

SECTION 2

CHAPTER 12

RF CONNECTORS AND CABLING

INTRODUCTION

1. Coaxial cable assemblies are used to carry radio frequency (RF) power from one point to another with a known rate of loss. An assembly consists of RF connectors attached to coaxial cable. The coaxial cable described in this chapter is of the flexible, solid dielectric type, relatively small to medium size. The characteristic impedance of most of the cable is 50 ohms, but several of the cables listed have a characteristic impedance of 48, 53, 75 or 93 ohms.

2. This chapter describes and illustrates the Military Standard RF connectors and coaxial cable most commonly used in aircraft and the recommended methods for assembling coaxial cable to the connectors. This section also describes and gives instructions for assembly of miniature RF connectors to coaxial cable, and for RF connectors used in fuel-quantity-indicating systems. General procedures for installation of coaxial cable assemblies into aircraft are given in Section 2, Chapter 4.

REFERENCE SPECIFICATIONS

3. The following specifications are applicable to RF connectors and cabling:

J-STD-004	Requirements for Soldering Fluxes
J-STD-005	Requirements for Soldering Pastes
J-STD-006	Requirements for Electronic Grade Solder Alloys and Fluxed and Non-Fluxed Solid Solders for Electronic Soldering Applications.
MIL-C-17	Cables, Radiofrequency, Flexible and Semi-rigid, General Specification For
MIL-C-3607	Connectors, Coaxial, Radiofrequency, Series Pulse, General Specification For
MIL-C-3643	Connectors, Coaxial, Radiofrequency, Series HN, General Specification For
SAE AS 8660	Silicone Compound NATO Code Number S-736 FSC 6850
MIL-S-22473	Sealing, Locking and Retaining Compounds, Single-Component

MIL-DTL-22520	Crimping Tools, Wire Termination, General Specification For
MIL-DTL-25516	Connectors, Electrical, Miniature, Co-axial, Environment Resisting Type, General Specification For
MIL-PRF-39012	Connectors, Coaxial, Radio Frequency, General Specification for

DESCRIPTION

RF Connectors

4. RF connectors are available as pin-contact or socket-contact plugs. (See Figure 12-1.) All plugs are cabled and are for attaching to the ends of coaxial cables. Receptacles are designed for mounting to panels or chassis. Receptacles are either cabled or uncabled. The following categories of RF connectors are used for replacement purposes, with Category D being the preferred.

- a. Category A - Braid clamp and solder contact.
- b. Category C - Solder centre pin or socket crimp ferrule. See Figure 12-2.
- c. Category D - Crimp centre pin or socket, crimp ferrule. See Figure 12-2.

5. The following series of RF connectors are used:

- a. **BNC Series.** A small, lightweight, bayonet type, quick-connect/disconnect connector, used with small coaxial cables, where peak voltage is not more than 500 volts. (See Figure 12-2.)
- b. **HN Series.** A high voltage (up to 5,000 volts), threaded coupling connector used with medium size coaxial cables. (See Figure 12-3.)
- c. **N Series.** A general purpose, threaded coupling connector used with medium size coaxial cables. (See Figure 12-4.)
- d. **C Series.** A bayonet type, quick-connect/disconnect connector used with medium size coaxial cables. It is

electrically similar to the N series. (See Figure 12-5.)

- e. **Pulse Series.** A high-voltage connector for pulse or DC applications. (See Figure 12-6.) Designed to be used with rubber dielectric pulse cables but may be used with equivalent-size cables of other constructions where high voltage is not required. With ceramic inserts, peak voltage is 15,000 volts at sea level. With rubber inserts, peak voltage is 5,000 volts at 50,000 feet, but higher voltages may be used at lower altitudes.
- f. **TNC Series.** A small lightweight connector similar to the BNC series, but having a threaded coupling, used where a positive coupling under vibration and a low noise level is desirable. (See Figure 12-7.)
- g. **SC Series.** A connector used with medium size coaxial cables; similar to the C series, but having a threaded coupling. (See Figure 12-8.)

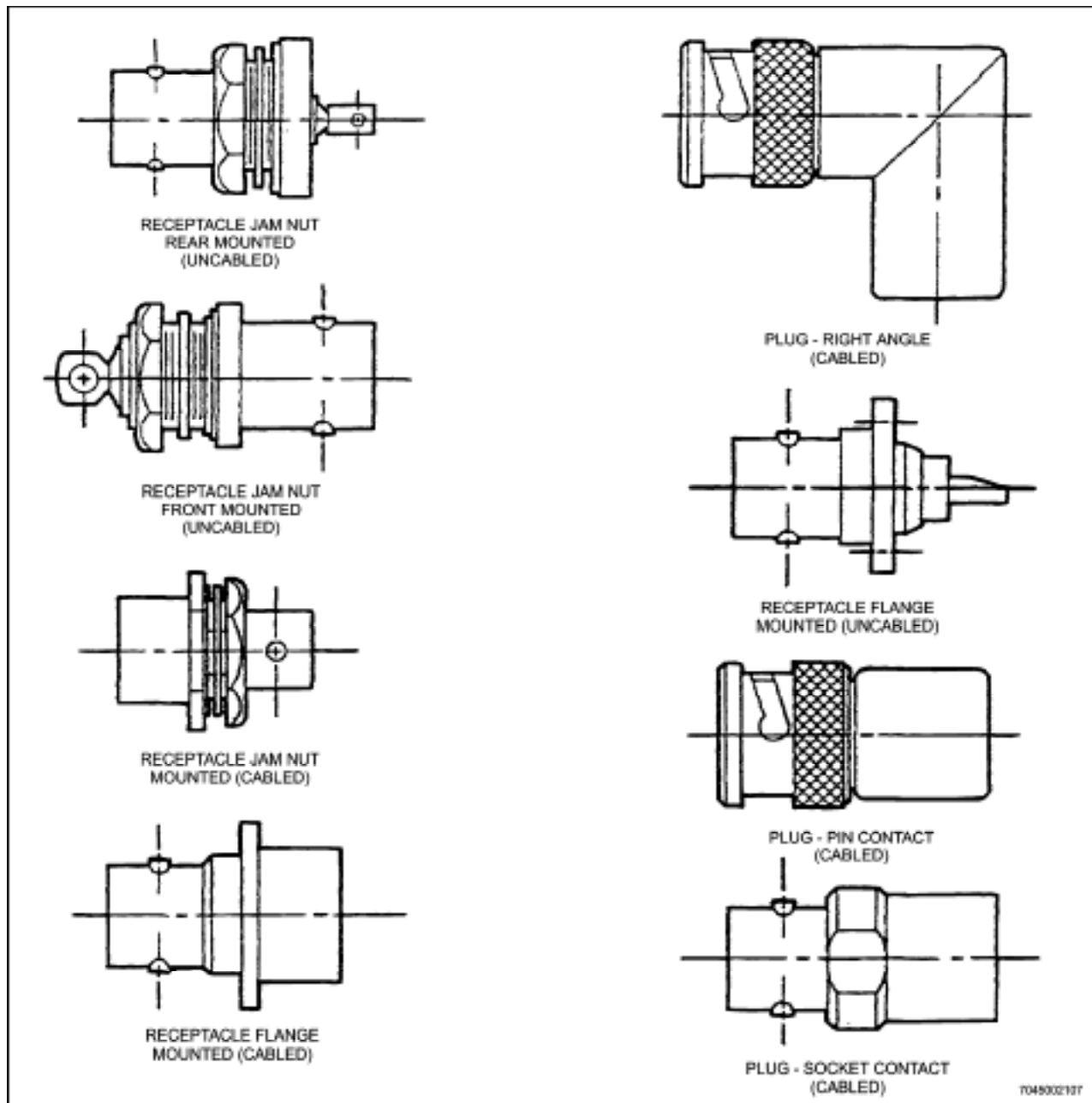


Figure 12-1 RF Connectors

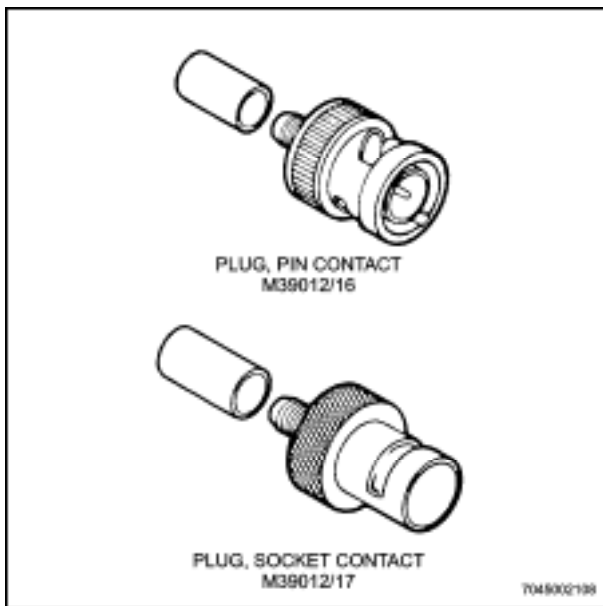


Figure 12-2 Typical BNC Connectors

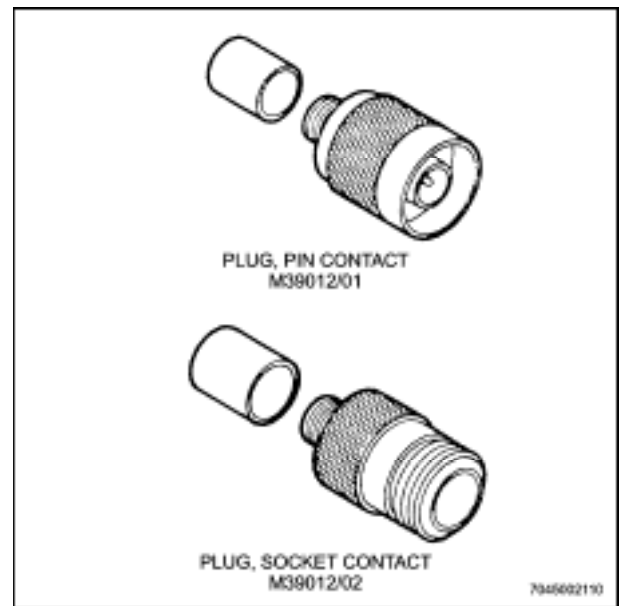


Figure 12-4 Typical N Connectors

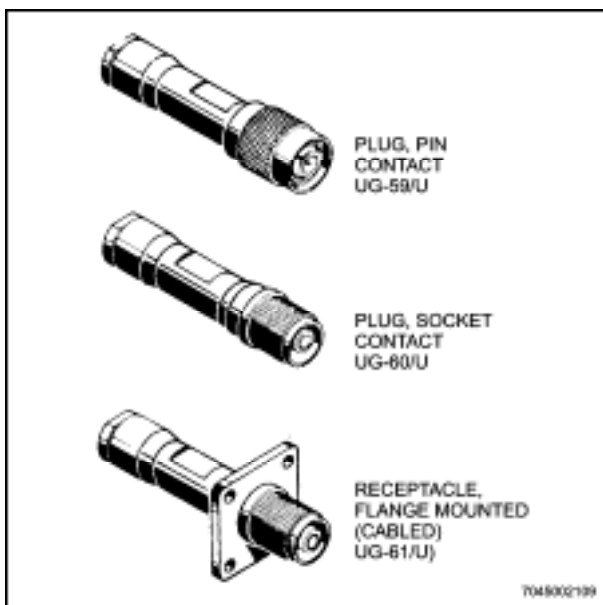


Figure 12-3 Typical HN Connectors

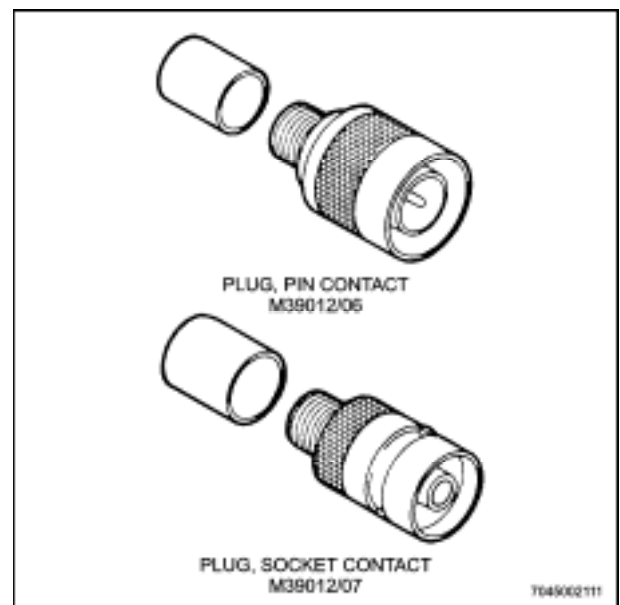


Figure 12-5 Typical C Connectors

Coaxial Cable

6. Coaxial cable consists of an inner (centre) conductor separated from the outer conductor, usually called a shield, by an insulating dielectric. The cable is protected against moisture and abrasion by a tough outer jacket (sometimes called a sheath). See Figure 12-9 for typical coaxial cables. The inner conductor is usually copper, either solid or stranded, and may be bare, tin plated, or silver plated. The outer conductor (shield) is usually a copper braid, bare, tin plated, or silver plated, woven over the dielectric. Some coaxial cables have a double outer conductor (double shield) to provide extra shielding. The dielectric has two functions: (1) it provides low loss insulation between the inner

conductor and the outer conductor, and (2) it maintains the relative position of the inner conductor inside the outer conductor and therefore keeps the capacitance between the two at a constant value. The maximum operating temperature of cables with polyethylene dielectric is 85°C. The maximum operating temperature of cables with teflon dielectric is 200°C. Teflon dielectric coaxial cables can replace polyethylene dielectric cables of the same physical and electrical characteristics.

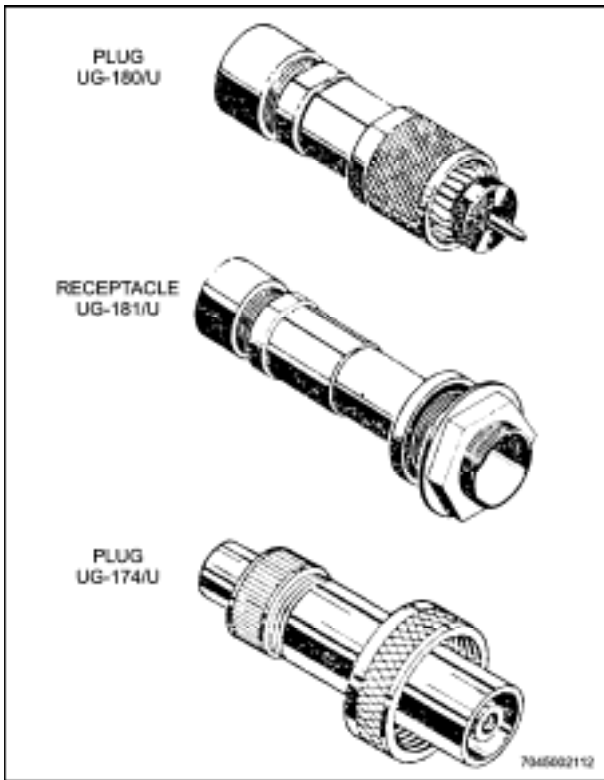


Figure 12-6 Typical Pulse Connectors

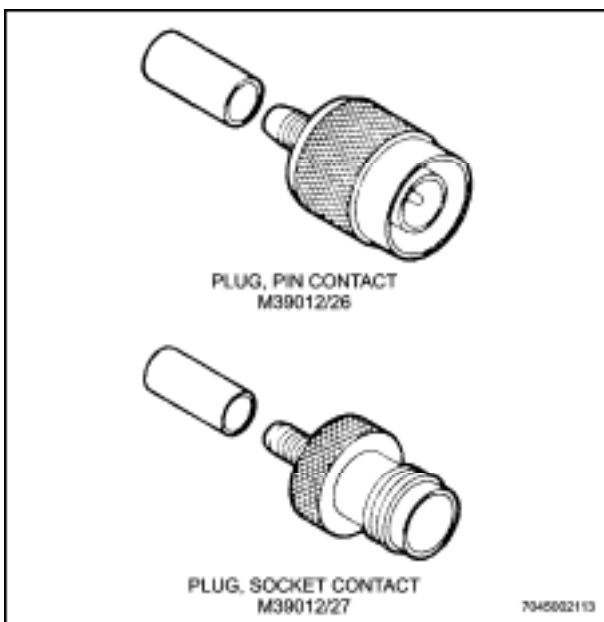


Figure 12-7 Typical TNC Connectors

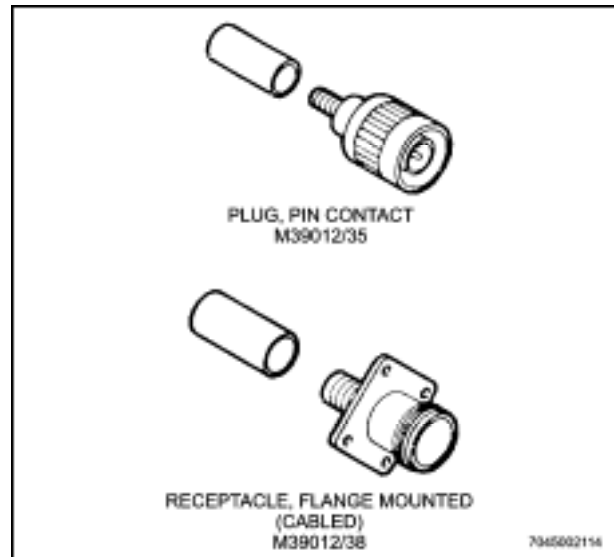


Figure 12-8 Typical SC Connectors

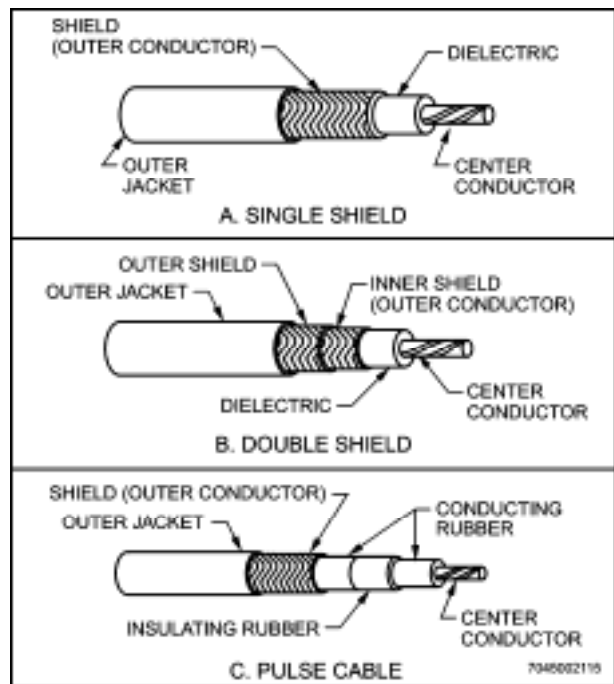


Figure 12-9 Typical Coaxial Cables

GENERAL PRECAUTIONS AND PROCEDURES

General Precautions

7. A good connection depends on holding coaxial cable and connectors to the design dimensions. Any change in these dimensions will cause added losses to the RF power being carried, and may also cause radiation interference. It is important that the assembly directions given for each connection be followed carefully to avoid problems. The following precautions are common to all assemblies of the coaxial cable and RF connectors:

- a. When working with coaxial cable, never step on the cable, set anything heavy on it, or bend it sharply. This will flatten the cable and will change its electrical characteristics. Handle coaxial cable carefully at all times. Anything which damages it, or which might lead to its being damaged later, reduces the efficiency of the system.
- b. Do not use pliers to assemble or disassemble RF connectors.
- c. Pins and sockets for RF connectors are usually packed unassembled. Do not misplace them.
- d. Use care in starting the braid clamp nut into a plug or jack body, in order to prevent cross threading.
- e. Keep soldering iron clean, smooth, and well tinned at all times. See Section 2, Chapter 7 for care of soldering iron.
- f. RF connectors should be physically tight on their coaxial cable. Improperly fitting connectors will allow movement that degrades the electrical connection by bending, nicking, and breaking the braided shield wires. This can cause premature failure or equipment damage if the cable is used in a transmitting system. Degraded signal carrying capability can occur in a receiving or data transfer system. If any rotational movement is found between the RF connector and cable, the connector shall be replaced.
- g. In areas where RF connectors are subject to mechanical or physical strain that would tend to break connections or braided shields, strain relieving cable clamps may be installed to prevent damage

WARNING

FAILURE TO ENSURE THAT THE CENTRE CONDUCTOR IS NOT SHORTED MAY RESULT IN EQUIPMENT DAMAGE, PERSONAL INJURY OR DEATH.

- h. Check assembled coaxial connectors with an ohm-meter to ensure that the centre conductor is not shorted to the shield. This can be accomplished by placing the ohm-meter on its highest

scale, ensuring that the other end of the coaxial cable is disconnected from the equipment, then placing the ohm-meter leads on the centre pin and the connector shell. The reading should be infinite ohms. An optional check can be performed using a time domain reflectometer (TDR).

General Procedures

8. During the preparation of coaxial cable assemblies, observe the following general procedures:

- a. Cut coaxial cable to length with long handled cable cutters or pruning shears, making sure cut is clean and square.
- b. Identify cable by using the methods described in Section 2, Chapter 2.
- c. Strip outer jacket from cable by first making a cut carefully around circumference with a sharp knife. Then make a lengthwise slit, and peel off jacket. Take care not to nick, cut, or damage shield.
- d. For connectors using braid clamps comb out the braid by using a pointed wooden dowel or a scriber.

CAUTION

DO NOT DAMAGE DIELECTRIC OR BREAK SHIELD STRANDS.

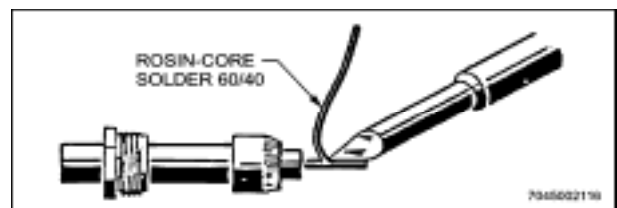


Figure 12-10 Tinning Centre Conductor

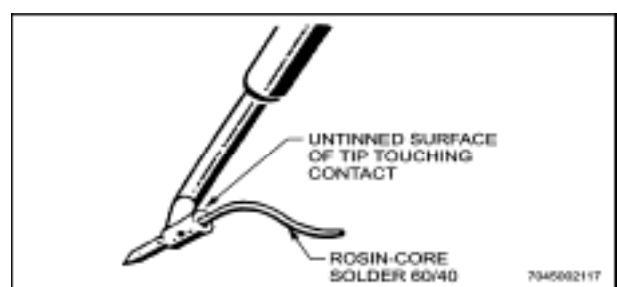


Figure 12-11 Tinning Inside of Contact

- e. To remove dielectric, cut with sharp knife around circumference, not quite through to centre conductor, taking care not to nick or cut strands or otherwise damage conductor. Pull off dielectric.
- f. For connectors using solder pins or sockets, tin centre conductor with soldering iron as shown in Figure 12-10.
- g. Tin inside of solder type pins and sockets with a soldering iron, as shown in Figure 12-11. (Use untinned face of tip to prevent depositing solder on outside of contact.)
- h. Solder pins and sockets to centre conductor with clean well tinned soldering iron using solder per standard J-STD-006.

CAUTION

CONTACT MUST BUTT FLUSH AGAINST DIELECTRIC BEFORE AND AFTER SOLDERING.

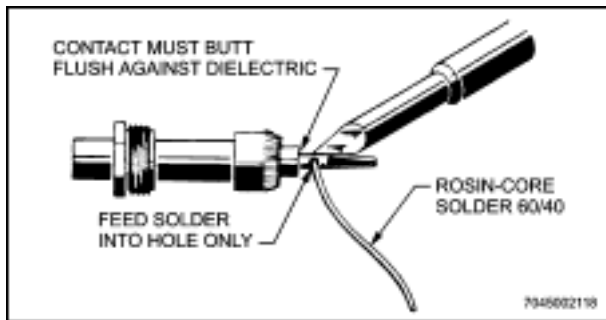


Figure 12-12 Soldering Contact to Coaxial Cable

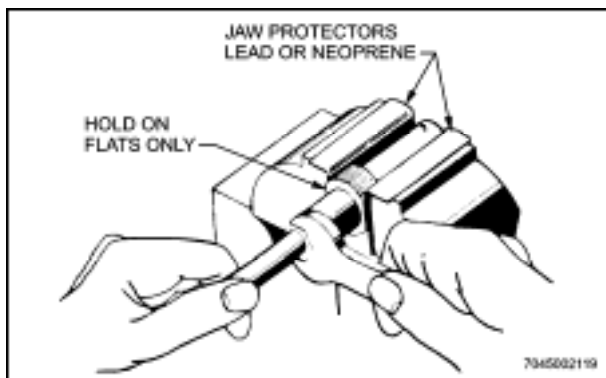


Figure 12-13 Tightening Braid Clamp Nut into Plug or Jack Body

- i. When assembling the connector, always start the clamping nut into the body by hand, then hold the body assembly in a vise using lead or neoprene jaw protectors. (See Figure 12-13.) Hold body only on the flats. Do not use excessive pressure, since the body can be easily distorted. Tighten nut with end spanner.

SOLDERING COAXIAL CABLE TO RF CONNECTORS

Preparation of Work

9. The work to be soldered must be clean and free from oxides. Remove grease by cleaning with Stoddard's solvent or other approved cleaner. Oxides, if not too heavy, are removed by the action of the rosin flux during the soldering operation. Heavily oxidised wire cannot be cleaned by the rosin flux and should be discarded.

Selection of Soldering Iron

10. For good soldering, it is important to select a soldering iron of the proper size and heat capacity. For soldering coaxial cable to RF connectors, use an iron with a heating element rated at 65 to 100 watts, and a tip of about 0.25 inch (6.3mm) in diameter. The soldering tip should be shaped as shown in Figure 12-14. Maintain this shape by dressing the tip with a mill smooth file. Make sure the soldering iron is clean, smooth, and well tinned. See Section 2, Chapter 7 for detailed instructions on care and maintenance of the soldering iron.



Figure 12-14 Correct Shape for Soldering Iron Tip

NOTE

For soldering coaxial cable to RF connectors, tin only one face of the tip so that areas adjacent to that being soldered will not be coated with solder by accident.

Soldering Procedure

11. See Section 2, Chapter 7 for general soldering procedures and precautions. For soldering cable to RF connectors, use only 60/40 tin-lead solder with a core of rosin flux. Heat the parts to be joined, and apply the solder at the junction of the soldering iron tip and the work as shown in Figure 12-12. Do not apply heat

longer than is necessary to melt the solder; excessive heat will swell the dielectric and make it difficult to insert into the body shell. Do not allow solder to flow over the outside of the contact. After the joint has cooled, remove excess flux by wiping with a clean cloth, using denatured alcohol as a solvent if necessary.

BNC AND TNC SERIES CONNECTORS

BNC and TNC Connector Types

12. There are three versions of connectors, differing in the method of attaching coaxial cable to the connector body. (See Figure 12–15.)

- a.** “Crimp Ferrule, Crimp Centre Pin or Socket” consists of connector body,

crimp outer ferrule, and crimp centre pin or socket.

- b.** “Crimp Ferrule, Solder Centre Pin or Socket” consists of connector body, crimp outer ferrule, and solder centre pin or socket.

- c.** “Braid Clamp, Solder Centre Pin or Socket” consists of connector body, nut, gasket clamp, bushings, and solder centre pin or socket.

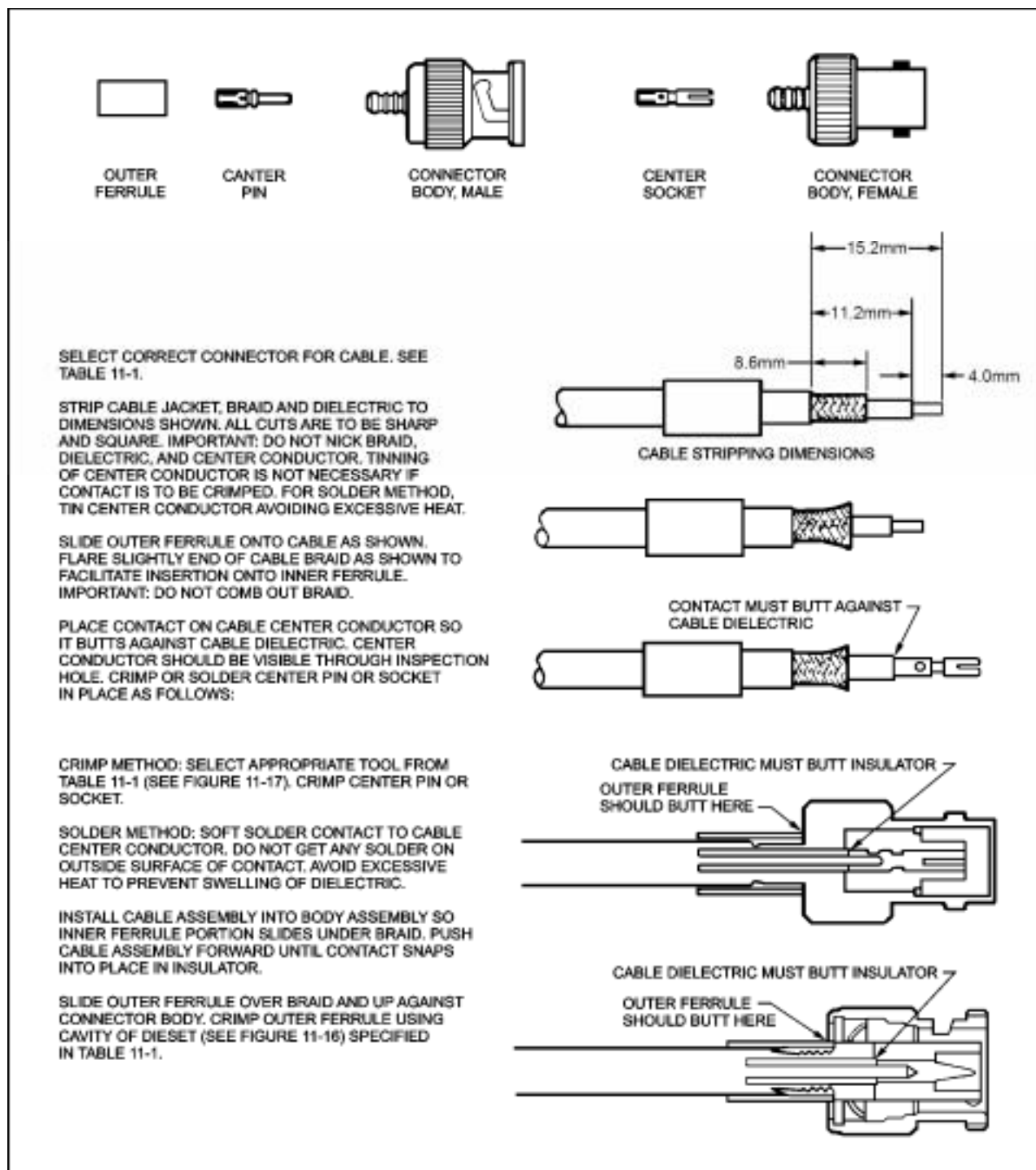


Figure 12-15 Attaching BNC & TNC (M39012) Crimp Connectors to Coaxial Cable

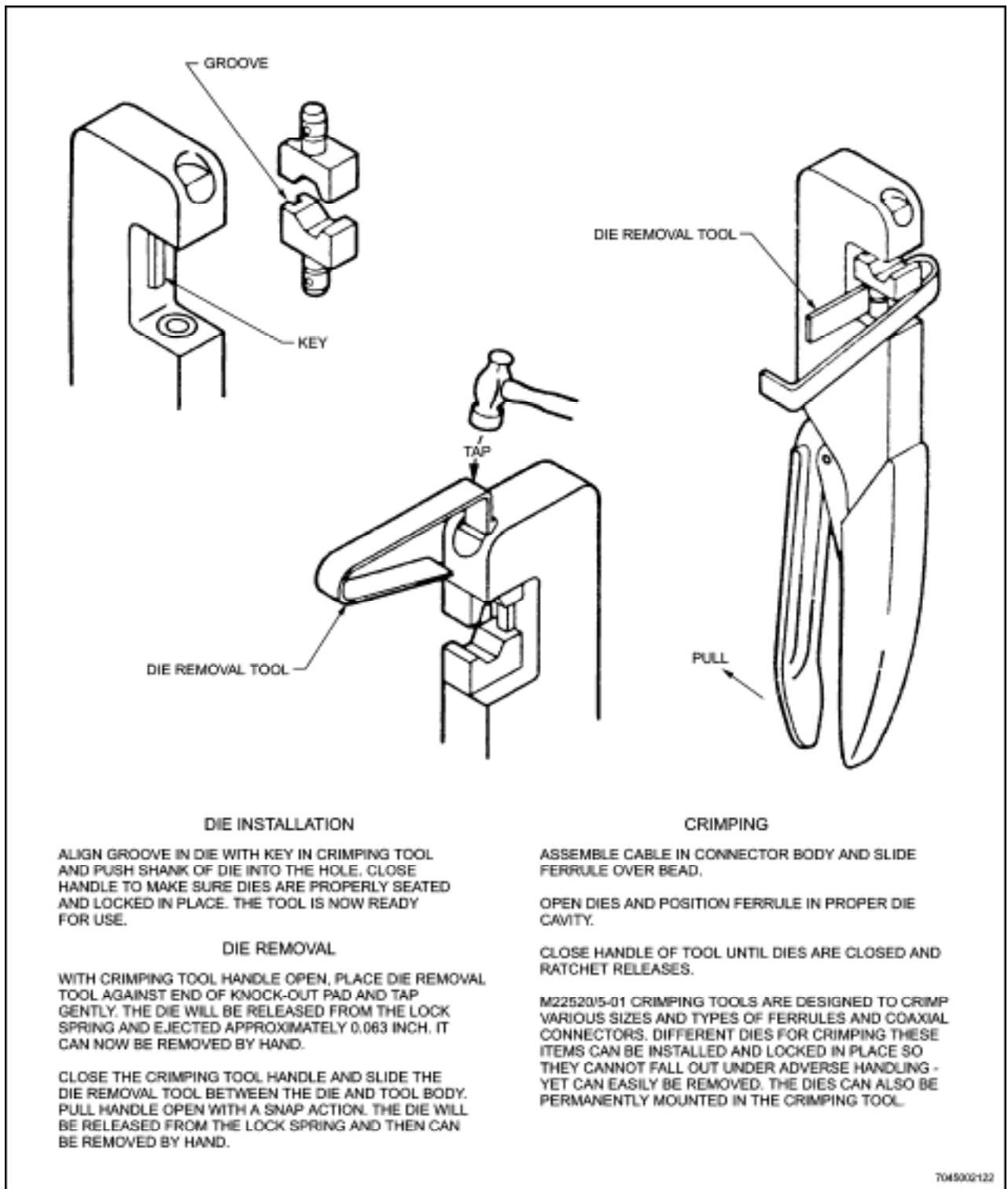


Figure 12-16 M22520/5-01 Crimping Tool and Hex Dies

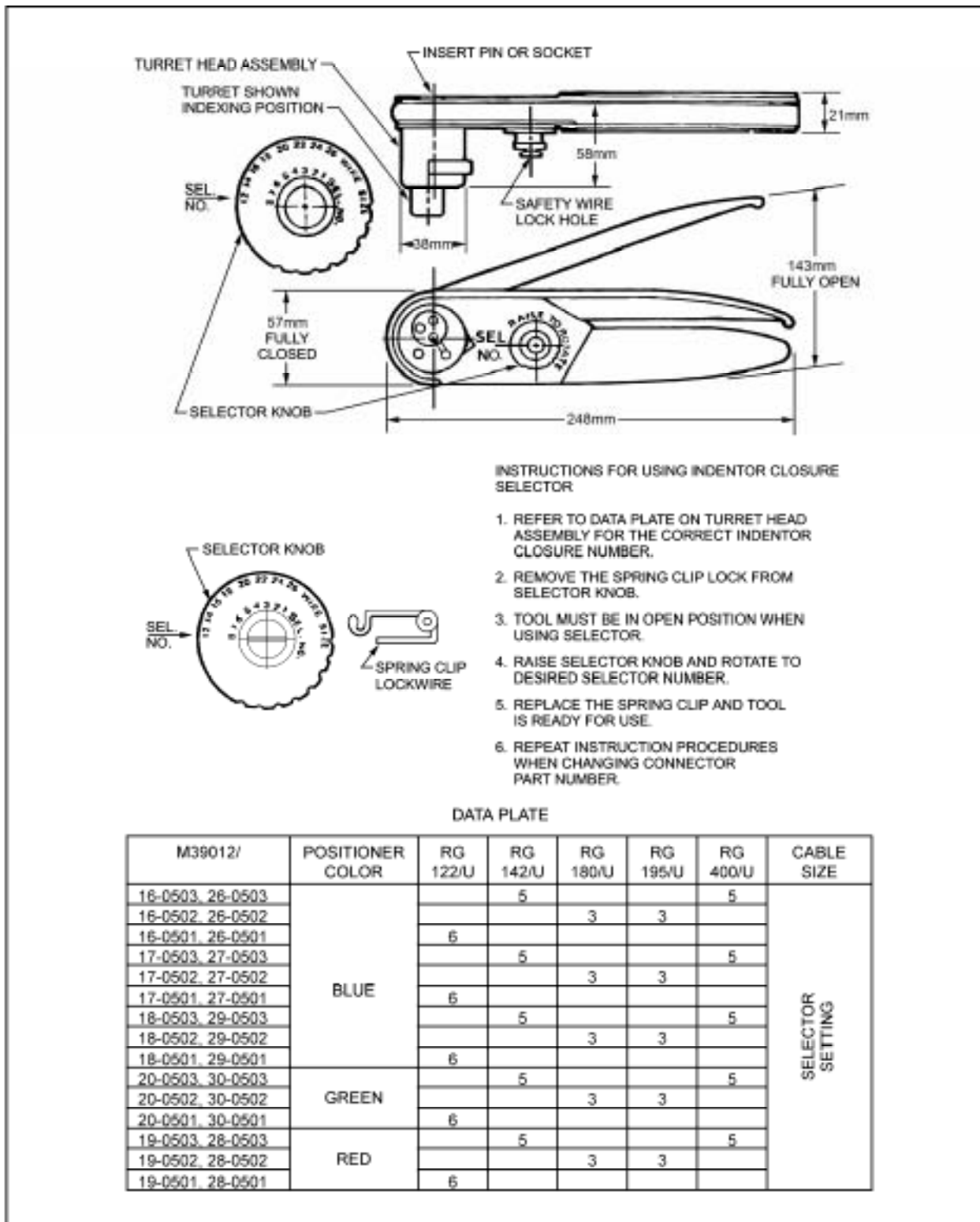


Figure 12-17 M22520/1-01 Crimping Tool and Turret

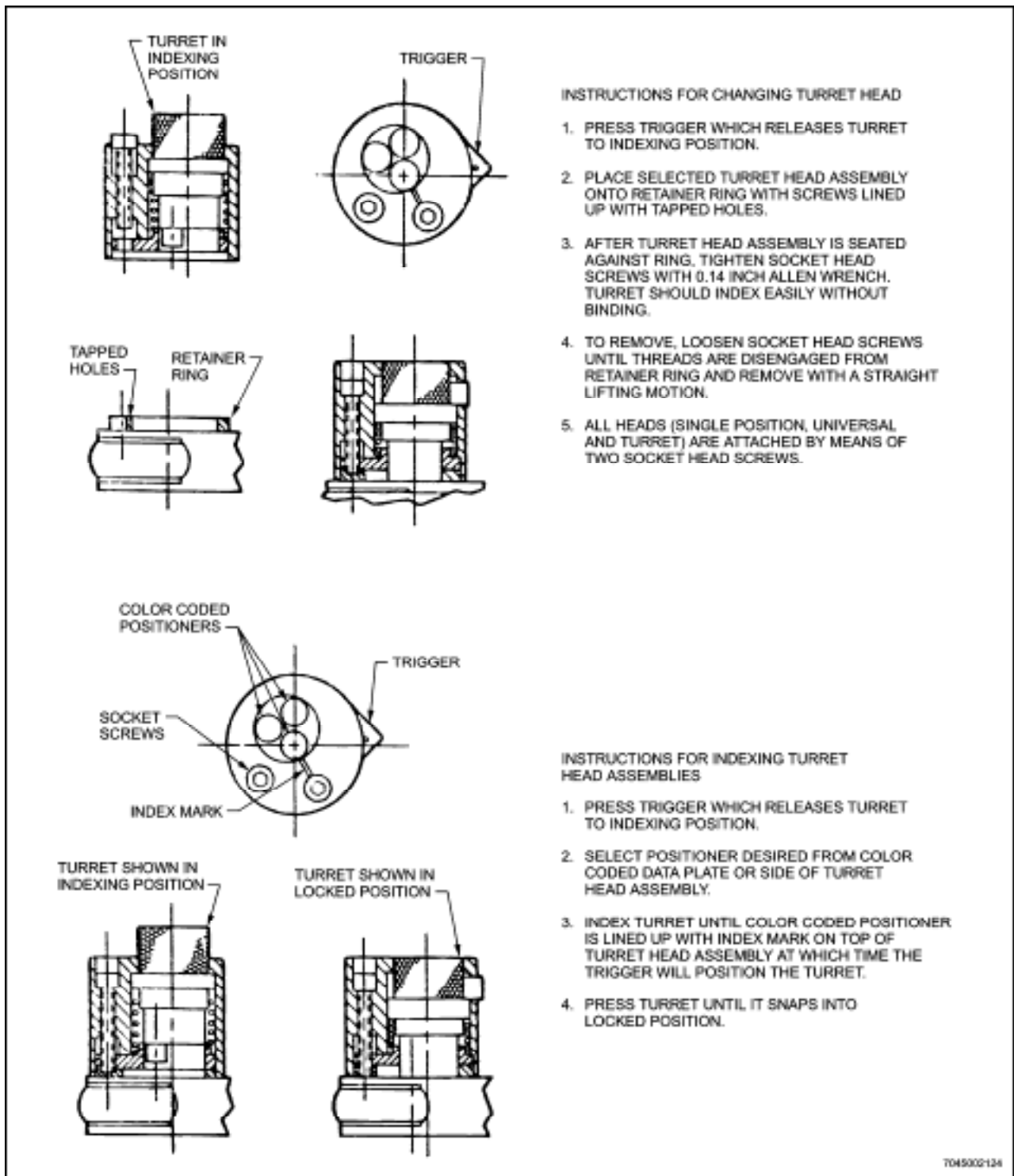


Figure 12-18 M22520/1-01 Crimping Tool Turrets

Table 12–1 BNC & TNC Series M39012 Connectors and Associated Cables (MIL-C-17)

Cable	Connector	Centre Pin or Socket	Tool Crimp Ferrule	Tool Alternate
BNC (Cabled) Plug, Pin, Contact				
RG-58	M39012/16-0504	Positioner M22520/1-12	Cavity A M22520/5-05	Cavity B M22520/5-19
RG-141	M39012/16-0013	Solder	Cavity B M22520/5-19	Cavity A M22520/5-11
RG-303	M39012/16-0013	Solder	Cavity B M22520/5-19	Cavity A M22520/5-11
RG-223	M39012/16-0014	Solder	Cavity B M22520/5-19	Cavity A M22520/5-11
RG-142	M39012/16-0503	Positioner M22520/1-12	Cavity A M22520/5-05	Cavity B M22520/5-19
RG-59	M39012/16-0015	Solder	Cavity A M22520/5-19	Cavity A M22520/5-13
RG-62	M39012/16-0015	Solder	Cavity A M22520/5-19	Cavity A M22520/5-13
RG-140	M39012/16-0015	Solder	Cavity A M22520/5-19	Cavity A M22520/5-13
RG-210	M39012/16-0015	Solder	Cavity A M22520/5-19	Cavity A M22520/5-13
RG-122	M39012/16-0501	Positioner M22520/1-12	Cavity B M22520/5-05	Cavity B M22520/5-41
RG-71	M39012/16-0017	Solder	Cavity A M22520/5-63	Cavity A M22520/5-15
RG-302	M39012/16-0020	Solder	Cavity A M22520/5-19	Cavity A M22520/5-13
RG-400	M39012/16-0503	Positioner M22520/1-12	Cavity A M22520/5-05	Cavity B M22520/5-19
RG-180	M39012/16-0502	Positioner M22520/1-12	Cavity B M22520/5-05	Cavity B M22520/5-41
BNC (Cabled) Plug, Socket, Contact				
RG-58	M39012/17-0504	Positioner M22520/1-12	Cavity A M22520/5-05	Cavity B M22520/5-19
RG-141	M39012/17-0013	Solder	Cavity B M22520/5-19	Cavity A M22520/5-11
RG-303	M39012/17-0013	Solder	Cavity B M22520/5-19	Cavity A M22520/5-11
RG-223	M39012/17-0014	Solder	Cavity B M22520/5-19	Cavity A M22520/5-11
RG-142	M39012/17-0503	Positioner M22520/1-12	Cavity A M22520/5-05	Cavity B M22520/5-19
RG-59	M39012/17-0015	Solder	Cavity A M22520/5-19	Cavity A M22520/5-13
RG-62	M39012/17-0015	Solder	Cavity A M22520/5-19	Cavity A M22520/5-13
RG-140	M39012/17-0015	Solder	Cavity A M22520/5-19	Cavity A M22520/5-13
RG-210	M39012/17-0015	Solder	Cavity A M22520/5-19	Cavity A M22520/5-13
RG-122	M39012/17-0501	Positioner M22520/1-12	Cavity B M22520/5-05	Cavity B M22520/5-41
RG-71	M39012/17-0017	Solder	Cavity A M22520/5-63	Cavity A M22520/5-15
RG-302	M39012/17-0020	Solder	Cavity A M22520/5-19	Cavity A M22520/5-13
RG-400	M39012/17-0503	Positioner M22520/1-12	Cavity A M22520/5-05	Cavity B M22520/5-19
RG-180	M39012/17-0502	Positioner M22520/1-12	Cavity B M22520/5-05	Cavity B M22520/5-41

Table 12–1 BNC & TNC Series M39012 Connectors and Associated Cables (MIL-C-17) (Continued)

Cable	Connector	Centre Pin or Socket	Tool Crimp Ferrule	Tool Alternate
BNC (Cabled) Receptacle, Socket, Contact, Flange Mounted				
RG-58	M39012/18-0504	Positioner M22520/1-12	Cavity A M22520/5-05	Cavity B M22520/5-19
RG-141	M39012/18-0013	Solder	Cavity B M22520/5-19	Cavity A M22520/5-11
RG-303	M39012/18-0013	Solder	Cavity B M22520/5-19	Cavity A M22520/5-11
RG-223	M39012/18-0014	Solder	Cavity B M22520/5-19	Cavity A M22520/5-11
RG-142	M39012/18-0503	Positioner M22520/1-12	Cavity A M22520/5-05	Cavity B M22520/5-19
RG-59	M39012/18-0015	Solder	Cavity A M22520/5-19	Cavity A M22520/5-13
RG-62	M39012/18-0015	Solder	Cavity A M22520/5-19	Cavity A M22520/5-13
RG-140	M39012/18-0015	Solder	Cavity A M22520/5-19	Cavity A M22520/5-13
RG-210	M39012/18-0015	Solder	Cavity A M22520/5-19	Cavity A M22520/5-13
RG-122	M39012/18-0501	Positioner M22520/1-12	Cavity B M22520/5-05	Cavity B M22520/5-41
RG-71	M39012/18-0017	Solder	Cavity A M22520/5-63	Cavity A M22520/5-15
RG-302	M39012/18-0020	Solder	Cavity A M22520/5-19	Cavity A M22520/5-13
RG-400	M39012/18-0503	Positioner M22520/1-12	Cavity A M22520/5-05	Cavity B M22520/5-19
RG-180	M39012/18-0502	Positioner M22520/1-12	Cavity B M22520/5-05	Cavity B M22520/5-41
BNC (Cabled) Receptacle, Socket, Contact, Jam Nut Mounted				
RG-58	M39012/19-0504	Positioner M22520/1-12	Cavity A M22520/5-05	Cavity B M22520/5-19
RG-141	M39012/19-0013	Solder	Cavity B M22520/5-19	Cavity A M22520/5-11
RG-303	M39012/19-0013	Solder	Cavity B M22520/5-19	Cavity A M22520/5-11
RG-223	M39012/19-0011	Solder	Cavity B M22520/5-19	Cavity A M22520/5-11
RG-142	M39012/19-0503	Positioner M22520/1-12	Cavity A M22520/5-05	Cavity B M22520/5-19
RG-59	M39012/19-0015	Solder	Cavity A M22520/5-19	Cavity A M22520/5-13
RG-62	M39012/19-0015	Solder	Cavity A M22520/5-19	Cavity A M22520/5-13
RG-140	M39012/19-0015	Solder	Cavity A M22520/5-19	Cavity A M22520/5-13
RG-210	M39012/19-0015	Solder	Cavity A M22520/5-19	Cavity A M22520/5-13
RG-122	M39012/19-0501	Positioner M22520/1-12	Cavity B M22520/5-05	Cavity B M22520/5-41
RG-71	M39012/19-0017	Solder	Cavity A M22520/5-63	Cavity A M22520/5-15
RG-302	M39012/19-0020	Solder	Cavity A M22520/5-19	Cavity A M22520/5-13
RG-400	M39012/19-0503	Positioner M22520/1-12	Cavity A M22520/5-05	Cavity B M22520/5-19
RG-180	M39012/19-0502	Positioner M22520/1-12	Cavity B M22520/5-05	Cavity B M22520/5-41

Table 12–1 BNC & TNC Series M39012 Connectors and Associated Cables (MIL-C-17) (Continued)

Cable	Connector	Centre Pin	Tool Crimp	Tool
-------	-----------	------------	------------	------

		or Socket	Ferrule	Alternate
BNC (Cabled) Plug, Pin, Contact, Right Angle				
RG-58	M39012/20-0504	Positioner M22520/1-12	Cavity A M22520/5-05	Cavity B M22520/5-19
RG-141	M39012/20-0006	Solder	Cavity B M22520/5-19	Cavity A M22520/5-11
RG-303	M39012/20-0006	Solder	Cavity B M22520/5-19	Cavity A M22520/5-11
RG-223	M39012/20-0007	Solder	Cavity B M22520/5-19	Cavity A M22520/5-11
RG-142	M39012/20-0503	Positioner M22520/1-12	Cavity A M22520/5-05	Cavity B M22520/5-19
RG-122	M39012/20-0501	Positioner M22520/1-12	Cavity B M22520/5-05	Cavity B M22520/5-41
RG-302	M39012/20-0010	Solder	Cavity A M22520/5-19	Cavity A M22520/5-13
RG-400	M39012/20-0503	Positioner M22520/1-12	Cavity A M22520/5-05	Cavity B M22520/5-19
RG-180	M39012/20-0502	Positioner M22520/1-12	Cavity B M22520/5-05	Cavity B M22520/5-41
TNC (Cabled) Plug, Pin, Contact				
RG-58	M39012/26-0504	Positioner M22520/1-12	Cavity A M22520/5-05	Cavity B M22520/5-19
RG-316	M39012/26-0022	Solder	Cavity B M22520/5-05	Cavity A M22520/5-41
RG-303	M39012/26-0010	Solder	Cavity B M22520/5-19	Cavity A M22520/5-11
RG-223	M39012/26-0011	Solder	Cavity B M22520/5-19	Cavity A M22520/5-11
RG-142	M39012/26-0503	Positioner M22520/1-12	Cavity A M22520/5-05	Cavity B M22520/5-19
RG-59	M39012/26-0012	Solder	Cavity A M22520/5-19	Cavity A M22520/5-13
RG-62	M39012/26-0012	Solder	Cavity A M22520/5-19	Cavity A M22520/5-13
RG-174	M39012/26-0022	Solder	Cavity B M22520/5-05	Cavity B M22520/5-41
RG-210	M39012/26-0012	Solder	Cavity A M22520/5-19	Cavity A M22520/5-13
RG-122	M39012/26-0501	Positioner M22520/1-12	Cavity B M22520/5-05	Cavity B M22520/5-41
RG-71	M39012/26-0014	Solder	Cavity A M22520/5-63	Cavity A M22520/5-15
RG-302	M39012/26-0021	Solder	Cavity A M22520/5-19	Cavity A M22520/5-13
RG-400	M39012/26-0503	Positioner M22520/1-12	Cavity A M22520/5-05	Cavity B M22520/5-19
RG-180	M39012/26-0502	Positioner M22520/1-12	Cavity B M22520/5-05	Cavity B M22520/5-41

Table 12–1 BNC & TNC Series M39012 Connectors and Associated Cables (MIL-C-17) (Continued)

Cable	Connector	Centre Pin or Socket	Tool Crimp Ferrule	Tool Alternate
TNC (Cabled) Plug, Socket, Contact				
RG-58	M39012/27-0504	Positioner M22520/1-12	Cavity A M22520/5-05	Cavity B M22520/5-19
RG-316	M39012/27-0022	Solder	Cavity B M22520/5-05	Cavity B M22520/5-41
RG-303	M39012/27-0010	Solder	Cavity B M22520/5-19	Cavity A M22520/5-11
RG-223	M39012/27-0011	Solder	Cavity B M22520/5-19	Cavity A M22520/5-11
RG-142	M39012/27-0503	Positioner M22520/1-12	Cavity A M22520/5-05	Cavity B M22520/5-19
RG-59	M39012/27-0012	Solder	Cavity A M22520/5-19	Cavity A M22520/5-13
RG-62	M39012/27-0012	Solder	Cavity A M22520/5-19	Cavity A M22520/5-13
RG-174	M39012/27-0022	Solder	Cavity B M22520/5-05	Cavity B M22520/5-41
RG-210	M39012/27-0022	Solder	Cavity A M22520/5-19	Cavity A M22520/5-13
RG-122	M39012/27-0501	Positioner M22520/1-12	Cavity B M22520/5-05	Cavity B M22520/5-41
RG-71	M39012/27-0014	Solder	Cavity A M22520/5-63	Cavity A M22520/5-15
RG-302	M39012/27-0021	Solder	Cavity A M22520/5-19	Cavity A M22520/5-13
RG-400	M39012/27-0503	Positioner M22520/1-12	Cavity A M22520/5-05	Cavity B M22520/5-19
RG-180	M39012/27-0502	Positioner M22520/1-12	Cavity B M22520/5-05	Cavity B M22520/5-41
TNC (Cabled) Receptacle, Socket, Contact, Jam Nut Mounted				
RG-58	M39012/28-0504	Positioner M22520/1-12	Cavity A M22520/5-05	Cavity B M22520/5-19
RG-316	M39012/28-0022	Solder	Cavity B M22520/5-05	Cavity B M22520/5-41
RG-303	M39012/28-0010	Solder	Cavity B M22520/5-19	Cavity A M22520/5-11
RG-223	M39012/28-0011	Solder	Cavity B M22520/5-19	Cavity A M22520/5-11
RG-142	M39012/28-0503	Positioner M22520/1-12	Cavity A M22520/5-05	Cavity B M22520/5-19
RG-59	M39012/28-0012	Solder	Cavity A M22520/5-19	Cavity A M22520/5-13
RG-62	M39012/28-0012	Solder	Cavity A M22520/5-19	Cavity A M22520/5-13
RG-174	M39012/28-0022	Solder	Cavity A M22520/5-05	Cavity B M22520/5-41
RG-210	M39012/28-0012	Solder	Cavity A M22520/5-19	Cavity A M22520/5-13
RG-122	M39012/28-0501	Positioner M22520/1-12	Cavity B M22520/5-05	Cavity B M22520/5-41
RG-71	M39012/28-0014	Solder	Cavity A M22520/5-63	Cavity A M22520/5-15
RG-302	M39012/28-0021	Solder	Cavity A M22520/5-19	Cavity A M22520/5-13
RG-400	M39012/28-0503	Positioner M22520/1-12	Cavity A M22520/5-05	Cavity B M22520/5-19
RG-180	M39012/28-0502	Positioner M22520/1-12	Cavity B M22520/5-05	Cavity B M22520/5-41

Table 12–1 BNC & TNC Series M39012 Connectors and Associated Cables (MIL-C-17) (Continued)

Cable	Connector	Centre Pin or Socket	Tool Crimp Ferrule	Tool Alternate
TNC (Cabled) Receptacle, Socket, Contact, Flange Mounted				
RG-58	M39012/29-0504	Positioner M22520/1-12	Cavity A M22520/5-05	Cavity B M22520/5-19
RG-316	M39012/29-0022	Solder	Cavity B M22520/5-05	Cavity B M22520/5-41
RG-303	M39012/29-0010	Solder	Cavity B M22520/5-19	Cavity A M22520/5-11
RG-223	M39012/29-0011	Solder	Cavity B M22520/5-19	Cavity A M22520/5-11
RG-142	M39012/29-0503	Positioner M22520/1-12	Cavity A M22520/5-05	Cavity B M22520/5-19
RG-59	M39012/29-0012	Solder	Cavity A M22520/5-19	Cavity A M22520/5-13
RG-62	M39012/29-0012	Solder	Cavity A M22520/5-19	Cavity A M22520/5-13
RG-174	M39012/29-0022	Solder	Cavity B M22520/5-05	Cavity B M22520/5-41
RG-210	M39012/29-0012	Solder	Cavity A M22520/5-19	Cavity A M22520/5-13
RG-122	M39012/29-0501	Positioner M22520/1-12	Cavity B M22520/5-05	Cavity B M22520/5-41
RG-71	M39012/29-0014	Solder	Cavity A M22520/5-63	Cavity A M22520/5-15
RG-302	M39012/29-0021	Solder	Cavity A M22520/5-19	Cavity A M22520/5-13
RG-400	M39012/29-0503	Positioner M22520/1-12	Cavity A M22520/5-05	Cavity B M22520/5-19
RG-180	M39012/29-0502	Positioner M22520/1-12	Cavity B M22520/5-05	Cavity B M22520/5-41
TNC (Cabled) Plug, Pin, Contact, Right Angle				
RG-58	M39012/30-0504	Positioner M22520/1-12	Cavity A M22520/5-05	Cavity B M22520/5-19
RG-316	M39012/30-0022	Solder	Cavity B M22520/5-05	Cavity B M22520/5-41
RG-303	M39012/30-0010	Solder	Cavity B M22520/5-19	Cavity A M22520/5-11
RG-223	M39012/30-0011	Solder	Cavity B M22520/5-19	Cavity A M22520/5-11
RG-142	M39012/30-0503	Positioner M22520/1-12	Cavity A M22520/5-05	Cavity B M22520/5-19
RG-59	M39012/30-0012	Solder	Cavity A M22520/5-19	Cavity A M22520/5-13
RG-62	M39012/30-0012	Solder	Cavity A M22520/5-19	Cavity A M22520/5-13
RG-174	M39012/30-0022	Solder	Cavity B M22520/5-05	Cavity B M22520/5-41
RG-210	M39012/30-0012	Solder	Cavity A M22520/5-19	Cavity A M22520/5-13
RG-122	M39012/30-0501	Positioner M22520/1-12	Cavity B M22520/5-05	Cavity B M22520/5-41
RG-71	M39012/30-0014	Solder	Cavity A M22520/5-63	Cavity A M22520/5-15
RG-302	M39012/30-0021	Solder	Cavity A M22520/5-19	Cavity A M22520/5-13
RG-400	M39012/30-0503	Positioner M22520/1-12	Cavity A M22520/5-05	Cavity B M22520/5-19
RG-180	M39012/30-0502	Positioner M22520/1-12	Cavity B M22520/5-05	Cavity B M22520/5-41

Attaching Improved BNC Connectors to Coaxial Cable

13. When attaching improved BNC connectors to coaxial cable (see Figure 12-19), use the following procedure:

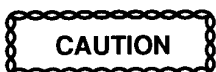
NOTE

While attaching connector, observe all general precautions and procedures listed in paragraphs 7 and 8.



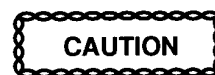
DO NOT NICK OR DAMAGE SHIELD.

- a. Remove 7.8mm of outer jacket, exposing shield.
- b. Slide nut and gasket (V-groove away from nut), in that order, onto jacket. Slide sleeve clamp over tapered shield until inside shoulder of clamp butts flush against cut end of jacket.
- c. Comb out shield. Use care to prevent breaking shield strands.
- d. Strip dielectric 4.7mm from edge of jacket to edge of dielectric exposing centre conductor.



DO NOT NICK OR DAMAGE CENTRE CONDUCTOR.

- e. Comb shield back smoothly over sleeve clamp, and trim to 2.3mm with scissors.
- f. Trim dielectric to 3mm from shield, and cut off centre conductor to 3mm from edge of dielectric.
- g. Tin centre conductor as shown in Figure 12-10. Tin inside of pin or socket as shown in Figure 12-11.
- h. Slip contact over centre conductor so that contact butts flush against dielectric. For RG-62/U and 71/U, add bushing. Solder, using a clean, well tinned, soldering iron. Contact must still be flush against dielectric after solder has cooled; if it is not, remake the joint. (See Figure 12-12.)



ENSURE THAT CORRECT CONTACT IS USED. A MALE CONTACT ALWAYS GOES INTO A PLUG BODY, AND A FEMALE CONTACT ALWAYS GOES INTO A JACK BODY.

- i. Push cable assembly into connector body as far as it will go. Make sure gasket is properly seated, with sharp edge of sleeve clamp entering gasket groove. Slide nut into connector body and fasten in vice. Start nut by hand and tighten with end spanner until enough pressure is applied to make a good seal by splitting the gasket. (See Figure 12-13.)

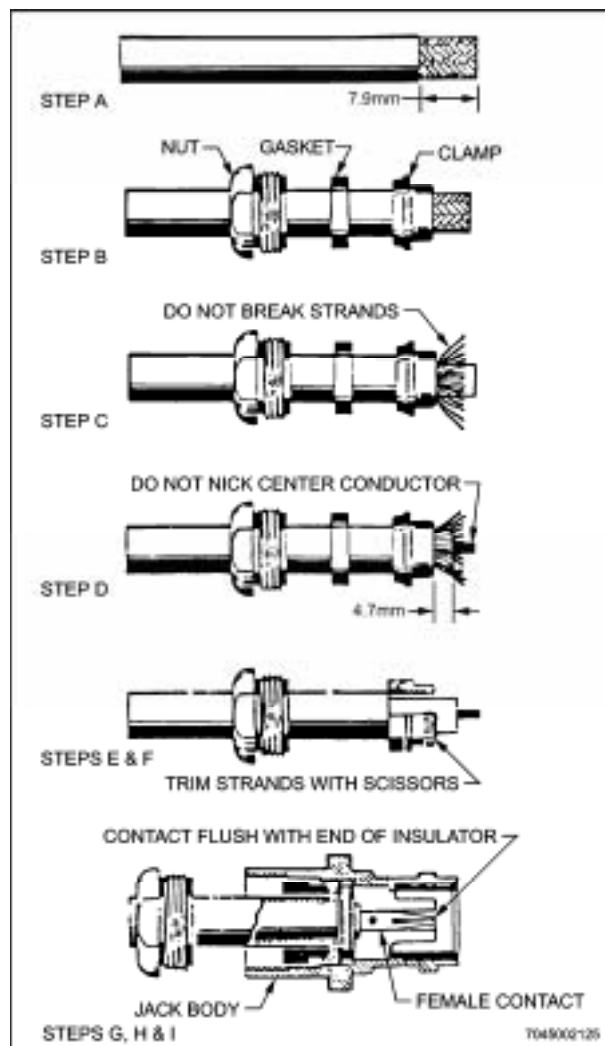


Figure 12-19 Attaching Improved BNC Connectors to Coaxial Cable

Attaching BNC Connectors with Captivated Contacts to Coaxial Cable

14. When attaching BNC connectors with captivated contacts to coaxial cable (see Figure 12-20), follow this procedure:

NOTE

While attaching connector, observe all general precautions and procedures listed in paragraphs 7 and 8.

- a. Remove 9.5mm of outer jacket, exposing shield, for all except plugs 31-301 and 31-304; strip jacket for these plugs 10.7mm. Disassemble nut, grooved gasket, and sleeve clamp from plug or jack body. Slide nut and grooved gasket (V-groove away from nut), in that order, over shield onto jacket.

CAUTION

DO NOT NICK OR DAMAGE SHIELD.

- b. Comb out shield. Use care to prevent breaking shield strands.
- c. Cut off cable dielectric to 4.7mm for cables RG-55/U, 58/U, 59/U, 140/U, 141/U, and 142/U. Cut to 0.156 inch (4mm) for cables RG-62/U and RG-71/U.

CAUTION

DO NOT NICK OR DAMAGE CENTRE CONDUCTOR.

- d. Comb shield back smoothly over sleeve clamp and trim to proper length; form evenly over clamp. Tin centre conductor as shown in Figure 12-10. Slide on contact. These parts must butt as shown. When attaching to cables RG-62/U and RG-71/U, add insulator bushing.
- e. Solder pin or socket to centre conductor (see Figure 12-14). Remove excess flux and solder from outside of contact.
- f. Slide front insulator over contact and butt against contact shoulder. Do not reverse direction of insulator.
- g. Insert cable assembly into connector body. Make sure that the sharp edge of

the clamp seats properly in the gasket. Tighten the nut, holding the body stationary. (See Figure 12-13.)

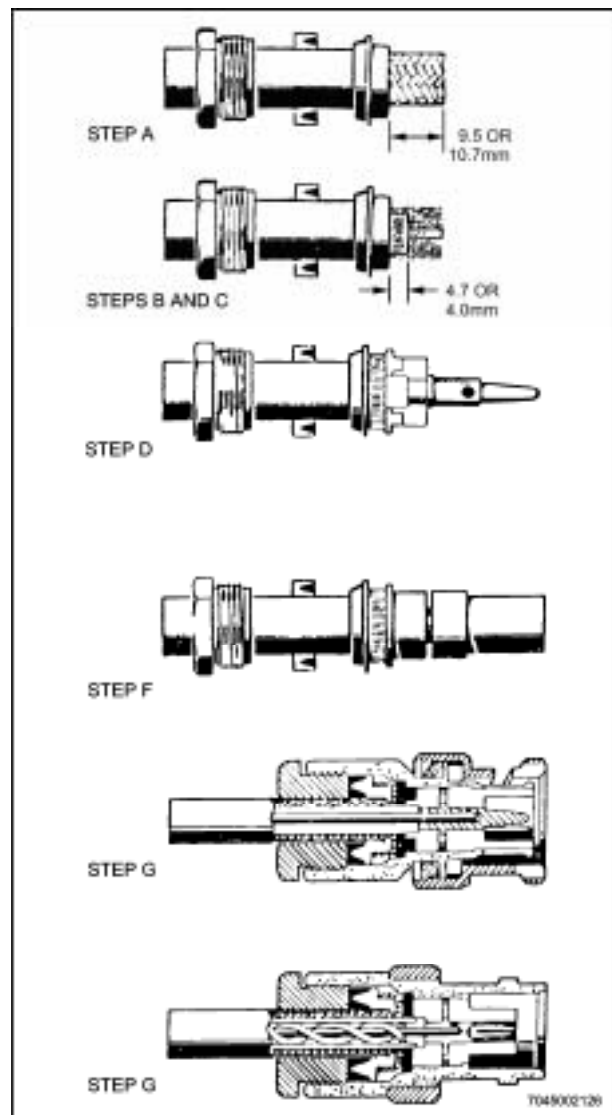


Figure 12-20 Attaching BNC Connectors With Captivated Contacts to Coaxial Cable

C AND SC SERIES CONNECTORS

15. There are three versions of C and SC connectors, differing in the method of attaching coaxial cable to the connector body.

Attaching Series C and SC Crimp Connectors to Coaxial Cable

16. When attaching C and SC connectors to coaxial cable (see Figure 12-21), use the following procedure:

- a. Select correct connector for cable. See Table 12-2.



DO NOT NICK OR DAMAGE BRAID, DIELECTRIC, OR CENTRE CONDUCTOR.

- b. Strip cable jacket, braid, and dielectric to dimensions shown $\pm 0.25\text{mm}$ (see Figure 12-22). All cuts are to be sharp and square. Tinning of centre conductor is not necessary if contact is to be crimped. For solder method, tin centre conductor avoiding excessive heat. Slide outer ferrule onto cable as shown.
- c. As shown, (see Figure 12-22) flare end of cable braid slightly to facilitate insertion onto inner ferrule. Do not comb out braid.
- d. Place contact on cable centre conductor so that it butts against cable dielectric.

Centre conductor should be visible through inspection hole. Crimp or solder the pin or socket in place as follows:

- e. **Crimp Method.** Select appropriate tool from Table 12-2. Crimp centre pin or socket. (See Figure 12-16.)
- f. **Solder Method.** Soft solder contact to cable centre conductor. Do not get any solder on outside surfaces of contact. Avoid excessive heat to prevent swelling of dielectric.
- g. Install cable assembly into body assembly so that inner ferrule portion slides under braid. Push cable assembly forward until contact snaps into place in insulator. Slide outer ferrule over braid and up against connector body. Crimp outer ferrule using cavity of die set specified in Table 12-2. (See Figure 12-16.)

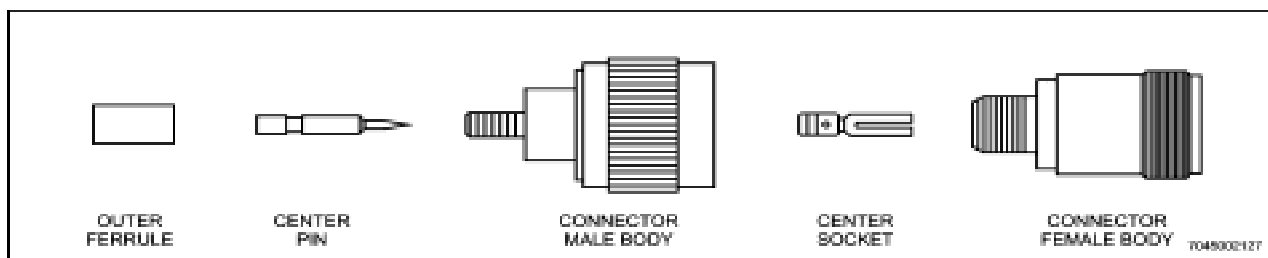


Figure 12-21 Attaching Series C and SC Connectors to Coaxial Cable

Table 12-2 Series C and SC M39012 Connectors and Associated Cables (MIL-C-17)

Cable	Connector	Centre Pin or Socket	Tool Crimp Ferrule	Tool Alternate
C (Cabled) Plug, Pin, Contact				
RG-212	M39012/06-0027	Solder	Cavity A M22520/5-35	Cavity A M22520/5-29
RG-304	M39012/06-0027	Solder	Cavity A M22520/5-35	Cavity A M22520/5-29
RG-213	M39012/06-0028	Solder	Cavity A M22520/5-61	Cavity A M22520/5-25
RG-214	M39012/06-0029	Solder	Cavity A M22520/5-61	Cavity A M22520/5-25
RG-165	M39012/06-0028	Solder	Cavity A M22520/5-61	Cavity A M22520/5-25
RG-225	M39012/06-0030	Solder	Cavity A M22520/5-61	Cavity A M22520/5-25
RG-11	M39012/06-0031	Solder	Cavity A M22520/5-61	Cavity A M22520/5-25

Table 12–2 Series C and SC M39012 Connectors and Associated Cables (MIL-C-17) (Continued)

Cable	Connector	Centre Pin or Socket	Tool Crimp Ferrule	Tool Alternate
C (Cabled) Plug, Socket, Contact				
RG-212	M39012/07-0014	Solder	Cavity A M22520/5-35	Cavity A M22520/5-29
RG-304	M39012/07-0014	Solder	Cavity A M22520/5-35	Cavity A M22520/5-29
RG-213	M39012/07-0011	Solder	Cavity A M22520/5-61	Cavity A M22520/5-25
RG-214	M39012/07-0012	Solder	Cavity A M22520/5-61	Cavity A M22520/5-25
RG-165	M39012/07-0011	Solder	Cavity A M22520/5-61	Cavity A M22520/5-25
RG-225	M39012/07-0013	Solder	Cavity A M22520/5-61	Cavity A M22520/5-25
RG-11	M39012/07-0015	Solder	Cavity A M22520/5-61	Cavity A M22520/5-25
C (Cabled) Receptacle, Socket, Contact, Flange Mounted				
RG-212	M39012/08-0013	Solder	Cavity A M22520/5-35	Cavity A M22520/5-29
RG-304	M39012/08-0013	Solder	Cavity A M22520/5-35	Cavity A M22520/5-29
RG-213	M39012/08-0010	Solder	Cavity A M22520/5-61	Cavity A M22520/5-25
RG-214	M39012/08-0011	Solder	Cavity A M22520/5-61	Cavity A M22520/5-25
RG-165	M39012/08-0010	Solder	Cavity A M22520/5-61	Cavity A M22520/5-25
RG-225	M39012/08-0012	Solder	Cavity A M22520/5-61	Cavity A M22520/5-25
C (Cabled) Pin, Contact, Right Angle				
RG-213	M39012/10-0006	Solder	Cavity A M22520/5-61	Cavity A M22520/5-25
RG-214	M39012/10-0007	Solder	Cavity A M22520/5-61	Cavity A M22520/5-25
RG-165	M39012/10-0006	Solder	Cavity A M22520/5-61	Cavity A M22520/5-25
RG-225	M39012/10-0008	Solder	Cavity A M22520/5-61	Cavity A M22520/5-25
C (Cabled) Socket, Contact, Receptacle, Jam Nut Rear Mounted				
RG-212	M39012/11-0012	Solder	Cavity A M22520/5-35	Cavity A M22520/5-29
RG-304	M39012/11-0012	Solder	Cavity A M22520/5-35	Cavity A M22520/5-29
RG-213	M39012/11-0013	Solder	Cavity A M22520/5-61	Cavity A M22520/5-25
RG-214	M39012/11-0014	Solder	Cavity A M22520/5-61	Cavity A M22520/5-25
RG-165	M39012/11-0013	Solder	Cavity A M22520/5-61	Cavity A M22520/5-25
RG-225	M39012/11-0015	Solder	Cavity A M22520/5-61	Cavity A M22520/5-25
RG-11	M39012/11-0016	Solder	Cavity A M22520/5-61	Cavity A M22520/5-25

Table 12–2 Series C and SC M39012 Connectors and Associated Cables (MIL-C-17) (Continued)

Cable	Connector	Centre Pin or Socket	Tool Crimp Ferrule	Tool Alternate
SC (Cabled) Plug, Pin, Contact				
RG-212	M39012/35-0010	Solder	Cavity A M22520/5-35	Cavity A M22520/5-29
RG-304	M39012/35-0010	Solder	Cavity A M22520/5-35	Cavity A M22520/5-29
RG-213	M39012/35-0502	M22520/1-14	Cavity A M22520/5-61	Cavity A M22520/5-25
RG-214	M39012/35-0501	M22520/1-14	Cavity A M22520/5-61	Cavity A M22520/5-25
RG-165	M39012/35-0011	Solder	Cavity A M22520/5-61	Cavity A M22520/5-25
RG-225	M39012/35-0501	M22520/1-14	Cavity A M22520/5-61	Cavity A M22520/5-25
RG-11	M39012/35-0013	Solder	Cavity A M22520/5-61	Cavity A M22520/5-25
RG-144	M39012/35-0013	Solder	Cavity A M22520/5-61	Cavity A M22520/5-25
RG-400	M39012/35-0503	M22520/1-14	Cavity B M22520/5-19	Cavity A M22520/5-57
RG-142	M39012/35-0503	M22520/1-14	Cavity B M22520/5-19	Cavity A M22520/5-57
RG-393	M39012/35-0501	M22520/1-14	Cavity A M22520/5-61	Cavity A M22520/5-25
SC (Cabled) Plug, Socket, Contact				
RG-212	M39012/36-0009	Solder	Cavity A M22520/5-35	Cavity A M22520/5-29
RG-304	M39012/36-0009	Solder	Cavity A M22520/5-35	Cavity A M22520/5-29
RG-213	M39012/36-0502	M22520/1-14	Cavity A M22520/5-61	Cavity A M22520/5-25
RG-214	M39012/36-0501	M22520/1-14	Cavity A M22520/5-61	Cavity A M22520/5-25
RG-165	M39012/36-0007	Solder	Cavity A M22520/5-61	Cavity A M22520/5-25
RG-225	M39012/36-0501	M22520/1-14	Cavity A M22520/5-61	Cavity A M22520/5-25
RG-11	M39012/36-0010	Solder	Cavity A M22520/5-61	Cavity A M22520/5-25
RG-144	M39012/36-0010	Solder	Cavity A M22520/5-61	Cavity A M22520/5-25
RG-400	M39012/36-0503	M22520/1-14	Cavity B M22520/5-19	Cavity A M22520/5-57
RG-142	M39012/36-0503	M22520/1-14	Cavity B M22520/5-19	Cavity A M22520/5-57
RG-393	M39012/36-0501	M22520/1-14	Cavity A M22520/5-61	Cavity A M22520/5-25

Table 12–2 Series C and SC M39012 Connectors and Associated Cables (MIL-C-17) (Continued)

Cable	Connector	Centre Pin or Socket	Tool Crimp Ferrule	Tool Alternate
SC (Cabled) Receptacle, Socket, Contact, Flange Mounted Rear				
RG-212	M39012/38-0008	Solder	Cavity A M22520/5-35	Cavity A M22520/5-29
RG-304	M39012/38-0008	Solder	Cavity A M22520/5-35	Cavity A M22520/5-29
RG-213	M39012/38-0502	M22520/1-14	Cavity A M22520/5-61	Cavity A M22520/5-25
RG-214	M39012/38-0501	M22520/1-14	Cavity A M22520/5-61	Cavity A M22520/5-25
RG-165	M39012/38-0006	Solder	Cavity A M22520/5-61	Cavity A M22520/5-25
RG-225	M39012/38-0501	M22520/1-14	Cavity A M22520/5-61	Cavity A M22520/5-25
RG-400	M39012/38-0503	M22520/1-14	Cavity B M22520/5-19	Cavity A M22520/5-57
RG-142	M39012/38-0503	M22520/1-14	Cavity B M22520/5-19	Cavity A M22520/5-57
RG-393	M39012/38-0501	M22520/1-14	Cavity A M22520/5-61	Cavity A M22520/5-25
SC (Cabled) Plug, Pin, Contact, Right Angle				
RG-213	M39012/39-0502	M22520/1-13	Cavity A M22520/5-61	Cavity A M22520/5-25
RG-214	M39012/39-0501	M22520/1-13	Cavity A M22520/5-61	Cavity A M22520/5-25
RG-165	M39012/39-0004	Solder	Cavity A M22520/5-61	Cavity A M22520/5-25
RG-225	M39012/39-0501	M22520/1-13	Cavity A M22520/5-61	Cavity A M22520/5-25
RG-400	M39012/39-0503	M22520/1-13	Cavity B M22520/5-19	Cavity A M22520/5-57
RG-142	M39012/39-0503	M22520/1-13	Cavity B M22520/5-19	Cavity A M22520/5-57
RG-393	M39012/39-0501	M22520/1-13	Cavity A M22520/5-61	Cavity A M22520/5-25
SC (Cabled) Receptacle, Socket, Contact, Jam Nut Rear Mounted				
RG-212	M39012/40-0014	Solder	Cavity A M22520/5-35	Cavity A M22520/5-29
RG-304	M39012/40-0014	Solder	Cavity A M22520/5-35	Cavity A M22520/5-29
RG-213	M39012/40-0502	M22520/1-14	Cavity A M22520/5-61	Cavity A M22520/5-25
RG-214	M39012/40-0501	M22520/1-14	Cavity A M22520/5-61	Cavity A M22520/5-25
RG-217	M39012/40-0018	Solder	M22520/5-27	
RG-165	M39012/40-0015	Solder	Cavity A M22520/5-61	Cavity A M22520/5-25
RG-225	M39012/40-0501	M22520/1-14	Cavity A M22520/5-61	Cavity A M22520/5-25
RG-11	M39012/40-0021	Solder	Cavity A M22520/5-61	Cavity A M22520/5-25
RG-144	M39012/40-0021	Solder	Cavity A M22520/5-61	Cavity A M22520/5-25
RG-216	M39012/40-0017	Solder	Cavity A M22520/5-61	Cavity A M22520/5-25
RG-400	M39012/40-0503	M22520/1-14	Cavity B M22520/5-19	Cavity A M22520/5-57

Table 12–2 Series C and SC M39012 Connectors and Associated Cables (MIL-C-17) (Continued)

Cable	Connector	Centre Pin	Tool Crimp	Tool
-------	-----------	------------	------------	------

		or Socket	Ferrule	Alternate
SC (Cabled) Receptacle, Socket, Contact, Jam Nut Rear Mounted (Continued)				
RG-142	M39012/40-0503	M22520/1-14	Cavity B M22520/5-19	Cavity A M22520/5-57
RG-393	M39012/40-0501	M22520/1-14	Cavity A M22520/5-61	Cavity A M22520/5-25

HN SERIES CONNECTORS

HN Connector Types

17. There are two versions of HN connectors with differing methods of attaching coaxial cable to the connector body. See Figure 12-3 for typical examples of HN connectors. Table 12-3 lists the more common connectors in the HN series and shows the coaxial cables associated with each.

NOTE

The HN series of RF connectors are used for replacement purposes only.

- a. **Improved Version.** Consists of a plug or jack body assembled to coaxial cable with nut, gasket, and braid clamp (see Figure 12-23). Plug UC-59E/U and jack UG-60E/U are typical of this version.
- b. **Captivated Contact Version** Consists of a plug or jack body assembled to coaxial cable with nut, gland, gasket, clamp, sleeve, and front and rear insulators (see Figure 12-24). Plug UG-1213/U and jack UG-1214/U are typical of this version.

Attaching Improved HN Connectors to Coaxial Cable

18. When attaching improved HN connectors to coaxial cable (see Figure 12-25), use the following procedure:

NOTE

While attaching connector, observe all general precautions and procedures listed in paragraphs 7 and 8.

- a. Disassemble nut, grooved gasket and braid clamp from plug or jack body. (See Figure 12-23.)
- b. Remove 17.5mm from outer jacket, exposing shield. Slide nut and gasket, in that order, over shield onto jacket. Make sure that groove in gasket faces away from the nut.

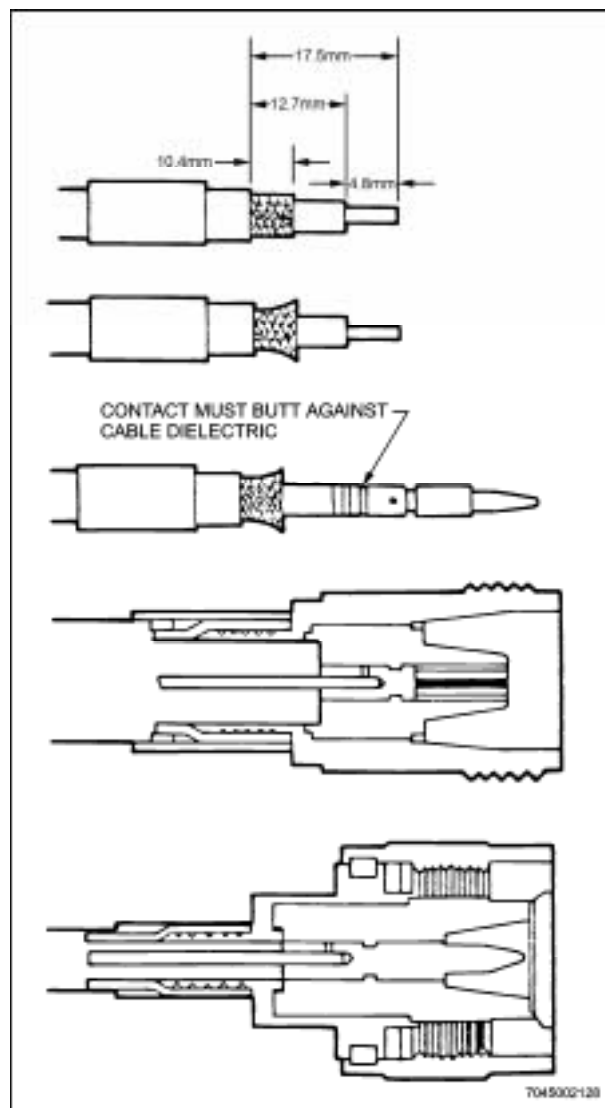
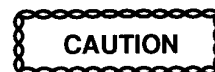


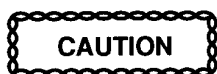
Figure 12-22 Cable Crimping Instructions



DO NOT NICK OR DAMAGE SHIELD OR CENTRE CONDUCTOR

- c. Comb out shield and strip dielectric 6.3mm.
- d. Slide clamp over shield until inside shoulder of clamp butts flush against cut end of jacket.
- e. Fold shield strands back over clamp without overlaps. Trim strands with

- scissors, so that all strands end at end of clamp taper.
- f. Tin centre conductor as shown in Figure 12-10.
 - g. Tin inside of contact (male or female) as shown in Figure 12-11.
 - h. Slip pin or socket over centre conductor so that contact butts flush against dielectric. Solder, using a clean, well tinned, soldering iron. Contact must still be flush against dielectric after solder has cooled; if not, remake the joint. (See Figure 12-12).



ENSURE CORRECT PIN OR SOCKET IS USED. A MALE PIN ALWAYS GOES INTO A PLUG BODY, AND A FEMALE SOCKET ALWAYS GOES INTO A JACK BODY.

- i. Push cable assembly into connector body as far as it will go. Slide gasket into connector body; make sure gasket is properly seated with sharp edge of braid clamp entering groove in gasket. Slide nut into connector body and fasten body in vice (see Figure 12-13). Start nut by hand and tighten with spanner until moderately tight.

NOTE

Gasket should be cut in half during tightening.

Attaching HN Connectors with Captivated Contacts to Coaxial Cable

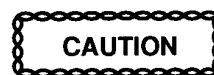
19. When attaching HN connectors with captivated contacts to coaxial cable (see Figure 12-26), use the following procedure:

NOTE

While attaching connector, observe all general precautions and procedures listed in paragraphs 7 and 8.

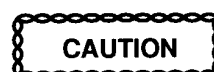
- a. Disassemble nut, gland, gasket, clamp, sleeve, and front and rear insulators front plug or jack body. (See Figure 12-24.)

- b. Slide nut and gland onto jacket. Make sure that sharp edge of gland is toward end of cable. Then slide gasket onto jacket, with "V" groove toward gland. Remove 4cm from outer jacket, exposing shield. Slide clamp over the braid until inside shoulder of clamp butts flush against end of jacket.



TAKE CARE NOT TO NICK OR DAMAGE SHIELD OR CENTRE CONDUCTOR

- c. Comb out shield and cut off dielectric 23mm from end of jacket.
- d. Fold shield strands back over clamp without overlaps. Trim strands with scissors so that all strands end at end of clamp taper.
- e. Tin centre conductor as shown in Figure 12-10, using minimum amount of heat.
- f. Slide sleeve and rear insulator over cable dielectric. Slip contact over centre conductor. Rear insulator must seat against cable dielectric, and contact shoulder must be flush with insulator face. Solder contact to centre conductor. (See Figure 12-12.)
- g. For jacks only, install front insulator.



ENSURE THAT CORRECT PIN OR SOCKET IS USED. A MALE PIN ALWAYS GOES INTO A PLUG BODY, AND A FEMALE SOCKET ALWAYS GOES INTO A JACK BODY.

- h. Push cable assembly carefully into connector body as far as it will go. Make sure that sharp edge of gland remains in the gasket groove, Tighten nut with spanner, holding body stationary. (See Figure 12-13.)

NOTE

Gasket should be cut in half during tightening.

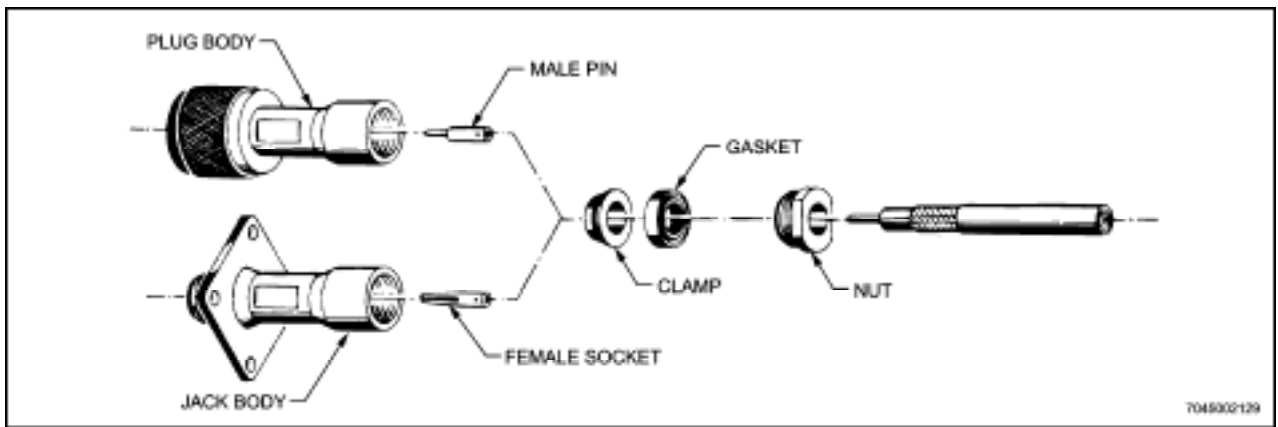


Figure 12-23 Improved HN Connectors - Exploded View

Table 12-3 HN Series Connectors (MIL-C-3643) with Associated Cables

Plug	Jack	Panel Jack	For Use With Cable Types
*UG-59E/U **UG-1213/U	*UG-60E/U **UG-1214/U	*UG-61E/U **UG-1215/U	RG8/U, 9/U, 213/U AND 214/U
*Improved Version	**Captivated Contact Version		

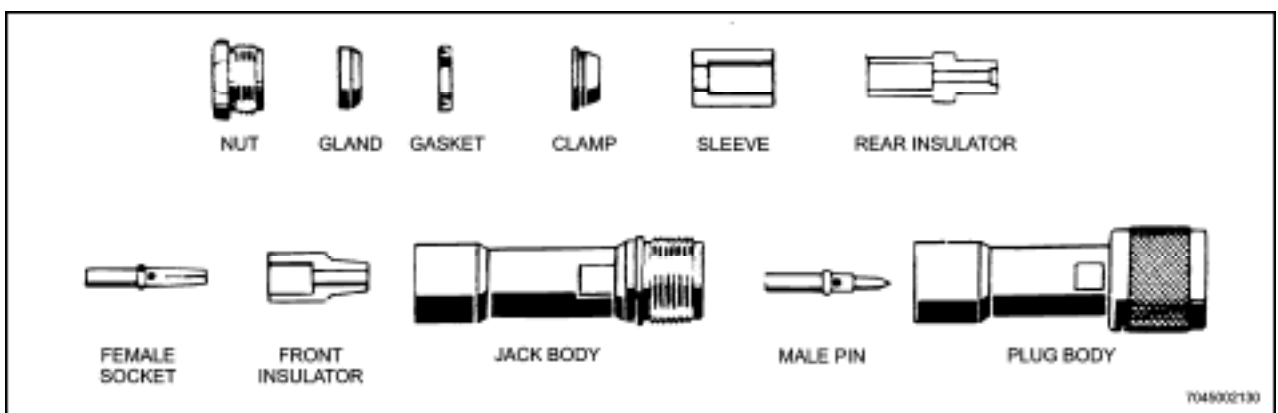


Figure 12-24 HN Connectors with Captivated Contacts - Exploded View

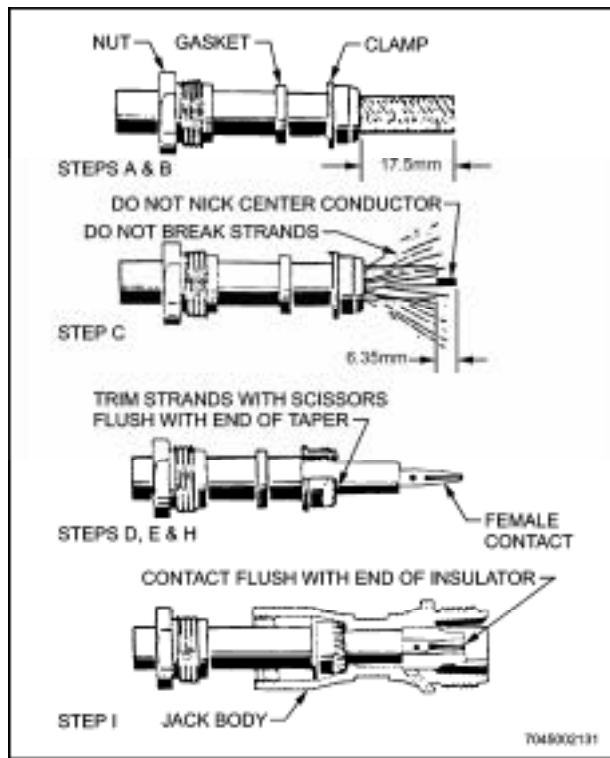


Figure 12-25 Attaching Improved HN Connectors to Coaxial Cable

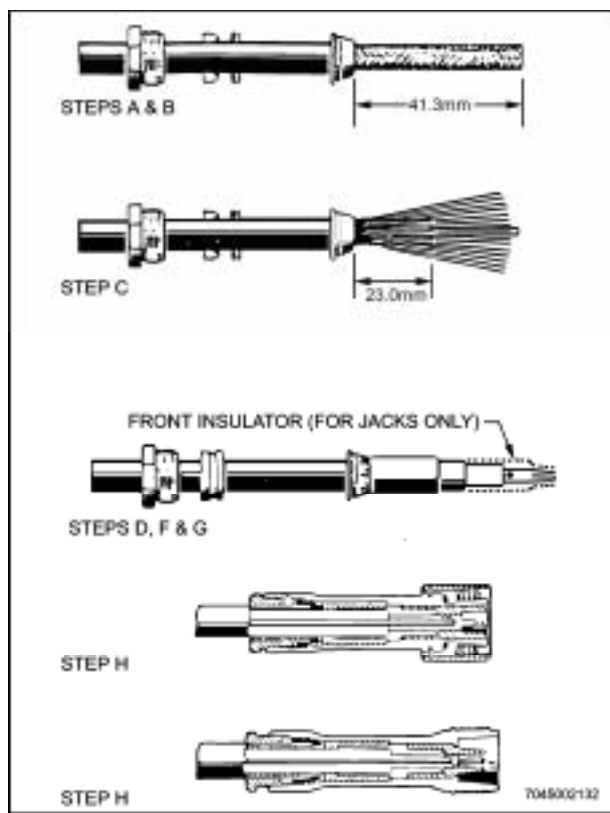


Figure 12-26 Attaching HN Connectors with Captivated Contacts to Coaxial Cable

N SERIES CONNECTORS

N Connector Types

20. There are three versions of N connectors, differing in method of attaching coaxial cable to the connector body. Refer to paragraph 4.

Attaching N Type Crimp Connectors, M39012, to Coaxial Cables

21. N Type Crimp Connectors are attached as follows:

- a. Select correct connector for cable Table 12-4.

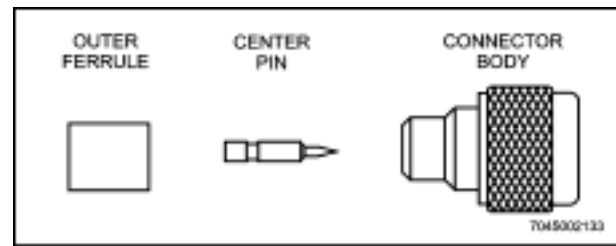


Figure 12-27 N Crimp Connectors



THE 50 OHM N TYPE RF CONNECTORS ARE NOT COMPATIBLE AND SHOULD NOT BE MATED.

NOTE

Some 70 ohm coaxial cables do not have suitable 70 ohm connectors and therefore equipment manufacturers may have substituted compatible 50 ohm connectors. This practice is accepted, but physical matching of male and female connectors is essential.

- b. Strip cable jacket, braid, and dielectric to dimensions shown (see Figure 12-28). All cuts are to be sharp and square. Important: Do not nick braid, dielectric, and centre conductor. Tinning of centre conductor is not necessary if contact is to be crimped. For solder method, tin centre conductor avoiding excessive heat.
- c. Slide outer ferrule onto cable as shown. Flare slightly end of cable braid as shown to facilitate insertion onto inner ferrule.

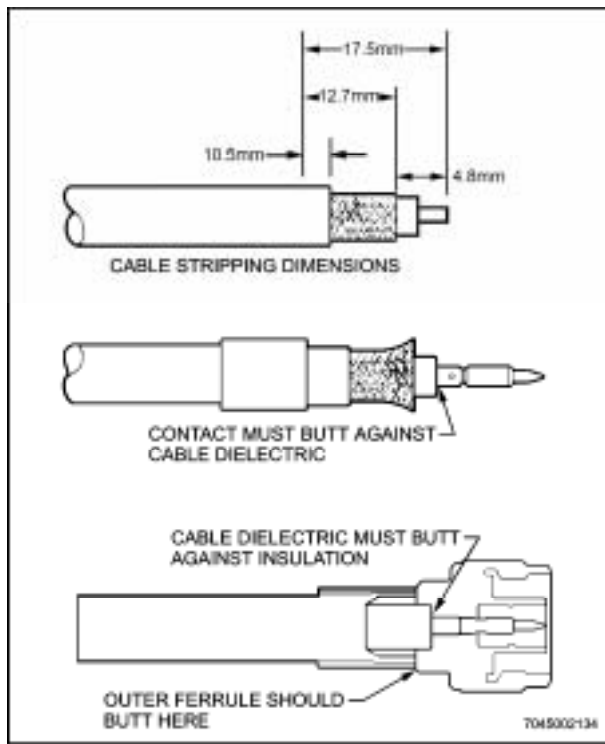


Figure 12-28 Cable Stripping Instructions

NOTE

Do not comb out braid.

- d. Place contact on cable centre conductor so it butts against cable dielectric. Centre conductor should be visible through inspection hole in contact. Crimp or solder centre pin or socket in place as follows:
- e. **Crimp Method.** Select appropriate tool from Table 12-4. Crimp centre pin or socket (see Figure 12-16).
- f. **Solder Method.** Soft solder contact to cable centre conductor. Do not get any solder on outside surface of contact. Avoid excessive heat to prevent swelling of dielectric.
- g. Install cable assembly into body assembly so inner ferrule portion slides under braid. Push cable assembly forward until contact snaps into place in insulator.
- h. Slide outer ferrule over braid and up against connector body. Crimp outer

ferrule using cavity of Die Set specified in Table 12-4. (See Figure 12-16.)

Attaching N Type Connectors with Captivated Contacts to Coaxial Cables

22. When attaching captivated contact N Type connectors to coaxial cable (see Figure 12-29), use the following procedure:

NOTE

While attaching connector, observe all general precautions and procedures listed in paragraphs 7 and 8.



DO NOT NICK SHIELD OR CENTRE CONDUCTOR.

- a. Remove 9.1mm of outer jacket, exposing shield.
- b. Comb out shield and cut off cable dielectric 3.1mm from end of jacket.
- c. Disassemble nut, gasket, clamp, washer, and insulator from plug or jack body.
- d. Taper shield toward centre conductor, and wrap with tape. Slide nut and gasket, in that order, over tapered shield onto jacket. Make sure grooved side of gasket faces away from nut. Then slide clamp over tapered shield and push back against cable jacket.
- e. Remove tape and fold shield strands back over clamp taper without overlaps. Trim shield with scissors so that strands end at end of clamp taper.
- f. Check that exposed dielectric is 1.1mm beyond shield.
- g. Tin centre conductor as shown in Figure 12-10, using minimum amount of heat.
- h. Slide on washer, rear insulator, and contact, so that the counter-bored end of the rear insulator butts flush against the dielectric, and the pin or socket shoulder butts flush against the rear insulator. Solder the contact to centre conductor. (See Figure 12-12.)

Table 12-4 Series N M39012 Connectors and Associated Cables (MIL-C-17)

Cable	Connector	Centre Pin	Tool Crimp	Tool
-------	-----------	------------	------------	------

		or Socket	Ferrule	Alternate
N (Cabled) Plug, Pin, Contact				
RG-212	M39012/01-0016	Solder	Cavity A M22520/5-35	Cavity A M22520/5-29
RG-222	M39012/01-0016	Solder	Cavity A M22520/5-35	Cavity A M22520/5-29
RG-213	M39012/01-0502	M22520/1-13	Cavity A M22520/5-61	Cavity A M22520/5-25
RG-214	M39012/01-0501	M22520/1-13	Cavity A M22520/5-61	Cavity A M22520/5-25
RG-217	M39012/01-0019	Solder	M22520/5-27	
RG-165	M39012/01-0021	Solder	Cavity A M22520/5-61	Cavity A M22520/5-25
RG-225	M39012/01-0501	M22520/1-13	Cavity A M22520/5-61	Cavity A M22520/5-25
RG-11	M39012/01-0023	Solder	Cavity A M22520/5-61	Cavity A M22520/5-25
RG-144	M39012/01-0023	Solder	Cavity A M22520/5-61	Cavity A M22520/5-25
RG-216	M39012/01-0024	Solder	Cavity A M22520/5-61	Cavity A M22520/5-25
RG-6	M39012/01-0027	Solder	Cavity A M22520/5-35	Cavity A M22520/5-29
RG-400	M39012/01-0503	M22520/1-13	Cavity B M22520/5-19	Cavity A M22520/5-57
RG-142	M39012/01-0503	M22520/1-13	Cavity B M22520/5-19	Cavity A M22520/5-57
RG-393	M39012/01-0501	M22520/1-13	Cavity B M22520/5-61	Cavity A M22520/5-25
N (Cabled) Plug, Socket, Contact				
RG-212	M39012/02-0019	Solder	Cavity A M22520/5-35	Cavity A M22520/5-29
RG-222	M39012/02-0019	Solder	Cavity A M22520/5-35	Cavity A M22520/5-29
RG-213	M39012/02-0502	M22520/1-13	Cavity A M22520/5-61	Cavity A M22520/5-25
RG-214	M39012/02-0501	M22520/1-13	Cavity A M22520/5-61	Cavity A M22520/5-25
RG-217	M39012/01-0022	Solder	M22520/5-27	
RG-165	M39012/02-0024	Solder	Cavity A M22520/5-61	Cavity A M22520/5-25
RG-225	M39012/02-0501	M22520/1-13	Cavity A M22520/5-61	Cavity A M22520/5-25
RG-11	M39012/02-0026	Solder	Cavity A M22520/5-61	Cavity A M22520/5-25
RG-144	M39012/02-0026	Solder	Cavity A M22520/5-61	Cavity A M22520/5-25
RG-216	M39012/02-0039	Solder	Cavity A M22520/5-61	Cavity A M22520/5-25
RG-6	M39012/02-0040	Solder	Cavity A M22520/5-35	Cavity A M22520/5-29
RG-400	M39012/02-0503	M22520/1-13	Cavity B M22520/5-19	Cavity A M22520/5-57
RG-142	M39012/02-0503	M22520/1-13	Cavity B M22520/5-19	Cavity A M22520/5-57
RG-393	M39012/02-0501	M22520/1-13	Cavity A M22520/5-61	Cavity A M22520/5-25

Table 12-4 Series N M39012 Connectors and Associated Cables (MIL-C-17) (Continued)

Cable	Connector	Centre Pin or Socket	Tool Crimp Ferrule	Tool Alternate
N (Cabled) Receptacle, Socket, Contact, Flange Mounted				

RG-212	M39012/02-0027	Solder	Cavity A M22520/5-35	Cavity A M22520/5-29
RG-222	M39012/02-0027	Solder	Cavity A M22520/5-35	Cavity A M22520/5-29
RG-213	M39012/02-0512	M22520/1-13	Cavity A M22520/5-61	Cavity A M22520/5-25
RG-214	M39012/02-0511	M22520/1-13	Cavity A M22520/5-61	Cavity A M22520/5-25
RG-165	M39012/02-0041	Solder	Cavity A M22520/5-61	Cavity A M22520/5-25
RG-225	M39012/02-0511	M22520/1-13	Cavity A M22520/5-61	Cavity A M22520/5-25
RG-11	M39012/02-0042	Solder	Cavity A M22520/5-61	Cavity A M22520/5-25
RG-144	M39012/02-0042	Solder	Cavity A M22520/5-61	Cavity A M22520/5-25
RG-216	M39012/02-0030	Solder	Cavity A M22520/5-61	Cavity A M22520/5-25
RG-6	M39012/02-0043	Solder	Cavity A M22520/5-35	Cavity A M22520/5-29
RG-400	M39012/02-0513	M22520/1-13	Cavity B M22520/5-19	Cavity A M22520/5-57
RG-142	M39012/02-0513	M22520/1-13	Cavity B M22520/5-19	Cavity A M22520/5-57
RG-393	M39012/02-0511	M22520/1-13	Cavity A M22520/5-61	Cavity A M22520/5-25
N (Cabled) Receptacle, Socket, Contact Jam Nut, Mounted				
RG-212	M39012/03-0013	Solder	Cavity A M22520/5-35	Cavity A M22520/5-29
RG-222	M39012/03-0013	Solder	Cavity A M22520/5-35	Cavity A M22520/5-29
RG-213	M39012/03-0502	M22520/1-14	Cavity A M22520/5-61	Cavity A M22520/5-25
RG-214	M39012/03-0501	M22520/1-14	Cavity A M22520/5-61	Cavity A M22520/5-25
RG-217	M39012/03-0016	Solder	M22520/5-27	
RG-165	M39012/03-0018	Solder	Cavity A M22520/5-61	Cavity A M22520/5-25
RG-225	M39012/03-0501	M22520/1-14	Cavity A M22520/5-61	Cavity A M22520/5-25
RG-11	M39012/03-0020	Solder	Cavity A M22520/5-61	Cavity A M22520/5-25
RG-144	M39012/03-0020	Solder	Cavity A M22520/5-61	Cavity A M22520/5-25
RG-216	M39012/03-0021	Solder	Cavity A M22520/5-61	Cavity A M22520/5-25
RG-6	M39012/03-0023	Solder	Cavity A M22520/5-35	Cavity A M22520/5-29
RG-400	M39012/03-0503	M22520/1-14	Cavity B M22520/5-19	Cavity A M22520/5-57
RG-142	M39012/03-0503	M22520/1-14	Cavity B M22520/5-19	Cavity A M22520/5-57
RG-393	M39012/03-0501	M22520/1-14	Cavity A M22520/5-61	Cavity A M22520/5-25

Table 12–4 Series N M39012 Connectors and Associated Cables (MIL-C-17) (Continued)

Cable	Connector	Centre Pin or Socket	Tool Crimp Ferrule	Tool Alternate
N (Cabled) Plug, Right Angle				
RG-212	M39012/05-0016	Solder	Cavity A M22520/5-35	Cavity A M22520/5-29
RG-222	M39012/05-0016	Solder	Cavity A M22520/5-35	Cavity A M22520/5-29
RG-213	M39012/05-0502	M22520/1-13	Cavity A M22520/5-61	Cavity A M22520/5-25
RG-214	M39012/05-0501	M22520/1-13	Cavity A M22520/5-61	Cavity A M22520/5-25
RG-165	M39012/05-0015	Solder	Cavity A M22520/5-61	Cavity A M22520/5-25
RG-225	M39012/05-0501	M22520/1-13	Cavity A M22520/5-61	Cavity A M22520/5-25
RG-11	M39012/05-0014	Solder	Cavity A M22520/5-61	Cavity A M22520/5-25
RG-144	M39012/05-0014	Solder	Cavity A M22520/5-61	Cavity A M22520/5-25
RG-216	M39012/05-0017	Solder	Cavity A M22520/5-61	Cavity A M22520/5-25
RG-6	M39012/05-0013	Solder	Cavity A M22520/5-35	Cavity A M22520/5-29
RG-400	M39012/05-0503	M22520/1-13	Cavity B M22520/5-19	Cavity A M22520/5-57
RG-142	M39012/05-0503	M22520/1-13	Cavity B M22520/5-19	Cavity A M22520/5-57
RG-393	M39012/05-0501	M22520/1-13	Cavity A M22520/5-61	Cavity A M22520/5-25



ENSURE THAT THE CORRECT PIN OR SOCKET IS USED. A PIN ALWAYS GOES INTO A PLUG BODY, AND A SOCKET ALWAYS GOES INTO A JACK BODY.

- i. Slide front insulator over pin or socket; make sure the counter-bored end of the insulator is toward the mating end of the contact.
- j. Push the cable assembly into the connector body. Make sure that the sharp edge of the clamp seats properly in the gasket. Tighten the nut, holding the body stationary. (See Figure 12–13.)



USE OF NITROGEN WITH HOT AIR GUN IN AN ENCLOSED AREA CAN BE HAZARDOUS. ENSURE AREA IS WELL VENTILATED.

- k. Cut two lengths of heat shrink, one 7cm and one 8cm. Slide the 7cm piece of heat shrink over the connector covering only the back 15.8mm of it. Heat the heat shrink until it is secure on the cable and connector. Repeat the same procedure with the 8cm piece of heat shrink.



USE ONLY HOT AIR GUN M83521/5-01 OR EQUIVALENT ON FUELLED AIRCRAFT.

PULSE SERIES CONNECTORS

Pulse Connector Types

23. There are two versions of pulse connectors. These versions differ in the material of the inserts, and in the method of attaching the coaxial cable to the connector body. See Figure 12-6 for typical examples of pulse connectors. Table 12-5 lists the more common connectors in the pulse series and shows the coaxial cables associated with each.

- a. **Ceramic Insert Version.** Consists of a plug or jack body assembled to coaxial cable with nut, cable clamp, washer, and corona shield. (See Figure 12-30). Plug UG-174/U is typical of this version.
- b. **Rubber Insert Version** consists of a plug or jack body assembled to coaxial cable with clamp, washer, gasket, sleeve, and ferrule. (See Figure 12-31). Plug UG-180A/U and jack UG-182A/U are typical of this version.

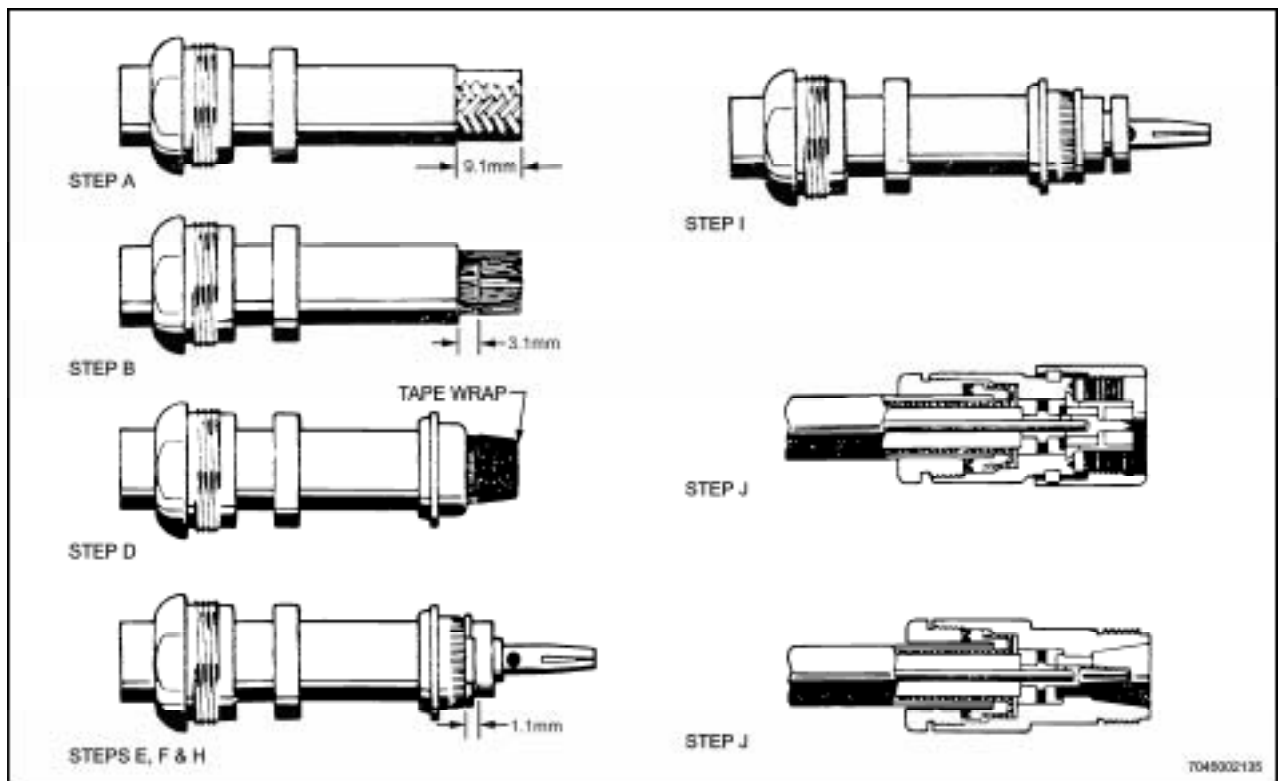


Figure 12-29 Attaching N Connectors with Captivated Contacts to Coaxial cable

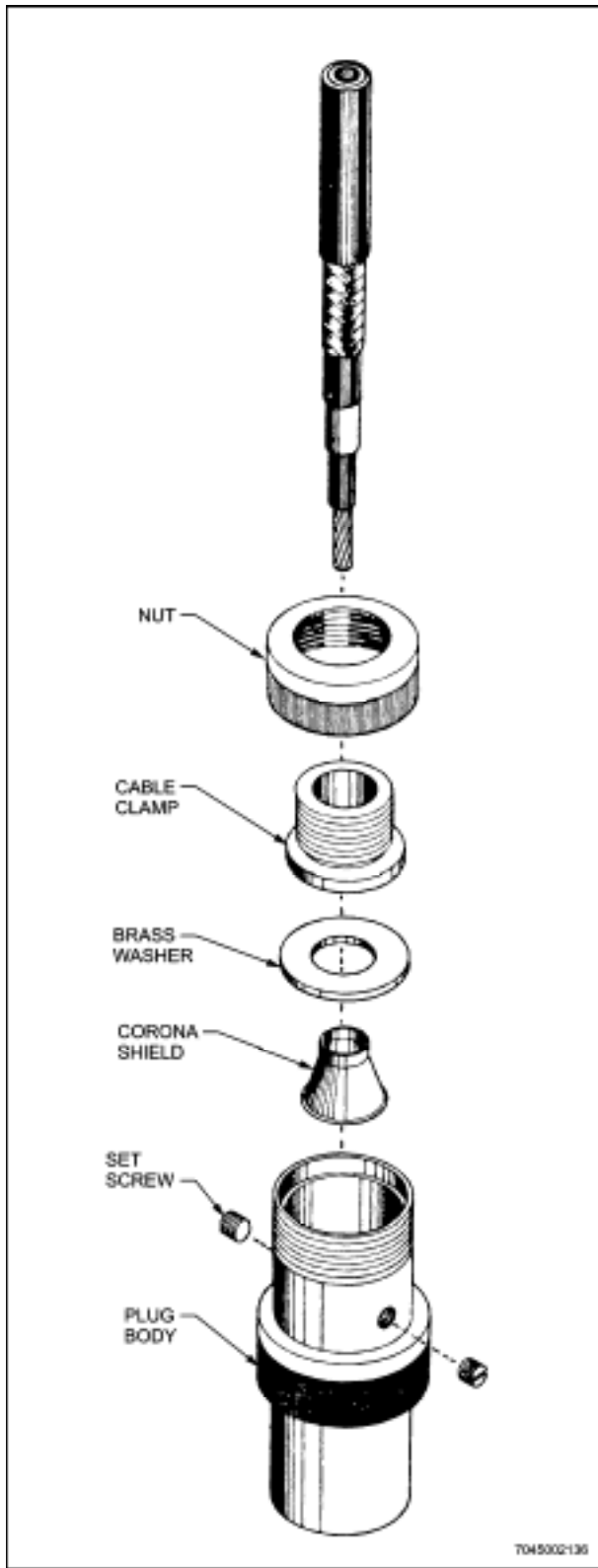


Figure 12-30 Pulse Connector - Ceramic Insert

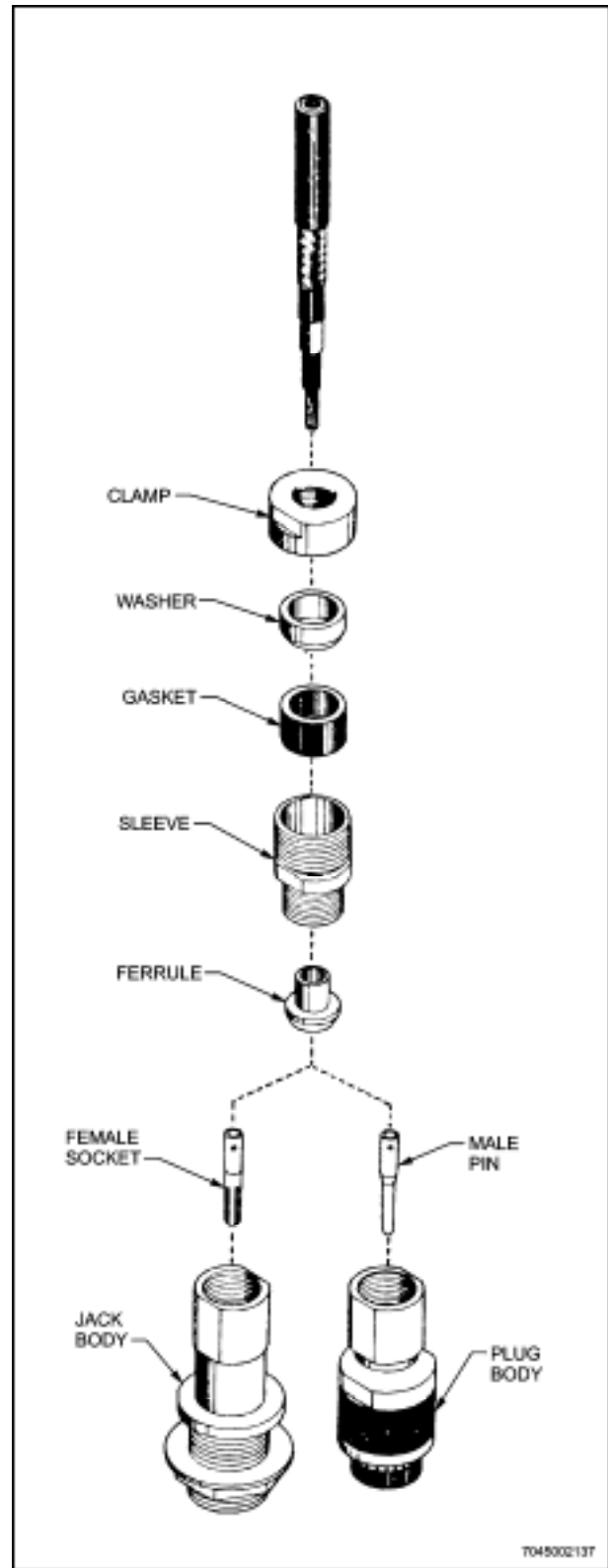


Figure 12-31 Pulse Connector - Rubber Insert

Table 12–5 Pulse Series Connectors (MIL-C-3643) with Associated Cables

Plug	Jack	Panel Jack	For Use With Cable Types
Ceramic Insert:			
UG-34/U UG-174/U			RG-25/U RG-28/U
Rubber Insert:			
UG-180A/U	UG-182A/U UG-1086/U	UG-181A/U	RG-25/U, 64/U, 77/U, 78/U & 88/U

Attaching Ceramic Insert Pulse Connectors to Coaxial Cable

NOTE

The following procedure is for assembling UG-174/U plug to RG-28/U cable, and UG-34/U plug to RG-25/U cable. Both assemblies differ in dimensions. Both cables have a double shield.

24. When attaching ceramic insert pulse connectors to coaxial cable (see Figure 12–32), use the following procedure:

NOTE

Observe all general precautions and procedures listed in paragraphs 7 and 8.

- a. Disassemble nut, cable clamp, washer, and corona shield from plug or jack body. (See Figure 12–30.)
- b. Slide nut and cable clamp, in that order, onto cable jacket. Remove 9.2cm of outer jacket of RG-28/U cable and 7cm of RG-2S/U cable, exposing first shield.



DO NOT NICK SHIELD.

- c. Remove first shield to 0.76mm from cut edge of outer jacket exposing insulating tape.
- d. Comb out shield and bend at right angles, as shown. Remove insulating tape even with cut edge of outer jacket, exposing second shield. Slide cable clamp forward against fanned-out first

shield. Trim shield strands 1.5mm below diameter of cable clamp flange.

- e. Slide brass washer carefully over second shield against fanned-out shield. Remove second shield to 4.7mm from brass washer for RG-281U cable, and 31mm for RG-25/U cable, exposing conducting rubber.
- f. Remove layer of conducting rubber to 9.5mm from face of brass washer for RG-28/U cable and 4.7mm for RG-25/U cable by making small slit at end of cable core and removing conducting rubber with dull knife. Scrape insulating rubber underneath to remove any traces of conducting rubber.



DO NOT DAMAGE INSULATING RUBBER.

- g. Slide corona shield over conducting rubber and under second shield until straight part of corona shield enters hole in brass washer approximately 1.5mm.
- h. Solder second shield to brass washer and to corona shield. Remove excess flux. Remove insulating rubber and conducting rubber underneath it to 6.7cm from face of brass washer for RG-28/U cable and 27mm for RG-25/U cable, exposing centre conductor. Taper rubber down to conductor 9.5mm for RG-28/U or 6.3mm for RG-25/U. Tin centre conductor. Remove excess flux.
- i. Scrape nickel plating from recess of plug into which brass washer fits. Remove set screws.

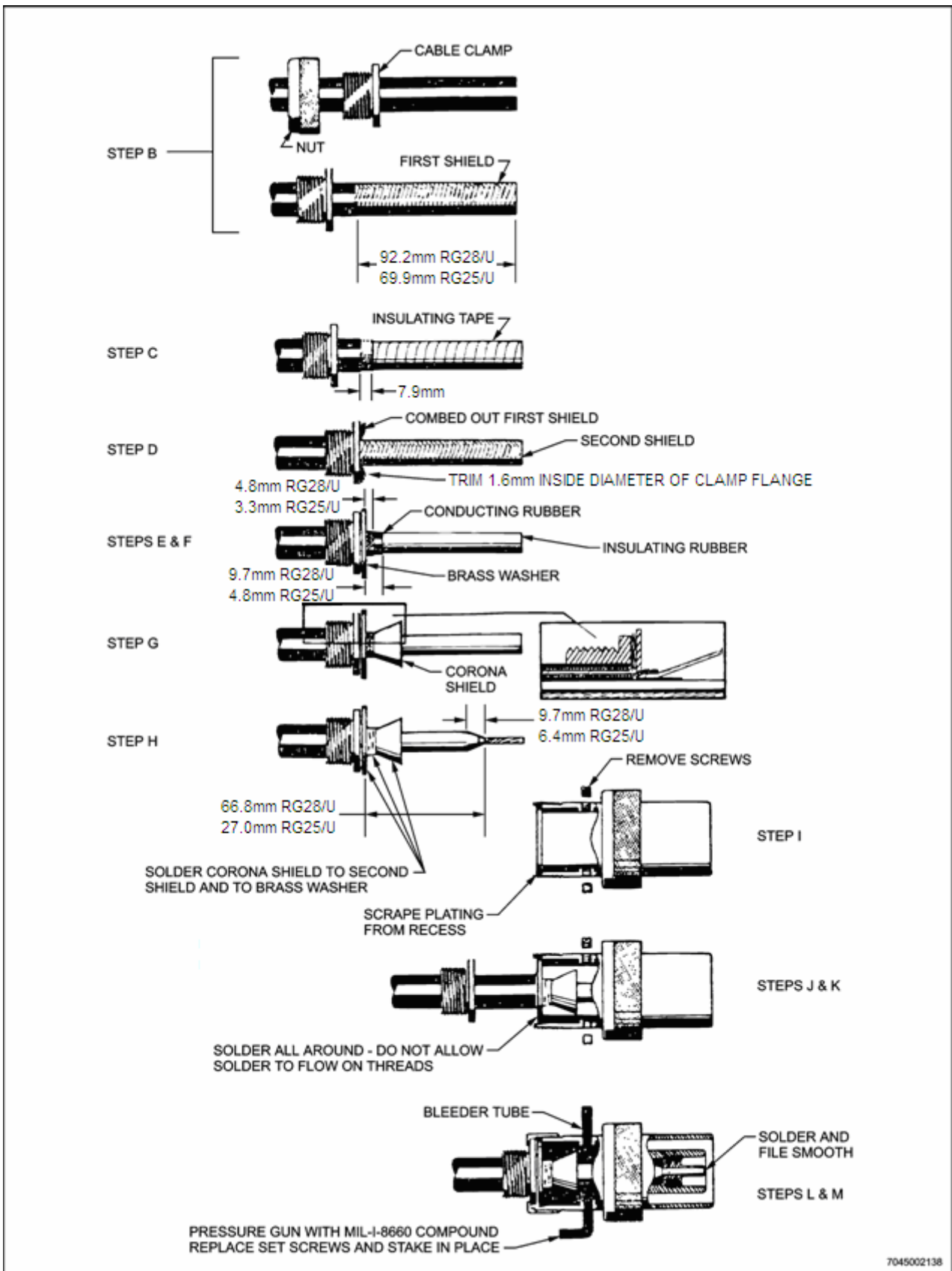


Figure 12-32 Assembly of Ceramic Insert Pulse Connector

j. Slide cable assembly into plug body, allowing cable clamp to slide back on

cable. Solder brass washer to recess in plug by flowing solder into space

between washer and groove. Remove excess flux.

- k. Slide cable clamp against washer, and nut onto plug body. Start nut by hand and tighten with spanner. Hold plug with strap wrench to prevent it from turning.
- l. Cut off excess conductor protruding beyond contact pin. Solder conductor to contact by flowing solder down into hole. Leave a drop of solder on end of contact and file smooth. Remove excess flux.
- m. Insert bleeder tube in top hole so it is vertical. Insert pressure gun in lower hole and fill plug cavity with SAE AS 8660 compound until material oozes from bleeder tube. Replace set screws and stake with prick punch.

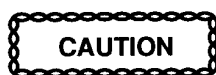
Attaching Rubber Insert Pulse Connectors to Coaxial Cable

25. When attaching rubber insert pulse connectors to coaxial cable (see Figure 12–33), use the following procedure:

NOTE

While attaching connector, observe all general precautions and procedures listed in paragraphs 7 and 8.

- a. Disassemble nut, washer, gasket, sleeve, and ferrule from plug or jack body. (See Figure 12–31.)



DO NOT NICK SHIELD OR CUT CABLE CORE.

- b. Slide nut, washer, gasket, and sleeve, in that order onto cable jacket. Remove 6.7cm of outer jacket exposing shield.
- c. Cut shield to 9.5mm from cut edge of outer jacket, exposing cable core.
- d. Push ferrule over cable core and under shield.
- e. Solder shield carefully to ferrule all around its circumference. Ensure solder flows through to all shields. If it is necessary to solder shields separately, fold back outer shield. Solder inner shield, then bring forward outer shield

and solder separately on top of inner shield. After solder has cooled, grasp cable in left hand, ferrule in right hand, and give several quick pulls to remove any slack in shield. Remove excess flux. Remove cable core with sharp square cut leaving 28.5mm from ferrule for connection to UG-180A/U and 25mm from ferrule for connection to UG-181A or 182A/U. Trim centre conductor to 4.7mm and tin.

NOTE

Cable RG-25A/U, 64A/U, 78/U, and 88A/U have a thin layer of red insulating rubber over the cable core. Do not remove this layer. Cables RG-25/U and RG-64/U have a thin layer of black conducting rubber over the cable core. Remove this layer to 1.5mm from ferrule very carefully with a sharp knife.

- f. Tin inside of pin or socket as shown in Figure 12–11. Slip contact over centre conductor so that contact butts flush against cable core. Solder, using a clean well tinned soldering iron. Pin or socket must still be flush against cable core after solder has cooled; if it is not, remake this joint. (See Figure 12–12.) Remove excess flux.



ENSURE CORRECT PIN OR SOCKET IS USED. A PIN ALWAYS GOES INTO A PLUG BODY, AND A SOCKET ALWAYS GOES INTO A JACK BODY.

- g. Push cable core into plug or jack body as far as it will go. Insert sleeve and tighten as far as it will go against ferrule, holding body with spanner so it will not turn. (See Figure 12–13.)
- h. Insert gasket, then washer into sleeve. Install nut on sleeve and tighten until gasket deforms around cable to hold it securely.

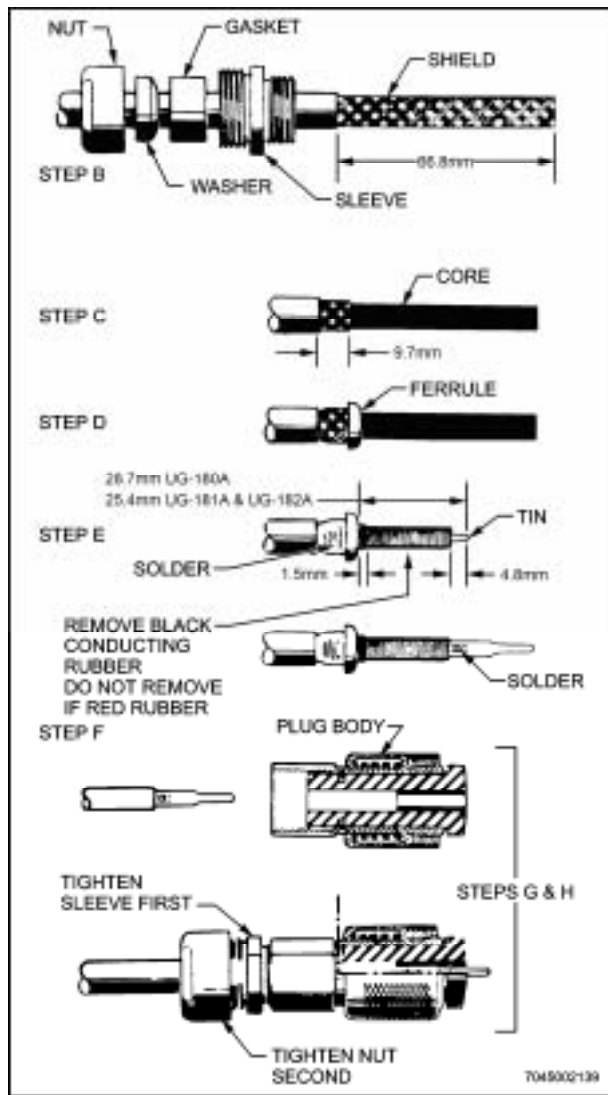


Figure 12-33 Assembly of Rubber Insert Pulse Connector

MINIATURE RF CONNECTORS

MB Miniature Connector Series

26. These are small, lightweight, bayonet type, quick connect/disconnect connectors, used with small RF cables where peak voltage is not more than 500 volts. These connectors do not carry a military number. No soldering is required in the assembly of plugs to solid centre conductors, such as RG58/U, 59/U, 62/U, 71/U, and 141/U. All jacks require soldering. Table 12-6 lists the more common connectors in the MB series and shows the coaxial cables associated with each. These connectors consist of a plug or jack body assembled to coaxial cable with clamp nut, braid clamp, and insulator bushing. (See Figure 12-34.)

Attaching MB Connectors to Coaxial Cable

27. The assembly procedure differs according to the cable used. For assembly to cables RG-58/U and

RG-141/U, the procedure is as follows (see Figure 12-35):

- a. Remove cable jacket to A dimension given in Table 12-7. Insert clamp nut over cable jacket and braid clamp over braid wire.
- b. Comb out braid wire, fold back over braid clamp, and trim to length. Cut off cable dielectric to dimension C in Table 12-7, and tin exposed conductor. If solderless contact is used, omit tinning.
- c. Insert contact over conductor. The end of the solderless contact with the shortest slot is inserted over the conductor. If a solder contact is used, solder it to the conductor, and remove excess solder from the outside of the contact.
- d. Insert assembly minus clamp nut into body and rotate slightly to make sure braid clamp is seated. When assembling straight plugs, insert insulator over contact before assembly into body. Thread clamp nut into body and tighten nut, holding body stationary.

28. For assembly into cables RG-59/U and 62/U, the procedure is as follows:

- a. Remove cable jacket to dimension A in Table 12-7. Insert clamp nut over cable so that internal shoulder seats against end of cable jacket. Insert braid clamp over wire.
- b. Comb out braid wires, fold back over braid clamp, and trim to length. Cut off cable dielectric to dimension C in Table 12-7, and tin exposed conductor. If solderless contact is used, omit tinning.
- c. Insert contact over conductor. The end of the solderless contact with the shortest slot is inserted over the conductor. Insert insulator bushing over contact if cable RG-62/U is being used. If solder contact is used, solder it to the conductor, and remove excess solder from the outside of the contact.
- d. Insert insulator over contact. Insert assembly minus clamp nut into body and rotate slightly to make sure braid clamp is seated. Thread clamp nut into body and tighten nut, holding body stationary.
- e. Right angle jacks or plugs: Strip cable jacket and dielectric, install parts, and

- f. Tin conductor, and insert assembly into body.
- g. With cap removed, solder the conductor in slot of angle plug contact.
- h. Insert cap, and spot solder or spot stake.

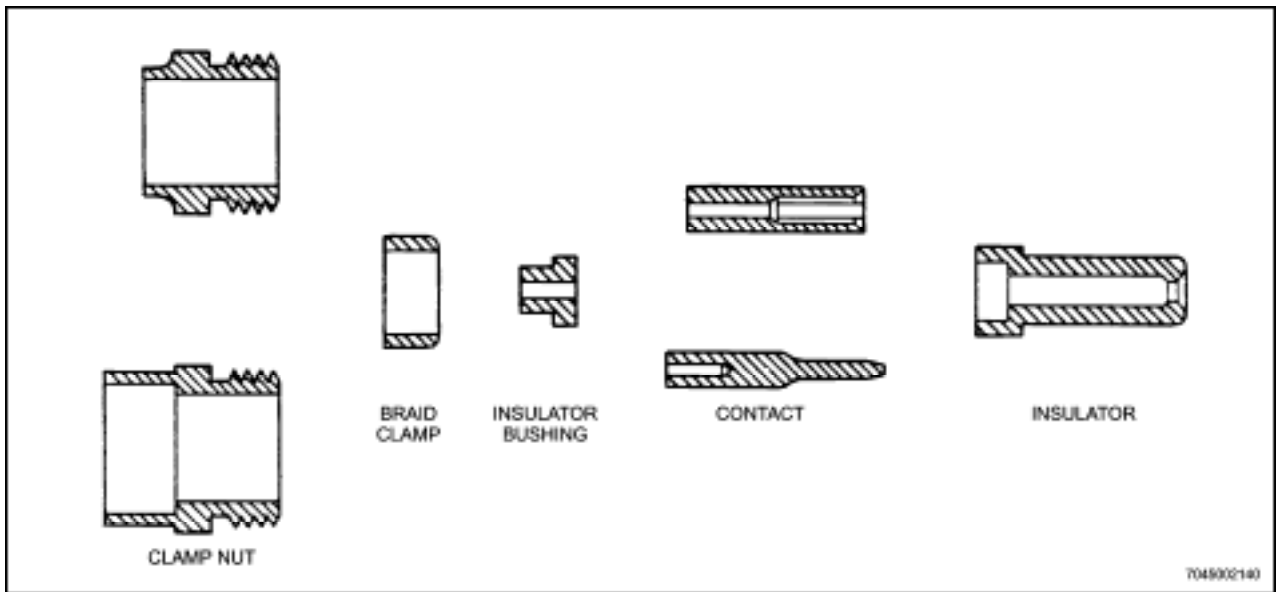


Figure 12-34 MB Connectors - Exploded View

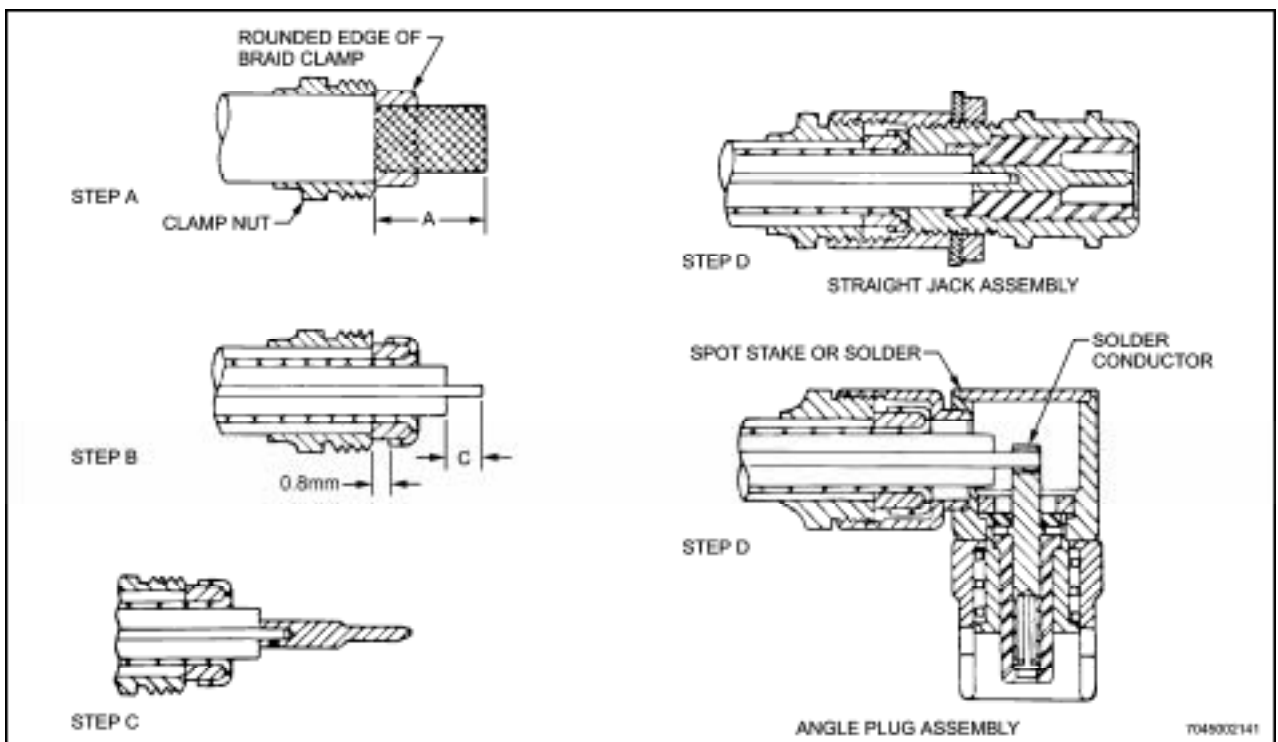


Figure 12-35 Attaching MB Connectors to Coaxial Cable

Table 12-6 MB Series Connectors with Associated Cables

Plug		Jack		Panel Jack		Cable RG-
IPC	King	IPC	King	IPC	King	
79875	KA51-03	79600	KA31-02	79425	KA11-04	55/U, 58/U 59/U
79525	KA51-02	79500	KA31-03	79925	KA11-03	

Table 12–7 Stripping Dimensions for Coaxial Cable Assembled to MB Connectors

	Connector Part (IPC)	RG- /U Cable	Stripping Dimensions	
			A (mm)	C (mm)
Plugs	45000	58, 141	161.1	51.0
	45025	59, 62	282.0	51.0
	45050	58, 141	161.1	51.0
	45550	59, 62	282.0	51.0
Jacks	46300	58, 141	161.1	61.0
	46325	59, 62	322.6	61.0
	46700	58, 141	161.1	61.0
	46775	59, 62	322.6	61.0
Angle Plugs	53000	58, 141	241.3	71.0
	53500	59, 62	241.3	71.0

SUBMINIATURE RF CONNECTORS

Subminiature RF Connectors (Amphenol #27 Series)

29. These connectors are very small, lightweight connectors designed for use with RG-174/U miniaturized coaxial cable, where peak voltage does not exceed 500 volts. Coupling is either of the screw thread type or the push-on type. The connectors consist of a plug or jack body assembled to coaxial cable with a sleeve and an insulator. (See Figure 12–36.) The assembly is crimped into the body, and a vinyl boot shrunk on for cable strain relief. Table 12–8 lists types of Amphenol #27 series connectors commonly used in aircraft.

Attaching Subminiature RF Connectors to Coaxial Cable

30. When attaching subminiature RF connectors to coaxial cable, follow this procedure (see Figure 12–37):

- a. Dilate the boot and slip it over the cable. The boot will remain dilated for approximately five minutes.



DO NOT NICK BRAID.

- b. Trim jacket to dimension A in Table 12–8.

- c. Slip sleeve over braid against cable jacket. Fold braid back over the sleeve and comb out so it lays even without overlapping.



AVOID OVERHEATING DURING SOLDERING, EXCESSIVE HEAT MAY DEFORM DIELECTRIC.

- d. Trim dielectric to dimension B in Table 12–8. Tin exposed centre conductor, and clean off excess solder.
- e. *Straight plugs and jacks.* Slip contact over centre conductor so that it butts flush against cut end of dielectric. Solder contact to conductor, and remove excess solder from outside of contact.
- f. Slip cable assembly into body and trim off excess braid protruding beyond body end. Crimp the assembly securely (see paragraph 31 for detailed crimping instructions), and pull boot over body as shown.
- g. *Angle plugs.* Unscrew front part of body. Follow procedure of steps a through d above. Then thread cable through back part of body as shown and

crimp. Thread female insulator over conductor and insert into body. Holding the female insulator in place in the body, pull the cable as far forward as possible to remove all slack. Trim conductor to 2.1mm minimum.

- h. Slip contact over conductor and butt contact flush against the female insulator. Solder contact to conductor, and remove excess solder.
- i. Place male insulator over the contact, and screw the front body part into back body and tighten with end spanner.

- a. Open jaws of tool 227-900 by loosening nut and pulling down lock screws (see Figure 12-38). Place the connector assembly in jaws, and set optimum distance between jaws for each assembly by means of the travel limit screw. Refer to connector placement Figure 12-38, A, B and C for straight plugs and jacks, and Figure 12-38, D for angle plugs.
- b. Lock jaws by pulling lock screws up, and tighten nut.
- c. Squeeze handles to crimp.
- d. Release handles to open jaws, and remove crimped assembly. Trim off any excess braid protruding beyond end of body.
- e. Slip boot over body end.

Crimping Procedure for Subminiature Connectors

31. Crimp subminiature connector bodies as follows:

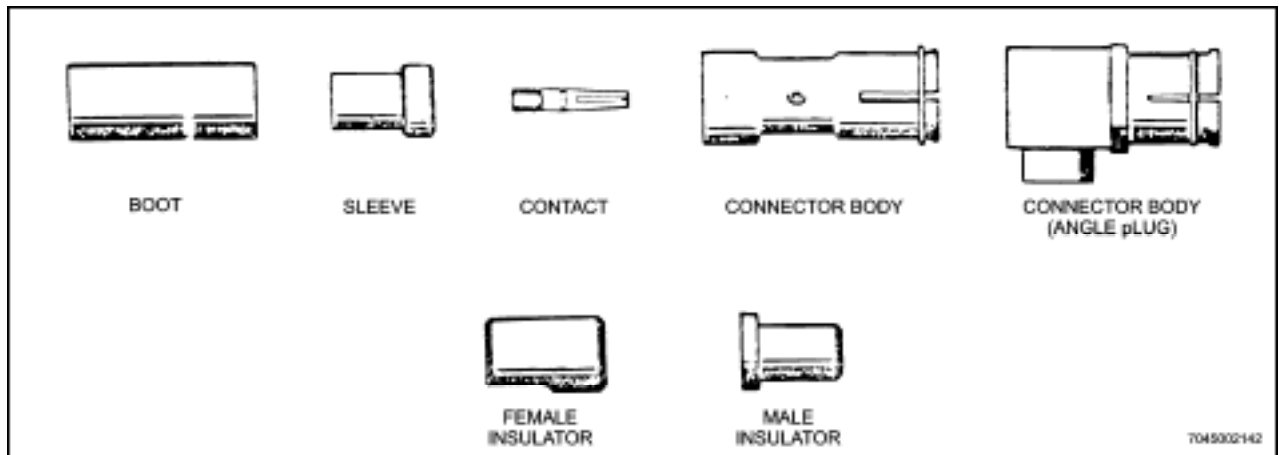


Figure 12-36 Subminiature RF Connector - Exploded View

Table 12-8 Stripping Dimensions and Crimping Tool Positions for Subminiature RF Connectors

Body Type	A (mm +0 -0.4)	B (mm Max)	Position in Tool 27-900 Figure No.
Straight Plug	231.1	40.6	11-38 A
Jack, Push-on	241.3	40.6	11-38 B
Jack, Screw-on	241.3	53.3	11-38 C
Bulkhead Jack	241.3	53.3	11-38 C
Angle Plug	503.0	53.3	11-38 D

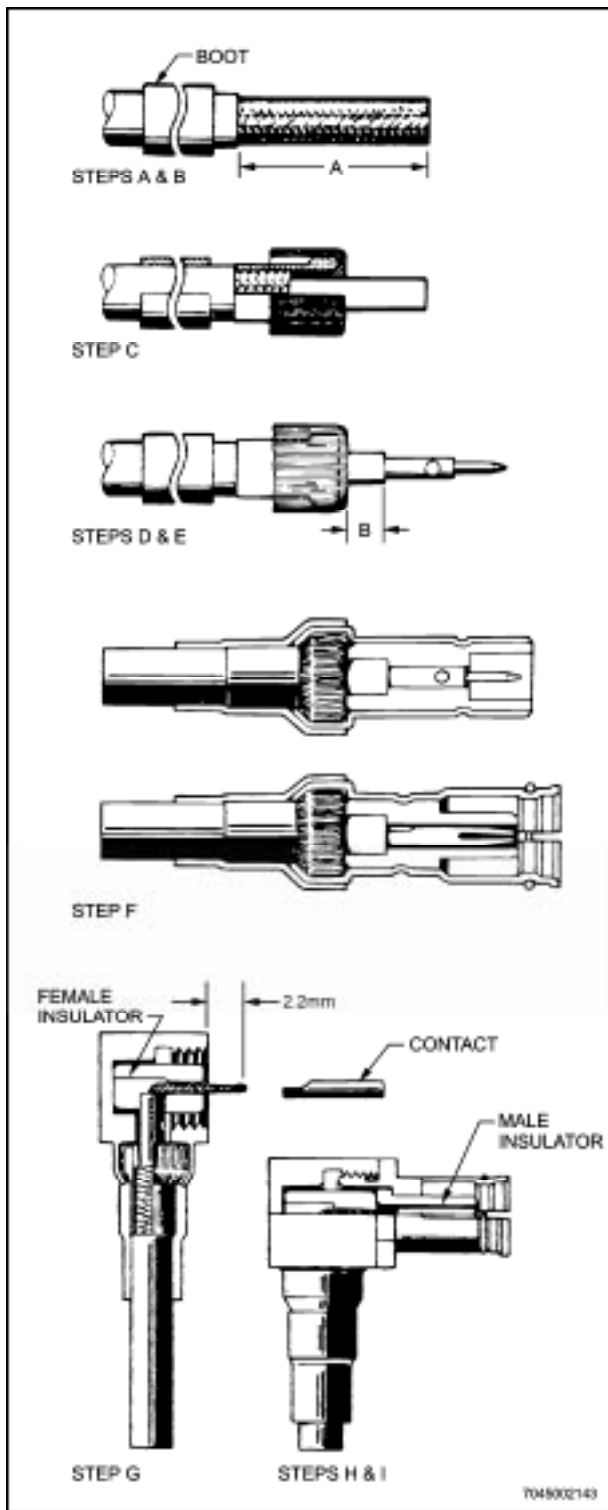


Figure 12-37 Attaching Subminiature RF Connectors to Coaxial Cable

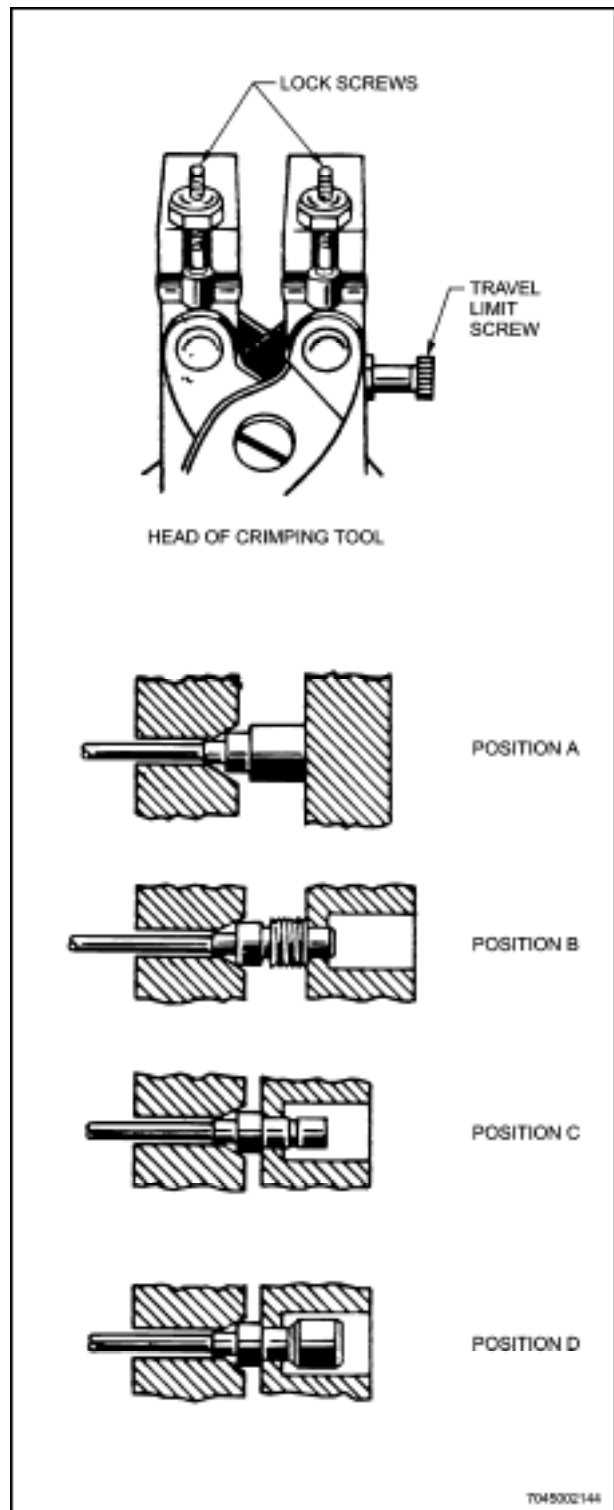


Figure 12-38 Crimping Subminiature RF Connectors

RF Connectors Used in Fuel-Quantity Indicating Systems

32. Because of their transmission line efficiency, RF connectors are often used in aircraft fuel-quantity-indicating systems. The connectors most commonly used for this purpose are of two types. One is similar to the standard BNC connector; typical of this type are the 163 series made by Avien, and the Liquidometer 9100 series. The second type is the miniature RF connector; the Nu-Line 1200 series (MIL-DTL-25516) and Liquidometer S62 and S63 are typical. These connectors are designed to be used with coaxial cable, but they are also frequently used with standard shielded or unshielded wire. They do not carry a military number.

Assembling BNC Type Fuel-Quantity-Indicating Connectors

33. For assembly of Avien 163-088 and 163-089 connectors to RG-58A/U coaxial cables, (see Figure 12-39), use the following procedures:

- a. Slide nut, washer, and gasket onto cable. Strip outer jacket 11mm, taking care not to nick the braid. Slide the clamp over the braid so it rests flush against the cut end of the jacket.
- b. Comb out braid and fold it back over the clamp, and trim the braid even with edge of clamp.
- c. Strip dielectric 2.4mm from edge of clamp.
- d. Cut exposed conductor to 2.8mm.
- e. Slide contact onto conductor, and check that there is no exposed conductor between the insulation and the contact solder hole. Check that the distance from the braid to the end of the contact is 12.7mm, as shown in Figure 12-39.
- f. Tin conductor and solder hole, and solder contact to conductor. Remove any excess solder.
- g. Push assembly into connector body, screw nut into body, and tighten.

34. For assembly of Avien 163-07 and 163-027 connectors to AN No. 20 unshielded wire, (see Figure 12-40), use the following procedure:

- a. Strip wire to expose 6.3mm of conductor, and tin the stripped wire. Tin inside of contact.

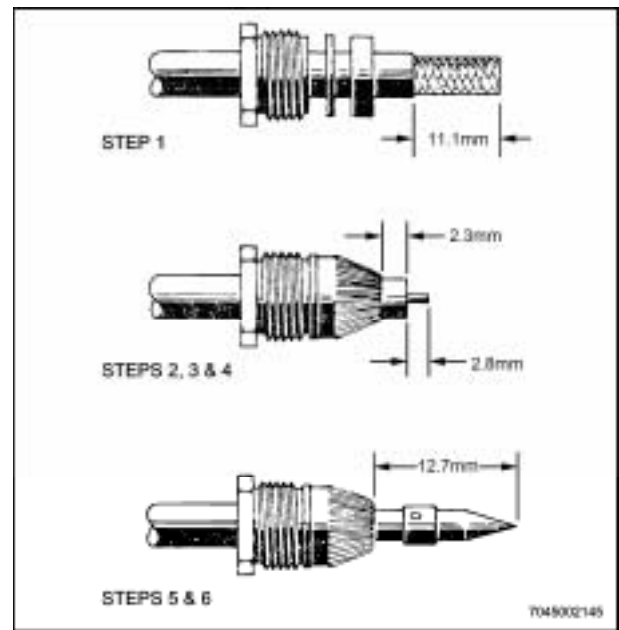


Figure 12-39 Attaching Avien 163-088 and 163-089 Connectors to Coaxial Cable

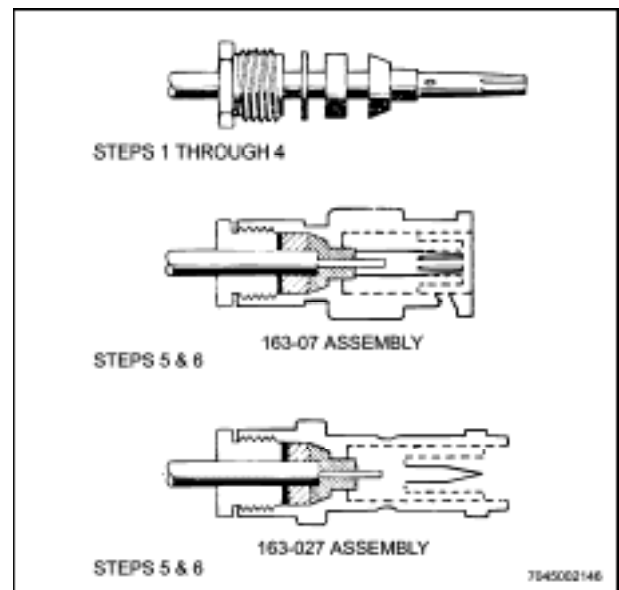


Figure 12-40 Attaching Avien 163-088 and 163-089 Connectors to Unshielded Wire

- b. Slide nut, washer, and gasket over the wire. Install TFE clamp over the wire so that the inside shoulder of the clamp butts against the cut insulation.
- c. Slide contact over the wire so that it butts against end of the clamp. While doing this, hold the insulation firmly in place against the clamp shoulder.
- d. Solder the contact to the conductor, and remove any excess solder.

- e. Insert the assembly into the connector body. The contact end should be flush with the end of the TFE clamp, but a recess of 0.8mm maximum is acceptable.
- f. Tighten nut while holding the body stationary.

35. For assembly of Liquidometer 9100 series connectors to RG-58/U coaxial cable, (see Figure 12-41), use the following procedure:

- a. Slide nut, washer, and gasket over the cable; strip outer jacket 9.5mm, taking care not to nick the braid. Slide the large eyelet over the braid so that it butts against the cut end of the jacket.
- b. Comb out the braid up to the large eyelet, and slide the smaller eyelet over the dielectric.
- c. Clamp the braid between the two eyelets with special slotted pliers, as shown in Figure 12-43. Trim off excess braid.
- d. Cut dielectric 3.0mm from the small eyelet, and cut off the exposed conductor to 3.0mm.
- e. Tin the exposed conductor and the inside hole of the contact.
- f. Slide the contact onto the conductor and solder. Remove any excess solder.
- g. Seat contact and eyelets into connector body and install the gasket firmly against the eyelets. Insert washer firmly against the gasket.
- h. Screw nut into connector body and tighten, holding connector body stationary. Tighten to 40 – 47 Newton metres (Nm) torque.

Assembling Miniature RF Fuel-Quantity-Indicating Connectors

36. For assembly of Nu-Line 1200 Series coaxial connectors to coaxial cable, (see Figure 12-42), use the following procedure:

- a. Remove 12.7mm of outer jacket, exposing shield.
- b. Slide nut, washer, and gasket, in that order, onto outer jacket.

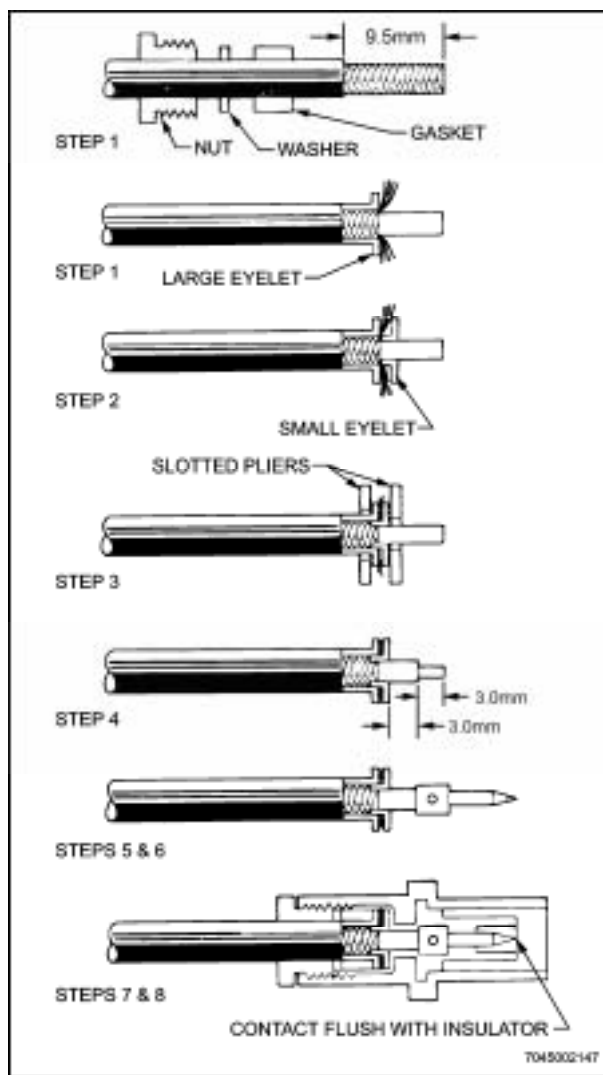


Figure 12-41 Attaching Liquidometer 9100 Series Connectors to Coaxial Cable

- c. Screw threaded braid clamp over jacket as shown.
- d. Comb out braid, and fold braid back over braid clamp, without overlap.
- e. Slide braid clamp sleeve (large ID toward gasket) over braid, and trim off excess braid with scissors. Install O-ring as shown.
- f. Place contact retainer firmly over dielectric, and strip off dielectric flush with contact retainer, exposing centre conductor.
- g. Cut off centre conductor 2.0mm from cut end of dielectric.

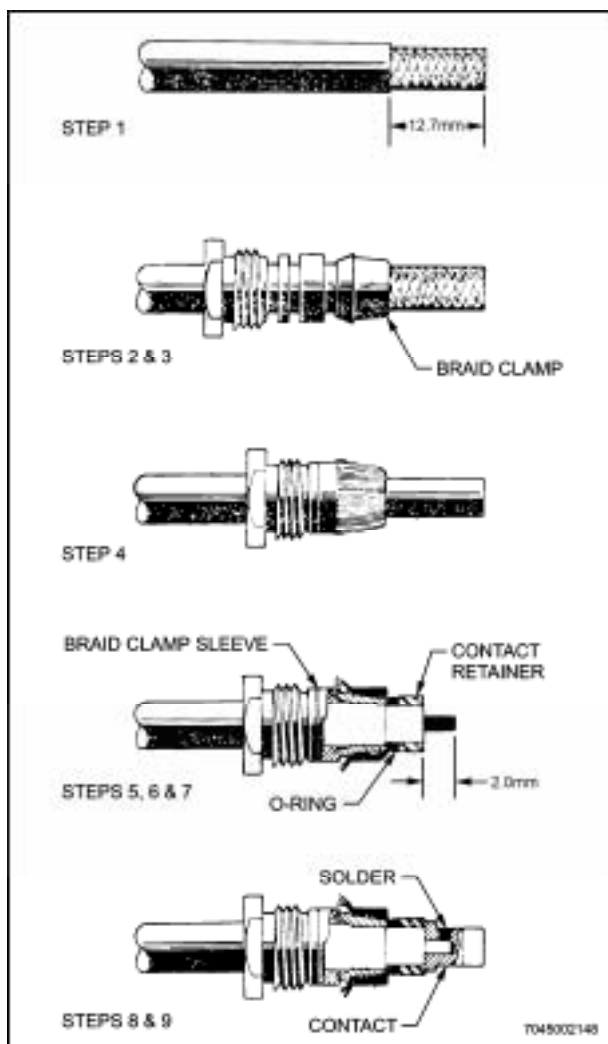


Figure 12-42 Attaching Nu-Line 1200 Series Connectors to Coaxial Cable

- h. Slide contact, male or female, over centre conductor so that contact butts flush against dielectric.
- i. Solder contact to centre conductor; contact must still be flush against dielectric after soldering.
- j. Slide cable assembly into connector body as far as it will go. Apply (MIL-S-22473, Grade C, sealing compound completely around the hex nut threads. Torque nut to approximately ten inch pounds.

NOTE

When connector is properly torqued, the gap between nut and body assembly should not exceed 1.0mm.

37. For assembly of Liquidometer S62 and S63 series connectors to RG-58/U coaxial cable (see Figure 12-43), use the following procedure:

- a. Slide nut and bushing back over cable. Cut outer jacket to dimension A in Table 12-9, being careful not to nick braid.
- b. Place the two halves of the cable clamp over the cable, lining up front (large) end of clamp with cut end of outer jacket. Slide bushing over tapered end of clamp. Compress bushing over cable clamp with special pliers as far as it will go.

NOTE

Special pliers No. TJF-107 are available from connector manufacturers.

- c. Comb braid back over clamp and trim braid around edge of clamp.

NOTE

Omit step (d) when using connectors S624 and S634.

- d. Slide washer, gasket, and second washer over dielectric and push up to cable clamp. Cut off dielectric to expose 2.4mm of conductor, and tin conductor.
- e. Slide contact over conductor and solder. Remove any excess solder.
- f. Slide assembly into plug or jack body until contact shoulder seats on insulator. Screw clamp nut into body, using a torque of 20Nm.

Table 12-9 Stripping Dimensions for Coaxial Cable Assembled to Liquidometer S62 and S63 Series Connectors

Connector (Liquidometer Number)	Stripping Dimension A
S62-1 and -4	8.7mm
S62-2 and -3	7.9mm
S63-1 and -4	7.9mm
S63-2 and -3	3.9mm

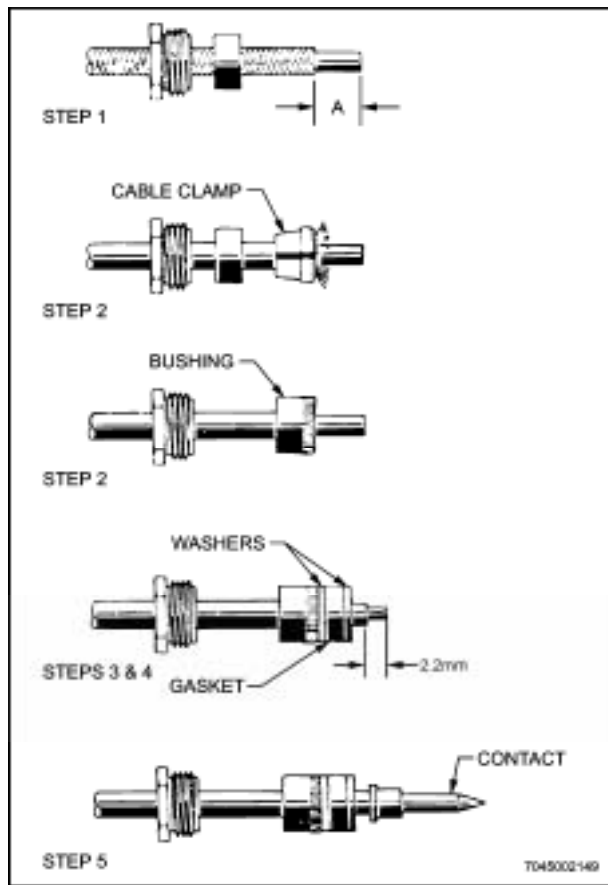


Figure 12-43 Attaching Liquidimeter S62 and S63 Series Connectors to Coaxial Cable

ASSEMBLY PROCEDURE FOR SUB-MINIATURE CONNECTOR, ONO89558

38. For assembly of connector to RG-195/U coaxial cable, use the following procedure:
- Install the sealing boot and slide the outer ferrule onto cable prior to stripping the cable. (See Figure 12-44.)
 - Strip cable jacket, braid, and dielectric to dimensions indicated. (See Figure 12-44.) All cuts are to be square and sharp. Do not nick braid, dielectric or centre conductor when cutting. If the wire ends of the centre conductor are frayed, twist them to normal lay.
 - Flair the ends of the wire braid to facilitate insertion of inner ferrule of body assembly. (See Figure 12-44.) Do not comb out the braid.
 - Place the stripped centre conductor into the contact until the cable dielectric butts against it. End of the wire must show through the inspection hole. (See Figure 12-44.)

- Insert the contact into the crimping tool until it is fully seated in the contact locator. Crimp with one full stroke. (See Table 12-10 for crimping tool information.)

Table 12-10 Crimping Tool Details

Crimp on Centre Contact		
Basic Tool	Basic Tool Setting	Contact Locator
M22520/2-01	No. 5	M22520/2-24

- Install the centre contact in the body assembly while sliding the inner ferrule underneath the wire braid. (See Figure 12-45.) The centre contact shall be inserted until it is locked into place in the body assembly. A 1.5 kilogram min to 2.3 kilogram max pull shall be exerted on the cable to assure that the contact is securely locked in place.
 - Slide the outer ferrule over the wire braid and up against the body assembly. No slack shall exist in the wire braid.
 - Crimp the outer ferrule with M22520/5-01 tool and M22520/5-10 die. See Figure 12-46.
 - The shielded contact now assembled shall be inserted into the connector assembly with insertion tool ONO89564.
 - Push the sealing boot forward into the grommet of the connector until the O-ring riser of the boot has effected its snap-in seal. (See Figure 12-47). The installation of the shielded contact is complete.
39. For assembly of connector to twisted pair of 26 or 24 A.W.G. wires, use the following procedure:
- Install the sealing boot onto the untwisted wire prior to stripping the wires. (See Figure 12-48.)
 - Strip the wires to the dimensions indicated. (See Figure 12-48.) All cuts are to be square and sharp. Do not nick the conductors when stripping the insulation.

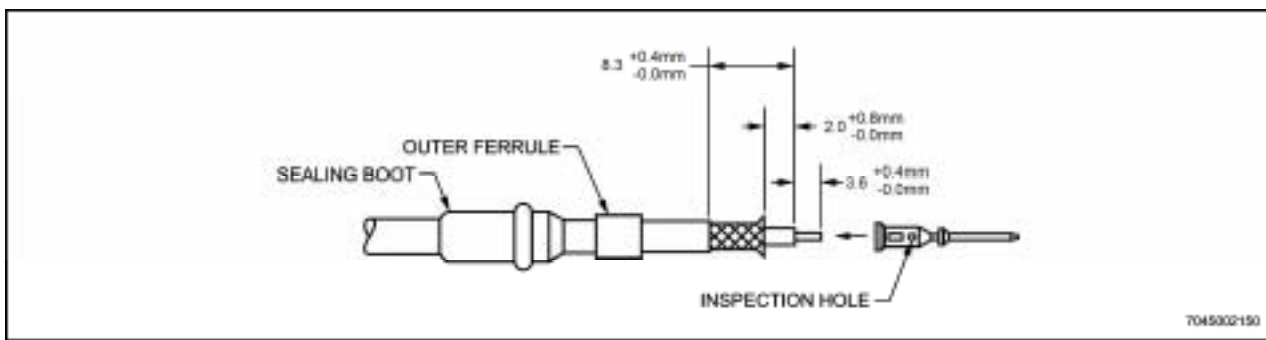


Figure 12-44 Stripping Dimensions, Sealing Boot, Ferrule and Contact Before Crimping the Contact

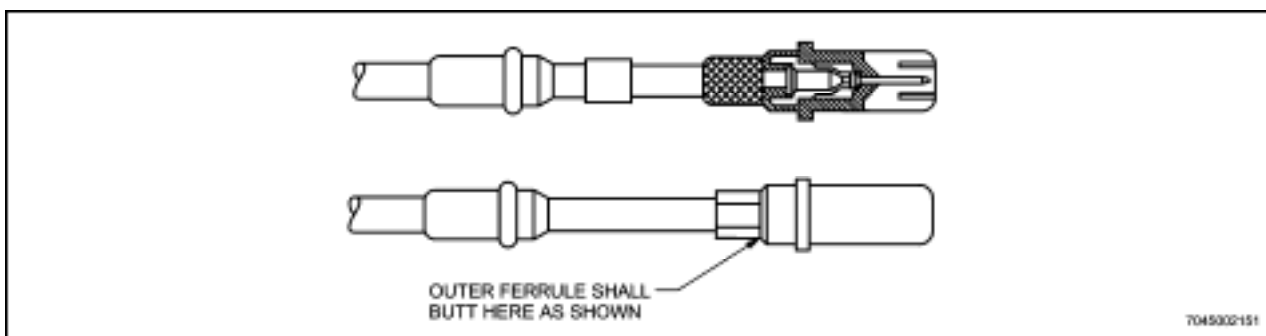


Figure 12-45 Final Assembly and Outer Ferrule Crimping

- c. Fold the longer stripped wire to a 5.5mm dimension. (See Figure 12-48.)
- d. Place the insulator and the contact onto the shorter stripped wire. The wire which is now the centre conductor must be visible through the contact inspection hole (See Figure 12-49.)
- e. Insert the contact into the crimping tool until it is fully seated in the contact locator. Crimp with one full stroke. (See Table 12-11 for crimping tool information.)
- f. Slide the outer ferrule onto the cable prior to installing the centre contact in the body assembly. (See Figure 12-50.)
- g. Position the folded wire on top of the inner ferrule. (See Figure 12-50.) The centre contact shall be inserted until it is locked in place in the body assembly. A 1.5kg min to 2.3kg maximum pull shall be exerted on the cable to assure that the contact is securely locked in place.
- h. Slide the outer ferrule over the folded wire and against the body assembly. Crimp the outer ferrule with crimp tool ONO89140.
- i. The shielded contact now assembled shall be inserted into the connector assembly with insertion tool ONO89564.
- j. Push the sealing boot forward into the grommet of the connector until the O-ring riser of the boot has effected its snap-in seal. (See Figure 12-49). The installation of the shielded contact is complete.

Table 12-11 Crimping Tool Details

Crimp on Centre Contact			
	Basic Tool Setting		
Basic Tool	26 A.W.G.	24 A.W.G.	Contact Locator
M22520/2-01	No. 6	No. 7	M22520/2-24

- f. Slide the outer ferrule onto the cable prior to installing the centre contact in the body assembly. (See Figure 12-50.)

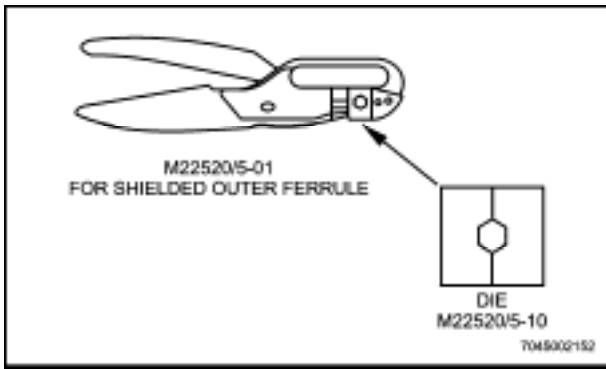


Figure 12-46 Crimping Tool for Shielded Outer Ferrule

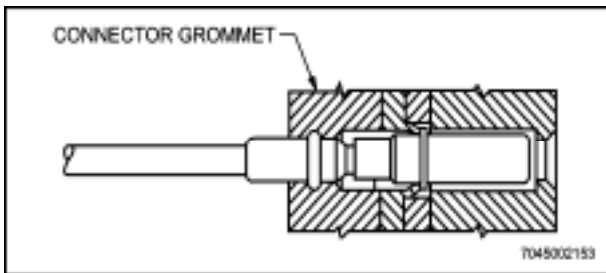


Figure 12-47 Final Connection Assembly

40. For assembly of Dage Type Connectors, use the following procedure:

- a. Cut off end of cable even and square.
- b. Slide cable nut and bushing over cable. Do not nick, braided shield or conductor.
- c. With a knife cut through and remove 9.5mm of outer jacket.

- d. Comb out braid and cut inner dielectric 2.5mm from end of cable.
- e. Place cable clamp in place making sure end of clamp is flush with end of outer jacket. (See Figure 12-51.)
- f. Slide nut into place to hold cable clamp in position.
- g. Carefully fold back braid over cable clamp, position first washer and gasket in place and trim excess braid flush with washer.
- h. Place second washer in place, tin centre conductor and contact hole.
- i. Solder contact on centre conductor flush with inner dielectric. Place insulator in place.



TURN NUT ONLY. DO NOT ROTATE BODY OF CABLE.

- j. Insert cable assembly into connector, push firmly in place and tighten nut until flush with body of connector.
- k. Place front gasket in place.

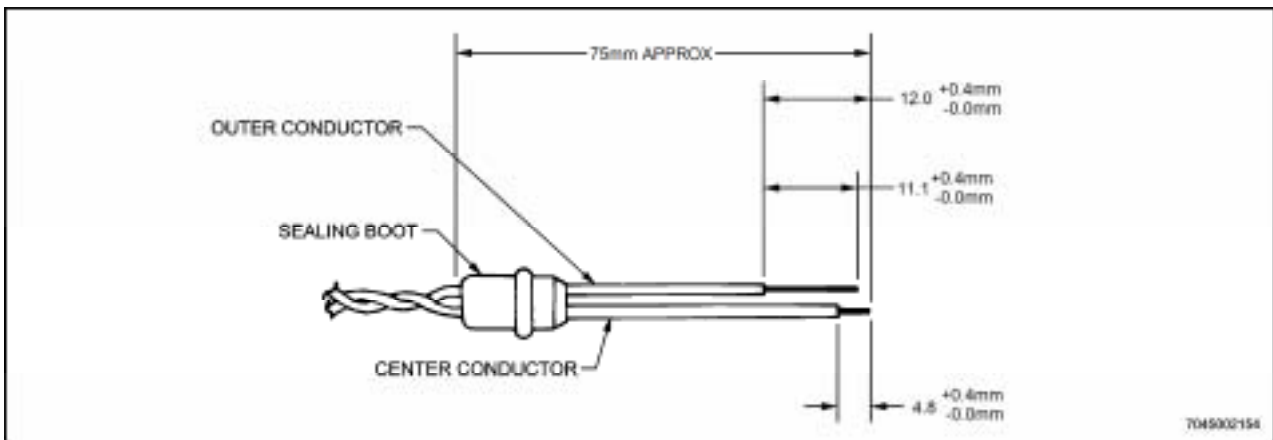


Figure 12-48 Stripping Dimensions and Sealing Boot Before Crimping the Contact

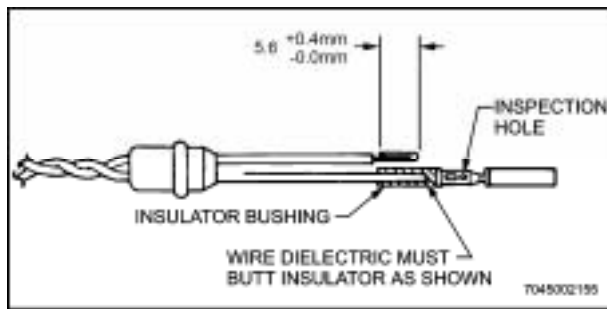


Figure 12-49 Assembly Before Crimping

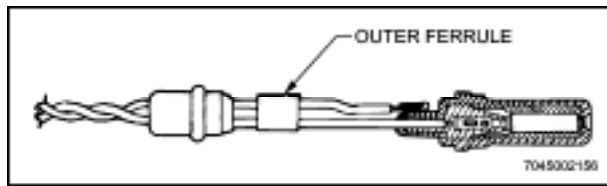


Figure 12-50 Final Assembly and Outer Ferrule Before Crimping the Outer Ferrule

ASSEMBLY PROCEDURE FOR SMA TERMINATION OF SEMI-RIGID CABLE USING HAND TOOL M22520/36

41. SMA connectors, Category F, designed for use with RG-402/U (3.6mm OD) and RG405/U (2.2mm OD) semi-rigid cable, consist of a plug (with or without a centre contact) or jack body. The plug (or jack) is assembled and terminated to the semi-rigid cable by means of an integrated grip sleeve. See Figure 12-52. A plug couples to a jack by means of screw threading.

Tooling for Preparing Semi-Rigid Cable

42. Before terminating the SMA connectors to the semi-rigid cable, the cable must be prepared using the components of the preparation tooling listed in Figure 12-53.

Preparing the Semi-Rigid Cable

43. Prepare both cable ends as follows:
- a. Place cable dressing fixture in vise.
 - b. Insert end of cable into cable size-designated hole (see Figure 12-53).
 - c. Position 2.8mm to 3.3mm thick jeweller's saw in slot of fixture, and carefully cut through cable shield while rotating cable and maintaining pressure against fixture.
 - d. Remove cable from fixture.



DO NOT NICK OR SCORE CENTRE CONDUCTOR WITH BLADE.

- e. Using a razor blade, cut and remove dielectric to expose centre conductor.
- f. Using the trimmer tool, smooth copper shield and dielectric (Figure 12-53). This is accomplished as follows:
 - (1) Slip correct end of tool over exposed end of cable.
 - (2) Push lightly against cable while slowly revolving tool clockwise two or three times.
 - (3) Remove tool and clean any chips from end of cable.
- g. Re-insert cable into cable dressing fixture for pointing. Keep pressure against fixture and rotate cable slowly while filing on 45° surface (Figure 12-54) with a small pillar file or mill file. Continue filing until conductor offers no resistance to the file.
- h. Remove cable and brush off any chips.

Selection of Cable, Connector, and Tool Components

44. Refer to Figure 12-55, and select the correct combination of cable, connector, hand tool locator, and die set from Table 12-12.

Tool Setup Procedure

45. Before the connector can be terminated to the prepared cable the hand tool must be set up with an appropriate locator and dies as follows:
- a. Having selected the proper locator die set for the selection chart (see Table 12-12), loosen locator locking screw on tool (see Figure 12-56).
 - b. Insert locator into cavity of ram, making sure locator bottoms on top surface of ram.
 - c. Re-tighten locking screw.
 - d. Position each die of the die set on its respective tool jaw, orienting chamfer on die as shown in Figure 12-57. Die chamfers positioned improperly will result in an unacceptable termination.

- e. Secure, without tightening, the dies to jaws with the die-holding screws.
- f. Align dies by placing cable inside locator and squeezing the handles to close tool. After ensuring that the dies are aligned with each other, tighten the die-holding screws (see Figure 12-58).

Cable Termination

46. Refer to Figure 12-59 (plug termination) or Figure 12-60 (jack termination), then proceed as follows:

- a. Slide connector over cable, flange end first.
- b. Place connector and cable inside locator of tool.
- c. Ensure that centre conductor or centre contact enters hole in locator if applicable.
- d. Ensure that connector is seated squarely on locator.

- e. When terminating PANEL JACK to cable, align sides of panel jack with tool jaws as shown in Figure 12-60.
- f. Support cable connector assembly and close tool handles until ratchet releases to complete termination.

Cable Bending Procedures

47. The 90° bending fixture assembly makes precise right-angle bends on the cable adjacent to the flange end of the plug. Refer to Figure 12-61 for tangent-of-radius to end-of-connector dimensions. Bends can have a radius of either 3.1mm on RG-402/U or RG-405/U cable, or 6.3mm on RG-402/U cable only. The spacer shown in Figure 12-62 must be positioned behind the dummy jack when bending the following: RC-402/U cable to either radius when cable is terminated with either plug M39012/79-3308 or plug M39012/79-3208; RG-405/U cable to 3.2mm radius when cable is terminated with plug M39012/79-3307 or plug M39012/79-3207. Simply loosen dummy jack to insert spacer, and retighten jack before proceeding.

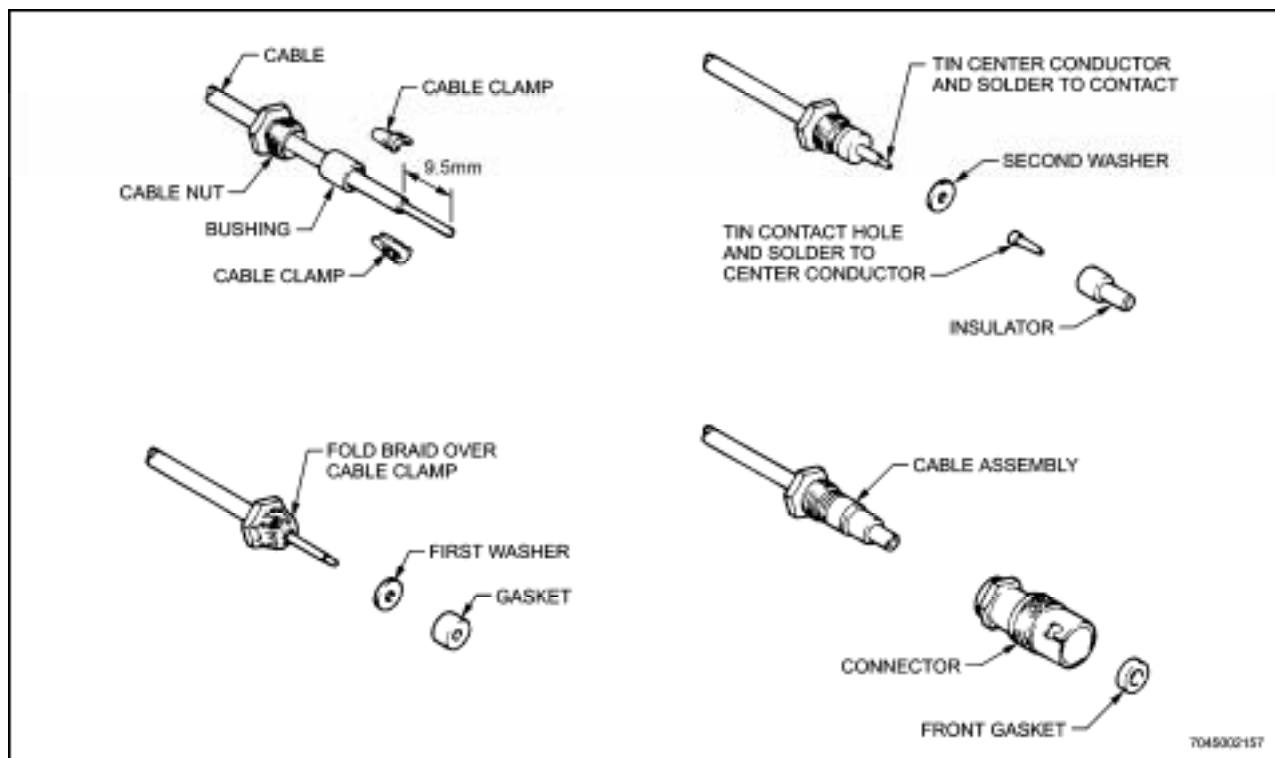


Figure 12-51 Assembly of Dage Type Connectors

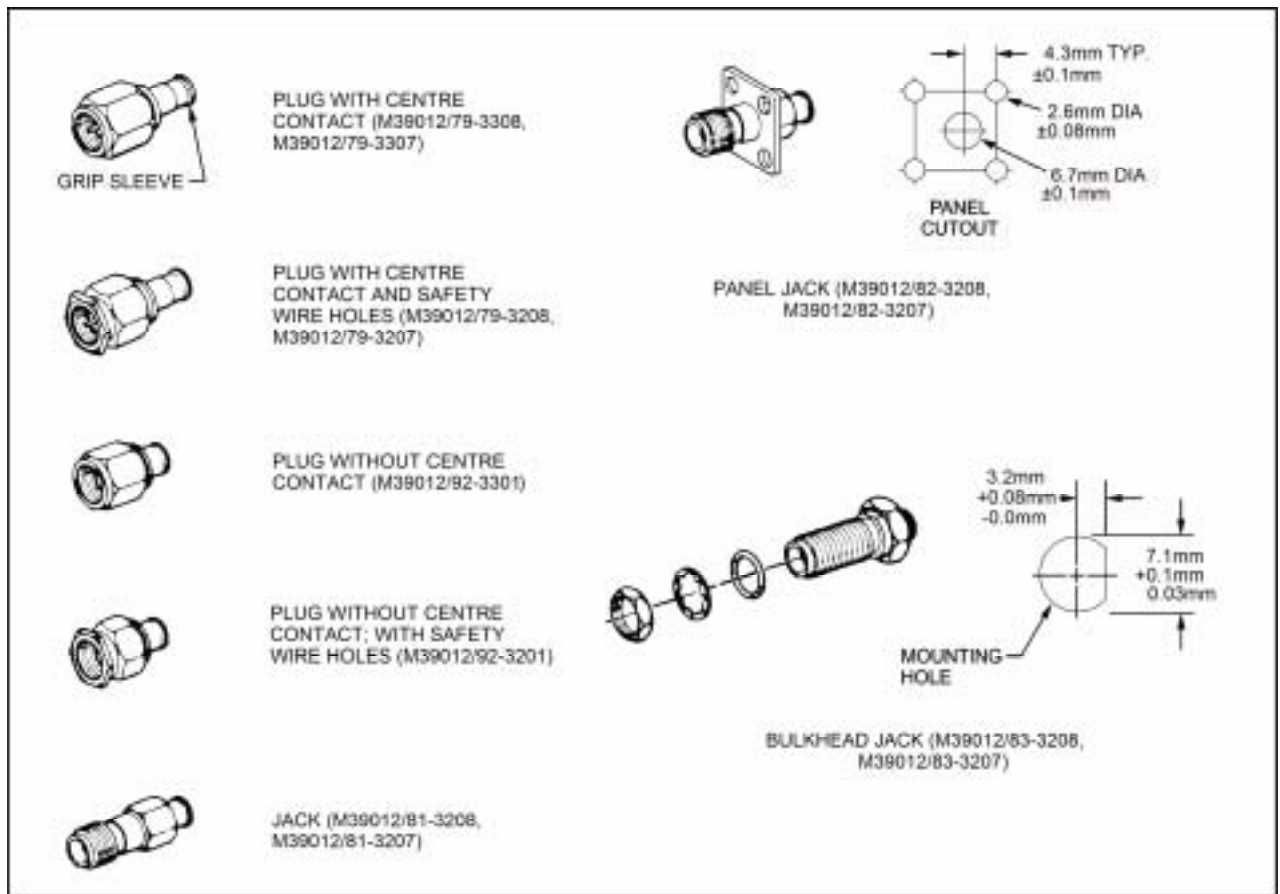


Figure 12-52 SMA Connectors M39012, Category F

Table 12-12 Cable, Connector and Tool Component Selection

Connector Part Number		Connector Description	Locator Part Number
For RG-402/U (3.6mm OD.) Cable Using Dies M22520/36-02	For RG-405/U (2.2mm OD.) Cable Using Dies M22520/36-03		
M39012/79-3308	M39012/79-3307	Plug with centre contact	M22520/36-04
M39012/79-3208	M39012/79-3207	Plug with centre contact, with safety wire holes	M22520/36-04
M39012/92-3301		Plug without centre contact	M22520/36-06
M39012/92-3201		Plug without centre contact, with safety wire holes	M22520/36-06
M39012/81-3208	M39012/81-3207	Jack	M22520/36-05
M39012/82-3208	M39012/82-3207	Panel Jack	M22520/36-05
M39012/83-3208	M39012/83-3207	Bulkhead Jack	M22520/36-05

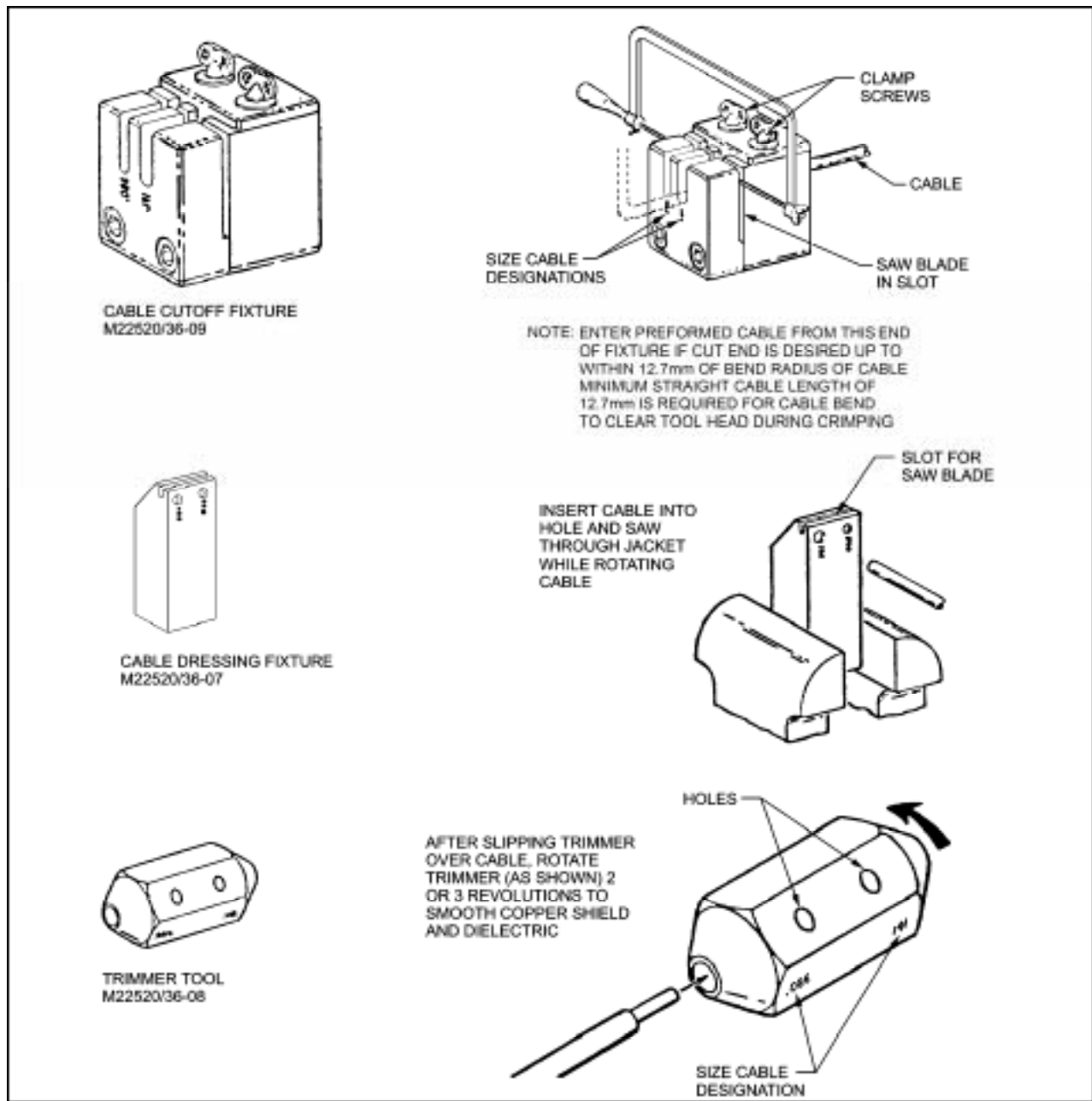


Figure 12-53 Tooling to Prepare Semi-rigid Cable

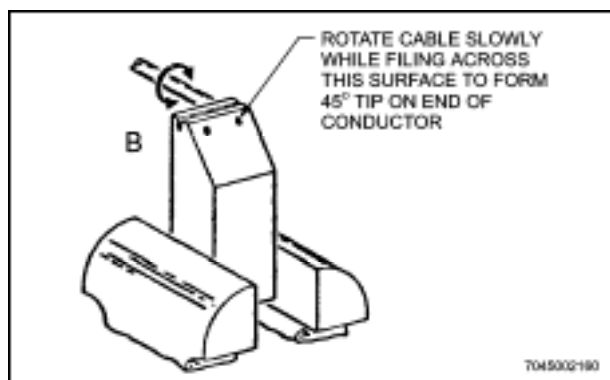


Figure 12-54 Pointing the Cable End

6.3mm Bends on RG-402/U Cable or 3.2mm Bends on RG-405/U Cable

48. Refer to Figure 12-63, and proceed as follows:
 - a. Screw terminated plug onto dummy jack of holder.
 - b. Refer to Table 12-13, and slip appropriate bend segment under cable.

NOTE

TOP marking is not designated on bend segment M22520/36-12.

- c. Using finger pressure, bend cable around segment to desired angle, 90° maximum.
- d. Unscrew plug from dummy jack on holder.

0.125-Inch Radius Bends on RG-402/U Cable

49. Refer to Figure 12-64, and proceed as follows:

- a. Form a 6.3mm radius bend as described in paragraph 48.
- b. Remove plug from dummy jack on holder.
- c. Replace 6.3mm bend segment with the 3.2mm segment for RG402/U cable.
- d. Re-attach plug to dummy jack of holder.

- e. Place conforming block over cable with tongue of block in slot of holder (see Figure 12-64).
- f. Insert limiting pin through hole in conforming block, and slide block against holder.
- g. Place assembly in a vice with a 7cm opening and tighten vice to force conforming block into holder slot. Continue to tighten vice until legs of holder prevent further movement of vice jaws.
- h. Remove assembly from vice, and unscrew plug from dummy jack on holder.
- i. Remove conforming block and bend segment from holder.

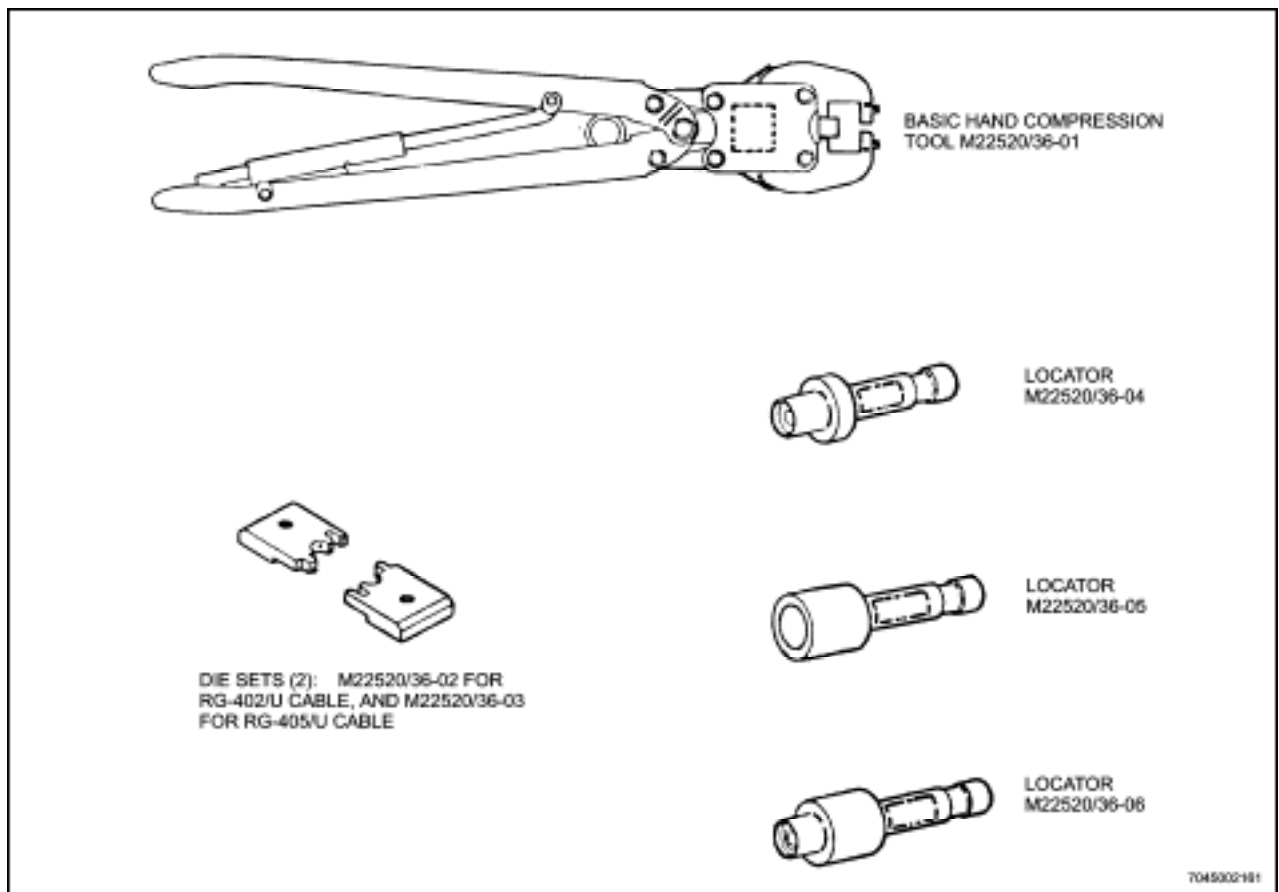


Figure 12-55 Termination Tooling

Table 12-13 Bend Segment Selection

Cable	Bend Segment Number	Radii Dimension	Plug Number
RG-402/U	M22520/36-12	6.3mm	M39012/79-3308
	M22520/36-11	3.2mm	M39012/79-3208 M39012/92-3301 M39012/92-3201
RG-405/U	M22520/36-13	3.2mm	M39012/79-3307 M39012/79-3207

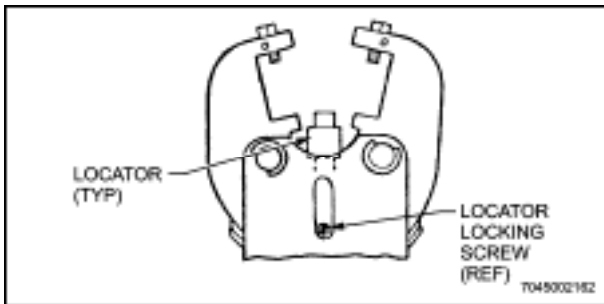


Figure 12-56 Locator and Locking Screw

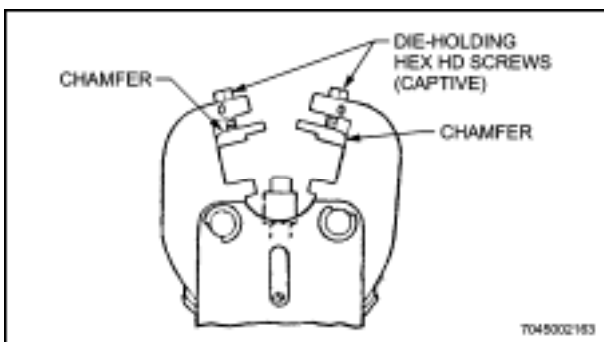


Figure 12-57 Orientation of Die Chambers

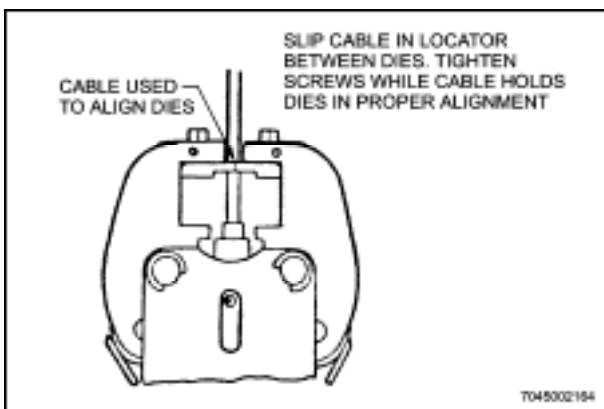


Figure 12-58 Die Alignment

Daily Maintenance

50. Each operator of the hand tool shall be made aware of, and responsible for, the following four steps of daily maintenance.

- a. Remove dust, moisture, and other contaminants with a clean brush, or a soft, lint-free cloth. Do NOT use objects that could damage the tool.
- b. Make sure proper retaining pins are in place and secured with proper retaining rings.
- c. Make certain all pins, pivot points and bearing surfaces are protected with a THIN coat of any good SAE No. 20 motor oil. Do NOT oil excessively.
- d. When tool is not in use, keep handles closed to prevent objects from becoming lodged in the dies; store tool in a clean, dry area.

Periodic Inspection

51. Regular periodic inspection and testing of hand crimping tools shall be performed in accordance with the requirements of Section 2 Chapter 6.

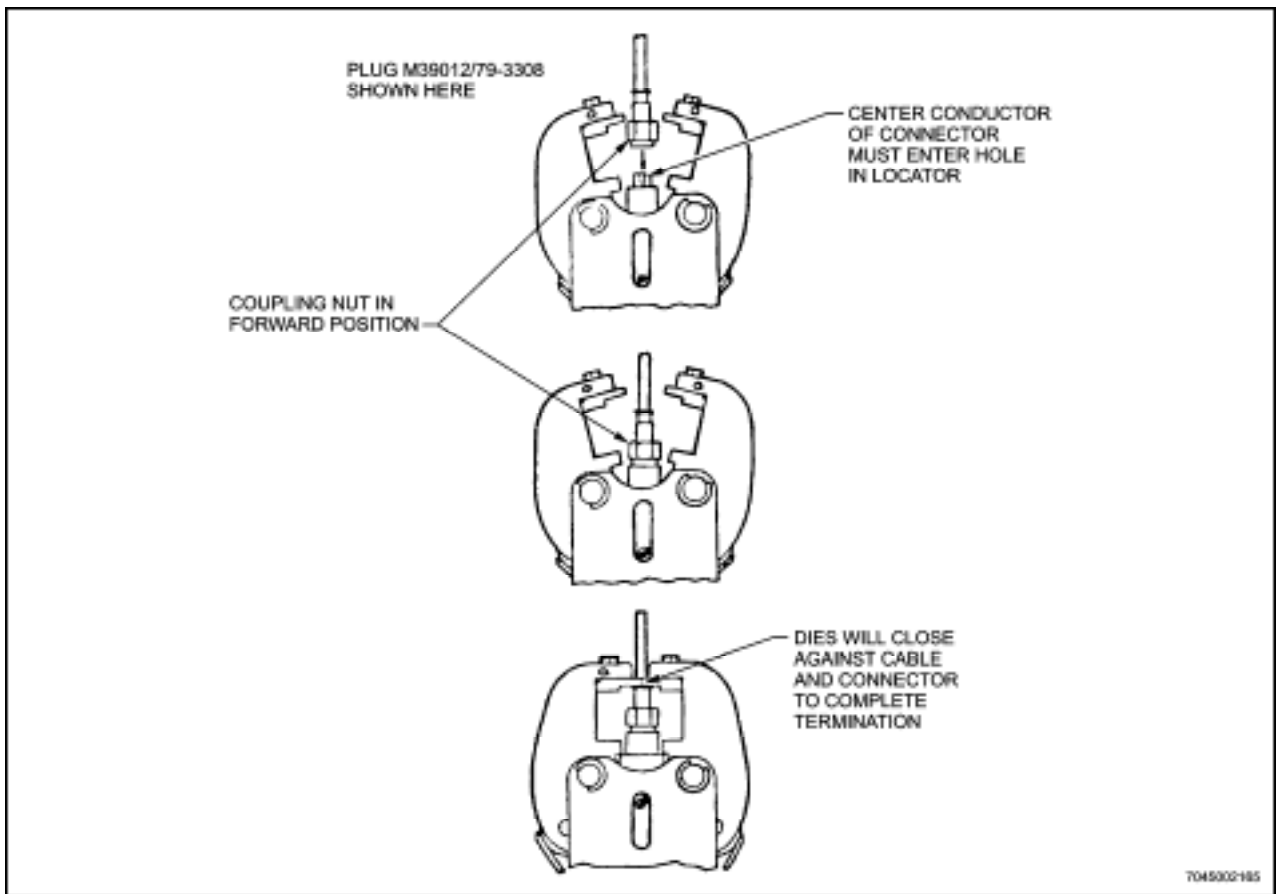


Figure 12-59 Plug Termination

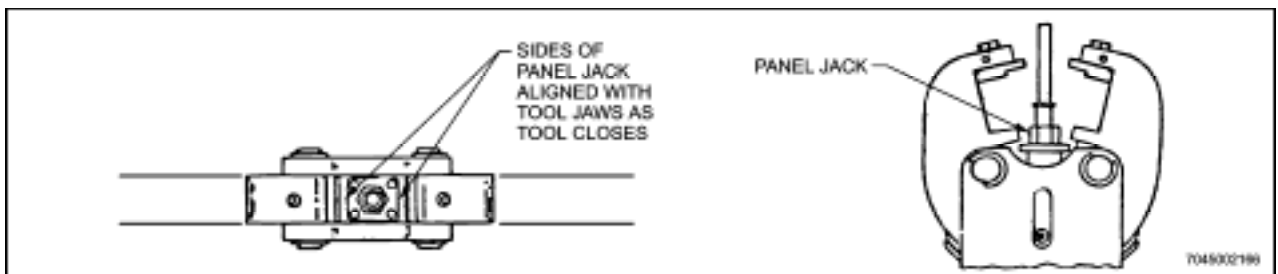


Figure 12-60 Jack Termination

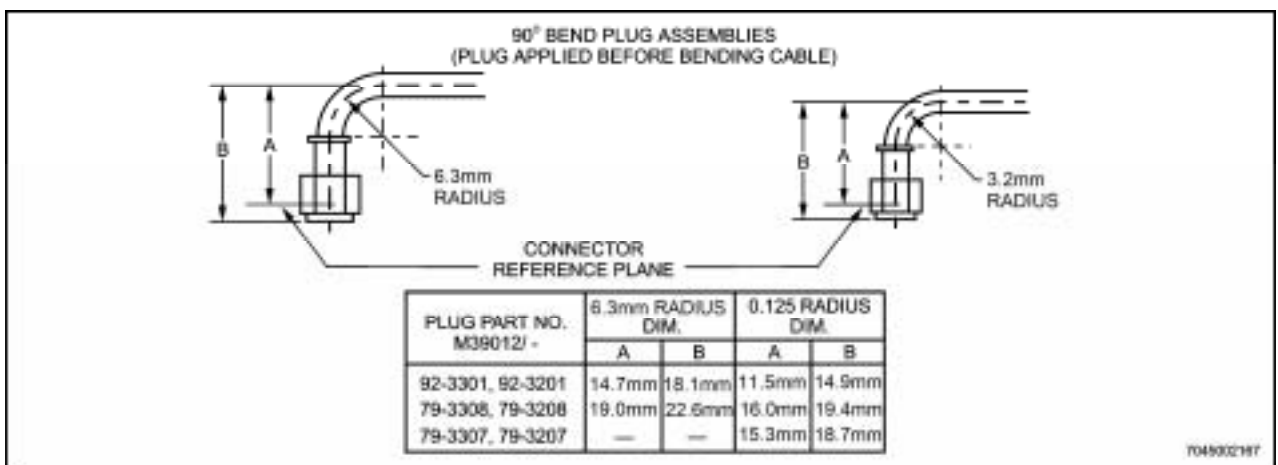


Figure 12-61 Radii Dimensions for Semi-Rigid Cable Bending

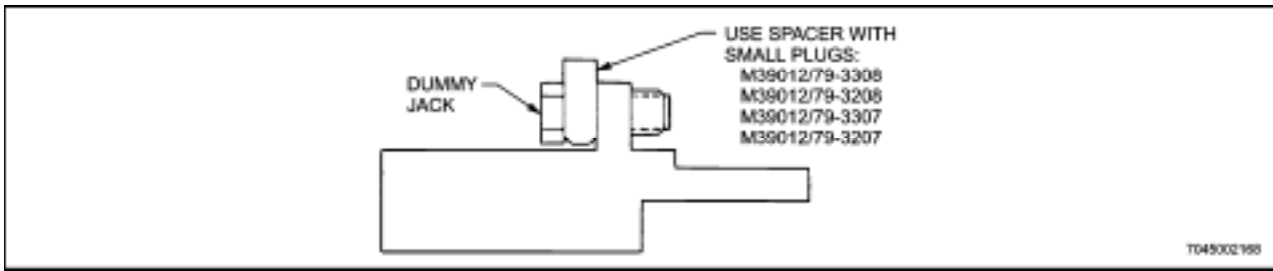


Figure 12-62 Spacer on Dummy Jack

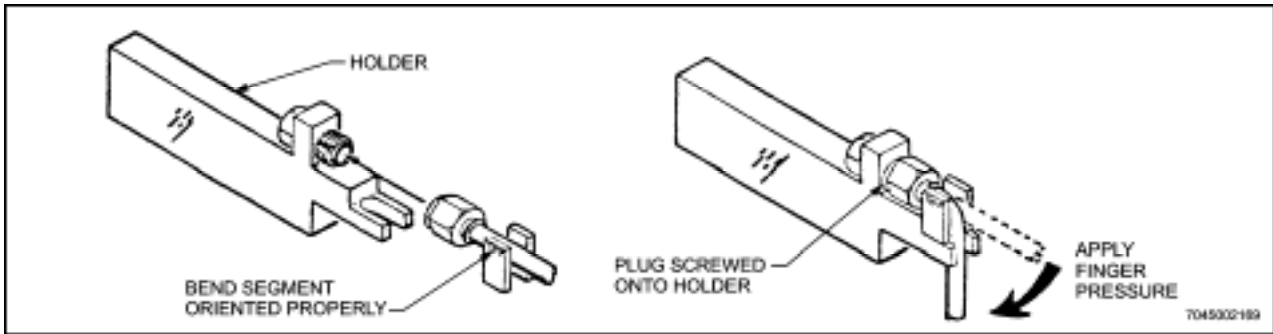


Figure 12-63 0.025 Inch Radius Bends on RG-402/U Cable and 0.125 Inch Radius Bends on RG-405/U Cable

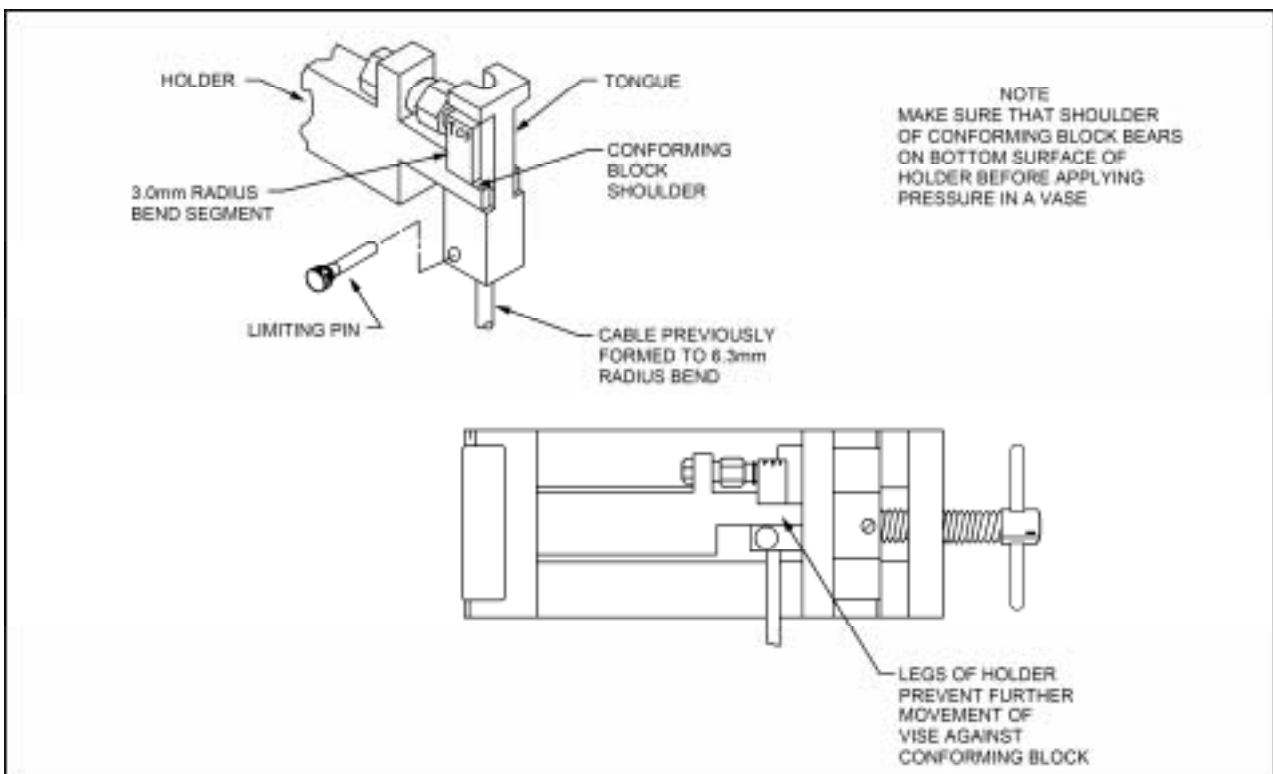


Figure 12-64 3.2mm Radius Bends on RG-402/U Cable

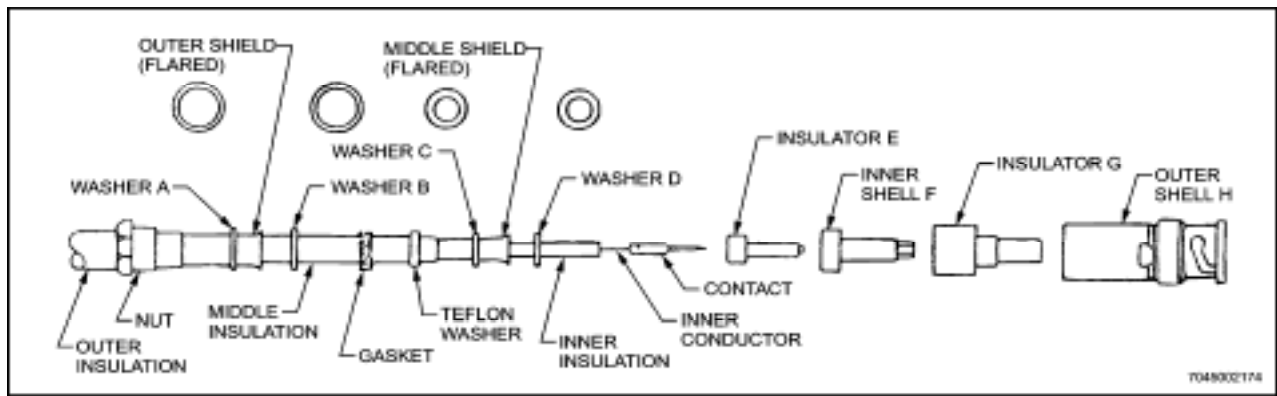


Figure 12-65 Triaxial Connector Assembly - Exploded View

TRIAXIAL CONNECTORS

52. MIL-PRF-49142 triaxial connectors and other such related connectors and fittings are intended for use with triaxial cable and can be used for radio frequency application when more shielding is required. It can be used in video circuits and for serial digital transfer.

Assembling Triaxial Cable Connectors

53. When assembling triaxial cable connectors to wire or cable, refer to Figure 12-65 through to Figure 12-68.

- a. Remove 12.7mm of outer insulation.
- b. Comb outer shield. Taper the shield over end middle insulation.
- c. Slide nut over outer insulation.
- d. Slide washer 'A' over tapered shield. Press the washer firmly against outer insulation.
- e. Cut outer shield to dimension shown in Figure 12-66.
- f. Flare outer shield. Install washer B firmly against shield. If necessary, trim shield flush with circumference of washers 'A' and 'B'.
- g. Install gasket firmly against washer 'B'.
- h. Cut middle insulation to dimension shown in Figure 12-67.
- i. Install teflon washer firmly against gasket.
- j. Install washer C firmly against teflon washer.
- k. Cut middle shield to dimension shown in Figure 12-67.
- l. Flare middle shield. Install washer firmly against shield. If necessary, trim shield flush with circumference of washers 'C' and 'D'.
- m. Cut inner insulation and inner conductor to dimensions shown in Figure 12-68.
- n. Tin inner conductor. Solder contact to inner conductor (do not over heat). Remove excess solder.
- o. Install items 'E', 'F', 'G' and 'H'. Tighten nut to 14 ± 1 inch-pounds while holding outer shell and outer insulation fixed.

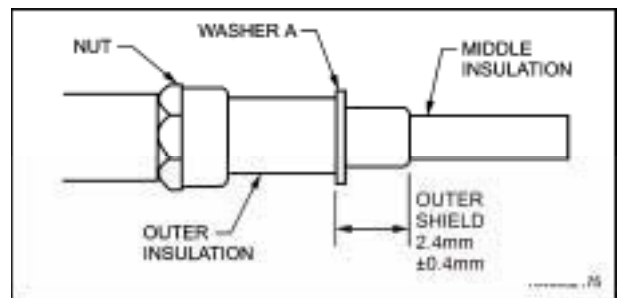


Figure 12-66 Attaching Triaxial Connector to Cable

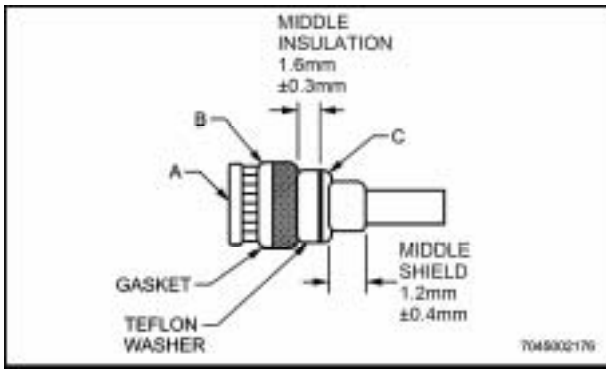


Figure 12-67 Attaching Gasket to Middle Insulation

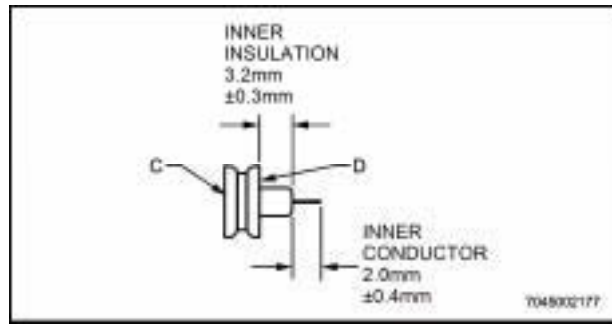


Figure 12-68 Attaching Outer Shell to Gasket