

# Amphenol® 97 Series Standard Cylindrical Connector

12-022-14

**MIL-5015 Style Connectors**  
widely used for:

- Factory Automation, Robotics
- Machine Tool, Instrumentation
- Welding Equipment
- Medical Equipment



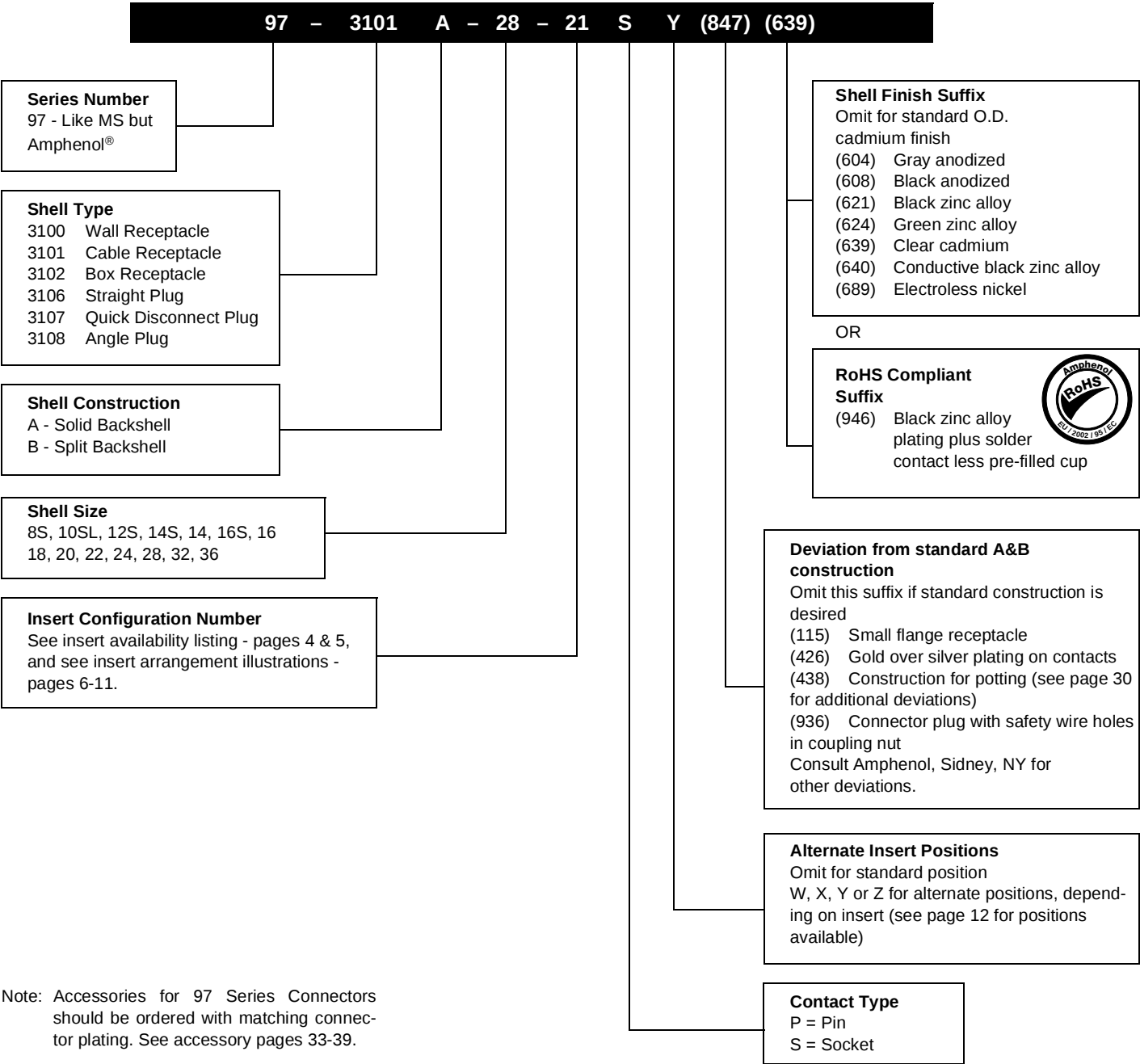
Amphenol® 97 Series Connectors are  
UL recognized and CSA recognized.

# Amphenol

# 97 series solder type

## how to order

Example of part number for solder type connectors is given below.



# Amphenol® 97 Series Connectors

provide the interconnection solution for low cost, general duty applications

Amphenol offers the 97 Series Connector Family - A general duty standard cylindrical connector, MIL-5015 style.

The 97 Series is a widely used connector series for the automotive, robotics, machine tool and welding industries, as well as numerous other commercial applications from heavy equipment to ECG monitoring cables.

Shell components are fabricated from high grade aluminum alloy to provide strength and environmental protection. This family of connectors offers a wide variety of shell styles, contact patterns and accessory options.

The Amphenol® 97 Series design features and benefits:

- Low cost, general duty non-environmental
- Environmental capability with the 417 suffix plus 9767 cable clamp (see page 34)
- Solder or crimp termination
- UL Recognized, CSA Recognized
- Wide selection of shell styles and insert patterns
- Wide selection of connector finishes - cadmium or non-cadmium (environmentally friendly zinc alloy)
- Threaded coupling, hard dielectric inserts
- Solid or split shell construction
- Accessories for both individual wire seal and jacketed cable



**RoHS COMPLIANT PRODUCT**  
**AVAILABLE** – Consult  
Amphenol Industrial Operations.



For additional information on Amphenol® 97 Series connectors, or for special application requirements, contact your local Amphenol sales office, authorized distributor, or -

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**Web site: [www.amphenol-industrial.com](http://www.amphenol-industrial.com)**

# Guide to Selecting a Connector

In selecting a connector, it first must be determined if a non-environmental 97 A or B Series 5015 type is required or if an environmental MS-5015 Class E, F, or R type\* is required.

If determined that the general duty, non-environmental 97 series is the choice - then this catalog is appropriate to your needs

The following 8 steps apply to formulation of a part number.\*\*

## 1 How many wires are you going to connect? What gauge?

These two questions are important, because they indicate which insert you need. There are literally hundreds to choose from.

The insert arrangements for solder contact connectors are illustrated on pages 6-11. The inserts most often used are highlighted on these pages.

Here's an example of how to choose an insert arrangement. Say you want to connect eight 16-ga. wires, - first find the section of arrangements containing 8 contacts. Insert number 20-7 is the one you want because it contains eight 16-ga. contacts and it is one of the most often used. The one you choose might depend on your space or voltage requirements. The voltage capacity of each insert is listed under its diagram.

If you have more than one wire size to connect, the method is essentially the same. Actually, the insert configurations for multiple-size wires are a lot more flexible than they appear. That's because you can always solder a smaller wire to a larger contact. However, soldering a large wire to a small contact isn't recommended because of size and current requirements.

## 2 What if several identical connectors have different functions?

Here's a situation to watch out for. You have four identical receptacles on a panel. One carries high current loads.

The others have low current functions. A plug mated with the wrong receptacle (cross-mating) could ruin your valuable equipment.

To avoid cross-mating, you can order identical inserts positioned in both the plugs and receptacles at various angles from standard. These variations from standard position are called alternate insert positions, and are described on page 12.

## 3 What kind of receptacle do you need?

**For Wall Mounting** Use a wall receptacle, type 3100. The elongated back of this receptacle extends through thick wall material. It is threaded to accept standard hardware fittings.

**For Unmounted Applications** Use the cable receptacle, type 3101.

**For Box or Panel Mounting** Use the box receptacle, type 3102. This receptacle's back is short to conserve space. It is not threaded on the back end and is used when no accessories such as clamps are needed.

## 4 What kind of plug do you need?

**For ordinary situations** The straight plug, type 3106 meets most connector requirements. However . . .

**when space is critical** you may want to consider using an angle plug, type 3108. This type plug lets the cable enter your equipment at a right angle.

## 5 Do you need a plug with a Solid or Split back shell?

You can get both straight and angle plugs in solid or split back shell designs. With the solid shell you have greater strength and you save space. On the other hand, the split shell design lets you quickly inspect the solder terminals when you need to. This feature could be important if you'll be subjecting the connector to rough handling and heavy use.

The designation to use for solid shell construction is the letter A. This designation letter goes immediately

after the main shell type number: for example, 3106A or 3108A.

The designation for split shell construction is the letter B; for example, 3106B or 3108B.

Because of application, receptacles are made in solid backshell construction only. Their designation is 3100A, 3101A. (See how to order for solder contact connectors, page 19.)

## 6 Which connector gets the socket? - the receptacle or the plug?

You're at the point where you designate which inserts are used with which shells. Either pin or socket inserts can be used with plugs or receptacles.

Here's a good rule of thumb. Order the sockets for the connector at the "hot" side of the circuit. By having sockets at the power source, there's little chance that a wayward finger or screwdriver will short the circuit or cause personal injury.

The designation for sockets is simply S in a part number, following the insert code number. For pins, the designation is P. Therefore, the 20-7P insert would have pin contacts, while the 20-7S insert would have socket contacts.

## 7 What type of plating is preferred?

If you prefer the standard olive cadmium, non-reflective, electrically conductive finish, then no suffix number is required. Other plating variations are available, including environmentally friendly zinc alloy. See how to order instructions for the various plating finishes offered for 97 Series solder connectors on page 19.

## 8 Do you need any accessories?

Accessories - cable clamps, protection caps and chains, conduit adapters, and panel gaskets are shown on pages 33-39.

\* If an environmental type MIL-5015 E, F or R Class is required, then the catalog that should be consulted is 12-020, MS/Standard MIL-5015 Cylindrical Connectors. See [www.amphenol-industrial.com](http://www.amphenol-industrial.com) for on-line catalogs or contact Amphenol, Sidney, NY.

\*\* These steps are for solder type connectors which are described in detail on pages 3-19. If a crimp type connector is needed, the same steps apply, however, you should consult pages 20-29 for details on 97 Series connectors with crimp contacts.

# Amphenol® 97 Series Connectors with solder contacts



MS3100A



MS3107A



MS3101A



MS3107B



MS3102A



MS3108A



MS3106A



MS3108B



MS3106B

## DESIGN CHARACTERISTICS

- Medium to heavy weight cylindrical
- Durable, field-proven design
- Single key/keyway polarization
- Threaded coupling, hard dielectric inserts
- Non-rotating contacts
- Operating temperatures from  $-55^{\circ}\text{C}$  to  $+125^{\circ}\text{C}$
- Cost effective
- Intermateable and intermountable with existing 97 Series and MIL-5015 connectors
- Underwriters Laboratories approved recognition File E115497
- Canadian Standards Association Certification File LR69183

## CUSTOMER OPTIONS

- Solid or split shell construction
- Six shell styles
- 128 contact arrangements, from 1 to 52 circuits
- Alternate insert positioning
- High temperature and potting constructions
- Special plating finishes including black and green zinc alloy
- Optional gold plating on MS contacts
- Thermocouple arrangements available

Connector components are fabricated from high grade aluminum alloy, with a conductive cadmium plate finish and an olive drab chromate after-treatment. Some cable clamps are a zinc alloy with an olive drab/green chromate finish. See how to order page 19 for other finish variations.

Contacts are silver plated with pre-tinned solder cups. Optional gold over silver plating is also available. Inserts for solder style contacts are diallyl-phthalate.

Users should be aware that classes "A" and "B" of MIL-5015 have been cancelled, and these products are no longer qualified.

# 97 series solder type insert availability

| Insert Number | Total Contacts | Mechanical Spacing |      | Service Rating | Contact Size |   |   |                 |                 |
|---------------|----------------|--------------------|------|----------------|--------------|---|---|-----------------|-----------------|
|               |                | Inches             | mm   |                | 0            | 4 | 8 | 12              | 16              |
| 8S-1♦         | 1              | 1/16               | 1.57 | INST.          |              |   |   |                 | 1               |
| 10SL-3        | 3              | 1/16               | 1.57 | A              |              |   |   |                 | 3               |
| 10SL-4        | 2              | 1/16               | 1.57 | A              |              |   |   |                 | 2               |
| 12SL-844♦*    | 4              | 1/16               | 1.57 | A              |              |   |   |                 | 4               |
| 12S-3         | 2              | 1/16               | 1.57 | A              |              |   |   |                 | 2               |
| 12-5♦         | 1              | 1/8                | 3.18 | D              |              |   |   | 1               |                 |
| 12S-6♦*       | 2              | 1/16               | 1.57 |                |              |   |   |                 | 2 Thermo-couple |
| 14S-1†        | 3              | 1/16               | 1.57 | A              |              |   |   |                 | 3               |
| 14S-2         | 4              |                    |      | INST.          |              |   |   |                 | 4               |
| 14S-4♦†       | 1              | 1/8                | 3.18 | D              |              |   |   |                 | 1               |
| 14S-5         | 5              |                    |      | INST.          |              |   |   |                 | 5               |
| 14S-6         | 6              |                    |      | INST.          |              |   |   |                 | 6               |
| 14S-7         | 3              | 1/16               | 1.57 | A              |              |   |   |                 | 3               |
| 14S-9†        | 2              | 1/16               | 1.57 | A              |              |   |   |                 | 2               |
| 16S-1         | 7              | 1/16               | 1.57 | A              |              |   |   |                 | 7               |
| 16S-4♦        | 2              | 1/8                | 3.18 | D              |              |   |   |                 | 2               |
| 16S-5         | 3              | 1/16               | 1.57 | A              |              |   |   |                 | 3               |
| 16S-6♦†       | 3              | 1/16               | 1.57 | A              |              |   |   |                 | 3               |
| 16-7          | 3              | 1/16               | 1.57 | A              |              |   | 1 |                 | 2               |
| 16S-8         | 5              | 1/16               | 1.57 | A              |              |   |   |                 | 5               |
| 16-9          | 4              | 1/16               | 1.57 | A              |              |   |   | 2               | 2               |
| 16-10         | 3              | 1/16               | 1.57 | A              |              |   |   | 3               |                 |
| 16-11♦†       | 2              | 1/16               | 1.57 | A              |              |   |   | 2               |                 |
| 16-12         | 1              | 1/16               | 1.57 | A              |              | 1 |   |                 |                 |
| 16-13         | 2              | 1/16               | 1.57 | A              |              |   |   | 2 Thermo-couple |                 |
| 18-1          | 10             | 1/16               | 1.57 | A              |              |   |   |                 | 4               |
|               |                |                    |      | INST.          |              |   |   |                 | 6               |
| 18-3†         | 2              | 1/8                | 3.18 | D              |              |   |   | 2               |                 |
| 18-4          | 4              | 1/8                | 3.18 | D              |              |   |   |                 | 4               |
| 18-5♦         | 3              | 1/8                | 3.18 | D              |              |   |   | 2               | 1               |
| 18-8          | 8              | 1/16               | 1.57 | A              |              |   |   | 1               | 7               |
| 18-9♦         | 7              |                    |      | INST.          |              |   |   | 2               | 5               |
| 18-10†        | 4              | 1/16               | 1.57 | A              |              |   |   | 4               |                 |
| 18-11         | 5              | 1/16               | 1.57 | A              |              |   |   | 5               |                 |
| 18-12†        | 6              | 1/16               | 1.57 | A              |              |   |   |                 | 6               |
| 18-13         | 4              | 1/16               | 1.57 | A              |              |   | 1 | 3               |                 |
| 18-16         | 1              | 5/16               | 7.92 | C              |              |   |   | 1               |                 |
| 18-19†        | 10             | 1/16               | 1.57 | A              |              |   |   |                 | 10              |
| 18-20         | 5              | 1/16               | 1.57 | A              |              |   |   |                 | 5               |
| 18-22†        | 3              | 1/8                | 3.18 | D              |              |   |   |                 | 3               |
| 18-29♦†       | 5              | 1/16               | 1.57 | A              |              |   |   |                 | 5               |
| 18-420*       | 1              |                    |      |                |              |   |   | 1 Hi-Voltage**  |                 |
| 20-3†         | 3              | 1/8                | 3.18 | D              |              |   |   | 3               |                 |

| Insert Number | Total Contacts | Mechanical Spacing |      | Service Rating | Contact Size |   |   |    |    |
|---------------|----------------|--------------------|------|----------------|--------------|---|---|----|----|
|               |                | Inches             | mm   |                | 0            | 4 | 8 | 12 | 16 |
| 20-4          | 4              | 1/8                | 3.18 | D              |              |   |   | 4  |    |
| 20-6†         | 3              | 1/8                | 3.18 | D              |              |   |   |    | 3  |
| 20-7          | 8              | 1/8                | 3.18 | D              |              |   |   |    | 4  |
|               |                | 1/16               | 1.57 | A              |              |   |   |    | 4  |
| 20-8          | 6              |                    |      | INST.          |              |   | 2 |    | 4  |
| 20-11†        | 13             |                    |      | INST.          |              |   |   |    | 13 |
| 20-14         | 5              | 1/16               | 1.57 | A              |              |   | 2 | 3  |    |
| 20-15         | 7              | 1/16               | 1.57 | A              |              |   |   | 7  |    |
| 20-16         | 9              | 1/16               | 1.57 | A              |              |   |   | 2  | 7  |
| 20-17         | 6              | 1/16               | 1.57 | A              |              |   |   | 5  | 1  |
| 20-18         | 9              | 1/16               | 1.57 | A              |              |   |   | 3  | 6  |
| 20-19†        | 3              | 1/16               | 1.57 | A              |              |   | 3 |    |    |
| 20-21         | 9              | 1/16               | 1.57 | A              |              |   |   | 1  | 8  |
| 20-23         | 2              | 1/16               | 1.57 | A              |              |   | 2 |    |    |
| 20-24         | 4              | 1/16               | 1.57 | A              |              |   | 2 |    | 2  |
| 20-27         | 14             | 1/16               | 1.57 | A              |              |   |   |    | 14 |
| 20-29         | 17             | 1/16               | 1.57 | A              |              |   |   |    | 17 |
| 20-33         | 11             | 1/16               | 1.57 | A              |              |   |   |    | 11 |
| 22-1†         | 2              | 1/8                | 3.18 | D              |              |   | 2 |    |    |
| 22-2          | 3              | 1/8                | 3.18 | D              |              |   | 3 |    |    |
| 22-4†         | 4              | 1/16               | 1.57 | A              |              |   | 2 | 2  |    |
| 22-5          | 6              | 1/8                | 3.18 | D              |              |   |   | 2  | 4  |
| 22-8†         | 2              | 3/16               | 4.75 | E              |              |   |   | 2  |    |
| 22-9          | 3              | 3/16               | 4.75 | E              |              |   |   | 3  |    |
| 22-10         | 4              | 3/16               | 4.75 | E              |              |   |   |    | 4  |
| 22-11         | 2              | 1/4                | 6.35 | B              |              |   |   |    | 2  |
| 22-12         | 5              | 1/8                | 3.18 | D              |              |   | 2 |    | 3  |
| 22-13†        | 5              | 1/8                | 3.18 | D              |              |   |   |    | 1  |
|               |                | 1/16               | 1.57 | A              |              |   |   | 4  |    |
| 22-14         | 19             | 1/16               | 1.57 | A              |              |   |   |    | 19 |
| 22-15         | 6              | 3/16               | 4.75 | E              |              |   |   |    | 1  |
|               |                | 1/16               | 1.57 | A              |              |   |   | 5  |    |
| 22-16†        | 9              | 1/16               | 1.57 | A              |              |   |   | 3  | 6  |
| 22-18         | 8              | 1/8                | 3.18 | D              |              |   |   |    | 5  |
|               |                | 1/16               | 1.57 | A              |              |   |   |    | 3  |
| 22-19         | 14             | 1/16               | 1.57 | A              |              |   |   |    | 14 |
| 22-20†        | 9              | 1/16               | 1.57 | A              |              |   |   |    | 9  |
| 22-22         | 4              | 1/16               | 1.57 | A              |              |   | 4 |    |    |
| 22-23         | 8              | 1/8                | 3.18 | D              |              |   |   | 1  |    |
|               |                | 1/16               | 1.57 | A              |              |   |   | 7  |    |

Not all insert arrangements are currently available for environmental individual wire seal. Consult Amphenol, Sidney, NY for availability.

† Inactive for new military design, but available for replacement or for non-military purposes.

\* "MS" number not assigned. Use "97" prefix in place of "MS" in completing catalog number. See how to order, page 19.

\*\* Hi-Voltage = 17KVAC/24KVDC

♦ Molded-in pin (MIP) insert requires (910) deviation. See how to order, pg. 19.

# 97 series solder type insert availability, cont.

| Insert Number | Total Contacts | Mechanical Spacing |      | Service Rating | Contact Size |   |   |    |    |
|---------------|----------------|--------------------|------|----------------|--------------|---|---|----|----|
|               |                | Inches             | mm   |                | 0            | 4 | 8 | 12 | 16 |
| 22-26*        | 7              | 1/8                | 3.18 |                |              |   |   | 2  | 5  |
| 22-27         | 9              | 1/8                | 3.18 | D              |              |   | 1 |    |    |
|               |                | 1/16               | 1.57 | A              |              |   |   |    | 8  |
| 22-28†        | 7              | 1/16               | 1.57 | A              |              |   |   | 7  |    |
| 22-34         | 5              | 1/8                | 3.18 | D              |              |   |   | 3  | 2  |
| 24-2          | 7              | 1/8                | 3.18 | D              |              |   |   | 7  |    |
| 24-5†         | 16             | 1/16               | 1.57 | A              |              |   |   |    | 16 |
| 24-6          | 8              | 1/8                | 3.18 | D              |              |   |   | 3  |    |
|               |                | 1/16               | 1.57 | A              |              |   |   | 5  |    |
| 24-7          | 16             | 1/16               | 1.57 | A              |              |   |   | 2  | 14 |
| 24-9†         | 2              | 1/16               | 1.57 | A              |              | 2 |   |    |    |
| 24-10         | 7              | 1/16               | 1.57 | A              |              |   | 7 |    |    |
| 24-11         | 9              | 1/16               | 1.57 | A              |              |   | 3 | 6  |    |
| 24-12         | 5              | 1/16               | 1.57 | A              |              | 2 |   | 3  |    |
| 24-16         | 7              | 1/8                | 3.18 | D              |              |   | 1 |    | 3  |
|               |                | 1/16               | 1.57 | A              |              |   |   | 3  |    |
| 24-19†        | 12             | 1/16               | 1.57 |                |              |   |   |    | 12 |
| 24-20♦        | 11             | 1/8                | 3.18 | D              |              |   |   | 2  | 9  |
| 24-21         | 10             | 1/8                | 3.18 | D              |              |   | 1 |    | 9  |
| 24-22♦        | 4              | 1/8                | 3.18 | D              |              |   | 4 |    |    |
| 24-27         | 7              | 3/16               | 4.75 | E              |              |   |   |    | 7  |
| 24-28         | 24             | 1/16               | 1.57 | INST.          |              |   |   |    | 24 |
| 28-1          | 9              | 1/8                | 3.18 | D              |              |   | 1 | 2  |    |
|               |                | 1/16               | 1.57 | A              |              |   | 2 | 4  |    |
| 28-2          | 14             | 1/8                | 3.18 | D              |              |   |   | 2  | 12 |
| 28-3          | 3              | 3/16               | 4.75 | E              |              |   | 3 |    |    |
| 28-6†         | 3              | 1/8                | 3.18 | D              |              | 3 |   |    |    |
| 28-8          | 12             | 1/16               | 1.57 | A              |              |   |   |    | 9  |
|               |                | 1/8                | 3.18 | D              |              |   |   |    | 1  |
|               |                | 3/16               | 4.75 | E              |              |   |   | 2  |    |
| 28-9          | 12             | 1/8                | 3.18 | D              |              |   |   | 6  | 6  |
| 28-10         | 7              | 1/8                | 3.18 | D              |              |   |   | 1  |    |
|               |                | 1/16               | 1.57 | A              |              | 2 | 2 | 2  |    |
| 28-11         | 22             | 1/16               | 1.57 | A              |              |   |   | 4  | 18 |
| 28-12         | 26             | 1/16               | 1.57 | A              |              |   |   |    | 26 |
| 28-15†        | 35             | 1/16               | 1.57 | A              |              |   |   |    | 35 |
| 28-16†        | 20             | 1/16               | 1.57 | A              |              |   |   |    | 20 |
| 28-17         | 15             | 1/4                | 6.35 | B              |              |   |   |    | 1  |
|               |                | 1/8                | 3.18 | D              |              |   |   |    | 3  |
|               |                | 1/16               | 1.57 | A              |              |   |   |    | 11 |
| 28-18         | 12             | 5/16               | 7.92 | C              |              |   |   |    | 1  |
|               |                | 1/8                | 3.18 | D              |              |   |   |    | 5  |
|               |                | 1/16               | 1.57 | A              |              |   |   |    | 2  |
|               |                |                    |      | INST.          |              |   |   |    | 4  |
| 28-19         | 10             | 1/4                | 6.35 | B              |              |   |   |    | 2  |
|               |                | 1/8                | 3.18 | D              |              |   |   |    | 2  |
|               |                | 1/16               | 1.57 | A              |              |   |   | 4  | 2  |

| Insert Number | Total Contacts | Mechanical Spacing |      | Service Rating | Contact Size |   |   |    |    |
|---------------|----------------|--------------------|------|----------------|--------------|---|---|----|----|
|               |                | Inches             | mm   |                | 0            | 4 | 8 | 12 | 16 |
| 28-20         | 14             | 1/16               | 1.57 | A              |              |   |   | 10 | 4  |
| 28-21         | 37             | 1/16               | 1.57 | A              |              |   |   |    | 37 |
| 32-5†         | 2              | 1/8                | 3.18 | D              | 2            |   |   |    |    |
| 32-6          | 23             | 1/16               | 1.57 | A              |              | 2 | 3 | 2  | 16 |
| 32-7          | 35             | 1/16               | 1.57 | A              |              |   |   | 7  | 24 |
|               |                |                    |      | INST.          |              |   |   |    | 4  |
| 32-8†         | 30             | 1/16               | 1.57 | A              |              |   |   | 6  | 24 |
| 32-13         | 23             | 1/8                | 3.18 | D              |              |   |   | 5  | 18 |
| 32-17         | 4              | 1/8                | 3.18 | D              |              | 4 |   |    |    |
| 32-414        | 52             | 1/16               | 1.57 | A              |              |   |   |    | 52 |
| 36-1†         | 22             | 1/8                | 3.18 | D              |              |   |   | 4  | 18 |
| 36-5          | 4              | 1/16               | 1.57 | A              | 4            |   |   |    |    |
| 36-6          | 6              | 1/16               | 1.57 | A              | 2            | 4 |   |    |    |
| 36-7          | 47             | 1/16               | 1.57 | A              |              |   |   | 7  | 40 |
| 36-8          | 47             | 1/16               | 1.57 | A              |              |   |   | 1  | 46 |
| 36-9          | 31             | 1/16               | 1.57 | A              |              | 1 | 2 | 14 | 14 |
| 36-10         | 48             | 1/16               | 1.57 | A              |              |   |   |    | 48 |
| 36-15         | 35             | 1/16               | 1.57 | A              |              |   |   |    | 34 |
|               |                | 1/8                | 3.18 | D              |              |   |   |    | 1  |
| 36-403*       | 52             | 1/16               | 1.57 | A              |              |   |   |    | 52 |

Not all insert arrangements are currently available for environmental individual wire seal. Consult Amphenol, Sidney, NY for availability.

† Inactive for new military design, but available for replacement or for non-military purposes.

\* "MS" number not assigned. Use "97" prefix in place of "MS" in completing catalog number. See how to order, page 19.

♦ Molded-in pin (MIP) insert requires (910) deviation. See how to order, pg. 19.

# 97 series solder type insert arrangements

Front view of pin insert or rear of socket insert illustrated.

Items highlighted are most popular and most readily available.

## 1 Contact

|                    |       |      |        |       |       |                               |
|--------------------|-------|------|--------|-------|-------|-------------------------------|
|                    |       |      |        |       |       |                               |
| Insert Arrangement | 8S-1  | 12-5 | 14S-4† | 16-12 | 18-16 | 18-420*                       |
| Contacts           | 1#16  | 1#12 | 1#16   | 1#4   | 1#12  | 1#12                          |
| Service Rating     | INST. | D    | D      | A     | C     | High Voltage<br>17KVAC/24KVDC |

## 2 Contacts

|                    |        |       |              |        |       |        |       |
|--------------------|--------|-------|--------------|--------|-------|--------|-------|
|                    |        |       |              |        |       |        |       |
| Insert Arrangement | 10SL-4 | 12S-3 | 12S-6*       | 14S-9† | 16S-4 | 16-11† | 16-13 |
| Contacts           | 2#16   | 2#16  | 2#16         | 2#16   | 2#16  | 2#12   | 2#12  |
| Service Rating     | A      | A     | Thermocouple | A      | D     | A      | A     |

|                    |       |        |       |       |       |       |       |
|--------------------|-------|--------|-------|-------|-------|-------|-------|
|                    |       |        |       |       |       |       |       |
| Insert Arrangement | 18-3† | 20-23† | 22-1† | 22-8† | 22-11 | 24-9† | 32-5† |
| Contacts           | 2#12  | 2#8    | 2#8   | 2#12  | 2#16  | 2#4   | 2#0   |
| Service Rating     | D     | A      | D     | E     | B     | A     | D     |

## 3 Contacts

|                    |        |        |       |        |        |           |       |            |
|--------------------|--------|--------|-------|--------|--------|-----------|-------|------------|
|                    |        |        |       |        |        |           |       |            |
| Insert Arrangement | 10SL-3 | 14S-1† | 14S-7 | 16S-5† | 16S-6† | 16-7      | 16-10 | 18-5       |
| Contacts           | 3#16   | 3#16   | 3#16  | 3#16   | 3#16   | 1#8, 2#16 | 3#12  | 2#12, 1#16 |
| Service Rating     | A      | A      | A     | A      | A      | A         | A     | D          |

|                    |       |       |        |      |      |      |       |
|--------------------|-------|-------|--------|------|------|------|-------|
|                    |       |       |        |      |      |      |       |
| Insert Arrangement | 20-3† | 20-6† | 20-19† | 22-2 | 22-9 | 28-3 | 28-6† |
| Contacts           | 3#12  | 3#16  | 3#8    | 3#8  | 3#12 | 3#8  | 3#4   |
| Service Rating     | D     | D     | A      | D    | E    | E    | D     |

# 97 series solder type

## insert arrangements, cont.

Front view of pin insert or rear of socket insert illustrated.

Items highlighted are most popular and most readily available.

### 4 Contacts

|                    |               |        |            |      |        |           |      |
|--------------------|---------------|--------|------------|------|--------|-----------|------|
|                    |               |        |            |      |        |           |      |
| Insert Arrangement | 12SL-844*     | 14S-2† | 16-9       | 18-4 | 18-10† | 18-13     | 20-4 |
| Contacts           | 4#16          | 4#16   | 2#12, 2#16 | 4#16 | 4#12   | 3#12, 1#8 | 4#12 |
| Service Rating     | 1/16" spacing | INST.  | A          | D    | A      | A         | D    |

|                    |           |           |       |       |       |       |      |
|--------------------|-----------|-----------|-------|-------|-------|-------|------|
|                    |           |           |       |       |       |       |      |
| Insert Arrangement | 20-24     | 22-4†     | 22-10 | 22-22 | 24-22 | 32-17 | 36-5 |
| Contacts           | 2#8, 2#16 | 2#8, 2#12 | 4#16  | 4#8   | 4#8   | 4#4   | 4#0  |
| Service Rating     | A         | A         | E     | A     | D     | D     | A    |

### 5 Contacts

|                    |       |       |       |        |        |           |
|--------------------|-------|-------|-------|--------|--------|-----------|
|                    |       |       |       |        |        |           |
| Insert Arrangement | 14S-5 | 16S-8 | 18-11 | 18-20† | 18-29† | 20-14     |
| Contacts           | 5#16  | 5#16  | 5#12  | 5#16   | 5#16   | 3#12, 2#8 |
| Service Rating     | INST. | A     | A     | A      | A      | A         |

|                    |           |                       |            |           |
|--------------------|-----------|-----------------------|------------|-----------|
|                    |           |                       |            |           |
| Insert Arrangement | 22-12     | 22-13†                | 22-34†     | 24-12     |
| Contacts           | 2#8, 3#16 | 1#16, 4#12            | 3#12, 2#16 | 2#4, 3#12 |
| Service Rating     | D         | E = D; A, B, C, D = A | D          | A         |

#### MIL-SPEC SERVICE RATING

|                    |          | INST. | A   | D    | E    | B    | C    |
|--------------------|----------|-------|-----|------|------|------|------|
| Limiting Operating | DC       | 250   | 700 | 1250 | 1750 | 2450 | 4200 |
| Voltag             | AC (rms) | 200   | 500 | 900  | 1250 | 1750 | 3000 |

See notes 1 and 2 under TEST CURRENT.  
INST. service normally for low voltage and currents.

|                              |      |      |      |      |      |      |       |
|------------------------------|------|------|------|------|------|------|-------|
| Effective Creepage (nominal) | Inch | 1/16 | 1/8  | 3/16 | 1/4  | 5/16 | 1     |
|                              | mm   | 1.57 | 3.18 | 4.75 | 6.35 | 7.92 | 25.40 |
| Mechanical Spacing (nominal) | Inch |      | 1/16 | 1/8  | 3/16 | 1/4  | 5/16  |
|                              | mm   |      | 1.57 | 3.18 | 4.75 | 6.35 | 7.92  |

† Inactive for new military design, but available for replacement or for non-military purposes.  
\* "MS" number not assigned. Use "97" prefix in place of "MS" in completing catalog number. See how to order, page 19.

#### TEST CURRENT

|              |    |    |    |    |     |
|--------------|----|----|----|----|-----|
| Contact Size | 16 | 12 | 8  | 4  | 0   |
| Amperes      | 13 | 23 | 46 | 80 | 150 |

NOTE 1: Transients were not considered in calculating these values.  
NOTE 2: Limiting operating voltages at 50,000 feet altitude are approximately 25% of the sea level values.

#### CONTACT LEGEND

|    |    |   |   |            |    |    |    |
|----|----|---|---|------------|----|----|----|
|    |    |   |   |            |    |    |    |
| 16 | 12 | 8 | 4 | 0          | 16 | 12 | 16 |
|    |    |   |   | IRON       |    |    |    |
|    |    |   |   | CONSTANTAN |    |    |    |

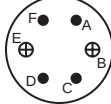
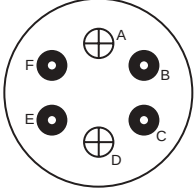
# 97 series solder type

## insert arrangements, cont.

Front view of pin insert or rear of socket insert illustrated.

Items highlighted are most popular and most readily available.

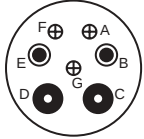
### 6 Contacts

|                    |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |
|--------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
|                    |  |  |  |  |  |  |  |
| Insert Arrangement | 14S-6                                                                             | 18-12†                                                                            | 20-8                                                                              | 20-17                                                                             | 22-5                                                                               | 22-15                                                                               | 36-6                                                                                |
| Contacts           | 6#16                                                                              | 6#16                                                                              | 4#16, 2#8                                                                         | 5#12, 1#16                                                                        | 2#12, 4#16                                                                         | 5#12, 1#16                                                                          | 2#0, 4#4                                                                            |
| Service Rating     | INST.                                                                             | A                                                                                 | INST.                                                                             | A                                                                                 | D                                                                                  | D = E; A, B, C, E, F = A                                                            | A                                                                                   |

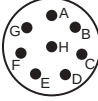
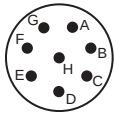
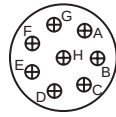
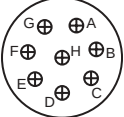
### 7 Contacts

|                    |                                                                                    |                                                                                    |                                                                                    |                                                                                      |                                                                                      |
|--------------------|------------------------------------------------------------------------------------|------------------------------------------------------------------------------------|------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------|
|                    |  |  |  |  |  |
| Insert Arrangement | 16S-1                                                                              | 18-9                                                                               | 20-15                                                                              | 22-26*                                                                               | 22-28†                                                                               |
| Contacts           | 7#16                                                                               | 5#16, 2#12                                                                         | 7#12                                                                               | 2#12, 5#16                                                                           | 7#12                                                                                 |
| Service Rating     | A                                                                                  | INST.                                                                              | A                                                                                  | 1/8" spacing                                                                         | A                                                                                    |

|                    |                                                                                     |                                                                                     |                                                                                      |                                                                                       |                                                                                       |
|--------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------|
|                    |  |  |  |  |  |
| Insert Arrangement | 24-2                                                                                | 24-10                                                                               | 24-16                                                                                | 24-27                                                                                 | 28-10                                                                                 |
| Contacts           | 7#12                                                                                | 7#8                                                                                 | 3#16, 1#8, 3#12                                                                      | 7#16                                                                                  | 3#12, 2#8, 2#4                                                                        |
| Service Rating     | D                                                                                   | A                                                                                   | A, B, F, G = D; C, D, E = A                                                          | E                                                                                     | G = D; all others = A                                                                 |

### 8 Contacts

|                    |                                                                                     |                                                                                     |                                                                                     |                                                                                       |                                                                                       |
|--------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------|
|                    |  |  |  |  |  |
| Insert Arrangement | 18-8                                                                                | 20-7                                                                                | 22-18                                                                               | 22-23                                                                                 | 24-6                                                                                  |
| Contacts           | 1#12, 7#16                                                                          | 8#16                                                                                | 8#16                                                                                | 8#12                                                                                  | 8#12                                                                                  |
| Service Rating     | A                                                                                   | A, B, H, G = D; C, D, E, F = A                                                      | A, B, H, F, G = D; all others = A                                                   | H = D; all others = A                                                                 | A, G, H = D; all others = A                                                           |

# 97 series solder type insert arrangements, cont.

Front view of pin insert or rear of socket insert illustrated.

Items highlighted are most popular and most readily available.

## 9 Contacts

|                                                  |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |
|--------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Insert Arrangement<br>Contacts<br>Service Rating |  |  |   |  |  |
|                                                  | <b>20-16</b><br>7#16, 2#12<br>A                                                   | 20-18<br>3#12, 6#16<br>A                                                          | 20-21<br>1#12, 8#16<br>A                                                            | 22-16†<br>3#12, 6#16<br>A                                                           | 22-20†<br>9#16<br>A                                                                 |
| Insert Arrangement<br>Contacts<br>Service Rating |  |  |  |                                                                                     |                                                                                     |
|                                                  | 22-27<br>1#8, 8#16<br>J = D; all others = A                                       | <b>24-11</b><br>3#8, 6#12<br>A                                                    | 28-1<br>3#8, 6#12<br>A, J, E = D; all others = A                                    |                                                                                     |                                                                                     |

## 10 Contacts

|                                                  |                                                                                     |                                                                                     |                                                                                     |                                                                                      |
|--------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------|
| Insert Arrangement<br>Contacts<br>Service Rating |  |  |  |  |
|                                                  | <b>18-1</b><br>10#16<br>B, C, F, G = A;<br>all others = INST.                       | <b>18-19</b><br>10#16<br>A                                                          | 24-21<br>1#8, 9#16<br>D                                                             | 28-19<br>4#12, 6#16<br>H, M = B; A, B = D;<br>all others = A                         |

## 11 Contacts

|                                                  |                                                                                       |                                                                                       |
|--------------------------------------------------|---------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------|
| Insert Arrangement<br>Contacts<br>Service Rating |  |  |
|                                                  | 20-33<br>11#16<br>A                                                                   | 24-20<br>2#12, 9#16<br>D                                                              |

## 12 Contacts

|                                                  |                                                                                     |                                                                                     |                                                                                     |                                                                                       |
|--------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------|
| Insert Arrangement<br>Contacts<br>Service Rating |  |  |  |  |
|                                                  | 24-19†<br>12#16<br>1/16" spacing                                                    | 28-8<br>2#12, 10#16<br>L, M = E; B = D;<br>all others = A                           | 28-9<br>6#12, 6#16<br>D                                                             | 28-18<br>12#16<br>M = C; A, B = A<br>C, D, E, F = INST.; all others = D               |

## 13 Contacts

|                                                  |                                                                                       |
|--------------------------------------------------|---------------------------------------------------------------------------------------|
| Insert Arrangement<br>Contacts<br>Service Rating |  |
|                                                  | 20-11†<br>13#16<br>INST.                                                              |

† Inactive for new military design, but available for replacement or for non-military purposes.

\* "MS" number not assigned. Use "97" prefix in place of "MS" in completing catalog number. See how to order, page 19.

See Service Rating and Test Current information on page 7.

## CONTACT LEGEND

|                                                                                       |                                                                                       |                                                                                       |                                                                                       |                                                                                       |
|---------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------|
|  |  |  |  |  |
| 16                                                                                    | 12                                                                                    | 8                                                                                     | 4                                                                                     | 0                                                                                     |

# 97 series solder type insert arrangements, cont.

Front view of pin insert or rear of socket insert illustrated.

Items highlighted are most popular and most readily available.

## 14 Contacts

|                    |                                                                                   |                                                                                   |                                                                                   |                                                                                    |
|--------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------|
|                    |  |  |  |  |
| Insert Arrangement | 20-27                                                                             | 22-19                                                                             | 28-2                                                                              | 28-20                                                                              |
| Contacts           | 14#16                                                                             | 14#16                                                                             | 2#12, 12#16                                                                       | 10#12, 4#16                                                                        |
| Service Rating     | A                                                                                 | A                                                                                 | D                                                                                 | A                                                                                  |

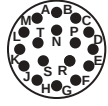
## 15 Contacts

|                                                                                     |
|-------------------------------------------------------------------------------------|
|  |
| 28-17                                                                               |
| 15#16                                                                               |
| R = B; M, N, P = D;<br>all others = A                                               |

## 16 Contacts

|                    |                                                                                    |                                                                                    |
|--------------------|------------------------------------------------------------------------------------|------------------------------------------------------------------------------------|
|                    |  |  |
| Insert Arrangement | 24-5†                                                                              | 24-7                                                                               |
| Contacts           | 16#16                                                                              | 2#12, 14#16                                                                        |
| Service Rating     | A                                                                                  | A                                                                                  |

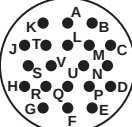
## 17 Contacts

|                                                                                     |
|-------------------------------------------------------------------------------------|
|  |
| 20-29                                                                               |
| 17#16                                                                               |
| A                                                                                   |

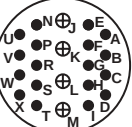
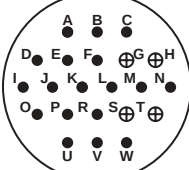
## 19 Contacts

|                                                                                      |
|--------------------------------------------------------------------------------------|
|  |
| 22-14                                                                                |
| 19#16                                                                                |
| A                                                                                    |

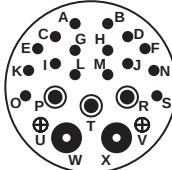
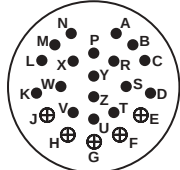
## 20 Contacts

|                                                                                     |
|-------------------------------------------------------------------------------------|
|  |
| 28-16†                                                                              |
| 20#16                                                                               |
| A                                                                                   |

## 22 Contacts

|                                                                                     |                                                                                     |
|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
|  |  |
| 28-11                                                                               | 36-1†                                                                               |
| 4#12, 18#16                                                                         | 4#12, 18#16                                                                         |
| A                                                                                   | D                                                                                   |

## 23 Contacts

|                                                                                       |                                                                                       |
|---------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------|
|  |  |
| 32-6                                                                                  | 32-13                                                                                 |
| 2#4, 3#8, 2#12, 16#16                                                                 | 5#12, 18#16                                                                           |
| A                                                                                     | D                                                                                     |

## 24 Contacts

|                                                                                     |
|-------------------------------------------------------------------------------------|
|  |
| 24-28                                                                               |
| 24#16                                                                               |
| INST.                                                                               |

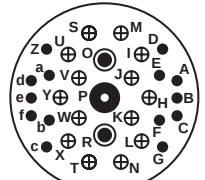
## 26 Contacts

|                                                                                     |
|-------------------------------------------------------------------------------------|
|  |
| 28-12                                                                               |
| 26#16                                                                               |
| A                                                                                   |

## 30 Contacts

|                                                                                      |
|--------------------------------------------------------------------------------------|
|  |
| 32-8†                                                                                |
| 6#12, 24#16                                                                          |
| A                                                                                    |

## 31 Contacts

|                                                                                       |
|---------------------------------------------------------------------------------------|
|  |
| 36-9                                                                                  |
| 1#4, 2#8, 14#12, 14#16                                                                |
| A                                                                                     |

# 97 series solder type

## insert arrangements, cont.

Front view of pin insert or rear of socket insert illustrated.

Items highlighted are most popular and most readily available.

### 35 Contacts

Insert Arrangement

Contacts

Service Rating

28-15†

35#16

A

32-7

7#12, 28#16

A, B, h, j = INST.;  
all others = A

36-15

35#16

m = D; all others = A

### 37 Contacts

28-21

37#16

A

### 47 Contacts

36-7

7#12, 40#16

A

36-8

1#12, 46#16

A

### 48 Contacts

36-10

48#16

A

### 52 Contacts

32-414\*

52#16

A

36-403\*

52#16

A

† Inactive for new military design, but available for replacement or for non-military purposes.

\* "MS" number not assigned. Use "97" prefix in place of "MS" in completing catalog number. See how to order, page 19.

See Service Rating and Test Current information on page 7.

CONTACT LEGEND

●

⊕

⦿

⦿

⊕

16

12

8

4

0

# 97 series solder type

## alternate insert positioning



| Insert Arrangement | Degrees |     |     |     |
|--------------------|---------|-----|-----|-----|
|                    | W       | X   | Y   | Z   |
| 12S-3              | 70      | 145 | 215 | 290 |
| 14S-2              | —       | 120 | 240 | —   |
| 14S-5              | —       | 110 | —   | —   |
| 14S-7              | 90      | 180 | 270 | —   |
| 14S-9              | 70      | 145 | 215 | 290 |
| 16S-1              | 80      | —   | —   | 280 |
| 16S-4              | 35      | 110 | 250 | 325 |
| 16S-5              | 70      | 145 | 215 | 290 |
| 16S-6              | 90      | 180 | 270 | —   |
| 16-7               | 80      | 110 | 250 | 280 |
| 16S-8              | —       | 170 | 265 | —   |
| 16-9               | 35      | 110 | 250 | 325 |
| 16-10              | 90      | 180 | 270 | —   |
| 16-11              | 35      | 110 | 250 | 325 |
| 16-13              | 35      | 110 | 250 | 325 |
| 18-1               | 70      | 145 | 215 | 290 |
| 18-3               | 35      | 110 | 250 | 325 |
| 18-4               | 35      | 110 | 250 | 325 |
| 18-5               | 80      | 110 | 250 | 280 |
| 18-8               | 70      | —   | —   | 290 |
| 18-9               | 80      | 110 | 250 | 280 |
| 18-10              | —       | 120 | 240 | —   |
| 18-11              | —       | 170 | 265 | —   |
| 18-12              | 80      | —   | —   | 280 |
| 18-13              | 80      | 110 | 250 | 280 |
| 18-19              | —       | 120 | 240 | —   |
| 18-20              | 90      | 180 | 270 | —   |
| 18-22              | 70      | 145 | 215 | 290 |
| 18-29              | 90      | 180 | 270 | —   |
| 20-3               | 70      | 145 | 215 | 290 |
| 20-4               | 45      | 110 | 250 | —   |
| 20-6               | 70      | 145 | 215 | 290 |
| 20-7               | 80      | 110 | 250 | 280 |
| 20-8               | 80      | 110 | 250 | 280 |
| 20-14              | 80      | 110 | 250 | 280 |
| 20-15              | 80      | —   | —   | 280 |
| 20-16              | 80      | 110 | 250 | 280 |
| 20-17              | 90      | 180 | 270 | —   |
| 20-18              | 35      | 110 | 250 | 325 |
| 20-19              | 90      | 180 | 270 | —   |
| 20-21              | 35      | 110 | 250 | 325 |
| 20-23              | 35      | 110 | 250 | 325 |
| 20-24              | 35      | 110 | 250 | 325 |
| 20-27              | 35      | 110 | 250 | 325 |
| 20-29              | 80      | —   | —   | 280 |

| Insert Arrangement | Degrees |      |      |      |
|--------------------|---------|------|------|------|
|                    | W       | X    | Y    | Z    |
| 22-1               | 35      | 110  | 250  | 325  |
| 22-2               | 70      | 145  | 215  | 290  |
| 22-4               | 35      | 110  | 250  | 325  |
| 22-5               | 35      | 110  | 250  | 325  |
| 22-8               | 35      | 110  | 250  | 325  |
| 22-9               | 70      | 145  | 215  | 290  |
| 22-10              | 35      | 110  | 250  | 325  |
| 22-11              | 35      | 110  | 250  | 325  |
| 22-12              | 80      | 110  | 250  | 280  |
| 22-13              | 35      | 110  | 250  | 325  |
| 22-14              | 80      | 110  | 250  | 280  |
| 22-15              | 80      | 110  | 250  | 280  |
| 22-16              | 80      | 110  | 250  | 280  |
| 22-18              | 80      | 110  | 250  | 280  |
| 22-19              | 80      | 110  | 250  | 280  |
| 22-20              | 35      | 110  | 250  | 325  |
| 22-22              | —       | 110  | 250  | —    |
| 22-23              | 35      | —    | 250  | —    |
| 22-27              | 80      | —    | 250  | 280  |
| 22-28              | 80      | —    | —    | 280  |
| 22-34              | 80      | 110  | 250  | 280  |
| 24-2               | 80      | —    | —    | 280  |
| 24-5               | 80      | 110  | 250  | 280  |
| 24-6               | 80      | 110  | 250  | 280  |
| 24-7               | 80      | 110  | 250  | 280  |
| 24-9               | 35      | 110  | 250  | 325  |
| 24-10              | 80      | —    | —    | 280  |
| 24-11              | 35      | 110  | 250  | 325  |
| 24-12              | 80      | 110  | 250  | 280  |
| 24-16              | 80      | 110  | 250  | 280  |
| 24-20              | 80      | 110  | 250  | 280  |
| 24-21              | 80      | 110  | 250  | 280  |
| 24-22              | 45      | 110  | 250  | —    |
| 24-27              | 80      | —    | —    | 280  |
| 24-28              | 80      | 110  | 250  | 280  |
| 28-1               | 80      | 110  | 250  | 280  |
| 28-2               | 35      | 110  | 250  | 325  |
| 28-3               | 70      | 145  | 215  | 290  |
| 28-6               | 70      | 145  | 215  | 290  |
| 28-8               | 80      | 110  | 250  | 280  |
| 28-9               | 80      | 110  | 250  | 280  |
| 28-10              | 80      | 110  | 250  | 280  |
| 28-11              | 80      | 110  | 250  | 280  |
| 28-12              | 90      | 180  | 270  | —    |
| 28-15              | 80      | 110  | 250  | 280  |
| 28-16              | 80      | 110  | 250  | 280  |
| 28-17              | 80      | 110  | 250  | 280  |
| 28-18              | 70      | 145  | 215  | 290  |
| 28-19              | 80      | 110  | 250  | 280  |
| 28-20              | 80      | 110  | 250  | 280  |
| 28-21              | 80      | 110  | 250  | 280  |
| 32-5               | 35      | 110  | 250  | 325  |
| 32-6               | 80      | 110  | 250  | 280  |
| 32-7               | 80      | 125  | 235  | 280  |
| 32-8               | 80      | 125  | 235  | 280  |
| 32-13              | 80      | 110  | 250  | 280  |
| 32-17              | 45      | 110  | 250  | —    |
| 32-414*            | 80*     | 110* | 250* | 280* |
| 36-1               | 80      | 110  | 250  | 280  |
| 36-5               | —       | 120  | 240  | —    |
| 36-6               | 35      | 110  | 250  | 325  |
| 36-7               | 80      | 110  | 250  | 280  |
| 36-8               | 80      | 110  | 250  | 280  |
| 36-9               | 80      | 125  | 235  | 280  |
| 36-10              | 80      | 125  | 235  | 280  |
| 36-15              | 60      | 125  | 245  | 305  |

# 97 series solder type receptacles

## MS3100A wall mount receptacle

Solid shell construction is strong and conserves space. Includes integral polarizing key in front. Back shell is threaded for standard MS/AN fittings.



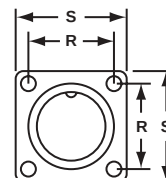
## MS3101A cable receptacle

Solid shell construction is strong and conserves space. Includes integral polarizing key in front shell. Machined back shell is threaded for standard MS/AN fittings. Can be unscrewed for inspection or soldering.



## MS3102A box receptacle

Solid shell designed for open wiring. Mounts directly on chassis, equipment or panel. Includes internal polarized key in front shell.



**Mounting Holes**  
 .173 (4.394) DIA.  
 FOR SIZE 32 AND 36  
 .147 (3.734) DIA.  
 FOR SIZES 24 AND 28  
 .120 (3.048) DIA.  
 FOR ALL OTHER SIZES

**Panel Opening**



## MS3100A and MS3101A

| Connector Size | A Coupling Thread | K Ref. |      | L Max.  |       | M Ref. |       | N Ref. |       | O Ref. |       | R Ref.  |       | S Ref. |       | V Fitting Threads |
|----------------|-------------------|--------|------|---------|-------|--------|-------|--------|-------|--------|-------|---------|-------|--------|-------|-------------------|
|                |                   | Inch   | mm   | Inch    | mm    | Inch   | mm    | Inch   | mm    | Inch   | mm    | Inch    | mm    | Inch   | mm    |                   |
| 8S             | 1/2-28            | 5/64   | 1.98 | 1-1/4   | 31.75 | 9/16   | 14.27 | 17/32  | 13.49 | .562   | 14.27 | 19/32   | 15.06 | 7/8    | 22.23 | 1/2-28            |
| 10S            | 5/8-24            | 5/64   | 1.98 | 1-5/16  | 33.32 | 9/16   | 14.27 | 5/8    | 15.88 | .688   | 17.48 | 23/32   | 18.24 | 1      | 25.40 | 1/2-28            |
| 10SL           | 5/8-24            | 5/64   | 1.98 | 1-9/32  | 32.53 | 9/16   | 14.27 | 3/4    | 19.05 | .812   | 20.62 | 23/32   | 18.24 | 1      | 25.40 | 5/8-24            |
| 12S            | 3/4-20            | 5/64   | 1.98 | 1-15/32 | 37.29 | 9/16   | 14.27 | 25/32  | 19.84 | .812   | 20.62 | 13/16   | 20.62 | 1-3/32 | 27.76 | 5/8-24            |
| 12             | 3/4-20            | 5/64   | 1.98 | 1-27/32 | 46.81 | 3/4    | 19.05 | 25/32  | 19.84 | .812   | 20.62 | 13/16   | 20.62 | 1-3/32 | 27.76 | 5/8-24            |
| 14S            | 7/8-20            | 5/64   | 1.98 | 1-15/32 | 37.39 | 9/16   | 14.27 | 7/8    | 22.23 | .938   | 23.83 | 29/32   | 23.01 | 1-3/16 | 30.15 | 3/4-20            |
| 14             | 7/8-20            | 5/64   | 1.98 | 1-55/64 | 47.04 | 3/4    | 19.05 | 7/8    | 22.23 | .938   | 23.83 | 29/32   | 23.01 | 1-3/16 | 30.15 | 3/4-20            |
| 16S            | 1 -20             | 5/64   | 1.98 | 1-15/32 | 37.39 | 9/16   | 14.27 | 1      | 25.40 | 1.062  | 26.97 | 31/32   | 24.59 | 1-9/32 | 32.54 | 7/8-20            |
| 16             | 1 -20             | 1/8    | 3.18 | 1-57/64 | 47.85 | 3/4    | 19.05 | 1      | 25.40 | 1.062  | 26.97 | 31/32   | 24.59 | 1-9/32 | 32.54 | 7/8-20            |
| 18             | 1-1/8-18          | 1/8    | 3.18 | 1-63/64 | 50.24 | 3/4    | 19.05 | 1-1/8  | 28.58 | 1.188  | 30.18 | 1-1/16  | 26.97 | 1-3/8  | 34.93 | 1 -20             |
| 20             | 1-1/4-18          | 1/8    | 3.18 | 1-57/64 | 47.85 | 3/4    | 19.05 | 1-1/4  | 31.75 | 1.312  | 33.32 | 1-5/32  | 29.36 | 1-1/2  | 38.10 | 1-3/16-18         |
| 22             | 1-3/8-18          | 1/8    | 3.18 | 1-63/64 | 50.24 | 3/4    | 19.05 | 1-3/8  | 34.93 | 1.438  | 36.53 | 1-1/4   | 31.75 | 1-5/8  | 39.67 | 1-3/16-18         |
| 24             | 1-1/2-18          | 1/8    | 3.18 | 2-1/4   | 57.15 | 13/16  | 20.62 | 1-1/2  | 38.10 | 1.562  | 36.67 | 1-3/8   | 34.93 | 1-3/4  | 44.45 | 1-7/16-18         |
| 28             | 1-3/4-18          | 1/8    | 3.18 | 2-1/4   | 57.15 | 13/16  | 20.62 | 1-3/4  | 44.45 | 1.812  | 46.02 | 1-9/16  | 39.67 | 2      | 50.80 | 1-7/16-18         |
| 32             | 2 -18             | 1/8    | 3.18 | 2-3/8   | 60.33 | 7/8    | 22.23 | 2-1/32 | 51.59 | 2.062  | 52.37 | 1-3/4   | 44.45 | 2-1/4  | 57.15 | 1-3/4-18          |
| 36             | 2-1/4-16          | 1/8    | 3.18 | 2-3/8   | 60.33 | 7/8    | 22.23 | 2-1/4  | 57.15 | 2.312  | 58.72 | 1-15/16 | 49.20 | 2-1/2  | 63.50 | 2 -18             |

## MS3102A

| Connector Size | A Coupling Thread | K Ref. |      | L Max.  |       | M Ref. |       | N Ref.  |       | O Ref. |       | R Ref.  |       | S Ref. |       |
|----------------|-------------------|--------|------|---------|-------|--------|-------|---------|-------|--------|-------|---------|-------|--------|-------|
|                |                   | Inch   | mm   | Inch    | mm    | Inch   | mm    | Inch    | mm    | Inch   | mm    | Inch    | mm    | Inch   | mm    |
| 8S             | 1/2-28            | 5/64   | 1.98 | 55/64   | 21.82 | 9/16   | 14.27 | 7/16    | 11.10 | .562   | 14.27 | 19/32   | 15.06 | 7/8    | 22.23 |
| 10S            | 5/8-24            | 5/64   | 1.98 | 55/64   | 21.82 | 9/16   | 14.27 | 1/2     | 12.70 | .688   | 17.48 | 23/32   | 18.24 | 1      | 25.40 |
| 10SL           | 5/8-24            | 5/64   | 1.98 | 61/64   | 24.21 | 35/64  | 13.87 | 11/16   | 17.48 | .812   | 20.62 | 23/32   | 18.24 | 1      | 25.40 |
| 12S            | 3/4-20            | 5/64   | 1.98 | 31/32   | 24.61 | 9/16   | 14.27 | 11/16   | 17.45 | .812   | 20.62 | 13/16   | 20.62 | 1-3/32 | 27.76 |
| 12             | 3/4-20            | 5/64   | 1.98 | 1-21/64 | 33.73 | 3/4    | 19.05 | 11/16   | 17.45 | .812   | 20.62 | 13/16   | 20.62 | 1-3/32 | 27.76 |
| 12SL           | 3/4-20            | 5/64   | 1.98 | 27/32   | 21.44 | 35/64  | 13.87 | 11/16   | 17.45 | .938   | 23.83 | 13/16   | 20.62 | 1-3/32 | 27.76 |
| 14S            | 7/8-20            | 5/64   | 1.98 | 61/64   | 24.21 | 9/16   | 14.27 | 3/4     | 19.05 | .938   | 23.83 | 29/32   | 23.01 | 1-3/16 | 30.15 |
| 14             | 7/8-20            | 5/64   | 1.98 | 1-11/32 | 34.14 | 3/4    | 19.05 | 3/4     | 19.05 | .938   | 23.83 | 29/32   | 23.01 | 1-3/16 | 30.15 |
| 16S            | 1 -20             | 5/64   | 1.98 | 61/64   | 24.21 | 9/16   | 14.27 | 7/8     | 22.23 | 1.062  | 26.97 | 31/32   | 24.59 | 1-9/32 | 32.54 |
| 16             | 1 -20             | 1/8    | 3.18 | 1-3/8   | 34.92 | 3/4    | 19.05 | 7/8     | 22.23 | 1.062  | 26.97 | 31/32   | 24.59 | 1-9/32 | 32.54 |
| 18             | 1-1/8-18          | 1/8    | 3.18 | 1-3/8   | 34.92 | 3/4    | 19.05 | 1       | 25.40 | 1.188  | 30.18 | 1-1/16  | 26.97 | 1-3/8  | 34.93 |
| 20             | 1-1/4-18          | 1/8    | 3.18 | 1-3/8   | 34.92 | 3/4    | 19.05 | 1-1/8   | 28.58 | 1.312  | 33.32 | 1-5/32  | 29.36 | 1-1/2  | 38.10 |
| 22             | 1-3/8-18          | 1/8    | 3.18 | 1-3/8   | 34.92 | 3/4    | 19.05 | 1-1/4   | 31.75 | 1.438  | 36.53 | 1-1/4   | 31.75 | 1-5/8  | 41.28 |
| 24             | 1-1/2-18          | 1/8    | 3.18 | 1-3/8   | 34.92 | 13/16  | 20.62 | 1-3/8   | 34.93 | 1.562  | 39.67 | 1-3/8   | 34.93 | 1-3/4  | 44.45 |
| 28             | 1-3/4-18          | 1/8    | 3.18 | 1-3/8   | 34.92 | 13/16  | 20.62 | 1-5/8   | 41.28 | 1.812  | 46.02 | 1-9/16  | 39.67 | 2      | 50.80 |
| 32             | 2 -18             | 1/8    | 3.18 | 1-15/32 | 37.31 | 7/8    | 22.23 | 1-29/32 | 48.41 | 2.062  | 52.37 | 1-3/4   | 44.45 | 2-1/4  | 57.15 |
| 36             | 2-1/4-16          | 1/8    | 3.18 | 1-15/32 | 37.31 | 7/8    | 22.23 | 2-1/8   | 53.98 | 2.312  | 58.72 | 1-15/16 | 49.20 | 2-1/2  | 63.50 |

# 97 series solder type plugs with solid shells

## MS3106A

| Connector<br>Size | L Max.  |       | N Ref. |       | Q Max.  |       | V<br>Fitting Threads |
|-------------------|---------|-------|--------|-------|---------|-------|----------------------|
|                   | Inch    | mm    | Inch   | mm    | Inch    | mm    |                      |
| 8S                | 1-1/4   | 31.75 | 17/32  | 13.49 | 3/4     | 19.05 | 1/2-28               |
| 10S               | 1-5/16  | 33.32 | 5/8    | 15.88 | 7/8     | 22.23 | 1/2-28               |
| 10SL              | 1-3/8   | 34.93 | 3/4    | 19.05 | 7/8     | 22.23 | 5/8-24               |
| 12S               | 1-7/16  | 36.50 | 25/32  | 19.84 | 1       | 25.40 | 5/8-24               |
| 12                | 1-7/8   | 47.63 | 25/32  | 19.84 | 1       | 25.40 | 5/8-24               |
| 12SL              | 1-31/64 | 37.69 | 7/8    | 22.23 | 1       | 25.40 | 3/4-20               |
| 14S               | 1-15/32 | 37.13 | 7/8    | 22.23 | 1-1/8   | 28.58 | 3/4-20               |
| 14                | 1-7/8   | 47.47 | 7/8    | 22.23 | 1-1/8   | 28.58 | 3/4-20               |
| 16S               | 1-15/32 | 37.13 | 1      | 25.40 | 1-1/4   | 31.75 | 7/8-20               |
| 16                | 1-7/8   | 47.47 | 1      | 25.40 | 1-1/4   | 31.75 | 7/8-20               |
| 18                | 1-31/32 | 49.88 | 1-1/8  | 28.57 | 1-11/32 | 34.11 | 1 -20                |
| 20                | 1-7/8   | 47.50 | 1-1/4  | 31.75 | 1-15/32 | 37.29 | 1-3/16-18            |
| 22                | 1-31/32 | 49.88 | 1-3/8  | 34.93 | 1-19/32 | 40.46 | 1-3/16-18            |
| 24                | 2-1/4   | 57.15 | 1-1/2  | 38.10 | 1-23/32 | 43.64 | 1-7/16-18            |
| 28                | 2-1/4   | 57.15 | 1-3/4  | 44.45 | 1-31/32 | 49.99 | 1-7/16-18            |
| 32                | 2-3/8   | 60.33 | 2-1/32 | 51.59 | 2-7/32  | 56.34 | 1-3/4-18             |
| 36                | 2-3/8   | 60.33 | 2-1/4  | 57.15 | 2-15/32 | 62.69 | 2 -18                |

### MS3106A straight plug

Sturdy, simple to assemble. Coupling ring machined from solid aluminum bar stock for high tensile strength. Mates with all types of MS receptacles. Front shell includes polarizing keyway. Back shell is threaded for standard MS/AN fittings.



## MS3107A

| Connector<br>Size | L Max.  |       | N Ref. |       | Q Max.  |       | V<br>Fitting Threads |
|-------------------|---------|-------|--------|-------|---------|-------|----------------------|
|                   | Inch    | mm    | Inch   | mm    | Inch    | mm    |                      |
| 10S               | 1-5/16  | 33.32 | 5/8    | 15.88 | 7/8     | 22.23 | 1/2-28               |
| 10SL              | 1-3/8   | 34.92 | 3/4    | 19.05 | 7/8     | 22.23 | 5/8-24               |
| 12S               | 1-7/16  | 36.50 | 25/32  | 19.84 | 1       | 25.40 | 5/8-24               |
| 12                | 1-7/8   | 47.63 | 25/32  | 19.84 | 1       | 25.40 | 5/8-24               |
| 14S               | 1-15/32 | 37.13 | 7/8    | 22.23 | 1-1/8   | 38.58 | 3/4-20               |
| 14                | 1-7/8   | 47.47 | 7/8    | 22.23 | 1-1/8   | 28.58 | 3/4-20               |
| 16S               | 1-15/32 | 37.13 | 1      | 25.40 | 1-1/4   | 31.75 | 7/8-20               |
| 16                | 1-7/8   | 47.47 | 1      | 25.40 | 1-1/4   | 31.75 | 7/8-20               |
| 18                | 1-31/32 | 49.88 | 1-1/8  | 28.58 | 1-11/32 | 34.11 | 1 -20                |
| 20                | 1-7/8   | 47.50 | 1-1/4  | 31.75 | 1-15/32 | 37.29 | 1-3/16-18            |
| 22                | 1-31/32 | 49.88 | 1-3/8  | 34.93 | 1-19/32 | 40.46 | 1-3/16-18            |
| 24                | 2-1/4   | 57.15 | 1-1/2  | 38.10 | 1-23/32 | 43.64 | 1-7/16-18            |
| 28                | 2-1/4   | 57.15 | 1-3/4  | 44.45 | 1-31/32 | 49.99 | 1-7/16-18            |

### MS3107A quick-disconnect plug

For fast connect/disconnect applications. Front shell has polarizing keyway. Mates with all types of MS receptacles. Back shell is threaded for standard MS/AN fittings



## MS3108A

| Connector<br>Size | L Ref.  |       | Q Max.  |       | U Ref. |       | V<br>Fitting Threads | Y Ref. |       |
|-------------------|---------|-------|---------|-------|--------|-------|----------------------|--------|-------|
|                   | Inch    | mm    | Inch    | mm    | Inch   | mm    |                      | Inch   | mm    |
| 10S               | 1-1/4   | 31.75 | 7/8     | 22.23 | 7/8    | 22.23 | 1/2-28               | 25/32  | 19.84 |
| 10SL              | 1-5/16  | 33.32 | 7/8     | 22.23 | 1      | 25.40 | 5/8-24               | 1-1/16 | 26.97 |
| 12S               | 1-3/8   | 34.93 | 1       | 25.40 | 1      | 25.40 | 5/8-24               | 1-1/16 | 26.97 |
| 12SL              | 1-3/8   | 34.93 | 1       | 25.40 | 1      | 25.40 | 3/4-20               | 1-1/16 | 26.97 |
| 12                | 1-13/64 | 30.56 | 1       | 25.40 | 1      | 25.40 | 5/8-24               | 1-1/16 | 26.97 |
| 14S               | 1-3/8   | 34.93 | 1-1/8   | 28.58 | 1      | 25.40 | 3/4-20               | 1-1/16 | 26.97 |
| 14                | 1-13/16 | 46.02 | 1-1/8   | 28.58 | 1      | 25.40 | 3/4-20               | 1-1/16 | 26.97 |
| 16S               | 1-1/2   | 38.10 | 1-1/4   | 31.75 | 1-1/8  | 28.58 | 7/8-20               | 1-5/16 | 33.32 |
| 16                | 1-15/16 | 49.20 | 1-1/4   | 31.75 | 1-1/8  | 28.58 | 7/8-20               | 1-5/16 | 33.32 |
| 18                | 1-15/16 | 49.20 | 1-11/32 | 34.11 | 1-1/8  | 28.58 | 1 -20                | 1-5/16 | 33.32 |
| 20                | 2-1/16  | 52.37 | 1-15/32 | 37.29 | 1-5/16 | 33.32 | 1-3/16-18            | 1-5/8  | 42.28 |
| 22                | 2-1/16  | 52.37 | 1-19/32 | 40.46 | 1-5/16 | 33.32 | 1-3/16-18            | 1-5/8  | 42.28 |
| 24                | 2-15/32 | 62.69 | 1-23/32 | 43.64 | 1-1/2  | 38.10 | 1-7/16-18            | 2      | 50.80 |
| 28                | 2-15/32 | 62.69 | 1-31/32 | 49.99 | 1-1/2  | 38.10 | 1-7/16-18            | 2      | 50.80 |

### MS3108A angle plug

For use where space in front of panel or wall is at a premium. Swivel ring and plate combination allow cable take off at any angle relative to front shell polarizing key. Back shell is threaded for standard MS/AN fittings.



# 97 series solder type plugs with split shells

## MS3106B

| Connector<br>Size | L Max.  |       | Q Max.  |       | V<br>Fitting Threads | Y Ref.  |       |
|-------------------|---------|-------|---------|-------|----------------------|---------|-------|
|                   | Inch    | mm    | Inch    | mm    |                      | Inch    | mm    |
| 14S               | 1-11/16 | 42.85 | 1-1/8   | 28.58 | 3/4-20               | 1-5/32  | 29.36 |
| 16S               | 1-11/16 | 42.85 | 1-1/4   | 31.75 | 7/8-20               | 1-1/4   | 31.75 |
| 18                | 2-1/16  | 52.37 | 1-11/32 | 34.11 | 1 -20                | 1-41/64 | 41.66 |
| 20                | 2-1/8   | 53.98 | 1-15/32 | 37.29 | 1-3/16-18            | 1-13/16 | 46.02 |
| 22                | 2-1/8   | 53.98 | 1-19/32 | 40.46 | 1-3/16-18            | 1-15/16 | 49.20 |
| 24                | 2-9/32  | 57.94 | 1-23/32 | 43.64 | 1-7/16-18            | 2-1/16  | 52.37 |
| 28                | 2-9/32  | 57.94 | 1-31/32 | 49.99 | 1-7/16-18            | 2-5/16  | 58.72 |
| 32                | 2-5/16  | 58.72 | 2-7/32  | 56.34 | 1-3/4-18             | 2-19/32 | 65.86 |
| 36                | 2-11/32 | 59.51 | 2-15/32 | 62.69 | 2 -18                | 2-27/32 | 72.21 |

## MS3107B

| Connector<br>Size | L Max.  |       | Q Max.  |       | V<br>Fitting Threads | Y Ref.  |       |
|-------------------|---------|-------|---------|-------|----------------------|---------|-------|
|                   | Inch    | mm    | Inch    | mm    |                      | Inch    | mm    |
| 14S               | 1-11/16 | 42.85 | 1-1/8   | 28.58 | 3/4-20               | 1-5/32  | 29.36 |
| 16S               | 1-11/16 | 42.85 | 1-1/4   | 31.75 | 7/8-20               | 1-1/4   | 31.75 |
| 18                | 2-1/16  | 52.37 | 1-11/32 | 34.11 | 1 -20                | 1-41/64 | 41.66 |
| 20                | 2-1/8   | 53.99 | 1-15/32 | 37.29 | 1-3/16-18            | 1-13/16 | 46.02 |
| 22                | 2-1/8   | 53.99 | 1-19/32 | 40.46 | 1-3/16-18            | 1-15/16 | 49.20 |
| 24                | 2-9/32  | 57.94 | 1-23/32 | 43.64 | 1-7/16-18            | 2-1/16  | 52.37 |
| 28                | 2-9/32  | 57.94 | 1-31/32 | 49.99 | 1-7/16-18            | 2-5/16  | 58.72 |

## MS3108B

| Connector<br>Size | L Ref.  |       | Q Max.  |       | U Ref.  |       | V<br>Fitting Threads | X Ref.  |       |
|-------------------|---------|-------|---------|-------|---------|-------|----------------------|---------|-------|
|                   | Inch    | mm    | Inch    | mm    | Inch    | mm    |                      | Inch    | mm    |
| 10S               | 1-3/8   | 34.93 | 7/8     | 22.23 | 7/8     | 22.23 | 1/2-28               |         |       |
| 10SL              | 1-1/2   | 38.10 | 7/8     | 22.23 | 1       | 25.40 | 5/8-24               |         |       |
| 12S               | 1-9/16  | 39.67 | 1       | 25.40 | 1       | 25.40 | 5/8-24               | 1/2     | 12.70 |
| 12                | 1-7/8   | 47.63 | 1       | 25.40 | 1       | 25.40 | 5/8-24               | 1/2     | 12.70 |
| 14S               | 1-23/32 | 43.64 | 1-1/8   | 28.58 | 1-1/16  | 26.97 | 3/4-20               | 21/32   | 16.66 |
| 14                | 1-15/16 | 49.20 | 1-1/8   | 28.58 | 1-1/16  | 26.97 | 3/4-20               | 21/32   | 16.66 |
| 16S               | 1-3/4   | 44.45 | 1-1/4   | 31.75 | 1-1/8   | 28.58 | 7/8-20               | 1-1/2   | 38.10 |
| 16                | 2-1/8   | 53.98 | 1-1/4   | 31.75 | 1-1/8   | 28.58 | 7/8-20               | 1-1/2   | 38.10 |
| 18                | 2-5/32  | 54.75 | 1-11/32 | 34.11 | 1-3/16  | 30.15 | 1 -20                | 1-41/64 | 41.66 |
| 20                | 2-3/8   | 60.33 | 1-15/32 | 37.29 | 1-5/16  | 33.32 | 1-3/16-18            | 1-13/16 | 46.02 |
| 22                | 2-13/32 | 61.11 | 1-19/32 | 40.46 | 1-5/16  | 33.32 | 1-3/16-18            | 1-15/16 | 49.20 |
| 24                | 2-5/8   | 66.68 | 1-23/32 | 43.64 | 1-7/16  | 36.50 | 1-7/16-18            | 2-1/16  | 52.37 |
| 28                | 2-5/8   | 66.68 | 1-31/32 | 49.99 | 1-7/16  | 36.50 | 1-7/16-18            | 2-5/16  | 58.72 |
| 32                | 2-13/16 | 71.42 | 2-7/32  | 56.34 | 1-3/4   | 44.45 | 1-3/4-18             | 2-19/32 | 65.86 |
| 36                | 2-27/32 | 72.21 | 2-15/32 | 62.69 | 1-15/16 | 49.20 | 2 -18                | 2-27/32 | 72.21 |

### MS3106B straight plug

Used for unusual conduit applications where soldering and inspection is the prime requirement. Back shell is threaded for all standard MS/AN fittings.



### MS3107B quick-disconnect plug

For fast connect/disconnect applications. Front shell has polarizing keyway. Mates with all types of MS receptacles. Back shell is threaded for standard MS/AN fittings.



### MS3108B angle plug

Lightweight, roomy cavity, split longitudinally for convenient solder or inspection. Front shell is keyed to allow the 90° angle housing to be rotated and locked at any 45° increment.

#### Sizes 10S thru 14



#### Sizes 16S thru 40



# 97 series solder type

## availability and weight reference

| Insert<br>Number | Wall<br>Receptacles<br>MS3100 | Cable<br>Receptacles<br>MS3101 | Box<br>Receptacles<br>MS3102 | Straight Plugs<br>MS3106 |             | Quick Disconnect<br>Plugs MS3107 |             | Angle Plugs<br>MS3108 |             | Total<br>Contacts |
|------------------|-------------------------------|--------------------------------|------------------------------|--------------------------|-------------|----------------------------------|-------------|-----------------------|-------------|-------------------|
|                  | Solid Shell                   | Solid Shell                    | Solid Shell                  | Solid Shell              | Split Shell | Solid Shell                      | Split Shell | Solid Shell           | Split Shell |                   |
|                  | A                             | A                              | A                            | A                        | B           | A                                | B           | A                     | B           |                   |
| 8S-1             | .02                           | .01                            | .01                          | .02                      |             |                                  |             |                       |             | 1                 |
| 10SL-3P          | .03                           | .03                            | .02                          |                          |             |                                  |             |                       |             | 3                 |
| 10SL-3S          |                               |                                |                              | .03                      |             | .03                              |             | .06                   | .05         | 3                 |
| 10SL-4P†         | .02                           | .02                            | .02                          |                          |             |                                  |             |                       |             | 2                 |
| 10SL-4S†         |                               |                                |                              | .03                      |             | .03                              |             | .06                   | .05         | 2                 |
| 12S-3            | .04                           | .03                            | .03                          | .03                      |             | .03                              |             | .07                   | .07         | 2                 |
| 12-5             | .05                           | .04                            | .03                          | .06                      |             | .06                              |             | .09                   | .08         | 1                 |
| 12S-6*           | .04                           | .03                            | .03                          | .04                      |             | .04                              |             | .07                   | .08         | 2                 |
| 12SL-844P*       |                               |                                | .03                          |                          |             |                                  |             |                       |             | 4                 |
| 12SL-844S*       |                               |                                |                              | .05                      |             | .06                              |             | .08                   |             | 4                 |
| 14S-1†           | .05                           | .04                            | .03                          | .06                      | .06         | .06                              | .06         | .08                   | .08         | 3                 |
| 14S-2            | .05                           | .04                            | .03                          | .06                      | .06         | .06                              | .06         | .08                   | .08         | 4                 |
| 14S-4†           | .05                           | .04                            | .03                          | .06                      | .06         | .06                              | .06         | .08                   | .08         | 1                 |
| 14S-5            | .05                           | .04                            | .04                          | .06                      | .06         | .06                              | .06         | .08                   | .08         | 5                 |
| 14S-6            | .05                           | .04                            | .04                          | .06                      | .06         | .06                              | .06         | .08                   | .08         | 6                 |
| 14S-7            | .05                           | .04                            | .03                          | .06                      | .06         | .06                              | .06         | .08                   | .08         | 3                 |
| 14S-9†           | .05                           | .04                            | .03                          | .06                      | .06         | .07                              | .06         | .08                   | .08         | 2                 |
| 16S-1            | .06                           | .05                            | .05                          | .07                      | .07         | .08                              | .07         | .14                   | .11         | 7                 |
| 16S-4            | .06                           | .05                            | .04                          | .07                      | .07         | .07                              | .07         | .12                   | .10         | 2                 |
| 16S-5†           | .06                           | .05                            | .04                          | .07                      | .07         | .07                              | .07         | .12                   | .10         | 3                 |
| 16S-6†           | .06                           | .05                            | .04                          | .07                      | .07         | .09                              | .07         | .12                   | .10         | 3                 |
| 16-7             | .08                           | .08                            | .07                          | .09                      |             | .07                              |             | .15                   | .14         | 3                 |
| 16S-8            | .06                           | .05                            | .04                          | .07                      | .07         | .09                              | .07         | .12                   | .10         | 5                 |
| 16-9             | .08                           | .07                            |                              | .09                      |             | .09                              | .10         | .12                   | .13         | 4                 |
| 16-10            | .08                           | .08                            | .07                          | .09                      |             | .09                              |             | .15                   | .14         | 3                 |
| 16-11†           | .08                           | .07                            | .07                          | .09                      |             | .11                              |             | .14                   | .13         | 2                 |
| 16-12            | .10                           | .09                            | .08                          | .11                      |             | .08                              |             | .16                   | .15         | 1                 |
| 16-13            | .07                           | .07                            | .06                          | .08                      |             | .11                              |             | .14                   | .13         | 2                 |
| 18-1             | .10                           | .10                            | .08                          | .11                      | .13         | .12                              | .13         | .16                   | .15         | 10                |
| 18-3†            | .10                           | .10                            | .08                          | .12                      | .13         | .11                              | .13         | .16                   | .15         | 2                 |
| 18-4             | .09                           | .09                            | .07                          | .11                      | .13         | .12                              | .13         | .16                   | .15         | 4                 |
| 18-5             | .10                           | .10                            | .08                          | .12                      | .13         | .13                              | .13         | .16                   | .15         | 3                 |
| 18-8             | .10                           | .10                            | .08                          | .12                      | .14         | .12                              | .14         | .16                   | .15         | 8                 |
| 18-9             | .11                           | .10                            | .09                          | .12                      | .14         | .13                              | .14         | .17                   | .16         | 7                 |
| 18-10†           | .11                           |                                | .09                          | .13                      | .14         | .13                              | .14         | .17                   | .16         | 4                 |
| 18-11            | .11                           | .11                            | .09                          | .13                      | .15         | .11                              | .15         | .18                   | .17         | 5                 |
| 18-12†           | .10                           | .09                            | .08                          | .11                      | .13         | .13                              | .13         | .16                   | .15         | 6                 |
| 18-13            | .12                           | .12                            | .10                          | .13                      | .15         | .13                              | .15         | .18                   | .17         | 4                 |
| 18-16            | .09                           | .09                            | .07                          | .11                      | .13         | .11                              | .13         | .15                   | .14         | 1                 |
| 18-19†           | .10                           | .10                            | .08                          | .11                      | .13         | .11                              | .13         | .16                   | .15         | 10                |
| 18-20†           | .09                           | .09                            | .07                          | .11                      | .13         | .11                              | .13         | .15                   | .15         | 5                 |
| 18-22†           | .09                           | .09                            | .07                          | .11                      | .13         |                                  | .13         | .16                   | .15         | 3                 |
| 18-29†           | .10                           |                                | .08                          | .11                      | .13         | .11                              | .13         | .16                   | .15         | 5                 |
| 18-420†*         | .10                           | .10                            | .08                          | .12                      | .13         | .12                              | .13         | .16                   | .16         | 1                 |
| 20-3†            | .14                           | .13                            | .10                          | .15                      | .16         | .15                              | .16         | .24                   | .19         | 3                 |

Where no weight is shown, insert is not available in that shell type.

† Inactive for new military design, but available for replacement or for non-military purposes.

\* "MS" number not assigned. Use "97" prefix in place of "MS" in completing catalog number.

Weights are for connectors with socket contacts.

Connectors with pin contacts weigh slightly less.

If a weight appears in the column, the shell is available.

Weight is shown in lbs.

# 97 series solder type

## availability and weight reference, cont.

| Insert Number | Wall Receptacles MS3100 | Cable Receptacles MS3101 | Box Receptacles MS3102 | Straight Plugs MS3106 |             | Quick Disconnect Plugs MS3107 |             | Angle Plugs MS3108 |             | Total Contacts |
|---------------|-------------------------|--------------------------|------------------------|-----------------------|-------------|-------------------------------|-------------|--------------------|-------------|----------------|
|               | Solid Shell             | Solid Shell              | Solid Shell            | Solid Shell           | Split Shell | Solid Shell                   | Split Shell | Solid Shell        | Split Shell |                |
|               | A                       | A                        | A                      | A                     | B           | A                             | B           | A                  | B           |                |
| 20-4          | .14                     | .13                      | .10                    | .15                   | .16         | .15                           | .16         | .24                | .19         | 4              |
| 20-6†         | .12                     | .11                      | .09                    | .13                   | .15         | .14                           | .15         | .23                | .18         | 3              |
| 20-7          | .13                     | .12                      | .09                    | .14                   | .15         | .14                           | .15         | .23                | .18         | 8              |
| 20-8          | .15                     | .14                      | .12                    | .16                   | .18         | .16                           | .18         | .26                | .20         | 6              |
| 20-11†        | .14                     | .13                      | .11                    | .15                   | .17         | .15                           | .17         | .25                | .20         | 13             |
| 20-14         | .16                     | .15                      | .13                    | .17                   | .19         | .17                           | .19         | .27                | .21         | 5              |
| 20-15         | .15                     | .14                      | .12                    | .16                   | .18         | .16                           | .18         | .26                | .21         | 7              |
| 20-16         | .14                     | .13                      | .10                    | .15                   | .16         | .15                           | .16         | .24                | .19         | 9              |
| 20-17         | .15                     | .14                      | .11                    | .16                   | .17         | .16                           | .17         | .25                | .20         | 6              |
| 20-18         | .14                     | .13                      | .11                    | .15                   | .17         | .15                           | .17         | .25                | .19         | 9              |
| 20-19†        | .16                     | .15                      | .13                    | .17                   | .19         | .17                           | .19         | .27                | .21         | 3              |
| 20-21         | .13                     | .12                      | .10                    | .14                   | .16         | .14                           | .16         | .24                | .19         | 9              |
| 20-23†        | .15                     | .14                      | .11                    | .16                   | .17         | .16                           | .17         | .25                | .20         | 2              |
| 20-24         | .15                     | .14                      | .11                    | .16                   | .17         | .16                           | .17         | .25                | .20         | 4              |
| 20-27         | .13                     | .12                      | .10                    | .14                   | .16         | .14                           | .16         | .24                | .19         | 14             |
| 20-29         | .14                     | .13                      | .11                    | .15                   | .17         | .15                           | .17         | .25                | .20         | 17             |
| 20-33         | .13                     | .12                      | .09                    | .14                   | .18         | .18                           | .18         | .23                | .18         | 11             |
| 22-1†         | .16                     | .16                      | .13                    | .18                   | .19         | .18                           | .19         | .27                | .23         | 2              |
| 22-2          | .17                     | .17                      | .14                    | .19                   | .20         | .19                           | .20         | .29                | .24         | 3              |
| 22-4†         | .21                     | .17                      | .14                    | .19                   | .20         | .19                           | .20         | .28                | .23         | 4              |
| 22-5          | .15                     | .14                      | .12                    | .17                   | .18         | .17                           | .18         | .26                | .21         | 6              |
| 22-8†         | .15                     | .14                      | .11                    | .16                   | .18         | .16                           | .18         | .26                | .21         | 2              |
| 22-9          | .15                     | .15                      | .12                    | .17                   | .18         | .17                           | .18         | .26                | .21         | 3              |
| 22-10         | .14                     | .13                      | .10                    | .15                   | .17         | .15                           | .17         | .25                | .20         | 4              |
| 22-11         | .14                     | .13                      | .10                    | .15                   | .17         | .15                           | .17         | .25                | .20         | 2              |
| 22-12         | .16                     | .16                      | .13                    | .18                   | .19         | .18                           | .19         | .27                | .23         | 5              |
| 22-13†        | .16                     | .15                      | .12                    | .17                   | .18         | .17                           | .18         | .27                | .22         | 5              |
| 22-14         | .15                     | .14                      | .11                    | .16                   | .18         | .16                           | .18         | .26                | .21         | 19             |
| 22-15         | .16                     | .14                      | .13                    | .17                   | .19         | .17                           | .19         | .27                | .22         | 6              |
| 22-16†        | .16                     | .15                      | .12                    | .17                   | .18         | .17                           | .18         | .27                | .22         | 9              |
| 22-18         | .14                     | .13                      | .10                    | .15                   | .17         | .15                           | .17         | .25                | .20         | 8              |
| 22-19         | .15                     | .14                      | .11                    | .16                   | .18         | .16                           | .18         | .26                | .21         | 14             |
| 22-20†        | .14                     | .14                      | .11                    | .16                   | .17         | .16                           | .17         | .25                | .21         | 9              |
| 22-22         | .19                     | .19                      | .16                    | .21                   | .26         | .21                           | .22         | .30                | .25         | 4              |
| 22-23         | .17                     | .16                      | .13                    | .18                   | .20         | .18                           | .20         | .28                | .23         | 8              |
| 22-26†        | .15                     | .14                      | .11                    |                       |             |                               |             |                    | .19         | 7              |
| 22-27         | .15                     | .15                      | .12                    | .17                   | .18         | .17                           | .18         | .27                | .22         | 9              |
| 22-28†        | .17                     | .16                      | .13                    | .18                   | .20         | .18                           | .20         | .28                | .23         | 7              |
| 22-34†        | .15                     | .15                      | .12                    | .17                   | .18         | .17                           | .18         | .26                | .22         | 5              |
| 24-2          | .20                     | .19                      | .16                    | .22                   | .24         | .22                           | .24         | .39                | .29         | 7              |
| 24-5†         | .18                     | .17                      | .14                    | .20                   | .22         | .20                           | .22         | .37                | .27         | 16             |
| 24-6          | .20                     | .19                      | .16                    | .22                   | .24         | .22                           | .27         | .39                | .29         | 8              |
| 24-7          | .19                     | .18                      | .14                    | .21                   | .23         | .21                           | .23         | .38                | .27         | 16             |
| 24-9†         | .22                     | .21                      | .17                    | .24                   | .25         | .24                           | .25         | .41                | .30         | 2              |
| 24-10         | .26                     | .25                      | .21                    | .28                   | .30         | .28                           | .30         | .45                | .34         | 7              |

Where no weight is shown, insert is not available in that shell type.

† Inactive for new military design, but available for replacement or for non-military purposes.

\* "MS" number not assigned. Use "97" prefix in place of "MS" in completing catalog number.

Weights are for connectors with socket contacts.

Connectors with pin contacts weigh slightly less.

If a weight appears in the column, the shell is available.

Weight is shown in lbs.

# 97 series solder type

## availability and weight reference, cont.

| Insert Number | Wall Receptacles MS3100 | Cable Receptacles MS3101 | Box Receptacles MS3102 | Straight Plugs MS3106 |             | Quick Disconnect Plugs MS3107 |             | Angle Plugs MS3108 |             | Total Contacts |
|---------------|-------------------------|--------------------------|------------------------|-----------------------|-------------|-------------------------------|-------------|--------------------|-------------|----------------|
|               | Solid Shell             | Solid Shell              | Solid Shell            | Solid Shell           | Split Shell | Solid Shell                   | Split Shell | Solid Shell        | Split Shell |                |
|               | A                       | A                        | A                      | A                     | B           | A                             | B           | A                  | B           |                |
| 24-11         | .24                     | .22                      | .19                    | .26                   | .27         | .26                           | .27         | .43                | .32         | 9              |
| 24-12         | .23                     | .22                      | .19                    | .25                   | .27         | .25                           | .27         | .42                | .32         | 5              |
| 24-16         | .20                     | .19                      | .15                    | .22                   | .24         | .22                           | .24         | .39                | .28         | 7              |
| 24-19†        | .18                     | .17                      | .13                    | .20                   | .22         |                               |             | .37                | .36         | 12             |
| 24-20         | .19                     | .17                      | .14                    | .21                   | .22         | .21                           | .22         | .38                | .27         | 11             |
| 24-21         | .19                     | .17                      | .14                    | .21                   | .23         | .21                           | .23         | .38                | .27         | 10             |
| 24-22         | .22                     | .21                      | .18                    | .24                   | .26         | .24                           | .26         | .41                | .30         | 4              |
| 24-27         | .17                     | .16                      | .13                    | .20                   | .21         | .20                           | .21         | .36                | .26         | 7              |
| 24-28         | .19                     | .18                      | .14                    | .21                   | .22         | .21                           | .22         | .38                | .27         | 24             |
| 28-1          | .29                     | .27                      | .24                    | .30                   | .32         | .30                           | .32         | .44                | .36         | 9              |
| 28-2          | .24                     | .22                      | .19                    | .25                   | .27         | .25                           | .27         | .40                | .32         | 14             |
| 28-3          | .26                     | .24                      | .21                    | .28                   | .30         | .28                           | .30         | .42                | .34         | 3              |
| 28-6†         | .30                     | .28                      | .25                    | .31                   | .33         | .31                           | .33         | .45                | .38         | 3              |
| 28-8          | .23                     | .22                      | .18                    | .25                   | .27         | .25                           | .27         | .39                | .31         | 12             |
| 28-9          | .25                     | .24                      | .20                    | .27                   | .29         | .27                           | .29         | .41                | .33         | 12             |
| 28-10         | .31                     | .29                      | .26                    | .33                   | .35         | .33                           | .35         | .47                | .39         | 7              |
| 28-11         | .25                     | .24                      | .20                    | .27                   | .29         | .27                           | .29         | .41                | .33         | 22             |
| 28-12         | .24                     | .22                      | .19                    | .26                   | .28         | .26                           | .28         | .40                | .32         | 26             |
| 28-15†        | .25                     | .23                      | .20                    | .26                   | .28         | .26                           | .28         | .40                | .32         | 35             |
| 28-16†        | .24                     | .22                      | .19                    | .25                   | .27         | .25                           | .27         | .39                | .31         | 20             |
| 28-17         | .23                     | .22                      | .18                    | .25                   | .27         | .25                           | .27         | .39                | .31         | 15             |
| 28-18         | .23                     | .22                      | .18                    | .25                   | .27         | .25                           | .27         | .39                | .31         | 12             |
| 28-19         | .24                     | .22                      | .19                    | .26                   | .28         | .26                           | .28         | .40                | .32         | 10             |
| 28-20         | .27                     | .25                      | .22                    | .29                   | .31         | .29                           | .31         | .43                | .35         | 14             |
| 28-21         | .25                     | .23                      | .20                    | .26                   | .28         | .26                           | .28         | .40                | .32         | 37             |
| 32-5†         | .36                     | .35                      | .32                    | .38                   | .40         |                               |             |                    | .48         | 2              |
| 32-6          | .39                     | .38                      | .35                    | .41                   | .43         |                               |             |                    | .51         | 23             |
| 32-7          | .33                     | .33                      | .29                    | .36                   | .38         |                               |             |                    | .45         | 35             |
| 32-8†         | .32                     | .32                      | .29                    | .35                   | .37         |                               |             |                    | .44         | 30             |
| 32-13         | .32                     | .31                      | .28                    | .34                   | .36         |                               |             |                    | .44         | 23             |
| 32-17         | .37                     | .37                      | .34                    | .40                   | .42         |                               |             |                    | .49         | 4              |
| 32-414†       | .35                     | .35                      | .31                    | .38                   | .40         |                               |             |                    | .48         | 52             |
| 36-1†         | .41                     | .39                      | .34                    | .41                   | .43         |                               |             |                    | .52         | 22             |
| 36-5          | .54                     | .52                      | .47                    | .54                   | .56         |                               |             |                    | .65         | 4              |
| 36-6          | .55                     | .53                      | .49                    | .55                   | .57         |                               |             |                    | .67         | 6              |
| 36-7          | .44                     | .41                      | .37                    | .44                   | .45         |                               |             |                    | .55         | 47             |
| 36-8          | .40                     | .38                      | .34                    | .41                   | .42         |                               |             |                    | .52         | 47             |
| 36-9          | .50                     | .47                      | .43                    | .50                   | .51         |                               |             |                    | .61         | 31             |
| 36-10         | .41                     | .39                      | .34                    | .41                   | .43         |                               |             |                    | .53         | 48             |
| 36-15         | .40                     | .37                      | .38                    | .40                   | .41         |                               |             |                    | .51         | 35             |
| 36-403†*      | .40                     | .36                      | .33                    | .40                   | .41         |                               |             |                    | .51         | 52             |

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[97-3106A-36\(621\)](#) [97-3108B-14S\(624\)](#) [97-3101A-12S\(624\)](#) [97-3106B-18\(936\)624](#) [97-3108A-18\(621\)](#) [97-3100A-](#)  
[10SL-3P\(946\)](#) [97-3100A-10SL-4P\(946\)](#) [97-60-10\(621\)](#) [97-93-14\(621\)](#) [97-3106A-28\(689\)](#) [97-3107A-18\(608\)](#) [97-18-](#)  
[29S](#) [97-12-5P](#) [97-55-1418S-5\(920\)](#) [97-81W-28-21S](#) [97-3107B-22-22P](#) [97-3064-10](#) [97-60-10\(608\)](#) [97-60-18P\(639\)](#)  
[97-60-20\(608\)](#) [97-60-822](#) [97-60-918](#) [97-60-920](#) [97-3055-28-16\(689\)](#) [97-60-16\(689\)](#) [97-60-20\(689\)](#) [97-67-18-8\(689\)](#)  
[97-67-28-16\(689\)](#) [97-18-16S\(431\)](#) [97-18-5S\(431\)](#) [97-20-27P\(431\)](#) [97-20-7S\(431\)](#) [97-22-5S\(431\)](#) [97-24-2S\(431\)](#)  
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