891                | 1.938      | .750                | 1.250      | 1.625      | .120                     | 1.1875-18NEF         | .641*               |
| 24         | 1.5000-18NEF         | .625              | .953                | 1.969      | .812                | 1.375      | 1.750      | .147                     | 1.4375-18NEF         | .578*               |
| 28         | 1.7500-18NS          | .625              | .953                | 2.188      | .812                | 1.562      | 2.000      | .147                     | 1.4375-18NEF         | .578*               |
| 32         | 2.0000-18NS          | .625              | 1.031               | 2.157      | .875                | 1.750      | 2.250      | .173                     | 1.7500-18NS          | .500*               |
| 36         | 2.2500-16UN          | .625              | 1.031               | 2.219      | .875                | 1.938      | 2.500      | .173                     | 2.0000-18NS          | .500*               |
| 40         | 2.5000-16UN          | .625              | 1.031               | 2.188      | .875                | 2.188      | 2.750      | .173                     | 2.2500-16UN          | .500*               |
| 44***      | 2.7500-16UN          | .625              | 1.031†              | 2.547      | .875                | 2.375      | 3.000††    | .173                     | 2.5000-16UN          | .751**              |
| 48***      | 3.0000-16UN          | .625              | 1.031†              | 2.547      | .875                | 2.625      | 3.000††    | .173                     | 3.0000-16UN          | .751**              |

\* Increase Z dimension by .312 for size "0" contact only.  
 \*\* Increase Z dimension by .062 for size "0" contact only.  
 \*\*\* Available in proprietary version only.  
 † +.020 -.030  
 †† ±.020

# MS/Standard

## MS3101A

### cable connecting plug



To complete order number, see "how to order" pg. 70.  
For solder well data, see page 67.

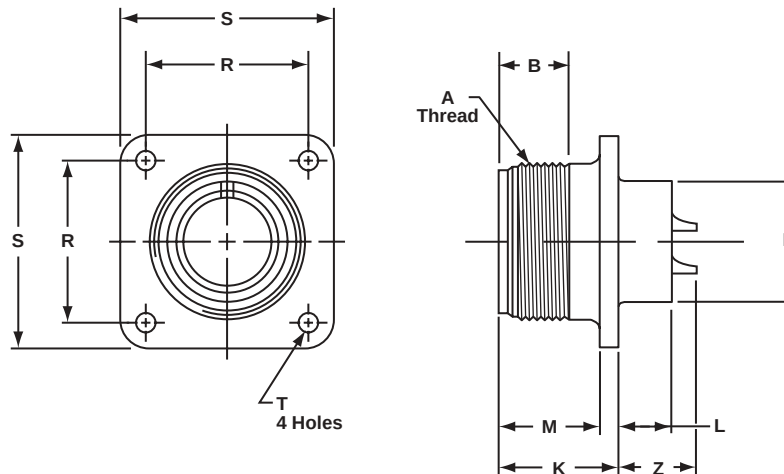
| Shell Size | A Thread Class 2A | B Min. Full Thread | L $\pm .030$ | N Dia. Max. | V Thread Class 2A | Z $\pm .040$ |
|------------|-------------------|--------------------|--------------|-------------|-------------------|--------------|
| 8S         | .5000-28UNEF      | .406               | 1.390        | .532        | .5000-28UNEF      | 1.094        |
| 10S        | .6250-24NEF       | .406               | 1.468        | .628        | .5000-28UNEF      | 1.094        |
| 10SL       | .6250-24NEF       | .406               | 1.468        | .755        | .6250-24NEF       | 1.094        |
| 12S        | .7500-20UNEF      | .422               | 1.468        | .755        | .6250-24NEF       | 1.094        |
| 12         | .7500-20UNEF      | .656               | 1.843        | .755        | .6250-24NEF       | 1.532        |
| 14S        | .8750-20UNEF      | .391               | 1.468        | .882        | .7500-20UNEF      | 1.094        |
| 14         | .8750-20UNEF      | .625               | 1.843        | .882        | .7500-20UNEF      | 1.532        |
| 16S        | 1.0000-20UNEF     | .391               | 1.468        | 1.010       | .8750-20UNEF      | 1.094        |
| 16         | 1.0000-20UNEF     | .625               | 1.843        | 1.010       | .8750-20UNEF      | 1.532        |
| 18         | 1.1250-18NEF      | .625               | 1.938        | 1.137       | 1.0000-20UNEF     | 1.532*       |
| 20         | 1.2500-18NEF      | .625               | 1.844        | 1.264       | 1.1875-18NEF      | 1.532*       |
| 22         | 1.3750-18NEF      | .625               | 1.938        | 1.392       | 1.1875-18NEF      | 1.532*       |
| 24         | 1.5000-18NEF      | .625               | 1.969        | 1.519       | 1.4375-18NEF      | 1.532*       |
| 28         | 1.7500-18NS       | .625               | 2.188        | 1.774       | 1.4375-18NEF      | 1.532*       |
| 32         | 2.0000-18NS       | .625               | 2.157        | 1.996       | 1.7500-18NS       | 1.532*       |
| 36         | 2.2500-16UN       | .625               | 2.219        | 2.251       | 2.0000-18NS       | 1.532*       |
| 40         | 2.5000-16UN       | .625               | 2.188        | 2.506       | 2.2500-16UN       | 1.532*       |
| 44***      | 2.7500-16UN       | .625               | 2.521        | 3.135       | 2.5000-16UN       | 1.782**      |

\* Increase Z dimension by .312 for size "0" contact only.

\*\* Increase Z dimension by .062 for size "0" contact only.

\*\*\* Available in proprietary version only.

# MS/Standard MS3102A or C box mounting receptacle



To complete order number, see "how to order" pg. 70.  
For solder well data, see page 67.

| Shell Size | A Thread Class 2A | B Min Full Thread | K $+.020$ $-.010$ | L $+.000$ $-.010$ | M $+.010$ $-.000$ | N Dia. $+.010$ $-.000$ | R $\pm.005$ | S $\pm.031$ | T Dia. $+.004$ $-.002$ | Z $+.050$ $-.060$ |
|------------|-------------------|-------------------|-------------------|-------------------|-------------------|------------------------|-------------|-------------|------------------------|-------------------|
| 8S         | .5000-28UNEF      | .391              | .672              | .297              | .562              | .375                   | .594        | .875        | .120                   | .422              |
| 10S        | .6250-24NEF       | .391              | .672              | .297              | .562              | .500                   | .719        | 1.000       | .120                   | .422              |
| 10SL       | .6250-24NEF       | .391              | .672              | .297              | .562              | .625                   | .719        | 1.000       | .120                   | .422              |
| 12S        | .7500-20UNEF      | .450              | .672              | .297              | .562              | .625                   | .812        | 1.094       | .120                   | .422              |
| 12         | .7500-20UNEF      | .625              | .860              | .484              | .750              | .625                   | .812        | 1.094       | .120                   | .672              |
| 14S        | .8750-20UNEF      | .450              | .672              | .297              | .562              | .750                   | .906        | 1.188       | .120                   | .422              |
| 14         | .8750-20UNEF      | .625              | .860              | .484              | .750              | .750                   | .906        | 1.188       | .120                   | .672              |
| 16S        | 1.0000-20UNEF     | .450              | .672              | .297              | .562              | .875                   | .969        | 1.281       | .120                   | .422              |
| 16         | 1.0000-20UNEF     | .625              | .860              | .484              | .750              | .875                   | .969        | 1.281       | .120                   | .672              |
| 18         | 1.1250-18NEF      | .625              | .891              | .453              | .750              | 1.000                  | 1.062       | 1.375       | .120                   | .641*             |
| 20         | 1.2500-18NEF      | .625              | .891              | .453              | .750              | 1.125                  | 1.156       | 1.500       | .120                   | .641*             |
| 22         | 1.3750-18NEF      | .625              | .891              | .453              | .750              | 1.250                  | 1.250       | 1.625       | .120                   | .641*             |
| 24         | 1.5000-18NEF      | .625              | .953              | .453              | .812              | 1.375                  | 1.375       | 1.750       | .147                   | .578              |
| 28         | 1.7500-18NS       | .625              | .953              | .453              | .812              | 1.625                  | 1.562       | 2.000       | .147                   | .578*             |
| 32         | 2.0000-18NS       | .625              | 1.031             | .438              | .875              | 1.875                  | 1.750       | 2.250       | .173                   | .500*             |
| 36         | 2.2500-16UN       | .625              | 1.031             | .438              | .875              | 2.062                  | 1.938       | 2.500       | .173                   | .500*             |
| 40         | 2.5000-16UN       | .625              | 1.031             | .438              | .875              | 2.312                  | 2.188       | 2.750       | .173                   | .500*             |
| 44***      | 2.7500-16UN       | .625              | 1.063             | .543†             | .875              | 2.594                  | 2.375       | 3.000††     | .173                   | .768**            |
| 48***      | 3.0000-16UN       | .625              | 1.063             | .543†             | .875              | 2.812                  | 2.625       | 3.250††     | .209                   | .769**            |

\* Increase Z dimension by .312 for size "0" contact only.

\*\* Increase Z dimension by .062 for size "0" contact only.

\*\*\* Available in proprietary version only.

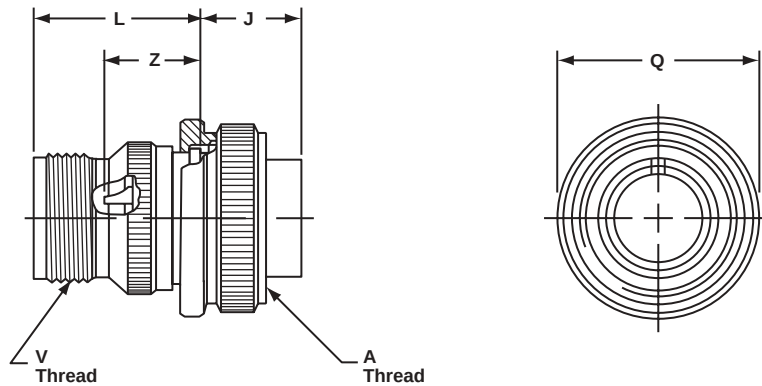
†  $+.020$   $-.030$

††  $\pm.020$

# MS/Standard

## MS3106A

### straight plug



To complete order number, see "how to order" pg. 70.  
For solder well data, see page 67.  
All lockwire holes are .045 dia. min.

| Shell Size | A Thread Class 2B | J $\pm .005$ | L $\pm .030$ | Q Dia. Max. | V Thread Class 2A | Z $\pm .045$ |
|------------|-------------------|--------------|--------------|-------------|-------------------|--------------|
| 8S         | .5000-28UNEF      | .531         | .859         | .741        | .5000-28UNEF      | .562         |
| 10S        | .6250-24NEF       | .531         | .937         | .869        | .5000-28UNEF      | .562         |
| 10SL       | .6250-24NEF       | .531         | .937         | .946        | .6250-24NEF       | .562         |
| 12S        | .7500-20UNEF      | .531         | .937         | .995        | .6250-24NEF       | .562         |
| 12         | .7500-20UNEF      | .719         | 1.124        | .995        | .6250-24NEF       | .812         |
| 14S        | .8750-20UNEF      | .531         | .937         | 1.123       | .7500-20UNEF      | .562         |
| 14         | .8750-20UNEF      | .719         | 1.124        | 1.123       | .7500-20UNEF      | .812         |
| 16S        | 1.0000-20UNEF     | .531         | .937         | 1.250       | .8750-20UNEF      | .562         |
| 16         | 1.0000-20UNEF     | .719         | 1.124        | 1.250       | .8750-20UNEF      | .812         |
| 18         | 1.1250-18NEF      | .719         | 1.219        | 1.333       | 1.0000-20UNEF     | .812*        |
| 20         | 1.2500-18NEF      | .719         | 1.125        | 1.461       | 1.1875-18NEF      | .812*        |
| 22         | 1.3750-18NEF      | .719         | 1.219        | 1.588       | 1.1875-18NEF      | .812*        |
| 24         | 1.5000-18NEF      | .719         | 1.251        | 1.715       | 1.4375-18NEF      | .812*        |
| 28         | 1.7500-18NS       | .719         | 1.470        | 1.968       | 1.4375-18NEF      | .812*        |
| 32         | 2.0000-18NS       | .719         | 1.439        | 2.209       | 1.7500-18NS       | .812*        |
| 36         | 2.2500-16UN       | .719         | 1.500        | 2.463       | 2.0000-18NS       | .812*        |
| 40         | 2.5000-16UN       | .719         | 1.469        | 2.719       | 2.2500-16UN       | .812*        |
| 44***      | 2.7500-16UN       | .719         | 1.818†       | 3.084       | 2.5000-16UN       | 1.063**      |
| 48***      | 3.3000-16UN       | .719         | 1.818†       | 3.354       | 3.0000-16UN       | 1.063**      |

\* Increase Z dimension by .312 for size "0" contact only.

\*\* Increase Z dimension by .062 for size "0" contact only.

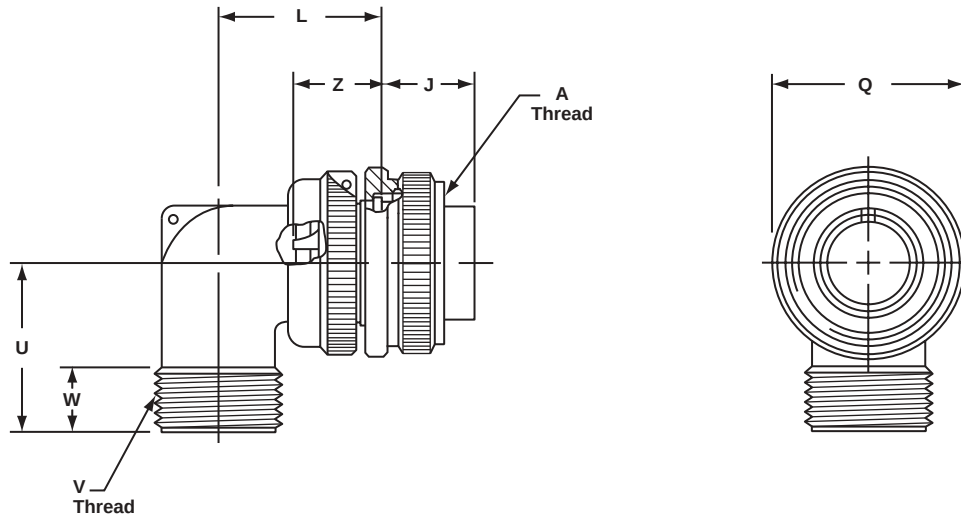
\*\*\* Available in proprietary version only.

† +.020 –.030

# MS/Standard

## MS3108A

### 90 degree plug



To complete order number, see "how to order" pg. 70.  
For solder well data, see page 67.  
All lockwire holes are .045 dia. min.

| Shell Size | A Thread Class 2B | J $\pm .005$ | L Max. | Q Dia. Max. | U Max. | V Thread Class 2A | W    | Z $\pm .045$ |
|------------|-------------------|--------------|--------|-------------|--------|-------------------|------|--------------|
| 8S         | .5000-28UNEF      | .531         | .896   | .741        | .750   | .5000-28UNEF      | .375 | .562         |
| 10S        | .6250-24NEF       | .531         | .927   | .869        | .750   | .5000-28UNEF      | .375 | .562         |
| 10SL       | .6250-24NEF       | .531         | .951   | .946        | .875   | .6250-24NEF       | .375 | .562         |
| 12S        | .7500-20UNEF      | .531         | .956   | .995        | .875   | .6250-24NEF       | .375 | .562         |
| 12         | .7500-20UNEF      | .719         | 1.143  | .995        | .875   | .6250-24NEF       | .375 | .812         |
| 14S        | .8750-20UNEF      | .531         | 1.120  | 1.123       | 1.000  | .7500-20UNEF      | .375 | .562         |
| 14         | .8750-20UNEF      | .719         | 1.207  | 1.123       | 1.000  | .7500-20UNEF      | .375 | .812         |
| 16S        | 1.0000-20UNEF     | .531         | 1.146  | 1.250       | 1.062  | .8750-20UNEF      | .375 | .562         |
| 16         | 1.0000-20UNEF     | .719         | 1.332  | 1.250       | 1.062  | .8750-20UNEF      | .375 | .812         |
| 18         | 1.1250-18NEF      | .719         | 1.395  | 1.333       | 1.188  | 1.0000-20UNEF     | .375 | .812*        |
| 20         | 1.2500-18NEF      | .719         | 1.645  | 1.461       | 1.250  | 1.1875-18NEF      | .375 | .812*        |
| 22         | 1.3750-18NEF      | .719         | 1.645  | 1.588       | 1.312  | 1.1875-18NEF      | .375 | .812*        |
| 24         | 1.5000-18NEF      | .719         | 1.896  | 1.715       | 1.438  | 1.4375-18NEF      | .375 | .812*        |
| 28         | 1.7500-18NS       | .719         | 1.896  | 1.968       | 1.500  | 1.4375-18NEF      | .375 | .812*        |
| 32         | 2.0000-18NS       | .719         | 2.118  | 2.209       | 1.750  | 1.7500-18NS       | .438 | .812*        |
| 36         | 2.2500-16UN       | .719         | 2.176  | 2.463       | 1.875  | 2.0000-18NS       | .500 | .812*        |
| 40         | 2.5000-16UN       | .719         | 2.301  | 2.719       | 2.031  | 2.2500-16UN       | .500 | .812*        |

\* Increase Z dimension by .312 for size "0" contact only.

# MS/Standard

## MS-E/F



wall mounting receptacle



cable connecting plug



box mounting receptacle



straight plug



90 degree plug

### MS-E & F

MS Class F connectors satisfy all the performance requirements of MIL-DTL-5015. Class E, environmental is also produced, but is no longer listed on the qualified products listing (QPL). These connectors are recommended for conditions where vibration, moisture, pressure and/or temperature are extreme. Strain relief is supplied on most shell sizes.

#### Shells:

Shell components are fabricated from high grade aluminum alloy. The standard hardware plating is electrically conductive cadmium plated finish with an olive drab chromate after-treatment for corrosion resistance. Consult Amphenol, Sidney, NY for other plating options.

#### Contacts:

Contacts are silver plated copper alloy for maximum corrosion resistance, maximum current carrying capacity and low millivolt drop. Size 16 and 12 socket contacts incorporate a closed entry design. Crimp and solder versions are available. Refer to pages 49, 67 and 68 for additional contact information.

#### Inserts:

Resilient neoprene inserts provide an outstanding moisture barrier, high dielectric strength, and resistance to vibration. Either pin or socket insert can be pressurized.

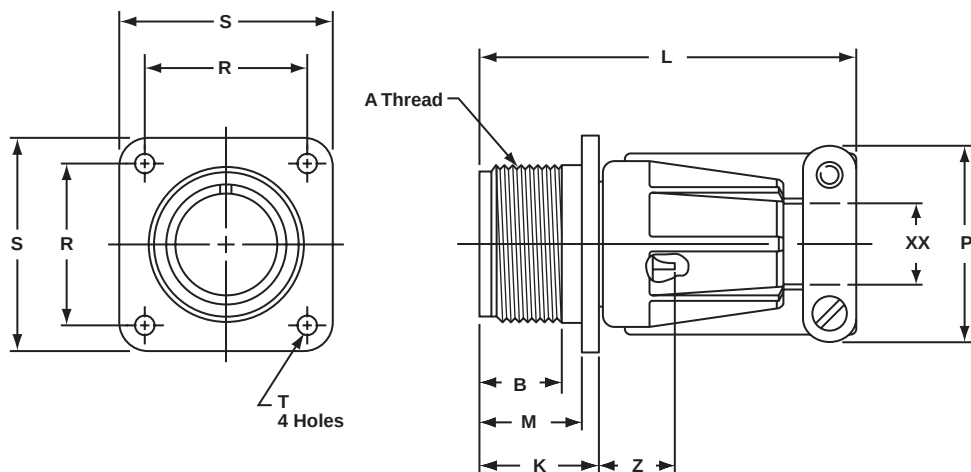
#### Strain Relief Clamp:

Strain relief clamps minimize tension at the solder well connection and provide a positive mechanical moisture seal. Complete field serviceability is possible with the strain relief clamp.

# MS/Standard

## MS3100E/F

### wall mounting receptacle

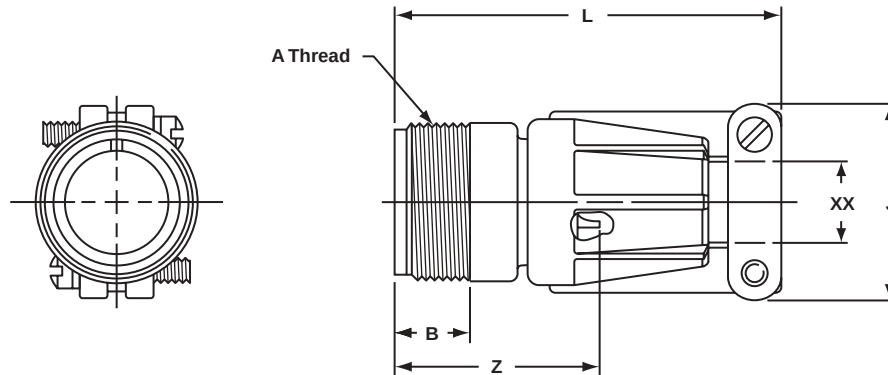


To complete order number, see “how to order” pg. 70.  
 For solder well data, see page 67.

| Shell Size | A Thread Class 2A | B Min. Full Thread | K $+0.020$ $-0.010$ | L Max. | M $+0.010$ $-0.000$ | P Max. | R $\pm 0.005$ | S $\pm 0.010$ | T Dia. $+0.004$ $-0.002$ | Z* Max. | XX Min. Cable Clearance |
|------------|-------------------|--------------------|---------------------|--------|---------------------|--------|---------------|---------------|--------------------------|---------|-------------------------|
| 10SL       | .6250-24UNEF      | .391               | .672                | 2.129  | .562                | .896   | .719          | 1.000         | .120                     | .472    | .281                    |
| 12S        | .7500-20UNEF      | .450               | .672                | 2.129  | .562                | .896   | .812          | 1.094         | .120                     | .472    | .281                    |
| 12         | .7500-20UNEF      | .625               | .860                | 2.129  | .750                | .896   | .812          | 1.094         | .120                     | .722    | .281                    |
| 14S        | .8750-20UNEF      | .450               | .672                | 2.201  | .562                | 1.021  | .906          | 1.188         | .120                     | .472    | .406                    |
| 14         | .8750-20UNEF      | .625               | .860                | 2.524  | .750                | 1.021  | .906          | 1.188         | .120                     | .722    | .406                    |
| 16S        | 1.0000-20UNEF     | .450               | .672                | 2.201  | .562                | 1.151  | .969          | 1.281         | .120                     | .472    | .500                    |
| 16         | 1.0000-20UNEF     | .625               | .860                | 2.524  | .750                | 1.151  | .969          | 1.281         | .120                     | .722    | .500                    |
| 18         | 1.1250-18UNEF     | .625               | .891                | 2.596  | .750                | 1.242  | 1.063         | 1.375         | .120                     | .691    | .531                    |
| 20         | 1.2500-18UNEF     | .625               | .891                | 2.654  | .750                | 1.499  | 1.156         | 1.500         | .120                     | .691    | .656                    |
| 22         | 1.3750-18UNEF     | .625               | .891                | 2.654  | .750                | 1.499  | 1.250         | 1.625         | .120                     | .691    | .740                    |
| 24         | 1.5000-18UNEF     | .625               | .953                | 2.885  | .812                | 1.781  | 1.375         | 1.750         | .147                     | .628    | .781                    |
| 28         | 1.7500-18UNS      | .625               | .953                | 2.885  | .812                | 1.781  | 1.562         | 2.000         | .147                     | .628    | .922                    |
| 32         | 2.0000-18UNS      | .625               | 1.031               | 2.943  | .875                | 2.087  | 1.750         | 2.250         | .173                     | .550    | 1.156                   |
| 36         | 2.2500-16UN       | .625               | 1.031               | 2.943  | .875                | 2.281  | 1.938         | 2.500         | .173                     | .550    | 1.250                   |
| 40         | 2.5000-16UN       | .625               | 1.031               | 3.068  | .875                | 2.581  | 2.188         | 2.750         | .173                     | .550    | 1.562                   |

\* Increase Z dimension by .312 for size “0” contact only.

# MS/Standard MS3101E/F cable connecting plug



To complete order number, see "how to order" pg. 70.  
For solder well data, see page 67.

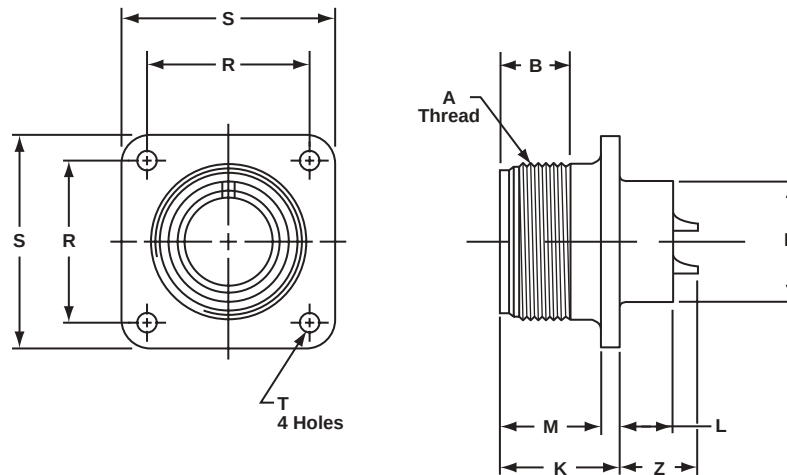
| Shell Size | A Thread Class 2A | B Min. Full Thread | J Max. | L Max. | Z* Max. | XX Min. Cable Clearance |
|------------|-------------------|--------------------|--------|--------|---------|-------------------------|
| 10SL       | .6250-24UNEF      | .406               | .896   | 2.129  | 1.134   | .281                    |
| 12S        | .7500-20UNEF      | .422               | .896   | 2.129  | 1.134   | .281                    |
| 12         | .7500-20UNEF      | .656               | .896   | 2.129  | 1.572   | .281                    |
| 14S        | .8750-20UNEF      | .391               | 1.021  | 2.201  | 1.134   | .406                    |
| 14         | .8750-20UNEF      | .625               | 1.021  | 2.524  | 1.572   | .406                    |
| 16S        | 1.0000-20UNEF     | .391               | 1.151  | 2.201  | 1.134   | .500                    |
| 16         | 1.0000-20UNEF     | .625               | 1.151  | 2.524  | 1.572   | .500                    |
| 18         | 1.1250-18UNEF     | .625               | 1.242  | 2.596  | 1.572   | .531                    |
| 20         | 1.2500-18UNEF     | .625               | 1.499  | 2.654  | 1.572   | .656                    |
| 22         | 1.3750-18UNEF     | .625               | 1.499  | 2.654  | 1.572   | .740                    |
| 24         | 1.5000-18UNEF     | .625               | 1.781  | 2.885  | 1.572   | .781                    |
| 28         | 1.7500-18UNS      | .625               | 1.781  | 2.885  | 1.572   | .922                    |
| 32         | 2.0000-18UNS      | .625               | 2.087  | 2.943  | 1.572   | 1.156                   |
| 36         | 2.2500-16UN       | .625               | 2.281  | 2.943  | 1.572   | 1.250                   |
| 40         | 2.5000-16UN       | .625               | 2.581  | 3.068  | 1.572   | 1.562                   |

\* Increase Z dimension by .312 for size "0" contact only.

# MS/Standard

## MS3102E

### box mounting receptacle



To complete order number, see "how to order" pg. 70.  
For solder well data, see page 67.

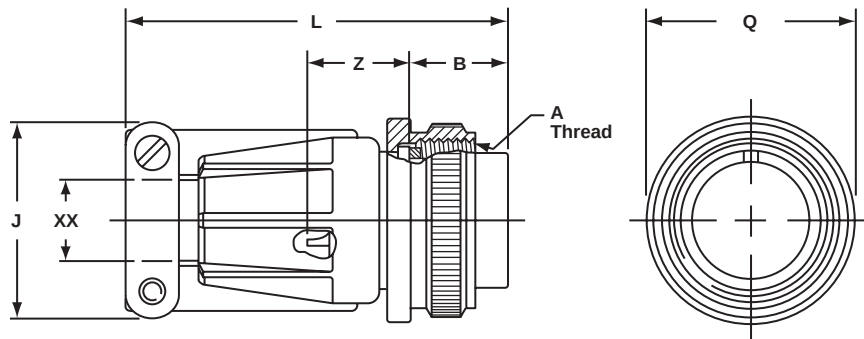
| Shell Size | A Thread Class 2A | B Min. Full Thread | K $+.020$ $-.010$ | L $+.000$ $-.010$ | M $+.010$ $-.000$ | N Dia. $+.010$ $-.000$ | R $\pm .005$ | S $\pm .031$ | T Dia. $+.004$ $-.002$ | Z $+.050$ $-.060$ |
|------------|-------------------|--------------------|-------------------|-------------------|-------------------|------------------------|--------------|--------------|------------------------|-------------------|
| 8S         | .5000-28UNEF      | .391               | .672              | .297              | .562              | .375                   | .594         | .875         | .120                   | .422              |
| 10S        | .6250-24NEF       | .391               | .672              | .297              | .562              | .500                   | .719         | 1.000        | .120                   | .422              |
| 10SL       | .6250-24NEF       | .391               | .672              | .297              | .562              | .625                   | .719         | 1.000        | .120                   | .422              |
| 12S        | .7500-20UNEF      | .450               | .672              | .297              | .562              | .625                   | .812         | 1.094        | .120                   | .422              |
| 12         | .7500-20UNEF      | .625               | .860              | .484              | .750              | .625                   | .812         | 1.094        | .120                   | .672              |
| 14S        | .8750-20UNEF      | .450               | .672              | .297              | .562              | .750                   | .906         | 1.188        | .120                   | .422              |
| 14         | .8750-20UNEF      | .625               | .860              | .484              | .750              | .750                   | .906         | 1.188        | .120                   | .672              |
| 16S        | 1.0000-20UNEF     | .450               | .672              | .297              | .562              | .875                   | .969         | 1.281        | .120                   | .422              |
| 16         | 1.0000-20UNEF     | .625               | .860              | .484              | .750              | .875                   | .969         | 1.281        | .120                   | .672              |
| 18         | 1.1250-18NEF      | .625               | .891              | .453              | .750              | 1.000                  | 1.062        | 1.375        | .120                   | .641*             |
| 20         | 1.2500-18NEF      | .625               | .891              | .453              | .750              | 1.125                  | 1.156        | 1.500        | .120                   | .641*             |
| 22         | 1.3750-18NEF      | .625               | .891              | .453              | .750              | 1.250                  | 1.250        | 1.625        | .120                   | .641*             |
| 24         | 1.5000-18NEF      | .625               | .953              | .453              | .812              | 1.375                  | 1.375        | 1.750        | .147                   | .578*             |
| 28         | 1.7500-18NS       | .625               | .953              | .453              | .812              | 1.625                  | 1.562        | 2.000        | .147                   | .578*             |
| 32         | 2.0000-18NS       | .625               | 1.031             | .438              | .875              | 1.875                  | 1.750        | 2.250        | .173                   | .500*             |
| 36         | 2.2500-16UN       | .625               | 1.031             | .438              | .875              | 2.062                  | 1.938        | 2.500        | .173                   | .500*             |
| 40         | 2.5000-16UN       | .625               | 1.031             | .438              | .875              | 2.312                  | 2.188        | 2.750        | .173                   | .500*             |

\* Increase Z dimension by .312 for size "0" contact only.

# MS/Standard

## MS3106E/F

### straight plug



To complete order number, see "how to order" pg. 70.  
 For solder well data, see page 67.  
 All lockwire holes are .045 dia. min.

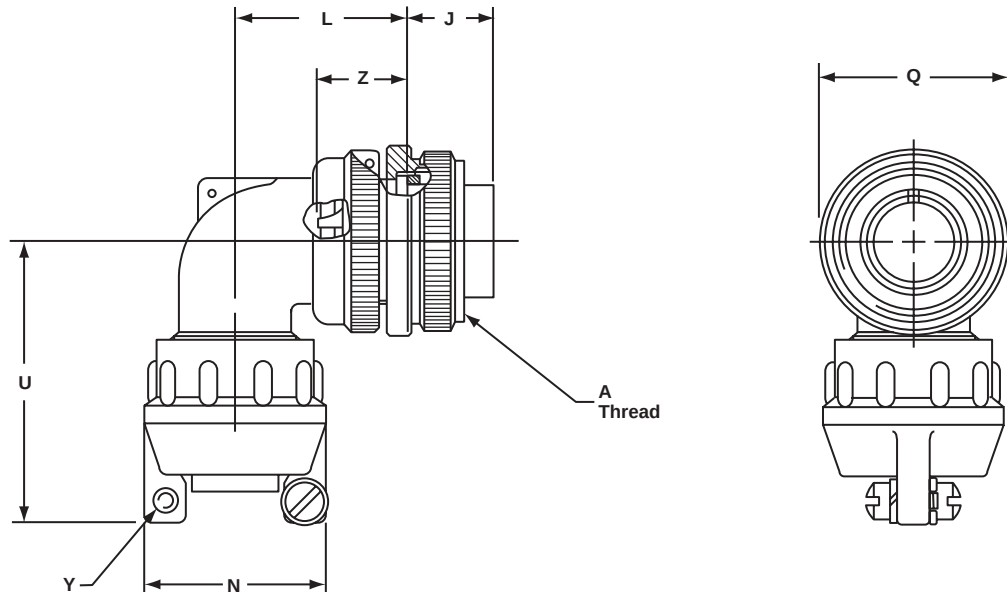
| Shell Size | A Thread Class 2A | B ±.005 | J Max. | L Max. | Q Max. | Z* ±.045 | XX Min. Cable Clearance |
|------------|-------------------|---------|--------|--------|--------|----------|-------------------------|
| 10SL       | .6250-24UNEF      | .531    | .896   | 2.129  | .946   | .607     | .281                    |
| 12S        | .7500-20UNEF      | .531    | .896   | 2.129  | .995   | .607     | .281                    |
| 12         | .7500-20UNEF      | .719    | .896   | 2.129  | .995   | .857     | .281                    |
| 14S        | .8750-20UNEF      | .531    | 1.021  | 2.201  | 1.123  | .607     | .406                    |
| 14         | .8750-20UNEF      | .719    | 1.021  | 2.524  | 1.123  | .857     | .406                    |
| 16S        | 1.0000-20UNEF     | .531    | 1.151  | 2.201  | 1.250  | .607     | .500                    |
| 16         | 1.0000-20UNEF     | .719    | 1.151  | 2.524  | 1.250  | .857     | .500                    |
| 18         | 1.1250-18UNEF     | .719    | 1.242  | 2.596  | 1.333  | .857     | .531                    |
| 20         | 1.2500-18UNEF     | .719    | 1.499  | 2.654  | 1.461  | .857     | .656                    |
| 22         | 1.3750-18UNEF     | .719    | 1.499  | 2.654  | 1.588  | .857     | .740                    |
| 24         | 1.5000-18UNEF     | .719    | 1.781  | 2.885  | 1.715  | .857     | .781                    |
| 28         | 1.7500-18UNS      | .719    | 1.781  | 2.885  | 1.968  | .857     | .922                    |
| 32         | 2.0000-18UNS      | .719    | 2.087  | 2.943  | 2.209  | .857     | 1.156                   |
| 36         | 2.2500-16UN       | .719    | 2.281  | 2.943  | 2.463  | .857     | 1.250                   |
| 40         | 2.5000-16UN       | .719    | 2.581  | 3.068  | 2.718  | .857     | 1.562                   |

\* Increase Z dimension by .312 for size "0" contact only.

# MS/Standard

## MS3108E

### 90 degree plug



To complete order number, see "how to order" pg. 70.  
For solder well data, see page 67.  
All lockwire holes are .045 dia. min.

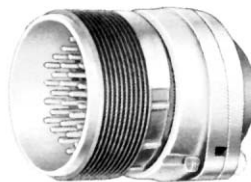
| Shell Size | A Thread Class 2B | J $\pm .005$ | L Max. | N Max. | Q Dia. Max. | U Max. | Y Thread Class 2B | Z $\pm .045$ |
|------------|-------------------|--------------|--------|--------|-------------|--------|-------------------|--------------|
| 8S         | .5000-28UNEF      | .531         | .927   | .807   | .741        | 1.445  | 6-32NC            | .562         |
| 10S        | .6250-24NEF       | .531         | .927   | .807   | .869        | 1.445  | 6-32NC            | .562         |
| 10SL       | .6250-24NEF       | .531         | .951   | .901   | .946        | 1.508  | 6-32NC            | .562         |
| 12S        | .7500-20UNEF      | .531         | .956   | .901   | .995        | 1.508  | 6-32NC            | .562         |
| 12         | .7500-20UNEF      | .719         | 1.143  | .901   | .995        | 1.508  | 6-32NC            | .812         |
| 14S        | .8750-20UNEF      | .531         | 1.020  | 1.026  | 1.123       | 1.570  | 6-32NC            | .562         |
| 14         | .8750-20UNEF      | .719         | 1.207  | 1.026  | 1.123       | 1.570  | 6-32NC            | .812         |
| 16S        | 1.0000-20UNEF     | .531         | 1.146  | 1.119  | 1.250       | 1.633  | 6-32NC            | .562         |
| 16         | 1.1000-20UNEF     | .719         | 1.333  | 1.119  | 1.250       | 1.633  | 6-32NC            | .812         |
| 18         | 1.1250-18NEF      | .719         | 1.395  | 1.229  | 1.333       | 1.759  | 6-32NC            | .812*        |
| 20         | 1.2500-18NEF      | .719         | 1.598  | 1.479  | 1.461       | 1.931  | 8-32NC            | .812*        |
| 22         | 1.3750-18NEF      | .719         | 1.598  | 1.479  | 1.588       | 1.993  | 8-32NC            | .812*        |
| 24         | 1.5000-18NEF      | .719         | 1.786  | 1.666  | 1.729       | 2.119  | 8-32NC            | .812*        |
| 28         | 1.7500-18NS       | .719         | 1.786  | 1.666  | 1.968       | 2.181  | 8-32NC            | .812*        |
| 32         | 2.0000-18NS       | .719         | 2.020  | 2.135  | 2.209       | 2.570  | 10-32NF           | .812*        |
| 36         | 2.2500-16UN       | .719         | 2.145  | 2.260  | 2.463       | 2.695  | 10-32NF           | .812*        |
| 40         | 2.5000-16UN       | .719         | 2.270  | 2.510  | 2.719       | 2.851  | 10-32NF           | .812*        |

\* Increase Z dimension by .312 for size "0" contact only.

# MS/Standard MS-R



**wall mounting receptacle**



**cable connecting plug**



**box mounting receptacle**



**straight plug**

## MS-R

Specification requirements for greater reliability in a shorter, lighter weight environmental resistant connector led to the design of the MS-R. MS Class R connectors satisfy all the performance requirements of MIL-DTL-5015.

This low profile assembly was attained by moving the axial compression nut and grommet assembly forward and flush with the rear of the insert. The neoprene grommet, with its low coefficient of friction, assures easier threading of wire bundles and quicker assembly and serviceability of the unit. Molded webs in each wire hole insure a moisture barrier around each wire.

The addition of an "O" ring at the main joint of all MS3106R plugs provide a main joint seal supplementary to the interfacial seal, thus insuring a higher degree of reliability when connector halves from different sources are employed. MS-R types are recommended for new design applications.

### Shells:

Shell components are fabricated from high grade aluminum alloy. All components have the standard electrically conductive cadmium plated finish with an olive drab chromate after-treatment for corrosion resistance. Consult Amphenol, Sidney, NY for other plating options.

### Contacts:

Contacts are machined from copper alloy for maximum corrosion resistance, maximum current carrying capacity and low millivolt drop. Both crimp and solder versions are available. Refer to pages 49, 67 and 68 for additional contact information.

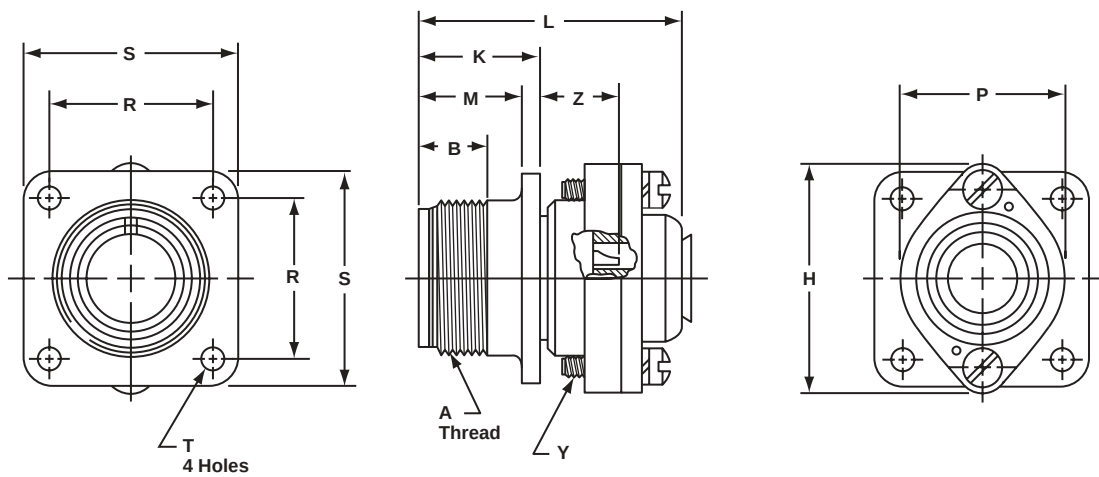
### Inserts:

Resilient neoprene inserts provide an outstanding moisture barrier, maximum vibration resistance and high dielectric strength. Either pin or socket insert can be pressurized.

# MS/Standard

## MS3100R

### wall mounting receptacle



To complete order number, see "how to order" pg. 70.  
 For solder well data, see page 67.  
 All lockwire holes are .045 dia. min.

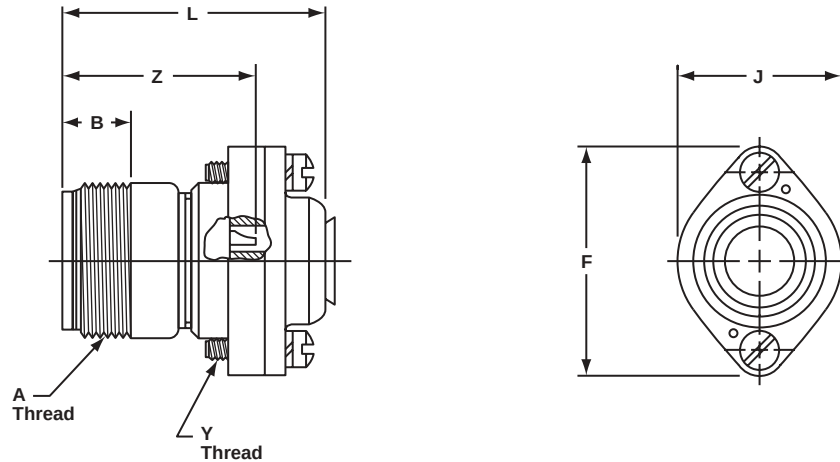
| Shell Size | A Thread Class 2A | B Min. Full Thread | H Dia. Max. | K $+0.020$ $-0.010$ | L Max. | M $+0.010$ $-0.000$ | P Dia. Max. | R $\pm 0.005$ | S $\pm 0.031$ | Y Thread Class 2 | T Dia. $+0.004$ $-0.002$ | Z $+0.050$ $-0.060$ |
|------------|-------------------|--------------------|-------------|---------------------|--------|---------------------|-------------|---------------|---------------|------------------|--------------------------|---------------------|
| 8S         | .5000-28UNEF      | .391               | .959        | .672                | 1.588  | .562                | .557        | .594          | .875          | 6-32NC           | .120                     | .422                |
| 10S        | .6250-24NEF       | .391               | 1.026       | .672                | 1.588  | .562                | .682        | .719          | 1.000         | 6-32NC           | .120                     | .422                |
| 10SL       | .6250-24NEF       | .391               | 1.120       | .672                | 1.588  | .562                | .807        | .719          | 1.000         | 6-32NC           | .120                     | .422                |
| 12S        | .7500-20UNEF      | .450               | 1.120       | .672                | 1.588  | .562                | .807        | .812          | 1.094         | 6-32NC           | .120                     | .422                |
| 12         | .7500-20UNEF      | .625               | 1.120       | .860                | 1.931  | .750                | .807        | .812          | 1.094         | 6-32NC           | .120                     | .672                |
| 14S        | .8750-20UNEF      | .450               | 1.307       | .672                | 1.588  | .562                | .932        | .906          | 1.188         | 6-32NC           | .120                     | .422                |
| 14         | .8750-20UNEF      | .625               | 1.307       | .860                | 1.931  | .750                | .932        | .906          | 1.188         | 6-32NC           | .120                     | .672                |
| 16S        | 1.0000-20UNEF     | .450               | 1.432       | .672                | 1.588  | .562                | 1.057       | .969          | 1.281         | 6-32NC           | .120                     | .422                |
| 16         | 1.0000-20UNEF     | .625               | 1.432       | .860                | 1.931  | .750                | 1.057       | .969          | 1.281         | 6-32NC           | .120                     | .672                |
| 18         | 1.1250-18NEF      | .625               | 1.557       | .891                | 1.931  | .750                | 1.182       | 1.063         | 1.375         | 6-32NC           | .120                     | .641*               |
| 20         | 1.2500-18NEF      | .625               | 1.744       | .891                | 1.931  | .750                | 1.291       | 1.156         | 1.500         | 8-32NC           | .120                     | .641*               |
| 22         | 1.3750-18NEF      | .625               | 1.869       | .891                | 1.931  | .750                | 1.432       | 1.250         | 1.625         | 8-32NC           | .120                     | .641*               |
| 24         | 1.5000-18NEF      | .625               | 1.994       | .953                | 2.009  | .812                | 1.557       | 1.375         | 1.750         | 8-32NC           | .147                     | .578*               |
| 28         | 1.7500-18NS       | .625               | 2.166       | .953                | 2.009  | .812                | 1.807       | 1.562         | 2.000         | 8-32NC           | .147                     | .578*               |
| 32         | 2.0000-18NS       | .625               | 2.541       | 1.031               | 2.072  | .875                | 2.057       | 1.750         | 2.250         | 10-32NF          | .173                     | .500*               |
| 36         | 2.2500-16UN       | .625               | 2.729       | 1.031               | 2.072  | .875                | 2.260       | 1.938         | 2.500         | 10-32NF          | .173                     | .500*               |
| 40         | 2.5000-16UN       | .625               | 2.979       | 1.031               | 2.072  | .875                | 2.260       | 2.510         | 2.750         | 10-32NF          | .173                     | .500*               |

\* Increase Z dimension by .312 for size "0" contact only.

# MS/Standard

## MS3101R

### cable connecting plug



To complete order number, see "how to order" pg. 70.  
For solder well data, see page 67.  
All lockwire holes are .045 dia. min.

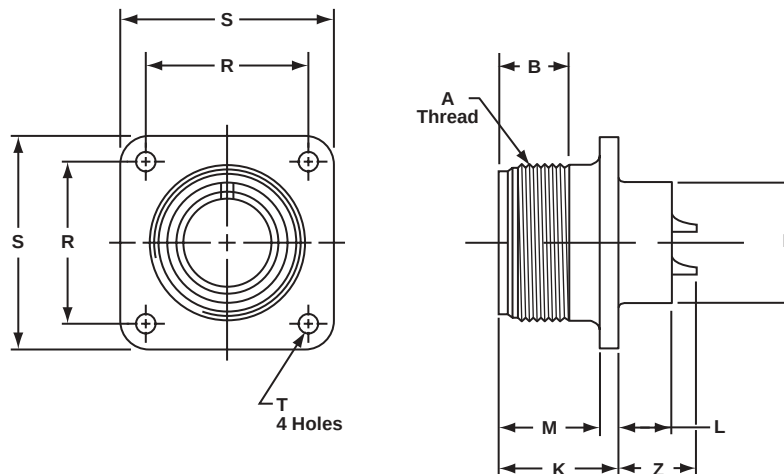
| Shell Size | A Thread Class 2A | B Min. Full Thread | F Dia. Max. | J Dia. Max. | L Max. | Y Thread Class 2 | Z ±.040 |
|------------|-------------------|--------------------|-------------|-------------|--------|------------------|---------|
| 8S         | .5000-28UNEF      | .406               | .959        | .557        | 1.588  | 6-32NC           | 1.094   |
| 10S        | .6250-24NEF       | .406               | 1.026       | .682        | 1.588  | 6-32NC           | 1.094   |
| 10SL       | .6250-24NEF       | .406               | 1.120       | .807        | 1.588  | 6-32NC           | 1.094   |
| 12S        | .7500-20UNEF      | .422               | 1.120       | .807        | 1.588  | 6-32NC           | 1.094   |
| 12         | .7500-20UNEF      | .656               | 1.120       | .807        | 1.931  | 6-32NC           | 1.532   |
| 14S        | .8750-20UNEF      | .391               | 1.307       | .932        | 1.588  | 6-32NC           | 1.094   |
| 14         | .8750-20UNEF      | .625               | 1.307       | .932        | 1.931  | 6-32NC           | 1.532   |
| 16S        | 1.0000-20UNEF     | .391               | 1.432       | 1.057       | 1.588  | 6-32NC           | 1.094   |
| 16         | 1.0000-20UNEF     | .625               | 1.432       | 1.057       | 1.931  | 6-32NC           | 1.532   |
| 18         | 1.1250-18NEF      | .625               | 1.557       | 1.182       | 1.931  | 6-32NC           | 1.532*  |
| 20         | 1.2500-18NEF      | .625               | 1.744       | 1.291       | 1.931  | 8-32NC           | 1.532*  |
| 22         | 1.3750-18NEF      | .625               | 1.869       | 1.432       | 1.931  | 8-32NC           | 1.532*  |
| 24         | 1.5000-18NEF      | .625               | 1.994       | 1.557       | 2.009  | 8-32NC           | 1.532*  |
| 28         | 1.7500-18NS       | .625               | 2.166       | 1.807       | 2.009  | 8-32NC           | 1.532*  |
| 32         | 2.0000-18NS       | .625               | 2.541       | 2.057       | 2.072  | 10-32NF          | 1.532*  |
| 36         | 2.2500-16UN       | .625               | 2.729       | 2.260       | 2.072  | 10-32NF          | 1.532*  |
| 40         | 2.5000-16UN       | .625               | 2.979       | 2.510       | 2.072  | 10-32NF          | 1.532*  |

\* Increase Z dimension by .312 for size "0" contact only.

# MS/Standard

## MS3102R

### box mounting receptacle



To complete order number, see "how to order" pg. 70.  
For solder well data, see page 67.

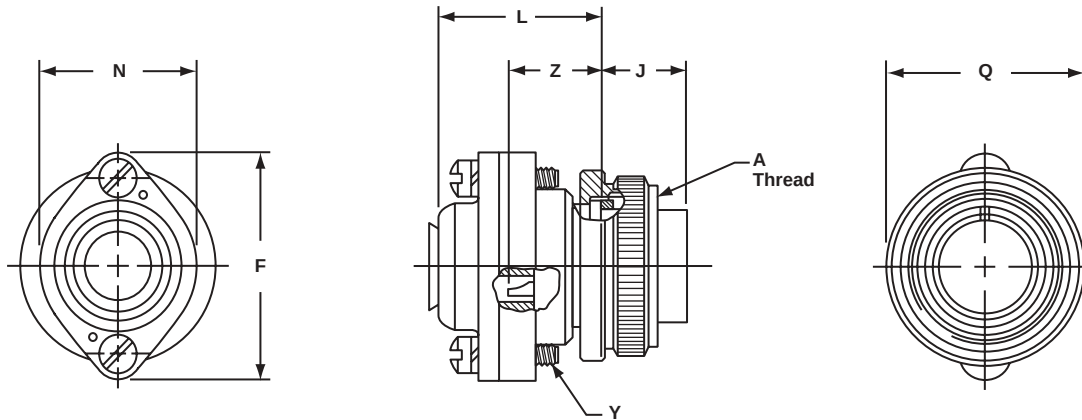
| Shell Size | A Thread Class 2A | B Min. Full Thread | K $+0.020$ $-0.010$ | L $+0.000$ $-0.010$ | M $+0.010$ $-0.000$ | N Dia. $+0.010$ $-0.000$ | R $\pm 0.005$ | S $\pm 0.031$ | T Dia. $+0.004$ $-0.002$ | Z $+0.050$ $-0.060$ |
|------------|-------------------|--------------------|---------------------|---------------------|---------------------|--------------------------|---------------|---------------|--------------------------|---------------------|
| 8S         | .5000-28UNEF      | .391               | .672                | .297                | .562                | .375                     | .594          | .875          | .120                     | .422                |
| 10S        | .6250-24NEF       | .391               | .672                | .297                | .562                | .500                     | .719          | 1.000         | .120                     | .422                |
| 10SL       | .6250-24NEF       | .391               | .672                | .297                | .562                | .625                     | .719          | 1.000         | .120                     | .422                |
| 12S        | .7500-20UNEF      | .450               | .672                | .297                | .562                | .625                     | .812          | 1.094         | .120                     | .422                |
| 12         | .7500-20UNEF      | .625               | .860                | .484                | .750                | .625                     | .812          | 1.094         | .120                     | .672                |
| 14S        | .8750-20UNEF      | .450               | .672                | .297                | .562                | .750                     | .906          | 1.188         | .120                     | .422                |
| 14         | .8750-20UNEF      | .625               | .860                | .484                | .750                | .750                     | .906          | 1.188         | .120                     | .672                |
| 16S        | 1.0000-20UNEF     | .450               | .672                | .297                | .562                | .875                     | .969          | 1.281         | .120                     | .422                |
| 16         | 1.0000-20UNEF     | .625               | .860                | .484                | .750                | .875                     | .969          | 1.281         | .120                     | .672                |
| 18         | 1.1250-18NEF      | .625               | .891                | .453                | .750                | 1.000                    | 1.062         | 1.375         | .120                     | .641*               |
| 20         | 1.2500-18NEF      | .625               | .891                | .453                | .750                | 1.125                    | 1.156         | 1.500         | .120                     | .641*               |
| 22         | 1.3750-18NEF      | .625               | .891                | .453                | .750                | 1.250                    | 1.250         | 1.625         | .120                     | .641*               |
| 24         | 1.5000-18NEF      | .625               | .953                | .453                | .812                | 1.375                    | 1.375         | 1.750         | .147                     | .578*               |
| 28         | 1.7500-18NS       | .625               | .953                | .453                | .812                | 1.625                    | 1.562         | 2.000         | .147                     | .578*               |
| 32         | 2.0000-18NS       | .625               | 1.031               | .438                | .875                | 1.875                    | 1.750         | 2.250         | .173                     | .500*               |
| 36         | 2.2500-16UN       | .625               | 1.031               | .438                | .875                | 2.062                    | 1.938         | 2.500         | .173                     | .500*               |
| 40         | 2.5000-16UN       | .625               | 1.031               | .438                | .875                | 2.312                    | 2.188         | 2.750         | .173                     | .500*               |

\* Increase Z dimension by .312 for size "0" contact only.

# MS/Standard

## MS3106R

### straight plug



To complete order number, see "how to order" pg. 70.  
For solder well data, see page 67.  
All lockwire holes are .045 dia. min.

| Shell Size | A Thread Class 2B | F Dia. Max. | J $\pm .005$ | L Max. | N Dia. Max. | Q Dia. Max. | Y Thread Class 2 | Z $\pm .045$ |
|------------|-------------------|-------------|--------------|--------|-------------|-------------|------------------|--------------|
| 8S         | .5000-28UNEF      | .959        | .531         | 1.057  | .557        | .741        | 6-32NC           | .562         |
| 10S        | .6250-24NEF       | 1.026       | .531         | 1.057  | .682        | .869        | 6-32NC           | .562         |
| 10SL       | .6250-24NEF       | 1.120       | .531         | 1.057  | .807        | .946        | 6-32NC           | .562         |
| 12S        | .7500-20UNEF      | 1.120       | .531         | 1.057  | .807        | .995        | 6-32NC           | .562         |
| 12         | .7500-20UNEF      | 1.120       | .719         | 1.212  | .807        | .995        | 6-32NC           | .812         |
| 14S        | .8750-20UNEF      | 1.307       | .531         | 1.057  | .932        | 1.123       | 6-32NC           | .562         |
| 14         | .8750-20UNEF      | 1.307       | .719         | 1.212  | .932        | 1.123       | 6-32NC           | .812         |
| 16S        | 1.0000-20UNEF     | 1.432       | .531         | 1.057  | 1.057       | 1.250       | 6-32NC           | .562         |
| 16         | 1.0000-20UNEF     | 1.432       | .719         | 1.212  | 1.057       | 1.250       | 6-32NC           | .812         |
| 18         | 1.1250-18NEF      | 1.557       | .719         | 1.212  | 1.182       | 1.333       | 6-32NC           | .812*        |
| 20         | 1.2500-18NEF      | 1.744       | .719         | 1.212  | 1.291       | 1.461       | 8-32NC           | .812*        |
| 22         | 1.3750-18NEF      | 1.869       | .719         | 1.212  | 1.432       | 1.588       | 8-32NC           | .812*        |
| 24         | 1.5000-18NEF      | 1.994       | .719         | 1.291  | 1.557       | 1.715       | 8-32NC           | .812*        |
| 28         | 1.7500-18NS       | 2.166       | .719         | 1.291  | 1.807       | 1.968       | 8-32NC           | .812*        |
| 32         | 2.0000-18NS       | 2.541       | .719         | 1.353  | 2.057       | 2.209       | 10-32NF          | .812*        |
| 36         | 2.2500-16UN       | 2.729       | .719         | 1.353  | 2.260       | 2.463       | 10-32NF          | .812*        |
| 40         | 2.5000-16UN       | 2.979       | .719         | 1.353  | 2.510       | 2.719       | 10-32NF          | .812*        |

\* Increase Z dimension by .312 for size "0" contact only.

**MS/Standard**  
contact and  
insert arrangements

# MS/Standard

## insert arrangements

| Insert Arrangement | Service Rating | Total Contacts | Contact Size |   |   |    |    |
|--------------------|----------------|----------------|--------------|---|---|----|----|
|                    |                |                | 0            | 4 | 8 | 12 | 16 |
| 8S-1               | A              | 1              |              |   |   |    | 1  |
| 10S-2              | A              | 1              |              |   |   |    | 1  |
| 10SL-3             | A              | 3              |              |   |   |    | 3  |
| 10SL-4†            | A              | 2              |              |   |   |    | 2  |
| 12S-3              | A              | 2              |              |   |   |    | 2  |
| 12S-4              | D              | 1              |              |   |   |    | 1  |
| 12-5               | D              | 1              |              |   |   | 1  |    |
| 14S-1              | A              | 3              |              |   |   |    | 3  |
| 14S-2              | Inst.          | 4              |              |   |   |    | 4  |
| 14S-4              | D              | 1              |              |   |   |    | 1  |
| 14S-5              | Inst.          | 5              |              |   |   |    | 5  |
| 14S-6              | Inst.          | 6              |              |   |   |    | 6  |
| 14S-7              | A              | 3              |              |   |   |    | 3  |
| 14S-9              | A              | 2              |              |   |   |    | 2  |
| 14S-10             | Inst.          | 4              |              |   |   |    | 4  |
| 14S-12             | A              | 3              |              |   |   |    | 3  |
| 14-3               | A              | 1              |              |   | 1 |    |    |
| 16S-1              | A              | 7              |              |   |   |    | 7  |
| 16S-3              | B              | 1              |              |   |   |    | 1  |
| 16S-4              | D              | 2              |              |   |   |    | 2  |
| 16S-5              | A              | 3              |              |   |   |    | 3  |
| 16S-6              | A              | 3              |              |   |   |    | 3  |
| 16S-8              | A              | 5              |              |   |   |    | 5  |
| 16-2               | E              | 1              |              |   |   | 1  |    |
| 16-7               | A              | 3              |              |   | 1 |    | 2  |
| 16-9               | A              | 4              |              |   |   | 2  | 2  |
| 16-10              | A              | 3              |              |   |   | 3  |    |
| 16-11              | A              | 2              |              |   |   | 2  |    |
| 16-12              | A              | 1              |              | 1 |   |    |    |
| 16-13              | A              | 2              |              |   |   | 2  |    |
| 18-1               | A/Inst.        | 10             |              |   |   |    | 10 |
| 18-3               | D              | 2              |              |   |   | 2  |    |
| 18-4               | D              | 4              |              |   |   |    | 4  |
| 18-5               | D              | 3              |              |   |   | 2  | 1  |
| 18-6               | D              | 1              |              | 1 |   |    |    |
| 18-7               | B              | 1              |              |   | 1 |    |    |
| 18-8               | A              | 8              |              |   |   | 1  | 7  |
| 18-9               | Inst.          | 7              |              |   |   | 2  | 5  |
| 18-10              | A              | 4              |              |   |   | 4  |    |
| 18-11              | A              | 5              |              |   |   | 5  |    |
| 18-12              | A              | 6              |              |   |   |    | 6  |
| 18-13              | A              | 4              |              |   | 1 | 3  |    |
| 18-14              | A              | 2              |              | 1 |   |    | 1  |
| 18-15              | A              | 4              |              |   |   | 4  |    |
| 18-16              | C              | 1              |              |   |   | 1  |    |
| 18-17              | Inst.          | 7              |              |   |   | 2  | 5  |
| 18-19              | A              | 10             |              |   |   |    | 10 |
| 18-20              | A              | 5              |              |   |   |    | 5  |
| 18-22              | D              | 3              |              |   |   |    | 3  |
| 18-24              | A/Inst.        | 10             |              |   |   |    | 10 |
| 18-29              | A              | 5              |              |   |   |    | 5  |
| 18-30              | A              | 5              |              |   |   |    | 5  |

| Insert Arrangement | Service Rating | Total Contacts | Contact Size |   |   |    |    |
|--------------------|----------------|----------------|--------------|---|---|----|----|
|                    |                |                | 0            | 4 | 8 | 12 | 16 |
| 18-31              | A              | 5              |              |   |   |    | 5  |
| 20-2               | D              | 1              | 1            |   |   |    |    |
| 20-3               | D              | 3              |              |   |   | 3  |    |
| 20-4               | D              | 4              |              |   |   | 4  |    |
| 20-6               | D              | 3              |              |   |   |    | 3  |
| 20-7               | D/A            | 8              |              |   |   |    | 8  |
| 20-8               | Inst.          | 6              |              |   | 2 |    | 4  |
| 20-9               | D/A            | 8              |              |   |   | 1  | 7  |
| 20-11              | Inst.          | 13             |              |   |   |    | 13 |
| 20-12              | A              | 2              |              | 1 |   |    | 1  |
| 20-14              | A              | 5              |              |   | 2 | 3  |    |
| 20-15              | A              | 7              |              |   |   | 7  |    |
| 20-16              | A              | 9              |              |   |   | 2  | 7  |
| 20-17              | A              | 6              |              |   |   | 5  | 1  |
| 20-18              | A              | 9              |              |   |   | 3  | 6  |
| 20-19              | A              | 3              |              |   | 3 |    |    |
| 20-20              | A              | 4              |              | 1 |   | 3  |    |
| 20-21              | A              | 9              |              |   |   | 1  | 8  |
| 20-22              | A              | 6              |              |   | 3 |    | 3  |
| 20-23              | A              | 2              |              |   | 2 |    |    |
| 20-24              | A              | 4              |              |   | 2 |    | 2  |
| 20-25              | Inst.          | 13             |              |   |   |    | 13 |
| 20-27              | A              | 14             |              |   |   |    | 14 |
| 20-29              | A              | 17             |              |   |   |    | 17 |
| 20-30              | Inst.          | 13             |              |   |   |    | 13 |
| 20-33              | A              | 11             |              |   |   |    | 11 |
| 22-1               | D              | 2              |              |   | 2 |    |    |
| 22-2               | D              | 3              |              |   | 3 |    |    |
| 22-4               | A              | 4              |              |   | 2 | 2  |    |
| 22-5               | D              | 6              |              |   |   | 2  | 4  |
| 22-6               | D              | 3              |              |   | 2 |    | 1  |
| 22-7               | E              | 1              | 1            |   |   |    |    |
| 22-8               | E              | 2              |              |   |   | 2  |    |
| 22-9               | E              | 3              |              |   |   | 3  |    |
| 22-10              | E              | 4              |              |   |   |    | 4  |
| 22-11              | B              | 2              |              |   |   |    | 2  |
| 22-12              | D              | 5              |              |   | 2 |    | 3  |
| 22-13              | D/A            | 5              |              |   |   | 4  | 1  |
| 22-14              | A              | 19             |              |   |   |    | 19 |
| 22-15              | E/A            | 6              |              |   |   | 5  | 1  |
| 22-16              | A              | 9              |              |   |   | 3  | 6  |
| 22-17              | D/A            | 9              |              |   |   | 1  | 8  |
| 22-18              | D/A            | 8              |              |   |   |    | 8  |
| 22-19              | A              | 14             |              |   |   |    | 14 |
| 22-20              | A              | 9              |              |   |   |    | 9  |
| 22-21              | A              | 3              | 1            |   |   |    | 2  |
| 22-22              | A              | 4              |              |   | 4 |    |    |
| 22-23              | D/A            | 8              |              |   |   | 8  |    |
| 22-24              | D/A            | 6              |              |   |   | 2  | 4  |
| 22-27              | D/A            | 9              |              |   | 1 |    | 8  |
| 22-28              | A              | 7              |              |   |   | 7  |    |

† 10SL-4 arrangement available only with pin contacts in receptacle and socket contacts in plug

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## insert arrangements, cont.

| Insert Arrangement | Service Rating | Total Contacts | Contact Size |   |   |    |    |
|--------------------|----------------|----------------|--------------|---|---|----|----|
|                    |                |                | 0            | 4 | 8 | 12 | 16 |
| 22-33              | D/A            | 7              |              |   |   |    | 7  |
| 22-34              | D              | 5              |              |   |   | 3  | 2  |
| 22-36              | D/A            | 8              |              |   |   | 8  |    |
| 24-2               | D              | 7              |              |   |   | 7  |    |
| 24-3               | D              | 7              |              |   |   | 2  | 5  |
| 24-5               | A              | 16             |              |   |   |    | 16 |
| 24-6               | D/A            | 8              |              |   |   | 8  |    |
| 24-7               | A              | 16             |              |   |   | 2  | 14 |
| 24-9               | A              | 2              |              | 2 |   |    |    |
| 24-10              | A              | 7              |              |   | 7 |    |    |
| 24-11              | A              | 9              |              |   | 3 | 6  |    |
| 24-12              | A              | 5              |              | 2 |   | 3  |    |
| 24-16              | D/A            | 7              |              |   | 1 | 3  | 3  |
| 24-17              | D              | 5              |              |   |   | 2  | 3  |
| 24-20              | D              | 11             |              |   |   | 2  | 9  |
| 24-21              | D              | 10             |              |   | 1 |    | 9  |
| 24-22              | D              | 4              |              |   | 4 |    |    |
| 24-27              | E              | 7              |              |   |   |    | 7  |
| 24-28              | Inst.          | 24             |              |   |   |    | 24 |
| 28-1               | D/A            | 9              |              |   | 3 | 6  |    |
| 28-2               | D              | 14             |              |   |   | 2  | 12 |
| 28-3               | E              | 3              |              |   | 3 |    |    |
| 28-4               | E/D            | 9              |              |   |   | 2  | 7  |
| 28-5               | D              | 5              |              | 2 |   | 1  | 2  |
| 28-6               | D              | 3              |              | 3 |   |    |    |
| 28-7               | D              | 2              |              | 2 |   |    |    |
| 28-8               | E/D/A          | 12             |              |   |   | 2  | 10 |
| 28-9               | D              | 12             |              |   |   | 6  | 6  |
| 28-10              | D/A            | 7              |              | 2 | 2 | 3  |    |
| 28-11              | A              | 22             |              |   |   | 4  | 18 |
| 28-12              | A              | 26             |              |   |   |    | 26 |
| 28-13              | A              | 26             |              |   |   |    | 26 |
| 28-15              | A              | 35             |              |   |   |    | 35 |
| 28-16              | A              | 20             |              |   |   |    | 20 |
| 28-17              | B/D/A          | 15             |              |   |   |    | 15 |
| 28-18              | C/D/A/Inst.    | 12             |              |   |   |    | 12 |
| 28-19              | B/D/A          | 10             |              |   |   | 4  | 6  |
| 28-20              | A              | 14             |              |   |   | 10 | 4  |
| 28-21              | A              | 37             |              |   |   |    | 37 |
| 28-22              | D              | 6              |              | 3 |   |    | 3  |

| Insert Arrangement | Service Rating | Total Contacts | Contact Size |   |   |    |    |
|--------------------|----------------|----------------|--------------|---|---|----|----|
|                    |                |                | 0            | 4 | 8 | 12 | 16 |
| 32-1               | E/D            | 5              | 2            |   |   | 3  |    |
| 32-2               | E              | 5              |              | 3 |   |    | 2  |
| 32-3               | D              | 9              | 1            | 2 |   | 2  | 4  |
| 32-4               | A/D            | 14             |              |   |   | 2  | 12 |
| 32-5               | D              | 2              | 2            |   |   |    |    |
| 32-6               | A              | 23             |              | 2 | 3 | 2  | 16 |
| 32-7               | Inst./A        | 35             |              |   |   | 7  | 28 |
| 32-8               | A              | 30             |              |   |   | 6  | 24 |
| 32-9               | D              | 14             |              | 2 |   |    | 12 |
| 32-10              | E/B/D/A        | 7              |              | 2 | 2 |    | 3  |
| 32-12              | A/D            | 15             |              |   |   | 5  | 10 |
| 32-13              | D              | 23             |              |   |   | 5  | 18 |
| 32-15              | D              | 8              | 2            |   |   | 6  |    |
| 32-16              | A              | 23             |              | 2 | 3 | 2  | 16 |
| 32-17              | D              | 4              |              | 4 |   |    |    |
| 32-22              | A              | 54             |              |   |   |    | 54 |
| 36-1               | D              | 22             |              |   |   | 4  | 18 |
| 36-3               | D              | 6              | 3            |   |   | 3  |    |
| 36-4               | D/A            | 3              | 3            |   |   |    |    |
| 36-5               | A              | 4              | 4            |   |   |    |    |
| 36-6               | A              | 6              | 2            | 4 |   |    |    |
| 36-7               | A              | 47             |              |   |   | 7  | 40 |
| 36-8               | A              | 47             |              |   |   | 1  | 46 |
| 36-9               | A              | 31             |              | 1 | 2 | 14 | 14 |
| 36-10              | A              | 48             |              |   |   |    | 48 |
| 36-11              | A              | 48             |              |   |   |    | 48 |
| 36-12              | A              | 48             |              |   |   |    | 48 |
| 36-13              | E/A            | 17             |              |   |   | 2  | 15 |
| 36-14              | D              | 16             |              |   | 5 | 5  | 6  |
| 36-15              | D/A            | 35             |              |   |   |    | 35 |
| 36-16              | A              | 47             |              |   |   | 7  | 40 |
| 36-17              | A              | 47             |              |   |   | 7  | 40 |
| 36-18              | A              | 31             |              | 1 | 2 | 14 | 14 |
| 36-20              | A              | 34             |              |   | 2 | 2  | 30 |
| 36-52              | A              | 52             |              |   |   |    | 52 |
| 40-1               | D              | 30             |              |   |   | 6  | 24 |
| 40-9               | A              | 47             |              |   | 1 | 22 | 24 |
| 40-56              | A              | 85             |              |   |   |    | 85 |
| 48-62              | D              | 85             |              |   |   |    | 85 |

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## special insert arrangements

| Insert<br>Arrange-<br>ment | Service<br>Rating | Total<br>Con-<br>tacts | Contact Size |     |   |   |    |    |    |        |   |   |    |  |
|----------------------------|-------------------|------------------------|--------------|-----|---|---|----|----|----|--------|---|---|----|--|
|                            |                   |                        | 4/0          | 2/0 | 0 | 4 | 8  | 12 | 16 | Coax** |   |   |    |  |
|                            |                   |                        |              |     |   |   |    |    |    | 0      | 4 | 8 | 12 |  |
| 14S-A7                     | A                 | 7                      |              |     |   |   |    |    | 7  |        |   |   |    |  |
| 16-59                      | A                 | 4                      |              |     |   |   |    | 4  |    |        |   |   |    |  |
| 20-26                      | A                 | 19                     |              |     |   |   |    |    | 19 |        |   |   |    |  |
| 20-51                      | A                 | 3                      |              |     |   |   | 3  |    |    |        |   |   |    |  |
| 20-57                      | A                 | 7                      |              |     |   |   |    | 7* |    |        |   |   |    |  |
| 20-58                      | A                 | 10                     |              |     |   |   |    | 5  | 5  |        |   |   |    |  |
| 20-59                      | A                 | 3                      |              |     |   |   | 3* |    |    |        |   |   |    |  |
| 20-66                      | A                 | 6                      |              |     |   |   |    | 5* | 1  |        |   |   |    |  |
| 20-79                      | A/D               | 8                      |              |     |   |   |    | 1  | 7  |        |   |   |    |  |
| 22-63                      | A                 | 12                     |              |     |   |   |    | 4  | 8  |        |   |   |    |  |
| 22-65                      | A/D               | 8                      |              |     |   |   |    | 8* |    |        |   |   |    |  |
| 22-70                      | A                 | 13                     |              |     |   |   |    | 8  | 5  |        |   |   |    |  |
| 22-80                      | A                 | 3                      |              |     |   |   | 3* |    |    |        |   |   |    |  |
| 24-19                      | A                 | 12                     |              |     |   |   |    |    | 12 |        |   |   |    |  |
| 24-51                      | A                 | 5                      |              |     |   |   | 5  |    |    |        |   |   |    |  |
| 24-52                      | Hi Volt.          | 1                      |              |     |   |   |    | 1  |    |        |   |   |    |  |
| 24-53                      | A                 | 5                      |              |     |   |   | 5  |    |    |        |   |   |    |  |
| 24-58                      | A                 | 13                     |              |     |   |   | 3  | 3  | 7  |        |   |   |    |  |
| 24-59                      | A                 | 14                     |              |     |   |   |    | 7  | 7  |        |   |   |    |  |
| 24-60                      | A                 | 7                      |              |     |   |   | 7* |    |    |        |   |   |    |  |
| 24-65                      | A                 | 15                     |              |     |   |   |    | 11 | 4  |        |   |   |    |  |
| 24-66                      | D                 | 7                      |              |     |   |   |    | 7  |    |        |   |   |    |  |
| 24-67                      | Inst.             | 19                     |              |     |   |   |    | 19 |    |        |   |   |    |  |
| 24-71                      | A                 | 7                      |              |     |   |   | 7* |    |    |        |   |   |    |  |
| 24-75                      | A                 | 7                      |              |     |   |   | 7* |    |    |        |   |   |    |  |
| 24-79                      | A                 | 5                      |              |     |   |   | 5  |    |    |        |   |   |    |  |
| 24-80                      | Inst.             | 23                     |              |     |   |   |    |    | 23 |        |   |   |    |  |
| 24-84                      | A                 | 19                     |              |     |   |   |    | 1  |    |        |   |   | 18 |  |
| 24-96                      | Inst.             | 28                     |              |     |   |   |    |    | 28 |        |   |   |    |  |
| 24-AJ                      | A                 | 25                     |              |     |   |   |    |    | 25 |        |   |   |    |  |
| 28-51                      | A                 | 12                     |              |     |   |   |    | 12 |    |        |   |   |    |  |
| 28-59                      | A                 | 17                     |              |     |   |   |    | 7  | 10 |        |   |   |    |  |
| 28-66                      | A                 | 16                     |              |     |   |   | 2  | 14 |    |        |   |   |    |  |
| 28-72                      | Coax              | 3                      |              |     |   |   |    |    |    |        | 3 |   |    |  |
| 28-74                      | A                 | 16                     |              |     |   |   | 7* |    | 9  |        |   |   |    |  |
| 28-75                      | A                 | 16                     |              |     |   |   | 7* |    | 9  |        |   |   |    |  |
| 28-79                      | A                 | 16                     |              |     |   |   | 7  |    | 9  |        |   |   |    |  |
| 28-82                      | D                 | 6                      |              |     |   |   | 2  | 4  |    |        |   |   |    |  |
| 28-84                      | A                 | 9                      |              |     |   |   | 9  |    |    |        |   |   |    |  |
| 28-AY                      | A                 | 9                      |              |     |   | 4 |    |    | 5  |        |   |   |    |  |
| 32-14                      | D                 | 13                     |              |     |   |   |    | 13 |    |        |   |   |    |  |
| 32-25                      | A                 | 25                     |              |     |   |   |    | 25 |    |        |   |   |    |  |
| 32-31                      | A                 | 31                     |              |     |   |   |    |    | 31 |        |   |   |    |  |
| 32-48                      | Inst.             | 48                     |              |     |   |   |    |    | 48 |        |   |   |    |  |
| 32-52                      | D                 | 8                      |              |     | 2 |   |    | 6  |    |        |   |   |    |  |
| 32-53                      | Inst./E           | 42                     |              |     |   |   |    | 5  | 37 |        |   |   |    |  |
| 32-56                      | A                 | 30                     |              |     |   |   |    | 6* | 24 |        |   |   |    |  |
| 32-57                      | Coax              | 8                      |              |     |   |   |    | 6  |    | 2      |   |   |    |  |
| 32-58                      | Coax              | 4                      |              |     |   |   |    |    |    |        | 4 |   |    |  |
| 32-59                      | A                 | 42                     |              |     |   |   |    |    | 40 |        |   | 2 |    |  |
| 32-60                      | A                 | 23                     |              |     |   |   |    |    | 15 |        |   | 8 |    |  |
| 32-62                      | Coax              | 23                     |              |     |   | 2 | 1  | 2  | 16 |        |   | 2 |    |  |
| 32-64                      | Inst.             | 54                     |              |     |   |   |    |    | 54 |        |   |   |    |  |
| 32-68                      | A                 | 16                     |              |     |   |   |    |    | 12 |        | 4 |   |    |  |
| 32-73                      | A                 | 46                     |              |     |   |   |    |    | 46 |        |   |   |    |  |
| 32-75                      | Coax              | 9                      |              |     |   |   |    | 2  |    |        |   | 7 |    |  |
| 32-76                      | A                 | 19                     |              |     |   |   |    | 19 |    |        |   |   |    |  |
| 32-79                      | D                 | 5                      |              |     |   | 4 | 1  |    |    |        |   |   |    |  |
| 32-82                      | A                 | 16                     |              |     |   | 4 |    |    | 12 |        |   |   |    |  |

\* Crimp contacts accommodate wire the same size as the contact as well as wire of the next smaller, even size. Arrangements identified with an asterisk (\*) are exceptions. See insert arrangement drawings on pages 38-48 for application wire size.

\*\* Coaxial cable data can be found on insert arrangement drawings, pages 38-48. For further information on special contacts and cable see catalog 12-120.

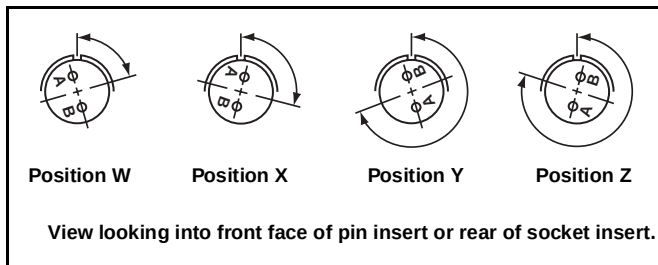
24

| Insert<br>Arrange-<br>ment | Service<br>Rating | Total<br>Con-<br>tacts | Contact Size |     |   |    |    |     |     |        |    |    |    |  |
|----------------------------|-------------------|------------------------|--------------|-----|---|----|----|-----|-----|--------|----|----|----|--|
|                            |                   |                        | 4/0          | 2/0 | 0 | 4  | 8  | 12  | 16  | Coax** |    |    |    |  |
|                            |                   |                        |              |     |   |    |    |     |     | 0      | 4  | 8  | 12 |  |
| 32-AF                      | A                 | 55                     |              |     |   |    |    |     | 55  |        |    |    |    |  |
| 36-22                      | D                 | 22                     |              |     |   |    |    | 22  |     |        |    |    |    |  |
| 36-51                      | D                 | 4                      |              |     | 2 | 2  |    |     |     |        |    |    |    |  |
| 36-54                      | A                 | 39                     |              |     |   |    | 8  |     | 31  |        |    |    |    |  |
| 36-55                      | A                 | 39                     |              |     |   |    | 8* |     | 31  |        |    |    |    |  |
| 36-59                      | A                 | 53                     |              |     |   |    |    | 3*  | 50  |        |    |    |    |  |
| 36-60                      | A                 | 47                     |              |     |   |    |    | 7*  | 40  |        |    |    |    |  |
| 36-64                      | Coax              | 4                      |              |     |   |    |    |     |     | 4      |    |    |    |  |
| 36-65                      | Coax              | 4                      |              |     |   |    |    |     |     | 4      |    |    |    |  |
| 36-71                      | A                 | 53                     |              |     |   |    |    | 3   | 50  |        |    |    |    |  |
| 36-73                      | Coax              | 7                      |              |     |   |    |    |     |     |        | 7  |    |    |  |
| 36-74                      | A                 | 44                     |              |     |   |    |    |     | 43  |        |    | 1  |    |  |
| 36-75                      | A                 | 48                     |              |     |   |    |    |     | 48* |        |    |    |    |  |
| 36-76                      | A                 | 47                     |              |     |   |    |    |     | 47  |        |    |    |    |  |
| 36-77                      | D                 | 7                      |              |     |   | 7  |    |     |     |        |    |    |    |  |
| 36-78                      | A                 | 14                     |              |     |   |    | 12 |     | 2   |        |    |    |    |  |
| 36-79                      | A                 | 20                     |              |     |   |    |    | 20  |     |        |    |    |    |  |
| 36-80                      | A                 | 20                     |              |     |   |    |    | 20* |     |        |    |    |    |  |
| 36-83                      | Coax              | 7                      |              |     |   |    |    |     |     |        | 7  |    |    |  |
| 36-85                      | A/D               | 35                     |              |     |   |    |    |     | 35* |        |    |    |    |  |
| 36-97                      | C                 | 1                      | 1            |     |   |    |    |     |     |        |    |    |    |  |
| 36-99                      | D                 | 12                     |              |     |   | 3  | 3  | 3   | 3   |        |    |    |    |  |
| 36-AF                      | A                 | 48                     |              |     |   |    |    |     | 48  |        |    |    |    |  |
| 40-5                       | A                 | 5                      |              |     | 5 |    |    |     |     |        |    |    |    |  |
| 40-10                      | A                 | 29                     |              |     |   | 4  | 9  |     | 16  |        |    |    |    |  |
| 40-30                      | A                 | 30                     |              |     |   | 1  |    | 29  |     |        |    |    |    |  |
| 40-35                      | D                 | 35                     |              |     |   |    |    | 35  |     |        |    |    |    |  |
| 40-53                      | A                 | 60                     |              |     |   |    |    |     | 60  |        |    |    |    |  |
| 40-57                      | E                 | 4                      |              |     | 4 |    |    |     |     |        |    |    |    |  |
| 40-61                      | A                 | 59                     |              |     |   |    | 1  | 3   | 55  |        |    |    |    |  |
| 40-62                      | A                 | 60                     |              |     |   |    |    |     | 60  |        |    |    |    |  |
| 40-63                      | A                 | 61                     |              |     |   |    |    |     | 61* |        |    |    |    |  |
| 40-64                      | Coax              | 36                     |              |     |   |    |    | 3   | 20  |        |    | 13 |    |  |
| 40-66                      | Coax              | 4                      |              |     |   |    |    |     |     | 4      |    |    |    |  |
| 40-67                      | A                 | 11                     |              |     |   |    |    |     | 1   |        | 10 |    |    |  |
| 40-68                      | A                 | 21                     |              |     |   |    | 21 |     |     |        |    |    |    |  |
| 40-70                      | A                 | 61                     |              |     |   |    |    |     | 61  |        |    |    |    |  |
| 40-72                      | A                 | 11                     |              |     |   |    |    |     | 1   |        | 10 |    |    |  |
| 40-73                      | A                 | 61                     |              |     |   |    |    |     | 61  |        |    |    |    |  |
| 40-74                      | A                 | 6                      |              |     |   |    |    | 1   |     | 4      | 1  |    |    |  |
| 40-75                      | E                 | 5                      |              |     | 4 |    |    | 1   |     |        |    |    |    |  |
| 40-80                      | A                 | 11                     |              |     |   | 10 |    |     | 1   |        |    |    |    |  |
| 40-81                      | A                 | 62                     |              |     |   |    |    |     | 62* |        |    |    |    |  |
| 40-82                      | A                 | 62                     |              |     |   |    |    |     | 62  |        |    |    |    |  |
| 40-85                      | A                 | 60                     |              |     |   |    |    |     | 60* |        |    |    |    |  |
| 40-86                      | E                 | 4                      |              |     |   |    |    |     |     | 4      |    |    |    |  |
| 40-87                      | D                 | 7                      |              |     |   | 7  |    |     |     |        |    |    |    |  |
| 40-AD                      | A                 | 8                      |              |     | 4 |    | 4  |     |     |        |    |    |    |  |
| 40-AG                      | A                 | 38                     |              |     |   |    |    | 38  |     |        |    |    |    |  |
| 40-AP                      | E                 | 2                      | 2            |     |   |    |    |     |     |        |    |    |    |  |
| 40-AR                      | Inst.             | 13                     |              |     | 3 | 3  |    | 7   |     |        |    |    |    |  |
| 40-AS                      | A                 | 40                     |              |     |   |    |    | 25  | 15  |        |    |    |    |  |
| 40-AT                      | A                 | 43                     |              |     |   |    | 1  | 24  | 18  |        |    |    |    |  |
| 40-AU                      | A                 | 14                     |              |     |   | 3  | 10 |     | 1   |        |    |    |    |  |
| 40-AV                      | D                 | 3                      |              | 3   |   |    |    |     |     |        |    |    |    |  |
| 44-52                      | A                 | 104                    |              |     |   |    |    |     | 104 |        |    |    |    |  |
| 44-53                      | A                 | 36                     |              |     |   |    |    |     | 18  |        |    | 18 |    |  |
| 48-51                      | A                 | 56                     |              |     |   |    | 10 |     | 42  | 4      |    |    |    |  |
| 48-52                      | A                 | 61                     |              |     |   |    |    |     | 56  | 5      |    |    |    |  |
| 48-53                      | D                 | 37                     |              |     |   |    |    | 37  |     |        |    |    |    |  |
| 48-54                      | A                 | 56                     |              |     |   |    | 10 |     | 42  | 4      |    |    |    |  |
| 48-55                      | A                 | 78                     |              |     |   | 6  | 2  | 2   | 68  |        |    |    |    |  |
| 48-57                      | A                 | 56                     |              |     | 4 |    | 10 |     | 42  |        |    |    |    |  |

# MS/Standard insert alternate positioning

To avoid cross-plugging problems in applications requiring the use of more than one connector of the same size and arrangement, alternate rotations are available as indicated in the accompanying charts.

As shown in the diagram below, the front face of the pin insert is rotated within the shell in a clockwise direction from the normal shell key. The socket insert would be rotated counter-clockwise the same number of degrees in respect to the normal shell key.



The following insert arrangements have the same alternate insert rotations for W, X, Y and Z, which are:

| Degrees |     |     |     |
|---------|-----|-----|-----|
| W       | X   | Y   | Z   |
| 80      | 110 | 250 | 280 |

|       |       |       |       |       |       |
|-------|-------|-------|-------|-------|-------|
| 16-7  | 20-22 | 22-29 | 24-17 | 28-16 | 32-13 |
| 18-5  | 22-6  | 22-33 | 24-20 | 28-17 | 32-22 |
| 18-9  | 22-12 | 22-34 | 24-21 | 28-19 | 32-AF |
| 18-13 | 22-14 | 24-1  | 24-28 | 28-20 | 36-1  |
| 18-14 | 22-15 | 24-3  | 28-1  | 28-21 | 36-7  |
| 20-7  | 22-16 | 24-4  | 28-4  | 32-1  | 36-8  |
| 20-8  | 22-17 | 24-5  | 28-8  | 32-3  | 36-13 |
| 20-9  | 22-18 | 24-6  | 28-9  | 32-4  | 40-AR |
| 20-12 | 22-19 | 24-7  | 28-10 | 32-6  | 40-AS |
| 20-14 | 22-21 | 24-12 | 28-11 | 32-9  | 40-AT |
| 20-16 | 22-24 | 24-14 | 28-14 | 32-10 | 40-AU |
| 20-20 | 22-25 | 24-16 | 28-15 | 32-12 |       |

| Insert Arrangement | Degrees |     |     |     |
|--------------------|---------|-----|-----|-----|
|                    | W       | X   | Y   | Z   |
| 10SL-4             | 63      | —   | —   | —   |
| 12S-3              | 70      | 145 | 215 | 290 |
| 14S-2              | —       | 120 | 240 | —   |
| 14S-5              | —       | 110 | —   | —   |
| 14S-7              | 90      | 180 | 270 | —   |
| 14S-9              | 70      | 145 | 215 | 290 |
| 16-9               | 35      | 110 | 250 | 325 |
| 16-10              | 90      | 180 | 270 | —   |
| 16-11              | 35      | 110 | 250 | 325 |
| 16-13              | 35      | 110 | 250 | 325 |
| 16S-1              | 80      | —   | —   | 280 |
| 16S-4              | 35      | 110 | 250 | 325 |
| 16S-5              | 70      | 145 | 215 | 290 |
| 16S-6              | 90      | 180 | 270 | —   |
| 16S-8              | —       | 170 | 265 | —   |
| 18-1               | 70      | 145 | 215 | 290 |
| 18-3               | 35      | 110 | 250 | 325 |
| 18-4               | 35      | 110 | 250 | 325 |
| 18-8               | 70      | —   | —   | 290 |
| 18-10              | —       | 120 | 240 | —   |
| 18-11              | —       | 170 | 265 | —   |
| 18-12              | 80      | —   | —   | 280 |
| 18-15              | —       | 120 | 240 | —   |
| 18-20              | 90      | 180 | 270 | —   |
| 18-22              | 70      | 145 | 215 | 290 |
| 18-29              | 90      | 180 | 270 | —   |
| 20-3               | 70      | 145 | 215 | 290 |
| 20-4               | 45      | 110 | 250 | —   |
| 20-5               | 35      | 110 | 250 | 325 |
| 20-6               | 70      | 145 | 215 | 290 |
| 20-15              | 80      | —   | —   | 280 |
| 20-17              | 90      | 180 | 270 | —   |
| 20-18              | 35      | 110 | 250 | 325 |
| 20-19              | 90      | 180 | 270 | —   |
| 20-21              | 35      | 110 | 250 | 325 |

| Insert Arrangement | Degrees |     |     |     |
|--------------------|---------|-----|-----|-----|
|                    | W       | X   | Y   | Z   |
| 20-23              | 35      | 110 | 250 | 325 |
| 20-24              | 35      | 110 | 250 | 325 |
| 20-27              | 35      | 110 | 250 | 325 |
| 20-29              | 80      | —   | —   | 280 |
| 22-1               | 35      | 110 | 250 | 325 |
| 22-2               | 70      | 145 | 215 | 290 |
| 22-4               | 35      | 110 | 250 | 325 |
| 22-5               | 35      | 110 | 250 | 325 |
| 22-8               | 35      | 110 | 250 | 325 |
| 22-9               | 70      | 145 | 215 | 290 |
| 22-10              | 35      | 110 | 250 | 325 |
| 22-11              | 35      | 110 | 250 | 325 |
| 22-13              | 35      | 110 | 250 | 325 |
| 22-20              | 35      | 110 | 250 | 325 |
| 22-22              | —       | 110 | 250 | —   |
| 22-23              | 35      | —   | 250 | —   |
| 22-27              | 80      | —   | 250 | 280 |
| 22-28              | 80      | —   | —   | 280 |
| 22-63              | 20      | —   | —   | —   |
| 24-2               | 80      | —   | —   | 280 |
| 24-9               | 35      | 110 | 250 | 325 |
| 24-10              | 80      | —   | —   | 280 |
| 24-11              | 35      | 110 | 250 | 325 |
| 24-22              | 45      | 110 | 250 | —   |
| 24-27              | 80      | —   | —   | 280 |
| 28-2               | 35      | 110 | 250 | 325 |
| 28-3               | 70      | 145 | 215 | 290 |
| 28-5               | 35      | 110 | 250 | 325 |
| 28-6               | 70      | 145 | 215 | 290 |
| 28-7               | 35      | 110 | 250 | 325 |
| 28-12              | 90      | 180 | 270 | —   |
| 28-18              | 70      | 145 | 215 | 290 |
| 28-22              | 70      | 145 | 215 | 290 |
| 28-AY              | 45      | 110 | 250 | —   |
| 32-2               | 70      | 145 | 215 | 290 |

| Insert Arrangement | Degrees |     |     |     |
|--------------------|---------|-----|-----|-----|
|                    | W       | X   | Y   | Z   |
| 32-5               | 35      | 110 | 250 | 325 |
| 32-7               | 80      | 125 | 235 | 280 |
| 32-8               | 80      | 125 | 235 | 280 |
| 32-14              | 65      | 130 | 230 | 295 |
| 32-15              | 35      | 110 | 250 | 280 |
| 32-17              | 45      | 110 | 250 | —   |
| 32-25              | 60      | 120 | —   | —   |
| 32-48              | 80      | —   | —   | —   |
| 32-64              | 80      | 100 | 110 | 250 |
| 32-68              | 30      | —   | —   | —   |
| 32-82              | 30      | —   | —   | —   |
| 36-3               | 70      | 145 | 215 | 290 |
| 36-4               | 70      | 145 | 215 | 290 |
| 36-5               | —       | 120 | 240 | —   |
| 36-6               | 35      | 110 | 250 | 325 |
| 36-9               | 80      | 125 | 235 | 280 |
| 36-10              | 80      | 125 | 235 | 280 |
| 36-14              | 90      | 180 | 270 | —   |
| 36-15              | 60      | 125 | 245 | 305 |
| 36-AF              | 65      | —   | —   | —   |
| 40-1               | 65      | 130 | 235 | 300 |
| 40-5               | 33      | —   | —   | 270 |
| 40-9               | 65      | 125 | 225 | 310 |
| 40-10              | 65      | 125 | 225 | 310 |
| 40-35              | 70      | 130 | 230 | 290 |
| 40-AD              | 45      | —   | —   | —   |
| 40-AG              | 37      | 74  | 285 | 322 |
| 40-AP              | 35      | 110 | 250 | 325 |
| 40-AV              | 90      | 180 | 270 | —   |

# MS/Standard

## contact arrangements

front face of pin insert or rear face of socket insert illustrated

|                    |      |       |                           |                           |       |       |      |
|--------------------|------|-------|---------------------------|---------------------------|-------|-------|------|
|                    |      |       |                           |                           |       |       |      |
|                    |      |       | Front of<br>Socket Insert | Front of<br>Socket Insert |       |       |      |
| Insert Arrangement | 8S-1 | 10S-2 | 10SL-3                    | 10SL-4                    | 12S-3 | 12S-4 | 12-5 |
| Service Rating     | A    | A     | A                         | A                         | A     | D     | D    |
| Number of Contacts | 1    | 1     | 3                         | 2                         | 2     | 1     | 1    |
| Contact Size       | 16   | 16    | 16                        | 16                        | 16    | 16    | 12   |

|                    |       |       |       |       |       |       |       |
|--------------------|-------|-------|-------|-------|-------|-------|-------|
|                    |       |       |       |       |       |       |       |
| Insert Arrangement | 14S-1 | 14S-2 | 14S-4 | 14S-5 | 14S-6 | 14S-7 | 14S-9 |
| Service Rating     | A     | Inst. | D     | Inst. | Inst. | A     | A     |
| Number of Contacts | 3     | 4     | 1     | 5     | 6     | 3     | 2     |
| Contact Size       | 16    | 16    | 16    | 16    | 16    | 16    | 16    |

|                    |                           |                           |      |       |       |       |
|--------------------|---------------------------|---------------------------|------|-------|-------|-------|
|                    |                           |                           |      |       |       |       |
|                    | 100° Rotation<br>of 14S-2 | 100° Rotation<br>of 14S-7 |      |       |       |       |
| Insert Arrangement | 14S-10                    | 14S-12                    | 14-3 | 16S-1 | 16S-3 | 16S-4 |
| Service Rating     | Inst.                     | A                         | A    | A     | B     | D     |
| Number of Contacts | 4                         | 3                         | 1    | 7     | 1     | 2     |
| Contact Size       | 16                        | 16                        | 8    | 16    | 16    | 16    |

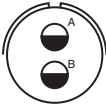
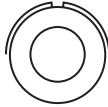
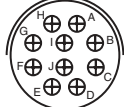
|                    |       |       |       |      |      |       |
|--------------------|-------|-------|-------|------|------|-------|
|                    |       |       |       |      |      |       |
| Insert Arrangement | 16S-5 | 16S-6 | 16S-8 | 16-2 | 16-7 | 16-9  |
| Service Rating     | A     | A     | A     | E    | A    | A     |
| Number of Contacts | 3     | 3     | 5     | 1    | 1 2  | 2 2   |
| Contact Size       | 16    | 16    | 16    | 12   | 8 16 | 12 16 |

CONTACT LEGEND

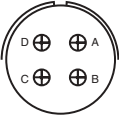
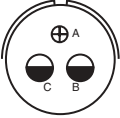
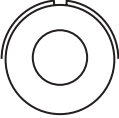
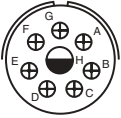
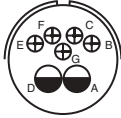
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# MS/Standard contact arrangements

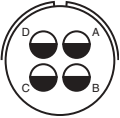
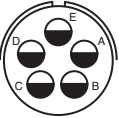
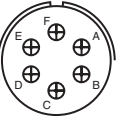
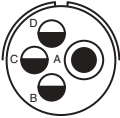
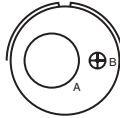
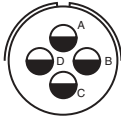
front face of pin insert or rear face of socket insert illustrated

|                    |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |
|--------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Insert Arrangement |  |  |  |  |  |  |
| Service Rating     | A                                                                                 | A                                                                                 | A                                                                                 | A                                                                                  | B, C, F, G = A; Bal. = Inst.                                                        | D                                                                                   |
| Number of Contacts | 3                                                                                 | 2                                                                                 | 1                                                                                 | 2*                                                                                 | 10                                                                                  | 2                                                                                   |
| Contact Size       | 12                                                                                | 12                                                                                | 4                                                                                 | 12                                                                                 | 16                                                                                  | 12                                                                                  |

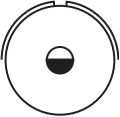
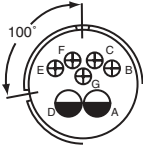
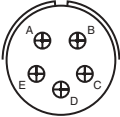
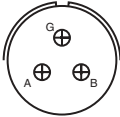
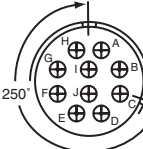
  

|                    |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |
|--------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Insert Arrangement |  |  |  |  |  |  |
| Service Rating     | D                                                                                 | D                                                                                 | D                                                                                 | B                                                                                  | A                                                                                   | Inst.                                                                               |
| Number of Contacts | 4                                                                                 | 2 1                                                                               | 1                                                                                 | 1                                                                                  | 1 7                                                                                 | 2 5                                                                                 |
| Contact Size       | 16                                                                                | 12 16                                                                             | 4                                                                                 | 8                                                                                  | 12 16                                                                               | 12 16                                                                               |

|                    |                                                                                     |                                                                                     |                                                                                     |                                                                                      |                                                                                       |                                                                                       |
|--------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------|
| Insert Arrangement |  |  |  |  |  |  |
| Service Rating     | A                                                                                   | A                                                                                   | A                                                                                   | A                                                                                    | A                                                                                     | A                                                                                     |
| Number of Contacts | 4                                                                                   | 5                                                                                   | 6                                                                                   | 1 3                                                                                  | 1 1                                                                                   | 4**                                                                                   |
| Contact Size       | 12                                                                                  | 12                                                                                  | 16                                                                                  | 8 12                                                                                 | 4 16                                                                                  | 12                                                                                    |

|                    |                                                                                     |                                                                                     |                                                                                     |                                                                                      |                                                                                       |                                                                                       |
|--------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------|
| Insert Arrangement |  |  |  |  |  |  |
| Service Rating     | C                                                                                   | Inst.                                                                               | A                                                                                   | A                                                                                    | D                                                                                     | B, C, F, G = A; Bal. = Inst.                                                          |
| Number of Contacts | 1                                                                                   | 2 5                                                                                 | 10                                                                                  | 5                                                                                    | 3                                                                                     | 10                                                                                    |
| Contact Size       | 12                                                                                  | 12 16                                                                               | 16                                                                                  | 16                                                                                   | 16                                                                                    | 16                                                                                    |

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CONTACT LEGEND

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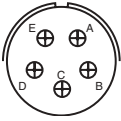
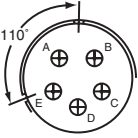
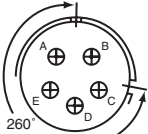
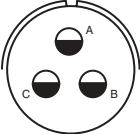
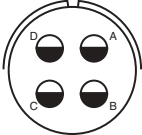
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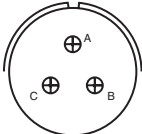
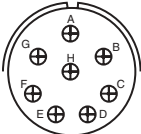
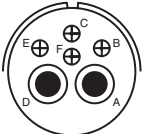
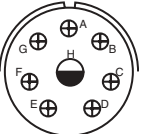
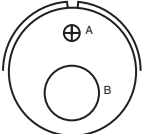
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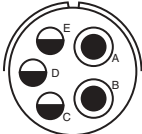
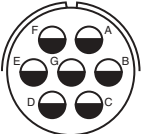
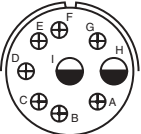
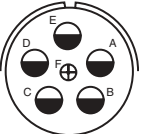
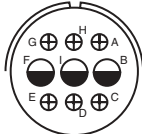
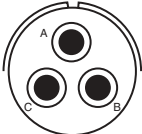
\* A = Iron; B = Constantan  
 \*\* A, C = Iron; B, D = Constantan

# MS/Standard contact arrangements

front face of pin insert or rear face of socket insert illustrated

|                    |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |
|--------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
|                    |  |  |  |  |  |  |
|                    |                                                                                   | 110° Rotation<br>of 18-20                                                         | 260° Rotation<br>of 18-20                                                         |                                                                                    |                                                                                     |                                                                                     |
| Insert Arrangement | 18-29                                                                             | 18-30                                                                             | 18-31                                                                             | 20-2                                                                               | 20-3                                                                                | 20-4                                                                                |
| Service Rating     | A                                                                                 | A                                                                                 | A                                                                                 | D                                                                                  | D                                                                                   | D                                                                                   |
| Number of Contacts | 5                                                                                 | 5                                                                                 | 5                                                                                 | 1                                                                                  | 3                                                                                   | 4                                                                                   |
| Contact Size       | 16                                                                                | 16                                                                                | 16                                                                                | 0                                                                                  | 12                                                                                  | 12                                                                                  |

|                    |                                                                                    |                                                                                    |                                                                                    |                                                                                     |                                                                                      |                                                                                      |
|--------------------|------------------------------------------------------------------------------------|------------------------------------------------------------------------------------|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------|
|                    |  |  |  |  |  |  |
|                    |                                                                                    | A, B, H, G = D; C, D, E, F = A                                                     |                                                                                    |                                                                                     |                                                                                      |                                                                                      |
| Insert Arrangement | 20-6                                                                               | 20-7                                                                               | 20-8                                                                               | 20-9                                                                                | 20-11                                                                                | 20-12                                                                                |
| Service Rating     | D                                                                                  | A, B, H, G = D; C, D, E, F = A                                                     | Inst.                                                                              | H = D; Bal. = A                                                                     | Inst.                                                                                | A                                                                                    |
| Number of Contacts | 3                                                                                  | 8                                                                                  | 2 4                                                                                | 1 7                                                                                 | 13                                                                                   | 1 1                                                                                  |
| Contact Size       | 16                                                                                 | 16                                                                                 | 8 16                                                                               | 12 16                                                                               | 16                                                                                   | 4 16                                                                                 |

|                    |                                                                                     |                                                                                     |                                                                                     |                                                                                      |                                                                                       |                                                                                       |
|--------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------|
|                    |  |  |  |  |  |  |
| Insert Arrangement | 20-14                                                                               | 20-15                                                                               | 20-16                                                                               | 20-17                                                                                | 20-18                                                                                 | 20-19                                                                                 |
| Service Rating     | A                                                                                   | A                                                                                   | A                                                                                   | A                                                                                    | A                                                                                     | A                                                                                     |
| Number of Contacts | 2 3                                                                                 | 7                                                                                   | 2 7                                                                                 | 5 1                                                                                  | 3 6                                                                                   | 3                                                                                     |
| Contact Size       | 8 12                                                                                | 12                                                                                  | 12 16                                                                               | 12 16                                                                                | 12 16                                                                                 | 8                                                                                     |



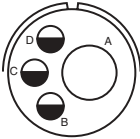
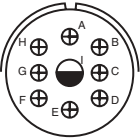
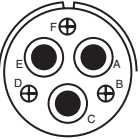
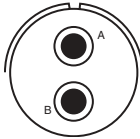
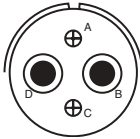
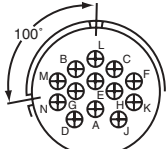


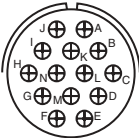
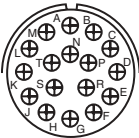
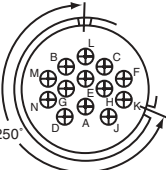
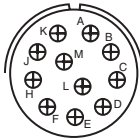
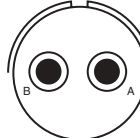
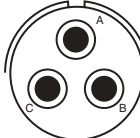


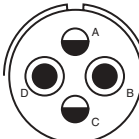
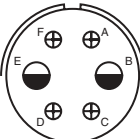
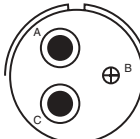
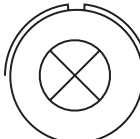
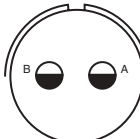
CONTACT LEGEND
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# MS/Standard contact arrangements

front face of pin insert or rear face of socket insert illustrated

|                    |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |
|--------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
|                    |  |  |  |  |  |  |
| Insert Arrangement | 20-20                                                                             | 20-21                                                                             | 20-22                                                                             | 20-23                                                                              | 20-24                                                                               | 20-25                                                                               |
| Service Rating     | A                                                                                 | A                                                                                 | A                                                                                 | A                                                                                  | A                                                                                   | Inst.                                                                               |
| Number of Contacts | 1 3                                                                               | 1 8                                                                               | 3 3                                                                               | 2                                                                                  | 2 2                                                                                 | 13                                                                                  |
| Contact Size       | 4 12                                                                              | 12 16                                                                             | 8 16                                                                              | 8                                                                                  | 8 16                                                                                | 16                                                                                  |

|                    |                                                                                   |                                                                                   |                                                                                    |                                                                                    |                                                                                     |                                                                                     |
|--------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
|                    |  |  |  |  |  |  |
| Insert Arrangement | 20-27                                                                             | 20-29                                                                             | 20-30                                                                              | 20-33                                                                              | 22-1                                                                                | 22-2                                                                                |
| Service Rating     | A                                                                                 | A                                                                                 | Inst.                                                                              | A                                                                                  | D                                                                                   | D                                                                                   |
| Number of Contacts | 14                                                                                | 17                                                                                | 13                                                                                 | 11                                                                                 | 2                                                                                   | 3                                                                                   |
| Contact Size       | 16                                                                                | 16                                                                                | 16                                                                                 | 16                                                                                 | 8                                                                                   | 8                                                                                   |

|                    |                                                                                     |                                                                                     |                                                                                      |                                                                                       |                                                                                       |
|--------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------|
|                    |  |  |  |  |  |
| Insert Arrangement | 22-4                                                                                | 22-5                                                                                | 22-6                                                                                 | 22-7                                                                                  | 22-8                                                                                  |
| Service Rating     | A                                                                                   | D                                                                                   | D                                                                                    | E                                                                                     | E                                                                                     |
| Number of Contacts | 2 2                                                                                 | 2 4                                                                                 | 2 1                                                                                  | 1                                                                                     | 2                                                                                     |
| Contact Size       | 8 12                                                                                | 12 16                                                                               | 8 16                                                                                 | 0                                                                                     | 12                                                                                    |

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CONTACT LEGEND

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# MS/Standard

## contact arrangements

front face of pin insert or rear face of socket insert illustrated

|                    |      |       |       |       |                       |
|--------------------|------|-------|-------|-------|-----------------------|
|                    |      |       |       |       |                       |
| Insert Arrangement | 22-9 | 22-10 | 22-11 | 22-12 | 22-13                 |
| Service Rating     | E    | E     | B     | D     | E = D; A, B, C, D = A |
| Number of Contacts | 3    | 4     | 2     | 2 3   | 4 1                   |
| Contact Size       | 12   | 16    | 16    | 8 16  | 12 16                 |

|                    |       |                          |       |                 |                                |
|--------------------|-------|--------------------------|-------|-----------------|--------------------------------|
|                    |       |                          |       |                 |                                |
| Insert Arrangement | 22-14 | 22-15                    | 22-16 | 22-17           | 22-18                          |
| Service Rating     | A     | D = E; A, B, C, E, F = A | A     | A = D; Bal. = A | A, B, F, G, H = D; C, D, E = A |
| Number of Contacts | 19    | 5 1                      | 3 6   | 1 8             | 8                              |
| Contact Size       | 16    | 12 16                    | 12 16 | 12 16           | 16                             |

|                    |       |       |       |       |                 |
|--------------------|-------|-------|-------|-------|-----------------|
|                    |       |       |       |       |                 |
| Insert Arrangement | 22-19 | 22-20 | 22-21 | 22-22 | 22-23           |
| Service Rating     | A     | A     | A     | A     | H = D; Bal. = A |
| Number of Contacts | 14    | 9     | 1 2   | 4     | 8               |
| Contact Size       | 16    | 16    | 0 16  | 8     | 12              |

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CONTACT LEGEND

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# MS/Standard contact arrangements

front face of pin insert or rear face of socket insert illustrated

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|--------------------|--------------------------|-----------------|-------|-----------------------------|------------------|
|                    |                          |                 |       |                             |                  |
| Insert Arrangement | 22-24                    | 22-27           | 22-28 | 22-33                       | 22-36            |
| Service Rating     | C, D, E = D; A, B, F = A | J = D; Bal. = A | A     | A, B, C, D = D; E, F, G = A | H = D; Bal. = A* |
| Number of Contacts | 2 4                      | 1 8             | 7     | 7                           | 8                |
| Contact Size       | 12 16                    | 8 16            | 12    | 16                          | 12               |

|                    |       |      |       |      |                       |
|--------------------|-------|------|-------|------|-----------------------|
|                    |       |      |       |      |                       |
| Insert Arrangement | 22-34 | 24-2 | 24-3  | 24-5 | 24-6                  |
| Service Rating     | D     | D    | D     | A    | A, G, H = D; Bal. = A |
| Number of Contacts | 3 2   | 7    | 2 5   | 16   | 8                     |
| Contact Size       | 12 16 | 12   | 12 16 | 16   | 12                    |

|                    |       |      |       |       |       |
|--------------------|-------|------|-------|-------|-------|
|                    |       |      |       |       |       |
| Insert Arrangement | 24-7  | 24-9 | 24-10 | 24-11 | 24-12 |
| Service Rating     | A     | A    | A     | A     | A     |
| Number of Contacts | 2 14  | 2    | 7     | 3 6   | 2 3   |
| Contact Size       | 12 16 | 4    | 8     | 8 12  | 4 12  |

\* A, C, E, G = Iron  
B, D, F, H = Constantan

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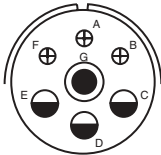
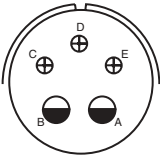
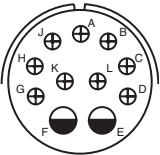
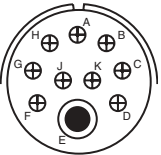
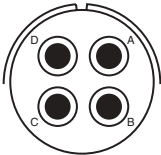
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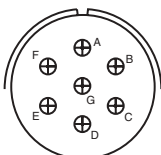
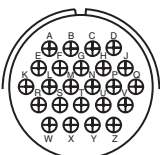
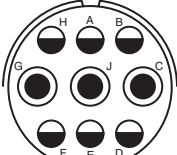
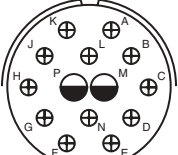
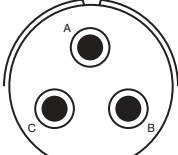
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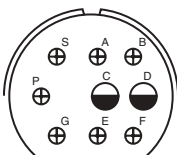
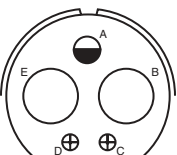
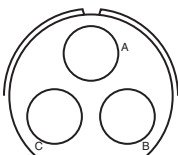
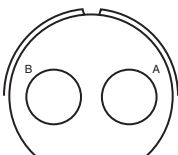
# MS/Standard

## contact arrangements

front face of pin insert or rear face of socket insert illustrated

|                    |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |
|--------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
|                    |  |  |  |  |  |
| Insert Arrangement | 24-16                                                                             | 24-17                                                                             | 24-20                                                                              | 24-21                                                                               | 24-22                                                                               |
| Service Rating     | A, B, F, G = D; C, D, E, = A                                                      | D                                                                                 | D                                                                                  | D                                                                                   | D                                                                                   |
| Number of Contacts | 1 3 3                                                                             | 2 3                                                                               | 2 9                                                                                | 1 9                                                                                 | 4                                                                                   |
| Contact Size       | 8 12 16                                                                           | 12 16                                                                             | 12 16                                                                              | 8 16                                                                                | 8                                                                                   |

|                    |                                                                                    |                                                                                    |                                                                                     |                                                                                      |                                                                                      |
|--------------------|------------------------------------------------------------------------------------|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------|
|                    |  |  |  |  |  |
| Insert Arrangement | 24-27                                                                              | 24-28                                                                              | 28-1                                                                                | 28-2                                                                                 | 28-3                                                                                 |
| Service Rating     | E                                                                                  | Inst.                                                                              | A, J, E = D; Bal. = A                                                               | D                                                                                    | E                                                                                    |
| Number of Contacts | 7                                                                                  | 24                                                                                 | 3 6                                                                                 | 2 12                                                                                 | 3                                                                                    |
| Contact Size       | 16                                                                                 | 16                                                                                 | 8 12                                                                                | 12 16                                                                                | 8                                                                                    |

|                    |                                                                                     |                                                                                     |                                                                                      |                                                                                       |
|--------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------|
|                    |  |  |  |  |
| Insert Arrangement | 28-4                                                                                | 28-5                                                                                | 28-6                                                                                 | 28-7                                                                                  |
| Service Rating     | G, P, S = E; Bal. = D                                                               | D                                                                                   | D                                                                                    | D                                                                                     |
| Number of Contacts | 2 7                                                                                 | 2 1 2                                                                               | 3                                                                                    | 2                                                                                     |
| Contact Size       | 12 16                                                                               | 4 12 16                                                                             | 4                                                                                    | 4                                                                                     |







CONTACT LEGEND

16

12

8

4

0

# MS/Standard contact arrangements

front face of pin insert or rear face of socket insert illustrated

|                    |                                |                                                  |                              |       |  |  |  |
|--------------------|--------------------------------|--------------------------------------------------|------------------------------|-------|--|--|--|
|                    |                                |                                                  |                              |       |  |  |  |
| Insert Arrangement | 28-8                           | 28-9                                             | 28-10                        | 28-11 |  |  |  |
| Service Rating     | L, M = E; B = D; Bal. = A      | D                                                | G = D; Bal. = A              | A     |  |  |  |
| Number of Contacts | 2 10                           | 6 6                                              | 2 2 3                        | 4 18  |  |  |  |
| Contact Size       | 12 16                          | 12 16                                            | 4 8 12                       | 12 16 |  |  |  |
|                    |                                |                                                  |                              |       |  |  |  |
| Insert Arrangement | 28-12                          | 28-13                                            | 28-15                        | 28-16 |  |  |  |
| Service Rating     | A                              | A                                                | A                            | A     |  |  |  |
| Number of Contacts | 26                             | 26                                               | 35                           | 20    |  |  |  |
| Contact Size       | 16                             | 16                                               | 16                           | 16    |  |  |  |
|                    |                                |                                                  |                              |       |  |  |  |
| Insert Arrangement | 28-17                          | 28-18                                            | 28-19                        |       |  |  |  |
| Service Rating     | R = B; M, N, P = D; A to L = A | M = C; G, H, J, K, L = D; A, B = A; Bal. = Inst. | H, M = B; A, B = D; Bal. = A |       |  |  |  |
| Number of Contacts | 15                             | 12                                               | 4 6                          |       |  |  |  |
| Contact Size       | 16                             | 16                                               | 12 16                        |       |  |  |  |

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CONTACT LEGEND

16

12

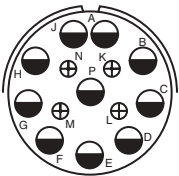
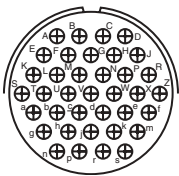
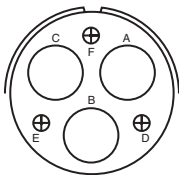
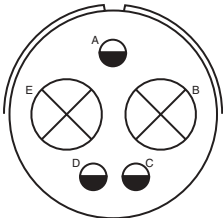
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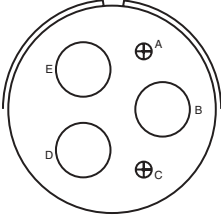
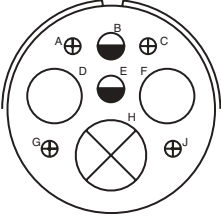
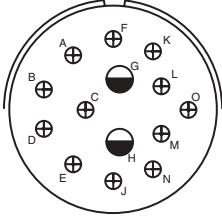
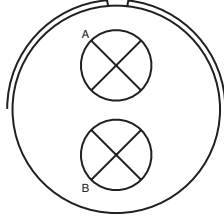
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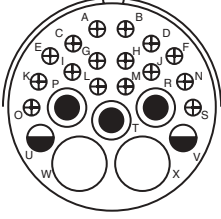
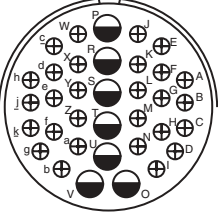
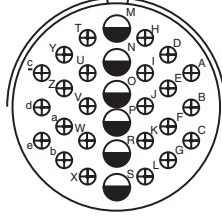
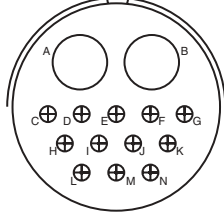
0

# MS/Standard contact arrangements

front face of pin insert or rear face of socket insert illustrated

|                    |                                                                                   |                                                                                   |                                                                                     |                                                                                     |
|--------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
|                    |  |  |  |  |
| Insert Arrangement | 28-20                                                                             | 28-21                                                                             | 28-22                                                                               | 32-1                                                                                |
| Service Rating     | A                                                                                 | A                                                                                 | D                                                                                   | A = E; B, C, D, E = D                                                               |
| Number of Contacts | 10 4                                                                              | 37                                                                                | 3 3                                                                                 | 2 3                                                                                 |
| Contact Size       | 12 16                                                                             | 16                                                                                | 4 16                                                                                | 0 12                                                                                |

|                    |                                                                                    |                                                                                    |                                                                                     |                                                                                      |
|--------------------|------------------------------------------------------------------------------------|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------|
|                    |  |  |  |  |
| Insert Arrangement | 32-2                                                                               | 32-3                                                                               | 32-4                                                                                | 32-5                                                                                 |
| Service Rating     | E                                                                                  | D                                                                                  | F, J, K, N = A; Bal. = D                                                            | D                                                                                    |
| Number of Contacts | 3 2                                                                                | 1 2 2 4                                                                            | 2 12                                                                                | 2                                                                                    |
| Contact Size       | 4 16                                                                               | 0 4 12 16                                                                          | 12 16                                                                               | 0                                                                                    |

|                    |                                                                                     |                                                                                     |                                                                                      |                                                                                       |
|--------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------|
|                    |  |  |  |  |
| Insert Arrangement | 32-6                                                                                | 32-7                                                                                | 32-8                                                                                 | 32-9                                                                                  |
| Service Rating     | A                                                                                   | A, B, h, j = Inst.; Bal. = A                                                        | A                                                                                    | D                                                                                     |
| Number of Contacts | 2 3 2 16                                                                            | 7 28                                                                                | 6 24                                                                                 | 2 12                                                                                  |
| Contact Size       | 4 8 12 16                                                                           | 12 16                                                                               | 12 16                                                                                | 4 16                                                                                  |







CONTACT LEGEND
16
12
8
4
0

# MS/Standard

## contact arrangements

front face of pin insert or rear face of socket insert illustrated

|                    |                                     |                             |       |       |
|--------------------|-------------------------------------|-----------------------------|-------|-------|
|                    |                                     |                             |       |       |
| Insert Arrangement | 32-10                               | 32-12                       | 32-13 | 32-15 |
| Service Rating     | A, F = E; G = B; B, E = D; C, D = A | C, D, E, F, G = A; Bal. = D | D     | D     |
| Number of Contacts | 2 2 3                               | 5 10                        | 5 18  | 2 6   |
| Contact Size       | 4 8 16                              | 12 16                       | 12 16 | 0 12  |

|                    |           |       |       |       |
|--------------------|-----------|-------|-------|-------|
|                    |           |       |       |       |
| Insert Arrangement | 32-16     | 32-17 | 32-22 | 36-1  |
| Service Rating     | A         | D     | A     | D     |
| Number of Contacts | 2 3 2 16  | 4     | 54    | 4 18  |
| Contact Size       | 4 8 12 16 | 4     | 16    | 12 16 |

|                    |      |                 |      |      |
|--------------------|------|-----------------|------|------|
|                    |      |                 |      |      |
| Insert Arrangement | 36-3 | 36-4            | 36-5 | 36-6 |
| Service Rating     | D    | A = D; B, C = A | A    | A    |
| Number of Contacts | 3 3  | 3               | 4    | 2 4  |
| Contact Size       | 0 12 | 0               | 0    | 0 4  |

CONTACT LEGEND

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16
12
8
4
0

# MS/Standard

## contact arrangements

front face of pin insert or rear face of socket insert illustrated

36-7

A

7 40

12 16

36-8

A

1 46

12 16

36-9

A

1 2 14 14

4 8 12 16

36-10

A

48

16

100° Rotation of 36-10

36-11

A

48

16

110° Rotation of 36-10

36-12

A

48

16

36-13

N, P, Q = E; Bal. = A

2 15

12 16

36-14

D

5 5 6

8 12 16

36-15

M = D; Bal. = A

35

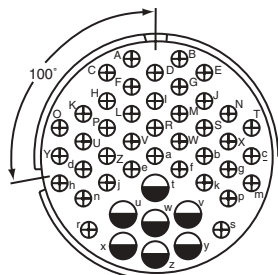
16

CONTACT LEGEND

16 12 8 4 0

# MS/Standard contact arrangements

front face of pin insert or rear face of socket insert illustrated



100° Rotation  
of 36-7

**36-16**

**Insert Arrangement**

**Service Rating**

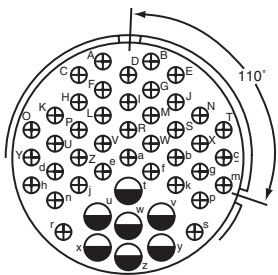
**A**

**Number of Contacts**

**7 40**

**Contact Size**

**12 16**



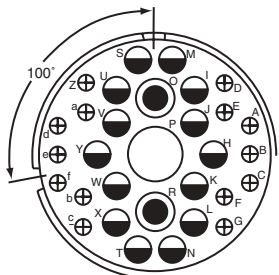
110° Rotation  
of 36-7

**36-17**

**A**

**7 40**

**12 16**



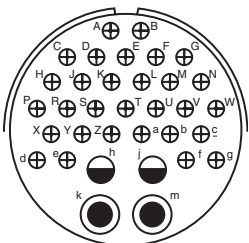
100° Rotation  
of 36-9

**36-18**

**A**

**1 2 14 14**

**4 8 12 16**



**36-20**

**Insert Arrangement**

**Service Rating**

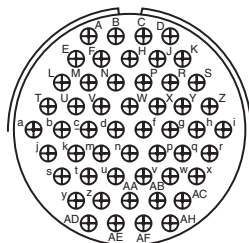
**A**

**Number of Contacts**

**2 2 30**

**Contact Size**

**8 12 16**

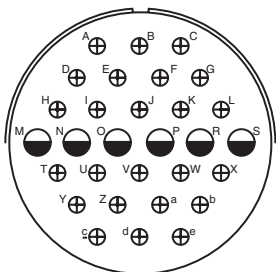


**36-52**

**A**

**52**

**16**

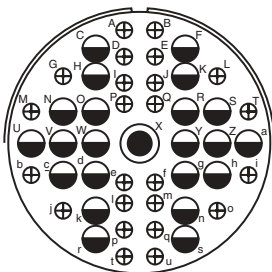


**40-1**

**D**

**6 24**

**12 16**



**40-9**

**Insert Arrangement**

**Service Rating**

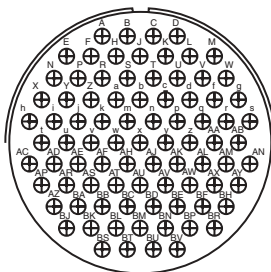
**A**

**Number of Contacts**

**1 22 24**

**Contact Size**

**8 12 16**

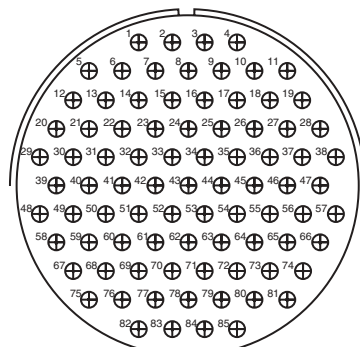


**40-56**

**A**

**85**

**16**



**48-62**

**D**

**85**

**16**



**CONTACT LEGEND**

**16**

**12**

**8**

**4**

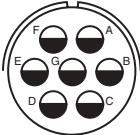
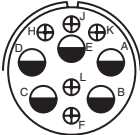
**0**

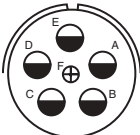
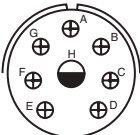
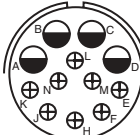
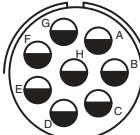
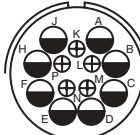
# Special contact arrangements

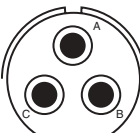
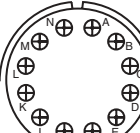
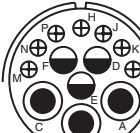
Requirements for more complex circuits prompted Amphenol to provide inserts not covered by the MS drawings. Illustrated here and on the following pages are insert layouts which have from one contact (high tension) to the 104 contact insert in shell size 44.

Many of these special inserts are also available in alternate keyway arrangements. Please contact Amphenol, Sidney, NY for additional information on special circuit application requirements.

front face of pin insert or rear face of socket insert illustrated

|                    |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |
|--------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
|                    |  |  |  |  |  |  |
| Insert Arrangement | 14S-A7                                                                            | 16-59                                                                             | 20-26                                                                             | 20-51                                                                              | 20-57                                                                               | 20-58                                                                               |
| Service Rating     | A                                                                                 | A                                                                                 | A                                                                                 | A                                                                                  | A                                                                                   | A                                                                                   |
| Number of Contacts | 7                                                                                 | 4                                                                                 | 19                                                                                | 3*                                                                                 | 7*                                                                                  | 5 5                                                                                 |
| Contact Size       | 16                                                                                | 12                                                                                | 16                                                                                | 8                                                                                  | 12 for #14 or 16 wire                                                               | 12 16                                                                               |

|                    |                                                                                    |                                                                                    |                                                                                    |                                                                                     |                                                                                      |                                                                                      |
|--------------------|------------------------------------------------------------------------------------|------------------------------------------------------------------------------------|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------|
|                    |  |  |  |  |  |  |
| Insert Arrangement | 20-59                                                                              | 20-66                                                                              | 20-79                                                                              | 22-63                                                                               | 22-65                                                                                | 22-70                                                                                |
| Service Rating     | A                                                                                  | A                                                                                  | H = D; Bal. = A                                                                    | A                                                                                   | H = D; Bal. = A                                                                      | A                                                                                    |
| Number of Contacts | 3*                                                                                 | 1 5                                                                                | 7* 1*                                                                              | 4 8                                                                                 | 8*                                                                                   | 8 5                                                                                  |
| Contact Size       | 8 for #10 or 12 wire                                                               | 16 12 for #10 wire                                                                 | 16 12 for #16 wire                                                                 | 12 16                                                                               | 12 for #14 or 16 wire                                                                | 12 16                                                                                |

|                    |                                                                                     |                                                                                     |                                                                                     |                                                                                      |                                                                                       |                                                                                       |
|--------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------|
|                    |  |  |  |  |  |  |
| Insert Arrangement | 22-80                                                                               | 24-19                                                                               | 24-51                                                                               | 24-52                                                                                | 24-53                                                                                 | 24-58                                                                                 |
| Service Rating     | A                                                                                   | A                                                                                   | A                                                                                   | Hi-Volt                                                                              | A                                                                                     | A                                                                                     |
| Number of Contacts | 3*                                                                                  | 12                                                                                  | 5*                                                                                  | 1                                                                                    | 5*                                                                                    | 3 3 7                                                                                 |
| Contact Size       | 8 for #10 or 12 wire                                                                | 16                                                                                  | B, E for AN #10 or 12 wire<br>A, C, D for AN #8 wire                                | 12                                                                                   | 8                                                                                     | 8 12 16                                                                               |

\* Solderless

CONTACT LEGEND

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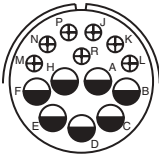
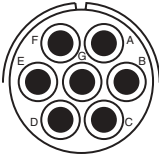
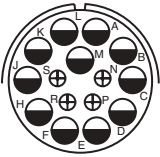
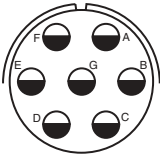
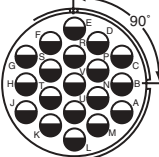
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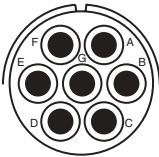
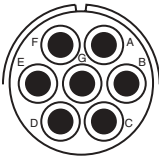
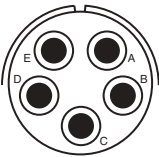
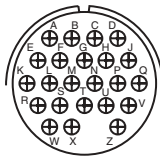
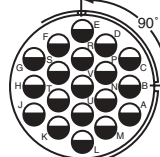
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# Special contact arrangements

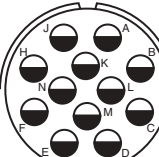
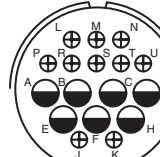
front face of pin insert or rear face of socket insert illustrated

|                    |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |
|--------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
|                    |  |  |  |  |  |
| Insert Arrangement | 24-59                                                                             | 24-60                                                                             | 24-65                                                                              | 24-66                                                                               | 24-67                                                                               |
| Service Rating     | A                                                                                 | A                                                                                 | A                                                                                  | D                                                                                   | Inst.                                                                               |
| Number of Contacts | 7 7                                                                               | 7*                                                                                | 11 4                                                                               | 7                                                                                   | 19                                                                                  |
| Contact Size       | 12 16                                                                             | 8 for #10 or 12 wire                                                              | 12 16                                                                              | 12                                                                                  | 12                                                                                  |

|                    |                                                                                    |                                                                                    |                                                                                     |                                                                                      |                                                                                      |
|--------------------|------------------------------------------------------------------------------------|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------|
|                    |  |  |  |  |  |
| Insert Arrangement | 24-71                                                                              | 24-75                                                                              | 24-79                                                                               | 24-80                                                                                | 24-84                                                                                |
| Service Rating     | A                                                                                  | A                                                                                  | A                                                                                   | Inst.                                                                                | A                                                                                    |
| Number of Contacts | 2* 5*                                                                              | 5 2                                                                                | 5                                                                                   | 23                                                                                   | 1 18                                                                                 |
| Contact Size       | 8 8 for #10 or 12 wire                                                             | 8 8 for #16 wire                                                                   | 8                                                                                   | 16                                                                                   | 12 12 (Coax) RG-188/U or RG-174/U                                                    |

|                    |                                                                                     |                                                                                     |                                                                                       |                                                                                       |
|--------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------|
|                    |  |  |  |  |
| Insert Arrangement | 24-96                                                                               | 24-AJ                                                                               | 28-51                                                                                 | 28-59                                                                                 |
| Service Rating     | Inst.                                                                               | A                                                                                   | A                                                                                     | A                                                                                     |
| Number of Contacts | 28                                                                                  | 25                                                                                  | 12                                                                                    | 7 10                                                                                  |
| Contact Size       | 16                                                                                  | 16                                                                                  | 12                                                                                    | 12 16                                                                                 |

\* Solderless

CONTACT LEGEND

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# Special contact arrangements

front face of pin insert or rear face of socket insert illustrated

|                    |       |                               |                               |                   |       |
|--------------------|-------|-------------------------------|-------------------------------|-------------------|-------|
|                    |       |                               |                               |                   |       |
| Insert Arrangement | 28-66 | 28-72                         | 28-74                         | 28-75             | 28-79 |
| Service Rating     | A     | —                             | A                             | A                 | A     |
| Number of Contacts | 2 14  | 3                             | 9* 4* 3*                      | 9* 7*             | 7 9   |
| Contact Size       | 8 12  | 4 (Coax) RG-59A/U or RG-62A/U | 16 8 8 for #10 wire (S, T, R) | 16 8 for #10 wire | 8 16  |

|                    |       |       |       |       |       |
|--------------------|-------|-------|-------|-------|-------|
|                    |       |       |       |       |       |
| Insert Arrangement | 28-82 | 28-84 | 28-AY | 32-14 | 32-25 |
| Service Rating     | D     | A     | A     | D     | A     |
| Number of Contacts | 2 4   | 9     | 4 5   | 13    | 25    |
| Contact Size       | 8 12  | 8     | 4 16  | 12    | 12    |

|                    |       |       |       |                        |
|--------------------|-------|-------|-------|------------------------|
|                    |       |       |       |                        |
| Insert Arrangement | 32-31 | 32-48 | 32-52 | 32-53                  |
| Service Rating     | A     | Inst. | D     | t, u = E; Bal. = Inst. |
| Number of Contacts | 31    | 48    | 6 2   | 5 37                   |
| Contact Size       | 16    | 16    | 12 0  | 12 16                  |

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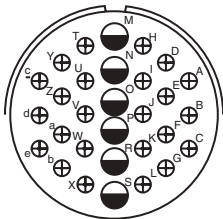
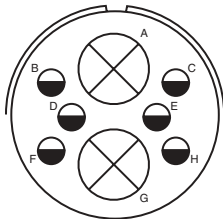
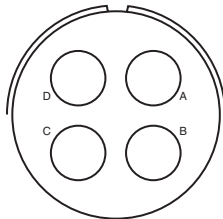
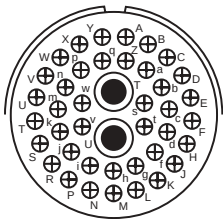
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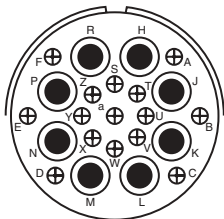
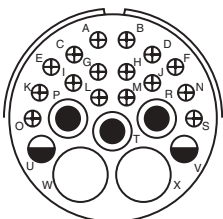
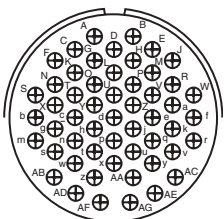
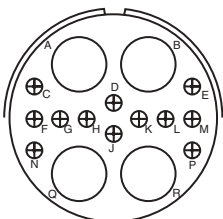
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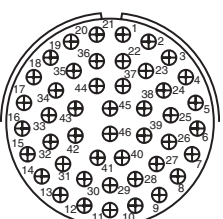
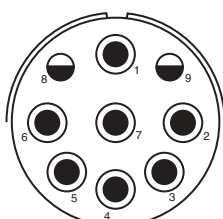
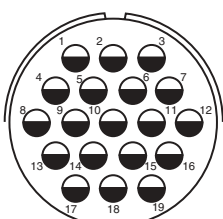
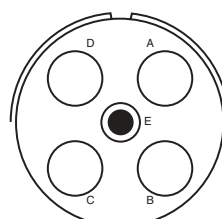
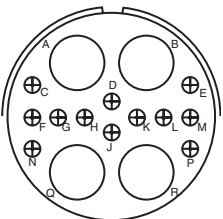
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# Special contact arrangements

front face of pin insert or rear face of socket insert illustrated

|                    |                                                                                   |                                                                                   |                                                                                    |                                                                                     |
|--------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
|                    |  |  |  |  |
| Insert Arrangement | 32-56                                                                             | 32-57                                                                             | 32-58                                                                              | 32-59                                                                               |
| Service Rating     | A                                                                                 | **                                                                                | –                                                                                  | A                                                                                   |
| Number of Contacts | 24 6                                                                              | 6 2                                                                               | 4                                                                                  | 40 2                                                                                |
| Contact Size       | 16 12 for #10 wire                                                                | 12 0 (Coax) RG-71/U                                                               | 4 (Coax) RG-161/U or RG-179/U                                                      | 16 8 (Coax) RG-161/U                                                                |

|                    |                                                                                    |                                                                                    |                                                                                      |                                                                                      |
|--------------------|------------------------------------------------------------------------------------|------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------|
|                    |  |  |  |  |
| Insert Arrangement | 32-60                                                                              | 32-62                                                                              | 32-64                                                                                | 32-68                                                                                |
| Service Rating     | A                                                                                  | **                                                                                 | Inst.                                                                                | A                                                                                    |
| Number of Contacts | 15 8                                                                               | 2 1 2 16 2                                                                         | 54                                                                                   | 12 4                                                                                 |
| Contact Size       | 16 8 (Coax) RG-124/U                                                               | 4 8 12 16 8 (Coax) RG-124/U                                                        | 16                                                                                   | 16 4 (Coax) RG-58C/U                                                                 |

|                    |                                                                                     |                                                                                     |                                                                                      |                                                                                       |                                                                                       |
|--------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------|
|                    |  |  |  |  |  |
| Insert Arrangement | 32-73                                                                               | 32-75                                                                               | 32-76                                                                                | 32-79                                                                                 | 32-82                                                                                 |
| Service Rating     | A                                                                                   | 8, 9 = D                                                                            | A                                                                                    | D                                                                                     | A                                                                                     |
| Number of Contacts | 46                                                                                  | 2 7                                                                                 | 19                                                                                   | 4 1                                                                                   | 4 12                                                                                  |
| Contact Size       | 16                                                                                  | 12 8 (Coax) RG-180B/U                                                               | 12                                                                                   | 4 8                                                                                   | 4 16                                                                                  |

\*\* Consult Amphenol, Sidney, NY for service rating of power contacts.

CONTACT LEGEND

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# Special contact arrangements

front face of pin insert or rear face of socket insert illustrated

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|--------------------|-------|-------|-------|-------|
|                    |       |       |       |       |
| Insert Arrangement | 32-AF | 36-22 | 36-51 | 36-54 |
| Service Rating     | A     | D     | D     | A     |
| Number of Contacts | 55    | 22    | 2 2   | 8 31  |
| Contact Size       | 16    | 12    | 0 4   | 8 16  |

|                    |                  |                    |                    |                                      |
|--------------------|------------------|--------------------|--------------------|--------------------------------------|
|                    |                  |                    |                    |                                      |
| Insert Arrangement | 36-55            | 36-59              | 36-60              | 36-64                                |
| Service Rating     | A                | A                  | **                 | —                                    |
| Number of Contacts | 31 8             | 50 3               | 40 7               | 4                                    |
| Contact Size       | 16 8 for #6 wire | 16 12 for #10 wire | 16 12 for #10 wire | 0 (Coax) RG-11/U, RG-12/U or RG-13/U |

|                    |                                      |       |                   |                      |
|--------------------|--------------------------------------|-------|-------------------|----------------------|
|                    |                                      |       |                   |                      |
| Insert Arrangement | 36-65                                | 36-71 | 36-73             | 36-74                |
| Service Rating     | —                                    | A     | —                 | A                    |
| Number of Contacts | 4                                    | 3 50  | 7                 | 43 1                 |
| Contact Size       | 0 (Coax) RG-59/U, RG-62/U or RG-71/U | 12 16 | 4 (Coax) RG-62B/U | 16 8 (Coax) RG-187/U |

\*\* Consult Amphenol, Sidney, NY for service rating of power contacts.

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# Special contact arrangements

front face of pin insert or rear face of socket insert illustrated

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|--------------------------------------------------------|-----------------|-----------------|------------------|-----------------|
|                                                        |                 |                 |                  |                 |
| Insert Arrangement                                     | 36-75           | 36-76           | 36-77            | 36-78           |
| Service Rating                                         | A               | A               | D                | A               |
| Number of Contacts                                     | 48              | 47              | 7                | 2 12            |
| Contact Size                                           | 16 for #14 wire | 16              | 4                | 16 8            |
|                                                        |                 |                 |                  |                 |
| Insert Arrangement                                     | 36-79           | 36-80           | 36-83            | 36-85           |
| Service Rating                                         | A               | A               | —                | M = D; Bal. = A |
| Number of Contacts                                     | 20              | 20              | 7                | 35              |
| Contact Size                                           | 12              | 12 for #10 wire | 4 (Coax) RG-58/U | 16 for #12 wire |
|                                                        |                 |                 |                  |                 |
| Insert Arrangement                                     | 36-97           | 36-99           | 36-AF            | 40-5            |
| Service Rating                                         | C               | D               | A                | A               |
| Number of Contacts                                     | 1               | 3 3 3 3         | 48               | 5               |
| Contact Size                                           | 4/0             | 4 8 12 16       | 16               | 0               |
| <div> </div> <div>CONTACT LEGEND 16 12 8 4 0 4/0</div> |                 |                 |                  |                 |

# Special contact arrangements

front face of pin insert or rear face of socket insert illustrated

|                    |        |       |       |       |
|--------------------|--------|-------|-------|-------|
|                    |        |       |       |       |
| Insert Arrangement | 40-10  | 40-30 | 40-35 | 40-53 |
| Service Rating     | A      | A     | D     | A     |
| Number of Contacts | 4 9 16 | 29 1  | 35    | 60    |
| Contact Size       | 4 8 16 | 12 4  | 12    | 16    |

|                    |       |         |       |
|--------------------|-------|---------|-------|
|                    |       |         |       |
| Insert Arrangement | 40-57 | 40-61   | 40-62 |
| Service Rating     | E     | A       | A     |
| Number of Contacts | 4     | 1 3 55  | 60    |
| Contact Size       | 0     | 8 12 16 | 16    |

|                    |                 |                         |                   |
|--------------------|-----------------|-------------------------|-------------------|
|                    |                 |                         |                   |
| Insert Arrangement | 40-63           | 40-64                   | 40-66             |
| Service Rating     | A               | -                       | -                 |
| Number of Contacts | 61              | 3 20 13                 | 4                 |
| Contact Size       | 16 for #14 wire | 12 16 8 (Coax) RG-124/U | 0 (Coax) RG-63B/U |

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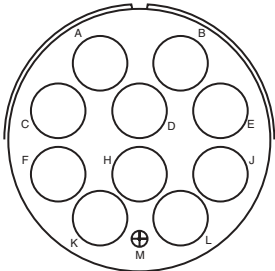
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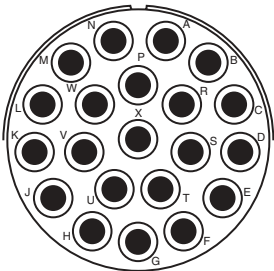
# Special contact arrangements

front face of pin insert or rear face of socket insert illustrated

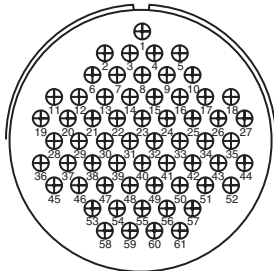
|                    |                     |
|--------------------|---------------------|
| Insert Arrangement | 40-67               |
| Service Rating     | A                   |
| Number of Contacts | 1 10                |
| Contact Size       | 16 4 (Coax) RG-59/U |



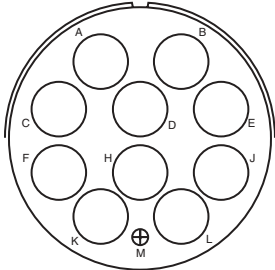
|       |
|-------|
| 40-68 |
| A     |
| 21    |
| 8     |



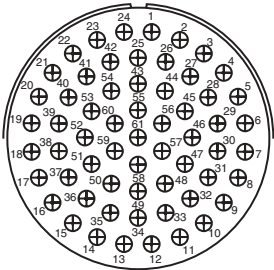
|       |
|-------|
| 40-70 |
| A     |
| 61    |
| 16    |



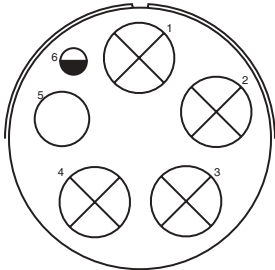
|                    |                     |
|--------------------|---------------------|
| Insert Arrangement | 40-72               |
| Service Rating     | A                   |
| Number of Contacts | 1 10                |
| Contact Size       | 16 4 (Coax) RG-9B/U |



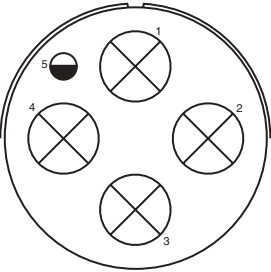
|       |
|-------|
| 40-73 |
| A     |
| 61    |
| 16    |



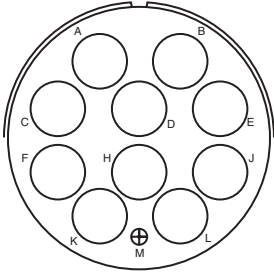
|                                                  |
|--------------------------------------------------|
| 40-74                                            |
| A                                                |
| 1 1 4                                            |
| 12 4 (Coax) RG-62/U 0 (Coax) RG-9B/U or RG-214/U |



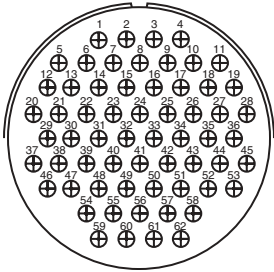
|                    |       |
|--------------------|-------|
| Insert Arrangement | 40-75 |
| Service Rating     | E     |
| Number of Contacts | 1 4   |
| Contact Size       | 12 0  |



|       |
|-------|
| 40-80 |
| A     |
| 1 10  |
| 16 4  |



|                 |
|-----------------|
| 40-81           |
| A               |
| 62              |
| 16 for #14 wire |



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# Special contact arrangements

front face of pin insert or rear face of socket insert illustrated

|                    |       |                 |                    |       |
|--------------------|-------|-----------------|--------------------|-------|
|                    |       |                 |                    |       |
| Insert Arrangement | 40-82 | 40-85           | 40-86              | 40-87 |
| Service Rating     | A     | A               | –                  | D     |
| Number of Contacts | 62    | 60              | 4                  | 7     |
| Contact Size       | 16    | 16 for #14 wire | 0 (Coax) RG-115A/U | 4     |

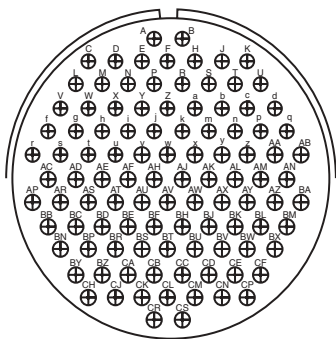
|                    |       |       |       |        |
|--------------------|-------|-------|-------|--------|
|                    |       |       |       |        |
| Insert Arrangement | 40-AD | 40-AG | 40-AP | 40-AR  |
| Service Rating     | A     | A     | E     | Inst.  |
| Number of Contacts | 4 4   | 38    | 2     | 7 3 3  |
| Contact Size       | 8 0   | 12    | 4/0   | 12 4 0 |

|                    |       |         |        |       |
|--------------------|-------|---------|--------|-------|
|                    |       |         |        |       |
| Insert Arrangement | 40-AS | 40-AT   | 40-AU  | 40-AV |
| Service Rating     | A     | A       | A      | D     |
| Number of Contacts | 15 25 | 24 18 1 | 3 10 1 | 3     |
| Contact Size       | 16 12 | 12 16 8 | 4 8 16 | 2/0   |

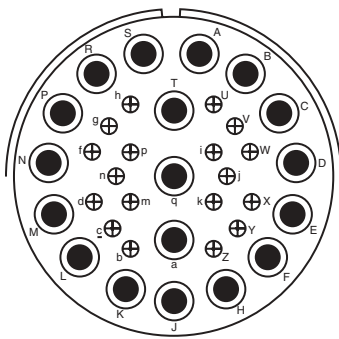
|                |    |    |   |   |   |     |     |
|----------------|----|----|---|---|---|-----|-----|
|                |    |    |   |   |   |     |     |
| CONTACT LEGEND | 16 | 12 | 8 | 4 | 0 | 2/0 | 4/0 |

# Special contact arrangements

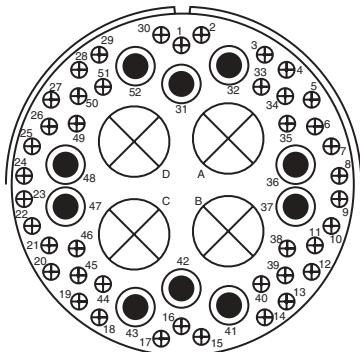
front face of pin insert or rear face of socket insert illustrated



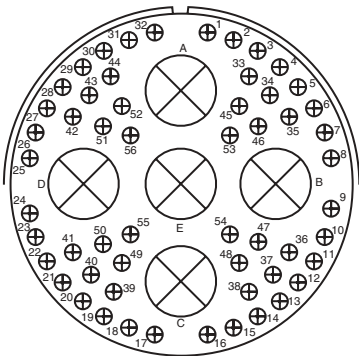
|                    |       |
|--------------------|-------|
| Insert Arrangement | 44-52 |
| Service Rating     | A     |
| Number of Contacts | 104   |
| Contact Size       | 16    |



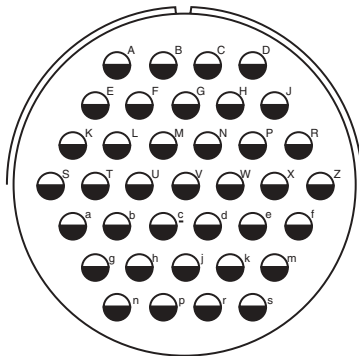
|                    |                      |
|--------------------|----------------------|
| Insert Arrangement | 44-53                |
| Service Rating     | A                    |
| Number of Contacts | 18 18                |
| Contact Size       | 16 8 (Coax) RG-124/U |



|                    |                       |
|--------------------|-----------------------|
| Insert Arrangement | 48-51                 |
| Service Rating     | A                     |
| Number of Contacts | 42 10 4               |
| Contact Size       | 16 8 0 (Coax) RG-41/U |



|                    |                     |
|--------------------|---------------------|
| Insert Arrangement | 48-52               |
| Service Rating     | A                   |
| Number of Contacts | 56 5                |
| Contact Size       | 16 0 (Coax) RG-41/U |



|                    |       |
|--------------------|-------|
| Insert Arrangement | 48-53 |
| Service Rating     | D     |
| Number of Contacts | 37    |
| Contact Size       | 12    |

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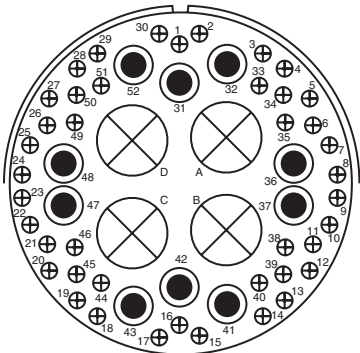
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# Special contact arrangements

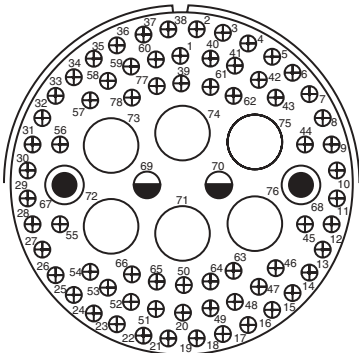
front face of pin insert or rear face of socket insert illustrated



48-54

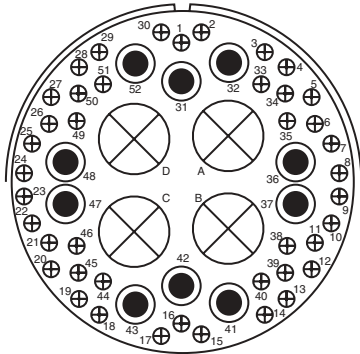
Insert Arrangement  
Service Rating  
Number of Contacts  
Contact Size

A  
42 10 4  
16 8 0 (Coax) RG-59/U



48-55

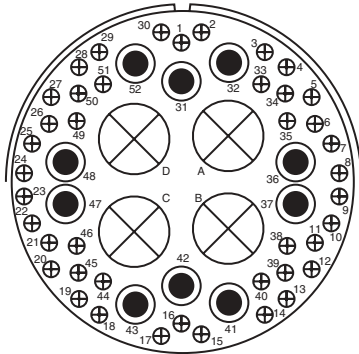
A  
68 2 2 6  
16 12 8 4



48-57

Insert Arrangement  
Service Rating  
Number of Contacts  
Contact Size

A  
42 10 4  
16 8 0



48-60

A  
42 10 4  
16 8 0 (Coax) RG-214/U



CONTACT LEGEND 16 12 8 4 0

# Thermocouple contact availability

A complete line of cylindrical connectors containing thermocouple insert arrangements is available. The contact layout for a particular arrangement will be found in either the MS/Standard contact arrangement section, pages 26-37, or the Special contact arrangement section, pages 38-48. All thermocouple contact layouts may contain either iron, alumel, chromel, constantan, standard (copper) or brass (dummy) contacts. See the thermocouple tabulations on the following pages.

The following abbreviations are used in the contact material column in the charts that follow. Also, thermocouple contacts are color coded as shown. (This identification is made by means of small dots of stain on the solder well end of the contact).

| Abbreviation | Material     | Color Code |
|--------------|--------------|------------|
| Ir.          | Iron         | Black      |
| Con.         | Constantan   | Yellow     |
| Cu.          | Copper Alloy | N/A        |
| Ch.          | Chromel      | White      |
| Al.          | Alumel       | Green      |
| Dummy        | Brass        | N/A        |

## WIRE WELL DATA

| Contact Size | Well Inside Dia.<br>+.004<br>-.002 | Well Depth<br>+.031<br>-.000 | Solder Well Barrel<br>Outside Dia. |
|--------------|------------------------------------|------------------------------|------------------------------------|
| 12           | .125                               | .250                         | .166 ±.003                         |
| 16           | .094                               | .188                         | .125 <sup>+.002</sup><br>-.004     |

## RECOMMENDED WIRE

|                      |                                        |
|----------------------|----------------------------------------|
| I Chromel - Alumel   | Use wire in accordance with MIL-W-5848 |
| II Iron - Constantan | Use wire in accordance with MIL-W-5845 |

# Thermocouple

## contact arrangements

| Shell Size and Arrg. | Similar to MS Arrg. | Total Contacts | Contact Size |    | Pin Insert Rotation C W | Contact Material                                |
|----------------------|---------------------|----------------|--------------|----|-------------------------|-------------------------------------------------|
|                      |                     |                | 12           | 16 |                         |                                                 |
| 10SL-51              | 10SL-4              | 2              |              | 2  | 45°                     | A = Ir.; B = Con.                               |
| 10SL-52              | 10SL-4              | 2              |              | 2  | 45°                     | A = Cu.; B = Con.                               |
| 10SL-53              | 10SL-4              | 2              |              | 2  | 45°                     | A = Al.; B = Ch.                                |
| 10SL-54              | 10SL-3              | 3              |              | 3  | None                    | A = Ir.; B = Con.; C = Cu.                      |
| 10SL-55              | 10SL-3              | 3              |              | 3  | None                    | A = Al.; B = Ch.; C = Cu.                       |
| 10SL-56              | 10SL-4              | 2              |              | 2  | None                    | A = Al.; B = Ch.                                |
| 10SL-57              | 10SL-4              | 2              |              | 2  | None                    | A = Ch.; B = Con.                               |
| 10SL-58              | 10SL-3              | 3              |              | 3  | None                    | A = Ch.; B = Al.; C = Cu.                       |
| 10SL-59              | 10SL-4              | 2              |              | 2  | None                    | A = Ch.; B = Al.                                |
| 10SL-60              | 10SL-4              | 2              |              | 2  | None                    | A = Ir.; B = Con.                               |
| 10SL-61              | 10SL-4              | 2              |              | 2  | None                    | A = Cu.; B = Con.                               |
| 10SL-62              | 10SL-3              | 3              |              | 3  | None                    | A = Cu.; B = Al.; C = Ir.                       |
| 10SL-63              | 10SL-3              | 3              |              | 3  | None                    | A, C = Con.; B = Ch.                            |
| 10SL-64              | 10SL-3              | 3              |              | 3  | None                    | A, C = Ch.; B = Al.                             |
|                      |                     |                |              |    |                         |                                                 |
| 12S-51               | 12S-3               | 2              |              | 2  | 315°                    | A = Ch.; B = Al.                                |
| 12S-54               | 12S-3               | 2              |              | 2  | 315°                    | A = Ir.; B = Con.                               |
| 12S-55               | 12S-3               | 2              |              | 2  | 45°                     | A = Cu.; B = Con.                               |
| 12S-56               | 12S-3               | 2              |              | 2  | None                    | A = Al.; B = Ch.                                |
| 12S-57               | 12S-3               | 2              |              | 2  | 60°                     | A = Ch.; B = Al.                                |
| 12S-58               | 12S-3               | 2              |              | 2  | 120°                    | A = Ir.; B = Con.                               |
| 12S-59               | 12S-3               | 2              |              | 2  | None                    | A = Ir.; B = Con.                               |
| 12S-60               | 12S-3               | 2              |              | 2  | None                    | A = Cu.; B = Con.                               |
| 12S-61               | 12S-3               | 2              |              | 2  | None                    | A = Ch.; B = Con.                               |
| 12S-62               | 12S-3               | 2              |              | 2  | None                    | A = Ch.; B = Al.                                |
|                      |                     |                |              |    |                         |                                                 |
| 14S-51               | 14S-9               | 2              |              | 2  | 90°                     | A = Al.; B = Ch.                                |
| 14S-52               | 14S-2               | 4              |              | 4  | 45°                     | A, B = Cu.; C = Al.; D = Ch.                    |
| 14S-53               | 14S-9               | 2              |              | 2  | 90°                     | A = Ir.; B = Con.                               |
| 14S-54               | 14S-6               | 6              |              | 6  | 45°                     | A, C, E = Ir.; B, D, F = Con.                   |
| 14S-55               | 14S-2               | 4              |              | 4  | 45°                     | A, C = Ir.; B, D = Con.                         |
| 14S-56               | 14S-2               | 4              |              | 4  | 45°                     | A = Ir.; B = Con.; C, D = Cu.                   |
| 14S-57               | 14S-2               | 4              |              | 4  | 45°                     | A, C = Al.; B, D = Ch.                          |
| 14S-58               | 14S-7               | 3              |              | 3  | 45°                     | A = Al.; B = Ch.; C = Cu.                       |
| 14S-59               | 14S-9               | 2              |              | 2  | 90°                     | A = Cu.; B = Con.                               |
| 14S-60               | 14S-9               | 2              |              | 2  | None                    | A = Al.; B = Ch.                                |
| 14S-61               | 14S-6               | 6              |              | 6  | 45°                     | A = Al.; B = Ch.; C = Ir.; D = Con.; E, F = Cu. |
| 14S-63               | 14S-6               | 6              |              | 6  | None                    | A, C = Al.; B, D = Ch.; E = Ir.; F = Con.       |
| 14S-64               | 14S-2               | 4              |              | 4  | None                    | A, C = Con.; B, D = Cu.                         |
| 14S-65               | 14S-6               | 6              |              | 6  | None                    | A, C, E = Cu.; B, D, F = Con.                   |
| 14S-67               | 14S-6               | 6              |              | 6  | None                    | A = Al.; B = Ch.; Balance = Cu.                 |
| 14S-68               | 14S-2               | 4              |              | 4  | 45°                     | A = Ch.; B = Con.; C, D = Cu.                   |
| 14S-69               | 14S-7               | 3              |              | 3  | None                    | A = Con.; B = Ch.; C = Cu.                      |
| 14S-70               | 14S-2               | 4              |              | 4  | None                    | A, D = Ch.; B, C = Al.                          |
| 14S-71               | 14S-2               | 4              |              | 4  | None                    | A, B, D = Cu.; C = Con.                         |
| 14S-72               | 14S-9               | 2              |              | 2  | None                    | A = Con.; B = Cu.                               |
| 14S-73               | 14S-2               | 4              |              | 4  | None                    | A, B = Cu.; C = Al.; D = Ch.                    |

# Thermocouple contact arrangements

| Shell<br>Size<br>and Arrg. | Similar<br>to<br>MS Arrg. | Total<br>Contacts | Contact<br>Size |    | Pin<br>Insert<br>Rotation<br>C W | Contact Material                                |
|----------------------------|---------------------------|-------------------|-----------------|----|----------------------------------|-------------------------------------------------|
|                            |                           |                   | 12              | 16 |                                  |                                                 |
| 14S-74                     | 14S-2                     | 4                 |                 | 4  | None                             | A, B = Ch.; C, D = Al.                          |
| 14S-75                     | 14S-2                     | 4                 |                 | 4  | None                             | A, B = Cu.; C, D = Con.                         |
| 14S-76                     | 14S-2                     | 4                 |                 | 4  | None                             | A, C = Al.; B, D = Ch.                          |
| 14S-77                     | 14S-2                     | 4                 |                 | 4  | None                             | A, D = Al.; B, C = Ch.                          |
| 14S-78                     | 14S-9                     | 2                 |                 | 2  | None                             | A = Ch.; B = Al.                                |
|                            |                           |                   |                 |    |                                  |                                                 |
| 16S-52                     | 16S-4                     | 2                 |                 | 2  | None                             | A = Ch.; B = Al.                                |
| 16S-54                     | 16S-1                     | 7                 |                 | 7  | None                             | A = Al.; B = Ch.; Balance = Cu.                 |
| 16S-55                     | 16S-1                     | 7                 |                 | 7  | None                             | A = Con.; Balance = Cu.                         |
|                            |                           |                   |                 |    |                                  |                                                 |
| 16-52                      | 16-11                     | 2                 | 2               |    | 90°                              | A = Al.; B = Ch.                                |
| 16-53                      | 16-9                      | 4                 | 2               | 2  | 70°                              | A = Al.; C = Ch.; B, D = Cu.                    |
| 16-55                      | 16-10                     | 3                 | 3               |    | 45°                              | A = Al.; B = Ch.; C = Cu.                       |
| 16-56                      | 16-13                     | 2                 | 2               |    | 90°                              | A = Con.; B = Cu.                               |
| 16-57                      | 16-10                     | 3                 | 3               |    | None                             | A = Al.; B = Cu.; C = Ch.                       |
| 16-58                      | 16-10                     | 3                 | 3               |    | None                             | A = Con.; B, C = Cu.                            |
| 16-60                      | 16-13                     | 2                 | 2               |    | None                             | A = Al.; B = Ch.                                |
| 16-62                      | 16-11                     | 2                 | 2               |    | None                             | A = Con.; B = Cu.                               |
|                            |                           |                   |                 |    |                                  |                                                 |
| 18-51                      | 18-12                     | 6                 |                 | 6  | None                             | A = Ir.; B, E = Con.; D = Cu.; C, F = Dummy     |
| 18-52                      | 18-11                     | 5                 | 5               |    | None                             | A = Ir.; B = Con.; C = Ch.; D = Al.; E = Dummy  |
| 18-53                      | 18-12                     | 6                 |                 | 6  | None                             | A, D = Ir.; B, E = Con.; C, F = Dummy           |
| 18-54                      | 18-15                     | 4                 | 4               |    | None                             | A, C = Al.; B, D = Ch.                          |
| 18-56                      | 18-1                      | 10                |                 | 10 | 45°                              | A, C, E, G, I = Ir.; B, D, F, H, J = Con.       |
| 18-57                      | 18-12                     | 6                 |                 | 6  | 45°                              | A, C, E = Al.; B, D, F = Ch.                    |
| 18-59                      | 18-12                     | 6                 |                 | 6  | 45°                              | A, C = Ir.; B, E, F = Con.; D = Cu.             |
| 18-60                      | 18-11                     | 5                 | 5               |    | 45°                              | A, D = Al.; B, C, = Ch.; E = Cu.                |
| 18-61                      | 18-12                     | 6                 |                 | 6  | None                             | A, C = Ir.; B, D = Con.; E = Ch.; F = Al.       |
| 18-62                      | 18-12                     | 6                 |                 | 6  | None                             | A, B, C = Ir.; D, E, F = Con.                   |
| 18-63                      | 18-15                     | 4                 | 4               |    | None                             | A, C = Con.; B, D = Cu.                         |
| 18-65                      | 18-12                     | 6                 |                 | 6  | None                             | A = Ir.; B = Con.; Balance = Cu.                |
| 18-66                      | 18-1                      | 10                |                 | 10 | None                             | A, C, E, G, I = Cu.; B, D, F, H, J = Con.       |
| 18-67                      | 18-12                     | 6                 |                 | 6  | None                             | A, C, E = Cu.; B, D, F = Con.                   |
| 18-68                      | 18-11                     | 5                 | 5               |    | None                             | A, D = Al.; B, C = Ch.; E = Cu.                 |
| 18-69                      | 18-1                      | 10                |                 | 10 | None                             | A = Al.; B = Ch.; Balance = Cu.                 |
| 18-70                      | 18-11                     | 5                 | 5               |    | None                             | A = Ir.; B = Con.; C = Ch.; D = Al.; E = Cu.    |
| 18-71                      | 18-15                     | 4                 | 4               |    | None                             | A = Con.; Balance = Cu.                         |
| 18-72                      | 18-15                     | 4                 | 4               |    | None                             | D = Con.; Balance = Cu.                         |
| 18-73                      | 18-9                      | 7                 | 2               | 5  | None                             | A = Al.; D = Ch.; Balance = Cu.                 |
| 18-74                      | 18-12                     | 6                 |                 | 6  | None                             | A = Ch.; B = Al.; D = Ir.; E = Cu.; C, F = Con. |
|                            |                           |                   |                 |    |                                  |                                                 |
| 20-52                      | 20-4                      | 4                 | 4               |    | 315°                             | A = Ir.; B = Con.; C = Ch.; D = Al.             |
| 20-56                      | 20-7                      | 8                 |                 | 8  | 45°                              | A, B, G, H = Ir.; C, D, E, F = Con.             |
| 20-60                      | 20-7                      | 8                 |                 | 8  | 45°                              | D = Ch.; E = Al.; Balance = Cu.                 |
| 20-61                      | 20-29                     | 17                |                 | 17 | 45°                              | A, B, M = Cu.; Balance = Con.                   |
| 20-62                      | 20-15                     | 7                 | 7               |    | 80°                              | A, C, E = Al.; B, D, F = Ch.; G = Cu.           |
| 20-64                      | 20-27                     | 14                |                 | 14 | None                             | A = Al.; C = Ch.; Balance = Cu.                 |

# Thermocouple

## contact arrangements

| Shell Size and Arrg. | Similar to MS Arrg. | Total Contacts | Contact Size |    | Pin Insert Rotation C W | Contact Material                                                                                            |
|----------------------|---------------------|----------------|--------------|----|-------------------------|-------------------------------------------------------------------------------------------------------------|
|                      |                     |                | 12           | 16 |                         |                                                                                                             |
| 20-65                | 20-27               | 14             |              | 14 | None                    | A, B, C, D, E, F, G = Ir.; H, I, J, K, L, M, N = Con.                                                       |
| 20-67                | 20-16               | 9              | 2            | 7  | None                    | H = Al.; I = Ch.; Balance = Cu.                                                                             |
| 20-68                | 20-7                | 8              |              | 8  | None                    | A, B, G, H = Con.; C, D, E, F = Cu.                                                                         |
| 20-69                | 20-27               | 14             |              | 14 | None                    | A, B, C, D, E, F, G = Cu.; H, I, J, K, L, M, N = Con.                                                       |
| 20-70                | 20-29               | 17             |              | 17 | None                    | A, C, E, G, J, L, N, R, T = Ir.; B, D, F, H, K, M, P, S = Con.                                              |
| 20-71                | 20-29               | 17             |              | 17 | None                    | S = Al.; R = Ch.; Balance = Cu.                                                                             |
| 20-74                | 20-29               | 17             |              | 17 | None                    | A, C, E, G, J, L, N, R = Ir.; B, D, F, H, K, M, P, S = Con.; T = Cu.                                        |
| 20-75                | 20-15               | 7              | 7            |    | None                    | G = Al.; Balance = Ch.                                                                                      |
| 20-77                | 20-16               | 9              | 2            | 7  | None                    | A = Con.; Balance = Std.                                                                                    |
| 20-80                | 20-27               | 14             |              | 14 | None                    | A, C, E, G, I, K, M = Cu.; B, D, F, H, J, L, N = Con.                                                       |
| 20-81                | 20-27               | 14             |              | 14 | None                    | A, C, E, G, I, K, M = Ch.; B, D, F, H, J, L, N = Al.                                                        |
| 20-82                | 20-29               | 17             |              | 17 | None                    | A, C, E, G, J, L, N, R = Al.; B, D, F, H, K, M, P, S = Ch.; T = Cu.                                         |
|                      |                     |                |              |    |                         |                                                                                                             |
| 22-36                | 22-23               | 8              | 8            |    | 347°                    | A, C, E, G = Ir.; B, D, F, H = Con.                                                                         |
| 22-57                | 22-14               | 19             |              | 19 | 45°                     | A, C, E, G, J, L, N, R = Ir.; B, D, F, H, K, M, P, S = Con.; T, U, V = Cu.                                  |
| 22-60                | 22-14               | 19             |              | 19 | 45°                     | U = Al.; N = Ch.; Balance = Cu.                                                                             |
| 22-62                | 22-23               | 8              | 8            |    | 60°                     | A, B, F, G = Al.; C, D, E, H = Ch.                                                                          |
| 22-68                | 22-19               | 14             |              | 14 | 45°                     | A, C, E, G, J, L, M = Ir.; B, D, F, H, K, P, N = Con.                                                       |
| 22-69                | 22-19               | 14             |              | 14 | 45°                     | A, C, E, G, J, L, M = Cu.; B, D, F, H, K, P, N = Con.                                                       |
| 22-71                | 22-14               | 19             |              | 19 | None                    | V = Al.; U = Ch.; Balance = Cu.                                                                             |
| 22-72                | 22-5                | 6              | 2            | 4  | None                    | B = Al.; E = Ch.; Balance = Cu.                                                                             |
| 22-73                | 22-5                | 6              | 2            | 4  | None                    | E = Al.; B = Ch.; Balance = Cu.                                                                             |
| 22-74                | 22-23               | 8              | 8            |    | None                    | A, C, E, G = Ir.; B, D, F, H = Con.                                                                         |
| 22-75                | 22-23               | 8              | 8            |    | None                    | A = Al.; B, D, G, H = Cu.; C = Ch.; E = Ir.; F = Con.                                                       |
| 22-76                |                     | 21             |              | 21 | None                    | W = Con.; Balance = Cu.                                                                                     |
| 22-77                | 22-19               | 14             |              | 14 | None                    | B, D, F, H, J, K, M, P = Cu.; A, E, L = Ir.; C, G, N = Con.                                                 |
| 22-78                | 22-14               | 19             |              | 19 | None                    | A, C, E, G, H, K, M, P, R, T = Con.; Balance = Cu.                                                          |
| 22-79                | 22-10               | 4              |              | 4  | None                    | A, C, = Con.; B, D = Cu.                                                                                    |
|                      |                     |                |              |    |                         |                                                                                                             |
| 24-56                | 24-20               | 11             | 2            | 9  | 45°                     | E = Al.; F = Ch.; Balance = Cu.                                                                             |
| 24-57                | 24-28               | 24             |              | 24 | 45°                     | A, C, J, V, Y, W, K, E, H, U, S, M = Ch.; Balance = Al.                                                     |
| 24-62                | 24-28               | 24             |              | 24 | None                    | A, C, E, G = Ir.; B, D, F, H = Con.; R, T = Ch.; S, U = Al.; Balance = Cu.                                  |
| 24-63                | 24-28               | 24             |              | 24 | None                    | A, C, E, G, J, L, K, N, S, U, W, Y = Cu.; B, D, F, H, Q, R, M, P, T, V, X, Z = Con.                         |
| 24-64                | 24-5                | 16             |              | 16 | None                    | A, B, C, D, E, F, G, H = Ir.; J, K, L, M, N, P, R, S = Con.                                                 |
| 24-68                | 24-28               | 24             |              | 24 | None                    | D = Con.; Balance = Cu.                                                                                     |
| 24-81                | 24-7                | 16             | 2            | 14 | None                    | A, C, E, G, I, K, M, N, P = Cu.; B, D, F, H, J, L, O = Con.                                                 |
|                      |                     |                |              |    |                         |                                                                                                             |
| 28-53                | 28-11               | 22             | 4            | 18 | 45°                     | J, L = Al.; K, M = Ch.; Balance = Cu.                                                                       |
| 28-58                | 28-20               | 14             | 10           | 4  | 45°                     | A, C, E, G, K, M = Al.; B, D, F, H, L, N = Ch.; J, P = Cu.                                                  |
| 28-61                | 28-21               | 37             |              | 37 | 45°                     | A, C, J, Z, m, r, n, a, K, F, H, X, k, h, T, M, N, d = Ir.; Balance = Con.                                  |
| 28-63                | 28-20               | 14             | 10           | 4  | 45°                     | A, C, E, G, J = Al.; B, D, F, H, P = Ch.; Balance = Cu.                                                     |
| 28-64                | 28-15               | 35             |              | 35 | None                    | A, d = Al.; B, j = Ch.; C, D, E, F, G, N, P, R, S, H, J, K, L, M, W, X, Y, Z = Con.; Balance = Cu.          |
| 28-65                | 28-12               | 26             |              | 26 | None                    | A, C, E, G, J, L, N, R, T, V = Ir.; X, Z = Al.; B, D, F, H, K, M, P, S, U, W = Con.; Y, a = Ch.; b, d = Cu. |
| 28-67                | 28-16               | 20             |              | 20 | None                    | U = Con.; Balance = Cu.                                                                                     |
| 28-68                | 28-15               | 35             |              | 35 | 45°                     | T = Al.; U = Ch.; Balance = Cu.                                                                             |

# Thermocouple contact arrangements

[illegible]

\* Amphenol arrangement