

## Amphenol

### MS/Standard MIL-C-5015 Style Connectors

ADS-5015-02



Amphenol Daeshin

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# Amphenol

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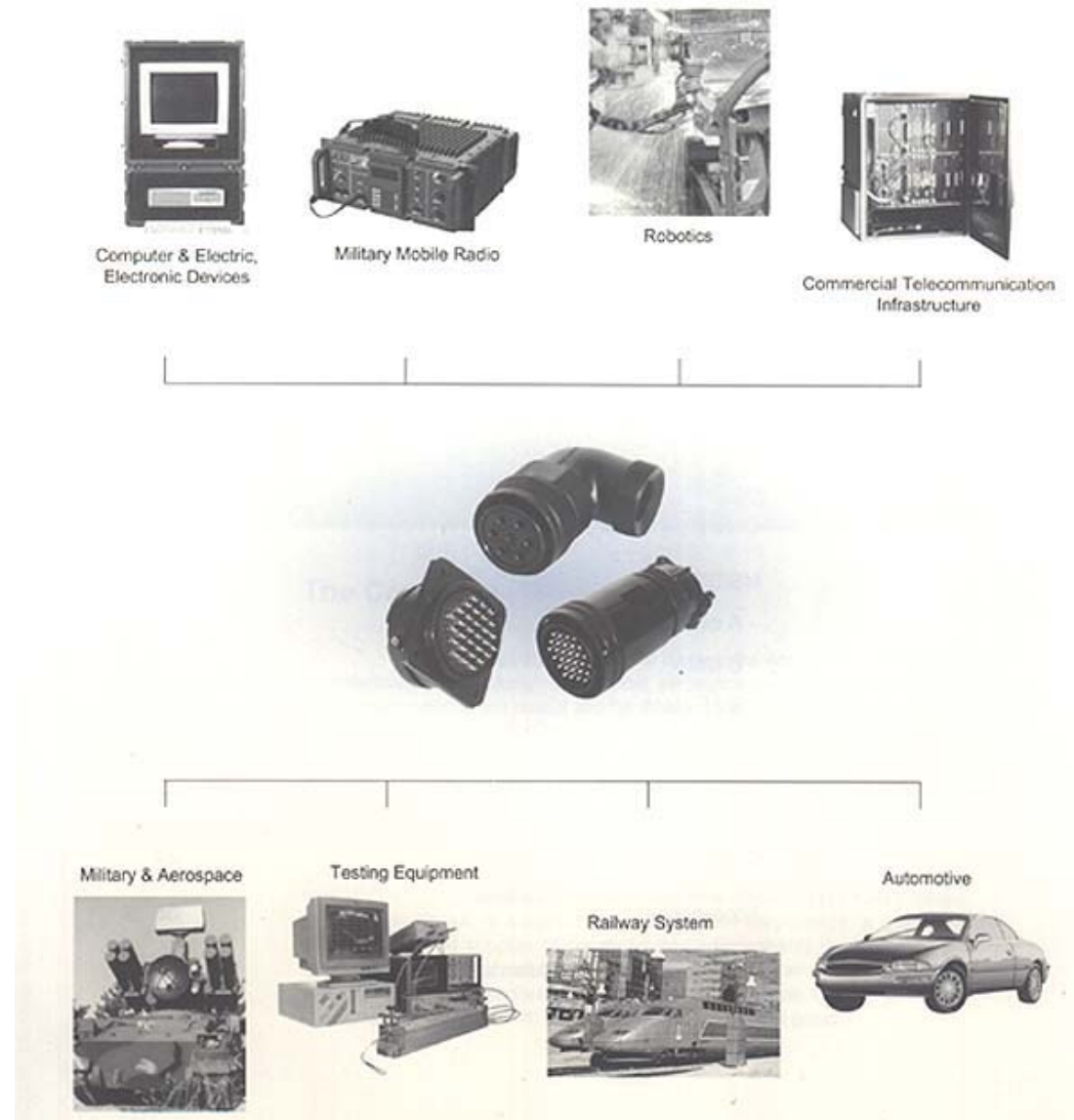
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## Amphenol MIL-C-5015 connectors

Solution to



## Amphenol MIL-C-5015 Connectors

### Basic Construction

Amphenol MIL-C-5015 connectors meet the latest performance requirements of MIL-C-5015. These connectors represent well-proven electrical capability at an acceptable cost for most equipment where durability is important. MIL-C-5015 features threaded coupling & single key & keyway polarization representing maximum simplicity in design. Applications include industrial machines, military ground support equipment, ordnance & shipboard installation. Amphenol MIL-C-5015 connectors are available in classes A, B, E/F, R, and also offers a range of pre-earth connectors. Therefore, you will always find the right connector in Amphenol, with us, for conditions & performance requirements you may have.

### Specification

#### Materials & Finish

|           | Materials                             | Finish                                        |
|-----------|---------------------------------------|-----------------------------------------------|
| Shell     | Aluminum alloy                        | Olive drab chromate coating over Zinc plating |
| Contact   | Brass or copper alloy                 | Silver plate                                  |
| Insulator | Plastic or Resilient Synthetic Rubber | –                                             |

#### Characteristics

|                       |                                   |
|-----------------------|-----------------------------------|
| Insulation resistance | 5,000Mega ohms minimum (at 25° C) |
| Temperature range     | –55° C to 125° C                  |

**Durability**

500 Cycle connection/disconnection

| Dielectric with standing voltage |                         |                   |       | Contact engagement and separation forces |                                     |                                             |                                     |
|----------------------------------|-------------------------|-------------------|-------|------------------------------------------|-------------------------------------|---------------------------------------------|-------------------------------------|
| Service rating                   | Test voltage<br>AC(rms) | Operating voltage |       | Contact mating end size                  | Minimum separation force<br>(ounce) | Maximum average engagement force<br>(ounce) | Maximum engagement force<br>(ounce) |
|                                  |                         | AC                | DC    |                                          |                                     |                                             |                                     |
| Inst.                            | 1,000                   | 200               | 250   | #16                                      | 2                                   | 24                                          | 30                                  |
| A                                | 2,000                   | 500               | 700   | #12                                      | 3                                   | 24                                          | 30                                  |
| D                                | 2,800                   | 900               | 1,250 | #8                                       | 5                                   | —                                           | 160                                 |
| E                                | 3,500                   | 1,250             | 1,750 | #4                                       | 10                                  | —                                           | 240                                 |
| B                                | 4,500                   | 1,750             | 2,450 | #0                                       | 15                                  | —                                           | 320                                 |
| C                                | 7,000                   | 3,000             | 4,200 |                                          |                                     |                                             |                                     |

| Contact size |                   |                  | Rated current<br>(Mated with insulators) | Contact resistance   |                           | Wire range accommodations |                                                |                                 |
|--------------|-------------------|------------------|------------------------------------------|----------------------|---------------------------|---------------------------|------------------------------------------------|---------------------------------|
| Size         | Pin Contact diam. | Solder pot diam. |                                          | Test current<br>DC A | Potential drop(MAX)<br>mV | A.W.G                     | Wire normal square size<br>( mm <sup>2</sup> ) | Dielectric material outer diam. |
| #16          | 1.6               | 1.9              | 13A                                      | 13A                  | 49                        | #20~#16                   | ≤1.3                                           | 1.7~3.3                         |
| #12          | 2.4               | 3.0              | 23A                                      | 23A                  | 42                        | #14~#12                   | ≤ 3.5                                          | 2.9~4.3                         |
| #8           | 3.6               | 5.4              | 46A                                      | 46A                  | 26                        | #10~#8                    | ≤ 8.0                                          | 4.2~6.4                         |
| #4           | 5.7               | 8.4              | 80A                                      | 80A                  | 23                        | #6~#4                     | ≤ 22.0                                         | 7.0~9.4                         |

|    |     |      |      |      |    |       |        |           |
|----|-----|------|------|------|----|-------|--------|-----------|
| #0 | 9.1 | 12.2 | 150A | 150A | 21 | #2~#0 | ≤ 50.0 | 10.6~14.0 |
|----|-----|------|------|------|----|-------|--------|-----------|



# Amphenol MIL-C-5015 Connectors

## Ordering Information

| Connector Series                    | Shell / Class                      |                                           |
|-------------------------------------|------------------------------------|-------------------------------------------|
| MS                                  | 3100                               | A                                         |
| Series Designation                  | Shell Style                        | Service Class                             |
| MS – Amphenol MIL-C-5015 STANDARD   | 3100 – Wall Mounting Receptacle    | A – General purpose, Solid Endbell        |
| DS – Amphenol MIL-C-5015 Europe use | 3101 – Cable Connecting Receptacle | B – General purpose, Split Endbell        |
| DL – Amphenol MIL-C-5015Pre-earth   | 3102 – Box Mounting Receptacle     | E – Environmental resisting               |
| mating function                     | 3106 – Straight Plug               | with grommet seal                         |
|                                     | 3108 – Right Angle Plug            | & strain relief backshell                 |
|                                     |                                    | F – Environmental resisting               |
|                                     |                                    | with grommet seal                         |
|                                     |                                    | & strain relief backshell                 |
|                                     |                                    | 3106F and 3018E style                     |
|                                     |                                    | include a front ‘O’ ring seal             |
|                                     |                                    | R – Environmental resisting               |
|                                     |                                    | with grommet seal,                        |
|                                     |                                    | light weight and shorter overall length   |
|                                     |                                    | 3106R style include a front ‘O’ ring seal |

| Insert Arrangement / Contact Type |                    |                   |                       | Deviations                  |                      |
|-----------------------------------|--------------------|-------------------|-----------------------|-----------------------------|----------------------|
| 18                                | 1                  | S                 | W                     | XXX                         |                      |
| Shell Size                        | Insert Arrangement | Contact Type      | Alternate Positioning | Deviation I, Plating        | Deviation II         |
| 10SL,12S,12,14S                   | See Page 41-42     | P – Pin (+), male | No suffix-Nomal       | No suffix – Olive Drab Zinc | No Suffix – Standard |
| 14,16S,16,18,20,                  |                    | S – Socket (-),   | W,X,Y,Z – See         | CD – Cadimium               | K – Japan Use,       |
| 22,24,28,32,36                    |                    | female            | Page 41-42            | 621 – Black Zinc            | Plastic Insert       |
|                                   |                    |                   |                       | 689 – Electro-less Nickel   | KR – Japan Use,      |
|                                   |                    |                   |                       | 426 – Electro-less Nickel   | Rubber Insert        |
|                                   |                    |                   |                       | & Gold Flash Contact        |                      |
|                                   |                    |                   |                       | Others – Consult Amphenol   |                      |

## Accessories

| Series                                             | Type                                                            | Size           |
|----------------------------------------------------|-----------------------------------------------------------------|----------------|
| MS                                                 | 25042                                                           | 10             |
| Series Designation                                 | Type                                                            | Size           |
| MS – Amphenol MIL-C-5015 STANDARD                  | 25042 – Protection Cap, 3106, 3108 Shell Style Plug             | See Page 37-40 |
| DS – Amphenol MIL-C-5015 Europe use                | 25043 – Protection Cap, 3100, 3101, 3102 Shell Style Receptacle |                |
|                                                    | 3057 – Cable Clamp                                              |                |
|                                                    | 3420 – Telescoping Bushing                                      |                |
|                                                    | BMA31 – Gasket                                                  |                |
| DL – Amphenol MIL-C-5015 Pre-earth mating function | 3057 – Cable Clamp                                              |                |
|                                                    | 3420 – Telescoping Bushing                                      |                |
|                                                    | BMA31 – Gasket                                                  |                |

## Typical Mating Guide



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Amphenol MIL-C-5015 connectors

MS/DS Series

'A' class



**Wall Mounting Receptacle**



**Cable Connecting Receptacle**

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

#### Shells:

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

#### Contacts:

Pins and sockets are machined from copper alloy with silver plated finish.

Size 16 and 12 socket contacts incorporate a closed entry design.

#### Inserts:

Inserts are resilient synthetic rubber, offering high dielectric strength, high arc resistance arc resistance to vibration.

Proprietary design permits pressurization of either pin or socket insert.



Box Mounting Receptacle



Straight Plug



Right Angle Plug

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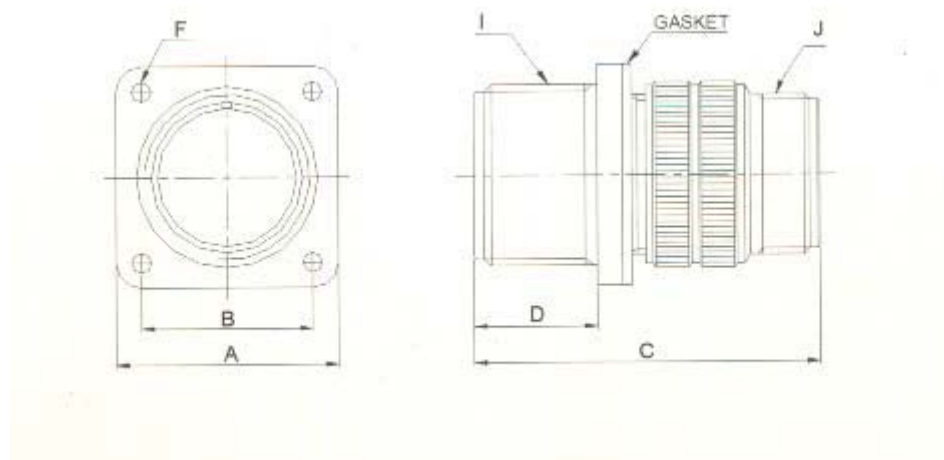
## Amphenol MIL-C-5015 connectors

'A' class Dimension

Wall Mounting Receptacle

Solid Endbell

**MS3100A**



MS3100A wall mounting receptacles are used with the MS3057 cable clamp or with conduit to eliminate need for the conduit box in applications where wires are carried thru walls or bulkheads.

(mm)

| Shell<br>Size | f A<br>± 0.79 | f B<br>±0.12 | C Max | D<br>+0.79<br>-0.00 | ØF<br>+0.25<br>-0.12 | I<br>Thread-2A | J<br>Thread-2A |
|---------------|---------------|--------------|-------|---------------------|----------------------|----------------|----------------|
| 10SL          | 25.40         | 18.26        | 38.88 | 14.28               | 3.05                 | 5/8-24 UNEF    | 5/8-24 UNEF    |
| 12S           | 27.79         | 20.62        | 42.87 | 14.28               | 3.05                 | 3/4-20 UNEF    | 5/8-24 UNEF    |
| 12            | 27.79         | 20.62        | 52.37 | 19.05               | 3.05                 | 3/4-20 UNEF    | 5/8-24 UNEF    |
| 14S           | 30.18         | 23.01        | 42.87 | 14.28               | 3.05                 | 7/8-20 UNEF    | 3/4-20 UNEF    |
| 14            | 30.18         | 23.01        | 52.37 | 19.05               | 3.05                 | 7/8-20 UNEF    | 3/4-20 UNEF    |
| 16S           | 32.54         | 24.61        | 42.87 | 14.28               | 3.05                 | 1-20 UNEF      | 7/8-20 UNEF    |
| 16            | 32.54         | 24.61        | 52.37 | 19.05               | 3.05                 | 1-20 UNEF      | 7/8-20 UNEF    |

|    |       |       |       |       |      |               |                |
|----|-------|-------|-------|-------|------|---------------|----------------|
| 18 | 34.93 | 26.97 | 52.37 | 19.05 | 3.05 | 1 1/8-18 UNEF | 1-20 UNEF      |
| 20 | 38.10 | 29.36 | 55.57 | 19.05 | 3.05 | 1 1/4-18 UNEF | 1 3/16-18 UNEF |
| 22 | 41.28 | 31.75 | 55.57 | 19.05 | 3.05 | 1 3/8-18 UNEF | 1 3/16-18 UNEF |
| 24 | 44.45 | 34.93 | 58.72 | 20.63 | 3.73 | 1 1/2-18 UNEF | 1 7/16-18 UNEF |
| 28 | 50.80 | 39.67 | 58.72 | 20.63 | 3.73 | 1 3/4-18 UNEF | 1 7/16-18 UNEF |
| 32 | 57.15 | 44.45 | 61.92 | 22.23 | 4.39 | 2-18 UNS      | 1 3/4-18 UNS   |
| 36 | 63.50 | 49.23 | 61.92 | 22.23 | 4.39 | 2 1/4-16 UN   | 2-18 UNS       |



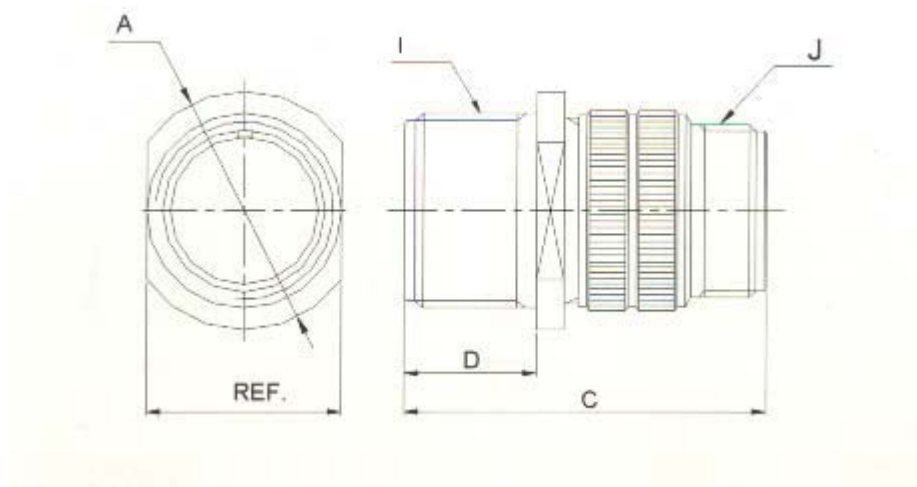
## Amphenol MIL-C-5015 connectors

'A' class Dimension

Cable Connecting Receptacle

Solid Endbell

**MS3101A**



MS3101A solid endbell cable connecting receptacles are used for cable extension requirements where mounting provisions are unnecessary. (mm)

| Shell Size | ØA Max | C Max | D<br>+0.79<br>-0.00 | I<br>Thread-2A | J<br>Thread-2A |
|------------|--------|-------|---------------------|----------------|----------------|
| 10SL       | 24.61  | 38.88 | 14.28               | 5/8-24 UNEF    | 5/8-24 UNEF    |
| 12S        | 26.97  | 42.87 | 14.28               | 3/4-20 UNEF    | 5/8-24 UNEF    |
| 12         | 26.97  | 52.37 | 19.05               | 3/4-20 UNEF    | 5/8-24 UNEF    |
| 14S        | 29.36  | 42.87 | 14.28               | 7/8-20 UNEF    | 3/4-20 UNEF    |
| 14         | 29.36  | 52.37 | 19.05               | 7/8-20 UNEF    | 3/4-20 UNEF    |
| 16S        | 31.75  | 42.87 | 14.28               | 1-20 UNEF      | 7/8-20 UNEF    |
| 16         | 31.75  | 52.37 | 19.05               | 1-20 UNEF      | 7/8-20 UNEF    |
| 18         | 34.13  | 52.37 | 19.05               | 1 1/8-18 UNEF  | 1-20 UNEF      |
| 20         | 37.31  | 55.57 | 19.05               | 1 1/4-18 UNEF  | 1 3/16-18 UNEF |

|    |       |       |       |               |                |
|----|-------|-------|-------|---------------|----------------|
| 22 | 40.48 | 55.57 | 19.05 | 1 3/8-18 UNEF | 1 3/16-18 UNEF |
| 24 | 43.66 | 58.72 | 20.63 | 1 1/2-18 UNEF | 1 7/16-18 UNEF |
| 28 | 50.01 | 58.72 | 20.63 | 1 3/4-18 UNEF | 1 7/16-18 UNEF |
| 32 | 56.36 | 61.92 | 22.23 | 2-18 UNS      | 1 3/4-18 UNS   |
| 36 | 62.71 | 61.92 | 22.23 | 2 1/4-16 UN   | 2-18 UNS       |

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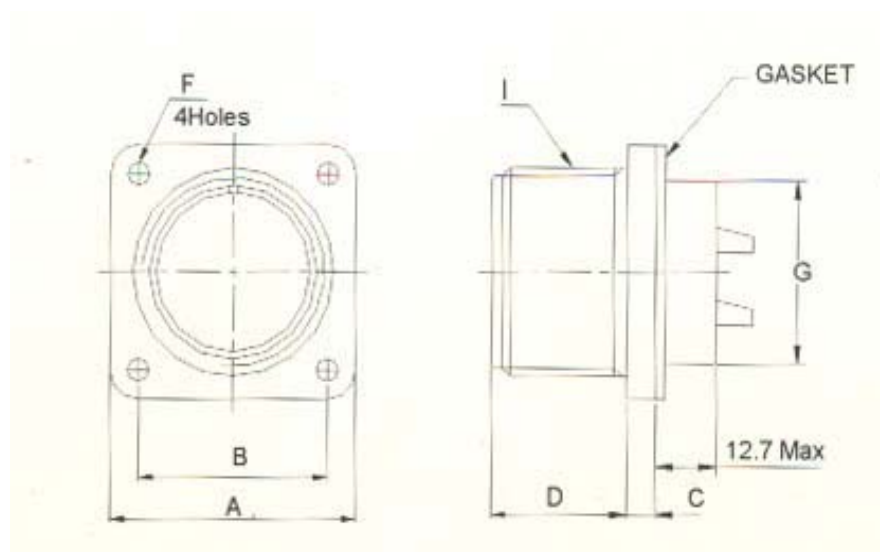
## Amphenol MIL-C-5015 connectors

### 'A' class Dimension

Box Mounting Receptacle

(Available with Plastic or Rubber insulators)

MS3102A



MS3102A box mounting receptacles are used on boxes and equipment cases where no cable support is required.

(mm)

| Shell<br>Size | f A<br>± 0.79 | f B<br>±0.12 | C<br>± 0.3 | D<br>+0.79<br>-0.00 | ØF<br>+0.25<br>-0.12 | ØG<br>Max | I<br>Thread-2A |
|---------------|---------------|--------------|------------|---------------------|----------------------|-----------|----------------|
| 10SL          | 25.40         | 18.26        | 3.0        | 14.28               | 3.05                 | 16.0      | 5/8-24 UNEF    |
| 12S           | 27.79         | 20.62        | 3.0        | 14.28               | 3.05                 | 16.5      | 3/4-20 UNEF    |
| 12            | 27.79         | 20.62        | 3.0        | 19.05               | 3.05                 | 16.5      | 3/4-20 UNEF    |
| 14S           | 30.18         | 23.01        | 3.0        | 14.28               | 3.05                 | 20.0      | 7/8-20 UNEF    |
| 14            | 30.18         | 23.01        | 3.0        | 19.05               | 3.05                 | 20.0      | 7/8-20 UNEF    |
| 16S           | 32.54         | 24.61        | 3.0        | 14.28               | 3.05                 | 23.0      | 1-20 UNEF      |
| 16            | 32.54         | 24.61        | 3.0        | 19.05               | 3.05                 | 23.0      | 1-20 UNEF      |
| 18            | 34.93         | 26.97        | 4.0        | 19.05               | 3.05                 | 26.0      | 1 1/8-18 UNEF  |
| 20            | 38.10         | 29.36        | 4.0        | 19.05               | 3.05                 | 29.0      | 1 1/4-18 UNEF  |
| 22            | 41.28         | 31.75        | 4.0        | 19.05               | 3.05                 | 32.5      | 1 3/8-18 UNEF  |
| 24            | 44.45         | 34.93        | 4.0        | 20.63               | 3.73                 | 35.5      | 1 1/2-18 UNEF  |
| 28            | 50.80         | 39.67        | 4.0        | 20.63               | 3.73                 | 42.0      | 1 3/4-18 UNEF  |
| 32            | 57.15         | 44.45        | 4.0        | 20.63               | 4.39                 | 48.0      | 2-18 UNS       |
| 36            | 63.50         | 49.23        | 4.0        | 20.63               | 4.39                 | 54.5      | 2 1/4-16 UN    |

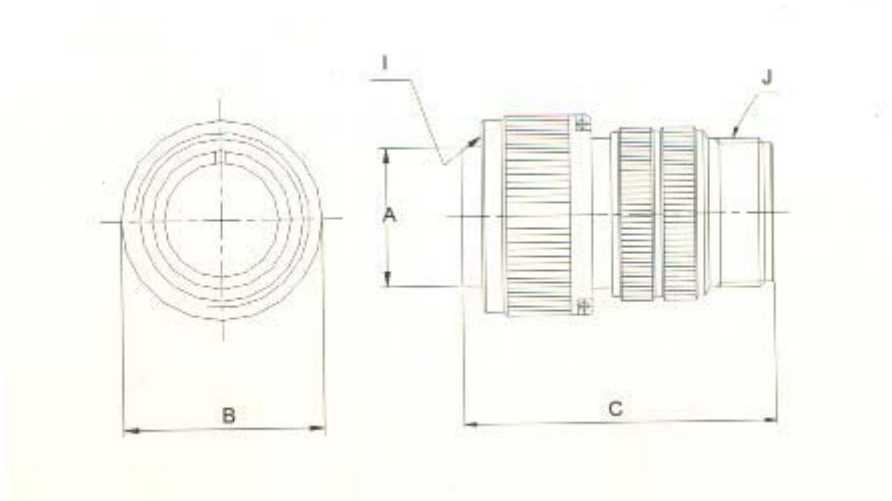
Amphenol MIL-C-5015 connectors

'A' class Dimension

Straight Plug

Solid Endbell

MS3106A



MS3106A straight plugs are used with 3100,3101 and 3102 receptacles.

(mm)

| Shell<br>Size | ØA<br>+0.00<br>-0.38 | ØB<br>Max | C<br>Max | I<br>Thread-2B | J<br>Thread-2A |
|---------------|----------------------|-----------|----------|----------------|----------------|
| 10SL          | 25.40                | 18.26     | 38.88    | 5/8-24 UNEF    | 5/8-24 UNEF    |
| 12S           | 27.79                | 20.62     | 42.87    | 3/4-20 UNEF    | 5/8-24 UNEF    |
| 12            | 27.79                | 20.62     | 52.37    | 3/4-20 UNEF    | 5/8-24 UNEF    |

|     |       |       |       |               |                |
|-----|-------|-------|-------|---------------|----------------|
| 14S | 30.18 | 23.01 | 42.87 | 7/8-20 UNEF   | 3/4-20 UNEF    |
| 14  | 30.18 | 23.01 | 52.37 | 7/8-20 UNEF   | 3/4-20 UNEF    |
| 16S | 32.54 | 24.61 | 42.87 | 1-20 UNEF     | 7/8-20 UNEF    |
| 16  | 32.54 | 24.61 | 52.37 | 1-20 UNEF     | 7/8-20 UNEF    |
| 18  | 34.93 | 26.97 | 52.37 | 1 1/8-18 UNEF | 1-20 UNEF      |
| 20  | 38.10 | 29.36 | 55.57 | 1 1/4-18 UNEF | 1 3/16-18 UNEF |
| 22  | 41.28 | 31.75 | 55.57 | 1 3/8-18 UNEF | 1 3/16-18 UNEF |
| 24  | 44.45 | 34.93 | 58.72 | 1 1/2-18 UNEF | 1 7/16-18 UNEF |
| 28  | 50.80 | 39.67 | 58.72 | 1 3/4-18 UNEF | 1 7/16-18 UNEF |
| 32  | 57.15 | 44.45 | 61.92 | 2-18 UNS      | 1 3/4-18 UNS   |
| 36  | 63.50 | 49.23 | 61.92 | 2 1/4-16 UN   | 2-18 UNS       |

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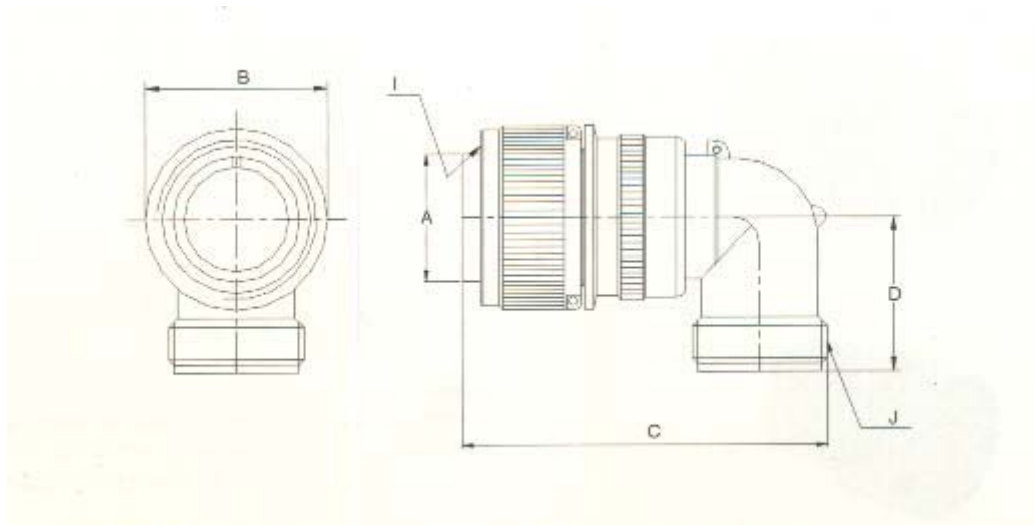
## Amphenol MIL-C-5015 connectors

'A' class Dimension

Right Angle Plug

Solid Endbell

**MS3108A**



MS3108A Right Angle plugs, have a solid endbell and are used where wire must be brought at an abrupt angle. Either the split or solid endbells on the 3108 are capable of being rotated and locked.

(mm)

| Shell<br>Size | ØA<br>+0.00<br>-0.38 | ØB<br>Max | C<br>Max | D<br>Max | I<br>Thread-2B | J<br>Thread-2A |
|---------------|----------------------|-----------|----------|----------|----------------|----------------|
| 10SL          | 11.33                | 24.61     | 46.02    | 25.4     | 5/8-24 UNEF    | 5/8-24 UNEF    |
| 12S*          | 14.10                | 26.97     | 50.80    | 26.9     | 3/4-20 UNEF    | 5/8-24 UNEF    |
| 12            | 14.10                | 26.97     | 57.15    | 26.9     | 3/4-20 UNEF    | 5/8-24 UNEF    |
| 14S           | 17.15                | 29.36     | 53.97    | 28.5     | 7/8-20 UNEF    | 3/4-20 UNEF    |
| 14            | 17.15                | 29.36     | 58.72    | 28.5     | 7/8-20 UNEF    | 3/4-20 UNEF    |
| 16S           | 20.45                | 31.75     | 60.32    | 30.1     | 1-20 UNEF      | 7/8-20 UNEF    |
| 16            | 20.45                | 31.75     | 65.07    | 30.1     | 1-20 UNEF      | 7/8-20 UNEF    |

|    |       |       |        |      |               |                |
|----|-------|-------|--------|------|---------------|----------------|
| 18 | 23.62 | 34.13 | 68.27  | 33.3 | 1 1/8-18 UNEF | 1-20 UNEF      |
| 20 | 26.67 | 37.71 | 76.98  | 34.9 | 1 1/4-18 UNEF | 1 3/16-18 UNEF |
| 22 | 29.85 | 40.48 | 76.98  | 34.9 | 1 3/8-18 UNEF | 1 3/16-18 UNEF |
| 24 | 33.02 | 43.66 | 86.51  | 39.6 | 1 1/2-18 UNEF | 1 7/16-18 UNEF |
| 28 | 38.61 | 50.01 | 86.51  | 39.6 | 1 3/4-18 UNEF | 1 7/16-18 UNEF |
| 32 | 44.96 | 56.36 | 95.25  | 47.6 | 2-18 UNS      | 1 3/4-18 UNS   |
| 36 | 50.29 | 62.71 | 100.02 | 52.3 | 2 1/4-16 UN   | 2-18 UNS       |

\*No Tooling

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[Amphenol MIL-C-5015 connectors](#)

[MS/DS Series](#)

['B' class](#)



**Cable Connecting Receptacle**



**Straight Plug**

MS-B class connector is a general duty standard cylindrical connector. It is a widely used for the automotive, machine tool & welding industries, as well as numerous other commercial applications, where mechanical forces and physical parameters are not subject to extreme or rapid environmental changes. UL, approved

#### Shells:

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

#### Contacts:

Pins and sockets are machined from copper alloy with silver plated finish. Size 16 and 12 socket contacts incorporate a closed entry design.

#### Inserts:

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



Right Angle Plug

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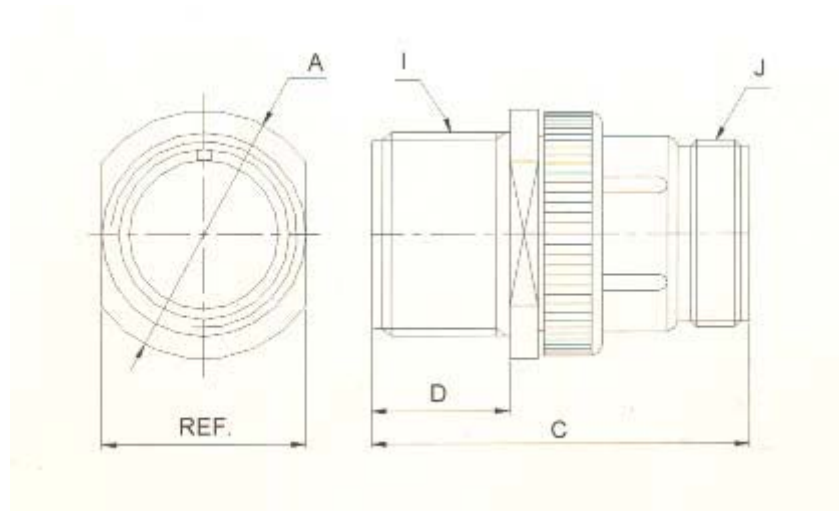
## Amphenol MIL-C-5015 connectors

'B' class Dimension

[Cable Connecting Receptacle](#)

[Split Endbell](#)

**[MS3101B](#)**



MS3101B split endbell cable connecting receptacles are used for cable extension requirements where mounting provisions are unnecessary.

(mm)

| Shell Size | ØA Max | C Max | D<br>+0.79<br>-0.00 | I<br>Thread-2A | J<br>Thread-2A |
|------------|--------|-------|---------------------|----------------|----------------|
| 10SL       | 24.61  | 38.88 | 14.28               | 5/8-24<br>UNEF | 5/8-24 UNEF    |
| 12S*       | 26.97  | 42.87 | 14.28               | 3/4-20 UNEF    | 5/8-24 UNEF    |
| 12*        | 26.97  | 52.37 | 19.05               | 3/4-20 UNEF    | 5/8-24 UNEF    |
| 14S        | 29.36  | 42.87 | 14.28               | 7/8-20 UNEF    | 3/4-20 UNEF    |
| 14         | 29.36  | 52.37 | 19.05               | 7/8-20 UNEF    | 3/4-20 UNEF    |
| 16S        | 31.75  | 42.87 | 14.28               | 1-20 UNEF      | 7/8-20 UNEF    |
| 16         | 31.75  | 52.37 | 19.05               | 1-20 UNEF      | 7/8-20 UNEF    |

|    |       |       |       |               |                |
|----|-------|-------|-------|---------------|----------------|
| 18 | 34.13 | 52.37 | 19.05 | 1 1/8-18 UNEF | 1-20 UNEF      |
| 20 | 37.31 | 55.57 | 19.05 | 1 1/4-18 UNEF | 1 3/16-18 UNEF |
| 22 | 40.48 | 55.57 | 19.05 | 1 3/8-18 UNEF | 1 3/16-18 UNEF |
| 24 | 43.66 | 58.72 | 20.63 | 1 1/2-18 UNEF | 1 7/16-18 UNEF |
| 28 | 50.01 | 58.72 | 20.63 | 1 3/4-18 UNEF | 1 7/16-18 UNEF |
| 32 | 56.36 | 61.92 | 22.23 | 2-18 UNS      | 1 3/4-18 UNS   |
| 36 | 62.71 | 61.92 | 22.23 | 2 1/4-16 UN   | 2-18 UNS       |

\*No Tooling



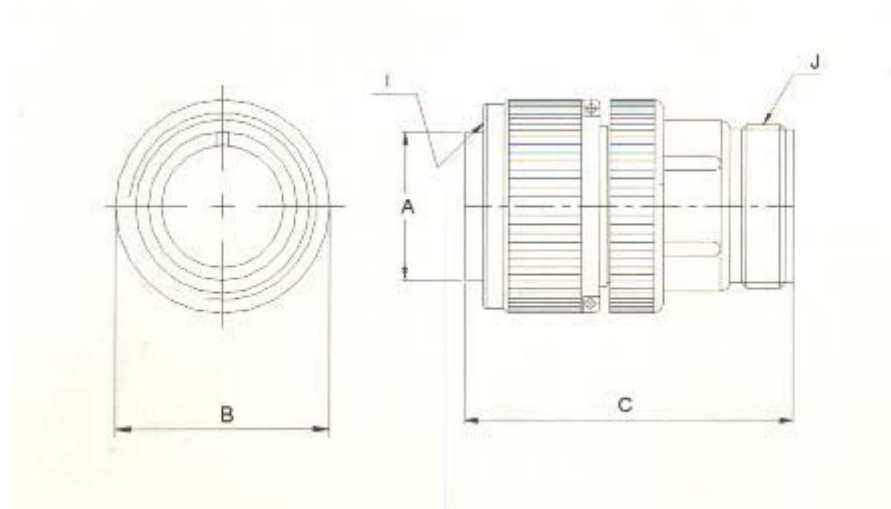
## Amphenol MIL-C-5015 connectors

'B' class Dimension

Straight Plug

Split Endbel

**MS3106B**



MS3106B straight plugs with split endbell are used with 3100,3101 and 3102 receptacles.

(mm)

| Shell Size | ØA<br>+0.00<br>-0.38 | ØB<br>Max | C<br>Max | I<br>Thread-2B | J<br>Thread-2A |
|------------|----------------------|-----------|----------|----------------|----------------|
| 10SL       | 11.33                | 24.61     | 38.88    | 5/8-24 UNEF    | 5/8-24 UNEF    |
| 12S*       | 14.10                | 26.97     | 42.87    | 3/4-20 UNEF    | 5/8-24 UNEF    |
| 12*        | 14.10                | 26.97     | 52.37    | 3/4-20 UNEF    | 5/8-24 UNEF    |
| 14S        | 17.15                | 29.36     | 42.87    | 7/8-20 UNEF    | 3/4-20 UNEF    |
| 14         | 17.15                | 29.36     | 52.37    | 7/8-20 UNEF    | 3/4-20 UNEF    |
| 16S        | 20.45                | 31.75     | 42.87    | 1-20 UNEF      | 7/8-20 UNEF    |
| 16         | 20.45                | 31.75     | 52.37    | 1-20 UNEF      | 7/8-20 UNEF    |
| 18         | 23.62                | 34.13     | 52.37    | 1 1/8-18 UNEF  | 1-20 UNEF      |
| 20         | 26.67                | 37.31     | 55.57    | 1 1/4-18 UNEF  | 1 3/16-18 UNEF |

|    |       |       |       |               |                |
|----|-------|-------|-------|---------------|----------------|
| 22 | 29.85 | 40.48 | 55.57 | 1 3/8-18 UNEF | 1 3/16-18 UNEF |
| 24 | 33.02 | 43.66 | 58.72 | 1 1/2-18 UNEF | 1 7/16-18 UNEF |
| 28 | 38.61 | 50.01 | 58.72 | 1 3/4-18 UNEF | 1 7/16-18 UNEF |
| 32 | 44.96 | 56.36 | 61.92 | 2-18 UNS      | 1 3/4-18 UNS   |
| 36 | 50.29 | 62.71 | 61.92 | 2 1/4-16 UN   | 2-18 UNS       |

\*No Tooling



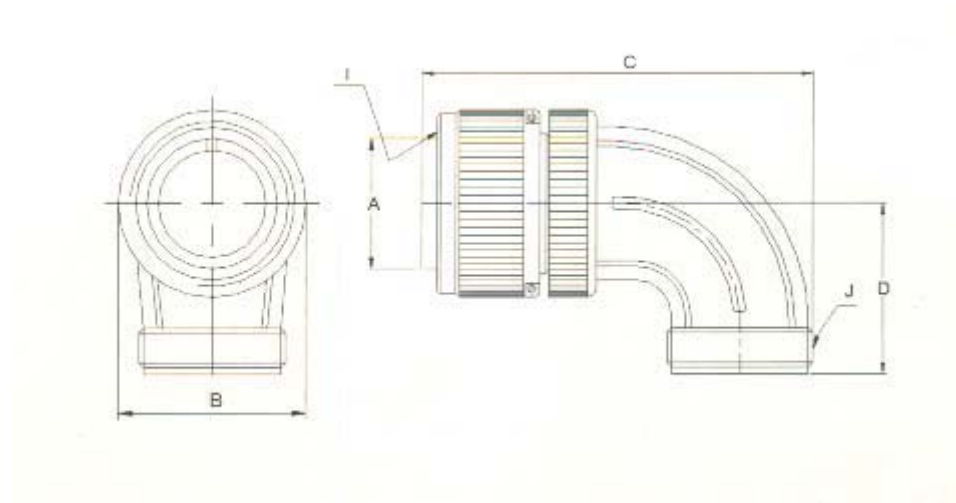
## Amphenol MIL-C-5015 connectors

'B' class Dimension

Right Angle Plug

Split Endbel

**MS3108B**



MS3108B Right angle plugs, have a split endbell and are used where wires must be brought at an abrupt angle.

Either the split or solid endbells on the 3108 are capable of being rotated and

locked.

(mm)

| Shell<br>Size | ØA<br>+0.00<br>-0.38 | ØB<br>Max | C<br>Max | D<br>Max | I<br>Thread-2B | J<br>Thread-2A |
|---------------|----------------------|-----------|----------|----------|----------------|----------------|
| 10SL          | 11.33                | 24.61     | 46.02    | 25.4     | 5/8-24 UNEF    | 5/8-24 UNEF    |
| 12S*          | 14.10                | 26.97     | 50.80    | 26.9     | 3/4-20 UNEF    | 5/8-24 UNEF    |
| 12*           | 14.10                | 26.97     | 57.15    | 26.9     | 3/4-20 UNEF    | 5/8-24 UNEF    |
| 14S           | 17.15                | 29.36     | 53.97    | 28.5     | 7/8-20 UNEF    | 3/4-20 UNEF    |
| 14            | 17.15                | 29.36     | 58.72    | 28.5     | 7/8-20 UNEF    | 3/4-20 UNEF    |
| 16S*          | 20.45                | 31.75     | 60.32    | 30.1     | 1-20 UNEF      | 7/8-20 UNEF    |
| 16*           | 20.45                | 31.75     | 65.07    | 30.1     | 1-20 UNEF      | 7/8-20 UNEF    |
| 18            | 23.62                | 34.13     | 68.27    | 33.3     | 1 1/8-18 UNEF  | 1-20 UNEF      |

|    |       |       |        |      |               |                |
|----|-------|-------|--------|------|---------------|----------------|
| 20 | 26.67 | 37.31 | 76.98  | 34.9 | 1 1/4-18 UNEF | 1 3/16-18 UNEF |
| 22 | 29.85 | 40.48 | 76.98  | 34.9 | 1 3/8-18 UNEF | 1 3/16-18 UNEF |
| 24 | 33.02 | 43.66 | 86.51  | 39.6 | 1 1/2-18 UNEF | 1 7/16-18 UNEF |
| 28 | 38.61 | 50.01 | 86.51  | 39.6 | 1 3/4-18 UNEF | 1 7/16-18 UNEF |
| 32 | 44.96 | 56.36 | 95.25  | 47.6 | 2-18 UNS      | 1 3/4-18 UNS   |
| 36 | 50.29 | 62.71 | 100.02 | 52.3 | 2 1/4-16 UN   | 2-18 UNS       |

\*No Tooling



## Amphenol MIL-C-5015 connectors

### MS/DS Series

#### 'E/F' class



Wall Mounting Receptacle

These MS connectors satisfy all the performance requirements of MIL-C-5015 and are recommended for conditions where vibration, moisture, pressure and/or temperature and 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 Zinc plated finish with an olive drab chromate after treatment for corrosion resistance. Consult Amphenol Daeshin for other plating options.

#### Contacts:



**Cable Connecting Receptacle**

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.

**Inserts:**

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

**Strain Relief Clamp:**

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



**Box Mounting Receptacle**



Straight Plug



Right Angle Plug

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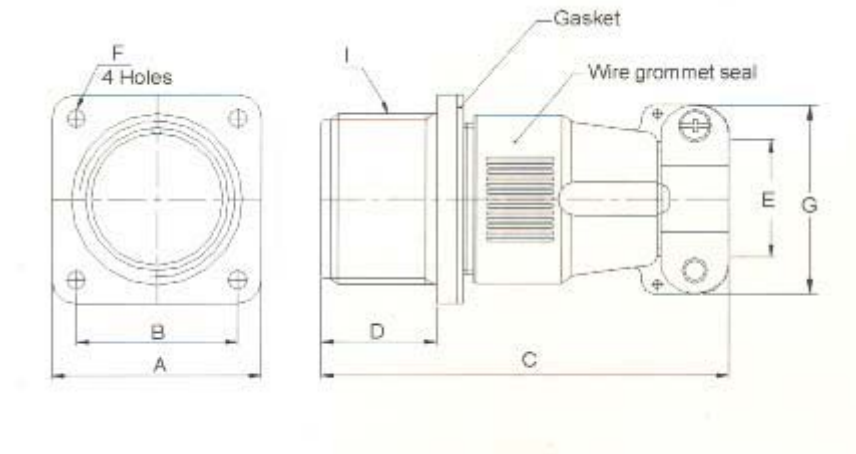
Amphenol MIL-C-5015 connectors

'E/F' class Dimension

# Wall Mounting Receptacle

## Integral Cable Clamp

### MS3100E/MS3100F



MS3100E/F wall mounting receptacles are used to carry wires thru walls or bulkheads, or to provide a means of disconnection at a bulkhead. MS 3100E/F receptacles mate with 3106 and 3108 plugs.

(mm)

| Shell<br>Size | ± A<br>± 0.79 | ± B<br>±0.12 | C<br>Max | D<br>+0.79<br>-0.00 | ØE<br>Max | ØF<br>+0.25<br>-0.12 | ØG<br>Max | I<br>Thread-2A |
|---------------|---------------|--------------|----------|---------------------|-----------|----------------------|-----------|----------------|
| 10SL          | 25.40         | 18.26        | 57.15    | 14.28               | 7.9       | 3.05                 | 23.0      | 5/8-24 UNEF    |
| 12S           | 27.79         | 20.62        | 57.15    | 14.28               | 7.9       | 3.05                 | 23.0      | 3/4-20 UNEF    |
| 12            | 27.79         | 20.62        | 66.67    | 19.05               | 7.9       | 3.05                 | 23.0      | 3/4-20 UNEF    |
| 14S           | 30.18         | 23.01        | 57.15    | 14.28               | 11.2      | 3.05                 | 26.0      | 7/8-20 UNEF    |

|     |       |       |       |       |      |      |      |               |
|-----|-------|-------|-------|-------|------|------|------|---------------|
| 14  | 30.18 | 23.01 | 66.67 | 19.05 | 11.2 | 3.05 | 26.0 | 7/8-20 UNEF   |
| 16S | 32.54 | 24.61 | 57.15 | 14.28 | 14.2 | 3.05 | 29.0 | 1-20 UNEF     |
| 16  | 32.54 | 24.61 | 66.67 | 19.05 | 14.2 | 3.05 | 29.0 | 1-20 UNEF     |
| 18  | 34.93 | 26.97 | 68.27 | 19.05 | 16.0 | 3.05 | 31.6 | 1 1/8-18 UNEF |
| 20  | 38.10 | 29.36 | 69.85 | 19.05 | 19.1 | 3.05 | 37.5 | 1 1/4-18 UNEF |
| 22  | 41.28 | 31.75 | 69.85 | 19.05 | 19.1 | 3.05 | 37.5 | 1 3/8-18 UNEF |
| 24  | 44.45 | 34.93 | 75.41 | 20.63 | 23.8 | 3.73 | 43.0 | 1 1/2-18 UNEF |
| 28  | 50.80 | 39.67 | 76.98 | 20.63 | 23.8 | 3.73 | 43.0 | 1 3/4-18 UNEF |
| 32  | 57.15 | 44.45 | 76.98 | 22.23 | 32.0 | 4.39 | 52.0 | 2-18 UNS      |
| 36  | 63.50 | 49.23 | 83.33 | 22.23 | 35.0 | 4.39 | 58.0 | 2 1/4-16 UN   |

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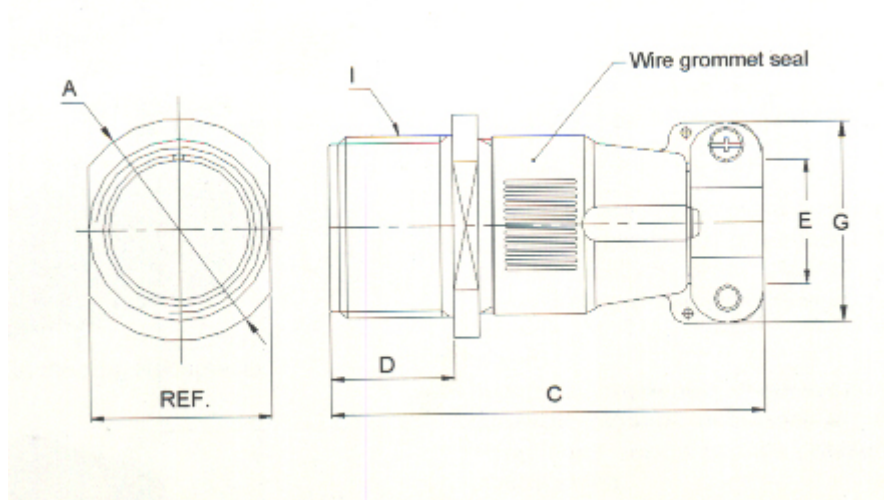
## Amphenol MIL-C-5015 connectors

'E/F' class Dimension

Cable Connecting Receptacle

Integral Cable Clamp

**MS3101E/MS3101F**



MS3101E/F cable connecting receptacles are used for cable extension requirements, where mounting provisions are unnecessary. MS3101E/F receptacles mate with 3106 and 3108 plugs.

(mm)

| Shell Size | A Max | C Max | D<br>+0.79<br>-0.00 | Ø E Max | Ø G Max | I<br>Thread-2A |
|------------|-------|-------|---------------------|---------|---------|----------------|
| 10SL       | 25.40 | 57.15 | 14.28               | 7.9     | 23.0    | 5/8-24 UNEF    |
| 12S        | 27.79 | 57.15 | 14.28               | 7.9     | 23.0    | 3/4-20 UNEF    |
| 12         | 27.79 | 66.67 | 19.05               | 7.9     | 23.0    | 3/4-20 UNEF    |
| 14S        | 30.18 | 57.15 | 14.28               | 11.2    | 26.0    | 7/8-20 UNEF    |
| 14         | 30.18 | 66.67 | 19.05               | 11.2    | 26.0    | 7/8-20 UNEF    |
| 16S        | 32.54 | 57.15 | 14.28               | 14.2    | 29.0    | 1-20 UNEF      |
| 16         | 32.54 | 66.67 | 19.05               | 14.2    | 29.0    | 1-20 UNEF      |

|    |       |       |       |      |      |               |
|----|-------|-------|-------|------|------|---------------|
| 18 | 34.93 | 68.27 | 19.05 | 16.0 | 31.6 | 1 1/8-18 UNEF |
| 20 | 38.10 | 69.85 | 19.05 | 19.1 | 37.5 | 1 1/4-18 UNEF |
| 22 | 41.28 | 69.85 | 19.05 | 19.1 | 37.5 | 1 3/8-18 UNEF |
| 24 | 44.45 | 75.41 | 20.63 | 23.8 | 43.0 | 1 1/2-18 UNEF |
| 28 | 50.80 | 76.98 | 20.63 | 23.8 | 43.0 | 1 3/4-18 UNEF |
| 32 | 57.15 | 76.98 | 22.23 | 32.0 | 52.0 | 2-18 UNS      |
| 36 | 63.50 | 83.33 | 22.23 | 35.0 | 58.0 | 2 1/4-16 UN   |

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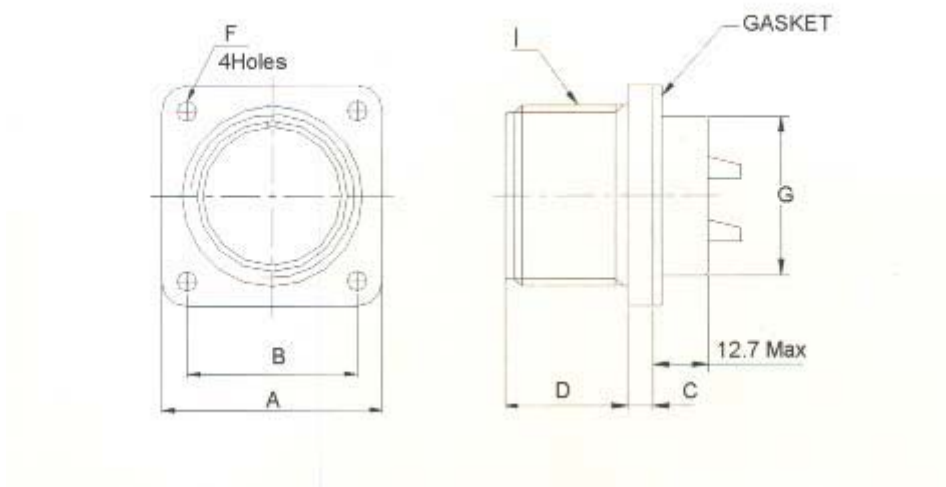
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## Amphenol MIL-C-5015 connectors

'E/F' class Dimension

Box Mounting Receptacle

**MS3102E**



MS3102E box mounting receptacles are used in junction boxes or as an integral part of equipment. These connectors are identical with 3102A in construction.

(mm)

| Shell<br>Size | $\pm A$<br>$\pm 0.79$ | $\pm B$<br>$\pm 0.12$ | C<br>$\pm 0.3$ | D<br>$+0.79$<br>$-0.00$ | $\varnothing F$<br>$+0.25$<br>$-0.12$ | $\varnothing G$<br>Max | I<br>Thread-2A |
|---------------|-----------------------|-----------------------|----------------|-------------------------|---------------------------------------|------------------------|----------------|
| 10SL          | 25.40                 | 18.26                 | 3.0            | 14.28                   | 3.05                                  | 16.0                   | 5/8-24 UNEF    |
| 12S           | 27.79                 | 20.62                 | 3.0            | 14.28                   | 3.05                                  | 16.5                   | 3/4-20 UNEF    |
| 12            | 27.79                 | 20.62                 | 3.0            | 19.05                   | 3.05                                  | 16.5                   | 3/4-20 UNEF    |
| 14S           | 30.18                 | 23.01                 | 3.0            | 14.28                   | 3.05                                  | 20.0                   | 7/8-20 UNEF    |
| 14            | 30.18                 | 23.01                 | 3.0            | 19.05                   | 3.05                                  | 20.0                   | 7/8-20 UNEF    |

|     |       |       |     |       |      |      |               |
|-----|-------|-------|-----|-------|------|------|---------------|
| 16S | 32.54 | 24.61 | 3.0 | 14.28 | 3.05 | 23.0 | 1-20 UNEF     |
| 16  | 32.54 | 24.61 | 3.0 | 19.05 | 3.05 | 23.0 | 1-20 UNEF     |
| 18  | 34.93 | 26.97 | 4.0 | 19.05 | 3.05 | 26.0 | 1 1/8-18 UNEF |
| 20  | 38.10 | 29.36 | 4.0 | 19.05 | 3.05 | 29.0 | 1 1/4-18 UNEF |
| 22  | 41.28 | 31.75 | 4.0 | 19.05 | 3.05 | 32.5 | 1 3/8-18 UNEF |
| 24  | 44.45 | 34.93 | 4.0 | 20.63 | 3.73 | 35.5 | 1 1/2-18 UNEF |
| 28  | 50.80 | 39.67 | 4.0 | 20.63 | 3.73 | 42.0 | 1 3/4-18 UNEF |
| 32  | 57.15 | 44.45 | 4.0 | 22.23 | 4.39 | 48.0 | 2-18 UNS      |
| 36  | 63.50 | 49.23 | 4.0 | 22.23 | 4.39 | 54.5 | 2 1/4-16 UN   |

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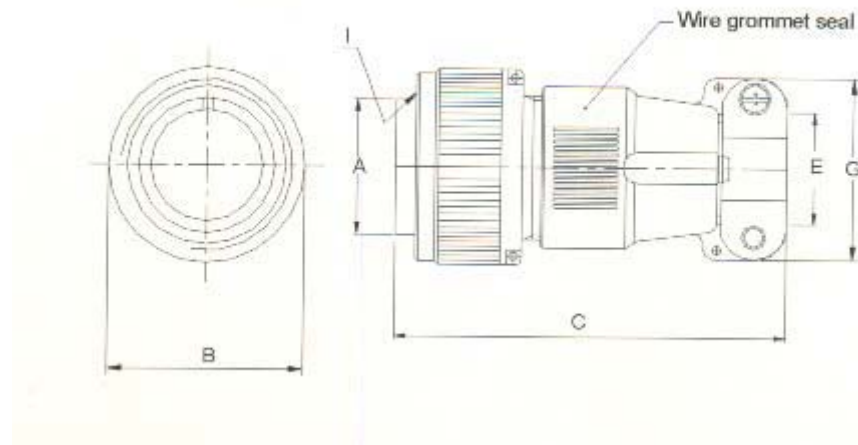
## Amphenol MIL-C-5015 connectors

'E/F' class Dimension

Straight Plug

Integral Cable Clamp

**MS3106E/MS3106F**



MS3106E/F straight plugs mate with 3100,3101 and 3102 receptacles

(mm)

| Shell<br>Size | A<br>+0.00<br>-0.38 | B<br>MAX | C<br>Max | Ø E<br>Max | Ø G<br>Max | I<br>Thread-2B |
|---------------|---------------------|----------|----------|------------|------------|----------------|
| 10SL          | 11.33               | 24.61    | 57.15    | 7.9        | 23.0       | 5/8-24 UNEF    |
| 12S           | 14.10               | 26.97    | 57.15    | 7.9        | 23.0       | 3/4-20 UNEF    |
| 12            | 14.10               | 26.97    | 66.67    | 7.9        | 23.0       | 3/4-20 UNEF    |
| 14S           | 17.15               | 29.36    | 57.15    | 11.2       | 26.0       | 7/8-20 UNEF    |
| 14            | 17.15               | 29.36    | 66.67    | 11.2       | 26.0       | 7/8-20 UNEF    |
| 16S           | 20.45               | 31.75    | 57.15    | 14.2       | 29.0       | 1-20 UNEF      |
| 16            | 20.45               | 31.75    | 66.67    | 14.2       | 29.0       | 1-20 UNEF      |

|    |       |       |       |      |      |               |
|----|-------|-------|-------|------|------|---------------|
| 18 | 23.62 | 34.13 | 68.27 | 16.0 | 31.6 | 1 1/8-18 UNEF |
| 20 | 26.67 | 37.31 | 69.85 | 19.1 | 37.5 | 1 1/4-18 UNEF |
| 22 | 29.85 | 40.48 | 69.85 | 19.1 | 37.5 | 1 3/8-18 UNEF |
| 24 | 33.02 | 43.66 | 75.41 | 23.8 | 43.0 | 1 1/2-18 UNEF |
| 28 | 38.61 | 50.01 | 76.98 | 23.8 | 43.0 | 1 3/4-18 UNEF |
| 32 | 44.96 | 56.36 | 76.98 | 32.0 | 52.0 | 2-18 UNS      |
| 36 | 50.29 | 62.71 | 83.33 | 35.0 | 58.0 | 2 1/4-16 UN   |

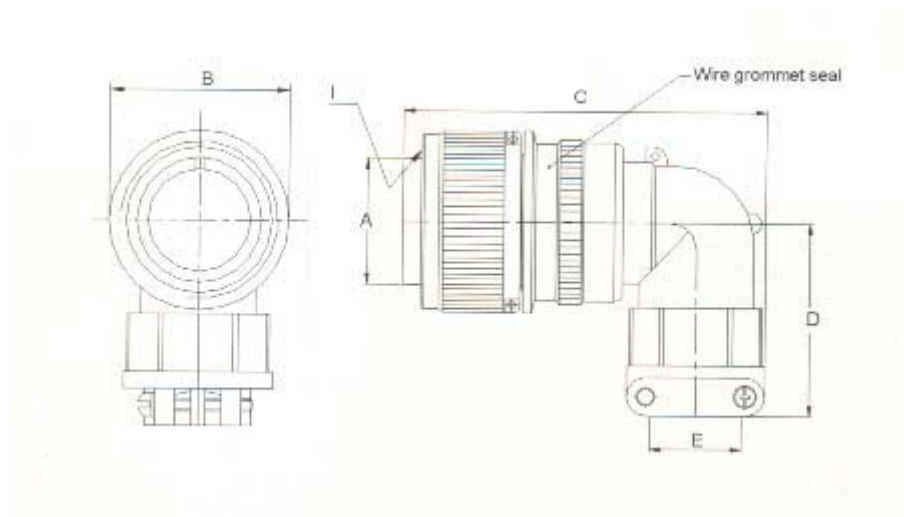


## Amphenol MIL-C-5015 connectors

'E/F' class Dimension

Right Angle Plug

**MS3108E**



MS3108E Right angle plugs are used where there is limited space and where wires must be brought at abrupt angles. This plug mate with 3100,3101 and 3102 receptacles.

(mm)

| Shell<br>Size | A<br>+0.00<br>-0.38 | B<br>MAX | C<br>Max | D<br>Max | Ø E<br>Max | I<br>Thread-2B |
|---------------|---------------------|----------|----------|----------|------------|----------------|
| 10SL          | 11.33               | 24.61    | 55.57    | 38.1     | 7.9        | 5/8-24 UNEF    |
| 12S*          | 14.10               | 26.97    | 55.57    | 38.1     | 7.9        | 3/4-20 UNEF    |
| 12*           | 14.10               | 26.97    | 64.28    | 38.1     | 7.9        | 3/4-20 UNEF    |
| 14S           | 17.15               | 29.36    | 58.72    | 40.4     | 11.2       | 7/8-20 UNEF    |
| 14            | 17.15               | 29.36    | 68.27    | 40.4     | 11.2       | 7/8-20 UNEF    |
| 16S           | 20.45               | 31.75    | 61.11    | 42.8     | 14.2       | 1-20 UNEF      |
| 16            | 20.45               | 31.75    | 70.63    | 42.8     | 14.2       | 1-20 UNEF      |

|    |       |       |        |      |      |               |
|----|-------|-------|--------|------|------|---------------|
| 18 | 23.62 | 34.13 | 72.23  | 45.2 | 16.0 | 1 1/8-18 UNEF |
| 20 | 26.67 | 37.31 | 82.55  | 50.0 | 19.1 | 1 1/4-18 UNEF |
| 22 | 29.85 | 40.48 | 82.55  | 50.8 | 19.1 | 1 3/8-18 UNEF |
| 24 | 33.02 | 43.66 | 94.46  | 53.9 | 23.8 | 1 1/2-18 UNEF |
| 28 | 38.61 | 50.01 | 94.46  | 55.5 | 23.8 | 1 3/4-18 UNEF |
| 32 | 44.96 | 56.36 | 106.37 | 65.8 | 32.0 | 2-18 UNS      |
| 36 | 50.29 | 62.71 | 109.14 | 69.0 | 35.0 | 2 1/4-16 UN   |

\*No Tooling



Amphenol MIL-C-5015 connectors

MS/DS Series

'R' class



**Wall Mounting Receptacle**

Specification requirements for greater reliability in a shorter, lighter weight environmental resistant connector led to the design of the MS-R.

This low profile assembly was attained by moving the axial compression nut and grommet assembly forward and flash with the rear of the insert. The silicon rubber 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 'O'ring at the main joint of all MS3106R plugs provide a main joint seal supplementary to the interfacial seal, thus insuring of higher degree of reliability when connector halves from different sources are employed. MS-R types are recommended for new design applications.

#### Shells:

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

#### Contacts:

Contacts are machined from copper alloy for maximum current carrying capacity and low



**Cable Connecting Receptacle**



Box Mounting Receptacle

millivolt drop.

Inserts:

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



Straight Plug



Right Angle Plug

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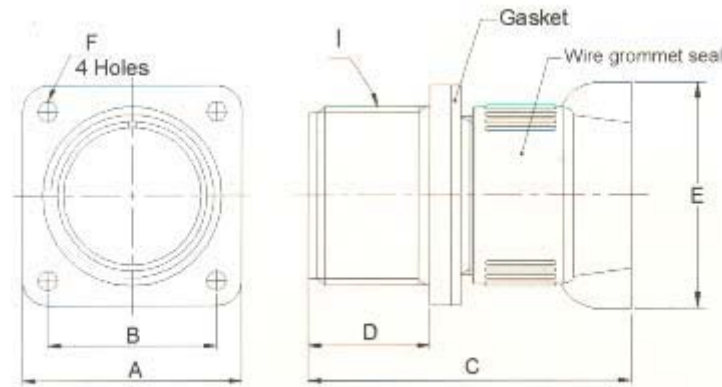
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## Amphenol MIL-C-5015 connectors

'R' class Dimension

Wall Mounting Receptacle

**MS3100R**



MS3100R receptacles are identical in purpose to the MS3100F.  
The MS3100R features a shorter lightweight endbell.

(mm)

| Shell<br>Size | ±A<br>± 0.79 | ±B<br>±0.12 | C<br>Max | D<br>+0.79<br>-0.00 | ØE<br>Max | ØF<br>+0.25<br>-0.12 | I<br>Thread-2A |
|---------------|--------------|-------------|----------|---------------------|-----------|----------------------|----------------|
| 10SL          | 25.40        | 18.26       | 46.68    | 14.28               | 24.0      | 3.05                 | 5/8-24 UNEF    |
| 12S           | 27.79        | 20.62       | 46.68    | 14.28               | 24.0      | 3.05                 | 3/4-20 UNEF    |
| 12            | 27.79        | 20.62       | 55.39    | 19.05               | 24.0      | 3.05                 | 3/4-20 UNEF    |
| 14S           | 30.18        | 23.01       | 46.68    | 14.28               | 27.6      | 3.05                 | 7/8-20 UNEF    |
| 14            | 30.18        | 23.01       | 66.67    | 19.05               | 11.2      | 3.05                 | 7/8-20 UNEF    |
| 16S           | 32.54        | 24.61       | 46.68    | 14.28               | 31.2      | 3.05                 | 1-20 UNEF      |
| 16            | 32.54        | 24.61       | 55.39    | 19.05               | 31.2      | 3.05                 | 1-20 UNEF      |
| 18            | 34.93        | 26.97       | 57.93    | 19.05               | 36.2      | 3.05                 | 1 1/8-18 UNEF  |

|    |       |       |       |       |      |      |               |
|----|-------|-------|-------|-------|------|------|---------------|
| 20 | 38.10 | 29.36 | 57.93 | 19.05 | 39.8 | 3.05 | 1 1/4-18 UNEF |
| 22 | 41.28 | 31.75 | 57.93 | 19.05 | 39.8 | 3.05 | 1 3/8-18 UNEF |
| 24 | 44.45 | 34.93 | 57.93 | 20.63 | 46.0 | 3.73 | 1 1/2-18 UNEF |
| 28 | 50.80 | 39.67 | 57.93 | 20.63 | 46.0 | 3.73 | 1 3/4-18 UNEF |
| 32 | 57.15 | 44.45 | 57.93 | 22.23 | 53.5 | 4.39 | 2-18 UNS      |
| 36 | 63.50 | 49.23 | 58.97 | 22.23 | 60.0 | 4.39 | 2 1/4-16 UN   |



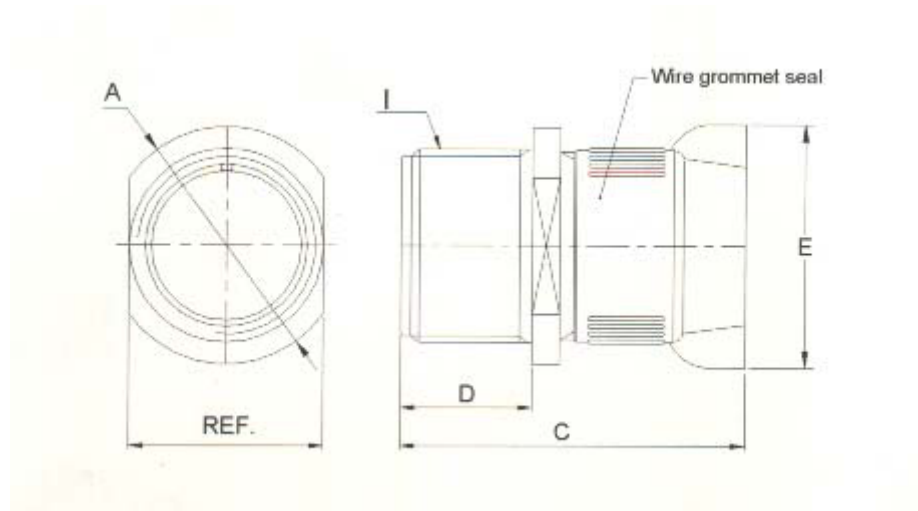
## Amphenol MIL-C-5015 connectors

'R' class Dimension

Cable Connecting Receptacle

**MS3101R**

(Receptacle with no mounting flange)



MS3101R cable connecting receptacles are identical in purpose to the MS3101E.

The MS3101R features a shorter lightweight endbell.

(mm)

| Shell Size | A MAX | C Max | D<br>+0.79<br>-0.00 | Ø E<br>Max | I<br>Thread-2A |
|------------|-------|-------|---------------------|------------|----------------|
| 10SL       | 24.61 | 46.68 | 14.28               | 24.0       | 5/8-24 UNEF    |
| 12S        | 26.97 | 46.68 | 14.28               | 24.0       | 3/4-20 UNEF    |
| 12         | 26.97 | 55.39 | 19.05               | 24.0       | 3/4-20 UNEF    |
| 14S        | 29.36 | 46.68 | 14.28               | 27.6       | 7/8-20 UNEF    |
| 14         | 29.36 | 55.39 | 19.05               | 27.6       | 7/8-20 UNEF    |
| 16S        | 31.75 | 46.68 | 14.28               | 31.2       | 1-20 UNEF      |
| 16         | 31.75 | 55.39 | 19.05               | 31.2       | 1-20 UNEF      |
| 18         | 34.13 | 57.93 | 19.05               | 36.2       | 1 1/8-18 UNEF  |

|    |       |       |       |      |               |
|----|-------|-------|-------|------|---------------|
| 20 | 37.31 | 57.93 | 19.05 | 39.8 | 1 1/4-18 UNEF |
| 22 | 40.48 | 57.93 | 19.05 | 39.8 | 1 3/8-18 UNEF |
| 24 | 43.66 | 57.93 | 20.63 | 46.0 | 1 1/2-18 UNEF |
| 28 | 50.01 | 57.93 | 20.63 | 46.0 | 1 3/4-18 UNEF |
| 32 | 56.36 | 57.93 | 22.23 | 53.5 | 2-18 UNS      |
| 36 | 62.71 | 58.97 | 22.23 | 60.0 | 2 1/4-16 UN   |

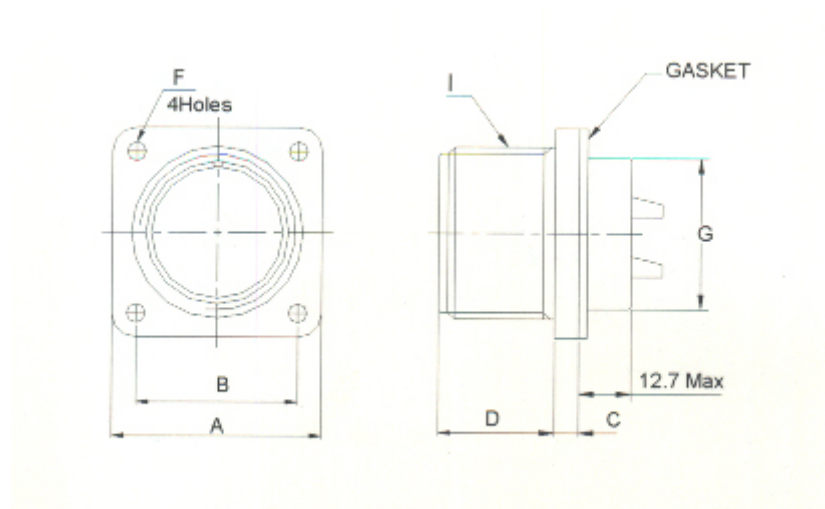


## Amphenol MIL-C-5015 connectors

### 'R' class Dimension

Box Mounting Receptacle

MS3102R



MS3102R box mounting receptacles are used in junction boxes or as an integral part of equipment. These connectors are identical with 3102A in construction.

(mm)

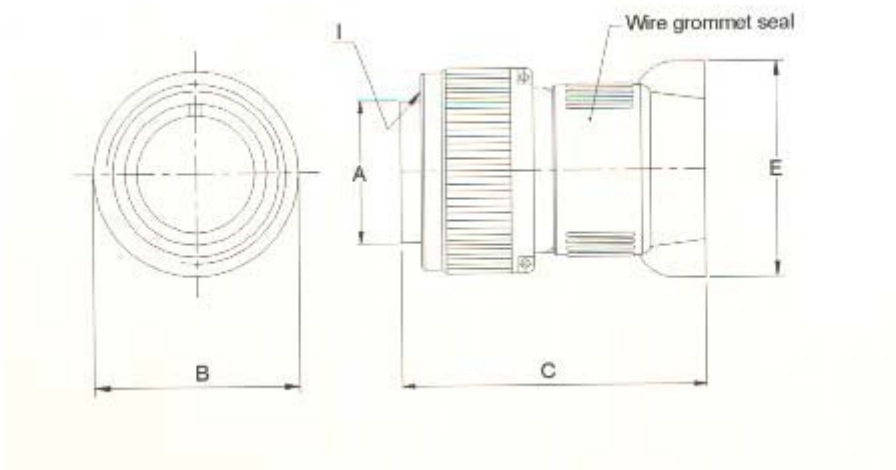
| Shell<br>Size | ± A<br>± 0.79 | ± B<br>±0.12 | C<br>± 0.3 | D<br>+0.79<br>-0.00 | Ø F<br>+0.25<br>-0.12 | ØG<br>Max | I<br>Thread-2A |
|---------------|---------------|--------------|------------|---------------------|-----------------------|-----------|----------------|
| 10SL          | 25.40         | 18.26        | 3.0        | 14.28               | 3.05                  | 16.0      | 5/8-24 UNEF    |
| 12S           | 27.79         | 20.62        | 3.0        | 14.28               | 3.05                  | 16.5      | 3/4-20 UNEF    |
| 12            | 27.79         | 20.62        | 3.0        | 19.05               | 3.05                  | 16.5      | 3/4-20 UNEF    |
| 14S           | 30.18         | 23.01        | 3.0        | 14.28               | 3.05                  | 20.0      | 7/8-20 UNEF    |
| 14            | 30.18         | 23.01        | 3.0        | 19.05               | 3.05                  | 20.0      | 7/8-20 UNEF    |
| 16S           | 32.54         | 24.61        | 3.0        | 14.28               | 3.05                  | 23.0      | 1-20 UNEF      |
| 16            | 32.54         | 24.61        | 3.0        | 19.05               | 3.05                  | 23.0      | 1-20 UNEF      |
| 18            | 34.93         | 26.97        | 4.0        | 19.05               | 3.05                  | 26.0      | 1 1/8-18 UNEF  |
| 20            | 38.10         | 29.36        | 4.0        | 19.05               | 3.05                  | 29.0      | 1 1/4-18 UNEF  |
| 22            | 41.28         | 31.75        | 4.0        | 19.05               | 3.05                  | 32.0      | 1 3/8-18 UNEF  |
| 24            | 44.45         | 34.93        | 4.0        | 20.63               | 3.73                  | 35.5      | 1 1/2-18 UNEF  |
| 28            | 50.80         | 39.67        | 4.0        | 20.63               | 3.73                  | 42.0      | 1 3/4-18 UNEF  |
| 32            | 57.15         | 44.45        | 4.0        | 22.23               | 4.39                  | 48.0      | 2-18 UNS       |
| 36            | 63.50         | 49.23        | 4.0        | 22.23               | 4.39                  | 55.0      | 2 1/4-16 UN    |

Amphenol MIL-C-5015 connectors

'R' class Dimension

Straight Plug

MS3106R



MS3106R straight plugs are identical in purpose to the MS3106F.  
The MS3106R has the shorter endbell.

(mm)

| Shell<br>Size | A<br>+0.00<br>-0.38 | B<br>MAX | C<br>Max | Ø E<br>Max | I<br>Thread-2B |
|---------------|---------------------|----------|----------|------------|----------------|
| 10SL          | 11.33               | 24.61    | 46.68    | 24.0       | 5/8-24 UNEF    |

|     |       |       |       |      |               |
|-----|-------|-------|-------|------|---------------|
| 12S | 14.10 | 26.97 | 46.68 | 24.0 | 3/4-20 UNEF   |
| 12  | 14.10 | 26.97 | 55.39 | 24.0 | 3/4-20 UNEF   |
| 14S | 17.15 | 29.36 | 46.68 | 27.6 | 7/8-20 UNEF   |
| 14  | 17.15 | 29.36 | 55.39 | 27.6 | 7/8-20 UNEF   |
| 16S | 20.45 | 31.75 | 46.68 | 31.2 | 1-20 UNEF     |
| 16  | 20.45 | 31.75 | 55.39 | 31.2 | 1-20 UNEF     |
| 18  | 23.62 | 34.13 | 57.93 | 36.2 | 1 1/8-18 UNEF |
| 20  | 26.67 | 37.31 | 57.93 | 39.8 | 1 1/4-18 UNEF |
| 22  | 29.85 | 40.48 | 57.93 | 39.8 | 1 3/8-18 UNEF |
| 24  | 33.02 | 43.66 | 57.93 | 46.0 | 1 1/2-18 UNEF |
| 28  | 38.61 | 50.01 | 57.93 | 46.0 | 1 3/4-18 UNEF |
| 32  | 44.96 | 56.36 | 57.93 | 53.5 | 2-18 UNS      |
| 36  | 50.29 | 62.71 | 58.97 | 60.0 | 2 1/4-16 UN   |



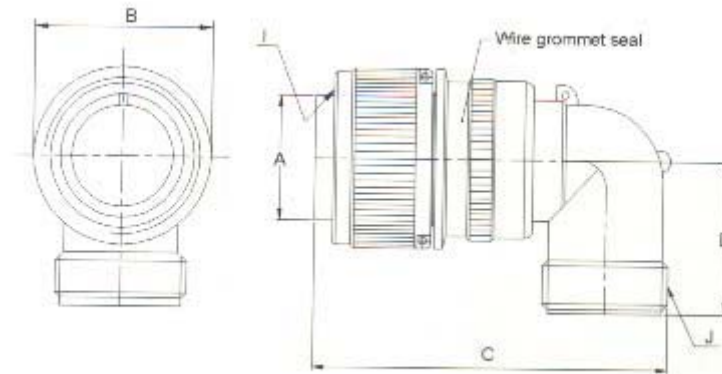


## Amphenol MIL-C-5015 connectors

'R' class Dimension

Right Angle Plug

MS3108R



MS3108R Right angle plugs are used where there is limited space and where wires must be brought at abrupt angles.

(mm)

| Shell<br>Size | ØA<br>+0.00<br>-0.38 | ØB<br>+0.00<br>-0.38 | C<br>Max | D<br>Max | I<br>Thread-2B | J<br>Thread-2A |
|---------------|----------------------|----------------------|----------|----------|----------------|----------------|
| 10SL          | 11.33                | 24.61                | 46.02    | 25.4     | 5/8-24 UNEF    | 5/8-24 UNEF    |
| 12S*          | 14.10                | 26.97                | 50.80    | 26.9     | 3/4-20 UNEF    | 5/8-24 UNEF    |
| 12*           | 14.10                | 26.97                | 57.15    | 26.9     | 3/4-20 UNEF    | 5/8-24 UNEF    |
| 14S           | 17.15                | 29.36                | 53.97    | 28.5     | 7/8-20 UNEF    | 3/4-20 UNEF    |
| 14            | 17.15                | 29.36                | 58.72    | 28.5     | 7/8-20 UNEF    | 3/4-20 UNEF    |
| 16S           | 20.45                | 31.75                | 60.32    | 30.1     | 1-20 UNEF      | 7/8-20 UNEF    |
| 16            | 20.45                | 31.75                | 65.07    | 30.1     | 1-20 UNEF      | 7/8-20 UNEF    |
| 18            | 23.62                | 34.13                | 68.27    | 33.3     | 1 1/8-18 UNEF  | 1-20 UNEF      |

|    |       |       |        |      |               |                |
|----|-------|-------|--------|------|---------------|----------------|
| 20 | 26.67 | 37.31 | 76.98  | 34.9 | 1 1/4-18 UNEF | 1 3/16-18 UNEF |
| 22 | 29.85 | 40.48 | 76.98  | 34.9 | 1 3/8-18 UNEF | 1 3/16-18 UNEF |
| 24 | 33.02 | 43.66 | 86.51  | 39.6 | 1 1/2-18 UNEF | 1 7/16-18 UNEF |
| 28 | 38.61 | 50.01 | 86.51  | 39.6 | 1 3/4-18 UNEF | 1 7/16-18 UNEF |
| 32 | 44.96 | 56.36 | 95.25  | 47.6 | 2-18 UNS      | 1 3/4-18 UNS   |
| 36 | 50.29 | 62.71 | 100.02 | 52.3 | 2 1/4-16 UN   | 2-18 UNS       |

\*No Tooling



## Amphenol MIL-C-5015 connectors

### DL Series, Pre-earth type



DL Series are highly reliable circular connectors (wire soldering type) approved by TUV satisfying European safety standards and UL standards. They feature IP67 class water and dust proof, when mated and a protective earth circuit with first mate last break grounding contacts. They are ideal for use in machine tools, servomotors, robots, and other industrial machines. Intermatable with MS connector.

Shells:

Shell components are fabricated from high grade aluminum alloy. Electrically conductive Zinc

### Box Mounting Receptacle

plate finish with an black chromate after treatment offers corrosion resistance. Consult Amphenol Daeshin for other plating options.

#### Contacts:

Pins and sockets are machined from copper alloy with silver plated finish. Size 16 and 12 socket contacts incorporate a closed entry design.



Straight Plug



Right Angle Plug

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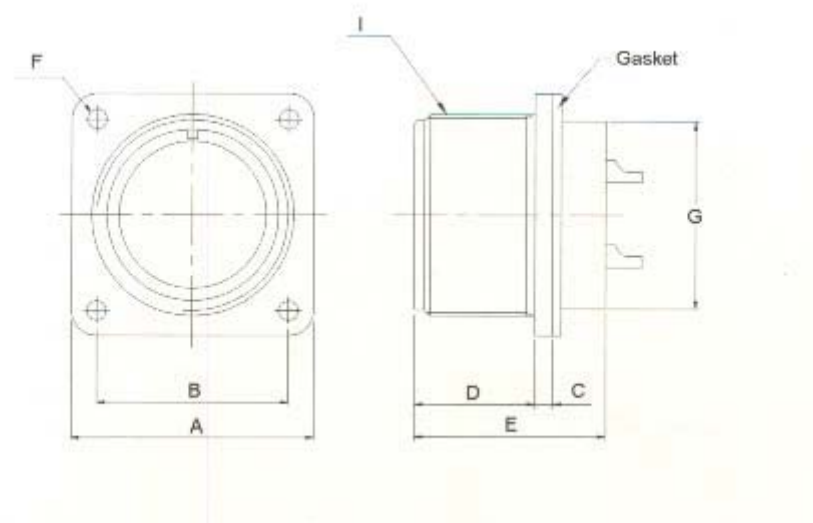
NEXT

## Amphenol MIL-C-5015 connectors

### DL Series

Box Mounting Receptacle

DL3102A



DL3102A box mounting receptacles are used on boxes and equipment cases where no cable support is required.

(mm)

| Contact<br>Arrangement | Grounding<br>Contact | □ A<br>±0.79 | □ B<br>±0.12 | C<br>±0.3 | D<br>+0.79 | E<br>±0.2 | ØF<br>+0.25 | ØG<br>Max | I<br>Thread-2A |
|------------------------|----------------------|--------------|--------------|-----------|------------|-----------|-------------|-----------|----------------|
|------------------------|----------------------|--------------|--------------|-----------|------------|-----------|-------------|-----------|----------------|

|           |   |       |       |     |       |      |       |      |               |
|-----------|---|-------|-------|-----|-------|------|-------|------|---------------|
|           |   |       |       |     | -0.00 |      | -0.12 |      |               |
| 10SL-3    | C | 25.40 | 18.26 | 2.1 | 14.28 | 23.5 | 3.05  | 16.0 | 5/8-24 UNEF   |
| 18-10     | D | 34.93 | 26.97 | 2.7 | 19.05 | 29.8 | 3.05  | 27.0 | 1 1/8-18 UNEF |
| 18-12     | D | 34.93 | 26.97 | 2.7 | 19.05 | 28.0 | 3.05  | 25.0 | 1 1/8-18 UNEF |
| 20-15     | D | 38.10 | 29.36 | 2.7 | 19.05 | 30.0 | 3.05  | 30.0 | 1 1/4-18 UNEF |
| 22-22     | D | 41.28 | 31.75 | 2.7 | 19.05 | 30.8 | 3.05  | 33.0 | 1 3/8-18 UNEF |
| 24-10     | D | 44.45 | 34.93 | 2.7 | 20.63 | 32.4 | 3.73  | 36.0 | 1 1/2-18 UNEF |
| 24-10(G)* | G | 44.45 | 34.93 | 2.7 | 20.63 | 32.4 | 3.73  | 36.0 | 1 1/2-18 UNEF |

\*Attention : No grounding pin in DL3102A24-10P(G)

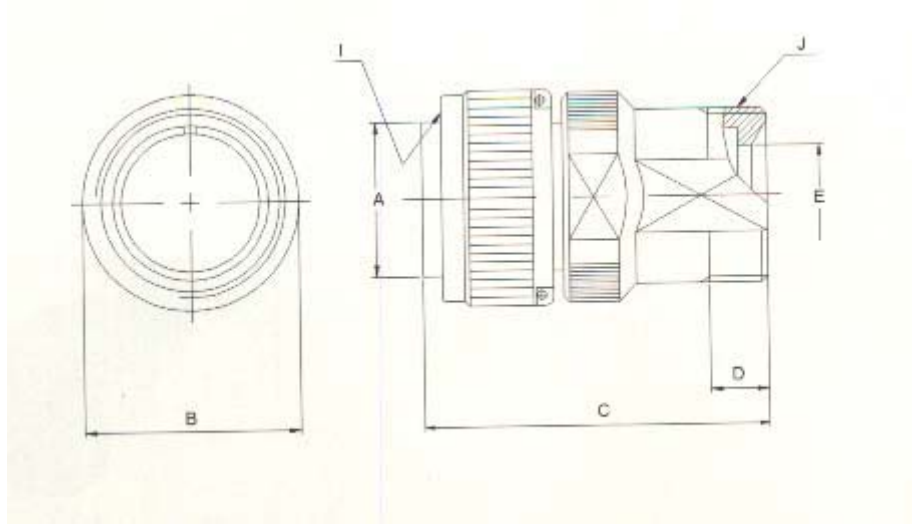


## Amphenol MIL-C-5015 connectors

### DL Series, Dimension

Straight Plug

DL3106A



DL3106A straight plugs are used with 3102 receptacles.

(mm)

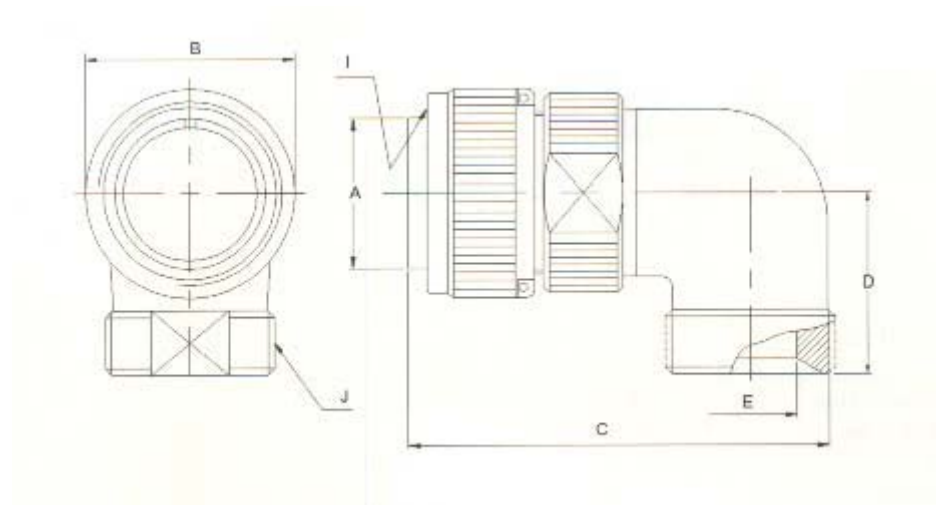
| Contact Arrangement | Grounding Contact | ØA<br>+0.00<br>-0.38 | ØB<br>Max | C<br>Max | D<br>Min | E<br>Max | I<br>Thread-2B | J<br>Thread-2A |
|---------------------|-------------------|----------------------|-----------|----------|----------|----------|----------------|----------------|
| 10SL-3              | C                 | 11.33                | 24.61     | 44.2     | 10.0     | 6.8      | 5/8-24 UNEF    | 5/8-24 UNEF    |
| 18-10               | D                 | 23.62                | 34.13     | 58.3     | 11.5     | 15.0     | 1 1/8-18 UNEF  | 1-20 UNEF      |
| 18-12               | D                 | 23.62                | 34.13     | 58.3     | 11.5     | 15.0     | 1 1/8-18 UNEF  | 1-20 UNEF      |
| 20-15               | D                 | 26.27                | 37.31     | 60.0     | 11.0     | 17.0     | 1 1/4-18 UNEF  | 1 3/16-18 UNEF |
| 22-22               | D                 | 29.85                | 40.48     | 67.6     | 11.0     | 17.0     | 1 3/8-18 UNEF  | 1 3/16-18 UNEF |
| 24-10               | D                 | 33.02                | 43.66     | 71.8     | 11.5     | 19.8     | 1 1/2-18 UNEF  | 1 7/16-18 UNEF |
| 24-10(G)            | G                 | 33.02                | 43.66     | 71.8     | 11.5     | 19.8     | 1 1/2-18 UNEF  | 1 7/16-18 UNEF |

## Amphenol MIL-C-5015 connectors

### DL Series, Dimension

Right Angle Plug

DL3108A



DL3108A Right angle plugs have a solid endbell and are used where wire must be brought at an abrupt angle.

(mm)

| Contact | Grounding | ØA | ØB | C | D | E | I | J |
|---------|-----------|----|----|---|---|---|---|---|
|---------|-----------|----|----|---|---|---|---|---|

| Arrangement | Contact | +0.00<br>-0.38 | Max   | Max  | Max  | Max  | Thread-2B     | Thread-2A      |
|-------------|---------|----------------|-------|------|------|------|---------------|----------------|
| 10SL-3      | C       | 11.33          | 24.61 | 44.0 | 24.0 | 6.8  | 5/8-24 UNEF   | 5/8-24 UNEF    |
| 18-10       | D       | 23.62          | 34.13 | 65.0 | 30.0 | 15.0 | 1 1/8-18 UNEF | 1-20 UNEF      |
| 18-12       | D       | 23.62          | 34.13 | 65.0 | 30.0 | 15.0 | 1 1/8-18 UNEF | 1-20 UNEF      |
| 20-15       | D       | 26.27          | 37.31 | 74.2 | 32.0 | 17.0 | 1 1/4-18 UNEF | 1 3/16-18 UNEF |
| 22-22       | D       | 29.85          | 40.48 | 73.0 | 32.0 | 17.0 | 1 3/8-18 UNEF | 1 3/16-18 UNEF |
| 24-10       | D       | 33.02          | 43.66 | 82.0 | 38.2 | 19.8 | 1 1/2-18 UNEF | 1 7/16-18 UNEF |
| 24-10(G)    | G       | 33.02          | 43.66 | 82.0 | 38.2 | 19.8 | 1 1/2-18 UNEF | 1 7/16-18 UNEF |

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## Amphenol MIL-C-5015 Connectors

### Customized Products

#### AJ Series



AJ series connectors meet the performance criteria of most factory automation applications. They withstand exposure to moisture, oil and vibration. Bayonet lock coupling.

#### Material/Finish

Shell

ZnDC/O.D Zinc Chromate



|           |                                  |
|-----------|----------------------------------|
| Hood      | Aluminum alloy/O.D Zinc Chromate |
| Insulator | PBT                              |
| Contact   | Copper alloy/Silver              |
| Bushing   | Synthetic rubber                 |

#### Characteristics

|                       |                                    |
|-----------------------|------------------------------------|
| Insulation resistance | 1000Mega ohms minimum (at DC500V)  |
| Temperature range     | -25℃ to 85℃                        |
| Durability            | 500 Cycle connection/disconnection |
| Voltage rating (max.) | AC 250V , DC 350V                  |
| Contact resistance    | 5mΩ max.                           |

## Ordering Information

|                                                                                                     |                  |                  |                  |                  |                 |                 |                                                              |
|-----------------------------------------------------------------------------------------------------|------------------|------------------|------------------|------------------|-----------------|-----------------|--------------------------------------------------------------|
|                                                                                                     | <u><b>AJ</b></u> | <u><b>06</b></u> | <u><b>21</b></u> | <u><b>19</b></u> | <u><b>P</b></u> | <u><b>X</b></u> |                                                              |
| <b>Connector series</b><br>AJ                                                                       |                  |                  |                  |                  |                 |                 | <b>Alternate Position</b><br>X,Y,Z-See Page 33               |
| <b>Shell style</b><br>00-Wall Mounting Receptacle<br>02-Box Mounting Receptacle<br>06-Straight Plug |                  |                  |                  |                  |                 |                 | <b>Contact type</b><br>P-Pin(+), male<br>S-Socket(-), female |
| <b>Shell size</b><br>21                                                                             |                  |                  |                  |                  |                 |                 | <b>Insert Arrangement</b><br>See Page 33                     |

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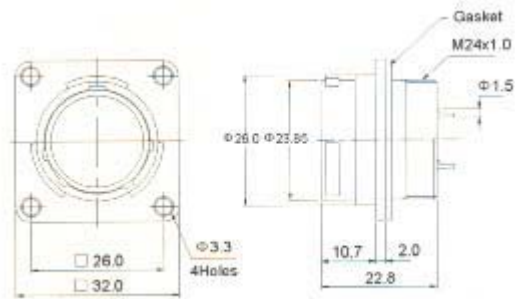
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[Amphenol MIL-C-5015 Connectors](#)

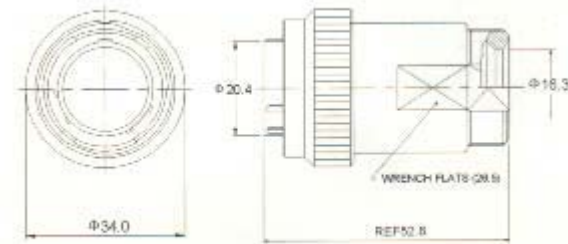
[Customized Products](#)

[AJ Series Dimension](#)

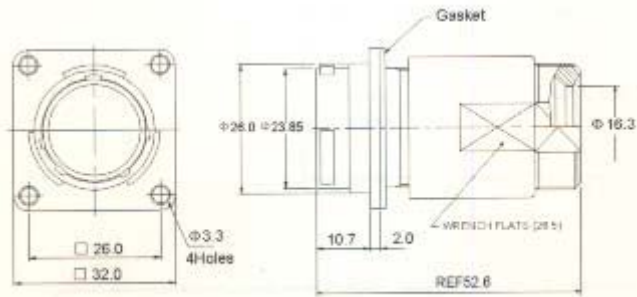
Box Mounting Receptacle



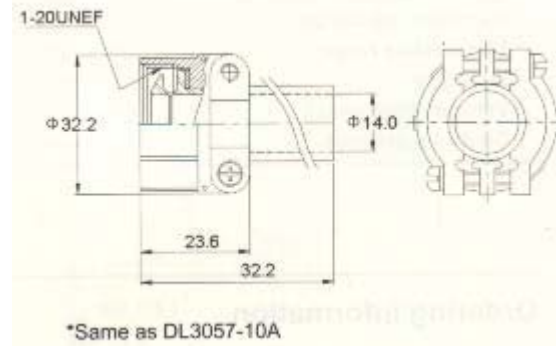
Straight Plug



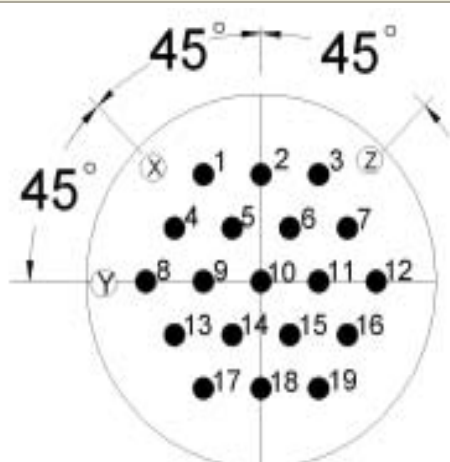
Wall Mounting Receptacle



Cable Clamp



Insert Arrangement

|                                              |                                                                                   |
|----------------------------------------------|-----------------------------------------------------------------------------------|
| Insert No.                                   | 21-19                                                                             |
| Arrangement<br>(Front view of<br>Pin insert) |  |
| No. of Contacts                              | #20-19                                                                            |
| Shell Size                                   | 21                                                                                |

\*Insert Arrangement, other than 21-19 available, Contact us.

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Amphenol MIL-C-5015 Connectors  
Customized Products  
ADG Series



ADG Bayonet coupling connectors in accordance with VG95234, well known as Amphenol ADG Bayonet connectors, are basically MIL-C-5015 type connectors. They withstand exposure to moisture, oil and vibration. Bayonet lock coupling. ADG series connectors meet the performance most subway coupler applications.

#### Material/Finish

|           |                              |
|-----------|------------------------------|
| Shell     | Aluminum alloy/Black Anodize |
| Hood      | Aluminum alloy/Black Anodize |
| Insulator | Synthetic rubber             |
| Contact   | Copper alloy/Gold            |
| Grommet   | Silicon Rubber               |
| Bushing   | Synthetic rubber             |

#### Characteristics

|                       |                                    |
|-----------------------|------------------------------------|
| Insulation resistance | 5000Mega ohms minimum (at DC500V)  |
| Temperature range     | -55℃ to 125℃                       |
| Durability            | 500 Cycle connection/disconnection |
| Voltage rating (max.) | AC 500V , DC 700V                  |
| Contact resistance    | 1.8mΩ max.                         |

## Ordering Information

|                                                                                                       | <u>ADG</u> | <u>06</u> | <u>F</u> | <u>36</u> | <u>03</u> | <u>P</u> |                                                              |
|-------------------------------------------------------------------------------------------------------|------------|-----------|----------|-----------|-----------|----------|--------------------------------------------------------------|
| <b>Connector series</b><br>ADG                                                                        |            |           |          |           |           |          | <b>Contact type</b><br>P-Pin(+), male<br>S-Socket(-), female |
| <b>Shell style</b><br>02-Box Mounting Receptacle<br>06-Straight Plug                                  |            |           |          |           |           |          | <b>Insert Arrangement</b><br>See Page 35                     |
| <b>Service Class</b><br>F - Environmental resisting<br>with grommet seal & strain relief<br>backshell |            |           |          |           |           |          | <b>Shell Size</b><br>36                                      |

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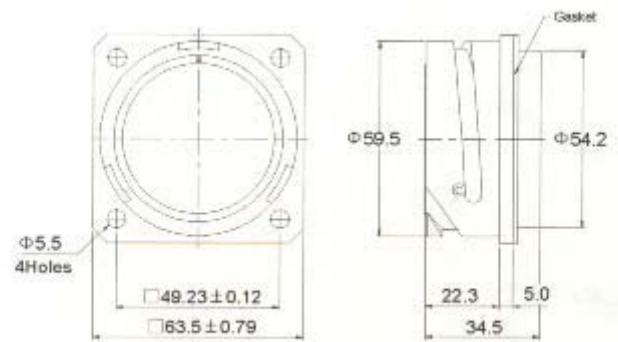
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[Amphenol MIL-C-5015 Connectors](#)

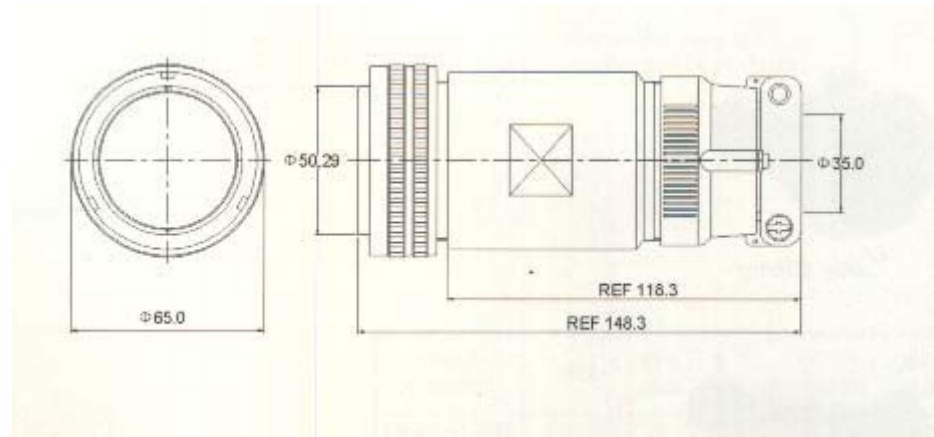
[Customized Products](#)

[ADG Series Dimension](#)

Box Mounting Receptacle

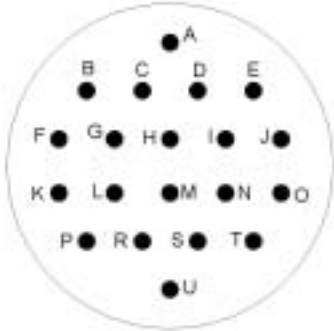
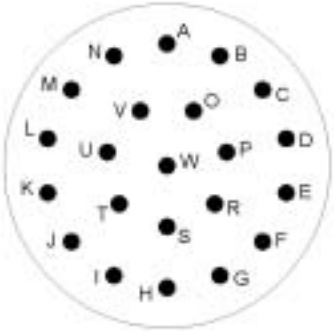


Straight Plug



Insert Arrangement

|            |       |       |                       |
|------------|-------|-------|-----------------------|
| Insert No. | 36-03 | 36-04 | * Insert Arrangement, |
|------------|-------|-------|-----------------------|

|                                              |                                                                                   |                                                                                     |                                               |
|----------------------------------------------|-----------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-----------------------------------------------|
| Arrangement<br>(Front view of<br>Pin insert) |  |  | other than 36-03,04<br>available, Contact us. |
| No. of Contacts<br>Shell Size                | #12-20<br>36                                                                      | #12-22<br>36                                                                        |                                               |

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## Amphenol MIL-C-5015 connectors

### Accessories



These metal dust caps are used to protect the plugs and receptacles. They are furnished with sash chains and are available with bead chains.

MS3057 style cable clamp was designed for use with jacketed cable or wire protected by tubing. Both clamping halves float maximum strain relief. For unjacketed cable or wires, Use corresponding MS3420 telescoping bushing.

Telescoping bushings keep dirt, oil and moisture out of end bell.

Plug Protection Cap

Sealing Gasket is being supplied separately.



Receptacle Protection Cap



Cable Clamp



Telescoping Bushing



Sealing Gasket

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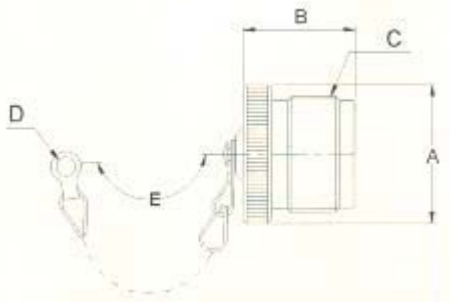
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[Amphenol MIL-C-5015 connectors](#)

[Accessories Dimension](#)

## Plug Protection Cap

### MS25042

|  | PART NUMBER | SIZE     | ØA Max | B Max | C Thread 2A   | ØD -0.3 | E Approx |
|-----------------------------------------------------------------------------------|-------------|----------|--------|-------|---------------|---------|----------|
|                                                                                   | MS25042-10D | 10S,10SL | 18.5   | 17.2  | 5/8-24 UNEF   | 4.2     | 102      |
|                                                                                   | MS25042-12D | 12S,12   | 20.4   | 21.4  | 3/4-20 UNEF   | 4.2     | 114      |
|                                                                                   | MS25042-14D | 14S,14   | 23.6   | 21.4  | 7/8-20 UNEF   | 4.2     | 114      |
|                                                                                   | MS25042-16D | 16S,16   | 26.0   | 21.4  | 1-20 UNEF     | 4.2     | 114      |
|                                                                                   | MS25042-18D | 18       | 29.9   | 21.4  | 1 1/8-18 UNEF | 4.2     | 114      |
|                                                                                   | MS25042-20D | 20       | 33.1   | 21.4  | 1 1/4-18 UNEF | 4.2*    | 127      |
|                                                                                   | MS25042-22D | 22       | 36.2   | 21.4  | 1 3/8-18 UNEF | 4.2*    | 127      |
|                                                                                   | MS25042-24D | 24       | 39.4   | 21.4  | 1 1/2-18 UNEF | 4.2*    | 140      |
|                                                                                   | MS25042-28D | 28       | 45.7   | 21.4  | 1 3/4-18 UNEF | 4.2*    | 197      |
|                                                                                   | MS25042-32D | 32       | 52.0   | 21.4  | 2-18 UNS      | 4.2**   | 197      |
|                                                                                   | MS25042-36D | 36       | 59.0   | 21.4  | 2 1/4-16 UN   | 4.2**   | 197      |

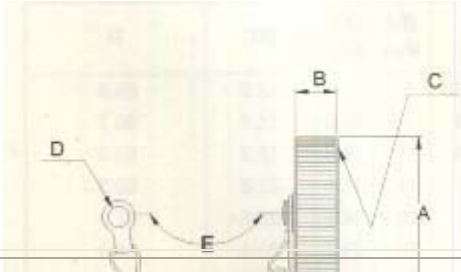
These externally threaded metal dust caps are used to protect the MS3106 and MS3108 plugs.

Material is aluminum alloy.They are furnished with sash chains and are available with bead chains.

Optional termination holes are also available.(\*5.0)(\*\*5.8)

## Receptacle Protection Cap

### MS25043

|  | PART NUMBER | SIZE     | ØA Max | B Max | C Thread 2A | ØD -0.3 | E Approx |
|-------------------------------------------------------------------------------------|-------------|----------|--------|-------|-------------|---------|----------|
|                                                                                     | MS25043-10D | 10S,10SL | 20.2   | 15.8  | 5/8-24 UNEF | 4.2     | 102      |
|                                                                                     | MS25043-12D | 12S,12   | 23.4   | 15.8  | 3/4-20 UNEF | 4.2     | 114      |
|                                                                                     | MS25043-14D | 14S,14   | 27.9   | 15.8  | 7/8-20 UNEF | 4.2     | 114      |
|                                                                                     | MS25043-16D | 16S,16   | 29.8   | 15.8  | 1-20 UNEF   | 4.2     | 114      |

|             |    |      |      |               |       |     |
|-------------|----|------|------|---------------|-------|-----|
| MS25043-18D | 18 | 32.2 | 15.8 | 1 1/8-18 UNEF | 4.2   | 114 |
| MS25043-20D | 20 | 36.3 | 15.8 | 1 1/4-18 UNEF | 4.2   | 127 |
| MS25043-22D | 22 | 39.9 | 15.8 | 1 3/8-18 UNEF | 4.2   | 127 |
| MS25043-24D | 24 | 43.7 | 15.8 | 1 1/2-18 UNEF | 4.2*  | 140 |
| MS25043-28D | 28 | 50.0 | 15.8 | 1 3/4-18 UNS  | 4.2*  | 197 |
| MS25043-32D | 32 | 56.5 | 15.8 | 2-18 UNS      | 4.2** | 197 |
| MS25043-36D | 36 | 61.5 | 15.8 | 2 1/4-16 UN   | 4.2** | 197 |

These internally threaded metal dust caps are used to protect MS3100, MS3101 and MS3102 receptacles.

Metal Is aluminum alloy. They are furnished with sash chains and are available with bead chains.

Optional termination holes are also available. (\*4.58)(\*\*5.00)

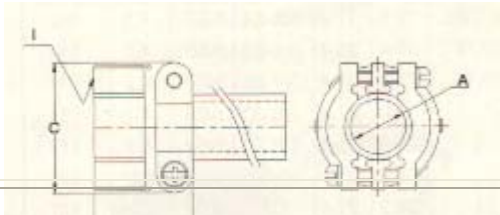


## Amphenol MIL-C-5015 connectors

### Accessories Dimension

#### Cable Clamp

#### MS3057

|  | PART NUMBER | SIZE     | ØA<br>±0.4 | B<br>±0.8 | ØC<br>±0.8 | I<br>Thread-2B |
|-------------------------------------------------------------------------------------|-------------|----------|------------|-----------|------------|----------------|
|                                                                                     | MS3057-4A   | 10SL,12S | 5.6        | 20.3      | 23.3       | 5/8-24 UNEF    |
|                                                                                     | MS3057-6A   | 14S,14   | 7.9        | 22.5      | 25.9       | 3/4-20 UNEF    |

|            |        |      |      |      |                |
|------------|--------|------|------|------|----------------|
| MS3057-8A  | 16S,16 | 11.1 | 24.4 | 28.9 | 7/8-20 UNEF    |
| MS3057-10A | 18     | 14.3 | 23.6 | 32.2 | 1-20 UNEF      |
| MS3057-12A | 20,22  | 15.9 | 23.6 | 37.8 | 1 3/16-18 UNEF |
| MS3057-16A | 24,28  | 19.1 | 26.0 | 43.4 | 1 7/16-18 UNEF |
| MS3057-20A | 32     | 23.8 | 27.7 | 52.1 | 1 3/4-18 UNS   |
| MS3057-24A | 36     | 31.8 | 29.2 | 57.3 | 2-18 UNS       |

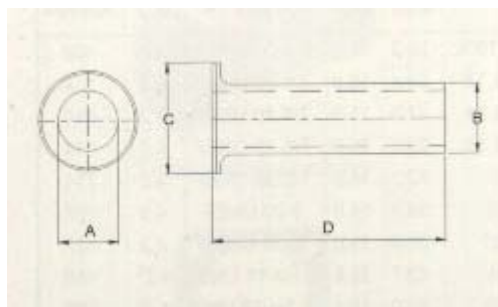
MS3057 style cable clamp was designed for use with jacketed cable or wire protected by tubing.

Both clamping halves float maximum strain relief. for unjacketed cable or wires, use corresponding

MS3420 telescoping bushing. To order clamp without bushing, add -1 to the P/N.

#### Telescoping Bushing

#### MS3420



| PART NUMBER | SIZE     | ØA Max | ØB Max | ØC   | D    |
|-------------|----------|--------|--------|------|------|
| MS3420-4    | 10SL,12S | 5.6    | 7.7    | 12.8 | 69.9 |
| MS3420-6    | 14S,14   | 7.9    | 10.9   | 15.7 | 66.7 |
| MS3420-8    | 16S,16   | 11.1   | 14.0   | 18.9 | 63.5 |
| MS3420-10   | 18       | 14.3   | 15.6   | 22.6 | 60.3 |
| MS3420-12   | 20,22    | 15.9   | 18.8   | 27.5 | 57.2 |
| MS3420-16   | 24,28    | 19.1   | 23.6   | 33.4 | 54.0 |
| MS3420-20   | 32       | 23.8   | 31.5   | 40.6 | 50.8 |
| MS3420-24   | 36       | 31.8   | 34.7   | 46.9 | 47.6 |

Telescoping grand bushings (used with 3057 clamp) keep dirt, oil and moisture out of endbell.

Taping or wrapping wires is eliminated since bushing protects wires going thru clamp.

Combinations of bushing may be used to decrease cable entry diameter to improve sealing.

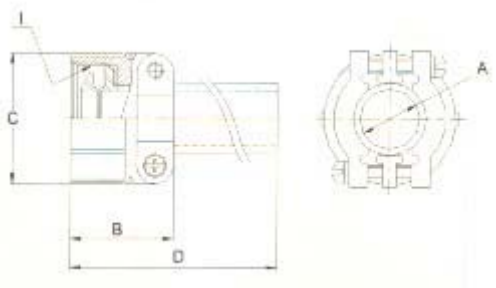


## Amphenol MIL-C-5015 connectors

### Accessories Dimension

#### Cable Clamp

##### DL3057

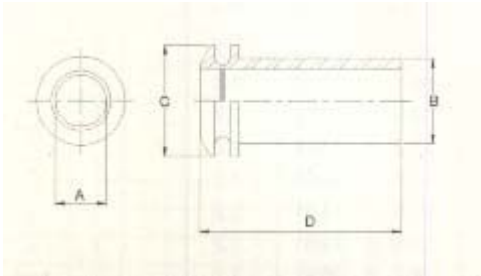
|  | PART NUMBER | SIZE   | ØA   | B    | ØC   | D    | I<br>Thread – 2B |
|------------------------------------------------------------------------------------|-------------|--------|------|------|------|------|------------------|
|                                                                                    | DL3057-4A   | 10SL   | 6.0  | 20.3 | 23.3 | 53.3 | 5/8-24 UNEF      |
|                                                                                    | DL3057-10A  | 18     | 14.0 | 23.6 | 32.2 | 54.4 | 1-20 UNEF        |
|                                                                                    | DL3057-12A  | 20, 22 | 15.9 | 23.6 | 37.8 | 57.3 | 1 3/16-18 UNEF   |
|                                                                                    | DL3057-16A  | 24     | 18.0 | 26.0 | 43.4 | 56.4 | 1 7/16-18 UNEF   |

DL3057 style cable clamp was designed for use with jacketed cable or wire protected by tubing.

Both clamping halves float maximum strain relief. for unjacketed cable or wires, use corresponding DL3420 telescoping busing. To order clamp without busing, add -1 to the P/N.

#### Telescoping Bushing

##### DL3420

|  | PART NUMBER | SIZE  | ØA Max | ØB Max | ØC   | D    |
|-----------------------------------------------------------------------------------|-------------|-------|--------|--------|------|------|
|                                                                                   | DL3420-4    | 10SL  | 6.0    | 7.7    | 12.0 | 47.5 |
|                                                                                   | DL3420-10   | 18    | 14.0   | 15.6   | 20.7 | 52.2 |
|                                                                                   | DL3420-12   | 20,22 | 15.9   | 18.8   | 24.5 | 52.3 |
|                                                                                   | DL3420-16   | 24    | 18.0   | 23.6   | 30.0 | 56.0 |

Telescoping grand bushings (used with 3057 clamp) keep dirt, oil and moisture out of endbell.

Taping or wrapping wires is eliminated since bushing protects wires going thru clamp.

Combinations of bushing may be used to decrease cable entry diameter to improve sealing.

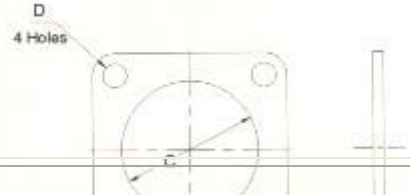
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## Amphenol MIL-C-5015 connectors

### Accessories Dimension

#### Sealing Gasket

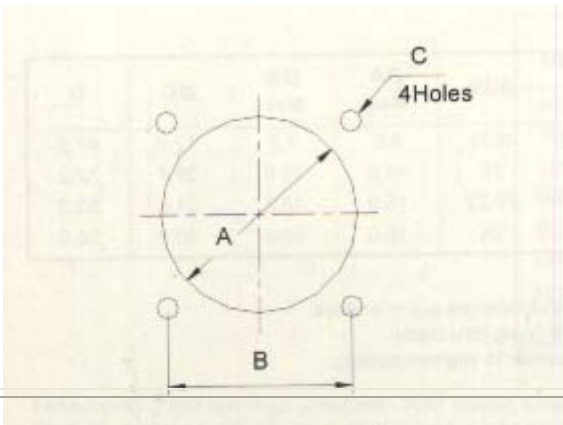
#### BMA 31

|  | PART NUMBER | Shell Size | □A    | □B    | ØC   | D +0.2 |
|-------------------------------------------------------------------------------------|-------------|------------|-------|-------|------|--------|
|                                                                                     | BMA31-10    | 10S,10SL   | 25.40 | 18.26 | 14.9 | 3.2    |
|                                                                                     | BMA31-12    | 12S,12     | 27.79 | 20.62 | 16.4 | 3.2    |

|          |        |       |       |      |     |
|----------|--------|-------|-------|------|-----|
| BMA31-14 | 14S,14 | 30.18 | 23.01 | 20.4 | 3.2 |
| BMA31-16 | 16S,16 | 32.54 | 24.61 | 23.0 | 3.2 |
| BMA31-18 | 18     | 34.94 | 26.97 | 25.9 | 3.2 |
| BMA31-20 | 20     | 38.10 | 29.36 | 29.1 | 3.2 |
| BMA31-22 | 22     | 41.28 | 31.75 | 32.0 | 3.2 |
| BMA31-24 | 24     | 44.45 | 34.93 | 35.3 | 3.8 |
| BMA31-28 | 28     | 50.80 | 39.67 | 41.5 | 3.8 |
| BMA31-32 | 32     | 57.15 | 44.45 | 47.5 | 4.6 |
| BMA31-36 | 36     | 63.50 | 49.23 | 54.7 | 4.6 |

The flat gasket of synthetic rubber material is provided to take complete advantage of waterproof and pressure sealing features. It is use with the flange mounted receptacle.

#### Panel Mounting Hole(Reference)

|  | Shell<br>Size | ØA<br>± 0.5 | □B<br>± 0.12 | C<br>+0.2 |
|-------------------------------------------------------------------------------------|---------------|-------------|--------------|-----------|
|                                                                                     | 10SL          | 17.5        | 18.26        | 3.2       |
|                                                                                     | 12S           | 18.5        | 20.62        | 3.2       |
|                                                                                     | 12            | 18.5        | 20.62        | 3.2       |
|                                                                                     | 14S           | 22.0        | 23.01        | 3.2       |
|                                                                                     | 14            | 22.0        | 23.01        | 3.2       |

|  |     |      |       |     |
|--|-----|------|-------|-----|
|  | 16S | 25.0 | 24.61 | 3.2 |
|  | 16  | 25.0 | 24.61 | 3.2 |
|  | 18  | 30.0 | 26.97 | 3.2 |
|  | 20  | 33.0 | 29.36 | 3.2 |
|  | 22  | 35.0 | 31.75 | 3.2 |
|  | 24  | 39.0 | 34.93 | 3.8 |
|  | 28  | 45.0 | 39.67 | 3.8 |
|  | 32  | 52.0 | 44.45 | 4.6 |
|  | 36  | 59.0 | 49.23 | 4.6 |

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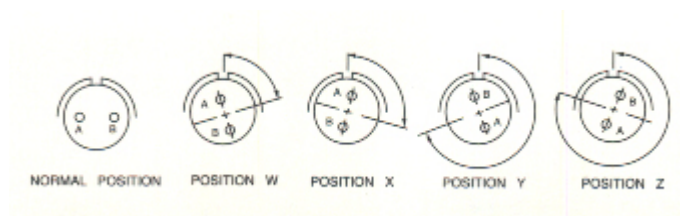
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## Amphenol MIL-C-5015 Connectors

### MS/DS Series

### Insert Arrangement & Alternate Positioning



| Contact<br>Arrange<br>-ment | Service<br>Rating | Total<br>Cont<br>-acts | Contact Size |   |   |    |    | Alternate Position-<br>Degrees |     |     |     |
|-----------------------------|-------------------|------------------------|--------------|---|---|----|----|--------------------------------|-----|-----|-----|
|                             |                   |                        | 0            | 4 | 8 | 12 | 16 | W                              | X   | Y   | Z   |
| 10S-2                       | A                 | 1                      |              |   |   |    | 1  | -                              | -   | -   | -   |
| 10SL-3                      | A                 | 3                      |              |   |   |    | 3  | -                              | -   | -   | -   |
| 10SL-4                      | A                 | 2                      |              |   |   |    | 2  | -                              | -   | -   | -   |
| 12S-1                       | A                 | 2                      |              |   |   |    | 2  | -                              | -   | -   | -   |
| 12S-3                       | A                 | 2                      |              |   |   |    | 2  | 4                              | 145 | 215 | 290 |
| 12S-4                       | D                 | 1                      |              |   |   |    | 1  | -                              | -   | -   | -   |
| 12-5                        | D                 | 1                      |              |   |   | 1  |    | -                              | -   | -   | -   |
| 14S-1                       | A                 | 3                      |              |   |   |    | 3  | -                              | -   | -   | -   |
| 14S-2                       | INST              | 4                      |              |   |   |    | 4  | -                              | 120 | 240 | -   |
| 14S-4                       | D                 | 1                      |              |   |   |    | 1  |                                |     |     |     |
| 14S-5                       | INST              | 5                      |              |   |   |    | 5  | -                              | 110 | -   | -   |
| 14S-6                       | INST              | 6                      |              |   |   |    | 6  | -                              | -   | -   | -   |
| 14S-7                       | A                 | 3                      |              |   |   |    | 3  | 90                             | 180 | 270 | -   |
| 14S-9                       | A                 | 2                      |              |   |   |    | 2  | 70                             | 145 | 215 | 290 |
| 14S-10                      | INST              | 4                      |              |   |   |    | 4  | -                              | -   | -   | -   |
| 14S-12                      | A                 | 3                      |              |   |   |    | 3  | -                              | -   | -   | -   |
| 14-3                        | A                 | 1                      |              |   | 1 |    |    | -                              | -   | -   | -   |
| 16S-1                       | A                 | 7                      |              |   |   |    | 7  | 80                             | -   | -   | 280 |
| 16S-3                       | B                 | 1                      |              |   |   |    | 1  | -                              | -   | -   | -   |
| 16S-4                       | D                 | 2                      |              |   |   |    | 2  | 35                             | 110 | 250 | 325 |
| 16S-5                       | A                 | 3                      |              |   |   |    | 3  | 70                             | 145 | 215 | 290 |
| 16S-6                       | A                 | 3                      |              |   |   |    | 3  | 90                             | 180 | 270 | -   |
| 16S-8                       | A                 | 5                      |              |   |   |    | 5  | -                              | 170 | 265 | -   |
| 16-2                        | E                 | 1                      |              |   |   | 1  |    | -                              | -   | -   | -   |

| Contact<br>Arrange<br>-ment | Service<br>Rating | Total<br>Cont<br>-acts | Contact Size |   |   |    |    | Alternate Position-<br>Degrees |     |     |     |
|-----------------------------|-------------------|------------------------|--------------|---|---|----|----|--------------------------------|-----|-----|-----|
|                             |                   |                        | 0            | 4 | 8 | 12 | 16 | W                              | X   | Y   | Z   |
| 18-22                       | D                 | 3                      |              |   |   |    | 3  | 70                             | 145 | 215 | 290 |
| 18-24                       | A/Inst            | 10                     |              |   |   |    | 10 | -                              | -   | -   | -   |
| 18-29                       | A                 | 5                      |              |   |   |    | 5  | -                              | -   | -   | -   |
| 18-30                       | A                 | 5                      |              |   |   |    | 5  | -                              | -   | -   | -   |
| 18-31                       | A                 | 5                      |              |   |   |    | 5  | -                              | -   | -   | -   |
| 20-2                        | D                 | 1                      | 1            |   |   |    |    | -                              | -   | -   | -   |
| 20-3                        | D                 | 3                      |              |   |   | 3  |    | 40                             | 145 | 215 | 290 |
| 20-4                        | D                 | 4                      |              |   |   | 4  |    | 45                             | 110 | 250 | -   |
| 20-6                        | D                 | 3                      |              |   |   |    | 3  |                                |     |     |     |
| 20-7                        | D/A               | 8                      |              |   |   |    | 8  | 80                             | 110 | 250 | 280 |
| 20-8                        | Inst.             | 6                      |              |   | 2 |    | 4  | 80                             | 110 | 250 | 280 |
| 20-9                        | D/A               | 8                      |              |   |   | 1  | 7  |                                |     |     |     |
| 20-11                       | Inst.             | 13                     |              |   |   |    | 12 | -                              | -   | -   | -   |
| 20-12                       | A                 | 2                      |              | 1 |   |    | 1  | -                              | -   | -   | -   |
| 20-14                       | A                 | 5                      |              |   | 2 | 3  |    | -                              | -   | -   | -   |
| 20-15                       | A                 | 7                      |              |   |   | 7  |    | 80                             | -   | -   | 280 |
| 20-16                       | A                 | 9                      |              |   |   | 2  | 7  | 80                             | 110 | 250 | 280 |
| 20-17                       | A                 | 6                      |              |   |   | 5  | 1  | 90                             | 180 | 270 | -   |
| 20-18                       | A                 | 9                      |              |   |   | 3  | 6  | 35                             | 110 | 250 | 325 |
| 20-19                       | A                 | 3                      |              |   |   | 3  |    | 90                             | 180 | 270 | -   |
| 20-20                       | A                 | 4                      |              | 1 |   | 3  |    | -                              | -   | -   | -   |
| 20-21                       | A                 | 9                      |              |   |   | 1  | 8  | -                              | -   | -   | -   |
| 20-22                       | A                 | 6                      |              |   | 3 |    | 3  | 80                             | 110 | 250 | 280 |
| 20-23                       | A                 | 2                      |              |   | 2 |    |    | 35                             | 110 | 250 | 325 |

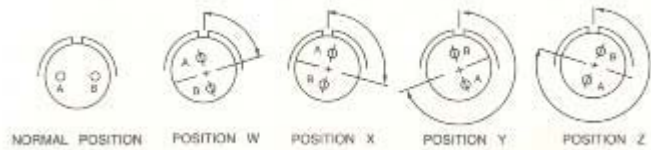
|       |        |    |  |   |   |   |    |    |     |     |     |
|-------|--------|----|--|---|---|---|----|----|-----|-----|-----|
| 16-7  | A      | 3  |  |   | 1 |   | 2  |    | –   | –   |     |
| 16-9  | A      | 4  |  |   |   | 2 | 2  | 35 | 110 | 250 | 325 |
| 16-10 | A      | 3  |  |   |   | 3 |    | 90 | 180 | 270 | –   |
| 16-11 | A      | 2  |  |   |   | 2 |    | 35 | 110 | 250 | 325 |
| 16-12 | A      | 1  |  | 1 |   |   |    | –  | –   | –   | –   |
| 16-13 | A      | 2  |  |   |   | 2 |    | 35 | 110 | 250 | 325 |
| 18-1  | A/Inst | 10 |  |   |   |   | 10 | 70 | 145 | 215 | 290 |
| 18-3  | D      | 2  |  |   |   | 2 |    | 35 | 110 | 250 | 325 |
| 18-4  | D      | 4  |  |   |   |   | 4  | 35 | 110 | 250 | 325 |
| 18-5  | D      | 3  |  |   |   | 2 | 1  | 80 | 110 | 250 | 280 |
| 18-6  | D      | 1  |  | 1 |   |   |    | –  | –   | –   | –   |
| 18-7  | B      | 1  |  |   | 1 |   |    | –  | –   | –   | –   |
| 18-8  | A      | 8  |  |   |   | 1 | 7  | 70 | –   | –   | 290 |
| 18-9  | Inst.  | 7  |  |   |   | 2 | 5  | 80 | 110 | 250 | 280 |
| 18-10 | A      | 4  |  |   |   | 4 |    | –  | 120 | 240 | –   |
| 18-11 | A      | 5  |  |   |   | 5 |    | –  | 170 | 265 |     |
| 18-12 | A      | 6  |  |   |   |   | 6  | 80 | –   | –   | 280 |
| 18-13 | A      | 4  |  |   | 1 | 3 |    | 80 | 110 | 250 | 280 |
| 18-14 | A      | 2  |  | 1 |   |   | 1  | –  | –   | –   | –   |
| 18-15 | A      | 4  |  |   |   | 4 |    | –  | 120 | 240 | –   |
| 18-16 | C      | 1  |  |   |   | 1 |    | –  | –   | –   | –   |
| 18-17 | Inst.  | 7  |  |   |   | 2 | 5  | –  | –   | –   | –   |
| 18-19 | A      | 10 |  |   |   |   | 10 | –  | 120 | 240 | –   |
| 18-20 | A      | 5  |  |   |   |   | 5  | 90 | 180 | 270 | –   |
| 18-21 | A1     | 3  |  |   |   | 3 |    | –  | –   | –   | –   |

|       |       |    |   |  |  |   |   |    |    |     |     |     |
|-------|-------|----|---|--|--|---|---|----|----|-----|-----|-----|
| 20-24 | A     | 4  |   |  |  | 2 |   | 2  | -  | -   | -   | -   |
| 20-25 | Inst. | 13 |   |  |  |   |   | 13 | -  | -   | -   | -   |
| 20-27 | A     | 14 |   |  |  |   |   | 14 | 35 | 110 | 250 | 325 |
| 20-29 | A     | 17 |   |  |  |   |   | 17 | 80 | -   | -   | 20  |
| 20-30 | Inst. | 13 |   |  |  |   |   | 13 | -  | -   | -   | -   |
| 20-33 | A     | 11 |   |  |  |   |   | 11 | -  | -   | -   | -   |
| 22-1  | D     | 2  |   |  |  | 2 |   |    | 35 | 110 | 250 | 325 |
| 22-2  | D     | 3  |   |  |  | 3 |   |    | 70 | 145 | 215 | 290 |
| 22-4  | A     | 4  |   |  |  | 2 | 2 |    | 35 | 110 | 250 | 325 |
| 22-5  | D     | 6  |   |  |  |   | 2 | 4  | -  | -   | -   | -   |
| 22-6  | D     | 3  |   |  |  | 2 |   | 1  | -  | -   | -   | -   |
| 22-7  | E     | 1  | 1 |  |  |   |   |    | -  | -   | -   | -   |
| 22-8  | E     | 2  |   |  |  |   | 2 |    | 35 | 110 | 250 | 325 |
| 22-9  | E     | 3  |   |  |  |   | 3 |    | 70 | 145 | 215 | 290 |
| 22-10 | E     | 4  |   |  |  |   |   | 4  | 35 | 110 | 250 | 325 |
| 22-11 | B     | 2  |   |  |  |   |   | 2  | 35 | 110 | 250 | 325 |
| 22-12 | D     | 5  |   |  |  | 2 |   | 3  | 80 | 110 | 250 | 280 |
| 22-13 | D/A   | 5  |   |  |  |   | 4 | 1  | 34 | 110 | 250 | 325 |
| 22-14 | A     | 19 |   |  |  |   |   | 19 | 80 | 110 | 250 | 280 |
| 22-15 | E/A   | 6  |   |  |  |   | 5 | 1  | 80 | 110 | 250 | 280 |
| 22-16 | A     | 9  |   |  |  |   | 3 | 6  | -  | -   | -   | -   |
| 22-17 | D/A   | 9  |   |  |  |   | 1 | 8  | -  | -   | -   | -   |
| 22-18 | A/D   | 8  |   |  |  |   |   | 8  | 80 | 110 | 250 | 280 |
| 22-19 | A     | 14 |   |  |  |   |   | 14 | 80 | 110 | 250 | 280 |
| 22-20 | A     | 9  |   |  |  |   |   | 9  | 35 | 110 | 250 | 325 |

## Amphenol MIL-C-5015 Connectors

### MS/DS Series

### Insert Arrangement & Alternate Positioning



| Contact Arrange-ment | Service Rating | Total Cont-acts | Contact Size |   |   |    |    | Alternate Position-Degrees |     |     |     |
|----------------------|----------------|-----------------|--------------|---|---|----|----|----------------------------|-----|-----|-----|
|                      |                |                 | 0            | 4 | 8 | 12 | 16 | W                          | X   | Y   | Z   |
| 22-21                | A              | 3               |              |   |   |    | 2  | -                          | -   | -   | -   |
| 22-22                | A              | 4               |              |   | 4 |    |    | -                          | 110 | 250 | -   |
| 22-23                | D/A            | 8               |              |   |   | 8  |    | 35                         | -   | 250 | -   |
| 22-27                | D/A            | 6               |              |   |   | 2  | 4  | 80                         | -   | 250 | 280 |
| 22-28                | A              | 9               |              |   | 1 |    | 8  | 80                         | -   | -   | 280 |
| 22-33                | D/A            | 7               |              |   |   |    | 7  | -                          | -   | -   | -   |
| 22-34                | D              | 5               |              |   |   | 3  | 2  | -                          | -   | -   | -   |
| 24-2                 | D              | 7               |              |   |   | 7  |    | 80                         | -   | -   | 280 |
| 24-3                 | D              | 7               |              |   |   | 2  | 5  | -                          | -   | -   | -   |

| Contact Arrange-ment | Service Rating | Total Cont-acts | Contact Size |   |    |    |    | Alternate Position-Degrees |     |     |     |
|----------------------|----------------|-----------------|--------------|---|----|----|----|----------------------------|-----|-----|-----|
|                      |                |                 | 0            | 4 | 8  | 12 | 16 | W                          | X   | Y   | Z   |
| 28-19                | B/D/A          | 10              |              |   | 4  | 6  |    | 80                         | 110 | 250 | 280 |
| 28-20                | A              | 14              |              |   | 10 | 4  |    | 80                         | 110 | 250 | 280 |
| 28-21                | A              | 37              |              |   |    | 37 |    | 80                         | 110 | 250 | 280 |
| 28-22                | D              | 6               |              | 3 |    |    | 3  | 70                         | 145 | 215 | 290 |
| 32-1                 | E/D            | 5               | 2            |   |    | 3  |    | 80                         | 110 | 250 | 280 |
| 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            |   |    |    |    | 35                         | 110 | 250 | 325 |

|       |       |    |   |   |   |    |    |     |     |     |
|-------|-------|----|---|---|---|----|----|-----|-----|-----|
| 24-5  | A     | 16 |   |   |   | 16 | 80 | 110 | 250 | 280 |
| 24-6  | D/A   | 8  |   |   | 8 |    | 80 | 110 | 250 | 280 |
| 24-7  | A     | 16 |   |   | 2 | 14 | 80 | 110 | 250 | 280 |
| 24-9  | A     | 2  | 2 |   |   |    | 35 | 110 | 250 | 325 |
| 24-10 | A     | 7  |   | 7 |   |    | 80 | -   | -   | 280 |
| 24-11 | A     | 9  |   | 3 | 6 |    | 35 | 110 | 250 | 325 |
| 24-12 | A     | 5  | 2 |   | 3 |    | 80 | 110 | 250 | 280 |
| 24-16 | D/A   | 7  |   | 1 | 3 | 3  | -  | -   | -   | -   |
| 24-17 | D     | 5  |   |   | 2 | 3  | -  | -   | -   | -   |
| 24-20 | D     | 11 |   |   | 2 | 9  | 80 | 110 | 250 | 280 |
| 24-21 | D     | 10 |   | 1 |   | 9  | -  | -   | -   | -   |
| 24-22 | D     | 4  |   | 4 |   |    | 45 | 110 | 250 | -   |
| 24-27 | E     | 7  |   |   |   | 7  | -  | -   | -   | -   |
| 24-28 | INST  | 24 |   |   |   | 24 | 80 | 110 | 250 | 280 |
| 28-1  | D/A   | 9  |   | 3 | 6 |    | 80 | 110 | 250 | 280 |
| 28-2  | D     | 14 |   |   | 2 | 12 | -  | -   | -   | -   |
| 28-3  | E     | 3  |   | 3 |   |    | 70 | 145 | 215 | 290 |
| 28-4  | E/D   | 9  |   |   | 2 | 7  | -  | -   | -   | -   |
| 28-5  | D     | 5  | 2 |   | 1 | 2  | -  | -   | -   | -   |
| 28-6  | D     | 3  | 3 |   |   |    | 70 | 145 | 215 | 290 |
| 28-7  | D     | 2  | 2 |   |   |    | 35 | 110 | 250 | 325 |
| 28-8  | E/D/A | 12 |   |   | 2 | 10 |    |     |     |     |
| 28-9  | D     | 12 |   |   | 6 | 6  | 80 | 110 | 250 | 280 |
| 28-10 | D/A   | 7  | 2 | 2 | 3 |    | 80 | 110 | 250 | 280 |
| 28-11 | A     | 22 |   |   | 4 | 18 | 80 | 110 | 250 | 280 |
| 28-12 | A     | 26 |   |   |   | 26 | 90 | 180 | 270 |     |
| 28-13 | A     | 26 |   |   |   | 26 | -  | -   | -   | -   |

|       |         |    |   |   |   |    |    |    |     |     |     |
|-------|---------|----|---|---|---|----|----|----|-----|-----|-----|
| 32-6  | A       | 23 |   | 2 | 3 | 2  | 16 | 80 | 110 | 250 | 325 |
| 32-7  | INST/A  | 35 |   |   |   | 7  | 28 | 80 | 125 | 235 | 280 |
| 32-8  | A       | 30 |   |   |   | 6  | 24 | 80 | 125 | 235 | 280 |
| 32-9  | D       | 14 |   | 2 |   |    | 12 | 80 | 110 | 250 | 280 |
| 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  |    | 35 | 110 | 250 | 280 |
| 32-16 | A       | 23 |   | 2 | 3 | 2  | 16 | -  | -   | -   | -   |
| 32-17 | D       | 4  |   | 4 |   |    |    | 45 | 110 | 250 | 280 |
| 32-22 | A/U/V   | 54 |   |   |   |    | 54 | 80 | 110 | 250 | 280 |
| 36-1  | D       | 22 |   |   |   | 4  | 18 | 80 | 110 | 250 | 280 |
| 36-3  | D       | 6  | 3 |   |   | 3  |    | 70 | 145 | 215 | 290 |
| 36-4  | D/A     | 3  | 3 |   |   |    |    | 70 | 145 | 215 | 290 |
| 36-5  | A       | 4  | 4 |   |   |    |    | -  | 120 | 240 | -   |
| 36-6  | A       | 6  | 2 | 4 |   |    |    | 35 | 110 | 250 | 325 |
| 36-7  | A       | 47 |   |   |   | 7  | 40 | 80 | 110 | 250 | 280 |
| 36-8  | A       | 47 |   |   |   | 1  | 46 | 80 | 110 | 250 | 280 |
| 36-9  | A       | 31 |   | 1 | 2 | 14 | 14 | 80 | 125 | 235 | 280 |
| 36-10 | A       | 48 |   |   |   |    | 48 | 80 | 125 | 235 | 280 |
| 36-11 | A       | 48 |   |   |   |    | 48 | -  | -   | -   | -   |
| 36-12 | A       | 48 |   |   |   |    | 48 | -  | -   | -   | -   |
| 36-13 | E/A     | 17 |   |   |   | 2  | 15 | 80 | 110 | 250 | 280 |
| 36-14 | D       | 16 |   |   | 5 | 5  | 6  | 90 | 180 | 270 | -   |
| 36-15 | D/A     | 35 |   |   |   |    | 35 | 60 | 125 | 245 | 305 |
| 36-16 | A       | 47 |   |   |   | 7  | 40 | -  | -   | -   | -   |
| 36-17 | A       | 47 |   |   |   | 7  | 40 | -  | -   | -   | -   |

[illegible]