

SCANNED

Electrical Connectors

Installation
Instructions

10-214000
75-214000
80-214000
Series

October 1972

Printed in USA

L-679-1

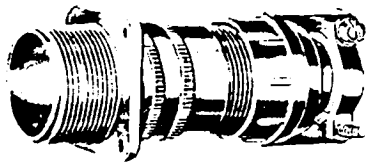


**Electrical
Components
Division**

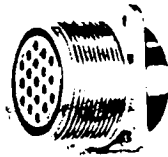
SECTION I

DESCRIPTION

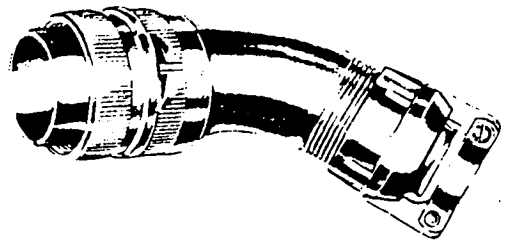
1-1. Connectors in the 10-214000, 75-214000 and 80-214000 Series are manufactured by The Bendix Corporation, Electrical Components Division, Sidney, New York 13838. They are basically similar to an MS (AN) connector modified for use with MIL-C-915A, MIL-C-2194 and other types of cables. Standard MS (AN) insert arrangements provide for complete interchangeability with MS (AN) connectors. The 214000 design includes a special long adapter and a modified version of the MS 3057B Cable Clamp. Figure 1-1 illustrates the various shell styles available.



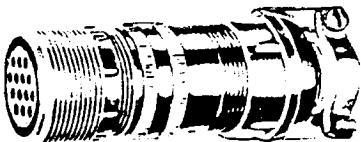
WALL MOUNT
RECEPTACLE



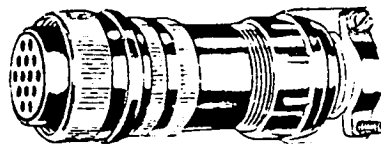
BOX MOUNT
RECEPTACLE



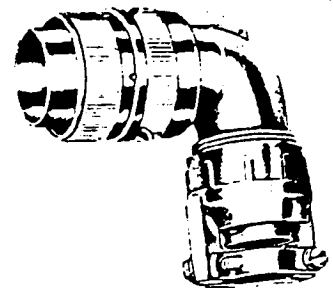
45° ELBOW



CABLE CONNECTING
PLUG



STRAIGHT
PLUG



90° ELBOW

Figure 1-1. Shell Styles Available

1-2. The 10-214000 Series connectors feature 50 millionths inch gold plated crimp contacts. The 75-214000 Series utilizes silver plated crimp contacts. Contacts for the 80-214000 Series connectors are supplied loose and purchased separately in bulk (silver or gold plated). Contacts are available in sizes 8, 12 and/or 16. See figure 1-2.

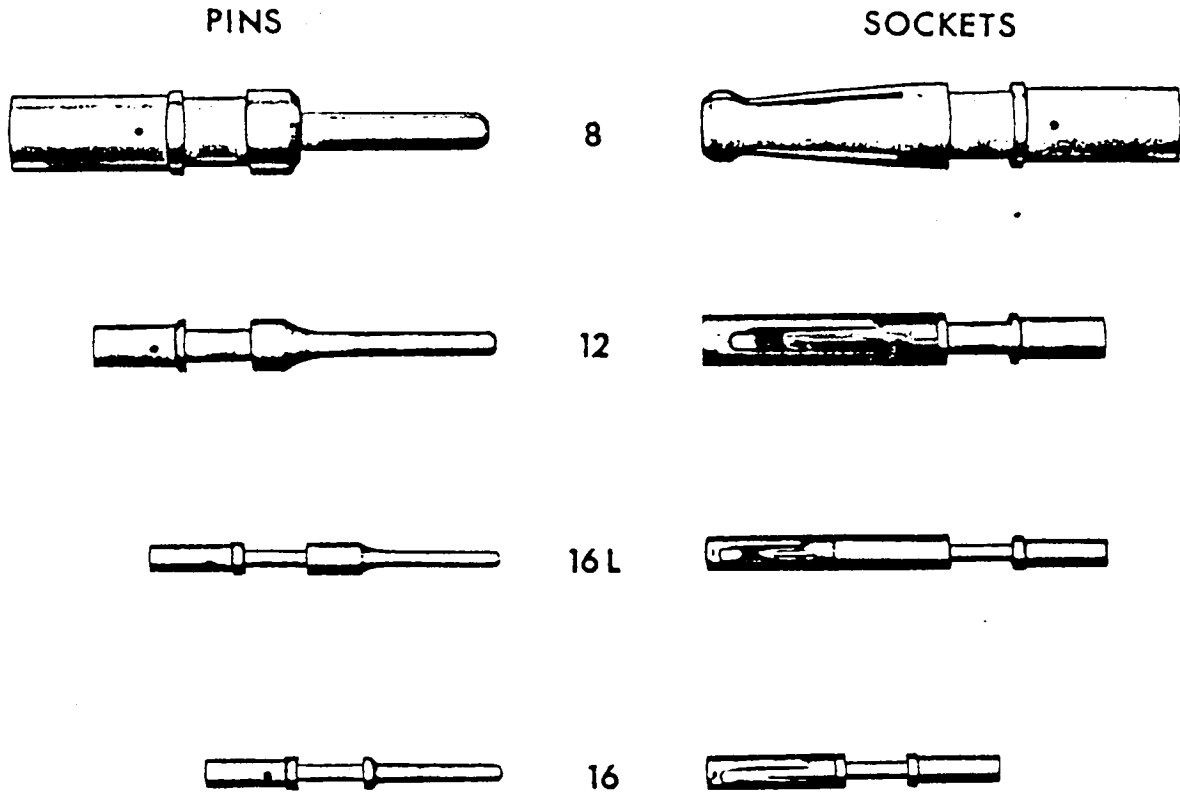


Figure 1-2. Contacts Used With 80-214000 Series Connectors

SECTION II
INSTALLATION

CAUTION

The removal of inserts is not recommended. Any attempt to do so might break the pressure and moisture proofing seal incorporated at the time of factory assembly.

2-1. CLEANING.

2-2. 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 denatured ethy alcohol (Federal Specification 0-E-760 Grade IV) for any necessary cleaning.

2-3. INSTALLING ACCESSORIES.

2-4. Prior to any contact crimping operation, the adapter and the modified version of the MS 3057B Cable Clamp must be slipped back on the cable or wire bundle in proper sequence, as shown in figure 2-1.

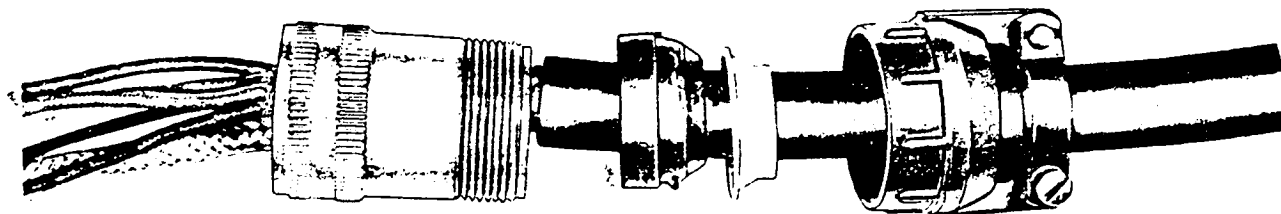


Figure 2-1. Sequence of Connector Parts Installation

2-5. CABLE AND WIRE PREPARATION.

2-6. Provide sufficient cable slack to permit easy connector installation. Determine lay of the cable before cutting so that individual contacts will be aligned with insert holes as closely as possible, to minimize conductor crossover. Cut the cable clean and square.

2-7. Using Figure 2-2 and Table 2-1 as guides, strip outer armor to the "C" dimension and outer jacket to the "A" dimension for the connector shell style and size being used. Remove armor using diagonal cutting pliers or equivalent. With a sharp cutting tool, cut around the cable jacket and pull it off. If armor or jacket is not easily removed, make an additional cut lengthwise and peel off. After cutting, wrap edges of the remaining armor with tape to prevent fraying.

CAUTION

Use care when removing the cable jacket or armor to avoid damage to conductors or insulation.

2-8. Using Figure 2-2 and Table 2-2 as guides, strip insulation from individual conductors to the "B" dimension. Hot wire stripping methods are recommended. If other methods are employed, use extreme care to avoid nicking or cutting the wire strands. If necessary, reform separated conductors by lightly twisting the strands together.

*Available from Shell Chemical Co., 50 West 50th St., N.Y., N.Y. 10020.

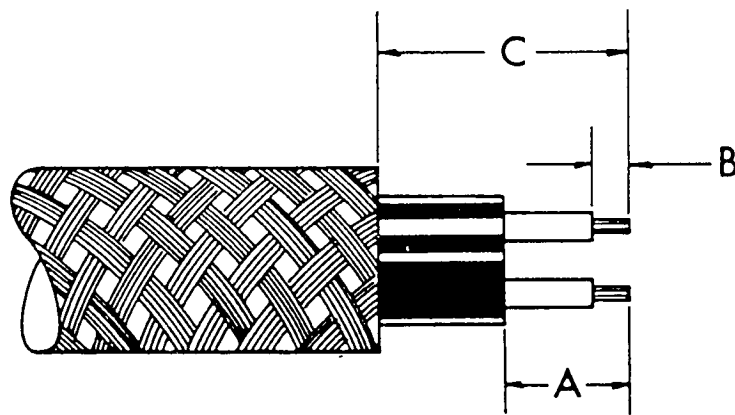


Figure 2-2. Cable Stripping Dimensions

NOTE

When determining connector shell size, observe the number molded in the front face of the insert. The first number indicates the connector shell size. For example, an insert stamped 20-21, would indicate a shell size of 20. Disregard the number following the dash when determining shell size only.

CONNECTOR SHELL SIZE	CONNECTOR SHELL STYLES					
	00, 01, 06		08		09	
	A	C	A	C	A	C
8	1.062	1.531	-----	-----	1.687	2.156
10	1.062	1.531	1.250	1.687	1.687	2.156
11	1.062	1.531	1.437	1.937	1.812	2.250
12	1.062	1.531	1.437	1.937	1.812	2.250
13	1.125	1.562	1.437	1.937	1.812	2.250
14	1.062	1.531	1.500	1.937	1.906	2.375
15	1.125	1.562	1.500	1.937	1.906	2.375
16	1.062	1.531	1.656	2.125	2.125	2.562
17	1.125	1.562	1.656	2.125	2.125	2.562
18	1.125	1.687	1.812	2.375	2.312	2.812
20	1.375	2.000	2.062	2.750	2.562	3.250
22	1.625	2.281	2.125	2.812	2.625	3.281
24	1.750	2.531	2.375	3.062	2.875	3.531
28	2.312	2.937	2.562	3.187	3.000	3.687
32	2.562	3.250	2.937	3.625	3.500	4.187
36	2.812	3.562	3.125	3.875	3.687	4.437
40	3.062	3.812	3.375	4.000	3.937	4.687
44	3.312	4.125	5.375	6.000	4.562	5.250

Table 2-1. Outer Armor and Jacket Stripping Dimensions (Inches)

CONTACT SIZE	8	12	16
STRIP INSULATION	9/16"	5/16"	5/16"

Table 2-2. Conductor Stripping Dimensions (Inches)

2-9. CRIMPING.

2-10. Using Table 2-3 as a guide, select the proper crimping tool and positioner for the contact/wire combination being used.

2-11. If the individual conductors are shielded, refer to paragraph 2-18 for the recommended procedure to terminate shield.

2-12. Insert the stripped end of wire into the contact wire well and apply slight pressure until it is positively bottomed. Visually check to make certain that wire stands are visible in the inspection hole provided in the wire well.

2-13. If the 11-7295 Series crimping tool from the 11-7785-1 Kit is to be used, insert the contact and wire into the tool as far as possible, then close the tool handles. See figure 2-3. The tool handles cannot be re-opened until the crimping cycle is completed thus ensuring a completely uniform and reliable crimp. **BE SURE TO USE THE CORRECT POSITIONER WITH CRIMPING TOOL.** See Table 2-3. For applicable gaging and inspection procedures for the 11-7295 (MS 3191-1) Crimping Tool, refer to publication L-729, Operation and Maintenance Instruction.

2-14. If the 11-8447-9 Die and Locator Assembly is used in conjunction with 11-7739 Holder Assembly, place a size 8 contact and wire into the tool and close handle to the full extent of its travel. Open and remove the crimped contact. See figure 2-4.

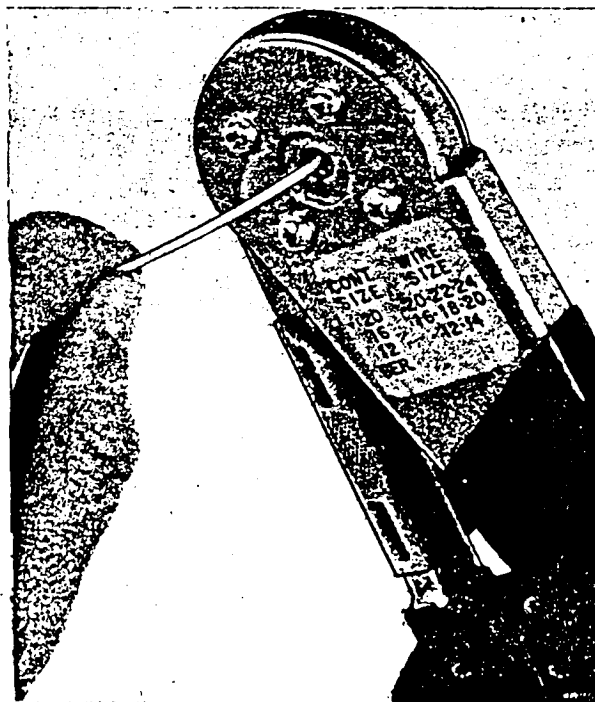


Figure 2-3. Use of 11-7295 Crimping Tool

NOTE

Readjustment and inspection of crimping tools must be done to approved standards and should never be attempted by personnel other than those authorized by the user to do this work (i.e., Tool and Gage control personnel).

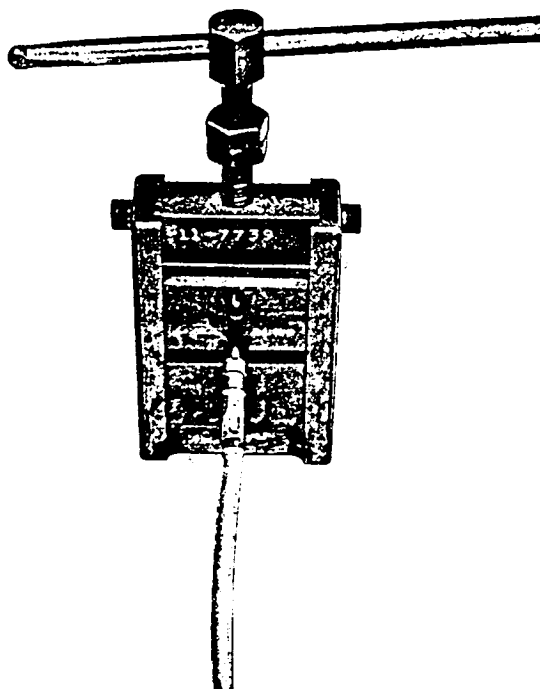


Figure 2-4. Use of 11-7739 Holder Assembly

2.15 To obtain the required pull out forces listed in Table 2-4, a 10-74696-X Adapter Sleeve may have to be used (see asterisk and note following Table 2-4). Adapter sleeves are listed in Table 2-5.

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

2-17. TERMINATION OF INDIVIDUAL CONDUCTOR SHIELDS.

2-18. When the individual conductors are covered with a braided shield and each shield is used as a ground, it is recommended that the braid be terminated by using a jumper wire and the "inner/outer sleeve method" described below.

a. Select commercially available inner and outer sleeves such as Thomas & Betts GSB, GSC and GSR sleeves* with the correct diameter (size) for the conductor being used and in accordance with the manufacturer's recommendation.

b. Strip outer insulation of the conductor back to a predetermined point where jumper wire is to be terminated to shield. Stripping distances should be staggered to eliminate bunching of the jumper wire termination. See figure 2-5. Slide the inner sleeve under the braid and over the inner insulation to the extent of its travel. Trim the braid flush with the front edge of the inner sleeve using braid scissors.

*Available from The Thomas & Betts Co., Inc., 36 Butler Street, Elizabeth, New Jersey 07207.

c. Using MIL-W-5086 Type I or MIL-W-16878 Type E, size 20 or 18 AWG wire, cut a 6 inch length for the jumper wire. Strip one end of the jumper wire 1/4 inch. Place the stripped end against the braid and over the inner sleeve so that the wire will come out of the rear of the termination.

d. Position the outer sleeve over the braid and jumper wire as shown in figure 2-5. Crimp the outer sleeve with a crimping tool recommended by the sleeve manufacturer.

e. Slide commercially available heat-shrink tubing over the crimped joint, then heat shrink using a Manco Electric Heat Gun* or equivalent.

f. Bend the jumper wire back toward the front end of the cable and cut off flush with the end of the main conductor. Strip the jumper wire in accordance with Table 2-2 and crimp to the contact with applicable tool specified in Table 2-3.

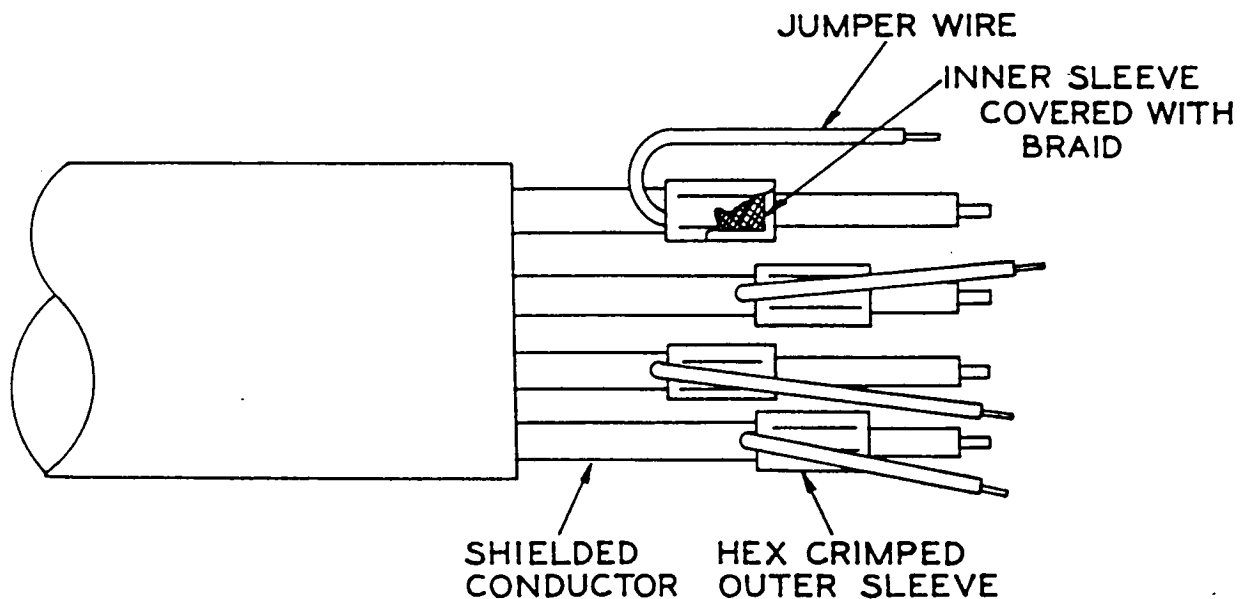


Figure 2-5. Inner/Outer Sleeve Method of Braid Termination

2-19. INSTALLING CONTACTS.

NOTE

The Neosol or denatured ethyl alcohol recommended for cleaning in paragraph 2-2 may also be used as a lubricant for contact insertion. Do not use excessive lubricant.

2-20. Using Table 2-3 as a guide, determine the appropriate tool for contact insertion.

2-21. If the 11-7345 or 11-7736 Contact Insertion Tool is used, grip the contact at the shoulder nearest the mating end of the contact (figure 2-6). Push the contact into the rear face of the insert as far as possible. Remove and reposition the tool tips against the rear of the wire-well (figure 2-7). Continue to seat the contact into the insert. The positioning of the tool on the contact at two points is to prevent contact bending. Make sure contact is fully seated, checking from the front face of the insert.

*Available from Grainger, Inc., Syracuse, N. Y. 13200.

(75-SERIES) CONTACT PART NO.	(10-SERIES) CONTACT PART NO.	SHELL SIZE*	CONTACT SIZE PIN SOCKET	CRIMPING TOOLS	POSITIONERS	INSERTION TOOLS	REMOVAL TOOL KIT
10-40552	10-113239-15S	8S-16S	16	11-7295	**11-7771-101	11-7345 11-7736	11-8250 with 11-3698 tool tip
10-40553	10-113239-15P	8S-16S	16	11-7295	**11-7771-101	11-7345 11-7736	11-8250 with 11-3697 tool tip
10-40556	10-113239-16S	16-40	16L	11-7295	**11-7771-102	11-7345 11-7736	11-8250 with 11-3698 tool tip
10-40557	10-113239-16P	16-40	16L	11-7295	**11-7771-103	11-7345 11-7736	11-8250 with 11-3697 tool tip
10-313672-161	10-313672-162	44-48	16XL	11-7295	11-7771-33	11-7345 11-7736	11-8250 with 11-3697 tool tip
10-313673-161	10-313673-162	44-48	16XL	11-7295	11-7771-34	11-7345 11-7736	11-8250 with 11-3698 tool tip
10-40560	10-113239-12S	16-40	12	11-7295	11-7771-4	11-7082 11-7763	11-8250 with 11-3698 tool tip
10-40561	10-113239-12P	16-40	12	11-7295	11-7771-4	11-7082 11-7763	11-8250 with 11-3696 tool tip
10-313672-121	10-313672-122	44-48	12XL	11-7295	11-7771-35	11-7082 11-7763	11-8250 with 11-3696 tool tip

Table 2-3. Contact and Tool Data

(75-SERIES) CONTACT PART NO.	(10-SERIES) CONTACT PART NO.	SHELL SIZE*	CONTACT SIZE PIN SOCKET	CRIMPING TOOLS	POSITIONERS	INSERTION TOOLS	REMOVAL TOOL KIT
10-313673-121	10-313673-122	44-48	12XL	11-7295	11-7771-35	11-7082 11-7763	11-8250 with 11-3698 tool tip
10-40792	10-113239-8P	16-40	8	11-7838-1	11-7740-5 LOCATOR	11-7611	11-8250 with 11-8252 tool tip
10-40793	10-113239-8S	16-40	8	11-7838-1	11-7740-5 LOCATOR	11-7611	11-8250 with 11-8251 tool tip

*SPECIAL SHELL SIZES 10SL, 12, AND 14 NOT SHOWN WOULD INCORPORATE THE LONG SIZE 16 CONTACTS. ONE INSERT ARRANGEMENT IN SPECIAL SHELL SIZE 12 WOULD ALSO REQUIRE ONE SIZE 12 CONTACT (12-5)

**11-7771-1, -2, -3 POSITIONERS SHOULD BE USED FOR JUMPER WIRE TERMINATIONS ONLY WHEN USING MIL-W-5086, TYPE 1 OR MIL-W-16878, TYPE E WIRE.

Table 2-3. Contact and Tool Data (Cont)

2-22. If the 11-7082, 11-8220 or 11-7763 Contact Insertion Tool is used, grip the contact at the rear shoulder and position it in the rear face of the insert. Push the contact into the insert until it is fully seated. See figure 2-8.



Figure 2-6. Initial Position of Contact Insertion Tool



Figure 2-7. Contact Insertion Tool Positioned at Rear of Wire-well

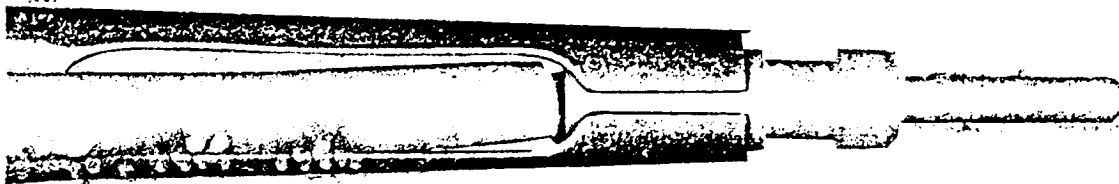


Figure 2-8. Contact Insertion Tool Positioned at Rear Shoulder

2-23. Seat the remaining contacts in the same manner, depending upon the method of insertion required.

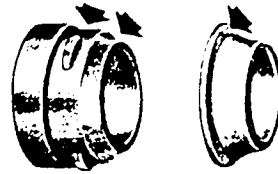
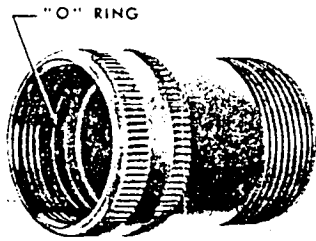
2-24. Personnel inserting contacts will normally "feel" the contact reach its fully seated position. Visually check the mating ends of the connector to be sure all contacts are properly inserted to the same depth.

2-25. After the installation and inspection of contacts has been completed, slide all rear accessories forward into place and tighten, using 11-6147-1 Connector Pliers or equivalent.

2-26. The gland, tapered sleeve, and "O" ring must be lubricated before reassembly. Apply a thin film of petrolatum with a small bristle brush to the areas indicated in figure 2-9.

CAUTION

The serrated face of the gland should be kept free of petrolatum to assure the gripping action of the gland.



LUBRICATE AREAS AS INDICATED

Figure 2-9. Lubrication Points

2-27. Position the tapered sleeve, gland and telescoping sleeve (if used) in the clamping nut of the cable clamp assembly. Slide the cable clamp assembly forward, thread it onto the back adapter and tighten using 11-6147-1 Connector Pliers or equivalent. Slight tension should be applied to the cable to prevent the conductors from buckling and binding until the gland seats on rear of the back adapter. Center the cable in the clamping bar, slide the clamp grommet (if used) into position and tighten the clamping bar screws evenly.

NOTE



All armor must be terminated behind gland of the cable clamp assembly or the moisture seal will be lost. Armor may be terminated by wrapping the ends with tape and firmly clamping between clamping bars of the cable clamp assembly. Armor braid may also be grouped and crimped to terminals to be secured by the clamping bar screws.



Contact Size	Wire Size	Approved MIL-C-915A Cables	Approved MIL-C-2194D Cables	Initial Min. Pull-Out Force Lb. (Prior to Conditioning)
16	16	MHFF-2, -4, -7, -10, -14, -19, -24, -30, -37, -44; DHOF-3; THOF-3; FHOFF-3; SRI-2-1/2 (26); SRIB-2-1/2 (26); SHFS-2-1/2; MRI-D-2-1/2; MRI-T-2-1/2; SHFA-3; DHFA-3; THFA-3; FHFA-3; MHFA-7, -10, -14, -19, -24, -30, -37, -44; DSS-3; DBSP-3; TBSP-3; FBSP-3.	DSGA-3; TSGA-3; FSGA-3; 7SGA-3	40
16	18	DCOP-1-1/2, -2; TCOP-2; MCOS-2, -4, -7; DSS-2; FSS-2; MDGB-12(1-1/2); DBSP-2; TBSP-2; FBSP-2	MSCA-7, -10, -14, -19, -24, -30, -37, -44	28
16	20	MCOS-5, -6; DCOP-1; TTOP-3, -5, -10, -15; SRI-1(10); SRIB-1(10); SHFS-1; MRI-D-1	NOT AVAILABLE	18
*16	22	TTHFWA-1-1/2, -3, -5, -10, -15, -20, -30, -40, -50, -60; TSP-11, -31; DBSP-3/5; TBSP-3/5; FBSP-3/5	NOT AVAILABLE	12
12	12	NOT EVALUATED	NOT EVALUATED	110
12	14	DHOF-4; THOF-4; FHOFF-4; FCOTP-4; SRI-4(41); SHFA-4; DHFA-4; THFA-4; FHFA-4; SHFR-4; DHFR-4; THFR-4; TSS-4; DBSP-4; TBSP-4; FBSP-4; SRI-4 (7); SRIB-4; SHFS-4	DSGA-4; TSGA-4; FSGA-4; 7SGA-4	70
*12	16	MHFF-2, -4, -7, -10, -14, -19, -24, -30, -37, -44; DHOF-3; THOF-3; FHOFF-3; SRI-2-1/2 (26); SRIB-2-1/2 (26); SHFS-2-1/2; MRI-D-2-1/2; MRI-T-2-1/2	NOT EVALUATED	50
*12	18	DSS-2; FSS-2; MDGB-12 (1-1/2); DBSP-2; TBSP-2; FBSP-2	MSCA-7, -10, -14, -19, -24, -30, -37, -44	38
*12	20	DCOP-1; TTOP-3, -5, -10, -15; MCOS-6; SRI-1(10); SRIB-1 (10); SHFS-1; MRI-D-1	NOT AVAILABLE	20
*12	22	TTHFWA-1-1/2, -3, -5, -10, -15, -20, -30, -40, -50, -60; TSP-11, -31; DBSP-3/5; TBSP-3/5; FBSP-3/5	NOT AVAILABLE	12
* 8	10	NOT EVALUATED	NOT EVALUATED	160
8	8	NOT EVALUATED	NOT EVALUATED	225

*CONTACT & WIRE COMBINATIONS REQUIRE WIRE WELL ADAPTERS TO OBTAIN WIRE PULL-OUT FORCES. REFER TO TABLE 2-5 FOR RECOMMENDED ADAPTER PART NUMBERS.

Table 2-4. Tensile Strength Data

CONTACT SIZE	WIRE SIZE	*ADAPTER PART NUMBER
16	22	10-74696-6
12	16	10-74696-4
12	18	10-74696-14
12	20	10-74696-15
8	10	10-74696-1
12	22	10-74696-15

*FOR EQUIVALENT GOLD PLATED ADAPTERS USE BENDIX P/N 10-242999-XX2 (50 MILLIONTHS GOLD).

Table 2-5. Adapter Sleeves

SECTION III
REPLACEMENT OF CONTACTS

NOTE

Contacts should not be removed unless absolutely necessary, since repeated removal tends to reduce contact retention.

3-1. REMOVING CONTACTS FOR REPLACEMENT.

3-2. Loosen and remove all rear accessories from the connector shell. Slide all parts out of the way along the wire bundle.

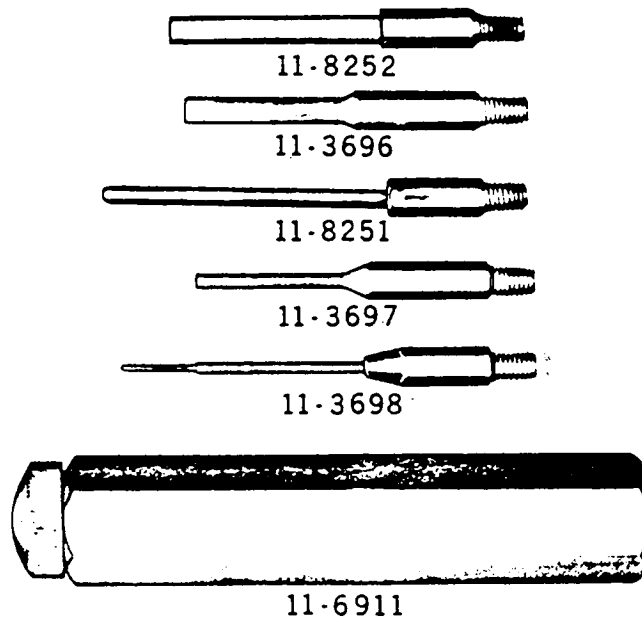


Figure 3-1. 11-8250 Removal Tool Kit

3-3. Determine the appropriate removal tool kit from Table 2-3. Be sure to use the correct contact removal tip with the tool. Working from the front face of the connector, position the tool tip on the contact and push contact back through the insert. Figure 3-1 is a view of the 11-8250 Removal Tool Kit for contact sizes 8, 12 and 16.

3-4. To replace contacts in the connector, follow the procedure given under "Installing Contacts", paragraph 2-19.