SERVICE INSTRUCTIONS

for

Bendix®

SOLDER TYPE PYGMY ELECTRICAL CONNECTORS

PT series

SP series

PC series

BP series

Scintilla Division
SIDNEY, NEW YORK

THE Bendix CORPORATION

Revised Sept. 1963

Form L-555-1

SECTION I

INTRODUCTION

1-1. Description.

The Bendix Pygmy miniature connector series is designed to provide a dependable means of coupling or uncoupling circuits where less weight and smallness of size is required. Two styles of coupling and polarization are utilized: the double stub quick disconnect thread with single key polarization on the PC series; and three point bayonet lock coupling with five key polarization on the PT, SP and BP series.

The size 16 or 20 socket contacts are gold plated and of closed entry, probe proof design. They are supported in their shells by vibration resistant resilient inserts. The PC series is cadmium plated with a clear chromate aftertreatment. The SP and BP series both have an alumilite finish for extreme corrosion resistance. These two series are provided with larger receptacle flanges and mounting holes (for No. 6 screws) for back panel mounting applications.

SECTION II

SOLDERING PROCEDURE

2-1. Wire and Cable Preparation.

2-2. Provision should be made for sufficient cable slack to permit easy installation of the connector. The wire, cut to a predetermined length, should be prepared as follows:

2-3. It is recommended that stripping be done after the wires are threaded through the grommets. If difficulty is encountered, cut the wire at a 45° angle to permit easier threading (figure 1).

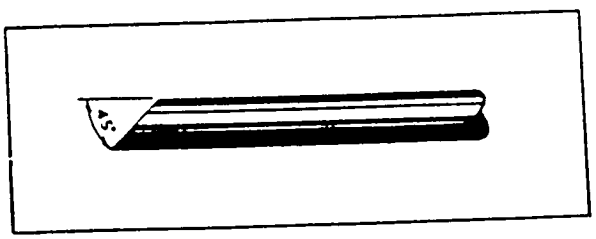


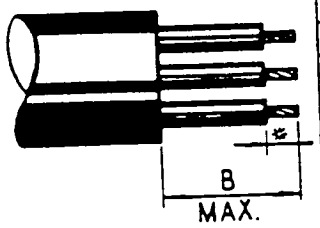
Figure 1.

2-4. Strip each individual conductor 1/4" for insertion into size 16 contacts and 1/8" for use with size 20 contacts.

2-5. If multi-wired, non-shielded jacketed cable is used (primarily for the "W" type termination), the stripping dimensions in Table I should be used.

TABLE I

STRIPPING DISTANCE FOR PYGMY TYPE "W" (Non-Shielded Cable)



Shell Size	B Max
8	.625
10	.625
12	.719
14	.812
16	.906
18	1.094
20	1.250
22	1.375
24	1.650

2-6. Pretinning.

2-7. The solder pot (if used) should contain a good grade of 60/40 tin-lead solder, and should be kept clean at all times. For most tinning operations, a bath temperature of about 550°F is satisfactory.

2-8. Clean the conductors, and dip them approximately 1/16" into a good grade of rosin-alcohol flux. With the solder bath at correct temperature, dip the conductors approximately 1/16" into the bath, as shown in figure 2.

NOTE

Pretinning should be confined to the lower half of the conductors to maintain flexibility.

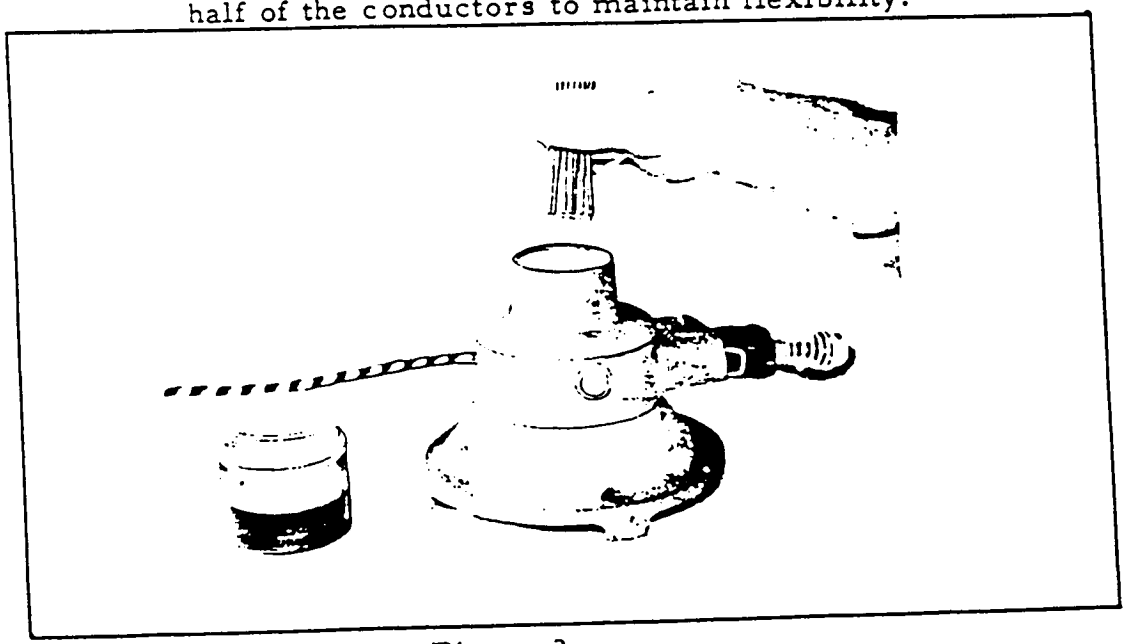


Figure 2.

2-9. Soldering.

2-10. Secure the connector in a suitable, protected holding device that will not damage the connector finish. Position the connector with the solder well end of the contacts facing the operator and with the cutaway portion of the wells up. Tilt the connector at a 45° angle to provide easy access to the contacts.

2-11. The Pygmy contact wire well is not pretinned. Tinning may be accomplished by dipping .040 diameter wire solder into a rosin alcohol flux and then into the contact wire well. Apply enough heat to the outside of the wire well to properly tin the interior.

2-12. Insert the pretinned conductor into the well of the contact. Apply heat to the closed side of the contact until the solder has liquified. Add more solder as required. Refer to Figure 3. Remove the heat and allow the joint to cool. Do not move the conductor or assembly while the solder is still in a molten state. Contact identification guide L-494 is available to assist in correct wiring.

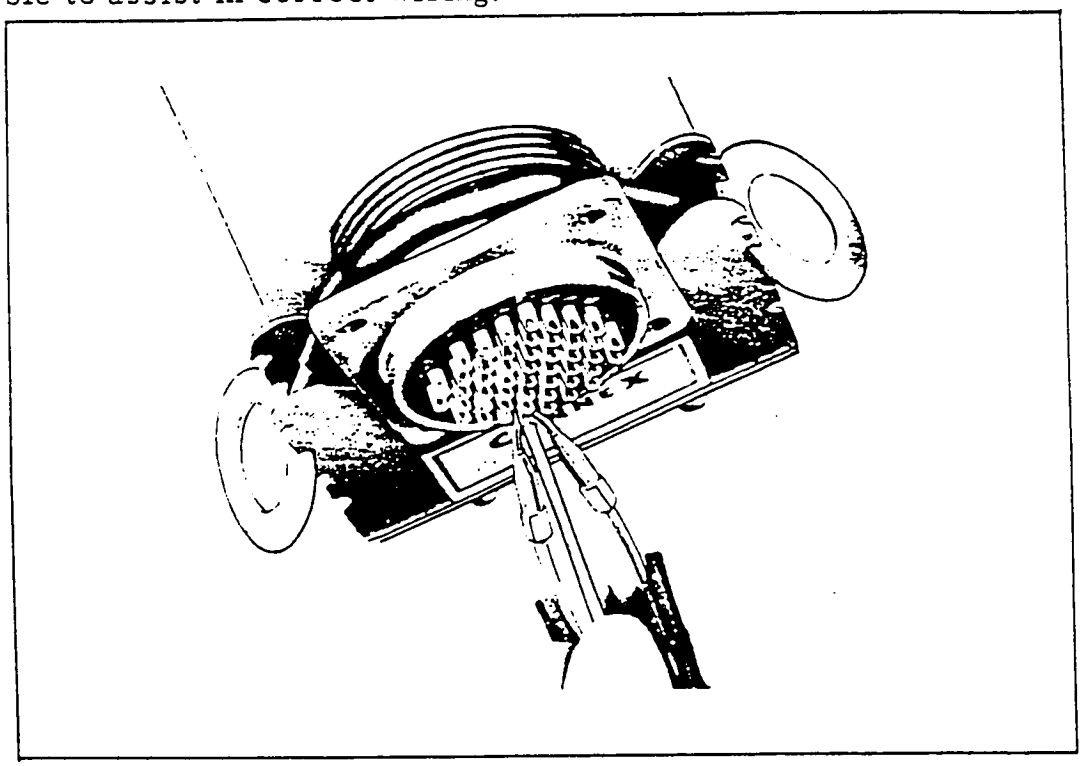


Figure 3.

2-13. A resistance soldering unit of approximately 125 watts is recommended. If a soldering iron is used (30 to 80 watts for size 20 and 80 to 150 watts for size 16 contacts), place the flat tinned surface of the iron against the closed side of the contact.

2-14. When soldering high density contact arrangements, the 11-6470 Contact Identifier may be used to speed up contact identification and act as a gui for correct wiring. Refer to MG-972 for operating instructions.

2-15. Wipe or brush excess flux from the contacts. If proprietary ethyl alcohol has been used, allow to air dry 30 minutes before enclosing the rear section with a termination device.

SECTION III

TERMINATION DEVICES

3-1. Assembly Procedures.

3-2. There are 7 terminations used in assembling the various styles of Bendix Pygmy connectors, as illustrated in figure 4. The connectors may be held with the applicable 11- holding tool, as called out in Table II, while tightening the various back accessories with the 11-6147-1 Pliers or equivalent.

TABLE II

Holding Tool	Application
11-6502	"PC" Pygmy Plugs
11-6506	"PT" Pygmy Plugs
11-6509	"PC" Pygmy Receptacle
11-6510	"PT" Pygmy Receptacle

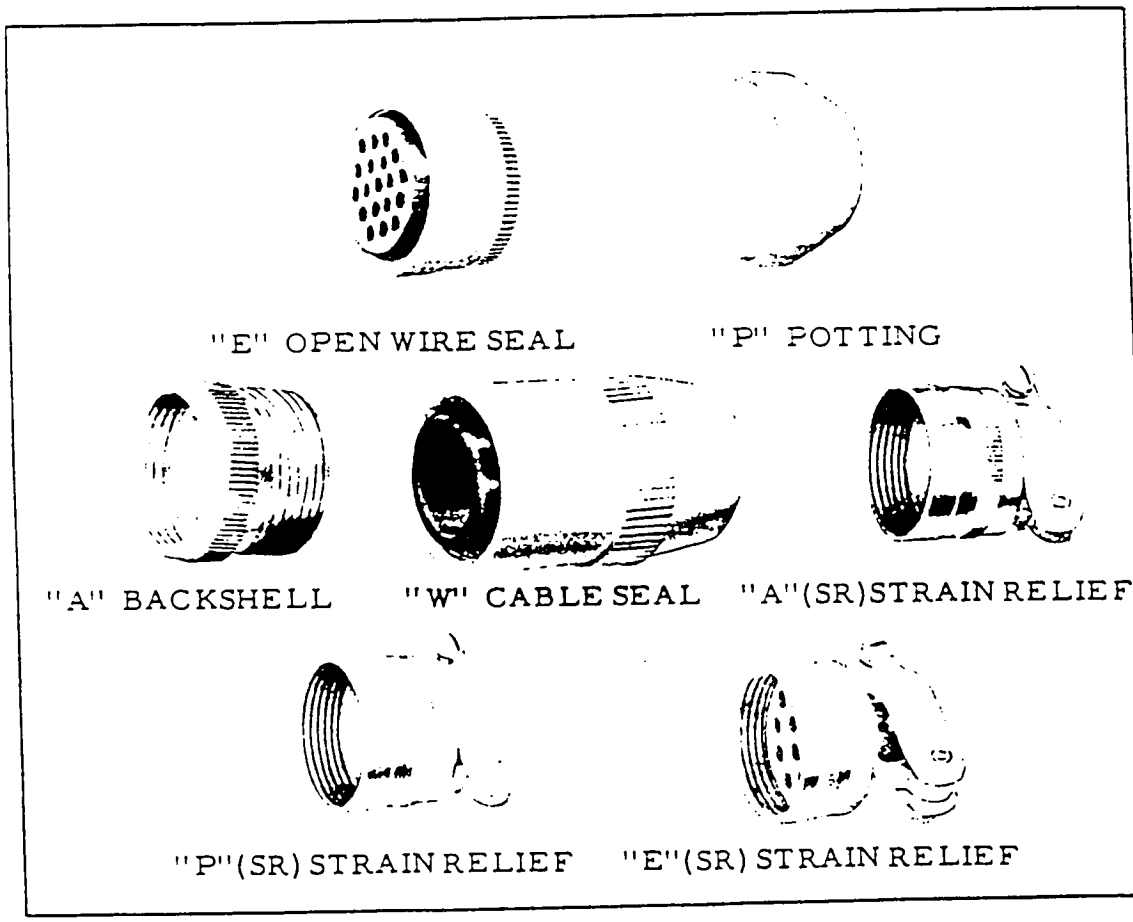


Figure 4.

3-3. General Duty "A".

Slide the back shell over the wire. Strip and solder the conductors per instructions in Section II. Place the back shell into position and tighten.

3-4. Open Wire Sealing "E".

Slide the grommet nut and tapered sleeve up the wire bundle. Thread the wires through the predetermined holes with grommet letters aligning with respective insert letters. Strip the wires and solder conductors as prescribed in Section II. Slide the grommet forward and set over the wire wells and against the insert. Fill all unused grommet holes with a nylon sealing plug 10-101033-11 for size 20 contacts and 10-101033-12 for size 16 contacts. Slide the tapered sleeve over the grommet. Bring the nut forward and tighten. When the nut is tightened, the grommet should protrude through the tapered sleeve. If the grommet does not protrude, remove the nut and sleeve. Apply a very thin film of Petrolatum VV-P-236 to the outside diameter of the grommet and inside surface of the nut. Reposition the sleeve and tighten the nut. Use care not to contaminate the wire or wire wells with the lubricant.

3-5. Potting Termination "P".

Bendix Pygmy connectors for potting are factory primed on the rear face of the resilient insert to assure good adhesion of Thiokol potting compound, type MIL-S-8516B. Slide the nylon end bell over the wire bundle. Strip and solder the wires as outlined in Section II. Using a stiff camel's hair brush, clean the area to be potted (including two inches of wire) using proprietary ethyl alcohol or equivalent.

CAUTION

Do not remove the factory applied potting primer.

Air dry for thirty minutes. Mixing and application of the potting compound should be done in accordance with the manufacturer's instructions.

3-6. Multi-Conductor Cable Moisture-Proofing "W".

Prepare the cable as outlined in Section II, paragraph 2-5. Determine if the gland nut and gland will provide sufficient clamping action. If not, install the proper AN3420A sleeve to build up the cable OD. Slide the gland nut and gland over the wire bundle. Strip and solder the conductors as described in Section II. After soldering, push the gland forward so that the two anti-rotation keys seat in the notches of the connector shell. Lubricate the external tapered surface of the gland and internal rear portion of the gland nut with Petrolatum VV-P-236. Push the AN3420A sleeve (if used) down inside the gland, allowing a slight protrusion. Slide the nut forward and tighten.

3-7. Strain Relief (SR).

A strain relief clamp is available in the class A, E and P series.

Its function is to provide additional support for the wire bundle where extremely rugged service conditions are to be encountered.

A. E(SR) - Slide the rubber bushing (if used), clamp and sleeve up the wire bundle. Thread the wires through the proper grommet hole. Strip and solder as outlined in Section II. Seat the grommet over the wire wells and slide the sleeve over the grommet. Lubricate the external surface of the sleeve and internal surface of the clamp with Petrolatum VV-P-236. Slide the clamp forward and tighten. Work the rubber bushing (if used) under the strain relief bars and tighten the clamping screws. (if a bushing is not used, build up a layer of vinyl tape under the clamp to protect the wire bundle from possible damage).

B. A(SR) - Slide the rubber bushing (if used) and clamp up the wire bundle. Strip and solder the wires to the connector as outlined in Section II. Slide the clamp down the cable and tighten. Work the bushing under the clamping bars and tighten the screws. (If a bushing is not used, build up a layer of vinyl tape under the clamp to protect the wire bundle from possible damage).

C. P(SR) - Slide the bushing (if used), and clamp up the wire bundle. Strip and solder the wires as outlined in Section II. Clean all parts and wires as prescribed for potting, Section III, paragraph 3-5. Form the wires into a tight bundle. This permits the potting compound to be readily applied. Reassemble the bars and tighten after completion of the potting operation.

CAUTION

It is not recommended that inserts or contacts in Pygmy connectors be removed.

SECTION IV

INSTALLATION INSTRUCTIONS FOR SOLDER MOUNT RECEPTACLES

4-1. Solder mount receptacles are generally classed as either external or internal types depending on whether the connector flange is mounted through the front or rear of a container. The type will determine if the wires should be soldered to the connector before or after mounting the receptacle. Refer to Section II for stripping and soldering conductors The finish of these receptacles is fused electrodeposited tin for easy solder ability with a special lacquer after treatment to assure maximum shell life. The lacquer will not interfere with any soldering operations.

4-2. Before soldering, remove internal "O" ring and clean flange of receptacle and panel surfaces of any dirt or grease.

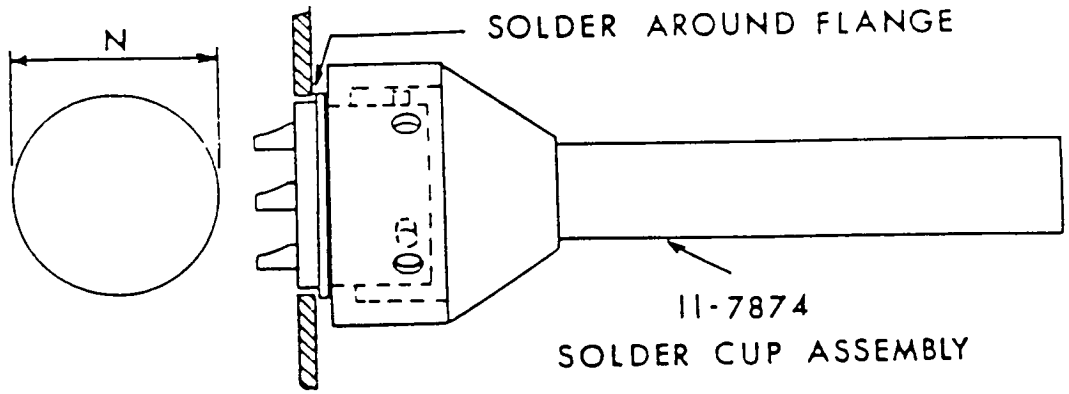
4-3. Pre-tin areas to be joined using rosin alcohol flux and 60/40 tin lead solder. Connector should be pre-heated before tinning the flange. Using a regular soldering iron, continue to move it around the flange to avoid excessive heat to any one area.

4-4. The final soldering operation may be accomplished by using the oven, oil bath, soldering cup, or soldering iron methods. Apply heat in a manner to eliminate thermal shock to the glass insert, which may cause cracking.

4-5. For oven or oil bath methods, flux the area to be soldered with a good grade of rosin-alcohol flux. Affix a ring of 60/40 tin lead solder of a predetermined diameter tightly around connector flange. Place in oven or oil bath of 374° to 400°F. until solder melts. For the oil bath use peanut oil or equivalent.

4-6. Soldering may be done with a soldering iron and a conventional flat tip if the connector and mounting panel are preheated to the melting temperature of solder. Remove from heating oven and immediately solder bead around the flange. Panel and flange of connector should be pretinned.

4-7. Applications that do not lend themselves to the oven or oil bath methods may be soldered by a soldering cup. (Soldering cups may be manufactured for applicable shell sizes in accordance with figure 5.)



Shell Size	Dia. of Mtg. Hole
6	0.448
8	0.572
10	0.682
12	0.791
14	0.916
16	1.041
18	1.166
20	1.260
22	1.385
24	1.510

Figure 5

4-8. Flux the tinned area to be soldered. Place the soldering cup over the connector and apply a bead of solder around the flange. Remove the iron and allow to cool. Remove the excess flux and residue by scrubbi with a small brush dipped in proprietary ethyl alcohol.