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TERMINATING AND JOINTING ELECTRIC WIRES AND CABLES**Chapter 125****CO-AXIAL CABLES AND CONNECTORS****CONTENTS**

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INTRODUCTION

1. The purpose of this chapter is to consolidate information relevant to the terminating of co-axial cables. Information on the splicing and jointing of co-axial cables is to be found in Chap 130. The tables of items in this chapter are not exhaustive.

STRUCTURE OF CHAPTER

2. This chapter is divided into three parts:—

- a. Textual and tabular information on cables.
- b. Tabular information on plugs, sockets and ancillaries.
- c. Illustrative and textual information on the assembly of plugs and sockets.

Note: These three parts will be amended as further information becomes available, by insertion of paragraphs, tables, and illustrations.

NOTE ON TABLES 2, 3, 4 AND 5

3. The class of a Uniradio (UR) cable may be given as 'P' or 'S'. 'S' class cables are those which should be the more readily available, certain of which (see Table 8) have NATO equivalents. 'P' class cables should only be used where there is no equivalent 'S' class cable. It is possible that only small stocks, or perhaps none of these cables, may be held.

COLOUR OF PVC SHEATHED CABLES

4. Stocks of PVC covered RF cables may have brown, black, red or grey sheaths. The different colours represent sheaths with different properties as follows:—

- Brown: Arctic grade passes cold bend test at -40°C .
- Black: General purpose grade passes cold bend test at -30°C .
- Red: General purpose grade passes cold bend test at -30°C (and has special stability of capacitance on flexing.)
- Grey: Non-migratory grade for cables to be used at SHF (10cm) passes cold bend test at -25°C .

OBSOLESCENT OR OBSOLETE CABLES

5. A number of cables are now obsolescent or obsolete and should only be used for replacement purposes. These cables are listed in Table 6 and 7 together with suggested alternatives from the present list.

SEALING

6. Care should be taken to seal the ends of all cables, at all times, against the ingress of moisture. This is absolutely essential for mineral insulated cables in which the power factor of a metre length has been found to double in ten minutes if the cable is left unsealed. For this type of cable, it is also impossible to obtain correct insulation resistance readings unless the insulation at the end is sealed from the atmosphere during the measurement. The following are approved methods of sealing cables:—

- a. Wrapping the cable end with at least three layers of waterproof adhesive tape with reasonable overlap.
- b. The use of a tight fitting end cap of PVC bonded to the cable with PVC adhesive tape.
- c. Where the protective PVC covering is left longer than the core, it may be used as a seal by flattening the end under heat so as to join the material for a length of at least $\frac{1}{4}$ in.
- d. In the case of lead covered cables, a lead cap may be wiped on.
- e. Mineral insulated cables should be sealed with the special compound provided. (Brief instructions are given in para 7. below.)

7. When fitting or sealing a mineral insulated cable, six inches at each end of the length should be cut off and discarded. The next twelve inches at each end of the length should then be dried out by heating the cable until the copper changes colour. The heat should be applied in such a manner as to drive the moisture outwards to the end of the cable, then fit termination or seal.

ADDITIONAL INFORMATION ON CERTAIN CABLES

8. a. Uniradio No 41, 55, 64, 82, 96, 104, 111 and 114 have inner conductors of resistance wire in order to obtain a high attenuation per unit length.
- b. Uniradio No 41. This cable has a Rhometal inner conductor, the resistivity of which (for the following tables) has been assumed to be 89.2×10^{-6} ohm cm. The permeability has been found to vary with the frequency and is somewhat variable from length to length. The attenuation figures quoted are based on maximum values. Observed values may be as much as 15 per cent lower at the highest frequency, as shown in the following tabulation:—

Freq MHz	Relative permeability	Inductance $\mu\text{H}/\text{metre}$	$Z_0 \Omega$	Velocity ratio V/c	Att db/100 ft
1	207	2.799	216.0-j84.9	0.217	10.0
5	207	1.450	152.0-j52.2	0.309	20.8
20	207	0.911	118.0-j33.1	0.398	78.1
100	203	0.596	93.3-j18.4	0.502	218.0
200	184	0.518	86.4-j13.4	0.543	316.0
600	98	0.421	77.2-j 6.3	0.608	449.0
1500	54	0.384	73.6-j 3.1	0.638	588.0
3000	38	0.371	72.3-j 1.9	0.649	625.0

c. Uniradio No 42 is a very low impedance cable with a braided inner conductor.

d. Uniradio No 56 and 59 are sheathed in polythene instead of PVC. They are intended for use in test equipment.

e. Uniradio No 63, 79, 83, 85, 98, 99, 100 and 101 have a helical tape of polythene to space the inner conductor, within an aluminium tube. These cables have an exceptionally low attenuation and require careful handling.

f. Uniradio No 64 and 96 are semi-air spaced cables with a thread of polythene wrapped round the copper covered steel inner conductor. As they are not robust they should not be used in positions where they may be exposed to rough handling.

g. Uniradio No 72 has a dielectric of PTFE and is suitable for use at temperatures up to 250°C. This cable is extremely expensive and in short supply; it should only be used in applications where a mineral insulated cable is unsuitable.

h. Uniradio No 84 is a version of obsolete No 70 which is not damaged by immersion in aircraft fuel.

j. Uniradio No 87 is a 950Ω cable with helically wound inner conductor.

k. Uniradio No. 90. This is to the NATO and IEC standard size. It will eventually replace Uniradio No 70. The newer cable has a lower attenuation and greater power rating.

l. Multiradio No 93. This is formed by laying up seven co-axial cores each based upon the design of Uniradio No 70.

m. Uniradio No 94 and 95. These are cables intended for use with miniaturized equipment.

n. Uniradio No 96. This is a small size low capacitance cable to the NATO standard size.

p. Uniradio No 102. This is a close tolerance version of the obsolete Uniradio No 73.

q. Uniradio No 103 and 104. These are PTFE dielectric equivalents of the polythene cored cables Uniradio No 57 and 90.

r. Uniradio No 102, 103, 104, 105, 106, 107, 108, 109, 110, and 113. The dielectric of these cables is PTFE and they are equivalent to standard polythene types. They are suitable for use up to a maximum centre conductor temperature of 200°C.

RADIO FREQUENCY CABLE DESCRIPTIVE CODE REFERENCES (TABLE 1)

9. The construction of radio frequency cables may be indicated by a code reference (see Table 1). This reference consists of four groups of symbols, each group separated by an oblique stroke eg Uniradio No 76 is coded as 1SB1/50/116/M195. This is decoded as follows:—

a. *First Group, 1SB1* The first figure (see Table 1, Group Aa) denotes the number of inner conductors. The letter following, indicates the type of conductor, ie S = stranded. The second letter (see Group Ab) indicates the type of outer conductor B = wire braid. The last number of this group (see Group Ac) indicates the type of dielectric ie 1 = polythene.

b. *Second Group, 50* The second group (see Table 1,

Group B) gives the nominal characteristic impedance in ohms, ie 50Ω.

c. *Third Group, 116* The third group (see Table 1, Group C) gives the nominal diameter over the insulation, in thousandths of an inch, ie 116 = 0.116 in.

d. *Fourth Group* The fourth group (see Table 1, Group Da) indicates the type of sheath M = PVC, followed by the nominal overall diameter (Table 1, Group Db) in thousandths of an inch, ie 195 = 0.195 in.

10. From para 9, Uniradio No 76, coded as 1SB1/50/116/M195 is read in conjunction with Table 1 to mean:—

1S = stranded inner conductor

B = wire braid screen

1 = solid polythene dielectric

50 = 50Ω impedance

116 = 0.116 in. dielectric diameter

M = PVC outer sleeve

195 = 0.195 in. overall diameter

CO-AXIAL CONNECTORS

General

11. Co-axial cables are normally terminated in a co-axial connector which provides a 360 degree contact with the outer conductor or sheath thereby providing complete screening. It is important at frequencies above 150MHz that the characteristic impedance of the connector is the same as that of the cable.

12. It is also important that any physical discontinuities such as pin diameter differing from cable inner conductor is avoided. Steps or radial grooves act as shunt capacitances and series inductors respectively. The adverse effect of these reactances increases with frequency and must be avoided if possible. These effects can be minimized by placing compensating discontinuities in the same region.

13. Standardization of co-axial connectors is such that connectors made by different manufacturers are interchangeable with each other but not the individual parts that go to make them up.

14. Co-axial connectors are categorized by the method of coupling and cable size. Table 9 should assist in identification of the types mainly used in service equipment. The three main methods of coupling are threaded, bayonet lock, and push-on. Each type is also available in different structures based on clamping methods and contact arrangement. The captive contact version of co-axial connectors is designed so that the centre contact is retained in a fixed position within the connector shell. This minimizes the possibility of the inner conductor of the co-axial cable shifting when subject to mechanical stresses etc.

Types of co-axial connectors

15. a. BNC series are small and light in weight and are mated by a quick connect, quick disconnect two-stud bayonet lock coupling.

b. SM series are normally used inside equipments and mated by a $\frac{1}{4}$ in. 32 thread screw coupling.

c. UHF series were designed for medium size cables but reducing adaptors were later introduced to permit the use of smaller cables. Mating is by

means of a $\frac{5}{8}$ in. 24 thread screw coupling. This range of connectors is sometimes referred to as the 83 series.

d. N series are mated by a $\frac{5}{8}$ in. 24 thread screw coupling. They are similar to, but not interchangeable with, the UHF series.

e. C series are larger than the BNC series and joined together by a larger size two-stud bayonet lock coupling.

16. Numerous other types of co-axial connectors are in use, a few of the most important types are listed below.

a. TNC is a version of the BNC series but is mated by a $\frac{7}{16}$ in. 28-thread coupling, which along with a locking wire, provides a more vibration proof joint.

b. TPS is a three pronged bayonet coupling connector slightly smaller than the BNC, but larger than the SM series.

c. SC is a threaded coupling version of the C series of connectors, which also has a locking wire.

d. MVH is a miniature high voltage connector similar to, but will not mate with, the BNC series.

Special connectors

17. There are available various terminations, attenuators and adaptors in co-axial connector form. The more widely used are between series adaptors. These adaptors provide an efficient electrical and mechanical transition between different series. They are of non-constant impedance but were designed so that any discontinuities are minimized.

18. The most common type is the straight through adaptor, but angles and tees are also available. (Some of these are listed in Table 10).

Assembly of connectors and cables

19. A co-axial connector is a precision engineered appliance and even the smallest changes in the mechanical dimensions or material characteristics may upset the properties of the device. Cable assembly should be carried out with great care for the connector to operate within its intended capabilities.

20. If connector assembly instructions show the cable dielectric butting the connector dielectric, every precaution should be taken to ensure that a positive butt is produced. Air pockets and rounded dielectric corners will produce impedance mismatches. Loose joints can reduce the peak voltage capability of the assembly.

Loose butt joints are caused by bad dielectric trimming. (Fig 6 shows incorrect and correct trimming)

21. Air pockets between the inner conductor and dielectric should be avoided. This is usually caused by excessive heat during soldering the inner conductor to the centre contact. Heat softens the dielectric and through movement of the inner conductor, a larger hole is formed.

22. During final assembly, precautions should be taken to ensure that the centre contact of the connector is positioned in the proper lateral position (as shown in Fig 7). In many connectors the exact axial distance between a point on the connector shell and the top of the pin is an electrical matching circuit.

23. Misalignment can result from assembling connectors to both ends of a long cable which is still coiled. When uncoiled, the ends of the centre conductor may take up a different position relative to the ends of the outer braid. This can also happen if a cable is assembled under temperature extremes. A good soldered bond must be made between the pin and the inner conductor over the entire depth of the solder bucket of the pin. Excess solder should be removed, as this can effect a circuit change within the connector.

24. During connector assembly there are five basic rules which should be followed to obtain proper operation:—

a. Closely follow the recommended assembly instructions to ensure proper SWR and voltage ratings.

b. Do not apply more heat than necessary during soldering operations.

c. Do not exert excessive force in tightening fittings containing rubber or plastic gaskets as permanent deformation will result.

d. Carefully remove all filings, loose solder and other foreign objects from the connectors prior to assembly. Observe cleanliness during all operations. Extraneous matter in connectors reduces power and voltage ratings and increases the SWR of the assembly.

e. Use extreme care in the assembly and earthing of connectors operating at high voltages to reduce corona and radiated noise.

25. Assembly instructions for various co-axial connectors are given in Fig 1 to 5 inclusive. These instructions do not cover all types of connectors available but can be used as a guide when assembly instructions are not provided with any individual connector.

Table 1—Code for radio frequency cables

Group Aa	Group Ab	Group Ac	Group B	Group C	Group Da	Group Db
Number and type of inner conductors	Type of outer conductor or screen (See Note (2))	Type of dielectric	Nominal impedance (Ω)	Diameter of dielectric	Protection (One or more letters of this group may be used)	Overall diameter
1	A — Aluminium sheath	1 — Solid polythene	Nominal impedance	Nominal diameter of dielectric (in thousandths of an inch)	A — Armour (tape or wire)	Nominal overall diameter (in thousandths of an inch)
2	B — Wire braid	2 — Airspaced polythene fin	The suffix 'C' is added where a cable is similar to some other cable but is made to closer tolerances		B — Armour (braid)	
Where a conductor is helically wound on a core, this is shown by adding 'H' after the number in this group.	C — Copper sheath	3 — Air spaced polythene			E — PTFE	
The stranding of conductors is shown by adding 'S' after the number in this group.	D — Double wire braid	4 — Air spaced, disc			G — Glass braid	
	E — Double wire, with intersheath	5 — Solid PTFE			J — FEP	
	K — Corrugated tape	6 — Compressed powder			L — Lead	
	L — Lead sheath				M — PVC	
	T — Metal tape				N — Nylon	
	U — Unscreened				P — Polythene	
					S — Serving	
					T — Protection against termites	

Notes: (1) Where a component of the cable has special characteristics the letter X is placed after the corresponding letter in the appropriate group eg the rhometal inner conductor of UR 41 is thus indicated: 1XB1/72/128/M230.

(2) There is no code shown in Group Da when the outer conductor is the only protection of the cable eg UR 10 is described 1L1/69/800/980.

(3) Where more than one letter is used in Group Da, that which refers to the innermost protection is written first eg UR9 is described as 1T4/75/375/LAS1100, the last three letters being Lead, Armour, and Serving.

Example:— 1XB1/72/128/M230

Each group is separated by an oblique stroke and subdivided into A, B, C, and D from left to right as required.

Group A 1XB1 = Special single centre conductor with wire braid screen and solid polythene insulator.

Group B 72 = Nominal impedance 72 Ω

Group C 128 = Diameter over dielectric 0.128 in.

Group D M230 = PVC sheath with o.a. diameter of 0.230 in.

Table 2—List of RF cables in numerical order

Cable type UR No	Joint Services catalogue No	Informative code	See Fig 1	Inner conductor (in.)	Zo (Ω)	Cap (pF/ft)	Maximum operating voltage (kV)			Minimum bending radius (in.)	Class
							Pulse	RF	DC		
9	6145-99-910-0272	IT4/75/375/LAS1100	J	1/0-104	75	14-0	1-75	1-75	1-75	18-0	P
10	6145-99-910-0273	1L1/69/800/980	G	1/0-144	69	23-0	32-0	16-0	130-0	8-0	S
17	6145-99-910-0274	1SB1/71/800/M1000	A	7/0-048	71	22-0	21-0	10-5	84-0	5-0	P
21	6145-99-910-0313	1B1/71C/330/M450	A	1/0-056	71	22-0	21-5	6-25	50-0	2-25	P
31	6145-99-910-0275	1B1/91/285/M405	A	1/0-029	91	17-0	8-5	4-25	34-0	2-0	S
33	6145-99-910-0276	1L1/71/128/188	G	1/0-022	71	22-0	5-0	2-5	20-0	2-0	S
39	6145-99-910-0277	1B1/69/200/M310	A	1/0-036	69	23-0	7-75	4-0	30-0	2-0	S
41	6145-99-910-0278	1XB1/72/128/M230	A	1/0-022	72	21-0	5-0	2-5	20-0	1-0	P
42	6145-99-910-0279	1XB1/15/285/M405	B	1/0-205	15	108-0	5-5	2-7	22-0	2-0	P
43	6145-99-910-0280	1B1/52/116/M195	A	1/0-032	52	29-0	5-25	2-75	21-0	1-0	S
45	6145-99-910-0281	1L1/91/285/400	G	1/0-029	91	17-0	8-5	4-25	34-0	3-5	S
47	6145-99-910-0319	1SB1/43/625/M810	A	19/0-044	43	36-0	20-5	10-25	82-0	4-0	P
54	6145-99-910-0282	1SD1/72/128/M325	D	7/0-0076	72	22-0	3-6	1-8	14-0	1-0	P
55	6145-99-910-0283	1XD1/71/128/M255	E	1/0-022	71	21-0	5-0	2-5	20-0	1-0	P
56	6145-99-910-0284	1B1/71/128/P230	A	1/0-022	71	22-0	5-0	2-5	20-0	1-0	P
57	6145-99-910-0285	1B1/75/285/M405	A	1/0-044	75	20-6	10-5	5-0	42-0	2-0	S
58	6145-99-910-0286	1L1/75/285/400	G	1/0-044	75	20-6	10-5	5-25	42-0	3-5	S
59	6145-99-910-0287	1B1/75C/285/P405	A	1/0-044	75	20-6	10-5	5-0	42-0	2-5	P
60	6145-99-910-0288	1D1/75/285/M460	E	1/0-044	75	20-6	10-5	5-0	42-0	2-25	P
63	6145-99-910-0291	1A2/75/625/M855	H	1/0-172	75	14-0	2-1	2-1	2-1	11-0	S

Table 2—(cont)

Cable type UR No	Joint Services catalogue No	Informative code	See Fig 1	Inner conductor (in.)	Zo (Ω)	Cap (pF/ft)	Maximum operating voltage (kV)			Minimum bending radius (in.)	Class
							Pulse	RF	DC		
64	6145-99-910-0292	1XB3/125/285/M405	F	1/0-0253	125	9.7	0.7	0.7	0.7	2.0	S
65	6145-99-910-0293	1B1/75C/285/M405	A	1/0-044	75	20.6	10.5	5.0	42.0	2.0	P
66	6145-99-910-0294	1L1/75C/285/400	G	1/0-044	75	20.6	10.5	5.25	42.0	3.5	P
67	6145-99-910-0295	1SB1/50/285/M405	A	7/0-029	50	30.0	9.6	4.8	38.4	2.0	S
DR 68	6145-99-910-0296	2SB1/98/168/M265	K	7/0-010	98	16.0	7.0	3.5	28.0	1.0	S
69	6145-99-910-0297	1SL1/50/285/M480	G	7/0-029	50	30.0	9.6	4.8	38.4	5.0	S
72	6145-99-910-0299	1B5/50/116/G175	A	1/0-036	50	28.5	4.8	2.4	19.2	1.0	S
74	6145-99-910-0301	1B1/51/680/M870	A	1/0-188	51	30.7	30.0	15.0	120.0	4.5	S
75	6145-99-910-0302	1B1/51/680/MB926	A	1/0-188	51	30.7	30.0	15.0	120.0	6.0	S
76	6145-99-942-4556	1SB1/50/116/M195	A	19/0-0066	50	29.0	3.5	1.8	14.0	1.0	S
77	6145-99-942-4557	1B1/75/680/M870	A	1/0-104	75	20.5	25.0	12.5	100.0	4.0	S
78	6145-99-942-4558	1B1/100/285/M405	A	1/0-024	100	15.0	7.4	3.7	29.0	2.0	S
79	6145-99-942-4559	1A2/50/625/M855	H	1/0-265	50	21.0	2.1	2.1	2.1	11.0	S
80	6145-99-942-4560	1L1/100/285/400	G	1/0-024	100	15.0	7.4	3.7	29.0	3.5	S
82	6145-99-942-4562	1XD1/75/285/M460	A	1/0-044	75	20.6	10.5	5.0	42.0	2.25	P
83	6145-99-942-4563	1A2/50/400/M555	H	1/0-168	50	21.0	1.3	1.3	1.3	7.0	S
84	6145-99-942-4564	1SB1/72/128/MN246	A	7/0-0076	72	21.0	3.6	1.8	14.4	1.0	P
85	6145-99-942-4565	1A2/75/400/M555	H	1/0-109	75	14.0	1.3	1.3	1.3	7.0	S
86	6145-99-942-4566	1L1/75/680/840	G	1/0-004	75	20.5	25.0	12.5	100.0	6.5	S
87	6145-99-942-4567	1HB1/950/285/M405	C	1/0-008	950	44.0	1.4	1.4	1.4	2.0	S

RESTRICTED

ELECTRICAL AND MECHANICAL
ENGINEERING REGULATIONS

Table 2—(cont)

Cable type UR No	Joint Services catalogue No	Informative code	See Fig 1	Inner conductor (in.)	Zo (Ω)	Cap (pF/ft)	Maximum operating voltage (kV)			Minimum bending radius (in.)	Class
							Pulse	RF	DC		
88	6145-99-942-4568	1L1/75/285/PAM736	G	1/0.044	75	20.6	10.5	5.25	42.0	6.0	P
89	6145-99-942-4569	1L1/75/285/P520	G	1/0.044	75	20.6	10.5	5.25	42.0	4.0	P
90	6145-99-943-3956	1XB1/75/146/M242	A	1/0.022	75	20.0	5.0	2.5	20.0	1.0	S
91	6145-99-943-4034	1SD1/50/285/M450	E	7/0.029	50	30.0	9.6	4.8	38.4	2.25	P
92	6145-99-943-4035	1SE1/50/285/M540	D	7/0.029	50	30.0	9.6	4.8	38.4	2.0	P
MR 93	6145-99-943-3955	—	—	—	71	22.5	5.0	2.5	20.0	7.0	P
94	6145-99-943-3954	1XB1/50/40/N68	A	1/0.0124	50	31.7	1.8	0.9	7.3	0.2	S
95	6145-99-943-3953	1XB1/50/60/N92	A	1/0.0180	50	30.9	2.7	1.3	10.7	0.3	S
96	6145-99-943-3957	1XB3/95/146/M242	F	1/0.0253	95	12.0	0.55	0.55	0.55	1.25	S
97	6145-99-943-3945	1SL1/50/285/400	G	7/0.029	50	30.0	9.6	4.8	38.4	3.5	S
98	6145-99-943-3946	1A2/75/625/735	H	1/0.172	75	14.0	2.1	2.1	2.1	11.0	S
99	6145-99-943-3944	1A2/50/625/735	H	1/0.265	50	21.0	2.1	2.1	2.1	11.0	S
100	6145-99-943-3943	1A2/50/400/475	H	1/0.168	50	21.0	1.3	1.3	1.3	7.0	S
101	6145-99-943-3962	1A2/75/400/475	H	1/0.109	75	14.0	1.3	1.3	1.3	7.0	S
102	6145-99-943-3961	1SB5/51C/285/G380	A	7/0.032	51	28.6	9.25	4.75	37.0	2.0	S
103	6145-99-943-3960	1B5/75/285/G380	A	1/0.048	75	19.5	10.5	5.0	42.0	2.0	S
104	6145-99-943-3959	1XB5/75/146/G205	A	1/0.0253	75	19.3	3.9	1.9	15.6	1.0	S
105	6145-99-105-6119	1SB5/75/285/G380	A	7/0.018	75	19.5	10.5	5.0	42.0	2.0	—
106	6145-99-105-6120	1XB5/75/146/J205	A	1/0.0253	75	19.3	3.9	1.9	15.6	1.0	—
107	6145-99-105-6121	1SB5/51/285/J350	A	7/0.032	51	28.6	9.25	4.75	37.0	2.0	—

RESTRICTED

Table 2—(cont)

Cable type UR No	Joint Services catalogue No	Informative code	See Fig 1	Inner conductor (in.)	Zo (Ω)	Cap (pF/ft)	Maximum operating voltage (kV)			Minimum bending radius (in.)	Class
							Pulse	RF	DC		
108	6145-99-105-6122	1B5/50/116/J173	A	1/0.036	50	28.5	4.8	2.4	19.2	1.0	—
109	6145-99-105-6123	1SXB5/50/60/J100	A	7/0.0067	50	28.0	1.2	1.2	2.2	0.6	—
110	6145-99-105-6124	1SXB5/50/30/J76	A	7/0.004	50	28.0	0.9	0.9	1.5	0.5	—
111	6145-99-105-6125	1SXB5/75/60/J100	A	7/0.004	75	19.0	1.2	1.2	2.2	0.6	—
112	6145-99-105-6126	1SD1/50C/285/M425	A	7/0.029	50	30.0	13.0	6.5	52.0	2.25	—
113	6145-99-105-6127	1SB5/75/285/J350	A	7/0.018	75	19.5	10.5	5.0	42.0	2.0	—
114	6145-99-105-6128	1XE1/75/146/M323	A	1/0.0226	75	20.0	5.0	2.5	20.0	1.75	—
115	6145-99-105-6129	1E1/52/116/M285	A	1/0.032	52	29.0	5.5	2.75	22.0	1.5	—

Table 3—Mineral insulated Uniradio cables

Cable type UR No	NSN 6145-99-	Informative code	See Fig 1	Inner conductor (in.)	Zo (Ω)	Cap (pF/ft)	Maximum operating voltage (kV)			Minimum bending radius (in.)	Class
							Pulse	RF	DC		
132	-910-0303	106/42/540/625	L	1/0.140	42	47.0	4.8	2.4	19.2	4.0	P
137	-910-0304	106/41/95/125	L	1/0.025	42	47.0	0.85	0.43	3.4	0.75	P
140	-910-0305	106/66/430/500	L	1/0.054	66	30.0	2.8	1.4	11.2	3.0	P
141	-910-0306	106/66/321/375	L	1/0.039	66	30.0	2.1	1.1	8.4	2.25	S

Table 4—Cables in order of increasing characteristic impedance

Z_0 (Ω)	Capacitance (pF/ft)	Type	UR No	Class	Informative Code
15	108.0	Flexible	42	P	1XB1/14/285/M405
50	29.0	Flexible	76	S	1SB1/50/116/M195
50	28.5	Flexible	72	S	1B5/50/116/G175
50	21.0	Aluminium air spaced	79	S	1A2/50/625/M855
50	21.0	Aluminium air spaced	83	S	1A2/50/400/M555
50	330.0	Flexible	91	P	1SD1/50/285/M450
50	30.0	Flexible	92	P	1SD1/50/285/PXM540
50	31.7	Flexible	94	S	1XB1/50/40/N68
50	30.9	Flexible	95	S	1XB1/50/60/N92
50	30.0	Lead covered	97	S	1SL1/50/285/400
50	21.0	Aluminium air spaced	99	S	1A2/50/625/735
50	21.0	Aluminium air spaced	100	S	1A2/50/400/475
50	30.0	Lead covered	69	S	1SL1/52/285/M480
50	30.0	Flexible	67	S	1SB1/50/285/M405
50	28.5	Flexible	108	S	1B5/50/116/J173
50	28.0	Flexible	109	S	1SXB5/50/60/J100
50	28.0	Flexible	110	S	1SXB5/50/30/J76
50	30.0	Flexible	112	S	1SD1/50C/285/M425
51	30.7	Flexible	74	S	1B1/51/680/M870
51	30.1	Flexible	102	S	1SB5/50C/285/G380
51	30.7	Armoured	75	S	1B1/51/680/MB926
51	28.6	Flexible	107	S	1SB5/51/285/J350
52	29.0	Flexible	43	S	1B1/52/116/M195
52	29.0	Flexible	115	S	1B1/52/116/M285
69	23.0	Lead covered	10	S	1L1/69/800/980
69	23.0	Flexible	39	S	1B1/69/200/M310
71	22.0	Flexible	21	S	1B1/71C/330/M450
71	22.0	Flexible	56	P	1B1/71/128/P230
71	22.0	Flexible	17	P	1SB1/71/800/M1000
71	22.0	Lead covered	33	S	1L1/71/128/188
71	21.0	Flexible	55	P	1XD1/71/128/M255
71*	22.5	Flexible	MR 93	P	—

* Multiradio No 93 consists of seven co-axial cores in one jacket

Table 4—(cont)

Z_0 (Ω)	Capacitance (pF/ft)	Type	UR No	Class	Informative Code
72	22.0	Flexible	54	P	1SD1/72/128/M325
72	21.0	Lossy, flexible	41	P	1XB1/72/128/M230
72	21.0	Flexible	70	S	1SB1/72/128/M230
72	21.0	Flexible	84	P	1B1/72/128/MN246
75	20.6	Flexible	57	S	1B1/75/285/M405
75	20.6	Lead covered	58	S	1L1/75/285/400
75	20.6	Flexible	59	P	1B1/75/285/P405
75	20.6	Flexible	60	P	1D1/75/285/M460
75	20.6	Flexible	65	P	1B1/75C/285/M405
75	20.6	Lead covered	66	P	1L1/75C/285/400
75	20.6	Flexible	82	P	1XD1/75/285/M460
75	20.6	Flexible	88	P	1L1/75/285/PAM736
75	20.6	Flexible	89	P	1L1/75/285/P520
75	20.5	Flexible	77	S	1B1/75/680/M870
75	20.5	Flexible	86	S	1L1/75/680/840
75	14.0	Aluminium air spaced	63	S	1A2/75/625/M855
75	14.0	Armoured	9	P	1T4/75/375/LAS1100
75	14.0	Aluminium air spaced	85	S	1A2/75/400/M555
75	20.0	Flexible	90	S	1XB/75/146/M242
75	14.0	Aluminium air spaced	98	S	1A2/75/625/735
75	14.0	Aluminium air spaced	101	S	1A2/75/400/475
75	19.5	Flexible	103	S	1B5/75/285/G380
75	19.3	Flexible	104	S	1XB5/75/146/G205
75	60.0	Flexible	111	S	1SXB5/75/60/J100
75	19.5	Flexible	105	S	1SB5/75/285/G380
75	19.3	Flexible	106	S	1XB5/75/146/J205
75	19.5	Flexible	113	S	1SB5/75/285/J350
75	20.0	Flexible	114	S	1XE1/75/146/M323
91	17.0	Flexible	31	S	1B1/91/285/M405
91	17.0	Lead covered	45	S	1L1/91/285/400
95	12.0	Flexible	96	S	1XB3/95/146/M242
98	16.0	Flexible	68	S	2SB1/98/168/M265
100	15.0	Flexible	78	S	1B1/100/285/M405

Table 4—(cont)

Z_0 (Ω)	Capacitance (pF/ft)	Type	UR No	Class	Informative Code
100	15.0	Lead covered	80	S	1L1/100/285/400
125	9.7	Flexible	64	S	1XB3/125/285/M405
950	44.0	Flexible	87	S	1HB1/950/285/M405

Table 5—Mineral insulated cables in order of increasing characteristic impedance

Z_0 (Ω)	Capacitance (pF/ft)	Nominal overall dia (in.)	UR No	Class	Informative Code
42	47.0	0.625	132	P	1C6/42/540/625
42	47.0	0.125	137	P	1C6/42/95/125
66	30.0	0.500	140	P	1C6/66/430/500
66	30.0	0.375	141	S	1C6/66/321/375

Table 6—Obsolescent RF cables

Obsolescent cable	Alternative cable	Remarks
Uniradio No 1	Uniradio No 57	OD was 0.450 in. now 0.405 in.
2	58	Smaller, no protection
4	67	Z_0 was 46 Ω now 50 Ω
6	64	Lower capacity for new cable
Duradio No 11		
13		
Uniradio No 18	Uniradio No 57	OD was 0.450 in. now 0.405 in.
21	65	OD was 0.450 in. now 0.405 in.
25	58	OD was 0.450 in. now 0.400 in.
Duradio No 26		
29		
Uniradio No 34	Uniradio No 77	Overall size slightly increased
36	86	Z_0 was 63 Ω now 75 Ω
44		
47		
52	Uniradio No 77	Replacement Z_0 75 Ω
53	60	
131		} Select from adjacent sizes in the mineral insulated range
134		
138		
139		
Duradio No 142		
145		
148		

Note: These cables are OBSOLESCE and are to be used only for replacement purposes

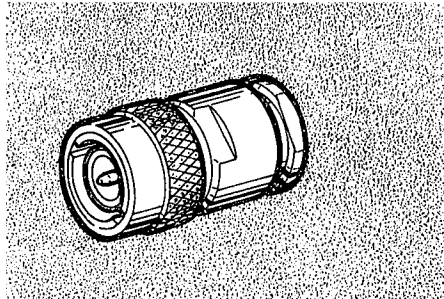
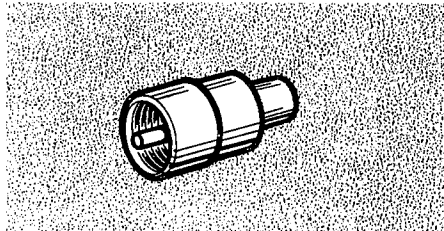
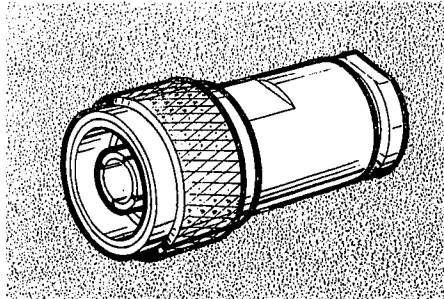
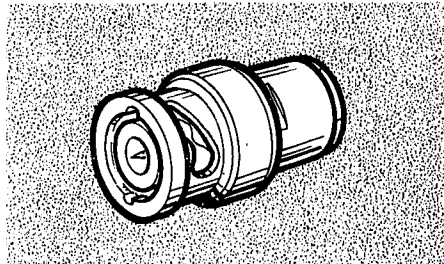
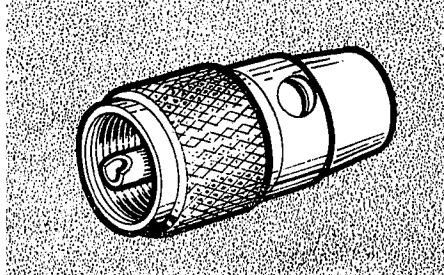
Table 7—Obsolete RF cables

<i>Obsolete cable</i>	<i>Replacement cable</i>	<i>Remarks</i>
Uniradio No 32	Uniradio No 17	Inner conductor now stranded
37	69	Zo was 46Ω now 51Ω
28	DR 68	Inner conductor now stranded
61	77	
62	86	Overall size slightly increased
73	102	Closer tolerance

Table 8—Comparison of, British, French, US and Canadian cables with NATO numbers

<i>British</i>	<i>French</i>	<i>US and Canadian</i>	<i>NATO</i>
Uniradio No 67	KX 4	RG-213U	NWR1
57	KX 8	RG-11/AU	NWR3
43	—	RG-58/CU	NWR2
72	—	RG-141/AU	NWR9
64	—	RG-63/BU	NWR4
74	KX 14	RG-218/U	NWR5
75	—	RG-219/U	NWR19
76	—	—	NWR2
77	—	RG-164/U	NWR6
78	—	RG-133/AU	NWR7
87	—	RG-65/AU	NWR8
90	KX 7	RG-59/U	NWR11
96	—	RG-62/AU	NWR12
102	—	RG-165/U	NWR10
104	—	RG-140/U	NWR14
105	—	RG-144/A	NWR16
106	—	RG-302/U	NWR31
107	—	—	—
108	—	RG-303/U	NWR30
109	—	RG-316/U	NWR32
110	—	RG-178/BU	NWR34
111	—	RG-179/BU	NWR33
112	—	RG-214/U	NWR35
113	—	—	NWR37

Table 9—Co-axial plugs and sockets—type recognition

	◀ C TYPE
	◀ SM TYPE
	◀ N TYPE
	◀ BNC TYPE
	◀ 83 UHF TYPE

Note: These Pages 15 and 16, Issue 2 supersede Pages 15 and 16, Issue 1 dated Aug 71. Lines marked ● have been amended.

Table 9 - Co-axial plugs and sockets - details

Type	Zo	NS No 5935-99-	PL	SK	Free	Fixed	Max dia cable (in.)	Remarks
BNC	50	932-2643	X		X		0.213	Elbow
BNC	50	913-2433	X		X		0.22	
BNC	50	940-1089	X		X		0.213	
BNC	50	940-3188	X		X		0.22	
BNC	50	914-5422	X		X		0.22	
BNC	50	914-2229	X		X		0.22	
BNC	75	914-5424	X		X		0.26	
BNC	75	580-1774	X		X		0.26	
BNC	75	913-3610	X		X		0.26	Elbow
BNC	75	972-8285	X		X		0.254	
BNC	50	911-6955		X		X	0.213	J
BNC	50	932-4048		X		X	0.22	J
BNC	50	945-4781		X		X	0.22	J
BNC	50	945-2283		X		X		
BNC	50	913-2101		X		X	0.22	
BNC	50	913-5333		X		X		25 lbf/in ² pressurized
BNC	50	911-8078		X		X		elbow, pressurized bulkhead
BNC	50	943-7282		X		X		J
BNC	50	920-9079		X		X	0.213	J
BNC	50	940-1040		X		X		
BNC	50	943-7320		X		X		Pressurized bulkhead
BNC	50	911-6872		X		X		
BNC	50	932-3982		X		X	0.213	J pressurized bulkhead
BNC	50	914-5215		X		X	0.22	J
BNC	50	911-8291		X	X		0.213	
BNC	75	580-2815		X		X	0.26	
BNC	75	972-8072		X		X	0.254	J
BNC	75	972-6827		X		X	0.254	J
BNC	75	972-6826		X		X		Pressurized bulkhead
BNC	75	972-8073		X		X		
BNC	75	911-3610		X		X		
BNC		932-4050		X		X		
BNC		914-2228		X		X		Elbow
BNC		911-3612		X	X		0.254	
C	50	580-2595	X		X		0.22	
C	50	580-7259	X		X		0.44	Elbow
●C	75	See Remarks	X		X		0.44	Elbow NS No 5975-99-915-6033
C	50	580-7060	X		X		0.44	
C	50	932-5852	X		X		0.425	
C	50	911-6860	X		X		0.885	
C	75	920-9015	X		X		0.425	
C	75	932-5646		X		X	0.425	J
C	75	911-6888		X		X		
C	50	913-2436		X		X	0.22	J
C	50	913-8550		X		X		
C	50	932-5883		X		X	0.425	J
C	50	911-6861		X	X		0.425	
C	50	920-9029		X		X		
C	50	999-6894		X		X	0.44	J

WORKSHOPS
F 100
Chap 125

RESTRICTED

ELECTRICAL AND MECHANICAL
ENGINEERING REGULATIONS

Table 9 - (Cont)

Type	Zo	NS No 5935-99-	PL	SK	Free	Fixed	Max dia cable (in.)	Remarks
C	50	999-6236		X		X		
	50	945-3788	X		X		0.129	
	50	945-3789		X		X		
MK4		911-8214	X		X			Male shell (size 1)
MK4		911-4508		X		X		Female shell (size 1)
MK4		932-5677		X	X			Male shell (size 1)
MK4		940-5721	X			X		Female shell (size 1)
MK4		940-8976		X		X		Female shell (size 1)
N	50	943-7281	X		X		0.22	
N	70	914-9542	X		X		0.44	
N	75	940-1095	X		X		0.425	
N	50	943-7316		X		X		
N	50	943-8215		X		X	0.44	J
N	50	972-6218		X	X		0.44	J
N	50	940-1046		X		X		
N	50	932-4049		X		X	0.22	J
N	70	933-0599		X		X		
N	75	911-6704		X		X		
N	75	972-9391		X	X		0.425	
N	75	972-9184		X		X	0.425	J
M	75	911-6607		X		X		
M	75	911-6882	X		X		0.196	
UHF		580-2813	X		X		0.44	
UHF		943-7576	X		X		0.44	
UHF		940-1839	X		X		0.413	
UHF		932-5870		X		X		

Note: J in the Remarks column indicates that the associated FIXED SOCKET has a CABLE CLAMP device incorporated in it.

Table 10 - Co-axial plug and socket adaptors

Zo	Type	NS No 5935-99-	PL	SK
50	BNC to BNC	972-3758	X	X
50	BNC	914-7548 or 920-9000 or 940-1047	X	X
50	BNC to C	972-3763	X	
50	BNC to C	972-4188	X	X
50	BNC to N	972-4189	X	
● 50	BNC to N	972-4190	X	X
50	BNC to UHF	972-3764	X	
● 50	BNC to UHF	972-4202 or 943-7280	X	X
50	C to BNC	972-4192	X	X
50	C to C	972-3765	X	X
50	C	580-1512		2
50	C to N	972-4193	X	
50	C to N	972-9194	X	X
50	C to UHF	972-4195	X	

Table 10—(cont)

<i>Zo</i>	<i>Type</i>	<i>NS No</i> <i>5935-99-</i>	<i>Pl</i>	<i>SK</i>
50	C to UHF	972-4196	X	X
50	N to BNC	972-4197	X	X
50	N to C	972-4198	X	X
50	N to N	972-4199	X	X
50	N to 83	972-4200	X	
50	N to 83	972-4201	X	X
50	83 to BNC	972-4202	X	X
50	83 to C	972-4203	X	X
50	83 to N	972-4204	X	X
50	83 to 83	972-4205	X	X
50	BNC to C	972-4206		X
50	BNC to N	972-4207		X
50	BNC to 83	972-4208		X
50	C to N	972-4209		X
50	C to 83	972-4210		X
50	N to 83	972-4211		X
	83 to BNC	943-7287	X	X
	N to BNC	932-4733	X	X
	83 to BNC	943-8203	X	X
75	C	913-1013	2	
50	UHF	971-7924		2
75	N to N	920-9072	X	X
75	N to N	933-0088		2
75	N	932-1715		2
	UHF	940-1838		2
	Tee piece adaptors			
50	BNC	932-2819	X	2
75	BNC	999-0974	X	2
50	N	943-7278	X	2
75	N	972-8894	X	2
50	C	222-6198	2	X
50	UHF	971-9680	X	2
50	N	954-6532		3
50	BNC	519-3502		3

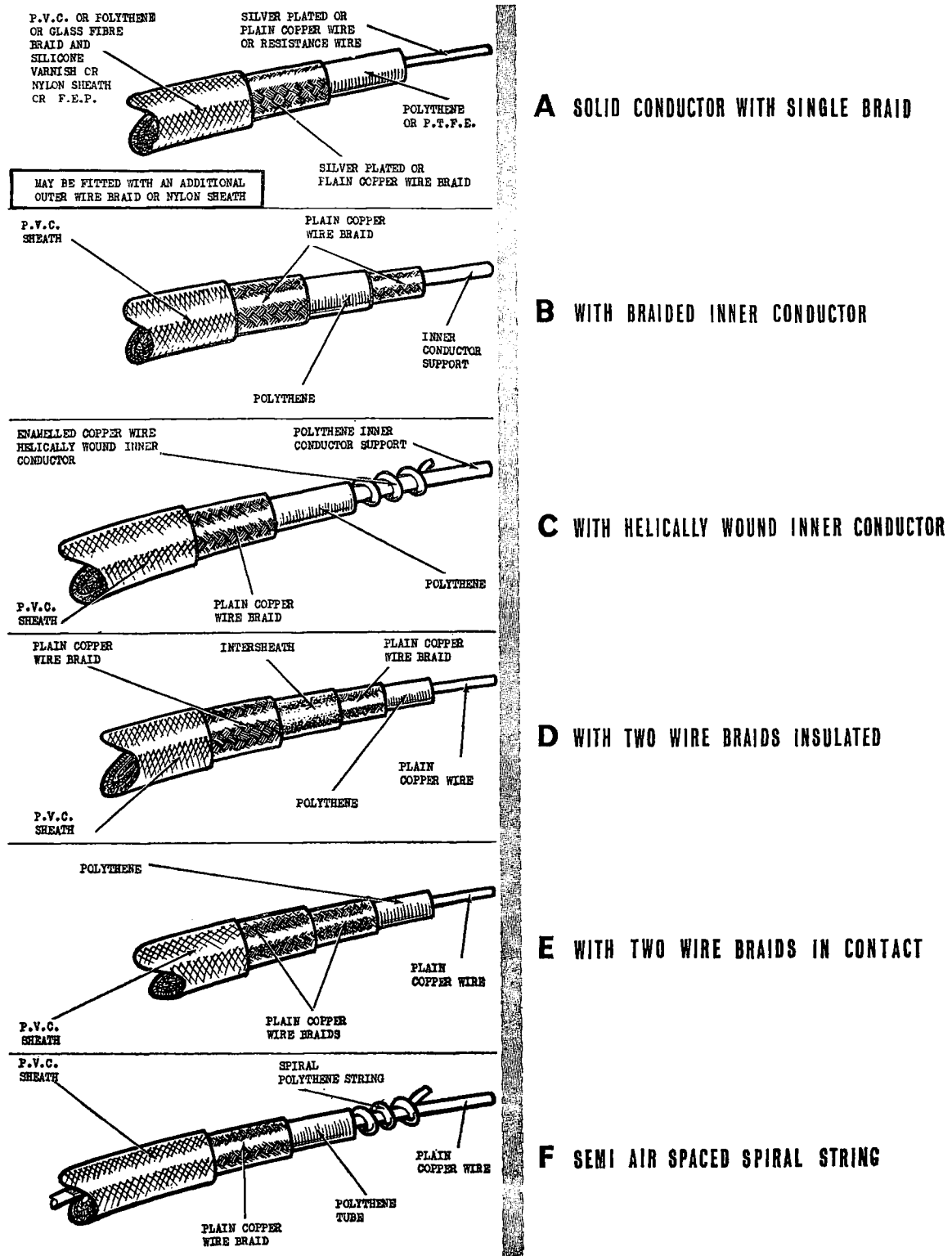
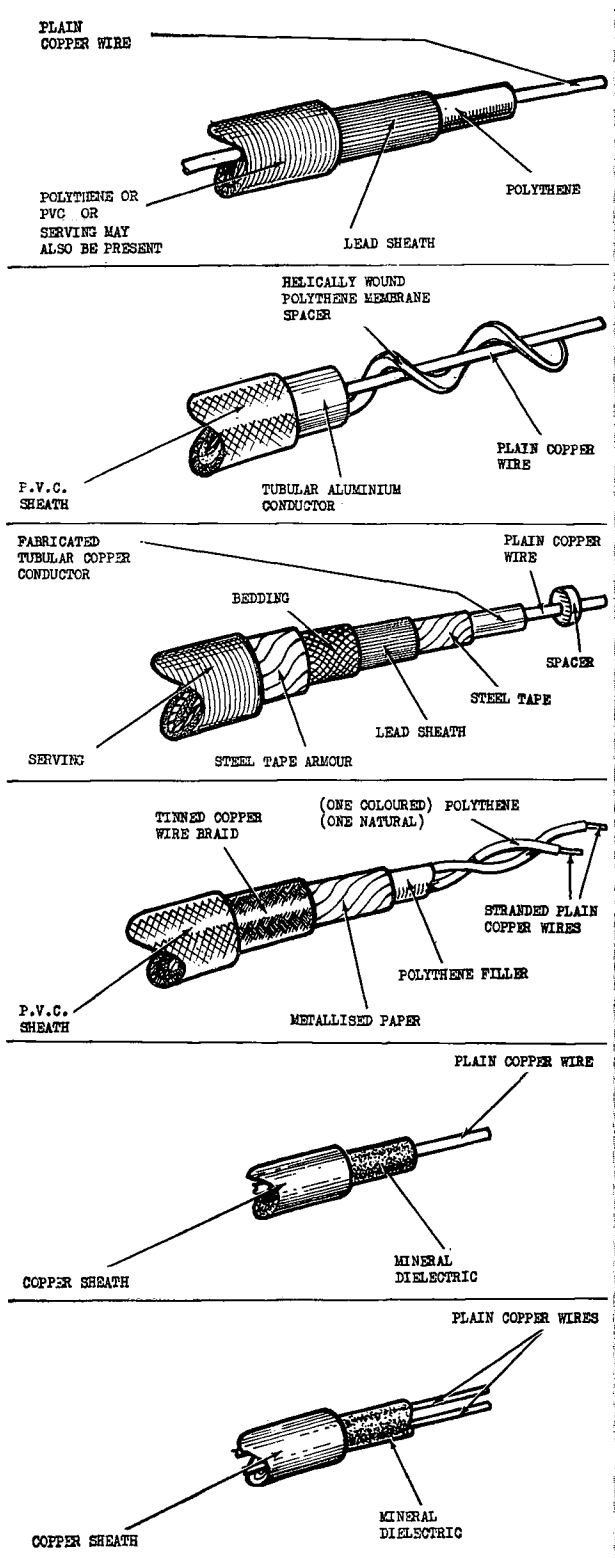


Fig 1—Construction of co-axial cables—A to M



G LEAD SHEATHED CABLES

H WITH HELICAL MEMBRANE SPACER

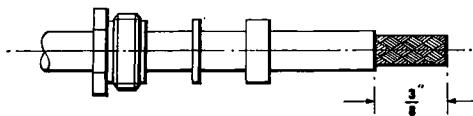
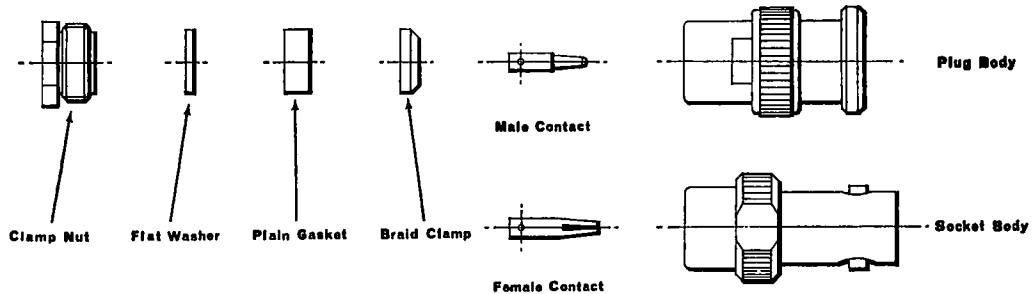
J AIR SPACED TUBULAR OUTER CONDUCTOR

K FLEXIBLE TWIN POLYTHENE INSULATION

L MINERAL INSULATED GO-AXIAL

M MINERAL INSULATED TWIN (OBSOLESCENT)

Fig 1—Construction of co-axial cables—A to M (cont)



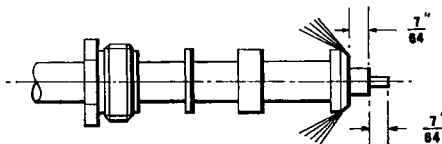
REMOVE ALL PIECE PARTS SHOWN.

Slide the clamp nut, flat washer (where applicable), and plain gasket over outer sheath,

Cut off outer sheath to $3/8$ in from end of cable.

Care must be taken to avoid damaging the braid.

Comb out the braid and taper inward.



Mount the braid clamp so that internal shoulder butts against the end of outer sheath.

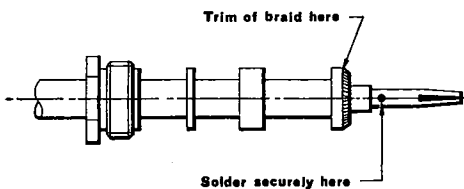
Fold back the braid smoothly over braid clamp without crossing the wires. Trim off surplus braid.

Cut off dielectric to $7/64$ in from braid clamp.

Care must be taken to avoid damaging the centre conductor.

Check length of protruding centre conductor to $7/64$ in from end of dielectric.

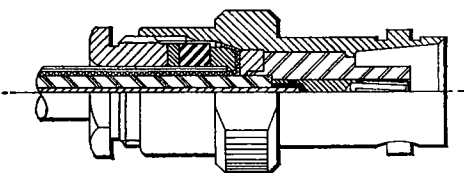
Tin centre conductor. Avoid excessive heat.



Mount the contact (male for plug; female for socket), over the centre conductor to butt against face of dielectric.

Hold contact and cable tightly together and solder securely.

Avoid excessive heat. Remove excess solder from outside of contact.



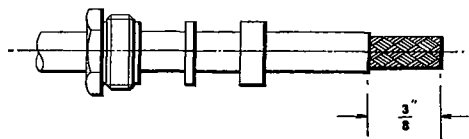
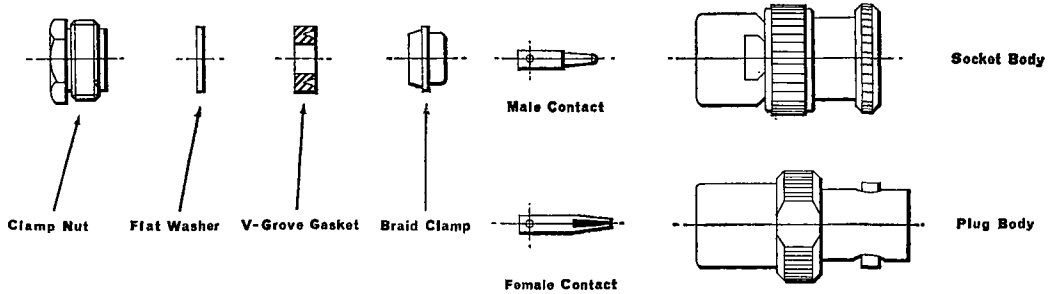
Slide the plain gasket, flat washer (where applicable), and clamp nut up to the braid clamp.

Push the sub-assembly into the body as far as it will go.

Engage the clamp nut in the body and tighten clamp nut.

For this operation hold the body and cable rigid and tighten the clamp nut until required pull out tension is achieved.

Fig 2A—Assembly instructions—BNC Type plugs and sockets—General



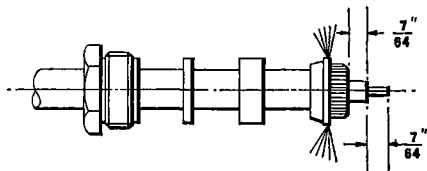
REMOVE ALL PIECE PARTS SHOWN.

Slide the clamp nut, flat washer (where applicable), and V-groove gasket over outer sheath.

Cut off outer sheath to $\frac{3}{8}$ in from end of cable.

Care must be taken to avoid damaging the braid.

Comb out the braid and taper inward.



Mount the braid clamp so that internal shoulder butts against the end of outer sheath

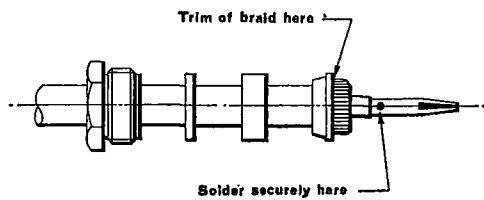
Fold back the braid smoothly over braid clamp without crossing the wires. Trim off surplus braid.

Cut off dielectric to $\frac{7}{64}$ in from braid clamp.

Care must be taken to avoid damaging the centre conductor.

Check length of protruding centre conductor to $\frac{7}{64}$ in from end of dielectric.

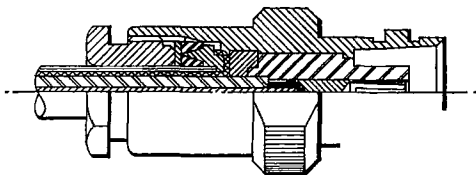
Tin centre conductor. Avoid excessive heat.



Mount the contact (male for plug; female for socket), over the centre conductor to butt against face of dielectric.

Hold contact and cable tightly together and solder securely.

Avoid excessive heat. Remove excess solder from outside of contact.



Slide the V-groove gasket, flat washer (where applicable), and clamp nut, up to the braid clamp. Ensure that V-groove gasket seats on the braid clamp.

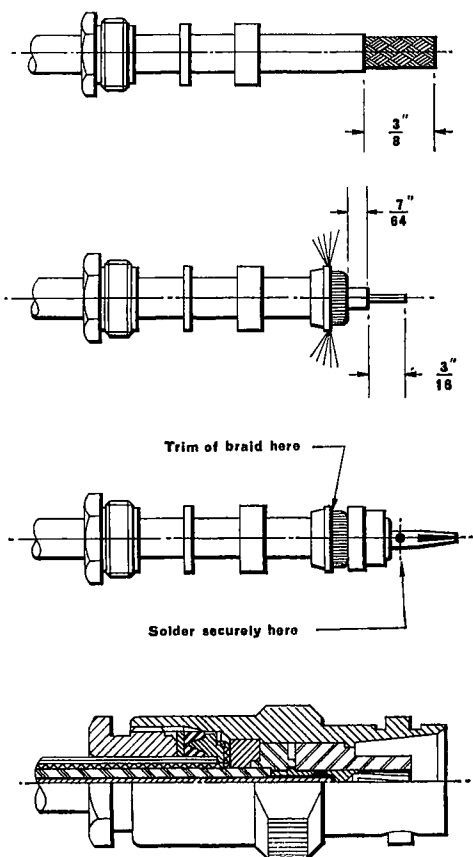
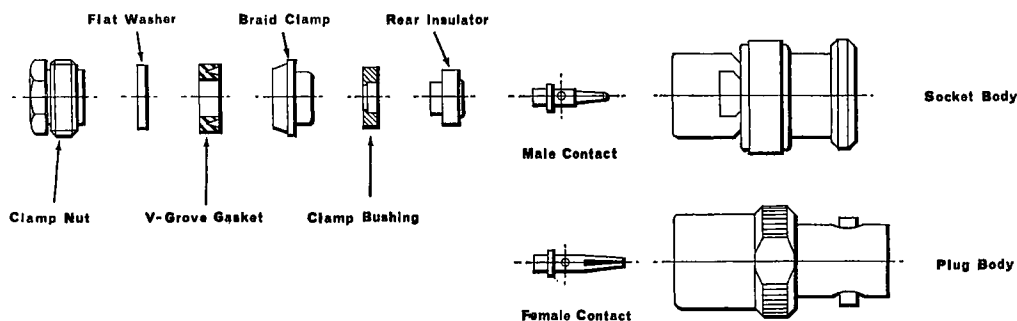
Push the sub-assembly into the body as far as it will go.

Engage the clamp nut in the body and tighten clamp nut.

For this operation hold the body and cable rigid and tighten the clamp nut until required pull out tension is achieved.

Fig 2B—Assembly instruct

pe plugs and sockets—Improved braid clamp



REMOVE ALL PIECE PARTS SHOWN.

Slide the clamp nut, flat washer (where applicable), and V-groove gasket over outer sheath.

Cut off outer sheath to $\frac{3}{8}$ in from end of cable.

Care must be taken to avoid damaging the braid.

Comb out the braid and taper inward.

Mount the braid clamp so that internal shoulder butts against the end of outer sheath.

Fold back the braid smoothly over braid clamp without crossing the wires. Trim off surplus braid.

Cut off dielectric to $\frac{7}{64}$ in from braid clamp.

Care must be taken to avoid damaging the centre conductor.

Check length of protruding centre conductor to $\frac{3}{16}$ in from end of dielectric.

Tin centre conductor. Avoid excessive heat.

Slide clamp bushing and rear insulator over the dielectric to butt against the braid.

Mount the contact (male for plug; female for socket), over the centre conductor with shoulder pressed into the recess in rear insulator.

Hold the contact and cable tightly together and solder securely.

Avoid excessive heat. Remove excess solder from outside of contact.

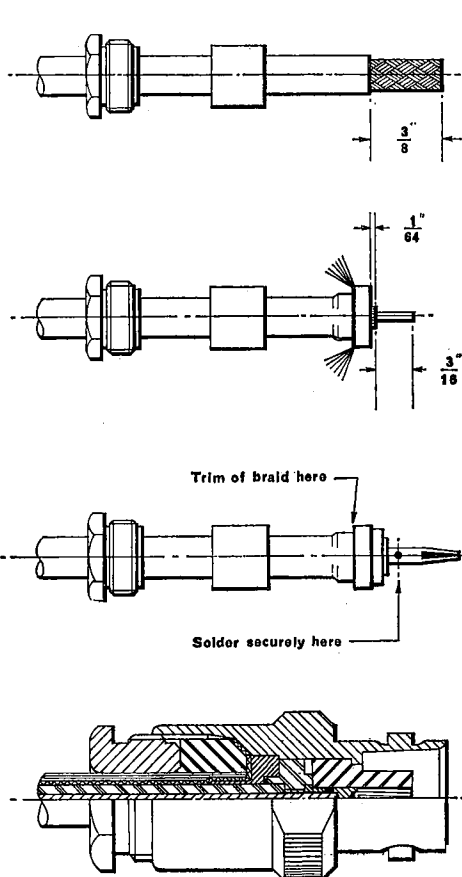
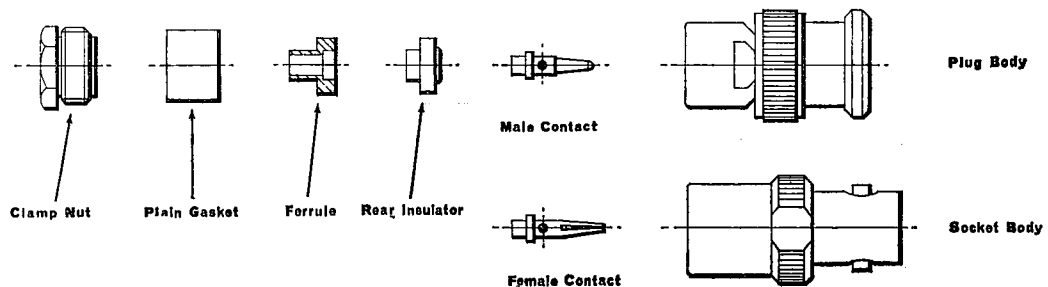
Slide the V-groove gasket, flat washer (where applicable), and clamp nut up to the braid clamp. Ensure that V-groove gasket seats on the braid clamp.

Push the sub-assembly into the body as far as it will go.

Engage the clamp nut in the body and tighten clamp nut.

For this operation hold the body and cable rigid and tighten the clamp nut until required pull out tension is achieved.

Fig 2C—Assembly instructions—BNC Type plugs and sockets—Captive contact



REMOVE ALL PIECE PARTS SHOWN.

Slide the clamp nut and plain gasket over outer sheath.

Cut off outer sheath to $\frac{3}{8}$ in from end of cable.

Care must be taken to avoid damaging the braid.

Comb out the braid and taper inward.

Fold back the braid and insert the ferrule between the dielectric and the braid, trapping the braid between the outer sheath and the ferrule. Trim off excess braid.

Cut off dielectric to $\frac{1}{64}$ in from rear of ferrule.

Care must be taken to avoid damaging the centre conductor.

Check length of protruding centre conductor to $\frac{3}{16}$ in from end of dielectric.

Tin centre conductor. Avoid excessive heat.

Slide rear insulator over the dielectric to butt against the ferrule.

Mount the contact (male for plug; female for socket), over the centre conductor with shoulder pressed into the recess in rear insulator.

Hold the contact and cable tightly together and solder securely.

Avoid excessive heat. Remove excess solder from outside of contact.

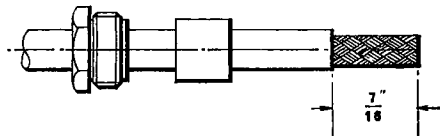
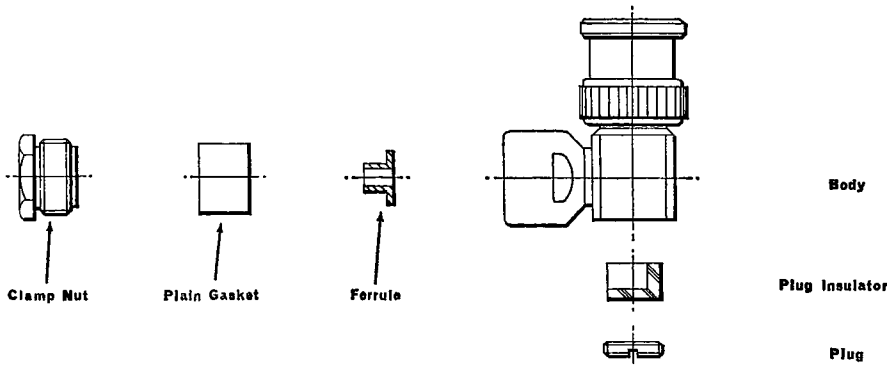
Slide plain gasket and clamp nut up to the ferrule, trapping the braid.

Push the sub-assembly into the body as far as it will go.

Engage the clamp nut in the body and tighten clamp nut.

For this operation hold the body and cable rigid and tighten clamp nut until 30 lb (minimum) pull out tension is achieved.

Fig 2D—Assembly instructions—BNC Type plugs and sockets—Pressure sleeve cable clamp



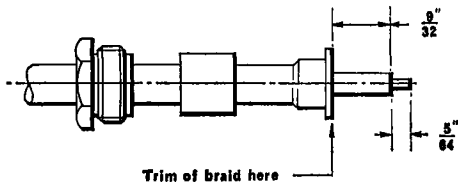
REMOVE ALL PIECE PARTS SHOWN

Slide the clamp nut and plain gasket over outer sheath.

Cut off outer sheath to $7/16$ in from end of cable.

Care must be taken to avoid damaging the braid.

Comb out the braid and taper inward.



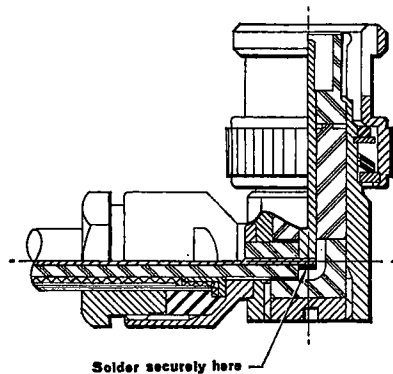
Fold back the braid and insert the ferrule between the dielectric and the braid, trapping the braid between the outer sheath and the ferrule. Trim off excess braid.

Cut off dielectric to $9/32$ in from rear of ferrule.

Care must be taken to avoid damaging the centre conductor.

Check length of protruding centre conductor to $5/64$ in from end of dielectric.

Tin centre conductor. Avoid excessive heat.



Ensure that slot in male contact is in line to receive cable.

Slide the plain gasket and clamp nut up to the ferrule, trapping the braid.

Push the sub-assembly into the body as far as it will go.

Engage the clamp nut in the body and tighten clamp nut.

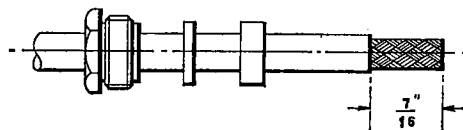
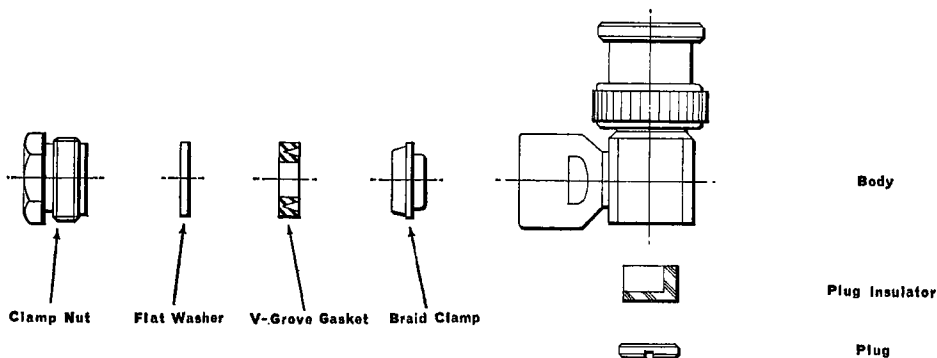
For this operation hold the body and cable rigid and tighten clamp nut until 30 lb (minimum) pull out tension is achieved.

Securely solder the centre conductor in the slot in male contact.

Avoid excessive heat. Remove excess solder from outside of contact.

Replace the plug insulator, and tighten up the plug.

Fig 2E—Assembly instructions—BNC Type plugs and sockets—Elbow plugs improved braid clamp



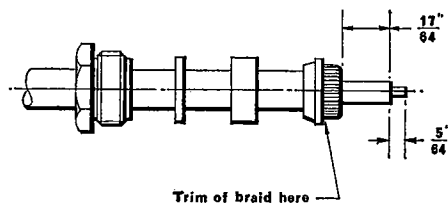
REMOVE ALL PIECE PARTS SHOWN.

Slide the clamp nut, flat washer and V-groove gasket over outer sheath.

Cut off outer sheath to $\frac{1}{16}$ in from end of cable.

Care must be taken to avoid damaging the braid.

Comb out the braid and taper inward.



Mount the braid clamp so that internal shoulder butts against the end of outer sheath.

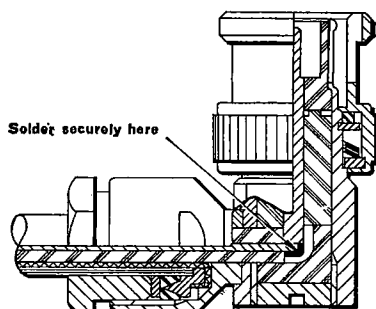
Fold back the braid smoothly over braid clamp without crossing the wires. Trim off surplus braid.

Cut off dielectric to $\frac{17}{64}$ in from braid clamp.

Care must be taken to avoid damaging the centre conductor.

Check length of protruding centre conductor to $\frac{5}{64}$ in from end of dielectric.

Trim centre conductor. Avoid excessive heat.



Ensure that slot in male contact is in line to receive cable.

Slide the V-groove gasket, flat washer and clamp nut up to the braid clamp. Ensure that V-groove gasket seats on the braid clamp.

Push the sub-assembly into the body as far as it will go.

Engage the clamp nut in the body and tighten clamp nut.

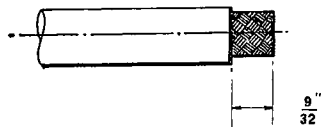
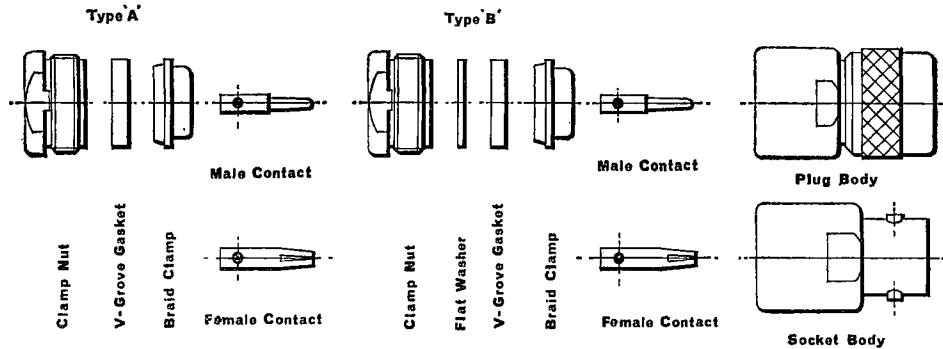
For this operation hold the body and cable rigid and tighten clamp nut until required pull out tension is achieved.

Securely solder the centre conductor in the slot in male contact.

Avoid excessive heat. Remove solder from outside of contact.

Replace the plug insulator and tighten up the plug.

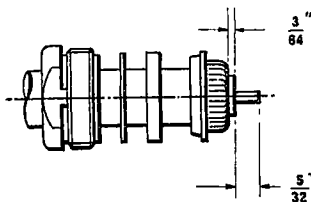
**Fig 2F—Assembly instructions—BNC Type plugs and sockets—
Elbow plugs, pressure sleeve cable clamp**



Slide the clamp nut; flat washer (for Type B only) and 'V' groove gasket, over the outer sheath with 'V' groove facing the end.

Cut off outer sheath to $9/32$ in from end.

Care must be taken to avoid damaging the braid.



Comb out the braid.

Cut off dielectric to $5/32$ in from the end of centre conductor.

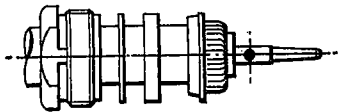
Care must be taken to avoid damaging the centre conductor.

Tin end of centre conductor.

Mount the braid clamp over the braid with taper cone leading, so that the internal shoulder butts against the end of outer sheath.

Fold back braid over the boss of the braid clamp and trim off excess.

Check dimensions $3/64$ in and $5/32$ in.

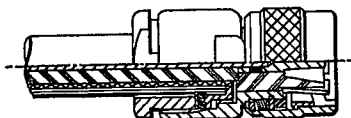


Mount the contact (male for Plug; female for Socket) over the centre conductor to butt against face of dielectric.

Hold contact and cable tightly together; solder securely.

Remove excess solder from outside of contact.

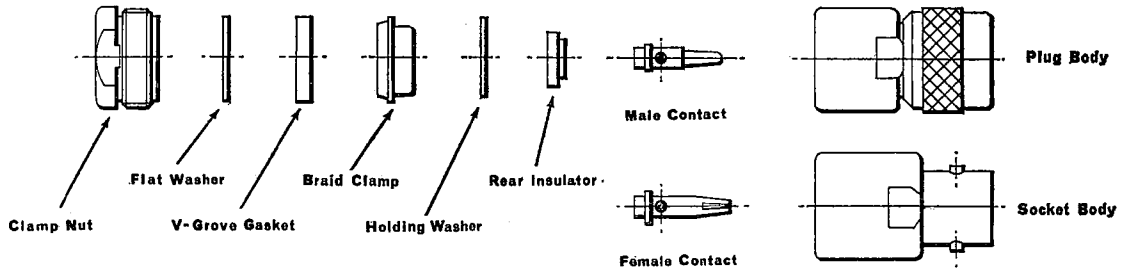
Avoid excessive heat.



Push the sub-assembly into the body as far as it will go.

Slide 'V' groove gasket; flat washer (for Type B only) and clamp nut, into the body, and holding the body and cable rigid, tighten up the clamp nut.

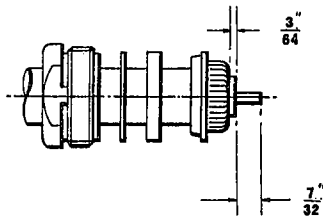
Fig 3A—Assembly instructions—C Type plugs and sockets—Improved braid clamp



Slide the clamp nut, flat washer and 'V' groove gasket, over the outer sheath with 'V' groove facing the end.

Cut off outer sheath to $11/32$ in from end.

Care must be taken to avoid damaging the braid.



Comb out the braid.

Cut off dielectric to $7/32$ in from the end of centre conductor.

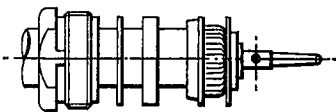
Care must be taken to avoid damaging the centre conductor.

Tin end of centre conductor.

Mount the braid clamp over the braid with taper cone leading, so that the internal shoulder butts against the end of outer sheath.

Fold back braid over the boss of the braid clamp and trim off excess.

Check dimensions $3/64$ in and $7/32$ in.



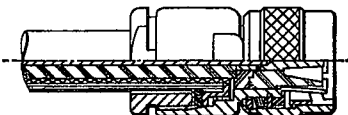
Slide holding washer and rear insulator over dielectric to butt against the braid.

Mount the captive contact (male for Plug; female for Socket) over the centre conductor, with the collar pressed into the recess in rear insulator.

Hold contact and cable tightly together; solder securely.

Remove excess solder from outside of contact.

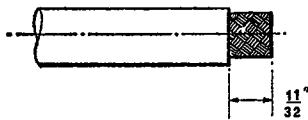
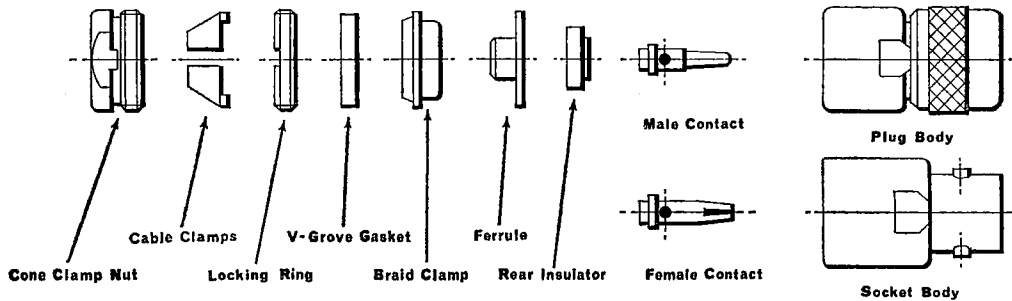
Avoid excessive heat.



Push the sub-assembly into the body as far as it will go.

Slide 'V' groove gasket, flat washer and clamp nut into the body and holding the body and cable rigid, tighten up the clamp nut.

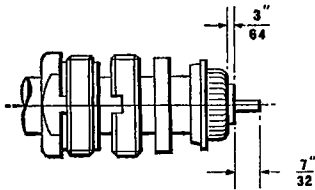
Fig 3B—Assembly instructions—C Type plugs and sockets—Captive contact



Slide the cone clamp nut; locking ring and 'V' groove gasket, over the outer sheath, with 'V' groove facing the cut end.

Cut off outer sheath to $11/32$ in from end.

Care must be taken to avoid damaging the braid.



Comb out the braid.

Cut off dielectric to $7/32$ in from the end of centre conductor.

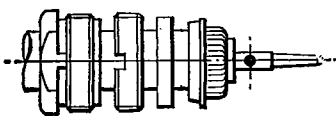
Care must be taken to avoid damaging the centre conductor.

Tin end of centre conductor.

Mount the braid clamp over the braid with taper cone leading, so that the internal shoulder butts against the end of outer sheath.

Fold back the braid over the boss of the braid clamp and trim off excess.

Check dimensions $3/64$ in and $7/32$ in.



Insert the ferrule between dielectric and braid to hold braid between flange of ferrule and face of braid clamp.

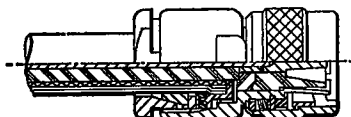
Slide rear insulator over dielectric to butt against the flange of the ferrule.

Mount the captive contact (male for Plug; female for Socket) over the centre conductor with the collar pressed into recess in rear insulator.

Hold contact and cable tightly together; solder securely.

Remove excess solder from outside of contact.

Avoid excessive heat.



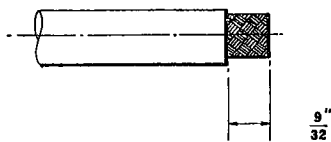
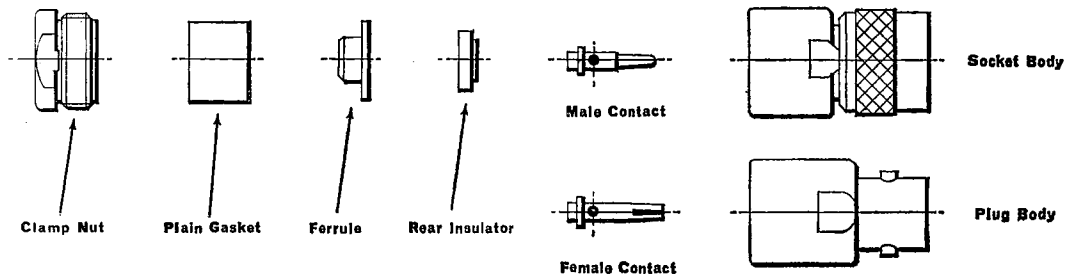
Push the sub-assembly into the body as far as it will go.

Insert 'V' groove gasket and locking ring into the body and tighten up locking ring.

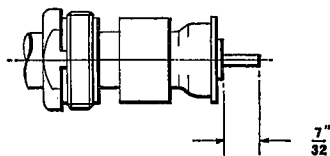
Mount the two halves of the cable clamp in position in the body, with tongues engaging slots in locking ring.

Insert the cone clamp nut and holding the body and cable rigid, tighten up the cone clamp nut.

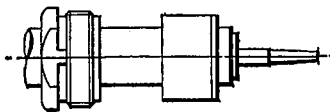
Fig 3C—Assembly instructions—C Type plugs and sockets—UK cable clamp



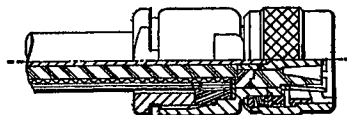
Slide the clamp nut and plain gasket, over the outer sheath.
Cut off outer sheath to $\frac{9}{32}$ in from end.
Care must be taken to avoid damaging the braid.



Comb out the braid.
Cut off dielectric to $\frac{7}{32}$ in from the end of centre conductor.
Care must be taken to avoid damaging the centre conductor.
Tin end of centre conductor.



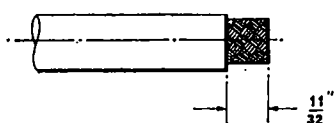
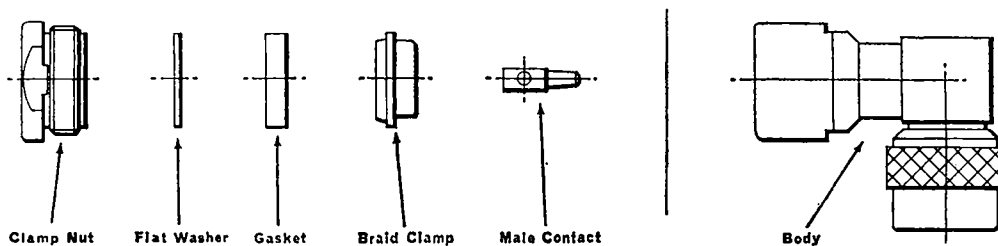
Fold back the braid over the end of outer sheath and insert the ferrule between the dielectric and the braid, to hold the braid between the flange of ferrule and face of outer sheath.
Lay back the braid against flange of ferrule and trim off excess braid flush with the outside diameter of flange.
Check $\frac{7}{32}$ in dimension.



Slide rear insulator over dielectric to butt against the flange of the ferrule.
Mount the captive contact (male for Plug; female for socket) over the centre conductor, with the collar pressed into the recess in rear insulator.
Hold contact and cable tightly together; solder securely.
Remove excess solder from outside of contact.
Avoid excessive heat.
Close plain gasket against flange of ferrule.

Push the sub-assembly into the body as far as it will go.
Insert the clamp nut and holding the body and cable rigid, tighten up the clamp nut.

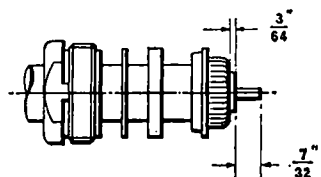
Fig 3D—Assembly instructions—C Type plugs and sockets—Pressure sleeve cable clamp



Slide the clamp nut; flat washer and 'V' groove gasket, over the outer sheath with 'V' groove facing the end.

Cut off outer sheath to $11/32$ in from end.

Care must be taken to avoid damaging the braid.



Comb out the braid.

Cut off dielectric to $7/32$ in from the end of centre conductor.

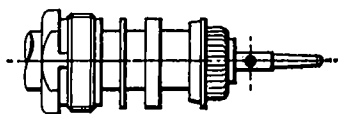
Care must be taken to avoid damaging the centre conductor.

Tin end of centre conductor.

Mount the braid clamp over the braid with taper cone leading, so that the internal shoulder butts against the end of outer sheath.

Fold back the braid over the boss of the braid clamp and trim off excess.

Check dimensions $3/64$ in and $7/32$ in.

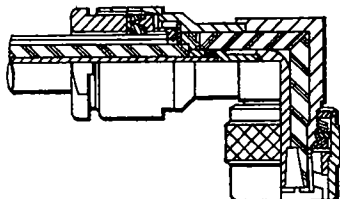


Mount the male contact over the centre conductor to butt against face of dielectric.

Hold contact and cable tightly together; solder securely.

Remove excess solder from outside of contact.

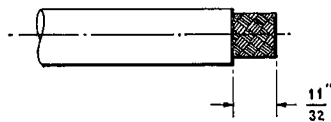
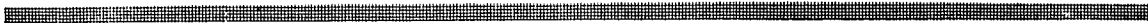
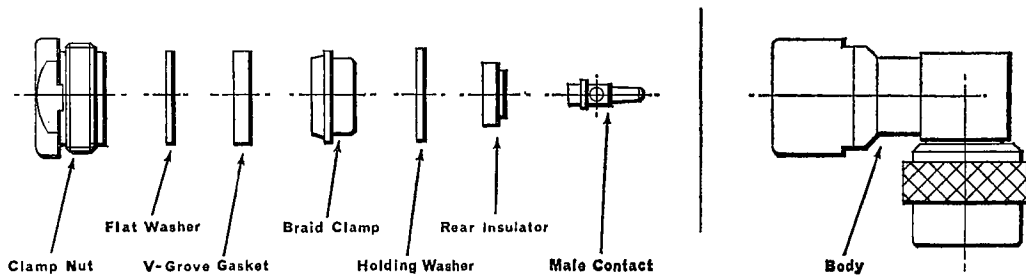
Avoid excessive heat.



Push the sub-assembly into the body as far as it will go.

Slide 'V' groove gasket; flat washer and clamp nut into the body and holding the body and cable rigid, tighten up the clamp nut.

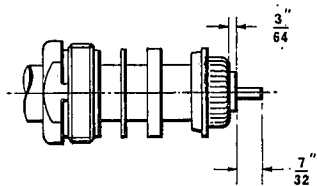
Fig 3E—Assembly instructions—C Type plugs and sockets—Elbow plugs—Improved braid clamp



Slide the clamp nut, flat washer and 'V' groove gasket, over the outer sheath with 'V' groove facing the end.

Cut off outer sheath to $11/32$ in from end.

Care must be taken to avoid damaging the braid.



Comb out the braid.

Cut off dielectric to $7/32$ in from the end of centre conductor.

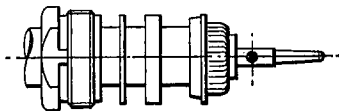
Care must be taken to avoid damaging the centre conductor.

Tin end of centre conductor.

Mount the braid clamp over the braid with taper cone leading, so that the internal shoulder butts against the end of outer sheath.

Fold back the braid over the boss of the braid clamp and trim off excess.

Check dimensions $3/64$ in and $7/32$ in.



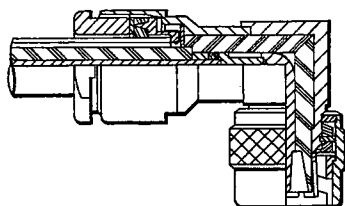
Slide holding washer and rear insulator over dielectric to butt against the braid.

Mount the captive contact over the centre conductor with the collar pressed into recess in rear insulator.

Hold contact and cable tightly together; solder securely.

Remove excess solder from outside of contact.

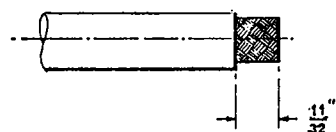
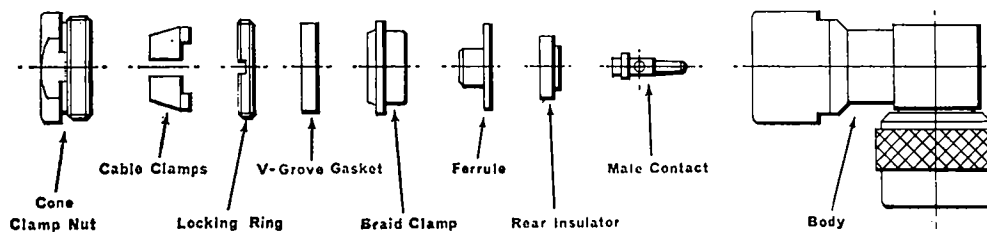
Avoid excessive heat.



Push the sub-assembly into the body as far as it will go, with male and female contacts properly engaged.

Slide 'V' groove gasket, flat washer and clamp nut into the body, and holding the body and cable rigid, tighten up the clamp nut.

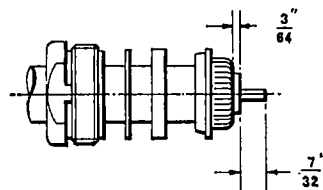
Fig 3F—Assembly instructions—C Type plugs and sockets—Elbow plugs—Captive contact



Slide the cone clamp nut; locking ring and 'V' groove gasket over the outer sheath, with 'V' groove facing the cut end.

Cut off outer sheath to $\frac{11}{32}$ in from end.

Care must be taken to avoid damaging the braid.



Comb out the braid.

Cut off dielectric to $\frac{7}{32}$ in from the end of centre conductor.

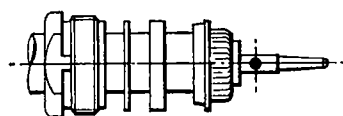
Care must be taken to avoid damaging the centre conductor.

Tin end of centre conductor.

Mount the braid clamp over the braid with taper cone leading, so that the internal shoulder butts against the end of outer sheath.

Fold back the braid over the boss of the braid clamp and trim off excess.

Check dimensions $\frac{3}{64}$ in and $\frac{7}{32}$ in.



Insert the ferrule between dielectric and braid to hold braid between flange of ferrule and face of braid clamp.

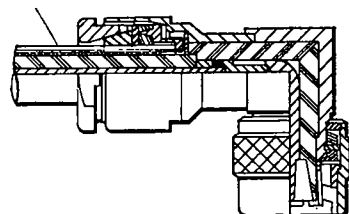
Slide rear insulator over dielectric to butt against the flange of the ferrule.

Mount the captive contact over the centre conductor with the collar pressed into recess in rear insulator.

Hold contact and cable tightly together; solder securely.

Remove excess solder from outside of contact.

Avoid excessive heat.



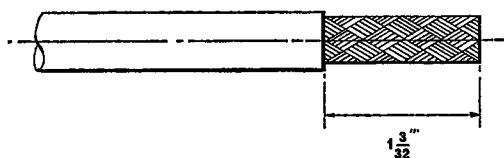
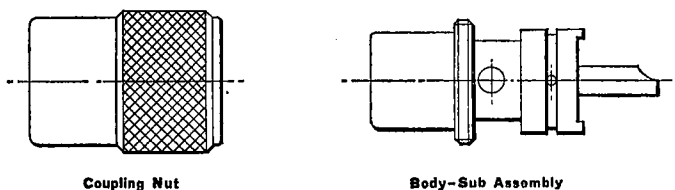
Push the sub-assembly into the body as far as it will go, with male and female contacts properly engaged.

Insert 'V' groove gasket and locking ring into the body and tighten up locking ring.

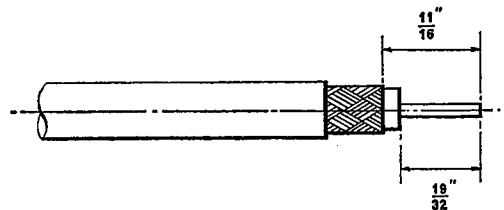
Mount the two halves of the cable clamp in position in the body, with tongues engaging slots in locking ring.

Insert the cone clamp nut and holding the body and cable rigid, tighten up the cone clamp nut.

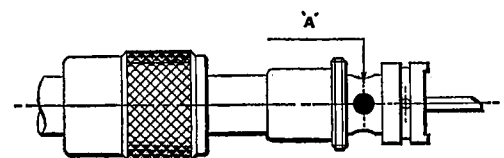
Fig 3G—Assembly instructions—C Type plugs and sockets—Elbow plug—UK cable clamp



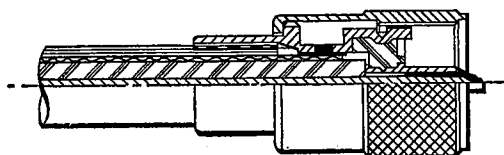
Slide the coupling nut over the cable with thread end towards the end of the cable.
Cut off outer sheath to $1\frac{3}{32}$ ins. from end of cable.
Care must be taken to avoid damaging the braid.



Cut off the braid to $\frac{11}{16}$ in. from end of cable.
Cut off dielectric to $\frac{18}{32}$ in. from end of centre conductor.
Care must be taken to avoid damaging the centre conductor.
Tin exposed braid and centre conductor.
Avoid excessive heat.

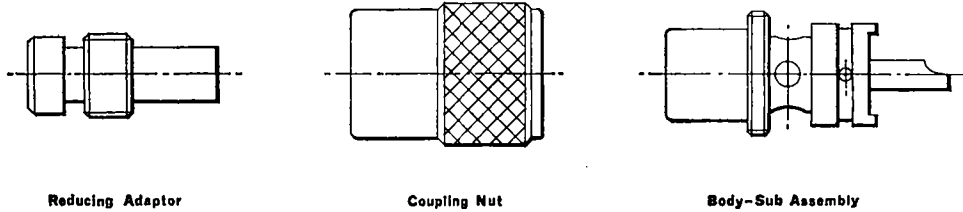


Screw the body sub-assembly on to the cable as far as it will go.
Solder braid to body through the solder holes "A" using only enough heat to create a bond of braid to body.
Solder the centre conductor to the contact.

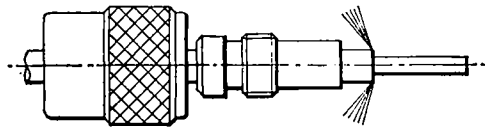


For final assembly, screw the coupling nut on to the body sub-assembly.

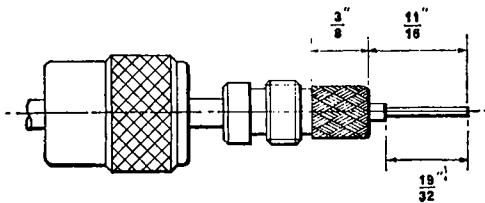
Fig 4A—Assembly instructions—UHF Type plugs and sockets—Without reducing adaptor



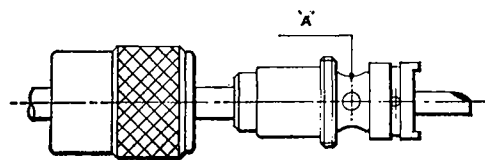
Slide the coupling nut, with thread end towards the end of cable, and the reducing adaptor, over the outer sheath. Cut off outer sheath to $\frac{23}{32}$ in. from end of cable. Care must be taken to avoid damaging the braid.



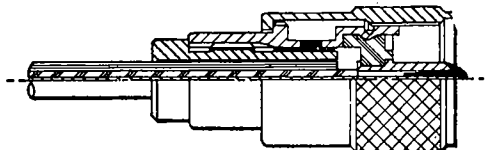
Fan back the braid against the end of outer sheath.



Position the end of the reducing adaptor to the end of outer sheath. Fold back the braid over the reducing adaptor and trim off to $\frac{3}{8}$ in. dimension. Check $\frac{11}{16}$ in. dimension. Cut off dielectric to $\frac{19}{32}$ in. from the end of centre conductor. Care must be taken to avoid damaging the centre conductor. Tin exposed centre conductor. Avoid excessive heat.

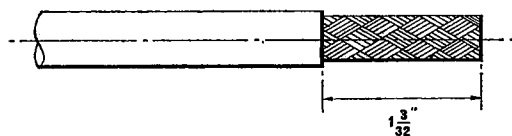
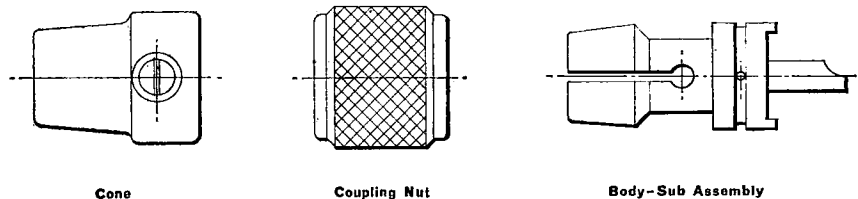


Screw the body sub-assembly tight home against the boss of the reducing adaptor. Solder braid to body through the solder holes "A" using only enough heat to create a bond of braid to body. Solder the centre conductor to the contact.

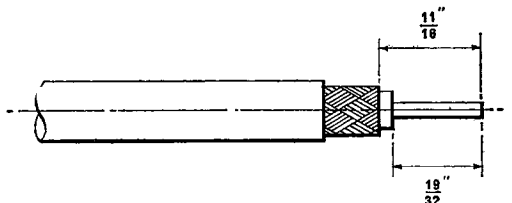


For final assembly, screw the coupling nut on to the body sub-assembly.

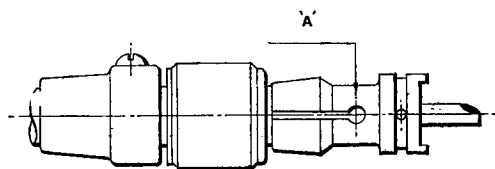
Fig 4B—Assembly instructions—UHF Type plugs and sockets—With reducing adaptor



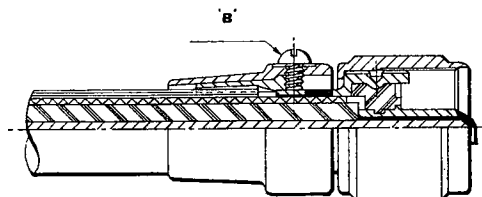
Slide the cone and coupling nut; with thread end towards the end of cable, over the outer sheath.
Cut off outer sheath to $1\frac{3}{32}$ in. from end of cable.
Care must be taken to avoid damaging the braid.



Cut off braid to $\frac{11}{16}$ in. from end of cable.
Cut off dielectric to $\frac{19}{32}$ in. from end of centre conductor.
Care must be taken to avoid damaging the centre conductor.
Tin exposed braid and centre conductor.
Avoid excessive heat.

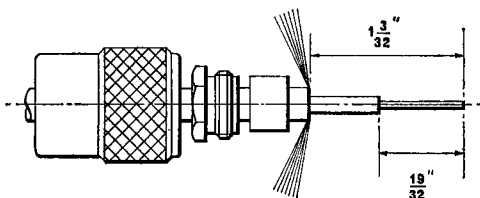
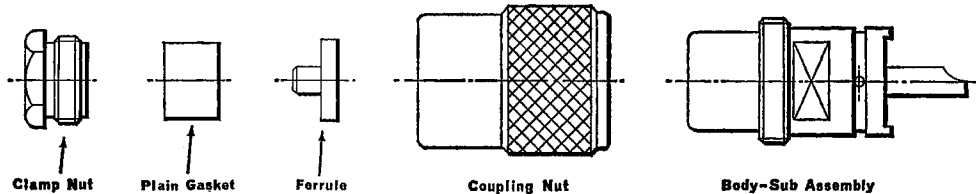


Screw the body sub-assembly on to the cable as far as it will go.
Solder braid to body through the solder holes "A" using only enough heat to create a bond of braid to body.
Solder the centre conductor to the contact.

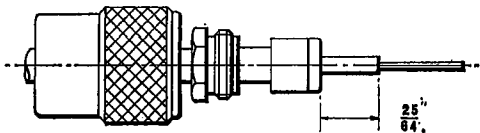


For final assembly, slide the coupling nut on to the body sub-assembly.
Position the cone with sufficient clearance to permit free rotation of the coupling nut and tighten screw "B".

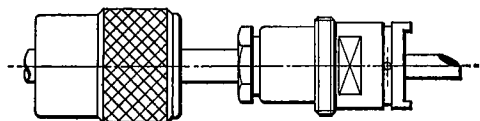
Fig 4C—Assembly instructions—UHF Type plugs—Type A



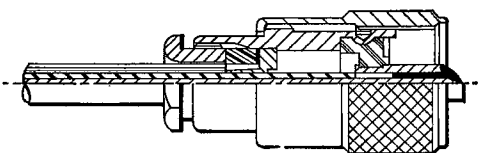
Slide the coupling nut; clamp nut and plain gasket over the outer sheath.
Cut off outer sheath to $1\frac{3}{32}$ in. from end of cable.
Care must be taken to avoid damaging the braid.
Comb out and fan back braid against face of outer sheath.
Cut off dielectric to $\frac{19}{32}$ in. from end of centre conductor.
Care must be taken to avoid damaging the centre conductor.
Tin exposed centre conductor. Avoid excessive heat.



Insert the ferrule between the dielectric and braid to hold the braid between flange of ferrule and face of outer sheath.
Lay back the braid against flange of ferrule and trim off excess braid flush with the outside diameter of the flange.
Close plain gasket against flange of ferrule.
Check $\frac{25}{64}$ in. dimension.

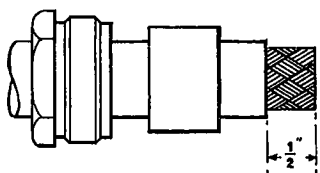
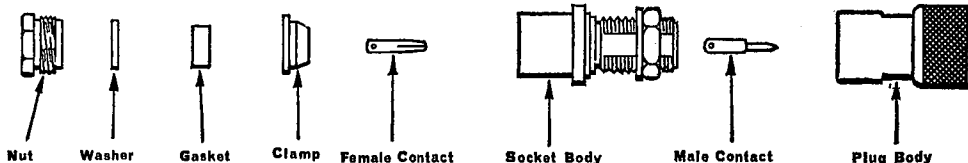


Push the prepared cable end into the body sub-assembly as far as it will go, with centre conductor through the hole in contact.
Insert the clamp nut and holding the body and cable rigid, tighten up the clamp nut.
Solder centre conductor to contact.

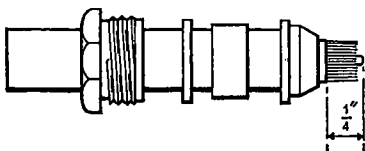


For final assembly, screw the coupling nut on to the body assembly.

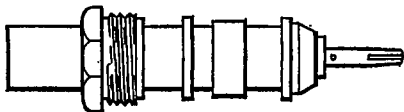
Fig 4D—Assembly instructions—UHF Type plugs and sockets—Pressure sleeve cable clamp



Slide the nut, washer and gasket over the outer sheath. Cut off outer sheath to $\frac{1}{2}$ in from end of cable. Care must be taken to avoid damaging the braid. Comb out the braid and taper inward.



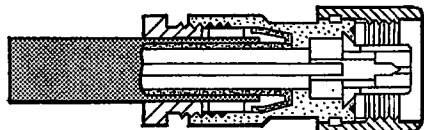
Mount the clamp so that the internal shoulder butts against the end of the outer sheath. When assembling connectors with a gland ensure the knife edge of the clamp is toward the end of the cable and the groove in the gasket is towards the clamp. Cut off dielectric $\frac{1}{4}$ in from the end and tin the conductor.



Smooth braid back over clamp and trim. Soft solder contact to centre conductor. Avoid use of excessive heat and solder.

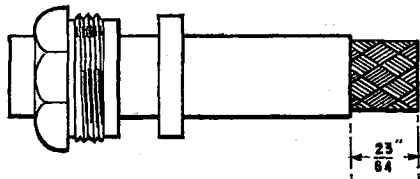
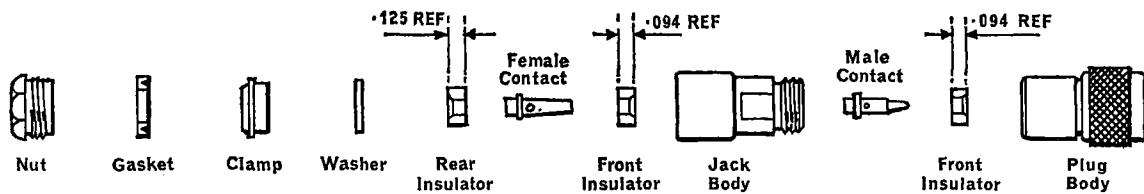


Slide the body into place carefully so that the contact enters the hold in insulator (male for plug; female for socket). The face of the dielectric must be flush against the insulator.

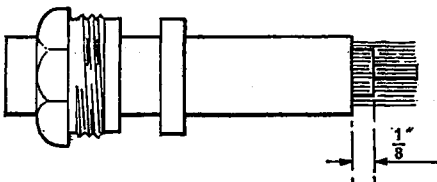


Slide the completed assembly into the body by pushing nut. Then the nut is in place tighten up as required.

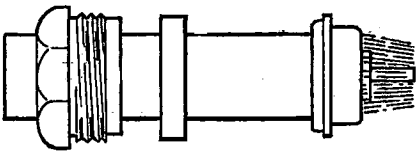
Fig 5A—Assembly instructions—N Type plugs and sockets—General



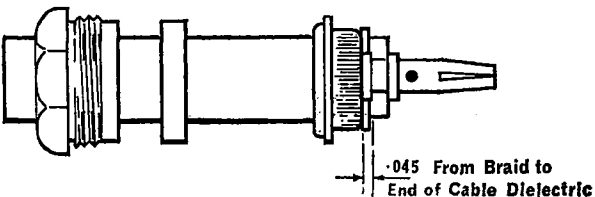
Slide the nut and gasket (with the "V" groove towards the clamp) over the cable.
Cut off outer sheath to 23/64 in from the end of cable. Care must be taken to avoid damage to braid.



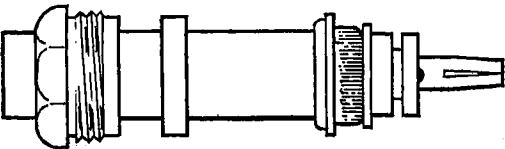
Comb out the braid and taper inwards.
Cut off dielectric 1/8 in from cable end.



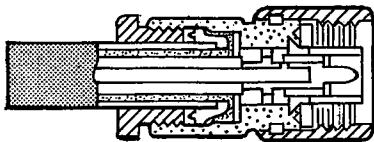
Place clamp over braid and push back against the end of the outer sheath.



Fold back braid wires, trim to proper length and form over clamp as shown.
Tin centre conductor using the minimum heat.
Slide on washer, rear insulator and contact.
Solder contact to centre conductor.



Slide front insulator over contact.



Insert the prepared termination into the connector body.
Ensure that the sharp edge of the clamp seats properly in the gasket.
Tighten the nut holding the body stationary.

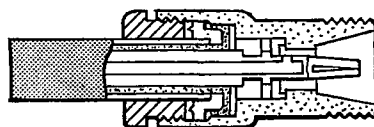
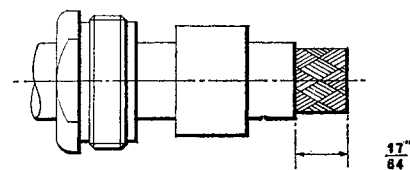
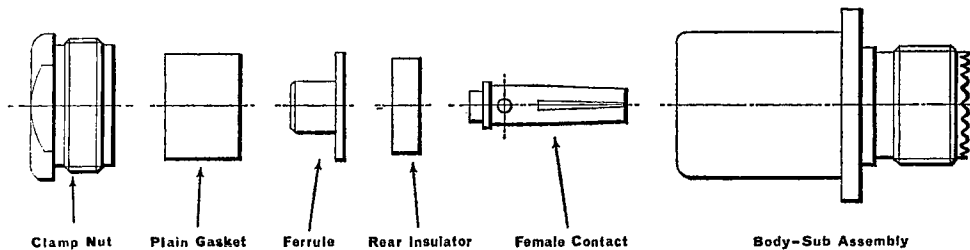
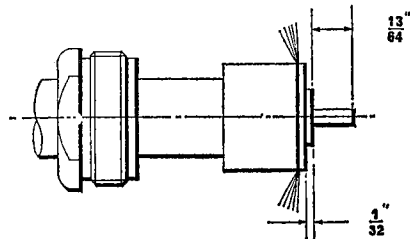


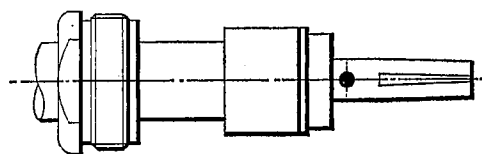
Fig 5B—Assembly instructions—N Type plugs and sockets—Captive contact



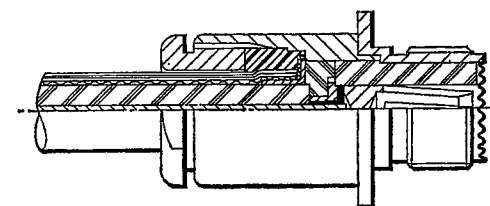
Slide the clamp nut and plain gasket over the outer sheath.
Cut off outer sheath to $\frac{17}{64}$ in. from end of cable.
Care must be taken to avoid damaging the braid.



Comb out and fan back the braid against the face of outer sheath.
Cut off dielectric to $\frac{13}{64}$ in. from end of centre conductor.
Care must be taken to avoid damaging the centre conductor.
Tin exposed centre conductor.
Insert the ferrule between the dielectric and braid to hold the braid between flange of ferrule and face of outer sheath.
Lay back the braid against flange of ferrule and trim off excess braid flush with the outside diameter of the flange.
Close plain gasket against flange of ferrule.
Check $\frac{1}{32}$ in. dimension.



Position the rear insulator over projecting dielectric, to butt against the face of the ferrule.
Mount the female contact over the centre conductor with the collar pressed into the recess in rear insulator. Hold contact and cable tightly together; solder securely.
Remove excess solder from outside of contact.
Avoid excessive heat.



Push the sub-assembly into the body as far as it will go.
Insert the clamp nut and holding the body and cable rigid, tighten up the clamp nut.

Fig 5C—Assembly instructions—N Type panel socket—Pressure sleeve clamp

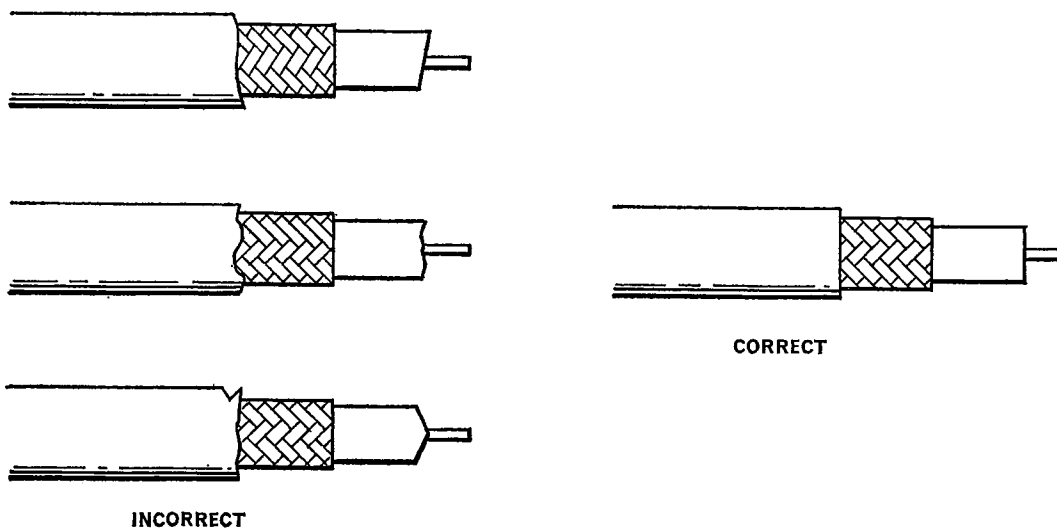


Fig 6—Stripping co-axial cable jacket and dielectric

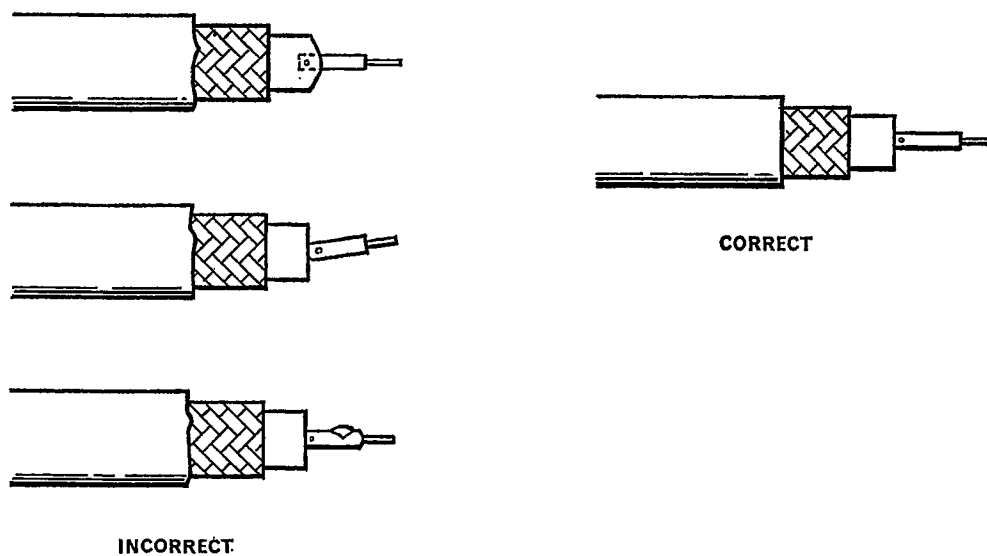
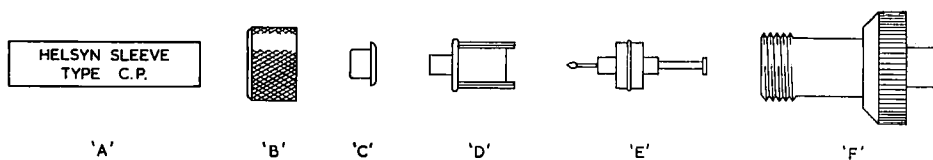
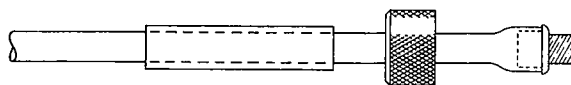


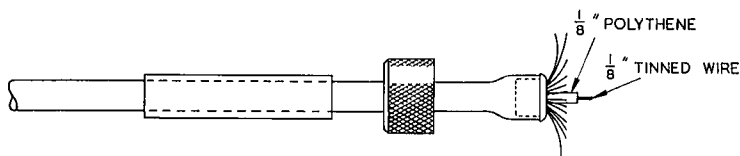
Fig 7—Installation of centre contact



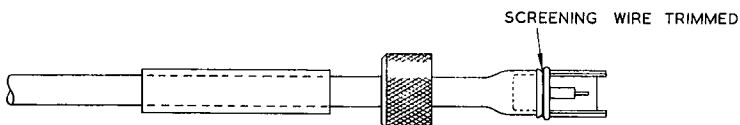
1. SLIDE 'A' OVER P.V.C. BY MEANS OF THE HELLERMANN TOOL. CUT OFF $\frac{1}{4}$ " OF THE P.V.C. COVERING AND FIT ITEM 'B' OVER P.V.C.



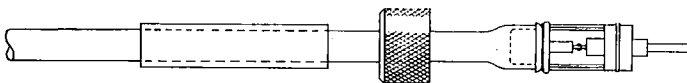
2. FIT ITEM 'C' OVER SCREENING SO THAT $\frac{1}{4}$ " OF SCREENING IS LEFT BARE AT THE END.



3. SPREAD OUT SCREENING OVER ITEM 'C' AND BARE $\frac{1}{8}$ " OF COPPER WIRE TIN THE WIRE



4. PUSH ON ITEM 'D' TO FIT INSIDE ITEM 'C' AND THUS FIX SCREENING TRIM OFF ANY SCREENING PROTRUDING OVER OUTSIDE. N.B. SCREENING SHOULD NOT BE SOLDERED TO ITEM 'C'



5. TIN ITEM 'E' AND SOLDER TO WIRE INSIDE CABLE. CARE BEING TAKEN THAT THE PROJECTIONS ON ITEM 'D' LOCATE WITH THE SLOTS ON ITEM 'E'



6. PUSH WHOLE ASSEMBLY INSIDE ITEM 'F' AND SCREW ON LOCKING RING ITEM 'B'
7. SLIDE 'A' OVER WHOLE ASSEMBLY. BY MEANS OF A HELLERMANN TOOL

NOTE (I) ITEM 'B' HAS BEEN MODIFIED TO FIT OVER P.V.C. COVERING IF AN UNMODIFIED ITEM 'B' IS USED, IT WILL BE NECESSARY TO PUSH BACK P.V.C. COVERING ONE INCH BEFORE FITTING SAME.

(II) IF A HELLERMANN TOOL IS NOT AVAILABLE THE HELSYN SLEEVE MAY BE SLID ON BY HAND

Fig 8—Wiring of Pye mini-plugs

EME8/2731

End of Chapter 125