APPENDIX 3. RF CABLES AND CONNECTORS

Figure 1. RF CABLES AND CONNECTORS

1. DESCRIPTION OF CABLES AND CONNECTORS. As an aid in determining the cable and connector to use on a particular system, the figures in this appendix describe the characteristics and parameters of the cables and connectors.

2. ASSEMBLAGE OF COAXIAL CABLE CONNECTORS. Great care must be exercised in assembling coaxial cable connectors to prevent faulty connections. Manufacturer's specifications of dielectric protrusion after the braid has been dressed is of the utmost importance. Too long a protrusion will force the braid off its seat when tightening the clamp nut. This causes a poor physical ground as well as possible shorting of the transmission line. In addition, improper seating of the clamp nut will cause a loose connector and a poor moisture seal. When properly assembled, the clamp should expose one to three threads after being fully seated. The illustrations in this appendix show the proper technique and cable dimensions for assembling the different connectors.

3. SELECTION OF COAXIAL CABLE CONNECTORS.

a. Environmental considerations must be taken into account when selecting the proper coaxial connectors for a project. The coefficient of expansion of the center conductor of an RF cable is greater than that of the dielectric. With long transmission lines and wide temperature variations, this difference in expansion results in slippage of the center contact pin of the coaxial connector. When RF connectors are used for outside installations, telescoping or captivated pin connectors are to be installed. Consult the manufacturer's catalogues and specifications for other environmental considerations.

b. All coaxial connectors specified in the engineering instructions do not always have UG designations. Some RF connectors are specified by manufacturer's name and part number, such as Amphenol 82-835, Phelps Dodge 735-100, etc.

Figure 2. COAXIAL CABLE JACKET DATA

Type I Black Polyvinyl Chloride
This jacket material was used predominately on cables manufactured to JAN-C-17. Although it is recognized as a jacket material in MIL-C-17C, it is not specified for use on any cables made to this specification. It has good weathering and abrasion properties and can be used for direct burial. However, it is of the contaminating type and will cause cable attenuation to increase with age.

Type IIa Black Polyvinyl Chloride
Most polyethylene dielectric cables manufactured to MIL-C-17C have this type of jacket. In addition to having all of the advantages of the type I jacket, type IIa is also non-contaminating.

Type IIIa Black Polyethylene
This is a high molecular weight, non-contaminating material that has excellent abrasion resistance and weathering properties. These jackets are stiffer than the vinyl types and cannot be satisfactorily potted or bonded.

Type IV Black Synthetic Rubber
In MIL-C-17C, this jacket material is used only on high voltage pulse cables. The basic material is polymerized chloroprene.

Type V Fiberglas Braid
This material is used for jacketing all Teflon dielectric cables except for the subminiatures. The fiberglas braid is impregnated with silicone varnish to provide better abrasion resistance and a moisture seal.

Type VI Silicone Rubber-Dacron Braid
The type VI jacket consists of a single braid of fiber glass impregnated with silicone varnish. Over this an extruded or taped layer of silicone rubber is applied. A Dacron braid, impregnated with a high temperature fluorocarbon lacquer, is applied over the rubber to provide added abrasion resistance. An alternate construction is allowed whereby silicone rubber impregnated fiber glass tape may be used in lieu of the fiberglas braid and layer of silicone rubber.

Type VII Teflon (Polytetrafluoroethylene)
The Teflon jacket may be extruded or tape wrapped. Taped jackets consist of two wraps applied in opposite directions with a 50% overlap. In MIL-C-17C, this type of jacket is specified for the Teflon subminiature cables. In addition to its ability to withstand high temperatures, this material is chemically inert and insoluble in liquids and gases.

Type VIII Synthetic Rubber
This jacket material is a polychloroprene compound and is specified for use on only a few pulse cables in MIL-D-17C. Its primary use is as a jacket material for multi-conductor cables.

Figure 2. COAXIAL CABLE JACKET DATA (CONT'D)

Other Types

Type II Grey Polyvinyl Chloride is a JAN-C-17A jacket material still common on several coaxial cables; it has an operating temperature of -25°C to +80°C. Although the foregoing jacket types will satisfy a great number of requirements, there may be applications that dictate special characteristics. Many plastic compounds are available for jacketing purposes.

MIL-C-17C Designation	Jacket Type	Temperature Limits
Type I	Black Polyvinyl Chloride	-40°C to +80°C*
Type IIa	Black Polyvinyl Chloride Non-Contaminating	Under " -55°C to +80°C* Over " - 40°C to +80°C*
Type IIIa	Black Polyethylene	-55°C to +85°C
Type IV	Black Synthetic Rubber	Under " - 55°C to +80°C Over " - 40°C to +80°C
Type V	Fiberglass	-55°C to +250°C
Type VI	Silicone Rubber	-55°C to +175°C
Type VII	Polytetrafluoroethylene (Teflon)	-55°C to +200°C
Type VIII	Synthetic Rubber	-55°C to +75°C

*This temperature limit established by the polyethylene dielectric of the cable.

Figure 3. Coaxial Cable Data And Specifications

LEGEND

Dielectric Materials

Non-Std. Nomenclature Used in Table	Std. Nomenclature
B - Polyisobutylene Mix	B
P - Polyethylene, solid	A-1
PA - Polyethylene, air spaced	A-2
R - Synthetic Rubber	C
RC - Synthetic Rubber between layers of conducting rubber	D
RC2 - Conducting rubber and two layers of Synthetic Rubber	E
TA - Teflon, air spaced	F-3
TS - Teflon, solid	F-1
TT - Teflon, taped	F-2

s - Denotes solid polyethylene with semi-conducting layers. Diameter is outside semi-conducting layer.

Jacket Materials

Solid

PVCA-Low temp black polyvinylchloride chloride contaminating plasticizers.

PVCB-Low temp black polyvinylchloride non-contaminating plasticizers.

PVCG-Grey polyvinylchloride, non-contaminating.

SNP-Stabilized natural polythylene.

BP-Black polyethylene, high molecular weight.

BSR-Black synthetic rubber.

Mix

FGT-Hi-temp lacquer impregnated fiber glass, over teflon tape in most cases.

FGS-Hi-temp lacquer impregnated polyester fiber over silicone impregnated fiber glass.

Conductor and Braid Materials

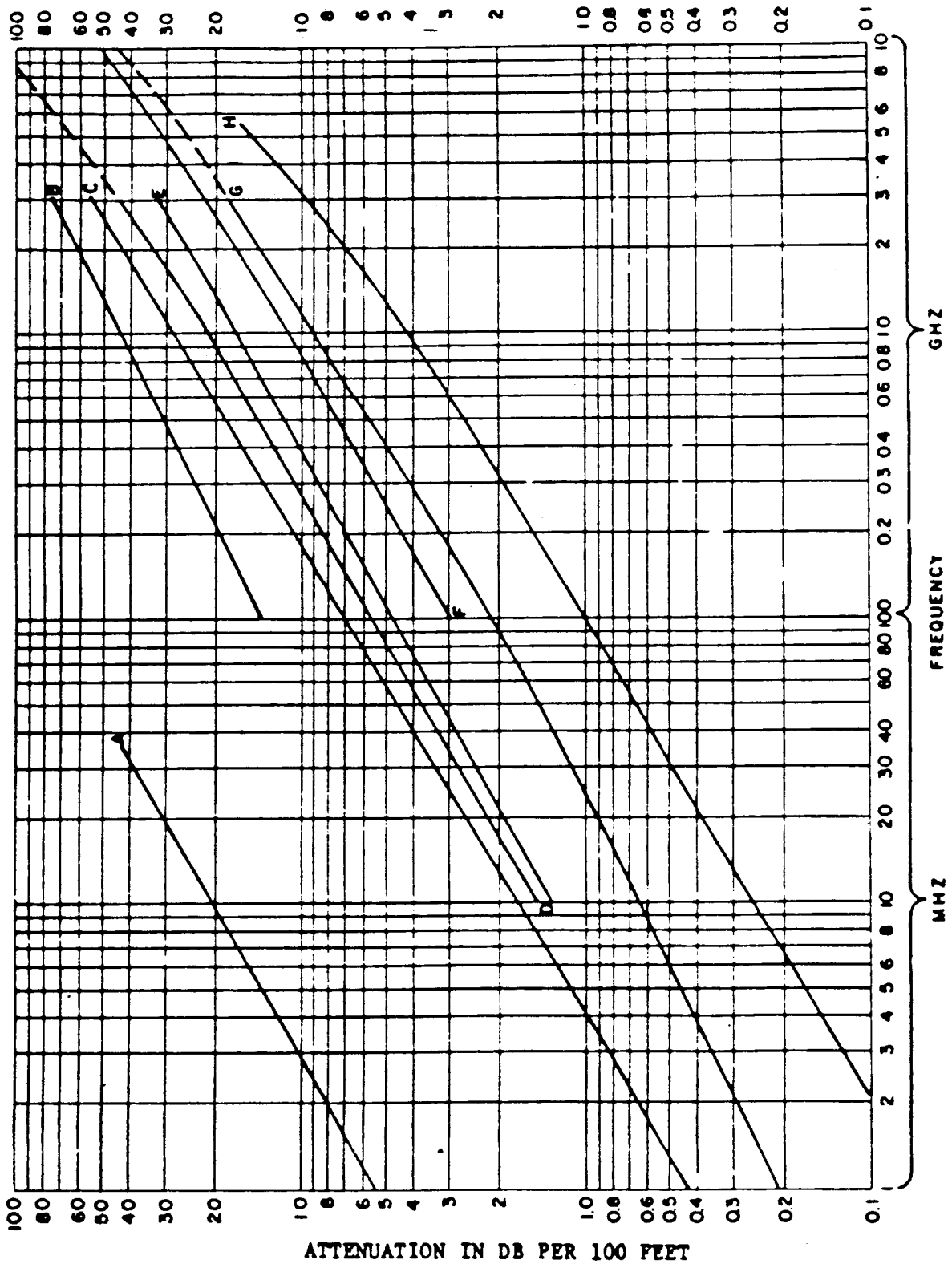
Type	Materials	Type	Materials
A	Aluminum	K	Karma Wire
AT	Aluminum Tubing	N	Nichrome
C	Copper	SC	Silver Covered Copper
CS	Copperweld	SCS	Silver Covered Copperweld
CT	Copper Tubing	TC	Tinned Copper
GS	Galvanized Steel	TCS	Tinned Copperweld

Figure 4. RF CABLE DATA USED WITH VHF/UHF AIR/GROUND ANTENNAS

Type Cable	Inner Conductor	Dielectric Material Nominal Diameter (Inch)	Type And Number Of Shielding Braid	Protective Covering	Nominal Overall Diameter (Inch)	Weight (lb/ft)	Nominal Impedance (ohms)	Nominal Capacitance (pf/ft)	Maximum Operating Voltage (volts RMS)	Remarks[1]
RG-8A/U	7/0.0235 in. copper	polyethylene 0.285	copper, single braid	noncontaminating synthetic resin	0.405	0.103	52.0	29.5	5,000	Replaced by RG-213/U Attenuation vs. Frequency Curve C
RG-9B/U	7/0.0285 in. silver-covered copper	polyethylene 0.282	silver-covered copper, double braid	noncontaminating synthetic resin	0.420	0.127	50.0	30.0	5,000	Replaced by RG-214/U Attenuation vs. Frequency Curve C
RG-17A/U	0.185 in. copper	polyethylene 0.680	copper, single braid	noncontaminating synthetic resin	0.870	0.46	52.0	29.5	11,000	Replaced by RG-218/U Attenuation vs. Frequency Curve H
RG-58C/U	19/0.0071 in. tinned copper	polyethylene 0.116	tinned copper, single braid	noncontaminating synthetic resin	0.195	0.029	50.0	28.5	1,900	Attenuation vs. Frequency Curve D
RG-213/U	7/0.0296 in. copper	polyethylene 0.285	copper, single braid	noncontaminating synthetic resin	0.405	0.120	50.0	29.5	5,000	Formerly RG-8A/U Attenuation vs. Frequency Curve C
RG-214/U	7/0.0296 in. silver-covered (14) copper	polyethylene 0.285	silver-covered copper, double braid	noncontaminating synthetic resin	0.425	0.158	50.0	30.0	5,000	Formerly RG-9B/U Attenuation vs. Frequency Curve C
RG-218/U	0.195 in. copper	polyethylene 0.680	copper, single braid	noncontaminating synthetic resin	0.870	0.491	50.0	29.5	11,000	Formerly RG-17A/U Attenuation vs. Frequency Curve H
RG-331	0.162 in. copper	foam PE	0.500 in al. tube	PE-IIIA	0.600	0.187	50.0	25.0	2,500	Low Loss Curve J Preferred over RG-17 or RG-218

NOTE: [1]See Figure 5, Attenuation Versus Frequency for Flexible Coaxial Cables. Curve A is for RG-63; curve B for RG-21; curve C for RG-122; curve E for RG-55, RG-223; curve F for RG-6, RG-212; curves applicable to lines used for antennas are indicated in the Remarks column, above.

Figure 5. ATTENUATION VERSUS FREQUENCY FOR FLEXIBLE COAXIAL CABLES



NOTE: See Figure 4, for applicable RG type cable.

Figure 6. RF CABLE DATA FOR NAS FACILITIES

RG/U Type	Inner Conductor	Dielectric Material	DOD (Inch)	Number & Type of Shielding Braids	Jacket Material	O.D. (Inch)	Weight (lbs/ft)	Nominal Imped. (ohms)	Nominal Capac-itance (pf/ft)	Max. Oper. Temp. Range (°C)		Max. Oper. Voltage (Volts RMS)
6A	0.0855" 7/0.0285" BC	PE	0.285	1:BC	PVC-11A	0.405	0.106	52.0	29.5	-40	+80	5,000
9	0.0855" 7/0.0285" SC	PE	0.280	2: Inner SC Outer BC	PVC-11	0.420	0.140	51.0	30.0	-40	+80	4,000
9A	0.0855" 7/0.0285" SC	PE	0.280	2:SC	PVC-11	0.420	0.140	51.0	30.0	-40	+80	4,000
9B	0.0855" 7/0.0285" SC	PE	0.280	2:SC	PVC-11A	0.420	0.150	50.0	30.8	-40	+80	5,000
11A	0.0477" 7/0.0159" TC	PE	0.285	1:BC	PVC-11A	0.405	0.096	75.0	20.6	-40	+80	5,000
12A	0.0477" 7/0.0159" TC	PE	0.285	1:BC	PVC-11A w. Armor	0.475 max.	0.141	75.0	20.6	-40	+80	5,000
13	0.0477" 7/0.0159" TC	PE	0.280	2:BC	PVC-1	0.420	0.126	74.0	20.8	-40	+80	4,000
13A	0.0477" 7/0.0159" TC	PE	0.280	2:BC	PVC-11A	0.420	0.126	74.0	20.8	-40	+80	5,000
14	0.102" BC	PE	0.370	2:BC	PVC-11	0.545	0.216	52.0	29.5	-40	+80	5,500
14A	0.1020" BC	PE	0.370	2:BC	PVC-11A	0.545	0.216	52.0	29.5	-40	+80	7,000
17A	0.1880" BC	PE	0.680	1:BC	PVC-11A	0.870	0.460	52.0	29.5	-40	+80	11,000
58A	0.0355" 19/0.0071" TC	PE	0.116	1:TC	PVC-1	0.195	0.029	52.0	28.5	-40	+80	1,900
58C	0.0355" 19/0.0071" TC	PE	0.116	1:TC	PVC-11A	0.195	0.029	50.0	30.8	-40	+80	1,900
59A	0.0253" CCS	PE	0.146	1:BC	PVC-11A	0.242	0.032	73.0	21.0	-40	+80	2,300
59B	0.0230" CCS	PE	0.146	1:BC	PVC-11A	0.242	0.032	75.0	20.6	-40	+80	2,300

Figure 6. RF CABLE DATA FOR NAS FACILITIES (CONT'D)

RG/U Type	Inner Conductor	Dielectric Material	DOD (Inch)	Number & Type of Shielding Braids	Jacket Material	O.D. (Inch)	Weight (lbs/ft)	Nominal Imped. (ohms)	Nominal Capac-itance (pf/ft)	Max. Oper. Temp. Range (°C)		Max. Oper. Voltage (Volts RMS)
62A	0.0253" CCS	Air-space PE	0.146	1:BC	PVC-11A	0.242	0.038	93.0	13.5	-40	+80	750
62B	0.0240" 7/0.0063" CCS	Air-space PE	0.146	1:BC	PVC-11A	0.242	0.038	93.0	13.5	-40	+80	750
71B	0.0253" CCS	Air-space PE	0.146	2:TC	PE-111A	0.250 max.	0.046	93.0	13.5	-55	+80	750
114A	0.0070" CCS	Air-space PE	0.285	1:BC	PVC-11A	0.405	0.087	185.0	6.5	-40	+80	1,000
213	0.0888" 7/0.0296" BC	PE	0.285	1:BC	PVC-11A	0.405	0.099	50.0	30.8	-40	+80	5,000
214	0.0888" 7/0.0296" SC	PE	0.285	2:SC	PVC-11A	0.425	0.126	50.0	30.8	-40	+80	5,000
217	0.108" BC	PE	0.370	2:BC	PVC-11A	0.545	0.201	50.0	30.8	-40	+80	7,000
218	0.195"BC	PE	0.680	1:BC	PVC-11A	0.870	0.460	50.0	30.8	-40	+80	11,000
234	0.3110" BC	PE Tubes	0.833	0.953" OD Al. Tube	PE	1.100	0.655	50.0	24.0	-55	+80	1,860
331	0.1620" BC	Foam PE	0.450	0.500" Al. Tube	PE-111A	0.600	0.187	50.0	25.0	-55	+80	2,500
333	0.2880" BC	Foam PE	0.801	0.8750" Al. Tube	PE-111A	1.015	0.548	50.0	25.0	-55	+80	4,500
393	0.0936" 7/0.0312" SC	PTFE	0.285	2:SC	FEP-1X	0.390	0.165	50.0	29.4	-55	+200	5,000

Figure 7. TRANSMISSION LINE LOSS IN dB PER HUNDRED FEET

RG/U TYPE	100 MHz	200 MHz	400 MHz	1000 MHz	3000 MHz
8A	2.2	3.2	4.6	9.0	19.0
9/9A/9B	2.2	3.2	4.6	9.0	19.0
11A	2.2	3.2	4.6	9.0	19.0
12A	2.2	3.2	4.6	9.0	19.0
13/13A	2.2	3.2	4.6	9.0	19.0
14/14A	1.4	2.1	3.1	5.8	13.0
17A	.81	1.2	1.9	3.8	9.0
58A/58B/58C	4.9	7.3	11.0	20.0	41.0
59A/59B	3.3	4.7	6.7	11.5	25.5
62A	2.8	3.7	5.2	8.5	18.4
62B	3.0	4.3	6.1	10.5	23.5
71B	2.8	3.7	5.2	8.5	18.4
114A	2.9	4.4	6.7	11.6	26.0
213	2.2	3.2	4.6	9.0	19.0
214	2.2	3.2	4.6	9.0	19.0
217	1.4	2.1	3.1	5.8	13.0
218	.81	1.2	1.9	3.8	9.0
254	.42	.60	.86	1.4	2.7
331	.82	1.2	1.8	3.2	6.5
333	.50	.75	1.2	2.1	4.7
393	2.1	3.1	4.5	7.5	14.0

Figure 8. RF CABLES VERSUS APPLICABLE RF CONNECTORS

This table contains a cross reference of cables versus applicable connectors and was prepared for informational purposes only to facilitate the selection of connectors for specific cable.

Cable Type RG-_/U	Connector Series	Applicable Connectors UG-_/U
	BNC	959
	C	570, 571, 572, 573, 710
8	HN	59, 60, 61, 427, 1213, 1214
	N	21, 22, 23, 160, 594, 1185, 1186
	BNC	959
	C	570, 571, 572, 573, 710
9	HN	59, 60, 61, 427
	N	21, 22, 23, 160, 594, 1185, 1186
	C	708
	HN	333, 334, 495
17	LC	1179, 1258
	N	167
	BN	85, 86, 87, 114, 115, 193, 206, 245, 246, 342
	BNC	88, 89, 253, 291, 909, 913
58	C	704, 709
	N	536, 556, 1052, 1095
	SM	699, 700, 923
	BNC	959A
	C	570A, 571A, 572A, 573B, 710B
213	HN	59E, 60E, 61E, 427C, 1213, 1214
	N	21E, 22E, 23E, 1600, 594A, 1185A, 1186A
	BNC	959A
	C	570A, 571A, 572A, 573B, 710B
214	HN	59E, 60E, 61E, 427C, 1213, 1214
	N	21E, 22E, 23E, 160D, 594A, 1185A, 1186A
	HN	333, 334, 495
	C	708B
218	N	167E
	LC	1179, 1258
331	N	Phelps Dodge Part No. 735-000 (Male) Phelps Dodge Part No. 735-001 (Female)
333	N	Phelps Dodge Part No. 735-100 (Male) Phelps Dodge Part No. 735-101 (Female)

Figure 9. CHARACTERISTICS OF BNC SERIES CONNECTORS

The BNC series connectors are small, weatherproof connectors with a bayonet coupling, a metal-to-metal cable clamp, and a Teflon dielectric. Nominal impedance is 50 ohms; maximum peak voltage rating is 500 volts; practical frequency limit is 10,000 megahertz. These connectors are designed for use with small cables.

UG-_/U	Description	Used with RG-_/U	Diameter (inch)	Length (inch)	Remarks
-88D	Plug	58	0.563	1.125	Replaces UG-_/U88, 88A, 88C, 88B
-89C	Jack	58	0.5	1-5/32	Replaces 89, 89A, 89B
-253B	Jack, bulkhead pressurized	58	0.813	1.0	Replaces 253, 253A and has modified braid clamp
-291C	Jack, panel	58	0.688	1.156	Replaces 90, 291, 291A, 291B
-909A	Jack, bulkhead	58	0.688	1.156	Replaces 909
-913A	Plug, right angle	58	1.094	1.625	Replaces 913
-959A	Plug	8.9	0.75	1.656	959
-1254	Plug	58	0.5	1.25	Mates with 1256 ruggedized
-1256	Plug	58	0.527	1.527	Mates with 1254, 1259, 1260 ruggedized

Figure 10. CHARACTERISTICS OF N SERIES COAXIAL CONNECTORS

The N series connectors are medium, weatherproof connectors with a screw-type coupling, a metal-to-metal clamp, and a Teflon dielectric for all except those used with RG-81/U or RG-82/U. They have a maximum peak voltage rating of 1500 volts and a practical frequency limit of 10,000 megahertz. Like the C series connectors, they are designed for use with medium cables. The N series consists of connectors having a nominal impedance of 50 or 70 ohms. The 50-ohm connectors will not properly mate with 70-ohm connectors, but they may be used with 70-ohm cables where the impedance mismatch is of no consequence.

UG-_/U	Description	Used with RG-_/U	Diameter (inch)	Length (inch)	Remarks
-21E	Plug	8, 9, 213 214	0.781	1.5	Replaces 12, 21, 21A, 21B, 21C, 21D
-22E	Jack, panel	8, 9, 213	0.75	1.527	Replaces 13, 22, 22A, 22B, 22C, 22D; 935A with end nut in place of armor clamp
-22E	Jack	8, 9, 213 214	0.75	1.527	Replaces 14
-160D	Jack, bulkhead	8, 9, 213 214	0.875	1.75	Replaces 160, 160A, 160B, 160C; mounts in 5/8" hole
-167E	Plug	17	1.313	2.25	167, 167A, 167B, 167C, 167D
-536B	Plug	58	0.781	1.5	Replaces 188, 536, 536A
-556B	Jack, bulkhead	58	0.75	1.813	Replaces 556, 556A; mounts in 5/8" single hole
-594A	Plug, right angle	8, 9, 213 214	1.25	1.5	Replaces 594
-1052	Jack, panel	58	1.0	1.813	
-1095B	Jack, panel	58	0.5	1.5	Replaces 1095, 1095A
-1185A	Plug	8, 9, 213 214	0.75	1.5	Similar to 21E, except has captive center conductor; replaces 1185
-1186A	Jack	214	0.75	1.5	Similar to 23E, except center conductor is captive; replaces 1186
-1187A	Jack, panel	8, 9, 213 214	0.75	1.5	Similar to 22E, except center conductor is captive; replaces 1187

Figure 11. CHARACTERISTICS OF C SERIES COAXIAL CONNECTORS

The C series connectors are medium, weatherproof connectors with a bayonet coupling, a metal-to-metal cable clamp, and a Teflon dielectric. Nominal impedance is 50 ohms; maximum peak voltage rating is 1500 volts. The connectors, designed for a peak voltage of 1500 volts, have a frequency limit of 10,000 megahertz. The high-voltage types (peak voltage of 4000 volts) have a limit of 2000 megahertz. They are intended for medium cables.

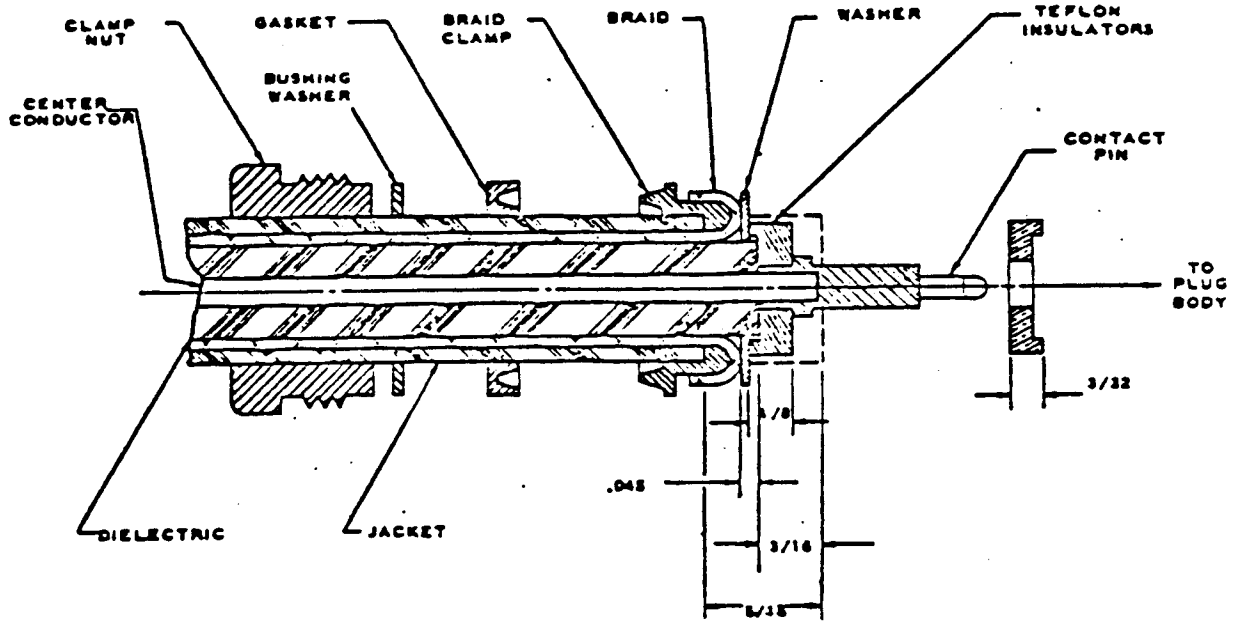
UG-_/U	Description	Used with RG-_/U	Diameter (inch)	Length (inch)	Remarks
-570A	Jack, bulkhead	8, 9, 213, 214	1.4	1.406	Replaces 570; mounts in 3/4" D hole 937 with end nut in place of armor clamp
-571A	Jack, panel	213, 214	1.0	1.406	Replaces 571; 938 with end nut in place of armor clamp
-572A	Jack	8, 9, 213, 214	0.75	1.406	Replaces 572; 944 with end nut in place of armor clamp
-573B	Plug	8, 9, 213, 214	0.75	1.484	Replaces 573, 573A; 943A with end nut in place of armor clamp
-704A	Jack, bulkhead	58	0.75	1.25	Replaces 704; mounts in 5/8" D hole
-708B	Plug	17, 218	1.313	2.156	Replaces 708, 708A
-709B	Plug	58	1.375	1.375	Replaces 709, 709A
-710B	Plug, right angle	8, 9, 213, 214	1.75	1.75	945A with end nut in place of cable clamp; replaces 710, 710A

Figure 12. CHARACTERISTICS OF HN SERIES CONNECTORS

The HN series are medium connectors with a screw-type coupling and a metal-to-metal cable clamp. All but UG-413 and -560/U have Teflon dielectrics. Nominal impedance is 50 ohms. These connectors were originally designed for high voltage; but tests by the U.S. Navy have demonstrated that, at RF frequencies, voltage characteristics of HN connectors are no better than the C or N series.

UG-_/U	Description	Used with RG-_/U	Diameter (inch)	Length (inch)	Remarks
-59E	Plug	8, 9	0.875	2.5	Replaces 59A, 59B, 59C, 59D
-60E	Jack	8, 9	0.75	2.5	Replaces 60A, 60B, 60C, 60D
-61E	Jack, panel	8, 9	0.75	2.313	Replaces 61A, 61B, 61C, 61D like 427B, except flange has drilled holes
-333B	Jack	17	1.313	2.5	Replaces 333, 333A
-334B	Jack, panel	17	1.313	2.5	Replaces 334, 334A
-427C	Jack, panel	8, 9	0.75	2.5	Replaces 424, 427A, 427B
-495D	Plug	17	1.313	2.375	Replaces 495, 495A, 495B, 495C; mates with 60A
-1213	Plug	8, 9	0.875	2.813	Similar to 59B, except center contact is captive
-1214	Jack	8, 9	0.75	2.875	Similar to 60B, except center contact is captive
-1215	Jack, panel	8, 9	0.75	2.875	Similar to 61B, except center is captive
-1320	Plug	8, 9	0.875	2.5	Similar to 59E

Figure 13. TYPICAL RF CONNECTOR ASSEMBLY INSTRUCTIONS



1. Cut cable end square. Slide gasket, clamp nut, and bushing washer over cable jacket in order listed.
2. Cut back jacket to dimension shown without nicking braid.
3. Push clamp over braid and butt against jacket. Comb out braid wires, fan back over clamp and trim as shown.
4. Cut dielectric to dimensions shown. Do not nick center conductor.
5. Cut center conductor to dimension shown and trim.
6. Push washer over dielectric and butt against braid.
7. Assemble contact pin into insulator as shown. Butt contact pin and insulator against face of dielectric and solder pin to center conductor using low-melting-point solder. Do not overheat dielectric. Clean excess solder, resin, etc., off pin.
8. Insert assembly into connector body containing other insulator. Leave gasket back of the clamp nut and do not include the gasket in the assembly at this time. Turn clamp nut into connector body until tight.
9. Conduct necessary electrical tests to determine that the cable is of proper electrical length. When final length has been determined, remove the clamp nut, stretch gasket over the clamp nut and bushing washer, and reassemble. Make sure sufficient pressure is applied to split the gasket and insure good contact between the braid clamp and clamp nut.
10. The bushing washer shown between the clamp nut and gasket is not a regular part of the UG-1185/U connector but may be obtained as Part Number 4310 from Industrial Products Company, Danbury, Connecticut, if it is not supplied with the connector from an FAA source. The purpose of this washer is to provide proper clamping action when using single shield cable. However, it is not required for RO-9B/U cable presently supplied for VOR installations and conversions.

Figure 14. CUTTING OF COAXIAL CABLE FOR CONNECTOR ASSEMBLY INSTRUCTIONS

DO'S AND DON'TS OF CONNECTOR/CABLE ASSEMBLY

When Cutting The Coaxial Cable Jacket . . .

DO DON'T

Cuts should be square, yielding jacket faces perpendicular to the center conductor of the cable.

When Cutting The Coaxial Cable Dielectric . . .

DO

Again, cuts must be square and perpendicular to the conductor. Uneven and ragged dielectric faces must be avoided. Care must be taken not to nick the center conductor during this operation.

DON'T

When Folding Braid . . .

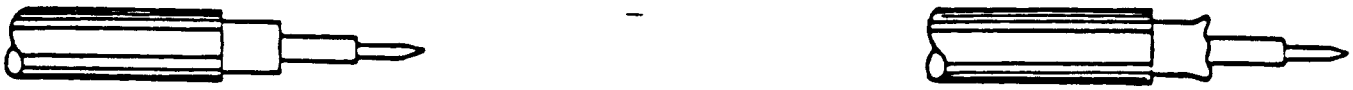
DO

Coaxial cable braid should be combed out and folded over the braid clamp equally distributing the wires around the clamp. Punching of the braid wires should be avoided.

DON'T

Figure 15. TINNING AND SOLDERING FOR RF CONNECTOR ASSEMBLY INSTRUCTIONS

When Tinning and Soldering . . .



DO

Deformation of the dielectric core must be avoided when tinning and contact soldering operations are performed. Avoid excessive heat.

DON'T

When Positioning the Contact . . .

DO

A contact properly soldered to the cable center conductor will butt against the dielectric core of the cable. Contacts digging into the dielectric core and contacts soldered leaving an axial space between the contacts' back end and core must be avoided. Contact eccentricity and solder build-up, accumulation of flux, solder and foreign matter on the dielectric core, all must be avoided.

DON'T

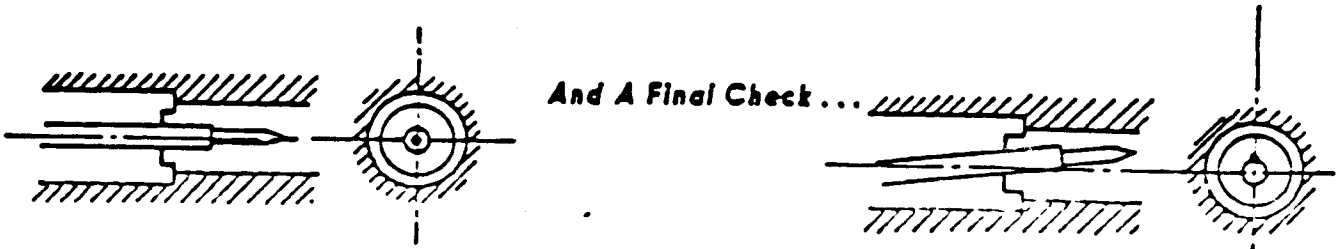
When Checking Before Final Assembly . . .

DO

Measure the length of the exposed cable dielectric core after the cable braid has been folded back over the braid clamp and after the contact has been soldered to the center conductor to be sure that this dimension conforms to instructions.

DON'T

And A Final Check . . .



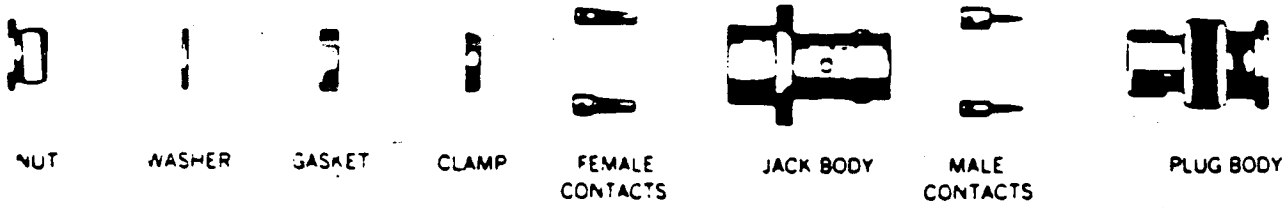
DO

After the final assembly of all connector parts the contact and connector body must be concentric. END

DON'T

REPRODUCED BY PERMISSION OF AMPHENOL, CHICAGO.

Figure 16. SERIES BNC CONNECTOR



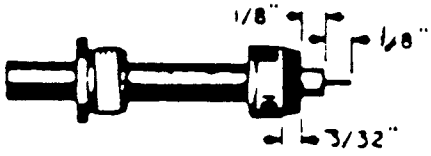
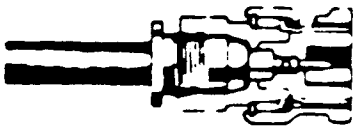
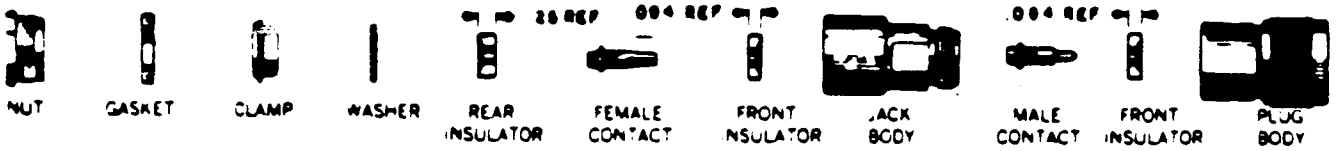
	Trim jacket 19/64 inch for RG-58/U.
	Fray shield and strip inner dielectric 1/8 inch. Tin center conductor.
	Taper braid and slide nut, washer, gasket, and clamp over braid. Clamp is inserted so that its inner shoulder fits squarely against end of cable jacket.
	With clamp in place, comb out braid, fold back smooth as shown, and trim 3/32 inch from end.
	Slip contact in place, butt against dielectric, and solder. Remove excess solder from outside of contact. Be sure cable dielectric is not heated excessively and swollen so as to prevent dielectric from entering into connector body.
 	Push assembly into body as far as it will go. Slide nut into body and screw in place with wrench until tight. For this operation, hold cable and shell rigid and rotate nut.

Figure 17. SERIES N CONNECTOR



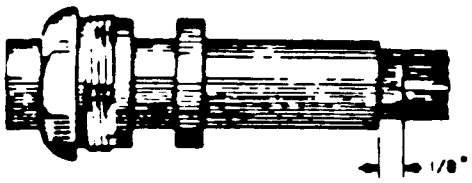
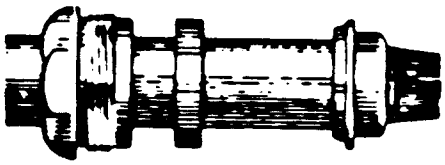
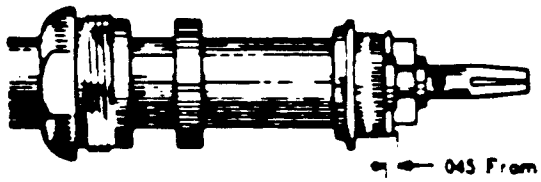
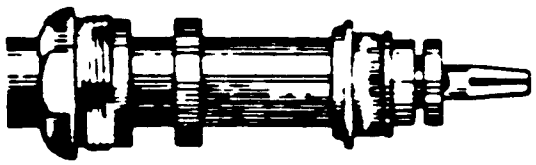
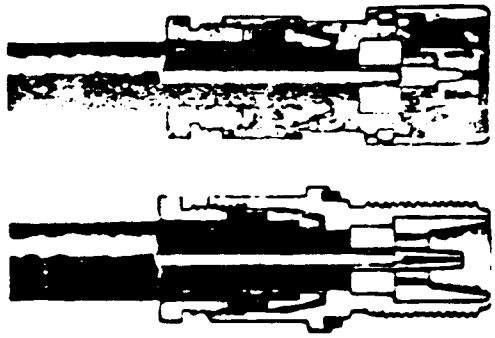
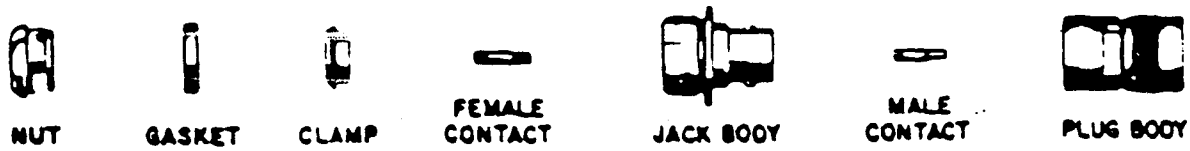
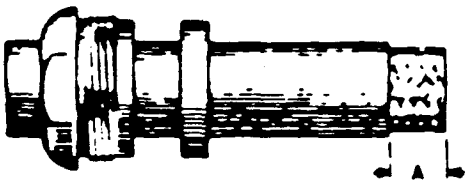
	Cut end of cable even. Place nut and gasket, with "V" groove toward clamp, over cable and cut off jacket 23/64 inch from end.
	Comb out braid as shown. Cut off cable dielectric 1/8 inch from end of jacket.
	Pull braid wires forward and taper toward center conductor. Place clamp over braid and push back against cable jacket.
	Fold back braid wires as shown, trim to proper length, and form over clamp as shown. Tin exposed center conductor using minimum amount of heat. Slide on washer, rear insulator, and contact. Contact shoulder, insulator and cable core must butt as shown. Solder contact to center conductor.
	Slide front insulator over contact. Be sure to place counter bore end of insulator toward mating end of contact.
	Insert prepared cable termination into connector body. Make sure sharp edge of clamp seats properly in gasket. Tighten nut, holding body stationary.

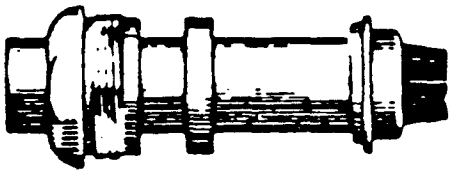
Figure 18. TYPE C RF CONNECTOR ASSEMBLY INSTRUCTIONS



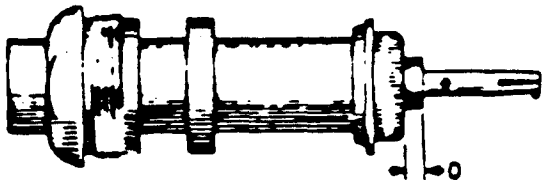


Place nut and gasket over cable and cut jacket to dimension "A."

Comb out braid and fold out. Cut cable dielectric to dimension "B."



Pull braid wires forward and taper toward center conductor. Place clamp over braid and push back against cable jacket.



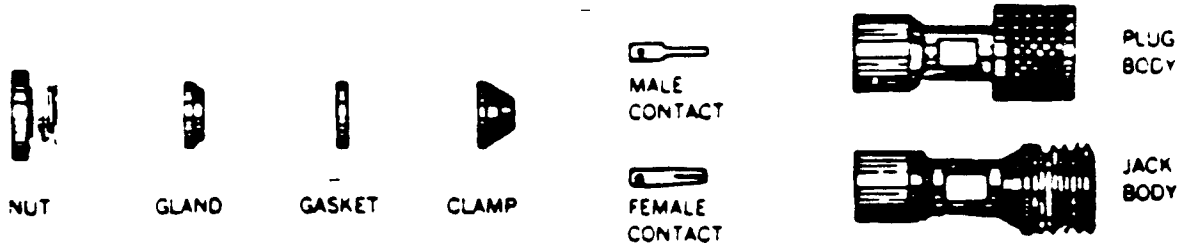
Fold back braid wires as shown, trim to proper length, and form over clamp as shown. Solder contact to center conductor. Dimension "D" should be as shown.

Insert cable and parts into connector body. Make sure sharp edge of clamp seats properly in gasket. Tighten nut. End of contact in plug should be flush with insulator. There should be a clearance of .010 inch between end of contact and insulator in jack.

Series C Connector

TYPE NUMBER - UG	A	B	C	D
570-U, 571-U, 572-U, 573A-U 626-U, 629-U, 630-U, 7108	9/32	1/8	5/32	1/16

Figure 19. SERIES HN CONNECTOR



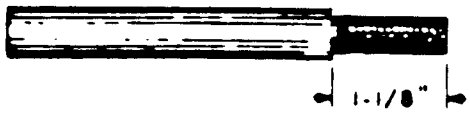
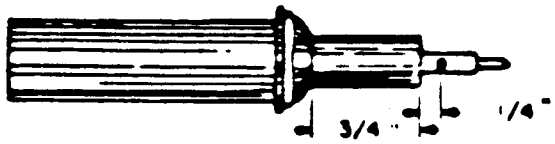
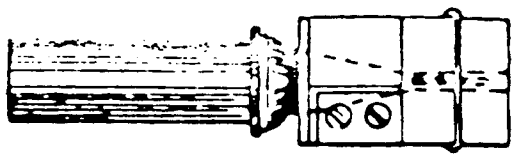
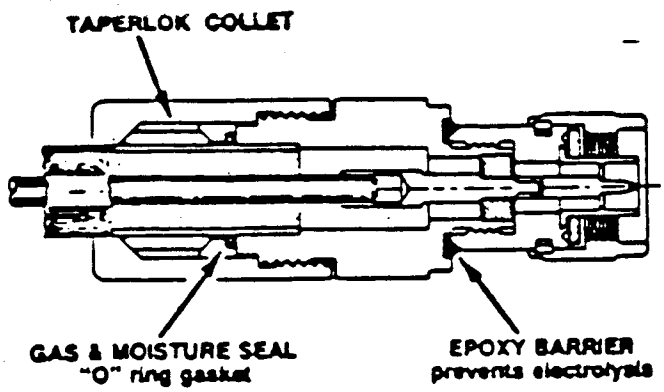
	Cut end of cable even. Strip off vinyl jacket 1 1 8 inches as shown. When using double shielded cable, this dimension should be 1 3/16 inches.
	Comb out copper braid as shown. Cut off dielectric 1/4 inch from end as shown.
	Taper braid and slide nut and gland onto jacket. Make certain knife edge of gland is toward end of cable. Then slide gasket onto jacket with "V" groove toward gland. Push clamp over braid so that shoulder butts flush to jacket.
	Fold braid back over clamp and trim. Soft-solder contact to center conductor. Avoid use of excessive heat. Clean contact and end of dielectric.
	TAPERED CONNECTORS Same as above.
	Tapered dielectric with Amphenol 103-301 (MX-103-U) trimming tool. When tapering dielectric of cable for plug assembly, push contact stop of tool to bottom of slot. Tool will stop cutting when shoulder of contact butts against stop. For jack assembly, see that stop is at top of slot. Cable will be properly tapered when end of center contact is flush with end of trimmer body

Figure 20. TYPE N FOAMFLEX RF CONNECTOR ASSEMBLY INSTRUCTIONS

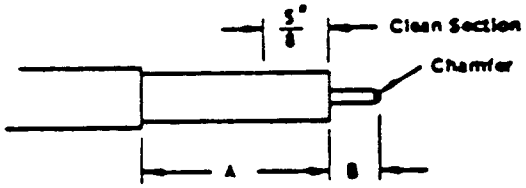


TOOLS AND MATERIALS REQUIRED

1. Tubing Cutter (Rigid No. 20 or equivalent)
2. Knife
3. File
4. Silicone Grease (Dow Corning DC-4 or equivalent)
5. Open end Wrenches

Cable Size	Wrench Size
1/4"	9/16, 5/8
3/8"	3/4 (2 req'd)
1/2"	7/8 (2 req'd)
3/4"	1 1/8, 1
7/8"	1¼ (2 req'd)

1. Trim cable to dimensions shown as follows:
   - 1a. If cable is jacketed, take care when removing jacket not to scratch outer conductor lengthwise with knife.
   - 1b. Score outer conductor with a sharp tubing cutter. Do not cut through outer conductor.
   - 1c. Make certain that surface of outer conductor is clean and smooth at least 5/8" back from scored groove. This will assure a good seal in the finished installation.
   - 1d. Grip end of cable and flex gently until the outer conductor fractures at the scored groove. Pull back outer conductor to expose approximately 1/8" of dielectric.
   - 1e. Cut dielectric with a sharp knife down to center conductor flush with end of outer conductor. Pull off short end of outer conductor and dielectric. For FOAMFLEX, make sure all adhering foam is removed from center conductor.
   - 1f. Cut center conductor to dimension shown. File chamfer on center conductor and make certain that center conductor is straight and free of nicks or burrs.
2. If required, mount heat shrinkable sleeve onto cable and slide back out of way.
3. Mount nut assembly and rubber O ring over cable as shown. Note: Coat O ring lightly with silicone grease (Dow Corning DC-4 or equivalent) before mounting on cable.
4. Mount connector front end over end of cable and bring up O ring and nut assembly.
5. Hold connector front end stationary and tight against end of cable while tightening nut.
6. Bring up heat shrinkable sleeve so it covers cable jacket and nut assembly. Apply heat to sleeve gently with either an electric hot air gun or a torch set to give a soft yellow flame. Be sure sleeve shrinks uniformly and completely.



Cable Size	"A" Dim.	"B" Dim.
1/4"	1¾"	3/16"
3/8"	2"	1/2"
1/2"	2"	1/2"
3/4"	3"	1/2"
7/8"	3"	1/2"