

RESTRICTED

INDEX of ARMY-NAVY  
R-F TRANSMISSION  
LINES and  
FITTINGS

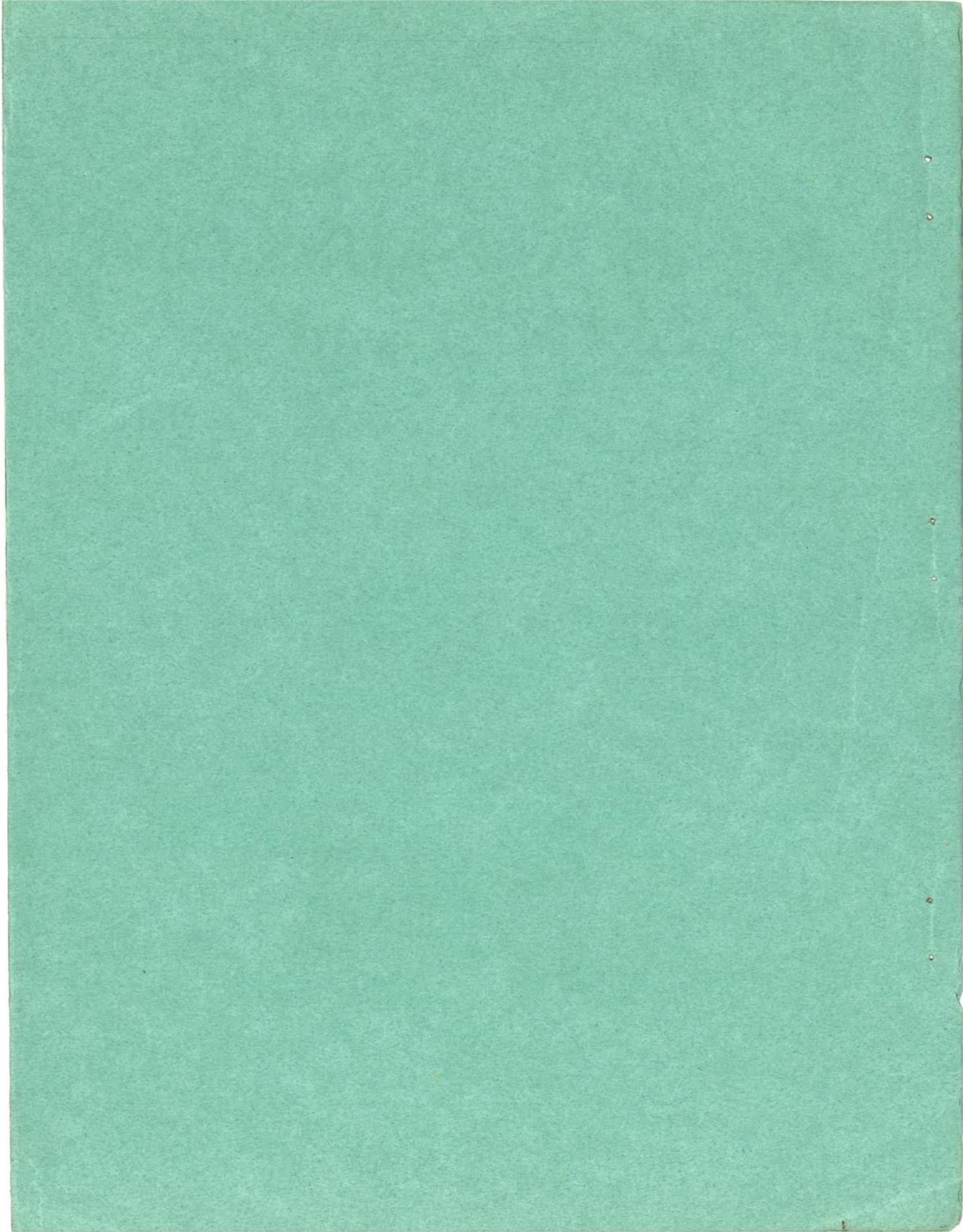
ARMY No. 71-4925    NAVSHIPS 900102

ARMY ELECTRONICS  
STANDARDS AGENCY  
WAR DEPARTMENT



BUREAU OF SHIPS  
NAVY DEPARTMENT  
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ARMY-NAVY R-F CABLE COORDINATING COMMITTEE



# INDEX of ARMY-NAVY R-F TRANSMISSION LINES and FITTINGS

ARMY No. 71-4925    NAVSHIPS 900102

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ARMY-NAVY R-F CABLE COORDINATING COMMITTEE

WASHINGTON, D. C.

JUNE 1945



War Department  
Army Electronics Standards Agency

Navy Department  
Bureau of Ships  
15 June 1945

1. "Index of Army-Navy R.F. Transmission Lines and Fittings", (NavShips 900,102, Army No. 71-4925) has been prepared by the Army-Navy R. F. Cable Coordinating Committee.

2. This publication is a revision of the former index, RE 9196B, and has been prepared as a guide for design agencies, manufacturers, procurement and installation activities. The information listed herein contains practically all the types listed in RE 9196B plus many new and old types which were formerly not listed.

3. Comments, criticism and additional material are solicited. Address all communication to the Army-Navy R. F. Cable Coordinating Committee, Code 930G, Bureau of Ships, Navy Department, Washington 25, D. C.

4. Additional copies may be obtained either from the Bureau of Ships, Washington 25, D. C. or the Army Electronics Standards Agency, 12 Broad Street, Red Bank, New Jersey.

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## Chapter I—INTRODUCTION

The nomenclature and drawing indices in the index are provided for the purpose of easy access to the information contained in the book. With a nomenclature or drawing number available, the index will immediately give the page number where information concerning the particular connector may be found.

A brief description precedes each group of lines and fittings. Its purpose is to explain the major relevant facts pertaining to each group. Further information can be obtained from the applicable drawings and references.

Transmission lines and fittings which are covered by Army-Navy directives are listed as *first category* components. New types, produced since the directives were issued and other types which are satisfactory and have found wide use are listed as *second category* items. These items may be covered by Army-Navy directives in the future. Either first or second category items *must* be used in all new equipments. Certain other components have been used for application where more satisfactory components are now available in the first and second categories. These components are listed in the *third category*. It is permissible to continue the use of these components in existing equipments but it is advisable to change to first or second category components wherever possible. Various other components, which in many cases were not designed for r.f. applications, have been used in electronic equipments. These components are listed in the *fourth category*. Any of these components, now being used in equipments in current production, should be replaced by first or second category components. In the event that no suitable line or fitting is listed in this index, it is necessary that the problem be brought to the attention of the Army-Navy R.F. Cable Coordinating Committee.

The Joint Army-Navy Nomenclature system has supplied component indicators for radio frequency transmission lines, associated fittings and transmission line assemblies. The indicator RG- /U is assigned to R.F. transmission lines. This includes flexible cables, gas filled bead supported, coaxial, stub supported coaxials and wave guides. The indicator UG- /U is assigned to the R.F. connectors, fittings and adapters used with the above transmission lines. The indicator CG- /U is assigned to lengths of transmission lines which are terminated with appropriate connectors and fittings.

The listings include a reference to manufacturers who are currently producing or are in a position to supply these components. The names and addresses of manufacturers may be found in the appendix.



## Chapter 2—R. F. CABLES

The R.F. Cables listed herein are divided into the following paragraphs for convenience. The *Army-Navy Standard List of Cables* dated 15 October 1944 (paragraph 1) indicates those cables which have been standardized for use in Army and Navy radio and radar equipments.

The following tables also appear:

(1) A listing of nonstandard cables which are still in use in various old equipments and which are to be used for replacement purposes only.

(2) A complete list of pulse cables including four new cables which are considered standard cables.

(3) A listing of R.F. cables by the diameter over the dielectric. This list includes RG-79/U which is also considered a standard cable.

A list of cable manufacturers is included at the end of this section.

### I. Army-Navy Standard List of Radio Frequency Cables

15 OCTOBER 1944

NOTE: This standard list supersedes the Army-Navy standard list of Radio Frequency Cables dated 18 November 1943.

TO: OFFICE OF THE CHIEF SIGNAL OFFICER; ALL FIELD ACTIVITIES UNDER THE CONTROL OF THE CHIEF SIGNAL OFFICER.  
ALL BUREAUS; ALL INSPECTORS OF NAVAL MATERIAL; COMMANDANTS, ALL NAVY YARDS; SUPPLY OFFICERS IN COMMAND, ALL NAVAL SUPPLY DEPOTS.  
ALL THOSE CONCERNED WITH THE DESIGN AND MANUFACTURE OF ARMY OR NAVY EQUIPMENT UTILIZING R. F. CABLE AND PULSE TRANSMISSION CABLE.

1. The following Army-Navy standard list of radio frequency cables has been selected by the Army-Navy R. F. Cable Coordinating Committee. The purpose of this list is to limit the number of types of cables used for radio frequency transmission, video, intermediate frequency, radio frequency test equipment, and pulse transmission used in Army-Navy Electronic equipment.

2. IT IS MANDATORY THAT ALL RADIO FREQUENCY AND PULSE TRANSMISSION CABLES FOR THE ABOVE APPLICATIONS FOR USE IN NEW EQUIPMENTS OR EQUIPMENTS IN THE DESIGN STAGE BE SELECTED FROM THIS STANDARD LIST. NO OTHER CABLES OF THE SUBJECT TYPE SHALL BE MANUFACTURED EXCEPT THOSE LISTED IN PARAGRAPH 3 AND THOSE CABLES REQUIRED FOR MAINTENANCE OF EQUIPMENTS IN THE FIELD FOR WHICH NO CABLE ON THE STANDARD LIST IS APPLICABLE.

3. The following non-standard cables, RG-7/U, RG-15/U, RG-23/U, RG-24/U, RG-29/U, RG-34/U, RG-35/U, RG-39/U, RG-42/U, and RG-54A/U, appeared on the previous standard list of cables dated 18 November 1943. These cables shall not be used in new equipments and may only be used in equipment in current production or for field replacement purposes.

4. In the event that it is believed that certain equipment of new design requires a special cable which is not included in the standard list, a specific waiver to use such a cable must be obtained from the Army-Navy R. F. Cable Coordinating Committee. Requests for such waivers, accompanied by a statement giving the engineering considerations which make the proposed type necessary, shall be forwarded to the Army-Navy R. F. Cable Coordinating Committee. The request shall be forwarded in the case of Army equipment, via the cognizant Service laboratory and the officer in charge, R. F. Cable Section, Signal Corps Standard Agency. In the case of Navy equipment, the request shall be forwarded via the Chief of the Bureau of Ships, Navy Department, Code 930, Washington, D. C.

5. The provisions of this directive are in no way intended to hamper or restrict new developments to the field of R. F. Cables.

6. This directive shall take effect immediately.

Office of the Chief Signal Officer  
Headquarters, Army Service Forces  
War Department

Chief of the Bureau of Ships  
Navy Department

RESTRICTED

R.F. TRANSMISSION LINES AND FITTINGS

ARMY-NAVY STANDARD LIST OF R.F. CABLES

15 OCTOBER 1944

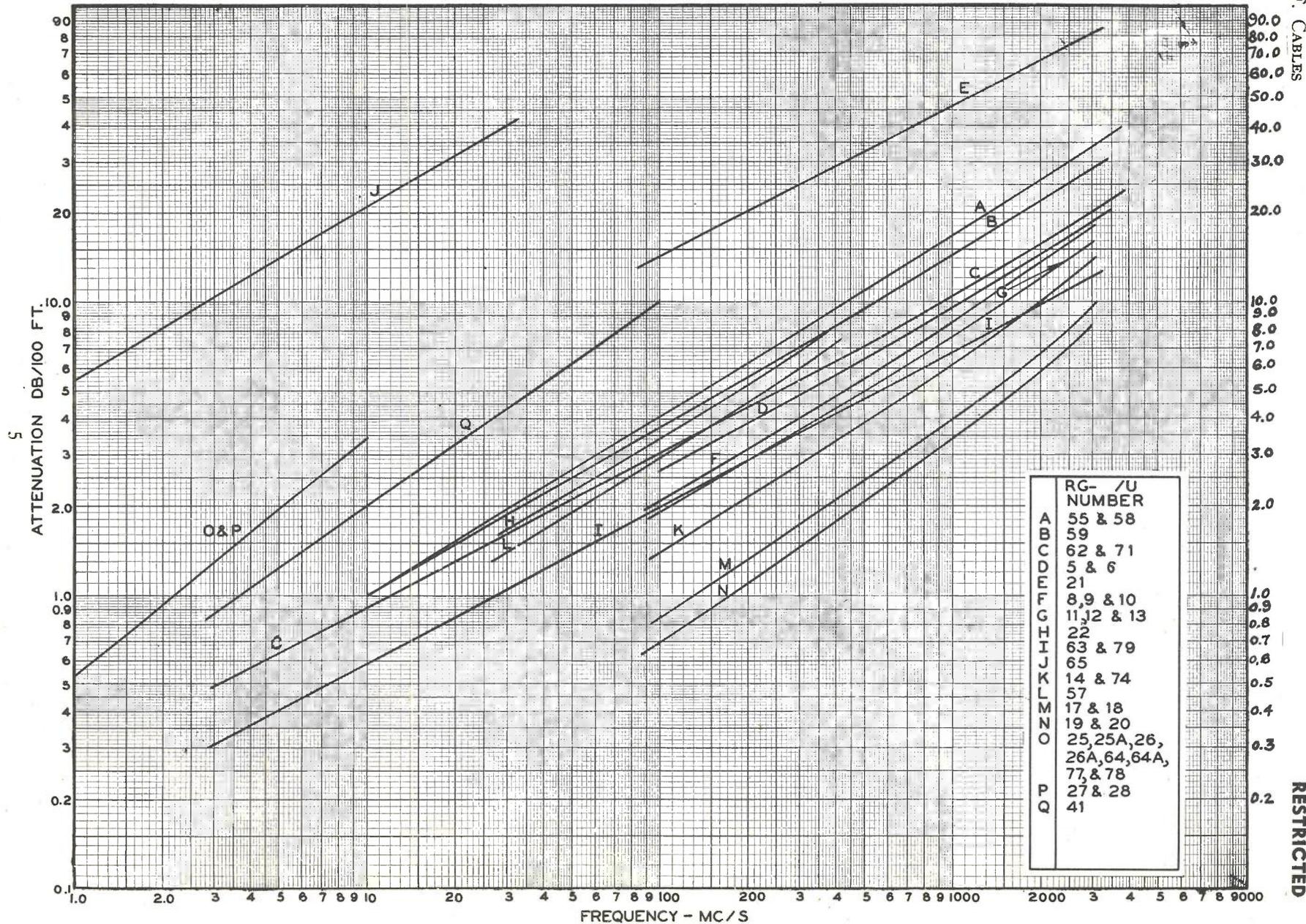
Class of Cables	Army Navy Type Number	Inner Conductor	Dielec. Material (1)	Nominal Diameter of Dielectric (Inches)	Shielding Braid	Protective Covering	Nominal Overall Dia. (In.)	Weight Pounds/Ft.	Nominal Impedance Ohms	Nominal Capacitance MMF/Ft.	Max. Operating Voltage Rms	Remarks			
50-55 OHMS	Single Braid	RG-58/U	20 A.W.G. Copper	A	0.116	Tinned Copper	Vinyl	0.195	0.025	53.5	28.5	1900	General purpose small size flexible cable		
		RG-8/U	7/21 A.W.G. Copper	A	0.285	Copper	Vinyl	0.405	0.106	52.0	29.5	4000	General purpose medium size flexible cable		
		RG-10/U	7/21 A.W.G. Copper	A	0.285	Copper	Vinyl (Non-contaminating) and Armor	(Max.) 0.475	0.146	52.0	29.5	4000	Same as RG-8/U armor for Naval equipment		
		RG-17/U	0.188 Copper	A	0.680	Copper	Vinyl (Non-contaminating)	0.870	0.460	52.0	27.5	11,000	Large high power low attenuation transmission cable		
		RG-18/U	0.188 Copper	A	0.680	Copper	Vinyl (Non-contaminating) Armor	(Max.) 0.945	0.585	52.0	29.5	11,000	Same as RG-17/U armor for Naval equipment		
		RG-19/U	0.250 Copper	A	0.910	Copper	Vinyl (Non-contaminating)	1.120	0.740	52.0	29.5	14,000	Very large high power low attenuation transmission cable		
		RG-20/U	0.250 Copper	A	0.910	Copper	Vinyl (Non-contaminating) Armor	(Max.) 1.195	0.925	52.0	29.5	14,000	Same as RG-19/U armor for Naval equipment		
	Double Braid	RG-55/U	20 A.W.G. Copper	A	0.116	Tinned Copper	Polyethylene	(Max.) 0.206	0.034	53.5	28.5	1900	Small size flexible cable		
		RG-5/U	16 A.W.G. Copper	A	0.185	Copper	Vinyl	0.332	0.087	53.5	28.5	2000	Small microwave cable		
		RG-9/U	7/21 A.W.G. Silvered Copper	A	0.280	Inner-Silver Coated Copper Outer-Copper	Vinyl (Non-contaminating)	0.420	0.150	51.0	30.0	4000	Medium size, low level circuit cable		
		RG-14/U	10 A.W.G. Copper	A	0.370	Copper	Vinyl (Non-contaminating)	0.545	0.216	52.0	29.5	5500	General purpose semi-flexible power transmission cable		
		RG-74/U	10 A.W.G. Copper	A	0.370	Copper	Vinyl (Non-contaminating) Armor	0.615	0.310	52.0	29.5	5500	Same as RG-14/U armor for Naval equipment		
		70-80 OHMS	Single Braid	RG-59/U	22 A.W.G. Copperweld	A	0.146	Copper	Vinyl	0.242	0.032	73.0	21.0	2300	General purpose small size video cable
				RG-11/U	7/26 A.W.G. Tinned Copper	A	0.285	Copper	Vinyl	0.405	0.096	75.0	20.5	4000	Medium size, flexible video and communication cable
RG-12/U	7/26 A.W.G. Tinned Copper			A	0.285	Copper	Vinyl (Non-contaminating) and Armor	0.475	0.141	75.0	20.5	4000	Same as RG-11/U armor for Naval equipment		
Double Braid	RG-6/U	21 A.W.G. Copperweld	A	0.185	Inner-Silver Coated Copper Outer-Copper	Vinyl (Non-contaminating)	0.332	0.082	76.0	20.0	2700	Small size video and I.F. cable			
	RG-13/U	7/26 A.W.G. Tinned Copper	A	0.280	Copper	Vinyl	0.420	0.126	74.0	20.5	4000	I.F. cable			
Cables of Special Characteristics	Twin Conductor	RG-22/U	2 Cond. 7-#18 A.W.G. Copper	A	0.285	Single-Tinned Copper	Vinyl	0.405	0.107	95.0	16.0	1000	Small size twin conductor cable		
		RG-57/U	2 Cond. 7/21 A.W.G. Copper	A	0.472	Single-Tinned Copper	Vinyl	0.625	0.225	95.0	16.0	3000	Large size twin conductor cable		
	High Attenuation	RG-21/U	16 A.W.G. Resistance Wire	A	0.185	Inner-Silver Coated Copper Outer-Copper	Vinyl (Non-contaminating)	0.332	0.087	53.0	29.0	2700	Special attenuating cable with small temperature coefficient of attenuation		
	High Impedance	RG-65/U	No. 32 Formex F Helix Dia. 0.128 in.	A	0.285	Single Copper	Vinyl	0.405	0.096	95.0	44.0	1000	High impedance video cable. High delay		
Low Capacitance	Single Braid	RG-62/U	A.W.G. Copperweld	A	0.146	Copper	Vinyl	0.242	0.0382	93.0	13.5 Max. 14.5	750	Small size low capacitance air-spaced cable		
		RG-63/U	22 A.W.G. Copperweld	A	0.285	Copper	Vinyl	0.405	0.0832	125	10.0 Max. 11.0	1000	Medium size low capacitance air-spaced cable		
	Double Braid	RG-71/U	22 A.W.G. Copperweld	A	0.146	Inner-Plain Copper Outer-Tinned Copper	Polyethylene	0.250 (Max.)	0.0457	93.0	13.5 Max. 14.5	750	Small size low capacitance air-spaced cable for I.F. purposes		
Pulse Applications	Single Braid	RG-26/U	19/0.0117 Tinned Copper	D	(2) 0.308	Tinned Copper	Synthetic Rubber and Armor	(Max.) 0.525	0.189	48.0	50.0	8000 (Peak)	Medium size pulse cable armored for Naval equipment		
		RG-27/U	19/0.0185 Tinned Copper	D	(2) 0.455	Single-Tinned Copper	Vinyl and Armor	(Max.) 0.675	0.304	48.0	50.0	15,000 (Peak)	Large size pulse cable armored for Naval equipment		
	Double Braid	RG-64/U	19/0.0117 Tinned Copper	D	(2) 0.308	Tinned Copper	Neoprene	0.495	0.205	48.0	50.0	8000 (Peak)	Medium size pulse cable		
		RG-25/U	19/0.0117 Tinned Copper	D	(2) 0.308	Tinned Copper	Neoprene	0.565	0.205	48.0	50.0	8000 (Peak)	Special twisting pulse cable for Naval equipment		
		RG-28/U	19/0.0185 Tinned Copper	D	(2) 0.455	Inner-Tinned Copper Outer-Galvanized Steel	Synthetic Rubber	0.805	0.370	48.0	50.0	15,000 (Peak)	Large size pulse cable		
Twisting Application	Single Braid	RG-41/U	16/30 A.W.G. Tinned Copper	C	0.250	Tinned Copper	Neoprene	0.425	0.150	67.5	27.0	3000	Special twist cable		

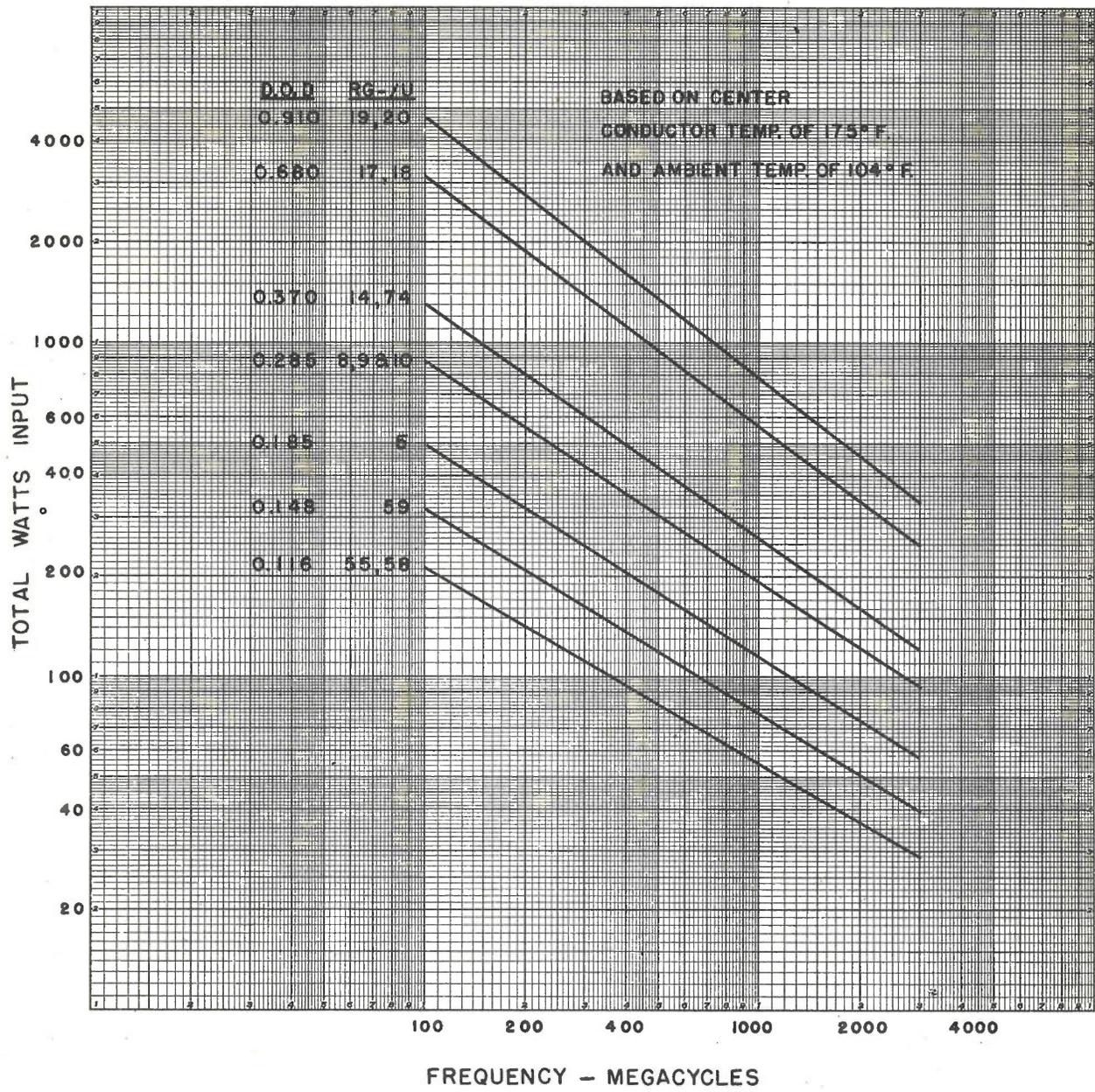
NOTES:

1. Dielectric Materials
  - A Stabilized Polyethylene
  - C Synthetic Rubber Compound
  - D Layer of Synthetic Rubber Dielectric Between Thin Layers of Conducting Rubber

2. This Value is the Diameter Over the Outer Layer of Conducting Rubber

ATTENUATION OF STANDARD R. F. CABLES  
VS  
FREQUENCY





## 2. Nonstandard cables still in use

Army-Navy Type Number	Inner Conductor	Dielectric Material (1)	Nominal Dia. of Dielectric (Inches)	No. of Shielding Braids	Protective Covering	Nominal Overall D.a. (Inches)	Weight #/Ft.	Nominal Impedance Ohms.	Nominal Capacitance MMF/Foot	Max. Operating Volts. Rms.	Replaced By Standard
RG-4/U	#20 AWG Copper	A	0.116	2	Vinyl	0.226	0.025	51	30	1900	RG-58/U
RG-7/U	#19 AWG Copper	A	0.250	1	Vinyl	0.370	0.080	95	14	.....	RG-62/U
RG-15/U	#15 AWG Copperweld	A	0.370	2	Vinyl	0.545	0.197	75	20	5500	RG-11/U RG-12/U
RG-16/U	0.125" Copper Tube	A	0.460	1	Vinyl	0.630	0.254	52	30	7500	Not used
RG-23/U	2 Conductor 7/26 Copper	A	0.400	2	Vinyl	0.650 x 0.945	0.490	125	13	3000	Used for D.F. only
RG-24/U	2 Conductor 7/26 Copper	A	0.400	2	Vinyl & Armor	0.735 x 1.034	0.670	125	13	3000	Used for D.F. only
RG-29/U	#20 AWG Copper	A	0.116	1	Polyethylene	0.184 (Max.)	0.021	53	29	1900	RG-58/U
RG-31/U	7/21 AWG Copper	B	0.285	1	Vinyl	0.405	0.106	51	30	2000	RG-8/U
RG-33/U	#10 AWG Copper	A	0.370	None	Lead Sheath	0.470	0.390	51	30	6000	None
RG-34/U	7/21 AWG Copper	A	0.460	1	Vinyl	0.625	0.224	72	21	5200	None
RG-35/U	#9 AWG Copper	A	0.680	1	Vinyl & Armor	.945 (Max.)	0.525	72	21	10,000	None
RG-36/U	0.162 Copper	A	0.910	1	Vinyl & Armor	1.160	0.805	72	21	10,000	None
RG-37/U	#20 AWG Tinned Copper	C	0.140	1	Polyethylene	0.210 (Max.)	0.040	53	29	750	RG-58/U
RG-38/U	#17 AWG Tinned Copper	C	0.196	2	Polyethylene	0.312 (Max.)	0.110	53	29	1000	RG-21/U
RG-39/U	#22 AWG Copperweld	C	0.196	2	Polyethylene	0.312 (Max.)	0.100	73	28	1000	RG-6/U RG-59/U
RG-40/U	#22 AWG Copperweld	C	0.196	2	Synthetic Rubber	0.420	0.150	73	28	1000	RG-6/U
RG-42/U	#21 AWG Resistance wire	A	0.196	2	Vinyl	0.342	0.050	76	20	2700	RG-21/U
RG-54A/U	7/0.0152 Copper	A	0.178	1	Non-contaminating Polyethylene	0.250 (Max.)	0.041	58	27	3000	None

NOTE:—(1) Dielectric Materials:

A—Stabilized Polyethylene

B—Polyisobutylene Mixtures

C—Synthetic Rubber Compounds

3. Standard Pulse Cables

Army Navy Type Number	Center Conductor	Core Diameter (Inches)	See Note	Outer Conductor Dia. (Inches)	Jacket Type & Diameter (In.-Max.)	Armor Max. Diameter (Inches)	Impedance Ohms.	Capacitance MMF/Foot.	Max. Operating Voltage (Peak)	Remarks
RG-25/U	19/0.0117" Tinned Copper Dia. 0.059"	0.308	(1)	2 Braids & Separator 0.418	Synthetic Rubber 0.585	.....	48	50	8000	Med. size pulse for twisting. No field assembly connector.
RG-25A/U	19/0.0117" Tinned Copper Dia. 0.059"	0.288	(2)	2 Braids & Separator 0.398	Synthetic Rubber 0.525	.....	48	50	8000	Replaces RG-25/U.
RG-26/U	19/0.0117" Tinned Copper Dia. 0.059"	0.318	(1)	1 Braid 0.358	Synthetic Rubber 0.485	0.525	48	50	8000	Similar to RG-25/U. Armored.
RG-26A/U	19/0.0117" Tinned Copper Dia. 0.059"	0.288	(2)	1 Braid 0.358	Synthetic Rubber 0.465	0.505	48	50	8000	Replaces RG-26/U.
RG-27/U	19/0.0185" Tinned Copper Dia. 0.093"	0.465	(1)	1 Braid 0.525	Vinyl 0.615	0.675	48	50	15,000	Large Armored.
RG-28/U	19/0.0185" Tinned Copper Dia. 0.093"	0.465	(1)	2 Braids & Separator 0.605	Synthetic Rubber 0.825	.....	48	50	15,000	Large Armored.
RG-77/U	19/0.0117" Tinned Copper Dia. 0.059"	0.288	(2)	2 Braids 0.368	Polyethylene 0.415	.....	48	50	8000	Replaces KS-9275. Designed for field assembly connectors.
RG-78/U	19/0.0117" Tinned Copper Dia. 0.059"	0.288	(2)	1 Braid 0.338	Polyethylene 0.385	.....	48	50	8000	Replaces KS-8623. Designed for field assembly connector.
RG-64/U	19/0.0117" Tinned Copper Dia. 0.059"	0.308	(1)	2 Braids 0.388	Synthetic Rubber 0.515	.....	48	50	8000	May be used with UG-34/U connector.
RG-64A/U	19/0.0117" Tinned Copper Dia. 0.059"	0.288	(2)	2 Braids 0.368	Synthetic Rubber .495	.....	48	50	8000	Replaces RG-64/U.

NOTES:

- (1) Third core layer of conducting rubber.
  - (2) New cables. Third core layer of Neoprene insulation (Red).
- These types are considered standard cables and will be included in the next revision of the Army-Navy Standard List of R. F. Cables.
- Specifications for Types RG-25A/U, RG-26A/U, RG-77/U and RG-78/U are given in Amendment II dated 15 December 1944 to specification JAN-C-17.

4. Standard R.F. cables in order of diameter over dielectric

D.O.D.	RG-/U Type	Number of Braids	Nominal Impedance Ohms	Jacket Type Note (1)	Armored	Remarks
.116	55	2	53.5	III	.....	Small Size I.F. cable.
.116	58	1	53.5	I	.....	Gen'l purpose small size flexible cable.
.146	59	1	73.0	I	.....	Gen'l purpose small size video cable.
.146	62	1	93.0	I	.....	Low capacitance cable.
.146	71	2	93.0	III	.....	Low capacitance cable.
.185	5	2	53.5	I	.....	Small microwave cable.
.185	6	2	76.0	II	.....	Small microwave I.F. cable—Double shielded.
.185	21	2	53.0	II	.....	Special attenuating cable.
.250	41	1	67.5	IV	.....	Cable designed for Twisting.
.280	9	2	51.0	II	.....	Medium size—low level circuit cable.
.280	13	2	74.0	I	.....	Double shielded I.F. cable.
.285	8	1	52.0	I	.....	Gen'l purpose—Med. size—flexible cable.
.285	10	1	52.0	II	X	Armored RG-8/U.
.285	11	1	75.0	I	.....	Medium—flexible video and communication cable.
.285	12	1	75.0	II	X	Armored RG-11/U.
.285	22	1	95.0	I	.....	Small size twin conductor cable.
.285	65	1	950.0	I	.....	High impedance—delay line video cable.
.285	63A	1	125.0	I	.....	Low capacity cable.
.285	79A	1	125.0	I	X	Armored RG-63A/U. .475" Max. dia. over armor.
.288	25A	2	48.0	V	.....	Replaces RG-25/U. Uses field assembly connectors.

**4. Standard R.F. cables in order of diameter over dielectric (continued)**

D.O.D.	RG-/U Type	Number of Braids	Nominal Impedance Ohms	Jacket Type Note (1)	Armored	Remarks
.288	26A	1	48.0	V	X	Replaces RG-26/U.
.288	77	2	48.0	III	.....	Replaces KS-9275. Uses field assembly connectors.
.288	78	1	48.0	III	.....	Replaces KS-8623. Uses field assembly connectors.
.308	64A	2	48.0	IV	.....	Medium size pulse cable.
.308	25	2	48.0	IV	.....	Special twist pulse cable.
.308	26	1	48.0	IV	X	Med. size armored pulse cable.
.370	14	2	52.0	II	.....	Gen'l purpose—semi-flexible cable.
.370	74	2	52.0	II	X	Armored RG-14/U. .615" Max. dia. over armor.
.455	27	1	48.0	I	X	Large size armored pulse cable.
.455	28	2	48.0	IV or V	.....	Large size pulse cable.
.472	57	1	95.0	I	.....	Large size twin conductor cable.
.680	17	1	52.0	II	.....	Large—high power low loss cable.
.680	18	1	52.0	II	.....	Armored RG-17/U.
.910	19	1	52.0	II	.....	Very large—high power low loss cable.
.910	20	1	52.0	II	.....	Armored RG-19/U.

**General Note:**

Type RG-79A/U does not appear on the present Standard List of R.F. Cables. It is intended to include this type on the next list. Armor is identical to that on RG-12/U.

**Note (1)**

- I—Vinyl
- II—Vinyl—non-contaminating resin
- III—Polyethylene
- IV—Neoprene
- V—Synthetic Rubber

**5. R. F. cable manufacturers**

The following R.F. cable manufacturers are able to supply the general types of cable as indicated. Information on specific type approvals may be obtained by applying to the Army-Navy R.F. Cable Coordinating Committee, code 930G, BuShips, Washington, D. C.

Manufacturer	CABLE TYPE			Manufacturers Index No.
	Polyethylene	Pulse	Rubber	
American Phenolic Corp. ....	X			3
American Steel & Wire Co. ....		X		6
Anaconda Wire & Cable Co. ....	X			7
Federal Telephone & Radio Corp. ....	X			31
General Cable Corp'n. ....	X			32
General Electric Co. ....	X		X	33A
Okonite Company ....	X	X	X	56
Pheips Dodge Copper Products Co. ....	X			59
Philadelphia Insulated Wire Co. ....			X	60
Simplex Wire & Cable Co. ....	X	X	X	69
Western Electric Co. ....		X	X	77
Whitney Blake Wire & Cable Co. ....	X	X	X	79

For complete address refer to Manufacturers Listing pages 103-105

**6. List of standard cables for replacement purposes**

AN Nomenclature	Old cable type No.
RG-5	RMA-16 (1)
RG-6	KS9168 (1) KS9226 (1)
RG-8	PT5, CASSF-50-1 WC543, WC549, RG-31/U
RG-9	B452
RG-10	CASSF-50-1A
RG-11	WC552, CASSF-70-1 WC562 (1)
RG-12	CASSF-70-1A (1) 62040
RG-13	21B-290-7/26-XXV B492

AN Nomenclature	Old cable type No.
RG-14	RMA-10 KS9269 (1)
RG-17	CASSF-50-2 KS9256
RG-18	CASSF-50-2A
RG-19	CASSF-50-3
RG-20	CASSF-50-3A
RG-21	KS9230
RG-22	WC551
RG-23	B601 B602
RG-24	B601A B602A

**6. List of standard cables for replacement purposes (continued)**

AN Nomenclature	Old cable type No.
RG-25A	A2, 62101, KS8623 (1) KS9311, RG-25/U (1)
RG-26A	A1 KS9347, RG-26/U (1)
RG-27	B1, 62102 KS9036
RG-28	B2, 62103
RG-41	62039 (1) KS8498 (1)
RG-57	WC-550 RG-43/U, RCSSF-95-1

AN Nomenclature	Old cable type No.
RG-58	RG-4/U (1)
RG-59	Uniradio 32 (1) EX 391 (1)
RG-63A	RG-7/U (1)(2), AS-48 (1)(2) WC547 (1)(2), 62064 (1)(2), K31 (1)(2), RG-68U (1)
RG-64	RG-25/U (1)
RG-77	KS9275
RG-78	KS8623

Notes: (1) Replaces with minor mechanical variations.  
(2) Replaces with minor electrical variations.

## Chapter 3—R. F. CONNECTORS

The following section includes listing of all recommended or commonly used R. F. connectors used with R. F. flexible cables. The adapters used between flexible cables and rigid lines are also included. The *Army-Navy Standard List of Radio Frequency Cable Connectors for Small and Medium Size R. F. Cables* dated 1 October 1944 is included for ready reference.

The connectors have been divided into various groups according to their functional use and have been arranged generally in accordance with the size of the cables with which they are used.

The N series of connectors has been evolved from the original type N constant impedance connector since they have many characteristics similar to the original N connector. The BN refers to a series of small size connectors used with the small R. F. cables. Literally speaking, they are known as "baby N" connectors. The BNC connectors are somewhat similar to the BN but are electrically improved to provide very little electrical discontinuity at high frequencies. The nomenclature BNC is derived from the fact that they have electrical characteristics similar to constant impedance connectors. The LN series are large size connectors very similar in construction and electrical properties to the original N series. The HN series refers to the connectors of similar size to the N connector. They are designed for use at higher voltages.

Each series of connectors includes a functional diagram showing the various ways in which the individual connectors may be used between cables and between cables and rigid lines. A listing of each individual connector and adapter gives the nomenclature, applicable specifications, AN drawings and a reference to the manufacturer's name and address.

Following this listing in each section are outline drawings which show the approximate size and shape of the individual connectors.

### I. Army-Navy Standard List of Radio Frequency Cable Connectors for Small and Medium Size R.F. Cables

1 October 1944

TO: ALL THOSE CONCERNED WITH THE DESIGN, PROCUREMENT AND MANUFACTURE OF ARMY OR NAVY EQUIPMENT UTILIZING RADIO FREQUENCY CABLE CONNECTORS.

1. The following Army-Navy Standard List of Radio Frequency Cable Connectors has been selected by the Army-Navy R.F. Cable Coordinating Committee as containing the most satisfactory types of connectors to be used with the standard Radio Frequency Cables in Army-Navy Electronic equipment. The purpose of this list is to effect a reduction in the number of types of R.F. connectors and to insure that only connectors expressly designed for use at radio frequencies be used in Service Equipments.

2. This list covers cable to cable connectors to be used with the following standard R.F. cables in applications such as video transmission, R.F. transmission, trigger, gate and timing pulse circuits and R.F. test equipment:

RG-5/U	RG-11/U	RG-29/U	
RG-6/U	RG-12/U	RG-39/U	RG-63/U
RG-7/U	RG-13/U	RG-57/U	RG-65/U
RG-8/U	RG-14/U	RG-58/U	RG-55/U
RG-9/U	RG-21/U	RG-59/U	RG-71/U
RG-10/U	RG-22/U	RG-62/U	RG-72/U

3. IT IS MANDATORY THAT ALL R.F. CONNECTORS FOR THE ABOVE APPLICATIONS, TO BE USED IN NEW EQUIPMENTS OR EQUIPMENTS IN THE EARLY DESIGN STAGE, UNDER THE JURISDICTION OF THE ARMY OR NAVY, BE SELECTED FROM THIS LIST.

4. In the event that it is believed that certain equipment of new design requires a special connector for which a suitable design is not included in the Standard List, a specific waiver to use such a connector must be obtained from the Army-Navy R.F. Cable Coordinating Committee. Requests for such waivers, accompanied by a statement giving the engineering considerations which make the proposed type necessary, shall be forwarded to the Army-Navy R.F. Cable Coordinating Committee. The request shall be forwarded, in the case of Army Equipment, via the Officer-in-Charge, R.F. Cable Section, Signal Corps Standards Agency, Red Bank, N. J., or in the case of Navy Equipment, via the Chief of the Bureau of Ships, Navy Department, Code 930, Washington 25, D. C.

5. Special R.F. components, which incorporate connectors as an integral part, and for which standard connectors require modification for electrical or mechanical reasons are not affected by the provisions of this directive, providing the external termination mates with the standard connectors. Connectors used between standard cables and Klystron tubes are not affected by the provisions of this directive.

6. An adapter is defined as a part of an R.F. connector in the form of an auxiliary fitting which is inserted between portions of a connector and does not connect directly to a cable at either end. Such adapters are covered by the provisions of this directive; but adapters which are used to couple standard connectors to non-standard connectors or to connectors of different size are not so covered by this directive.

7. The provisions of this directive are in no way intended to hamper or restrict new developments in the field of Radio Frequency transmission.

8. The provisions of this directive shall take effect immediately.

Office of the Chief Signal Officer  
Headquarters, Army Service Forces  
War Department

Chief of the Bureau of Ships  
Navy Department

**i. Type BN low voltage non-constant impedance cable connectors**

A-N Type No.	Description	Cable Type	Nominal Impedance	Army Dwg. No.	Navy Dwg. No.	Remarks
UG-85/U	Plug	RG-29/U	Not matched to cable.	.....	RE-49F-243	Weatherproof.
UG-115/U	Jack	RG-55/U	.....	.....	RE-49F-256	Weatherproof.
UG-114/U	Panel Jack	RG-71/U	.....	.....	RE-49F-256	Weatherproof.
UG-87/U	Receptacle	RG-58/U	.....	.....	RE-49F-244	
UG-86/U	Receptacle (pressurized)	RG-59/U	.....	.....	RE-49F-245	
MX-195/U	Hood, R.F.	RG-62/U	.....	.....	RE-49F-244	Use with UG-86/U or UG-87/U.

**ii. Type UHF low voltage non-constant impedance cable connectors**

A-N Type No.	S.C. Type No.	Navy Type No.	Description	Cable Type	S.C. Dwg. No.	Navy Dwg. No.	Remarks
	PL-259	49190	Plug	RG-7/U	SC-D-5888		Small coaxial cable connectors. Non-weather-proof.
	PL-259-A	49195	Plug	RG-8/U		RE-49F-167	
	SO-239	49194	Receptacle	RG-9/U	SC-D-5850	RE-49F-167	
	M-358	49199	Adapter—Tee	RG-10/U		RE-49F-172	
	M-359	49192	Adapter—Rt. Angle	RG-11/U	SC-D-5889	RE-49F-168	
	PL-274		Adapter—Straight 2 female ends, (Bulkhead)	RG-12/U	SC-D-6234		
	PL-258	49191	Adapter—Straight 2 female ends	RG-13/U	SC-D-5887	RE-49F-169	
UG-106/U	M-360	49193	Hood	RG-63/U	SC-B-5849	RE-49F-167	
UG-102/U	PL-284		Plug	RG-22/U	SC-D-5940		
UG-103/U	SO-264		Receptacle		SC-D-5941		
UG-104/U	PL-293		Adapter—Rt. Angle		SC-D-5943		
	PL-275		Adapter—Straight, 2 female ends (Bulkhead)		SC-D-10097		Small twin cable connectors. Non-weather-proof.
UG-105/U	PL-285		Adapter—Straight 2 female ends		SC-C-6268		
UG-106/U	M-360	49193	Hood		SC-B-5849		
	PL-295	49188	Plug	RG-57/U			
	SO-265	49196	Receptacle			RE-49F-173	
	PL-325	49198	Adapter—Rt. Angle			RE-49F-173	
	PL-276		Adapter—Straight, 2 female ends (Bulkhead)			RE-49F-171	
	PL-305	49189	Adapter—Straight 2 female ends			RE-49F-174	
	M-365	49208	Hood			RE-49F-173	

## iii. Type "N" low voltage constant impedance cable connectors

A-N Type No.	Description	Cable Type	Nominal Impedance	Joint Army-Navy Specification	Navy Dwg. No.	Remarks
UG-18/U	Plug	RG-5/U RG-21/U	50 ohms	JAN-C-71	RE-49F-216	Weatherproof.
UG-19/U	Panel Jack			JAN-C-71	RE-49F-216	
UG-20/U	Jack			JAN-C-71	RE-49F-216	
UG-91/U	Plug	RG-6/U	70 ohms	JAN-C-71	RE-49F-216	Weatherproof—These connectors should be used only where 70 ohm impedance matching is necessary. These connectors will not mate with 50 ohm connectors.
UG-92/U	Jack			JAN-C-71	RE-49F-216	
UG-93/U	Panel Jack			JAN-C-71	RE-49F-216	
UG-21/U	Plug	RG-8/U RG-9/U RG-10/U	50 ohms	JAN-C-71	RE-49F-188	Weatherproof.
UG-22/U	Panel Jack			JAN-C-71	RE-49F-188	
UG-23/U	Jack			JAN-C-71	RE-49F-188	
UG-94/U	Plug	RG-11/U RG-12/U RG-13/U	70 ohms	JAN-C-71	RE-49F-188	Weatherproof—These connectors should be used only where 70 ohm impedance matching is necessary. These connectors will not mate with 50 ohm connectors.
UG-95/U	Jack			JAN-C-71	RE-49F-188	
UG-96/U	Panel Jack			JAN-C-71	RE-49F-188	
UG-9/U	Plug	RG-5/U	50 ohms	(Radiation Lab. Dwg. 2306)		Non-weatherproof—These connectors are to be used only in laboratory test equipment where weatherproofing is unnecessary.
UG-10/U	Panel Jack	RG-21/U		(Radiation Lab. Dwg. 2309)		
UG-11/U	Jack			(Radiation Lab. Dwg. 2309)		
UG-12/U	Plug	RG-8/U	50 ohms	(Radiation Lab. Dwg. 2306)	RE-49F-180	Non-weatherproof—These connectors are to be used only in laboratory test equipment where weatherproofing is unnecessary.
UG-13/U	Panel Jack	RG-9/U		(Radiation Lab. Dwg. 2309)	RE-49F-180	
UG-14/U	Jack	RG-10/U		(Radiation Lab. Dwg. 2309)	RE-49F-180	
UG-27A/U	Adapter—Rt. Angle		50 ohms	JAN-C-71		Mates with UG-18/U UG-21/U plugs.
UG-30/U	Adapter—Straight 2 female ends (Pressurized)			JAN-C-71		
UG-58/U	Receptacle			JAN-C-71	RE-49F-254	
UG-107/U	Adapter—Tee 2 female ends, 1 male end			JAN-C-71	RE-49F-262	
UG-57/U	Adapter—Straight 2 male ends			JAN-C-71	RE-49F-259	
UG-29/U	Adapter—Straight 2 female ends			JAN-C-71	RE-49F-258	
UG-106/U	Hood			(Army Dwg. SC-B-5849)	RE-49F-167	Use with UG-58/U.

## iv. Type HN high voltage constant impedance cable connectors

A-N Type No.	Description	Cable Type	Nominal Impedance	Army Dwg. No.	Navy Dwg. No.	Remarks
UG-59/U	Plug	RG-8/U	50 ohms		RE-49F-225	Weatherproof—Requires special cable tapering tool, MX-103/U to assemble to cable.
UG-60/U	Jack				RE-49F-225	
UG-61/U	Panel Jack					
UG-212/U	Adapter—Rt. Angle		50 ohms		RE-49F-349	

## v. Type LN low voltage constant impedance cable connectors

A-N Type No.	Description	Type Cable	Nominal Impedance	Army Dwg. No.	Navy Dwg. No.	Remarks
UG-100/U	Plug	RG-14/U	50 ohms		RE-49F-292	Weatherproof—(Radio Research Laboratory Dwg.) S-101-B1
UG-101/U	Panel Jack	RG-14/U	50 ohms		RE-49F-287	(R.R.L. Dwg.) S-102-B1
UG-98/U	Receptacle		50 ohms		RE-49F-290	(R.R.L. Dwg.) S-103-B1
UG-97/U	Adapter—Rt. Angle				RE-49F-291	(R.R.L. Dwg.) S-121-B1
UG-109/U	Adapter—Straight 2 female ends		50 ohms			(R.R.L. Dwg.) S-120-B1

2. BN Connectors

The connectors described in this section are BN type small lightweight connectors and are designed for use with small cables such as RG-58/U, RG-59/U etc.

They are widely used for video, i.f., trigger pulse and low power r.f. applications. They are not constant impedance and are therefore not recommended for applications where frequencies are in excess of approximately 200 mc. unless the electrical requirements of the circuit are not critical. They may be used at voltages up to 250 volts peak. An adapter is available for use between these connectors and the UHF series. Modified versions of these connectors are being used in multi-contact, Army-Navy aeronautical type connectors.

BN connectors and adapters

AN type	Name	Category	Fig no.	Navy type	ANRFCCC or Navy draw. no.	Army or other type no.	Army or other draw. no.	For use with cable RG- /U	Weather proof	Notes	Mfg. code
UG-85/U	Plug.....	1	1	.....	RE 49F 243	W.E. D-170613	.....	55, 58, 59, 62, 71	Yes	.....	51, 74, 67, 15, 46, 16
UG-245/U	Plug.....	2	2	49599	.....	W.E. D-166366	B.T.L. ESL-651173	58, 29, 55	No	(1)	74
.....	Plug.....	3	3	.....	.....	W.E. D-169448	B.T.L. ESL-662305	58, 29	No	(2)	51
.....	Plug.....	3	3	.....	.....	W.E. D-169880	B.T.L. ESL-662305	59, 62	No	(2)	51
UG-115/U	Jack.....	1	4	.....	RE 49F 256	W.E. D-170612	.....	55, 58, 59, 62, 71	Yes	.....	51, 74, 67, 15, 46, 16
.....	Jack.....	3	5	.....	.....	W.E. D-169911	.....	58, 29	No	(3)	51
.....	Jack.....	3	5	.....	.....	W.E. D-169912	.....	59, 62	No	(3)	51
UG-114/U	Panel Jack.....	1	4	.....	RE 49F 256	W.E. D-170611	.....	55, 58, 59, 62, 71	Yes	.....	51, 74, 67, 15, 46, 16
UG-246/U	Panel Jack.....	2	6	49601	.....	W.E. D-166367	B.T.L. ESL-651173	55, 58	No	(1)	74
UG-86/U	Pressurized Receptacle.....	1	7	.....	RE 49F 245	W.E. D-170576	.....	55, 58, 59, 62, 71	Yes	(4)	51, 74, 67, 15, 46, 16
UG-87/U	Receptacle.....	1	8	.....	RE 49F 244	W.E. D-169871	.....	55, 58, 59, 62, 71	Yes	(4)	51, 74, 67, 15, 46, 16
UG-206/U	Receptacle.....	2	9	.....	.....	W.E. D-170222	B.T.L. BL-101618	55, 58, 59, 62, 71	No	(1)	46, 51
UG-198/U	Pressurized Receptacle.....	2	10	.....	.....	.....	Philco 756-2021	55, 58, 59, 62, 71	Yes	(4, 5)	16, 74
.....	Receptacle.....	3	11	49460	.....	W.E. D-169552	B.T.L. ESL-662646	29, 55, 58, 59, 62, 71	No	.....	51, 74
MX-195/U	Hood.....	1	7	.....	RE 49F 244	.....	B.T.L. .ESP-662296	58, 29, 55	No	.....	51, 74, 67, 15, 46
MX-367/U	Hood.....	2	7	.....	.....	.....	Philco 258-9024, 257-9967	59, 62, 71	No	.....	16, 74
UG-243/U	Adapter (Rt. Angle).....	2	.....	.....	RE 49F 375	.....	.....	.....	Yes	.....	67
UG-242/U	Adapter (Tee).....	2	.....	.....	RE 49F 374	.....	.....	.....	Yes	1 Male, 2 Fem. ends	.....
UG-244/U	Adapter (Pressurized).....	2	.....	.....	RE 49F 376	.....	Rad. Lab. 12855	.....	Yes	2 Fem. ends	74
UG-241/U	Adapter BN to UHF.....	2	.....	.....	RE 49F 373	.....	.....	.....	No	(6)	.....

NOTES:

- (1) To be used only inside of equipments
- (2) Replaced by UG-85/U
- (3) Replaced by UG-115/U
- (4) Requires MX-195/U hood for connecting braid of RG-58/U cable and MX-367/U hood for RG-62/U, RG-59/U and RG-71/U cables.
- (5) Has long threaded body for 5/16" panels.
- (6) Mates with UG-86/U or similar at one end and 49195 or similar at other end.
- (7) Cable assembly instructions are shown on AN drawings RE 49F 357 and RE 49F 358.

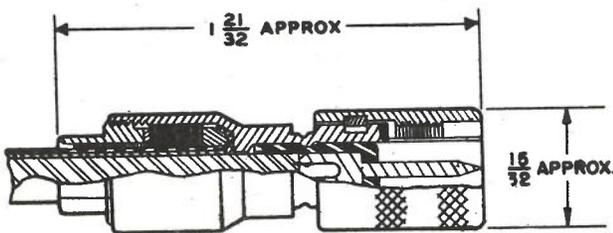


Figure 1.

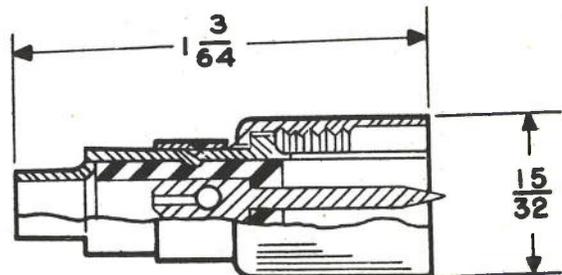


Figure 2.

Type BN connectors.

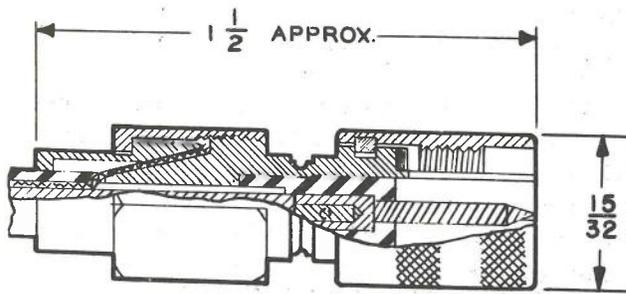


Figure 3.

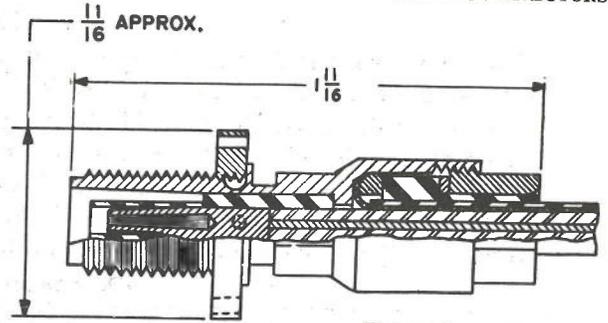


Figure 4.

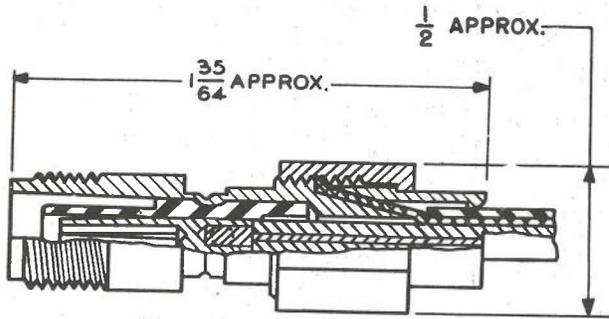


Figure 5.

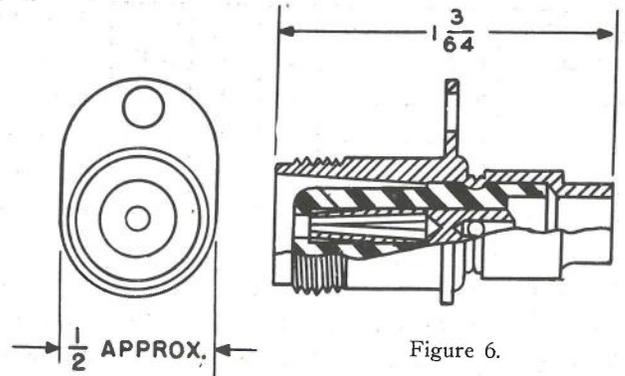


Figure 6.

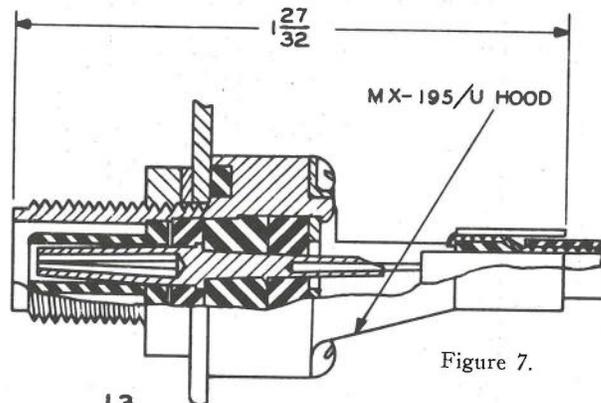


Figure 7.

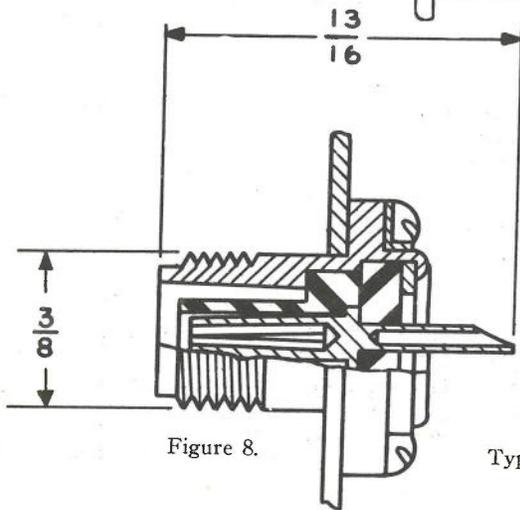
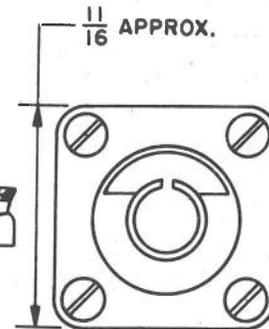


Figure 8.

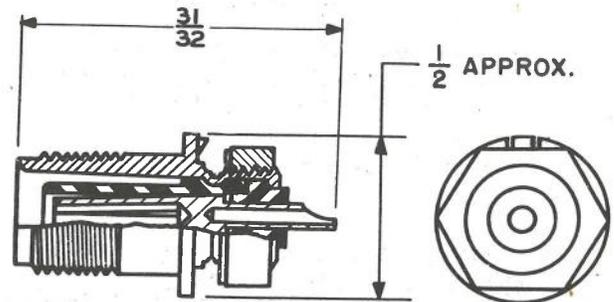


Figure 9.

Type BN connectors (cont.).

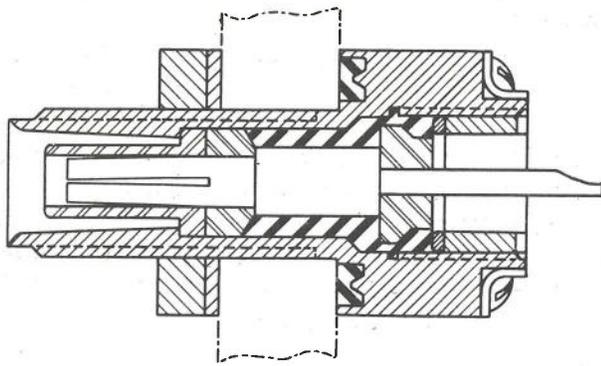


Figure 10.

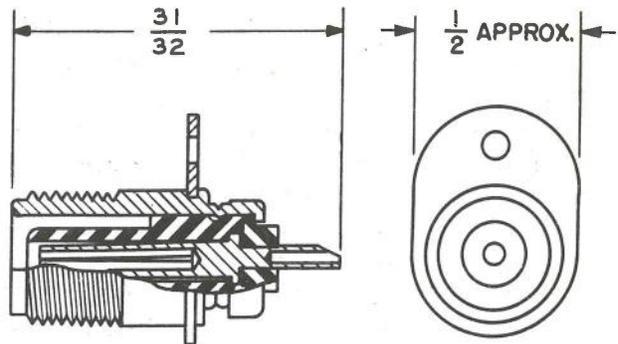
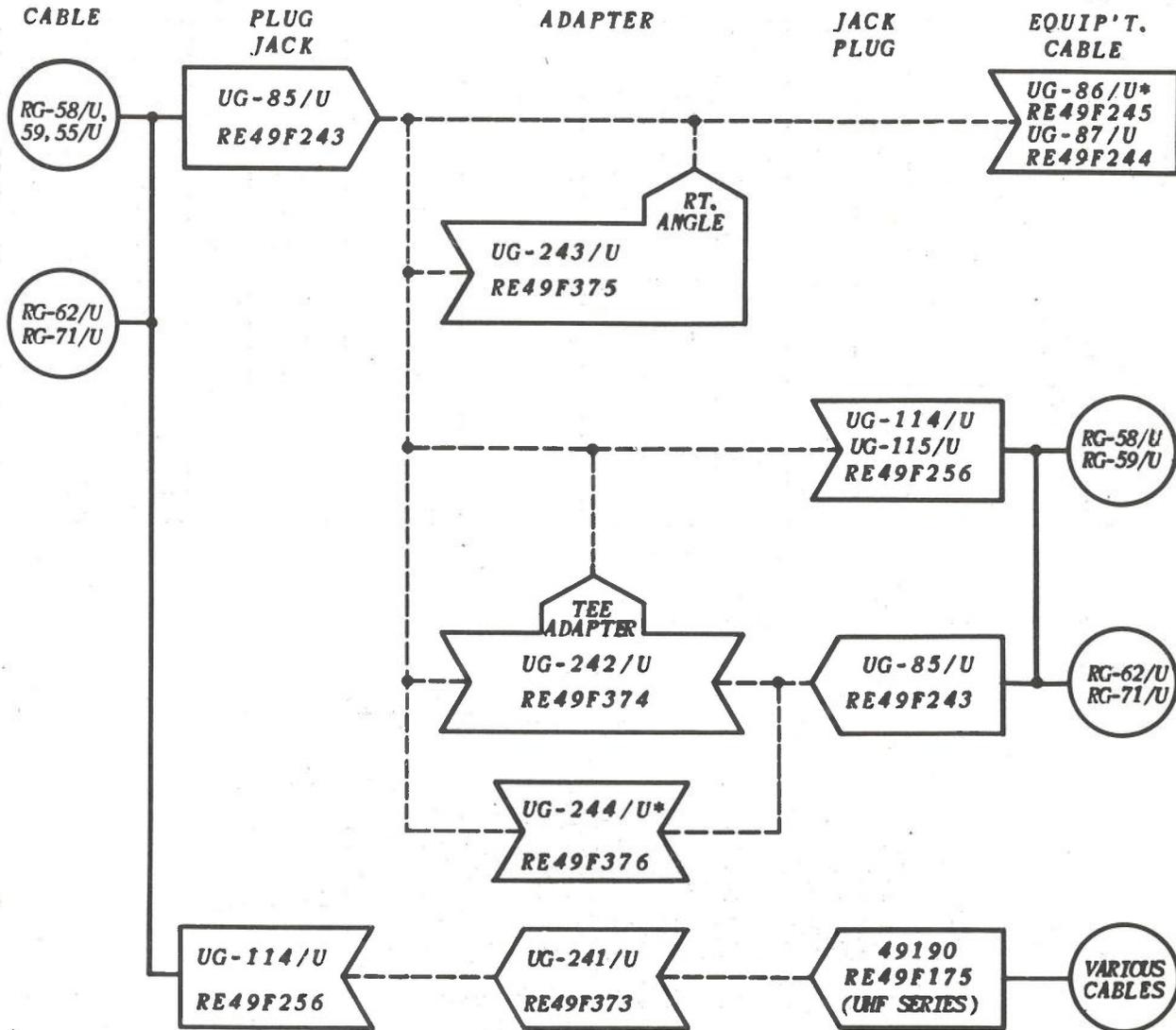


Figure 11.



\*PRESSURIZED

Type BN connectors (cont.).

3. BNC Connectors

The items described in this section are small, lightweight, quick connect and disconnect connectors and are known as BNC. They are designed for use with the small R. F. cables. Types are available for use with RG-58/U, RG-59/U, RG-62/U and RG-71/U.

They may be used for application where the peak voltage does not exceed 500. They are not constant impedance connectors but are designed to produce very little electrical discontinuity in a coaxial line of 52 ohms. Samples have been tested and show a voltage standing wave ratio of approximately 1.05 at 1,000 mc/sec. and 1.15 at 3,000 mc/sec. They are recommended for use at frequencies as high as 3,000 mc where impedance matching is important. Adapters are available between these connectors and types N and UHF.

These connectors have been tentatively adopted as standard for aircraft test equipment.

BNC connectors and adapters

AN type	Name	Category	Fig no.	Navy type	ANRFCCC or Navy draw. no.	Army or other type no.	Army or other draw. no.	For use with cable RG- /U	Weather proof	Notes	Mfg. code
UG-88/U	Plug.....	2	12	.....	RE 49F 246	.....	.....	58	Yes	.....	39, 3
UG-260/U	Plug.....	2	12	.....	RE 49F 380	.....	.....	59, 62, 71	Yes	.....	39, 16
UG-89/U	Jack.....	2	13	.....	RE 49F 246	.....	.....	58	Yes	.....	39, 3
UG-261/U	Jack.....	2	13	.....	RE 49F 380	.....	.....	59, 62, 71	Yes	.....	39
UG-90/U	Panel Jack.....	3	13	.....	RE 49F 246B	.....	.....	58	Yes	.....	39
UG-291/U	Panel Jack.....	2	13	.....	RE 49F 246	.....	.....	58	Yes	.....	39
UG-262/U	Panel Jack.....	2	13	.....	RE 49F 380	.....	.....	59, 62, 71	Yes	.....	39
UG-185/U	Receptacle.....	3	16	.....	RE 49F 331B	.....	.....	58, 59, 62, 71	Yes	.....	39
UG-290/U	Receptacle.....	2	16	.....	RE 49F 331	.....	.....	58, 59, 62, 71	Yes	(1)	39, 3, 16
UG-254/U	Receptacle (Pressurized).....	2	.....	.....	RE 49F 377	.....	.....	58, 59, 62, 71	Yes	(1)	39, 16
CW-123/U	Cap & Chain Assembly.....	2	14	.....	RE 49F 331	.....	.....	.....	Yes	(2)	39
MT-412/U	Mounting Plate.....	3	.....	.....	RE 49F 331	.....	.....	.....	.....	(3)	39
UG-201/U	Adapter BNC to N.....	2	15	.....	RE 49F 335	.....	.....	.....	Yes	(4)	39
UG-255/U	Adapter BNC to UHF.....	2	.....	.....	RE 49F 378	.....	.....	.....	No	(5)	39
UG-273/U	Adapter UHF to BNC.....	2	.....	.....	RE 49F 389	.....	.....	.....	No	(6)	39
UG-274/U	Adapter (Tee).....	2	.....	.....	RE 49F 390	.....	.....	.....	Yes	1 Male 2 Fem. ends	39
UG-306/U	Adapter Rt. Angle.....	2	.....	.....	.....	.....	.....	.....	Yes	.....	.....

NOTES:

- (1) Use MX-195/U Hood for RG-58/U or MX-367/U hood for RG-59/U, RG-62/U or RG-71/U cables.
- (2) Fits all jacks and receptacles.
- (3) Used to mount UG-90/U and UG-185/U. Has four tapped holes.
- (4) Mates with UG-22/U or similar at one end and UG-88/U or similar at other end.
- (5) Mates with UG-90/U or similar at one end and 49190 or similar at other end.
- (6) Mates with UG-88/U or similar at one end and 49194 or similar at other end.
- (7) Cable assembly instructions are shown on AN drawing RE 49F359.

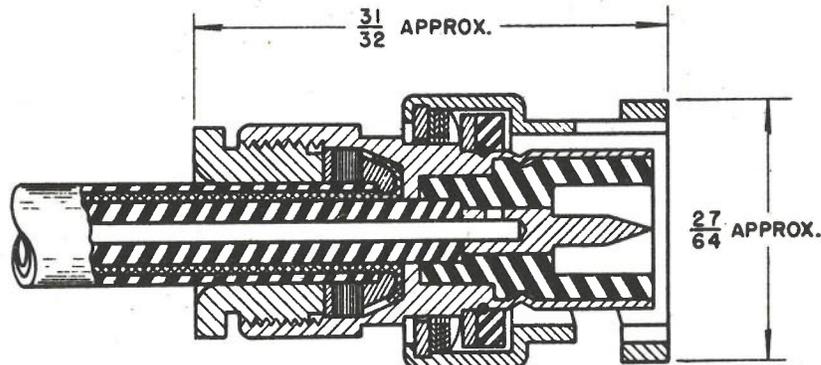


Figure 12.  
Type BNC connectors.

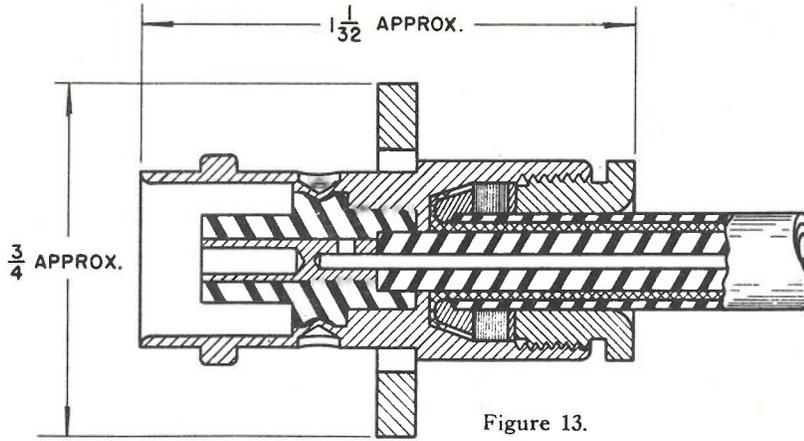


Figure 13.

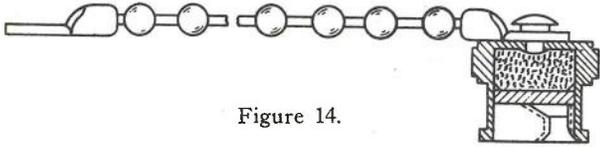


Figure 14.

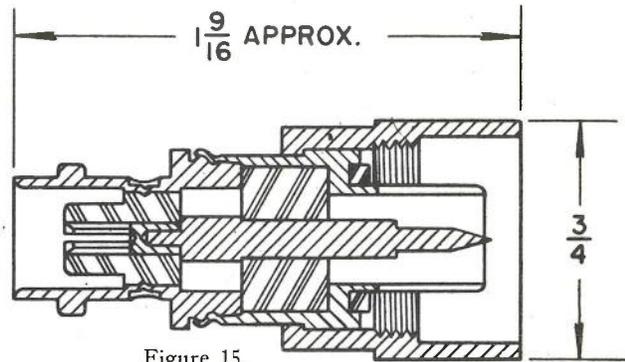


Figure 15.

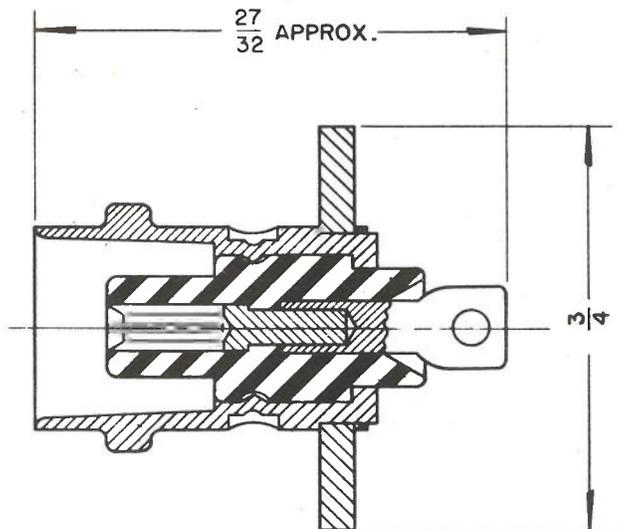
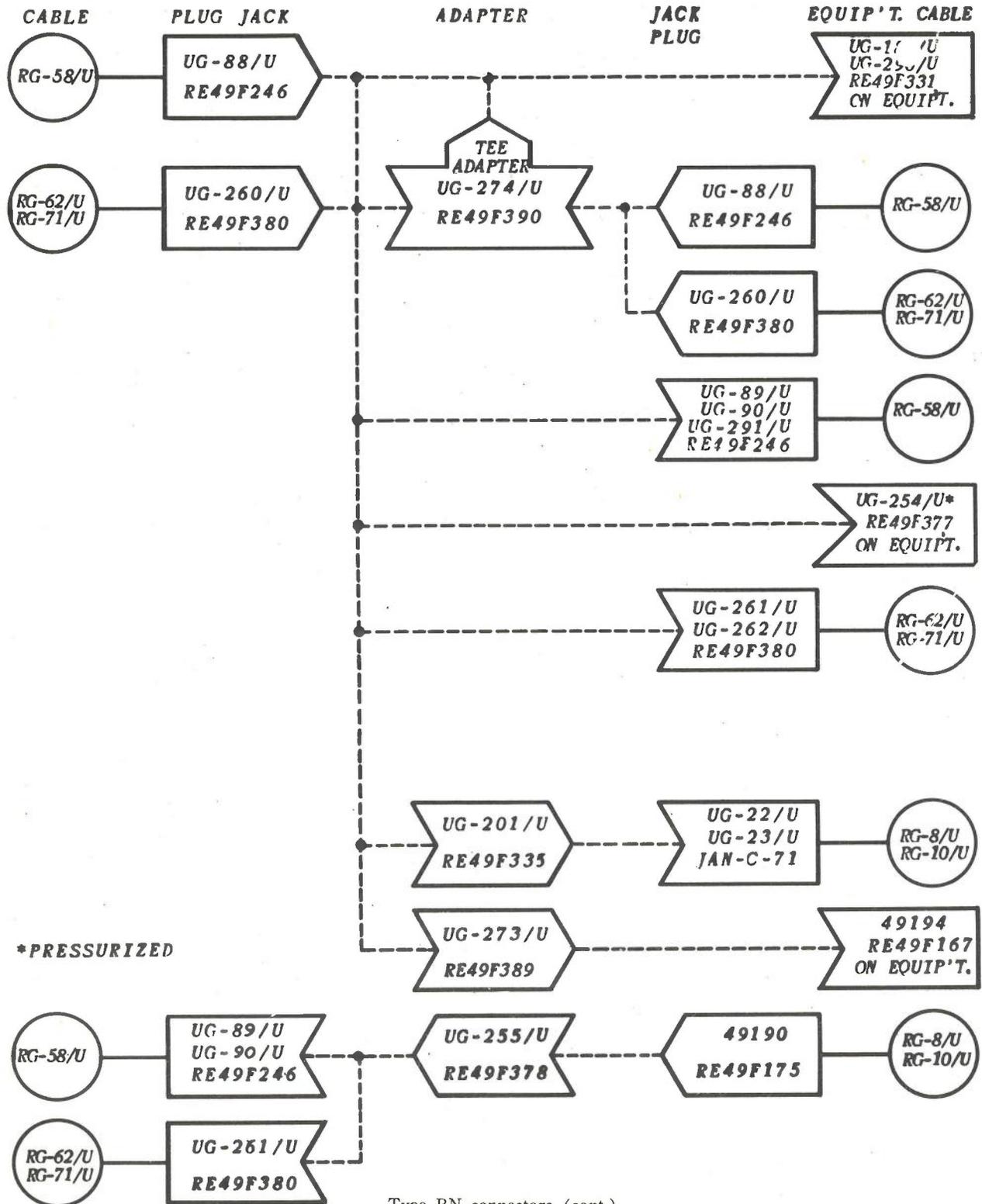


Figure 16.

Type BN connectors (cont.).



4. UHF Connectors

The connectors described in this section are known as UHF connectors. They may be used with numerous small and medium size cables. They are not constant impedance and will therefore introduce some voltage reflection. They are generally satisfactory at frequencies up to 200 megacycles and may be used with caution up to 500 megacycles. They may be used at voltages up to 500 volts peak.

These connectors are generally available and are recommended for use where low cost, general-purpose connectors are required and where they will not be exposed to the weather. Adapters are available for use between these connectors and type N, British "Pye", BN, and BNC.

These connectors are available in small and large coaxial types, small twin conductor types and large twin conductor types.

UHF connectors and adapters (Small coaxial)

AN type	Name	Category	Fig no.	Navy type	ANRFC or Navy draw. no.	Army or other type no.	Army or other draw. no.	For use with cable RG- /U	Weather proof	Notes	Mfg. code
	Plug.....	1	17	49195	RE 49F 167	PL-259A		8, 9, 10 11, 12, 13 63, 65	No	3 piece type	3, 9, 41 67, 74, 52 46, 34, 77 54
	Plug.....	1	18	49190	RE 49F 175	PL-259	SC-D-5888	8, 9, 10 11, 12, 13 63, 65	No	2 piece type	3, 9, 41 67, 74, 46 34, 77
UG-203/U	Plug.....	3	17	49482				58, 29, 55	No	(1)	3, 9, 74
	Receptacle.....	1	19	49194	RE 49F 167	SO-239	SC-D-5850	8, 9, 10 11, 12, 13 63, 65	No		3, 9, 41 67, 74, 52 46, 34, 77 54
UG-266/U	Receptacle (Pressurized).....	2					Buggie B-275		No		16
	Receptacle (Pressurized).....	3	20			W.E. D-170088			No		77
	Jack (Pressurized).....	3	21			W.E. D-166132		8, 9, 10 11, 12, 13 63, 65	No		77
UG-223/U	Receptacle.....	2	22		RE 49F 351				No	(2)	
UG-106/U	Hood.....	1	23	49193	RE 49F 167	M-360	SC-B-5849	8, 9, 10 11, 12, 13 63, 65	No		9, 74, 67 41, 3
UG-177/U	Hood.....	2	23			Amphenol 83-765		29, 55, 58	No		3
	Adapter (Tee).....	1	24	49199	RE 49F 172	M-358	SC-D-5889		No	1 Male 2 Fem. ends	9, 3
	Adapter (Rt. Angle).....	1	25	49192	RE 49F 168	M-359	SC-D-5890		No		3, 41, 52 74, 9
	Adapter (Rt. Angle).....	1	25	49192A		M-359A			No	(3)	26, 34, 67 77
	Adapter (Straight).....	1	26	49191	RE 49F 169	PL-258	SC-D-5887		No	(4)	3, 9, 67
	Adapter (Bulkhead).....	1	27			PL-274	SC-D-6234 SC-D-5918		No	(5)	3, 9
UG-224/U	Adapter (Bulkhead).....	1	27						No	(6)	67
UG-173/U	Adapter (Reducing).....	2	28			W.E. D-163664	B.T.L. ESA-641956	39	No	(7)	77
UG-175/U	Adapter (Reducing).....	2	28		RE 49A 355			58, 29, 55	No	(7)	3
UG-176/U	Adapter (Reducing).....	2	28		RE 49A 355			59, 62, 71	No	(7)	3
UG-146/U	Adapter (N to UHF).....	2	29		RE 49F 278				No	(8)	9
UG-83/U	Adapter (N to UHF).....	2	30		RE 49F 250				No	(9)	9
UG-235/U	Adapter Jones to UHF.....	2	31				B.T.L. ESO-693983		No	(10)	77
UG-171/U	Adapter (UHF to British).....	2	32	49547	RE 49F 251				No	(11)	3, 9
UG-197/U	Adapter (UHF to British).....	2	33	49544	RE 49F 242				No	(12)	9
	Adapter (UHF to British).....	2	34			PL-271			No	(13)	3
	Adapter (UHF to British).....	2	35			PL-272			No	(14)	3
UG-255/U	Adapter (UHF to BNC).....									(15)	
UG-273/U	Adapter (UHF to BNC).....									(15)	
UG-241/U	Adapter (UHF to BN).....									(16)	

UHF connectors and adapters small coaxial (continued)

AN type	Name	Category	Fig no.	Navy type	ANRFCCC or Navy draw. no.	Army or other type no.	Army or other draw. no.	For use with cable RG- /U	Weather proof	Notes	Mfg. code
.....	Cap & Chain for Receptacle.....	2	36	.....	.....	Amphenol 83-1AC	.....	.....	Yes	.....	3
.....	Cap & Chain for Plug.....	2	37	.....	.....	Amphenol 83-1BC	.....	.....	Yes	.....	3, 46

NOTES:

- (1) Similar to 49195 except cable end is reduced in diameter to fit small cables.
- (2) Mounts in 3/8" hole. Designed for and recommended to replace British panel mounting connectors. Mates with 49195 and similar UHF connectors.
- (3) Similar to 49192 except has better electrical properties.
- (4) Provides cable to cable connection by coupling two 49195 or similar plugs.
- (5) Similar to 49191 except 2" long and body threaded full length and has two hex mounting nuts.
- (6) Similar to PL-274 except 1-3/8" long.
- (7) For use with 49190 or 49195 plugs and adapts back end to smaller cables.
- (8) Mates with UG-23/U or similar at one end and 49190 or similar at other end.
- (9) Mates with UG-21/U or similar at one end and 49194 or similar at other end.
- (10) Mates with Jones jack at one end and 49190 or similar at other end.
- (11) Mates with 49194 or similar at one end and 10H-365 or similar at other end.
- (12) Mates with 49190 or similar at one end and 10H-588 or similar at other end.
- (13) Mates with 49190 or similar at one end and 110H-585 at other end.
- (14) Mates with 49194 or similar at one end and 110H-584 at other end.
- (15) See BNC Section.
- (16) See BN Section.

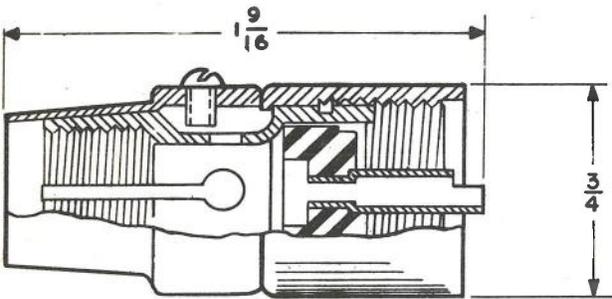


Figure 17.

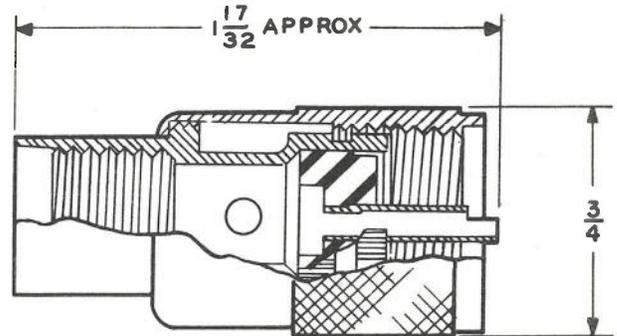


Figure 18.

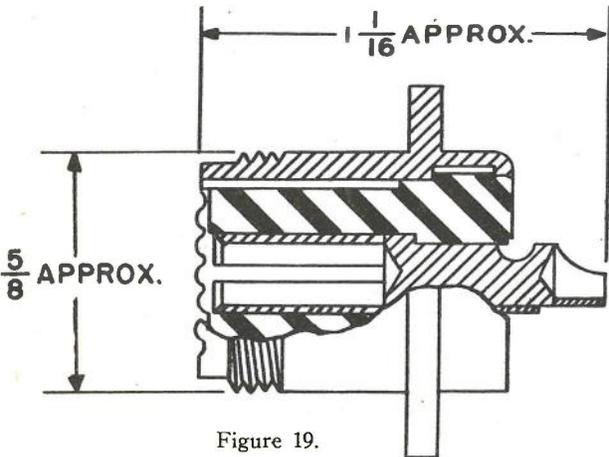


Figure 19.

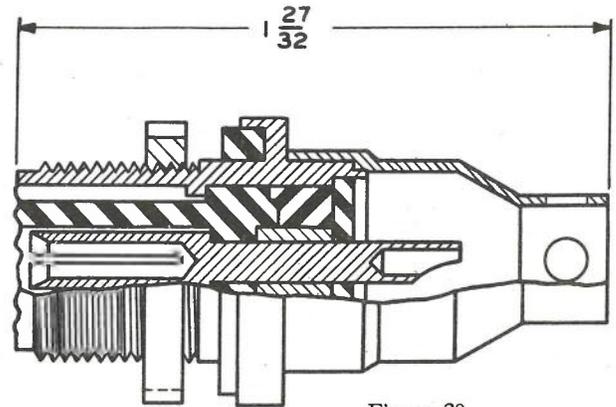


Figure 20.

Type UHF connectors and adapters (small coaxial)

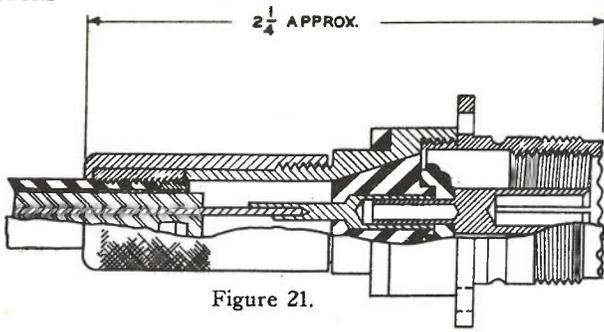


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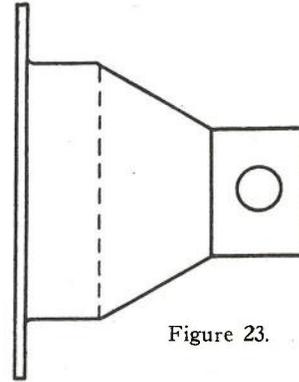


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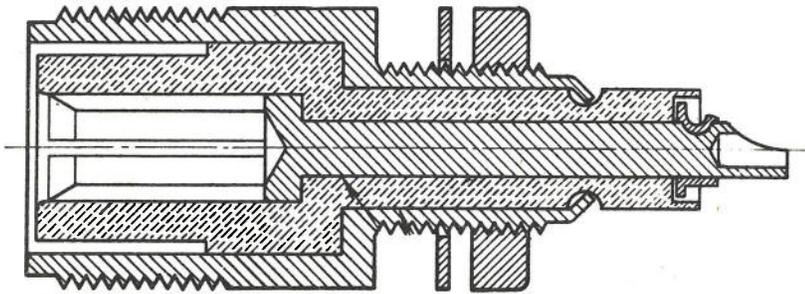


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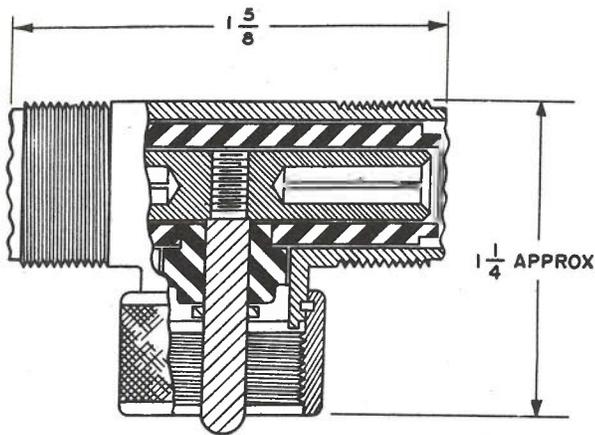


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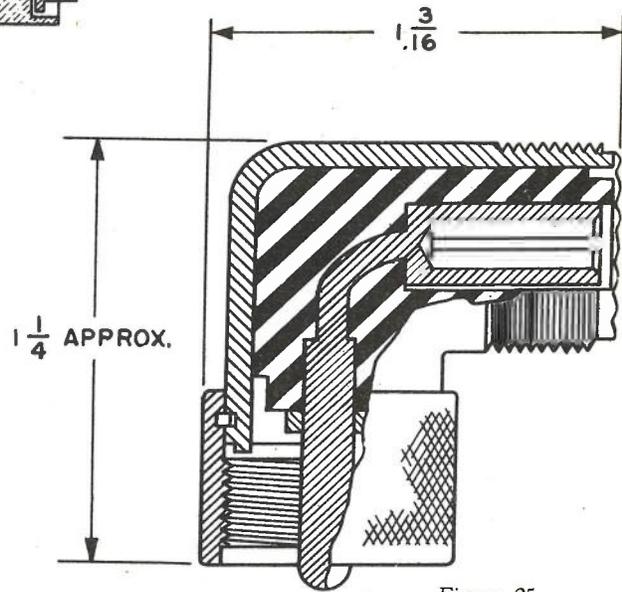


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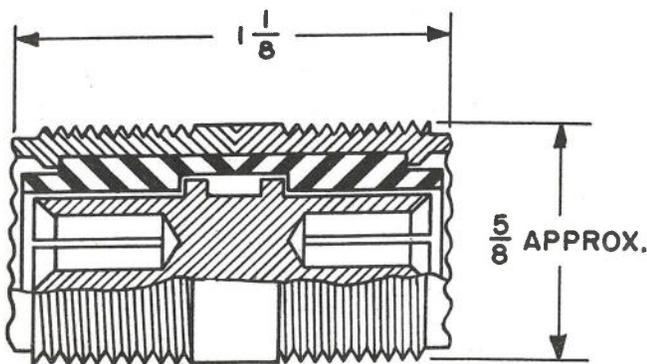


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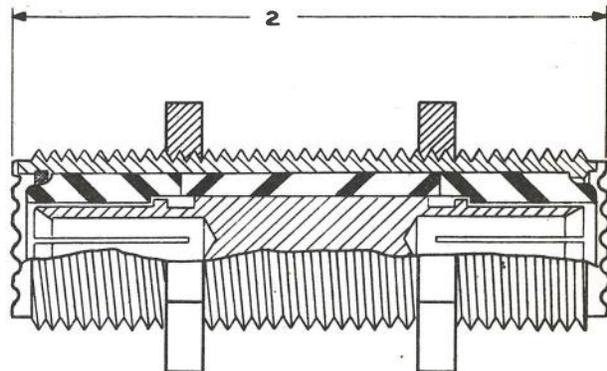


Figure 27.

Type UHF connectors and adapters (small coaxial) (cont.).

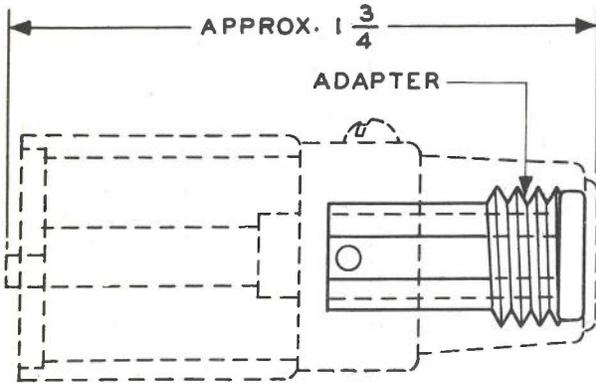


Figure 28.

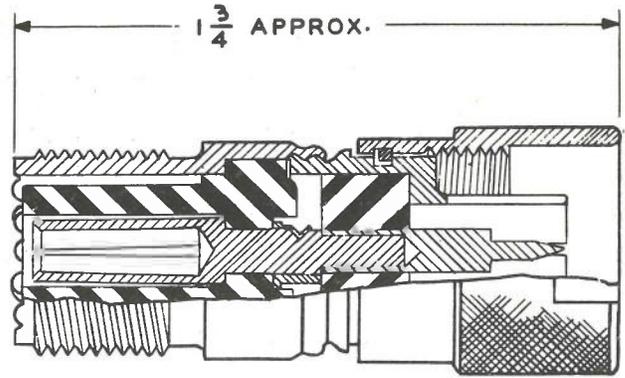


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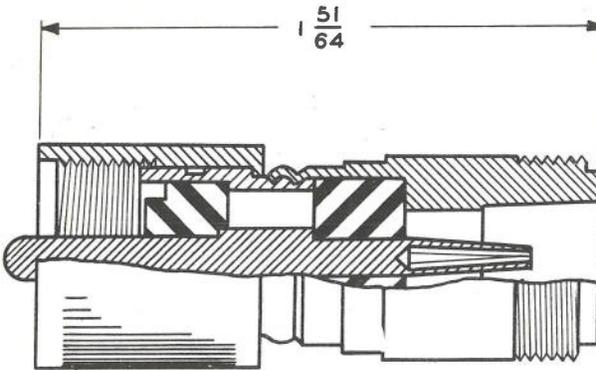


Figure 30.

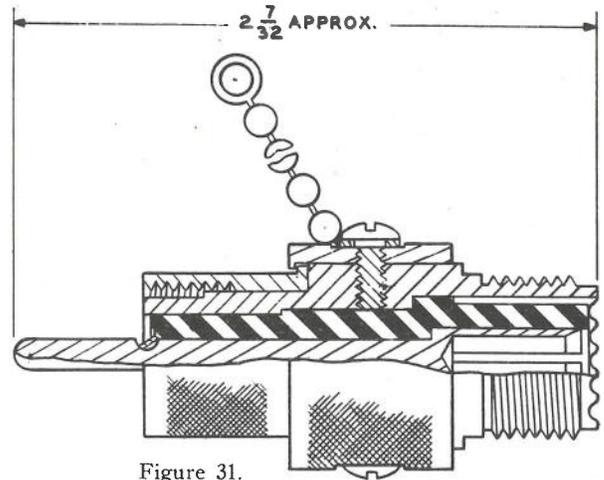


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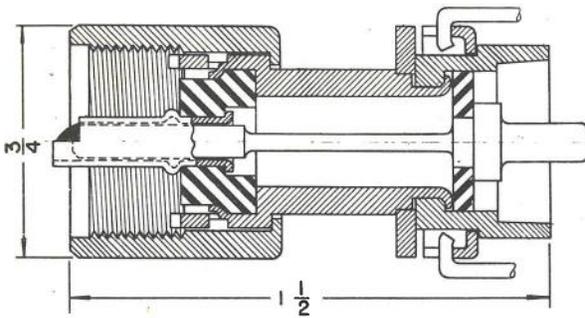


Figure 32.

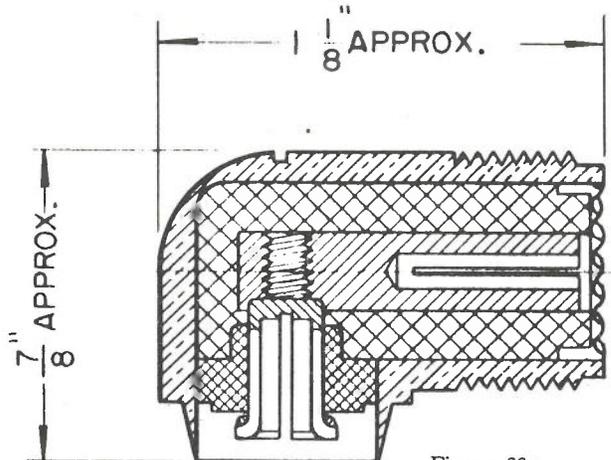


Figure 33

Type UHF connectors and adapters (small coaxial) (cont.).

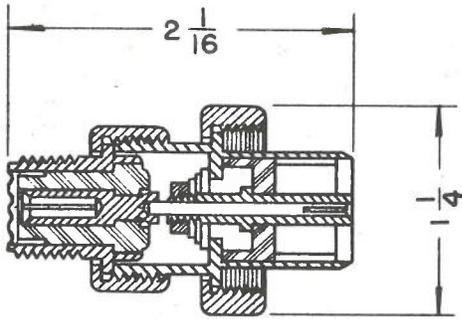


Figure 34.

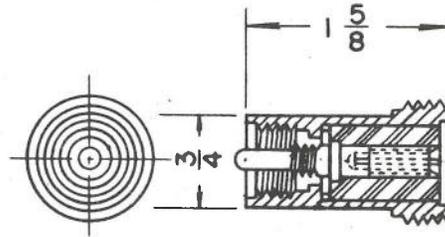


Figure 35.

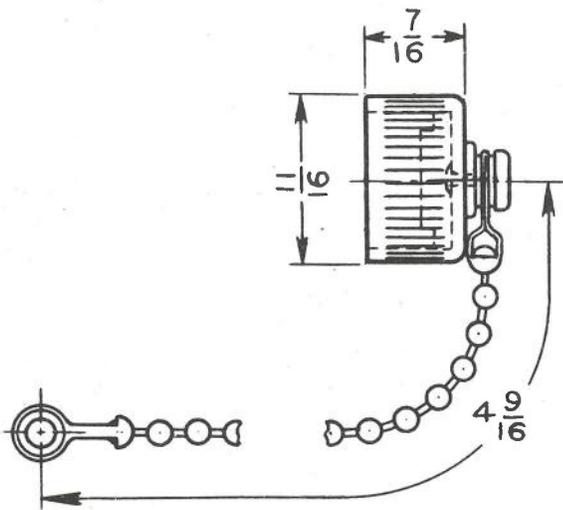


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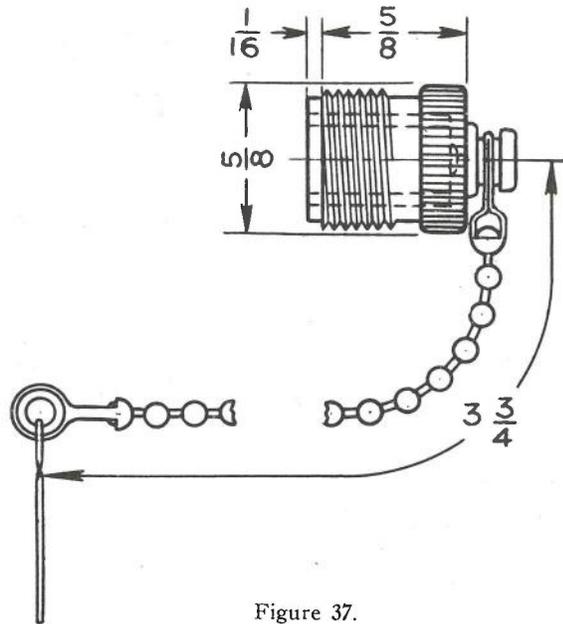
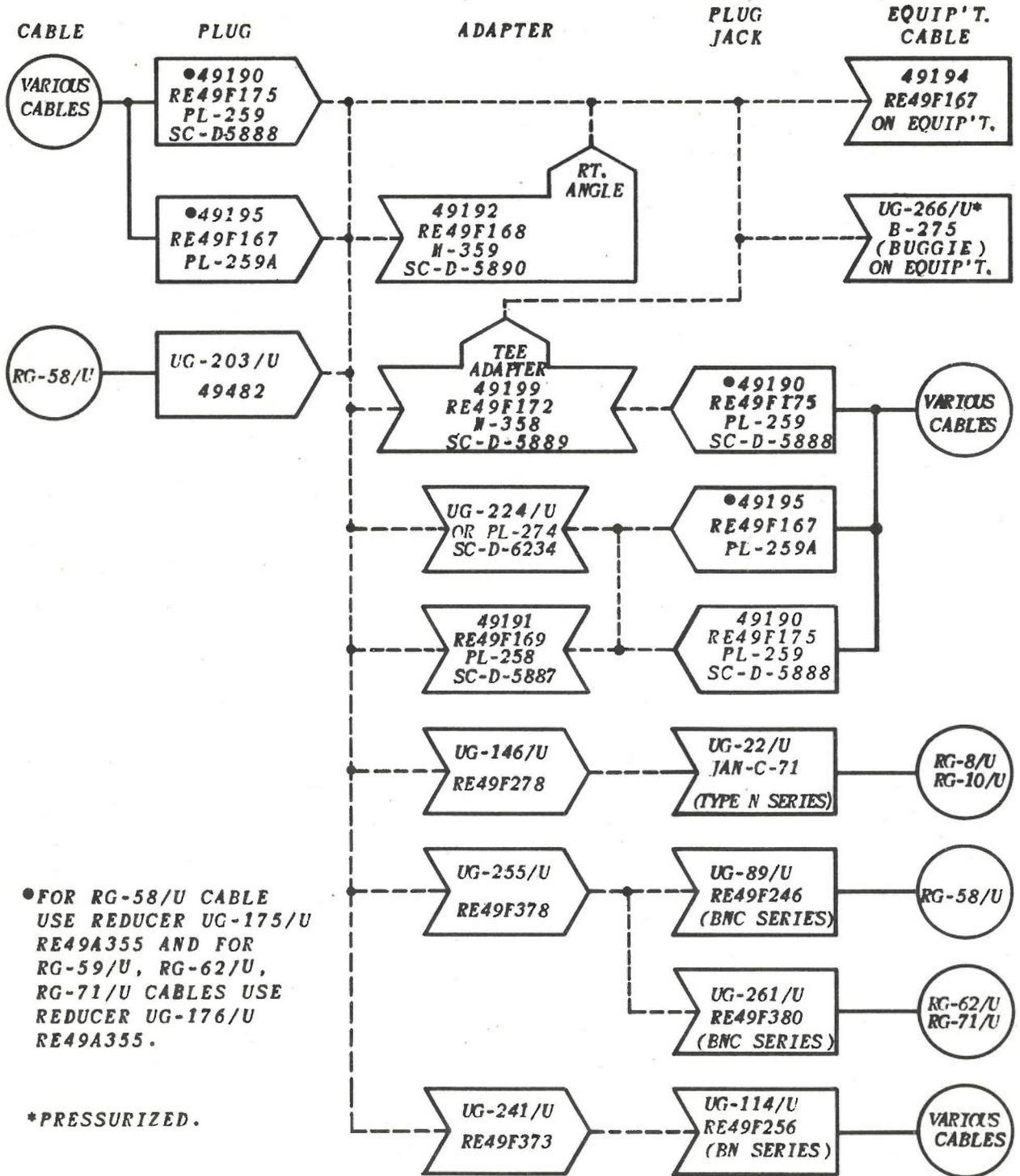


Figure 37.

Type UHF connectors and adapters (small coaxial) (cont.).



Type UHF connectors.

**UHF connectors and adapters (Small twin)**

AN type	Name	Category	Fig no.	Navy type	ANRFCCC or Navy draw. no.	Army or other type no.	Army or other draw. no.	For use with cable RG- /U	Weather proof	Notes	Mfg. code
UG-102/U	Plug.....	1	38	.....	.....	PL-284	SC-D-5940	22	No	.....	3, 74
UG-103/U	Receptacle.....	1	39	.....	.....	SO-264	SC-D-5941	22	No	.....	3
UG-104/U	Adapter (Rt. Angle).....	1	40	.....	.....	PL-293	SC-D-5943	.....	No	(1) Male end	3, 74
UG-105/U	Adapter (Straight).....	1	41	.....	.....	PL-285	SC-D-10870	.....	No	(2) Fem. ends	3
UG-106/U	Hood.....	1	23	49193	RE 49F 167	M-360	SC-B-5849	22	No	.....	9, 74, 67 41, 3
.....	Adapter (Bulkhead).....	1	42	.....	.....	PL-275	SC-D-10097	.....	No	(1)	3
UG-196/U	Adapter (Tee).....	2	24	.....	.....	.....	.....	.....	No	(1) Male (2) Fem. ends	3

Use same cap and chain assemblies as those listed for small coaxial cables.

NOTE:

(1) Similar to UG-105/U except longer and body is threaded full length and has two hex nuts for panel or bulkhead mounting.

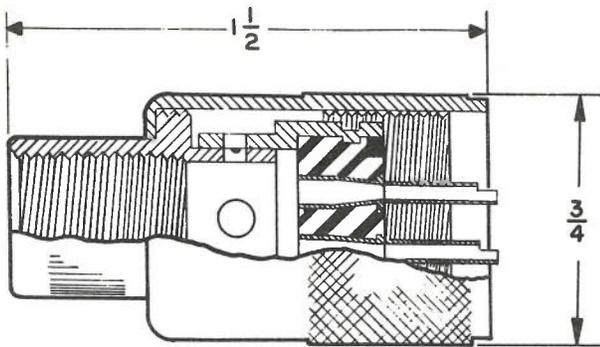


Figure 38.

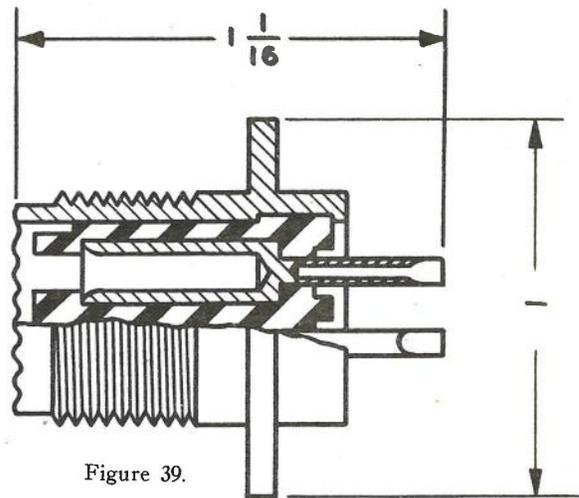


Figure 39.

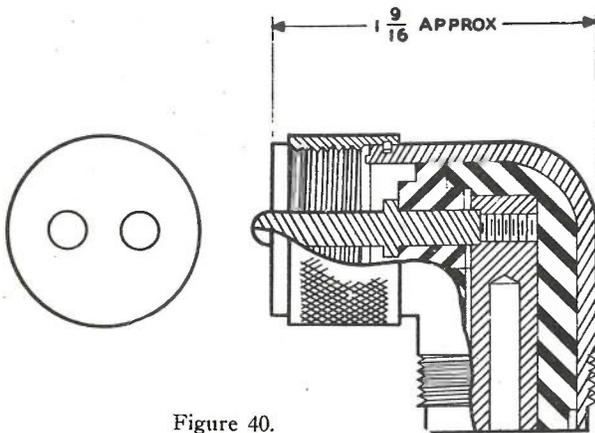


Figure 40.

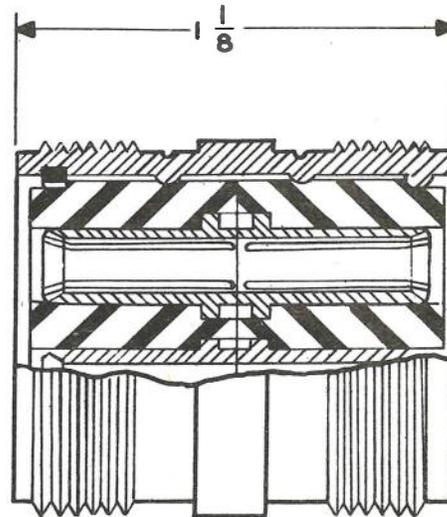


Figure 41.

Type UHF connectors and adapters (small twin)

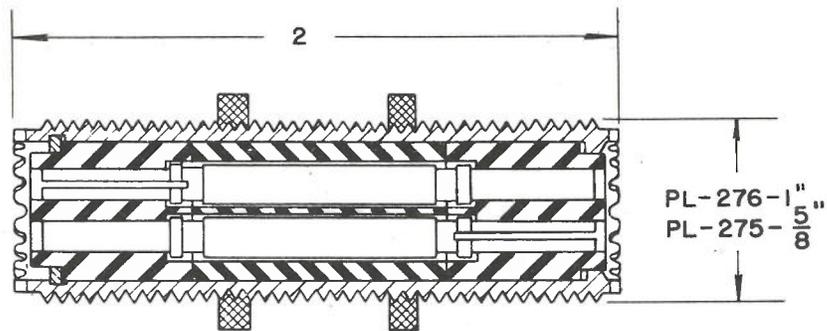
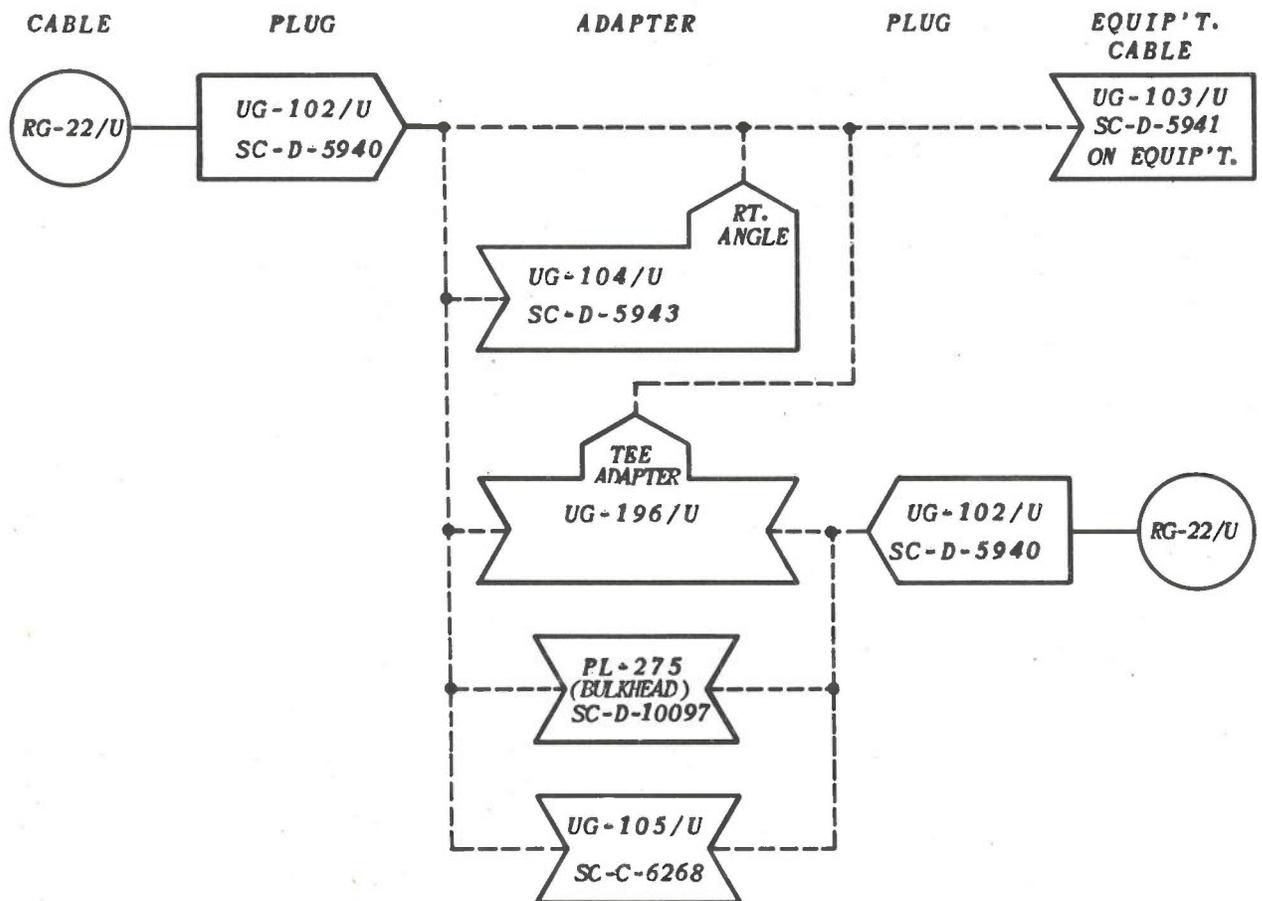


Figure 42.

Type UHF connectors and adapters (small twin) (cont.).



Type UHF twin connectors (small non-weather)

UHF connectors and adapters (Large twin)

AN type	Name	Category	Fig no.	Navy type	ANR FCCC or Navy draw. no.	Army or other type no.	Army or other draw. no.	For use with cable RG- /U	Weather proof	Notes	Mfg. code
.....	Plug.....	1	43	49188	RE 49F 173	PL-295	.....	57	No	.....	3
.....	Receptacle.....	1	44	49196	RE 49F 173	SO-265	.....	57	No	.....	3
.....	Adapter (Rt. Angle).....	1	45	49198	RE 49F 171	PL-325	.....	.....	No	(1) Male (2) Fem. ends	3
.....	Adapter (Straight).....	1	41	49189	RE 49F 174	PL-305	.....	.....	No	(2) Fem. ends	3
.....	Adapter (Bulkhead).....	1	42	.....	.....	PL-276	.....	.....	No	(1)	3
.....	Hood.....	1	23	49208	RE 49F 173	M-365	.....	57	No	.....	3

NOTE:

(1) Similar to 49189 except with a longer body and threaded full length and with two hex nuts for panel or bulkhead mounting.

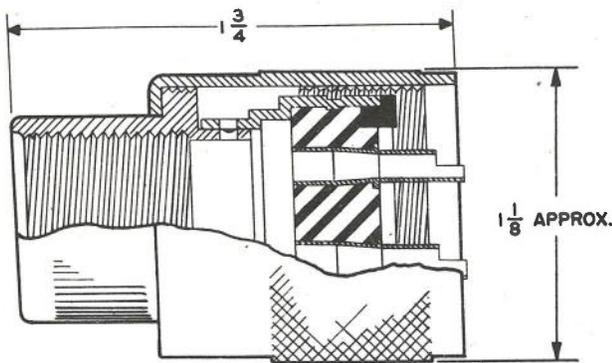


Figure 43.

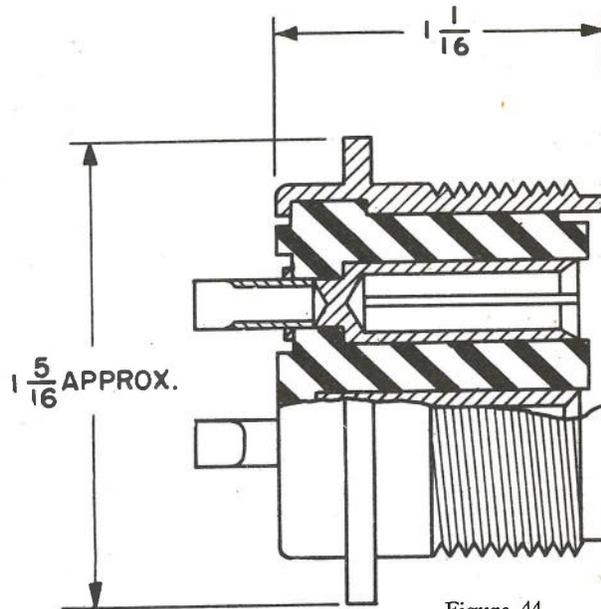


Figure 44.

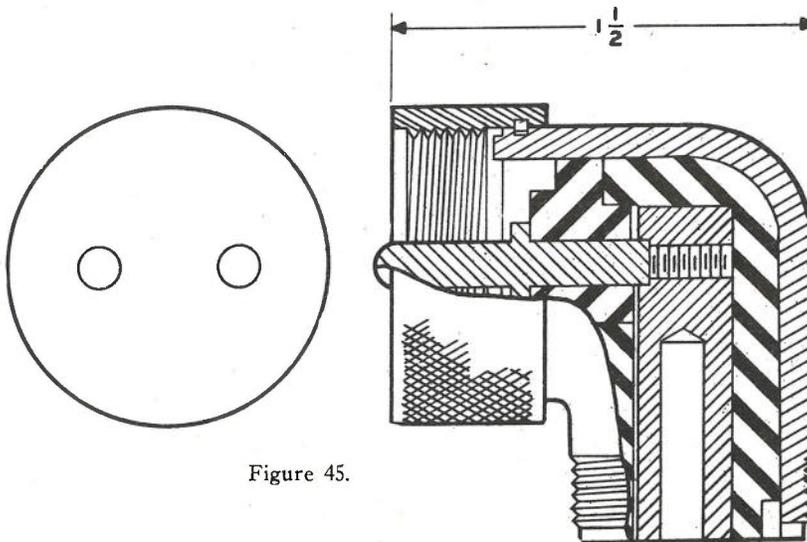
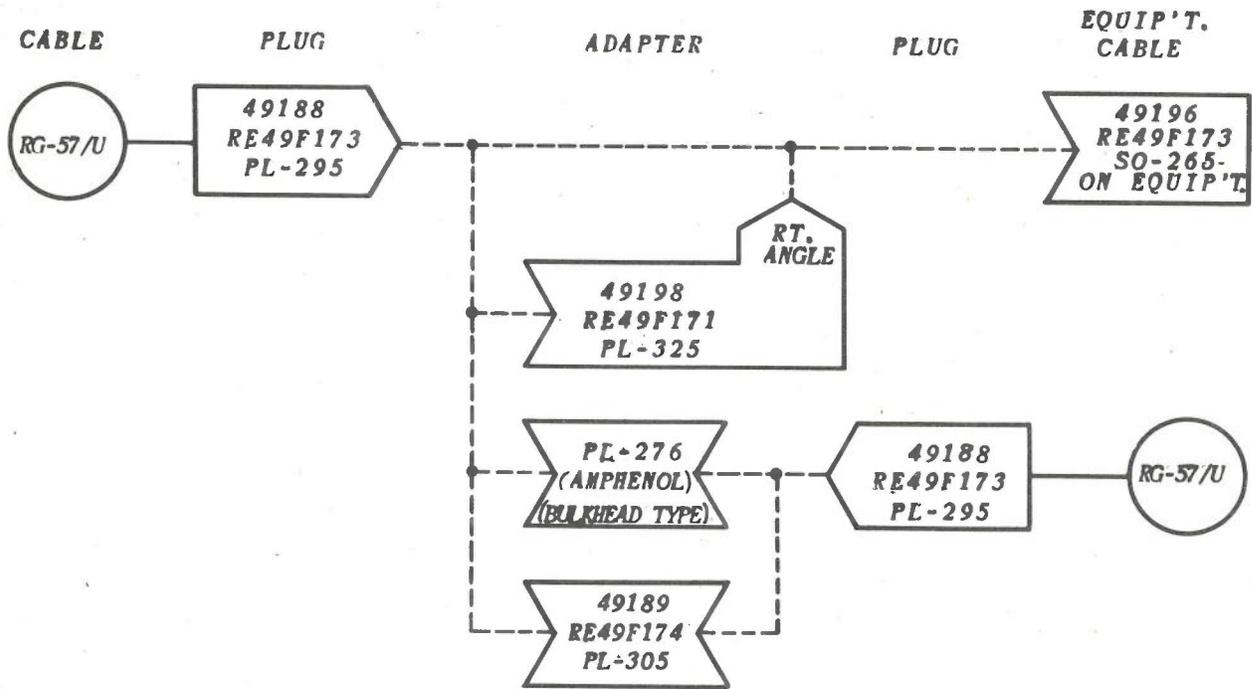


Figure 45.

Type UHF connectors and adapters (large twin).



Type UHF twin connectors (large nonweatherproof)

**UHF connectors and adapters (Large coaxial)**

AN type	Name	Category	Fig no.	Navy type	ANRFCCC or Navy draw. no.	Army or other type no.	Army or other draw. no.	For use with cable RG- /U	Weather proof	Notes	Mfg. code
.....	Plug.....	3	.....	.....	.....	Amphenol 83-21SP	.....	34	No	.....	3
.....	Plug.....	3	.....	.....	.....	Amphenol 83-787	.....	14	No	(1)	3
.....	Receptacle.....	3	.....	.....	.....	Amphenol 83-21R	.....	.....	No	.....	3
.....	Adapter (Rt. Angle).....	3	.....	.....	.....	Amphenol 83-21AP	.....	.....	No	(1) Male (2) Fem. ends	3
.....	Adapter (Straight).....	3	.....	.....	.....	Amphenol 83-21J	.....	.....	No	(2) Fem. ends	3
.....	Cap & Chain Assembly.....	3	.....	.....	.....	Amphenol 83-2AC	.....	.....	Yes	For use with 83-21R	3

NOTE:

(1) Similar to Amphenol 83-21SP with cable end reduced in diameter to fit RG-14/U Cable.

5. Type N Connectors

These connectors are known as type N and are designed for use with RG-8/U or similar size cables. These connectors are available in both weatherproof and non-weatherproof types. The weatherproof types are commonly used and are recommended for all applications whether or not the connector is exposed to moisture. The non-weatherproof types can be used to advantage on cable assemblies or special assemblies inside equipments where they will not be exposed to the weather.

The characteristic impedance of N connectors is 50 ohms. They may be used with 70 ohm cables where impedance matching is not necessary. 70 ohm plugs and jacks are available for use with 70 ohm cables where impedance matching is necessary.

The weatherproof type N connectors require special care in assembling to the cable.

Type N connectors and adapters (50 ohms)

AN type	Name	Category	Fig no.	Navy type	ANRFCCC or Navy draw. no.	Army or other type no.	Army or other draw. no.	For use with cable RG- /U	Weather proof	Notes	Mfg. code
UG-9/U	Plug.....	1	46	49426	.....	.....	Rad. Lab. 2306	5, 21	No	.....	46, 74
UG-12/U	Plug.....	1	46	49205	RE 49F 180	.....	Rad. Lab. 2306	8, 9, 10	No	.....	74, 46, 3 52
UG-15/U	Plug.....	3	46	49288	.....	.....	Rad. Lab. 2306	5, 21	No	.....	46, 74, 24
UG-18/U	Plug.....	1	47	49286	JAN-C-71	.....	.....	5, 21	Yes	.....	46, 74, 9 51, 67
UG-18A/U	Plug.....	2	.....	.....	RE 49F 402	.....	.....	5, 21	Yes	(1)	.....
UG-18B/U	Plug.....	2	.....	.....	RE 49F 402	.....	.....	5, 21	Yes	(2)	.....
UG-21/U	Plug.....	1	47	49268	JAN-C-71	.....	.....	8, 9, 10	Yes	.....	46, 74, 9 51, 67, 27 75
UG-21A/U	Plug.....	2	.....	.....	RE 49F 402	.....	.....	8, 9, 10	Yes	(1)	.....
UG-21B/U	Plug.....	2	.....	.....	RE 49F 402	.....	.....	8, 9, 10	Yes	(3)	.....
UG-24/U	Plug.....	.....	.....	49284	.....	.....	.....	.....	.....	Superseded by UG-21/U	.....
UG-167/U	Plug.....	2	48	49483A	RE 49F 215	.....	.....	17, 18	Yes	(4)	10
UG-188/U	Plug.....	3	46	.....	.....	W.E. D-168504	B.T.L. BA-103874	29, 55, 58	No	(5)	.....
UG-204/U	Plug.....	2	49	.....	RE 49F 361	.....	Rad. Lab. C-6554A	14	Yes	(6)	.....
UG-11/U	Jack.....	1	50	49428	.....	.....	Rad. Lab. 2309	5, 21	No	.....	46, 74
UG-14/U	Jack.....	1	50	49296	RE 49F 180	.....	Rad. Lab. 2309	8, 9, 10	No	.....	46, 74
UG-17/U	Jack.....	3	52	49297	.....	.....	Rad. Lab. 2309	38	No	.....	74, 46, 24
UG-20/U	Jack.....	1	51	49299	JAN-C-71	.....	.....	5, 21	Yes	.....	74, 46, 9 51, 67
UG-20A/U	Jack.....	2	.....	.....	RE 49F 402	.....	.....	5, 21	Yes	(1)	.....
UG-20B/U	Jack.....	2	.....	.....	RE 49F 402	.....	.....	5, 21	Yes	(3)	.....
UG-23/U	Jack.....	1	51	49298	JAN-C-71	.....	.....	8, 9, 10	Yes	.....	46, 74, 9 51, 67, 27 75
UG-23A/U	Jack.....	2	.....	.....	RE 49F 402	.....	.....	8, 9, 10	Yes	(1)	.....
UG-23B/U	Jack.....	2	.....	.....	RE 49F 402	.....	.....	8, 9, 10	Yes	(3)	.....
UG-26/U	Jack.....	.....	.....	49445	.....	.....	.....	.....	.....	Superseded by UG-23/U	.....
UG-263/U	Jack (Pressurized)	2	.....	.....	RE 49F 381	.....	.....	.....	.....	(7)	.....
UG-10/U	Panel Jack.....	1	52	49427	.....	.....	Rad. Lab. 2309	5, 21	No	.....	74, 46
UG-13/U	Panel Jack.....	1	52	49206	RE 49F 180	.....	Rad. Lab. 2309	8, 9, 10	No	.....	74, 46, 9 52
UG-16/U	Panel Jack.....	3	50	49284	.....	.....	Rad. Lab. 2309	38	No	.....	74, 46, 24
UG-19/U	Panel Jack.....	1	53	49287	JAN-C-71	.....	.....	5, 21	Yes	.....	74, 46, 9 51, 67
UG-19A/U	Panel Jack.....	2	.....	.....	RE 49F 402	.....	.....	5, 21	Yes	(1)	.....
UG-19B/U	Panel Jack.....	2	.....	.....	RE 49F 402	.....	.....	5, 21	Yes	(2)	.....
UG-22/U	Panel Jack.....	1	53	49269	JAN-C-71	.....	.....	8, 9, 10	Yes	.....	46, 74, 9 51, 67, 27 75
UG-22A/U	Panel Jack.....	2	.....	.....	RE 49F 402	.....	.....	8, 9, 10	Yes	(1)	.....
UG-22B/U	Panel Jack.....	2	.....	.....	RE 49F 402	.....	.....	8, 9, 10	Yes	(3)	.....
UG-25/U	Panel Jack.....	.....	.....	49285	.....	.....	.....	.....	.....	Superseded by UG-22/U	.....
UG-159/U	Panel Jack.....	2	54	.....	.....	.....	.....	5, 21	Yes	(8)	67
UG-160/U	Panel Jack.....	2	54	.....	.....	.....	.....	8, 9, 10	Yes	(8)	67

## Type N connectors and adapters (50 ohms) (continued)

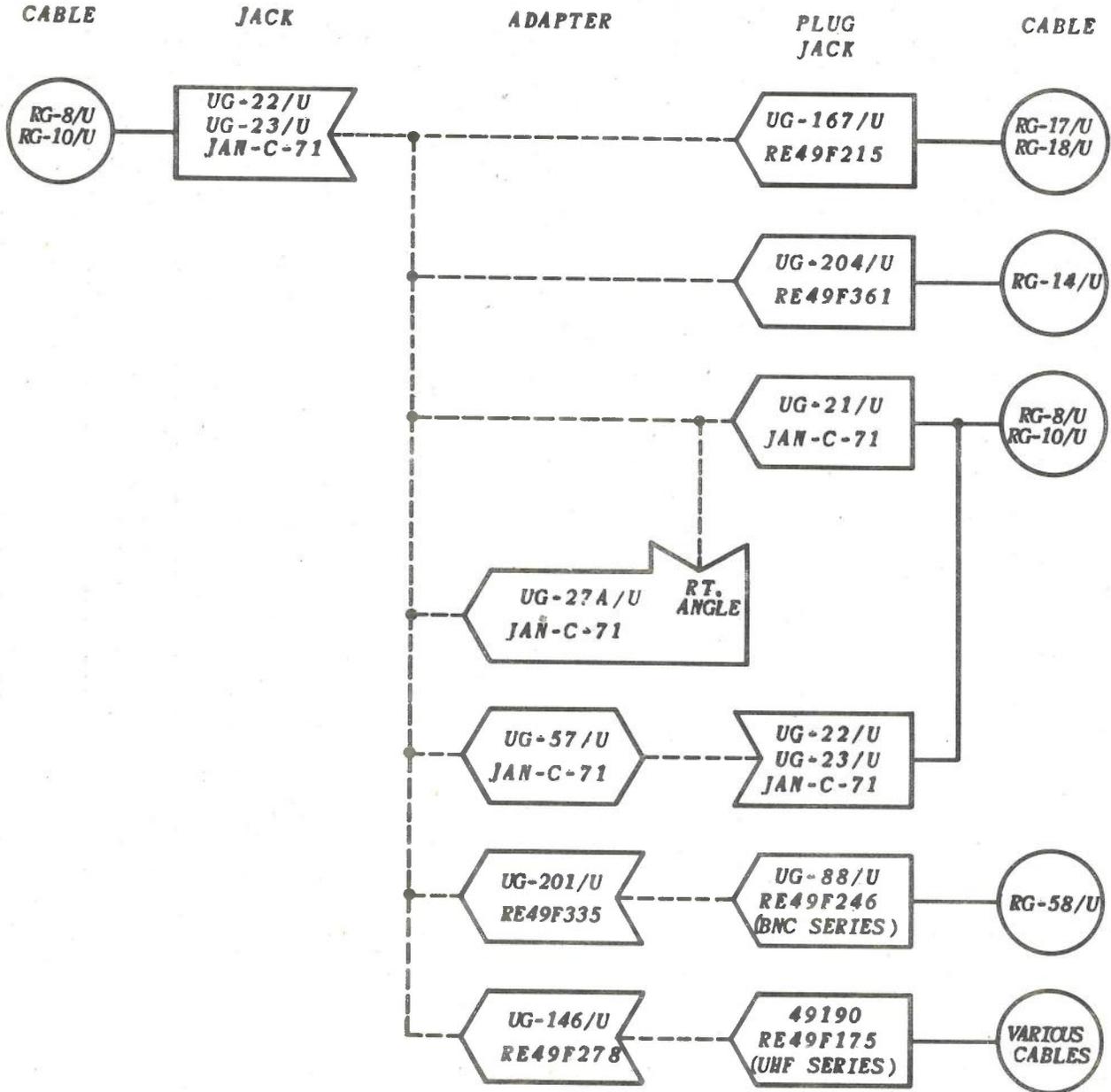
AN type	Name	Category	Fig no.	Navy type	ANRFCCC or Navy draw. no.	Army or other type no.	Army or other draw. no.	For use with cable RG- /U	Weather proof	Notes	Mfg. code
UG-58/U	Receptacle.....	1	55	49470	JAN-C-71				Yes		74, 9, 27 46, 51, 67
UG-231/U	Receptacle.....	3			RA 49F 246			58		(9)	67 9, 74, 67 41, 3
UG-106/U	Hood.....	1	23	49193	RE 49F 167	M-360	SC-B-5849	8, 9, 10 11, 12, 13 63	No		
MX-564/U	Armor Clamp Cap & Chain Assembly.....	2			RE 49A 403			10, 12	Yes	(10)	
UG-29/U	Adapter (Straight).....	1	59	49451	JAN-C-71				Yes	(2) Fem. ends	9, 27, 46 51, 67
UG-30/U	Adapter (Straight).....	1	61		JAN-C-71				Yes	(2) Fem. ends pressurized	9, 27, 67 51
UG-57/U	Adapter (Straight).....	1	60		JAN-C-71				Yes	(2) Male ends	9, 27, 46 51, 67
UG-27/U	Adapter (Rt. Angle).....	3							Yes		74, 9
UG-27A/U	Adapter (Rt. Angle).....	1	56	49267	JAN-C-71		Rad. Lab. B-2666		Yes	(11)	51, 67, 27 46, 75, 9
UG-202/U	Adapter (Rt. Angle).....	2	58		RE 49F 405				Yes	(12)	51
UG-28/U	Adapter (Tee).....	3	57	49450					Yes	3 Fem. ends	9, 24, 67
UG-107/U	Adapter (Tee).....	1	57		JAN-C-71				Yes	1 Male 2 Fem. ends	9, 27, 46 51, 67
UG-201/U	Adapter (N to BNC).....									(13)	
UG-83/U	Adapter (N to UHF).....									(14)	
UG-146/U	Adapter (N to UHF).....									(14)	
UG-108/U	Adapter (N to LN).....	2	64		RE 49F 288				Yes	(15)	15, 27
UG-213/U	Adapter (N to LN).....	2			RE 49F 368				Yes	(16)	15, 27
UG-110/U	Adapter (N to SKL).....									(17)	
UG-131/U	Adapter (N to SKL).....									(17)	
UG-7/AP	Adapter (N to Holmdel).....	3	62			W.E. D-167284			No	(18)	
UG-8/AP	Adapter (N to Holmdel).....	3	63			W.E. D-166702			No	(19)	
UG-270/U	Adapter (N to UG-154/U).....									(20)	71
UG-271/U	Adapter (N to UG-154/U).....									(20)	71
UG-32/U	Adapter (N to Rigid Line).....	2			RE 49F 187			8, 9, 10 11, 12, 13	Yes	(21, 22)	74
UG-33/U	Adapter (N to Rigid Line).....	2			RE 49F 187			8, 9, 10 11, 12, 13	Yes	(22, 23)	74
UG-272/U	Adapter (N to Rigid Line).....	2			RE 49F 187			8, 9, 10 11, 12, 13	Yes	(22, 24)	74

## NOTES.

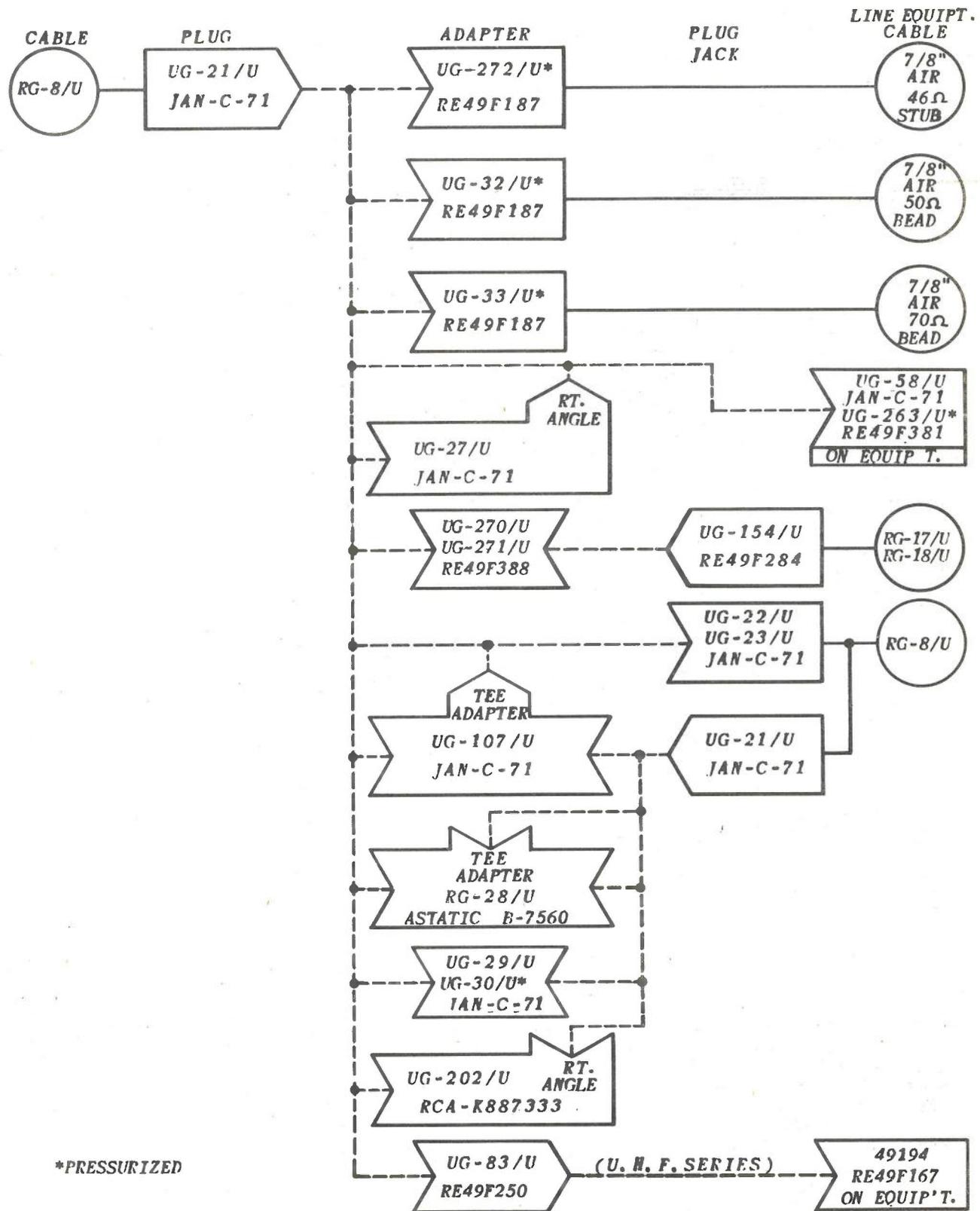
- (1) Improved mechanically.
- (2) Similar to UG-18A/U, UG-19A/U and UG-20A/U with lower reflection at microwave frequencies.
- (3) Similar to UG-21A/U, UG-22A/U and UG-23A/U except with lower reflection at microwave frequencies.
- (4) Connects to RG-17/U or RG-18/U cable and couples to UG-23/U or similar jack.
- (5) Similar to UG-12/U except for use with 0.116 D.O.D. cables such as RG-58/U.
- (6) Similar to UG-21/U except back end is the same as UG-100/U
- (7) Mounts on panel and cable fastens directly to jack inside of equipment.
- (8) Single hole panel mounting.
- (9) Similar to UG-58/U except has special connection for RG-58/U cable.
- (10) Used to clamp armor.
- (11) Similar to UG-27/U except smaller in size and has lower electrical reflection.
- (12) Similar to UG-27A/U except one leg is lengthened and provided with a flange for panel mounting.
- (13) See BNC Section.
- (14) See UHF Section.
- (15) Mates with UG-21/U or similar at one end and UG-100/U at other end.
- (16) Mates with UG-23/U or similar at one end and UG-100/U at other end.
- (17) See SKL Section.

**RESTRICTED**

- (18) Mates with Holmdel plug at one end and UG-23/U or similar at other end.
- (19) Mates with Holmdel jack at one end and UG-21/U or similar at other end.
- (20) See connectors for large size cables.
- (21) Connects to 7/8", 50 ohm, bead line. Use UG-21/U or equivalent to connect cable to this adapter.
- (22) Installation Instructions RE 49F 269.
- (23) Connects to 7/8", 70 ohm, bead line (Impedance discontinuity).
- (24) Connects to 7/8", 46 ohm, stub line.



Type N series connectors for RG-8/U or RG-10/U to RG-8/U, RG-10/U, RG-14/U, RG-17/U, RG-18/U, and RG-58/U cables.



Type N series connectors for RG-8/U or RG-10/U cable.

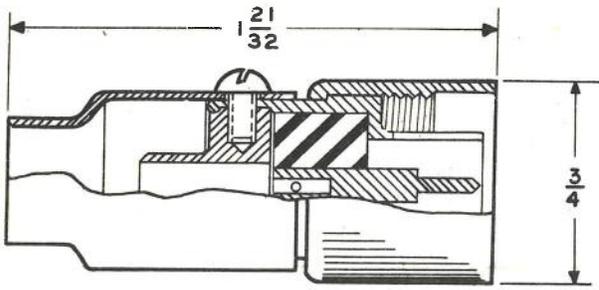


Figure 46.

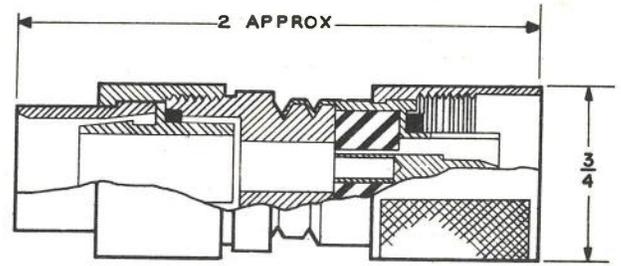


Figure 47.

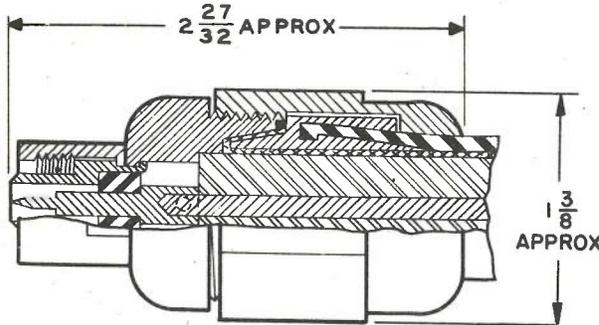


Figure 48.

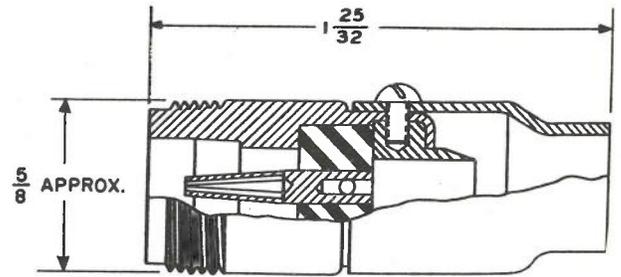


Figure 50.

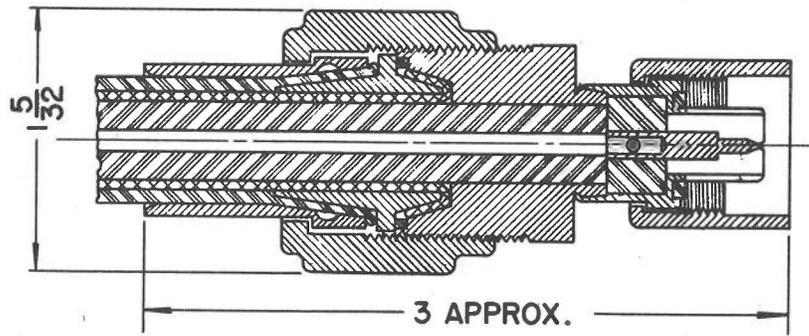


Figure 49.

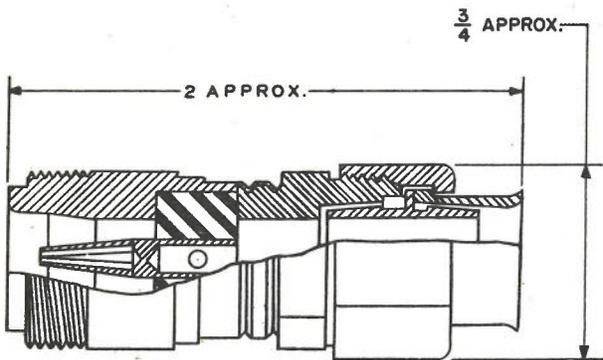


Figure 51.

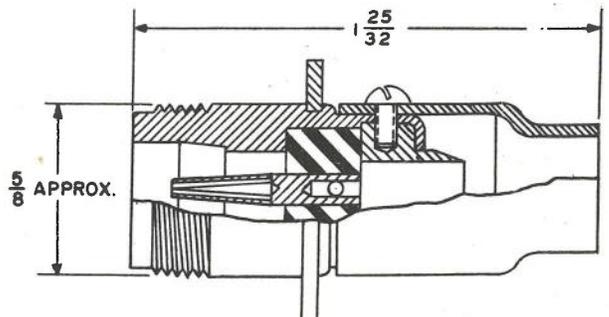


Figure 52.

Type N connectors and adapters (50 ohms).

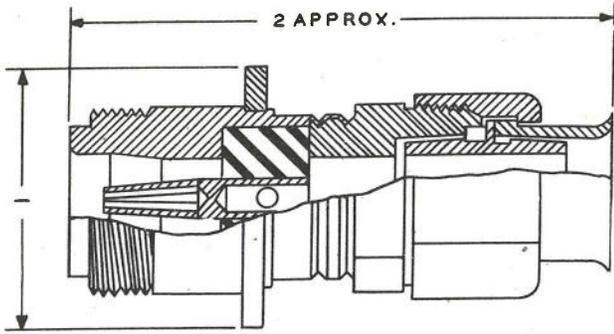


Figure 53.

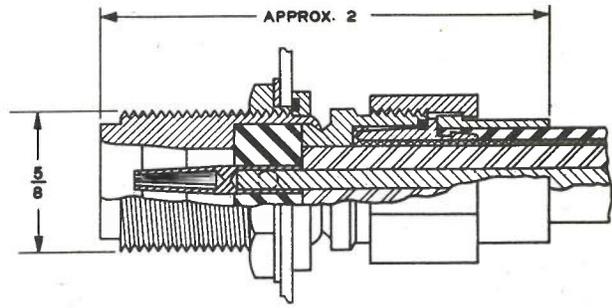


Figure 54.

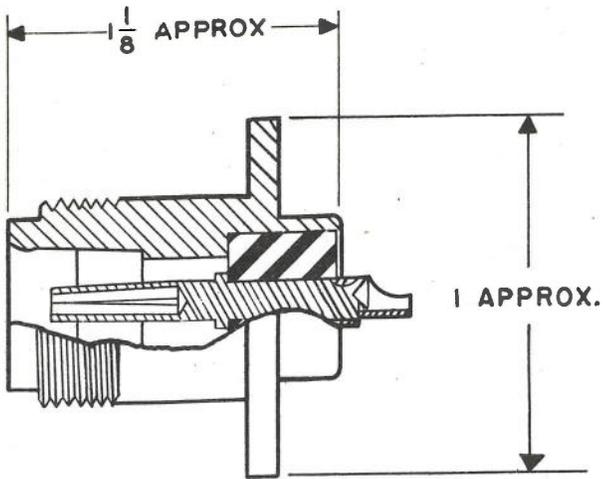


Figure 55.

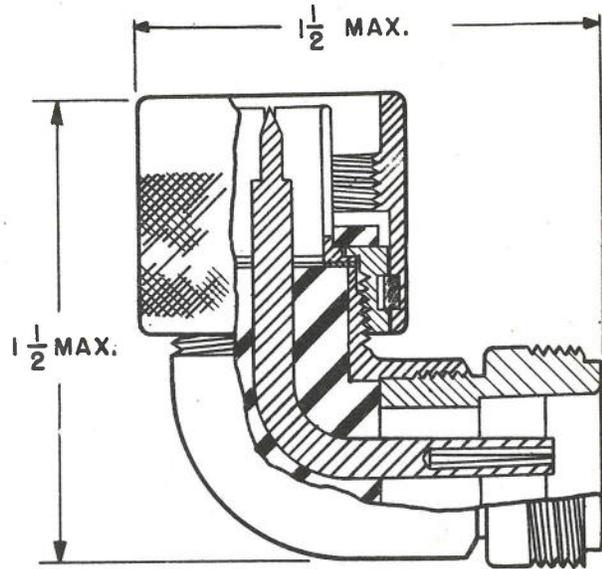


Figure 56.

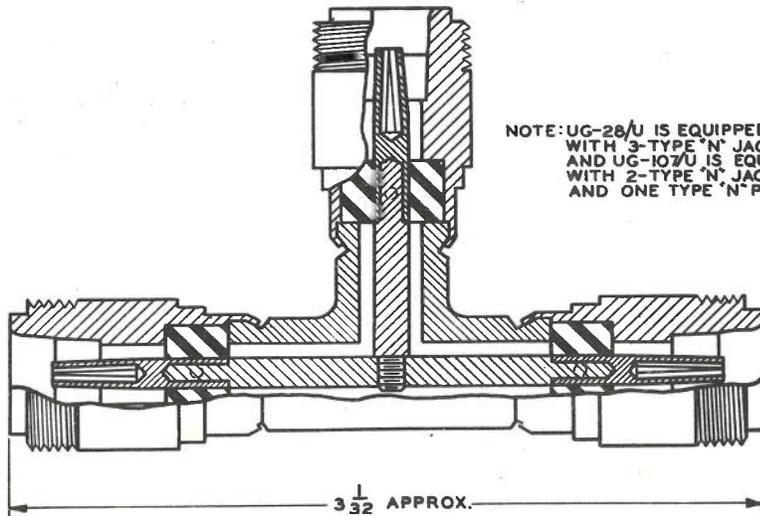


Figure 57.

NOTE: UG-28/U IS EQUIPPED WITH 3-TYPE 'N' JACKS AND UG-107/U IS EQUIPPED WITH 2-TYPE 'N' JACKS AND ONE TYPE 'N' PLUG.

Type N connectors and adapters (50 ohms) (cont.).

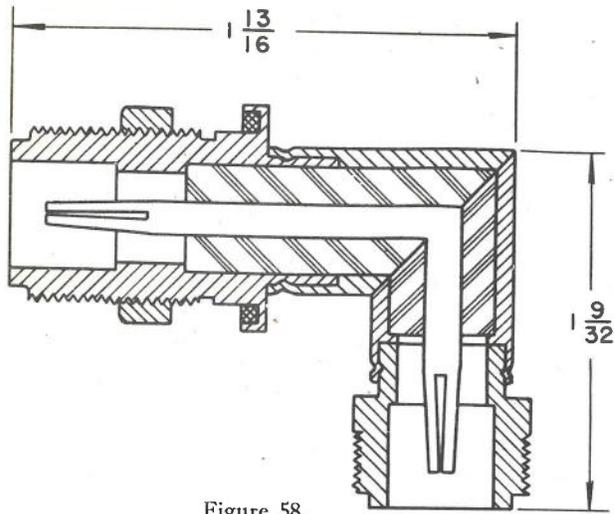


Figure 58.

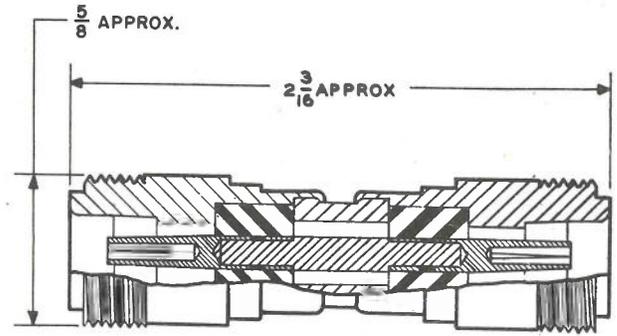


Figure 59.

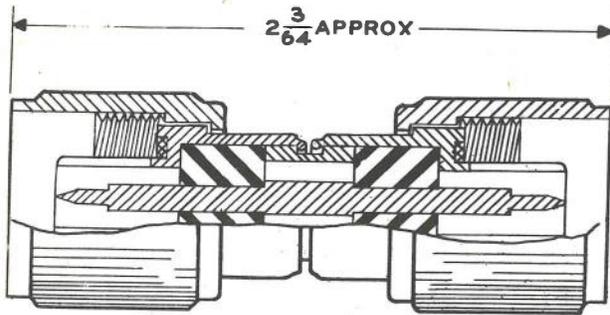


Figure 60.

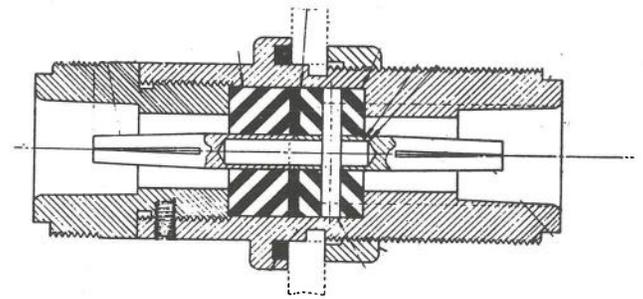


Figure 61.

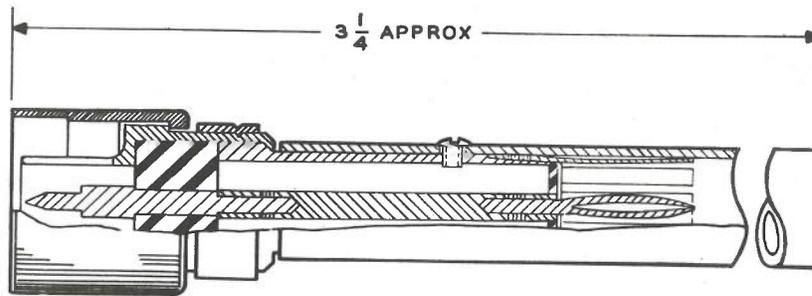


Figure 62.

Type N connectors and adapters (50 ohms) (cont.).

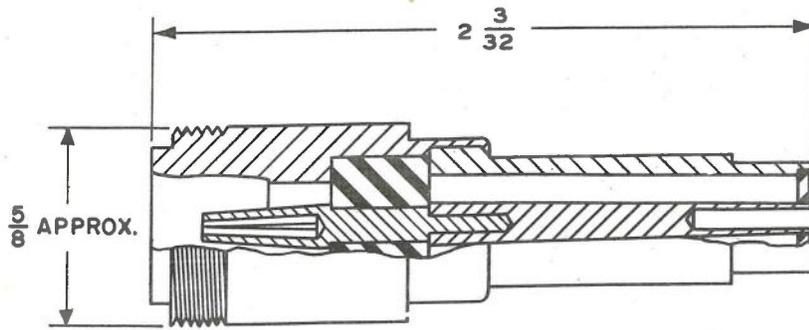


Figure 63.

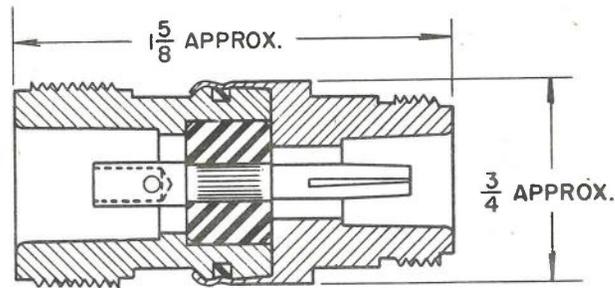


Figure 64.

Type N connectors and adapters (50 ohms) (cont.).

**Type N connectors (70 ohms)**

AN type	Name	Category	Fig no.	Navy type	ANRFCCC or Navy draw. no.	Army or other type no.	Army or other draw. no.	For use with cable RG- /U	Weather proof	Notes	Mfg. code
UG-91/U	Plug.....	1	47	.....	JAN-C-71	.....	.....	6	Yes	(1)	46, 51, 75
UG-91A/U	Plug.....	2	.....	.....	RE 49F 402	.....	.....	6	Yes	(1, 2)	.....
UG-92/U	Jack.....	1	51	.....	JAN-C-71	.....	.....	6	Yes	(1)	46, 51, 75
UG-92A/U	Jack.....	2	.....	.....	RE 49F 402	.....	.....	6	Yes	(1, 2)	.....
UG-93/U	Panel Jack.....	1	53	.....	JAN-C-71	.....	.....	6	Yes	(1)	46, 51, 75
UG-93A/U	Panel Jack.....	2	.....	.....	RE 49F 402	.....	.....	6	Yes	(1, 2)	.....
UG-94/U	Plug.....	1	47	.....	JAN-C-71	.....	.....	11, 12, 13	Yes	(1)	46, 51, 75
UG-94A/U	Plug.....	2	.....	.....	RE 49F 402	.....	.....	11, 12, 13	Yes	(1, 2, 3)	.....
UG-95/U	Jack.....	1	51	.....	JAN-C-71	.....	.....	11, 12, 13	Yes	(1)	46, 51, 75
UG-95A/U	Jack.....	2	.....	.....	RE 49F 402	.....	.....	11, 12, 13	Yes	(1, 2, 3)	.....
UG-96/U	Panel Jack.....	1	53	.....	JAN-C-71	.....	.....	11, 12, 13	Yes	(1)	46, 51, 75
UG-96A/U	Panel Jack.....	2	.....	.....	RE 49F 402	.....	.....	11, 12, 13	Yes	(1, 2, 3)	.....

**NOTES:**

- (1) These connectors should only be used where 70 ohm impedance matching is necessary. They will not properly mate with any of the 50 ohm N connectors.
- (2) Improved mechanically.
- (3) Use MX-564/U to clamp armor for shipboard.

6. HN Connectors

These connectors are known as HN, high-voltage, connectors. They are designed for use with RG-8/U cable. They have constant impedance, 52 ohms, and are weatherproof. They can be used up to 4,000 volts peak, at 50,000 feet altitude. Their voltage rating is improved by the application of Dow-Corning #4 ignition sealing compound to the tapered cable dielectric surfaces, and to the connector dielectric mating surfaces. Certain adapters are available for use between these connectors and large size cable connectors and also to certain types of rigid lines. (See adapters to rigid lines.)

Type HN connectors

AN type	Name	Category	Fig no.	Navy type	ANRFCC or Navy draw. no.	Army or other type no.	Army or other draw. no.	For use with cable. RG- /U	Weather proof	Notes	Mfg. code
UG-59A/U	Plug.....	2	65	.....	RE 49F 225	B.T.L. ESL-660067	.....	8	Yes	(1, 7)	9, 74
UG-60A/U	Jack.....	2	66	.....	RE 49F 225	B.T.L. ESL-660078	.....	8	Yes	(1, 7)	9, 74
UG-61A/U	Jack M. P.....	2	67	.....	RE 49F 225	B.T.L. ESL-660078	.....	8	Yes	(1, 2, 7)	9, 74
UG-212/U	Right Angle Adapter.....	2	68	.....	RE 49F 349	.....	.....	.....	Yes	.....	27, 39, 71
UG-252/U	Straight Adapter...	2	69	.....	RE 49F 372	.....	.....	.....	Yes	(4)	7a, 71
MX-103/U	Tapering Tool.....	2	.....	.....	RE 49F 226	.....	.....	.....	Yes	(3)	50, 40
UG-217/U	Straight Adapter...	2	70	.....	RE 49F 346	.....	.....	.....	Yes	(5)	71
UG-259/U	Straight Adapter...	2	70	.....	RE 49F 346	.....	.....	.....	Yes	(6)	71
MX-564/U	Clamp.....	2	.....	.....	RE 49A 403	.....	.....	10	Yes	(7)	.....

NOTES:

- (1) Cable assembly instructions.
- (2) M.P. designates mounting plate.
- (3) This tool required to prepare cable for plugs and jacks.
- (4) Connects UG-59A/U plug and UG-215/U adapter.
- (5) Connects UG-59A/U plug and UG-154/U plug.
- (6) Same as 5 except has mounting plate.
- (7) Use clamp MX-546/U for clamping armor for shipboard. (Figures show method of using armor clamp.)

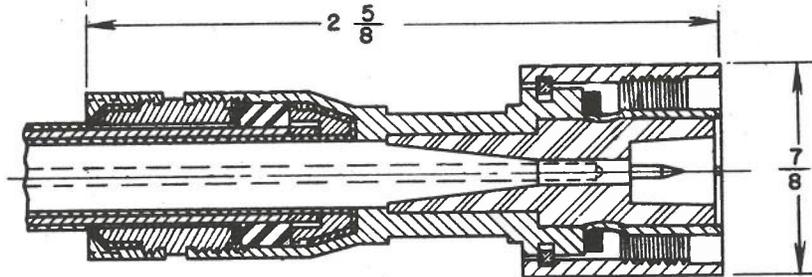


Figure 65.

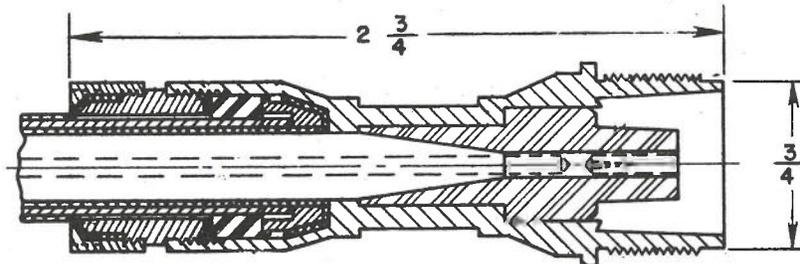


Figure 66.

Type HN connectors.

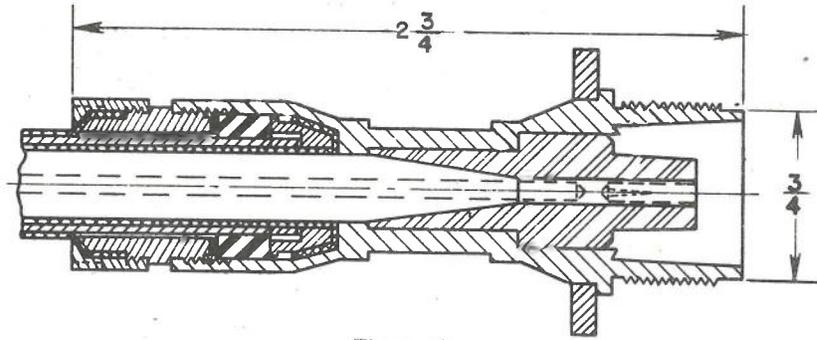


Figure 67.

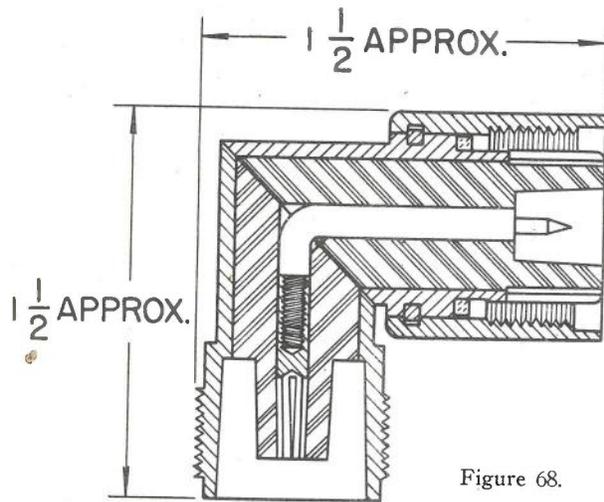


Figure 68.

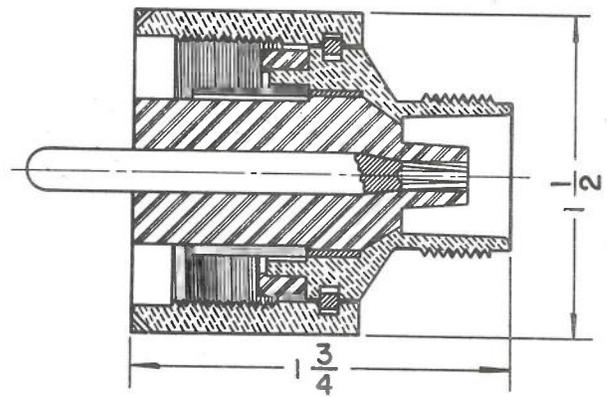


Figure 69.

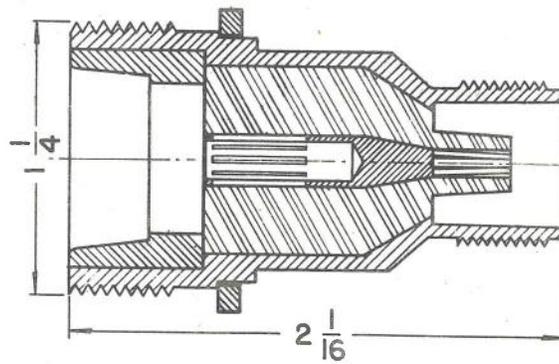
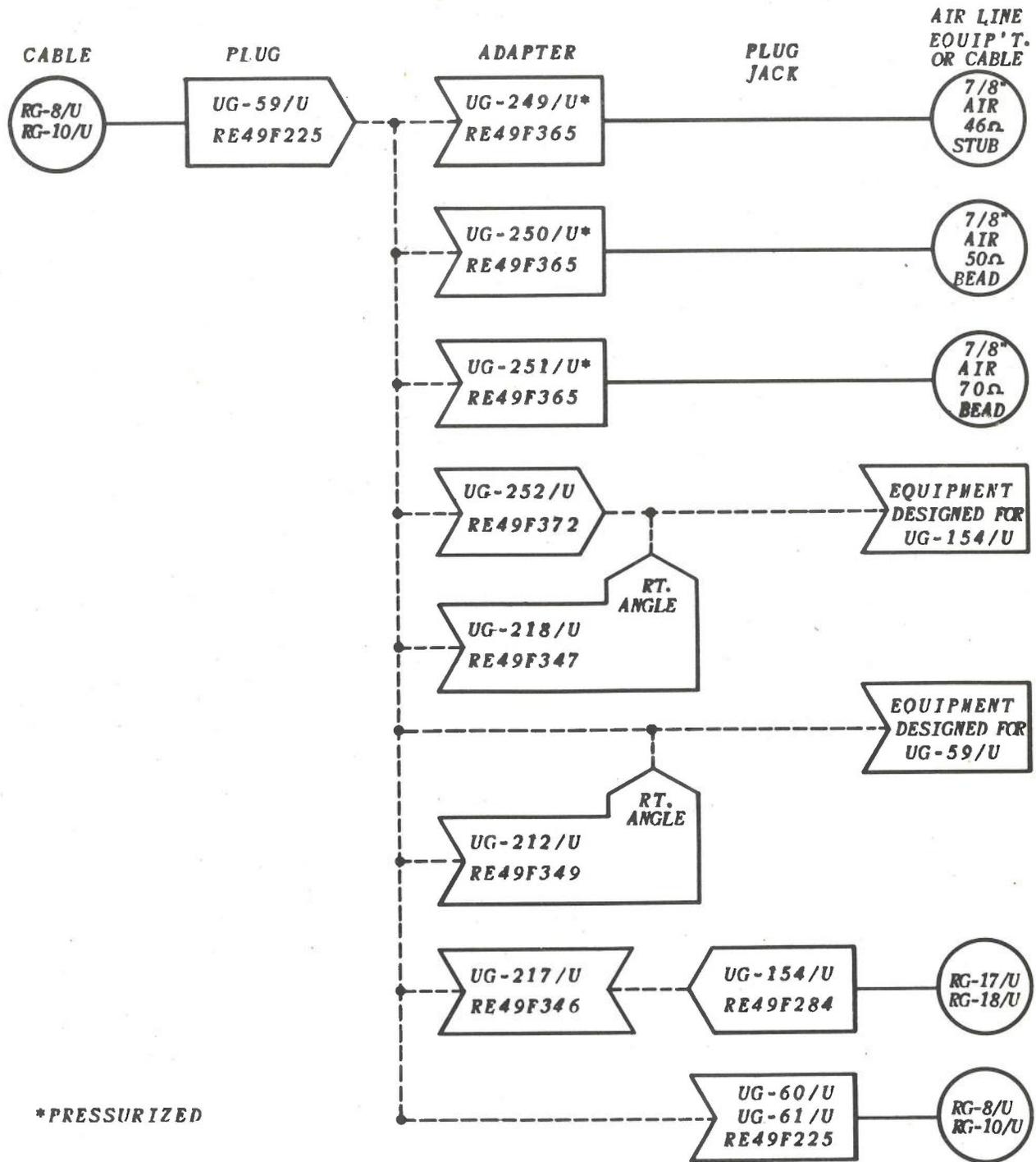


Figure 70.

Type HN connectors (cont.).



Type HN connectors for RG-8/U or RG-10/U cable.

7. Type LN Connectors

The type LN connectors are similar to, but are larger than, the type N connectors. They are used only with RG-14/U R. F. cable. They are 50 ohms and are weatherproof. The approximate voltage rating is 1,000 v peak. Adapters can be used to connect these fittings to type N for applications where RG-14/U is to be introduced in a circuit requiring lower attenuation than that of RG-8/U.

Type LN connectors

AN type	Name	Category	Fig no.	Navy type	ANRFC or Navy draw. no.	Army or other type no.	Army or other draw. no.	Cable code	Weather proof	Notes	Mfg. code
UG-97/U	Rt. Angle Adapter..	1	71	.....	RE 49F 291	.....	.....	.....	Yes	.....	15, 27
UG-98/U	Receptacle.....	1	72	.....	RE 49F 290	.....	.....	.....	Yes	(4)	15, 27
UG-100/U	Plug.....	1	73	.....	RE 49F 292	.....	.....	14	Yes	(2)	15, 27
UG-101/U	Jack M.P.....	1	74	.....	RE 49F 287	.....	.....	14	Yes	(1, 2)	15, 27
UG-108/U	Adapter.....	2	64	.....	RE 49F 288	.....	.....	.....	.....	.....	.....
UG-109/U	Adapter.....	1	75	.....	RE 49F 289	.....	.....	.....	Yes	(3)	15, 27
UG-213/U	Adapter.....	2	76	.....	RE 49F 368	.....	.....	.....	.....	(5)	15, 27
UG-279/U	Jack.....	2	.....	.....	RE 49F 287	.....	.....	14	Yes	(6)	15, 27
UG-293/U	Adapter Pressurized.....	2	.....	.....	.....	.....	ARL 45-220	.....	Yes	(7)	.....

NOTES:

- (1) M.P. means mounting plate attached.
- (2) Assembly drawing similar to type N.
- (3) Couples to UG-100/U plug.
- (4) For chassis mounting.
- (5) Couples UG-100/U plug and type N plug or equivalent.
- (6) Same as UG-101/U except less mounting plate.
- (7) Similar to type N (UG-30/U), panel mounted, longitudinally pressurized.

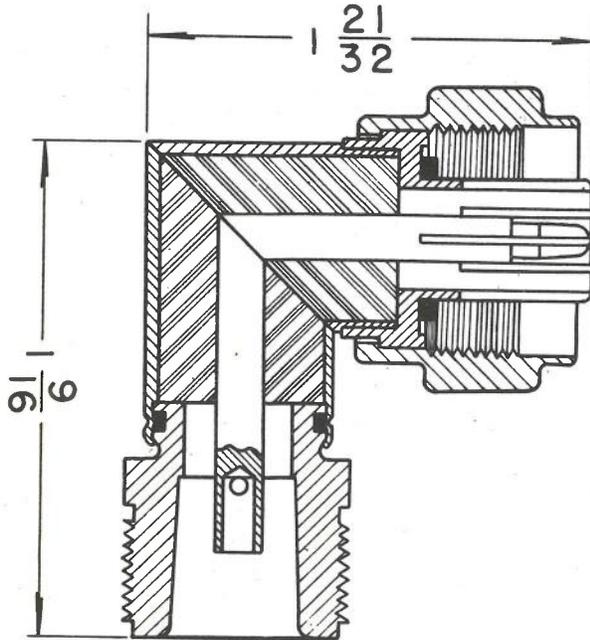


Figure 71.

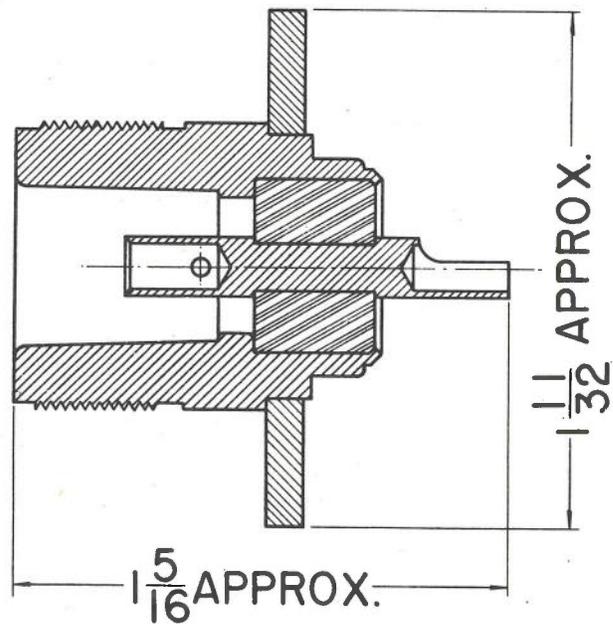


Figure 72.

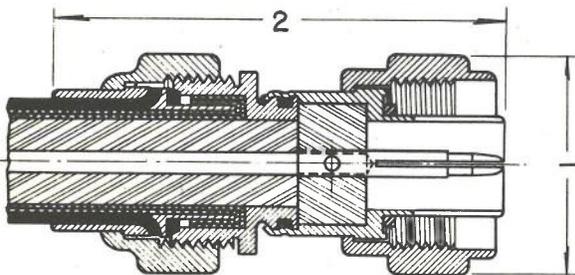


Figure 73.

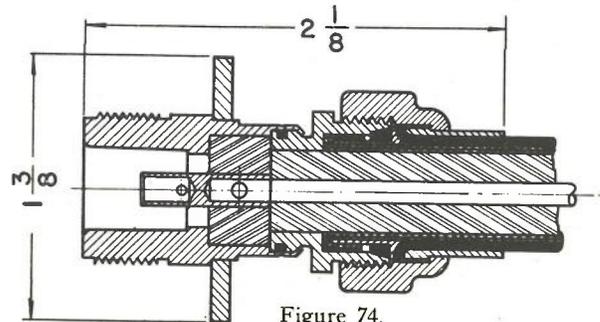


Figure 74.

Type LN connectors.

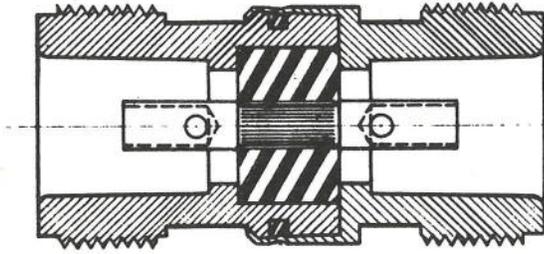


Figure 75.

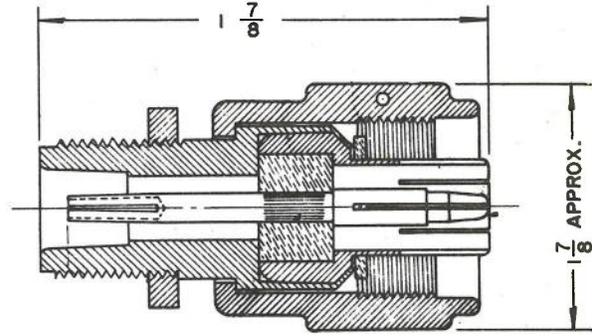
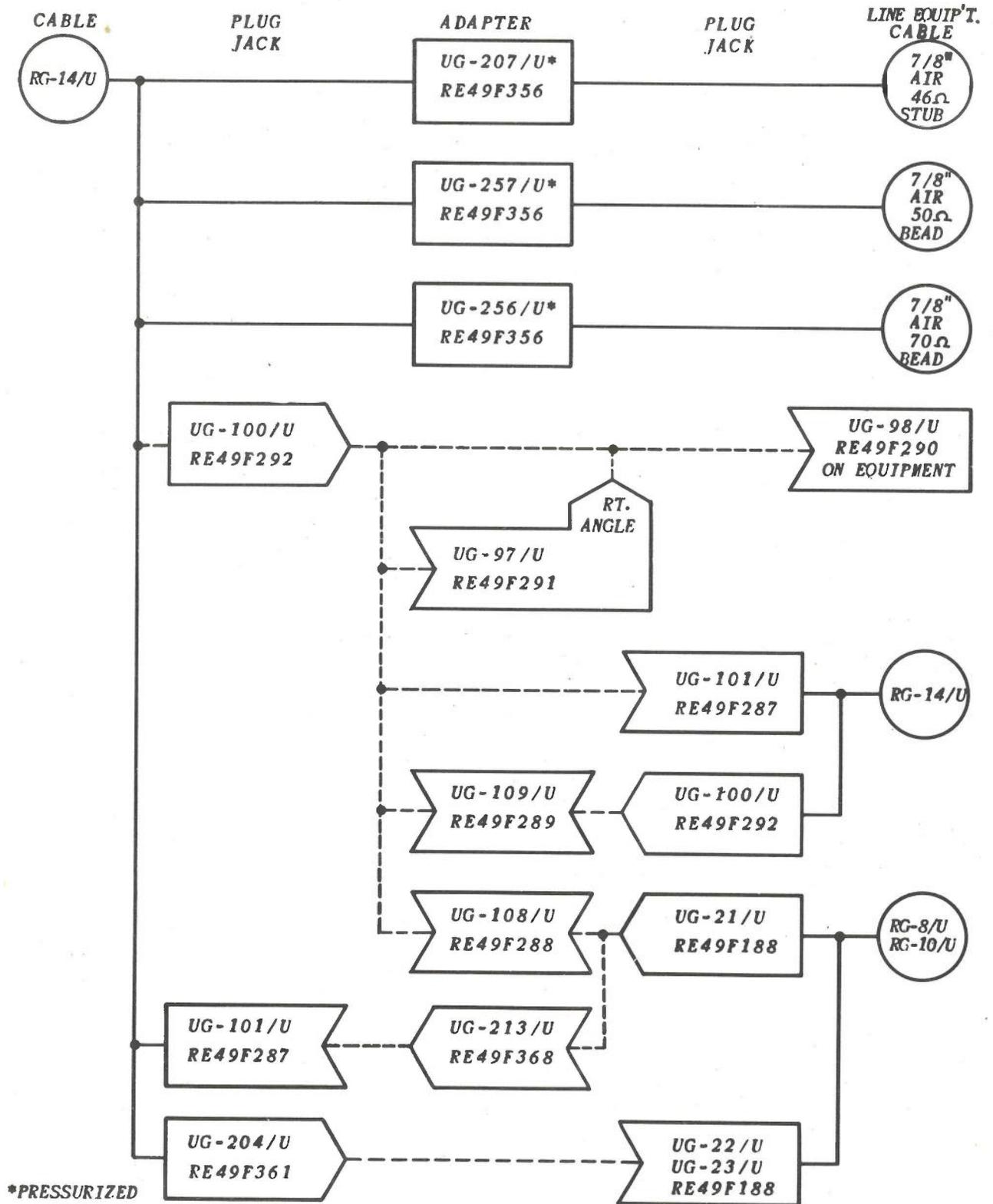


Figure 76.

Type LN connectors (cont.).



Type LN connectors for RG-14/U cable.

**8. British Connectors**

The connectors described in this section are known as British connectors and are used with RG-7/U and RG-8/U cables. They are widely used in British equipments and have been used to some extent in American equipments. The electrical and mechanical design of the connectors is not considered as satisfactory as the comparable American types, such as UHF and N.

These connectors should not be used in any new equipments. Adapters are available from most British types to standard American types. The use of these adapters is strongly recommended wherever British connectors are encountered which cannot be replaced by standard type.

A UHF receptable, UG-223/U, has been designed to mount in the same hole as the British panel plug 10H-528 and should be used to replace 10H-528 wherever possible.

A British report has been prepared which is essentially a standard list for British Connectors. It is entitled "Interim Working Schedule of R. F. plugs and Sockets" R.C.L./322, Issue 1, June 1944 and was issued by the Inter-Services Components Technical Committee, Regent Arcade House, Regent Street, London, W. 1.

**British connectors**

AN type	Name	Category	Fig no.	Navy type	ANRFCCC or Navy draw. no.	Army or other type no.	Army or other draw. no.	Fits RG-7/U cable	Weather proof	Notes	Mfg. code
	Panel Mtg. Plug... (110-H-1364,5,6)	4	77			British 10H-528	S.C. Type TM-201		No		41, 3
	Panel Mtg. Double Plug.....	4	78			British 10H-628			No		41, 3
	Straight Cable Socket.....	4				British 10H-1364		7	No		3
	Straight Cable Socket.....	4				10H-1365		8	No		3
	Right Angle Cable Socket.....	4	79			British 10H-529	S.C. Type MC-320	7	No		41, 3
UG-236/U	Right Angle Cable Socket.....	4	79			British 10H-701	S.C. Type MC-277	8	No		41, 3
	Right Angle Cable Socket.....	4	79			British 10H-702	S.C. Type MC-321	8	No		41, 3
	Panel Mtg. Plug....	4	80			British 110H-585			No		41, 3
	Straight Cable Socket.....	4	81			British 110H-584		8	No		41, 3
	Right Angle Cable Socket.....	4	82			British 110H-507		8	No		41, 3
	Adapter (110H-584 to UHF).....										
	Adapter (110H-585 to UHF).....		80								
UG-171/U	Adapter (UHF to British)....										
UG-197/U	Adapter (UHF to British)....										

NOTES:  
(1) See UHF Section (small coaxial).

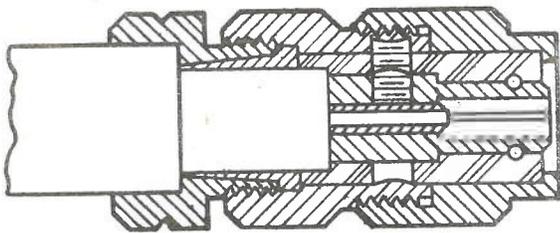


Figure 77.

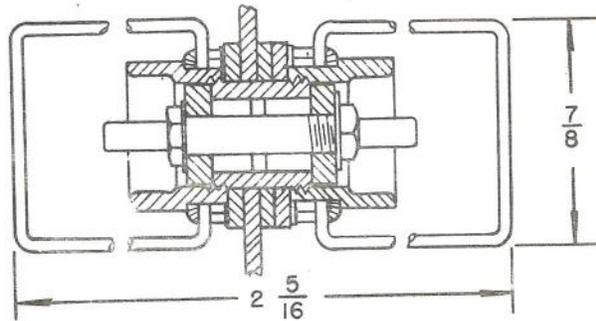


Figure 78.

British connectors.

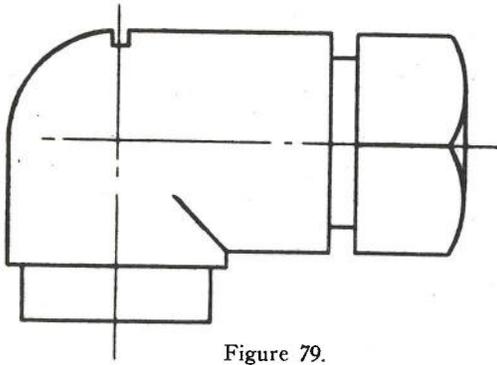


Figure 79.

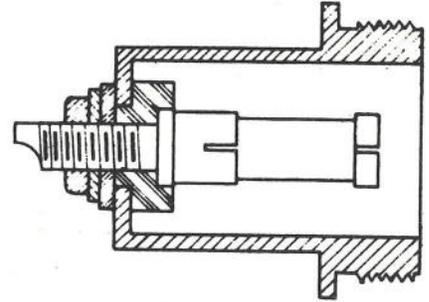


Figure 80.

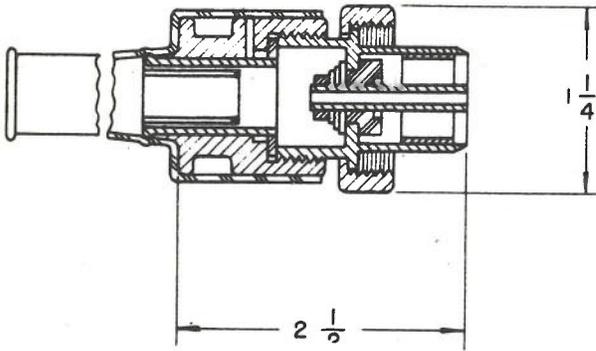


Figure 81.

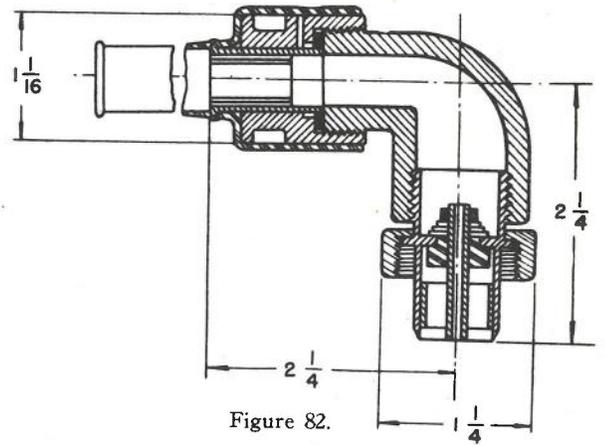


Figure 82.

British connectors (cont.).

9. SKL Connectors and Adapters

SKL connectors were originally designed to provide a connection to a Klystron tube. Various modifications were subsequently designed to provide general purpose cable to cable connections.

Only the Klystron connectors and adapters to type N should be used in new equipments. The other modifications should not be used because existing standard types such as BN, BNC and type N perform the same function and are more generally available.

SKL connectors and adapters

AN type	Name	Category	Fig no.	Navy type	ANRFCC or Navy draw. no.	Army or other type no.	Army or other draw. no.	Fits RG-5/U cable	Weather proof	Notes	Mfg. code
UG-275/U	Klystron Connector.....	2	83	49270	RE 49F 189	Sperry R-5657396	.....	5	No	Connects RG-5/U to Klystron tube	26, 51
.....	Adapter.....	4	84	.....	.....	Sperry J.O. 25835-2192	.....	.....	No	(1)	26
UG-276/U	Klystron Right Angle Connector.....	2	85	.....	.....	Sperry R-5657556	.....	5	No	Connects RG-5/U to Klystron tube	26, 51
.....	Adapter.....	4	86	.....	.....	Sperry J.O. 25835-2243	.....	.....	No	(2)	26
.....	Tee Adapter.....	4	87	.....	.....	Sperry J.O. 25835-2225	.....	.....	No	(7)	26
.....	Adapter.....	4	88	.....	.....	Sperry J.O. 25835-2237	.....	.....	No	(3)	26
UG-110/U	SKL to N Adapter..	4	89	.....	.....	Sperry R-5657559	.....	.....	No	(5)	26
UG-131/U	SKL to N Adapter..	2	90	.....	.....	Sperry R-5657821	.....	.....	No	(6)	26
.....	SKL to N Adapter..	4	91	.....	.....	.....	.....	.....	No	(4)	26

NOTES:

- (1) Bulkhead type—to male ends—couples two Klystron connectors.
- (2) Couples two Klystron connectors.
- (3) Two female ends.
- (4) Couples UG-21/U, or similar, to SKL connector.
- (5) Couples SKL connector to UG-23/U, or similar jack.
- (6) Couples UG-21/U, or similar, to Klystron tube.
- (7) Couples two Klystron connectors to Klystron Tube.

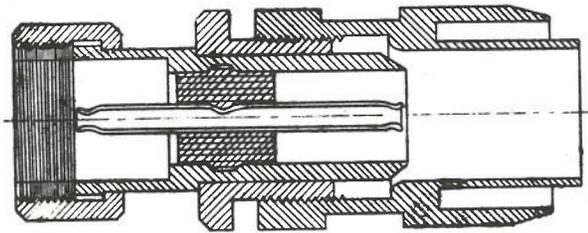


Figure 83.

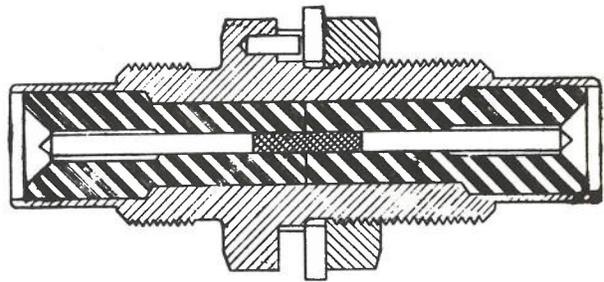


Figure 84.

SKL connectors and adapters.

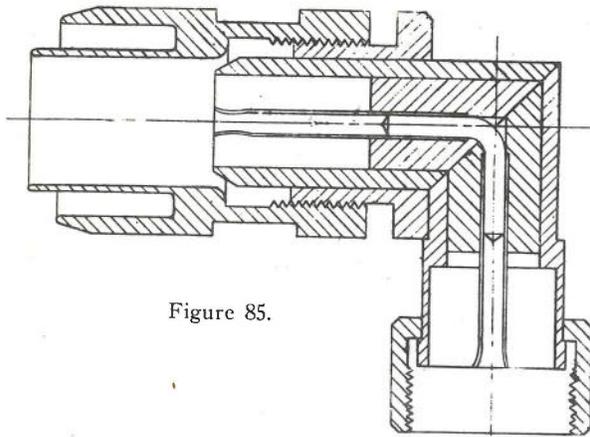


Figure 85.

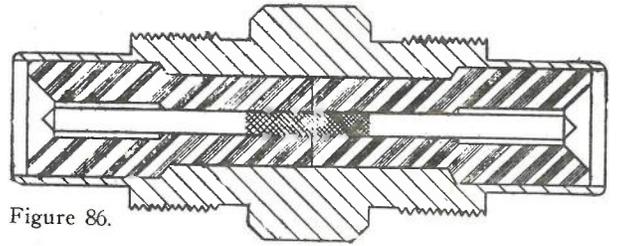


Figure 86.

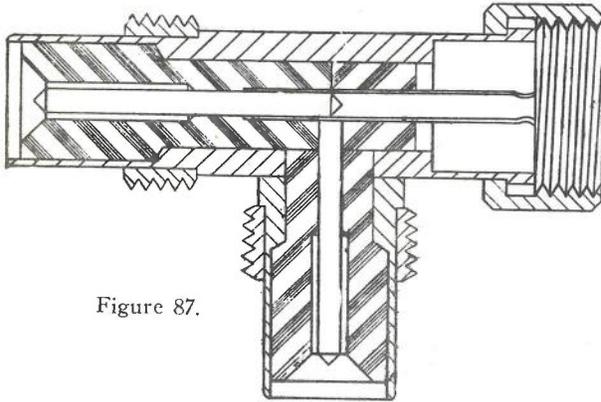


Figure 87.

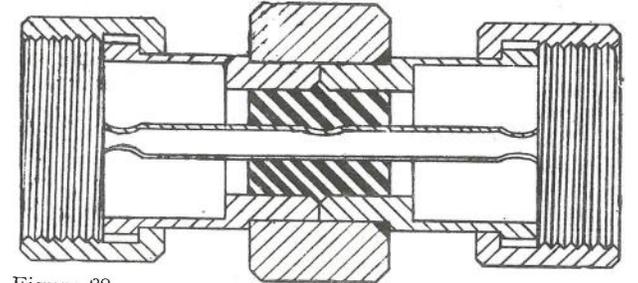


Figure 88.

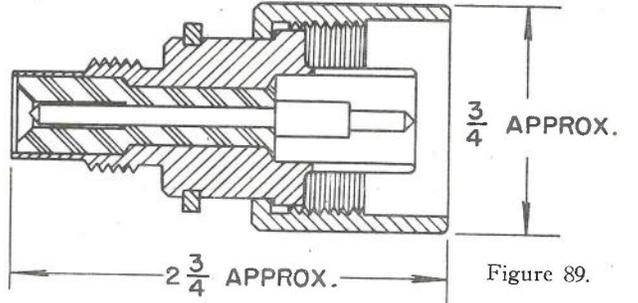


Figure 89.

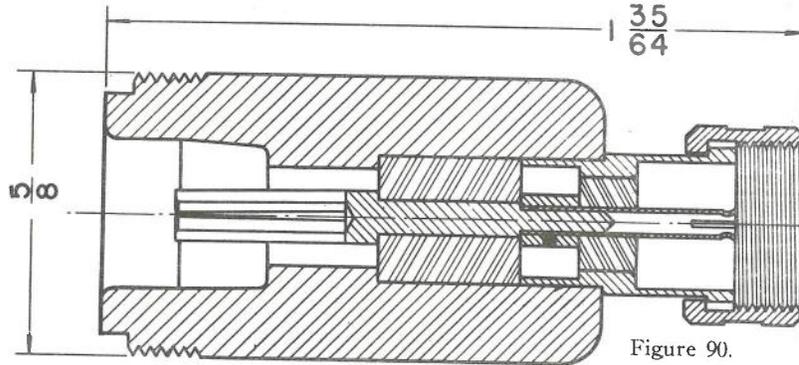


Figure 90.

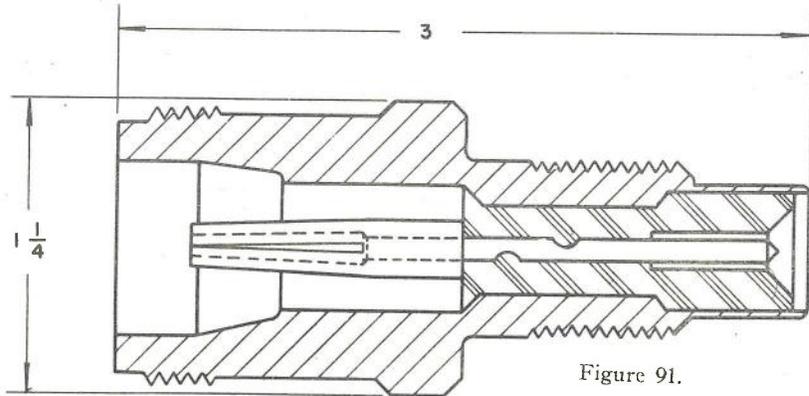


Figure 91.

SKL connectors and adapters (cont.).

**10. Miscellaneous Connectors and Adapters**

The connectors and adapters listed in this section are of various types which do not fit in any of the other listings. In practically all cases they are obsolete designs which should not be used for R. F. applications in new equipments under any conditions. Many of these connectors were designed for audio frequencies and are suitable for such use but do not have the electrical properties required for R. F. applications.

**Miscellaneous connectors and adapters**

AN type	Name	Category	Fig no.	Navy type	ANRFCCC or Navy draw. no.	Army or other type no.	Army or other draw. no.	Fits RG- /U cable	Weather proof	Notes	Mfg. code
.....	Holmdel Plug.....	4	92	.....	.....	W.E. D-163595	.....	6	No	(1)	26, 77
.....	Holmdel Plug.....	4	92	.....	.....	W.E. D-163950	.....	6	No	(1)	26, 77
.....	Holmdel Jack.....	4	93	.....	.....	W.E. D-163596	.....	6	No	(1)	26, 77
.....	Holmdel Jack.....	4	93	.....	.....	W.E. D-163597	.....	6	No	(1)	26, 77
.....	Holmdel Jack.....	4	94	.....	.....	W.E. D-163598	.....	6	No	(1)	26, 77
.....	Holmdel Jack.....	4	93	.....	.....	W.E. D-163591	.....	6	No	(1)	26, 77
UG-7/AP	Holmdel Adapter.....	.....	62	.....	.....	.....	.....	.....	.....	(4)	.....
UG-8/AP	Holmdel Adapter.....	.....	63	.....	.....	.....	.....	.....	.....	(4)	.....
.....	Holmdel Adapter.....	4	95	.....	.....	W.E. D-168777	.....	.....	No	(2)	.....
UG-124/U	Adapter AN to UHF.....	2	.....	.....	.....	.....	.....	.....	.....	(5)	.....
.....	Receptacle AN-3100-145-4P.....	4	.....	.....	.....	.....	.....	.....	No	.....	.....
UG-125/U	Adapter AN to British.....	3	.....	.....	.....	.....	.....	.....	.....	(3)	.....
.....	Jones Plug.....	4	96	49163	.....	Jones S-101	.....	.....	No	(2)	45
.....	Jones Socket.....	4	97	49164	.....	.....	.....	.....	No	(2)	45
.....	Jones Plug.....	4	96	49458	.....	Jones P-101-1/4	.....	.....	.....	.....	45
.....	Jones Socket.....	4	97	49459	.....	Jones S-101-D	.....	.....	.....	.....	45
.....	Jones Socket.....	4	97	49460	.....	Jones S-201-B	.....	.....	.....	.....	45
.....	Jones Plug.....	4	96	49461A	.....	Jones P-202-FHT	.....	.....	.....	.....	45
.....	Jones Socket.....	4	97	49462	.....	Jones S-202-B	.....	.....	.....	.....	45
.....	Jones Plug.....	4	96	49463	.....	Jones P-201-3/8	.....	.....	.....	.....	45
.....	Cannon Plug.....	4	96	49142	.....	Cannon TQ-1-12	.....	.....	.....	.....	17
.....	Cannon Receptacle..	4	97	49143	.....	Cannon TQ-1-13B	.....	.....	.....	.....	17
.....	Cannon Receptacle..	4	97	49144	.....	Cannon TQ-1-13BC	.....	.....	.....	.....	17
.....	Adapter Jones Jack to UHF Plug.....	2	31	.....	.....	.....	.....	.....	.....	(5)	.....
UG-288/U	Plug.....	.....	.....	.....	RA 62F 363	.....	.....	8	.....	(6)	29
UG-289/U	Adapter.....	.....	.....	.....	RA 62F 363	.....	.....	.....	.....	(7)	29

Notes:

- (1) 70 ohm type N connectors should be used to replace Holmdel connectors wherever possible.
- (2) Double jack. Couples two Holmdel plugs.
- (3) Couples AN-3100-145-4P receptacle to British cable socket 10H-701 or similar socket.
- (4) See Type N connectors.
- (5) See UHF connectors.
- (6) Quick disconnect type but similar to type N.
- (7) Used to connect UG-288/U plug and UG-21/U type N plug or equivalent panel mounting provisions.

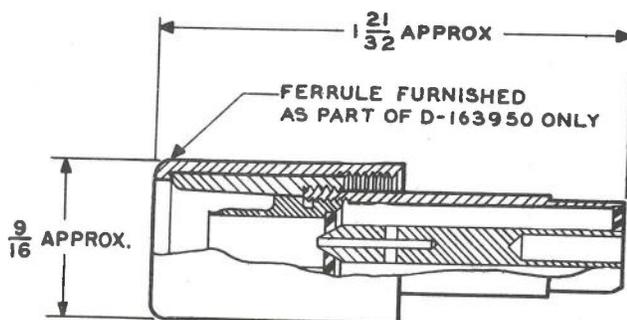


Figure 92.

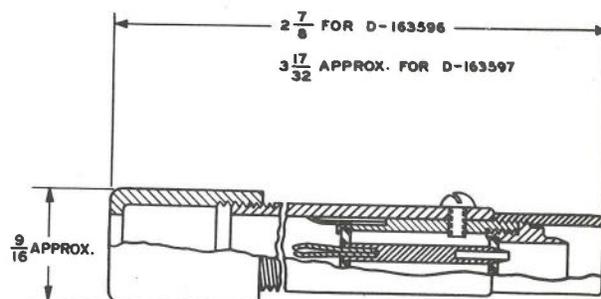


Figure 93.

Miscellaneous connectors and adapters.

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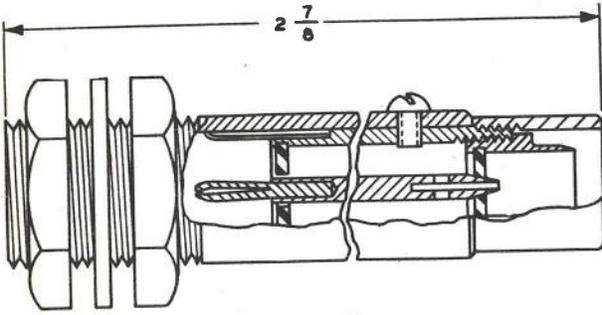


Figure 94.

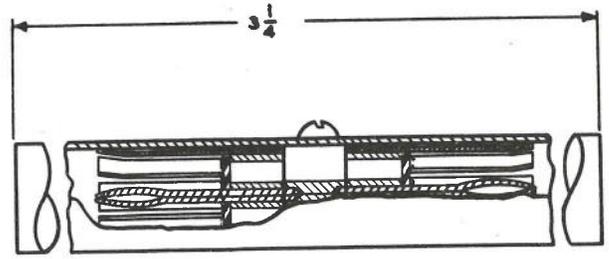


Figure 95.

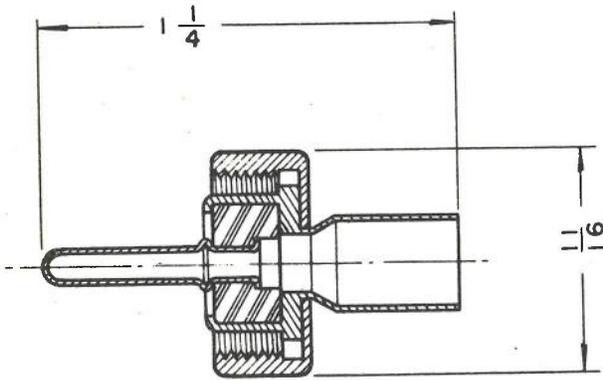


Figure 96.

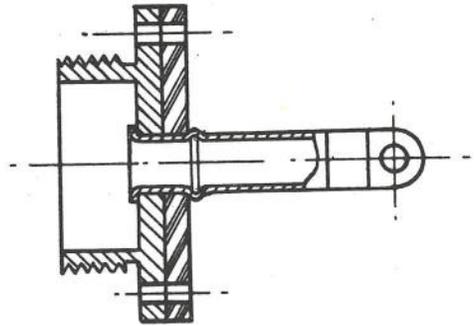


Figure 97.

Miscellaneous connectors and adapters (cont.).

## II. Connectors for Large Size Cables

These connectors are of 52 ohms characteristic impedance and are weatherproof.

With appropriate preparation these connectors may be used with RG-18/U as a low voltage or high voltage assembly. Where it is desired to operate the plug UG-154/U as a low voltage connector the cable dielectric is butted flush against the dielectric in the mating connector. Where the UG-154/U plug is used for high voltage applications a counter boring operation is performed with a special tool TL-326/U on the end of the cable dielectric.

For RG-20/U the connectors indicated are all of the high voltage type, and consequently, a counter boring operation on the end of the dielectric in the UG-156/U plug must always be performed with the special tool TL-325/U.

The voltage rating for the low voltage types for RG-18/U is 5,000, and 10,000 for the high voltage types with counter-bored dielectrics. The voltage rating for the RG-20/U connectors is in excess of 10,000. Dow-Corning #4 ignition sealing compound should always be used on the faces of the dielectric mating parts on all these connectors.

Those connectors, designated "special" on the tabulations, have been designed for a specific Navy equipment. They are not recommended for use in new equipments. They introduce considerable discontinuity at high frequencies, and other more satisfactory types previously described are available.

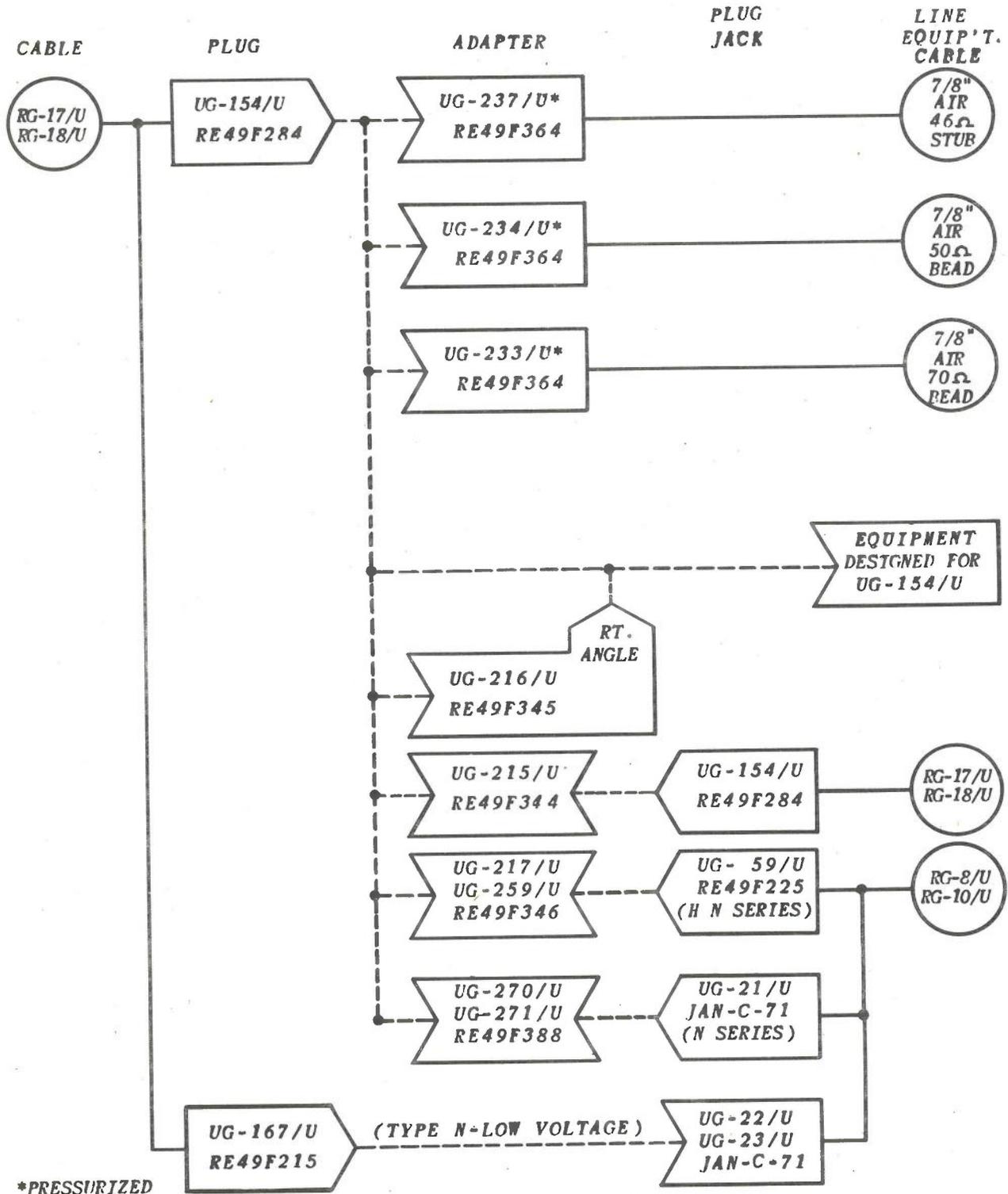
Voltage rating is approximately 2,000 volts peak. Adapters are available between these connectors and rigid lines.

Connectors for large size cables

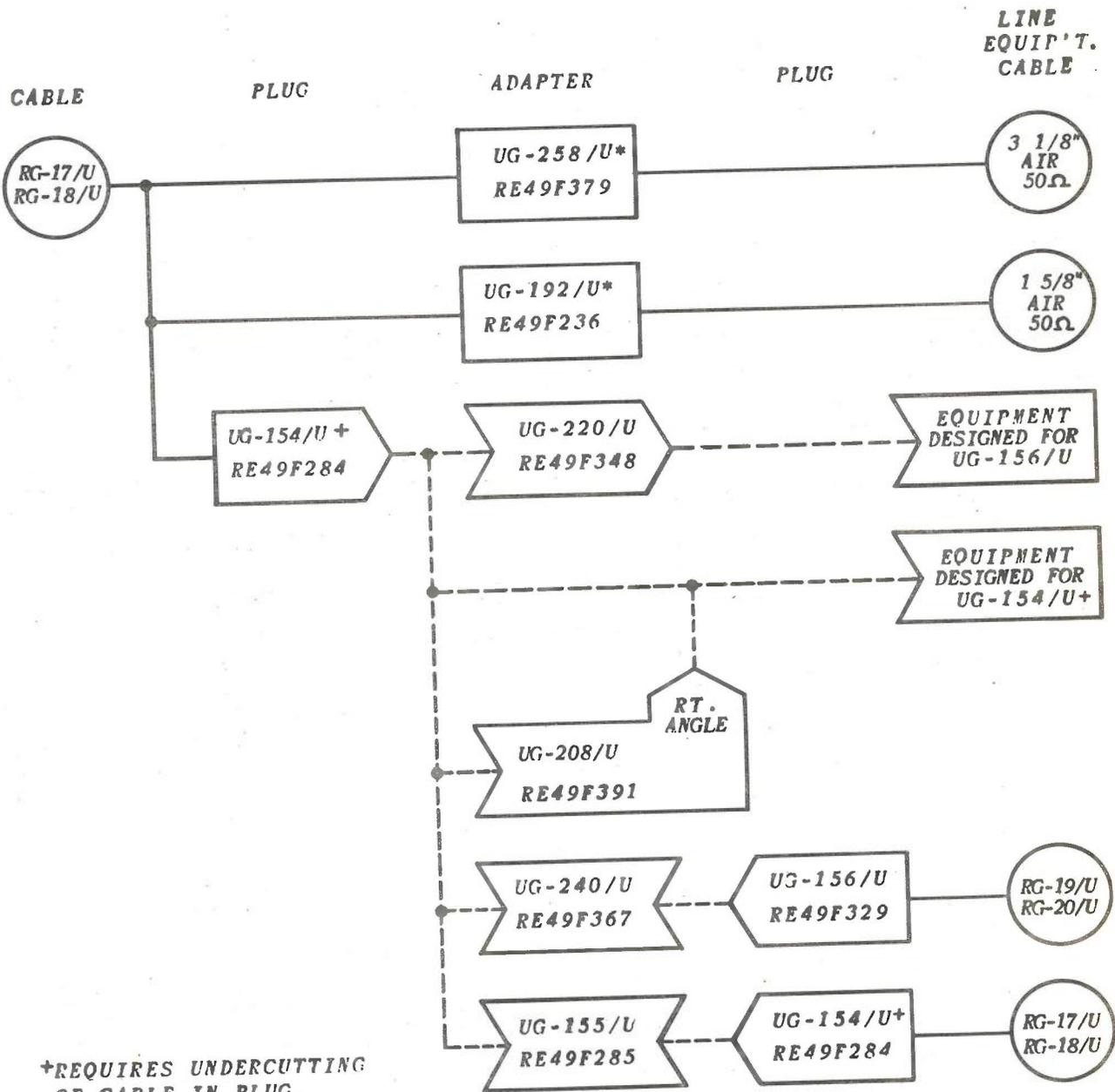
AN type	Name	Category	Fig no.	Navy type	ANRFCCC or Navy draw. no.	Army or other type no.	Army or other draw. no.	Fits RG- /U cable	Weather proof	Notes	Mfg. code
UG-156/U	Plug.....	1	98	.....	RE 49F 329	.....	.....	19, 20	Yes	(1, 3, 7)	67, 70
UG-157/U	Adapter.....	1	99	.....	RE 49F 328	.....	.....	.....	Yes	.....	67, 70
UG-219/U	Rt. Angle.....	1	.....	.....	RE 49F 392	.....	.....	.....	Yes	.....	67, 70
UG-220/U	Adapter.....	1	100	.....	RE 49F 348	.....	.....	.....	Yes	.....	67, 70
UG-154/U	Plug.....	1	101	.....	RE 49F 284	.....	.....	17, 18	Yes	(2, 3, 8)	27, 39, 7a, 71
UG-155/U	Adapter.....	1	102	.....	RE 49F 285	.....	.....	.....	Yes	.....	71
UG-208/U	Rt. Angle.....	1	.....	.....	RE 49F 391	.....	.....	.....	Yes	.....	7a, 71
UG-215/U	St. Adapter.....	1	103	.....	RE 49F 344	.....	.....	.....	Yes	(6)	7a
UG-216/U	Rt. Angle.....	1	104	.....	RE 49F 345	.....	.....	.....	Yes	(6)	27, 71
UG-217/U	St. Adapter.....	1	105	.....	RE 49F 346	.....	.....	.....	Yes	(4, 5, 6)	27, 71
UG-218/U	Rt. Angle.....	1	106	.....	RE 49F 347	.....	.....	.....	Yes	(5, 6)	71
UG-240/U	St. Adapter.....	1	107	.....	RE 49F 367	.....	.....	.....	Yes	.....	7a, 71
UG-259/U	St. Adapter M. P....	1	105	.....	RE 49F 346	.....	.....	.....	Yes	(4)	7a, 71
UG-270/U	St. Adapter.....	1	.....	.....	RE 49F 388	.....	.....	.....	Yes	(9)	7a, 71
UG-271/U	St. Adapter.....	1	.....	.....	RE 49F 388	.....	.....	.....	Yes	(10)	7a, 71
UG-287/U	Rt. Adapter.....	1	103	.....	RE 49F 344	.....	.....	.....	Yes	(11)	.....

NOTES:

- (1) High voltage mates UG-157/U, 219/U etc., special counter boring operation must be performed on plug dielectric when assembled to cable.
- (2) General purpose plug for use with medium and high voltage.
- (3) Method of assembling cable to plug—see RE 49F 339.
- (4) Can be used with mounting plate.
- (5) Adapters to type HN
- (6) Medium voltage types.
- (7) Require TL-325/U tool. See RE 49F 387.
- (8) Require TL-326/U tool. See RE 49F 387. Only if used with UG-155/U or equivalent.
- (9) Adapters to type N.
- (10) Connects type N plug or equivalent, and UG-154/U plug or equivalent.
- (11) Same as UG-215/U except with mounting plate.

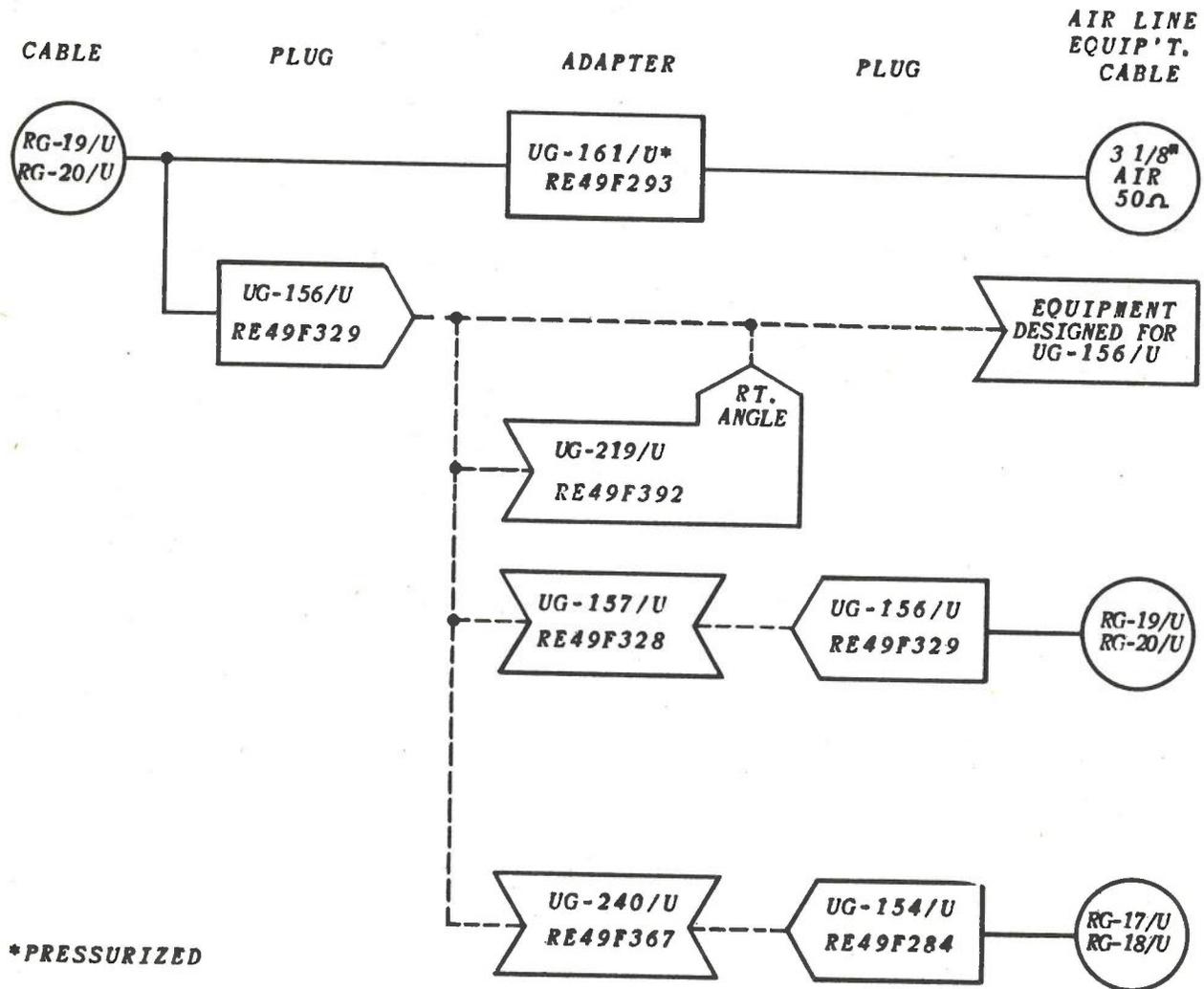


Connectors for RG-17/U and RG-18/U (Low voltage).



\*REQUIRES UNDERCUTTING OF CABLE IN PLUG.  
 \*PRESSURIZED.

Connectors for RG-17/U and RG-18/U (High voltage).



Connectors for RG-19/U or RG-20/U cable.

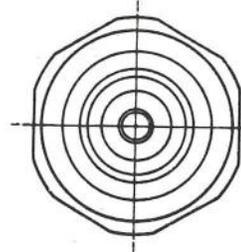
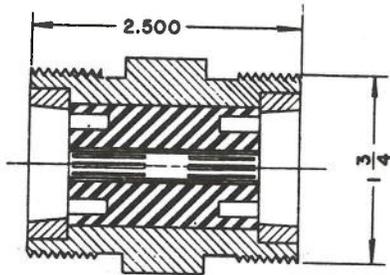
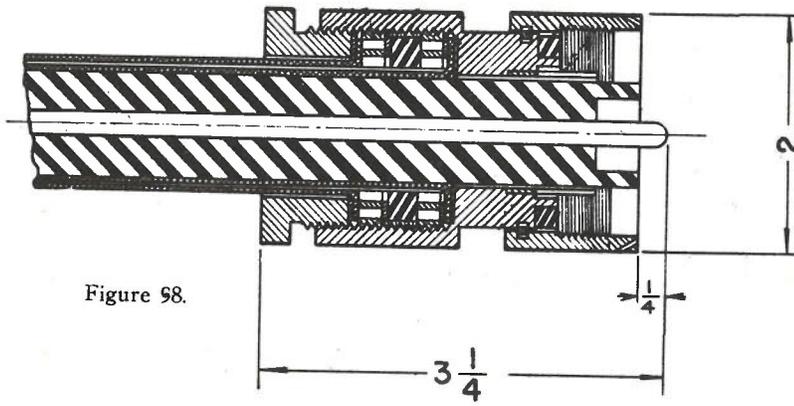


Figure 99.

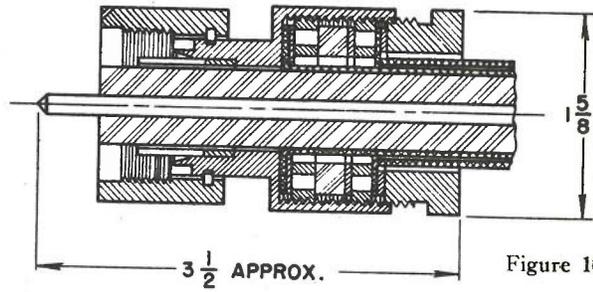


Figure 101.

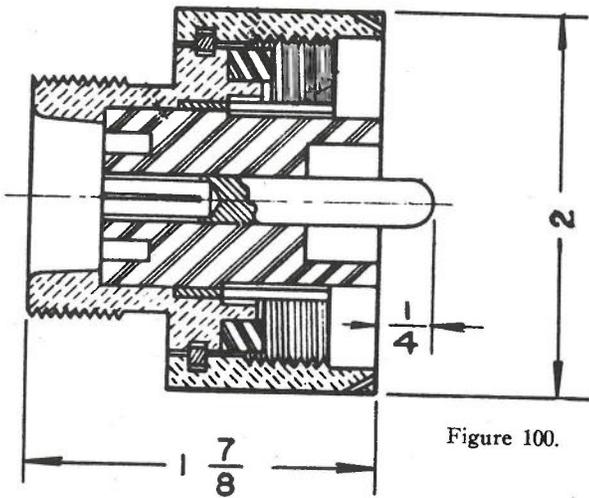


Figure 100.

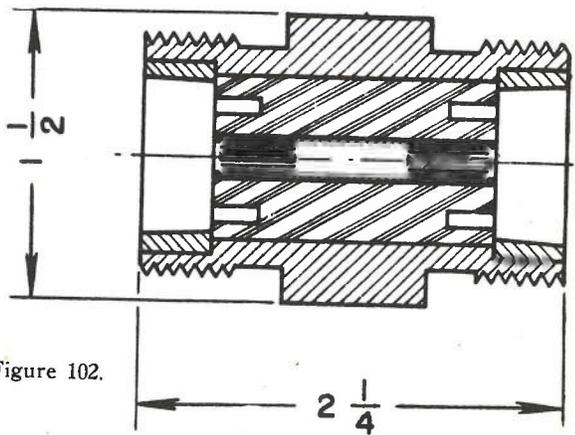


Figure 102.

Connectors for large size cables.

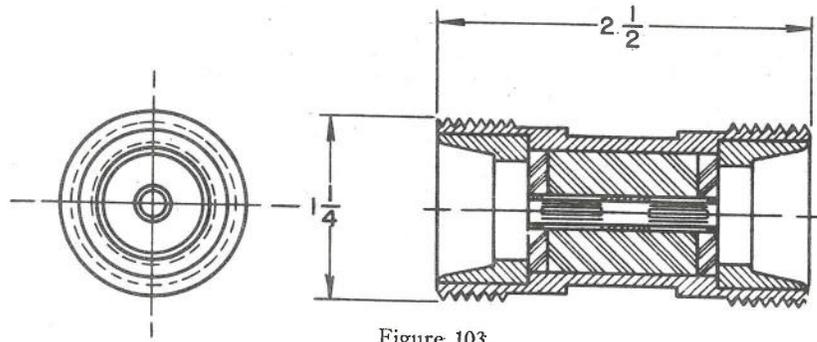


Figure 103.

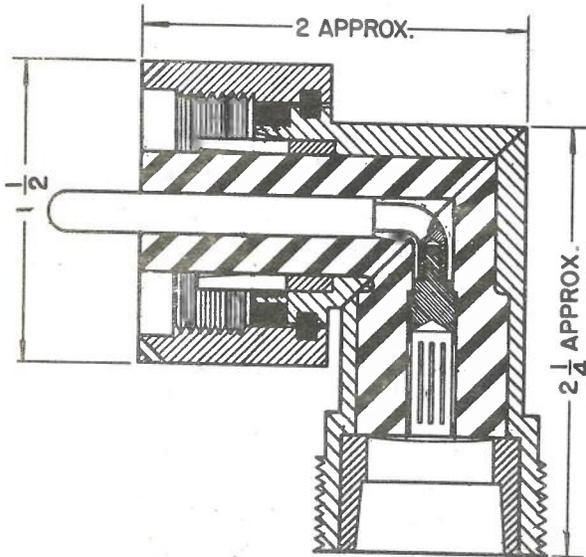


Figure 104.

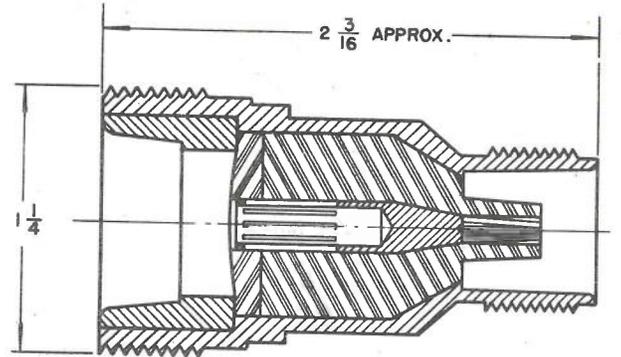


Figure 105.

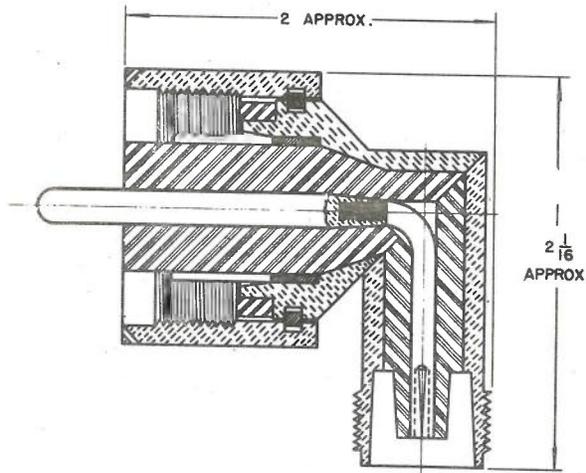


Figure 106.

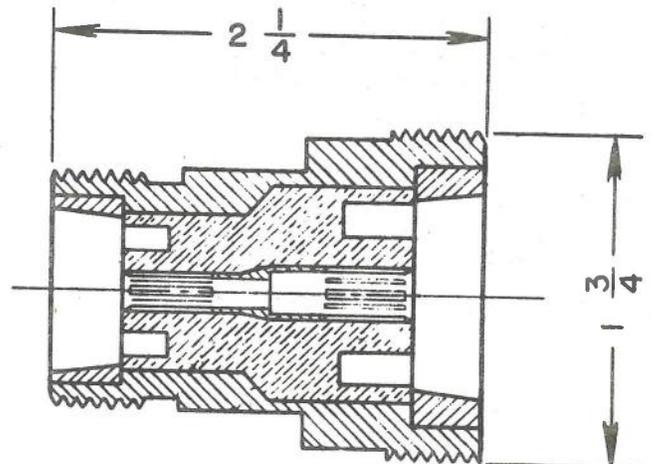


Figure 107.

Connectors for large size cables (cont.)

Connectors for large size cables (special)

AN type	Name	Category	Fig no.	Navy type	ANRFCCC or Navy draw. no.	Army or other type no.	Army or other draw. no.	Fits RG cable	Weather proof	Notes	Mfg. code
.....	Plug.....	3	108	49550	RE 49F 252	.....	.....	17, 18	Yes	.....	10, 27
.....	Receptacle M. P.....	3	109	49551	RE 49F 252	.....	.....	17, 18	Yes	(1)	10, 27
.....	Jack.....	3	110	49579	RE 49F 252	.....	.....	17, 18	Yes	.....	10, 27
.....	Right Angle Adapter.....	3	111	49891	RE 49F 252	.....	.....	17, 18	Yes	(3)	10, 27
.....	Jack M. P.....	3	110	49580	RE 49F 252	.....	.....	17, 18	Yes	(1)	10, 27
.....	.....	.....	.....	491272	.....	.....	.....	.....	Yes	.....	.....
.....	.....	.....	.....	491273	.....	.....	.....	.....	Yes	.....	.....

NOTES:

- (1) M.P. designates mounting plate.
- (2) Mates type N jacks or equivalent.
- (3) Formerly 49552.

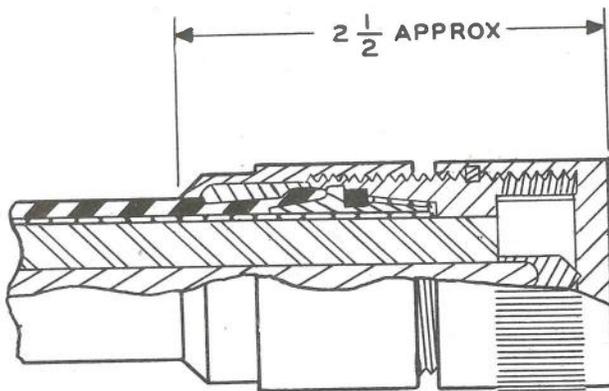


Figure 108.

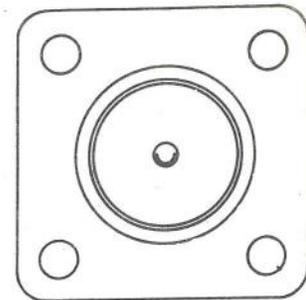
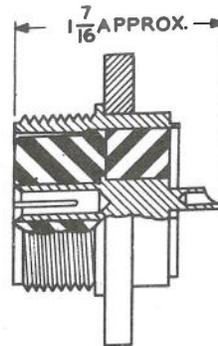


Figure 109.

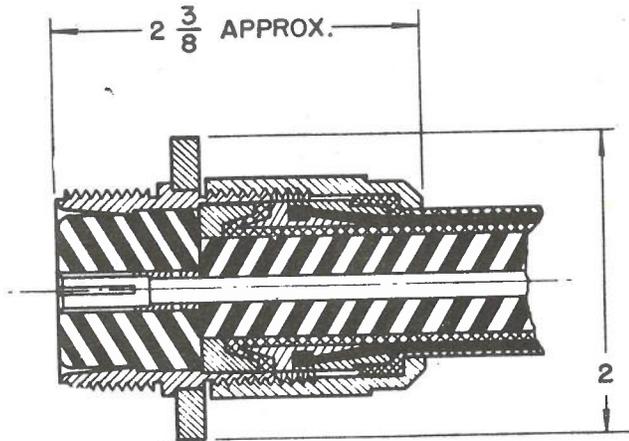


Figure 110.

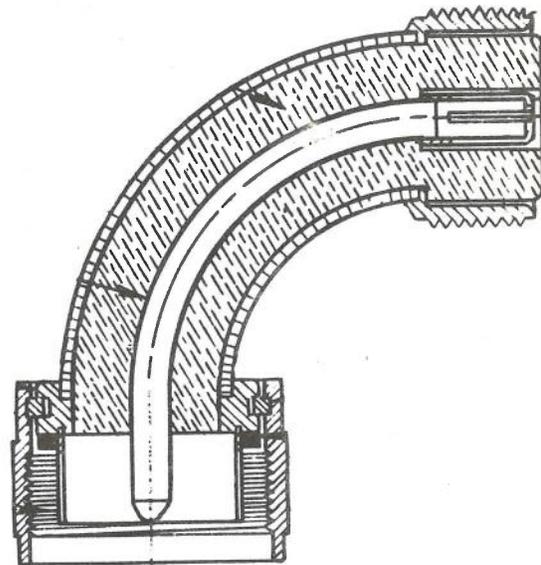


Figure 111.

Connectors for large size cables (special).

**12. Adapters (Cable to Rigid Line)**

The following groups of adapters provide means of connecting solid-dielectric, R. F. cable and rigid, bead-supported, or stub supported, coaxial, transmission lines.

These adapters are divided into the four following groups:

1. Adapters, couple to rigid line, require plug to connect cable to adapter. Can be field assembled.
2. Adapters, high voltage, couple to rigid line. Cable connects directly to adapter. Can be field assembled.
3. Adapters, low voltage, couple to rigid line. Cable connects directly to adapter. Can be field assembled.
4. Adapters, couple to rigid line. Cable molded permanently into adapter. Can not be field assembled.

The adapters shown in groups 1 and 2 are preferred. Those shown in group 3 have, in general, been designed for specific applications, and are not recommended for general use. Group 4 covers factory-molded adapter. They must be factory assembled, as dielectric material, normally polyethylene, must be injected into the adapter body and be bonded to the cable dielectric. No design of this type is considered pressure-tight. Normally they are furnished molded to a specified length of cable. When required additional lengths of cable can be molded to the cable protruding from these adapters. See splicing technique for R. F. cables.

**Adapters, pressurized—Requires plug to connect cable to rigid line**

AN type	Name	Category	Fig no.	Navy type	ANRFCCC or Navy draw. no.	Army or other type no.	Army or other draw. no.	Fits RG- /U cable	Weather proof	Notes	Mfg. code
UG-32/U	Adapter.....	2	112	.....	RE 49F 187	.....	.....	8, 9, 10 11, 12, 13	Yes	(1, 2)	74
UG-33/U	Adapter.....	2	112	.....	RE 49F 187	.....	.....	8, 9, 10 11, 12, 13	Yes	(3, 2)	74
UG-272/U	Adapter.....	2	112	.....	RE 49F 187	.....	.....	8, 9, 10	Yes	(4)	74
UG-233/U	Adapter.....	2	113	.....	RE 49F 364	.....	.....	17, 18	Yes	(5)	71
UG-234/U	Adapter.....	2	113	.....	RE 49F 364	.....	.....	17, 18	Yes	(6)	71
UG-237/U	Adapter.....	2	113	.....	RE 49F 364	.....	.....	17, 18	Yes	(7)	71
UG-250/U	Adapter.....	2	114	.....	RE 49F 365	.....	.....	8, 10	Yes	(8)	71
UG-251/U	Adapter.....	2	114	.....	RE 49F 365	.....	.....	8, 10	Yes	(9)	71
UG-249/U	Adapter.....	2	114	.....	RE 49F 365	.....	.....	8, 10	Yes	(10)	71
UG-285/U	Adapter.....	2	.....	.....	RE 49F 397	.....	.....	81	Yes	(11)	.....
UG-286/U	Adapter.....	2	.....	.....	RE 49F 398	.....	.....	82	Yes	(12)	.....

NOTES:

- (1) Connects to 7/8", 50 ohm, bead line. Use UG-21/U or equivalent to connect cable to this adapter.
- (2) Cabling instructions RE 49F 269.
- (3) Connects to 7/8", 70 ohm, bead line. (Impedance bump.)
- (4) Connects to RG-44/U stub line.
- (5) Connects to 7/8", 70 ohm, bead line. Use UG-154/U plug to connect cable to this adapter.
- (6) Same as 5 except for 50 ohm line.
- (7) Same as 5 except 7/8" stub, RG-44/U line.
- (8) Connect to 7/8", 50 ohm bead line. Use UG-59/U plug to connect cable to this adapter.
- (9) Same as 8 except for 70 ohm line.
- (10) Same as 8 except for 7/8" stub line RG-44/U.
- (11) Connects type N to 3/8" pyrotanax.
- (12) Connects type UG-154/U to 3/4" pyrotanax.

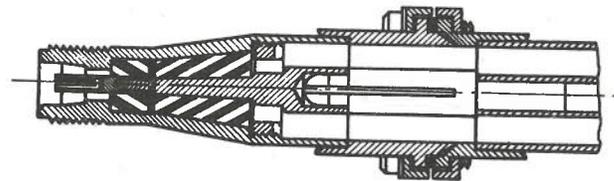


Figure 112.

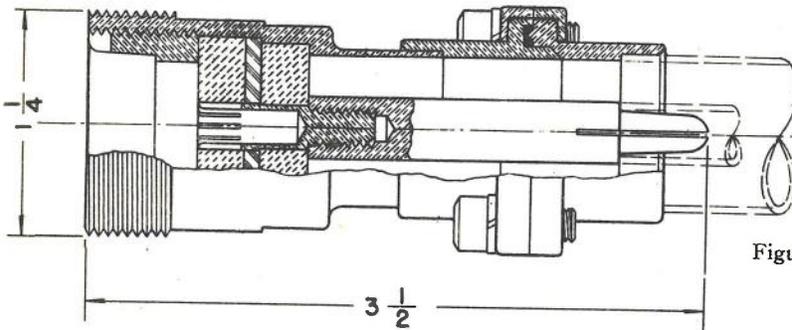


Figure 113.

Adapters, pressurized. Requires plug to connect cable to rigid line.

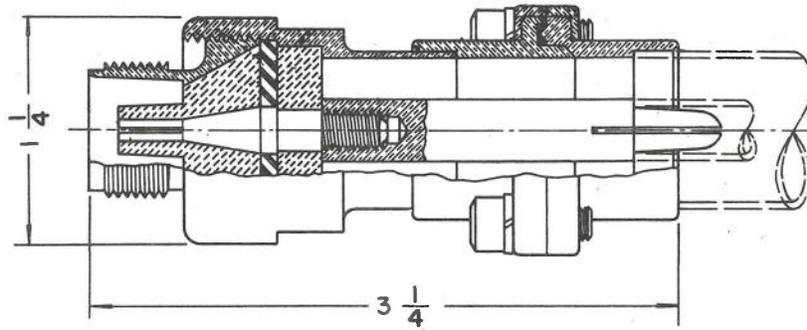


Figure 114.

Adapters, pressurized. Requires plug to connect cable to rigid line (cont.).

Adapters, high voltage, nonpressurized—Cable to rigid line

AN type	Name	Category	Fig no.	Navy type	ANRFCCC or Navy draw. no.	Army or other type no.	Army or other draw. no.	Fits RG- /U cable	Weather proof	Notes	Mfg. code
.....	Adapter.....	3	122	49197	RE 49F 176	.....	.....	8, 9, 10	Yes	(1)	40, 67
.....	Adapter.....	3	.....	.....	.....	.....	M.I.T. C-2117	14	Yes	(2)	67
.....	Adapter.....	3	123	.....	.....	.....	M.I.T. 4340	11, 12, 13	Yes	(3)	67, 71
.....	Adapter.....	3	124	.....	.....	.....	M.I.T. B-6037	14	Yes	(4)	67
.....	Adapter.....	3	.....	49454	RE 49F 194	.....	.....	14	Yes	(5)	67

NOTES:

- (1) Connects to 7/8", 50 ohm, bead line.
- (2) Connects to RG-44/U stub line.
- (3) Connects to 7/8", 70 ohm, stub line.
- (4) Connects to 1/2", 50 ohm, stub line.
- (5) Connects to RG-46/U stub line.

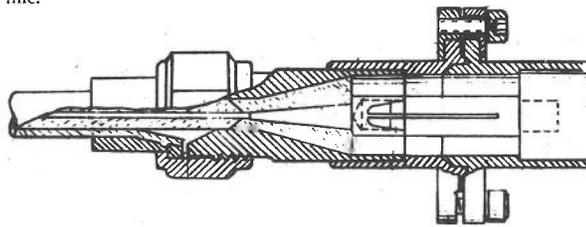


Figure 122.

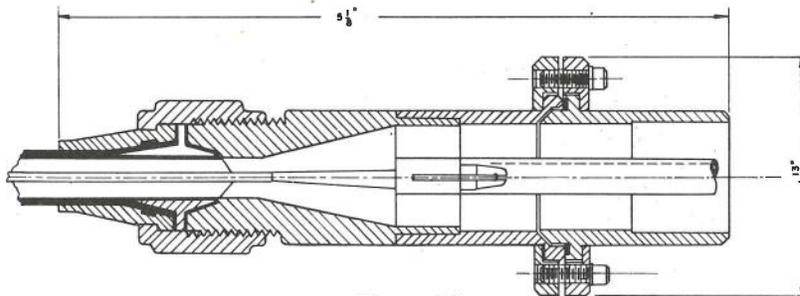


Figure 123.

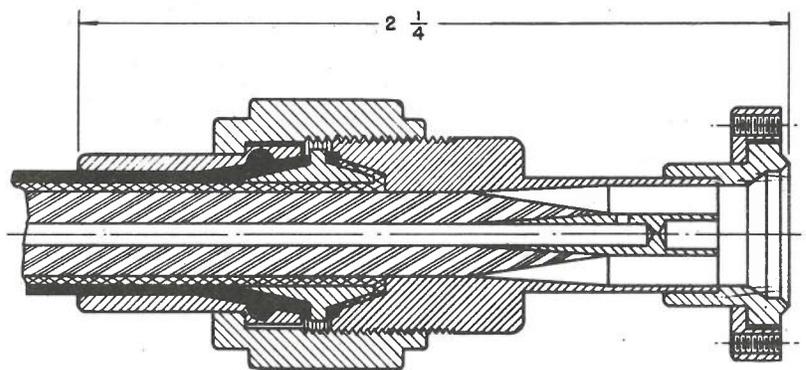


Figure 124.

Adapters, high voltage, non-pressurized molded. Cable to rigid line.

**13. Pulse Connectors—Ceramic Insert Type**

The ceramic insert pulse connectors listed in this section are commonly known as types A and B. The type A connectors have been widely used in Naval aircraft equipments. At very high altitudes they occasionally flash-over across the ceramic insert. No damage is caused by the flashover and they may continue to be used as soon as the voltage stress is relieved. The chief difficulty with the type A connector is the relatively poor grounding between the mating connectors. This causes excessive noise where they are used near communication equipment.

The type B connectors are considered as standard for use with RG-27/U and RG-28/U cable for shipboard and Signal Corps ground equipment. They may be used at voltage up to 15 KV peak. These connectors tend to leak noise. However, the problem is not as serious as with the type A because the equipments with which they are being used are generally not near communication equipments.

**Pulse connectors—Ceramic insert type**

AN type	Name	Category	Fig no.	Navy type	ANRFCCC or Navy draw. no.	Army or other type no.	Army or other draw. no.	Fits RG- /U cable	Weather proof	Notes	Mfg. code
UG-34/U	Plug.....	3	125			Rad. Lab. A	Rad. Lab. B-4642	25, 26, 64	Yes	(3)	74
UG-35/U	Socket Air to Air.....	3	126			Rad. Lab. A	Rad. Lab. B-4641		Yes		
	Socket Air to Oil.....	3	126			Rad. Lab. A			Yes		
UG-62/U	Socket Air to Oil Small.....	3	127			Rad. Lab. A	Rad. Lab. 3539-B		Yes		33b
UG-63/U	Socket Air to Oil Small.....	3	127			Rad. Lab. A	Rad. Lab. 3539-A		Yes		33b
UG-221/U	Adapter 2 Female ends.....	3	128			Rad. Lab. A	Rad. Lab. B-5731-A	27	Yes	(1)	33b
UG-36/U	Plug.....	2	129		RE 49F 354	Rad. Lab. B	Rad. Lab. B-4643	28	Yes	(4)	33b, 74
UG-174/U	Plug.....	2	129			Rad. Lab. B	Rad. Lab. B-4643		Yes	(4)	33b, 74
UG-37/U	Socket Air to Air.....	2	130		RE 49F 353	Rad. Lab. B	Rad. Lab. B-4644		Yes		33b, 74
UG-38/U	Socket Air to Oil.....	2	131		RE 49F 352	Rad. Lab. B	Rad. Lab. B-4645		Yes		33b, 74
UG-166/U	Jack.....	2	132			G.E. 8B96		28	Yes	(4)	33b
UG-158/U	Jack.....	2	132			G.E. 8B98		27	Yes	(4)	33b
UG-222/U	Adapter 2 Female ends.....	2	133			G.E. 79X822	G.E. M3995982		Yes	(2)	33b

NOTES:

- (1) Couples two UG-34/U plugs.
- (2) Couples two UG-36/U or UG-174/U plugs.
- (3) Assembly instructions are shown on Radiation Laboratory Report M-150.
- (4) Assembly instructions are shown on Radiation Laboratory Report M-149.

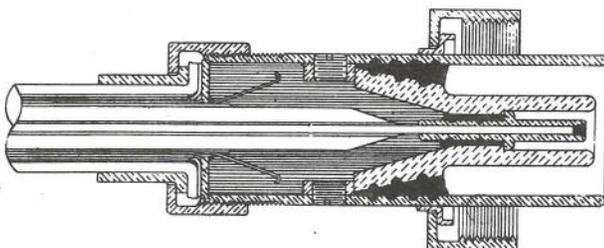


Figure 125.

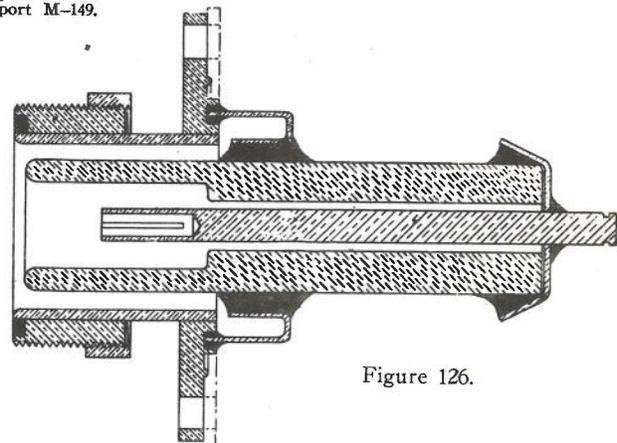


Figure 126.

Pulse connectors, Ceramic insert type.

RESTRICTED

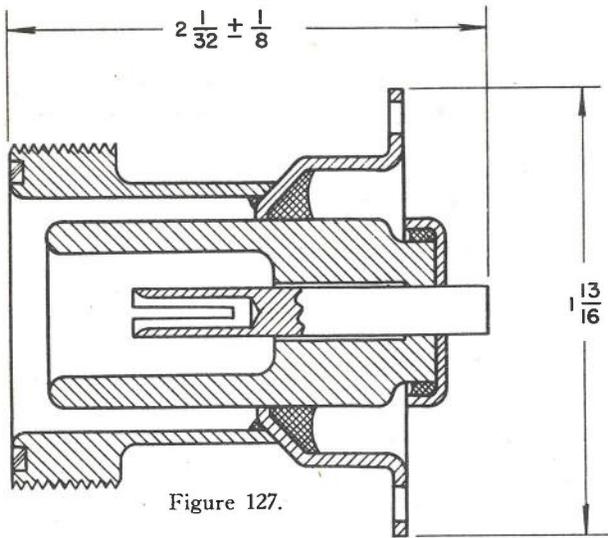


Figure 127.

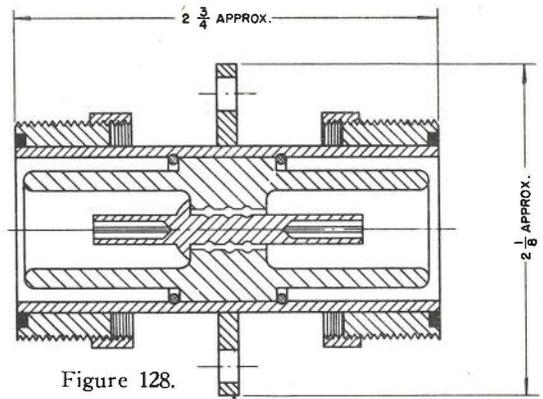


Figure 128.

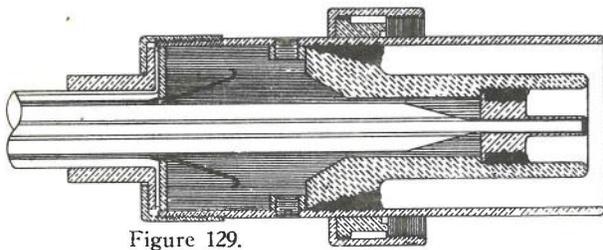


Figure 129.

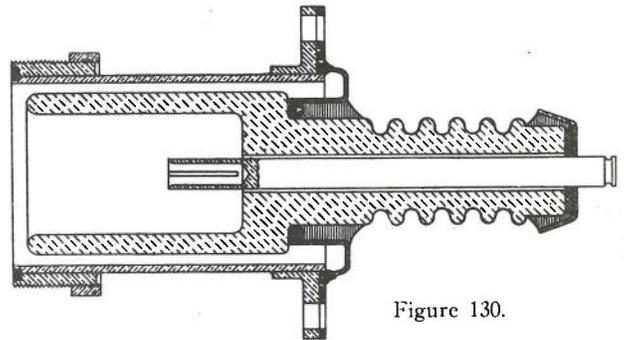


Figure 130.

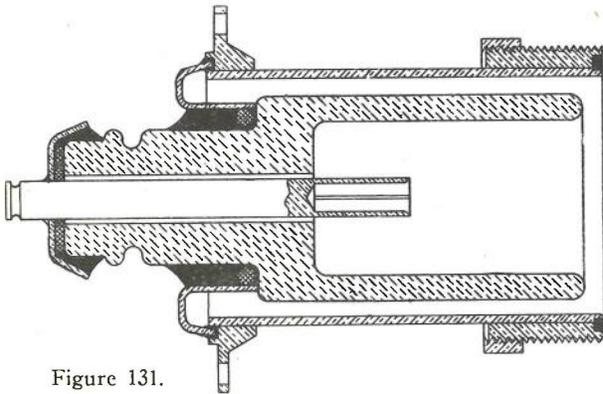


Figure 131.

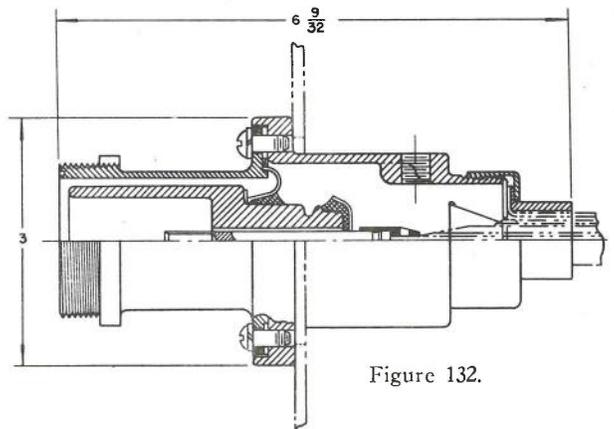


Figure 132.

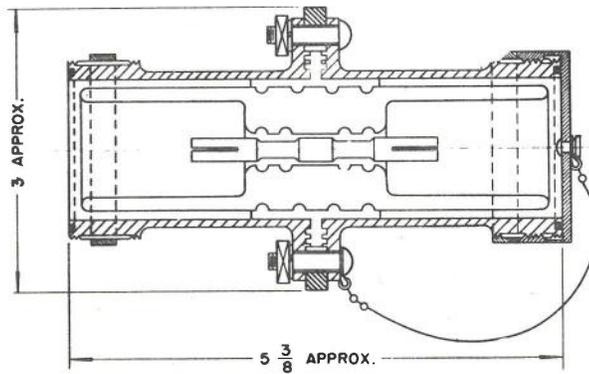
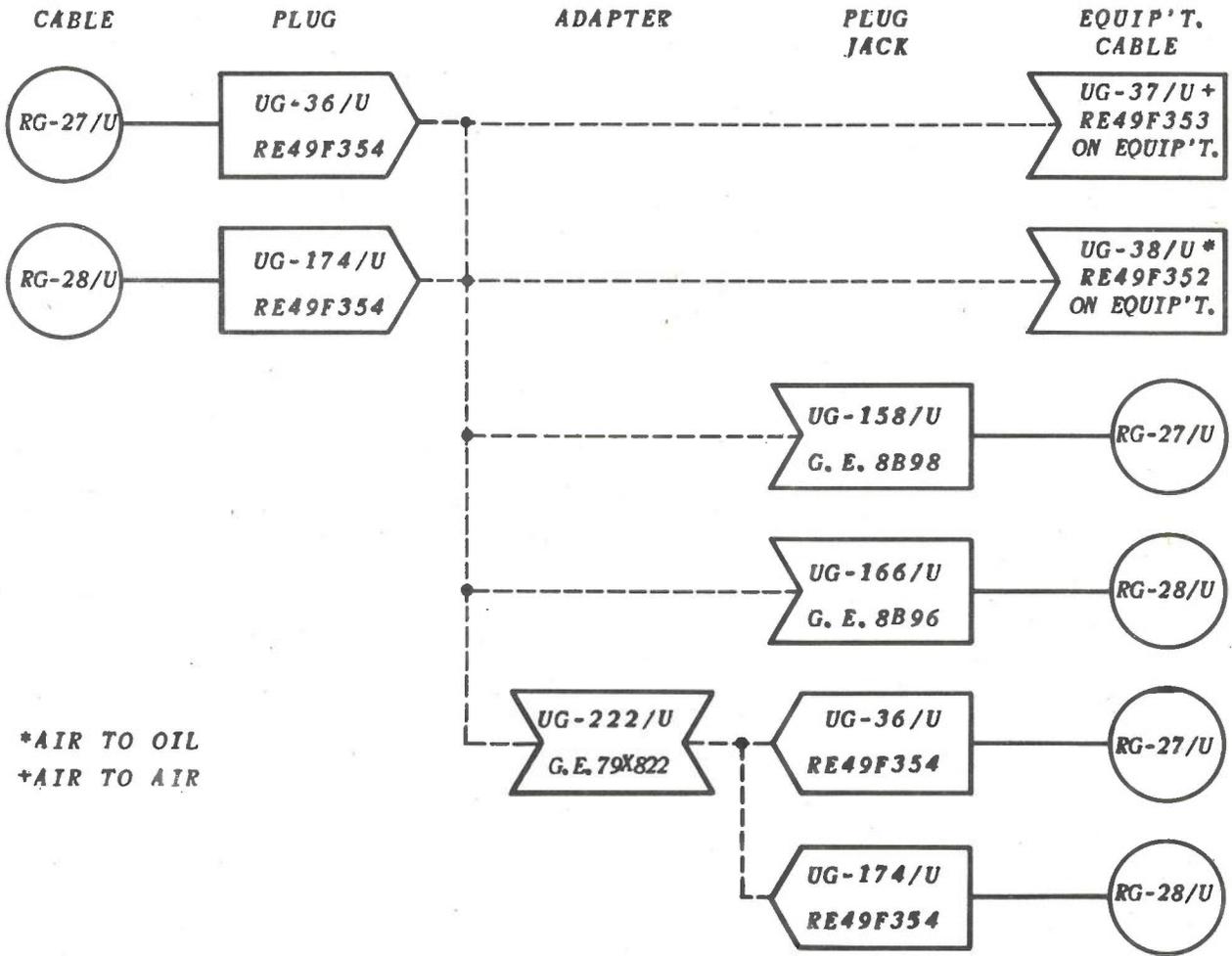


Figure 133.

Pulse connectors, Ceramic insert type (cont.).



Pulse connectors, Ceramic insert type.

15. End Seals

These end seals are primarily for low or medium frequency use, where impedance matching is not a requirement, where high voltages may be encountered and weather-proofing is necessary.

End seals\*

AN type	Name	Category	Fig no.	Navy type	ANRFCCC or Navy draw. no.	Army or other type no.	Army or other draw. no.	For use with RG- /U cable	Weather proof	Notes	Mfg. code
MX-407/U	End seal.....	2	137	.....	RE 49F 341	.....	.....	17, 18	Yes	(1)	71
.....	End seal.....	2	138	49530	RE 49F 237	.....	.....	8, 10	Yes	.....	1, 33b
MX-498/U	End seal.....	2	139	.....	RE 49F 371	.....	.....	8, 9, 63 11	Yes	.....	71

NOTE:

- (1) Drawing RE 49F 363 covers assembly instructions.
- \* Also see NRL listing.

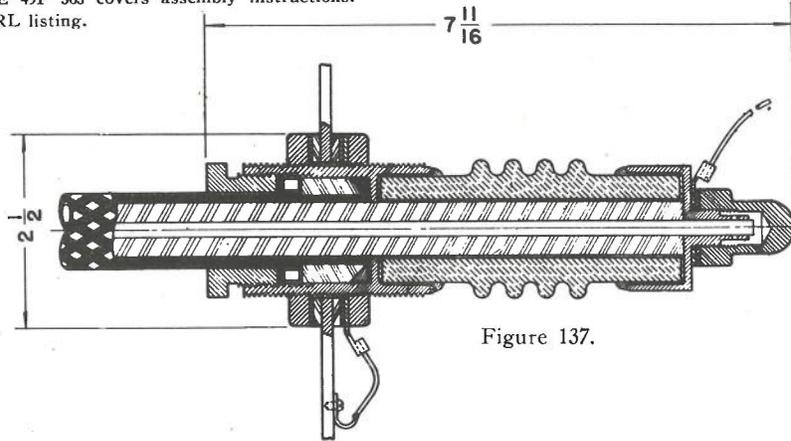


Figure 137.

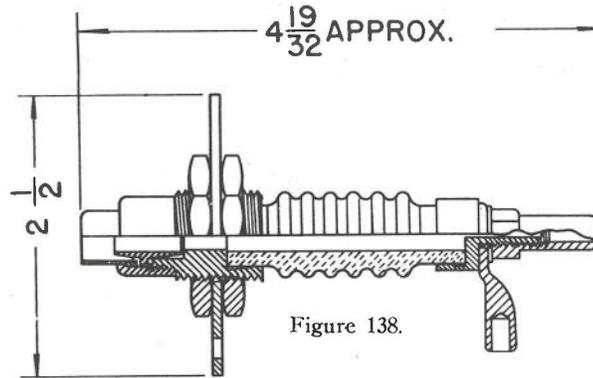


Figure 138.

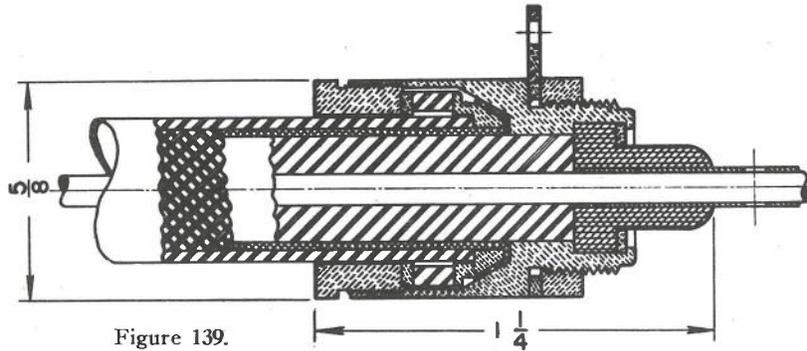


Figure 139.

End seals.

## Chapter 4—RIGID WAVE GUIDES

This section is essentially a listing of rigid wave guides used in Army and Navy radio and radar equipments. The *Army-Navy Standard List of Wave Guides and Couplings* dated 10 October 1944 is included in this section although it contains in addition, the standard lists of wave guide couplings and flexible wave guide assemblies. These lists will not be duplicated in the applicable section.

### 1. Army-Navy Standard List of Wave Guides and Couplings

10 October 1944

TO: ALL THOSE CONCERNED WITH THE DESIGN, PROCUREMENT AND MANUFACTURE OF ARMY OR NAVY EQUIPMENT UTILIZING WAVE GUIDES AND ASSOCIATED COUPLINGS.

1. The following standard list of radio frequency rigid and flexible wave guides and associated couplings has been selected by the Army-Navy R. F. Cable Coordinating Committee. The purpose of this list is to standardize wave guides and couplings and effect a reduction in the number of types used in Army-Navy electronic equipment.

2. IT IS MANDATORY THAT ALL WAVE GUIDES AND COUPLINGS USED IN ARMY AND NAVY ELECTRONIC EQUIPMENTS BE SELECTED FROM THE FOLLOWING LIST.

3. Where an existing equipment or a new design equipment requires a guide or coupling for which a satisfactory type cannot be obtained from the standard list, it will be necessary to obtain a specific waiver from the Army-Navy R. F. Cable Coordinating Committee to use such a guide or coupling. Requests for such waivers, accompanied by a statement giving the engineering considerations which make the type necessary, shall be forwarded to the Army-Navy R. F. Cable Coordinating Committee. The request shall be forwarded in the case of Army equipment, via the cognizant Army laboratory and the Officer in Charge, R. F. Cable Section, Signal Corps Standards Agency. In the case of Navy equipment, the request shall be forwarded via the Chief of the Bureau of Ships, Navy Department, Code 930, Washington, D. C. with the standard wave guide couplings.

4. Special R. F. plumbing components such as mixers, T. R. boxes, feed horns, etc., are not affected by the provisions of this directive providing these special components have terminations which will mate with the standard wave guide couplings.

5. Where wave guides and couplings not covered by the standard list are used in existing equipments, they may continue to be used pending action on requests for waivers.

6. The provisions of this directive are in no way intended to hamper or restrict new developments in the field of wave guide transmission.

7. The provisions of this directive shall take effect immediately.

Office of the Chief Signal Officer  
Headquarters, Army Service Forces  
War Department

Chief of the Bureau of Ships  
Navy Department

B40881

#### Standard list of rigid wave guides

AN Type No.	Dimensions (In.)		Material	Weight lbs/ft	Attenuation at Normal Operating Frequency—db/ft	Power rating Megawatts
	Outside	Inside				
RG-69/U	6.66 x 3.41	6.500 x 3.250	Brass	6.07	.....	6.0
RG-48/U	3 x 1½	2.840 x 1.340	Brass	2.63	0.012	2.6
RG-49/U	2 x 1	1.872 x 0.872	Brass	1.40	0.019	1.2
RG-50/U	1½ x ¾	1.372 x 0.622	Brass	1.03	0.039	0.57
RG-51/U	1¼ x ¾	1.122 x 0.497	Brass	0.848	0.044	0.44
RG-68/U	1¼ x ¾	1.122 x 0.497	Aluminum	0.263	.....	0.44
RG-52/U	1 x ½	0.900 x 0.400	Brass	0.531	0.072	0.25
RG-67/U	1 x ½	0.900 x 0.400	Aluminum	0.165	.....	0.25
RG-53/U	.....	.....	Brass	.....	.....	.....
RG-66/U	.....	.....	Silver	.....	.....	.....
RG-75/U	3 x 1½	2.840 x 1.340	Aluminum	0.820	.....	2.6

NOTE:

(1) JAN-W-85 specification "Waveguides, Seamless Rectangular Tubing," covers the mechanical requirements for tubing for the above waveguides.

**Standard list of wave guide coupling flanges**

AN Type No.	For Use With Wave Guide Type	Army-Navy R. F. Cable Coordinating Committee Drawing Number	Coupling Type	Flange Type	Material
UG-65/U UG-66/U	RG-48/U	RE 49F 213	Contact	Plain Plain (includes gasket)	Bronze Bronze
UG-53/U UG-54/U	RG-48/U	RE 49Z 205	Choke	Plain Choke	Bronze Bronze
UG-149/U UG-148/U	RG-49/U	RE 49F 279	Choke	Plain Choke	Brass Brass
UG-150/U	RG-50/U	RE 49AA 280	Contact	Plain	Bronze
UG-51/U UG-52/U	RG-51/U	RE 49F 203	Choke	Plain Choke	Brass Brass
UG-138/U UG-137/U	RG-68/U	.....	Choke	Plain Choke	Aluminum Aluminum
UG-39/U UG-40/U	RG-52/U	RE 49F 197	Choke	Plain Choke	Brass Brass
UG-135/U UG-136/U	RG-67/U	.....	Choke	Plain Choke	Aluminum Aluminum
UG-116/U UG-117/U	RG-53/U and RG-66/U	RE 49F 281	Choke	Plain Choke	Brass Brass

**Standard list of flexible wave guide assemblies**

AN Type No.	Dimensions (In.)		Material	Jacket	Each End Mates With Standard Flange
	Outside	Inside			
CG-170/U(*)	3 x 1½	2.840 x 1.340	Brass	Synthetic rubber	UG-66/U
CG-169/U(*)	3 x 1½	2.840 x 1.340	Brass	None	UG-66/U
CG-168/U(*)	2 x 1	1.872 x 0.872	Brass	Synthetic rubber	UG-148/U
CG-167/U(*)	2 x 1	1.872 x 0.872	Brass	None	UG-148/U
CG-166/U(*)	1¾ x ¾	1.122 x 0.497	Brass	Synthetic rubber	UG-52/U
CG-165/U(*)	1¾ x ¾	1.122 x 0.497	Brass	None	UG-52/U
CG-164/U(*)	1¾ x ¾	0.900 x 0.400	Brass	Synthetic rubber	UG-40/U
CG-179/U(*)	1 x ¾	0.900 x 0.400	Brass	None	UG-40/U
CG-163/U(*)	.....	.....	Brass	Synthetic rubber	UG-117/U
CG-162/U(*)	.....	.....	Brass	None	UG-117/U

NOTES:

(1) The above guides shall be made in the following lengths: 6", 12", 18", 24", 30", 36", 42", 48", 60", and 72".

(2) Assemblies have a plain flange, factory assembled at each end.

\*Length of wave guide between flange faces in inches.

2. Rigid wave guides

AN type	Name	Category	Fig no.	Navy type	ANRFCC or Navy draw. no.	Army or other type no.	Army or other draw. no.	Material	Weather proof	Notes	Mfg. code
RG-69/U	Guide 6.66 x 3.41....	1	.....	.....	JAN-W-85	.....	.....	Brass	.....	.....	4, 19
RG-48/U	Guide 3 x 1½.....	1	.....	.....	JAN-W-85	.....	.....	Brass	.....	.....	63, 4, 80
RG-75/U	Guide 3 x 1½.....	1	.....	.....	JAN-W-85	.....	.....	Alum.	.....	.....	63, 64, 19
RG-49/U	Guide 2 x 1.....	1	.....	.....	JAN-W-85	.....	.....	Brass	.....	.....	14, 63, 4
RG-50/U	Guide 1½ x ¾.....	1	.....	.....	JAN-W-85	.....	.....	Brass	.....	.....	19, 80
RG-51/U	Guide 1¼ x ⅝.....	1	.....	.....	JAN-W-85	.....	.....	Brass	.....	.....	14, 63, 4
RG-52/U	Guide 1 x ½.....	1	.....	.....	JAN-W-85	.....	.....	Alum.	.....	.....	19, 80
RG-68/U	Guide 1¼ x ⅝.....	1	.....	.....	JAN-W-85	.....	.....	Alum.	.....	.....	63, 64
RG-52/U	Guide 1 x ½.....	1	.....	.....	JAN-W-85	.....	.....	Brass	.....	.....	14, 63, 4
RG-67/U	Guide 1 x ½.....	1	.....	.....	JAN-W-85	.....	.....	Alum.	.....	.....	19, 80
RG-53/U	Guide.....	1	.....	.....	JAN-W-85	.....	.....	Brass	.....	.....	63, 64
RG-66/U	Guide.....	1	.....	.....	JAN-W-85	.....	.....	Silver	.....	.....	14, 63, 4
											19, 80



## Chapter 5—WAVE GUIDE COUPLINGS AND ADAPTERS

This section contains a listing of the widely used wave guide couplings and adapters required for connecting rigid and flexible wave guides.

The couplings are of two types, contact and choke. The contact type consists of two plain flanges which will mate with each other and are designed to produce a good electrical contact between each other. A gasket is usually provided for weatherproofing and in some cases pressurization. The choke type couplings consists of two parts, a plain flange and a choke flange. These two parts mate together to form a complete coupling. Electrical continuity is not dependant on a metal to metal contact between the two flanges. Nomenclature has been assigned in all cases to each metal flange.

Included are the outline drawings for these couplings and adapters. The standard listing of couplings is located in the preceding section, "Rigid Wave Guides".

The following convention has been established for the placement of wave guide choke couplings in R. F. transmission lines for all but K band equipments. A revised convention for K band equipments is available to those organizations cleared to receive confidential information.

1. Transmitters, receivers, antennas, test equipment assemblies and other major units shall be provided with choke flange terminations.
2. Sections of interconnecting rigid guide shall be provided with a plain flange on the end which is coupled to the choke flange termination of the major unit. Junctions between interconnecting sections of rigid guide shall be made with a choke flange-plain flange combination, with the choke flange placed nearest the antenna.
3. Wave guide couplings within major units and which are not subject to initial field installation are not covered by this convention.

**Wave guide couplings and adapters**

AN type	Name	Category	Fig no.	Navy type	ANRFCCC or Navy draw. no.	Army or other type no.	Army or other draw. no.	For use with RG-/U no.	Weath-er proof	Notes	Mfg. code
UG-65/U	Contact Coupling Plain Flange.....	1	140	49480	RE 49F 213	.....	.....	48	.....	Mates with UG-66/U	36, 76
UG-66/U	Contact Coupling Plain Flange with Gasket.....	1	140	49481	RE 49F 213	.....	.....	48	.....	Mates with UG-65/U	36, 76
UG-53/U	Choke Coupling Plain Flange.....	1	141	.....	RE 49F 334	.....	.....	48	.....	Mates with UG-54/U	76
UG-54/U	Choke Coupling Choke Flange.....	1	141	.....	RE 49F 204	.....	.....	48	.....	Mates with UG-53/U	76
UG-164/U	Choke Coupling Plain Flange.....	2	.....	.....	.....	.....	B.T.L.	48	.....	Mates with UG-165/U	.....
UG-165/U	Choke Coupling Plain Flange.....	2	.....	.....	.....	.....	B.T.L.	48	.....	Mates with UG-164/U	.....
UG-214/U	Choke Coupling Choke Flange.....	2	142	.....	RE 49F 334	.....	.....	48	.....	Mates with UG-200/U	48, 76
UG-200/U	Choke Coupling Choke Flange.....	2	142	.....	RE 49F 334	.....	.....	48	.....	Mates with UG-214/U	48, 76
UG-55/U	Expansion Coupling Plain Flange.....	3	143	.....	RE 49Z 205	.....	.....	48	.....	Mates with UG-56/U	76
UG-56/U	Expansion Coupling Choke Flange.....	3	143	.....	RE 49Z 205	.....	.....	48	.....	Mates with UG-55/U	76
UG-68/U	Elbow 6" R.H. Bend.....	2	.....	.....	RE 49F 220	.....	.....	48	.....	Couplings not included	76
UG-67/U	Elbow 6" R.E. Bend.....	2	144	.....	RE 49F 219	.....	.....	48	.....	Couplings not included	76

Wave guide couplings and adapters (continued)

AN type	Name	Category	Fig no.	Navy type	ANRFCCC or Navy draw. no.	Army or other type no.	Army or other draw. no.	For use with RG- /U cable	Weather proof	Notes	Mfg. code
UG-69/U	Elbow 2" R.E. Bend.....	3	145	.....	RE 49J 222	.....	.....	48	.....	(1)	76
UG-70/U	Elbow 2" R.H. Bend.....	3	.....	.....	RE 49J 223	.....	.....	48	.....	(1)	76
UG-148/U	Choke Coupling Choke Flange.....	1	141	.....	RE 49F 279	.....	.....	49	.....	Mates with UG-149/U	76
UG-149/U	Choke Coupling Plain Flange.....	1	.....	.....	RE 49F 279	.....	.....	49	.....	Mates with UG-148/U	76
.....	Expansion Coupling Plain Flange.....	3	143	.....	.....	.....	Walworth 4 G.O. SK-26	49	.....	Mates with 4 G.O. SK-15	76
.....	Expansion Coupling Choke Flange.....	3	.....	.....	.....	.....	Walworth 4 G.O. SK-15	49	.....	Mates with 4 G.O. SK-26	76
UG-150/U	Contact Coupling Plain Flange.....	1	146	.....	RE 49AA 280	.....	.....	50	.....	.....	76
UG-42/U	Choke Coupling Choke Flange.....	3	147	.....	RE 49F 198	.....	.....	51	.....	Mates with UG-51/U	76
UG-52/U	Choke Coupling Choke Flange.....	1	148	.....	RE 49F 203	.....	.....	51	.....	Mates with UG-51/U	76, 26, 47
UG-51/U	Choke Coupling Plain Flange.....	1	148	.....	RE 49F 203	.....	.....	51	.....	Mates with UG-42/U & UG-52/U	76, 26, 47 81
UG-142/U	Elbow 2" R.E. Bend.....	2	.....	.....	.....	.....	B.T.L. BL-21771	51	.....	Includes UG-51/U & UG-52/U	26
UG-143/U	Elbow 2" R.H. Bend.....	2	.....	.....	.....	.....	B.T.L. BL-21772	51	.....	Includes UG-51/U & UG-52/U	26
UG-39/U	Choke Coupling Plain Flange.....	1	148	.....	RE 49F 197	.....	.....	52	.....	Mates with UG-40/U	76, 26, 47 81
UG-40/U	Choke Coupling Choke Flange.....	1	148	.....	RE 49F 197	.....	.....	52	.....	Mates with UG-39/U	76, 26, 47 81
UG-116/U	Choke Coupling Plain Flange.....	1	149	.....	RE 49F 281	.....	.....	53, 66	.....	Mates with UG-117/U	26, 81
UG-117/U	Choke Coupling Choke Flange.....	1	149	.....	RE 49F 281	.....	.....	53, 66	.....	Mates with UG-116/U	26, 81
UG-211/U	Choke Coupling Plain Flange.....	3	148	.....	.....	.....	Philco SK 3776	53, 66	.....	.....	.....
UG-210/U	Choke Coupling Choke Flange.....	3	148	.....	.....	.....	Philco SK 3775	53, 66	.....	.....	.....
UG-137/U	Choke Coupling Choke Flange.....	1	148	.....	.....	.....	Walworth 4 G.O. SK-303	68	.....	Aluminum mates with UG-138/U	76
UG-138/U	Choke Coupling Plain Flange.....	1	148	.....	.....	.....	Walworth 4 G.O. SK-302	68	.....	Aluminum mates with UG-137/U	76
UG-135/U	Choke Coupling Plain Flange.....	1	148	.....	.....	.....	Walworth 4 G.O. SK-300	67	.....	Aluminum mates with UG-136/U	76
UG-136/U	Choke Coupling Choke Flange.....	1	148	.....	.....	.....	Walworth 4 G.O. SK-301	67	.....	Aluminum mates with UG-135/U	76
UG-152/U	Adapter UG-40/U to UG-51/U.....	2	.....	.....	RE 49F 413	.....	Selectar A 40249	51, 52	.....	.....	.....
UG-153/U	Adapter UG-39/U to UG-52/U.....	2	.....	.....	RE 49F 413	.....	Selectar S-40248	51, 52	.....	.....	.....
UG-247/U	Choke Coupling Plain Flange.....	.....	.....	.....	RA 10A 794	.....	.....	50	.....	(2)	76
UG-248/U	Choke Coupling Choke Flange.....	.....	.....	.....	RA 10A 794	.....	.....	50	.....	(2)	76

GENERAL NOTES:

First category items are listed in "Army-Navy Standard List of Wave guides and Couplings" dated 10 October 1944.

2" radius bends are not very good electrically. 3" radius, 6" radius or larger bends are recommended for RG-48/U waveguide.

3" and 6" radius, 45° and 90° prefabricated bends in both the E and H planes are available without couplings and with the various standard RG-48/U couplings.

NOTES:

(1) Includes UG-66/U couplings on each end.

(2) For use only inside of equipments.

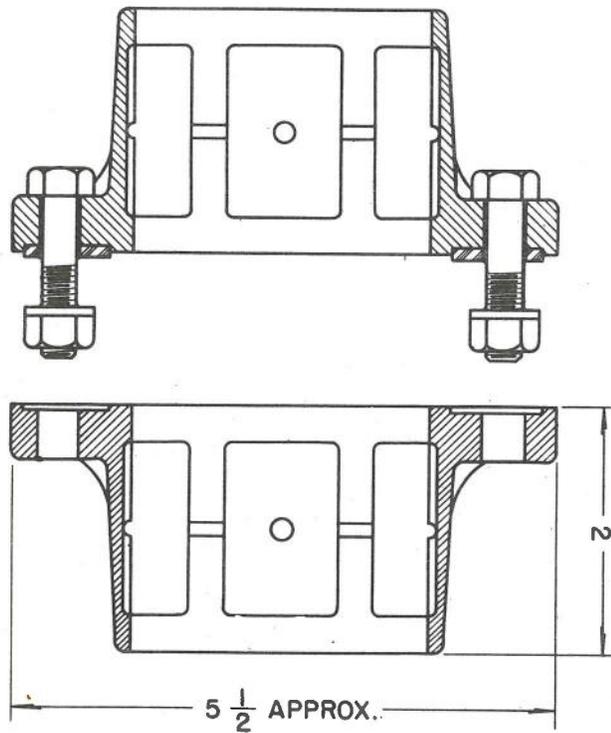


Figure 140.

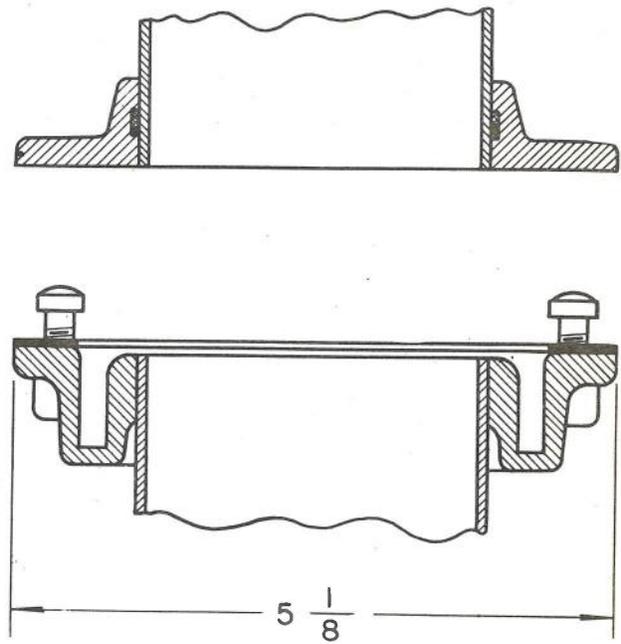


Figure 142.

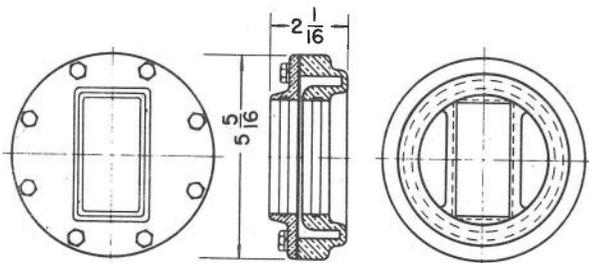


Figure 141.

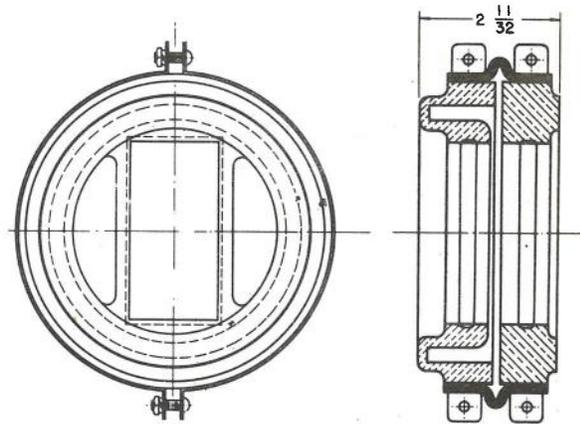


Figure 143.

Waveguide couplings and adapters.

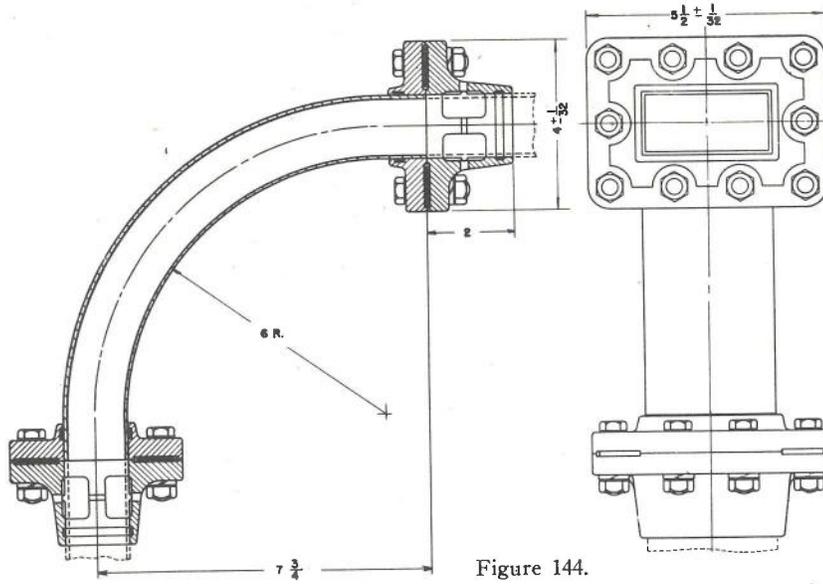


Figure 144.

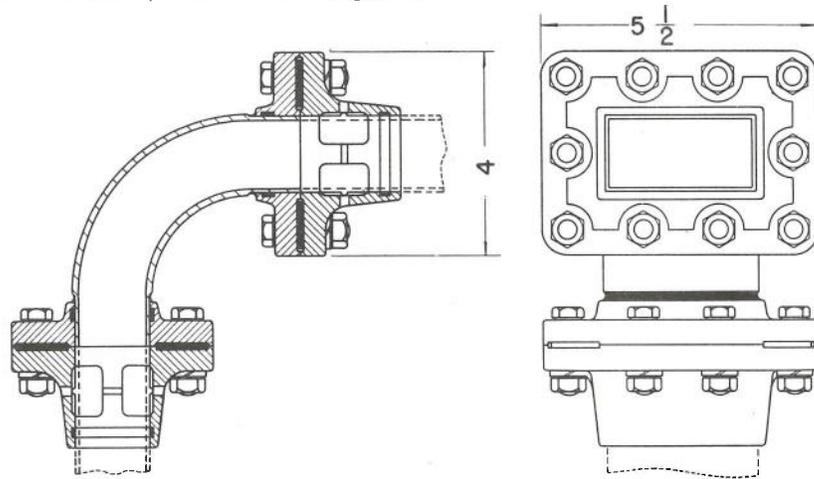


Figure 145.

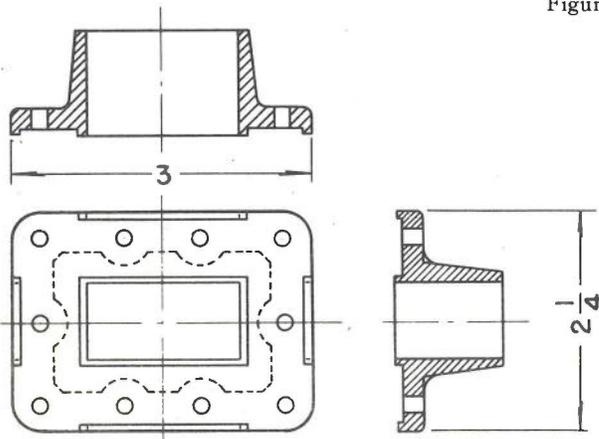


Figure 146.

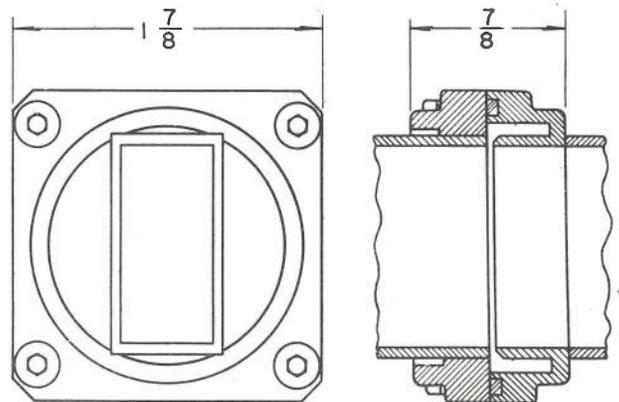


Figure 147.

Waveguide couplings and adapters (cont.).

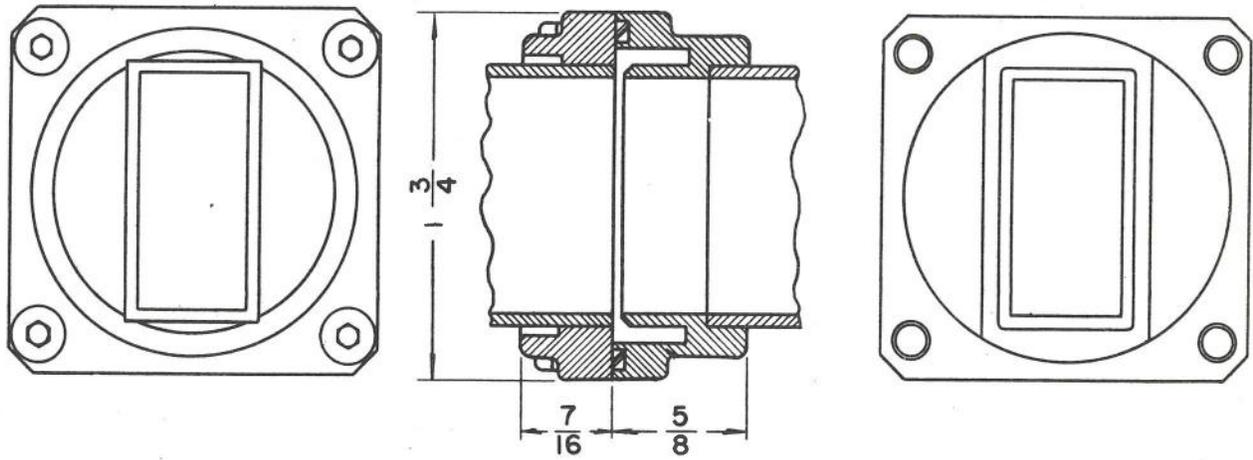


Figure 148.

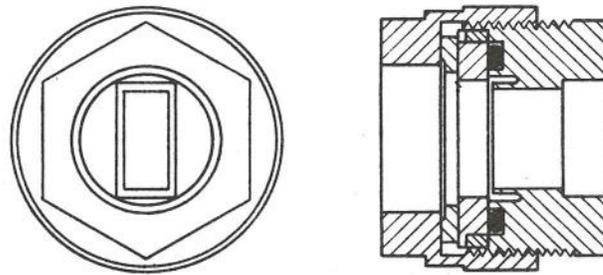


Figure 149.

Waveguide couplings and adapters (cont.).



## Chapter 6—FLEXIBLE WAVE GUIDE ASSEMBLIES

This section contains a list of flexible wave guide assemblies. Standard flexible wave guide assemblies include a plain flange at each end except those assemblies used with UG-116/U and UG-117/U couplings; these assemblies are standard with a plain flange at one end and a choke flange at the other end. This change was recently agreed to by the principal users of this type assembly.

The length of the assembly is specified in the nomenclature by following the CG- /U with parenthesis containing the length in inches between the flange faces.

The standard listing of flexible wave guide assemblies is located in the previous section on "Rigid Wave Guides".

**Flexible wave guide assemblies**

AN type	Name	Category	Fig no.	Navy type	ANRFCCC or Navy draw. no.	Army or other type no.	Army or other draw. no.	Cable code	Jacketed	Notes	Mfg. code
CG-170/U(*)	Assembly 3 x 1½...	1	.....	.....	.....	.....	.....	.....	Yes	Couples to UG-66/U	5
CG-169A/U(*)	Assembly 3 x 1½...	2	.....	.....	.....	.....	.....	.....	Yes	Couples to UG-66/U	73
CG-333/U(*)	Assembly 3 x 1½...	2	.....	.....	.....	.....	.....	.....	No	Couples to UG-53/U & UG-54/U	73
CG-350/U(*)	Assembly Ticket Tubing.....	2	.....	.....	.....	.....	.....	.....	No	.....	73
CG-168/U(*)	Assembly 2 x 1.....	1	.....	.....	.....	.....	.....	.....	Yes	Couples to UG-148/U	5
CG-167A/U(*)	Assembly 2 x 1.....	2	.....	.....	.....	.....	.....	.....	No	Couples to UG-148/U	73
CG-343/U(*)	Assembly 1½ x ¾..	2	.....	.....	.....	.....	.....	.....	Yes	Couples to UG-150/U	5
CG-166/U(*)	Assembly 1¼ x ⅝..	1	.....	.....	.....	.....	.....	.....	Yes	Couples to UG-52/U	5
CG-165A/U(*)	Assembly 1¼ x ⅝..	2	.....	.....	.....	.....	.....	.....	Yes	Couples to UG-52/U	73
CG-334/U(*)	Assembly 1¼ x ⅝..	3	.....	.....	.....	.....	.....	.....	Yes	Couples to UG-51/U	5
CG-164/U(*)	Assembly 1 x ½.....	2	.....	.....	.....	.....	.....	.....	Yes	Couples to UG-40/U	5
CG-179A/U(*)	Assembly 1 x ½.....	2	.....	.....	.....	.....	.....	.....	Yes	Couples to UG-40/U	73
CG-163/U(*)	Assembly.....	1	.....	.....	.....	.....	.....	.....	Yes	Couples to UG-117/U	5
CG-162A/U(*)	Assembly.....	2	.....	.....	.....	.....	.....	.....	Yes	Couples to UG-117/U	73
CG/344/U(*)	Assembly.....	2	.....	.....	.....	.....	.....	.....	Yes	(1)	5

NOTES:

- (1) Vertebrae type of wave guide and has UG-116/U coupling one end and a UG-117/U coupling at other end.
- \*Length of wave guide between flange faces in inches.



## Chapter 7—BEAD SUPPORTED COAXIAL LINES

It is recommended that only 52 ohm lines be used for new ground equipments. No bead lines are recommended for shipboard or aircraft use. This is due to the fact that under vibration and shock, bead lines require much maintenance to keep them pressurized. Furthermore, certain types of shock impulses cause ceramic spacers to shatter.

**Bead supported coaxial lines**

Overall Diameter Inches	Nominal Impedance Ohms	Inner Conductor		Supporting Insulation		Bead Dia.	Min. Bend Radius	Weight Lbs./100'	Nominal Capacitance MMF/Ft.	Propagation Constant % at 100 MC	Average Attenuation Db/Ft 100 MC	Flashover Voltage 60 ~ Rms	Recommended Rating—Input Watts at 100 MC	Max. Total Power at 100 MC Note 1
		Type	Dia. "	Spacing	Material									
												Notes		
.250	75	Solid Copper Wire	.051	2½ turns per inch	Polyethylene*	.200	3"	8.25	14.5	88.7	.015	1000	750	1350
.375	72	Solid Copper Wire	0.081	2"	Steatite†	.311	8"	15.75	14.5	86.2	.011	2900	1500	3000
.875	65	Copper Tube	.250	6"	Steatite†	.785	.....	60.	18.4	87.6	.005	7000	4000	5250
.875	65	Copper Tube	.250	3"	Steatite†	.785	5"	60.	18.4	87.6	.005	7000	4000	5250
1.625	50	Copper Tube	.625	6"	Steatite†	1.527	.....	125.	23.4	86.8	.003	11,000	9000	10,000
‡1.625	50	Copper Tube	.638	3"	Poly F1114‡	1.527	.....	125.	20.5	94.9	.002	11,000	9000	10,000
3.125	.....	Copper Tube	.875	12"	Steatite†	3.027	.....	230.	.....	.....	.....	21,500	25,000	25,500
3.125	.....	Copper Tube	.875	6"	Poly F1114‡	3.027	.....	241.	.....	.....	.....	21,500	25,000	25,500

\*Helical wrapped thread.

†Beaded

‡See NavShips 900,579 for installation instructions.

Communication Products, Inc. Manufacturers' code: 8-43-21.

**NOTES:**

- (1) Total watts input based on center conductor temp. of 220°F. Ambient 76°F.
- (2) RMS volts—with line at atmospheric pressure.



### Chapter 8—COUPLINGS FOR BEAD SUPPORTED COAXIAL LINES

The following types of couplings are only a few of the many types that have been used in Service equipments. They are recommended in lieu of other types, as they offer less electrical discontinuity, and, if they are properly assembled to the line, require no maintenance.

Couplings for bead supported coaxial lines

AN type	Name	Category	Fig no.	Navy type	ANRFCCC or Navy draw. no.	Army or other type no.	Army or other draw. no.	Line code	Weather proof	Notes	Mfg. code
	Female Coupling....	2	150			GE 4B213	GE-Pittsfield K-8396763	7/8	.....	(1)	33b
	Female Coupling....	2	150			4B233	K-8396763	1 1/8	.....	(1)	33b
	Female Coupling....	2	150			4B253	K-8396763	3/4	.....	(1)	33b
	Female Coupling....	2	151			4B211	K-8396761	7/8	.....	(2)	33b
	Female Coupling....	2	151			4B231	K-8396761	1 1/8	.....	(2)	33b
	Male Coupling....	2					K-9207025	3/4	.....	(3)	33b
	Male Coupling....	2	152				K-9207002	1 1/8	.....	(4)	33b
	Male Coupling....	2	153			4B201	K-8396751	7/8	.....	(5)	33b
	Male Coupling....	3	153			4B205	K-8396751	7/8	.....	(6)	33b
	Male Coupling....	2	153			4B221	K-8396751	1 1/8	.....	(7)	33b
	Male Coupling....	3	154			4B203 4B207	K-8396753 K-8396753	7/8	.....	(3) 70 ohm.	33b
	Male Coupling....	2	154			4B223 4B243	K-8396753 K-8396753	1 1/8 3/4	.....	(3) (3)	33b
	Male Coupling....	2	155			G.E. No. 4B271	G.E. No. K-8396750	7/8	.....	(8)	33b
	Male Coupling....	2	155			4B273	K-8396750	7/8	.....	(8) 70 ohm line	33b
	Male Coupling....	2	155			4B281	K-8396750	1 1/8	.....	(8)	33b
	Male Coupling....	2	155			4B291	K-8396750	3/4	.....	(8)	33b
	Solderless Coupling.....	3		49543	RE 49F 241			7/8	.....	(9)	42
	Solderless Coupling.....	3	156			Lapp 30225	Lapp 2936	7/8	.....	(10), (11)	46
	Solderless Coupling.....	3	157	49773		RCA M-438127- 502		1 1/8	.....	(12), (13)	21
	Solderless Coupling.....	3	157	49772		RCA M-438127- 501		1 1/8	.....	(12), (13)	21
	Coupling 90°.....	3	158	49774		RCA T-617920- 502		1 1/8	.....	(12), (13)	21
	Coupling 45°.....	3	159	49775		RCA T-617971- 501		1 1/8	.....	(12), (13)	21

NOTES:

- (1) Less center contact. Uses knurled coupling ring in lieu of bolts to connect to male coupling. Pressurized. Has mounting flange.
- (2) Same as note 1 except no mounting flange.
- (3) With center contact. Mates coupling ring type coupling. Pressurized. Incorporates mounting flange.
- (4) Same as 3 except for 1 1/8" line.
- (5) With center contact, pressurized.
- (6) Same as 5 except for 70 ohm line.
- (7) Same as 5 except for 1 1/8" line.
- (8) Stub line type, male coupling with 4 hole square coupling plate, pressurized, with bullet type center conductor contact.
- (9) Pressure seal built into coupling.
- (10) Spring loaded solderless coupling, with or without gas admission valves, etc. Coupling for other size lines also available from this organization.
- (11) With 2 pipe-tapped holes for gas admission valve or gauge.
- (12) Designed for use with "Teflon", 7/8" rigid line.
- (13) Installation technique shown in restricted publication NavShips 900,579.

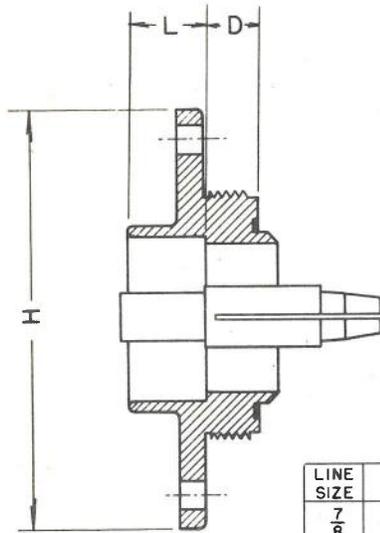


Figure 150.

LINE SIZE	D	H	L
$\frac{7}{8}$	$\frac{1}{2}$	$3\frac{1}{4}$	$\frac{3}{8}$
$1\frac{5}{8}$	$\frac{5}{8}$	$4\frac{1}{2}$	$\frac{3}{4}$
$3\frac{1}{8}$	$\frac{5}{8}$	6	$\frac{3}{4}$

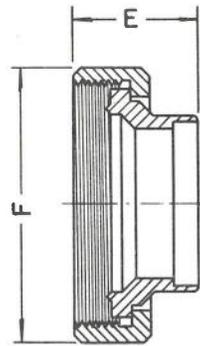


Figure 151.

LINE SIZE	E	F
$\frac{7}{8}$	$\frac{13}{16}$	2
$1\frac{5}{8}$	1	$2\frac{3}{4}$

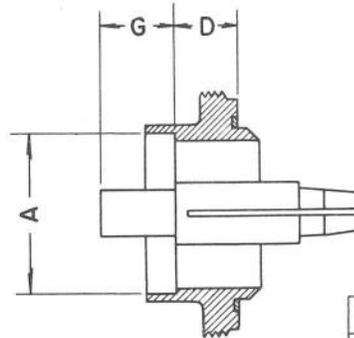


Figure 153.

LINE SIZE	A	D	G
$\frac{7}{8}$	.878	$\frac{1}{2}$	$\frac{3}{8}$
$1\frac{5}{8}$	1.631	$\frac{5}{8}$	$\frac{3}{4}$

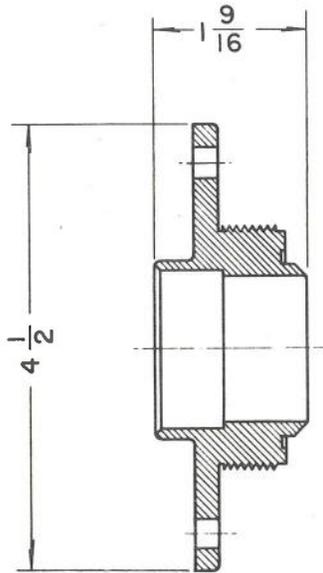


Figure 152.

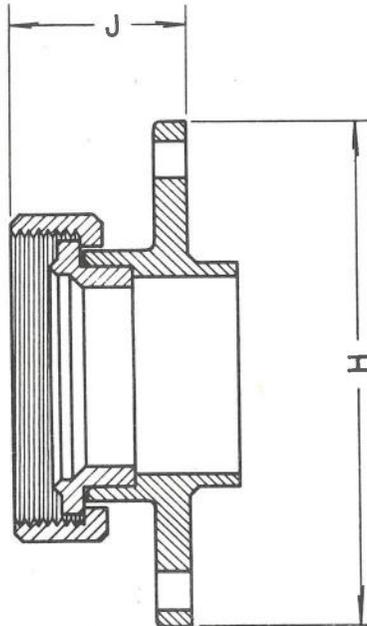


Figure 154.

LINE SIZE	J	H
$\frac{7}{8}$	$1\frac{1}{4}$	$3\frac{1}{2}$
$1\frac{5}{8}$	$1\frac{7}{16}$	$4\frac{1}{2}$
$3\frac{1}{8}$	$1\frac{5}{8}$	6

Couplings for bead supported coaxial lines.

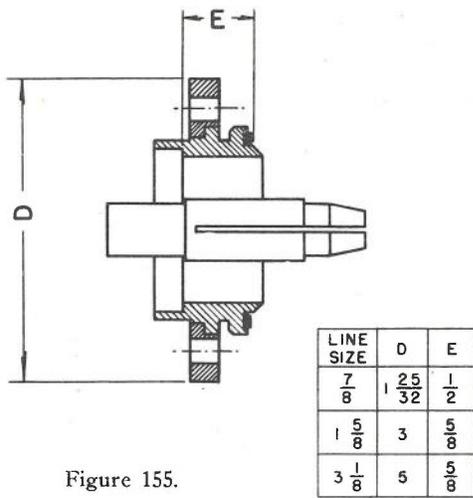


Figure 155.

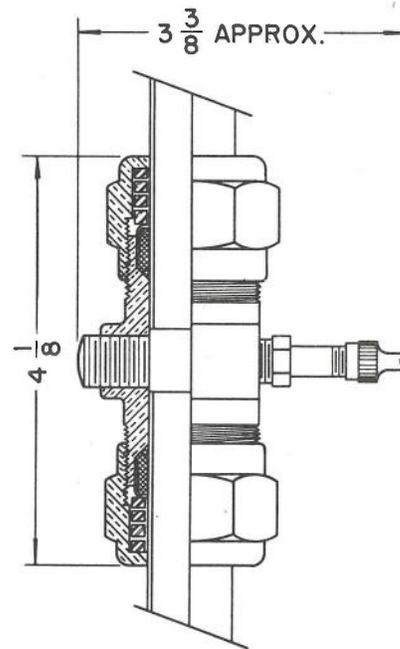
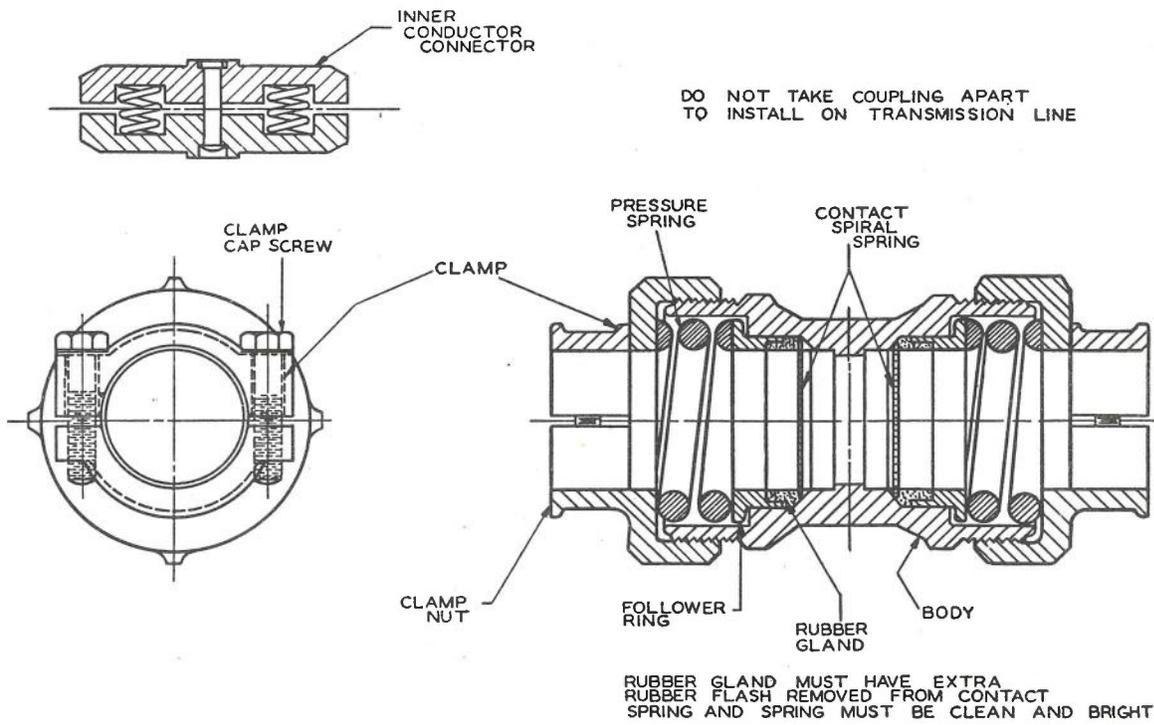


Figure 156.



Couplings for bead supported coaxial lines (cont.).

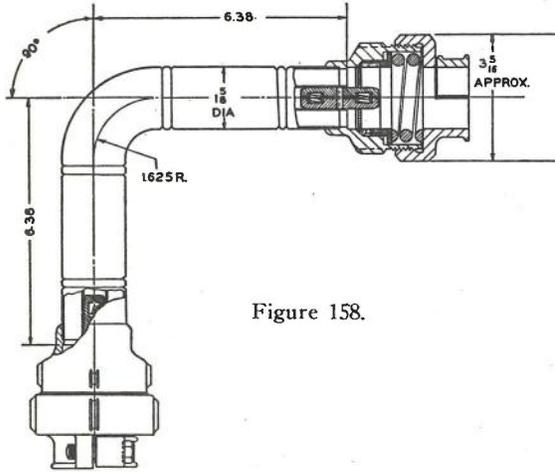


Figure 158.

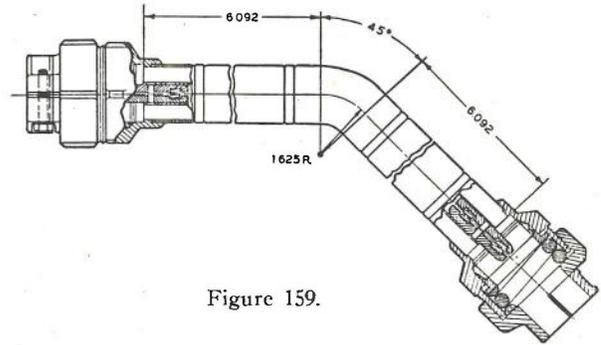


Figure 159.

Couplings for bead supported coaxial lines (cont.).

### Chapter 9—STUB SUPPORTED COAXIAL LINES

A tabulation of stub lines is listed in this section. The useful band width of frequencies or power that can be transmitted through these lines is available to organizations cleared to receive such information. It should be noted that a specific line may be used only for that frequency band for which the stub is turned.

It is recommended that wave guides for ship or ground use be used in lieu of stub lines in new equipment design because of the greater ease of installation, maintenance and supply.

Stub supported coaxial lines

AN type	Other type	Category	Fig. no.	ANRFCC or Navy dwg. no.	Nominal Impedance	Size O.D.	Outer wall thickness	Diam. inner conductor	Inner wall thickness	Notes	Mfg. code
RG-44/U	.....	1	160	.....	50	7/8	.032	.375	.032	.....	See Note 1
RG-45/U	.....	1	160	.....	50	1 1/4	.049	.500	.032	.....	See Note 1
RG-46/U	.....	1	160	.....	50	1 5/8	.049	.625	.035	.....	See Note 1
RG-47/U	.....	1	160	.....	50	1/2	.032	.1875	.032	.....	See Note 1
RG-76/U	.....	1	160	.....	50	5/8	.032	.250	.022	.....	See Note 1
.....	.....	3	.....	.....	50	5/16	.025	.125	.032	.....	See Note 1
.....	.....	3	.....	.....	70	3/8	.042	.250	.032	.....	See Note 1
.....	.....	3	.....	.....	70	3/4	.032	.250	.022	.....	See Note 1
.....	.....	3	.....	.....	70	3/8	.045	.2187	.032	.....	See Note 1

NOTE:

(1) Manufacturers Code numbers for the above are: 22, 24, 27, 30, 35, 37, 44, 58, 61, 65, 67, 72.

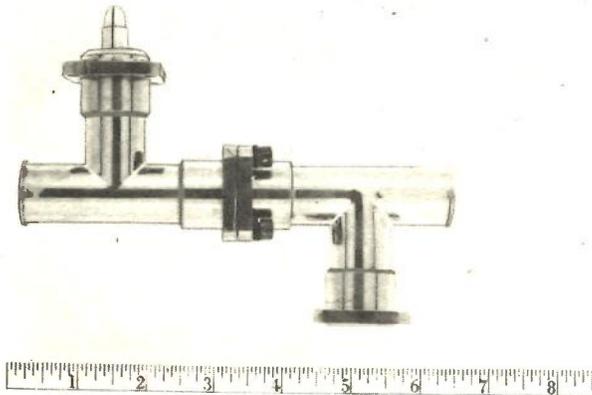


Figure 160.

Stub supported coaxial lines.



## Chapter 10—COUPLINGS FOR STUB SUPPORTED COAXIAL LINES

The couplings listed are weatherproof and good for any frequencies or power for which the stub line is designed.

Any other couplings used in the past are not recommended for use in new equipments and should be procured for replacement use only.

### Couplings for stub supported coaxial lines

AN type	Name	Category	Fig no.	Navy type	ANRFCCC or Navy draw. no.	Army or other type no.	Army or other draw. no.	For use with RG- /U	For Size line	Weather proof	Notes	Mfg. code
UG-43/U	Male Coupling..	2	161	.....	RE 49F 209	.....	M.I.T. B-4386	47	1/2"	Yes	(1)	67, 81
UG-44/U	Female Coupling	2	161	.....	RE 49F 209	.....	M.I.T. B-4386	47	1/2"	Yes	.....	67, 81
UG-140/U	Male Coupling..	2	161	.....	RE 49F 271	Sperry R-5221832	Sperry R-5221833	76	5/8"	Yes	(1)	39, 74, 67
UG-141/U	Female Coupling	2	161	.....	RE 49F 271	R-5221941 R-5221945	R-5221942 R-5221946	76	5/8"	Yes	.....	39, 74, 67
UG-45/U	Male Coupling..	2	161	.....	RE 49F 210	.....	M.I.T. C-1973	44	3/8"	Yes	(1)	33b, 67 81, 47
UG-46/U	Female Coupling	2	161	.....	RE 49F 210	.....	M.I.T. C-1973	44	3/8"	Yes	.....	33b, 67 81, 47
UG-47/U	Male Coupling..	2	161	.....	RE 49F 211	.....	B-4460	45	1 1/4"	Yes	(1)	67
UG-48/U	Female Coupling	2	161	.....	RE 49F 211	.....	B-4460	45	1 1/4"	Yes	.....	67
UG-49/U	Male Coupling..	2	161	.....	RE 49F 212	.....	B-2168	46	1 5/8"	Yes	(1)	67
UG-50/U	Female Coupling	2	161	.....	RE 49F 212	.....	B-2168	46	1 5/8"	Yes	.....	67

NOTE:

- (1) Special care should be taken not to deform or nick sharp, contacting edge of this coupling.

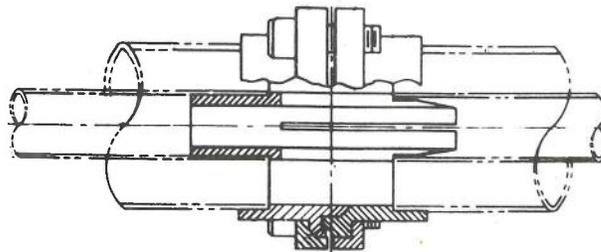


Figure 161.

Couplings for stub supported coaxial lines.



## Chapter II—MISCELLANEOUS NAVAL LINES AND FITTINGS

The following list of transmission lines, fittings and associated equipment has been prepared principally for the convenience of Naval activities. The listing has been prepared by the Naval Research Laboratory and contains components shown on their drawings.

This section contains its own manufacturer's index. The manufacturer's numbers, as listed herein, apply only to this section and should not be used or compared with those of any other section.

### 1. NAVAL RESEARCH LABORATORY ANACOSTIA, D.C., LISTING (Drawings and specifications available upon application to the Director, N. R. L.)

#### 1/4" O.D. coaxial lines (70-ohm, gas filled)

Item	Navy Type	Navy Dwg.	Pt. No.	Mfr.*	Mfr's. No.
Installation Instructions .....	.....	RA-62A-234	.....	.....	.....
Spit Ring Connector .....	.....	RA-62A-234	1	1	.....
Compression Nut .....	.....	RA-62A-234	2	1	.....
Inner Conductor Sleeve .....	.....	RA-62A-234	3	1	Part of 602-A
Deck or Bulkhead Sleeve .....	.....	RA-62A-234	4	6	.....
Deck Sleeve Nut .....	.....	RA-62A-234	5	6	.....
Spit Sleeve Member .....	.....	RA-62A-234	6	6	.....
Coaxial Line .....	.....	RA-62A-234	21	1	600
Protective Armor .....	.....	RA-62A-234	22	2; 3	M. P. Brass Special; RT-13
Gland & Follower .....	.....	RA-62A-234	23	1	380
Box Connection .....	.....	RA-62A-234	25	4	68-F
Neoprene Gland .....	.....	RA-62A-234	26	4	60-FL
Ceramic Plug .....	.....	RA-62A-234	27	1	615
Tee Connector .....	.....	RA-62A-234	28	4	72-F
Pipe Cap .....	.....	RA-62A-234	29	4	108-B
End Seal .....	.....	RA-62A-234	31	1	612-NR
Concentric Jack Shield .....	.....	RA-62A-234	35	1; 19	.....
Installation Hardware .....	.....	BuShips 9-S-3980-L	.....	6	.....

\* See Mfr's. Legend at end of list.

#### 3/8" O.D. coaxial lines (70-ohm, gas filled)

Item	Navy Type	Navy Dwg.	Pt. No.	Mfr.*	Mfr's. No.
Installation Instructions .....	.....	RA-62A-231	.....	.....	.....
Bending Instructions .....	.....	RA-62A-232	.....	.....	.....
Pipe Sleeve Coupling .....	.....	RA-62A-231	1	1	493
Inner Conductor Elbow, 90° .....	.....	RA-62A-231	2	1	Part of 491
Inner Conductor Elbow, 45° .....	.....	RA-62A-231	3	1	Part of 492
Inner Conductor Elbow, Coupling .....	.....	RA-62A-231	4	1	Part of 491 & 492
Gas-Vented Elbow Insulator .....	.....	RA-62A-231	5	1	125-4478
Coaxial Line .....	.....	RA-62A-231	21	1; 7	459-F
Deck or Bulkhead Sleeve .....	.....	RA-62A-231	22	6	.....
Shim .....	.....	RA-62A-231	23	6	.....
Gland & Follower .....	.....	RA-62A-231	24	1	478
Compression Nut .....	.....	RA-62A-231	25	1	479
Solder Type Coupling .....	.....	RA-62A-231	26	1	457-E
Short Solderless Coupling .....	.....	RA-62A-231	27	1	473-A
Solderless Coupling .....	.....	RA-62A-231	28	1	88-A
Gas Servicing Coupling .....	.....	RA-62A-231	29	1	475-B
Anchor Joint .....	.....	RA-62A-231	30	1	483-A
Differential Joint .....	.....	RA-62A-231	31	1	485-A
Expansion Coupling .....	.....	RA-62A-231	32	1	486-NA
End Seal .....	.....	RA-62A-231	33	1	474
Prefabricated Elbow, 90° .....	.....	RA-62A-231	2, 4, 5, 21, 36	1	491-C
Prefabricated Elbow, 45° .....	.....	RA-62A-231	3, 4, 5, 21, 37	1	492-C
Step Hanger .....	.....	RA-62A-231	38	6	.....

**7/8" O.D. coaxial lines (70-ohm, gas filled) (continued)**

Item	Navy Type	Navy Dwg.	Pt. No.	Mfr.*	Mfr's. No.
Bar Hanger .....	.....	RA-62A-231	39	6	.....
Hanger Screws, etc. ....	.....	RA-62A-231	40	Com'l.	.....
Strap Screws, etc. ....	.....	RA-62A-231	41	Com'l.	.....
Strap Hanger .....	.....	RA-62A-231	42	6	.....
Strap Liner .....	.....	RA-62A-231	43	6	.....
Solderless I.C. Connector .....	.....	RA-62AA-249	.....	.....	.....
Gas Barrier & Terminal Section .....	.....	RA-62F-252	.....	.....	.....
Expansion Unit .....	.....	.....	.....	1	471-1
Test Report, Line & Fittings .....	.....	NRL No. R-1824	.....	.....	.....

\* See Mfr's. Legend at end of list.

**1 1/8" O.D. coaxial lines (50-ohm, gas filled)**

Item	Navy Type	Navy Dwg.	Pt. No.	Mfr.*	Mfr's. No.
Gas Barrier & Terminal Section .....	.....	RA-62F-250	.....	.....	.....
Tee Connection .....	.....	RA-62F-251	.....	.....	.....
Coaxial Line .....	.....	.....	.....	1; 7	720; 22174
Solderless Coupling .....	.....	.....	.....	1; 7	732; 22183
Gland & Follower .....	.....	.....	.....	1	736
Compression Nut .....	.....	.....	.....	1	737
Pipe Sleeve Coupling .....	.....	.....	.....	1; 7	725; 22185
Expansion Unit .....	.....	.....	.....	1	722
Locking Section .....	.....	.....	.....	7	22175
Prefabricated Elbow, 90° .....	.....	.....	.....	1; 7	E10-10383; 22173
Prefabricated Elbow, 45° .....	.....	.....	.....	1; 7	E10-10382; 22173

\* See Mfr's. Legend at end of list.

**Miscellaneous accessories for gas-filled coaxial lines**

Item	Navy Type	Navy Dwg.	Pt. No.	Mfr.*	Mfr's. No.
Gas Admission Valve .....	.....	RA-62A-234	32	5	645
Automatic Bleeder Valve .....	10050	RA-62F-229	.....	1-12	.....
Bleeder Valve .....	.....	.....	.....	1	460
Manual Bleeder Valve .....	.....	.....	.....	1; 7	336; 367
Portable Pressure Gauge .....	.....	RA-13A-249	.....	15	.....
Moisture Indicator Element .....	62022	RA-62F-230	.....	1; 12	.....
Line Testing Ohmmeter .....	60010	RA-10F-231	.....	13-6	.....
Line Gassing Equipment .....	.....	RA-62F-222	.....	12	.....
Line Blowing Equipment .....	.....	RA-62F-221	.....	12	.....
Air Drier & Reactivator, Ship's Air Supply .....	.....	RA-62F-233	.....	12	.....
Compressor—Dehydrator, Single Cell .....	.....	.....	.....	1	2100
Compressor—Dehydrator, Dual Cell, Manual Control ....	.....	.....	.....	14	A-120
Auto. Comp.—Dehydrator, Dual Cell .....	10137	.....	.....	1; 16	2200; 22

\* See Mfr's. Legend at end of list.

**Miscellaneous accessories for solid dielectric coaxial cables**

Item	Navy Type	Navy Dwg.	Pt. No.	Mfr.*	Mfr's. No.
End Seal, RG-8/U-12/U-63/U, etc. ....	62111	RA-62F-300	.....	19; 21; 22; 23; 24	31
End Seal, Ditto, Weather .....	62119	RA-62F-300	.....	19; 21; 22; 23; 24	31
Concentric Jack Termination .....	62112	RA-62F-200	.....	19; 21; 22; 23; 24	31
Patch Cord Junction .....	62113	RA-62F-300	.....	19; 21; 22; 23; 24	31
Splice for RG-10/U-12/U .....	62114	RA-62F-300	.....	19; 22; 23; 24	.....
Stuffing Tube Packings .....	.....	RA-62AA-314	.....	27; 28; 29	.....
90° Shield for 49194 & UG-58/U .....	.....	RA-49F-247	.....	18; 21	.....
Demountable Panel Receptacle UG-231/U (Fits UG-12/U & UG-21/U Plugs) .....	.....	RA-49F-246	.....	18	.....
Junction Box Coupling for RG-8/U .....	.....	RA-62F-363	.....	.....	.....
Splicing Kit (Injection Molding) .....	10351	.....	.....	30	.....

\* See Mfr's. Legend at end of list.

**Concentric patch cords and related fittings**

Item	Navy Type	Navy Dwg.	Pt. No.	Mfr.*	Mfr's. No.
70-Ohm Patch Cord, 18"	49122-B	RA-62F-218	.....	19	.....
70-Ohm Patch Cord, 38"	49123-B	RA-62F-218	.....	19	.....
70-Ohm Patch Cord, 48"	49150-B	RA-62F-218	.....	19	.....
175-Ohm Patch Cord, 36"	49124-B	RA-62F-218	.....	19	.....
Concentric Jack	49120	RA-49F-215	.....	1; 19; 20; 21; 31	.....
Concentric Plug	49121-A	RA-49F-216	.....	1; 19; 20; 21; 31	.....
Patch Cord Adapter	.....	RA-49AA-218	.....	6	.....
90° Plug Adapter	49151	RA-49F-224	.....	19; 21; 31	.....
Binding Post Adapter	49152	RA-49AA-225	.....	19; 21; 31	.....

\* See Mfr's. Legend at end of list.

**Instructions and specifications**

Title	Navy No.
Installation Instructions, 3/8" O.D. Gas-Filled Lines	RA-62A-231
Bending Instructions, 3/8" O.D. Gas-Filled Lines	RA-62A-232
Test Report, 3/8" O.D. Gas-Filled Lines & Fittings	NRL #R-1824
Installation Instructions, 1/4" O.D. Gas-Filled Lines	RA-62A-234
Installation Instructions, RG-11/U & RG-12/U Cables	RA-62A-303
Instructions for Measuring the Hardness and Creep of Insulating Cores in Solid-Dielectric Coaxial Cables	RA-62A-308

**Manufacturer's Index**

1. Communication Products Company, 744 Broad St., Newark, New Jersey.
2. A.M.H. Branch, American Brass Company, P. O. Box 791, Waterbury, Conn.
3. Chicago Metal Hose Company, Maywood, Illinois.
4. Imperial Brass Mfg. Company, 1200 W. Harrison St., Chicago, Illinois.
5. A. Schrader's Son, Company, 470 Vanderbilt Avenue, Brooklyn, New York.
6. Installing Ship Yard.
7. Isolantite, Inc., 233 Broadway, New York, New York.
8. R. C. A. Manufacturing Company, Camden, New Jersey.
9. Barco Manufacturing Company, Walcott Winnemac Avenue, Chicago, Illinois.
10. Chiksan Company, 332 Pomono Avenue, Brea, California.
11. McIntire Connector Company, 253 Jefferson St., Newark, New Jersey.
12. Weston Electrical Instrument Company, Newark, New Jersey.
13. American Brake Shoe & Foundry Company, 230 Park Avenue, New York 17, New York.
14. U. S. Gauge Company, 44 Beaver St., New York, New York.
15. Dielectric Products Company, 63 Park Row, New York, New York.
16. Amthor Testing Instrument Company, 45 Van Slinderen Avenue, Brooklyn, New York.
17. E. H. Scott Radio Laboratories, 4464 Ravenswood Avenue, Chicago, Illinois.
18. National Electrical Machine Shops, Inc., 1935 5th St., N. E., Washington 2, D.C.
19. L. S. Brach Manufacturing Corporation, Newark, New Jersey.
20. National Company, Inc., 61 Sherman St., Malden 48, Mass.
21. Electro-Marine Company, 274 Madison Avenue, New York 16, New York.
22. Brelco Corporation, 266 Wallabout Street, Brooklyn 6, New York.
23. The Adapti Company, 2996 East 72nd St., Cleveland 4, Ohio.
24. Airplane & Marine Instrument Company, Clearfield, Pa.
25. Royal Switchboard Company, 460 Driggs Avenue, Brooklyn 11, New York.
26. Quaker Rubber Corporation, Comly & Milnor Streets, Phila., Pa.
27. General Tire and Rubber Company, Wabash, Indiana.
28. Yeager Rubber Company, 214 N. 13th St., Philadelphia 7, Pa.
29. New Products Corporation, Benton Harbor, Michigan.
30. Precision Development Company, Salisbury, Md.
31. Transcontinental Electronic Corp., 315-321 E. 42nd St., New York 10, New York.



## Chapter 12—ROTARY JOINTS—SOLID DIELECTRIC

These joints have been developed for radars which use solid-dielectric r. f. cables to supply the r. f. signal to the antenna. The solid-dielectric rotary joint eliminates the necessity of pressurizing or dehydrating an air-dielectric type rotary joint.

The single coaxial joint can be used for transmission of frequencies and voltages which are limited only by the accessory cables and connectors in the line.

The duplex joints listed are for the specific band or frequency of the equipment noted. Other joints are also under development.

### Rotary joints—solid dielectric

AN type	Name	Category	Fig no.	Navy type	ANRFCCC or Navy draw. no.	Army or other type no.	Army or other draw. no.	Cable code	Weather proof	Notes	Mfg. code
UG-162/U	Single Rotary Joint.....	2	162	.....	RE 49F 338	.....	.....	8, 10 17, 18	Yes	(1, 2)	71, 20
UG-226/U	.....	2	163	.....	RE 49F 385	.....	.....	8, 10 17, 18	Yes	(1, 2, 3)	36
UG-227/U	Duplex.....	2	.....	.....	RE 62F 362	.....	.....	8, 10 19, 20	Yes	(4)	.....
UG-308/U	Single Rotary Joint.....	.....	.....	.....	.....	.....	.....	.....	.....	(5)	78

NOTES:

- (1) Use two UG-154/U plugs to connect RG-18/U cable to this unit.
- (2) By means of UG-252/U adapter, can be used with two UG-59/U plugs and RG-8/U R.F. cable.
- (3) For use with TDY equipment only.
- (4) Use two UG-156/U plugs to connect RG-19/U or equivalent and two UG-59A/U plugs to connect RG-10/U cables or equivalent.
- (5) Fits UG-59A/U plug.

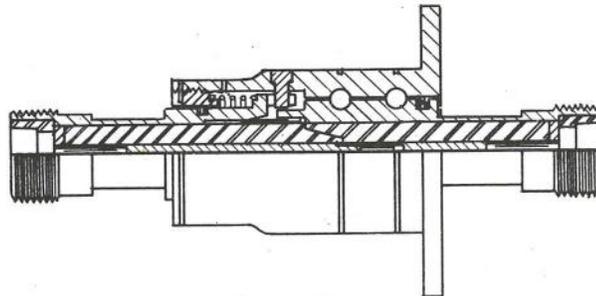


Figure 162.

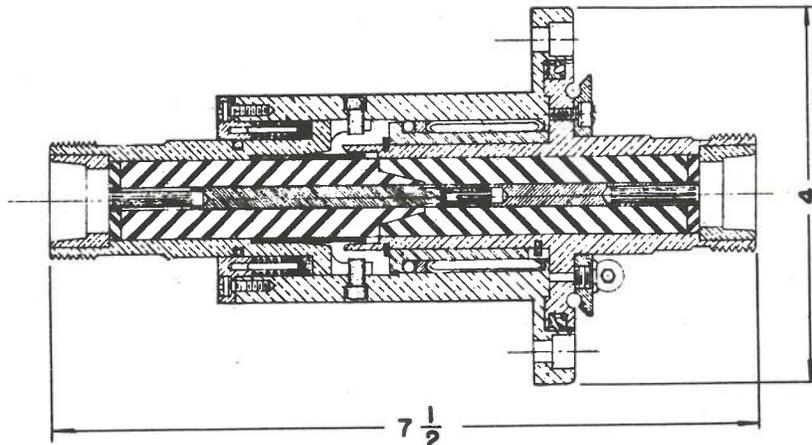


Figure 163.

Rotary joints—Solid dielectric.



### Chapter 13—ROTARY JOINTS—AIR DIELECTRIC

As a result of lack of standardization in the past, many joints have been designed, each specific to a particular equipment. The present objectives of standardization of pedestals and antenna mountings will enhance standardization of these rotating joints. The types listed below include single coaxial and double concentric coaxial systems. The single coaxial units include 50 and 70 ohm characteristic impedance types. The drawings for each type listed may be obtained from the designer or from the component manufacturer.

#### Rotary joints—Air dielectric

AN type	For Radar	Fig. no.	Navy type	ANRFCCC or Navy draw. no.	Army or other type no.	Army or other draw. no.	Line code	Notes	Mfg. code
.....	SC SC-1.....	164	.....	.....	G.E. Co. P-7764307 Pt. 2	Chiksan R1D5	1 5/8"	.....	20
.....	SC-2 to SC-5.... (Inclusive)	164	.....	.....	G.E. Co. P-7764307 Pt. 3	R1D12	1 5/8"	.....	20
.....	SA SA-2	164	.....	.....	RCA T-620921	R31D3	1 5/8"	.....	20
.....	SA-3.....	164	.....	.....	RCA T-620651	R33D3	1 5/8"	.....	20
.....	SA-1.....	164	.....	.....	G.E. Co. T-8002388 Pt. 16	R1D9	1 5/8"	.....	20
.....	SCR-527.....	164	.....	.....	G.E. Co. P-7764307 Pt. 4 and 5	R1D18 R1D19	1 5/8"	Azimuth Elevation	20
.....	SCR-627.....	164	.....	.....	B.T.L. ESO-683474	SK191DC (R28D1)	1 5/8"	.....	20
.....	SCR-296A.....	165	.....	.....	B.T.L. ES-807764-1 BO-411228	R28D3 Mod. R28D4	1 5/8"	Azimuth Elevation	20
.....	Mark 20 Mod. 0.....	166	.....	.....	B.T.L. BL-416111 BO-411228	R28D3 Mod. R28D4	1 5/8"	Azimuth Elevation	20
.....	Mark 20 Mod. 1.....	166	.....	.....	B.T.L. ES-825083-3	R28D3	1 5/8"	.....	20
.....	AN/TPS-1	166	.....	.....	B.T.L. BO-414066	R28D6	1 5/8"	.....	20
.....	AN/TPS-1A.....	166	.....	.....	B.T.L. ESR-685329-1 ESR-685329-2	R45D1 Style 1 R45D1 Style 2	1 5/8"	Azimuth Elevation	20
.....	AN/TPS-1B.....	166	.....	.....	B.T.L. BR-29230 BO-29231	Chiksan R45D4 R45D5	1 5/8"	Cross Level Elevation	20
.....	SCR-545.....	167	.....	.....	RCA M-440009	R44D3	1 5/8"	.....	20
.....	Mark 12.....	168	.....	.....	RCA P-719535	R105D2	1 5/8"	.....	20
.....	SD-3.....	169	.....	.....	G.E. Co. T-7764749 Pt. 1	R10D1	3 1/8"	.....	20
.....	SR-2.....	170	.....	.....	G.E. Co. T-7662832	R10D4	3 1/8" Top 2 1/2" Bottom	.....	20
.....	SK.....	171	.....	.....	G.E. Co. T-7764749 Pt. 3	R10D6	3 1/8"	.....	20
.....	SK-1M.....	171	.....	.....	G.E. Co. T-7662578 T-7662579	R55D3 R55D4	7/8"	Cross Level Elevation	20
.....	SK-2	171	.....	.....	G.E. Co. M-7467424	R38D1	7/8"	.....	20
.....	SK-3.....	171	.....	.....	B.T.L. ESR-679468	SK131DC (R7D1)	7/8"	.....	20
.....	SM	172	.....	.....	M.I.T. B-4326	R61D1	RG-28/U	D.C. Pulse	20
.....	SM-1.....	172	.....	.....	M.I.T. T-4454-A	R61D3	RG-27/U RG-28/U	D.C. Pulse	20
.....	SC Pedestal Modified to use FC & BI Antennas	171	.....	.....					
.....	Mark 3	173	.....	.....					
.....	Mark 4.....	174	.....	.....					
.....	SCR-682.....	174	.....	.....					
.....	AN/CPS-4	174	.....	.....					
.....	SCR-598.....	174	.....	.....					

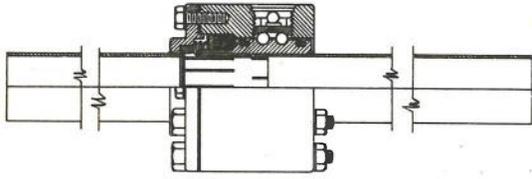


Figure 164.

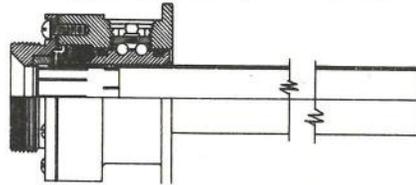


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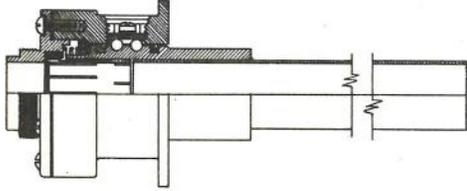


Figure 166.

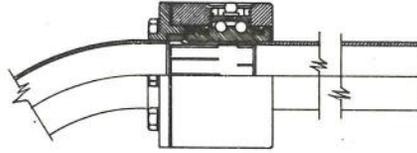


Figure 167.

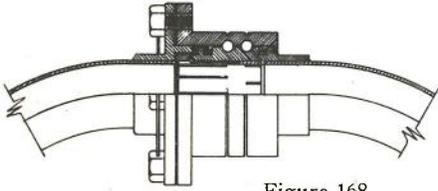


Figure 168.

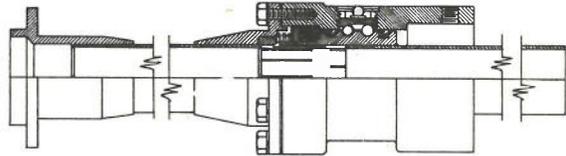


Figure 169.

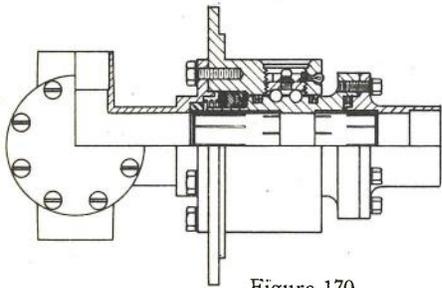


Figure 170.

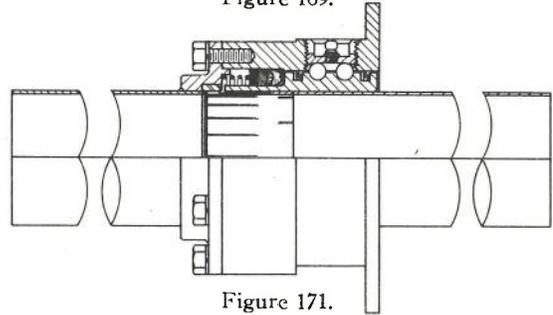


Figure 171.

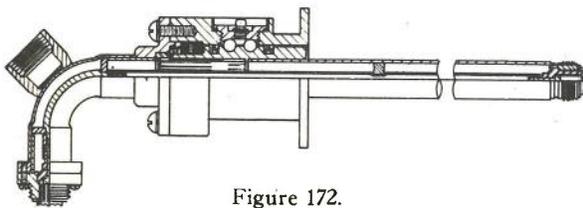


Figure 172.

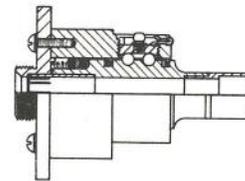


Figure 173.

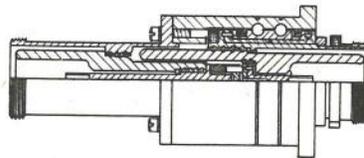


Figure 174.

Rotary joints—Air dielectric.

## Chapter 14—SPlicing TECHNIQUE FOR R. F. CABLES

The need for splices for flexible solid dielectric cables is increasing and the following information is given to meet the need for standard practice.

Navships 900,597 dated 20 March 1945 contains the latest information available for performing the splicing operations. Basically, five steps are required in making a splice:

- A. The joining of the inner conductors.
- B. The application of polyethylene dielectric over the inner joint and its continuity with the cables insulation.
- C. The splicing of the copper shields.
- D. The molding of the vinylite jacket.
- E. The joining of the outer armor.

Step E of course is omitted for all non-armored cables.

Splicing kits for several types of cables have been manufactured and are being distributed.

### Tools and materials furnished with the splicing kits

	Navy Type 10351 (a)	Navy Type 10352 (a)	Navy Type 10353 (a)	Navy Type 10353-S (b)	Navy Type 10424 (b)
For Splicing RG-8/U Cables	-8/U,-10/U,-11/U,-12/U, -17/U,-18/U,-19/U,-20/U	-8/U,-10/U,-11/U,-12/U, -19/U,-20/U	-8/U,-10/U, -11/U,-12/U	-8/U,-10/U	-19/U,-20/U
Dielectric Trimmer	1 -17/U,-18/U 1 -19/U,-20/U	1 -19/U,-20/U	None required	None required	1 -19/U,-20/U
Heat Indicating Crayons	4	4	4	4	4
Dielectric Molds	1 -8/U,-10/U } (10354) -11/U,-12/U } 1 -17/U,-18/U (10288) 1 -19/U,-20/U (10317)	1 -(10354) 1 -(10317)	1 -(10354)	1 -(10354)	1 -(10317)
Jacket Molds	1 -(10355) 1 -(10329) 1 -(10289)	1 -(10355) 1 -(10329)	1 -(10355)	1 -(10355)	1 -(10329)
Die and die stock	1 - Die 10-32 1 - Die Handle 1 - Die 1/4"-28	1 - Die 1/4"-28 1 - Die Handle	None required	None required	1 - Die 1/4"-28 1 - Die Handle
C - Clamps	2 - 6"	2 - 6"	1 - 4" or 6"	1 - 4"	2 - 6"
Injection Gun Screws	2 -(10287)	2 -(10287)	2 -(10287)	2 -(10287)	2 -(10287)
Injection Gun Cylinders, Nuts and Plungers	2 -(10287)	2 -(10287)	2 -(10287)	2 -(10287)	2 -(10287)
Inner Conductor Joiners	25 -8/U,-10/U 25 -17/U, 18/U 25 -11/U,-12/U 25 -19/U, -20/U	25 -8/U,-10/U 25 -19/U, -20/U 25 -11/U,-12/U	25 -8/U,-10/U 25 -11/U,-12/U	25 -8/U,-10/U	25 -19/U,-20/U
Injection Gun Adapters	2	2	2	2	None required
Copper Foil	10 ft.-2" x 0.004"	5 ft.-2" x 0.004"	5 ft.-2" x 0.004"	5 ft.-2" x 0.004"	10 ft.-2" x 0.004"
Copper Wire on Spool	100 ft.-#28 gauge	50 ft.-#28 gauge	50 ft.-#28 gauge	50 ft.-#28 gauge	100 ft.-#28 gauge
Polyethylene Stocks	10-5/8" dia. x 8" L.	10-5/8" dia. x 8" L.	10 x 5/8" dia. x 8" L.	10 - 5/8" dia. x 8" L.	10 - 5/8" dia. x 8" L.
Vinyl Sticks and/or Vinyl Tape	10-5/8" dia. x 8" L.	10-5/8" dia. x 8" L.	10 x 5/8" dia. x 8" L. 150 ft.-3/4" x 0.013"	10 - 5/8" dia. x 8" L.	10 - 5/8" dia. x 8" L.
Instruction Pamphlets	2	2	2	2	2

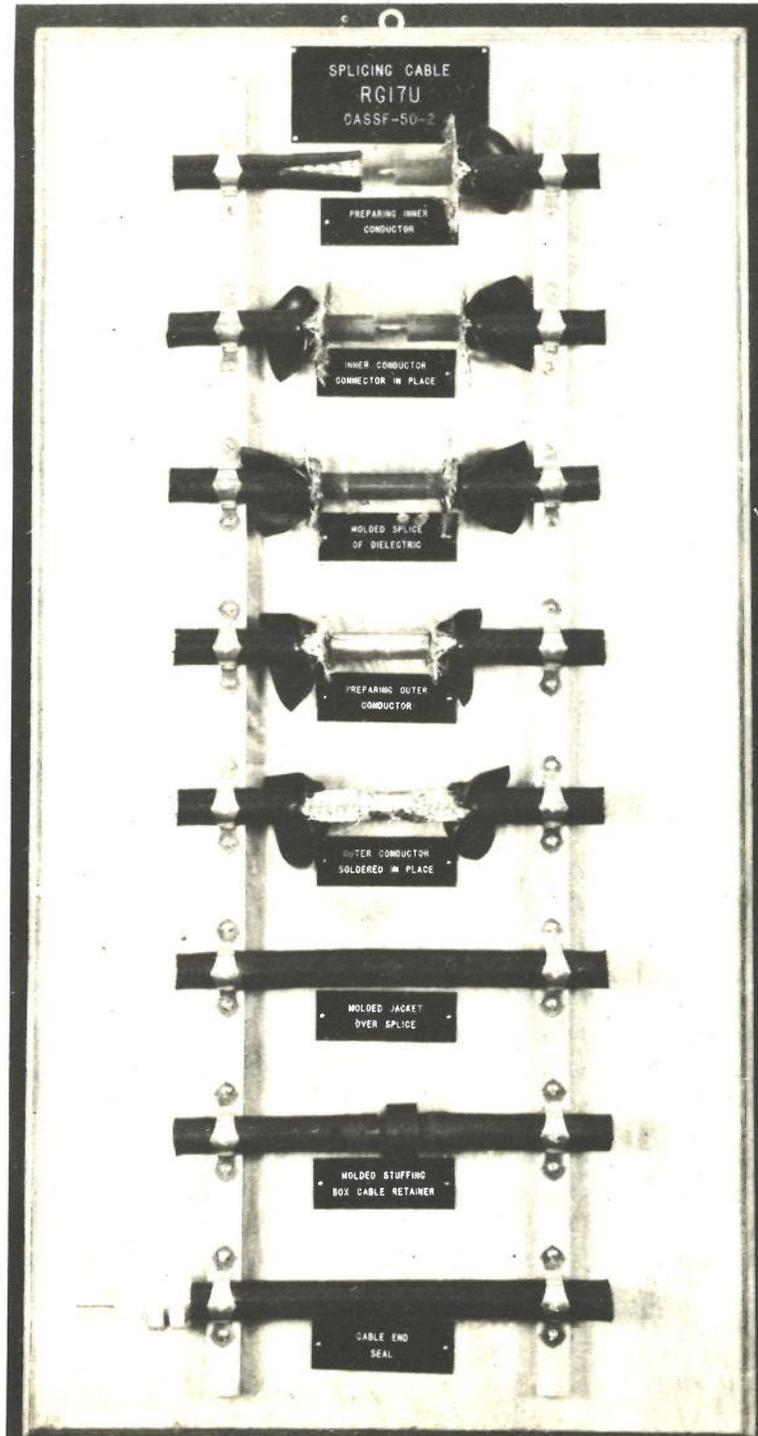
(a) Manufactured by the New Products Corp., Benton Harbor, Mich.

(b) Manufactured by the W. D. Cashin Company, So. Boston, Mass.

The following are special molds used for molding collars on vinylite jacketed cables and a mold for making a Tee connection on RG-8/U cable:

Table	Type	For Cable	Ref. Drawing
.....	Collar Molds	RG-19/U and RG-20/U	RA 10F 461
.....	Collar Molds	RG-17/U and RG-18/U	RA 10F 311
.....	Collar Molds	RG-8/U and RG-10/U	RA 10F 405
.....	Tee Mold	RG-8/U, and RG-10/U	.....
.....	.....	Dielectric Mold	RA 10F 342
.....	.....	Jacket Mold	RA 10F 352

Information for making other special molds and splices may be obtained from Naval Research Laboratory, Anacostia, D. C.



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Code No.	Code No.
1. Altair Machinery Corporation 55 Vandam Street New York City, New York	18. W. D. Cashin Company 69A Street, South Boston, Mass.
2. Aluminum Company Of America 801 Gulf Building Pittsburgh, Pa.	19. Chase Brass & Copper Company Waterbury 91, Conn.
3. American Phenolic Corporation 1830 S. 54th Avenue Cicero, Illinois	20. Chiksan Company 332 Pomona Avenue Brea, California
4. American Brass Company (Rigid W.G.) Waterbury 88, Conn.	21. Communications Products Company 744 Broad Street Newark 2, New Jersey
5. American Brass Company (Flexible W.G.) American Metal Hose Division Waterbury 88, Conn.	22. C. G. Conn, Ltd. Elkhart, Indiana
6. American Steel & Wire Company Worcester, Mass.	23. Henry L. Crowley Co., Inc. 1 Central Avenue West Orange, New Jersey
7. Anaconda Wire & Cable Company Hastings-on-Hudson, New York	24. Cundy-Bettoney Co., Inc. Bradley Street, Hyde Park Boston, Mass.
7a. Artoy Company Indianola Avenue Youngstown, Ohio	25. Dalmo-Victor, Incorporated 620 York Street San Francisco, Calif.
8. Victor J. Andrew 363 E. 15th Street Chicago, Illinois	26. DeMornay-Budd, Inc. 475 Grand Concourse New York City, New York
9. Astatic Corporation 830 Market Street Youngstown, Ohio	27. Diamond Instrument Company North Avenue & Broadway Wakefield, Mass.
10. Bantam Products Company 24 Franklin Avenue Nutley, New Jersey	28. Electrol Research Associates 270 Lafayette Street New York 12, New York
11. Barco Manufacturing Company Chicago, Illinois	29. Electro-Marine Products Company 274 Madison Avenue New York, New York
12. Boston Insulated Wire Company 65 Bay St., Uphams Corner Postal Sta. Boston, Mass.	30. Englishtown Cutlery, Ltd. 230 5th Avenue New York, New York
13. Brelco Corporation New York City, New York	31. Federal Telephone & Radio Corporation Intelin Division Nutley, New Jersey
14. Bridgeport Brass Company 1425 H. Street, N. W. Washington, D. C.	32. General Cable Corporation Bayonne, New Jersey
15. Brookfield Engineering Laboratories Sharon, Mass.	33a. General Electric Company Cable Division 1285 Boston Avenue Bridgeport, Conn.
16. H. H. Buggie & Company Jackson & 13th Streets Toledo 1, Ohio	33b. General Electric Company 100 Woodlawn Pittsfield, Mass.
17. Cannon Electric Company 3209 Humboldt Street Los Angeles 31, Calif.	

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34. Gephart Company 1020 W. Adams Street Chicago, Illinois	52. Molded Insulation Company 3246 Ludlow Street Philadelphia 3, Pa.
35. Gorham Manufacturing Company Providence, R. I.	53. National Electric Machine Shop 1935—5th Street, N. E. Washington, D. C.
36. J. W. Greer Company 119-137 Windsor Street Cambridge A-39, Mass.	54. National Fabricated Products Company 2650 Belden Avenue Chicago, Illinois
37. W. S. Haines Co. Mass Avenue Boston, Mass.	55. New Products Corporation Benton Harbor, Mich.
38. Alfred Hoffman & Company 59th Street W. New York, New Jersey	56. Okonite Company 220 Passaic Street Passaic, New Jersey
39. Industrial Products Company P. O. Box 148 Danbury, Conn.	57. Parker Appliance Co. 17325 Euclid Avenue Cleveland, Ohio
40. Industrial Tool & Die Works, Inc. 2824 Univ. Avenue, S.E. Minneapolis, Minn.	58. Pedlar Company Elkhart, Indiana
41. International Resistance Corporation Connector Division 401 N. Broad Street Philadelphia 8, Pa.	59. Phelps-Dodge Copper Products Corporation Habirshaw Cable & Wire Division 40 Wall Street New York City, New York
42. Isolantite, Inc. 343 Cortlandt Street Bellville, New Jersey	60. Philadelphia Insulated Wire Co. 200 N. 3rd Street Philadelphia 6, Pa.
43. E. F. Johnson Company Waseca, Minn.	61. Presto Recording Company 242 W. 55th Street New York, New York
44. M. Joseph Sewing Machine Company 67 W. Springfield Street Boston, Mass.	62. Reliable Instrument and Machine Corp. 207 9th Avenue New York 1, New York
45. Howard B. Jones 2460 West George Street Chicago 18, Illinois	63. Revere Copper & Brass Company Rome, New York
46. Kings Electronics, Inc. 372 Classon Avenue Brooklyn 5, New York	64. Reynolds Metal Company Southern Building, 15th and H Streets Washington, D. C.
47. Lambert Meter Company 715 W. Front Street Plainfield, New Jersey	65. Bernard Rices Sons 325 5th Avenue New York City, New York
48. Lapp Insulator Company LeRoy, New York	66. Scovill Manufacturing Company Waterbury, Conn.
49. Locke Insulator Company Baltimore, Maryland	67. Selectar Manufacturing Corp. 21-10 49th Avenue Long Island City, New York
50. Marlboro Tool Manufacturing Co. Matawan, New Jersey	68. Carl Shutter Company Rockville Center Long Island, New York
51. Mendelsohn Speedgun Company 457 Bloomfield Avenue Bloomfield, New Jersey	69. Simplex Wire & Cable Company 79 Sidney Street Cambridge, Mass.

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70.	Signal U. Youngstown, Ohio	76.	Walworth Company 60 E. 42nd Street New York, New York
71.	Specialty Spraying & Machine Co. 42 Second Street Long Island, New York	77.	Western Electric Company C/O Bell Telephone Labs., Inc. 180 Varick Street New York, New York
72.	L. H. Terpenning Co. 220 E. 23rd Street New York City, New York	78.	Westinghouse Electric & Mfg. Co. 2519 Wilkens Avenue Baltimore 3, Md.
73.	Titeflex, Inco. 500 Frelinghuysen Avenue Newark 5, New Jersey	79.	Whitney Blake Wire & Cable Company P. O. Box K Hamden New Haven, Conn.
74.	The Ucinite Corporation 459 Watertown Street Newtonville, Mass.	80.	Wolverine Tube Company Investment Bldg. Washington, D. C.
75.	Universal Aircraft Products Co., Inc. 53 Rose Street New York, New York	81.	Yale & Towne Manufacturing Company Stamford Division Stamford, Conn.



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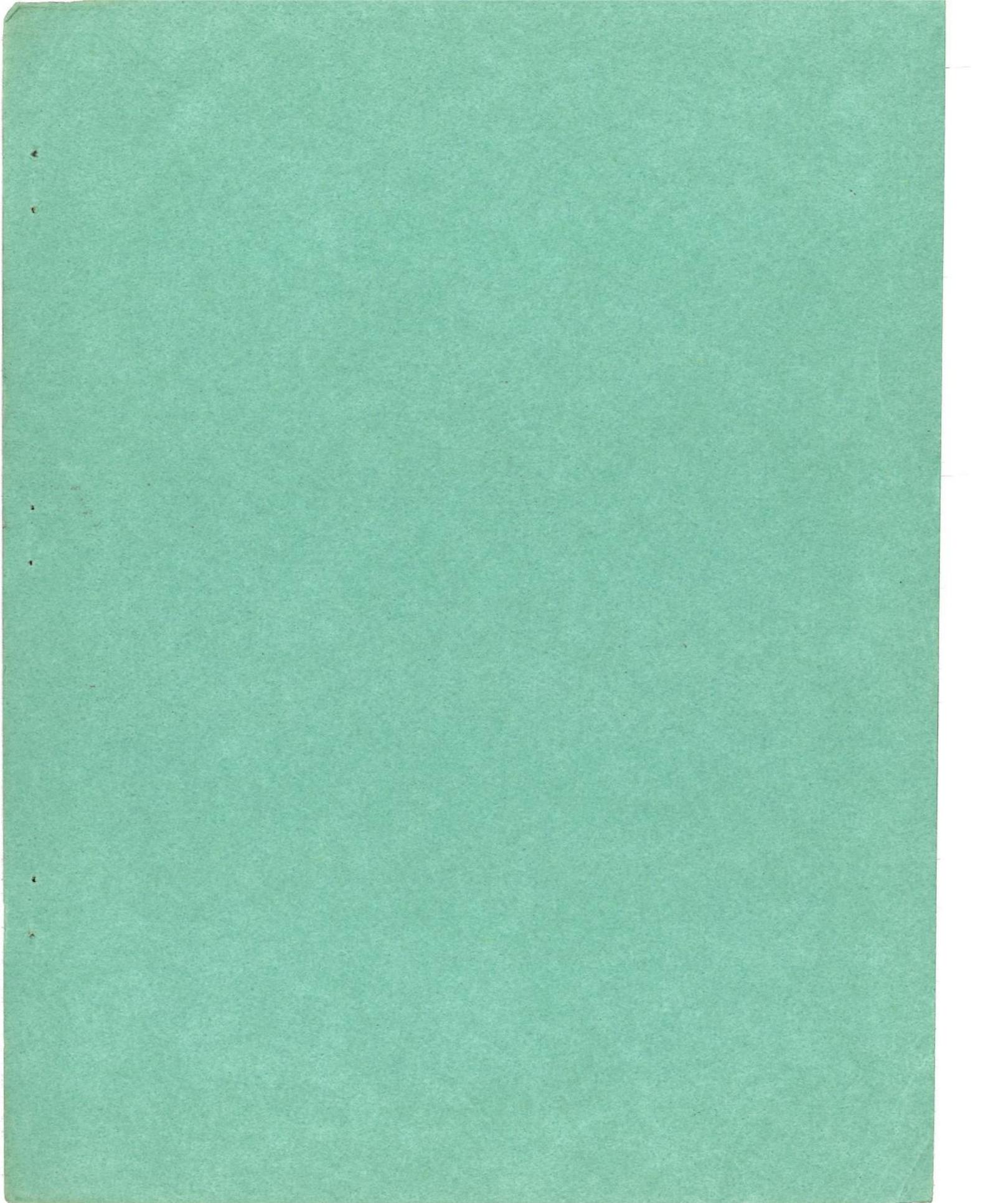
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