SHIELDED CABLES AND WIRES CONNECTING AT COAXIAL TYPE CONNECTORS, JACKS, PLUGS AND TERMINALS

CONTENTS

1. INDEX

2. GENERAL

2.1 Scope of Section

2.11 This section covers the general requirements and methods for connecting coaxial and twin-conductor cables at coaxial type connectors, jacks, plugs or terminals.

2.12 Each figure of this section illustrates only conditions to which reference is made in the text and is not to be considered as covering the requirements for other conditions that may be involved.

2.13 The requirements covered in this section shall be followed except as modified by applicable specifications and drawings.

2.2 Arrangement of Tools, Precautions and Verification

2.21 Refer to Section 700 Handbook 9 for information pertaining to these items.

3. INSTALLING EQUIPMENT

3.1 In addition to the tools and supplies ordinarily required for connecting and soldering operations, the following are required for the operations covered by this section.

R-3075	Crimper, Shield Sleeve (Die Codes V & X)
R-3142	Crimper, Shield Sleeve (Die Codes T & V)
R-3473	Crimper, Shield Sleeve
R-2783	Fixture, Holding, Coaxial Cable
R-2786	Pliers, Assembly, Coaxial Jack
R-2784	Pliers, Compressing, Shield
KS-6854	Screwdriver, 3-1/2"
R-3359	Tape, Gray Plastic Adhesive, 1/2"
R-4081	Crimping Tool

4. REQUIREMENTS AND METHODS

4.1 Preparation

4.11 Prior to connecting the cable to any coaxial type connector, jack, plug or terminal refer to:

(a) The terminating drawings (ED-92524-10 to -20) and connect the foregoing apparatus in accordance with these drawings. The terminating drawings indicate when a soldered or solderless shield connection shall be made.

(b) Section 760 of Handbook 9 for information pertaining to methods of checking for false or foreign shield grounds, type of solder to be used, and soldering precautions for Pe insulated conductors.

4.12 Butt and strip cables as outlined in Section 730 of Handbook 9.

4.13 To facilitate soldering the inner cable conductor, dress a soldering copper tip down to approximately 1/8 inch in width.

4.14 Clamp cable in holding fixture (R-2783), as shown in Ffgure 1 and adjust the fixture to a position that will facilitate the operation being performed.

NOTE: Fill out split halves of hole in clamping head as required, with friction or acetate fiber tape, when cable is too small to be otherwise adequately held in fixture.

4.15 Remove the jacks, etc., to be connected from their mounting panel, since in general the mounting location of the apparatus prohibits terminating the cable in a satisfactory manner.

4.16 Remove the sleeve or shell from the jack, plug, etc. to be connected, using the 3-1/2" screwdriver (KS-6854).

CAUTION: USE CARE TO AVOID DROPPING THE SMALL SCREWS AS THEY MAY FALL INTO THE EQUIPMENT, THUS BECOMING A POTENTIAL SOURCE OF TROUBLE.

4.2 Soldered Shield Connections

NOTE: This type of connection shall be made only when the connector, jack, plug, or terminal is not designed for a solderless crimped shield connection.

4.21 Prior to placing the jack, plug, etc., onto the cable perform the following:

4.211 When required, place sleeving under the shield. The terminating drawings indicate when and what type of sleeving is required.

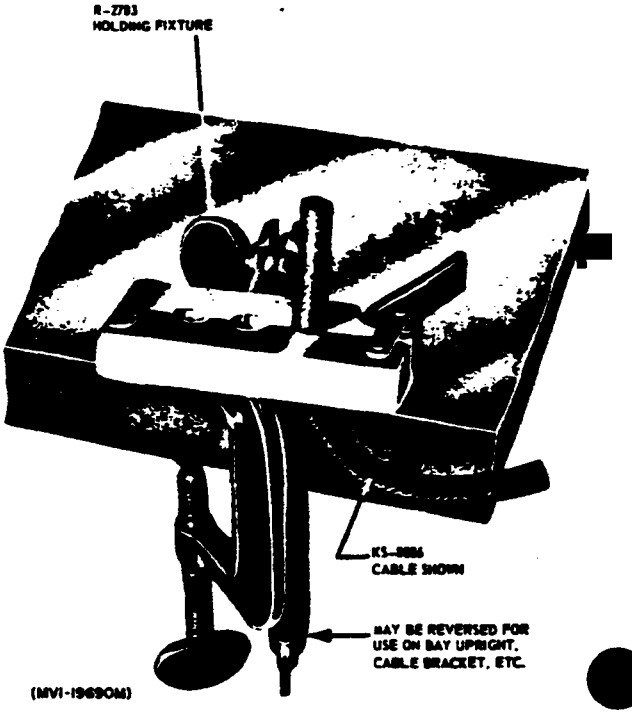

FIG. 1 HOLDING FIXTURE FOR COAXIAL CABLE (PARS. 4.14,4.221)

4.212 Tin around the end of the shield and compress the tinned end of the shield using the compressing pliers (R-2784) as shown in Figure 2, to facilitate placing the plug or jack on the cable. Two compressions, with tool rotated 90°, will reduce the "tits" formed at the side closure points of the die.

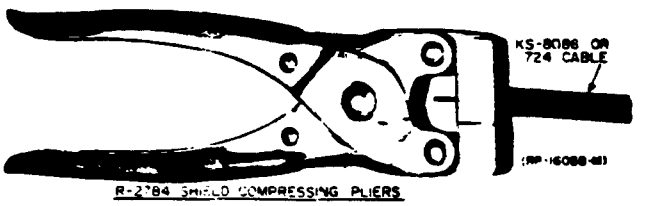

FIG. 2 SHIELD COMPRESSING PLIERS (PAR. 4.212)

4.213 When the shield is to be connected to the body of the jack, plug etc., by means of a P-188130 Ferrule, first solder the ferrule to the jack body before soldering the shield to the ferrule.

4.214 When connecting KS-8086 cable, just before placing the jack or plug body on the cable, carefully scrape the black coating from the central conductor with the short nose skinning pliers, using care to leave the lead plating intact.

4.22 Before soldering the shield perform the following:

4.221 When connecting other than split type jacks or plugs support end of cable in a vertical position as shown in Figure 1 to prevent dislocation of polyethylene dielectric (as in 724 and SDC-75-2S (RG 59/U) cables) in case it is softened by heat.

4.222 When connecting split type jacks or plugs, clamp the split type jack or plug body in the holding fixture as shown in Figure 3, so as to assure that the associated shell or sleeve can be placed on the body after soldering.

TO BE REISSUED AT A LATER DATE TO INCLUDE

THIS PHOTOGRAPH

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FIG. 3 SPLIT PLUG BODY CLAMPED IN HOLDING FIXTURE (PAR. 4.222)

4.223 Place a loose plug into the jack or a jack onto the plug, as the case may be, and leave it in place until the soldered connection has throughly cooled since the insulator holding the central terminal is a cerex compound which may be softened by heat during the soldering operation.

4.23 Place the jack or plug etc., onto the cable, being careful to see that the inner cable conductor is properly inserted into the central terminal and that the end of the shield is sufficiently exposed on each side of the jack or plug, etc. (when ferrules are not provided) to insure a good soldered connection.

CAUTION: USE CARE IN HANDLING JACK BODY ASSEMBLIES TO AVOID DISTORTING THE CONTACT SPRINGS.

4.231 Position jack bodies so that the screw holes in jack bodies which have a fixed relation to the mounting lug on the associated jack sleeve are correctly oriented in order to avoid twisting the cable when the jack is being mounted.

4.24 Solder the shield to the sleeve of the apparatus body or to the ferrule. Avoid excess solder when soldering the shield as it may run down the plug or jack body and be difficult to remove. Excess solder can be removed from the outside of plug or jack body by wiping it off with a dry cloth (such as KS-14666 cleaning cloth) while the solder is still molten.

CAUTION: BEFORE SOLDERING MAKE SURE THAT THE CABLE AND APPARATUS BODY ARE POSITIONED CORRECTLY, BECAUSE IT IS VERY DIFFICULT TO REMOVE A JACK OR PLUG FROM THE CABLE, ONCE THE CONNECTION HAS BEEN MADE OR PARTIALLY MADE.

4.3 Solderless Crimped Shield Connections

4.31 Prior to making a crimped connection, refer to Section 740 of Handbook 9 for information and precautions pertaining to the use of crimping tools.

4.311 Periodically, before using the shield sleeve crimpers (R-3075, R-3142 or R-3408.) check with a feeler gauge that there is not more than .003" space at the open end of the dies when the dies are closed. Appropriately tag and return tools failing to meet this requirement to Installation Stockkeeping for adjustment. Make no attempt to correct any defect in die closure on the job.

4.312 After placing the assembly to be crimped into the proper die opening use both hands, apply a steady even pressure, and squeeze the handles of the tool together until the dies are completely closed, and the ratchet feature releases. Then remove the tool from the crimper connection.

NOTE: If for some unusal reason the dies cannot be completely closed, the ratchet feature may be released by placing the tip of a screwdriver under the tip of the pawl and lifting it up or by pushing on the heel of the pawl at the point where the spring is attached.

4.32 Figure 4 shows the various parts and tools required for making a crimped connection.

PARTS FOR CONNECTING TO COAXIAL CONNECTORS, JACKS, PLUGS AND TERMINALS								
INNER SLEEVE		OUTER SLEEVE				CRIMPING TOOL		
CABLE	INNER SLEEVE TUBULAR EXTEN.	KS-15712 T&B EQUIVALENT	COLOR	DIE CODE	COLOR	KS-15710 LIST	CURRENT TOOL	R-4081 TOOL USING TOOL
724,726 727A,728A KS-8086	PART OF APPARATUS	LIST 5 GSC-327	TIN	V	TIN	3 OR 2	R-3075 OR R-3142	Detail 3
SDC-75-2S (RG-59/U)	PART OF APPARATUS	LIST 4 GSC-287	BLUE	T	BLUE	2	R-3142	Detail 4
KS-19224-L1	PART OF APPARATUS	LIST 13 GSC-128	BLUE	-	BLUE	4	R-3473	Detail 7
754	PART OF APPARATUS	LIST 6 GSC-415	RED	X	RED	3	R-3075	Detail 2

FIG. 4 PARTS FOR CRIMPED SHIELD CONNECTION (PAR. 4.32)

4.33 When connecting KS-8086 cable, just before placing the jack or plug body on the cable, carefully scrape the black coating from the central conductor with the short nose skinning pliers, using care to leave the lead plating intact.

4.34 Make solderless crimped shield connections as follows:

4.341 Slip the required outer sleeve over the shield and back onto the cable jacket.

4.342 Fan the shield by rotating the exposed conductor dielectric in a circular motion.

4.343 Place the jack, plug, etc. onto the cable being careful that the inner conductor is properly inserted into the central terminal and that the shield is well seated over the inner sleeve (tubular extension) as shown in Figure 5.

CAUTION 1: USE CARE IN HANDLING JACK BODY ASSEMBLIES TO AVOID DISTORTING THE CONTACT SPRINGS.

CAUTION 2: WHILE PLACING THE APPARATUS ON THE CABLE EXERCISE CARE TO INSURE THAT ANY LOOSE ENDS OF THE SHIELD ARE NOT INSERTED UNDER THE TUBULAR EXTENSION OF THE APPARATUS BODY OR THAT THE SHINER PORTION OF THE INNER CABLE CONDUCTOR DOES NOT BECOME KINKED. THE SHINER PORTION CAN BECOME KINKED BY IMPROPER INSERTION OF THE SHINER INTO THE CENTRAL TERMINAL OR BY HAVING TOO LONG A SHINER LENGTH. THE FOREGOING ITEMS CAN CAUSE INTERMITTENT SHORTS WHICH ARE DIFFICULT TO LOCATE.

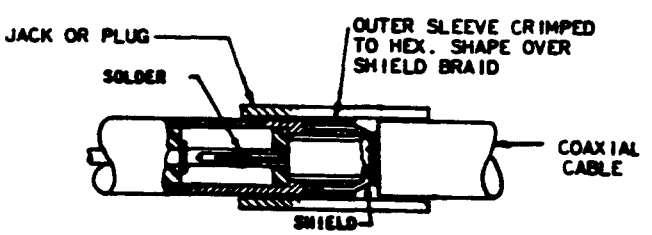


FIG. 5 CONNECTION TO COAXIAL JACK OR PLUG (PARS. 4.343, 4.344)

4.3431 Position jack bodies so that the screw holes in jack bodies which have a fixed relation to the mounting lug on the associated jack sleeve, are correctly oriented in order to avoid twisting the cable when the jack is being mounted.

4.344 Slide the outer sleeve over the shield and position it over the shield and inner sleeve (tubular extension) of the jack, plug, etc., as shown in Figure 5.

4.35 Insert the assembly to be crimped into the proper die opening of the proper tool, position the tool so that the outer sleeve is completely enclosed within the confines of the die, and make the crimped connection.

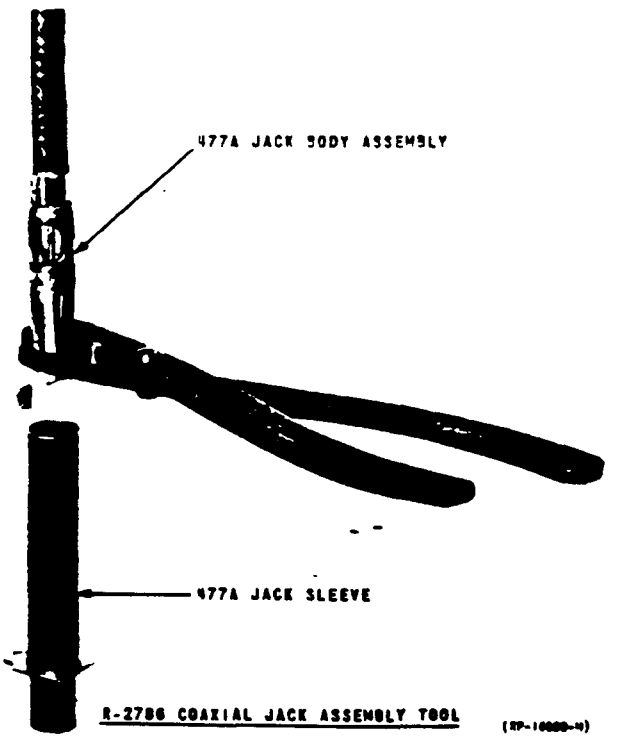
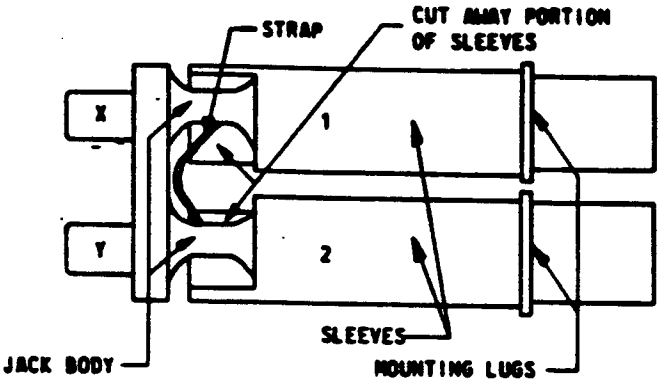
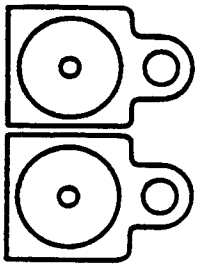


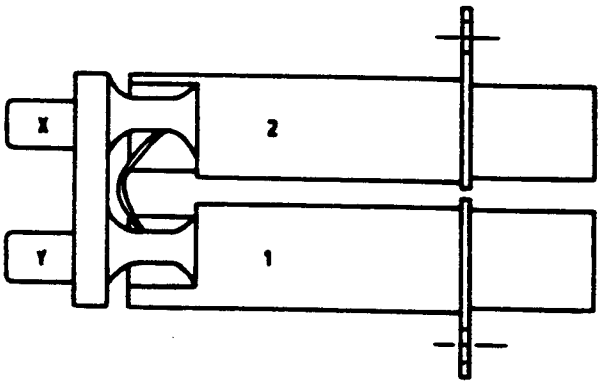
FIG. 6 ASSEMBLY OF COAXIAL JACK (PAR. 4.612)





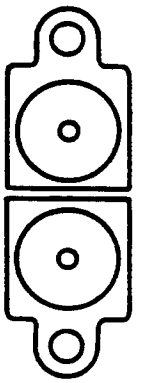
ORIENTATION OF LUGS FOR MOUNTING JACKS HORIZONTALLY

FIG. A



SLEEVE 1 ON BODY X FOR HORIZONTAL MOUNTING.
2 Y
1 Y VERTICAL
2 X

FIG. B



ORIENTATION OF LUGS FOR MOUNTING JACKS VERTICALLY

FIG. 7 METHOD OF ASSEMBLING 491A JACKS (PAR. 4.641)

CAUTION: BEFORE CRIMPING MAKE SURE THAT THE CABLE AND SLEEVES ARE POSITIONED CORRECTLY, THE PROPER TOOL IS BEING USED, AND THE ASSEMBLY IS IN THE PROPER DIE OPENING. IT IS VERY DIFFICULT TO REMOVE A JACK OR PLUG, ETC. FROM THE CABLE, ONCE THE CONNECTION HAS BEEN MADE OR PARTIALLY MADE.

4.4 Soldering Inner Cable Conductors

4.41 Adjust the cable holding fixture so that the cable is in a horizontal position and solder the inner cable conductor at the soldering slot in the central terminal.

4.42 The central terminals of double coaxial jacks should not be under tension after the inner cable conductors are connected.

4.5 Building Up O.D. of Cable to I.D. of Jack, etc.,

4.51 When the terminating drawings indicate that the O.D. of a cable shall be built up to the I.D. of a jack, etc., and 1A or 2A cord cushions OR RUBBER BUSHINGS are not furnished for this purpose, use the R-3359 tape to build up the O.D. of the cable.

4.6 Reassembly of Jacks, Plugs, etc.

4.61 After all connecting operations are completed on any jack, plug, etc., check for and remove any solder splashes or other foreign matter inside the apparatus body and observe that the jack body springs are not distorted, then reassemble the jack, plug, etc.

4.611 Jack body springs that have been accidentally bent inward should be bent into alignment by applying an outward pressure at the end of the spring, using the thumb or finger. Springs that

have been bent outward should be bent into alignment by applying pressure with the thumb on outside of spring, near the base.

4.612 When replacing the sleeve on the jack body assembly, compress the springs with the coaxial jack assembly pliers (R-2786), as shown in Figure 6 using care not to snag the springs.

4.613 When placing the cover assembly on double coaxial jacks, watch the location of the screw holes so that the jack sleeves can be placed as required for the location of the mounting lugs.

4.62 Replace the assembly screws, using the 3-1/2" screwdriver (KS-6854), observing the caution under Paragraph 4.16.

4.63 After reassembling jacks, check to see (using a lamp lead) that the ends of the springs are seated back of the shoulder on the inside of the sleeve, so as to avoid possible damage to the springs when plugs are inserted.

4.64 Proper Assembly of 491A Jacks

4.641 The 491A is a twin jack arranged for mounting in jack mountings such as the No. 185 or 230A. One end of each sleeve has a cutaway portion and two holes for screwing the sleeve to the jack body. The mounting lugs on the individual jack sleeves may be positioned for mounting the jacks either side by side (Figure 7A) or one beneath the other (Figure 7B). However, the lugs cannot be positioned for these types of mounting by merely rotating the sleeves. The proper sleeve must be on the proper body as shown by the 1 and 2 designations in Figures A and B, so that the edge of the cutaway portion of the sleeve does not touch the strap that connects the inner contacts of the jack.

4.7 Sequence of Connecting Cables at 210A Connectors and 207A Terminals

4.71 When a coaxial cable is to be terminated in a 210A connector and a 207A terminal, make the connection in the following sequence:

4.711 Place the outer shell of the 210A connector over the cable (knurled end away from end of cable).

4.712 Make the solderless shield crimped connection.

4.713 Place the hexagon nut (furnished with the 210A connector) onto the 207A terminal and run it down as far as possible onto the terminal.

4.714 Slide the 207A terminal onto the shiner portion of the central conductor and solder the central conductor at the soldering slot in the terminal.

4.715 Slide the outer shell up to the threaded portion of the 207A terminal, and screw the shell down as far as possible onto the terminal (holding terminal stationery to prevent rotation of the cable). Then lock shell in place using hexagon nut (furnished with 210A connector).

➔ Arrowed lines indicate new or changed information.

Manager, Engineering Transmission Products

Reason for Reissue:
To add crimping tool R-4081 to Figure 4.