

MS-R Electrical Connectors

Installation
Instructions

MS3100R
MS3101R
MS3102R
MS3106R

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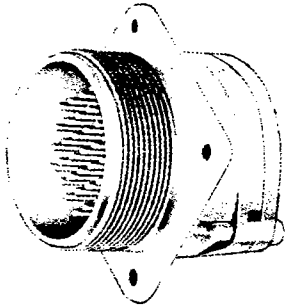


**Electrical
Components
Division**

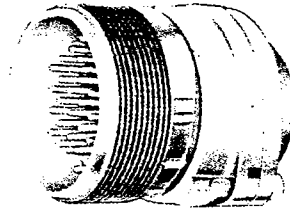
INTRODUCTION

This publication contains instructions for the installation, disassembly, inspection and reassembly of the Bendix MS-R environmental resisting electrical connector, as manufactured by the Electrical Components Division of The Bendix Corporation.

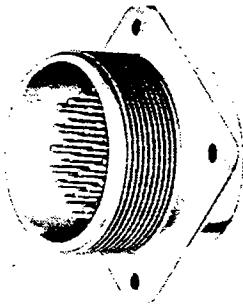
Figures 1 through 4 illustrate the four shell styles available in the MS-R series.



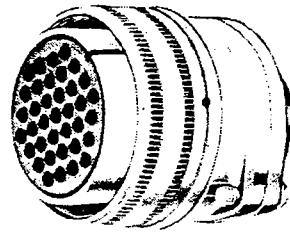
MS3100R - Wall Mounting Receptacle
Figure 1



MS3101R - Cable Connecting Plug
Figure 2



MS3102R - Box Mounting Receptacle
Figure 3



MS3106R - Straight Plug
Figure 4

SECTION I

DESCRIPTION

The Bendix MS-R environmental resistant series connector is designed to meet the requirements specified in MIL-C-5015D. To provide greater reliability, compatibility and improve interfacial sealing between mating halves, regardless of manufacturer, an "O" ring is incorporated into the main joint of the straight plug.

A shorter back nut, an improved "slippery" grommet - for easier wire

threading - plus the axial compression type sleeve, provide increased moisture resistance and less weight. This is a more compact assembly over previous environmental resistant types. Aluminum shell components are cadmium plated with an olive drab chromate after treatment. In addition, these assemblies utilize resilient inserts and silver plated copper alloy contacts.

SECTION II
INSTALLATION

CAUTION

Removal of inserts from MS-R connectors is not recommended. Removal breaks the pressure and moisture proofing seal. Contacts and inserts are not removable from MS3100R and MS3102R receptacles.

1. Prepare.

a. Remove compression screws, sleeve and grommet. Remove back nut by unscrewing to the LEFT. See Section IV for information on removing accessories when a connector is to be removed from a wire bundle or replaced.

b. Visually check the connector. Be sure contacts and other parts are not damaged. All solderwells should extend the same distance from the rear face of the insert.

2. Clean.

Inserts, contacts, and inside surfaces of shells must be kept free of oil, grease and dirt throughout the installation procedure. Use a clean cloth moistened with Neosol* or proprietary denatured ethyl alcohol, (Federal Specification O-E-750 Grade IV) for cleaning.

3. Install Rear Accessories.

Before any soldering operations, the compression sleeve, grommet and back nut must be slipped on the wire bundle. The order of components is illustrated in figure 5 for MS3100R, MS3101R or MS3106R. The MS3102R does not have an accessory or threads.

NOTE

Identifying letters on the rear face of the grommets are to be used as a guide in threading wires. The letter or letters should be aligned with the same letter or letters on the rear face of the insert, figure 6.

4. Prepare Cable and Wires.

a. Provide enough wire slack for easy installation of the connector.

NOTE

Strip wire after placing the grommet on the wires. In some cases, where it is difficult to get wire through the grommet, the wire may be cut at a 45° angle, figure 7.

b. Strip wire ends according to size of contacts. Refer to Table I to obtain correct stripping length.

*Available from Shell Chemical Co., 380 Madison Ave., New York, New York.

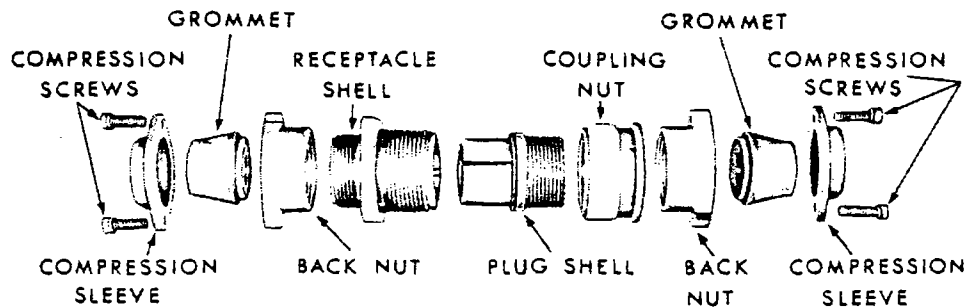


Figure 5

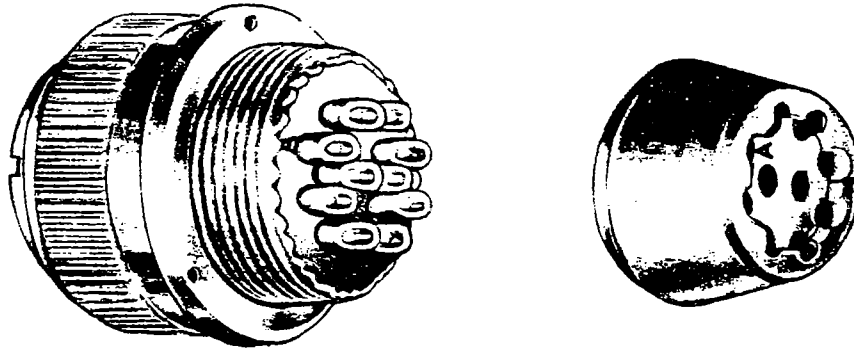


Figure 6

TABLE 1

Contact	0	4	8	12	16
Strip Cable					
Insulation to B.	9/16	5/8	5/8	5/16	1/4

c. Be sure the stripped conductors are clean, straight, and strands are tight together.

d. Apply a good grade of rosin-alcohol flux to the stripped ends. This can best be done by dipping the bare ends in flux about half way to the insulation. Both flux and solder tend to creep up the conductor during tinning. Shake off excess flux.

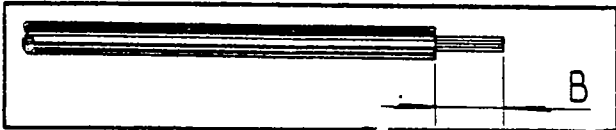


Figure 7

e. Immediately after fluxing, pre-tin approximately 50% of each exposed conductor end. Use of a solder pot and good grade of 60/40 tin-lead solder is recommended, figure 8. Temperature should be 500 to 550 degrees F. Dip the bare conductor ends into the solder about halfway to the insulation. Hold in the bath long enough for the conductors to heat through and tinning of all strands to take place but avoid melting, burning, or scorching the insulation. Remove from pot and shake off excess solder.

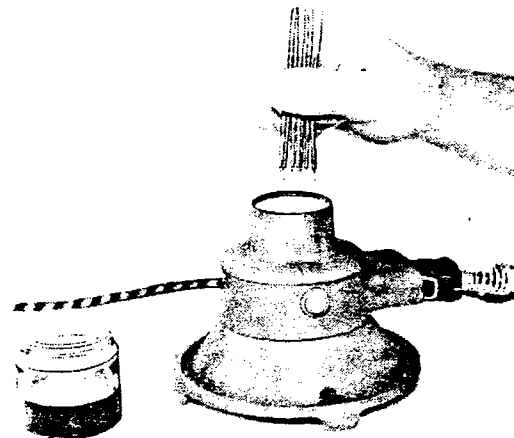


Figure 8

5. Solder Contacts.

Either probe type resistance soldering equipment or soldering iron is suitable for soldering conductors to contacts installed in connectors. When using an iron, it may be necessary to re-shape the tip to provide for access to contacts in some insert arrangements. The tip should be left as large as practicable in order to obtain the greatest amount of heat transfer in the shortest length of time. Recommended iron sizes are 500 watt for size 0 and 4 contacts, 300 watt for size 8, and 100 to 150 watt for size 12 and 16. The tip should be kept clean, free of pits, and well tinned. Support connectors to leave both hands free for soldering. Jaws of clamping devices should be padded with some soft material to prevent damage to the connector shell.

a. Position the connector as shown in figure 9. Cutaway sides of solderwells should be up. If necessary, the wire being attached can be

supported to avoid putting side strain on the connector shell and insert.

b. Dip the first conductor to be soldered in rosin-alcohol flux. It is recommended that soldering start with the bottom row, working across and up.

c. Start the conductor into the proper wire well and apply the soldering iron tip or tips of resistance probes at the side or opposite the cut-away. Avoid a "cold joint" - maintain heat until solder in solder well and on the conductor is completely liquid. Be sure the conductor is pushed to the bottom of the well. Add more solder if needed. Be sure any solder added melts completely.

CAUTION

Soldering of bonded-in contacts must be done carefully to avoid overheating. Do not hold contacts at elevated temperatures any longer than necessary. Do not apply temperatures higher than those normally generated by the recommended sizes of soldering irons.

d. While holding the wire straight and steady, remove the heat source and allow solder to cool until completely solid. Permitting the wire to move while the solder is in a plastic state results in crystallization and a weak joint.

e. Be sure excess solder has not collected outside of the solder-well. Work quickly. Excess solder may be wiped from the contacts before it solidifies. If necessary to use heat to remove excess, hold the wire in correct alignment until the solder in the well is completely solid.

f. Proceed in like manner for remainder of the wires and contacts.

g. Remove all excess flux with alcohol when soldering is complete.

6. Assemble Rear Accessories.

After the conductors have been soldered in place the component parts which have been previously slipped on the wire bundle are installed in the

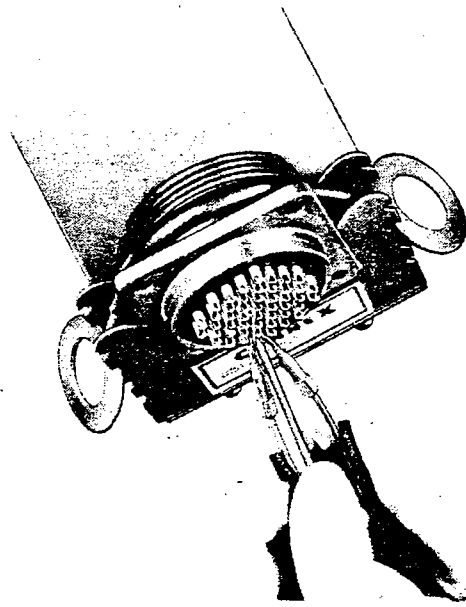


Figure 9

following sequence:

a. Slide back nut forward, couple, and tighten, using 11-6147-1 pliers, or suitable padded wrench.

b. Seat grommet into back nut and over the solder wells. Press grommet until it is snug against the rear face of the insert.

c. Fill empty grommet holes with the nylon sealing plugs specified in Table II.

TABLE II

Contact Size	Wire Size	Use Plug No.	Color Code
16	22-16	10-101033-12	Blue
12	14-12	10-101033-13	Yellow
8	10-8	10-101033-14	White

d. Place compression sleeve over "slippery" grommet.

e. Thread and tighten the two compression screws provided.

These screws may also be used for grounding circuits through the connector.