Connectors

Installation Instructions

Pygmy Removable "CE" Series Crimp Contact

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Bendix Electrical Components Division
Sidney, N. Y. 13838

SECTION I

DESCRIPTION

1-1. Bendix Pygmy Removable CE Crimp Contact Series Connectors are manufactured by the Electrical Components Division, The Bendix Corporation, Sidney, N. Y. 13838. They are designed for unpressurized, moisture proof service and feature the use of crimp-type wire terminations. Size 16 and 20 gold-plated contacts with closed entry sockets are incorporated in standard Pygmy Insert Arrangements. Size 20 Alumel and Chromel CE thermocouple contacts are also available in certain arrangements. These contacts are color coded for identification; white for Chromel and green for Alumel. A three-point bayonet-lock coupling provides mechanical assistance in engagement and disengagement as well as a visual check for complete mating. Five keys and keyways are incorporated in shells to eliminate mismating and consequent damage to contacts. Wire wells are designed for use with standard cables.

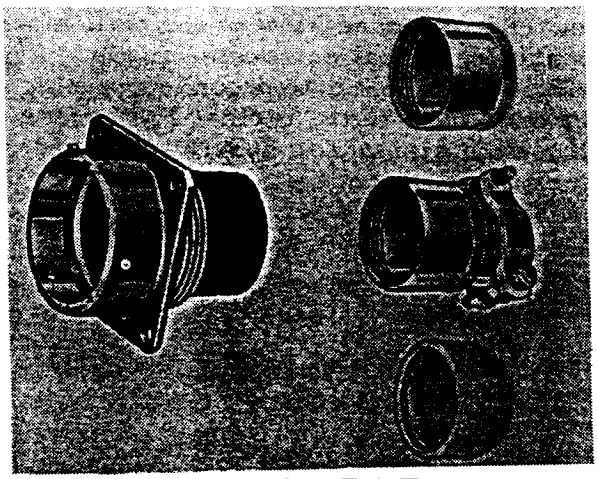

Figure 1-1. PT Type.

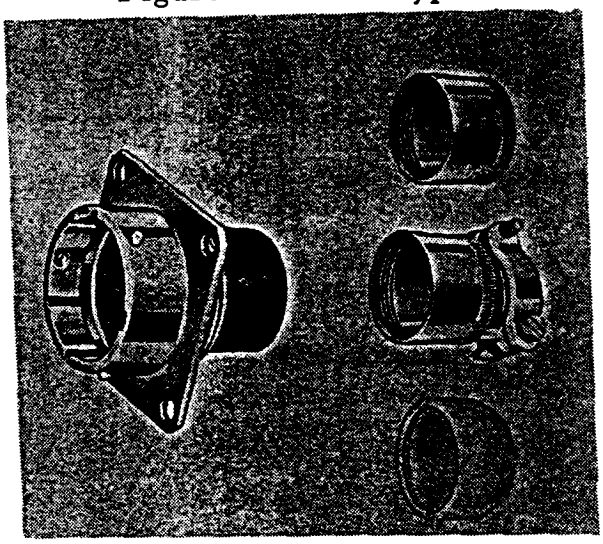

Figure 1-2. BP and SP Types.

1-2. The following Pygmy Connector types are covered in this publication: BP-CE, BP-CE(SR), BP-CP, PT-CE, PT-CE(SR), PT-CP, PM-CE, SP-CE, SP-CE(SR) and SP-CP. The BP series is manufactured to the applicable Boeing Miniature Connector Specification and is so identified. The PT series Pygmy connectors have a cadmium plate finish with an olive drab chromate after-treatment. This finish is electrically conductive. The SP series supplements the PT series, providing an alumilite #225 finish, larger mounting flange and holes. The alumilite finish is non-conductive. The PM series connectors incorporate several improved features. A double web grommet and improved interfacial insert compression provide the connector with better unpressurized and moisture proof characteristics. The connector also incorporates a captive oriented coupling nut and 50 mil gold plated contacts. The three types of wire terminations are coded CE - open wire sealing; CE(SR) - open wire sealing with strain relief clamp and CP - for potting.

1-3. The contacts are supplied with Pygmy crimp style connectors but are not installed as they must first be crimped on the wires. A feature of this connector is that the contacts may be removed and replaced if necessary to change or correct a circuit condition. An exploded view of the wall mounting receptacle is shown in figure 1-3 to illustrate typical component parts. Figure 1-4 is a cross-sectional view of a typical BP, PT, or SP mated connector plug and receptacle while figure 1-5 is a cross-sectional view of the typical PM series connector. Table 1-1 shows recommended tools, wire sizes, and destructive force test data.

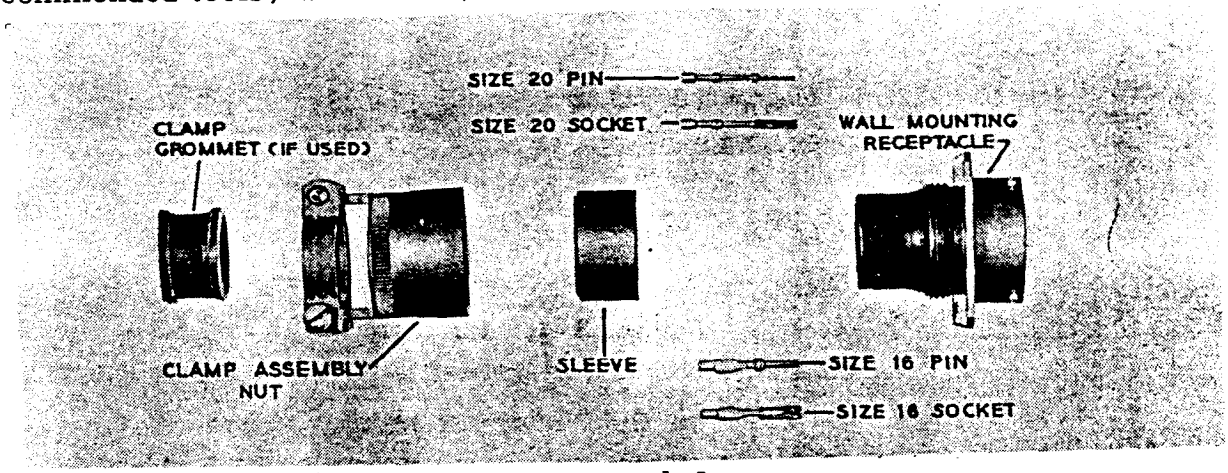

Figure 1-3.

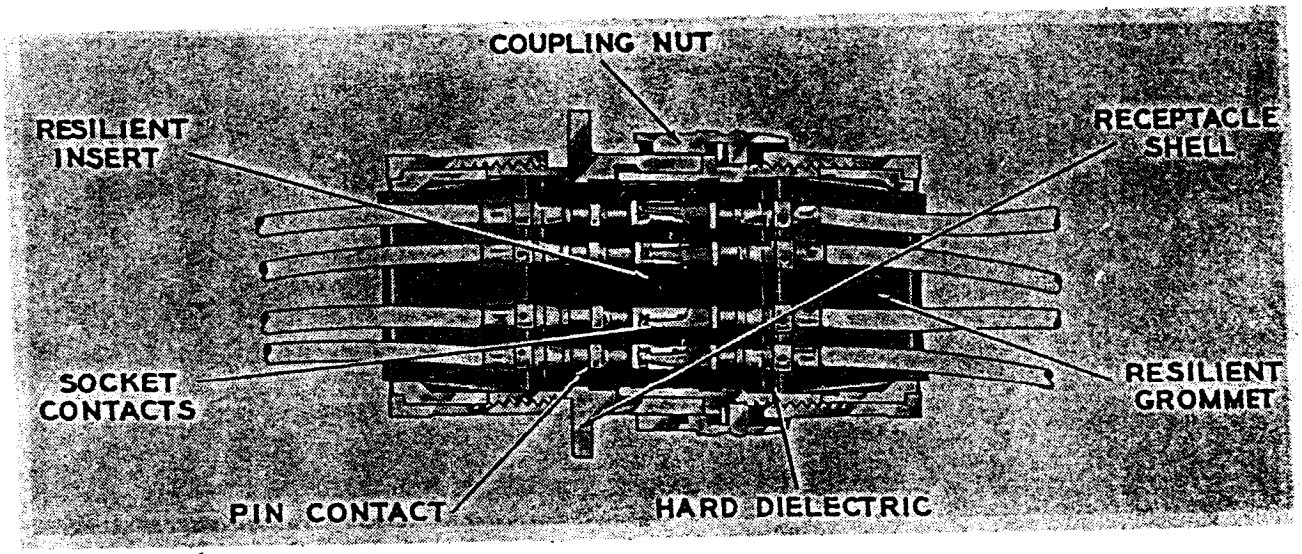

Figure 1-4.

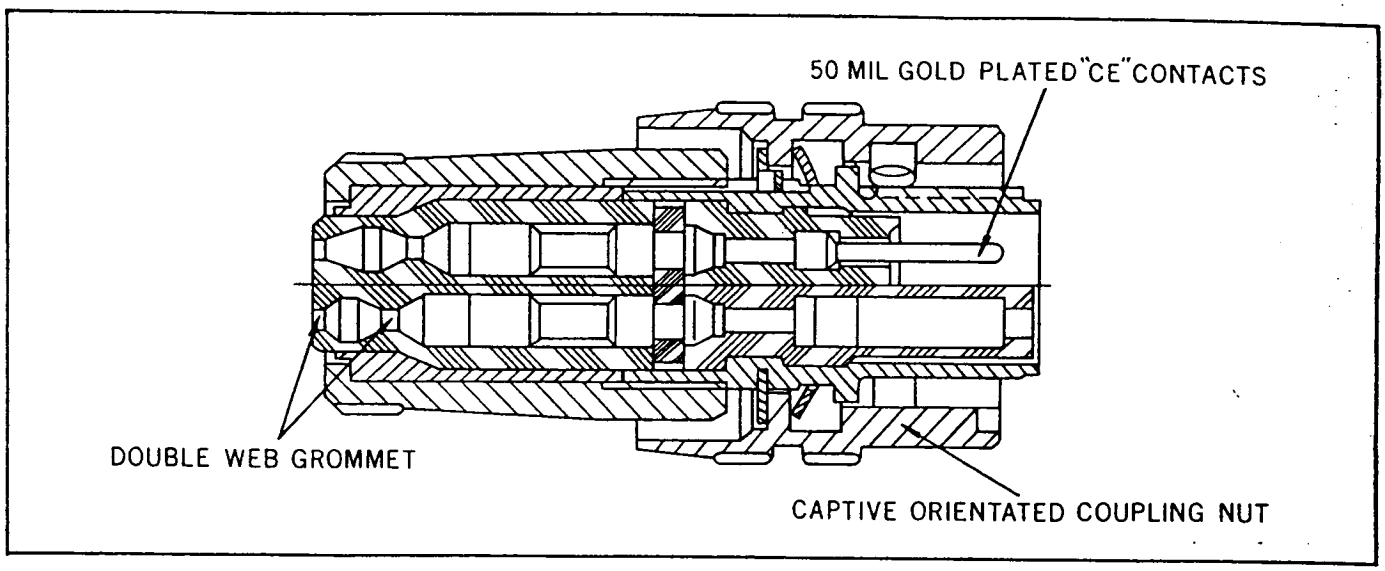

Figure 1-5.

TABLE 1-1.

Tool, Wire and Crimp Test Pull Data			
Contact	Crimping Tool	Wire **	Min. Pull-Out Force LB. (Destructive Test)
Size 20	11-7295*	24 22 20	10 15 19
Size 16	11-7295*	20 18 16	19 38 50
Size 20 Contact with Size 16 Wire Well	11-7295*	20 18 16	19 38 50

*To crimp CE contacts, the 11-7295 Tool must be used with three special positioners; the 11-7771-5 for standard size 20 contacts, the 11-7771-6 for standard size 16 contacts and the 11-7771-20 for size 20 contacts with a size 16 wire well.

**These tensile strength values are based on the use of AWG 16, 18, 20, 22 MIL-W-5086 and AWG 24 MIL-W-16878 wire only and with all operations conducted at normal room temperature. Any variation from these standards may result in tensile values which differ from those in Table 1-1.

SECTION II

INSTALLATION

2-1. Preparation of Cable.

2-2. Cut wire to length and strip 1/4 in. of insulation from the end. 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. 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 provided in the wire-well. With size 20 contacts, the insulation must also extend far enough into the insulation-well to provide wire support.

2-6. The unmodified 11-6737-20 Crimping Tool provided an insulation crimp as well as the conductor crimp. The modified 11-6737-20 tools (see Form MG-1071) do not provide the insulation crimp. The 11-7295 Crimping Tool with three positioners; the 11-7771-5 for size 20, the 11-7771-6 for size 16 contacts, and the 11-7771-20 for size 20 contacts with size 16 wire wells, standardize and replace the 11-7350 and 11-6737 series crimping tool. Figure 2-1 shows the tool configurations. The 11-6737 and 11-7350 are superseded by the 11-7295 Crimping Tool for procurement. Figure 2-2 is a cross-sectioned view of a typical crimped contact. The 11-8385 Portable and 11-8386 Bench Mounted Semi-Automatic Crimping Tools are also available for crimping "CE" contacts. (See Form MG-1113-2.) The 11-8581-2 Portable and 11-8582-2 Bench Mounted Pneumatic Crimping Tools are also available for crimping "CE" contacts. (See Form MG-1263.)

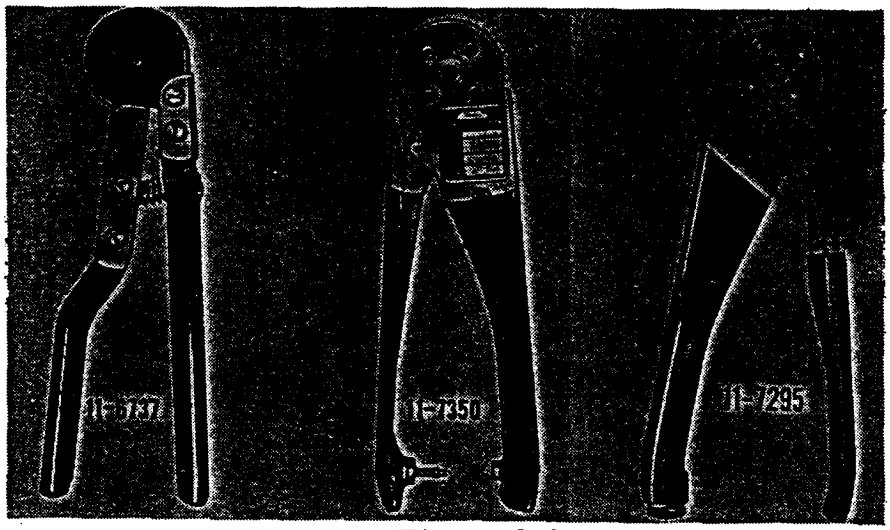

Figure 2-1

2-7. With the wire in place, insert the contact into the crimping tool as shown in figure 2-3. Make sure the contact and wire are inserted in the crimping tool as far as possible, then close the tool handles. These tools have a built-in safety feature in that they cannot be re-opened until the crimping cycle is completed, thus insuring a complete, uniform, and reliable crimp. The 11-6737-16 and

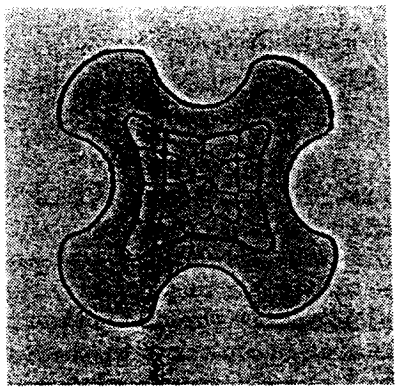

Figure 2-2.

11-7350 tools are designed for crimping size 16 contacts only and the 11-6737-20 or 11-7350-20 tool for size 20 contacts only. The 11-7295 with the 11-7771-6 positioner is used to crimp the size 16 contact, the 11-7771-5 positioner to crimp the size 20 contact, and the 11-7771-20 positioner to crimp size 20 contacts with size 16 wire wells. The part number is shown on the handle of each tool and in addition the tool is marked to show the contact and wire sizes for which it is to be used. Handles of the 11-6737 and 11-7350 tools are color coded, red for size 20 and blue for size 16. CE positioners are not color coded but are stamped with their respective part numbers.

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.

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. Installing Contacts.

2-10. 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 ASSEMBLY.

2-11. Slide the parts of the securing device over the wires in proper sequence. A typical installation is shown in figure 2-4. When elbows are to be installed, the back cover must be removed to facilitate this operation. (See figure 2-5.)

Figure 2-3

2-12. To install contacts in the connector, it is recommended that each contact be positioned by hand in the corresponding hole in the grommet before final seating with the insertion tool. To avoid any possibility of bending the contact or damaging the insert, the contact must be inserted in proper alignment with the hole. Contacts with wires attached may be positioned in the insertion tool before inserting into the grommet, but any misalignment of the contact with the hole is not so readily apparent.

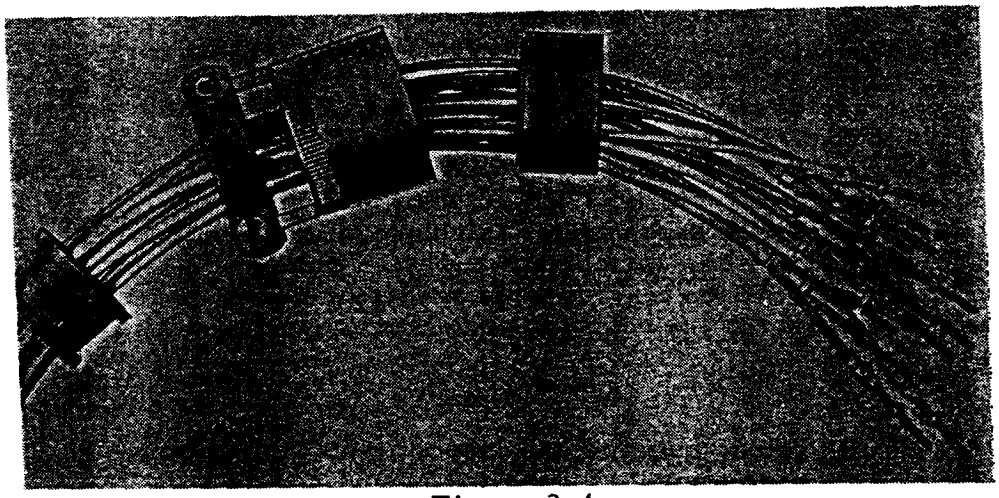

Figure 2-4.

2-13. To complete seating of a contact, use the 11-6781 insertion tool (blue handles) for size 16 contacts and for the size 20 contact with a size 16 wire well. The 11-6782 tool (red handles) is used for size 20 contacts. Grip the contact as shown in figure 2-6 and push forward in line with the hole until the contact is felt to snap in position. A slight increase in resistance may be noticed just before the contact reaches its seated position (see figure 2-7). Size 20 contacts must be securely gripped at the insulation well. The small shoulder provided in the tip of the insertion tool must be positioned against the outer end of the terminal well. Size 16 contacts have no insulation well and are gripped by the wire well. It is recommended that seating of contacts start at top, proceeding across each row and downward.

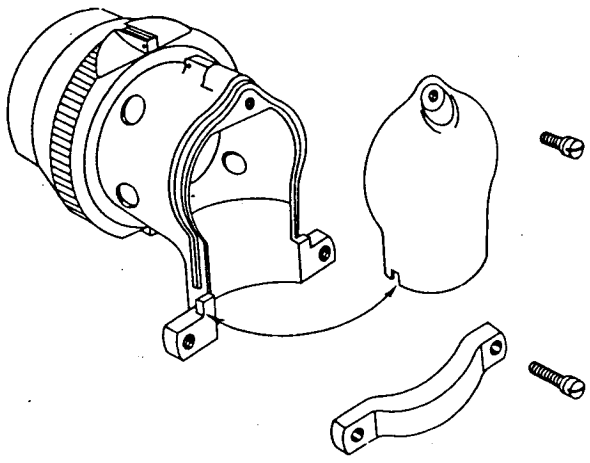

Figure 2-5.

AVOID GRIPPING CONTACTS IMPROPERLY AND DO NOT PUSH INTO PLACE AT AN ANGLE.

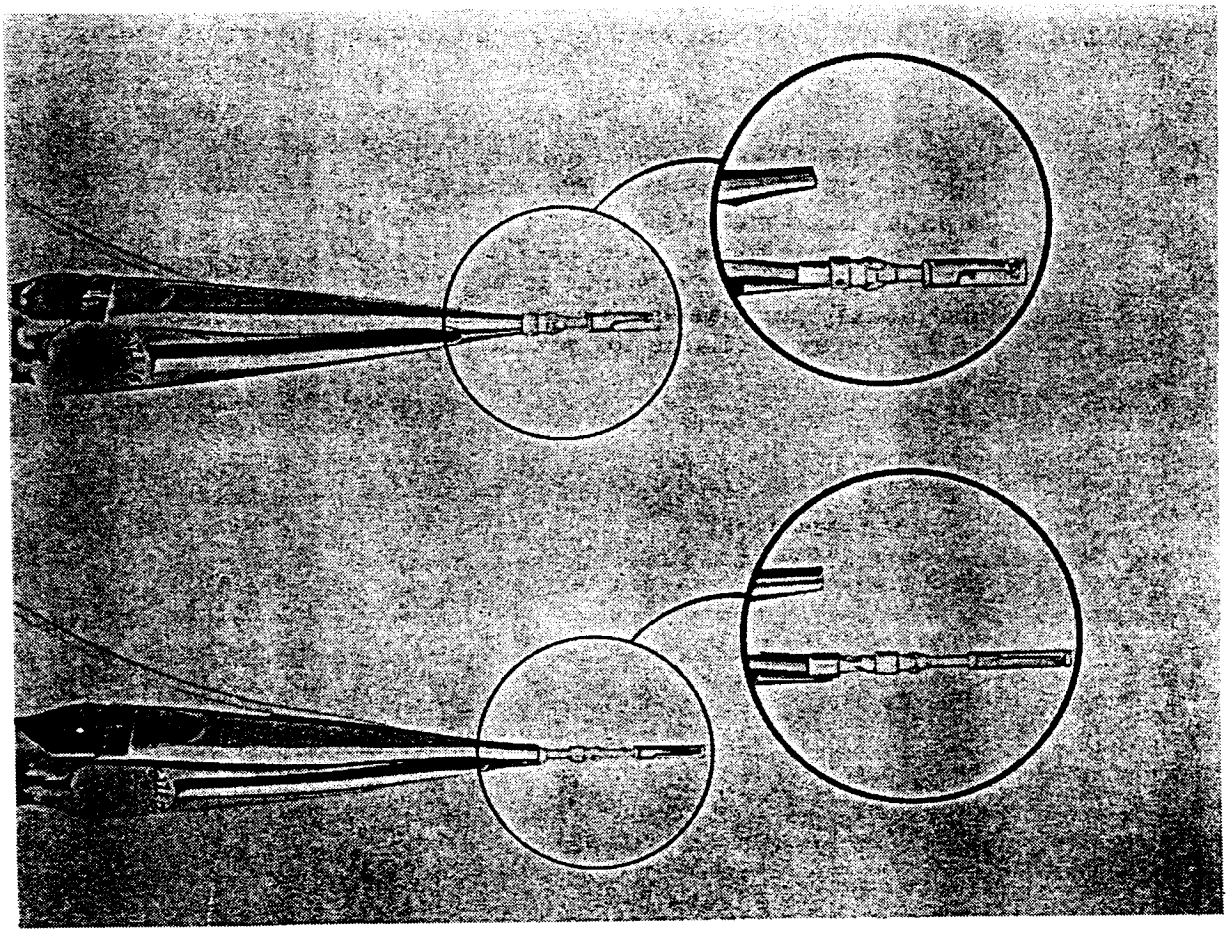

Figure 2-6.

Note

Insertion tools are necessarily made with finely ground tips. These tools should never be used for any purpose other than inserting contacts. Tips should be protected from possible damage when not in use.

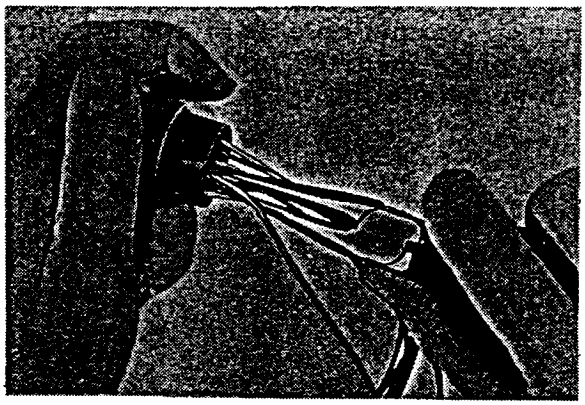

Figure 2-7

2-14. Figure 2-8 shows the 11-6781 and 11-6782 recommended insertion tools.

Note

The 11-6781 for size 16 contacts, and the 11-6782 for size 20 contacts standardized and replaced the 11-7761-16, -20 insertion tools. The 11-7761-16, -20 insertion tool may continue to be used if previously purchased; however, this tool is no longer available for procurement.

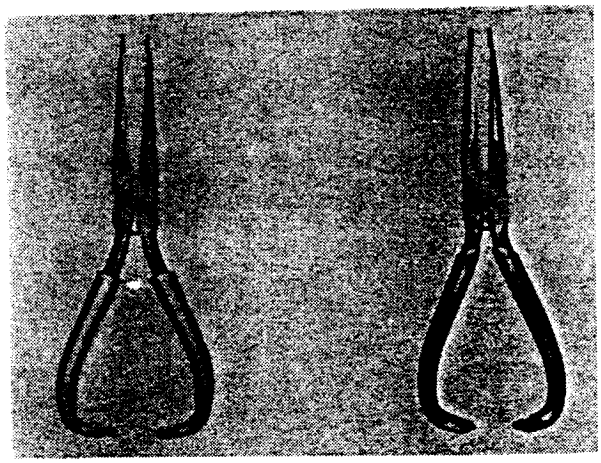

Figure 2-8.

2-15. Remove the insertion tool tips from the grommet by releasing the holding pressure on the handles and pulling straight to the rear. It is not necessary to force the handles apart to release the contact, since the jaws of the insertion tools are designed to provide adequate wire clearance for maximum gage size 20 or size 16 wire.

2-16. Continue in a like manner to seat the remainder of the contacts. Make a visual check at the mating end of the connector to be sure contacts are all properly inserted to an equal distance.

2-17. Insert one end of double ended sealing plug (Scintilla part number 10-101033-12, blue, for number 16 contacts, and 10-101033-10, brown, for number 20 contacts) by hand in any unused grommet hole as shown in figure 2-9. Box mounted connectors do not need sealing plugs inserted in the unused grommet holes; those connectors do not provide moisture sealing.

NOTE

FOR FINAL INSTALLATION, CONTACTS MUST BE ASSEMBLED INTO ALL INSERT HOLES REGARDLESS OF NUMBER OF CIRCUITS BEING USED.

2-18. Assembling Securing Device.

2-19. With straight type assemblies, slide the sleeve forward into place on the

grommet and then bring the nut assembly into position (see figure 2-10). Using the 11-6147-1 pliers, tighten the nut assembly. 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 an elbow.

2-20. 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 build-up sufficiently for gripping by the bar clamp. 11-6506 and 11-6510 holding tools should be used to hold the connector while tightening back accessories.

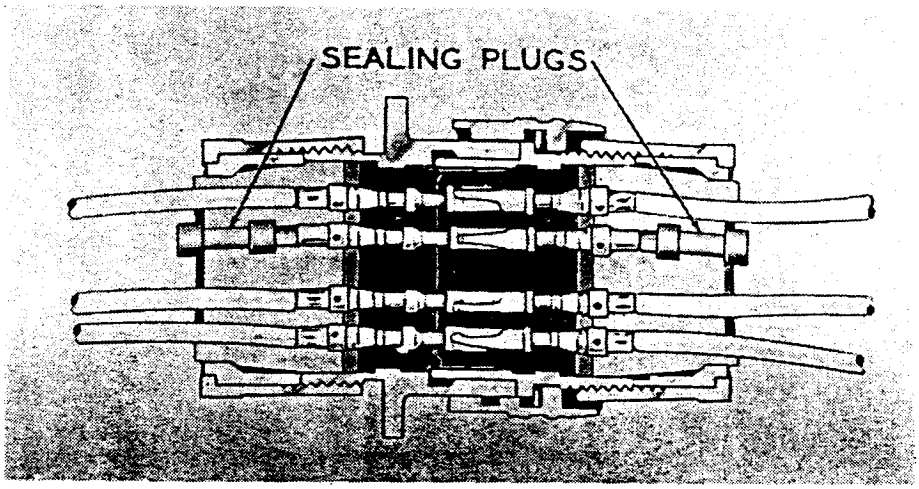

Figure 2-9.

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 (Federal Specification VV-P-236. AVOID APPLYING ANY EXCESS. DO NOT PERMIT CONTACTS TO BECOME CONTAMINATED.

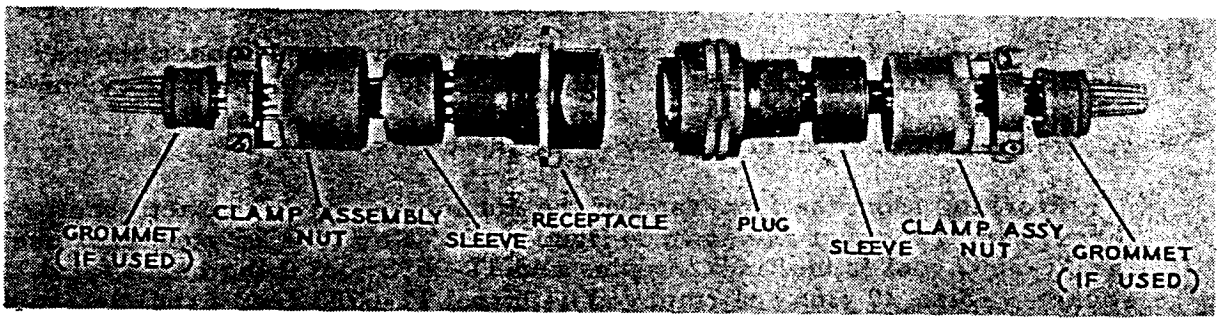

Figure 2-10.

SECTION III

REPLACEMENT OF CONTACTS

3-1. Contacts in Pygmy CE series connectors may be removed if necessary for replacement. Removal is accomplished with tools from the 11-6900 kit shown in figure 3-1. With this kit, the container is used for a handle. Removal tools are also furnished separately for use with a wood handle, part number 11-3699. To remove contacts, proceed as follows:

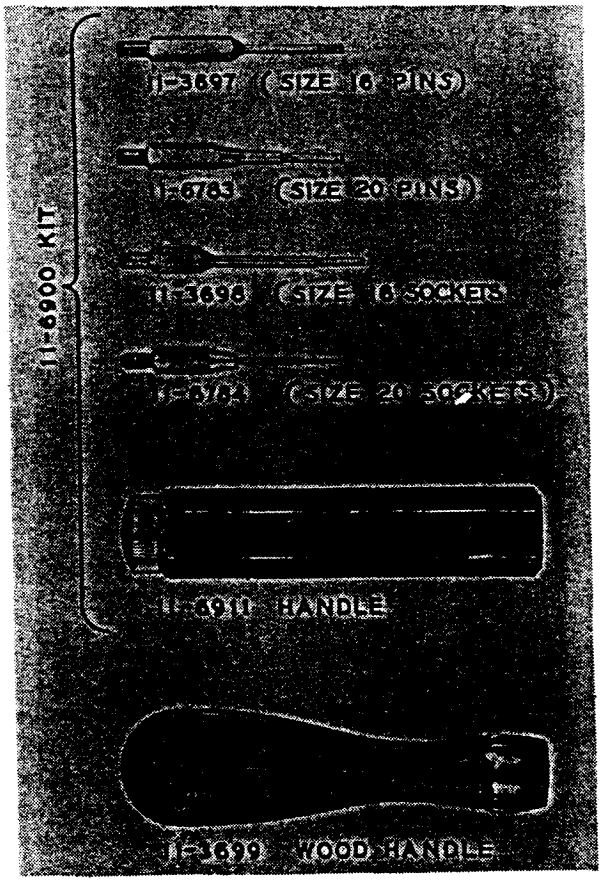

Figure 3-1.

a. With straight type assemblies, loosen the bar clamp and unscrew the clamp assembly from the connector shell.

b. With elbow assemblies, remove the back cover and loosen the bar clamp, then unscrew the knurled nut which holds the elbow to the connector.

c. Slide all parts out of the way along the wires.

d. Working from the front face of the connector, push contacts back through the grommet as shown in figure 3-2. For size 16 contacts, use the 11-3697 tool (blue band) for pins and 11-3698 tool (blue band) for sockets. Size 20 pins are removed with tool 11-6783 (red band) and sockets with tool 11-6784 (red band).

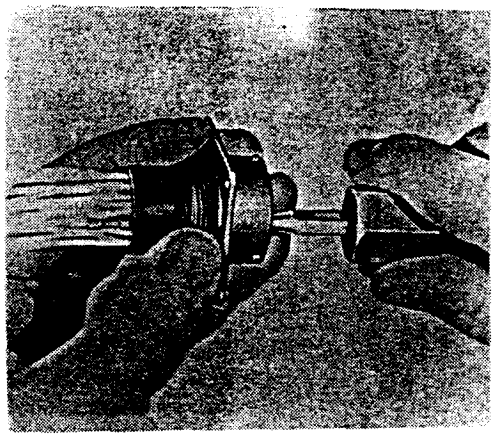

Figure 3-2.

Note

While removing contacts always push in a straight line parallel to the contacts to avoid possible damage.

3-2. To replace contacts, follow procedure given under "Installation." Plug any unused holes as indicated in Section II, paragraph 2-17.