

Amphenol 97 Series MIL-DTL-5015



MATES WITH ALL THREADED MIL-DTL-5015 CONNECTORS

The 97 series is a durable, cost-effective MIL-DTL-5015 available in a variety of shell styles, sizes, contacts, and layouts. Contacts are silver-plated with pre-tinned solder cups. These circular connectors are excellent for industrial applications including robotics, machine tools and welding.

- UL-approved & CSA-certified
- Also called MIL-C-5015 or MS

APPLICATIONS

Industrial, commercial and medical applications where cost-effective, general-duty connectors are required.

- Communications systems
- Medical instrumentation
- Ships
- Conveyors
- Motors
- Trucks
- Factory automation
- Mobile equipment
- Trailers
- Industrial machinery
- Sensors

FEATURES

- Cost-effective
- Wide selection of shell styles and insert patterns
- Threaded coupling, hard dielectric inserts
- Solder termination
- Wide variety of connector finishes
- Solid or split-shell construction
- UL-recognized and CSA-certified

TECHNICAL SPECIFICATIONS

MATERIALS & FINISHES

| | |
|------------------|--|
| Shell | Aluminum alloy |
| Plating | Olive drab chromate or clear chromate coating over cadmium plating to QQ-P-416, Black alloy, conductive black alloy, electroless nickel or green zinc and gray zinc nickel |
| Contacts | Brass or copper alloy |
| Contacts Plating | Silver plating to ASTM B700 (solder contacts have tinned solder pot) gold plating to ASTM B488 |
| Insulator | Diallyl phthalate (Blue color) |

ELECTRICAL DATA

Operating Voltage/Test Voltage

| SERVICE RATING* | TEST VOLTAGE (RMS 60 cps) | SUGGESTED* OPERATING VOLTAGE | | AIR SPACING NOM. (INCHES) | CREEPAGE DISTANCE NOM. (INCHES) |
|-----------------|---------------------------|------------------------------|----------|---------------------------|---------------------------------|
| | | DC | AC (rms) | | |
| I | 1,000 | 250 | 200 | 1/32 | 1/16 |
| A | 2,000 | 700 | 500 | 1/16 | 1/8 |
| D | 2,800 | 1,250 | 900 | 1/8 | 3/16 |
| E | 3,500 | 1,750 | 1,250 | 3/16 | 1/4 |
| B | 4,500 | 2,450 | 1,750 | 1/4 | 5/16 |
| C | 7,000 | 4,200 | 3,000 | 5/16 | 1 |

* Each insulator has a specific service rating. These numbers should be used by the designer only as a guide. The Service Ratings for each layout are listed on [pages 72-93](#).

97 series connectors show no evidence of breakdown when the given test voltages are applied between the two closest contacts and between the shell and the contacts closest to the shell for a period of one minute, per MIL-STD-1344 Method 3001.

Current Rating & Contact Resistance

| CONTACT SIZE | TEST CURRENT (AMPS) | POTENTIAL DROP (MILLIVOLTS) |
|--------------|---------------------|-----------------------------|
| 16 | 13 | 49 |
| 12 | 23 | 42 |
| 8 | 46 | 26 |
| 4 | 80 | 23 |
| 0 | 150 | 21 |

Maximum total current to be carried per connector in wire bundles as specified in MIL-W-5088. Contact resistance when tested to MIL-C-39029 will not exceed voltage drops listed in above table.

MECHANICAL

| | |
|-----------------------|---|
| Wire Range Sizes | 24 to 0 AWG |
| Contact Resistance | (See table above) |
| Insulation Resistance | > 5,000 megohms at 77°F (25°C) per MIL-DTL-5015, 3.18 |
| Mating Life | 100 cycles minimum per MIL-DTL-5015, 3.16 |
| Salt Spray | MIL-STD-1344 Method 1001 Condition B minimum (Cadmium) 48 hour, Gray Zinc Nickel 500 hours |
| Heat | +257°F (+125°C) for 60 hours, +185°F (+85°C) for 1,000 hours per MIL-DTL-5015, 4.6.14, minimum |
| Chemical Resistance | 20 hour full immersion (unmated) in hydraulic fluid and lubricating oil per MIL-DTL-5015 minimum |
| Vibration | 10 to 2,000Hz (15g's) 10 microseconds maximum discontinuity to MIL-STD-1344 Method 2005 per MIL-DTL-5015 |
| Shock | 50g 11 millisecond duration, three major axes 10 microseconds maximum discontinuity to MIL-DTL-5015, 3.13 |
| Contact Type | Solder (hard silver or gold plating) |
| Number of Circuits | 1 to 52 (See pages 72-82) |

CREATE YOUR PART NUMBER USING THESE FIVE STEPS

| STEP | 1 | 2 | 3 | 4 | 5 |
|---------------|-------------|--------------|-------------|----------|-------------|
| | 97 | 3106A | 18-1 | P | -946 |
| SERIES PREFIX | SHELL STYLE | LAYOUT | CONTACT | ROTATION | PLATING |

(example)

STEP 1: SELECT SHELL STYLE, PLUG OR RECEPTACLE

RECEPTACLES ← Mates with → PLUGS




97-3100A
Wall Mount with Accessory Threads, Solid Endbell



97-3106A
Straight with Accessory Threads, Solid Endbell



97-3106B
Straight with Accessory Threads, Split Endbell




97-3101A
Cable Mount with Accessory Threads, Solid Endbell



97-3107A
Friction Fit Straight with Accessory Threads, Solid Endbell
*Not available in shell sizes 12S & 36



97-3107B
Friction Fit Straight with Accessory Threads, Split Endbell
*Not available in shell sizes 8S, 10SL, 12SL, 12, 32, 36




97-3102A
Box Mount with No Accessory Threads



97-3108A
Right Angle with Accessory Threads, Solid Endbell
*Not available in shell sizes 32 & 36



97-3108B
Right Angle with Accessory Threads, Split Endbell
*Not available in shell sizes 32

STEP 2: SELECT LAYOUT

⇒ See pages 72-93 for more information

| | | | | | | | |
|----------|--------|-------|--------|-------|-------|-------|--------|
| 8S-1 | 16S-4 | 18-4 | 18-30 | 20-27 | 22-22 | 24-24 | 28-21 |
| 10SL-3* | 16S-5 | 18-5 | 18-31 | 20-29 | 22-23 | 24-25 | 32-5 |
| 10SL-4* | 16S-6 | 18-8 | 18-420 | 20-30 | 22-27 | 24-26 | 32-6 |
| 12-5 | 16S-8 | 18-9 | 20A16 | 20-32 | 22-28 | 24-27 | 32-7 |
| 12S-2 | 16S-14 | 18-10 | 20A37 | 20-33 | 22-30 | 24-28 | 32-8 |
| 12S-3 | 16S-15 | 18-11 | 20-3 | 22-1 | 22-31 | 28-1 | 32-17 |
| 12SL-844 | 16S-16 | 18-12 | 20-4 | 22-2 | 22-32 | 28-2 | 32-414 |
| 12-5 | 16S-17 | 18-13 | 20-6 | 22-4 | 22-34 | 28-3 | 36-1 |
| 14S-1 | 16SA18 | 18-16 | 20-7 | 22-5 | 24-2 | 28-6 | 36-5 |
| 14S-2 | 16SA19 | 18-17 | 20-8 | 22-8 | 24-5 | 28-8 | 36-6 |
| 14S-4 | 16SA20 | 18-18 | 20-11 | 22-9 | 24-6 | 28-9 | 36-7 |
| 14S-5 | 16SA21 | 18-19 | 20-14 | 22-10 | 24-7 | 28-10 | 36-8 |
| 14S-6 | 16-7 | 18-20 | 20-15 | 22-11 | 24-9 | 28-11 | 36-9 |
| 14S-7 | 16-9 | 18-22 | 20-16 | 22-12 | 24-10 | 28-12 | 36-10 |
| 14S-9 | 16-10 | 18-23 | 20-17 | 22-13 | 24-11 | 28-13 | 36-11 |
| 14S-10 | 16-11 | 18-24 | 20-18 | 22-14 | 24-12 | 28-15 | 36-12 |
| 14S-11 | 16-12 | 18-25 | 20-19 | 22-15 | 24-16 | 28-16 | 36-15 |
| 14S-12 | 16-13 | 18-26 | 20-21 | 22-16 | 24-19 | 28-17 | 36-403 |
| 14S-13 | 18A31 | 18-27 | 20-23 | 22-18 | 24-20 | 28-18 | |
| 14S-14 | 18-1 | 18-28 | 20-24 | 22-19 | 24-21 | 28-19 | |
| 16S-1 | 18-3 | 18-29 | 20-25 | 22-20 | 24-22 | 28-20 | |

* Socket for plug only. Pin for receptacle only.

STEP 3: SELECT CONTACT

P = Pin S = Socket

STEP 4: SELECT ROTATION

⇒ See pages 83-93 (Omit for normal)

W, X, Y, Z

STEP 5: SELECT PLATING

CONTACTS

(Omit for silver plating)

426 = Gold over Silver
431 = Less Pre-filled Solder Cups

SHELL PLATING

(Omit for olive drab chromate over cadmium)

621 = Black Alloy
639 = Clear Chromate over Cadmium
640 = Conductive Black Alloy
689 = Electroless Nickel
958 = Gray Zinc Nickel

OTHER MODIFIERS

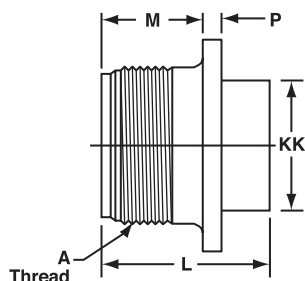
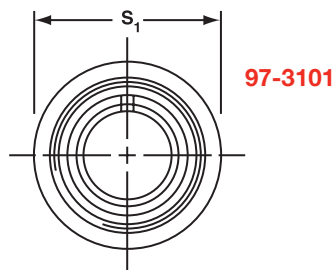
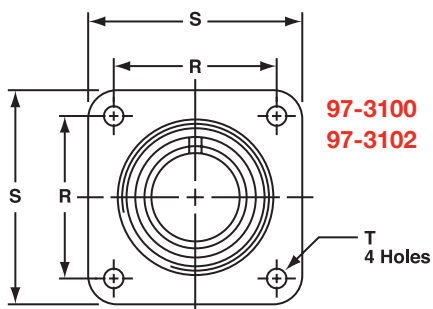
417 = Plug Seal O-Ring
438 = Plug Seal O-Ring and Potting Cup
940 = Add Cable Clamp and Bushing
946 = 431 + 621 Mod Codes Combined (RoHS)
947 = 431 + 689 Mod Codes Combined (RoHS)
955 = 431 + 640 Mod Codes Combined (RoHS)
959 = 431 + 958 Mod Codes Combined (RoHS)



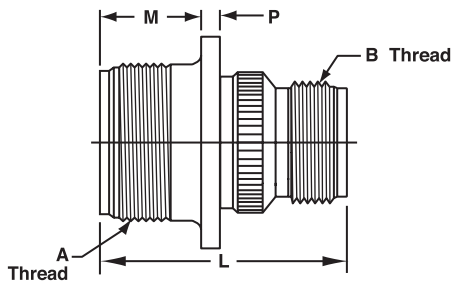
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DIMENSIONS

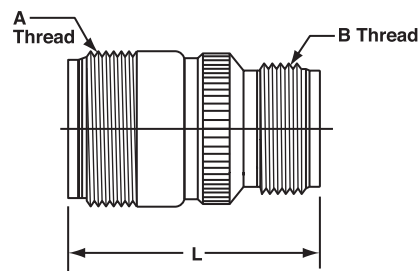
RECEPTACLE STYLES



97-3102



97-3100



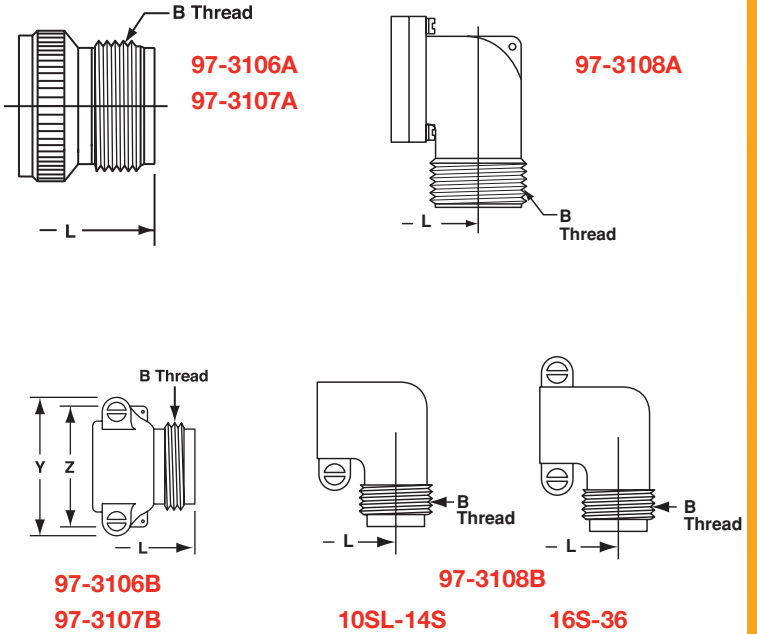
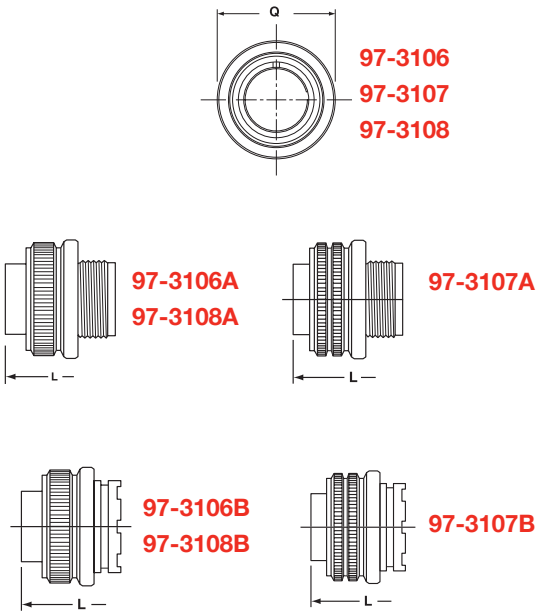
97-3101

| SHELL SIZE | 97-3100A/97-3102A | | | | | A THREAD 2A | 97-3102A | | 97-3100A | 97-3101A | | 97-3100A/97-3101A B THREAD 2A |
|------------|-------------------|----------------|----------------|-----------------|----------------|-----------------|-----------------|-----------------|-----------------|----------------|-----------------|----------------------------------|
| | M | P | R | S | T | | L | KK | L | S ₁ | L | |
| 8S | 0.56 (14.3) | 0.078 (2.0) | 0.59 (15.1) | 0.88 (22.2) | 0.120 (3.0) | 1/2-28 UNEF | 0.859 (21.8) | 0.438 (11.1) | 1.25 (31.8) | 0.88 (22.2) | 1.25 (31.8) | .5000-28 UNEF |
| 10S | 0.56 (14.3) | 0.078 (2.0) | 0.72 (18.3) | 1.00 (25.4) | 0.120 (3.0) | 5/8-24 NEF | 0.859 (21.8) | 0.500 (12.7) | 1.313 (33.3) | 1.00 (25.4) | 1.313 (33.3) | .5000-28 UNEF |
| 10SL | 0.56 (14.3) | 0.078 (2.0) | 0.72 (18.3) | 1.00 (25.4) | 0.120 (3.0) | 5/8-24 NEF | 0.953 (24.2) | 0.688 (17.5) | 1.281 (32.5) | 1.00 (25.4) | 1.281 (32.5) | .6250-24 UNEF |
| 12S | 0.56 (14.3) | 0.078 (2.0) | 0.81 (20.6) | 1.09 (27.8) | 0.120 (3.0) | 3/4-20 UNEF | 0.969 (24.6) | 0.688 (17.5) | 1.469 (37.3) | 1.09 (27.8) | 1.469 (37.3) | .6250-24 UNEF |
| 12 | 0.75 (19.1) | 0.078 (2.0) | 0.81 (20.6) | 1.09 (27.8) | 0.120 (3.0) | 3/4-20 UNEF | 1.328 (33.7) | 0.688 (17.5) | 1.84 (46.8) | 1.09 (27.8) | 1.84 (46.8) | .6250-24 UNEF |
| 12SL | 0.56 (14.3) | 0.078 (2.0) | 0.81 (20.6) | 1.09 (27.8) | 0.120 (3.0) | 3/4-20 UNEF | 0.844 (21.4) | 0.688 (17.5) | - (27.8) | 1.09 (27.8) | - (27.8) | .6250-24 UNEF |
| 14S | 0.56 (14.3) | 0.078 (2.0) | 0.91 (23.0) | 1.185 (30.1) | 0.120 (3.0) | 7/8-20 UNEF | 0.953 (24.2) | 0.750 (19.1) | 1.469 (37.3) | 1.16 (29.5) | 1.469 (37.3) | .7500-20 UNEF |
| 16S | 0.56 (14.3) | 0.078 (2.0) | 0.97 (24.6) | 1.28 (32.5) | 0.120 (3.0) | 1-20 UNEF | 0.953 (24.2) | 0.875 (22.2) | 1.469 (37.3) | 1.28 (32.5) | 1.469 (37.3) | .8750-20 UNEF |
| 16 | 0.75 (19.1) | 0.125 (3.2) | 0.97 (24.6) | 1.28 (32.5) | 0.120 (3.0) | 1-20 UNEF | 1.375 (34.9) | 0.875 (22.2) | 1.891 (48.0) | 1.28 (32.5) | 1.891 (48.0) | .8750-20 UNEF |
| 18 | 0.75 (19.1) | 0.125 (3.2) | 1.06 (27.0) | 1.38 (34.9) | 0.120 (3.0) | 1 1/8-18 NEF | 1.375 (34.9) | 1.000 (25.4) | 1.984 (50.4) | 1.38 (34.9) | 1.984 (50.4) | 1.0000-20 UNEF |
| 20 | 0.75 (19.1) | 0.125 (3.2) | 1.16 (29.4) | 1.50 (38.1) | 0.120 (3.0) | 1 1/4-18 NEF | 1.375 (34.9) | 1.125 (28.6) | 1.891 (48.0) | 1.50 (38.1) | 1.891 (48.0) | 1.1875-18 UNEF |
| 22 | 0.75 (19.1) | 0.125 (3.2) | 1.25 (31.8) | 1.63 (41.3) | 0.120 (3.0) | 1 3/8-18 NEF | 1.375 (34.9) | 1.250 (31.8) | 1.984 (50.4) | 1.63 (41.3) | 1.984 (50.4) | 1.1875-18 UNEF |
| 24 | 0.81 (20.6) | 0.125 (3.2) | 1.38 (34.9) | 1.75 (44.5) | 0.147 (3.7) | 1 1/2-18 NEF | 1.375 (34.9) | 1.375 (34.9) | 2.25 (57.2) | 1.75 (44.5) | 2.25 (57.2) | 1.4375-18 UNEF |
| 28 | 0.81 (20.6) | 0.125 (3.2) | 1.56 (39.7) | 2.00 (50.8) | 0.147 (3.7) | 1 3/4-18 NS | 1.375 (34.9) | 1.625 (41.3) | 2.25 (57.2) | 2.00 (50.8) | 2.25 (57.2) | 1.4375-18 UNEF |
| 32 | 0.88 (22.2) | 0.125 (3.2) | 1.75 (44.5) | 2.25 (57.2) | 0.173 (4.4) | 2-18 NS | 1.469 (37.3) | 1.906 (48.4) | 2.375 (60.3) | 2.25 (57.2) | 2.375 (60.3) | 1.7500-18 UNS |
| 36 | 0.88 (22.2) | 0.125 (3.2) | 1.94 (49.2) | 2.50 (63.5) | 0.173 (4.4) | 2 1/4-16 UN | 1.469 (37.3) | 2.125 (54.0) | 2.375 (60.3) | 2.50 (63.5) | 2.375 (60.3) | 2.0000-18 UNS |

All dimensions in inches (millimeters in parenthesis)

PLUG STYLES (BARREL ASSEMBLIES)

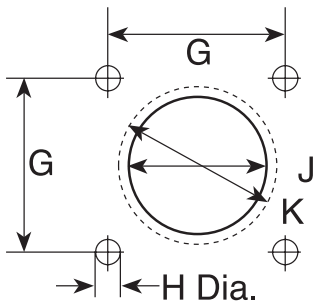
ENDBELL STYLES



| SHELL SIZE | 97-3106 97-3107 97-3108 | 97-3106A 97-3107A | 97-3106B/97-3107B | | | 97-3108A | 97-3108B | B Thread 2A |
|------------|-------------------------------|----------------------|-------------------|----------------|----------------|----------------|----------------|----------------|
| | Q | L | L | Y | Z | L | L | |
| 8S | 0.75 (19.1) | 1.25 (31.8) | - | - | - | - | - | .5000-28 UNEF |
| 10S | 0.88 (22.2) | 1.31 (33.3) | - | - | - | 1.25 (31.8) | 1.38 (34.9) | .5000-28 UNEF |
| 10SL | 0.88 (22.2) | 1.38 (35.1) | - | - | - | 1.31 (33.3) | 1.50 (38.1) | .6250-24 UNEF |
| 12S | 1.00 (25.4) | 1.47 (37.3) | - | - | - | 1.38 (34.9) | 1.56 (39.7) | .6250-24 UNEF |
| 12 | 1.00 (25.4) | 1.84 (46.8) | - | - | - | 1.22 (31.0) | 1.88 (47.6) | .6250-24 UNEF |
| 12SL | 1.00 (25.4) | - | - | - | - | 1.38 (34.9) | - | .7500-20 UNEF |
| 14S | 1.13 (28.6) | 1.47 (37.3) | 1.69 (42.9) | 1.16 (29.4) | 1.13 (28.6) | 1.22 (31.0) | 1.72 (43.7) | .7500-20 UNEF |
| 16S | 1.25 (31.8) | 1.47 (37.3) | 1.69 (42.9) | 1.25 (31.8) | 1.25 (31.8) | 1.50 (38.1) | 1.75 (44.5) | .8750-20 UNEF |
| 16 | 1.25 (31.8) | 1.89 (48.0) | - | - | - | 1.94 (49.2) | 2.13 (54.0) | .8750-20 UNEF |
| 18 | 1.34 (34.1) | 1.98 (50.4) | 2.19 (55.6) | 1.64 (41.7) | 1.34 (34.1) | 1.94 (49.2) | 2.16 (54.8) | 1.0000-20 UNEF |
| 20 | 1.47 (37.3) | 1.89 (48.0) | 2.13 (54.0) | 1.81 (46.0) | 1.47 (37.3) | 2.06 (52.4) | 2.38 (60.3) | 1.1875-18 UNEF |
| 22 | 1.59 (40.5) | 1.98 (50.3) | 2.13 (54.0) | 1.94 (49.2) | 1.59 (40.5) | 2.06 (52.4) | 2.41 (61.1) | 1.1875-18 UNEF |
| 24 | 1.72 (43.7) | 2.25 (57.2) | 2.28 (57.9) | 2.06 (52.4) | 1.72 (43.7) | 2.47 (62.7) | 2.63 (66.7) | 1.4375-18 UNEF |
| 28 | 1.97 (50.0) | 2.25 (57.2) | 2.28 (57.9) | 2.31 (58.8) | 1.97 (50.0) | 2.47 (62.7) | 2.63 (66.7) | 1.4375-18 UNEF |
| 32 | 2.22 (56.4) | 2.38 (60.3) | 2.31 (58.8) | 2.59 (65.9) | 2.22 (56.4) | - | 2.81 (71.4) | 1.7500-18 UNS |
| 36 | 2.47 (62.7) | 2.38 (60.3) | 2.34 (59.5) | 2.84 (72.2) | 2.47 (62.7) | - | 2.84 (72.2) | 2.0000-18 UNS |

All dimensions in inches (millimeters in parenthesis)

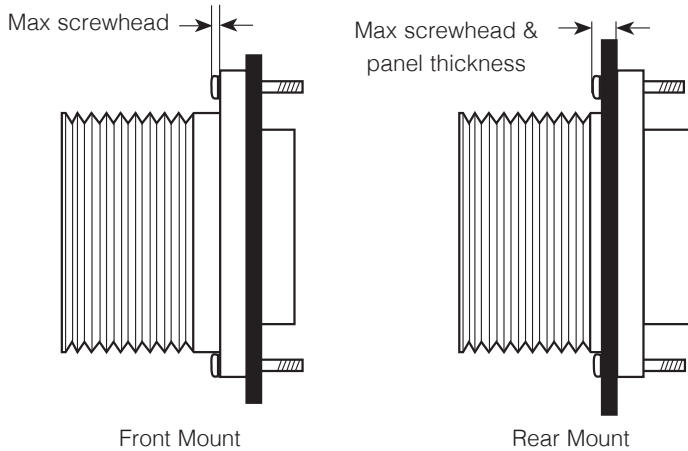
PANEL CUTOUTS



Dimension J is flange in front of panel.
Dimension K is flange at rear of panel.
See sealing screws on [page 490](#).

| SHELL SIZE | FLANGE STYLE 0-2-6B | | | |
|-------------|---------------------|------------------------|--------------|--------------|
| | G | MOUNTING HOLE DIAMETER | FRONT MOUNT | REAR MOUNT |
| | | H | J | K |
| 8S | 0.594 (15.1) | 0.134 (3.4) | 0.396 (10.1) | 0.603 (15.4) |
| 10S/10SL | 0.717 (18.2) | 0.134 (3.4) | 0.646 (16.4) | 0.728 (18.5) |
| 12S/12SL/12 | 0.811 (20.6) | 0.134 (3.4) | 0.646 (16.4) | 0.854 (21.7) |
| 14S | 0.906 (23.0) | 0.134 (3.4) | 0.776 (19.7) | 0.980 (24.9) |
| 16S/16 | 0.969 (24.6) | 0.134 (3.4) | 0.902 (22.9) | 1.091 (27.7) |
| 18 | 1.063 (27.0) | 0.134 (3.4) | 1.028 (26.1) | 1.224 (31.1) |
| 20 | 1.157 (29.4) | 0.134 (3.4) | 1.161 (29.5) | 1.358 (34.5) |
| 22 | 1.252 (31.8) | 0.134 (3.4) | 1.287 (32.7) | 1.488 (37.8) |
| 24 | 1.374 (34.9) | 0.154 (3.9) | 1.417 (36.0) | 1.626 (41.3) |
| 28 | 1.563 (39.7) | 0.154 (3.9) | 1.654 (42.0) | 1.854 (47.1) |
| 32 | 1.752 (44.5) | 0.177 (4.5) | 1.902 (48.3) | 2.118 (53.8) |
| 36 | 1.937 (49.2) | 0.177 (4.5) | 2.150 (54.6) | 2.362 (60.0) |
| 40 | 2.185 (55.5) | 0.177 (4.5) | 2.409 (61.2) | 2.610 (66.3) |

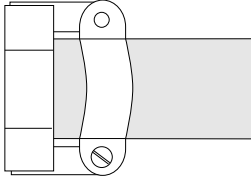
PANEL THICKNESS



| SHELL SIZE | FRONT MOUNT | REAR MOUNT |
|------------|-------------|-------------|
| 8SL | .125 (3.18) | .125 (3.18) |
| 10S | | .125 (3.18) |
| 10SL | | .125 (3.18) |
| 12S/12SL | | .125 (3.18) |
| 12 | | .187 (4.75) |
| 14S | | .187 (4.75) |
| 16S | | .187 (4.75) |
| 16 | | .187 (4.75) |
| 18 | | .187 (4.75) |
| 20 | | .187 (4.75) |
| 22 | | .187 (4.75) |
| 24 | | .187 (4.75) |
| 28 | | .187 (4.75) |
| 32 | | .250 (6.35) |
| 36 | | .250 (6.35) |
| 40 | | .250 (6.35) |

All dimensions in inches (millimeters in parenthesis)

MS3057-A CABLE CLAMP



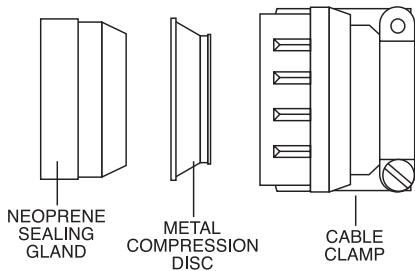
Standard MS3057 cable clamps have dual-clamping action to provide a balanced, positive hold on the wires and greatly reduce moisture transmission. This cable clamp accepts MS3420 bushings. MS3420 bushings can be nested to reduce the inside diameter to more closely match the diameter of the cable or wire bundle.

| SHELL SIZE | THREAD CLASS 2B | STANDARD CLAMP | | | | STANDARD CLAMP AND TELESCOPIC BUSHING | | |
|-------------|-----------------|--------------------|--------------------------|------------------------------------|----------------------------------|---------------------------------------|------------------|----------------------|
| | | LOW-COST CAST ZINC | ALUMINUM W/ BRASS SCREWS | ALUMINUM W/ STAINLESS STEEL SCREWS | MAXIMUM CABLE DIAMETER INCH (MM) | LOW-COST ZINC WITH BUSHING | BUSHING INCLUDED | BUSHING ID INCH (MM) |
| 8S/10S | 1/2-28UNEF | - | MS3057-3A | M85049/41-3A | 0.250 (6.35) | - | MS3420-3 | 0.130 (3.3) |
| 12/12S/10SL | 5/8-24UNEF | 97-3057-1004** | MS3057-4A | M85049/41-4A | 0.312 (7.92) | 97-3057-1004-1 | MS3420-4 | 0.220 (5.6) |
| 12SL/14S | 3/4-20UNEF | 97-3057-1007** | MS3057-6A | M85049/41-6A | 0.438 (11.10) | 97-3057-1007-1 | MS3420-6 | 0.312 (7.9) |
| 16/16S | 7/8-20UNEF | 97-3057-1008** | MS3057-8A | M85049/41-8A | 0.562 (14.27) | 97-3057-1008-1 | MS3420-8 | 0.437 (11.1) |
| 18 | 1-20UNEF | 97-3057-1010** | MS3057-10A | M85049/41-10A | 0.625 (15.88) | 97-3057-1010-1 | MS3420-10 | 0.562 (14.3) |
| 20/22 | 1 3/16-18UNEF | 97-3057-1012** | MS3057-12A | M85049/41-12A | 0.750 (19.0) | 97-3057-1012-1 | MS3420-12 | 0.625 (15.9) |
| 24/28 | 1 7/16-18UNEF | 97-3057-1016** | MS3057-16A | M85049/41-16A | 0.938 (23.80) | 97-3057-1016-1 | MS3420-16, -12 | 0.625 (15.9) |
| 32 | 1 3/4-18UNS | 97-3057-1020** | MS3057-20A | M85049/41-20A | 1.250 (31.75) | 97-3057-1020-1 | MS3420-20, -16 | 0.750 (19.0) |
| 36 | 2-18UNS | 97-3057-1024** | MS3057-24A | M85049/41-24A | 1.375 (34.92) | 97-3057-1024-1 | MS3420-24, -20 | 0.937 (23.8) |
| 40 | 2 1/4-16UNS | - | MS3057-28A | M85049/41-28A | 1.625 (41.28) | - | - | - |

Default is CAD OD.

MS3057-C WATERPROOF CABLE CLAMP

** Other platings are available. → See page 17 for alternate platings.

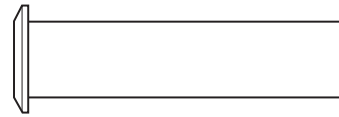


Standard MS3057-C waterproof cable clamp with mechanical strain relief for use with threaded endbells. Internal neoprene gland and compression ring will seal a broad range of round cable diameters as listed below. For reduction of cable diameters, order the appropriate MS3420A bushing in table.

| SHELL SIZE | PART NUMBER | WIRE DIAMETER INCHES (MM) | | OPTIONAL BUSHINGS | |
|-------------|-------------|---------------------------|---------------|--|---|
| | | MAX. | MIN. | PART NUMBER | MAX. WIRE DIA. (MM) |
| 8S/10S | MS3057-3C | 0.219 (5.56) | 0.095 (2.41) | MS3420-3A | 0.125 (3.17) |
| 10SL/12/12S | MS3057-4C | 0.312 (7.93) | 0.188 (4.80) | MS3420-4A | 0.219 (5.56) |
| 12SL/14S | MS3057-6C | 0.438 (11.12) | 0.281 (7.10) | MS3420-6A MS3420-4A | 0.312 (7.93) 0.219 (5.56) |
| 16/16S | MS3057-8C | 0.530 (13.48) | 0.312 (7.90) | MS3420-8A MS3420-6A | 0.438 (11.10) 0.312 (7.93) |
| 18 | MS3057-10C | 0.625 (15.87) | 0.375 (9.50) | MS3420-10A MS3420-6A | 0.438 (11.10) 0.312 (7.93) |
| 20/22 | MS3057-12C | 0.750 (19.00) | 0.500 (12.70) | MS3420-12A MS3420-8A | 0.540 (13.74) 0.438 (11.10) |
| 24/28 | MS3057-16C | 0.940 (23.80) | 0.625 (15.90) | MS3420-16A MS3420-12A MS3420-8A | 0.750 (19.00) 0.540 (13.74) 0.438 (11.10) |
| 32 | MS3057-20C | 1.25 (31.75) | 0.921 (23.40) | MS3420-20A MS3420-16A MS3420-12A | 0.938 (23.80) 0.750 (19.00) 0.540 (13.74) |
| 36 | MS3057-24C | 1.38 (35.00) | 1.00 (25.40) | MS3420-24A MS3420-18A MS3420-16A | 1.12 (28.50) 0.938 (23.80) 0.750 (19.00) |
| 40 | MS3057-28C | 1.62 (41.25) | 1.25 (31.80) | MS3420-28A MS3420-20A MS3420-16A | 1.25 (31.75) 0.940 (23.80) 0.750 (19.00) |

All dimensions in inches (millimeters in parenthesis)

MS3420 TELESCOPING BUSHINGS



For use with style-A cable clamps and AIT/MS style-E/F endbells to resist dust, dirt, and oil. Bushings can be nested, one inside the other, to reduce the inside diameter to better seal against the cable jacket. Each bushing will accept the next smallest bushing.

| SHELL SIZE | 1ST BUSHING PART NUMBER | INSIDE DIAMETER | 2ND NESTED BUSHING | INSIDE DIAMETER | FITS IN CABLE CLAMP |
|------------|-------------------------|-----------------|--------------------|-----------------|---------------------|
| 8S/10S | MS3420-3 | .130 (3.30) | NONE | - | MS3057-3A |
| 10SL | MS3420-4 | .220 (5.59) | NONE | - | MS3057-4A |
| 12/12S | MS3420-4 | .220 (5.59) | NONE | - | MS3057-4A |
| 14S | MS3420-6 | .312 (7.92) | NONE | - | MS3057-6A |
| 16S | MS3420-8 | .437 (11.10) | NONE | - | MS3057-8A |
| 16 | MS3420-8 | .437 (11.10) | NONE | - | MS3057-8A |
| 18 | MS3420-10 | .562 (14.30) | NONE | - | MS3057-10A |
| 20 | MS3420-12 | .625 (15.90) | NONE | - | MS3057-12A |
| 22 | MS3420-12 | .625 (15.90) | NONE | - | MS3057-12A |
| 24 | MS3420-16 | .750 (19.05) | MS3420-12 | .625 (15.90) | MS3057-16A |
| 28 | MS3420-16 | .750 (19.05) | MS3420-12 | .625 (15.90) | MS3057-16A |
| 32 | MS3420-20 | .937 (23.80) | MS3420-16 | .750 (19.05) | MS3057-20A |
| 36 | MS3420-24 | 1.250 (31.75) | MS3420-20 | .937 (23.80) | MS3057-24A |
| 40 | MS3420-28 | 1.375 (34.92) | MS3420-24 | 1.250 (31.75) | SE96-28A4 |

MS3420-A REDUCTION BUSHINGS



For use with MS3057-C cable clamps (style-C) to reduce the wire sealing diameter. Bushings can be nested, one inside the other, to progressively reduce the inside diameter of the cable clamp. The column labeled "reduction bushings" shows the acceptable nesting options for each clamp. → See page 21.

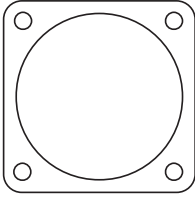


9767 CABLE CLAMPS

9767 waterproof cable clamp with mechanical strain relief. An internal neoprene gland seal bushing and compression washer will seal a broad range of round cable diameters as listed below.

| SHELL SIZE | CABLE CLAMP PART NUMBER | MAX. CABLE OUTSIDE DIAMETER | | MIN. CABLE OUTSIDE DIAMETER | | THREAD CLASS 2B UNEF |
|-------------|-------------------------|-----------------------------|-------|-----------------------------|-------|----------------------|
| | | INCHES | MM | INCHES | MM | |
| 10SL/12S/12 | 9767-12-4 | 0.219 | 5.55 | 0.100 | 2.54 | 5/8-24 |
| 12SL/14S | 9767-14-4 | 0.219 | 5.55 | 0.100 | 2.54 | 3/4-20 |
| 12SL/14S | 9767-14-6 | 0.344 | 8.73 | 0.176 | 4.47 | 3/4-20 |
| 16S/16 | 9767-16-4 | 0.219 | 5.55 | 0.100 | 2.54 | 7/8-20 |
| 16S/16 | 9767-16-6 | 0.344 | 8.73 | 0.176 | 4.47 | 7/8-20 |
| 16S/16 | 9767-16-8 | 0.438 | 11.12 | 0.177 | 4.50 | 7/8-20 |
| 18 | 9767-18-6 | 0.344 | 8.73 | 0.176 | 4.47 | 1-20 |
| 18 | 9767-18-8 | 0.438 | 11.12 | 0.177 | 4.50 | 1-20 |
| 18 | 9767-18-10 | 0.563 | 14.29 | 0.292 | 7.42 | 1-20 |
| 20/22 | 9767-22-8 | 0.438 | 11.12 | 0.177 | 4.50 | 1-3/16-18 |
| 20/22 | 9767-22-10 | 0.563 | 14.29 | 0.292 | 7.42 | 1-3/16-18 |
| 20/22 | 9767-22-12 | 0.688 | 17.46 | 0.370 | 9.40 | 1-3/16-18 |
| 24/28 | 9767-28-10 | 0.563 | 14.29 | 0.292 | 7.42 | 1-7/16-18 |
| 24/28 | 9767-28-12 | 0.688 | 17.46 | 0.370 | 9.40 | 1-7/16-18 |
| 24/28 | 9767-28-16 | 0.844 | 21.43 | 0.536 | 13.61 | 1-7/16-18 |
| 32 | 9767-32-20 | 1.031 | 26.19 | 0.590 | 14.99 | 1-3/4-18UNS |
| 36 | 9767-36-16 | 0.844 | 21.43 | 0.536 | 13.61 | 2-18UNS |

GASKETS



Synthetic rubber gaskets are used to ensure a moisture-tight seal between a receptacle and the panel. Gaskets are available for front or rear panel mounting of style 3100 and 3102 connectors. Gasket thickness is approximately .031 inches (1 mm) for nonconductive and low-temperature types.

Conductive shielding gaskets contain an imbedded metal screen for EMI/RFI shielding in addition to moisture sealing. Gaskets are available for front or rear panel mounting of connectors. Gasket thickness is .020 inches (.5 mm).

| SHELL SIZE | NON-CONDUCTIVE | CONDUCTIVE | LOW-TEMPERATURE -67°F (-55°C) |
|------------|----------------|---------------|----------------------------------|
| 8S | 10-040450-008 | 10-040450-08S | 10-036675-008 |
| 10S/10SL | 10-040450-010 | 10-040450-10S | 10-036675-010 |
| 12/12S | 10-040450-012 | 10-040450-12S | 10-036675-012 |
| 14S | 10-040450-014 | 10-040450-14S | 10-036675-014 |
| 16S | 10-040450-016 | 10-040450-16S | 10-036675-016 |
| 16 | 10-040450-016 | 10-040450-16S | 10-036675-016 |
| 18 | 10-040450-018 | 10-040450-18S | 10-036675-018 |
| 20 | 10-040450-020 | 10-040450-20S | 10-036675-020 |
| 22 | 10-040450-022 | 10-040450-22S | 10-036675-022 |
| 24 | 10-040450-024 | 10-040450-24S | 10-036675-024 |
| 28 | 10-040450-028 | 10-040450-28S | 10-036675-028 |
| 32 | 10-040450-032 | 10-040450-32S | 10-036675-032 |
| 36 | 10-040450-036 | 10-040450-36S | 10-036675-036 |
| 40 | 10-040450-040 | 10-040450-40S | 10-036675-040 |

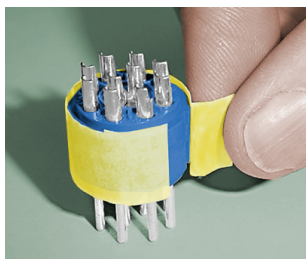
METAL DUST CAPS WITH SASH CHAIN & DUMMY RECEPTACLES

Metal dust caps are used to protect the contacts when the connectors are left unmated. Dust caps come with metal chain lanyards.

Dummy receptacles are for front or rear panel mounting. The center of the dummy receptacle is closed. Dummy receptacles mount on the same centers and have the same outside dimensions as a 97-3102A receptacle. A version with a clearance hole through the middle of the connector is also available. Call for ordering information.

| SHELL SIZE | DUST CAPS | | |
|-------------|-------------|-------------|-------------------|
| | PLUG CAP | RECEPTACLE | DUMMY RECEPTACLES |
| 8S | MS25042-8* | MS25043-8* | MS3105-8S |
| 10S/10SL | MS25042-10* | MS25043-10* | MS3105-10S |
| 12/12S/12SL | MS25042-12* | MS25043-12* | MS3105-12S |
| 14S | MS25042-14* | MS25043-14* | MS3105-14S |
| 16S | MS25042-16* | MS25043-16* | MS3105-16S |
| 16 | MS25042-16* | MS25043-16* | MS3105-16 |
| 18 | MS25042-18* | MS25043-18* | MS3105-18 |
| 20 | MS25042-20* | MS25043-20* | MS3105-20 |
| 22 | MS25042-22* | MS25043-22* | MS3105-22 |
| 24 | MS25042-24* | MS25043-24* | MS3105-24 |
| 28 | MS25042-28* | MS25043-28* | MS3105-28 |
| 32 | MS25042-32* | MS25043-32* | MS3105-32 |
| 36 | MS25042-36* | MS25043-36* | MS3105-36 |
| 40 | MS25042-40* | MS25043-40* | MS3105-40 |

*Contact us for other platings. *D = Olive drab chromate over cadmium DA = Anodized
See contact information below.

READ THESE INSTRUCTIONS PRIOR TO ASSEMBLY.

STEP 1: Open both shell kit and insert kit.



STEP 2: Remove yellow tape from insert, being careful not to allow front and rear insulators to come apart.



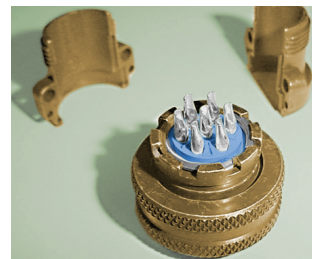
STEP 3: Insert insulator assembly into shell or barrel, aligning the key and keyway until rear of the insert is positioned just below the retaining spring ring ridge.



STEP 4: Insert the retainer spring ring into the ridge by working one end in first, then working around the ring until it snaps into place.



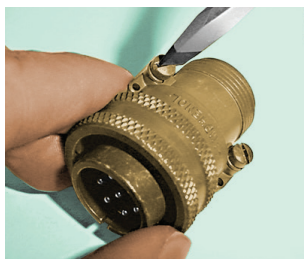
STEP 5: For barrels, add coupling nut to barrel and slide rear accessories on to cable.



STEP 6: Solder wires onto proper contacts.



STEP 7: Thread endbell onto barrel/shell. Slide cable clamp down the cable and thread onto the endbell. Tighten endbell and cable clamp using endbell accessory tools → See page 122.



STEP 8: Tighten cable clamp screws appropriately for the specific wire/cable in use.