

# INSTALLATION INSTRUCTIONS

for the



## PYGMY REMOVABLE SE, MS312X SERIES CRIMP CONTACT CONNECTORS

PT-SE, PT-SE (SR), or PT-SP

and

SP-SE, SP-SE (SR), or SP-SP

ELECTRICAL COMPONENTS DIVISION  
SIDNEY, NEW YORK 13838



February 1967

PRINTED  
IN  
U.S.A.

Form L-786  
(Supersedes MG-1074-5)

SECTION I  
DESCRIPTION

1-1. The Bendix Pygmy "SE" & "SP" Series Connector, manufactured by the Electrical Components Division, utilizes the geometry of the MIL-C-23216 type contact. Designed to accommodate standard wire sizes, the gold plated contacts incorporate the closed entry probe-proof socket design in the size 12, 16, and 20 contacts. The MS312X series incorporates the closed entry probe-proof hooded socket design in the size 16 and 20 contacts. Complete interchangeability with PT and SP Pygmy, and MIL-C-26482 connectors has been provided for by using established Bendix Pygmy insert arrange-

ments, three point bayonet lock coupling and five key and keyway polarization.

1-2. The contacts are supplied loose in a pliofilm bag. In addition, nylon sealing plugs, for all unused grommet holes, are available as separate items. Illustrated in figure 1-1 is an exploded view of a wall mounting receptacle with the SE, SE(SR), and SP wire terminations. Information pertinent to the 11-7295 Crimp Tool (MS 3191-1) wire sizes and test pull data is tabulated in Table I.

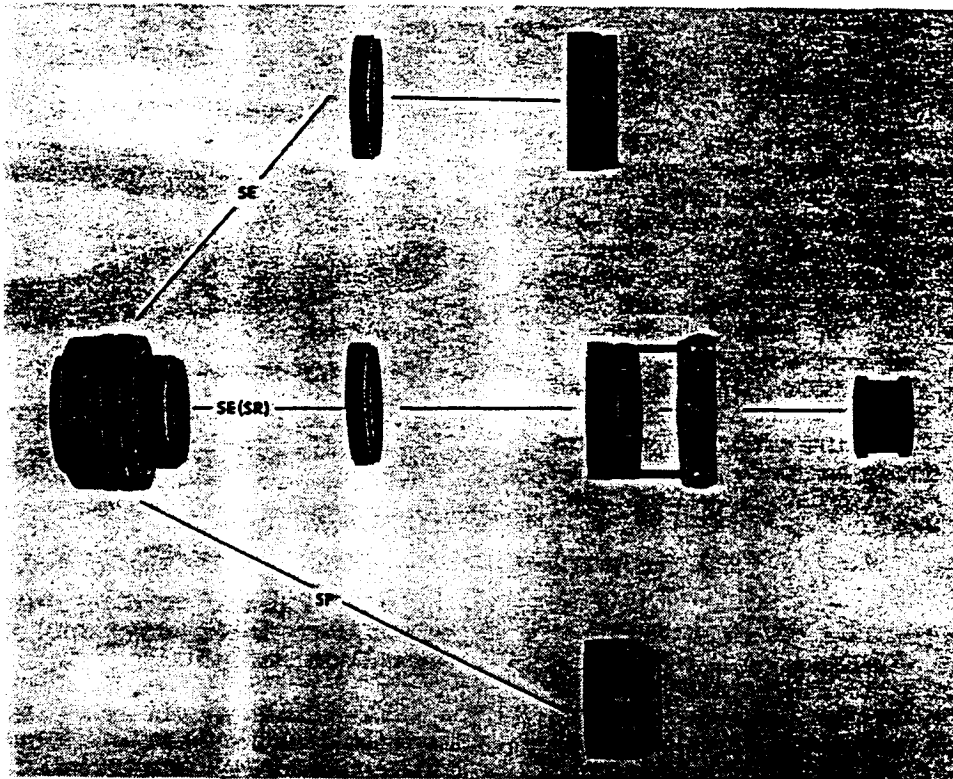


Figure 1-1

TABLE I

Tool, Wire and Crimp Test Pull Data

Contact	Crimping Tool	Wire	Initial Min. Pull-Out Force Lb. (Destructive Test)
Size 20	11-7295*	24	8
	11-7790	22	12
	11-7791	20	20
Size 16	11-7295*	20	20
	11-7790	18	40
	11-7791	16	50
Size 12	11-7295*	14	70
	11-7790	12	110
	11-7791		

\*Supplied with three positioners.

## SECTION II

## INSTALLATION

## 2-1. PREPARATION OF WIRE.

2-2. Cut wire to length and strip  $\frac{1}{8}$  in. of insulation from the end for insertion into size 16 contacts. Cut wire to length and strip  $\frac{3}{16}$  in. of insulation from the end, for insertion into size 20 contacts. Hot wire stripping methods are recommended where applicable. If other methods are employed, use extreme care to avoid nicking or cutting wire strands.

2-3. Check to be sure strands of conductors are not separated. If necessary, reform by lightly twisting the strands together.

## 2-4. CRIMPING.

2-5. The Bendix 11-7295 military approved hand crimping tool (MS 3191-1) is supplied with three positioners: two are stored in the handle and one is in place on the tool. Select the positioner stamped with the contact size number to be crimped. In addition, a red ring is used on the size 20, a blue ring on the size 16, and a yellow ring is used on the size 12 positioner. Change the crimp tool positioner as shown in figure 2-1, and as described in steps a, b, and c.

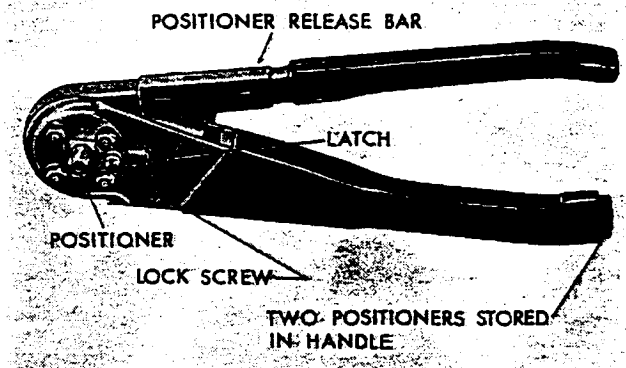


Figure 2-1

a. Release holding pressure of positioner lock screw and slide latch away from positioner.

b. Slide positioner release bar, located on the handle, downward and simultaneously remove positioner from tool.

c. Select positioner (20, 16 or 12) depending upon the contact size to be crimped. Move positioner release bar downward and seat positioner (flat up) into the tool. Release bar,

slide latch forward and tighten lock screw.

2-6. Insert the stripped end of wire into the contact wire-well and apply slight pressure until it is positively bottomed. Check visually to make certain the wire strands are visible in the inspection hole. With size 20 contacts the wire insulation must extend into the insulation-well to provide wire support.

2-7. The 11-7295 crimping tool has a built-in safety feature in that the handles cycle in one direction, from opened to fully closed, and from closed to fully opened. With the wire in place, insert the contact into the crimping tool as shown in figure 2-2 with handles fully opened. Make sure the contact and wire are inserted into the crimping tool as far as possible, using slight pressure with the hand. Close the tool handles to the fully closed position. The tool handles will not release until a complete uniform and reliable crimp is provided.

#### NOTE

Readjustment and inspection of crimping tools must be done to approved standards and should never be attempted by personnel other than those authorized to do this work.

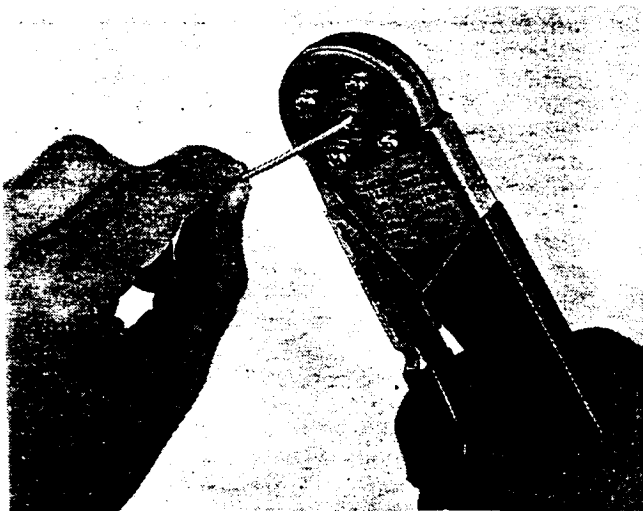


Figure 2-2

2-8. Make a final visual check to be sure contacts are properly crimped and the ends of wires are visible in the inspection hole in the contact wire well.

2-9. CRIMPING (11-7790 and 11-7791 Crimping Tools).

2-10. The Bendix 11-7790 and 11-7791 Automatic Feed, Air Actuated Crimping Tools are designed for crimping sizes 12, 16 and 20 pin or socket "SE" contacts. The 11-7790 Tool is the portable version, while the 11-7791 is the bench mounted type.

#### NOTE

Refer to MG-1113 for complete operating instructions.

2-11. INSTALLING CONTACTS.

2-12. Remove the securing device (i.e., clamp assembly, elbow) from the back of the connector.

#### CAUTION

Do not attempt to remove or rotate grommets or inserts as these are an integral part of the connector assy.

2-13. Slide the parts of the securing device over the wires in proper sequence. A typical installation is shown in figure 2-3, ready for insertion of contacts into assembly. When elbows are to be installed, the back cover must be removed to facilitate this operation. (See figure 2-4).

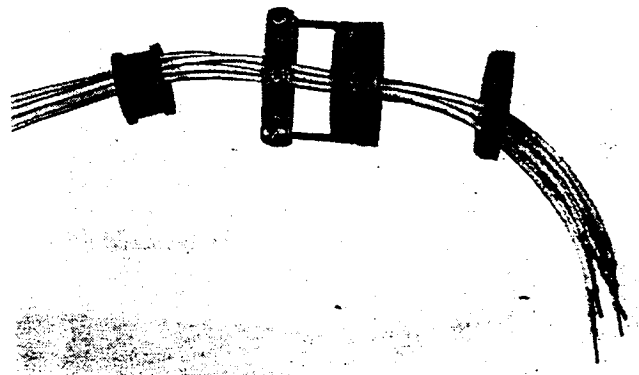


Figure 2-3

2-14. INSTALLING CONTACTS (11-8107 Type Tools).

2-15. If the 11-8107 type insertion tools are to be used for contact insertion, proceed as follows: Use the 11-8107-16 tool (blue handles) for size 16 contacts and the 11-8107-20 tool (red handles) for size 20. Grip the size 16 contact as shown in figure 2-5 and push forward in line with the hole until the contact is felt to snap into position.

2-16. Size 20 contacts must be securely gripped at the insulation well (figure 2-6). The small shoulder provided in the tip of the size 20 insertion tool must be positioned against the outer end of the contacts. Size 16 contacts have no insulation well and are gripped at the wire well.

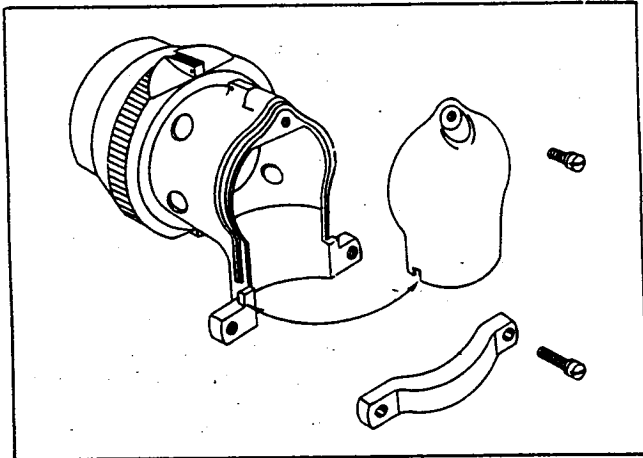


Figure 2-4

2-17. When inserting the size 20 contacts in the high voltage insert arrangements 14-91 and 18-91, it may be necessary to use the 11-8107-16 insertion tool due to the large insulation used on the high voltage wire. Place the 11-8107-16 insertion tool around the wire and grip the contact on the shoulder below the wire well support. Push the contact forward in line with the hole until the contact is felt to snap into position.

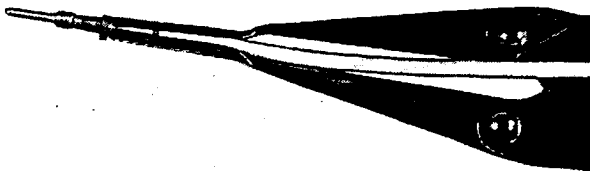


Figure 2-5

2-18. A slight increase in resistance may be noticed just before the contact reaches its seated position (figure 2-7). It is recommended that seating of contacts start at the top, proceeding across each row and downward.



Figure 2-6

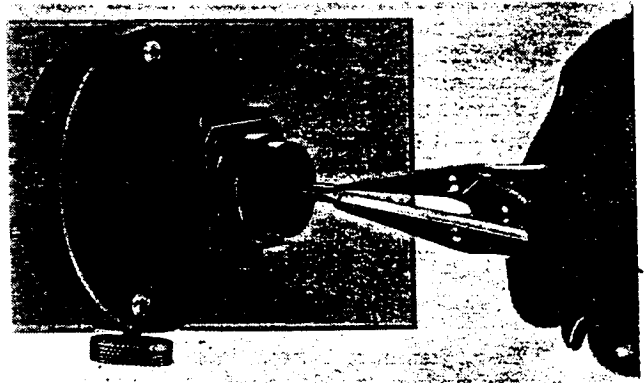


Figure 2-7

2-19. INSTALLING CONTACTS (11-7401 Type Tools).

2-20. To install contacts in the connector using the 11-7401 type tool, position the size 20 contact in the channel of the 11-7401-20 insertion tool. The channel is slightly greater than a half circle, thus the contact is placed into the front of the tip and pushed to the rear, until the insulation support (provided on #20 contacts only) butts against the slight shoulder located inside the channel of the tool. Insert the contact into the rear face of the assembly. Push forward (figure 2-8) until the contact bottoms. It is recommended that size 16 contacts with wire attached be positioned by hand into the rear of the assembly. The 11-7401-16 insertion tool should be used to fully seat the size 16 contacts, and the size 12 contacts should be installed using the 11-7401-12 insertion tool. Position the extreme end of the insertion tool against the rear portion of stop, figure 2-9, of the contact and proceed to seat the contact by pushing forward until the contact bottoms.

NOTE

Use care when inserting contacts and do not push into place at an angle.

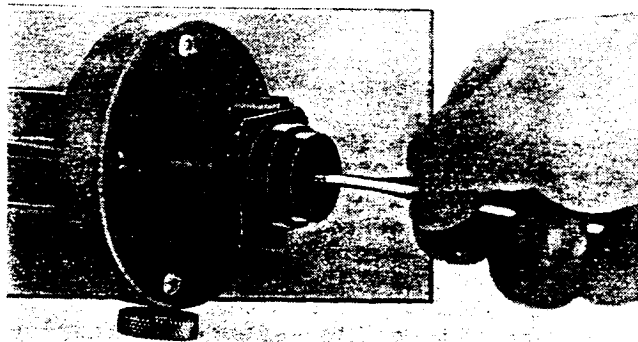


Figure 2-8

NOTE

Prior to use, visually inspect insertion tools for any damage. The tools are necessarily made with finely ground tips and should never be used for any purpose other than installing contacts. Tips should be protected by covering with the protective sleeve provided. Any damaged tools should be rejected.

2-21. Continue in a like manner to seat the remainder of the contacts. visually check the mating end of the connector to be sure contacts are all properly inserted to the same depth.

2-22. A slight pull on wires is a positive check to insure the contact is properly seated. If contact becomes separated from insertion tool during operation, do not probe in an attempt to re-position tool on contact. Contact should be removed and re-installed in prescribed manner. In instances where it is desired to check actual contact location, refer to Form #L-780 for gaging procedure.

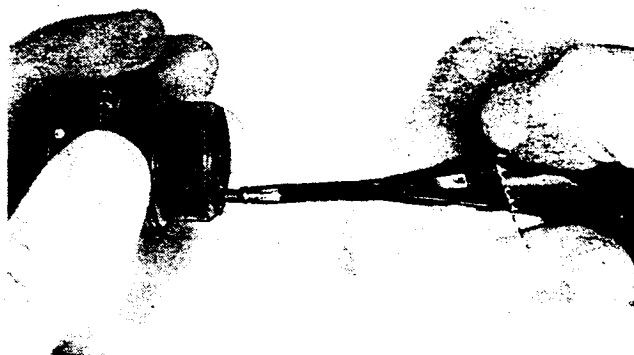


Figure 2-9

2-23. Fill any unused holes in the connector with an uncrimped contact. In addition, insert a double ended nylon sealing plug (procured separately) in the unused grommet hole, so that one end protrudes out the rear of the grommet. Use Electrical Components Division part number 10-101033-10 for backing up size 20 contacts, and 10-101033-11 for backing up size 16 contacts, and 10-101033-12 for backing up size 12 contacts.

NOTE

Publication L-494 is recommended as an aid in identifying and selecting the correct grommet hole for contact insertion.

2-24. ASSEMBLY SECURING DEVICE.

2-25. With straight type assemblies, figure 2-10, slide the clamping nut, with or without strain relief, forward into place on the grommet and tighten using 11-6147-1 connector pliers or equivalent. The 11-6506 and 11-6510 Holding Tools are recommended for holding plugs and receptacles respectively, while tightening the back accessories. Slide rubber grommet bushing (if used) forward and under clamping bars and tighten screws. Elbows are attached with a knurled nut and do not have a separate sleeve, the forward part of the elbow shell performing the same function. - Be sure wires are clear of the opening before replacing the elbow cover.

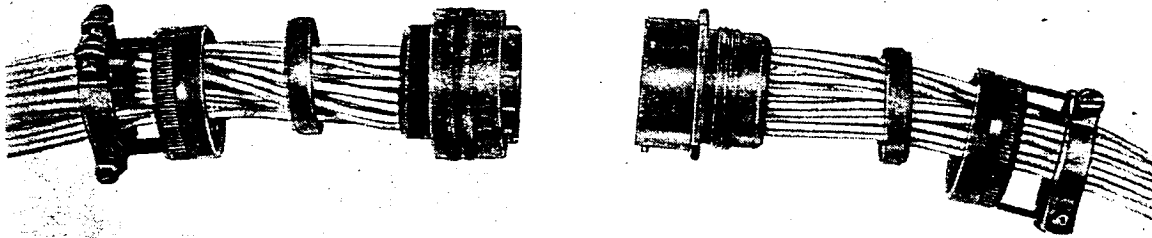


Figure 2-10

NOTE

The inside surface of sleeves and elbows are furnished by the factory properly lubricated to facilitate sliding on the grommet without binding. If for any reason this lubricant has been wiped dry, apply a very thin film of petrolatum (VV-P-236). Avoid applying any excess. Do not permit contacts to become contaminated.

2-26. Center the wires at the bar clamp, slide the clamp grommet, if used, into position, and tighten the bar clamp screws. If the clamp grommet is not used, wrap wires with vinyl tape to protect insulation and build up wire bundle sufficiently for gripping by the bar clamp.

2-27. POTTING PROCEDURE (PT-SP and

SP-SP Connectors).

2-28. Clean the area to be potted, including about 2 inches of the wire, by scrubbing with a stiff camel's-hair brush and proprietary ethyl alcohol. Follow scrubbing by rinsing in clean solvent.

2-29. Allow the cleaned surfaces to air dry for thirty minutes. This permits residual solvent to evaporate and prevents its being trapped by potting compound.

2-30. Mix and apply the potting compound in accordance with the compound manufacturer's instructions.

NOTE

For potting, use material conforming to MIL-S-8516B or suitable material having equal viscosity in the uncured state.

SECTION III

REPLACEMENT OF CONTACTS

3-1. Contacts in Pygmy "SE" & "SP" Crimp Series connectors may be removed if necessary for replacement.

3-2. With straight type assemblies, loosen the bar clamp and unscrew the clamp assembly from the connector shell. With elbow assemblies, remove the back cover and loosen the bar clamp, then unscrew the knurled nut which holds the elbow to the connector. slide all parts out of the way along the wires.

3-3. Working from the front face of the connector, enter the 11-7880-20 removal tool for size 20, 11-7880-16

tool for size 16 contacts, or the 11-7880-12 for size 12 contacts until it fully bottoms in the insert hole. A slight twisting motion of the tool will sometimes aid tool insertion. A slight increase will sometimes be noticed just before the tip bottoms. The design of the tool is such that the above action will spread the internal contact retention member and release its hold on the contact. Now push the spring loaded thrust assist knob forward and to the extent of its travel. The contact is now disengaged and visible from the rear, figure 3-1. Remove from the assembly by gripping the wire contact and pull straight to the rear.

#### NOTE

The 11-7880 series contact removal tools supersede the 11-7402 series removal tools. The 11-7880 type tool provides a longer plunger which pushes the contact further from the back of the grommet than did the 11-7402 type tool. Modification instructions for the 11-7402 series are provided in MG-1122.

#### CAUTION

Extreme care must be used to maintain true axial alignment of removal tool with contact in order to prevent bending of contact. The thrust assist knob must be pushed completely to the stop in order to obtain full contact release. The 11-7880-16 and 11-7880-20 tools should be protected from damage when not in use by covering tips with the sleeve provided.

#### 3-4. Potted connector contacts.

a. Cut the potting compound around the wire to be replaced away from the surrounding compound with an 11-3691 tool or equivalent. The tool need not be sharpened for this operation but should be cleaned in Neosol or equivalent prior to use.

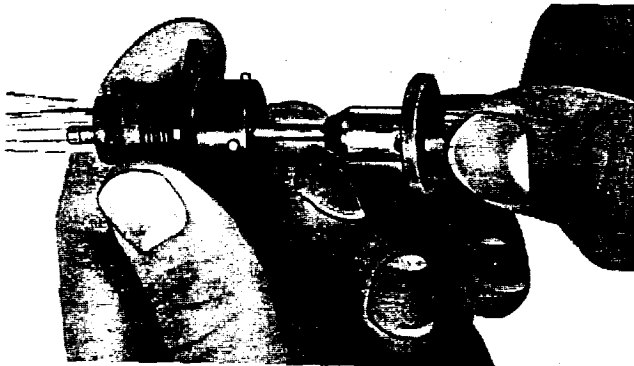


Figure 3-1

b. Using the applicable 11-7880

removal tool, push the contact to be removed back through the opening in the compound, pulling on the wire at the same time to prevent buckling.

c. Enlarge and taper the hole in the compound as much as possible without exposing any of the adjacent wires. This may be done with a sharp knife properly cleaned.

d. Attach a new contact of the proper size on the replacement wire and clean this assembly in Neosol or equivalent prior to potting. Allow contact assembly to thoroughly dry before installing into the connector.

e. Using the applicable 11-8107 or 11-7401 tool, install the new contact and wire.

f. Apply freshly prepared potting compound to the hole around the new wire, making certain the compound flows down into the hole, the 11-3698 tool, or a similar tool, should be used to tamp the new compound down into the hole.

g. Allow the new compound to cure as prescribed by the manufacturer. Inspect the reworked area for possible voids after the potting compound is cured.

#### CAUTION

Extreme care must be taken so that the reworked area is not contaminated in order to insure proper adhesion of the new potting compound to the old. All tools used in this operation should be cleaned with Neosol or equivalent.

#### NOTE

A companion publication is available (L-740) regarding inspection and maintenance of the 11-7295 crimp tool, 11-8107 insertion and 11-7880 withdrawal tools.