TECHNICAL MANUAL

ORGANIZATIONAL MAINTENANCE MANUAL

ELECTRONIC EQUIPMENT CONFIGURATIONS

ARMY MODELS UH-1B and UH-1C/M

HELICOPTER

This copy is a reprint which includes current pages from Changes 1 through 5. Title was changed by Change 3.

HEADQUARTERS, DEPARTMENT OF THE ARMY

AUGUST 1966

WARNING

DANGEROUS VOLTAGES

EXIST IN THESE CONFIGURATIONS

Be careful when working on the 115-volt ac circuits of the inverters or on the high-voltage dc output circuits of the dynamotors.

DEATH ON CONTACT

MAY RESULT IF SAFETY PRECAUTIONS ARE NOT OBSERVED

Be careful not to come in contact with high voltage connections or any power connections when using this equipment. Turn off the power and discharge all high-voltage capacitors before making any connections or doing any work inside the equipment. Voltages as high as 1,500 volts dc are present in these configurations.

RF BURNS

Do not touch or stand too close to radiating antennas. Serious rf burns may result. Move away antenna or transmitting equipment if any part of the body area feels flushed.

DO NOT TAKE CHANCES

WARNING
DANGEROUS CHEMICALS ARE USED IN NICKEL-CADMIUM BATTERIES

The electrolyte used in the nickel-cadmium batteries contains potassium hydroxide (KOH), which is a caustic agent. Serious and deep burns of body tissue will result if the eyes or any part of the body comes in contact with the electrolyte. Use rubber gloves, rubber apron, and protective goggles when handling the electrolyte. If accidental contact with the electrolyte is made, use ONLY clean water and immediately (seconds count) flush with large quantities of clean water, for at least 15 minutes. Seek medical attention without delay.

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HEADQUARTERS
DEPARTMENT OF THE ARMY
WASHINGTON, D.C., 4 August 1966

ORGANIZATIONAL MAINTENANCE MANUAL

ELECTRONIC EQUIPMENT CONFIGURATION;

ARMY MODELS UH-1B AND UH-1C/M HELICOPTERS

*This manual supersedes so much of TM 11-1520-207-35. 1l October 1961, and TR 11-1520-207-20/2, 13 June 1963, including C1, 14 August 1961, ae pertains to organizational maintenance of electronic equipment configurations of Army model UH-1B helicopter; and so much of TM 11-1520-207-20P, 17 May 1965, as pertains to the maintenance allocation chart.

LIST OF ILLUSTRATIONS

CHAPTER 1
INTRODUCTION

Section I. GENERAL

1-1. Scope

a. This manual covers organizational maintenance of the electronic equipment configurations in Army model UH-1B Helicopter, serial numbers 60-3546 through 60-3619, 61-686 through 61-803, 62-1872 through 62-2105, 62 4566 through 62-4605, 62-12515 through 6212555, 63-8500 through 63-8738, 63-12903 through 63-12952, 63-13086 through 63-13089, and 64-13902 through 64-14100; Army Model UH-1C Helicopter, serial numbers 64-14101 through 64-14191, 65-9416 through 65-9564, 65-12738 through 65-12744, 65-12772 through 65-12856, 66-602 through 66-745, 66-15000 through 66-15147, and 66-15148 through 6615245; and helicopters that have been modified i n accordance with MWO's 55-1520-221-34/23, 55-1520-211-40/4, 55-1520-211-30/24, 55-1520-211-30/25, 55-1520-211-30/26, 55-1520-221-30/27, 55-1 520-30/33, 55-1250-219-30/1, 55-1500-211-30/28, 55-1520-211-30/29, 55-1520-211-30/30, 55-1520-220-30/1, 55-1520-211-40/5, 55-1520-211-30/31 and 55-1500-219-30/3. The manual includes instructions for organizational maintenance personnel to perform periodic preventative maintenance and troubleshooting procedures for the electronic communication, navigational, intercommunications' identification, and antenna equipment when the equipment is provided for or installed in the helicopter. A list of tools and test equipment required by organizational maintenance personnel to maintain the configuration is provided.

b. Operating instructions for the UH-1B Helicopter are contained in TM 55-1520-21910. This manual supplements TM 55-1520219-ESC and TM 11-1520-219-20 for organizational maintenance instructions. Also, TM 55-1520-220-10, TM 55-1520-220--ESC, and TM 55-1520-220-20 apply to the UH-IC Helicopter. Some of the electronic equipments used in this configuration are covered in detail in other technical manuals; the pertinent technical manuals are listed in appendix I. When servicing components of these electronic equipments independent of the helicopter, refer to the applicable technical manuals for detailed troubleshooting procedures and for replacing and repairing maintenance parts.

c. Equipment nomenclatures containing an asterisk (*) given in (1) through (22) below are used throughout this manual to indicate that more than one model of an equipment may be used.

(1) Antenna AT-454(*)/ARC represents Antennas AT-454/ARC and T-454A/ARC.

(2) Antenna AT-640(*)/ARN represents Antennas AT-640/ARN and AT-640A/ ARN.

(3) Antenna Element AT-455(*)/ARC represents Antenna Elements AT-455/ARC and AT-455A/ARC.

(4) Antenna Element AT-624(*)/AR represents Antenna Elements AT-624/AR and AT-624A/AR.

(5) Base, Antenna AB-340(*)/ARC represents Bases, Antenna AB-340/ARC and AB-840A/ARC.

(6) Control, Radio Set C-436(*)/ARN-30 represents C-3436/ARN-30 and C-8436A/ ARN-80.

(7) Control, Radio Set C-4074(*)/ARC-73A

represents Controls, Radio Set C-4074/ARC-73 and C-4074A/ARC-73.

(8) Controls, Intercommunications Set C-1611 (*) AIC represents Controls, Intercommunications Sets C-611/AIC, C-1611B/AIC, and C-61 C/AIC.

(9) Coupler, Antenna CU-361(*)/ARC represents Couplers, Antenna CU-361/ARC, CU-361A/ARC, CU-: 361B,: ARC, CU-: 361C/ARC, and CU-361D/A RC.

(10) Dynamotor DY-107(*)/AR represents Dynamotors DY-107/AR and DY-107A/AR.

(11) Headset-Microphone H-101(*)/U represents Headset-Microphones H-101/U and H-01A/U.

(12) Keyer KY-149(*)/AR represents Keyers KY-149/AR and KY-149A./AR.

(13) Motor/Generator PU-54.3(*)/A represents Motor Generator PU-543/A, PU-543A/A, PU-543B/A, and PU-543C/A.

(14) Mounting MT-1267(*)A/R represents Mountings MT-1267/AR and MT-1267A/AR.

(15) Mounting MT-2699(*)/ARC-73A represents Mountings MT-2699/ARC-73A and MT-2699A/ARC-73A.

(16) Radio Set AN/ARC-51(*)Xrepresents Radio Sets AN/ARC-51X and AN/ARC-51BX.

(17) Radio Set AN/ARC-55(*) represents Radio Sets AN/ARC-55, AN/ARC-55A, .and AN/ARC-55B.

(18) Receiver, Radio R-1041(*)/ARN represents Receiver, Radio R-1041/ARN and R-1041A/ARN.

(19) Receiver, Radio R-1123(*)/ARC-73A represents Receiver, Radio R-1123/ARC-73, R-1123A/ARC-73, and R-1123B/ARC-73.

(20) Receiver-Transmitter, Radio RT-294(*)/ ARC-44 represents Receiver-Transmitters, Radio RT-294/ARC-44, RT-294A/ARC-44, and RT-294B/ARC-44.

(21) Receiver-Transmitter, Radio RT-349(*) ARC-55 represents Receiver-Transmitters RT-349 ARC-55, RT-349/ARC-55, RT-349A/ARC-55, and RT-469 ARC-55B.

(22) Transmitter, Radio T-879(*)/ARC-73 represents Transmitters, Radio T-879/ARC-73A, T-879A/ARC-73, and T-879B/ARC-73.

1-2. Indexes of Publications

a. DA Pam 310-4. Refer to the latest issue of DA Pam 310-4 to determine whether there are new editions, changes, or additional publications pertaining to the equipment.

b. DA Pam 310-7. Refer to DA Pam 310-7 to determine whether there are modification work orders (MWO's) pertaining to the equipment.

1-3. Forms and Records.

a. Reports of maintenance and Unsatisfactory Equipment. Use equipment forms and records in accordance with instructions in TM 38-750.

b. Report of Packaging and Handling Deficiencies. Fill out and forward DD Form 6 (Packaging Improvement Report) as prescribed in AR 700-58/NAVSUPINST 4030.29/AFR 71-1:3 MCO P4030.29A, and DSAR 4145.8.

c. Discrepancy in Shipment Report (DISREP) (SF-361). Fill out and forward Discrepancy in Shipment Report (DISREP) (SF 361) as prescribed in AR 55-38/ NAVSUPINST 4610.33A AFR 75-18/MCO P4610.19B and DSAR 4500.15.

1-3.1. Recommendation for Maintenance Publications Improvements

The reporting of errors, omissions, and recommendations for improving this publication by the individual user is encouraged. Reports should be submitted on DA Form 2028 (Recommended Changes to Publications and Blank Forms) and forwarded direct to Commander, US Army Electronics Command, ATTN: AMSEL-MA-Q, Fort Monmouth, NJ 07703.

Section II. DESCRIPTION OF CONFIGURATION AND ELECTRONIC EQUIPMENT

1-4. Configurations and Serials Numbers

There are nine basic electronic equipment configurations for Army Models UH-1B and UH-1C helicopters. The serial numbers of all helicopters within a particular configuration are listed below.

Configuration	Mode	Helicopter Arial number
A	UH-1B	60-3546 through 60-3619 61-686 through 61-803
B	UH-1B	62-1872 through 62-2105 62-4566 through 624605 62-12515 through 62-12555
C	UH-1B	63-8500 through 63-738 63-12903 through 63-12952
D	UH-1B	63-13086 through 63-13089
E	UH-1B	64-13902 through 64-14100
	UH-1C	64-14101 through 64-14191
F	UH-1C	65-9416 through 65-9564 65-12738 through 65-12744 66-12772 through 65-12856 66-491 through 66601
G	UH-1C	66602 through 66745 66-15000 through 66-15147
H	UH-1C	66-15148 through 6615245

1-5. Facilities and Electronic Equipment

The charts in *a* through *e* below list each operational facility provided in the different configurations of the Army models UH-1B, and UH-1C helicopters (para 1-4). Configurations A, B, C, D, and E (tail numbers 64-13902 through 64-1400) apply to Helicopter UH-1B. Configurations E (tail numbers 64-14101 through 6414191), F, G, and H apply to Helicopter UH-1C. Figures 4-1 and 4-1.1 show item locations. The charts list all electronic equipment components used for each facility indicated in the Equipment or component column. A letter X in the Configuration column indicates that the particular component was installed in the aircraft. A letter Y in the Configuration column indicates that complete facilities for the component are provided but the component is not installed. These facilities permit easy installation of the component when required for a special geographical location or mission application. A letter Z in the Configuration column indicates that only adequate space, weight, and power allowances are provided and an aircraft retrofit or modification program will be required to add this component.

1-5.1. Proximity Warning Facility installation

The Proximity Warning Facility YG-1054 (PWS) is primarily intended for use by training commands in high density aircraft areas to avoid mid-air collisions. The PWS installation is accomplished by applying Modification Work Order MWO55-1500-219-30/3 to all aircraft based on Department of Army allocation. The Proximity Warning Facility can be applied to all aircraft with electronic configurations E through H starting with aircraft serial number 64-14101. The PWS as applied to the communications facility is designated Y in the *Configuration* column.

a. Communications Facility (figs. 4-1 and 4-1.1).

Facility	Equipment or component	Configuration								Remarks
		A	B	C	D	E	F	G	H	
Fm liaison	Radio Set AN/ARC-44: Antenna AT-464(*)/ARC Bae , Antenna AB-340(*)/ ARC.	X X X	X X X	X X X	X X X					Operates with antenna. Group AN/ARA-41 is also provide fm homing (navigation).

Facility	Equipment or component	Configuration								Remarks
		A	B	C	D	E	F	G	H	
	Coupler, Antenna CU-361(*)/ARC.	X	X	X	X					
	Antenna Element AT-455(*)/ARC.	X	X	X	X					
	Receiver-Tranrmitter, Radio RT-294 (*)/ARC-44.	X	X	X	X					
	Mounting MT-1268/AR	X	X	X	X					
	Dynamotor DY-107(*)/AR	X	X	X	X					
	Mounting MT-1267(*)/AR	X	X	X	X					
	Panel, Control SB-327/ARC-44.	X	X	X	X					
	Control panel assembly (p/n 204-076-219). (Switch Assembly SA-474/AR modified.	X	X	X	X					
	Radio Set AN/ARC-54:	X	X	X	X	X	X	X	X	Operates with the 637A-2 antenna and the ID-46/ARN-30 or ID-1347/ARN-82 to also provide fm homing (navigation).
	Receiver-Tranmnitter, Radio RT-348/ARC-54.	X	X	X	X	X	X	X	X	
	Mounting MT-1535/ARC-54.	X	X	X	X	X	X	X	X	
	Antenna AT-765/ARC					X	X			
	Antenna AS-1703/ARC-54	X	X	X		X	X	X	X	
	Coupler, Antenna CU-942/ARC-54.	X	X	X		X	X	X	X	
	Control, Radio Set C-3835/ARC-54.	X	X	X			X	X	X	
	Control, Radio Set C-1636/ARC-54.					X				
Voice Security	Computer, Voice Security TSEC/KY-28.	X	X	X		X	X	X	X	
	Control-Indicator, Voice Security C-8167/ARC.	X	X	X		X	Y	X	X	
	Mounting MT-3802/ARC	X	X	X		X	X	X	X	
	Light Remote Cipher	X	X	X		X	X	X	X	
Uhf command	Radio Set AN/ARC-55:									
	Receiver-Tranamitter, Radio RT-349(*)/ARC-55.									
	Receiver-Tranmnitter, Radio RT-469/ARC-55B.									
	Control, Radio Set C-1827/ARC-65.									
	Mounting MT-1536/ARC-55.									
	Antenna AT-450/ARC									
	Antenna AT-1108/ARC	X	X							
	Radio Set AN/ARC-51(*)X:	X	X	X	X	X	X	X	X	
	Receiver-Tranamitter, Radio RT-702/ARC-51X or RT-742/ARC-51BX or RT-334( )/ARC-51X.	X	X	X	X	X	X	X	X	
	Indicator, Standing Wave Ratio ID-1003/ARC.	X	X	X	X	X	X	X	X	Mounting on front of RT-702/ARC-51X and RT-742/ARC-51BX.
	Cooler, Air, Electronic Equipment HD-615/ARC-51X.	X	X	X	X	X	X	X	X	Mounted at rear of RT/702. ARC-51X, RT-742/ARC-51BX and RT-334( )/ARC-51X.
	Mounting MT-2653/ARC	X	X	X	X	X	X	X	X	

Facility	Equipment or component	Configuration								Remarks
		A	B	C	D	E	F	G	H	
	Control, Radio Set C-4677/ARC-51X, or C-6287/ARC-51BX.	X	X	X	X	X	X	X	X	The radio set controls are not interchangeable. The C-4677/ARC-51X must be used with the RT-702/ARC-51X and the C-287/ARC-51BX must be used with the RT-741/ARC-51BX or RT-334 ( )/ARC-51X.
	Antenna AT-1108/ARC (Collins Model 37R-2U)	X	X	X	X	X	X	X	X	Also used for vhf command and emergency uhf.
Vhf command	Radio Set AN/ARC-73A:	Y	Y	Y	Y	Y	Y	Y	Y	May be intalled as an alternate to uhf command.
	Receiver, Radio R-1123/ ARC-73A.	Y	Y	Y	Y	Y	Y	Y	Y	
	Transmitter, Radio T-879/ARC-73A.	Y	Y	Y	Y	Y	Y	Y	Y	
	Mounting MT-2699/ ARC-73.	Y	Y	Y	Y	Y	Y	Y	Y	
	Antenna (Collins Model 37R-2).	Y								
	Antenna AT-1108/ARC	X	X	X	X	X	X	X	X	Used also for uhf command and emergencey uhf.
	Control, Radio Set C-4074A/ARC-73A.	Y	Y	Y	Y	Y	Y	Y	Y	(see above).
	Power relay K28	Y	Y	Y	Y	Y	Y	Y	Y	
Vhf emergeney radio transmitter.	Transmitter, Radio T-366A/ ARC:	X	X	X			X	X	X	Operated with R-1021/ARN-30(*) or R-1388/ARN-82 to provide vhf command communications.
	Dynamotor DY-86/ ARN-30.	X	X	X			X	X	X	
	Mounting MT-1142/ARC	X	X	X			X	X	X	
	Antenna (Collins Model 37R-2) .	X								
	Filter, Direct Current Power F-726/AR (ARC Type P-12).	X	X	X			X	X	X	
	Relay, Switch RE-275/AR ARC Type K-18).	X	X	X			X	X	X	
	Control panel (P/n 204-075-708).	X	X							
	Switch panel (p/n 204-075-709).	X	X							Harness only supplied with configuranton 1A.
	Antenna AT-1108/ARC.		X	X			X	X	X	Also used for vhf command eonunleations (see above).
	Control Panel ARC Type C8OB.			X			X	X	X	
	Sidetone relay K12 (MS24139-5).	X	X	X			X	X	X	
Hf ssb/am set	Radio Set AN/ARC-102:		Y	Y	Y	Y	Y	Y	Y	Configurations B, C, and D in accordance with MWO 55-1520-211-34/28.
	Receiver-Transmitter RT-698/ARC-102.		Y	Y	Y	Y	Y	Y	Y	
	Power Inverting-Mounting PP-3702/ARC-102.		Y	Y	Y	Y	Y	Y	Y	
	Control, Radio Set C-3940/ARC-94.		Y	Y	Y	Y	Y	Y	Y	
	Network, Impedance Matehing CU-991/AR.		Y	Y	Y	Y	Y	Y	y	
	Antenna, long wire (p/n 204-076-609).		Y	Y	Y	Y				

Facility	Equipment or component	Configuration								Remarks
		A	B	C	D	E	F	G	H	
	Antenna, long wire (p/n 206-70-027).						Y	Y	Y	
Auxiliary Fm receiver.	Receiving Set, Radio AN/ ARR-49:	Z	Z	Z	Z	Z	Z	Z	Z	
	Control, Receiver C-2177/ AR.	Z	Z	Z	Z	Z	Z	Z	Z	
	Reeiver, Radio R-809/ ARC.	Z	Z	Z	Z	Z	Z	Z	Z	
	Mounting MT-1835/AR	.Z	Z	Z	Z	Z	Z	Z	Z	
Intercommunica-tions.	Control, Intercommunication Set C-1611 (')/AIC.	X	X	X	X	X	X	X	X	
	Cyclic Stick Switch X942-2	X	X	X	X	X	X	X	X	
	Headset-Microphone H-101(*)4.	X	X	X	X	X	X	X	X	
	Foot Switch SA-47A/AIC	X	X	X	X	X	X	X	X	
	Network, Impedance Matching A16 (fig. FO-4).	X	X	X	X	X	X	X	X	
	Relays K1, K2	X	X	X	X	X	X	X	X	
	Discriminator MD-736/A	X	X	X	X	X	X	X	X	

b. Navigation Facility (figs. 4-1 and 4-1.1).

Facility	Equipment or component	Configuration								Remarks
		A	B	C	D	E	F	G	H	
Vhf navigation	Receiving Set, Radio AN/ ARN-30D.	X	X							
	Receiving Set, Radio AN/ ARN-30E.			X	X	X	X			
	Receiver, Radio R-1021/ ARN-30D.	X	X	X	X	X	X			
	Mounting MT-1174/ ARN-30A.	X	X	X	X	X	X			
	Mounting MT-1175/ ARN-30A.	X	X	X	X	X	X			
	Power Supply PP-2792/ ARN-30D.	X	X	X	X	X	X			Mounted on R-1021/ARN-30D.
	Converter, Signal Data CV-265A/ARN-30A.	X	X	X	X	X	X			
	Indicator ID-453/ARN-30	X	X	X	X	X	X			Also usd for homing display in some configurationr.
	Antenna AS-1304/ARN (Dorne-Margolin DMN4-4).	X	X	X	X	X	X	X	X	
	Reeeiving Set, Radio AN/ ARN-82.							X	X	
	Mounting MT-3600/ ARN-82.							X	X	
	Course Indicator ID-1347/ ARN-82.							X	X	Also used for hominfng display of signals for AN/ARC-54.
	Control, Radio Set C-6873/ARN-82.							X	X	
	Control Radio Set C-3436/ARN-30D.	X	X							
	Control, Radio Set			X	X	X	X			

Facility	Equipment or component	Configuration								Remarks
		A	B	C	D	E	F	G	H	
	C-3436/ARN-30E									
Low frequency (lf) automatic direction finder (adf) navigation set.	Direction Finder Set AN/ARN-59(V):	X	X	X	X	X	X			
	Receiver, Radio R-836/ARN.	X	X	X	X	X	X			
	Mount MT-2018/ARN	X	X	X	X	X	X			R-386/ARN mount.
	Antenna AT-780/ARN	X	X	X	X	X	X			Loop antenna.
	Dynamotor DY-150/ARN	X	X	X	X	X	X			
	Mount MT-2019/ARN	X	X	X	X	X	X			DY-150/ARN mount.
	Control, Receiver C-2275/ARN.	X	X	X	X	X	X			
	Antenna, sensing (p/n 204-075-328).	X	X	X	X	X	X	X	X	
Glide slope set	Direction Finder Set AN/ARN-83:							X	X	
	Receiver, Radio R-1391/ARN-83.							X	X	
	Mounting MT-3506/ARN-83.							X	X	R-1391/ARN mount.
	Antenna AS-1863/ARN-83.							X	X	Loop antenna.
	Control, Direction Finder C-6899/ARN-83.							X	X	
Gyro magnetic compass.	Aircraft Magnetic Compass Type J2 Induction Compass Indicator Type V-7A:	X	X	X	X	X	X	X	X	
	Induction Compass Transmitter T-611/ASN.	X	X							
	Magnetic Flux Compensator CN-405/ASN.									
	Electronic Control Amplifier Type A-2.	X	X	X	X	X	X	X		
	Electrically Driven Gyro Control Type S-3A.	X	X	X	X	X	X	X		
	Gyromagnetic Compas Set AN/ASN-43.								X	
	Directional Gyro CN-998/ASN-43.								X	
	Induction Compass Transmitter T-611/ASN.			X	X	X	X	X	X	
	Magnetic Flux Compensator CN-405/ASN.	X	X	X	X	X	X	X	X	
	Interlock, Power K-19	X	X	X	X	X	X	X	X	
FM homing	Antenna Group AN/ARA-31:				X					Operates with AN/ARC-44.
	Element, Antenna AT-624(*) /AR.				X					
	Network, Impedance Matching CU-459/AR.				X					
	Keyer KY-149(A)/AR .				X					
	Mounting MT-1620/AR				X					
	Switch Assembly SA474/AR (modified).				X					See paragraph 1-6*j*. Operates with AN/ARC-5 and ID-453/ARN-30A or ID-1347/ARN-82
	Homing Antenna Assembly 637A-2 (205-075-345).					X	X	X	X	Operates with AN/ARC-54 and ID-458/ARN-30A or ID-1347/ARN-82

Facility	Equipment or component	Configuration								Remarks
		A	B	C	D	E	F	G	H	
	Homing Facility Indicator Relays K53 and K54.	X	X	X	X	X	X	X	X	
Marker beacon receiver.	Receiver, Radio R-1041A/ ARN:		X	X	X	X	X	X	X	
	Receiver, Radio R-737-ARN	X								
	Antenna, Collins Model 37RX-2.		X							
	Antenna, 37X-2	X		X	X					
	Antenna AT-640(*)/ARN					X	X	X	X	
	Mounting MT-2292/ARN	X	X	X	X	X	X	X	X	
Radar altimeter	Radar Set AN/APN-100:	Z	Z	Z	Z	Z	Z	Z	Z	
	Calibrator, Electronic Altimeter Set FR-129/ APN-100.	Z	Z	Z	Z	Z	Z	Z	Z	
	Indicator, Height ID-721/ APN-100.	Z	Z	Z	Z	Z	Z	Z	Z	
	Receiver-Transmitter, Radar RT-446/APN-100.		Z	Z	Z	Z	Z	Z	Z	
Position fixing	Navigation Set, Position Fixing AN/ASN-72		X	X	X	X	X	X	X	Installed in helicopters modified in accordance with MWO 55-1520-211-34/38.
	Obsolete									

c. Indicating Facility (figs. 4-1 and 4-1.1).

Facility	Equipment or component	Configuration								Remarks
		A	B	C	D	E	F	G	H	
Radiomsagnetic indicator (rmi) display.	Indicator, Course ID-998/ ASN (Sperry Type C-6H):	X	X	X	X	X	X	X	X	Pilot's indicator, display vhf navigation, if-adf, and gyro magntic compass data
	Indicator, Course ID-250/ ARN.	X	X	X	X	X	X	X	X	Copilot's indicator, display vhf navigation, if-df, and gyromagnetic compass data
	Converter, Radio Magnetic Indicator CV-1275/ARN (ARC type B-18A).	X	X	X	X	X	X			Adapts vhf navigation data to rmi input.
	Amplifier, Electronic Control AM-3209/ASN (Sperry P/N 1783867-1).	X	X	X	X	X	X	X	X	
Attitude display	Amplifier, Attitude Indicator, Model 5404G:	X	X	X	X	X				

Facility	Equipment or component	Configuration								Remarks
		A	B	C	D	E	F	G	H	
	Attitude Indicator Model 4005G.	X	X	X	X	X	X	X	X	
	Rate Switching Gyro, Type MC-1.	X	X	X	X	X	X	X	X	
	Roll and Pitch Gyro, Type MD-1.	X	X	X	X	X	X	X	X	

d. Proximity Warning Facility (figs. 4-1 and 4-1.1)

Facility	Equipment or component	Configuration								Remarks
		A	B	C	D	E	F	G	H	
Proximity Warning Facility YG-1054	Receiver-Transponder					Y	Y	Y	Y	
	Antenna					Y	Y	Y	Y	

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*e. Identification Facility (*fig. *4-2).*

Facility	Equipment or component	Configuration								Remarks
		A	B	C	D	E	F	G	H	
IFF transponder	Transponder Set AN APX-44:	Y	X	X	X	X	X	X	X	In configurations A through H adapter cables are used with the AN APX-44, which are removed upon installation of the AN APX-72.
	Receiver-Transmitter RT-494 APX-44	Y	X	X	X	X	X	X	X	
	Control, Transmitter Set C-2744 APX-44.	Y	X	X	X	X	X	X	X	
	Mount MT-2100 APX-44....	Y	X	X	X	X	X	X	X	
	Relay IFF power failure K68.			X		X	X	X	X	
	Light, IFF Caution	X	X	X		X	X	X	X	
	Transponder Set AN APX-72.	X	X	Y		Y	Y	Y	Y	
	Test Set TS-1843 APX-72	X	X	Y		Y	Y	Y	Y	
	Computer Transponder KIT-1A. TSEC	X	X	Y		Y	Y	Y	Y	
	Receiver-Transmitter, Radar RT-859,APX-72.	X	X	Y		Y	Y	Y	Y	
	Mounting MT-3809 APX-72	X	X	Y		Y	Y	Y	Y	
	Control. Transponder Set C-6280 APX-72.	X	X	Y		Y	Y	Y	Y	
	Light. Code Hold	X	X	X		X	X	X	X	
	Switch. Code Hold	X	X	X		X	X	X	X	
	Mounting, MT-3513 APX-72	X	X	X		X	X	X	X	

f. Power Sources (figs. 2-40 and 2-44).

Facility	Equipment or component	Configuration								Remarks
		A	B	C	D	E	F	G	H	
Dc source	Battery BB-433 A	X	X	X	X	X	X	X	X	2 installed, main and spare.
Ac source	Motor Generator PU-543(*) A.	X	X	X	X	X	X	X	X	

1-6. Differences in Electronic Equipment Models

a. The major components of Radio Set AN/ARC-51X and AN/ARC-51BX are not inter changeable. Control, Radio Set C-4677/ARC-51X tunes Receiver-Transmitter, Radio RT-702/ARC-51X in 0.1-megacycle (mc) increments, has a four-numbered frequency indicator and has a SENS control. Control, Radio Set C-6287/ARC-51BX must be used with Receive Transmitter, Radio RT-742/ARC-51X. It tunes the receiver-transmitter in 0.05-mc increments, has a five-numbered frequency indicator, and does not have a SENS control. Provision is also made for selection of 20 preset channels by use of the C-6287/ARC-51X.

b. Antenna Group AN/ARA-31 and Antenna 637A-2 are different. Antenna 637A-2 does not use Keyer KY-149(*)/AR, its mount, or modified Switch Assembly SA-474/AR. Homing Antenna 637A-2 (205-075-345) is used in configurations E, F, G, and H.

c. In configurations, F, G, and H, a failure relay is used in conjunction with the identification friend of foe

(IFF) interrogation system. Failure relay K68 is connected to the adapter on Transponder Set Control C-2714/APX-44 (ground connection) and to pin 53 of J906 adapter on Receiver Transmitter RT-494/ APX-44. In case of system failure, the master caution panel will indicate malfunctioning-of the transponder system if provisions have been made for wiring to pin DD of P24 on the master caution panel. In configurations A through E, failure relay K68 is used in conjunction with-the transponder identification friend or foe (IFF) interrogation system. In configurations C through H, on the AN/APX44, K68 is connected to the adapter on Transponder Set Control C-2714/APX-44 (ground connection) and to pin 53 of the J906 adapter on Receiver-Transmitter RT-494/APX-44. If the system fails, the IFF caution light on the helicopter instrument panel indicates malfunctioning of the transponder system. In configurations A through H, on the AN/APX-72, K68 is connected to pin 30 of J921 on Computer Transponder KIT-1A/TSEC. If the system fails the +28 v caution light on the KIT-1A/TSEC indicates malfunctioning of the transponder system.

d. Components of the J2 magnetic compass system in configurations C, D, E, F, and G differ from those in configurations lA, A, and B only in the compass transmitter. In configurations C, D, E, F, and G Induction Compass Transmitter Type C-2 is replaced by the T611/ASN. Mounted on the T-611/ASN is Magnetic Flux Compensator CN-405/ASN (error compensator).

e. Receiving Set, Radio AN/ARN-SOD is installed in configurations 1A, A and B and Receiving Set, Radio AN/ARN-30E is installed in configurations C, D, E, and F.

(1) The AN/ARN-30D contains Control, Radio Set C-3486/ARN-S0D, which tunes Receiver, Radio R-1021/ARN-80D. The AN/ ARN-30E receiver can use the same control. However, if a C-3436A/ARN-30E is used, it can, in addition to controlling Receiver, Radio R-1021/ARN-30D, tune an associated glideslope receiver. The C3436A/ARN-30E changes the frequencies of the R-1021/ARN-SOD simultaneously with the glideslope receiver. This control automatically tunes both receivers to associated glideslope and localizer frequencies.

(2) The C-3436/ARN-30D control has two electrical connectors on the rear panel and the C-3436A/ARN-30E has three electrical connectors on the rear panel and has slightly greater physical depth. (Front panels of the controls are similar; however, C-3436A/ARN-30E is marked VHF ILS on the left side instead of VHF NAV.).

f. In configurations A, B, C, E, F, G, and H, a failure relay is used in conjunction with the identification friend or foe (IFF) interrogation system. Failure relay K68 is connected to the adapter on Transponder Set Control C-2714/ APX-44 (ground connection) and to pin 53 of J906 adapter on Receiver-Transmitter RT494/APX-44. In case of system failure, the master caution panel will indicate malfunctioning of the transponder system if provisions have been made for wiring to pin DD of P24 on the master caution panel.

g. On configurations A, B, C, E, F, and H, two relays (K53 and K54) provide signal in-U formation to Indicator Course ID-453/ARN (omni-indicator). Left and right deviation indication signals from Converter, Radio Magnetic Indicator CV-1275/ARN are furnished to the indicator, and homing signals from Radio Set AN/ARC-54 are fed to the indicator through K53. Flag alarm signals from Receiving Set, Radio AN/ARN-30E (in addition to homing information from the AN/ARC-54) and flag left and right signals from the C-3835/ARC-54 control panel are fed to the omni-indicator through relay K54.

*g.*1. In configurations A, B, C, E, F, G, and H, two relays (K53 and K54) provide signals information to Indicator, Course ID-1847/ ARN-82 (omni-indicator). Left and right deviation indication signals from Receiver R1388/ARN-82 and homing signals from Radio Set AN/ARC-54 (fm radio) are sent to the indicator through relay K53. Flag alarm signals from the AN/ARN-82 receiver, homing information from the AN/ARC-54, and flag left and right signals from the C-3835/ARC-54 control panel are sent to Indicator, Course ID

1847/ARN-82 (omni-indicator) through relay K54.

h. Configuration D uses relays K40 and K41 (mounted on the A16 impedance-matching assembly printed circuit board) to control application of IFF audio to the interphone system. In configurations, A, B, C, E, F, G, and H, these relays are labeled K1 and K2, but serve the same purpose. In configurations 1A, A, and B, the IFF audio is introduced through diodes CR3 on impedance-matching network A16.

i. In configurations A, B, C, F, G, and H, filter FL 1 is a radiofrequency interference suppression filter. Power (28 volts direct current (dc)) from terminals F, e, and f of the C-3835/ARC-54 supplied to receiver-transmitter unit pins 36, 18, and 34, is fed through filter FL1. In configuration E, this same suppression is accomplished with capacitor filter C11.

j. On configuration D, control panel assembly 204-075-219 is mechanically and electrically identical with Switch Assembly SA-474/AR, except for the markings on the panel face. For information on Switch Assembly SA-474/AR, refer to TM 11-5985--200-12 covering Antenna Group AN/ARA-31.

k. In configurations A, B, C, D, and E, the pilot's attitude indicating system consists of a pilot's attitude indicator type 4005G, rate switching gyro MC-1, roll and pitch gyro MD-1, and an indicator amplifier type 5404G. In configurations F, G, and H, the components remain the same as in configurations A, B, C, D, and E, except the indicator amplifier type 5404G is not used.

1-7. Equipment Technical Characteristics

Electronic components within the scope of this manual not covered in separate Department of the Army technical manuals include the following:

a. Impedance-Matching Assembly A16 (fig. 4-2). Impedance-matching assembly A16 is installed in each configuration. The range of the impedance pad is dc through audio. The input signal and output signal are audio. The pilot's and copilot's intercommunication system (ics) relays are mounted on the impedances pad.

b. AN/APX-72 Transponder Set. In configurations C through H, 22 more wires have been added to the wires existing for the AN/APX-44. These wires make provisions for using IFF Transponder Set AN/APX-72. Transponder Set AN/APX-72 installations differ as follows:

(1) In configurations A through H, provisions only are made for the AN/APX-72.

(2) Test Set TS-1843/APX-72 and Computer Transponder KIT-1A/TSEC are the main additional components which are not included in the AN/APX-44 type interrogation system. Adapter cables are used to integrate the AN/APX-44 components into the AN/ APX-72 system when the AN/APX-72 is not used. Range, frequency, input, and output signals carried by the cables are dc and audio. Input power is 28 volts dc.

(3) The AN/APX-72 is installed in configurations A through H.

(4) The AN/APX-72 consists of the following:

(a) Test Set TS-1843/APX-72.

(b) Computer Transponder KIT-1A/ TSEC.

(c) Receiver-Transmitter, Radar RT-859/ APX-72.

(d) Mounting MT-3809/APX-72.

(e) Control, Transponder Set C-6280/ APX-72.

(f) Mounting MT-8518/APX-72.

(g) Antenna AT-884/APX-44.

c. Uhf Fm Antenna 637A-2 (205-075-45) (fig. 2-10.3). On configuration A, B, C, E, F, G, and H, the AN/ARC-54 uses the 637A-21 (205-075-345) homing antenna which is mounted topside on the helicopter. It is 6.5 inches high and 26.8 inches long, resembling a towel rack in appearance, and is often referred to by this term. The antenna is used with the AN/ARC-54 in the homing mode, which allows the pilot to home on any signal transmitted within the frequency range of 30.00 to 69.59 megacycles. The antenna is very

compact in comparison with the dual antennas used on other configurations.

1-8. Description of Equipment Components

a. Impedance-Matching Assembly A16 (fig. 42).

(1) *Unique functional aspects.* The impedance-matching assembly, located in the communication junction box, is a printed circuit board containing relays and network circuity. This assembly matches various signals between related receivers and transmitters. It also serves as a coupler for all distribution panels in the interphone facility.

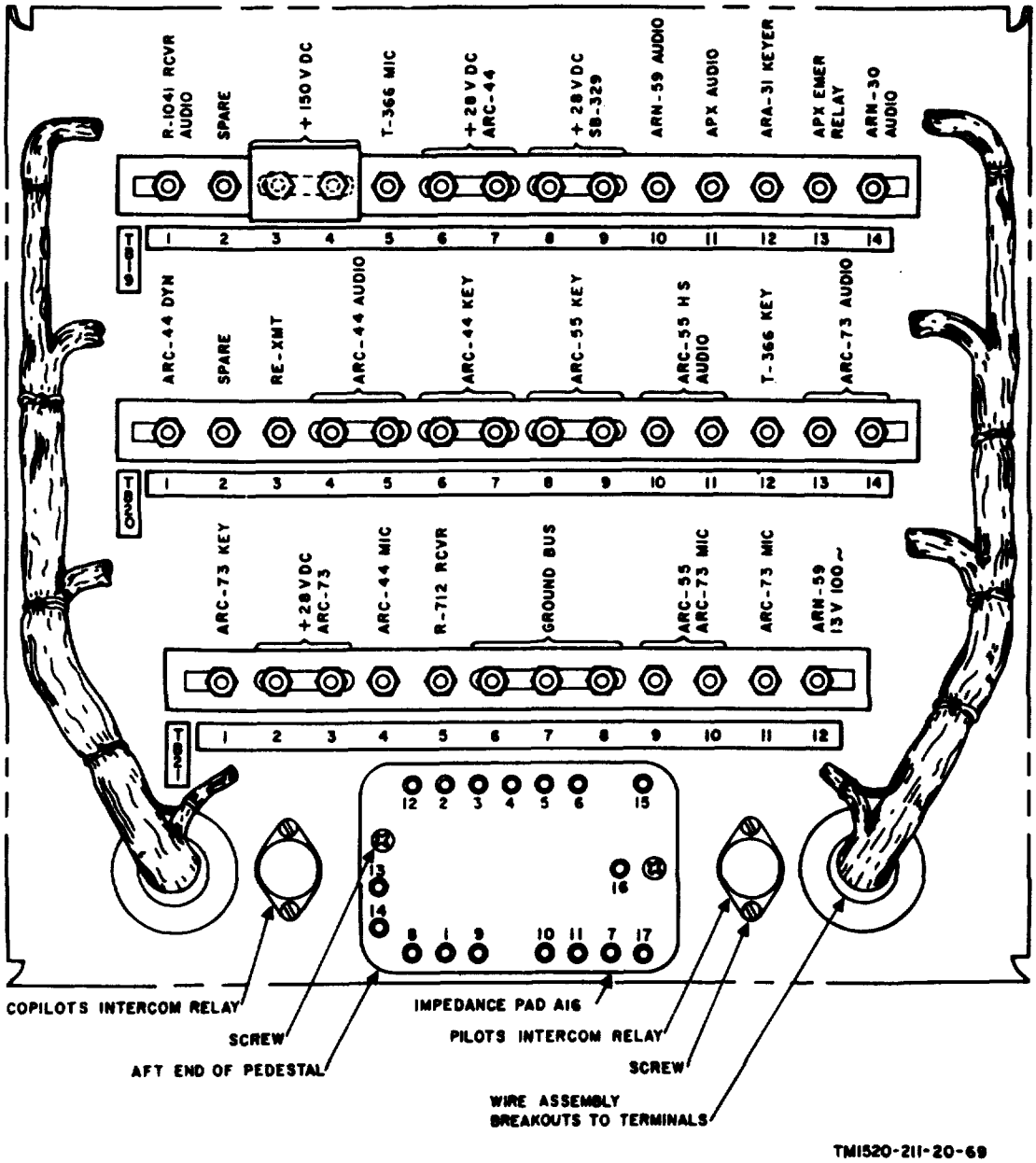


Figure 1-2. Communications junction box parts layout (configurations A and B).

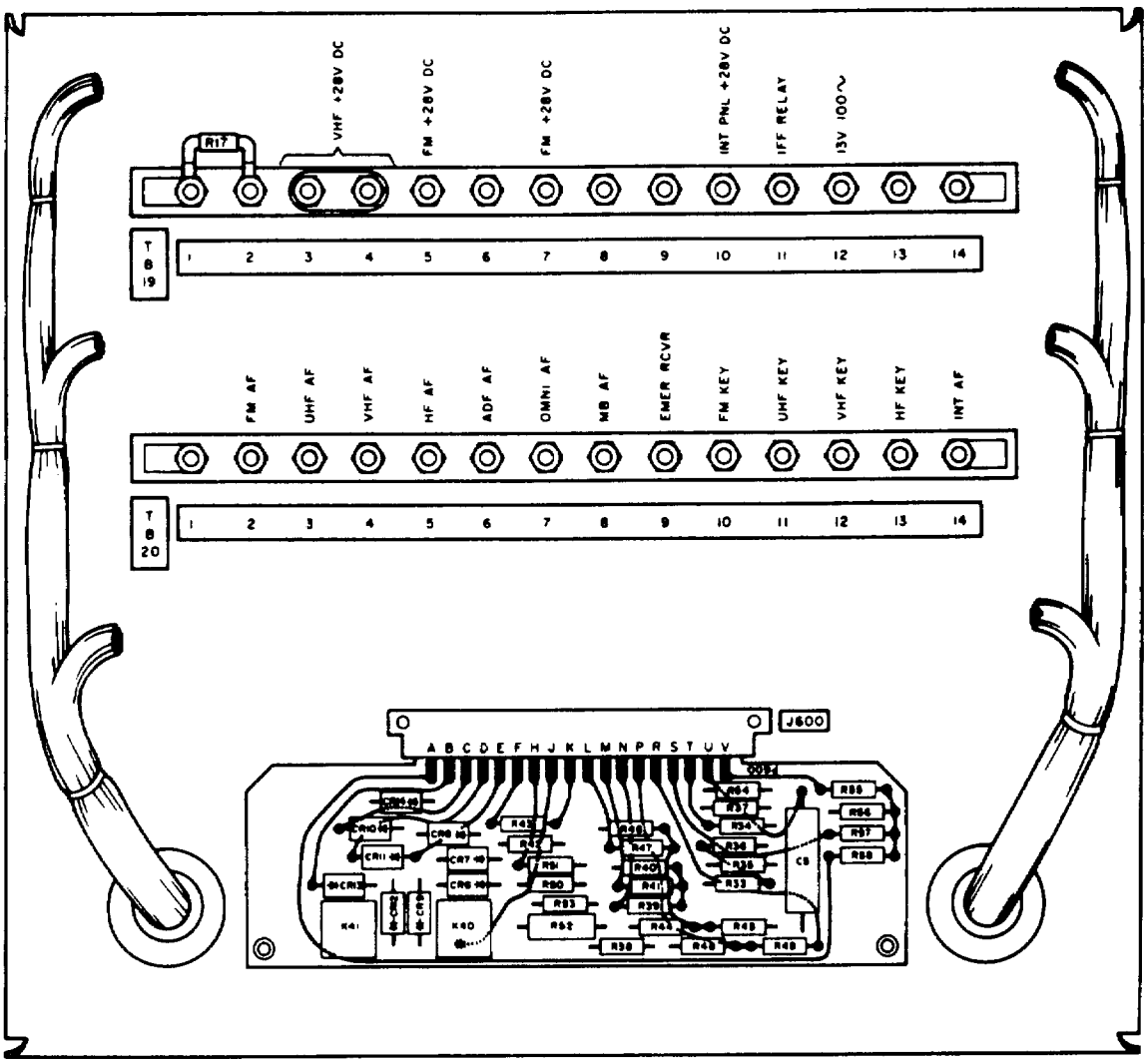
(2) *Structural and assembly features.* The A16 impedance-matching assembly is rigidly mounted in the communications junction box in every configuration. The impedance matching circuit board makes external connection and is easily replaced. The junction box is on the aft end of the pedestal.

b. Relays, Intercommunication System (figs. 1-2 through 1-5).

(1) *Unique functional aspects.*

(a) Two interphone control station (ics) relays (in the communication junction box) are provided for interphone operation. The ics relays are energized when the corresponding pilot or copilot trigger switch is depressed to position 1 (first detent) or position 2 (second detent). Twenty-eight volt dc power is applied through the INTERCOM SB329 or INTERCOM C-1611 circuit breaker to one side of the ics relay coils. The relays are energized when the associated trigger switch is closed, completing the supply circuit to ground.

(b) When the pilot's ics relay is energized,



TM1520-211-20-70

Figure 1-3. Communication junction box parts layout (configuration E).

audio signals originating at the pilot's station are fed through the closed contacts of the relay to the pilot's distribution panel for interphone operation or for transmitting purposes.

(c) When the copilot's ics relay is energized, audio signals originating at the copilot's station are fed through the closed contacts of the relay to the copilot's distribution panel for interphone operation or for transmitting purposes.

(d) When neither trigger switch is depressed, the ics relays are deenergized and neither operator can transmit.

(2) *Structural and assembly features.* The ics relays are located in the communication junction box on the aft end of the pedestal on each configuration of the helicopter (figs. 4-1 and 4-1.1). Reference designators for the ics relays in the various configurations are listed below.

Position	A	B	C	D	E	F	G	H
Pilot's	K17	K17	K40	K40	K40	K1	K1	K1
Copilot's	K18	K18	K41	K41	K41	K2	K2	K2

c. Adapter Cables, Transponder, P/N 762-1849-102 and 762-1848-101 (fig. 4-8).

(1) *Unique functional aspects.* The 7621849-102 and 7621848-101 cables adapt the configuration wiring of Transponder Set AN/ APX-72 to provide the interconnections for transponder Set AN/APX-44 components.

(2) *Structural and assembly features.* Provisions for installation of the KIT-1A/TSEC computer transponder are in the radio compartment beside the RT-859/APX-72 receiver-transmitter, when and if installed. Test Set TS-1943/APX-72, when and if installed, is in the nose compartment radio rack in configurations A through E and in the radio compartment in configurations F through H. A UG29B/U adapter couples the antenna coaxial cable when the AN/APX-44 is installed. A second adapter, UG-564A/U, is required for attaching the antenna coaxial cable to the RT-859/APX-72. In configurations C through E, one of the cable assemblies is stowed in the radio compartment beside the RT-859/APX-72; the other is stowed beside the nose compartment radio Track. In configurations F through H, both cable assemblies are stowed in the radio compartment.

d. Uhf Fm Antenna Assembly P/N 205075-345 (637A-2) (fig. 2-10.3).

(1) *Unique functional aspects*. Antenna Assembly P/N 205-075-345 is used instead of Antenna Group AN/ARA-31 or AN/ARA-56 installed on configuration D. There is no functional change from the earlier antennas for receiving homing signals from 30.00 to 69.95 mc.

(2) *Structural and assembly features.* The antenna is mounted on the roof of the helicopter. It does not protrude from the fuselage as much as the earlier model antennas mounted on the nose of the helicopter on configurations 1A and D.

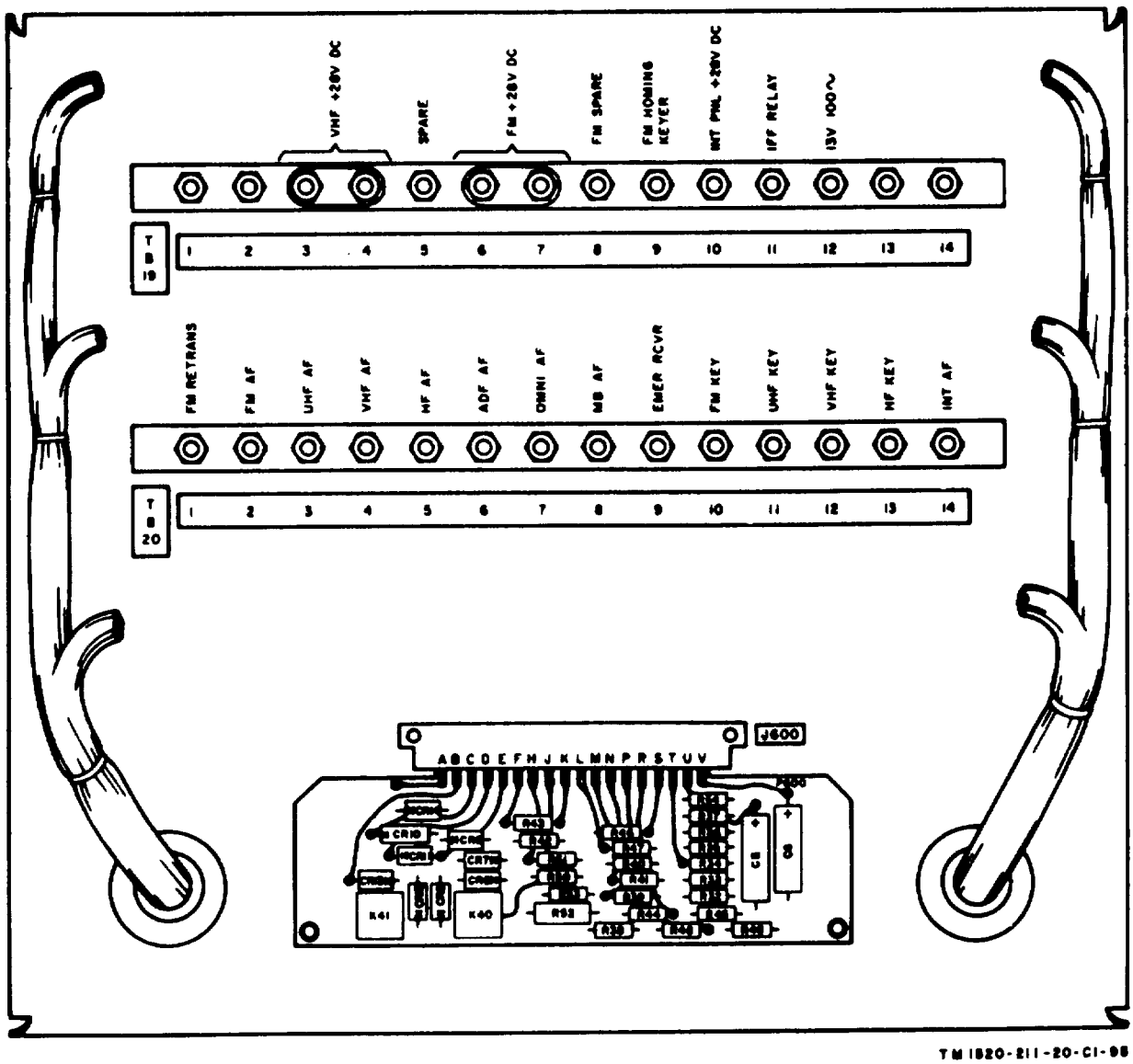


Figure 1-4. Communications junction box parts layout (configurations C and D).

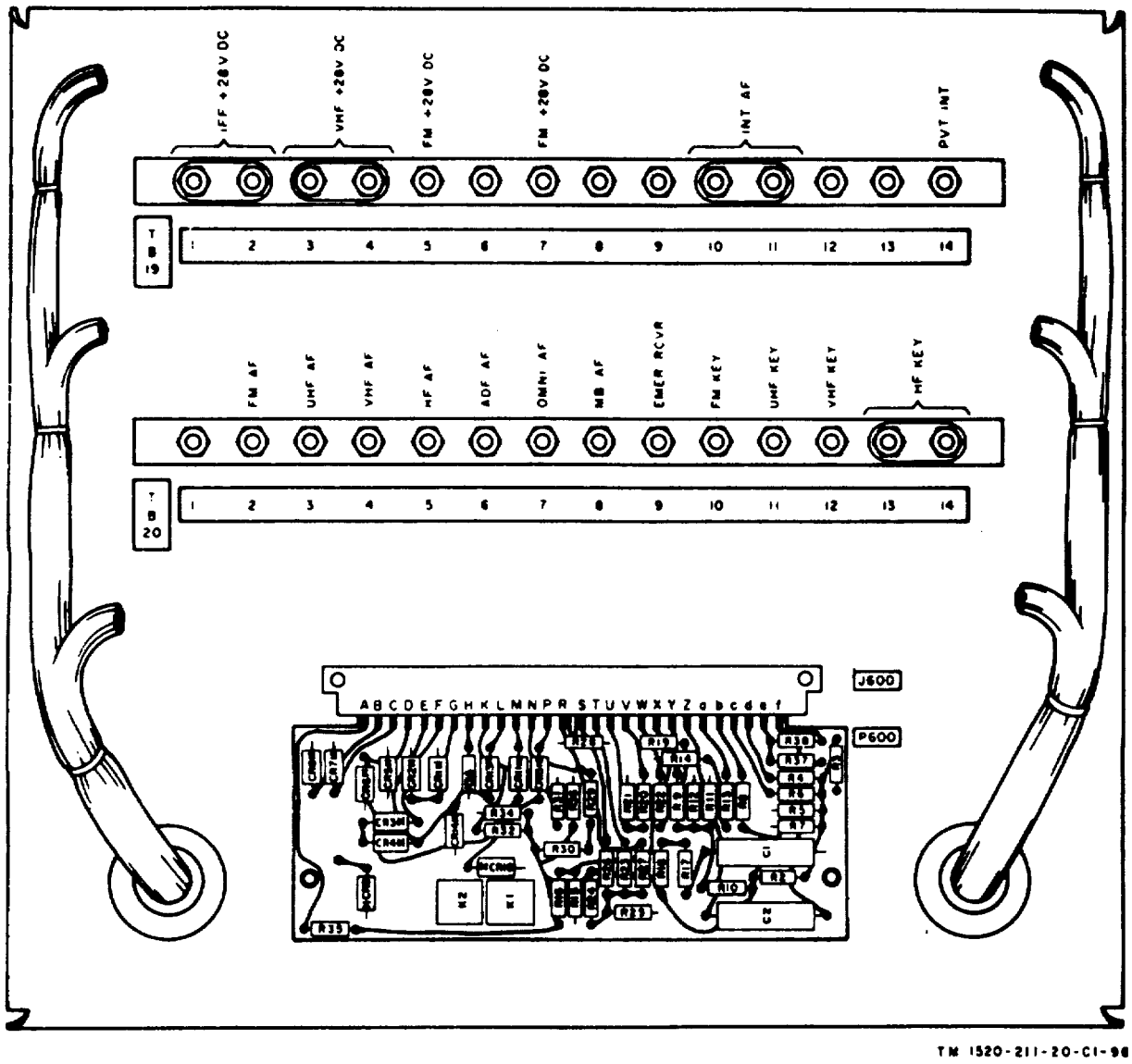


Figure 1-5. Communications junction box parts layout (configurations G and H).

CHAPTER 2

MAINTENANCE INSTRUCTIONS

Section I. GENERAL REQUIREMENTS

2-1. Scope of Organizational Maintenance

The maintenance duties assigned to the organizational maintenance repairman of the helicopter electronic equipment configuration are listed below, together with references to paragraphs covering the specific maintenance functions. These maintenance duties supplement the intermediate and periodic preventive maintenance checks and services contained in the organizational maintenance manual on the helicopter (TM 55-1520-219-20 or TM 55-1520-220-20). The procedures covered in this manual will be performed concurrently with the helicopter periodic preventive maintenance checks and services. The results of the preventive maintenance checks and services will be recorded on applicable maintenance forms in accordance with instructions in TM 38-750.

a. Periodic preventive maintenance checks and services (para 2-6).

b. Cleaning and repainting (para 2-8).

c. Servicing (para 2-9).

d. Troubleshooting (paras 2-10 and 2-11).

e. Repair (para 2-12).

f. Adjustments (para 2-85).

2-2. Tools, Test Equipment and Materials Required

Major electronic equipment components, when removed from the helicopter for higher category maintenance are replaced by serviceable components from maintenance float stock or on a direct exchange (DX) basis from higher category maintenance organizations (direct support maintenance). Tools, materials, and test equipment required for organizational maintenance are listed below.

a. Tools.

(1) Tool Kit, Electronic Equipment TK105/G (SM 11-4-5180-R).

(2) Tool Kit, Battery Service TK-90/U (SM 11-4-5180).

(3) Apron, battery worker's, FSN 8415-284-9258.

(4) Goggles, industrial type, FSN 4240-521-6586.

(5) Charger, Battery PP-1451/G.

b. Test Equipment. The following chart lists the test equipment required for organizational maintenance and the applicable technical manual for each test equipment:

Test equipment	Technical manual	Required for
Multimeter AN/URM-105	TM 11-6625-203-12	All facilities.
Test Set, Electrical Power AN/UPM-93	TM 11-6625-303-12	Ac power source.
Test Set, Transponder Set AN/APM-156	TM 11-6625-509-2	IFF.
Test Oscillator BC-376-(*)	TM 11-6625-552-15/1	Marker beacon.
Decca test sets:		Navigation Set, Position Fixing AN/ASN-72.
Decca model LRO-1		
Decca model 870		
Test Facilities Kit Laboratory for Electronics #101675.		
Deccas model 336		
Honeywell Inc., Transponder Test Set P/N 2330AA01	Operation & Service Instructions	Proximity Warning System YG- 1054

e. Materials.

(1) Cleaning compound, Federal stock No. 7980-395-9542.

(2) Sandpaper, fine, No. 000.

(3) Cleaning cloth (lint free).

(4) Soft-bristle brush.

(5) Lubricating oil, general purpose, preservative.

(6) The following safety wire can be requisitioned:

FSN	Descriptions	Diameter (inch)	Unit of issue
9505-554-1421	Safety Wire, Steel Corrosion-Resistant Annealed.	0.32	Spool
9505-242-7527	Safety Wire, Steel Corrosion-Resistant Annealed.	0.047	Spool
9505-554-1420	Safety Wire, Steel Corrosion-Resistant Annealed.	0.063	Spool

2-3. Fuse and Circuit Protective Device Locations

The only fuses in the electronic equipment configuration that are accessible without removal of electronic equipments from the helicopter are the fm liaison set fuses located on the front of Dynamotor DY-107(*)/AR (fig. 2-2) and the IFF transponder set fuses located on the front panel of the receiver-transmitter. The push-pull type, de circuit breakers are mounted on the overhead console. The ac circuit breakers are mounted on the righthand forward side of the pedestal. The following chart lists the locations of all accessible fuses and circuit breakers that provide circuit protection for the electronic equipment.

2-4. Auxiliary Power Unit Connection

To prevent excessive drain on the helicopter battery, connect an auxiliary power unit, Aircraft Ground Servicing Unit, Multipurpose,

Equipment	Rating (amp)	Location	Figure No.
Radio Set AN/ARC-44	150V, 0.5	Dynamotor DY-107/AR	2-2
	300V, 0.5	Dynamotor DY-107/AR	2-2
	10	Dc circuit breaker panel	2-1
Radio Set AN/ARC-54	15	Dc circuit breaker panel	2-1.2
Radio Set AN/ARC-55	26	Dc circuit breaker panel	2-1
Radio Set AN/ARC-51	15	Dc circuit breaker panel	2-1.2
Radio Set AN/ARC-73 (xmtr)	10	Dc circuit breaker panel	2-1.2
(rcvr)	5	Dc circuit breaker panel	2-1.2
VHF Emergency Transmitter T-66A/ARC	5	Dc circuit breaker panel	2-1.2
Radio Set AN/ARC-102	50	Dc circuit breaker panel	2-1.2
Intercommunications Signal Distribution Panel SB-29/AR	6	Dc circuit breaker panel	2-1
Control Intercommunication Set C-1611(*)/AIC (Pilot and Crew)	5	Dc circuit breaker panel	2-1.2
Control Intercommunication Set C-1611(*)/AIC (Copilot and Crew)	5	Dc circuit breaker panel	2-1.2
Radio Receiving Set AN/ARN-30	5	Dc circuit breaker panel	2-1
Radio Receiving Set AN/ARN-82	5	Dc circuit breaker panel	2-1.2
Direction Finder Set AN/ARN-59 (radio compass).	5	Dc circuit breaker panel	2-1
Direction Finder Set AN/ARN-83 (LF NAV ADF).	5	Dc circuit breaker panel	2-1.2
Magnetic Compass J-2	5	Dc circuit breaker panel	2-1
	2	Ac circuit breaker panel	2-1.1
	2	Ac circuit breaker panel	2-1.1
Course Indicator	1.5	Ac circuit breaker panel	2-1.1
Magnetic Compar AN/ASN-43	1	Ac circuit breaker panel	2-1.1
Antenna Group AN/ARA-31 (FM Homing)	5	Dc circuit breaker panel	2-1
Radio Receiver R-737/ARN (Marker beacon)	5	Dc circuit breaker panel	2-1

Equipment	Rating (amp)	Location	Figure No.
Navigation Set AN/ASN-72 (Decca Mark VIII)	15	Dc circuit breaker panel	2-1.2
Attitude Indicating System (pilot's)	1	Ac circuit breaker panel	2-1.1
Attitude Indicating System (copilot's)	1	Ac circuit breaker panel	2-1.1
Proximity Warning Facility YG-1054	2 amp	Dc circuit breaker panel	2-1.2
Transponder Set AN/APX-44 (IFF)	10	Dc circuit breaker panel	2-1.2
Transponder Set (AN/APX-72) IFF	10 amp	Dc circuit breaker panel	
	5 amp (spare).	Receiver-Transmitter RT-859/APX-72.	
	115V 5 amp	Receiver-Transmitter RT-859/APX-72.	
	28V 5 amp	Receiver-Transmitter RT-859/APX-72.	
Test Set TS-1843/APX-72	5 amp	Dc circuit breaker panel	
Secure-Voice Encoder/Decoder KY-28	5 amp	Dc circuit breaker panel	
Motor Generator PU-643(*)/A:	1 amp	Ac circuit breaker panel	2-1.1
Main	25	Dc circuit breaker panel	2-1
Spare	25	Dc circuit breaker panel	2-1
Inverter control	5 amp	Dc circuit breaker panel	2-1

Type MA-1 or equivalent to the helicopter before performing the power-on periodic preventive maintenance inspection (para 2-7) of the electronic equipment configuration. Do not connect the auxiliary power unit to the helicopter without checking with the organizational maintenance repairman or the helicopter crew chief.

a. Turn the helicopter battery switch on the de power panel on the overhead console to the OFF position (fig. 2-1.)

CAUTION

The helicopter battery switch must always be at the OFF position while the auxiliary power unit is connected to the helicopter. Reversed polarity between the helicopter battery circuit and the auxiliary power unit can damage electrical part and cause a serious fire.

b. Connect the auxiliary power unit plug to the helicopter external power receptacle (fig. 2-3) on the left side of the helicopter below the electrical compartment access door.

NOTE

When the auxiliary power unit plug is inserted in the receptacle, the auxiliary power unit relay is energized and electrical power is supplied direct to the main battery bus for distribution.

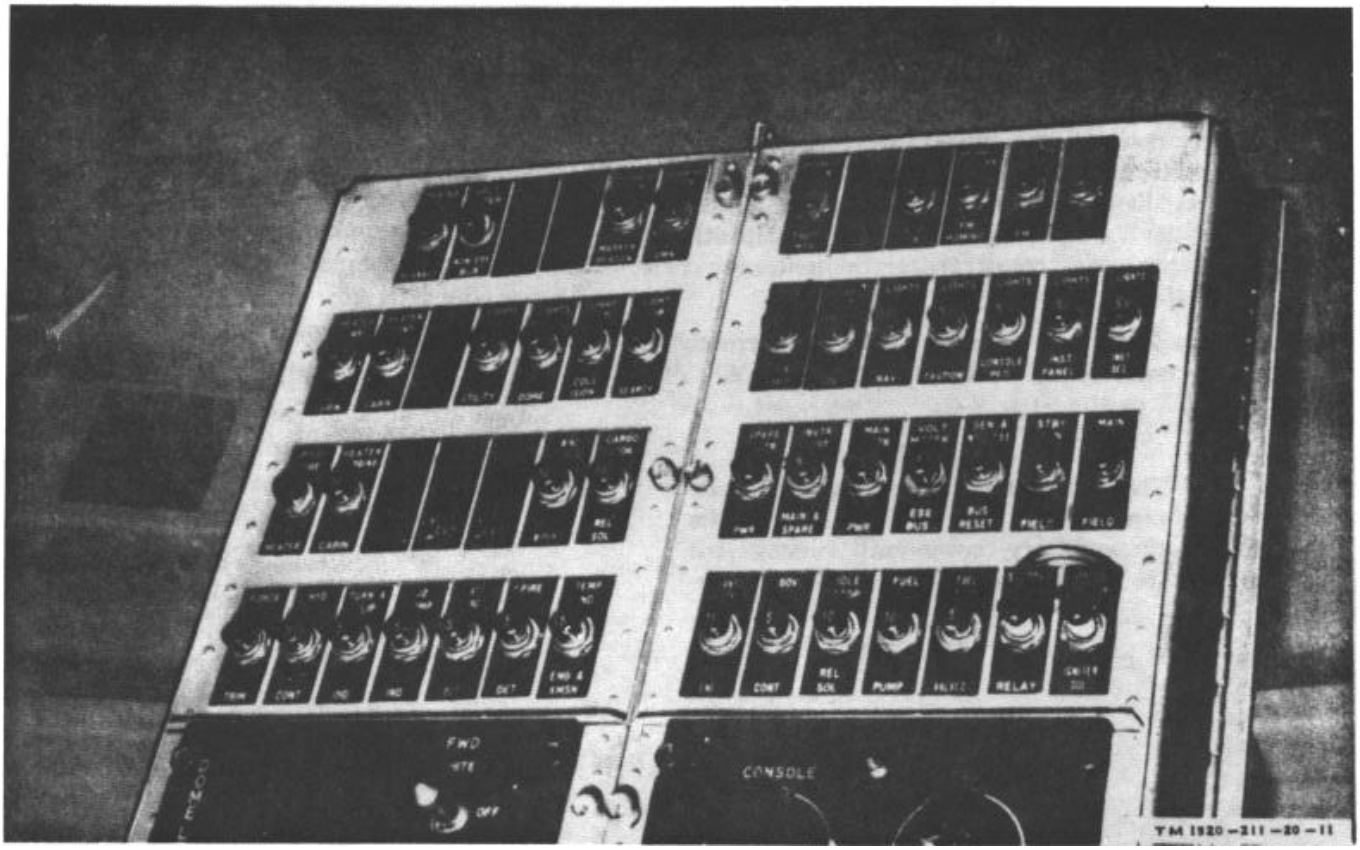


Figure 2-1. Dc circuit breaker panel (overhead, console).

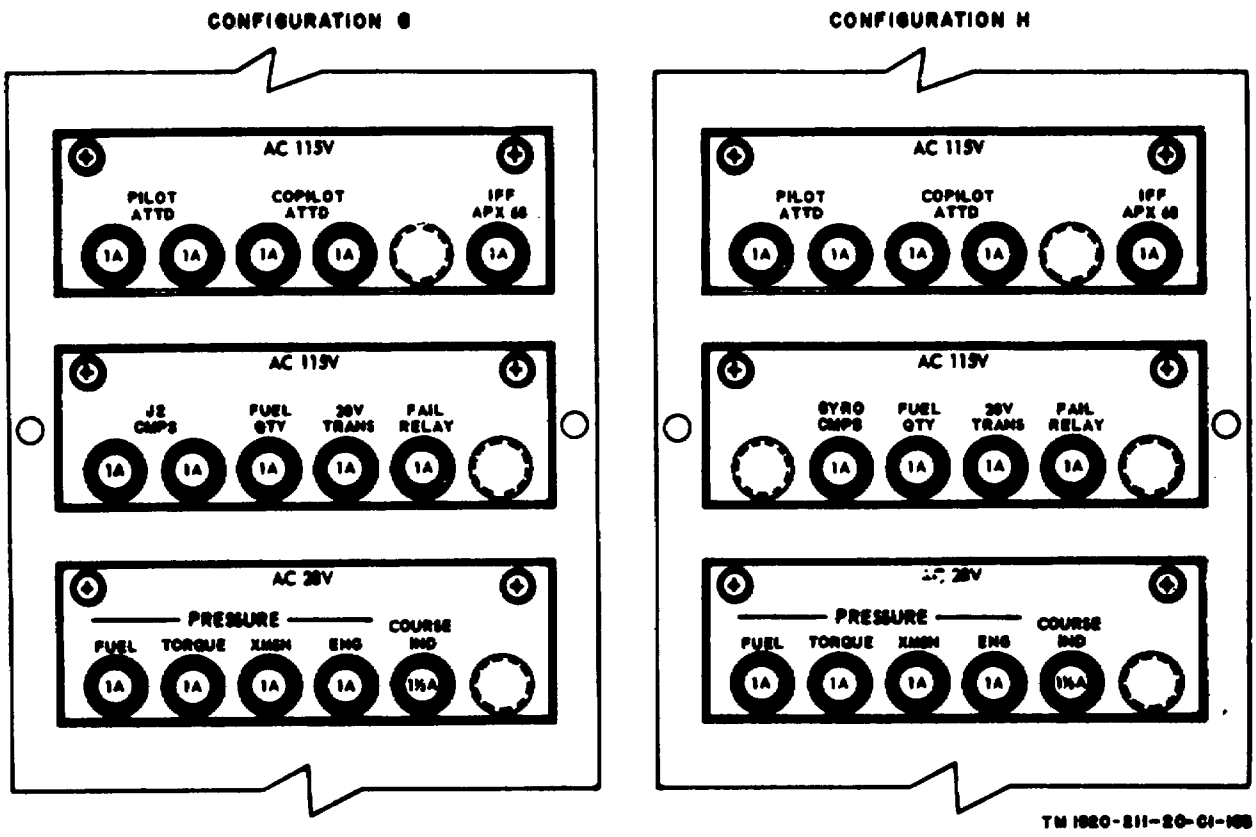


Figure 2-1.1. Ac circuit breaker panel (configurations G and H).

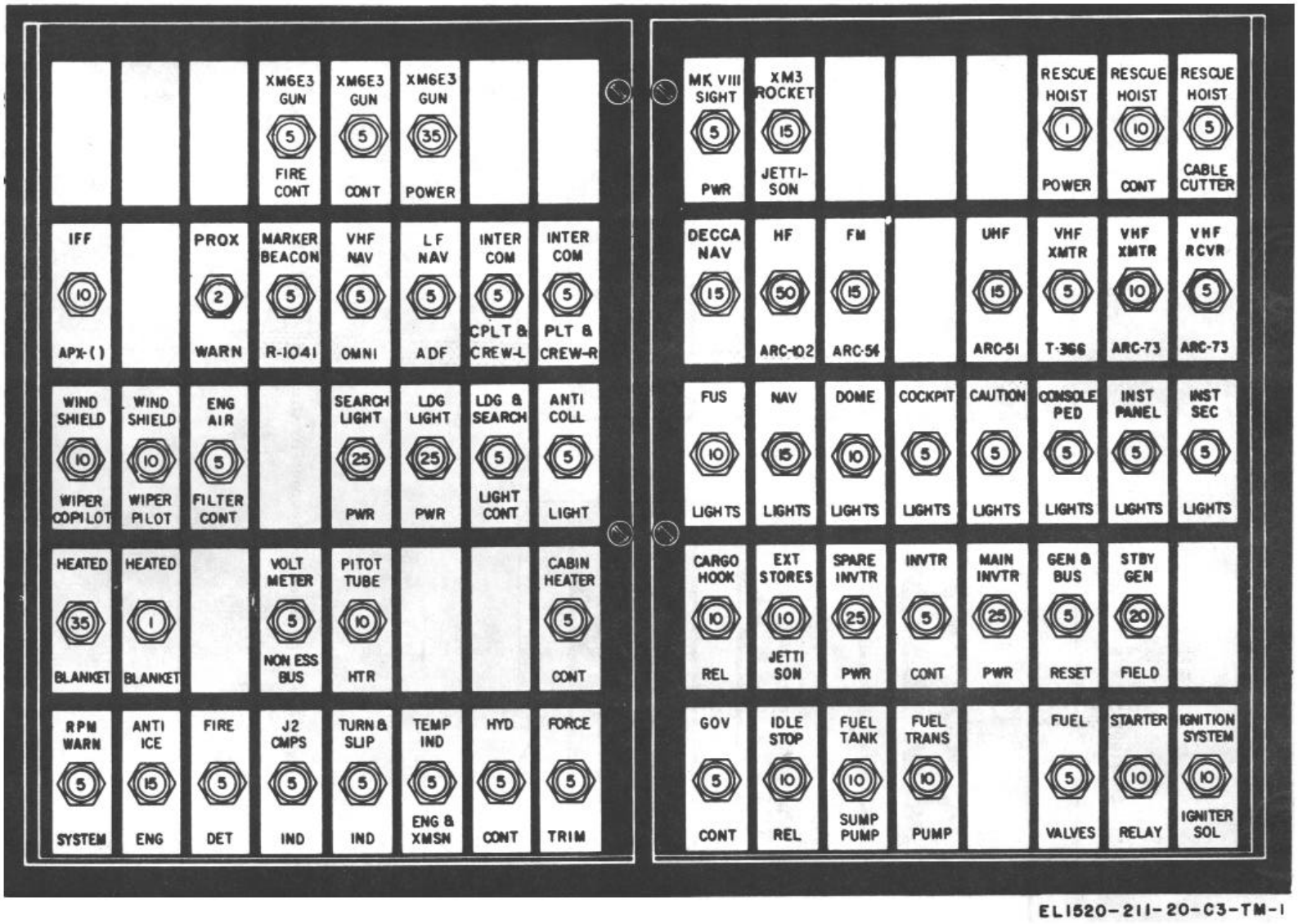


Figure 2-1.2 DC Circuit breaker panel, typical.

2-4.2 Change 3

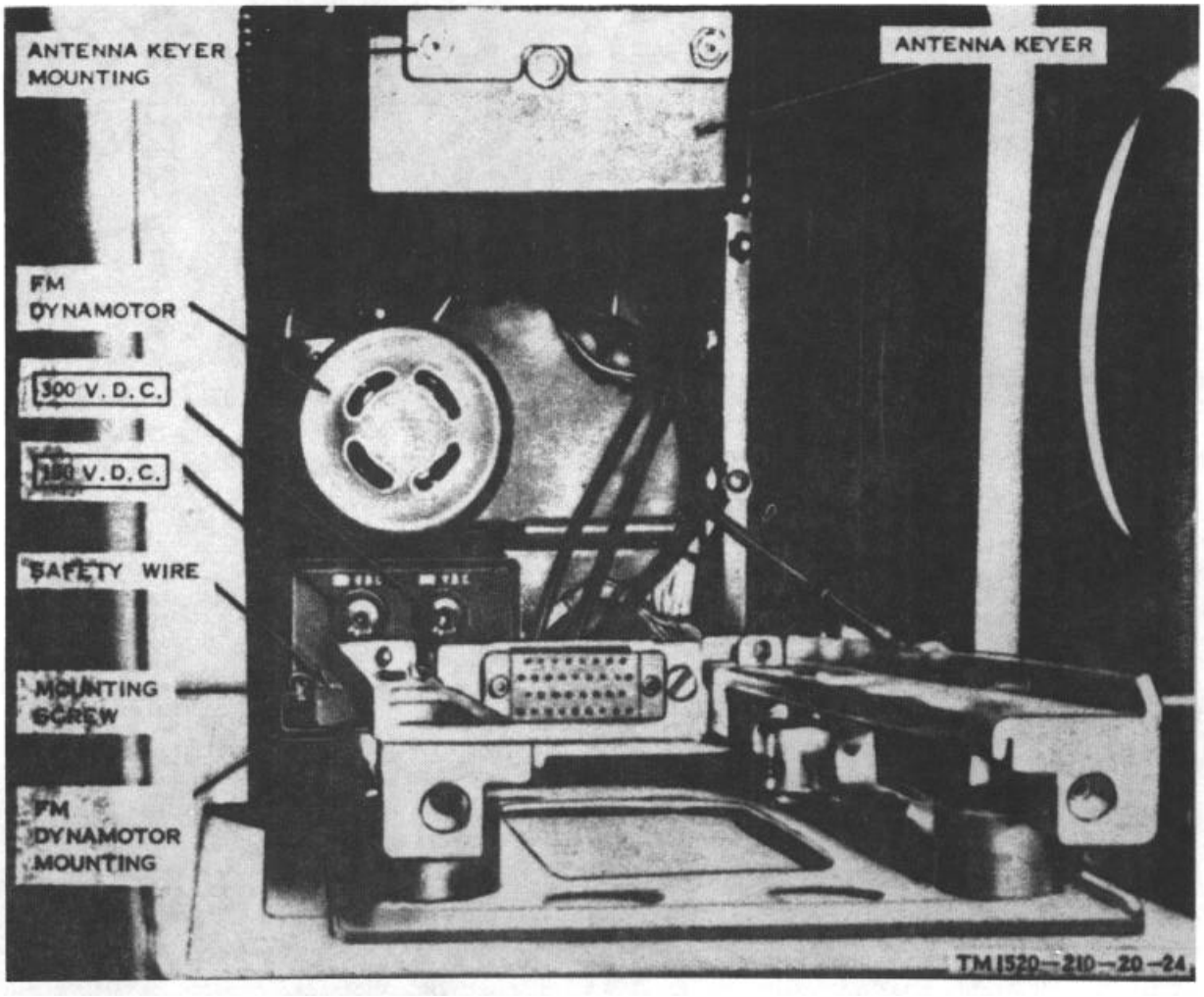


Figure 2-2. Location of Dynamotor DY-107/AR and antenna keyer.

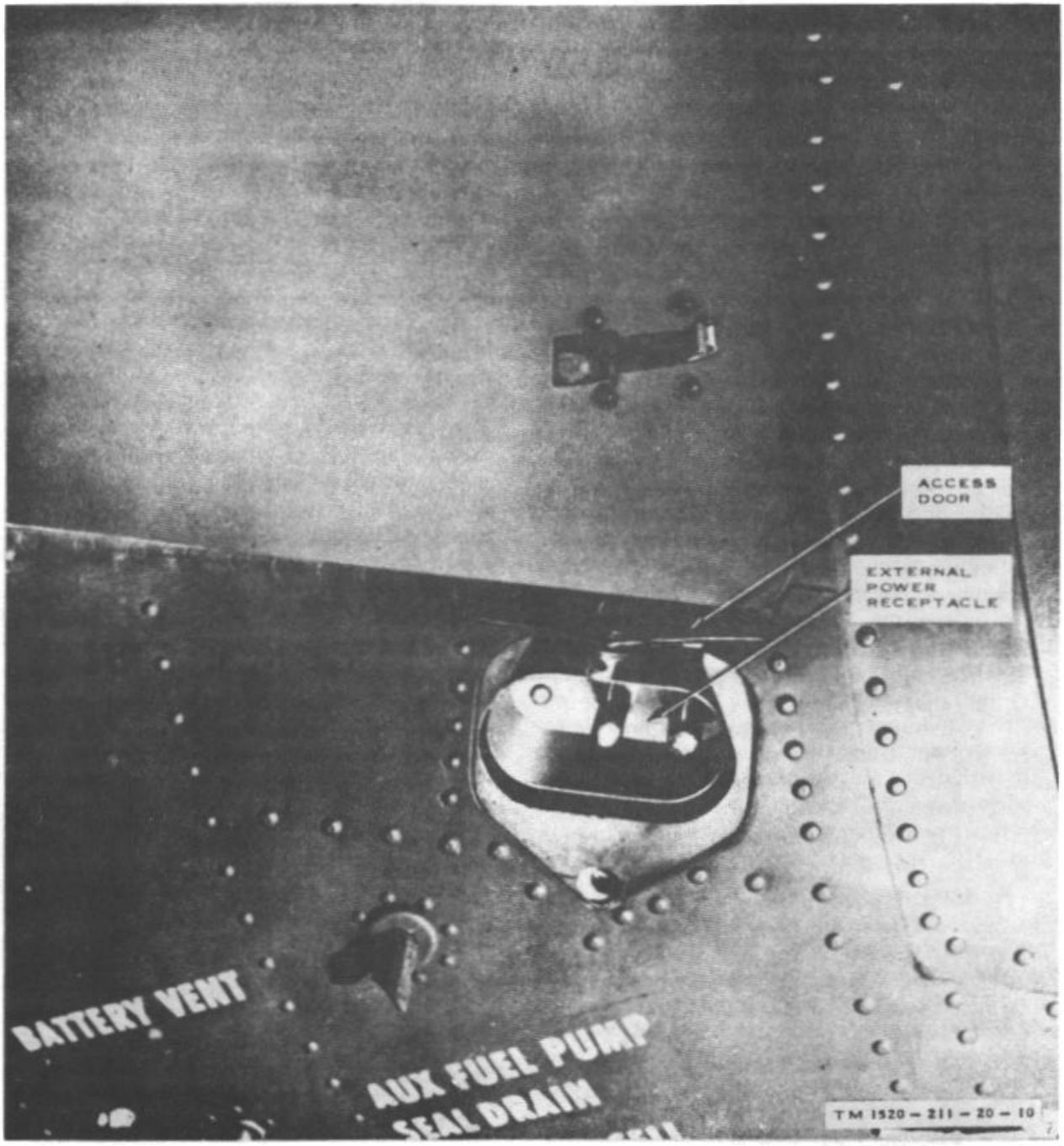


Figure 2-3. External power receptacle.

Section II. PREVENTIVE MAINTENANCE PROCEDURES

2-5. Preventive Maintenance

Preventive maintenance is the systematic care, servicing, and inspection of equipment to prevent the occurrence of trouble, to reduce downtime, and to assure maximum operational capability. Preventive maintenance is the responsibility of all maintenance categories with the electronic configurations, and

includes the inspection, testing, and repair or replacement of components that inspections and tests indicate would probably fail before the next scheduled service period. Preventive maintenance checks and services of the electronic equipment configuration for the helicopter at the organizational level are made at daily, intermediate, and periodic intervals (TM 55-1520-211-PMI and TM 55-1520-211-PMP) unless otherwise directed by the commanding officer. The maintenance checks and services of the electronic configuration should be performed concurrently with the inspection of the helicopter.

a. Maintenance Checks and Services. The maintenance checks and services procedures provided by TM 55-1520-211-20 and this manual outline functions to be performed at specific intervals. These checks and services are to maintain combat serviceability; that is, to maintain the helicopter and its electronic equipment configuration in good general (physical) condition and in good operating condition. To assist the organizational maintenance repairman in maintaining combat serviceability the chart indicates what to check, how to check, and the normal conditions; the *References* column lists the paragraph and publications that contain additional information. If a defect cannot be remedied by the organizational repairman, higher category maintenance or repair is required.

b. Maintenance Form and Records. Records and reports of these checks and services and maintenance forms and records to be used and maintained on the electronic equipment configuration are specified in TM 38750. Paragraph 1-3 of this manual contains additional information concerning the submission of specific forms.

2-6. Periodic Preventive Maintenance Checks and Services

a. General. Preventive maintenance checks and services are performed on the aircraft on a daily, intermediate, and periodic basis. The helicopter daily preventive maintenance checks and services (TM 55-1520-211-PMD) are performed each calendar day or after approximately 8 hours of flying time. The helicopter intermediate preventive maintenance checks and services (TM 55-1520-211-PMI) are performed after approximately 25 hours of flying time. The helicopter periodic preventive maintenance checks and services (TM 55-1520-211-PMP) are performed after approximately 100 hours of flying time. Preventive maintenance checks and services of the electronic equipment configuration will be scheduled concurrently with applicable preventive maintenance checks and services of the aircraft. The daily checks are accomplished when the pilot or operator performs the preflight checks. The preflight checks are given in TM 55-1520-211-10 and TM 55-1520-211-CL. The intermediate preventive maintenance checks and services of the electronic equipment configuration are performed concurrently with every second intermediate preventive maintenance checks and services of the aircraft. This action establishes an interval of approximately 50 flying hours between the electronic equipment configuration intermediate preventive maintenance checks and services. The periodic preventive maintenance checks and services of the electronic equipment configuration are performed concurrently with every second periodic preventive maintenance checks and services of the helicopter. This action establishes and interval of approximately 200 flying hours between the electronic equipment configuration periodic preventive maintenance checks and services. All deficiencies or shortcomings noted during the performance of the preventive maintenance checks and services of the electronic equipment configuration will be immediately reported to direct support maintenance personnel through the use of forms and procedures specified in TM 38-750. Equipment that has a deficiency that cannot be corrected at the organizational maintenance level should be deadlined and reported to a higher maintenance category using the form specified in TM 38-750. Perform all of the checks and services in the preventive maintenance checks and services chart (para 2-7). Whenever an abnormal or unsatisfactory condition or result is observed, take corrective action in accordance with the paragraph listed in the *References* column.

b. Periodic Pullout Checks. During the periodic preventive maintenance checks and services of the electronic configuration, certain major components are scheduled to be removed from the helicopter (*c* below) for bench checks and services. The bench checks and services of the electronic equipment major components are performed by direct support maintenance personnel. When the components are removed from the helicopter, they are replaced by equivalent serviceable components from maintenance float stock or on a direct exchange DX) basis from the direct support maintenance organizations.

c. Pullout Intervals. The chart below lists electronic equipment components in the helicopter electronic equipment configuration, and indicates the service time interval at which each component should be removed from the helicopter for bench check and interval preventive maintenance by direct support maintenance personnel. The chart also references the paragraph that provides removal and replacement instructions for that component.

Equipment component	Pull out intervals (flying hours)	Procedure (reference)
Radio Set AN/ARC-44		
RT-294(*)/ARC-44	300	Para 2-15
SB-327/ARC-44	300	Para 2-17
DY107(*)/AR	300	Para 2-16
AT-454(*)/ARC-44	NR	Para 2-21
MT-1267(*)/AR	NR	
MT-1268/AR	NR	
Control Panel 204-075-219	300	Para 2-20
Radio Set AN/ARC-54:		
RT-348/ARC-54	300	Para 2-26
C-3835/ARC-54	300	Para 2-29
CU-943/ARC-54	300	Para 2-21
AT-765/ARC	NR	Para 2-27
AS-1703/ARC	NR	Para 2-28
MT-1535/ARC/54	NR	
Radio Set AN/ARC-55(*):		
RT-349(*)/ARC-55	300	Para 2-34
MT-1536/ARC-55	300	
C-1827/ARC-55	NR	Para 2-33
AT-450/ARC	NR	Para 2-32
AT-1108/ARC	NR	Para 2-25
Radio Set AN/ARC-51(*)X:		
RT-702/ARC-51X	300	
or RT-742/ARC-51BX	300	
or RT-334( )/ARC-51X	300	Para 2-22
C-4677/ARC-51X	300	Para 2-23
C-6287/ARC-51BX	300	Para 2-24
AT-1108/ARC	NR	Para 2-25
Radio Set AN/ARC-73A:		
Receiver, Radio R-1123(*)/ ARC-73	300	Para 2-26
Transmitter, Radio Set T-879(*)/ARC-73.	300	Para 2-37
Control, Radio Set C-4074(*)/ ARC-73.	300	Para 2-41
Mounting MT-2699/ARC-73	NR	
Antenna AT-1108/ARC	NR	Para 2-40
Transmitter, Radio T-366/ARC:	300	Para 2-47
DY-86/ARN-30	300	Para 2-49
F-726/AR (ARC Type P-12)	300	Para 2-80
MT-1142/ARC		
C-80B (control)	300	Para 2-50
204-075-708 (control panel)	300	Para 2-48
204-075-709 (switch panel)	300	Para 2-48
Radio Set AN/ARC-102:		
RT-698/ARC-102	300	Para 2-42
C-3940/ARC-94	300	Para 2-45
PP-3702/ARC-102	300	
CU-991/AR	300	Para 2-46
205-706-027 (antenna)	NR	Para 2-44
204-075-609 (antenna)	NR	Para 2-43
Intercommunications:		
SB-329/AR	300	Para 2-18
Switch X942-2	300	Para 2-79
CU-435/AIC	NR	
SA-47A/AIC	300	Para 2-78
C-1611(*)/AIC	300	Para 2-19
Receiving Set, Radio AN/ARN-30(*):		
R-1021/ARN-30D	300	Para 2-51
CV-265A/ARM-30D	300	Para 2-54
PP-2792/ARN-30D	300	Para 2-53
C-3436(*)/ARN-30D	300	Para 2-56
ID-453/ARN-30	NR	Para 2-55
AS-1304/ARN (DMN4-4)	NR	Para 2-52
MT-1174/ARN-30A	NR	
MT-1175/ARN-30A	NR	
Receiving Set, Radio AN/ARN-82:		
R-1388/ARN-82	300	Para 2-51.1
C-6873/ARN-82	300	Para 2-56.1
ID-1347/ARN-82	NR	Para 2-55.1
MT-3600/ARN-82	NR	
Direction Finder Set AN/ARN-59(V)		
R-836/ARN	300	Para 2-57
C-2275/ARN	300	Para 2-60
DY-150/ARN	300	Para 2-59
Antenna 204-075-328	NR	Para 2-61
AT-780/ARN	NR	Para 2-58
MT-2018/ARN	NR	

Equipment component	Pull out intervals (flying hours)	Procedure (reference)
MT-2019/ARN	NR	
Direction Finder Set AN ARN-83:		
R-1391 ARN-83	300	Para 2-57.1
C-6899/ARN-83	300	Para 2-60.1
Antenna 205-075-325	NR	Para 2-61
AS-1863/ARN-83	NR	Para 2-58.1
MT-3605 ARN-83	NR	
Aircraft Magnetic Compass Type J2 and Gyro Magnetic Compass Type AN-ASN-43;		
C-2 (transmitter)	NR	Para 2-67
T-611 ASN (transmitter)	NR	Para 2-67
A-2 (amplifier)	600	Para 2-68
S-3A474AR	NR	Para 2-69
CN-405 ASB	NR	Para 2-67
CN-998 ASN-43 (gyro)	NR	Para 2-69.1
Antenna Group AN ARA-31:		
KY-149(*) AR	300	Para 2-66
AT-624(*)AR	NR	Para 2-64
CU-59/AR	NR	Para 2-65
SA-474/AR	NR	Para 2-20
MT-1620 AR	NR	
Antenna 637-2	NR	Para 2-30
Marker beacon:		
R-737 ARN	300	Para 2-62
R-104AA/ARN	300	Para 2-62
MT-2292/ARN	NR	
AT-640(*)ARN		Para 2-63
Antenna 37RX-2 or 37X2	NR	Para 2-63
Navigation Set, Position Fixed AN ASN-72:		Para 2-67
Receiver 908	300	Para 2-76*a*
Receiver control panel 918	300	Para 2-76*d*
Computer 9360	300	Para 2-76*b*

Equipment component	Pull out intervals (flying hours)	Procedure (reference)
Proximity Warning Facility		
YG-1054:	300	Para 2-67.2
Antenna		Para 2-67.1
Receiver Transponder		Para 2-67.2
	300	Para 2-76*t*
	NR	
	300	Para 2-76*c*
	300	Para 2-76*c*
	300	Para 2-76*c*
	300	Para 2-76*g*
Indicating systems:		
ID-998 ASN	NR	Para 2-70
ID-250 ARN	NR	Para 2-70.2
CV-1275/ARN	NR	Para 2-81
AM-3209/ASN	300	Para 2-70.1
Amplifier 5404G	NR	Para 2-81.4
Indicator 4005H	NR	Para 2-81.1
Rate Gyro MC-1	NR	Para 2-81.3
Roll and pitch gyro MD-1	NR	Para 2-81.2
Indicator J-8	NR	Para 2-81.5
Transponder Set AN APX-44:	300	
RT-494 APX-44		Para 2-71
C-2714 APX-44		Para 2-73
AT-884 APX-44		Para 2-72
*Motor Generator PU-543(*)A	600	Para 2-74
Transponder Set AN APX-44:		
RT-494 APX-44	300	Para 2-80
C-2744 APX-44	300	Para 2-82
AT-884 APX-44	NR	Para 2-81
MT-2100/APX-44	NR	
Transponder SET AN APX-72:		
RT-494 APX-44	300	Para 2-90
TS-1843 APX-72	300	Para 2-92
MT-3809 APX-72	NR	Para 2-89
MT-3513 APX-72	NR	
KIT-1ATSEC	300	Para 2-89

*After every 200 hour period of operation the inverter will be cleaned and brushed inspected. After every 600 hour period of operation the inverter will be removed for bench testing. After every 900 hours of operation the inverter will be removed for overhaul.

2-7. Periodic Preventive Maintenance Checks and Service Chart

Item No.	Item to be inspected	Procedure	References
		POWER-OFF INSPECTION	
1	Entire configuration	Inspect the entire electronic configuration (fig. 4-1) for completeness, general condition, and cleanliness. Remove all electronic equipment scheduled for bench tests (para 2-6c).	Para 2-1 and TM 55-1520-219-20, TM 55-1520-220-20.

Item No.	Item to be inspected	Procedure	References
2	Publications.....	Check to see that pertinent publications are available: *a.* Operator's manuals are complete and in usable condition without missing pages. *b.* All changes pertinent to the equipment are on hand. *c.* Organizational maintenance manuals are complete and in usable condition.	App. I.
3	Modification work orders.	Check DA Pam 310-7 to determine whether new applicable MWO's have been published; check to see if all URGENT MWO's have been applied to the equipment, and that all NORMAL MWO's have been scheduled.	DA Pam 310-7.
4	Frequency cards, decals, stencils, and other insignia.	Check for up-to-date frequency cards in the frequency card holders. Check all decals, stencils, and other insignia for legibility.	TM 55-1520-211-10.
5	Headset-microphones.....	Check the headset-microphones, microphone adapters, and associated receptacles for possible damage; check to see that they are clean and properly connected and that the wiring is free of cuts or breaks.	TM 11-5965-240-15 and TM 55-1520-211-20.
6	Microphone switches.....	Check all trigger and foot-operated switch wiring for fraying.	TM 55-1520-211-20.
7	Control panels and operating controls.	*a.* Check to see that all control panels are clean and the paint is not scratched or marred.	*a.* Para 2-8.
		b. Check all operating controls during operation: Check knobs for looseness or binding; adjust as necessary so that knobs are tight on the shafts and have free movement without binding. Check switches for positive action and secure mounting.	*b.* Applicable technical manuals (app I).
		c. Check to see that control panel cable connectors are securely attached and that cable wiring is free of cuts or deterioration.	*c.* None.
8	Flexible shaft (mechanical linkage).	Inspect the mechanical linkage flexible tuning shaft for broken or crushed casing and for excessive binding or backlash of the mechanical linkage.	TM 55-1520-211-20. Para 2-51, 2-56, 2-57.
9	Connector plugs and receptacles.	Inspect all connector plugs and receptacles for cracks, corrosion, and evidence of overheating.	TM 55-1520-211-20.
10	Cables and wiring.....	Inspect all cables and wiring for signs of chafing, fraying, and overheating, and for loose clamps and clamp supports.	TM 55-1520-211-20. TM 11-530.
11	Terminal boxes, junction boxes, and terminal strips.	Inspect the terminal boxes and junction boxes for: *a.* Cracks, structural failure, and security of mounting. *b.* Plugged drain holes. *c.* Electrical receptacles for cracks, corrosion, and loose wire connections. *d.* Terminal strips for security of attachment. *e.* Relays mounted on or on the boxes for damage and security of mounting.	TM 11-530.

Item No.	Item to be inspected	Procedure	References
12	Internal equipment mountings.	Check equipment mountings of equipment mounted inside the helicopter for cracks, Corrosion, and loose attaching bolts or rivets. Check shock-mount vibration isolators for deterioration of rubber and loose or missing bonding.	Applicable technical manuals (app I).
13	External equipment mountings.	Check equipment mountings of the equipment mounted on the tail boom of the helicopter for the same defects listed in item No. 12.	Applicable technical manuals (app I).
14	Antennas.....	Inspect all antenna systems as follows: *a.* Check for security of mounting and for any signs of damage or fatigue. Inspect insulators for cracks; clean with cleaning compound.	None.

Item No.	Item to be inspected	Procedure	References
		b. Inspect all exposed lead-ins and connectors for signs of damaged or frayed wires or insulation.	
15	Equipment, replacement	*a*. Replace all units of the electronic configuration that were removed for bench testing.	*a*. Para 2-14.
		b. Safety-wire all units.	*b*. Para 2-83.
		c. Perform the necessary adjustments to the uhf command set and the fm liaison set.	*c*. Applicable technical Manual (appx I).
		OPERATIONAL PRESET	
16	Auxiliary power unit.....	Connect an auxiliary power unit to the helicopter to supply primary 28 volts dc for operational tests.	Para 2-4.
17	Helicopter power MASTER SWITCH	Set the MASTER SWITCH to ON to energize the helicopter electrical circuits.	TM 55-1520-211-10.
18	RADIO POWER switch.	Set the RADIO POWER switch to ON to energize the radio bus.	TM 55-1520-211-10.
		POWER-ON INSPECTION, INTERPHONE FACILITY	
19	FM circuit breaker.....	Depress the FM circuit breaker button. The fm dynamotor starts, and the distribution panels are energized.	Para 2-11, item No. 19.
20	Distribution panels.....	Set the distribution panel SB-329/ARC-44 or C-1611/AIC controls as follows:	None.
		a. TRANS selector switch to INT.....	
		b. RECEIVER 1 and 2 switches to the down (off) position.	
		c. Turn the VOL control fully counterclockwise.	
21	Pilot's trigger switch and headset-microphone.	Depress the pilot's trigger switch to the first position, and speak into the microphone. Sidetone signals are heard in the pilot's headset, and interphone signals are heard in the copilot's headset.	Para 2-11, item No. 21.
22	Copilot's trigger switch and headset-microphone.	Depress the pilot's trigger switch to the first position, and speak into the microphone. Sidetone signals are heard in the copilot's headset, and interphone signals are heard in the pilot's headset.	Para 2-11, item No. 21.
		POWER-OFF INSPECTION, RADIO SETS AN/ARC-44 AND AN/ARC-54	
23	Exterior surfaces.....	*a.* Clean the control unit, receiver-transmitter, and mounting.	*a*. Para 2-8.
		b. Inspect exposed metal surfaces for rust, corrosion, and bare spots.	
24	Cables and connectors....	Check all cables for evidence of chafing, cracking, or excessive strain. Refer to higher maintenance category for replacement. Check all electrical connectors for dents, cracks, or improper mating.	TM 11-530.
25	Receiver-transmitter.....	*a.* Check to see that the receiver-transmitter is securely mounted.	Applicable technical manual (appx I).
		b. Check the meter for dirty or broken glass.	
		c. Check to see that all controls operate smoothly with no binding.	

Item No.	Item to be inspected	Procedure	References
26	Mounting.....	Check to see that the mounting is securely fastened to the helicopter frame or rack. Check to see that the ground straps are secure and that the shock isolators work smoothly. Check for any sign of physical damage.	None.
27	Control unit.....	*a*. Check to see that the control unit is securely mounted.	*a*. None.
		b. Check the controls for smooth mechanical action, and check to see that the knobs are tight.	*b*. None.
	POWER-ON INSPECTION, RADIO SETS AN/ARC-44 AND AN/ARC-54		
28	Primary power.....	*a.* Set the helicopter primary power ON-OFF switch to ON, and close the aircraft 28-volt dc circuit breaker.	*a*. TM 55-1520-211-10.
		b. Check to see that the control unit panel lamps light. *Note:* Brilliance of lamps is controlled by the helicopter panel light control.	*b*. Para 2-11, item 28.
29	Fm facility circuit breakers.	Depress the FM and HOMING circuit breaker buttons. The fm dynamotor starts, and the distribution panels are energized.	Para 2-11, item No. 30.
30	Blower.....	Set the mode control on the control unit to PTT, and check to see that the blower in the receiver-transmitter operates.	Para 2-11, item No. 30.
		Set the controls on the distribution panels as follows:	
		a. Rotate the TRANS selectors so that 1 appears in the window.	*a*. None.
		b. Operate the VOL control fully clockwise, Then fully counterclockwise. The volume varies smoothly. Adjust the VOL control to a comfortable listening level.	*b.* Para 2-11, item No. 32.
32	Fm control panel.....	*a.* Set the REM-LOCAL switch to LOCAL and transmitter is energized, and the panel lamps light.	*a*. Para 2-11, item No. 32.
		b. Operate the VOL control fully clockwise, then fully counterclockwise. The volume varies smoothly. Adjust the VOL control to a comfortable listening level.	*b*. Para 2-11, item No. 32.
33	Fm control panel.....	*a.* Set the FREQ control to the frequency of a local fm grounding station. A 400-cps tone is heard in the headsets while the receiver-transmitter is channeling.	*a*. Para 2-11, item No. 33.
		b. Noise or a signal is heard when the frequency is selected.	*b.* Para 2-11, item No. 33.
34	Fm switch assembly.....	*a*. Set the fm switch assembly HOME switch to 1 (off) position. The fm system is connected to the communication antenna.	*a*. None.
		b. Set the SQUEL switch to SQUEL. A loud rushing noise is heard in the headsets.	*b.* Para 2-11, item No. 34.
		c. Set the SQUEL switch to 2 (off) noise in the headsets is considerably	*c.* Para 2-11, item No. 34.

Item No.	Item to be inspected	Procedure	References
35	Tuning.....	Tune the radio set to the frequency of a local fm station. A channel-changing tone should be heard in the headset while the radio set is tuning. When the tone stops, the radio set is tuned.	None.
36	Pilot's microphone switches, microphone, and radio set: two-way communication operation.	*a*. Check to see that the control unit is establish two-way communication with the local fm ground station. The transmitted signals should be of adequate strength and readability, and the sidetone and received signals adequate to maintain reliable communication. Release the trigger switch.	*a*. Para 2-11, item No. 36.
		b. Depress the pilot's foot-operated switch, And establish communication with the local fm ground station. The transmitted signals should be of adequate strength and readability, and the sidetone and received signals adequate to maintain reliable communication. Release the foot-operated switch.	*b*. Para 2-11, item No. 36.
37	Copilot's microphone switches, microphone, and radio set: two-way communication operation.	*a.* Fully depress the copilot's trigger switch, and establish two-way communication with the local fm ground station. The transmitted signals should be of adequate strength and readability, and the sidetone and received signals adequate to maintain reliable communication. Release the trigger switch.	*a*. Para 2-11, item No. 37.
		b. Depress the copilot's foot-operated switch, and establish communication with the local fm ground station. The transmitted signals should be of adequate strength and readability, and the sidetone and received signals adequate to maintain reliable communication. Release the foot-operated switch.	*b*. Para 2-11, item No. 37.
38	Radio set, homing operation.	Set the fm switch assembly HOME switch To HOME. The homing antenna circuits are energized. One of the three following signals is heard in the headsets, depending on the location of the ground station: Morse code D (dah-dit-dit), Morse code U (dit-dit-dah, or a steady 400-cps on-course tone.	Para 2-11, item No. 38.
39	Radio set retransmission operation (used only when two radio sets are installed in the helicopter).	Establish two-way communication with the local fm ground station. The ground station must operate on appropriate frequencies for each of the two radio sets.	None.
40	Fm control panel and circuit breakers.	Set the fm control panel ON-OFF switch to OFF. Release the FM and HOMING circuit breaker buttons. The fm liaison facility is deenergized.	None.

Item No.	Item to be inspected	Procedure	References
41	Exterior surfaces.....	*a*. Clean the receiver-transmitter, radio set control, and indicator front panels. Check for broken meter and indicator glasses. Refer to higher maintenance category for repair.	*a*. Para 2-8.
		b. Check all exposed metal surfaces for rust and corrosion.	*b*. Para 2-8.
42	Exterior items.....	*a*. Check safety wiring on the wingnut fasteners on the mounting.	*a*. TM 11-530.
		b. Check to see that mechanical actions of the radio set control switches and knobs are smooth and free of binding and scraping. Tighten loose mounting screws. Replace defective radio set control and forward to higher maintenance category for repair.	*b.* None.
		c. Check handles for looseness and defects.	*c*. None.
43	Air pressure indicator.	Check to see that the air pressure indicator shows 3 to 5 psi internal air pressure in the receiver-transmitter (center head protrudes when air pressure is 3 to 5 psi). Refer to higher maintenance category for repair.	None.
44	External blower air filter.	*a*. Remove and inspect the air filter.....	*a*. None.
		b. Clean the air filter if dirty.....	*b*. Para 2-8.
POWER-ON INSPECTION, RADIO SET AN/ARC-51(*)X			
		***Note*: If the helicopter engines are operated during the power-on inspection, the pilot or an authorized crew member will start and operate the engines. If the helicopter engines are not operated, use an auxiliary power source to prevent excessive drain on the helicopter battery. Refer to the helicopter manuals for connections and power requirements, and for setting of communication power controls.**	
45	Function select switch and external blower.	Set the function select switch to T/R. Check for operation of the external blower on the receiver-transmitter.	Para 2-11, item No. 45.
46	Radio set SENS control.	Turn fully clockwise. Allow 1 minute for the radio set to warm up. Listen for rushing audio noise in the headset. Set the SENS control fully counterclockwise. Note that audio noise is cut off. Reset the SENS control fully clockwise.	Para 2-11. Item No. 46.
47	Radio set VOL control.	Turn fully counterclockwise and then fully clockwise. Listen for corresponding decrease and increase in headset audio noise.	Para 2-11, item No. 47.
48	Radio set 10-, 1-, and	Operate controls to select assigned test frequency channel. Listen for 800-cps audio tone in headset during channel-change cycle. ***Note*: If the receiver-transmitter is remotely located from microphone push-to-talk switch, it will be necessary to use two men to perform items 49 and 50 below.**	Para 2-11, item No. 48.

Item No.	Item to be inspected	Procedure	References
49	Rf wattmeter transmitter power output.	Press the microphone push-to-talk switch, and observe the rf wattmeter indication. The power output should be at least 20 watts.	Para 2-11, item No. 49.
50	Rf wattmeter, reflected power.	With the microphone switch depressed, press PRESS FOR REFL POWER switch. Reflected power should be less than 5 watts	Para 2-11, item No. 50.
51	Receiver-transmitter sidetone.	Speak into the microphone, and listen for sidetone audio in the headset.	Para 2-11, item No. 51.
52	Receiver-transmitter operation test	Communicate with the base control tower or another uhf receiver-transmitter on at least three frequencies across the uhf band to test receiver-transmitter operation.	Para 2-11, item No. 52.
53	Guard receiver and radio set control function select switch.	Place the radio set control function select switch on T/R+G. Arrange for a communications check n a guard frequency of 243.0 mc. Listen for clear, intelligible audio in the headset.	Para 2-11, item No. 53.
	POWER-ON INSPECTION, RADIO SET AN/ARC-55(*)		
54	Uhf command facility circuit breakers	*a.* Depress the AN/ARC-55, the AN/ARC-44 XCVR, and the SB-329/AR panel circuit breaker buttons. *b*. Check to see that the control unit panel lamps light. *c*. Check to see that the blower motor operates.	*a*. None. *b*. Para 2-11, item No. 54. *c*. Para 2-11, item No. 54.
55	Uhf control unit.....	Operate the selector switch on the uhf control unit to T/R+G REC.	None.
56	Distribution panel.....	Operate the distribution panel TRANS selector switch until 2 appears in the window.	None.
57	Distribution panel.....	Operate the RECEIVERS 2 switch to the up and increase in headset audio noise.	None.
58	Distribution panel.....	Operate all other switches to the down position.	None.
59	AN/ARC-44 switch panel assembly.	Operate controls to select assigned test the up position.	None.
60	Uhf control panel.....	*a*. Set the uhf control unit frequency selector controls to correspond to the first frequency on the frequency card. *b*. Transmitter-receiver will stop cycling and will tune to desired frequency (channel tone will stop).	*a*. Para 2-11, item No. 60. *b*. Same as above.
61	Cyclic control grip trigger switch.	Fully depress the trigger switch on each cyclic control grip (pilot and copilot), in turn, to position 2 (second detent), and sidetone signal will be heard in headset.	Para 2-11, item No. 61.
62	Distribution panel.....	While receiving signals from the round station, operate the TRANS selector switch on the distribution panel to position 3, and listen for audio signals from the ground station.	Para 2-11, item No. 62.
63	Distribution panel.....	To test the set, see applicable publication.....	Appx I.

Item No.	Item to be inspected	Procedure	References
64	Uhf control panel.....	Remove the power from the uhf command set by operating the selector on the uhf control unit to OFF.	None.
65		Operate the power switch to OFF.....	
	POWER-ON INSPECTION, RADIO SET AN/ARC-73(*)		
66	Control.....	Select the desired frequency.....	TM 11-5821-217-12.
67	Receiver.....	Adjust the SQUELCH control.....	TM 11-5821-217-12.
68	Control panel.....	Rotate the SQ control fully counterclockwise.	None.
69	Control panel.....	Adjust the VOL control to midposition.....	None.
70	Control panel.....	Operate the power switch to ON (allow 15 minutes warmup time). Control panel lamps light, and transmission and reception is possible.	Para 2-11, item No. 70.
71	Receiver.....	Adjust the SQUELCH screwdriver control so that the receiver operates on the weakest of the selected frequencies.	Para 2-11, item No. 71.
72	Control panel.....	Adjust the SQ control for proper threshold level.	None.
73	Control panel.....	Adjust the VOL control for audio output level.	Para 2-11, item No. 73.
74	Remote control.....	Operate the megacycle and kilocycle dial controls to all positions. Observe that the frequency displayed in the FREQ MC indicator window on the receiver remote control is the same as that displayed in the MC indicator window on the receiver.	Para 2-11, item No. 74.
75	Transmitter.....	Press the push-to-talk button on each cyclic control grip in turn (pilot's and copilot's). Speak into microphone, and observe sidetone into headset. Squelching of receiver noise should occur.	Para 2-11, item No. 75.
76	Control panel.....	Operate the power switch to OFF.....	Para 2-11, item No. 76.
	POWER-OFF INSPECTION, RECEIVING SET RADIO AN/ARN-30(*)		
77	Exterior surfaces.....	*a*. Clean the control unit, receiver-transmitter, and mounting.	*a*. Para 2-8.
		b. Inspect exposed metal surfaces for rust, corrosion, and bare spots.	*b*. Para 2-8.
78	Cables and Connectors.	Check all cables for evidence of chafing, cracking, or excessive strain. Refer to higher maintenance category for replacement. Check all electrical connectors for dents, cracks, or improper mating.	TM 11-530.
79	Receiver.....	Check to see that the receiver is securely mounted.	None.
80	Control unit.....	*a*. Check the front panel control knobs to secured to its mounting panel by the lock fasteners.	*a.* None.
		b. Check the front panel control knobs to make certain that they are not broken and do not bind when turned.	*b*. None.

Item No.	Item to be inspected	Procedure	References
81	Course indicator.....	*a.* Make sure the course indicator is properly secured to the aircraft console panel.	*a.* None.
		b. Check the indicator glass for cracks and breaks.	*b.* None.
		c. Operate the course selector knob to be sure that the knob is tight on its shaft and turns freely.	*c.* None.
82	Mounting.....	*a.* Check to see that the mounting is securely fastened to the helicopter frame or rack.	*a.* None.
		b. Check to see that the mounting is securely making good contact.	*b.* None.
		c. Check the rubber shock mounts on the mounting to make sure they are not cracked and have not deteriorated.	*c.* None.
	POWER-ON INSPECTION, RECEIVING SET, RADIO SET AN/ARC-30(*)		
83	Circuit breaker.....	*a.* Depress the AN/ARC-55, the AN/ARC-44	*a.* Para 2-11, item No. 83.
		b. The vertical flag on the course indicator shifts out of sight.	*b.* Para 2-11, item No. 83.
		c. The TO-FROM indicator on the course Indicator remains stable.	*c.* Para 2-11, item No. 83.
84	Control unit.....	Turn the VOL-OFF switch and knob completely clockwise. Receiver noise will be heard over the headset-microphone.	Para 2-11, item No. 84
85	Control unit.....	*a.* Set the megacycle channel selector switch to a designated frequency.	*a.* None.
		b. The OFF vertical flag on the course indicator drops out of sight.	*b.* Para 2-11, item No. 85
		c. The TO-FROM meter indicates either TO or FROM, and call signs from station are heard.	*c.* Para 2-11, item No. 85.
86	Course indicator.....	*a.* Turn the course selector knob.....	*a.* None.
		b. Indicator shifts to the selected station.....	*b.* Para 2-11, item No. 86.
87	Control unit.....	*a.* Set the megacycle channel selector to the frequency of local station.	*a.* None.
		b. The OFF vertical flag on the course indicator drops out of sight. Station call letters can be heard on the headset.	*b.* Para 2-11, item No. 87.
88	Control unit.....	*a.* Place the VOL-OFF switch and the control knob completely counterclockwise.	*a.* None.
		b. The OFF vertical flag on the course indicator appears.	*b.* Para 2-11, item No. 88.
89	Circuit breaker for AN/ARN-30(*).	*a.* Deenergize; place at OFF.....	*a.* None.
		b. Control unit lamps go out.....	*b.* Para 2-11, item No. 89.
	POWER-OFF INSPECTION, DIRECTION FINDER SET AN/ARN-59(V)		
90	Exterior surfaces.....	Clean control, receiver, and mounting.....	Para 2-8.
91	Control unit.....	*a.* Check for loose or insecure fastenings. Tighten if required.	*a.* None.
		b. Cranks and knobs should be properly secured to shafts and should not bind. Tighten loose knobs and be sure that defective or broken knobs.	*b.* None.

Item No.	Item to be inspected	Procedure	References
		c. Check the meter and the indicator for broken or cracked glass. See that pointers are not bent, broken, or stuck.	c. None.
		POWER-ON INSPECTION, DIRECTION FINDER SET AN/ARN-59(V)	
92	Preliminary operation	Set the helicopter instrument panel controls as follows:	
		a. Turn the master power switch on.....	*a*. None.
		b. Turn the adf switch on.....	*b*. None.
		c. Turn the interphone power switches on..	*c*. Para 2-11, item No. 92.
		d. Check to see that the control unit panel lamps light.	*d*. Para 2-11, item No. 92.
93	VOL control.....	Turn fully clockwise; the dynamotor runs.....	Para 2-11, item No. 93.
94	MC BAND selector switch and tuning crank.	Set the MC BAND selector switch to the desired frequency band, turning the tuning crank to frequency of the radio station. Maximum indication on the tuning meter is achieved. If the radio station is cw, intermittent hissing noise is heard.	Para 2-11, item No. 94.
95	Function switch.....	Set the function switch to COMP. The indicator pointer rotates to azimuth of the radio station in relation to the heading of the helicopter.	Para 2-11, item No. 95.
96	E-W VAR control knob.	Turn the control knob in either direction; the azimuth scale on indicator rotates.	Para 2-11, item No. 96.
97	LOOP switch.....	Press the switch to either the left or right. indicator pointer rotates in direction of switch position and returns to its original position when switch is released.	Para 2-11, item No. 97.
98	BFO switch.....	Place the switch to ON. Beat signal (audio note) is heard in the headset.	Para 2-11, item No. 98.
99	Function switch.....	Set the function switch to ANT and the BFO switch to the on position, and tune the receiver. Audio note varies in pitch as the receiver is tuned exactly to the radio station frequency.	Para 2-11, item No. 99.
100	Function switch.....	Set the function switch to LOOP. Hold the LOOP switch to left or right. Aural null is effected when the LOOP antenna is in the direction of the received radio station. A second aural null is apparent at an azimuth that is 180° from the first null.	Para 2-11, item No. 100.
101	VOL control.....	Turn the control to OFF (fully counter-clockwise). Dynamotor stops running.	Para 2-11, item No. 101.
102	Stopping procedures.....	Set the helicopter instrument panel controls as follows:	
		a. Turn the master power switch off.....	*a*. None.
		b. Turn the adf switch off.....	*b*. None
		c. Turn the interphone power switches off.....	*c*. None.
		POWER-OFF INSPECTION, RECEIVER SET, RADIO R-1041(*)/ARN	
103	Receiver.....	*a*. Clean the exterior.....	*a*. Para 2-8.

Item No.	Symptom	Probable trouble	Correction
		b. Check to see that the mechanical action of the switch is smooth and free of external or internal binding. If the knob requires frequent tightening, replace the setscrew. POWER-ON INSPECTION, RECEIVER SET, RADIO R-1041(*)/ARN *Note.* Receiver Set, Radio R-1041(*)/ARN is energized automatically when the helicopter master communication or navigation switches are turned on.	*b.* None.
104	Indicator lamp on instrument panel.	Press the lens of the indicator lamp of the R-1041(*)/ARN, and check to see that the lamp lights.	Para 2-11, item No. 104.
104	Receiver	Fly the helicopter over a marker beacon transmitter, and check to see that the indicator lamp lights and an aural tone is heard in the headset. POWER-OFF INSPECTION, PANEL, SIGNAL DISTRIBUTION, RADIO SB-329/AR	Para 2-11, item No. 105.
106	Panel	Knobs should be properly secured to shafts And should not bind. Tighten loose knobs and be sure that knobs do not rub against panels. Replace defective or broken knobs. POWER-ON INSPECTION, PANEL, SIGNAL DISTRIBUTION, RADIO SB-329/AR	None.
107	Circuit breakers	Depress the AN/ARC-44 XCVR and SB-329/AR panel circuit breakers. Control panel lamps will light.	Para 2-11, item No. 107.
108	Distribution panels	Set the distribution panel controls as follows: *a.* Set the TRANS selector switch to INT - *b.* Set the RECEIVER 1 and 2 switches to the down (off) position. *c.* Turn the VOL control fully counterclockwise	 *a.* None. *b.* None. *c.* None.
109	Pilot's trigger switch and headset-microphone.	Depress pilot's trigger switch to the first position, and speak into the microphone. Sidetone signals are heard in the pilot's headset, and interphone signals are heard in the copilot's headset.	Para 2-11, item No. 109.
110	Copilot's trigger switch and headset-microphone.	Depress the copilot's trigger switch to the first position, and speak into the microphone. Sidetone signals are heard in the copilot's headset, and interphone signals are heard in the pilot's headset. POWER-OFF INSPECTION, CONTROL, INTERCOMMUNICATION SET C-1611/AIC	Para 2-11, item No. 110.
111	Panel	Knobs should be properly secured to shafts And should not bind. Tighten loose knobs and be sure that knobs do not rub against panels. Replace defective or broken knobs.	None.

Item No.	Symptom	Probable trouble	Correction
112	Circuit breaker panel	Depress AN/ARC-44 XCVR and the C-1611/ AIC panel circuit breakers. Panel lamps will light.	Para 2-11, item No. 112.
113	Control panel	Set the transmit-interphone selector switch at positions 1, 2, 3, and 4.	None.
114	Control panel	Set the RECEIVERS switches to ON	None.
115	Entire system	Set the transmit-interphone selector switch to interphone (PVT) and make audio test.	Para 2-11, item No. 115.
		POWER-ON INSPECTION, ANTENNA, GROUP AN/ARA-31 OR ANTENNA 637A-2 (205-076-345)	
116	Circuit breaker panel	Depress circuit breaker for the AN/ARC-44 and the AN/ARA-31 (no circuit breaker for the AN/ARA-56 and 637A-2 antenna systems).	None.
117	Fm control panel	Turn on the radio set	None.
118	Keying unit (AN/ARA-31 models only).	Set the FM HOME toggle switch to on (up) position. Select an fm station, preferably one whose relative bearing is known. One of the following three signals is heard in the headsets, depending on the location of the ground station: Morse code D, Morse code U, or a steady 400-cps on-course tone.	Para 2-11, item No. 118.
119	Switch assembly	Set the FM HOME toggle switch to OFF	None.
120	Fm radio set	Turn the fm radio set off .-	Para 2-11, item No. 120.
		POWER-OFF INSPECTION, TRANSPONDER SETS AN/APX-44 AND AN/APX-72	
121	Control unit	Knobs should be properly secured to shafts and should not bind. Tighten loose knobs and be sure that knobs do not rub against panels. Replace defective or broken knobs.	None.
122	Receiver-transmitter	Check for loose and missing knobs. Knobs should be properly secured to shafts and should not bind. Tighten loose knobs andbe sure that knobs do not rub against panels. Replace defective or broken knobs.	None.
123	Mounting	Check for cracks, corrosion, loose attaching bolts or rivets, deterioration of rubber, and loose or missing bonding.	None.
		POWER-ON INSPECTION, TRANSPONDER SETS AN/APX-44 AND AN/APX-72	
124	Circuit breaker panel	Depress the AN/APX-44, AN/APX-72, and C-1611/AIC panel circuit breaker buttons.	None.
125	Control panel	Place the master control at STBY. The pilot light should light (allow 3 to 5 minutes for warmup).	Para 2-11, item No. 125.
126	Transponder set control	To test the set, see applicable publication	App. I.
127	Control panel	Place the master control at OFF .	None.

Item No.	Symptom	Probable trouble	Correction
		POWER OFF INSPECTION, AIRCRAFT MAGNETIC COMPASS J2	
128	Indicator	Check the response of the heading dial and pointer to the rotation of the indicator set course knob. Both heading dial and pointer should rotate freely as the set course knob is rotated.	Para 2-11, item No. 128.
129	Gyro control	Inspect the desiccant crystals in the humidity indicator for proper color. Desiccant crystals should be blue.	Para 2-11, item No. 129.
130	Slaving cutout switch	Check slaving cutout switch for proper mechanical action.	Para 2-11, item No. 130.
		POWER-ON INSPECTION, AIRCRAFT MAGNETIC COMPASS J2	
131	Helicopter main line switch and inverter switch.	The J2 compass is connected directly to the main electrical supply of the helicopter. Turning on the main power supply starts the operation of the compass system. Both ac and dc power must be turned on simultaneously.	None.
132	Indicator	Set the compass slaving switch to IN. Groundswing the helicopter so that its longitudinal axis is aligned with a known heading. The indicator heading should be within 2° of the known heading reference.	Para 2-11, item No. 132.
		POWER-OFF INSPECTION, RADIO SET AN/ARC-102	
133	Receiver-transmitter	*a.* Clean exterior *b.* Check to see that the knob is secured to the shaft and does not bind. *c.* Check the meter for broken or cracked glass.	*a.* Para 2-8. *b.* None. *c.* None.
134	Control unit	*a.* Clean exterior *b.* Check to see that the knobs are secured to shaft and do not bind. *c.* Check the meter for broken or cracked glass.	*a.* Para 2-8. *b.* None. *c.* None.
		POWER-ON INSPECTION, RADIO SET AN/ARC-102	
136	Circuit breaker panel	a. Depress the AN/ARC-102 circuit breaker b. Lamps on panel should light and blower motor should start.	a. None. b. Para 2-11, item 135.
136	Receiver-transmitter	To test, see applicable publication	App. 1.
		POWER-OFF INSPECTION, AC INVERTERS	
137	Exterior surfaces	a. Clean inverters *b.* Inspect exposed metal surfaces for rust, corrosion, and bare spots.	a Para 2-8. b. Para 2-8.
138	Cables and connectors	Check cables for evidence of chafing, cracking, or excessive strain. Refer to higher maintenance category for replacement. Check electrical connectors for dents, cracks, or improper mating.	TM 11-530.
139	Inverter	Check to see that inverter is securely mounted.	None.

Item No.	Symptom	Probable trouble	Correction
		POWER-ON INSPECTION, AC INVERTERS	
140	Circuit breaker	Depress MAIN INVTR-SPARE INVTR, and INVTR CONT circuit breakers on de circuit breaker panel.	
141	AC POWER control panel.	*a.* Place inverter switch in MAIN ON or SPARE ON position. *b.* Inverter should start	*a.* None. *b.* Pare 211, item No. 141.
142	AC voltmeter	*a.* Rotate AC VM switch on AC POWER control panel to AB, AC, or BC phase. *b.* Ac voltage should be indicated on the ac voltmeter on the instrument panel.	*a.* None. *b.* Pare 2-11, item No. 1U.
143	AC voltmeter	*a.* Rotate AC VM switch on AC POWER control panel to AB, AC, or BC phase. control panel to AB, AC, or BC phase. *b.* Ac voltage of 115 (± 2.5) volts ac should be indicated on the AC voltmeter on the instrument panel.	*a.* None. *b.* Pare 2-11, Item No. 148.
		POWER-OFF INSPECTION, NAVIGATION SET AN/ASN-72 (DECCA VIII)	
144	Cable connectors	Check all connections to all components of the navigation set and insure that they are all clean, intact, and not loose fitting.	TM 11-630.
145	Exterior surfaces	*a.* Remove all dirt, grease, and moisture from all external surfaces as required. *b.* Check general condition of each component. *c.* Inspect for missing screws and bent or broken hardware.	*a.* Para 2-8. *b.* None. *c.* None.
146	Indicators	Check to see that the indicators are in good condition and that their glass surfaces are clean and not cracked or damaged.	None.
147	Control units	Check each control for proper mechanical action of knobs, dials, and switches. Observe that the mechanical action is positive without backlash, binding, or scraping.	None.
148	Receiver	Check to see that the receiver is securely mounted.	None.
149	Computer	Check to see that the computer is securely mounted.	None.
150	Flight log display head.	Check to see that the flight log display head is securely mounted.	None.
151	Preamplifier .	Check to see that the preamplifier is securely mounted.	None.
152	Antenna	Check to see that the antenna is securely mounted.	None.
		POWER-ON INSPECTION, NAVIGATION SET AN/ASN-72 (DECCA VIII)	
153	AN/ASN-72	To perform POWER ON INSPECTION, refer to TM 11-5826-228-12.	App. I.
		POWER-OFF INSPECTION, RECEIVING SET, RADIO AN/ARN-82	
154	Exterior surfaces	a. Clean control unit, receiver, and mounting b. Inspect exposed metal surfaces for rust, corrosion, and bare spots.	a. Para 2-8. b. Para 2-8.

Item No.	Symptom	Probable trouble	Correction
155	Cables and connectors	Check all cables for evidence of chafing, cracking, or excessive strain. Refer to higher maintenance category for replacement. Check all electrical connectors for dents, cracks, or improper mating.	TM 11-530.
156	Receiver	Check to see that receiver is securely mounted.	None.
157	Control unit	*a.* Check to see that the control unit is secured to its mounting panel by the lock fasteners. *b.* Check the front panel control knobs to make certain that they are not broken and do not bind when turned.	*a.* None. *b.* None.
158	Course indicator	*a.* Make sure the course indicator is properly secured to the aircraft instrument panel. *b.* Check the indicator glass for cracks and breaks. *c.* Operate the course selector knob to be sure that the knob is tight on its shaft and turns freely.	*a.* None. *b.* None. *c.* None.
159	Mounting .	*a.* See that the mounting is securely fastened to the helicopter frame or rack. *b.* See that the ground straps are making good contact. *c.* Check the rubber shock mounts on the mounting to make sure that they are not cracked or deteriorated.	*a.* None. *b.* None. *c.* None.
	POWER-ON INSPECTION, RECEIVING SET, RADIO AN/ARN-82		
160	Circuit breaker for AN/ARN-82.	Depress circuit breaker for AN/ARN-82	None.
161	Control unit	a. Set power switch to PWR *b.* Panel lamps light	a. None. *b.* Para 2-11, item No. 161.
162	Course indicator	Set OBS control for a 0 indication under course index.	None.
163	Control unit	a. Set power switch to TEST b. Vor/localizer needle should center and to/from indicator should indicate FR.	a. None. *b.* Para 2-11, item No. 168.
164	Control unit	a. Set kilocycle and megacycle controls to a tower frequency within 118 me to 126.95 mc band. Call control tower on one of the helicopter transceivers and request a communications check on frequency selected. b. Set VOL control to midrange c. When the communications check is received, set VOL control for a clear and comfortable audio level.	a. None. *b.* None. c. Para 2-11, item No. 164.
165	Control unit	a. After tower has stopped transmitting, set power switch to TEST. *b.* Noise should be hard in headset	a. None. *b.* Para 2-11, item No. 166.
166	Control unit	a. Set power. switch to PWR *b.* Noise should not be heard in headset (this indicates that squelch circuit is working properly).	a. None. *b.* Para 2-11, item No. 166.

Item No.	Symptom	Probable trouble	Correction
167	Control unit	*a.* Set power switch to OFF *b.* Panel lights go out	a. None. *b.* Para 2-11, item No. 167.
168	Circuit breaker for AN/ARN-82.	Deenergize and place to off	None.
	POWER-OFF INSPECTION, DIRECTION FINDER SET AN/ARN4-83		
169	Exterior surfaces	*a.* Clean control unit, receiver, and mounting. *b.* Inspect exposed metal surfaces for rust, corrosion, and bare spots.	*a.* Para 2-8. *b.* Para 2-8.
170	Cables and connectors	Check all cables for evidence of chafing, cracking, or excessive strain. Refer to higher maintenance category for replacement. Check all electrical connectors for dents, cracks, or improper mating.	TM 11-530.
171	Control unit	*a.* Check to see that the control unit is secured to its mounting panel by the lock fasteners. *b.* Check the front panel control knobs, dials, and switches to make certain that they are not broken and do rot bind when turned. *c.* Check for broken tuning meter lens and FREQUENCY dial window.	*a.* None. *b.* None. *c.* None.
172	Receiver	*a.* Check to see that receiver is securely mounted. *b.* Clean air ventilating holes in receiver dust cover.	*a.* None. *b.* None.
173	Antenna	Check surface of loop for dents, deep scratches, and cracks.	None.
174	Mounting	*a.* See that the mounting is securely fastened to the helicopter frame or rack. *b.* See that the ground straps are making good contact. *c.* Check the rubber shock mounts on the mounting to make sure that they are not cracked or deteriorated.	*a.* None. *b.* None. *c.* None.
	POWER-ON INSPECTION, DIRECTION FINDER SET AN/ARN-83		
175	Circuit breaker for AN/A RN-83.	Depress circuit breaker for AN/ARN-83 -	None.
176	Circuit breakers for distribution panels.	Depress circuit breakers for C-1611/AIC distribution panels.	None.
177	Distribution panels	Position the NAV switch on the distribution panel to the ON position.	None.
178	Control unit	a. Set function switch to ANT position b. Inspect front panel tuning meter and FREQUENCY dial window.	a. None. b. Para 2-11, item No. 178.
179	Control unit	Rotate GAIN control clockwise for noise in headset.	Para 2-11, item No. 179.
180	Control unit	a. Set range switch to each of the three frequency ranges and tune to radio station. b. Range switching takes place and dial indicates correct frequency range.	a. None. b. Para 2-11, item No. 180.

Item No.	Symptom	Probable trouble	Correction
181	Control unit	*a.* Set range switch to each of the three frequency ranges and turn tune control to frequency of radio station. *b.* Tuning meter indicates signal strength and audio can be heard in headset.	*a.* None. *b.* Para 2-11, item No. 181.
182	Control unit	*a.* Set. BFO-OFF switch to BFO. Tune to a radio station. *b.* Beat notes can be heard in headset	*a.* None. *b.* Para 2-11, item No. 182.
183	Control unit	Set function switch to ANT and tune to a radio station of a known bearing.	None.
184	Control unit .	Set function switch to LOOP. Hold LOOP switch to L position for an aural null in headset.	Para 2-11, item No. 183.
186	Control unit	Set function switch to LOOP position, hold LOOP switch to R position, and rotate bearing indicator pointer. Bearing indicator pointer will indicate two nulls displaced 180° apart.	Para 2-11, item No. 185.
186	Control unit	*a.* Release LOOP switch to center position and set function switch to ADF. *b.* Bearing indicator pointer rotates and Shows bearing of radio station (one null).	*a.* None. *b.* Para 2-11, item No. 186.
187	Control unit	Set function switch to OFF position	None.
188	Distribution panels	Position the NAV switch on the distribution panel to the OFF position.	None.
189	Circuit breakers for AN/ARN-83.	Deenergize and place to off	None.
	POWER-OFF INSPECTION, GYROMAGNETIC COMPASS SET AN/ASN-4		
190	Exterior surfaces	*a.* Clean gyro, transmitter, compensator indicator, and amplifier. *b.* Inspect exposed metal surfaces for rust, corrosion, and bare spots.	*a.* Para 2-8. *b.* Para 2-8.
191	Cables and connectors	Check all cables for evidence of chafing, cracking, or excessive strain. Refer to higher maintenance category for replacement. Check all electrical connectors for dents, cracks, or improper mating.	TM 11-530.
192	Indicator	*a.* Make sure the indicator is properly secured to the aircraft instrument panel. *b.* Check the indicator glass for cracks and damage. *c.* Operate knobs, dials, and switches for proper mechanical action, and make sure the knobs are tight on shafts.	*a.* None. *b.* None. *c.* None.
193	Gyro	Check to see that gyro is securely mounted .	None.
194	Transmitter and compensator.	Check to see that transmitter and compensator are securely mounted.	None.
195	Amplifier	Check to see that amplifier is securely mounted.	None.
	POWER-ON INSPECTION, GYROMAGNETIC COMPASS SET AN/ASN-43		
196	Circuit breaker for AN/ASN43.	*a.* Depress circuit breaker *b.* Power failure indicator on ID-998/ASN disappears and panel lamps light.	*a.* None. *b.* Para 2-11, item No. 196.

Item No.	Symptom	Probable trouble	Correction
197	Slaving switch (MAG-DG).	Set MAG-DG switch to MAG position	None.
198	Indicator	Turn synchronizing knob on ID-998/ASN in the direction indicated by the annunciator until the annunciator is centered (nulled).	Para 2-11, item No. 198.
199	Indicator	Annunciator centered, magnetic heading shown on the scale dial of the ID-998/ASN should agree with a known magnetic heading.	Para 2-11, item No. 199.
200	Slaving switch (MAG-DG).	*a.* Set MAG-DG switch to DG *b.* Annunciator on ID-998 moves to center position and remains.	*a.* None. *b.* Para 2-11, item No. 200.
201	Gyro .	Set LATITUDE knob on base of CN-998/ ASN-43 to the local latitude and set the LATITUDE switch to the N position for northern hemisphere operation or to the S position for southern hemisphere operation.	None.
202	Indicator	*a.* Rotate the synchronizing knob on the ID-998/ASN to set the scale on the ID-998/ ASN to a known heading reference. *b.* Annunciator on ID-998/ASN remains in the center position.	*a.* None. *b.* Para 2-11, item No. 202.
203	Circuit breaker for AN/ASN-48.	*a.* Deenergize and place to off *b.* Power failure indicator on ID-998/ASN will appear and panel lamps remain lighted.	*a.* None. *b.* Para 2-11, item No. 203.
	POWER-OFF INSPECTION, PILOT'S ATTITUDE INDICATING SYSTEM		
204	Exterior surfaces	a. Clean the attitude indicator, rate gyro, roll and pitch gyro, and indicator amplifier. *b.* Check all exposed metal surfaces for rust and corrosion.	a. Para 2-8. *b.* Para 2-8.
205	Cables and connectors	Check all cables for evidence of chafing, cracking, or excessive strain. Refer to higher maintenance category for replacement. Check all electrical connectors for dents, cracks, or improper mating.	TM 11-530.
206	Attitude indicator	a. Make sure the attitude indicator is properly secured to the helicoper instrument panel. b. Check the indicator glass for cracks and breaks. c. Operate the pitch and roll trim knobs to be sure the knobs are tight on their shafts and turn freely.	a. None. b. None. c. None.
207	Attitude amplifier	Check to see that the amplifier is securely mounted.	None.
208	Roll and pitch gyro	Check to see that the gyro is securely mounted.	None.
209	Rate switching gyro	Check to see that the gyro is securely mounted.	None.
	POWER-ON INSPECTION, PILOT'S ATTITUDE INDICATING SYSTEM		
210	Circuit breakers	a. Depress PILOT ATTD circuit breakers on AC circuit breaker panel.	a. None.

Item No.	Symptom	Probable trouble	Correction
		b. OFF warning flag on attitude indicator should disappear in approximately 2 minutes.	*b.* Para 2-11, item No. 210.
211	Attitude indicator	*a.* Adjust the roll trim knob to align the vertical axis of the sphere with the center mark at top of the indicator.	*a.* None.
		b. Pointer on the indicator sphere should align with the center mark at top of the indicator.	*b.* Para 2-11, item No. 211.
212	Attitude indicator	*a.* Adjust the pitch trim knob to center the horizon on the indicator sphere with the miniature airplane which indicates normal flight attitude of the helicopter.	*a.* None.
		b. The horizon on the indicator sphere should center with the miniature airplane.	*b.* Pare 2-11, item No. 212.
218	Circuit breakers	*a.* Deenergize PILOT ATTD circuit breakers on the AC circuit breaker panel.	*a.* None.
		b. OFF warning flag on the attitude indicator should appear.	*b.* Pare 2-11, item No. 213.
		POWER-OFF INSPECTION, COPILOT'S ATTITUDE INDICATING SYSTEM	
214	Exterior surfaces	*a.* Clean attitude indicator	*a.* Para 2-8.
		b. Check exposed metal surfaces for rust and corrosion.	*b.* Para 2-8.
215	Cable and connector	Check cable for evidence of chafing, cracking, or excessive strain. Refer to higher maintenance category for replacement. Check electrical connector for dents, cracks, or improper mating.	TM 11-650.
216	Attitude indicator	*a.* Make sure the attitude indicator is properly secured to the helicopter instrument panel.	*a.* None.
		b. Cheek the indicator glass for cracks and breaks.	*b.* None.
		POWER-ON INSPECTION, COPILOT'S ATTITUDE INDICATING SYSTEM	
217	Circuit breakers and attitude indicator.	*a.* Depress COPILOT ATTD circuit breakers on AC circuit breaker panel.	*a.* None.
		b. Operation of the indicator it noted by the movement of horizon bar with relation to the miniature airplane in the center of the indicator.	*b.* Para 2-11. item No. 217.
218	Circuit breaker	Deenergize COPILOT ATTD circuit breakers on AC circuit breaker panel to turn system off.	None.
		POWER-OFF INSPECTION, PROXIMITY WARNING FACILITY YG-1054	
219	Receiver-transponder	Check for loose and missing knobs. Knobs should be properly secured to shafts and should not bind. Tighten loose knobs and be sure that knobs do not rub against panels. Replace defective or broken knobs.	None.
220	Exterior surfaces	*a.* Remove all dirt grease and moisture from all external surfaces as required.	a. Para 2-8

Item No.	Symptom	Probable trouble	Correction
		b. Check general condition of components. *c.* Inspect for missing screws, and bent or broken hardware.	*b.* None *c.* None
221	Antenna	Check to see that both antenna's are securely mounted.	None.
222	Cables and connectors	Check cables for evidence of chafing, cracking, or excessive strain. Check electrical connectors for dents, cracks or improper mating.	TM55-1500-323-15.
	POWER-ON INSPECTION, PROXIMITY WARNING FACILITY YG-1054		
223	Circuit breaker for proximity warning	Press circuit breaker for proximity warning system.	None.
	Receiver-transponder	Set POWER switch ON and wait at least one minute.	Para 2 11, item No. 223.
		Note: Two types of ground power tests are possible: a transponder ground test and a confidence test. The transponder ground test is a ground system checkout that uses a remote ground transponder. The confidence test is a go/no-go type check (self-test) that is normally performed in flight, but which can also be performed on the ground. Both types of tests are covered.	
224	Receiver-transponder	For the confidence test, set the TRANSPONDER GND TEST/CONFIDENCE TEST switch to CONFIDENCE TEST. The receiver/transponder ABOVE, EQUAL and BELOW indicator lamps should alternately flash on and off and a pulsing audio alarm should be heard in the pilot's and copilot's headsets.	Para 2 11, item No. 224.

Item No.	Symptom	Probable trouble	Correction
225	Receiver/transponder	For the transponder ground test, place the Ground Transponder Tester UA2330AA01 within line of sight of the aircraft. Distances up to 3000 feet may be used. Set the power switch ON. In the aircraft, set the TRANSPONDER GND TEST CONFIDENCE TEST switch to TRANSPONDER GND TEST position. If the Proximity Warning Facility is operating properly, the BELOW, EQUAL, and ABOVE indicator lamps will flash in cycle and audio alarm should be heard in the pilot's and copilot's headsets. The Ground Transponder simulates another helicopter that cycles from 180 feet above to 180 below ground level once every 16 seconds. Set the power switch OFF. Note: The signal from the Ground Transponder will be decoded only by those receiver-transponders which are in the transponderground test condition.	Para 2-11, item No. 225
		POSTOPERATIONAL SHUTDOWN	
226	RADIO POWER switch.	Set the RADIO POWER switch to OFF to deenergize the radio bus.	None.
227	Helicopter power MASTER SWITCH.	Set the MASTER SWITCH to OFF to deenergize the helicopter electrical circuits.	None.
228	Auxiliary power unit	Disconnect the auxiliary power unit from the helicopter.	Para 2-4.
229	Battery	Check the battery (fig. 2-44) for :	

Item No.	Symptom	Probable trouble	Correction
	Note: Do not service battery while installed In the helicopter. The Battery should be re-moved and serviced Every 100 hours by Authorized battery shop personnel only.	*a.* Evidence of leakage or overflow of electrolyte *b.* Freedom from obstructions of the vents *c.* Proper electrolyte level *d.* Evidence of corrosion on cables and leads and on the terminals. *e.* Tight terminal connections	*a.* TM 11-6140-205-12. *b.* TM 55-1520-211-20. *c.* TM 11-6140-205-12. *d.* TM 55-1520-211-20. *e.* TM 55-1520-211-20.

2-8. General Cleaning and Repainting Instructions

Inspect all items of each configuration for dirt and corrosion. The surfaces should be clean and free of dirt.

a. Remove moisture and loose dirt with a clean, soft cloth.

Warning

Prolonged breathing of cleaning compound is dangerous; make certain that adequate ventilation is provided. Cleaning compound is flammable; do not use near a flame. Avoid contact with the skin; wash off any that spills on your hands.

b. Remove grease, fungus, and ground-in dirt with a cloth dampened (not wet) with Cleaning Compound FSN 7930-395-9542).

c. Remove dust and lint from the exposed connectors with a soft-bristle brush; remove moisture with a dry cloth.

d. Remove rust and corrosion from metal surfaces by lightly sanding them with fine sandpaper. Brush two thin coats of paint on the bare metal to protect it from further corrosion. For painting instructions and materials, refer to SB 11-573; refer to the applicable cleaning and refinishing practices specified in TB 43-0118. Use lacquer for all items originally painted with lacquer. Use enamel base paint for all items originally painted with enamel base paint.

Caution

Do not apply lacquer to enamel painted surfaces. Lacquer will loosen the existing enamel.

2-9. Servicing

a. AN/ARN-59. Grease should be applied as follows:

(1) Control Unit gearing. Remove the flexible mechanical linkage from the control unit. Use a thin, long-handled brush, and apply a small amount of grease to the control unit gears.

(2) Receiver gearing. Remove the flexible mechanical linkage from the receiver, and remove the two screws and washers holding the gearing unit cover in place. Remove the cover, and apply a small amount of grease to the exposed gears. Replace the gearing unit cover, washers and screws, and mechanical linkage.

WARNING

The electrolyte in the nickel-cadmium batteries contains potassium hydroxide (KOH), which is a caustic agent. Serious and deep burns of body tissue will result if any part of the body comes in contact with the electrolyte. If accidental contact is made with the electrolyte use ONLY clean water in large quantities for at least 15 minutes. Seek immediate medical attention.

b. Battery BB-433/A.

(1) Release the snap fasteners that secure the cover, and remove the battery cover. Tighten the filler vent caps if necessary. Using a nylon brush, (never a wire brush) clean the tops of the cell cases and battery terminal links. Remove any white deposit on the battery terminals.

(2) Clean the battery sump jar by removing the pad and rinsing the jar in water. Wash the pad in boric acid or vinegar.

Section III. TROUBLESHOOTING

2-10. General Troubleshooting Information

Troubleshooting of the helicopter electronic equipment configuration supplements the checks in the periodic preventive maintenance checks and services charts (para 2-7). Item numbers in the troubleshooting chart are not in numerical sequence as they are keyed to the same item numbers in the periodic preventive maintenance checks and services chart. To troubleshoot the equipment, perform all functions

starting with item 19 in the periodic preventive maintenance checks and services chart and proceed through the items until an abnormal condition or result is observed. When any abnormal condition or result is observed, note the symptom number and turn to the corresponding symptom in the troubleshooting chart (para 2-11). If the corrective measures indicated do nor result in correction of the trouble, higher category of maintenance is required. Paragraphs 2-12 through 2-81 contain step-by-step instructions for performing equipment removal and replacement and paragraph 2-85 contains instructions for adjustments to be performed after the equipment is replaced.

2-11. Troubleshooting Chart

Item No.	Symptom	Probable trouble	Correction
19	FM dynamotor does not start.	*a.* Primary 28 volts dc not applied to dynamotor.	*a.* Check FM circuit breaker; replace if defective. Replace Switch Assembly SA-474/AR (fm switch assembly) (para 2-20).
		b. Defective fm dynamotor	*b.* Replace DY-107/AR fm dynamotor (para 2-16).
21	No sidetone or interphone signals heard when pilot's cyclic stick trigger switch is operated.	*a.* Defective pilot's headset-microphone.	*a.* Replace pilot's headset-microphone.
		b. Defective trigger switch	*b.* Check pilot's trigger switch; replace as necessary (para 2-79).
		c. Defective interphone relay	*c.* Check for 28 volts dc between terminals A and B of pilot's interphone relay: check for continuity between terminals M and N. Replace applicable relay as necessary (para 1-8*b*(2)).
		d. Defective distribution panel.	*d.* Replace SB-329 AR or C-1611 AIC distribution panel (para 2-18 or 2-19).
22	No sidetone or interphone signals heard when copilot's cyclic stick trigger switch is operated.	*a.* Defective copilot's headset-microphone.	*a.* Replace copilot's headset-microphone.
		b. Defective trigger switch	*b.* Check copilot's trigger switch: replace as necessary (para 2-79).
		c. Defective interphone relay	*c.* Check for 28 volts dc between terminals A and B of copilot's interphone relay; check for continuity between terminals M and N. Replace applicable relay as necessary (para 1-8*b(2)).*
28	Control unit panel lamps do not light.	Panel lamps loose in sockets or burned out.	Check panel lamps for proper seating and replace if necessary (para 2-82).
29	Fm dynamotor fails to start.	*a.* Defective fm circuit breaker	*a.* Replace FM ARC-44 or FM ARC-54 circuit breaker.
		b. Defective fm dynamotor	*b.* Replace DY-107/AR fm dyne-motor (para 2-16).
30	Blower in receiver-transmitter does not operate.	Defective receiver-transmitter	Replace receiver-transmitter RT-294(*)/ARC-44 or RT-348/ ARC-54 (para 2-15 or 2-26).

Item No.	Symptom	Probable trouble	Correction
32	Volume does not vary smoothly, the received signal is not clear, or panel lamps do not light.	*a*. Defective fm control panel	*a.* Replace SB-327/ARC44 or C-3825/ARC-54 fm control panel (para 2-17 or 2-29).
		b. Defective receiver-transmitter	*b.* Replace RT-294(*)/ARC-44 or RT-348/ARC-54 receiver. transmitter (para 2-15 or 2-26).
		c. Defective panel lamps	*c.* Replace panel lamps (para 2-82).
33	No 400-cps tone heard while the fm set is cycling.	*a*. Defective fm control panel	*a.* Replace SB-327/ARC-44 or C-3835/ARC-54 fm control panel (para 2-17 or 2-29).
		b. Defective receiver-transmitter	*b.* Replace RT-294(*) /ARC-44 or RT-348/ARC-54 receiver-transmitter (para 2-15 or 2-26).
34	No rushing noise is heard; background noise is not decreased.	Defective squelch circuit	a. Replace control panel assembly 204-075-219 (Switch Assembly SA-474/AR modified) (para 2-20). b. Replace RT-294(*)/ARC-44 or RT-348/ARC-54 receiver-transmitter (para 2-15 or 2-26).
36	No sidetone is heard in pilot's headset; transmitted signals are not loud and clear; received signals are not adequate to maintain communications.	*a.* Defective pilot's headset-microphone.	*a.* Replace pilot's H-101/U headset-microphone.
		b. Defective pilot's trigger or foot-operated switch.	*b.* Replace pilot's defective X942-2 trigger or SA-47A/AIC foot-operated switch (para 2-79 or 2-78).
		c. Defective receiver-transmitter	*c.* Replace RT-294(*) /ARC-44 or RT-348/ARC-54 receiver-transmitter (para 2-15 or 2-26).
		d. Defective fm antenna	*d.* Replace Antennas AT-454(a)/ ARC or AT-765/ARC (fm antenna) (para 2-21 or 2-27).
37	No sidetone is heard in copilot's headset; transmitted signals are not loud and clear; received signals are not adequate to maintain communications.	a. Defective copilot's headset-microphone. b. Defective copilot's trigger or foot-operated switch. *Note.* Receiver-transmitter and fm antenna are not probable sources of trouble if procedure 36 was trouble-free.	a. Replace H-101/U headset microphone. b. Replace defective X942-2 trigger or SA-47A/AIC foot-operated switch (para 2-79 or 2-78).
38	No coded audio signal is heard in the headsets.	a. Defective homing antenna	a. Replace AN/ARA-31 or 637A-2 (205-075-345) homing antenna (para 2-30, 2-4, or 2-65).
		b. Defective antenna keyer (A, B, C, and D configurations only).	b. Replace KY-149/AR antenna keyer (para 2-66).
		c. Defective fm switch assembly	c. Replace control panel assembly 204-075-219 (Switch Assembly SA-474/AR) (para 2-20).

Item No.	Symptom	Probable trouble	Correction
		d. Defective receiver-transmitter.	*d.* Replace RT-294(*)/ARC-44 or RT-348/ARC-54 receiver-transmitter (para 2-15 or 226).
45	External blower does not operate.	Defective radio set control or receiver-transmitter.	Check C-4677/ARC-51X radio set control and RT-702/ARC-61X receiver-transmitter by substitution. (Radio Set AN/ARC-51BX uses C-6287/ARC-61BX and RT-742/ARC-51BX.) Replace defective unit (para 2-23, 2-24, or 2-22).
46	a. No audio in headset *b.* Radio set control SENS control does not cut off audio completely at full counterclockwise position.	*a.* Defective headset-microphone or receiver-transmitter. *b.* Defective radio set control or malfunction in receiver-transmitter.	*a.* Replace defective headset-microphone. Replace RT-702/ARC-51X or RT-742/ARC-51BX receiver-transmitter (para 2-22). *b.* Check C-4677/ARC-61 radio set control (or C-6287/ARC-51BX) and RT-702/ARC-61X receiver-transmitter (or RT-742/ARC-51BX) by sub stitution. Replace defective unit (para 2-23, 2-24, or 2-22).
47	Headset audio level cannot be controlled by radio set control.	Defective VOL control on radio set control.	Replace radio set control (para 2-23 or 2-24).
48	No audio tone in headset during channel-changing cycle.	Fault in receiver-transmitter	Replace RT-702/ARC-51 or RT-742/ARC-51BX receiver-transmitter (para 2-22). Higher category maintenance required.
49	Transmitter power output indication is less than 20 watts.	*a.* Receiver-transmitter is defective. *b.* Reflectometer is defective	*a.* Replace RT-702/ARC-61 or RT-742/ARC-51BX receiver-*t*ransmitter (para 2-22). Higher category maintenance required. *b.* Replace ID-1003/ARC reflec-*t*ometer. Higher category maintenance required.
50	Reflected power indication is more than 5 watts.	*a.* Defective receiver-transmitter. *b.* Improper cable connections between receiver-transmitter and uhf antenna. *c.* Reflectometer is defective	*a.* Replace receiver-transmitter (para 2-22). Higher category maintenance required. *b.* Check antenna cable connections. Replace defective cable. *c.* Replace ID-1003/ARC reflectometer. Higher category maintenance required.
51	No sidetone audio in headset during transmission.	Defective receiver-transmitter	Replace receiver-transmitter (para 2-22). Higher category maintenance required

Item No.	Symptom	Probable trouble	Correction
52	Radio set fails to provide two-way communication with base control tower or other uhf receiver-transmitter on all assigned test frequencies.	Receiver-transmitter is defective.	Replace RT-702/ARC-1 or RT-742/ARC-61BX receiver-trans mitter (par 2-22). Higher category maintenance required.
53	No guard receiver audio output.	Defective receiver-transmitter or radio set control.	Check RT-702/ARC-61 or RT-742/ARC-61BX receiver-trau-mitter and C-4677/ARC-51 or C-287/ARC-61BX radio set control by substitution. Replace defective unit (para 2-22, 2-23, or 2-24). Higher category maintenance is required.
54	*a.* Control unit panel lamps-do not light when aircraft primary power switch is set to on. *b.* Blower does not operate.	*a.* Panel lamps loose in sockets or burned out. *b.* Defective blower motor	*a.* Check panel lamps for proper seating and replace if necessary (para 2-82). *b.* Remove and replace RT-349()/ ARC-65 receiver-transmitter (para 2-31 or 2-84).
60	a. Uhf control unit frequency controls do not work properly. b. Radio set will not tune to desired frequency. c. Radio set continues to tune (channel tone does not stop).	*a.* Defective control unit or loose frequency control knobs *b.* Defective control unit or defective receiver-transmitter. *c.* Defective receiver-transmitter, control unit, or wiring.	*a.* Check knobs for tightness and tighten or replace as necessary. Remove and replace C-1827/ARCoS6 control unit if necessary. (para 2-83). *b.* Remove and replace C-1827/ ARC-65 control unit (para 2-33). If this does not correct fault, remove and replace RT-349(*)/ARC6 receiver-transmitter (para 2-31). *c.* Remove and replace RT-49(*)/ ARC-6 receiver-transmitter (para 2-81). Remove and replace C-1827/ARC-55 control unit (para 2-38). Check wiring.
61	No sidetone is heard in headset.	*a.* Defective interphone system. *b.* Defective receiver transmitter.	*a.* Check interphone system *(*para 2-7, items 19 through 22, and items 19 through 22 above). *b.* Remove and replace RT-89(*)/ ARC-6 receiver-transmitter (para 2-31).
62	Audio is distorted	*a.* Defective interphone system *b.* Defective receiver transmitter.	*a.* Check interphone system (para 2-7, items 19 through 22, and items 19 through 22 above). *b.* Remove and replace RT-449(*)/ ARC-6 receiver-transmitter (para 2-31).
70	Control panel lamps do not come on; transmission and reception not functional.	*a*. Interunit cabling not secure *b.* Radio set components defective.	*a.* Check interunit cabling. *b.* Replace radio set components in order listed below: (1) C4074A/ARC78 control unit (para 2-41).

Item No.	Symptom	Probable trouble	Correction
			(2) R-1128(*)/ARC-73 (para 2-36). (3) T-879(*)/ARC-73 (para 2-37).
71	Audio intelligibility poor.	Defective receiver	Replace R-1123(*)/ARC-78 (para 2-36).
73	Audio intelligibility poor.	Defective VOL control	Replace C-4074A/ARC-73 control (para 2-41).
74	Frequency displayed in remote window is not the same as in control window.	Defective control	Replace C-404A/ARC-78 control (para 2-41).
75	No sidetone. Receiver noise is not squelched.	Defective receiver	Replace R-1123(*)/ARC-78 receiver (para 2-36).
76	Transmitter, receiver, and remote control units continue to operate.	*a.* Defective interunit cabling *b.* Defective control unit	*a.* Check connectors and cables. *b.* Replace C-4074A/ARC-73 control unit (para 2-41).
83	OFF vertical flag on course indicator remains in position or TO-FROM indicator shifts from TO to FROM	*a.* Defective receiver *b.* Defective control unit *c.* Defective receiver power supply.	*a.* Replace A-1021/ARN-30D receiver (para 2-51). *b.* Replace C-3436/ARN-30D or C-3436A/ARN-30E control unit (para 2-56). *c.* Replace power supply PP-2792/ARN-30D.
84	Call signs inaudible over intercommunication system.	*a.* Defective receiver *b.* Defective converter *c.* Defective antenna	*a.* Replace R-1021/ARN-90D receiver (para 2-61). *b.* Replace CV-265A/ARN-30A converter (para 2-64). *c.* Remove and replace Antenna AS-1304/ARN (Dorne-Margolin DMN4-4) (para 2-52).
85	OFF vertical flag on course indicator remains in sight. Station call letters either cannot be heard at all or are indistinct over helicopter intercommunication system.	*a.* Defective converter *b.* Defective receiver *c.* Defective course indicator	*a.* Replace CV-265A/ARN-30A converter (para 2-54). *b.* Replace R-1021/ARN-30D receiver (para 2-51). *c.* Replace Course Indicator ID-453/ARN-30 (para 2-55),
86	Course pointer either does not move at all or moves erratically.	Defective course indicator	Replace ID-453/ARN course indicator (para 2-55).
87	OFF vertical flag on course indicator remains in sight.	Defective course indicator	Replace ID-453/ARN course indicator (para 2-55).
88	OFF vertical flag disappears or appears erratically.	Defective course indicator	Replace ID-453/ARN-30 course indicator (par 2-55).
89	Control unit lamps remain lighted and set continues to operate.	Defective switch or circuit breaker.	Replace switch or circuit breaker.
92	Panel markings and MC dials on vhf navigation control unit do not light.	*a.* Power unavailable	*a.* Use multimeter to determine if helicopter power is available at switch or circuit breaker.

Item No.	Symptom	Probable trouble	Correction
		b. Panel lamps loose in sockets or burned out.	*b.* Check panel lamps for proper seating; replace if necessary (para 2-82).
93	Dynamotor does not run.	*a.* Power source or power cabling connections are defective.	*a.* Check power source and power cabling connections.
		b. Interconnecting cables are defective.	*b.* Check continuity of cabling between units.
		c. VOL control on control unit is defective.	*c.* Replace C-2275/ARN control unit (para 2-60).
		d. Dynamotor is defective	*d.* Replace DY-150/ARN dynamotor (para 2-59).
94	No audio or intermittent noise is heard in headset; tuning indicator does not indicate.	*a.* MC BAND selector switch is improperly set.	*a.* Check position of MC BAND selector switch.
		b. Mechanical linkage is out of alignment.	*b.* Check alignment of mechanical linkage (para 2-93).
		c. MIC BAND selector switch is defective.	*c.* Replace C-2275/ARN control unit (para 2-60).
		d. Sense antenna is defective	*d.* Replace 204-075-328 sense antenna (par 2-61).
95	Indicator does not rotate to azimuth of radio station.	*a.* Loop antenna wiring is defective.	*a.* Check loop antenna wiring; if necessary, replace antenna (para 2-58).
		b. Indicator is defective	*b.* Replace ID-250/ARN indicator.
		c. Receiver is defective	*c.* Replace R-836/ARN receiver (para 2-57).
96	Azimuth scale does not rotate.	E-W VAR control is defective	Replace ID-250/ARN indicator.
97	Indicator pointer does not rotate when LOOP switch is held momentarily.	*a.* Loop antenna wiring is defective.	*a.* Check loop antenna wiring.
		b. LOOP control on the control unit is defective.	*b.* Replace C-2275/ARN control unit (para 2-60).
		c. Indicator is defective	*c.* Replace ID-250/ARN indicator.
		d. Loop antenna is defective.	*d.* Replace AT-780/ARN loop antenna (para 2-58).
98	Beat signal (audio note) is not heard in headset.	*a.* BFO control is defective	*a.* Replace C-2275/ARN control unit (para 2-60).
		b. BFO circuit is defective	*b.* Replace R-836/ARN receiver (para 2-57).
99	Set does not tune exactly to desired frequency.	*a.* Mechanical linkage is out of alignment.	*a.* Check alignment of mechanical linkage (para 2-93).
		b. Tuning crank is defective	*b.* Replace C-2275/ARN control unit (para 2-60).
100	Aural null is not obtained when the loop antenna is rotated	*a.* Loop antenna wiring is defective.	*a.* Check loop antenna wiring.
		b. LOOP switch is defective	*b.* Replace C-2275/ARN control unit (para 2-60).
		c. Loop antenna is defective	*c.* Replace AT-780/ARN loop antenna (para 2-58).
101	Dynamotor does not stop running.	VOL control on control unit is defective.	Replace C-2275/ARN control unit (para 2-60).
104	Indicator lamp does not light.	Defective indicator lamp	Replace indicator lamp (para 2-82).

Item No.	Symptom	Probable trouble	Correction
105	Audio tone inaudible and/or the indicator lamp does not light as helicopter enters the field of the marker beacon.	*a*. Defective dc power source	*a*. Check the +28-volt dc power source.
		b. Defective receiver	*b*. Replace the R-1041A/ARN receiver set (para 2-62).
		c. Defective indicator lamp	*c*. Replace indicator lamp (para 2-82).
107	Panel lamps do not light	*a*. Defective panel lamp	*a*. Replace panel lamp (para 2-82).
		b. Power source interrupted	*b*. Check for power at main power switch and at circuit breakers.
109	No sidetone or interphone signals heard when pilot's cyclic stick trigger switch is operated.	*a*. Defective pilot's headset-microphone.	*a*. Replace pilot's headset-microphone.
		b. Defective trigger switch	*b*. Check pilot's trigger switch; replace as necessary (para 2-79).
		c. Defective interphone relay	*c*. Check for 28 volts dc between terminals A and B of pilot's interphone relay; check for continuity between terminals M and N. Replace relay as necessary.
		d. Defective relay No. 2	*d*. Check for continuity between contacts 9 and 17 of signal switching relay No. 2; if not present, replace relay.
		e. Defective distribution panel	*e*. Replace SB-329/AR distribution panel (para 2-18).
110	No sidetone or interphone signals heard when copilot's cyclic stick trigger switch is operated.	*a*. Defective copilot's headset-microphone.	*a*. Replace copilot's headset-microphone.
		b. Defective trigger switch	*b*. Check copilot's trigger switch; replace as necessary (para 2-79).
		c. Defective interphone relay	*c*. Check for 28 volts dc between terminals A and B of copilot's interphone relay; check for continuity between terminals M and N. Replace relay as necessary.
		d. Defective fail-safe relay No. 2	*d*. Check for continuity between contacts 9 and 17 of fail-safe relay No. 2; if not present, replace relay.
		e. Defective distribution panel panel (para 2-18).	*e*. Replace SB-329/AR distribution
112	Panel lamps do not light	*a*. Defective panel lamp.	*a*. Replace panel lamp (para 2-82).
		b. Defective circuit breaker	*b*. Replace circuit breakers.
		c. Defective system cabling	*c*. Check cabling.
115	No audio is heard in headset	Defective control unit	Replace C-1611/AIC control unit (para 2-18).
118	No 400-cps tone signal is heard coded signal is inaudible.	*a*. Cable defective	*a*. Check cable continuity.
		b. Keyer unit defective	*b*. Replace KY-149/AR keyer unit (para 2-66).
		c. Antenna element defective	*c*. Replace AT-624/AR or 637A-2 antenna (para 2-64 or 2-30).
120	Associated fm radio set continues to operate.	Defective ON-OFF switch	Replace ON-OFF switch.
126	Transponder set will not energize.	*a*. No power input	*a*. Check helicopter power source.
		b. Defective master control S904	*b*. Check control continuity in

Item No.	Symptom	Probable trouble	Correction
			STBY, LOW, NORM, and EMER.
		c. Defective interconnect cable	*c.* Check continuity.
		d. Defective receiver-transmitter	*d.* Replace RT-494/APX-44 receiver-transmitter (para 2-71).
125A	No output in any mode of operation.	*a.* No helicopter power panel is lighted. Apply helicopter power.	*a.* Check that C-6280(P)/APX-72
		b. MASTER switch of control C-6280(P)/APX-72 set to OFF or STBY.	*b.* Check MASTER control position. Place in LOW or NORM.
		c. Defective cable or loose connections.	*c.* Check cable and connections. Replace or tighten as applicable.
		d. Defective fuse in RT859/APX-72.	*d.* Check and replace defective fuse.
		e. Defective RT-859/APX-72	*e.* Replace RT-859/APX-72.
125B	Output low or intermittent in any or all modes of operation.	*a.* Power supply in RT-859/APX-72 abnormal.	*a.* Replace RT-859/APX-72.
		b. RT-859/APX-72 coder operations abnormal.	*b.* Replace RT-859/APX-72.
125C	No output from a single mode. All others normal.	*a.* Applicable mode enable switch C-6280(P)/APX-72 in OUT or TEST position.	*a.* Check that applicable mode enable switch is set to ON.
		b. Improper code setting in applicable mode switch.	*b.* Check for proper code setting.
128	*a.* Action erratic with backlash binding or scraping.	*a.* Defective indicator	*a.* Replace ID-250/ARN indicator.
	b. Loose course knob	*b.* Worn setscrews	*b.* Replace setscrews.
129	Desiccant crystals pink in color	Saturated crystals	Replace crystals.
130	Erratic switch action	Defective switch	Replace switch.
132	Indicator heading error greater than +2°.	Defective indicator	Refer to higher category maintenance.
135	Panel lamps do not light	Defective lamps .	Replace defective lamps (para 2-82).
		MOTOR GENERATOR PU-543 (*) /A	
141	Main inverter fails to operate; spare inverter fails to operate. switch or power circuits.	*a.* Open circuit breaker	*a.* Reset circuit breaker.
		b. Faulty wiring or connections in	*b.* Check continuity of dc wiring. Repair wiring and tighten connections.
		c. Poor bonding to ground	*c.* Clean and tighten ground connections.
		d. Faulty inverter control	*d.* Check for 28 volts dc on both main and spare switch terminals; replace faulty control.
		e. Defective inverter .	Replace inverter (para 2-74).
142	Inverter runs but no voltage is supplied to instrument.	*a.* Faulty wiring	*a.* Check continuity of ac wiring; repair wiring.
		b. Defective inverter changeover relay.	*b.* Check continuity of relay contacts; replace faulty relay.
		c. Defective inverter	*c.* Check for 115-volt ac output from inverter; replace faulty inverter (para 2-74).
143	Improper inverter output voltage or frequency.	*a.* Low input voltage	*a.* Check for proper input voltage to inverter; correct low primary voltage condition.

Item No.	Symptom	Probable trouble	Correction
		b. Defective inverter voltage regulator.	*b*. Check inverter output voltage and frequency with voltmeter and frequency meters; replace defective inverter (para 2-74).

Item No.	Symptom	Probable trouble	Correction
161	Panel lamps do not light .	Defective control unit	Replace C-6873/;ARN-82 contrd unit (para 2-56.1).
163	Vor/localizer needle does not center or to/from indicator indicates from.	*a*. Defective receiver	*a*. Replace R-1388/ARN-82 receiver (para 2-51.1).
		b. Defective course indicator .	*b.* Replace ID-1347/ARN-82 indicator (para 2-55.1).
		c. Defective control unit	*c.* Replace C-6873/ARN-82 control unit (para 2-56.1).
		d. Defective antenna	*d.* Remove and replace antenna AS-1304/ARN (Dorne-Margolin DMN4-4) (para 2-52).
164	Voice reception is not heard in headset.	*a.* Defective receiver	*a.* Replace R-1388/ARN-82 receiver (para 2-51.1).
		b. Defective antenna	*b.* Remove and replace Antenna AS-1304/ARN (Dorne-Margolin DMN4-4) (para 2-52).
165	Noise is not heard in headset.	Defective receiver	Replace R-1388/ARN-82 receiver (para 2-51.1).
166	Noise is heard in headset	Defective squelch	Replace R-1388/ARN-82 receiver (para 2-51.1).
167	Panel lamps do not go out	*a.* Defective control unit	*a.* Replace C-6873/ARN-82 control unit (para 2-56.1).
		b. Defective circuit breaker .	*b.* Replace circuit breaker.
178	Front panel, tuning meter, and dial window not illuminated.	Lamps burned out in control unit	Replace C-6899/ARN-83 control unit (para 2-60.1).
179	No noise in headset	Defective receiver	Replace R-1391/ARN-83 receiver (para 2-57.1).
180	Receiver does not switch frequency range.	*a.* Defective receiver	*a.* Replace R-1391/ARN-83 receiver (para 2-57.1).
		b. Defective control unit .	*b.* Replace C-6899/ARN-83 control unit (para 2-60.1).
181	Tuning meter inoperative, but sound can be heard	Defective meter	Replace C-6899/ARN-83 control unit (para 2-60.1).
182	No beat notes can be heard in headset.	Defective bfo circuit in receiver	Replace R-1391/ARN 83 receiver (para 2-57.1).
184	Null cannot be obtained in loop mode.	*a.* Defective LOOP switch .	*a.* Replace C-6899/ARN-83 control unit (para 2-60.1).
		b. Defective receiver	*b.* Replace R-1391/ARN-83 receiver (pa-a 2-57.1).
		c. Defective loop antenna or rf inductance compensator.	*c.* Replace AS-1863/ARN-83 loop antenna (para 2-58.1).
185	Positioning LOOP switch has no effect on bearing pointer, but sound can be heard in headset.	*a.* Defective LOOP switch	*a.* Replace C-6899/ARN-83 control unit (para 2-60.1).
		b. Defective loop antenna	*b.* Replace AS-1863/ARN-83 loop antenna (para 2-58.1).
		c. Defective cable between loop antenna and receiver.	*c.* Check antenna cable connection. Replace defective cable.
		d. Defective bearing indicator	*d.* Replace ID-998/ASN indicator (para 2-70).
186	Bearing pointer will not rotate in ADF mode.	*a.* Defective bearing indicator	*a.* Replace ID-998/ASN indicator (para 2-70).

Item No.	Symptom	Probable trouble	Correction
		b. Defective loop servosystem in receiver.	*b.* Replace R-1391/ARN-83 re ceiver (para 2-57.1).
196	Power failure indicator does not disappear and panel lamps do not light.	*a.* Defective ID-998/ASN indicator (para 2-70).	*c.* Replace ID-998/ASN indicator
		b. Defective circuit in CN-998/ ASN-43.	*b.* Replace CN-998/ASN-43 gyro (para 2-69.1).
		c. Defective intercabling or connectors.	*c.* Replace defective cables and connectors.
198	Annunciator will not move.	*a.* Defective circuit in CN-998/ ASN-43.	*a.* Replace CN-998/ASN-43 gyro (para 2-69.1).
		b. Defective annunciator in ID-998/ASN.	*b.* Replace ID-99S/ASN indicator (para 2-70).
		c. Defective T-611/ASN or CN-405/ASN.	c. Refer trouble to next higher category of maintenance.
199	Scale dial does not move but annunciator does move.	*a.* Defective ID-998/ASN	*a.* Replace ID-998/ASN indicator (para 2-70).
		b. Defective AM-3209/ASN	*b.* Replace AM-3209/ASN amplifier (para 2-70.1).
200	Annunciator will not go to center position, or keeps moving, when MAG-DG switch is set to DG.	*a.* Defective MAG-DG switch switch.	*a.* Replace defective MAG-DG
		b. Defective circuit in CN-998/ ASN-43 gyro.	*b.* Replace CN-998/ASN-4S gyro (para 2-69.1).
202	Annunciator will not remain in center position.	*a.* Defective MAG-DG switch	*a.* Replace defective MAG-DG switch.
		b. Defective circuit in CN-908/ ASN-43 gyro.	*b.* Replace CN-998/ASN-3 gyro (para 2-69.1).
203	Power failure indicator does not appear and panel lamps remain lighted.	Defective ID-998/ASN indicator	Replace ID-998/ASN indicator (para 2-70).
210	OFF warning flag does not disappear.	*a.* Defective circuit breaker	*a.* Check circuit breaker.
		b. Defective indicator	*b.* Replace indicator (para 2-81.1).
211	Pointer on the indicator sphere will not align with the center mark on the indicator.	*a.* Defective indicator	*a.* Replace indicator (para 281.2).
		b. Defective roll and pithc gyro (para 2-81.3).	*b.* Replace roll and pitch gyro
		c. Defective rate switching gyro .	*c.* Replace rate switching gyro (para 2-81.3).
		d. Defective indicator amplifier.	*d.* Replace indicator amplifier (para 2-81.4).
212	Horizon on the indicator sphere will not center with the miniature airplane.	*a.* Defective indicator	*a.* Replace indicator (par 2-S81.1).
		b. Defective roll and pitch gyro	*b.* Replace roll and pitch gyro (para 2-81.2).
		c. Defective rate switching gyro .	Replace rate switching gyro (para 2-81.3).
		d. Defective indicator amplifier	*d.* Replace indicator amplifier (para 2-81.4).
213	OFF warning flag will not appear.	*a.* Defective circuit breaker	*a.* Check circuit breaker.
		b. Defective indicator	*b.* Replace indicator (para 2-81.1).
217	Horizon bar will not move	*a.* Defective circuit breaker	*a.* Check circuit breaker.
		b. Defective indicator	Replace indicator (para 2-81.5).
223	Receiver-transponder power on lamp does not light.	*a.* Panel lamp loose in socket or defective.	*a.* Check panel lamp for proper seating and replace if necessary (para 2-67.3)
	Note: The ABOVE, EQUAL and BELOW lamps normally light and cycle one time when power is initially applied.	*b.* Circuit breaker defective.	*b.* Replace circuit breaker.
		c. Interconnection wiring to circuit breaker defective.	*c.* Repair defective wiring.

Item No.	Symptom	Probable trouble	Correction
224	Receiver-transponder ABOVE, EQUAL and BELOW lamps do not light when CONFIDENCE TEST switch is ON.	*a*. Panel lamps defective. *b*. Receiver-transponder defective.	*a*. Replace panel lamps. *b*. Replace receiver-transponder.
225	Receiver-transponder ABOVE, EQUAL and BELOW lamps do not cycle when TRANS-PONDER GND TEST switch in ON when using Ground Transponder test set.	*a*. See item 223. *b*. Receiver-transponder defective. *c*. Ground transponder test set is defective.	*a*. See item 223. *b*. Replace receiver-transponder. *c*. Check Ground transponder, repair or replace as required.

Section IV. ELECTRONIC EQUIPMENT CONFIGURATION REPAIRS

2-12. General Repair Techniques

Repair of the helicopter electronic configuration at organizational maintenance consists of removal of defective major electronic equipment components and replacement of these components with serviceable components from maintenance float stock. When the troubleshooting procedures indicate that a component is defective, follow the applicable removal procedures given in this section. Replace the removed component with a known serviceable equivalent component. After the component has been replaced, install safety wiring on the mounting hardware and electrical connectors (para 2-88). If replacement of major components still does not correct the trouble, check the electronic equipment configuration wiring, and repair the wiring or cabling as required (para 2-84).

2-13. Electronic Equipment Component Removal and Replacement

The procedures that follow include information required for the removal and replacement of the major electronic equipment components installed in the helicopter configurations.

Warning: Before removal and replacement of any electrical equipment components, be sure that the DC POWER control panel BAT switch is at OFF.

2-14. Coordinating Removal and Replacement

When removal or replacement of any component requires disassembly or reassembly of any portion of the airframe, be sure to coordinate removal or replacement with the organizational maintenance repairman or the crewchief.

2-15. Removal and Replacement of Receiver-Transmitter, Radio RT-294/ARC44 (fig. 2-4)

a. Removal.

(1) Disconnect the mechanical linkage, the antenna connector, and the two electrical connectors from the front of the RT-294/ARC-44.

(2) Remove the safety wire, and slide the snap-slide fasteners away from the grooved studs on the mounting rack.

(3) Lift the RT-294(*)/AR-44 free of the grooved studs, and slide it forward to disengage it from the mounting rack guide rail.

b. Replacement.

(1) Slide the RT-294(*)/ARC-44 onto the mounting rack to engage the unit with the mounting rack guide rail.

(2) Place the RT-294(*)/ARC-44 so that the grooved studs on the mounting rack fit through the mounting holes on the front of the bottom cover.

(3) Slide the snap-slide fasteners onto the grooved studs to secure the RT294(*)/ARC-44 to the mounting rack.

(4) Install safety wire on each snap-slide fastener.

(5) Connect the electrical connectors, the antenna connector, and the mechanical linkage to the RT-294(*)/ARC-44.

2-16. Removal and Replacement of Dynamotor DY-107/AR (AN-ARC-44) (fig. 22)

a. Removal.

(1) Remove the RT-294(*)/ARC-44 receiver-transmitter (pare 2-15).

(2) Remove the safety wire from the mounting screws on the front of the dynamotor, and remove the screws.

(3) Slide the dynamotor forward to disconnect it from the electrical connector and guide pins at the rear of the dynamotor mounting.

(4) Slide the dynamotor out of the guide rail, and lift it from the mounting.

b. Replacement.

(1) Place the dynamotor in its mounting.

(2) Slide the dynamotor to the rear of

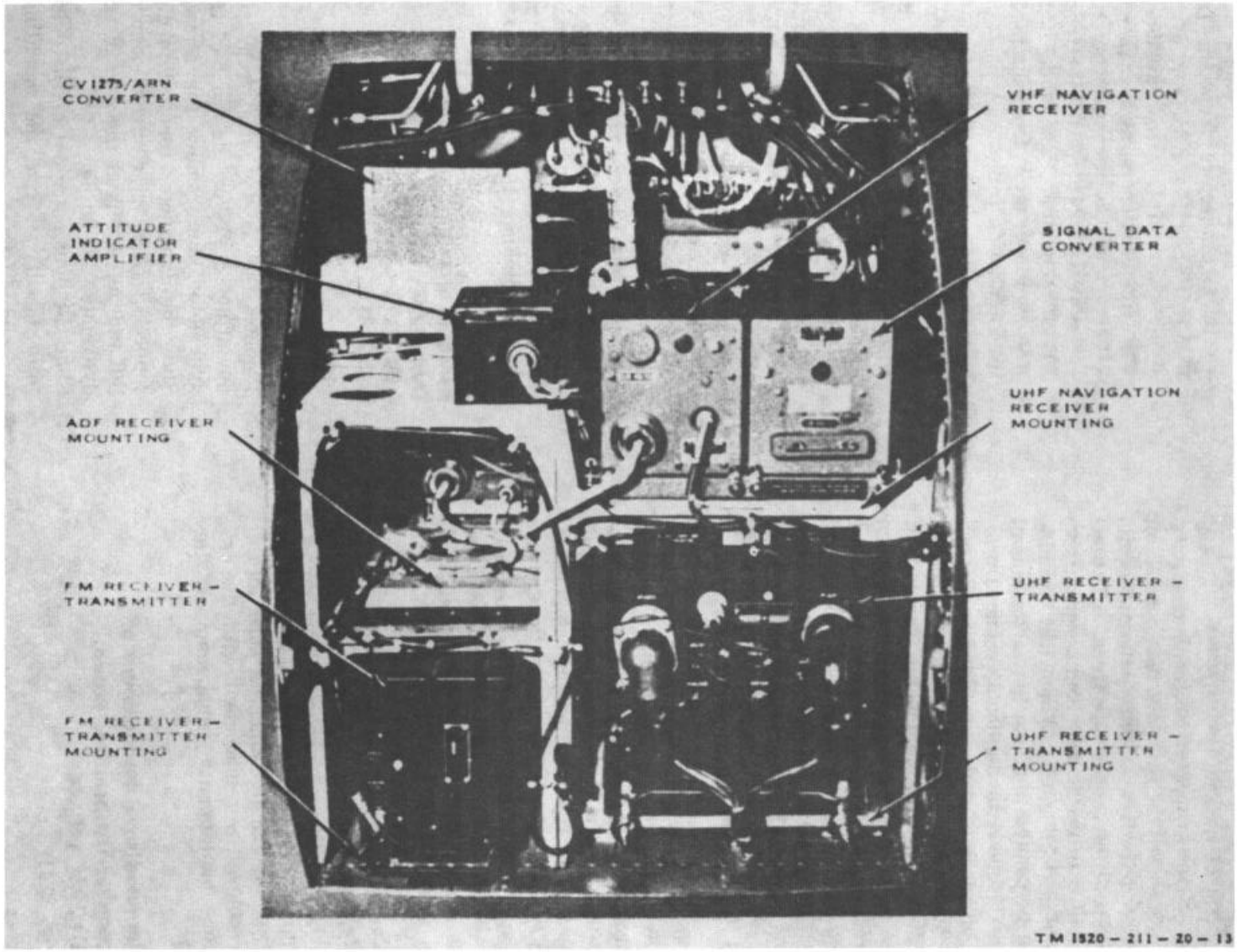


Figure 2-4. Radio set compartment, location of components for Radio Set AN/ARC-44, Radio Set AN/ARC-55 (*), Receiving Set, Radio AN/ARN-30(*), and Direction Finder Set AN/ARN-59 (V).

the mounting until the electrical connectors and guide pins mate. Firmly seat the dynamotor on the electrical connector.

(3) Secure the dynamotor to its mounting with the mounting screws.

(4) Secure the mounting screws with safety wire.

(5) Replace the fm receiver-transmitter (para 2-15b).

2-17. Removal and Replacement of Panel, Control SB-327/ARC-44 (Fm Liaison Control Panel)

a. Removal.

(1) Loosen the spring-lock fasteners that secure the fm liaison control panel to the bracket assembly.

(2) Lift the panel far enough from the bracket assembly to reach the spring-lock fasteners that secure the connector assembly at the rear of the panel.

(3) Loosen the spring-lock fasteners, and remove the connector assembly from the rear of the panel.

(4) Lift out the fm liaison control panel.

b. Replacement.

(1) Slide the fm control panel into the bracket assembly until the connector assembly can be mated with the connector at the rear of the fm liaison control panel.

(2) Seat the connector assembly in the connector at the rear of the fm liaison control panel, and tighten the connector assembly to the fm liaison control panel.

(3) Push the fm control panel into the bracket assembly, and secure it in place with the spring-lock fasteners.

2-18. Removal and Replacement of Panel, Signal Distribution, Radio SB-329/AR (1A, A, and B Configurations) (fig. 2-5)

a. Removal.

(1) Loosen the spring-lock fasteners that secure the distribution panel to the bracket assembly.

(2) Lift the distribution panel far enough from the bracket assembly to gain access to the spring-lock fasteners that secure the connector assembly to the rear of the distribution panel.

(3) Loosen the spring-lock fasteners, and remove the connector assembly from the rear of the distribution panel.

(4) Lift out the distribution panel.

b. Replacement.

(1) Slide the SB-329/AR into the bracket assembly until the connector assembly can be mated with the connector at the rear of the SB-329/AR.

(2) Seat the connector assembly in the connector at the rear of the SB-329/AR and tighten the spring-lock fasteners to secure the connector assembly.

(3) Position the SB-329/AR into the bracket assembly, and secure with the springlock fasteners.

2-19. Removal and Replacement of Control, Intercommunication Set C-1611/AIC (A, B, C, D, E, F, G, and H Configurations) (fig. 2-4.1)

Procedures for removal and replacement of the C-1611/AIC are the same as for Panel, Signal Distribution, Radio SB-329/AR (para 2-18).

2-19.1 Removal and Replacement of Discriminator Discrete Signal MD736/A, Configurations F Through H (figs. 2-4.2 and 2-4.3)

a. Removal of Left or Right Crew MD-736/ A.

(1) Remove the cover by loosening the two screws in the cover.

(2) Disconnect and tag the discriminator wires.

(3) Remove four screws, four washers, and four nuts that mount the discriminator to

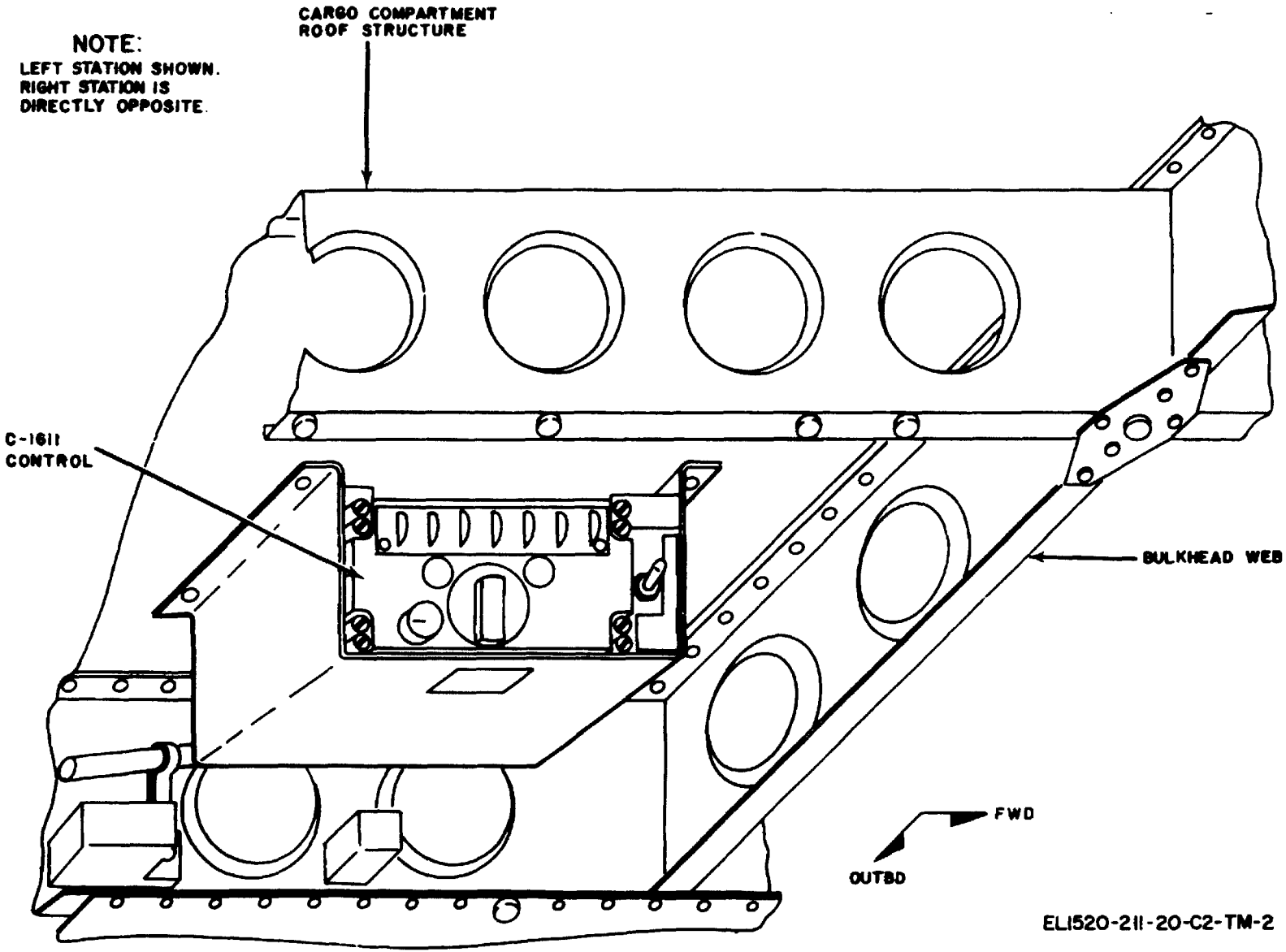


Figure 2-4.1 Location of crewmembers Control, Intercommunications Set C-1611/AIC

the one below and pull the discriminator from the pedestal.

b. Replacement of Left or Right Crew MD736/A.

(1) Position the discriminator in the pedestal and secure it in place with the four screws, four washers, and four nuts.

(2) Connect the discriminator wires.

(3) Install the cover by tightening the two screws in the cover.

c. Removal of Pilot or Copilot MD-736/A.

(1) Remove the four screws, four washers, and four nuts that mount the upper discriminator and displace the upper discriminator to gain access to the two screws that secure the cover of the lower discriminator.

(2) Remove the cover of the lower discriminator by loosening the two screws in the cover.

(3) Disconnect and tag the discriminator wires.

(4) Remove the four screws that hold the printed circuit boards.

(5) Remove the four screws and four washers that secure the discriminator to the bracket and pull the discriminator from the pedestal.

d. Replacement of Pilot or Copilot MD736/A.

(1) Mount the discriminator to the pedestal bracket with four screws and four washers.

(2) Install the printed circuit boards into the base with four screws.

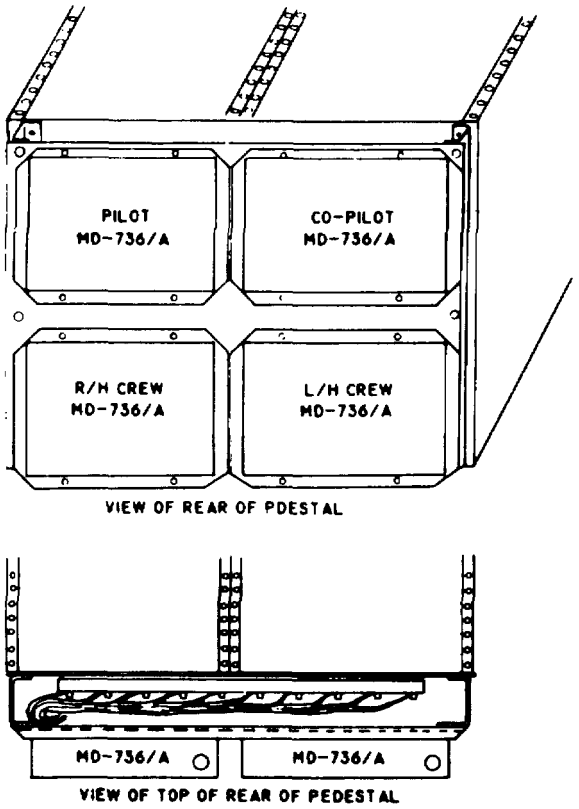


Figure 2-4.2 Location of Discrete Signal Discriminator MD-736/A.

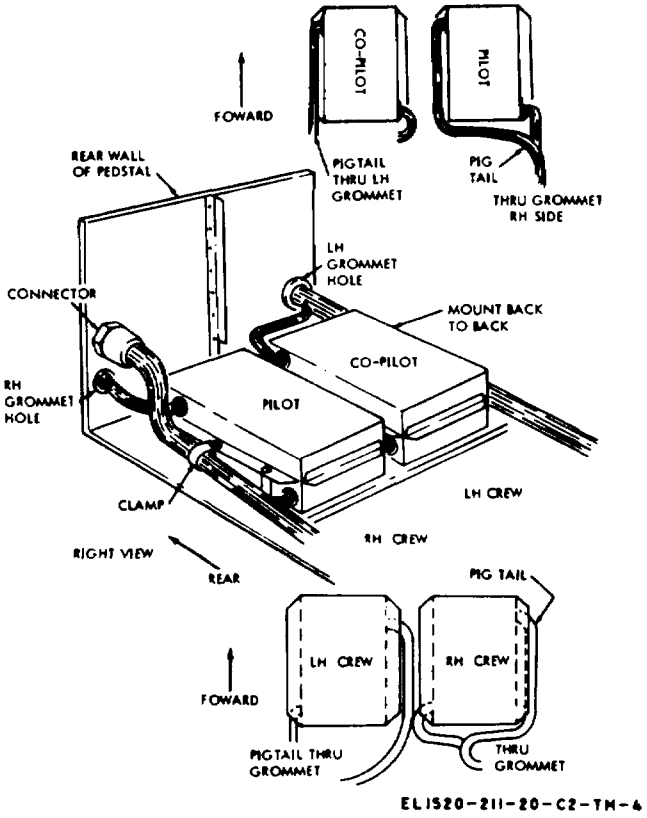


Figure 2-4.3 Location of Discrete Signal Discriminator MD-736/A inside pedestal.

(3) Connect the discriminator wiring.

(4) Install the discriminator cover by tightening the two screws in the cover.

(5) Mount the upper discriminator to the lower discriminator with four screws, four washers, and four nuts.

2-20. Removal and Replacement of Control Panel Assembly 204 075-219 (SA-474/AR Modified) (A Through D Configurations)

(fig. 2-6)

Procedures for removal and replacement of 204-075-219 (SA-474/AR modified) are the same as for Panel, Signal Distribution, Radio SB-329/AR (para 2-18).

2-21. Removal and Replacement of Antenna AT-454(*)/ARC-44 (A Through D Configurations)

(fig. 2-7)

a. Removal.

(1) Remove the setscrew in Base AB340(*)/ARC with a 1/4-inch Allen wrench.

(2) Loosen the nut that secures the AT455(*)/ARC to the base and remove the fm antenna element.

(3) Disconnect the fm antenna cable connector from the base.

(4) Remove the screws that secure the AB-340(*)/ARC to the mounting bracket, and then remove the AB-340 (*)/ARC.

(5) Remove the screws that secure the cover to the housing of Coupler CU-361(*)/ ARC. Disconnect the antenna keyer cable from the receptacle on the CU-361(*)/ARC (figs. 4-1 and 2-8).

(6) Remove the mounting screws that secure the CU-61(*)/ARC (fig. 2-8) to the tail boom, and then remove the CU-361(*)/ ARC.

b. Replacement.

(1) Secure the CU-361(*)/ARC to the tail boom with the mounting screws.

(2) Attach the antenna cable from the antenna keyer to the receptacle on the CU361(*)/ARC.

(3) Place the cover in position over the CU-361(*)/ARC housing, and secure the cover with the screws.

(4) Place Base AB-340(*)/ARC in position on the mounting bracket, and secure with the mounting screws.

(5) Screw element AT-455(*)/ARC into the AB-340(*)/ARC, and secure with the nut.

(6) Replace and tighten the setscrew to prevent loosening of the antenna element nut.

(7) Connect the AT-455(*)/ARC cable connector from the CU-361(*)/ARC to the receptacle in the AB-340/(*)/AR.

2-22. Removal and Replacement of Receiver-Transmitter RT-702/ARC-51 X, RT-742/ARC-51BX or RT-334( )/ARC-51X(A, B, C, D, E, F, G, and H Configurations)

a. Removal.

(1) Disconnect the electrical connectors and the antenna cable from the receptacles on the front of the receiver-transmitter.

(2) Cut the safety wire, and unscrew the wingnuts that secure the receiver-transmitter to Mounting MT-2653/ARC.

(3) Slide the receiver-transmitter forward to disengage the guide pins at the rear of the mounting and remove the receiver-transmitter.

b. Replacement.

(1) Carefully place the receiver-transmitter on Mounting MT-2653/ARC and slide into the guide pins at the rear of the MT-2653/ ARC.

(2) Secure the receiver-transmitter to the MT-2653/ARC, and tighten the wingnuts.

(3) Install the safety wire on each wingnut.

(4) Connect the electrical cables and the antenna cable to the receptacles at the front of the receiver-transmitter.

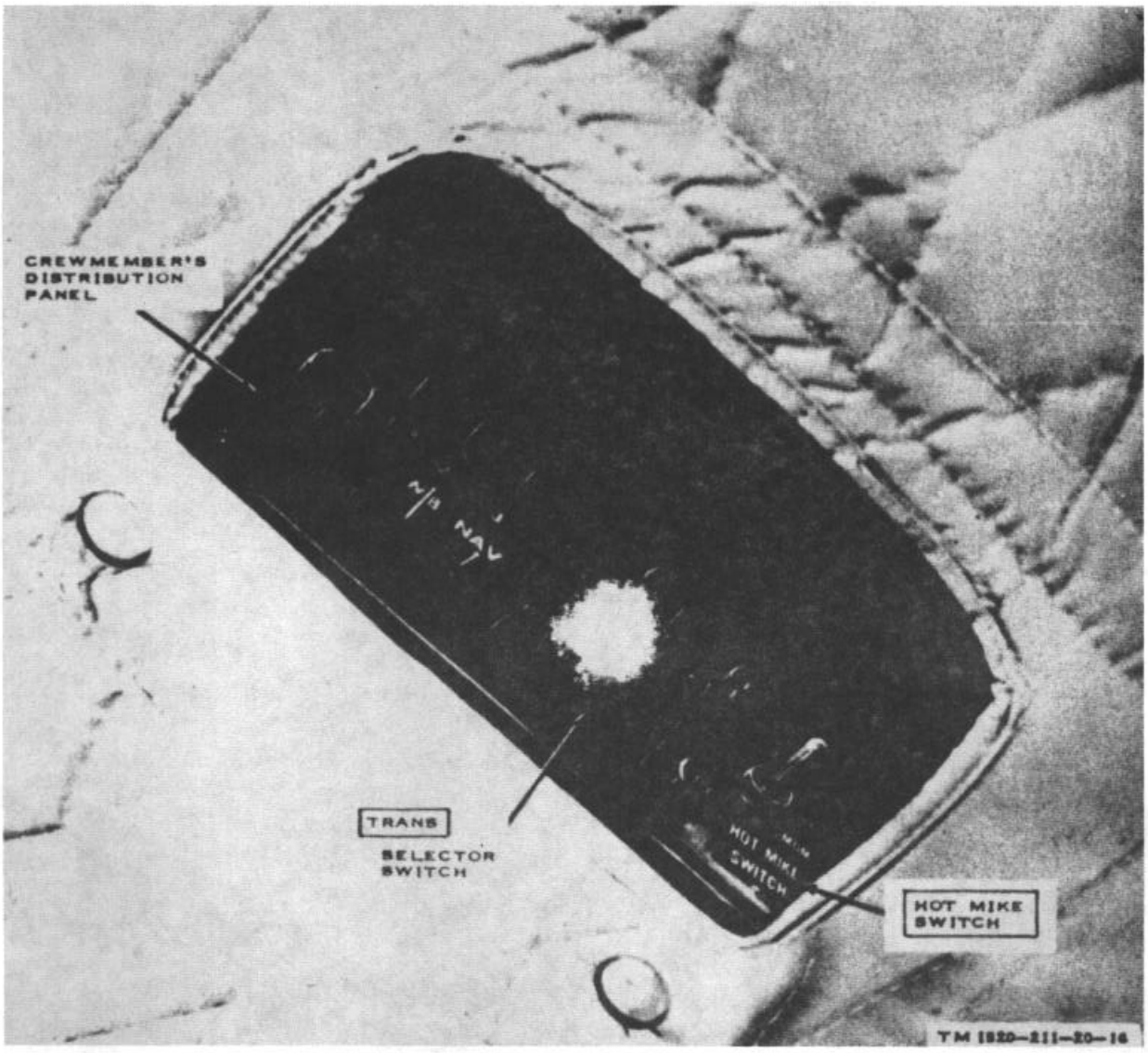


Figure 2-5. Location of Panel, Signal Distribution, Radio SB-329/AR (crewmember's).

2-23. Removal and Replacement of Control, Radio Set C-4677/ARC-51X 1 (A, B, C, D, E, and F Configurations)

a. Removal.

(1) Loosen the spring-lock fasteners that secure the uhf control unit to the radio control console.

(2) Lift the uhf control unit from the radio control console, and disconnect the

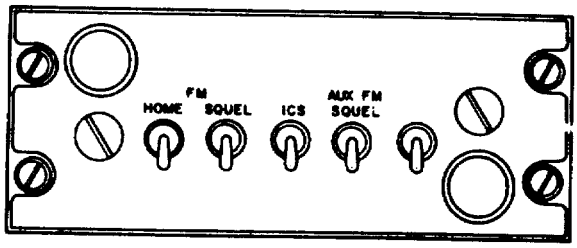


Figure 2-6. Control panel assembly part number 204-075-219 (Switch Assembly SA-474/AR, modified).

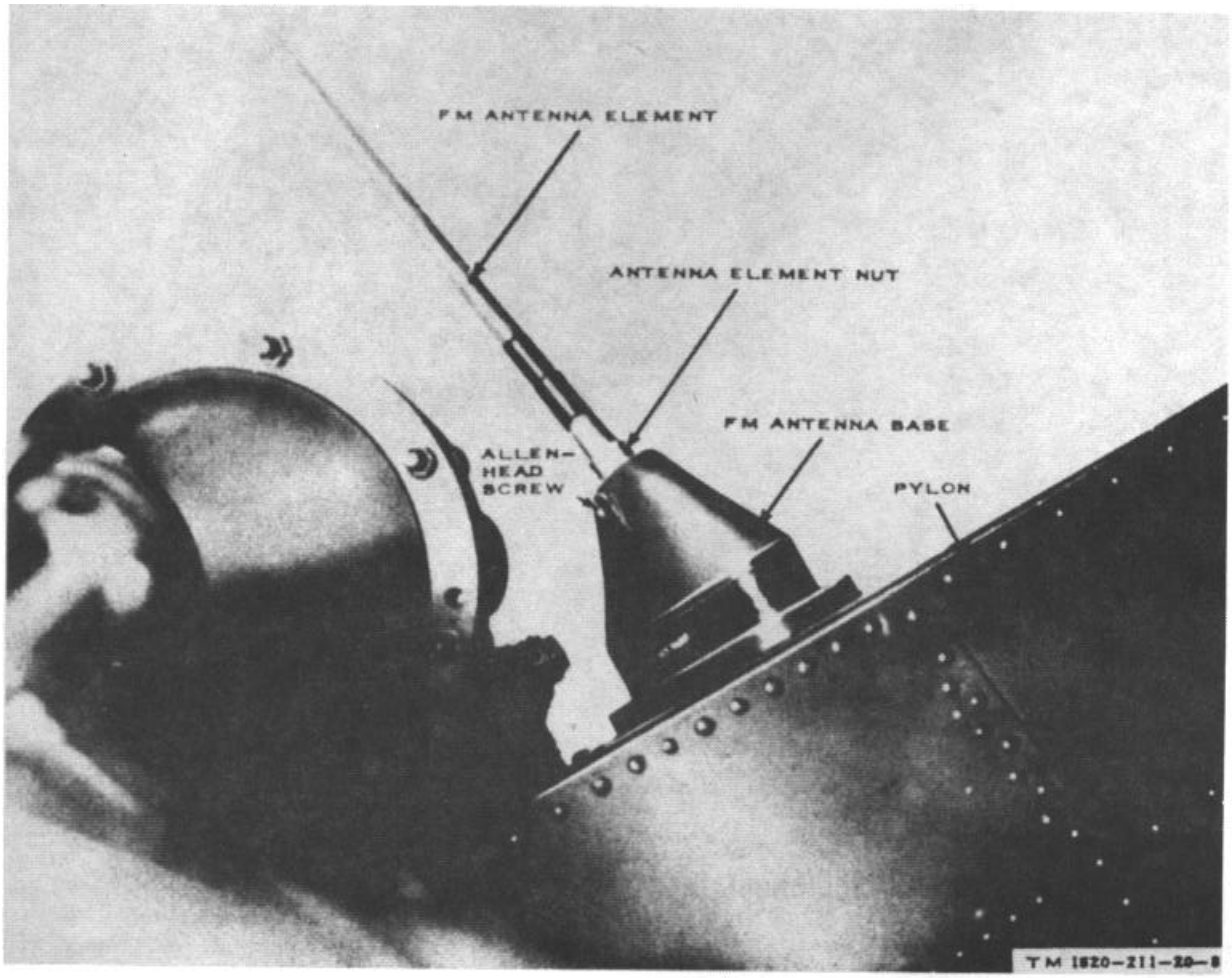


Figure 2-7. Antenna A T-454(*)/ARC (A through D configurations) or Antenna AT-765/ARC (A through H configurations) installed.

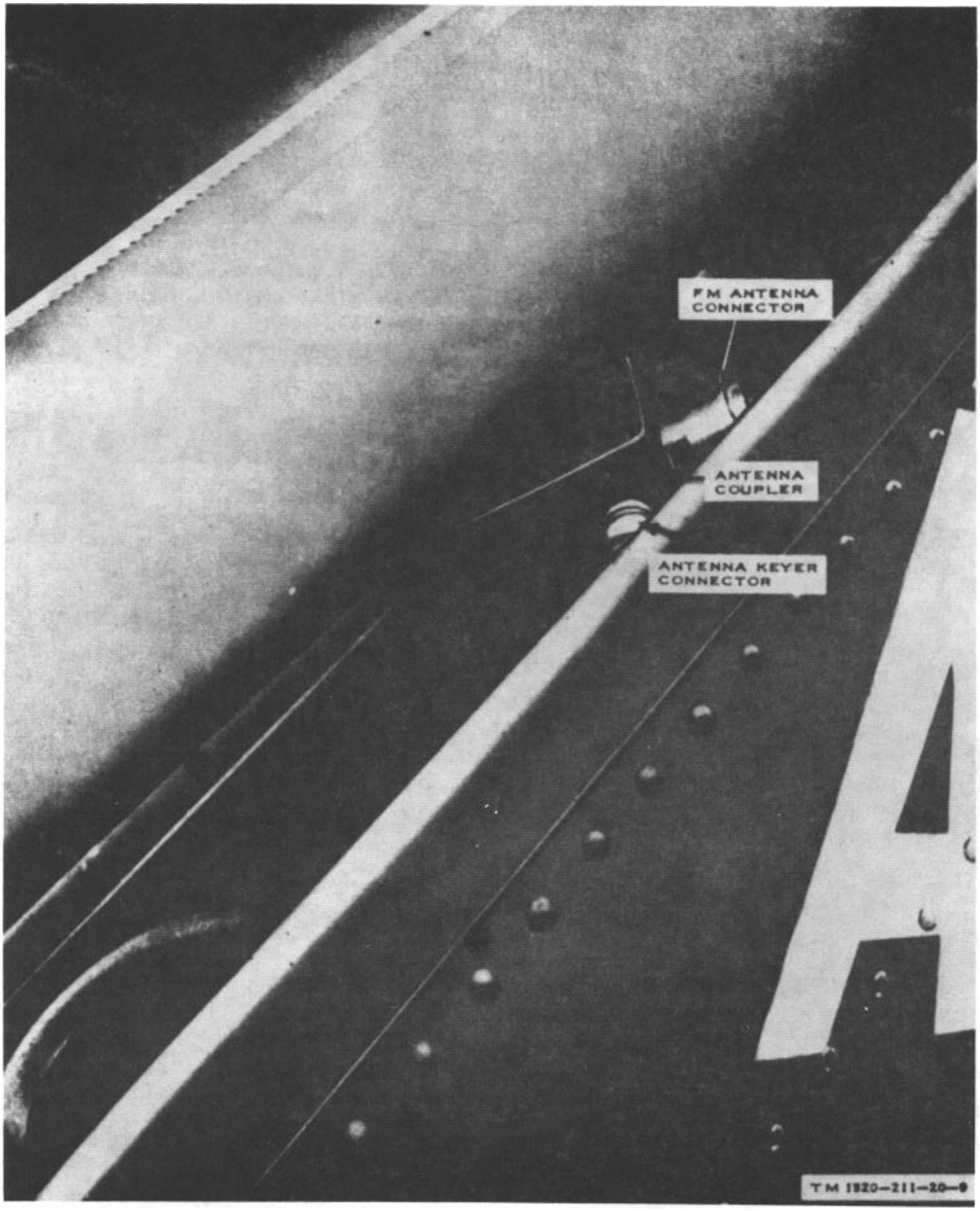


Figure 2-8. Coupler CU--361(*)/ARC installation.

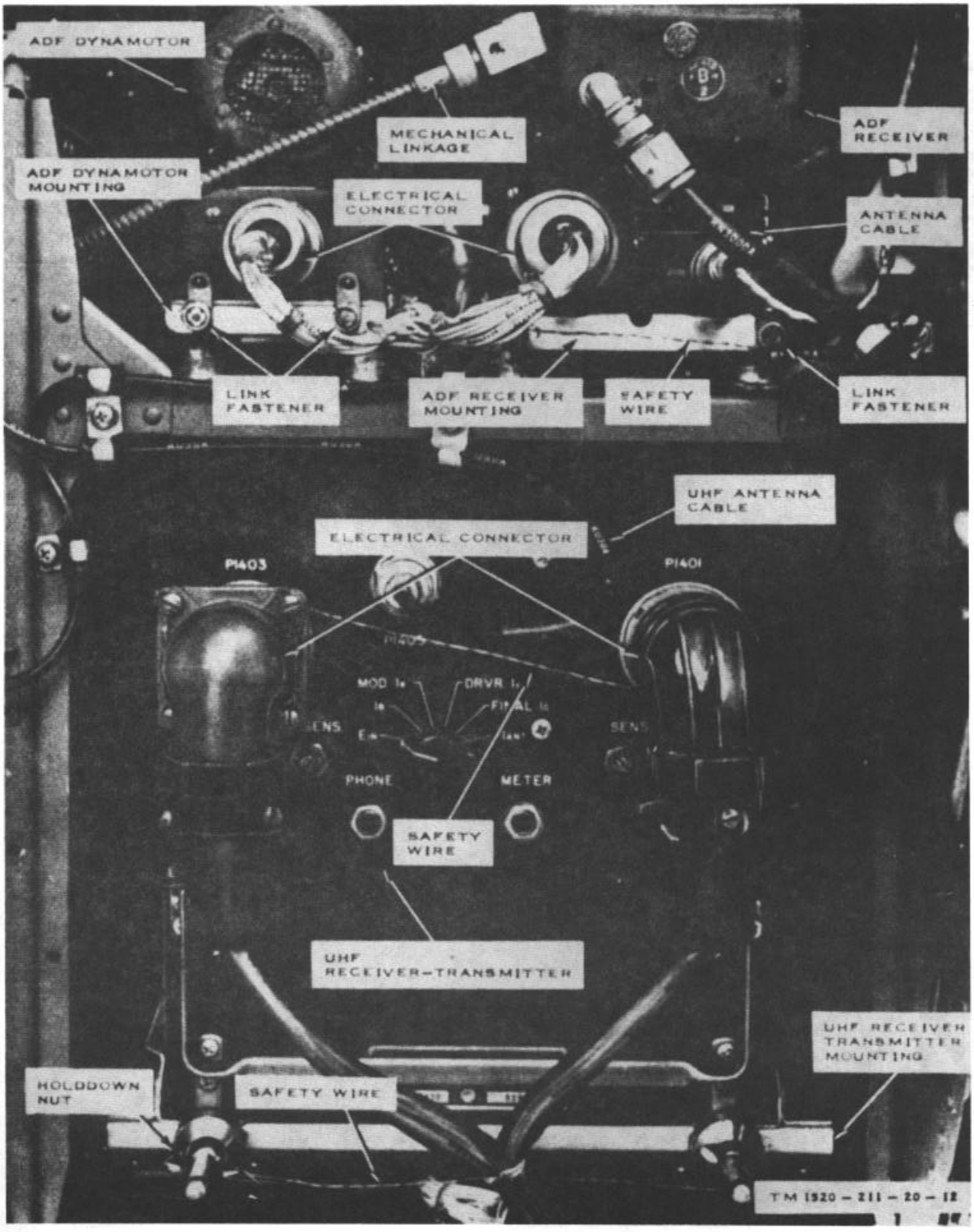


Figure 2-9. Radio set compartment location of Receiver-Transmitter RT-349(*)/ARC-55 and components of Direction Finder Set AN/ARN-59(V).

electrical cable from the back of the control unit.

(3) Lift the control unit free of the console.

b. Replacement.

(1) Connect the electrical cable to the rear of the control unit.

(2) Position the control unit in the console.

(3) Secure the control unit to the console with the spring-lock fasteners.

2-24. Removal and Replacement of Control, Radio Set C-6287/ARC-51BX (C, D, E, F, G, and H Configurations)

Procedures for removal and replacement of the C-6287/ARC-51BX control panel are the same as for the C-4677/ARC-51X control panel (para 2-23).

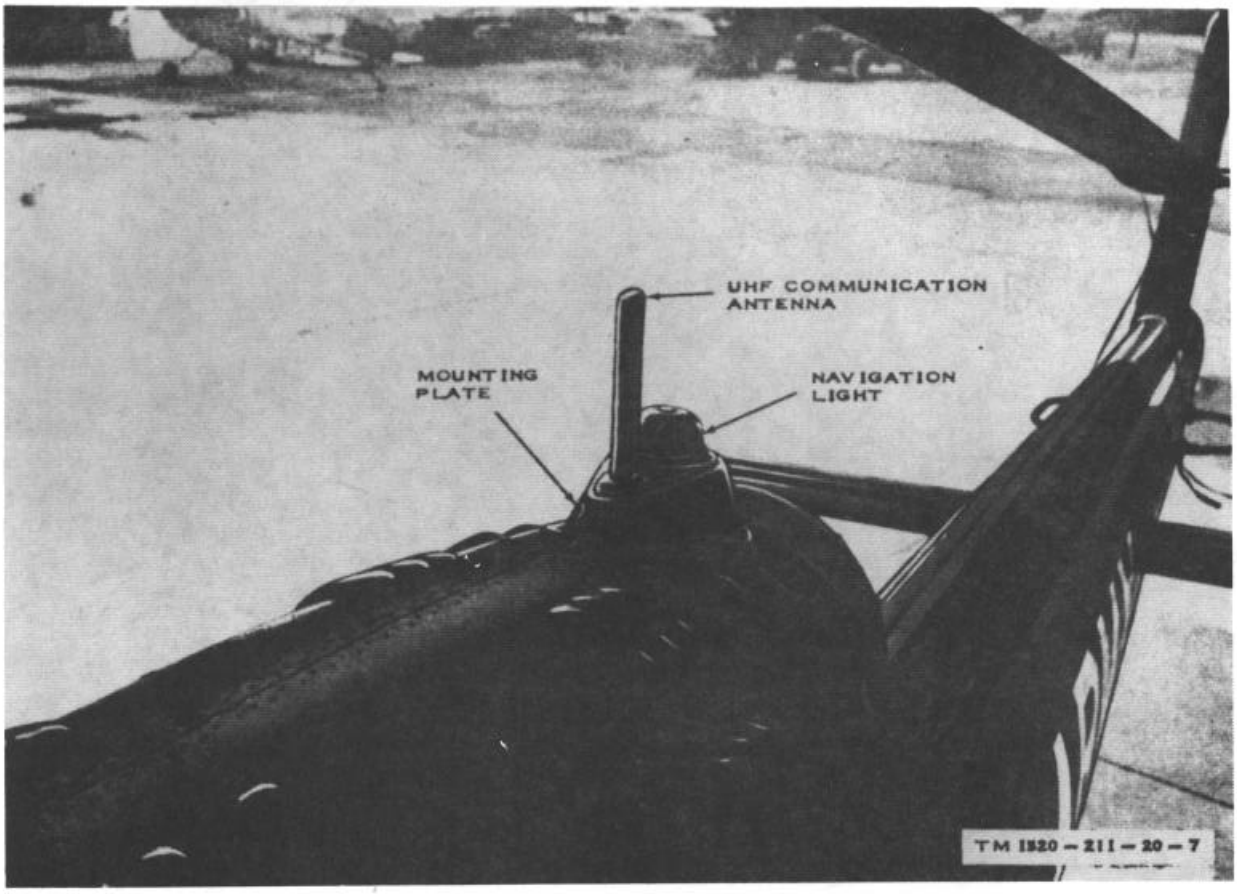


Figure 2-10. Location of Antenna AT-450/ARC.

2-25. Deleted.

2-26. Removal and Replacement of Receiver-Transmitter RT-348/ARC-54
(fig. 2-4)

Procedures for removal -and replacement of the RT-348/ARC-54 are the same as for the RT-294(*)/ARC-44 (para 2-15).

2-27. Removal and Replacement of Antenna AT-765/ARC
(fig. 2-7)

Procedures for removal and replacement of the AT-765/ARC are the same as for the AT-454(*)/ARC (para 2-21).

2-28. Removal and Replacement of Antenna AS-1703( )/ARC-54 and Antenna Coupler CU-943/ARC-54
(fig. 2-10.4)

a. Removal.

(1) Remove the screws that secure the antenna coupler support to the tail boom assembly of the helicopter.

(2) Lift the antenna coupler support and disconnect cables from the antenna coupler.

b. Replacement.

(1) Connect cables to the antenna coupler and position the antenna coupler support on the tail boom assembly of the helicopter.

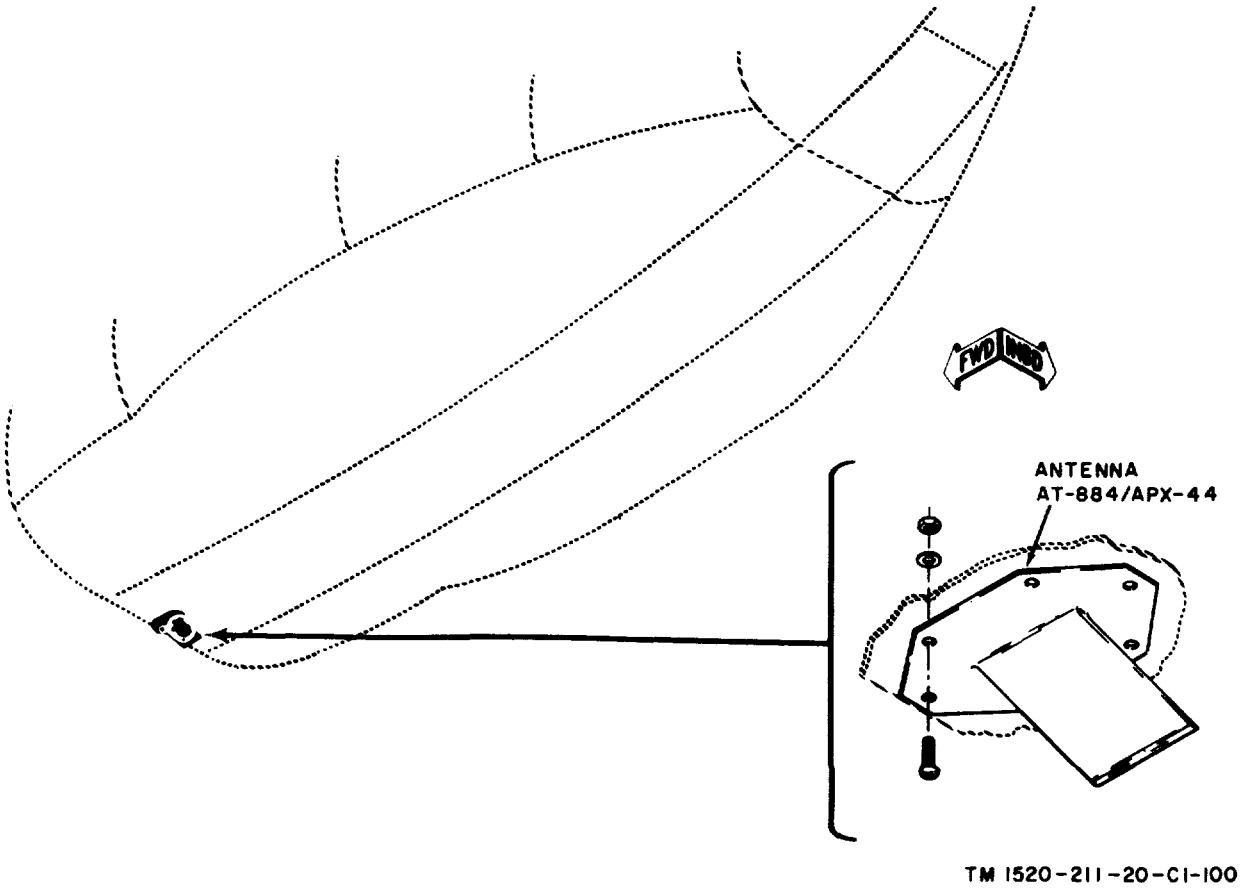


Figure. 2-10.1 Location of IFF antenna.

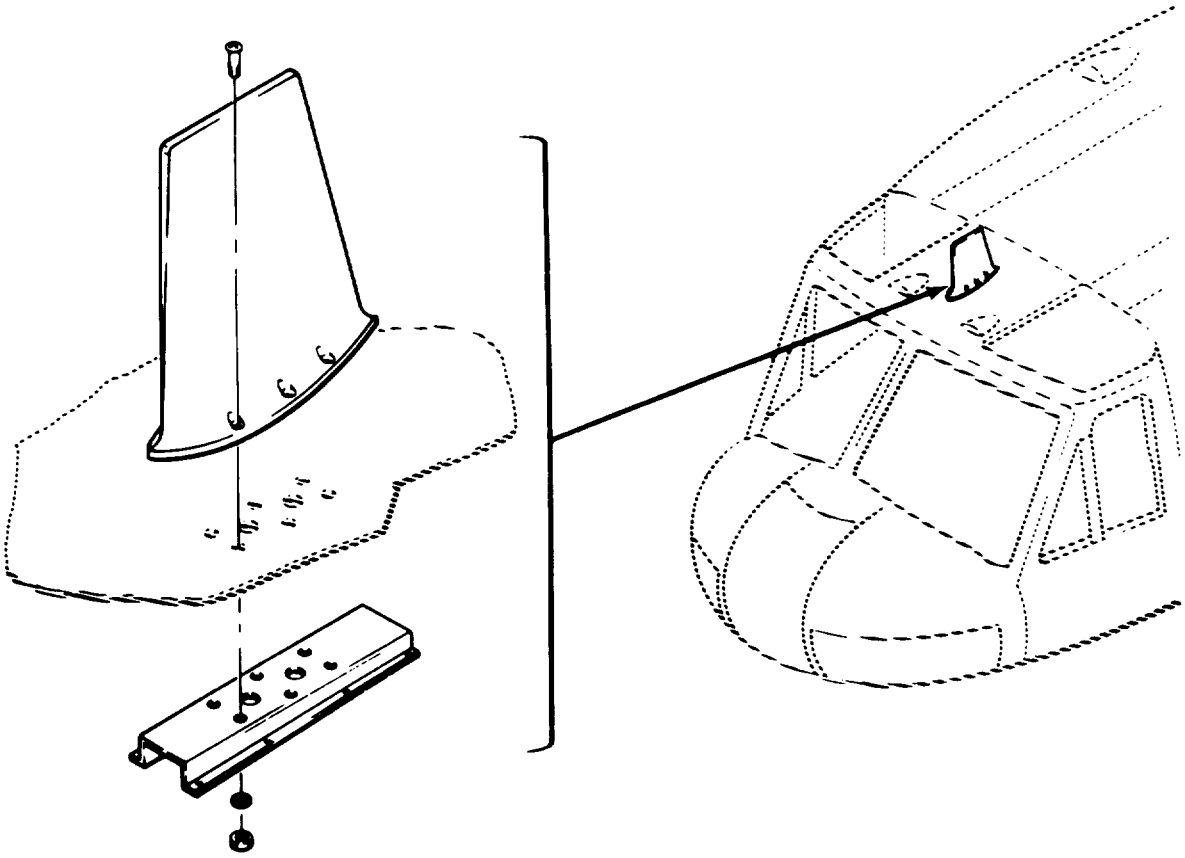


Figure 2-10.2. Location of vhf/uhf antenna.

(2) Secure the coupler support to the tail boom assembly with screws.

2-29. Removal and Replacement of Control, Radio Set C-3835/ARC-54

Procedures for removal and replacement of the C-3885/ARC-54 control panel are the same as for the SB-327/AR control panel (para 2-17).

2-30. Removal and Replacement of Homing Antenna Assembly (637A-2) AS-1922/ARC (AN/ARC-54)

(figs. 2-10.3, 2-10.5, and 2-10.6)

a. Removal.

(1) Remove the mounting screws at each end of the antenna.

CAUTION

In removing the antenna, be careful not to damage the cable.

(2) Lift the antenna gently from the skin of the helicopter.

(3) Disconnect the antenna cable.

b. Replacement.

(1) Connect the antenna cable.

(2) Position the antenna, being careful to avoid damaging the cable.

(3) Secure the antenna to the helicopter skin with the mounting screws.

2-31. Removal and Replacement of Receiver-Transmitter RT-349(*)/ARC-55
(fig. 2-9)

Procedures for removal and replacement of the RT-349 (*)/ARC-55 receiver-transmitter are the same as for the RT-702/ARC-51 receiver-transmitter (para 2-22).

2-32. Removal and Replacement of Antenna AT-450/ARC
(fig. 2-10)

Procedures for removal and replacement of the AT-450/ARC antenna are the same as for the AT-1108/ARC antenna (para 2-35).

2-33. Removal and Replacement of Control, Radio Set C-1827/ARC-55

Procedures for removal and replacement of the C-1827/ARC-55 control panel are the same as for the C-4677/ARC-51X control panel (para 2-23).

2-34. Deleted.

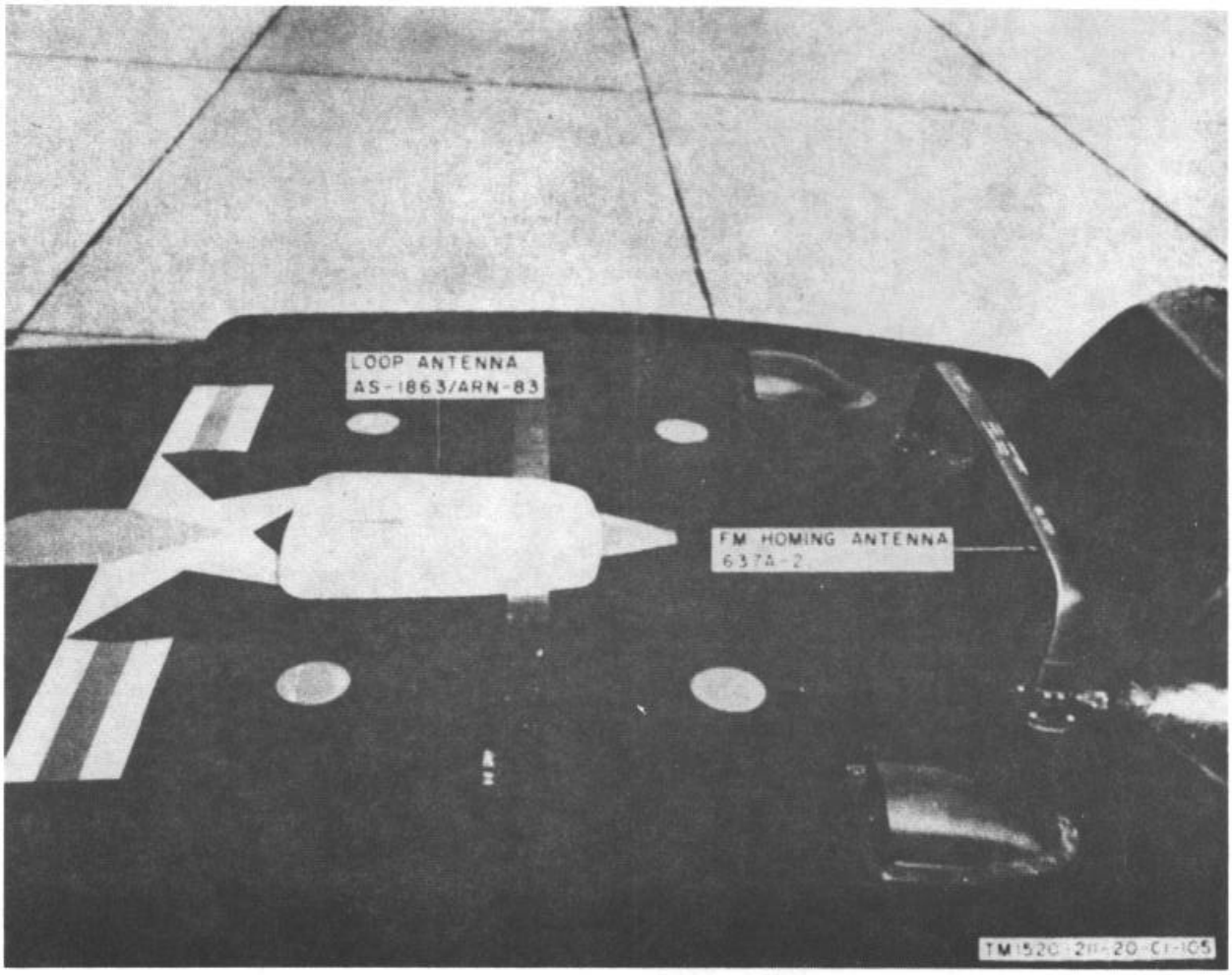


Figure 2-10.3. Location of adf loop antenna and fm homing antenna.

2-35. Removal and Replacement of Antenna AT-1108/ARC (37R-2U) (fig. 2-10.2)

a. Removal.

(1) Remove the screws, nuts, and washers from the antenna base.

CAUTION
In removing the antenna, be careful not to damage the cable.

(2) Lift the antenna gently from the skin of the helicopter, and disconnect the cables.

b. Replacement.

(1) Connect the cables.

(2) Position the antenna, being careful to avoid damaging the cable.

(3) Replace the screws, nuts, and washers to secure the antenna.

2-36. Removal and Replacement of Receiver R-1123(*)/ARC-73

a. Removal.

(1) Cut the safety wire, and loosen the holddown clamps on the lower side of the receiver.

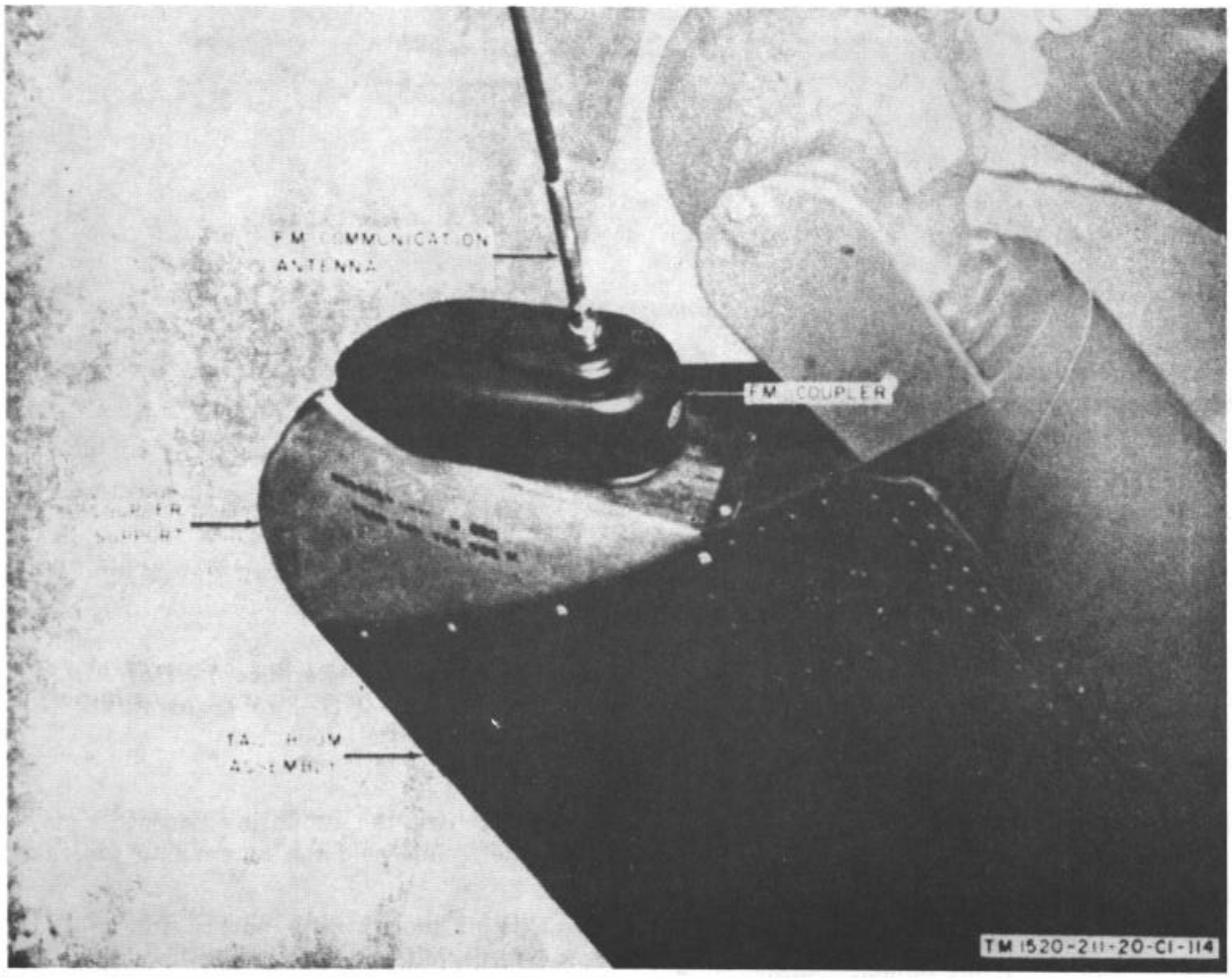


Figure 2-10.4. Location of *fm* communications antenna and coupler.

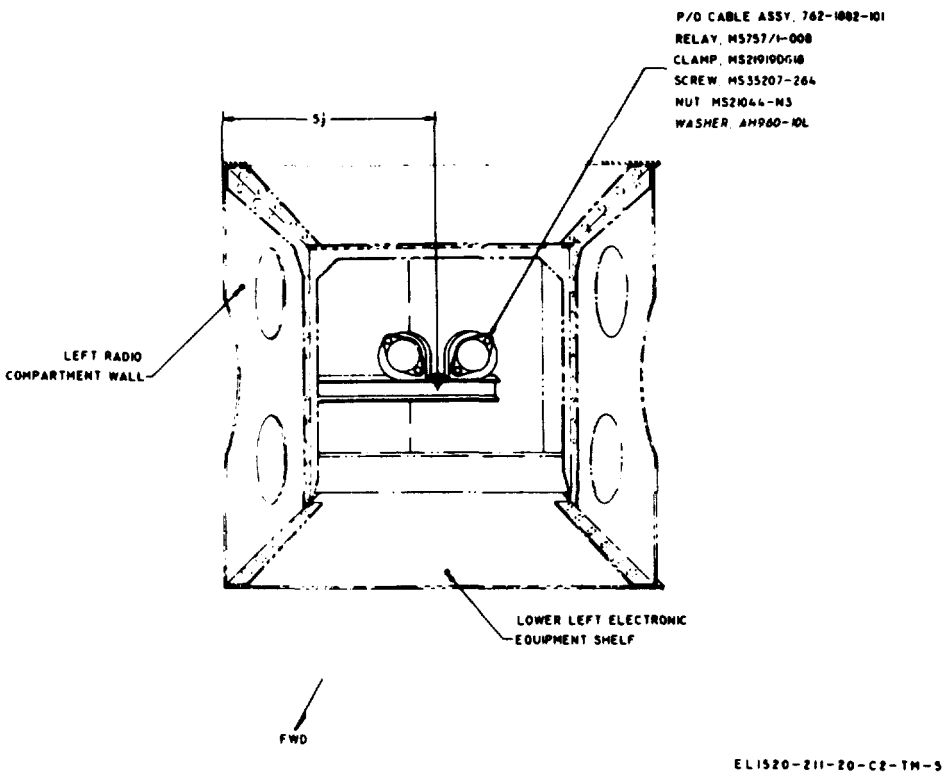


Figure 2-10.5. Location of VOR/HOMER relay.

(2) Using the front pullout handle, slide the receiver forward until the plug-in connector is disengaged, and lift the receiver from the mount.

b. Replacement.

(1) Position the receiver on the rack. Make sure that the plug-in connectors are properly aligned, and push the receiver into place.

(2) Tighten the holddown clamps, and install the safety wire.

2-37. Removal and Replacement of Transmitter, Radio T-879(*)/ARC-73

a. Removal.

(1) Cut the safety wire, and loosen the holddown clamps on the lower side of the transmitter.

(2) Using the front pullout handle, slide the transmitter forward until the plug-in connector is disengaged.

(3) Lift the transmitter from the mount.

b. Replacement.

(1) Position the transmitter on the rack.

(2) Align the plug-in connectors, and push the transmitter into place.

(3) Tighten the holddown clamps, and secure with the safety wire.

2-38. Removal and Replacement of Antenna 37R-2 (T-366 Transmitter)

(fig. 2-12 (1))

a. Removal.

(1) Remove the mounting screws, nuts, and washers that hold the antenna to the cabin.

(2) Pull the antenna out as far as the wires win permit and disconnect the electrical connectors.

b. Replacement.

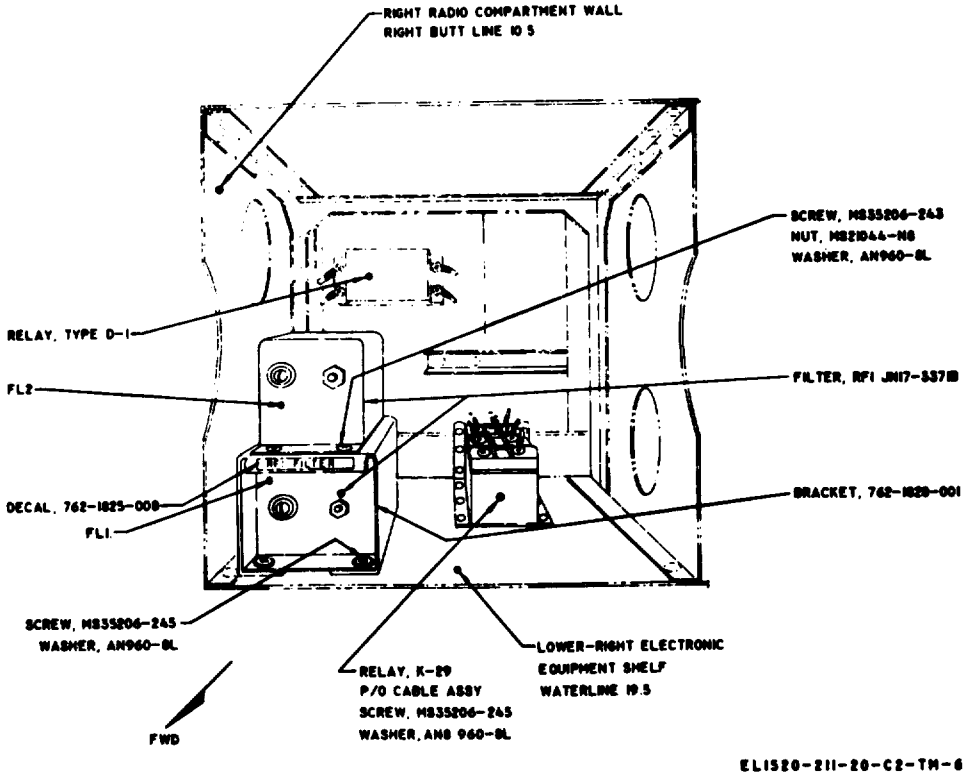


Figure 2-10.6. Location of AN/ARC-54 rfi *filter* and K29 relay.

(1) Position the antenna in place, and connect the electrical connectors.

(2) Install the mounting screws, nuts, and washers.

2-39. Deleted.

2-40. Deleted.

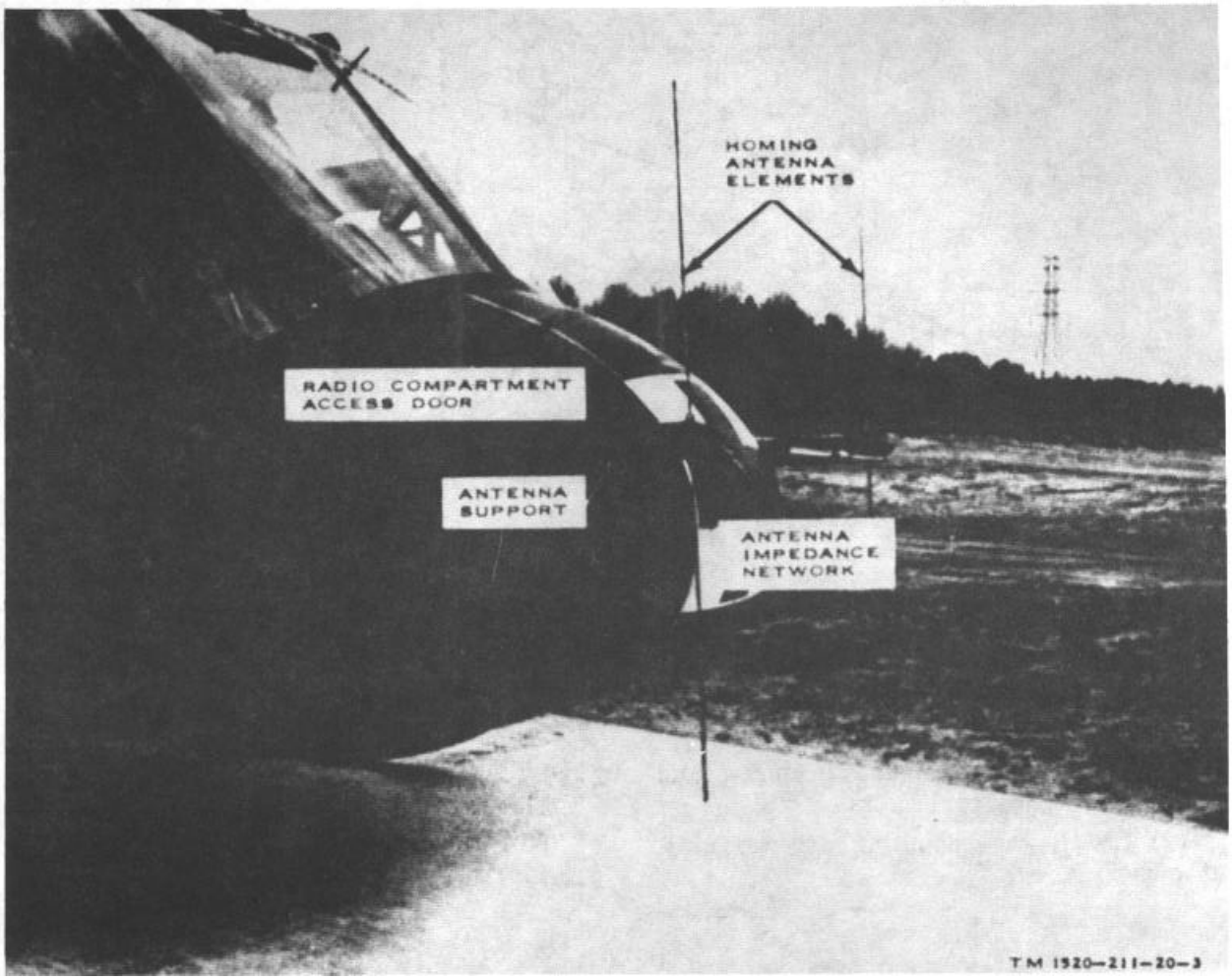


Figure 2-11. Location of Antenna Group AN/ARA-31 (configurations A, B, C, and D).

2-41. Removal and Replacement of Control, Radio Set C-4074A/ARC-73

a. Removal.

(1) Disconnect the cable from the rear of the remote control unit.

(2) Loosen and remove the mounting screws on the left and right edges of the front panel.

(3) Pull the remote control unit out of the mounting panel.

b. Replacement.

(1) Place the remote control unit in the mounting panel.

(2) Replace the mounting screws on the left and right edges of the front panel. Make sure that the remote control unit is held firmly in place.

(3) Connect the cable to the connector at the rear of the remote control unit.

2-42. Removal and Replacement of Receiver-Transmitter RT-698/ARC-102

a. Removal.

(1) Disconnect, tag, and protect the cables attached to the front connectors of the receiver-transmitter.

(2) Remove the safety wiring from the holddown clamp, and loosen the holddown clamp assembly.

(3) Carefully remove the receiver-transmitter.

b. Replacement.

(1) Place the receiver-transmitter on its mount, and push to engage the connector with the mount receptacle.

(2) Engage and tighten the holddown clamp assembly to the receiver-transmitter angle bracket.

(3) Safety-wire the holddown clamp, and connect the cables to the front connectors.

2-43. Removal and Replacement of Antenna, Longwire P/N 204-075-609 (AN/ARC-102}
(fig. 2-12)

a. Removal.

(1) Carefully disconnect the hf longwire antenna by disconnecting from feed-through insulator, front and rear shackles, and standoff insulators.

(2) Coil the longwire antenna into a neat package and stow.

b. Replacement.

(1) Uncoil the hf longwire antenna, and lay out under the tail boom to follow the tail boom pattern (both sides).

(2) Carefully install the hf longwire antenna with the existing hardware by attaching to the feedthrough insulator, standoff insulators, front support shackle, and rear support shackle.

(3) Equalize tautness between all supports, and tighten all nuts.

(4) Secure the shackle pins with cotter pins, installing them in front and rear shackles.

2-44. Removal and Replacement of Antenna, Longwire P/N 205-706-027

Procedures for removal and replacement of 205-706-027 antenna are the same as for the 204-075-609 antenna (para 2-43).

2-45. Removal and Replacement of Control, Radio Set C-3940/ARC-94 (AN/ARC-102)

a. Removal of C-3940/ARC-94.

(1) Release the four fasteners that hold the control unit.

(2) Remove the control unit from the pedestal, and disconnect the cable.

b. Replacement of C-3940/ARC-94.

(1) Place the control unit above the pedestal, and reconnect the cable.

(2) Place the control unit into the pedestal, and secure with the four mounting fasteners.

2-46. Removal and Replacement of Network, Impedance Matching CU-991 /AR (AN/ARC-102)
(fig. 4-1)

a. Removal.

(1) Disconnect the cables from the tuner.

(2) Cut the safety wire from the knurled thumbnuts of the mounting, and release the clamp by loosening the nuts.

(3) Pull the tuner forward from the rear retaining flange, and lift it from the mount.

b. Replacement.

(1) Place the tuner on its mount, and connect the cables.

(2) Slide the tuner into place to engage it to the rear retaining flange.

(3) Tighten the knurled thumbnuts of the mounting, and fasten with the safety wire.

2-47. Removal and Replacement of Transmitter T-366/ARC (Emergency Vhf)
(fig. 4-1)

a. Removal.

(1) Disconnect the electrical connectors from the transmitter, and cover the openings.

(2) Remove the nuts, bolts, and washers that secure the transmitter to the shelf.

(3) Lift the transmitter from the shelf.

b. Replacement.

(1) Position the transmitter in place.

(2) Install the bolts, washers, and nuts and tighten securely.

(3) Remove the covers from the openings, and install the electrical connectors.

2-48. Removal and Replacement of Control Panel PN 204-075-708 (T-366/ARC Transmitter)

a. Removal.

(1) Remove the panel from the left-hand side of the pedestal by loosening the attaching hardware.

(2) Disconnect the electrical connector from the rear of the control panel, and cover the openings.

b. Replacement.

(1) Connect the electrical connector at the rear of the control panel.

(2) Position the panel on the pedestal.

(3) Tighten panel fasteners.

2-49. Removal and Replacement of Dynamotor Dy-86/ARN-30 (T-366/ARC Transmitter)

a. Removal.

(1) Remove the RT-294(*)/ARC-44 fm receiver-transmitter (para 2-15a).

(2) Remove the safety wire that secures the mounting screws on the front of the dynamotor, and' remove the mounting screws.

(3) Slide the dynamotor forward to dis connect it from the electrical connector and guide pins at the rear of the dynamotor mounting.

(4) Slide the dynamotor out of the guide rail, and lift it from the mounting.

b. Replacement.

(1) Place the dynamotor in the dynamotor mounting.

(2) Slide the dynamotor to the rear of the dynamotor mounting until the electrical connectors and guide pins mate. Firmly seat the dynamotor on the electrical connector.

(3) Secure the dynamotor to its mounting with mounting screws.

(4) Secure the mounting screws with safety wire.

(5) Replace the fm receiver-transmitter (para 2-15b).

2-50. Removal and Replacements of Control Panel ARC Type C-80B (T-366/ARC Transmitter)

a. Removal.

(1) Remove the pedestal cover panel from the left-hand side of the pedestal.

(2) Disconnect the electrical connector from the rear of the control panel, and cover the opening.

(3) Remove the control panel by loosening the four spring-lock fasteners on the panel.

b. Replacement.

(1) Position the control panel on the pedestal, and tighten the mounting fasteners.

(2) Connect the electrical connector in

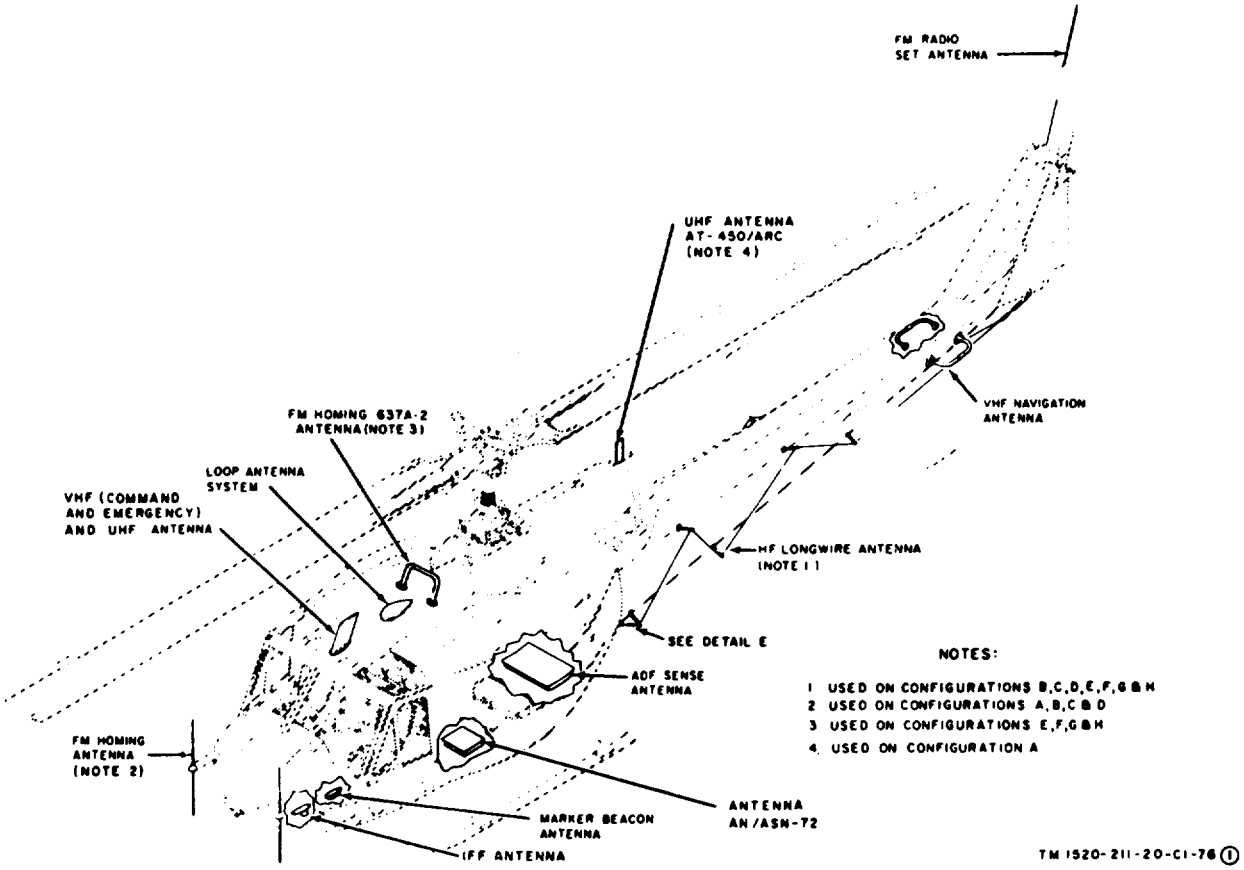


Figure 2-12(1). Helicopter antennas and antenna groups (part 1 of 4).

side the pedestal, and install the cover panel on the side of the ,pedestal.

(3) Tighten the four spring-lock fasteners on the face of the control panel.

2-51. Removal and Replacement of Receiver, Radio R-1021/ARN-30

(fig. 2-4)

a. Removal.

(1) Disconnect the antenna cable and electrical cable or mechanical linkage from the receptacles on the front of the vhf navigation receiver.

(2) Remove the link fasteners from the securing posts on the front of the vhf navigation receiver.

(3) Pull the vhf navigation receiver forward and out to disengage the electrical connectors from the receiver mounting.

b. Replacement.

(1) Place the vhf navigation receiver on its mounting, and slide it back to engage the connectors with the receptacles on the mounting.

(2) Place the link fasteners over the securing posts on the vhf navigation receiver, and secure the screws.

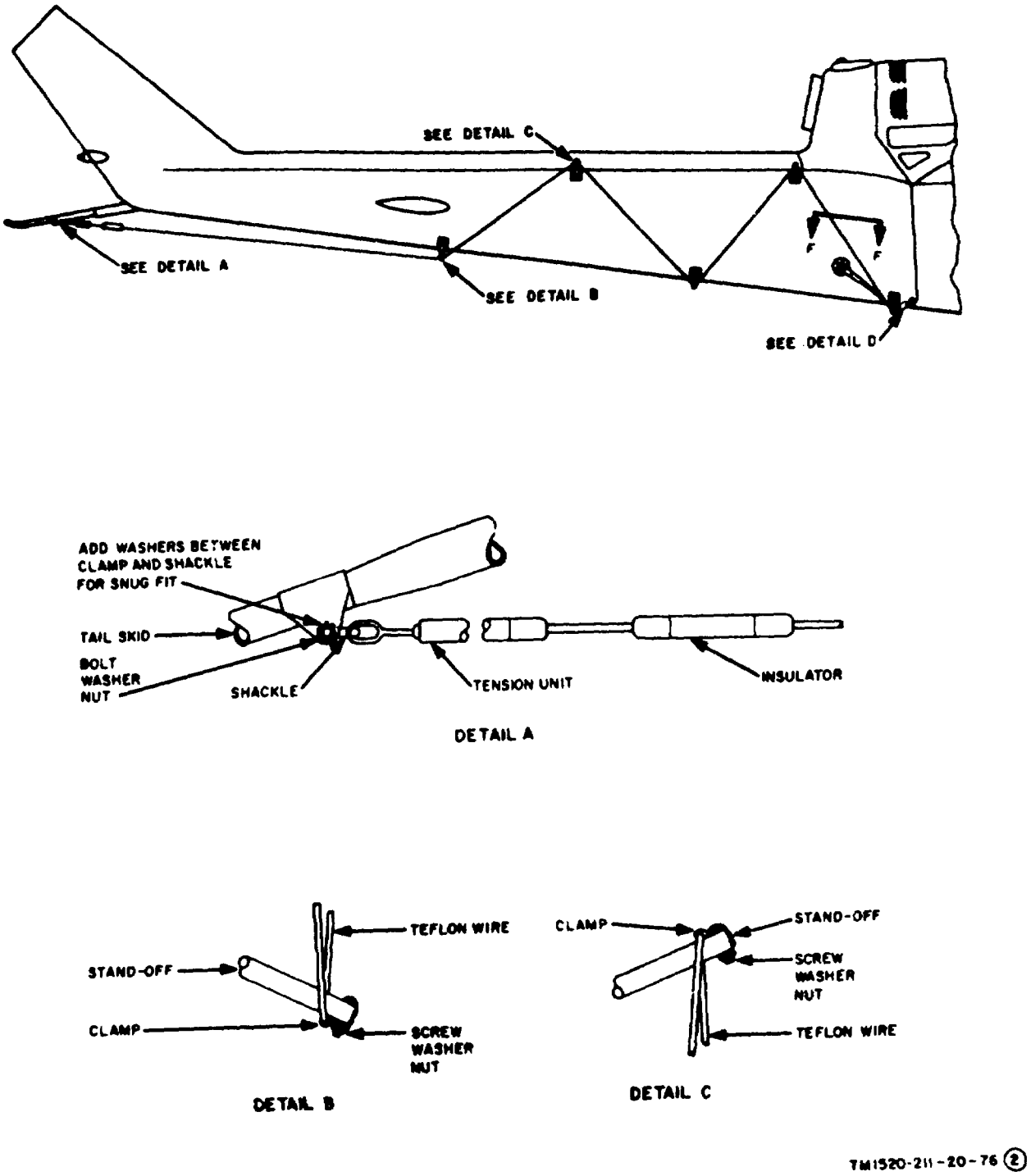
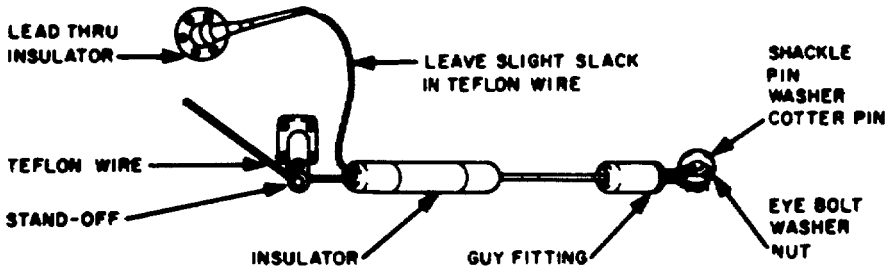
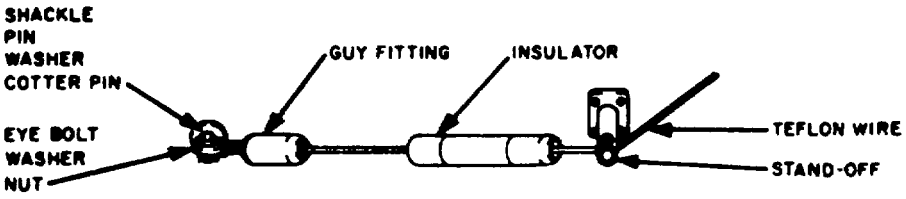


Figure 2-12 (2). Helicopter- antenna and antenna groups (part 2 of 4).



DETAIL D



DETAIL E

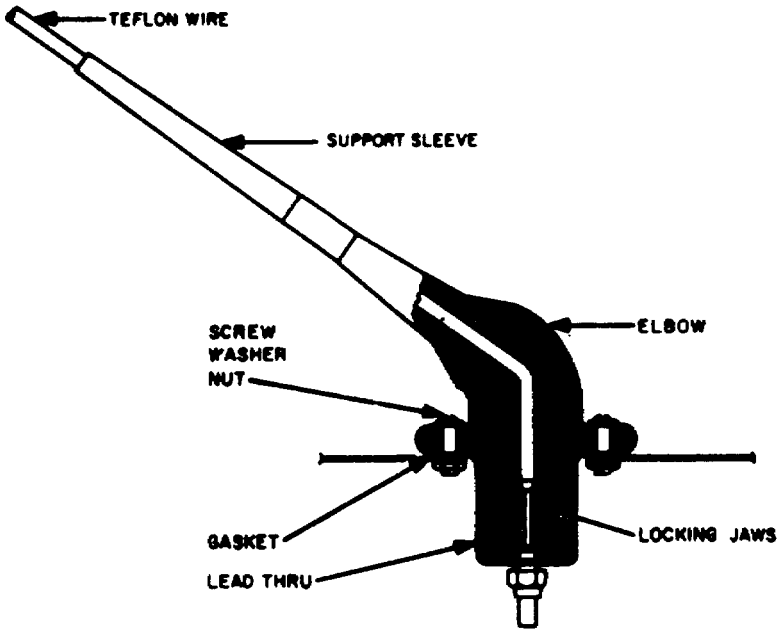


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Figure 2-12(3). Helicopter antennas and antenna group (part 3 of 4).

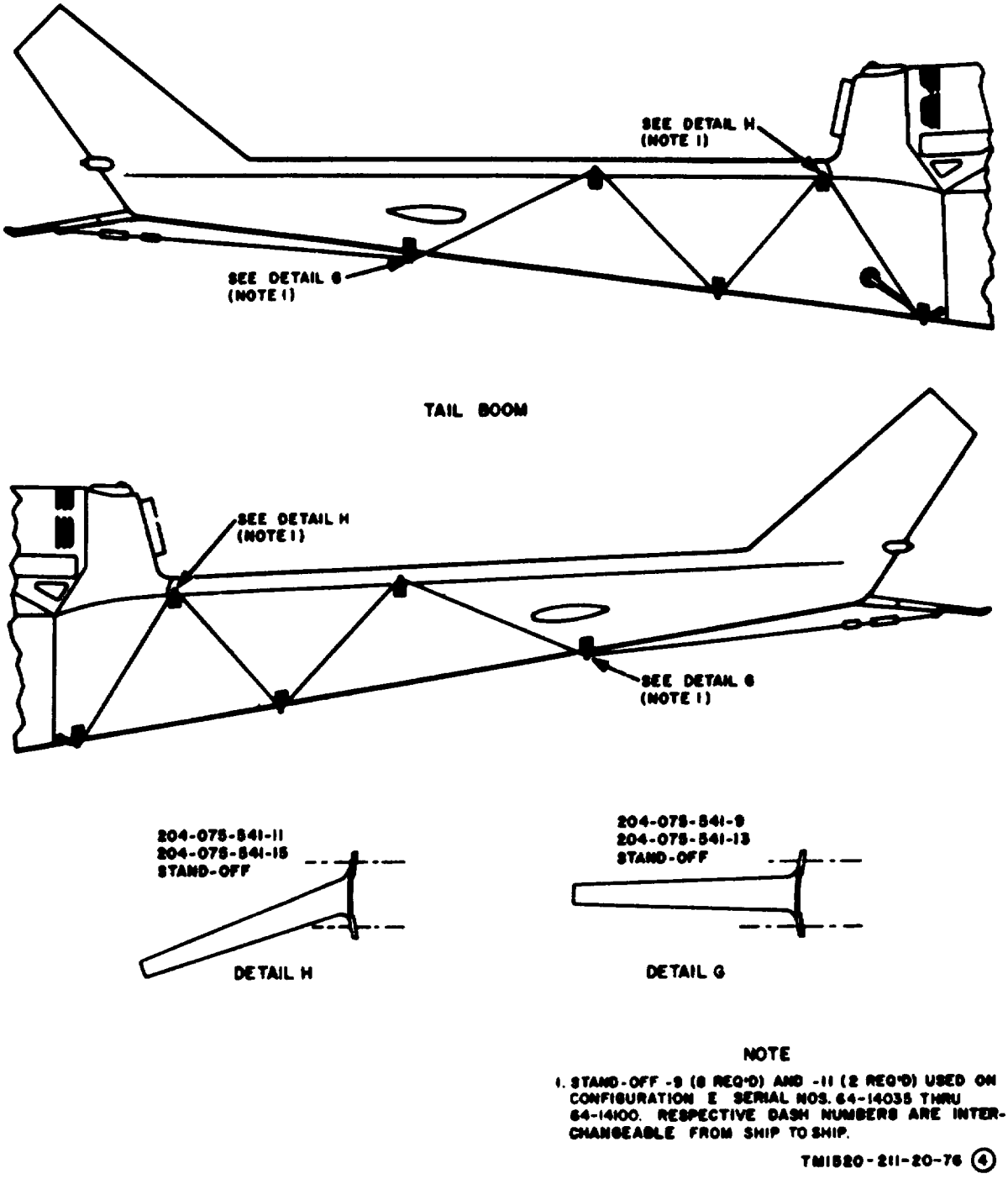


Figure 2-12(4). Helicopter antenna groups (part 4 of 4).

(3) Connect the electrical cable or mechanical linkage and the antenna cable to the receptacles on the front of the vhf navigation receiver.
(4) Safety-wire the connectors and link fasteners.

2-51.1. Removal and Replacement of Receiver, Radio R-1388/ARN-82 (fig. 2-12.1)

a. Removal.
(1) Disconnect the cables located onthe front of the receiver.
(2) Remove the safety wire (not shown) from the thumbnut on the front of the mounting.
(3) Loosen the thumbnut on the front of the mounting.
(4) Lift up the cylindrical latch, beneath the thumbnut, and swivel the cylindrical latch down so that it is free of the lip on the receiver.
(5) Slide the receiver out of the mounting.

b. Replacement.
(1) Slide the receiver into the mounting.
Note. The lip on the back of the receiver must fit snugly under the groove in the back of the mounting.
(2) Switch the cylindrical latch on the mounting up and engage it with the lip on the front of the receiver.
(3) Tighten the thumbscrew on the mount to secure the cylindrical latch.
(4) Safety-wire the thumbscrew to prevent it from working loose.
(5) Connect the receiver cables to the front of the receiver.

2-52. Removal and Replacement of Antenna AS-1304/ARN-30 (DMN4 4)
(fig. 2-13)

a. Removal.
(1) Remove the hardware that secures the antenna to the skin of the helicopter.
(2) Pull the antenna a short distance from the surface of the helicopter.
(3) Disconnect the coaxial connector from the antenna base.

b. Replacement.
(1) Hold the antenna a short distance from its mounting, and connect the coaxial cable from the vhf navigation receiver to the vor and localizer connector.
(2) Secure the antenna to the helicopter with the appropriate hardware removed in a(l) above.

2-53. Removal and Replacement of Power Supply PP-2792/ARN-30D

a. Removal.
(1) Remove the vhf navigation receiver (para 2-51a).
(2) Cut the safety wire, and slide the snap-slide fasteners away from the securing posts of the power supply.
(3) Lift the power supply free of its mounting.

b. Replacement.
(1) Position the power supply on its mounting, and firmly engage the connector with the mounting receptacle.
(2) Secure the power supply to the mounting with the self-container, snap-slide fasteners.
(3) Install the safety wire on each snapslide fastener.
(4) Replace the vhf navigation receiver (para 2-51b).

2-54. Removal and Replacement of Converter, Signal Data CV-265A/ARN-30
(fig. 2-14)

a. Removal of CV-265A/ARN-40.
(1) Loosen the knurled nuts, and drop the link fasteners from the securing posts on the front of the converter.
(2) Pull the converter slightly forward to disconnect the electrical connectors at the rear of the converter mounting.
(3) Slide the converter forward, and lift it from the mounting.

b. Replacement of CV-265A/ARN-30.
(1) Place the converter on its mounting, and ???? it back to engage its connect it with the mounting receptacle.

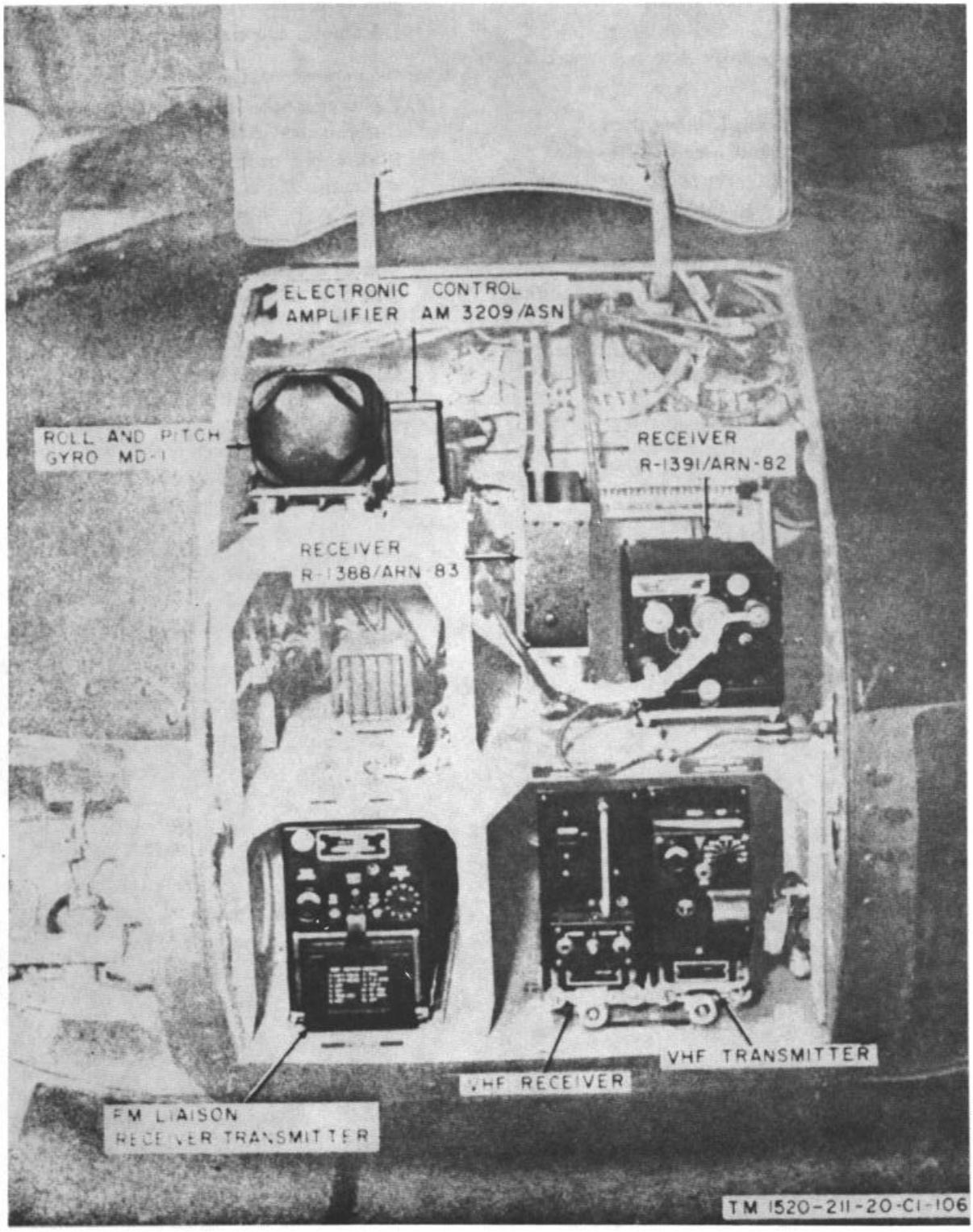


Figure 2-12.1. Location of electronic components in forward radio compartment.

(2) Place the link fasteners over the securing posts on the converter.

(3) Tighten the knurled nuts on the link fasteners to secure the converter to its mounting.

2-55. Removal and Replacement of Indicator, Course ID-453/ARN-30

a. Removal of ID-453/ARN-3O.

(1) Snap down the light shield, and remove the lamps.

(2) Remove the mounting screws (at each corner), and remove the light shield from the course indicator.

(3) Slide the indicator out of the instrument panel, and disconnect the electrical connector at the rear of the course indicator.

(4) Remove the course indicator.

b. Replacement of ID-453/ARN-O.

(1) Connect the electrical connector to the course indicator.

(2) Slide the course indicator into the instrument panel.

(3) Place the light shield on the course indicator, and secure the light shield and the course indicator to the instrument panel with the mounting screws.

(4) Insert the lamps in the lamp shield, and snap up the light shield.

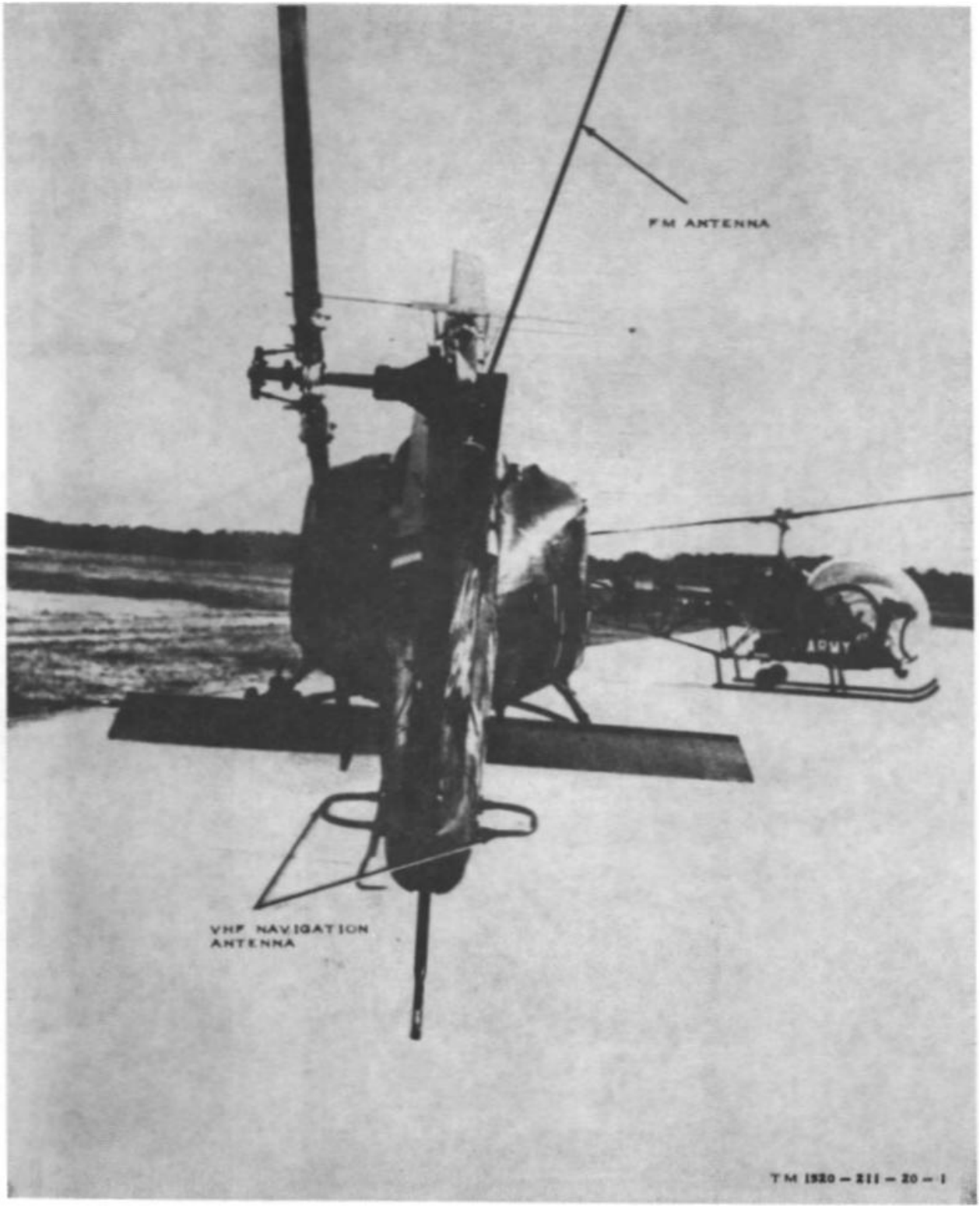


Figure 2-13. Location of vhf navigation Antenna AS-1304/ARN (DMN4-4).

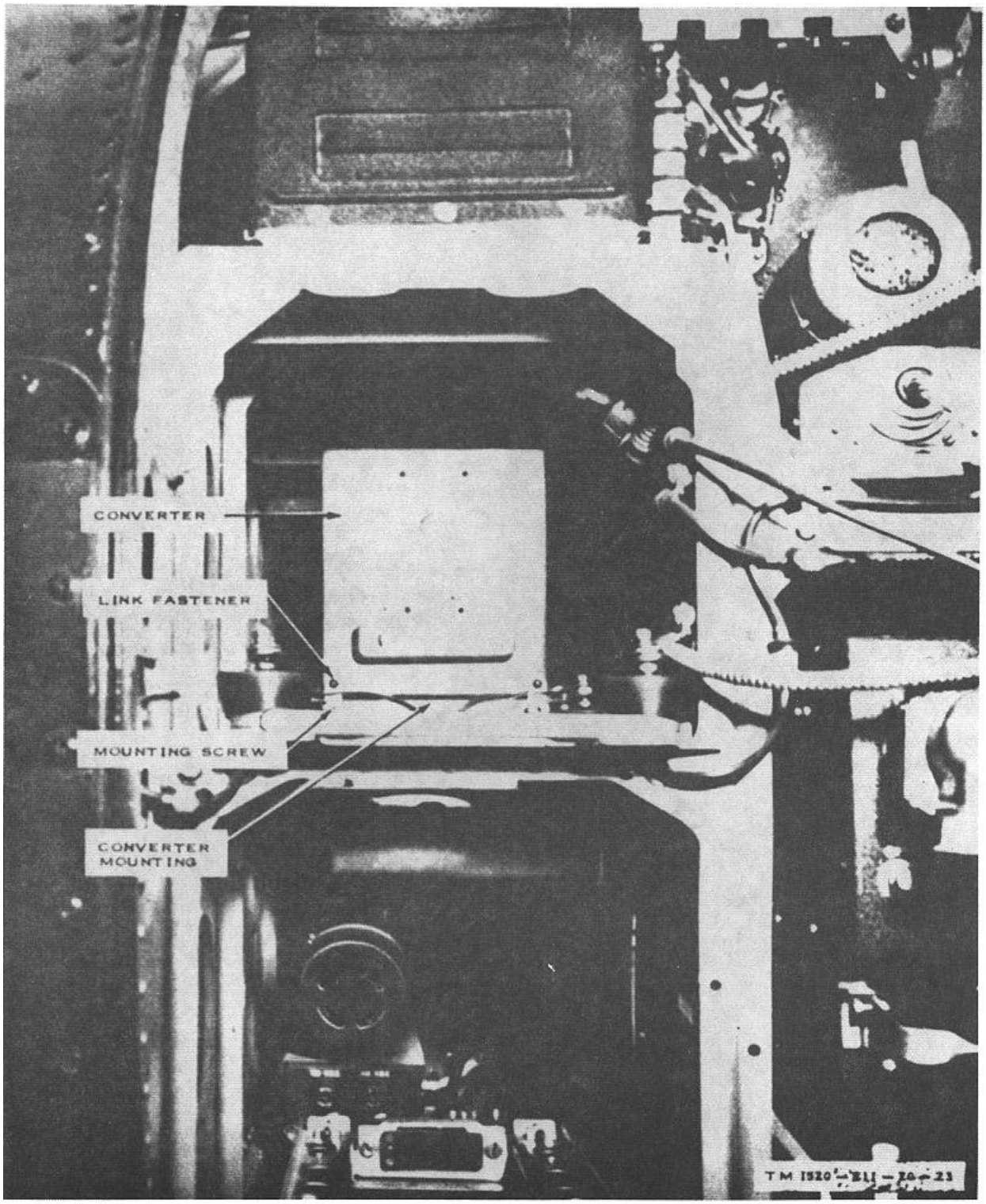


Figure 2-14. Converter, Signal Data CV-265A/ARN-30A installed.

2-55.1 Removal and Replacement of Indicator, Course ID-1347/ARN-82
(fig. 2-24.2)

a. Removal.

(1) Remove the screws that secure the light shield to the course indicator and remove the light shield.

(2) Loosen the four screws that secure the course indicator to the aircraft instrument panel.

(3) Pull the course indicator out of the aircraft instrument panel and disconnect the cable from the rear of the course indicator.

b. Replacement.

(1) Connect the course indicator cable to the rear of the course indicator.

(2) Insert the course indicator into the aircraft instrument panel and secure the course indicator with the four screws.

(3) Place the light shield on the course indicator and secure the light shield to the course indicator with the mounting screws.

2-56. Removal and Replacement of Control, Radio Set C-3436/ARN-30D or C-3436A/ARN-30E

a. Removal.

(1) Loosen the spring-lock fasteners that secure the vhf navigation control unit to the radio control console.

(2) Lift the vhf navigation control unit from the radio control console.

(3) Disconnect the mechanical linkage and electrical connectors from the rear of the vhf navigation control unit as necessary to free the control unit.

b. Replacement.

(1) Connect the mechanical linkage and electrical connector to the rear of the vhf navigation control unit.

(2) Position the vhf navigation control unit in the radio control console.

(3) Secure the vhf navigation control unit to the radio control console with the spring-lock fasteners.

2-56.1 Removal and Replacement of Control, Radio Set C-6873/ARN-82
(fig. 2-15.1)

a. Removal.

(1) Loosen the four captive Dzus fasteners that secure the control unit to the radio control console.

(2) Pull the control unit out of the radio control console then disconnect the cable from the rear of the control unit.

b. Replacement.

(1) Connect the control unit cable to the rear of the unit.

(2) Insert the control unit into the radio control console and fasten the four Dzus fasteners securely.

2-57. Removal and Replacement of Receiver, Radio R-348/ARN-54 (Adf Receiver)
(fig. 2-9)

a. Removal.

(1) Disconnect the mechanical linkage from the adf receiver front panel.

(2) Disconnect the antenna cable plugs from the receptacles on the adf receiver front panel.

(3) Disconnect the electrical connectors from receptacles J101 and J103.

(4) Cut and remove the safety wire, and loosen the two link fasteners on the front of the adf receiver mounting.

(5) Lift up the front of the adf receiver to clear the mounting, and remove the adf receiver.

b. Replacement.

(1) Position the adf receiver on its mounting.

(2) Secure the adf receiver to its mounting with the two link fasteners on the front of the receiver mounting.

(3) Engage the electrical and antenna connectors with their receptacles on the adf receiver front panel.

(4) Connect the mechanical linkage to the receptacle on the receiver front panel.

(5) Install the safety wire on the two link fasteners.

2-57.1 Removal and Replacement of Receiver, Radio R-1391/ARN-83 (Adf Receiver)
(fig. 2-12.1)

a. Removal.

(1) Disconnect sense antenna and loop antenna cable connectors at front of receiver.

(2) Cut and remove the safety wire, and loosen the nut at front of receiver mount which engages a hook on receiver. After loosening, push nut down to clear front of receiver.

(3) Grasp handle at front of receiver and pull receiver forward, removing receiver off mount.

b. Replacement.

(1) Slide receiver onto receiver mount and make certain that connector at rear of receiver mates with connector at the rear of receiver mount.

(2) Engage nut at front of receiver mount with hook at front of receiver and tighten nut.

(3) Connect sense and loop antenna cables.

(4) Install safety wire on nut.

2-58. Removal and Replacement of Antenna AT-780/ARN
(fig. 2-15)

a. Removal.

(1) From inside the helicopter, disconnect the two cables from the adf antenna.

(2) Outside the helicopter, remove the machine screws that secure the adf antenna cover to its housing.

(3) Lift the cover, and remove the gasket from the antenna housing.

(4) Remove the screws that secure the antenna to its mounting; carefully remove the antenna.

b. Replacement.

(1) Position the antenna on its mounting, and secure it with screws.

(2) Replace and cement a new gasket between the antenna housing and the antenna cover.

(3) Cement the underside of the antenna cover, and position the cover over the antenna housing.

(4) Secure the cover to the antenna housing with the machine screws.

(5) From inside the helicopter, connect the two cables to the antenna.

2-58.1 Removal and Replacement of Antenna AS-1863/ARN-83 (fig. 2-10.3)

a. Removal.

(1) From inside the helicopter, disconnect the cable from the adf antenna.

(2) Outside the helicopter, remove the machine screws that secure the adf antenna to helicopter roof.

(3) Lift the antenna, and remove the sealant from the antenna.

b. Replacement.

(1) Seal the underside of the antenna.

(2) Position the antenna on helicopter roof and secure it with screws.

(3) From inside the helicopter, connect the cable to the antenna.

2-59. Removal and Replacement of Dynamotor DY-150SO/ARN
(fig. 2-9)

a. Removal.

(1) Disconnect the electrical connector from the adf dynamotor.

(2) Cut the safety wire from the link fasteners.

(3) Remove the link fasteners from the securing posts on the front of the dynamotor.

(4) Lift up the dynamotor, and remove it from its mounting.

b. Replacement.

(1) Place the dynamotor on its mounting, and secure with the link fasteners.

(2) Connect the electrical connector to the dynamotor receptacle.

(3) Install the safety wire on the link fasteners.

2-60. Removal and Replacement of Control, Receiver C-2275/ARN

a. Removal of C-2275/ARN.

(1) Loosen the spring-lock fasteners that secure the control panel to the radio control console.

(2) Lift the adf control, and disconnect the mechanical linkage at the rear of the control panel.

(3) Disconnect the electrical connector from the rear of the control panel.

(4) Remove the control panel.

b. Replacement of C-2275/ARN.

(1) Engage the electrical connector with the receptacle at the rear of the control panel.

(2) Connect the mechanical linkage to the receptacle at the rear of the control panel.

(3) Position the control panel in the radio control console, and secure it with the spring-lock fasteners.

2-60.1 Removal and Replacement of Control, Direction Finder C-6899/ARN-83

(figs. 2-15.1 and 2-15.2)

a. Removal.

(1) The control unit is secured to the

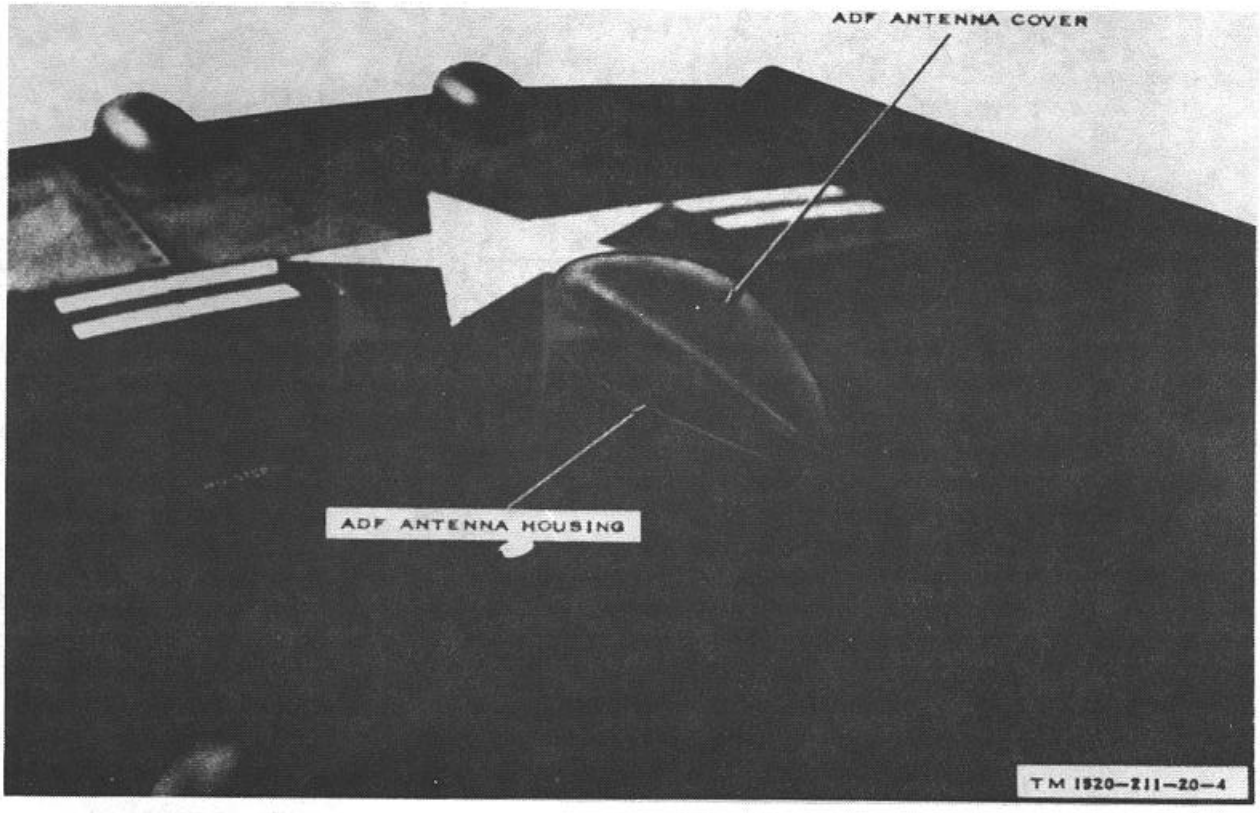
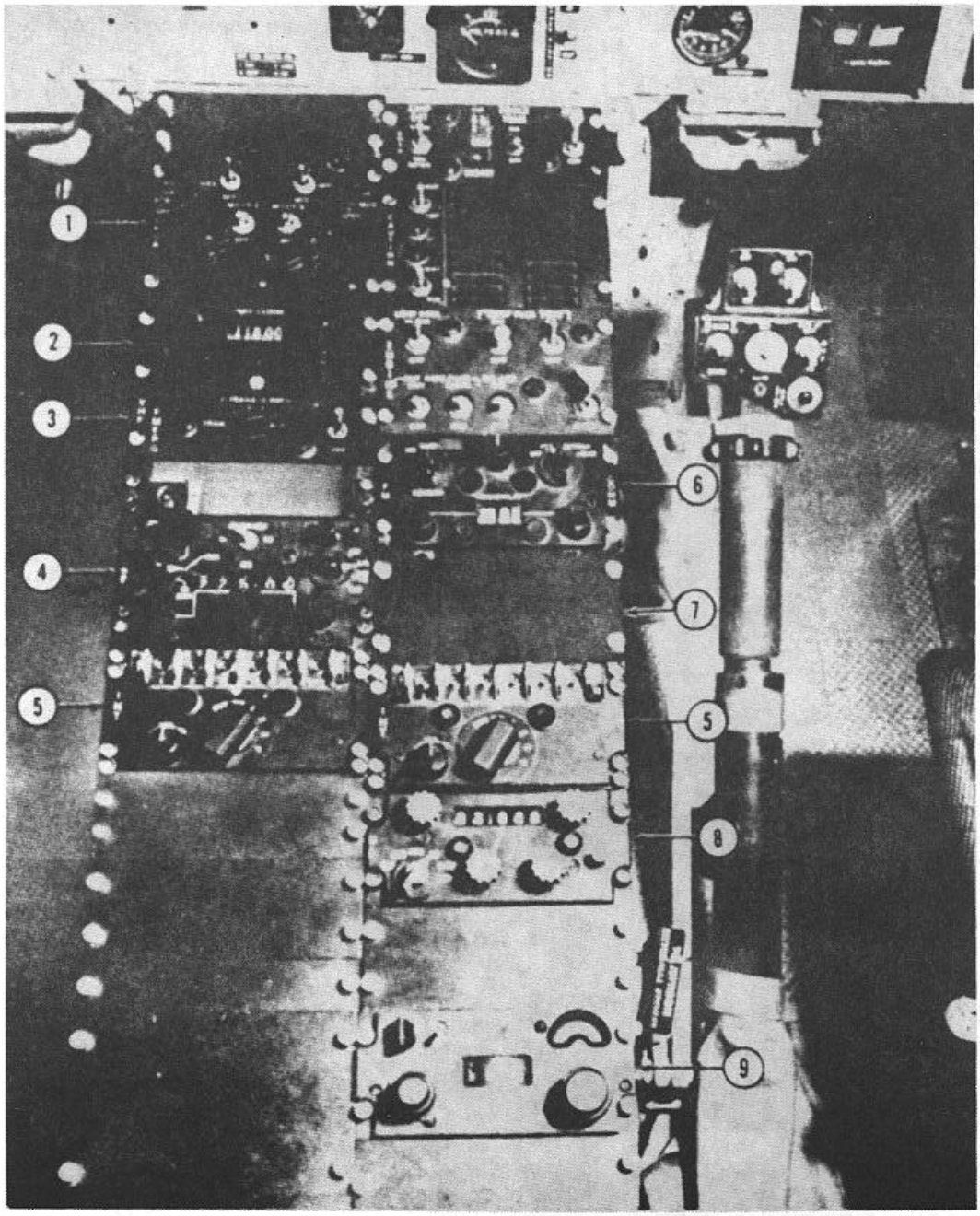


Figure 2-15. Location of Antenna AT-780/ARN and antenna housing



1. TRANSPONDER CONTROL
2. VHF NAV CONTROL
3. VHF EMERGENCY CONTROL
4. UHF CONTROL
5. SIGNAL DISTRIBUTION CONTROL
6. FM LIAISON CONTROL
7. PROVISIONS FOR VOICE SECURITY CONTROL
8. HF CONTROL
9. ADF NAV CONTROL

EL1520-211-20-C2-TM-71

Figure 2-15.1 Typical radio control console.

radio control console with four Dzus type, quarter-turn fasteners (one fastener at each corner of control panel). Loosen the four fasteners and remove control unit.

(2) Remove the cable and connector at the rear of control unit.

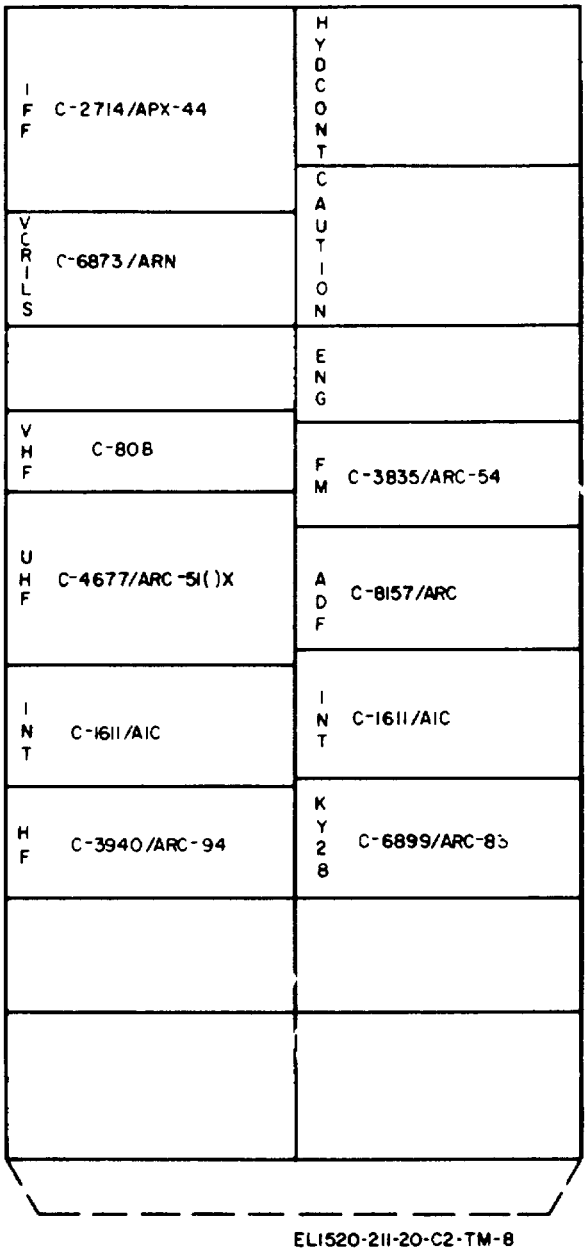


Figure 2-15.2 Typical pedestal configuration.

b. Replacement.

(1) Reconnect cable and connector at rearof control unit.

(2) Mount control unit on radio control console and tighten the four quarterturn fasteners.

2-61. Removal and Replacement of Adf Antenna, Sense 204-075-328 (AN/ARN-59)

a. Removal.

(1) Inside the helicopter, disconnect the electrical connector from the sense antenna connector.

Note. The sense antenna connector can be reached through the access door on the left side of the helicopter at the forward end of the tail boom.

(2) Outside the helicopter, remove the screws that secure the sense antenna housing (fig. 2-39) to the bottom of the helicopter.

(3) Remove the sense antenna housing and the sense antenna inside the housing as a unit.

b. Replacement of Adf Sense Antenna.

(1) Place the sense antenna housing, with the sense antenna inside, in position at the underside of the helicopter.

(2) Secure the sense antenna housing to the helicopter with screws.

(3) Inside the helicopter, connect the electrical connector to the sense antenna connector.

2-62. Removal and Replacement of Receiver, Radio R-1041A/ARN (Marker Beacon)

a. Removal of R-1041A/ARN.

(1) Remove the R-836/ARN adf receiver (para 2-57).

(2) Loosen the four spring-lock fasteners on the receiver front panel, and pull the R-1041A,'ARN panel forward.

(3) Disconnect the antenna connector.

(4) Disconnect the power plug and lift out the receiver.

b. Replacement of R-I041A/ARN.

(1) Connect the power plug.

(2) Connect the antenna connector.

(3) Insert the receiver in the mounting bracket, and secure the spring-lock fasteners.

(4) Set the R-836/ARN adf receiver in place (para 2-57).

2-63. Removal and Replacement of Antenna 37X-2, 37RX-2, or AT-640A/ARN (Marker Beacon)
(fig. 2-16)

a. Removal of Marker Beacon Antenna.

(1) Remove the screws that secure the antenna to the helicopter frame.

(2) Pull the antenna down to reach the antenna cable connector.

(3) Disconnect the antenna cable connector from the base of the antenna.

(4) Remove the antenna.

b. Replacement of Marker Beacon Antenna.

(1) Connect the cable connector from the helicopter to the receptacle in the antenna base.

(2) Position the antenna over the cutout in the helicopter frame, and secure it in place with the screws.

2-64. Removal and Replacement of Element, Antenna AT-624/AR (AN/ARN-31)
(fig. 2-11 and 2-17)

a. Removal of AT-624/AR.

(1) Loosen the setscrew (fig. 2-17) that secures each homing antenna element.

(2) Unscrew the homing antenna elements from the antenna adapter.

(3) Remove the three mounting screws that secure the antenna adapter to the adapter housing.

(4) Lift the antenna adapter out of the adapter housing, and disconnect the homing antenna cable from the antenna adapter.

(5) Remove the bolts and washers that secure the antenna support (fig. 2-11) and remove the antenna support.

Caution: Be careful not to damage the homing antenna cable that runs through the antenna support.

b. Replacement of AT-624/AR.

(1) Run the homing antenna cable that

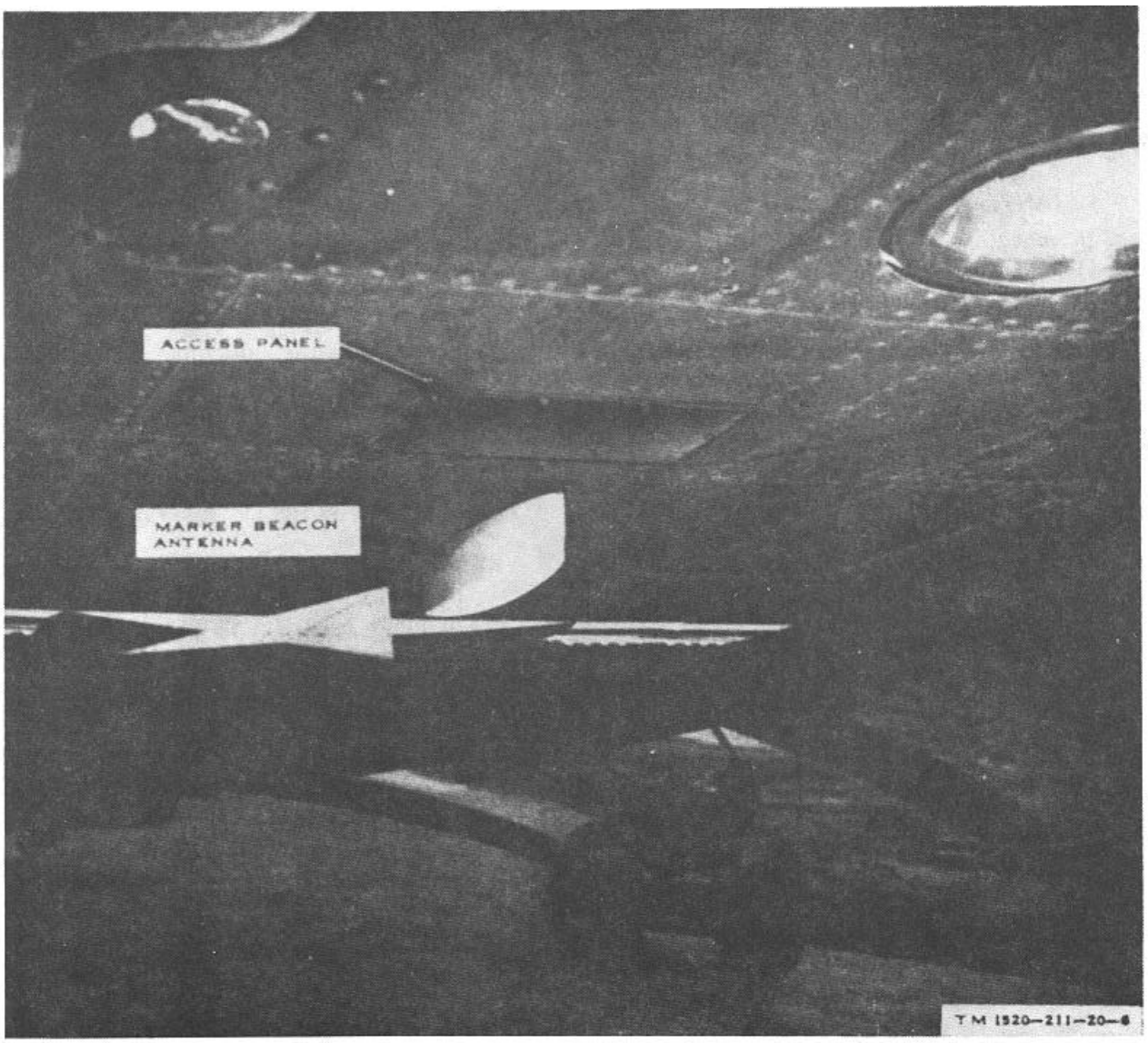


Figure 2-16. Location of Antenna 37X-2, 37RX-2, or AT-64OA/ARN.

extends through the antenna keyer cover through the antenna support.

(2) Secure the antenna support with the bolts and washers.

(3) Connect the homing antenna cable to the receptacle at the rear of the antenna adapter.

(4) Insert the antenna adapter into the adapter housing.

(5) Screw the two homing antenna elements into the antenna adapter, and handtighten each homing antenna element.

(6) Secure each homing antenna element to the antenna adapter.

(7) Apply staking lacquer to both setscrews in each homing antenna element, and tighten the setscrews.

(8) Adjust the completed assembly so that the homing elements are in a vertical position.

(9) Secure the antenna adapter to the adapter housing with the mounting screws.

2-65. Removal and Replacement of Network, Impedance Matching CU-459/AR (AN/ARA-31)

(fig. 2-17)

a. Removal of CU-459/AR.

(1) Remove the three screws that hold the antenna impedance-matching network units to their mounts.

(2) Disconnect the cables attached to the impedance-matching units.

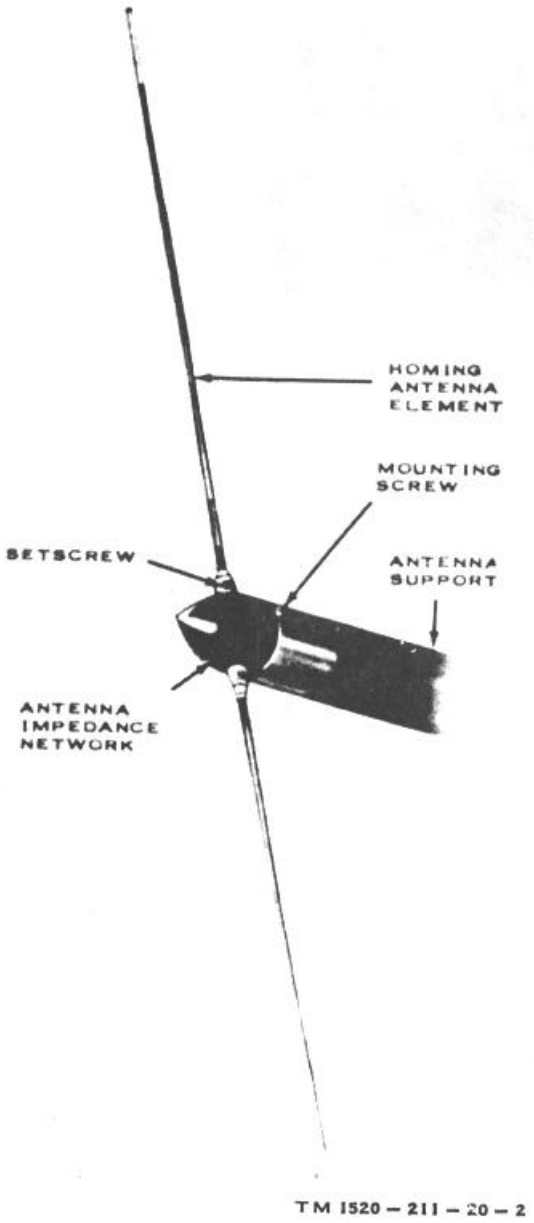


Figure 2-17. Antenna Elements AT--624(*)/AR with CU-459/AR

(3) Remove the CU.-459/AR.

b. Replacement of CU-459/AR.

(1) Connect cables to the impedance matching units.

(2) Mount the antenna impedance-matching network so that the elements are in a vertical position. When the elements are placed in a vertical position, the mounting holes on the impedance-matching units should be aligned with the mounting holes on their mounts.

***Note*. When installing impedance-matching units, rotate one unit 180° in relation to the other.**

(3) Secure the impedance-matching units in position with the mounting screws.

2-66. Removal and Replacement of Keying Unit KY-149/AR (AN/ARA-31 Only)

(fig. 2-18)

a. Removal of Antenna Keyer.

(1) Loosen the spring latches on each side of the antenna keyer cover, and raise the cover.

(2) Tag each of the antenna cables for identification, and disconnect the four antenna cables from the front receptacles on the antenna keyer.

(3) Remove the safety wire, and disconnect the power connector from the 28-volt dc receptacle.

(4) Remove the safety wire, and unscrew the two mounting screws at the front of the antenna keyer.

(5) Lift the front of the antenna keyer over the front mounting stud (not shown), and pull the antenna keyer forward to disengage the two guide pins at the rear of the mounting.

b. Replacement of Antenna Keyer.

(1) Slide the antenna keyer onto its mounting until it is firmly engaged with the rear guide pins and the front mounting stud.

(2) Tighten and safety-wire the two mounting screws.

(3) Connect and safety-wire the power connector to the 28-volt dc receptacle.

(4) Connect the four antenna cable connectors to the tagged (a(2) above) front receptacles on the antenna keyer.

(5) Set the antenna keyer cover in place, and secure the spring latches on each aide.

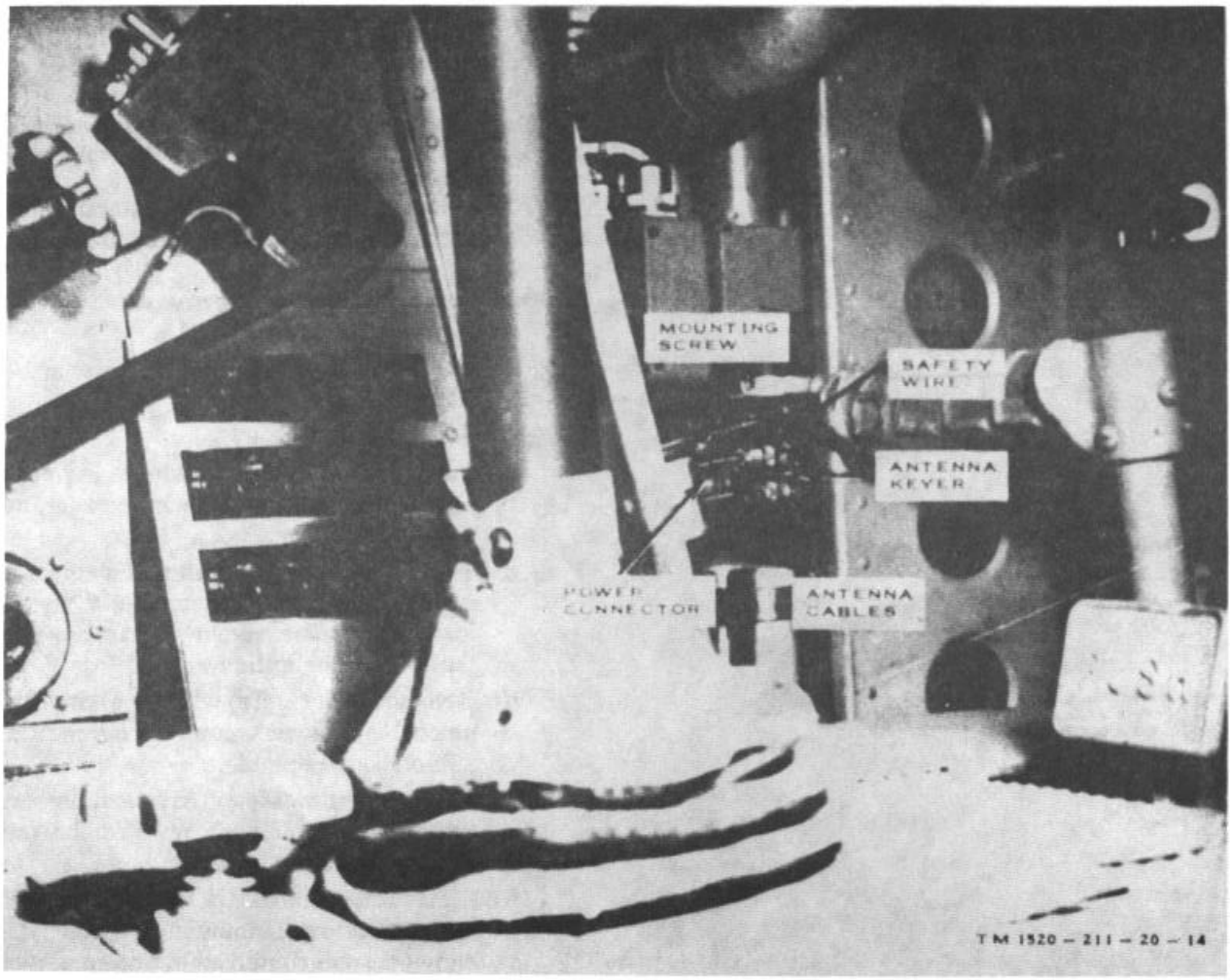


Figure 2-18. Location of Keying Unit KY-149(*)/AR.

2-67. Removal an Replacement of Remote Induction Compass Transmitter T-611/ASN (Aircraft Magnetic Compass Type J2)
(fig. 2-19)

a. Removal.

(1) Remove the screws that secure the remote compass transmitter to its mounting bracket.

(2) Remove the remote compass transmitter and single-cycle error compensator (CN-4056/ASN) as a unit.

(3) Remove the screws that secure the single-cycle error compensator (CN405/ASN) to the remote compass transmitter.

(4) Remove the single-cycle error compensator.

(5) Remove nuts and washers that secure wires to remote compass transmitter and tag wires.

b. Replacement.

(1) Connect the tagged wires to the remote compass transmitter and secure with washers and nuts.

(2) Place the single-cycle error compensator on the remote compass transmitter and secure with mounting screws.

(3) Place the remote compass transmitter and single-cycle error compensator (CN-405/ASN), as a unit, into the mounting bracket.

Note

Check to see that the mounting flange graduations on the remote compass transmitter are facing the forward portion of the helicopter.

(4) Secure the remote compass transmitter to its mounting bracket with the mounting screws.

2-67.1 Removal and Replacement of PWS Antennas (fig. 2-18.1)

a Removal of forward PWS Antenna.

(1) Open the circuit breaker panel on the copilot's side.

(2) Disconnect the antenna cable connector from the base of the PWS antenna.

(3) On top of the aircraft above the circuit breaker panel, remove the screws which secure the antenna wedge and washer assembly from the nuts inside the aircraft.

(4) Remove traces of RTV sealant from antenna and aircraft.

Note

When the Proximity Warning Facility antenna is not scheduled for replacement, the mounting holes for the antenna must be covered. Use a plug or plate on large holes and screws when applicable (on mounts

b. Replacement of Forward PWS Antenna.

(1) On top of the aircraft above the circuit breaker panel, position the tapered wedge over the hole for the PWS antenna with the thin edge facing forward.

(2) Position the antenna on top of the wedge and align holes.

(3) Insert one 8-32x3/4 inch screw into the forward hole of the antenna and three 8-32x7/8 inch screws in the remaining holes.

(4) In the aircraft cabin under the antenna, install the washer assembly and secure with nuts previously removed.

(5) Connect the antenna cable to the PWS antenna connector and close circuit breaker console.

(6) Apply a small bead of RTV sealant between the aircraft skin and wedge assembly, and a second bead between the antenna and wedge assembly.

c. Removal of Aft PWS Antenna

(1) Underneath the aircraft, remove the 23 diameter rearmost access door.

(2) Reach inside the access door and disconnect the antenna cable connector from the Aft PWS antenna.

(3) Remove the four screws which secure the Aft PWS antenna, wedge assembly, washer and nuts.

(4) Remove traces of RTV sealant from antenna and aircraft.

Note

When the Proximity Warning Facility antenna is not scheduled for replacement, the mounting holes for the antenna must be covered. Use a plug or plate on large holes and screws when applicable on mounts.

d. Replacement of Aft PWS Antenna

(1) Underneath the aircraft aft of the rear access door, position the tapered wedge over the hole for the PWS antenna with the thin edge facing forward.

(2) Position the antenna on top of the wedge and align holes.

(3) Insert one 8-32x3/4 inch screw into the forward hole of the antenna and three 8-32x7/8 inch screws in the remaining holes.

(4) Inside the access hole, position the washer assembly previously removed and secure with four nuts.

(5) Connect the antenna cable to the Aft PWS antenna connector.

(6) Replace the rear access door.

(7) Apply a small bead of RTV sealant between the aircraft skin and wedge assembly and a second bead between the antenna and wedge assembly.

2-67.2 Removal and Replacement of PWS Receiver-Transponder (fig. 2-18.1)

a. Removal of PWS Receiver-Transponder YG-1054.

(1) The receiver-transponder YG-1054 is secured to the radio control console with four Dzus type, quarter-turn fasteners (one fastener at each corner of the panel). Loosen the four fasteners and lift the unit clear of the console.

(2) Remove the antenna cables, power cable and static air line at the rear of the unit.

(3) Remove the receiver-transponder from console.

Note.

When the Proximity Warning Facility YG- 105.1 (receiver/transponder) is removed from the aircraft, the static air line which was fastened to the PWS unit must be plugged ad tested prior to flight.

b. Replacement of PWS Receiver-Transponder YG-1 054.

(1) Reconnect the power cable, antenna cables and static air line at the rear of the receiver-transponder.

(2) Mount the receiver-transponder on the radio control console and tighten the four quarter-turn fasteners.

2-67.3 Parts Replacement of Lamps in PWS Receiver Transponder

a. To replace the POWER lamp, unscrew the lamp lens by turning CCW, remove and discard old lamp and install the new lamp Replace lamp lens.

b. To replace any of the intruder ABOVE EQUAL, or BELOW lamps, remove the two screws that secure the directional display and lamp filter. Remove and replace lamp attach filter, and replace directional display. Secure with two screws previously re moved.

Figure 2-18. 1 Location and Components of Proximity Warning Facility Antennas.

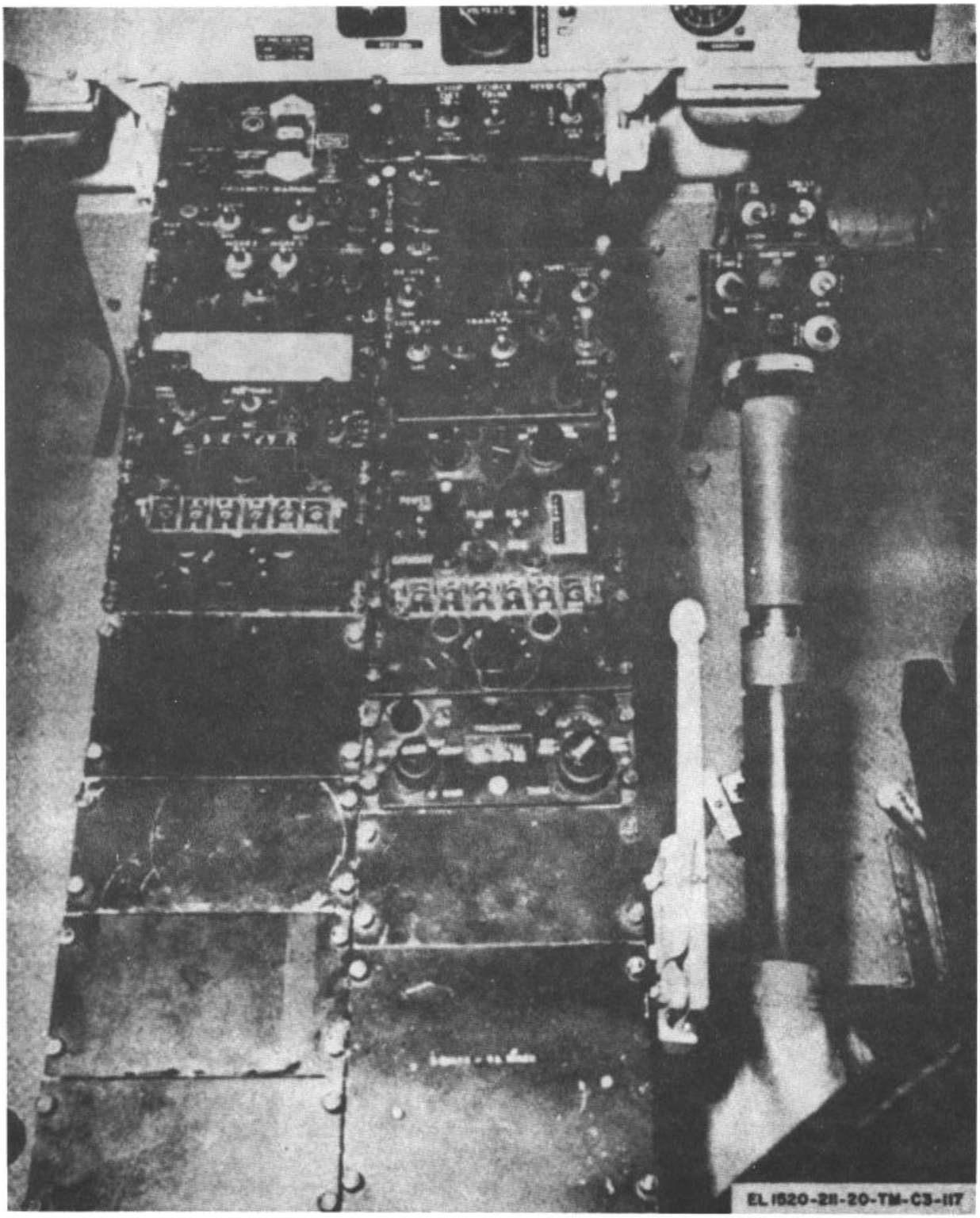


Figure 2-18.2 Location of Proximity Warning Facility, Receiver-Transponder YG-1054.

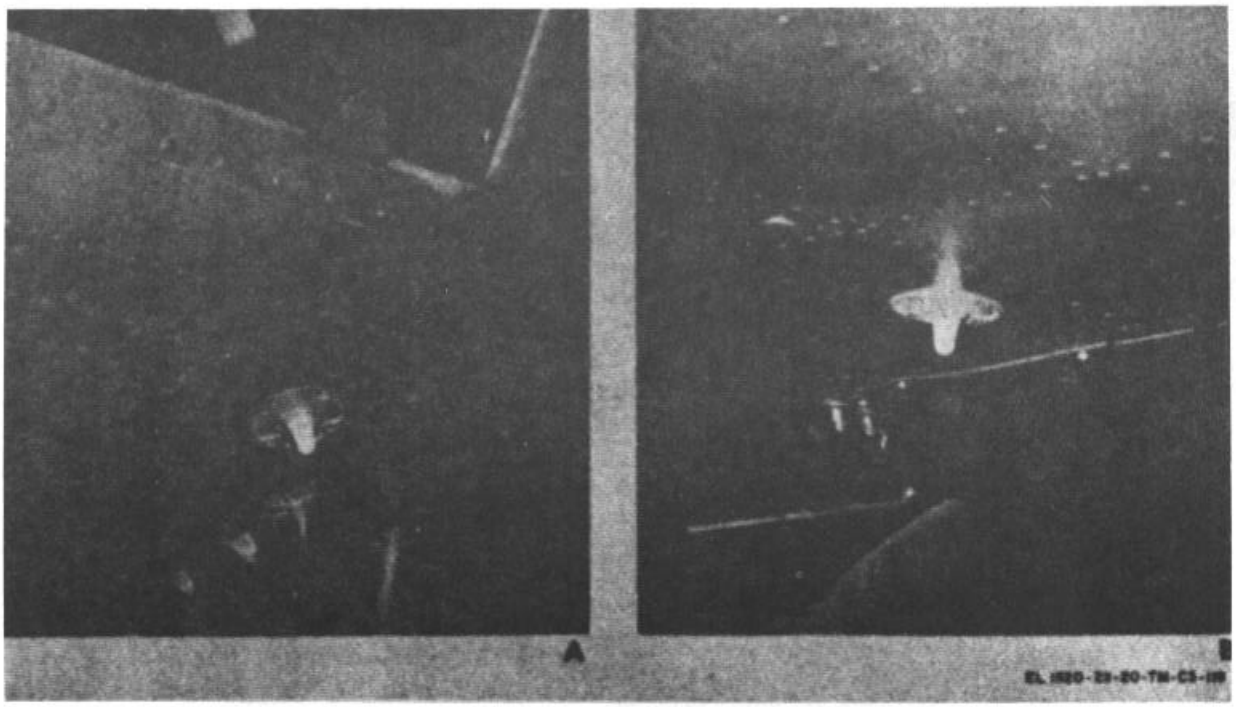


Figure 2-18.3 Location of Proximity Warning Facility Antennas.

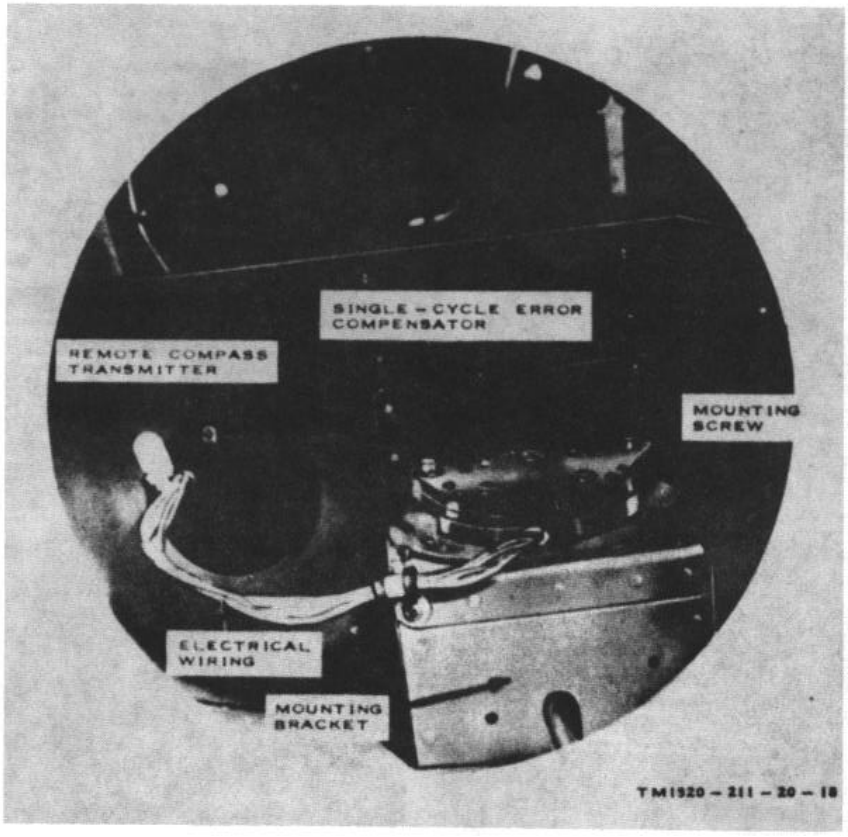


Figure 2-19. Induction Compass Transmitter T-611/ASN or C-2 and Magnetic Compensator CN-405/ASN.

2-68. Removal and Replacement of Electronic Control Amplifier A-2 (Aircraft Magnetic Compass J21

(figs. 2-20, 2-21, and 2-22)

a. Removal of A-2.

(1) Cut the safety wire, and disconnect the electrical connector from the magnetic compass amplifier.

(2) Cut the safety wire, and disengage the snap-slide fasteners.

(3) Remove the magnetic compass amplifier from its mounting studs.

b. Replacement of A-2.

(1) Position the magnetic compass amplifier on its mounting studs, and secure with the snap-slide fasteners.

(2) Connect the electrical connector to the magnetic compass amplifier.

(3) Safety-wire the electrical connector and the snap-slide fasteners.

2-69. Removal and Replacement of Electrically Driven Gyro Control Type S-3A (Aircraft Magnetic Compass J2)

(figs. 220, 2-21, and 2-22)

a. Removal of S-3A.

(1) Disconnect the electrical connector from the Pro control.

(2) Remove the nuts, bolts, and washers that secure the gyro control to the electrical compartment shelf.

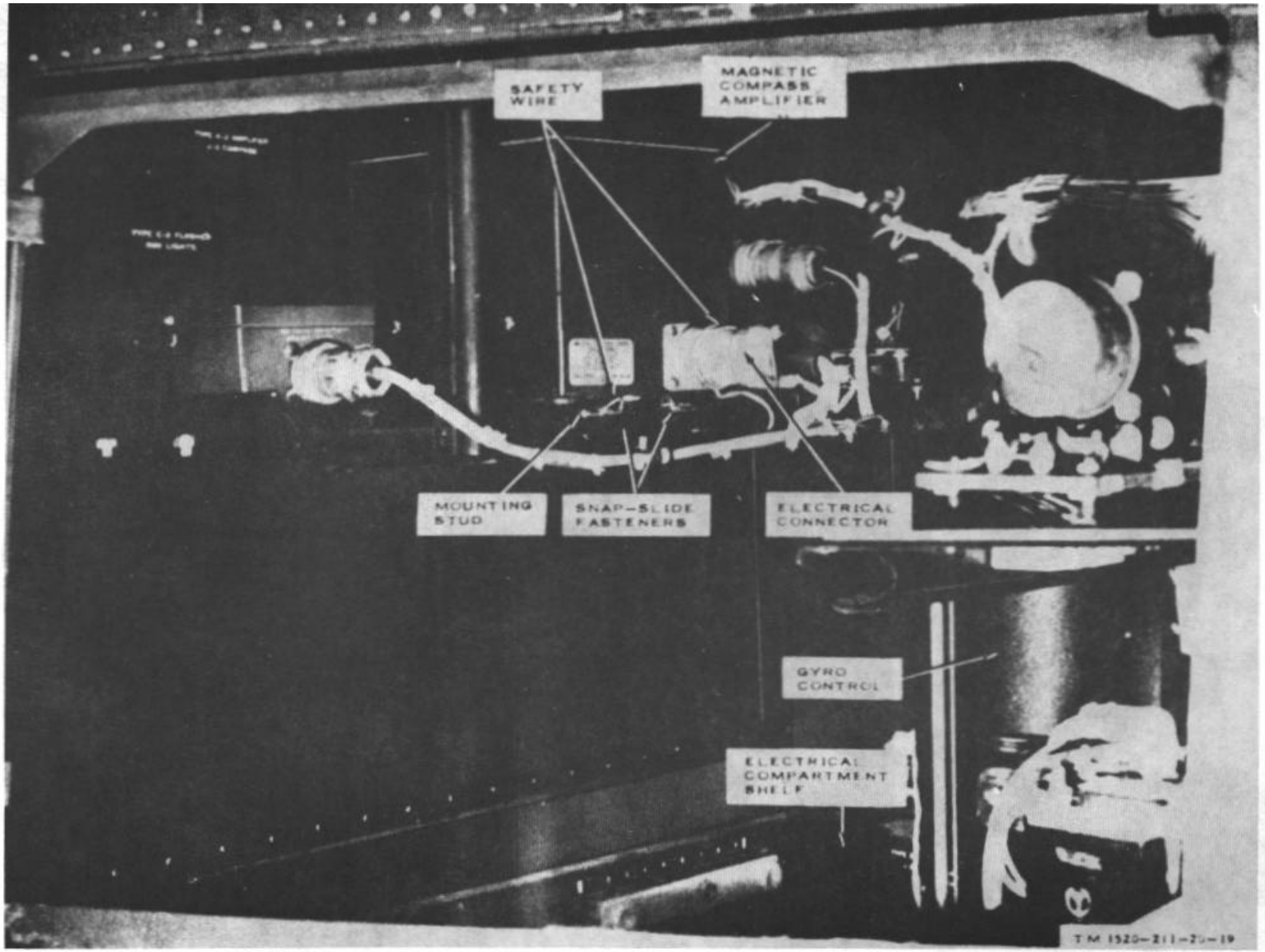


Figure 2-20. Location of Electrically Driven Gyro Control Type S-3A and Electronic Control Amplifier Type A-2 (configurations A and B).

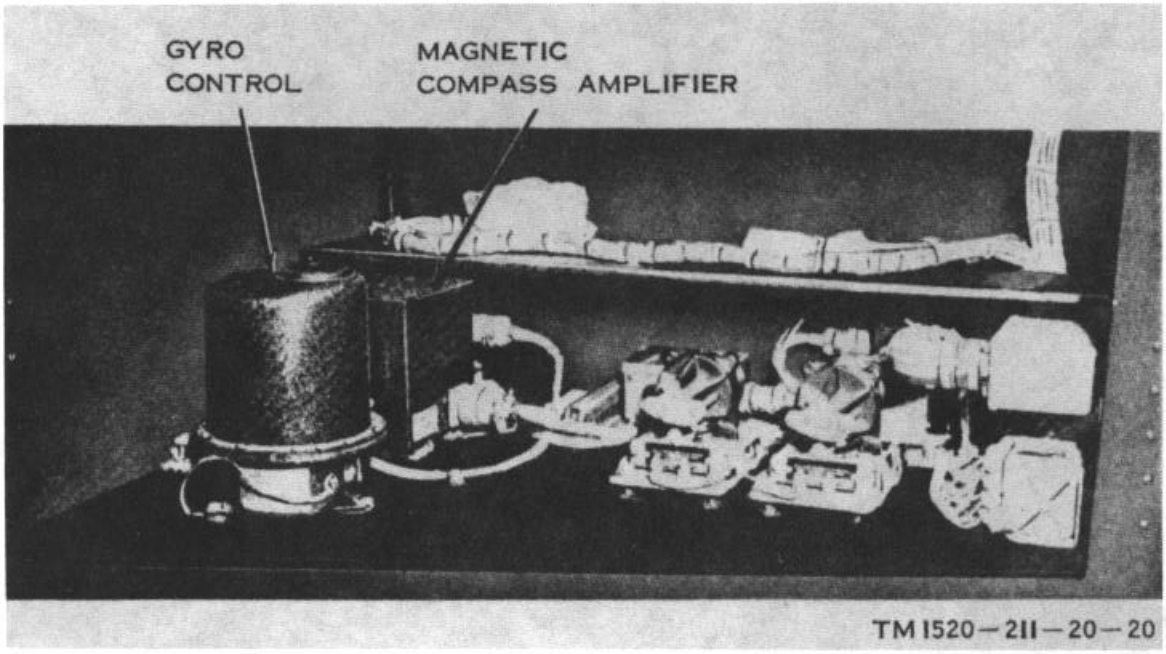


Figure 2-21. Location of Electrically Driven Gyro Control Type S-3A and Electronic Control Amplifier Type A-2 (configurations C and D).

(3) Remove the gyro control from the electrical compartment shelf.

b. Replacement of S-3A.

(1) Position the gyro control on the electrical compartment shelf with the arrow on the gyro control pointing toward the front of the helicopter.

(2) Secure the gyro control to the electrical compartment shelf with the nuts,

washers, and bolts.

(3) Connect the electrical connector to the gyro control.

269.1. Removal and Replacement of Directional Gyro Type CN-998/ASN-43 (Aircraft Magnetic Compass Type AN/ASN-43)

(fig. 2-21.1)

a. Removal.

(1) Disconnect the electrical connector from the gyro.

(2) Remove the nuts, bolts, and washers that secure the gyro to the electrical compartment shelf.

(3) Remove the gyro from the electrical compartment shelf.

b. Replacement.

(1) Secure the gyro to the electrical compartment shelf with the nuts, washers, and bolts.

(2) Connect the electrical connector to the gyro.

2-70. Removal and Replacement of Indicator, Course ID-998/ASN (C-6H)

(fig. 2-23)

a. Removal.

(1) Remove the mounting screws from each corner of the magnetic compass indicator.

(2) Slowly pull the magnetic compass indicator out from the instrument panel far enough to reach the electrical connector at the rear.

(3) Disconnect the electrical connector from the magnetic compass indicator and remove the indicator.

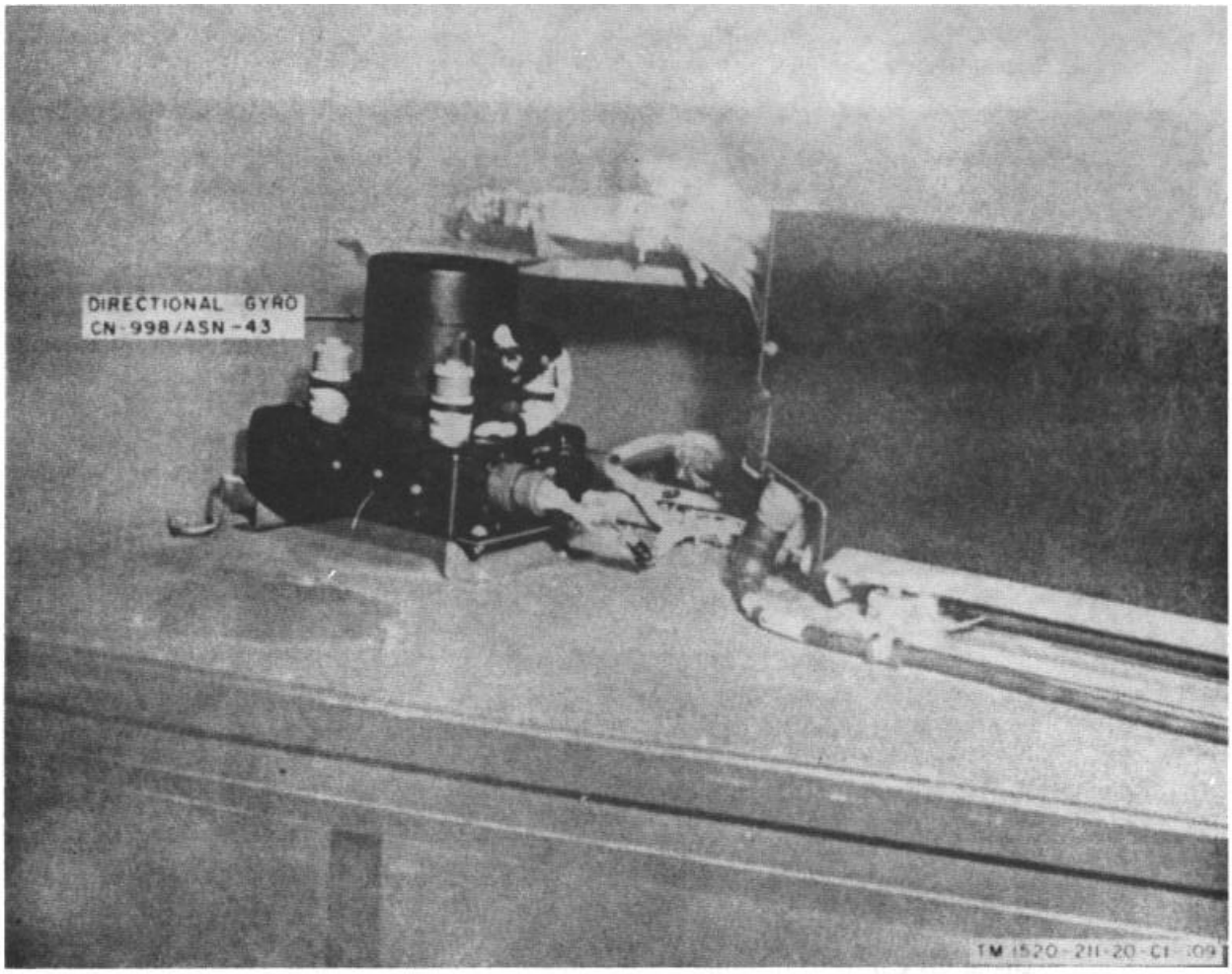


Figure 2-21.1. Location of Directional Gyro CN-998/ASN-43.

b. Replacement.

(1) Connect the electrical connector to the rear of the magnetic compass indicator.

(2) Position the magnetic compass indicator in the instrument panel, and secure with the screws.

2-70.1. Removal and Replacement of Amplifier, Electronic Control AM-3209-ASN
(fig. 2-24.1)

a. Removal.

(1) Remove nuts and washers from lugs that secure the amplifier to its mounting bracket.

(2) Lift amplifier from mating connector.

b. Replacement.

(1) Insert amplifier into mating connector.

(2) Secure amplifier to mounting bracket with washers and nuts.

2-70.2. Removal and Replacement of Indicator, Course ID-250/ARN
(fig. 2-24.2)

a. Removal.

(1) Remove the screws that secure the light

shield to the course indicator, and remove the light shield.

(2) Remove the mounting screw from each corner of the course indicator.

(3) Slowly pull the course indicator out from the instrument panel far enough to reach the electrical connector at the rear.

(4) Disconnect the electrical connector from the course indicator and remove the indicator.

b. Replacement.

(1) Connect the electrical connector to the rear of the course indicator.

(2) Position the course indicator in the instrument panel, and secure with screws.

(3) Place the light shield on the course indicator, and secure the light shield to the course indicator with the mounting screws.

2-71. Removal and Replacement of Receiver-Transmitter, Radio RT-494/APX-44

(fig. 4-1)

a. Removal.

(1) Disconnect all cables from the front panel connectors.

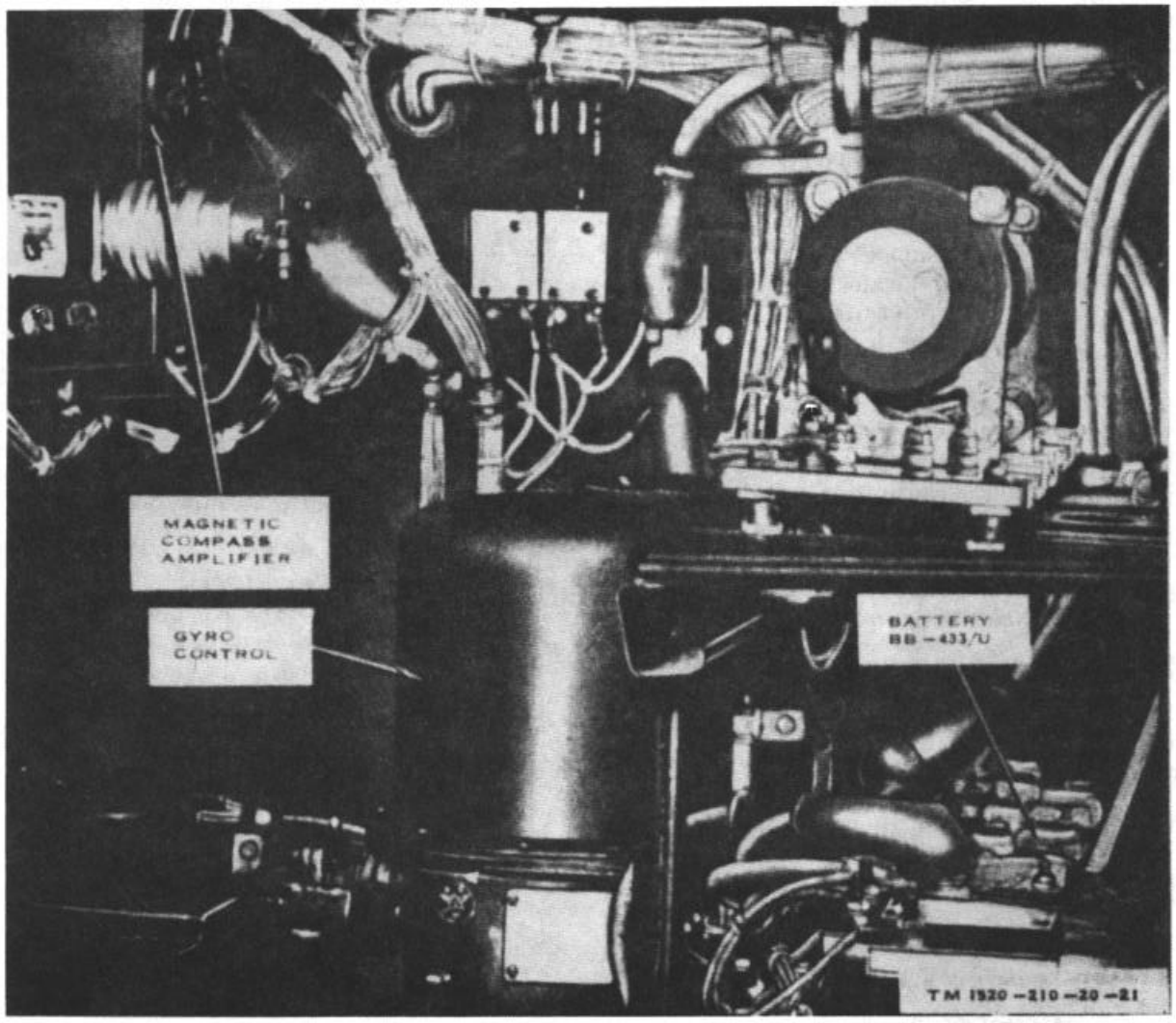


Figure 2-22. Location of Electrically Driven Gyro Control Type S-3A and Electronic Control Amplifier Type A-2 (configurations E and F).

(2) Loosen the two knurled knobs of holddown clamps on the mount by turning counterclockwise.

(3) Turn the injector-ejector knob counterclockwise several turns. When the receiver-transmitter has been brought out far enough to disengage the holddown hooks, lift the front end slightly to clear the front panel lip from the injector-ejector groove. Withdraw the receiver-transmitter from the mount, and remove the detachable side plates by turning the fasteners counterclockwise.

b. Replacement of RT-494/APX-44.

(1) Place the receiver-transmitter between the side rails of the mount.

(2) Slide the receiver-transmitter to the rear until the guide pins at the rear of the mount engage the guide holes at the rear of the receiver-transmitter case.

(3) Before the mount and the receiver transmitter connectors engage, raise the receiver-transmitter slightly and match the lip of its case with the groove of the injector-ejector mechanism.

(4) Lower the case front, with the lip and groove engaged. Turn the injector-ejector knob clockwise until the receiver-transmitter is fully seated.

(5) Lock the receiver-transmitter in place by engaging and tightening the holddown clamps and turning the knurled knobs clockwise.

2-72. Removal and Replacement of Antenna AT-884/APX-44

(fig. 2-10.1)

a. Removal of AT-884/APX-44.

(1) Remove the mounting screws, nuts, and washers that secure the antenna to the helicopter.

(2) Pull the antenna out as far as the wiring will permit, and disconnect the wires from the antenna.

(3) Remove the antenna..

b. Replacement of AT-884/APX-44.

(1) Connect the wires to the antenna.

(2) Position the antenna, and install the mounting screws, nuts, washers.

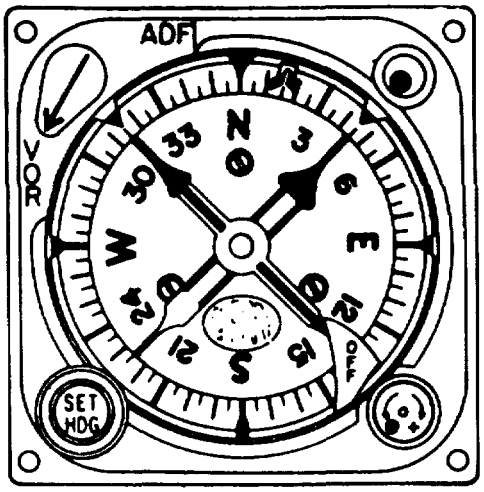


Figure 2-23. Indicator, Course ID-998/ASN.

2-73. Removal and Replacement of Transponder Set Control C-271 4/APX-44

a. Removal of C-2714/APX-44.

(1) Release the mounting fasteners, and lift the panel from the pedestal.

(2) Disconnect the electrical connector from the rear of the control panel, and cover the connector openings

b. Replacement of C-2714/APX-44.

(1) Connect the electrical connector to the rear of the control panel.

(2) Position the control panel in the pedestal, and secure the mounting fasteners.

2-74. Removal and Replacement of Motor-Generator PU-543(*)/A

(fig. 2-40)

a. Removal of Inverter.

(1) Disconnect the electrical connector from the inverter.

(2) Remove the four bolts and nuts that secure the inverter mounting plate to the electrical shelf.

(3) Remove the inverter assembly.

b. Replacement of Inverter.

(1) Remove the cover from the inverter regulator box and check to see that the terminal board is wired as the removed (or the other) inverter is.

(2) Replace the regulator cover.

(3) Check to see that the electrical shelf, where the inverter mounting plate will make contact, is free from oil and grease.

(4) Set the inverter on the shelf and secure in place with the nuts and bolts removed in *a*(2) above.

(5) Connect the electrical connector to the inverter and safety-wire in place.

2-74.1 Removal and Replacement of Secure-Voice Control-Indicator C-8157/ARC

(fig. 2-15.1)

For removal and replacement procedures, refer to the applicable Army Security Agency publication.

2-74.2 Removal and Replacement of Mount MT-3802/ARC

For removal and replacement procedures, refer to the applicable Army Security Agency publication.

2-74.3 Removal and Replacement of Secure Voice Coder TSEC/KY-28

(fig. 2-15.1)

For removal and replacement procedures, refer to the applicable Army Security Agency publication.

2-74.4 Removal and Replacement of Remote Cipher Light (Configurations C Through H)

(fig. 2-23.2)

d. Removal.

(1) Remove lens and lamp by grasping firmly and turning ccw.

(2) Remove retaining nut by turning ccw.

(3) Remove four screws and four washers from cipher light cover.

(4) Remove cipher light cover.

(5) Disconnect and tag the cipher light wires.

(6) Remove the cipher light.

b. Replacement.

(1) Connect the wires to the cipher light.

(2) Install the cipher light in its hole in the cipher light cover and position the cipher light cover onto the base plate.

(3) Install the four screws and four washers to secure the cipher light cover.

(4) Install the retaining nut by turning cw.

(5) Install the lens and lamp by turning cw.

2-75. Removal and Replacement of Computer Transponder KIT-1A/TSEC

(fig. 2-23.2)

a. Removal.

(1) Disconnect the cables from their connectors.

(2) Release the fasteners that attach the unit to the mount.

(3) Remove the unit from the mount.

b. Replacement.

(1) Position the unit onto the mount.

(2) Secure the unit to the mount by turning the fasteners.

(3) Reconnect the cables.

2-75.1 Removal and Replacement of Receiver-Transmitter RT-859/APX-72

(fig. 2-23.2)

Procedures for removal and replacement of the RT-859/APX-72 transponder are the same as for the RT-494/APX-44 transponder (para 2-80).

2-75.2 Removal and Replacement of Control, Transponder Set C-6280/APX-72

(fig. 2-15.1)

Procedures for removal and replacement of the C-6280/

APX-72 control are the same as for he C-2714/APX-44 control (para 282).

2-75.3 Removal and Replacement of Test Set TS-1843/APX-72

(figs. 2-23.3 and 2-23.4)

a. Removal.

(1) Disconnect POWER and ANTENNA cables from the respective connectors.

(2) Remove the holddown screws that secure the unit to the mount.

(3) Remove the transponder test set from he mount.

b. Replacement.

(1) Place the transponder test set into position.

(2) Install the holddown screws that secure the unit to the mount.

(3) Reconnect the POWER and ANTENNA cables.

2-76. Removal of Navigation Set, Position Fixing AN/ASN-72 (Airborne Decca)

(figs. 2-41 and 224.2)

a. Receiver. Remove the receiver from its mounting as follows:

(1) Disengage the two screw clamps from the holddown brackets at the front of the receiver by turning the knurled nuts counterclockwise.

(2) Use the handle at the front of the receiver to pull the receiver forward and away from the mounting.

b. Computer. Remove the computer from its mounting as follows:

(1) Disengage the screw clamp from the holddown bracket at the front of the computer by turning the knurled nut counterclockwise.

(2) Use the handle at the front of the computer to pull the computer forward and away from the mounting.

c. Decometers and Lane Identification Meter (fig. 2-24.2). Remove a decometer or lane identification meter from its mounting as follows:

(1) Remove the two mounting screws and hardware at the front corners of the decometer (or lane identification meter) and slide the meter housing from the mounting panel hole.

(2) Unscrew and disconnect the cable connector from the connector at the rear of the meter housing.

NOTE

If more than one decometer is removed, tag and identify the cable connectors so that they may be reconnected to the proper decometer during replacement.

d. Receiver Control Panel. Remove the receiver control panel from its mounting as follows:

(1) Loosen the four turnlock fasteners at the front of the receiver control panel.

(2) Slide the receiver control panel from its mounting panel hole.

(3) Disconnect the cable connector at the rear of the receiver control panel and remove the control panel.

e. Flight Log Control. Remove the flight log control from its mounting as follows:

(1) Loosen the four turnlock fasteners at the front of the flight log control.

(2) Slide the flight log control from its mounting panel hole.

(3) Disconnect the cable connectors at the rear of the flight log control box. Make sure that the two connectors are tagged and identified so that they can be correctly mated with the connector on the flight log control box during replacement.

f. Preamplifier. Remove the preamplifier from its mounting as follows:

(1) Loosen the four captive mounting screws at the top of the preamplifier; retain all hardware.

(2) Lift the preamplifier from its mounting.

(3) Disconnect the four-pin connector and the coaxial connector at the underside of the preamplifier.

g. Flight Log Display (fig. 224.2). Remove the flight log display from its mounting as follows:

(1) Remove the three screws and associated hardware at the back of the flight log display.

(2) Lift the flight log display from its mounting.

(3) Disconnect the cable connector at the back of the flight log display and remove the display.

h. Cassette. Remove the cassette from the flight log display case as follows:

(1) Depress the two upper triangular shaped levers, and the top part of the cassette will be disengaged from the case.

(2) Depress the two lower levers, and the cassette can be lifted from the case.

2-77. Replacement Procedures for Navigation Set, Position Fixing AN/ASN-72 Components

To replace any component, perform the removal procedures in reverse sequence to the order of removal. In replacing the flight log control, make sure that the two cable connectors are mated to the proper connectors at

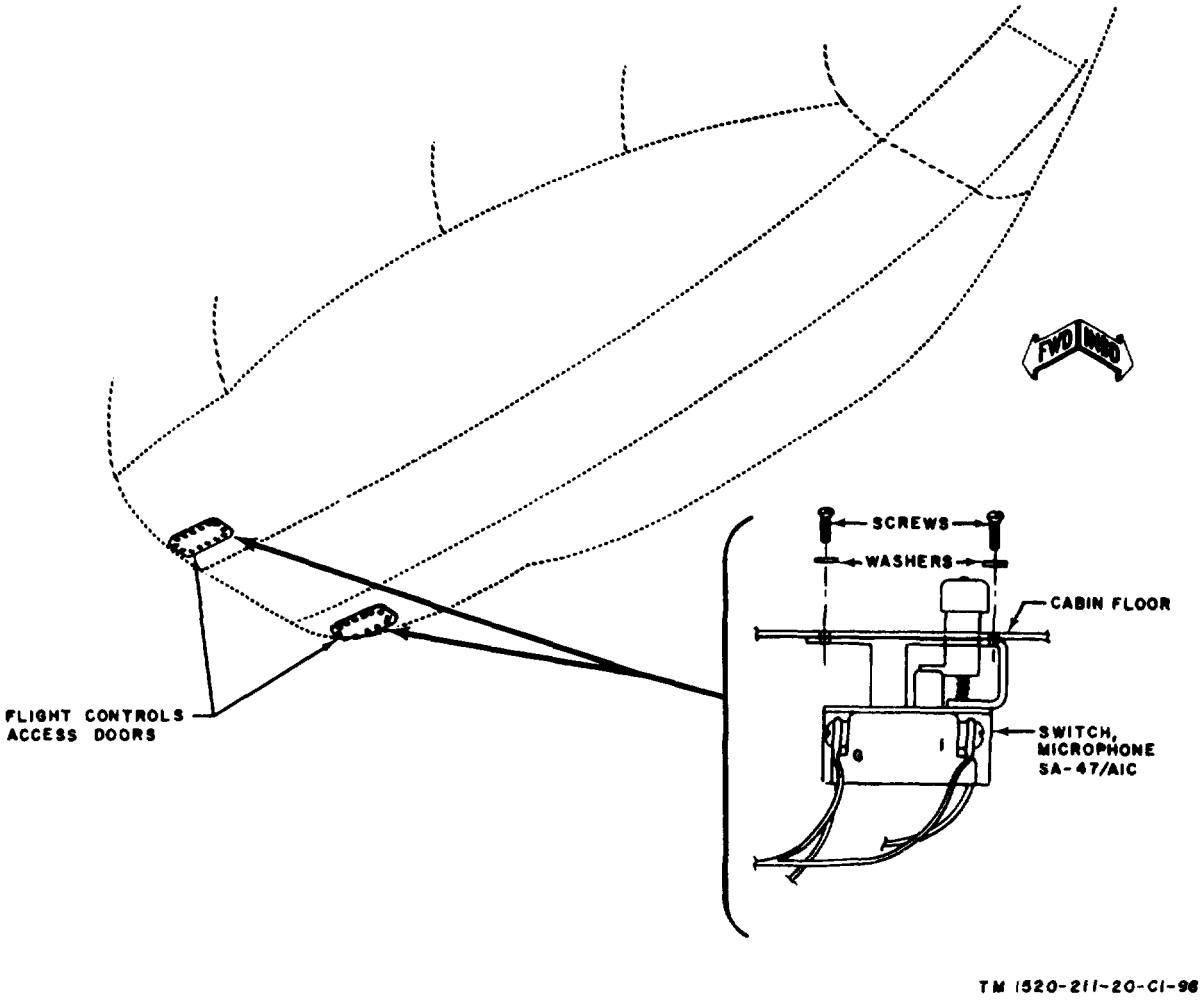


Figure 2-23.1 Switch, Microphone - SA-47A/AIC foot switch location.

the back of the flight log control box. Replace the cassette in the flight log display head by pressing the ends of the lower roller into the holes at the sides of the case at the triangularshaped levers. Press the cassette firmly into the holes until it is locked in place; then press the upper part of the cassette firmly into the case until it is engaged by the upper levers.

2-78. Removal and Replacement of Switch, Microphone SA-47A/AIC (Footswitch)
(fig. 2-23.1)

a. Removal.

(1) Remove flight controls access doors.

(2) Disconnect and tag the wires attached to the foot switch.

(3) Remove the screws and washers that secure the foot switch to the cabin floor.

b. Replacement.

(1) Connect the wires to the foot switch.

(2) Secure the foot switch to the cabin floor with screws and washers.

(3) Replace flight controls access doors.

2-78.1 Removal and Replacement of Door Gunners Foot Mike Switch (Configurations A through H)
(fig. 2-28.5)

a. Removal (fig. 223.6)

(1) The procedure in steps (2) through (4) below is the same for both the left- and right-hand foot switch.

(2) Remove the screws and washers that secure the switch bracket and switch to the cabin floor.

(3) Disconnect the wires attached to the switch. (See figure 2-23.7 for wiring diagram.) (4) Remove the switch from the switch bracket.

b. Replacement.

(1) Connect the wires to the front switch. (See figure 2-23.7 for wiring diagram.)

(2) Insert the door gunners foot mike switch in the switch bracket.

(3) Secure the switch bracket to the cabin floor with the screws and washers.

2-79. Removal and Replacement of Cyclic Switch X942-2 (Trigger Switch)
(fig. 2-24)

a. Removal.

(1) Remove the two screws at the top of the cyclic stick grip.

(2) Remove the cyclic stick grip cover.

(3) Loosen - clamps at the base of the stick and slide the microphone switch upward.

(4) Disconnect and tag all wires and remove the microphone switch.

b. Replacement.

(1) Connect the tagged wires to the microphone switch.

(2) Slide the microphone switch down into the cyclic stick grip.

(3) Remove slack from the cable assembly and tighten the clamps at the base of the cyclic grip.

(4) Secure the cyclic stick grip cover with screws.

2-80. Removal and Replacement of Filter, Direct Power F-726/AR (Power Unit
ARC Type P-12)

a. Removal.

(1) Remove Dynamotor DY-86/ARN-30 (para 2-49).

(2) Cut and remove the safety wire on the power unit.

(3) Loosen the slide fasteners and remove the holddown screws.

(4) Disconnect the connector on the power unit and lift the unit from its mounting.

b. Replacement.

(1) Position the power unit on its mounting.

(2) Install the holddown screws and close the slide fasteners.

(3) Secure the connector to the receptacle and install all safety wire as removed in a(2) above.

(4) Replace Dynamotor DY-86/ARN4O (para 2-49).

2-81. Removal and Replacement of Converter, Radio-Magnetic Indicator CV-1275/ARN or B1-8A

(figs. 2-25 and 2-26).

a. Removal.

(1) Clip the safety wire, loosen the thumbscrews, and turn the retainer clips.

(2) Slide the CV-1275/ARN or B-18A converter forward.

(3) Disconnect the connector and cable from the back of the unit.

(4) Lift the CV-1275/ARN or B-18A converter from its mounting.

b. Replacement.

(1) Position the CV-1275/ARN or B-18A converter onto its mounting.

(2) Engage the connector (at the back of the unit) and the electrical cable.

(3) Slide the CV-1275/ARN or B-18A converter into position.

(4) Turn the retainer clips until they lock into position, and tighten the thumbscrews.

2-81.1 Removal and Replacement of Indicator, Attitude 4005G

(fig. 24.2)

a. Removal of Indicator.

(1) Remove the mounting screw from each corner of the attitude indicator.

(2) Slowly pull the attitude indicator out from the instrument panel far enough to reach the electrical connector at rear.

(3) Disconnect the electrical connector from the attitude indicator and remove the indicator.

b. Replacement of Indicator.

(1) Connect the electrical connector to the rear of the attitude indicator.

(2) Position the attitude indicator in the instrument panel, and secure with screws.

2-81.2 Removal and Replacement of Gyro, Roll and Pitch MD-1

(fig. 2-24.1)

a. Removal of MD-1 Gyro.

(1) Disconnect the electrical connector on the front of the gyro.

(2) Remove the mounting screws that secure the gyro and remove the gyro.

b. Replacement of MD-1 Gyro.

(1) Secure the gyro with the mounting screws.

(2) Connect the electrical connector to the front of the gyro.

2-81.3 Removal and Replacement of Gyro, Rate Switching MC-1

(fig. 2-24.1)

a. Removal of MC-1 Gyro.

(1) Disconnect the electrical connector on the front of the gyro.

(2) Remove the mounting screws that secure the gyro, and remove the gyro.

b. Replacement of MC-1 Gyro.

(1) Secure the gyro with the mounting screws.

(2) Connect the electrical connector to the front of the gyro.

2-81.4 Removal and Replacement of Amplifier, Attitude Indicator

(fig. 2-4)

a. Removal.

(1) Disconnect the electrical connector on the front of the amplifier.

(2) Remove the mounting screws that secure the amplifier, and remove the amplifier.

b. Replacement.

(1) Secure the amplifier with the mounting screws.

(2) Connect the electrical connector to the front of the amplifier.

2-81.5 Removal and Replacement Indicator, Attitude J-8

(fig. 224.2)

a. Removal.

(1) Remove the screws that secure the light shield to the attitude indicator, and remove light shield.

(2) Remove the mounting screw from each corner of the attitude indicator.

(3) Slowly pull the attitude indicator out from the instrument panel far enough to reach the electrical connector at rear.

(4) Disconnect the electrical connector from the attitude indicator, and remove the indicator.

b. Replacement.

(1) Connect the electrical connector to the rear of the attitude indicator.

(2) Position the attitude indicator in the instrument panel, and secure with screws.

(3) Place the light shield on the attitude indicator, and secure the light shield to the indicator with the mounting screws.

2-81.6 Removal and Replacement of IFF Caution Light

(fig. 2-23.8)

a. Removal.

(1) Remove lens and lamp by grasping firmly and turning ccw.

(2) Remove retaining nut by turning ccw.

(3) Pulling from the rear of the instrument panel, pull the IFF caution light out of the instrument panel hole.

(4) Disconnect and tag the IFF caution light wires.

(5) Remove the IFF caution light.

b. Replacement.

(1) Connect the tagged wires to the IFF caution light.

(2) From the rear of the instrument panel, insert the IFF caution light into its hole in the instrument panel.

(3) Install the retaining nut by turning cw.

(4) Install the lens and lamp by turning cw.

2-81.7 Removal and Replacement of Cod Hold Light

(fig. 2-23.8)

Procedures for removal and replacement of the code hold light are the same as for the IFF caution light (para 2-110).

2-81.8 Removal and Replacement of Cod Hold Switch

(fig. 2-23.8)

a. Removal.

(1) Remove the retaining nut by turning ccw.

(2) Pulling from the rear of the instrument panel, pull the code hold switch out of the instrument panel hole.

(3) Disconnect and tag the code hold switch wires. (4) Remove code hold switch.

b. Replacement.

(1) Connect the tagged wires to the code hold switch.

(2) From the rear of the instrument panel, insert the code hold switch into its hole in the instrument panel.

(3) Install the retaining nut by turning cw.

2-82. Parts Replacement of Control Unit Panel Lamps

Replace panel lamps installed on the control units as follows:

a. Remove the lamp housing from the control unit by grasping it firmly and turning it counterclockwise.

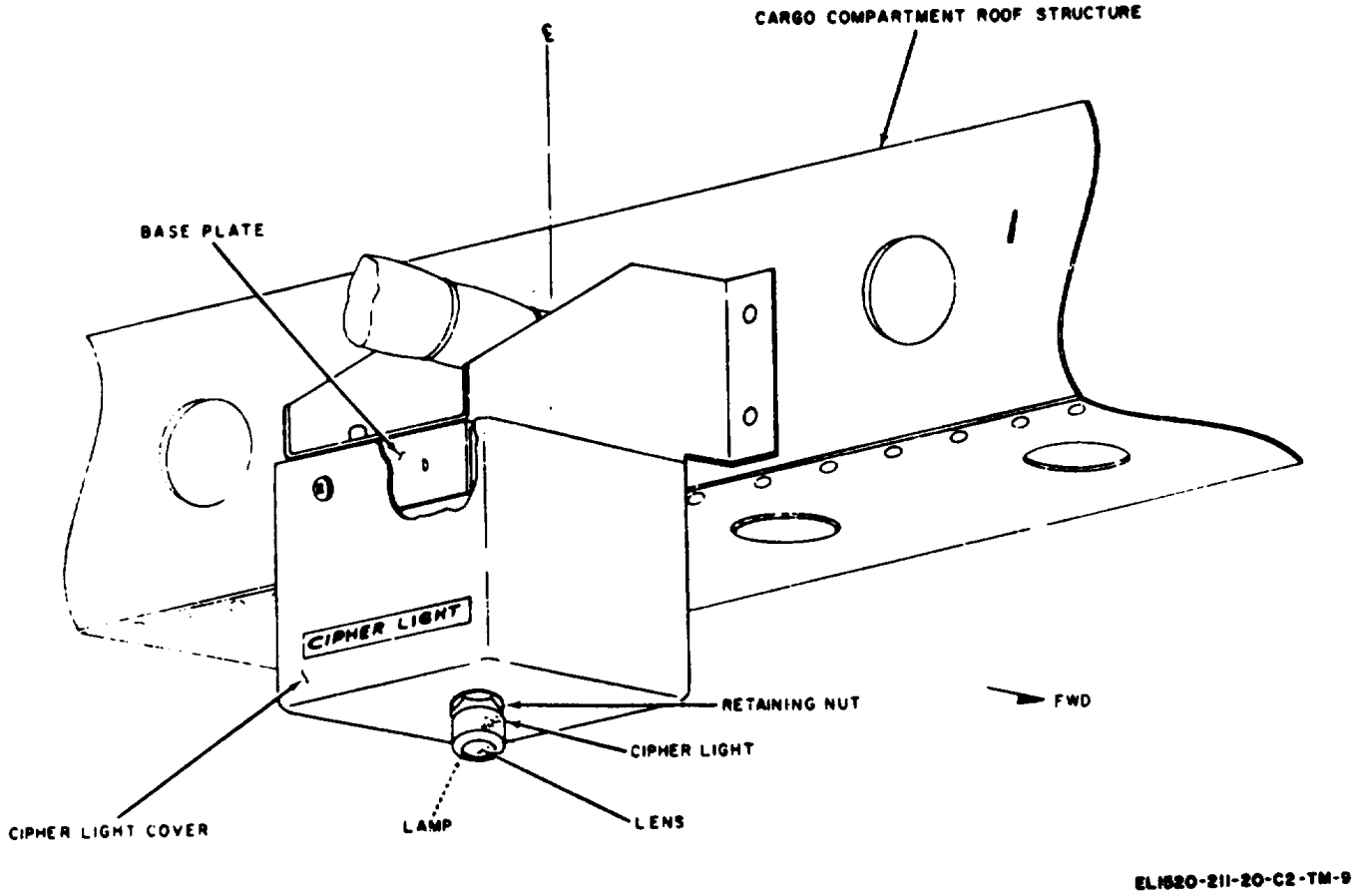


Figure 2-23.2 Remote cipher light location

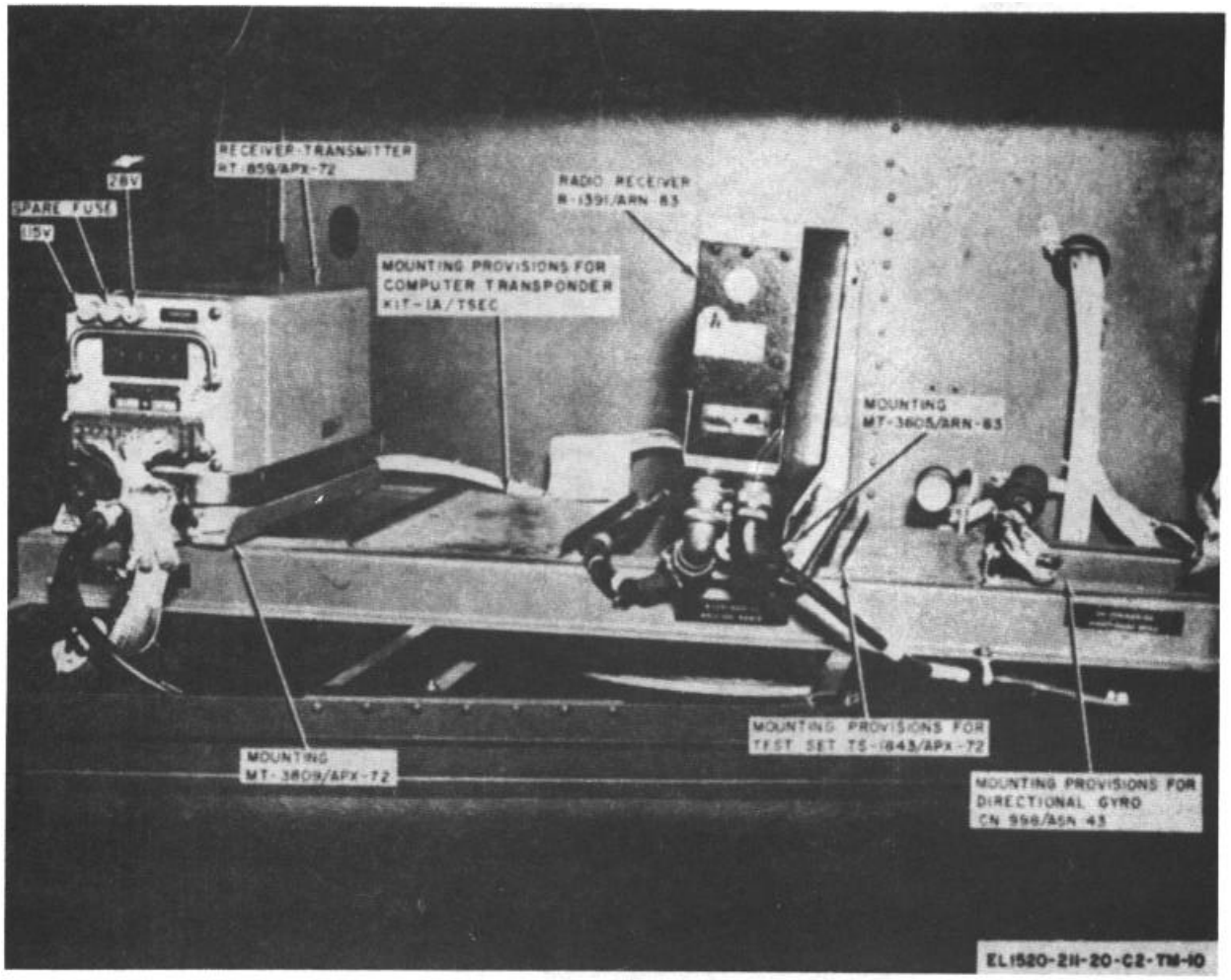


Figure 2-23.3 Location of Radio Receiver R-191/ARN-83, Receiver-Transmitter RT-859/APX-72, Transponder Computer Kit 1A/TSEC, Test Set TS-1843/APX-72, and Directional Gyro CN-998/ASN-43.

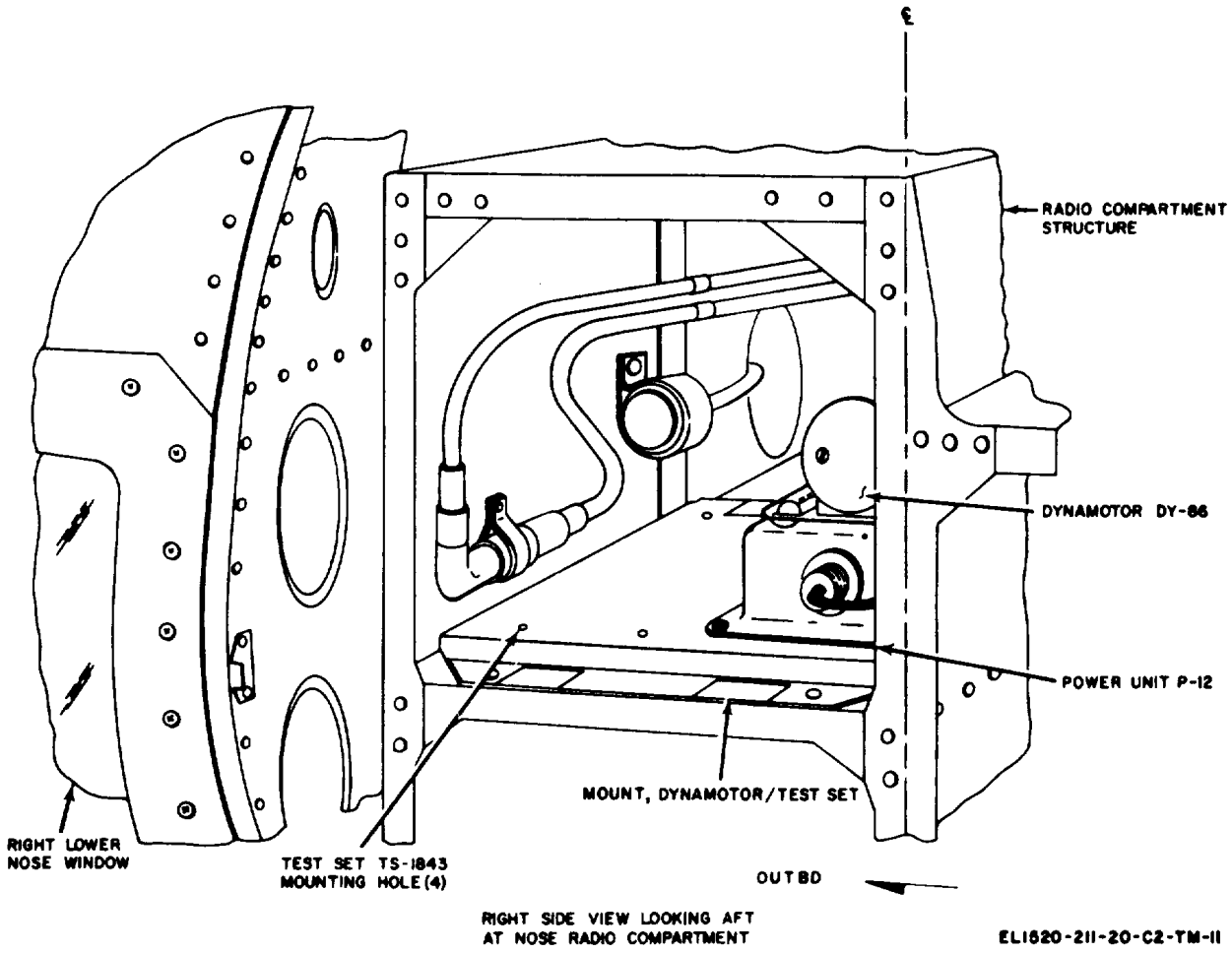


Figure 2-23.4 Mounting provisions for Test Set TS-1843/APX-72 location of Dynamotor DY-86 and Power Unit P- 12

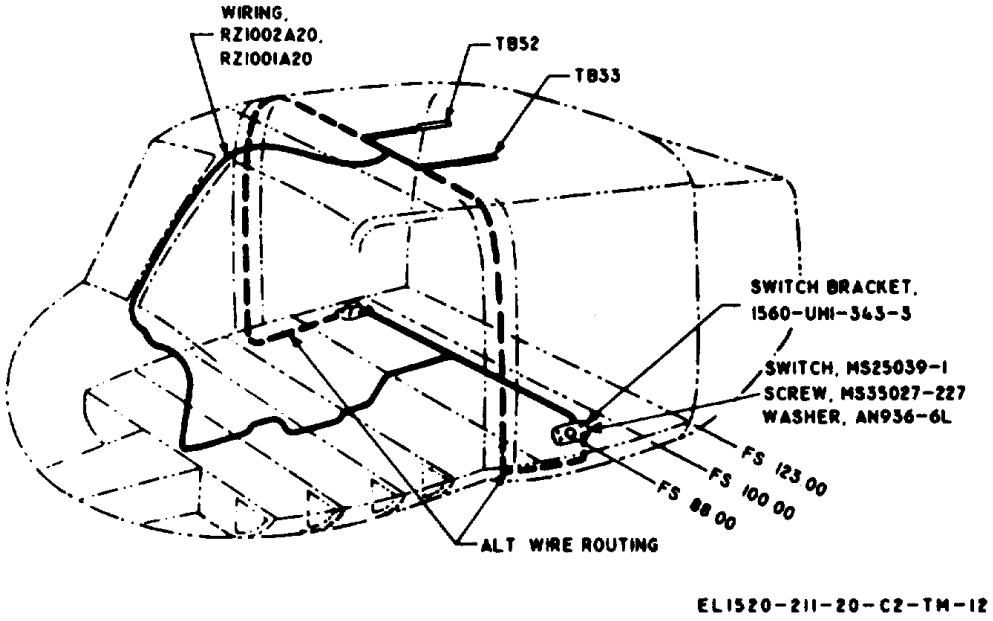


Figure 2-23.5 Location of door gunner's foot mike switch.

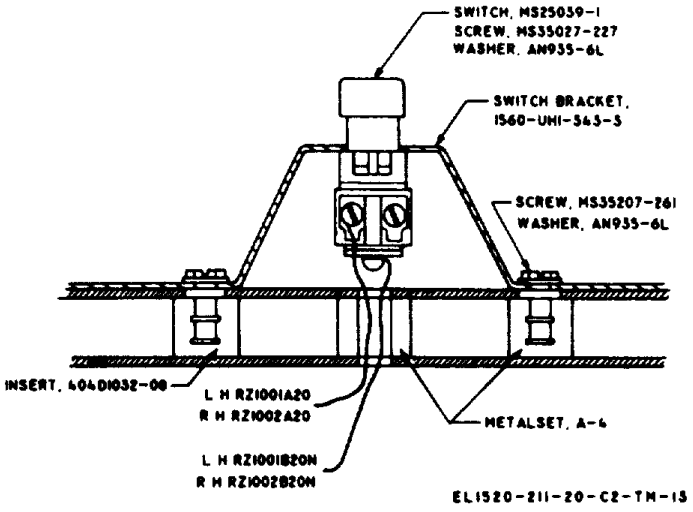


Figure 2-23.6 Door gunner's foot mike switch, detail.

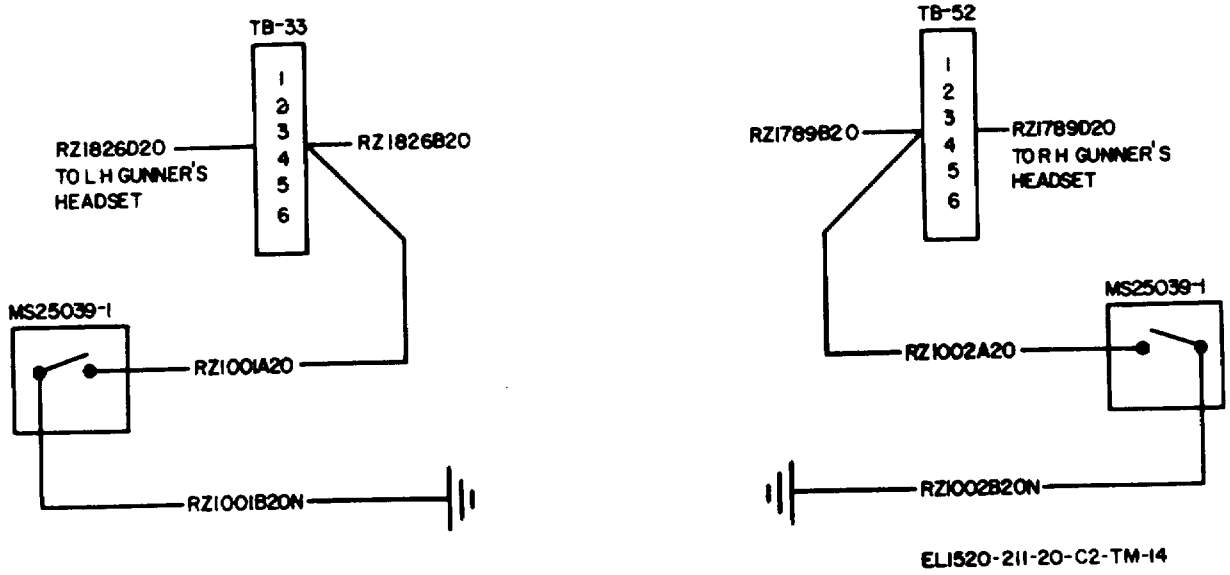


Figure 2-23.7 Door gunner's foot mike switch , wiring diagram

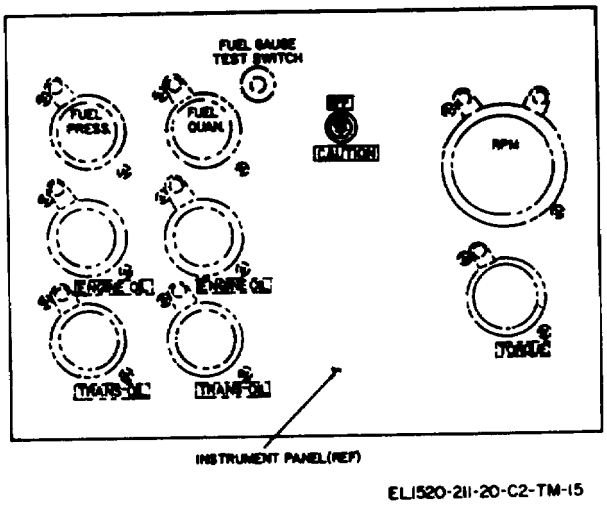


Figure 2-23.8 Location of IFF caution light.

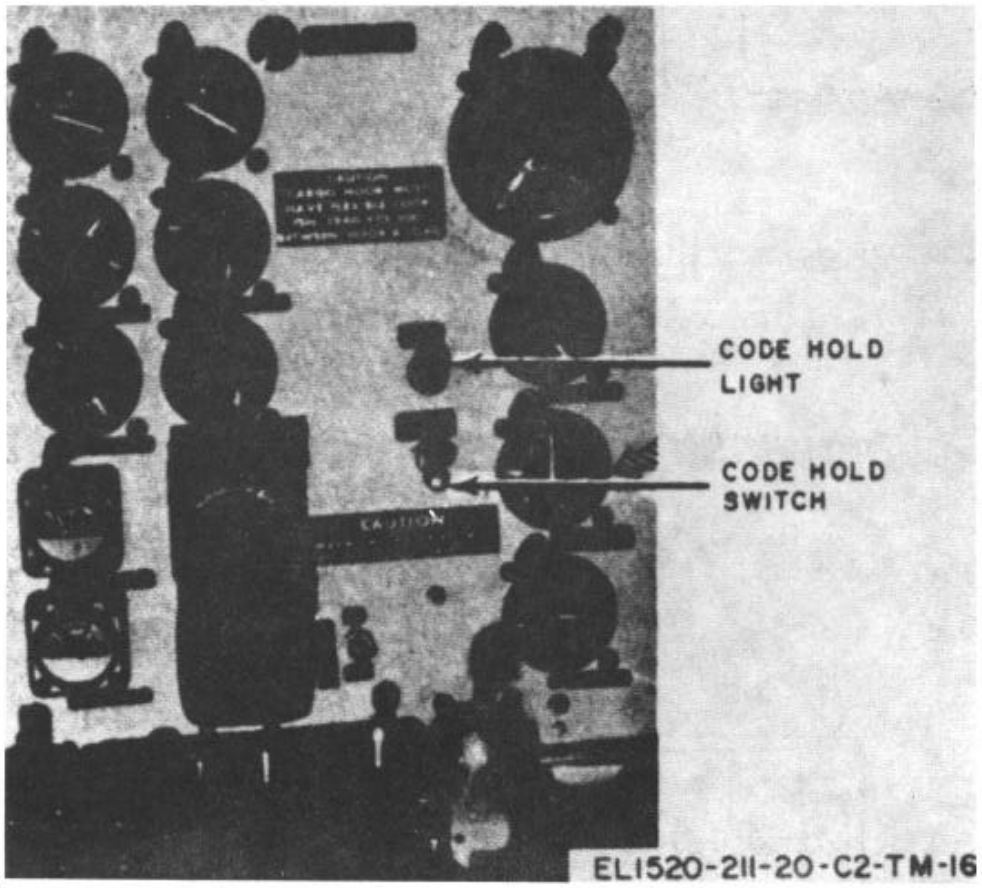


Figure 2-23.9 Instrumentation panel.

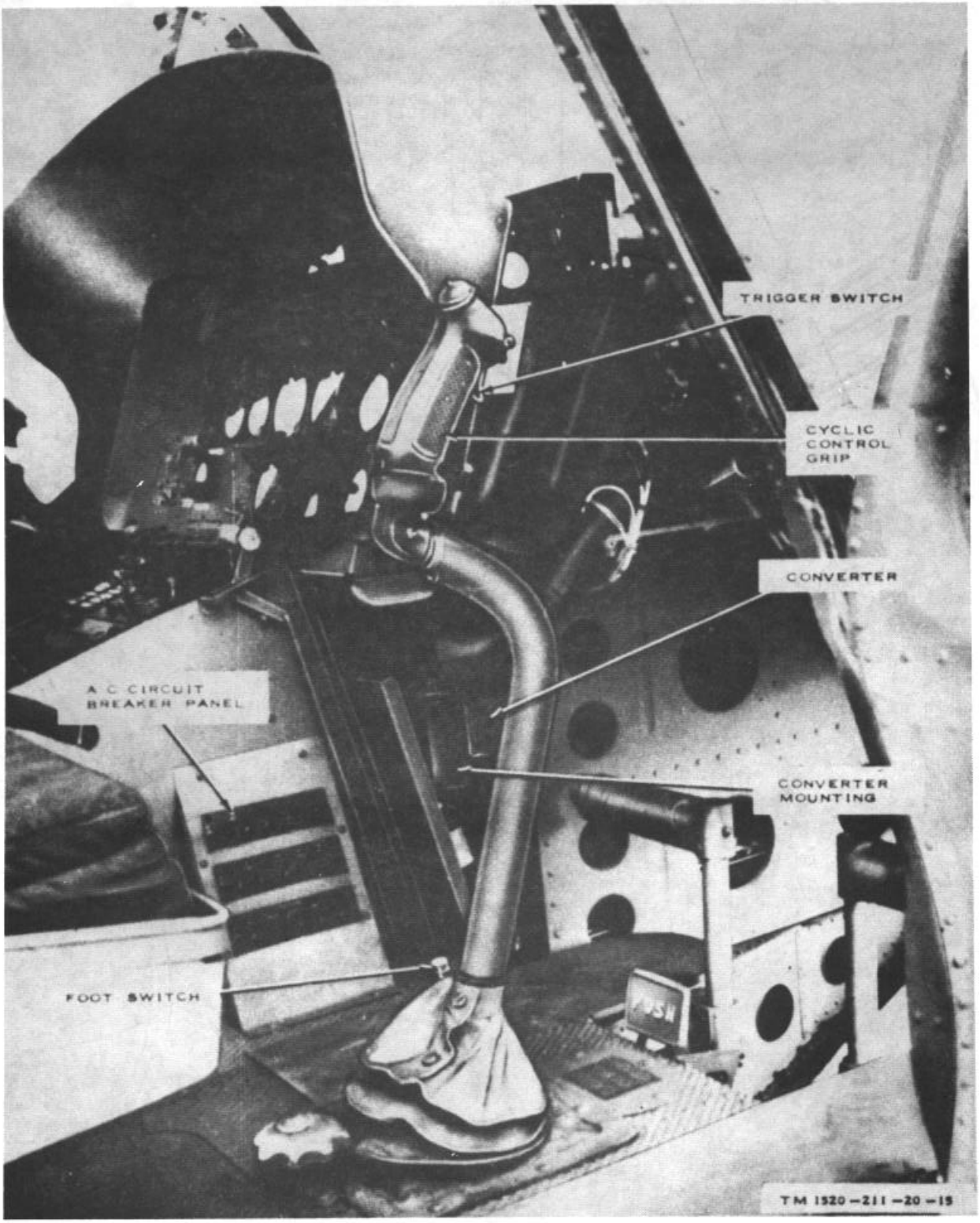


Figure 2-24. Location of Cyclic Stick Switch X942--2 and Switch, Microphone SA-47A/AIC.

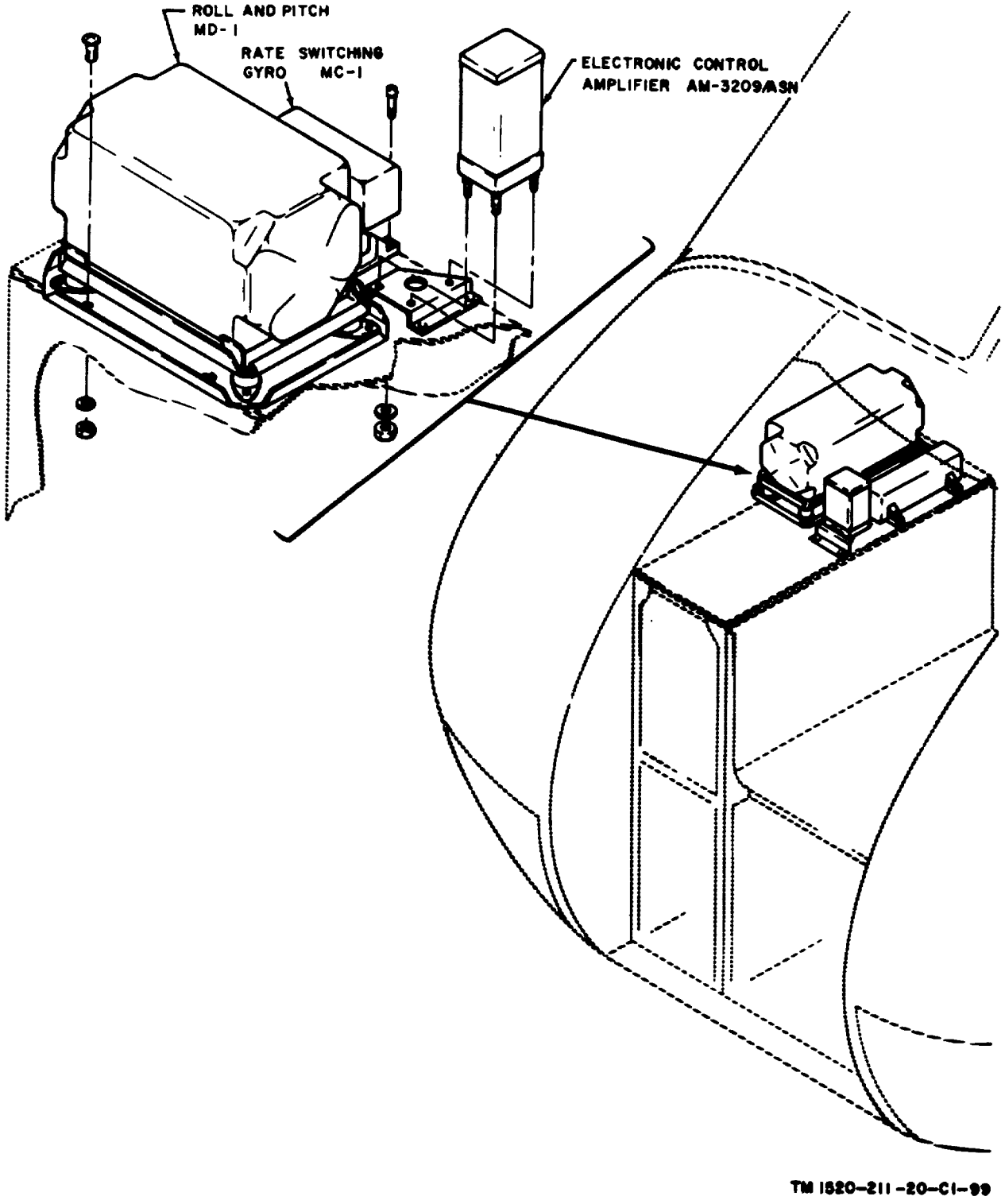
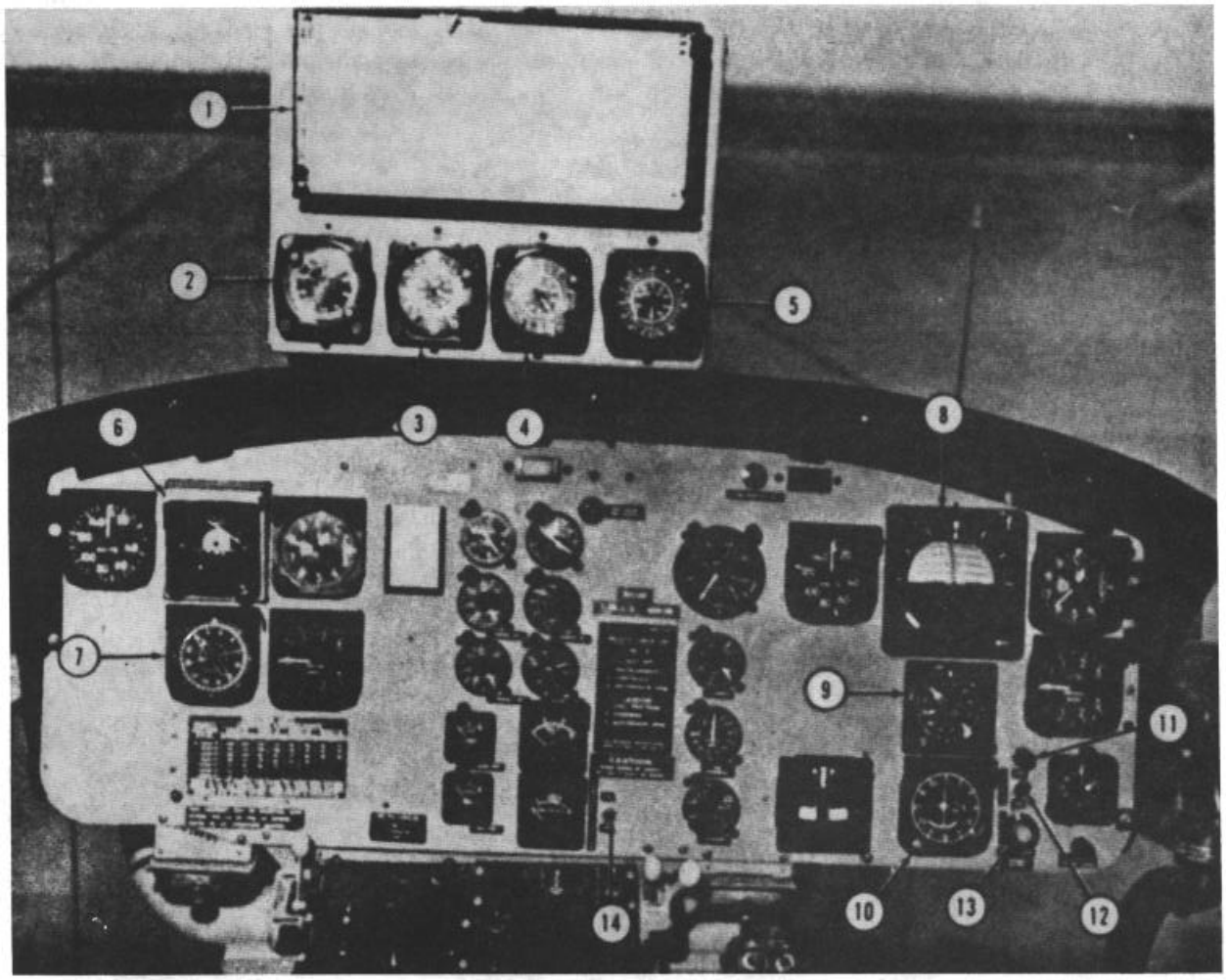


Figure 2-24.1 MD-1 roll and pitch gyro, MC-1 rate switching gyro and AM-3209/ASN electronic control amplifier location.



1. FLIGHT LOG DISPLAY HEAD
2. LANE IDENT METER
3. RED DECOMETER
4. GREEN DECOMETER
5. PURPLE DECOMETER
6. COPILOT'S ATTITUDE INDICATOR
7. COURSE INDICATOR
8. PILOT'S ATTITUDE INDICATOR
9. COURSE INDICATOR
10. COURSE INDICATOR (VHF NAV)
11. MARKER BEACON IND
12. MARKER BEACON HI-LOW SW
13. MARKER BEACON VOL CONTROL
14. COMPASS SLAVING SW

TM 1520-211-20-CI-102

Figure 2-24.2 Instrument panel

b. Pull the lamp bulb forward and out from the housing mounting.

c. Replace the defective lamp bulb with a newly tested unit. Make sure that the flange on the lamp bulb is flush with the housing mounting.

d. Insert the lamp housing into the control panel and turn it clockwise until it is secure.

2-82.1 Parts Replacement of Lamp in Remote Cipher Light, IFF Caution Light, or Code Hold Light
(figs. 2-28.2, 2-23.8, and 2-23.9)

a. Remove the lamp and lens by grasping them firmly and turning ccw.

b. Pull the lamp from the lens.

c. Replace the defective lamp with a newly stud unit.

d. Place the lamp and lens into position and secure them by turning cw.

2-83. Safety Wiring

To prevent loosening during service, all attaching hardware and electrical connectors for the components of the electronic configuration must be secured with safety wire. Tighten the applicable mounting hardware and install safety wire, arranged so that loosening of the hardware will cause the safety wire to tighten. Use new safety wire and be careful not to kink the wire.

2-84. Wiring Repairs

a. General. When removal and replacement of major components have not corrected a trouble within a facility of the electronic equipment configuration, troubles in the electronic equipment configuration wiring may be the cause. Refer to the electronic configuration facility schematic diagrams (figs. 2-27--2-37, 4-3-4-11, and 4-15 and 4-16) for interunit wiring details. For general instructions in repairing the helicopter electronic configuration, refer TM 55-1500-204-25/1.

b. Wire Identification Code. The wires of

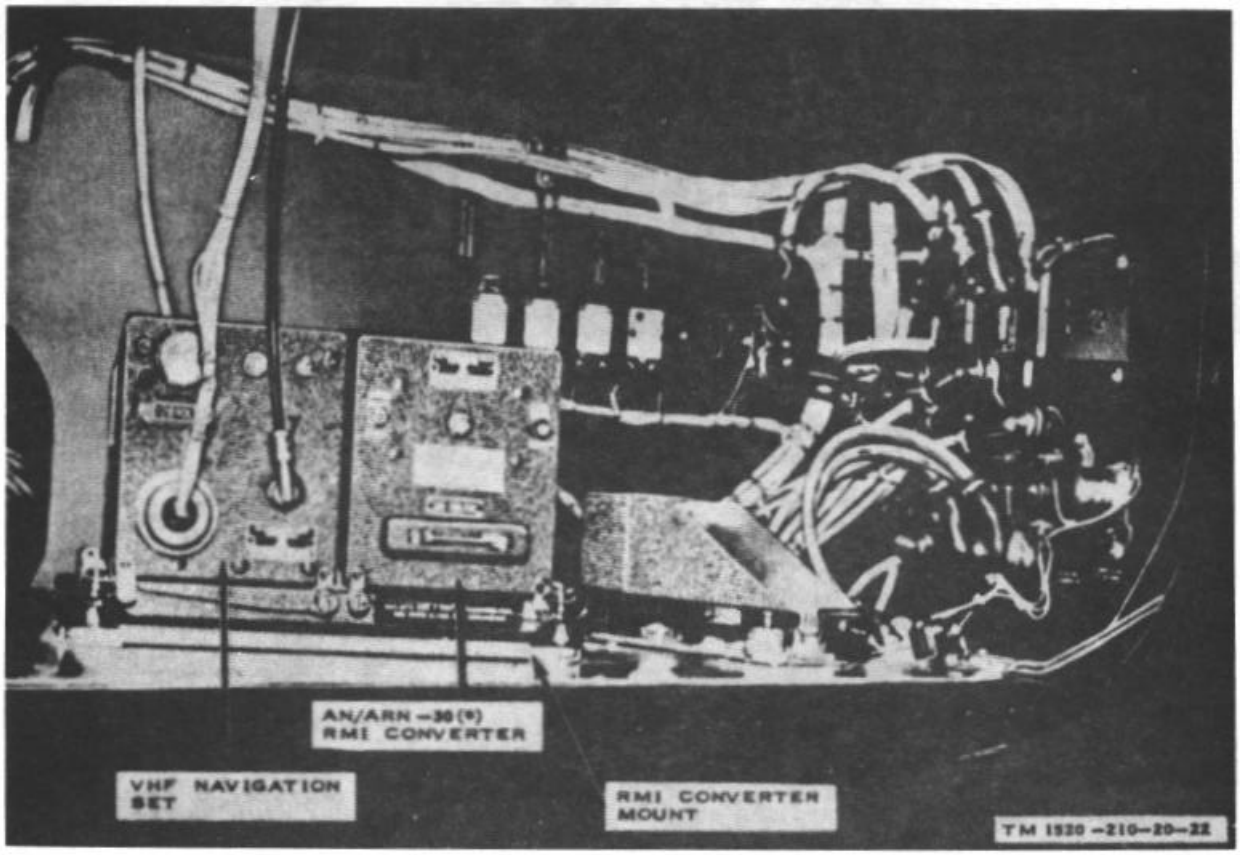


Figure 2-25. Location of Converter, Radio Magnetic Indicator CV-1275/ARN or B-18A.

the electronic configuration are identified by wire numbers; *for example*, RC130A20N. The first two symbols are code letters (RC in the above example) which identify the facility in accordance with the chart below. The second symbol *130* is the cable number; it differentiates between cables in a particular facility.
The third symbol A identifies the cable segment, the cable run between terminals or connections. The next symbol *20* indicates the wire size. The last symbol N, commonly called the ground letter, identifies a cable which completes a circuit to ground.

Code letters	Function
RZ	Interphone
RF	Fm liaison set (vhf liaison)
RU	Uhf command set
RC	Emergency vhf transmitter (command)
RV	Vhf radio set (vhf command)
PWD	Proximity Warning Facility

Code	
letters	Functions
SX	IFF transponder set (radar recognition)
RN	Vhf navigation sat and adf set (navigation) and AN/ASN-72
RY	Marker beacon
F	Compass and attitude indicating systems
RL	Hf ssb/am. radio set (liaison)
RA	Instrument, landing
RH	Homing
RS	Ship communication
RX	Recorder
RP	Radio power

c. Connector Replacement. The chart below lists all the electronic configuration wiring connectors that can be replaced at the organizational maintenance level.

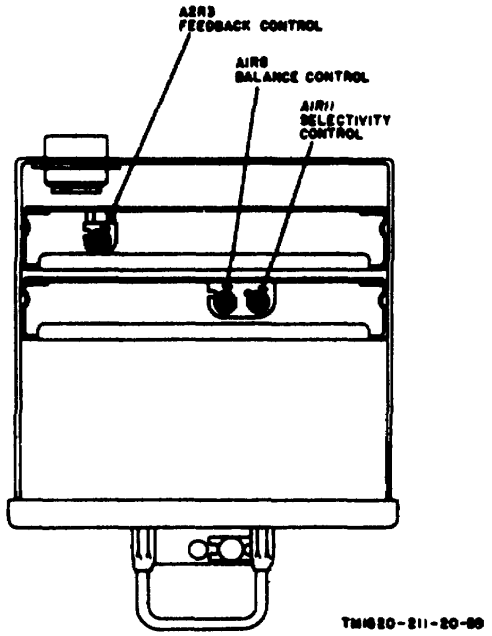


Figure 2-26. Converter, Radio-Magnetic Indicator CV-1275/ARN or B-18A adjustment controls

Facility	Connectors in Configuration							
	A	B	C	D	E	F	G	H
Fm liaison set AN/ARC-44 (fig. 4-3)	P803	P803	P803	P803				
	P815	P815	P815	P815				
	P101	P101	P101	P101				
	P602	P602	P602	P602				
	P603	P603	P603	P603				
	P604	P604	P604	P604				
	P606	P606	P605	P605				
	P606	P606	P606	P606				
	P307	P307	P307	P307				
	P201	P201	P201	P201				
	P702	P702	P702	P702				
	P609	P609	P609	P609				
	J609	J609	J609	J609				
	P601R	P601R	P601R	P601R				
	P601L	P601L	P601L	P601L				
	P701	P701	P701	P701				
	P610	P610						
AN/ARC-54					P605	P605	P605	P605
					P609	P609	P609	P609
					P0106	P2105	P2105	P105
					P2106	P106	P106	P2106
AN/ARC-54(fig. 4-24)								
					P1601	P1601	P1601	P1601
					P2107	P1107	P2107	P2107
					P601R	P601R	P601R	P601R

Facility	Connectors in Configuration							
	A	B	C	D	E	F	G	H
					P601L	P601L	P601L	P601L
					P2103	P210	P2103	P2103
					J2101	P2101	P2101	P2101
					P2102	P210	P2102	P2102
					P2102	J2102	J2102	J2102
					P2104	P2104	P2104	P2104
					J2104	J2104	J2104	J2104
Vhf emergency transmitter T-66/	P2302	P2302	P2302			P2302	P2802	P2302
ARC (fig. W2-8).	P2303	P2303	P2303			P2808	P2303	P2308
	P2304	P2304	P2304			P2804	P2304	P2304
	P2306	P2306	P2306			P2806	P2306	P2306
	P802	P802	P802			P802	P802	P802
	P804	P804	P804			P804	P804	P804
	P806	P806	P806			P806	P806	P806
	P2307	P2307	P2307			P2307	P2307	P2307
	P162	P162	P162			P162	P162	P162
	P163	P163	P163			P163	P163	P163
Uhf command et AN/ARC-61(*)			P1401	P1401	P1401	P1401	P1401	P1401
(fig. 4-4).			P1403	P1403	P1403	P1403	P1403	P1403
			P1405	P1405	P1405	P1405	P1405	P1405
			P3801	P3801	P3801	P3801	P3801	P3801
			P1407	P1407	P1407	P1407	P1407	P1407
AN/ARC-55(*) (fig. 4-25)	P1401	P1401						
	P1403	P1403						
	P1405	P1406						
	P1408							
	P1407	P1407						
	J1407							
	P3801	P3801						
Vhf command wt AN/ARC-78 (fig.	P1905	P1905	P1905	P1905	P1905	P1905	P1905	P1905
4-26).	P1904	P1904	P1904	P1904	P1904	P1904	P1904	P1904
	P1903	P1908	P1903	P1903	P1903	P1903	P1903	P1903
	P1902							
	P1901	P1901	P1901	P1901	P1901	P1901	P1901	P1901
	P804	P804	P804			P804	P804	P804
	P805	P805	P805			P805	P805	P805
	P1906	P1906	P1906 .	P1906	P1906	P1906	P1906	P1906
Hf-"b met AN/ARC-102 (fig. 4-)					P1801	P1801	P1801	P1801
					P1806	P1806	P1806	P1806
					P1809	P1809	P1809	P1809
					P1805	P1805	P1805	P1805
					J1805	J1806	J1805	J1805
					P1807	P1807	P1807	P1807
					J1807	J1807	J1807	J1807
					P1804	P1804	P1804	P1804
					P1803	P1803	P1803	P1803
					P1808	P1808	P1808	P1808
Vhf navigation set AN/ARN-30(*)	P303	P083	P803	P803	P303	P303		
(fig. 4-23).	P310	P310	P310	P310	P310	P310		
	P304	P304	P304	P304	P304	P304		
	P305	P306	P805	P305	P305	P305		
	P306	P306	P806	P306	P306	P806		
	P1706	P1706	P1706	P1706	P1706	P1706		
	P311	P311	P311	P311	P311	P311		
	P1501	P1501	P1501	P1501	P1501	P1501		
	P1601	P1601	P1601	P1601	P1601	P1601		

Facility	Connectors in Configuration							
	A	B	C	D	E	F	G	H
	P1303	P1303	P1303	P1303	P1303	P1303		
	J1303	J1303	P1303	J1303	J1303	J1303		
	P801	P801	P801	P801	P801	P801		
	J801	J801	J801	J801	J801	J801		
	P1305	P1305	P1305	P1305	P1305	P1305		
	P1307	P1307	P1307	P1307	P1307	P1307		
	P610	P610						
	P403	P403	P403	P403	P403	P403		
Vhf navigation set AN/ARN-82 (fig. 4-21).							P303	P303
							P304	P304
							P306	P306
							P403	P403
							P409	P409
							P311	P311
							P1601	P1601
							P1303	P1303
							J1303	J1303
							P601	P601
							P801	P801
							J801	J801
							P1305	P1305
							P1307	P1307
Lf adf navigation set AN/ARN-59 (V) (fig. 4-6).	P407	P407	P407	P407	P407	P407		
	P404	P404	P404	P404	P404	P404		
	P406	P406	P406	P406	P406	P406		
	P408	P408	P408	P408	P408	P408		
	P302	P302	P302	P302	P302	P302		
	P405	P405	P405	P405	P405	P405		
	P402	P402	P402	P402	P402	P402		
	P403	P403	P403	P403	P403	P403		
	P401	P401	P401	P401	P401	P401		
Lf adf navigation set AN/'ARN-83 (fig. 4-19).							P404	P404
							P406	P406
							P407	P407
							P302	P302
							P403	P403
							P401	P401
							P402	P402
J2 gyrosyn magnetic compass system (fig. 4-7).	P410	P410	P410	P410	P410	P410	P410	
	J410	J410	J410	J410	J410	J410	J410	
	P411	P411	P411	P411	P411	P411	P411	
	P412	P412	P412	P412	P412	P412	P412	
	P413	P413	P413	P413	P413	P413	P413	
	P409	P409	P409	P409	P409	P409	P409	
	P506	P506	P506	P506	P506	P506	P506	
	J506	J506	J506	J506	J506	J506	J506	
AN/ASN-43 Gyro magnetic compass system (fig. 4-20).								P410
								J410
								P411
								P409
								P415
								P506
								J506
Marker beacon, Receiver, Radio R-737/ARN or R-1041/ARN (figs. 2-34 and 3-35.1).	P501	P501	P501	P501	P501	P501	P501	P501
	P502	P502	P502	P502	P502	P502	P502	P502
	P506	P506	P506	P506	P506	P506	P506	P506

Facility	Connectors in Configuration							
	A	B	C	D	E	F	G	H
37X2 or 37RX-2 antenna Intercom-	J506	J5506	J506	J506	J506	J506	J506	J506
munication (fig. 4-17, 4-18, and 4-	P503	P503	P503	P503	P503	P503	P503	P503
27).	P301A	P301A	P301A	P301A	P301A	P301A	P301A	P301A
						P301B	P301B	P301B
	P303L	P301L	P301L	P301L	P301L	P301L	P301L	P301L
	P30R	P301R	P301R	P301R	P301R	P301R	P301R	P301R
	P600	P600	J600	J600	J600	J600	J600	J600
	P610	P610						
	J610	J610						
	J308L	J308L	J308L	J308L	J308L	J308L	J308L	J308L
	J308R	J308R	J308R	J308R	J308R	J308R	J308R	J308R
					P319	P319	P319	P319
					J319	J319A	J319A	J319A
						J319B	J319B	J319B
	J309	J309	J309	J309	J309	J309	J309	J309
	P20	P20	P20	P20	P20	P20	P20	P20
	J20	J20	J20	J20	J20	J20	J20	J20
	P22	P22	P22	P22	P22	P22	P22	P22
	J22	J22	J22	J22	J22	J22	J22	J22
	P162	P162	P162	P162	P162	P162	P162	P162
IFF transponder facility AN APX-44	P902	P902	P902	P902	P902	P902	P902	P902
(figs. 4-8 and 2-36).	P903	P903	P903	P903	P903	P903	P903	P903
						P906	P906	P906
						J906	J906	J906
	P901	P901	P901	P901	P901	P901	P901	P901
						P907	P907	P907
						J907	J907	J907
	P904	P904	P904	P904	P904	P904	P904	P904
						P909	P909	P909
						CP6	CP6	CP6
						P910	P910	P910
IFF transponder AN/APX-72	P908	P908	P905		P908	P908	P908	P908
	P906	P906	P906		P906	P906	P906	P906
	P907	P907	P907		P907	P907	P907	P907
	94-621	94-621	94-621		94-621	94-621	94-621	94-621
Navigation Set, Position Fixing AN/		P5001	P5001	P5001	P5001	P5001	P5001	P5001
ASN-72 (fig. 4-15).		P5002	P5002	P5002	P5002	P5002	P5002	P5002
		P5003	P5003	P5003	P5003	P5003	P5003	P5003
		P5004	P5004	P5004	P5004	P5004	P5004	P5004
		P5005	P5005	P5006	P5005	P5005	P5005	P5005
		P5006	P5006	P5006	P5006	P5006	P5006	P5006
		P5007	P5007	P5007	P5007	P5007	P5007	P5007
		P5008	P5008	P5008	P5008	P5008	P5008	P5008
		P5009	P5009	P5009	P5009	P5009	P5009	P5009
		P5010	P5010	P5010	P5010	P5010	P5010	P5010
		J5010	J5010	J5010	J5010	J5010	J5010	J5010
		P5011	P5011	P5011	P5011	P5011	P5011	P5011
		P5012	P5012	P5012	P5012	P5012	P5012	P5012
		P5013	P5013	P5013	P5013	P5013	P5013	P5013
		P5014	P5014	P5014	P5014	P5014	P5014	P5014
		P5015	P5015	P5015	P5015	P5015	P5015	P5015
		J5015	J5015	J5015	J5015	J5015	J5015	J5015
Attitude indicating system (fig. 4-22)	P131	P131	P131	P131	P131	P131	P131	P131
	P6	P6	P6	P6	P6	P6	P6	P6
	P129	P129	P129	P129	P129	P129	P129	P129
	P130	P130	P130	P130	P130	P130	P130	P130

Facility	Connectors in configuration							
	A	B	C	D	E	F	G	H
Motor Generator PU-543/U (fig. 4-7)	P164 P165 P191 P192 P24	P164 P165 P191 P192 P24	P164 P165 P191 P192 P24	P164 P165 P191 P192 P24	P164 P165 P191 P192 P24	P191 P192 P24	P191 P192 P24	P191 P192 P24
Battery BB-433-A (fig. 2-44)	P74	P74	P74	P74	P74	P74	P74	P74
Voice Security KY-28							P2202 P2202 P223	
Discriminator Discrete Signal MD-736-A.	J600 P301	J600 P301	J600 P301		J600 P301	J600 P301	J600 P301	J600 P301

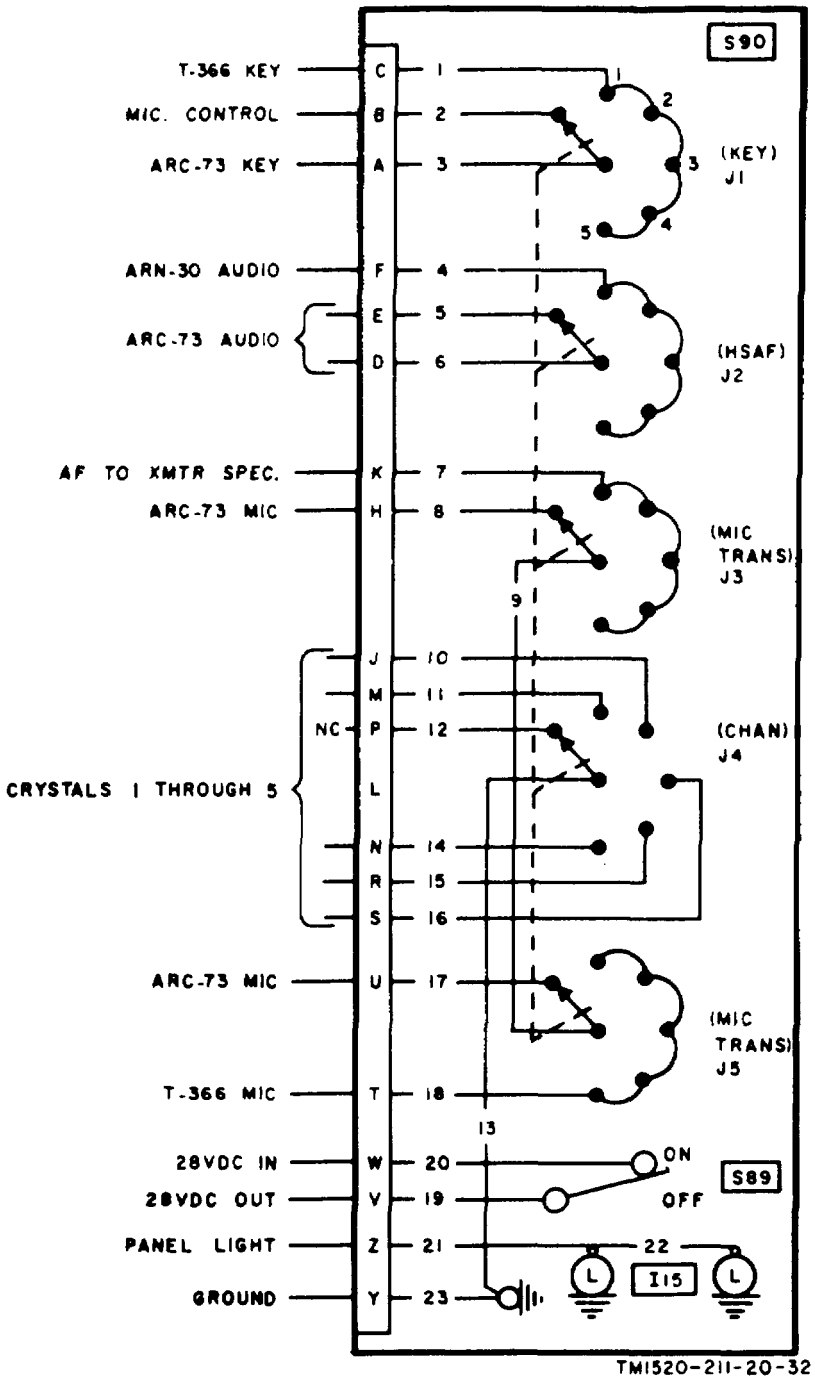


Figure 2-27. Vhf control panel wiring diagram (204-075-708).

Figure 2-28. Vhf navigation facility (AN/ARN-30 (*)), wiring diagram. (Deleted)

Figure 2-29. Fm liaison, Radio Set AN/ARC-54, wiring diagram. (Deleted)

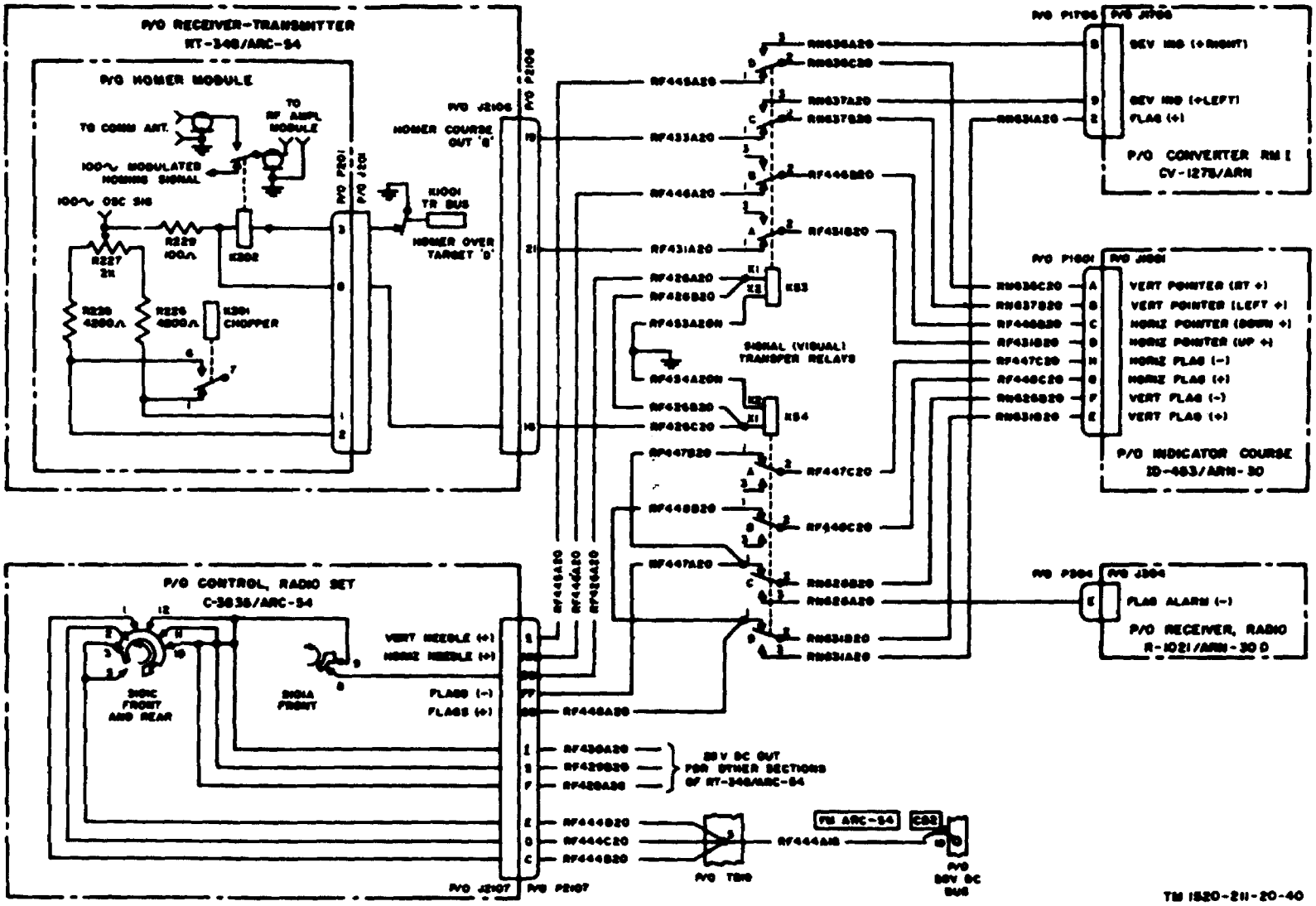


Figure 2-30. Fm homing display, Antenna Group AN/ARA-31, wiring diagram.

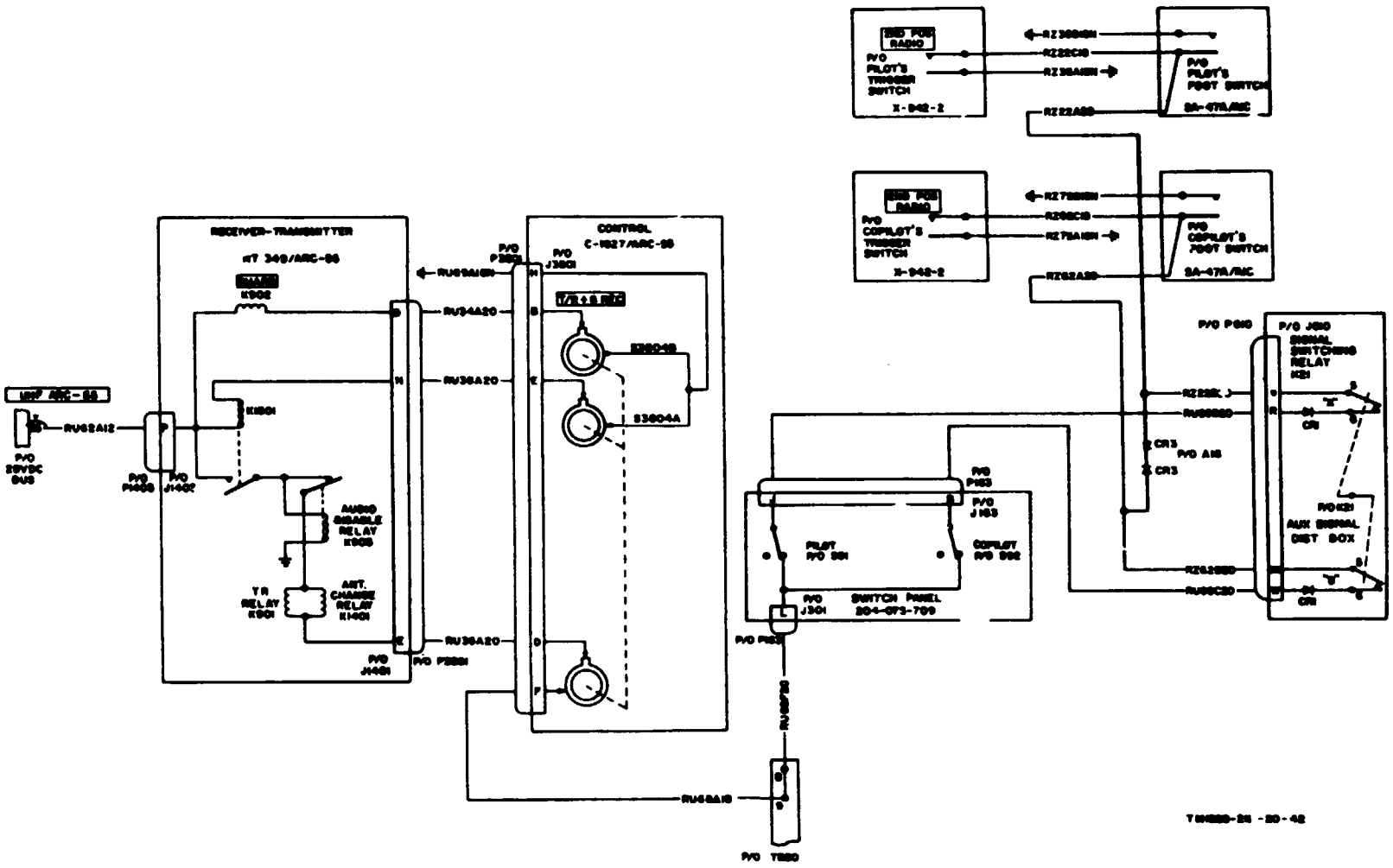


Figure 2-31. Uhf command facility, Radio Set AN/ARC-55, wiring diagram.

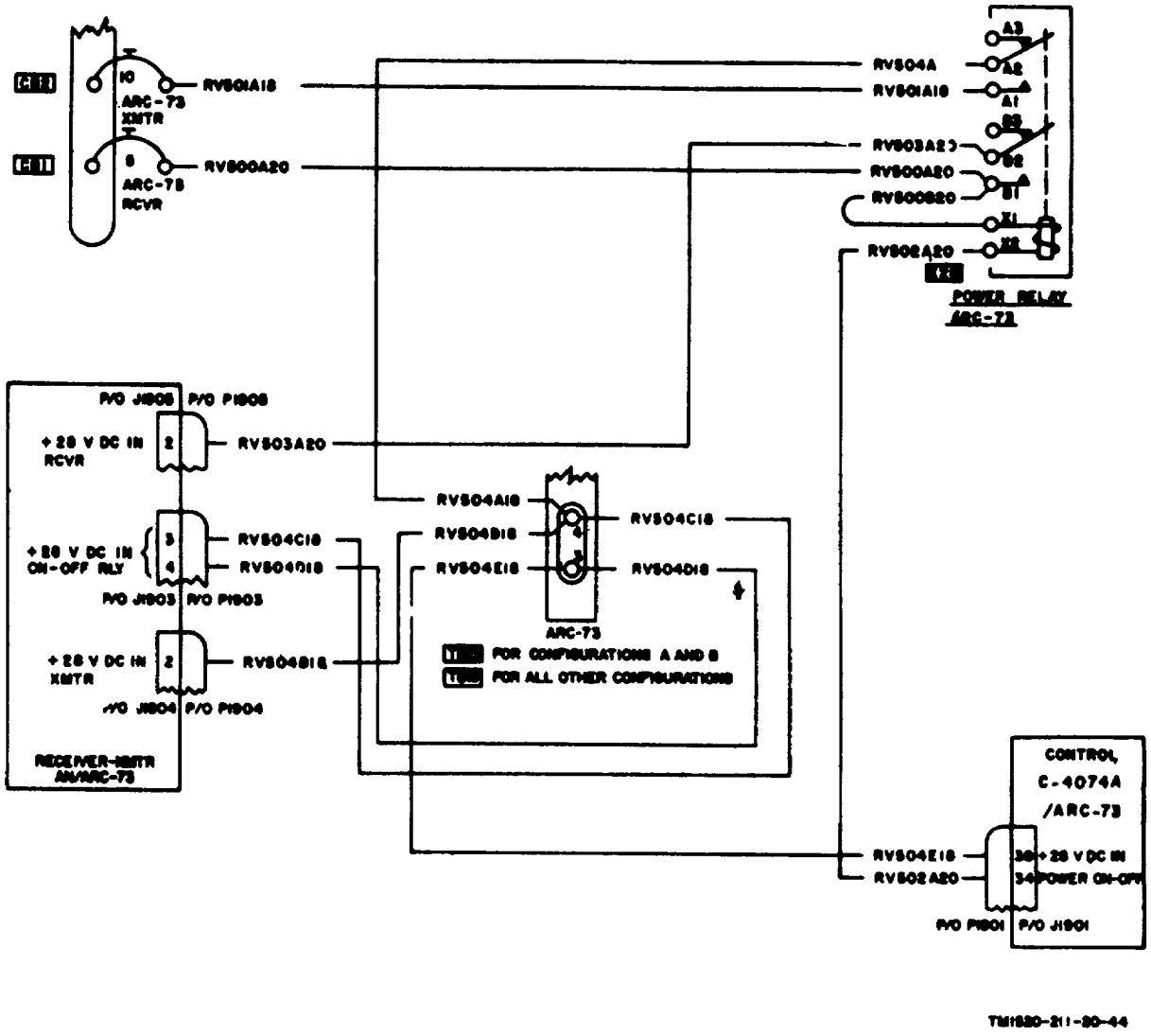


Figure 2-32. Vhf command facility, wiring diagram.

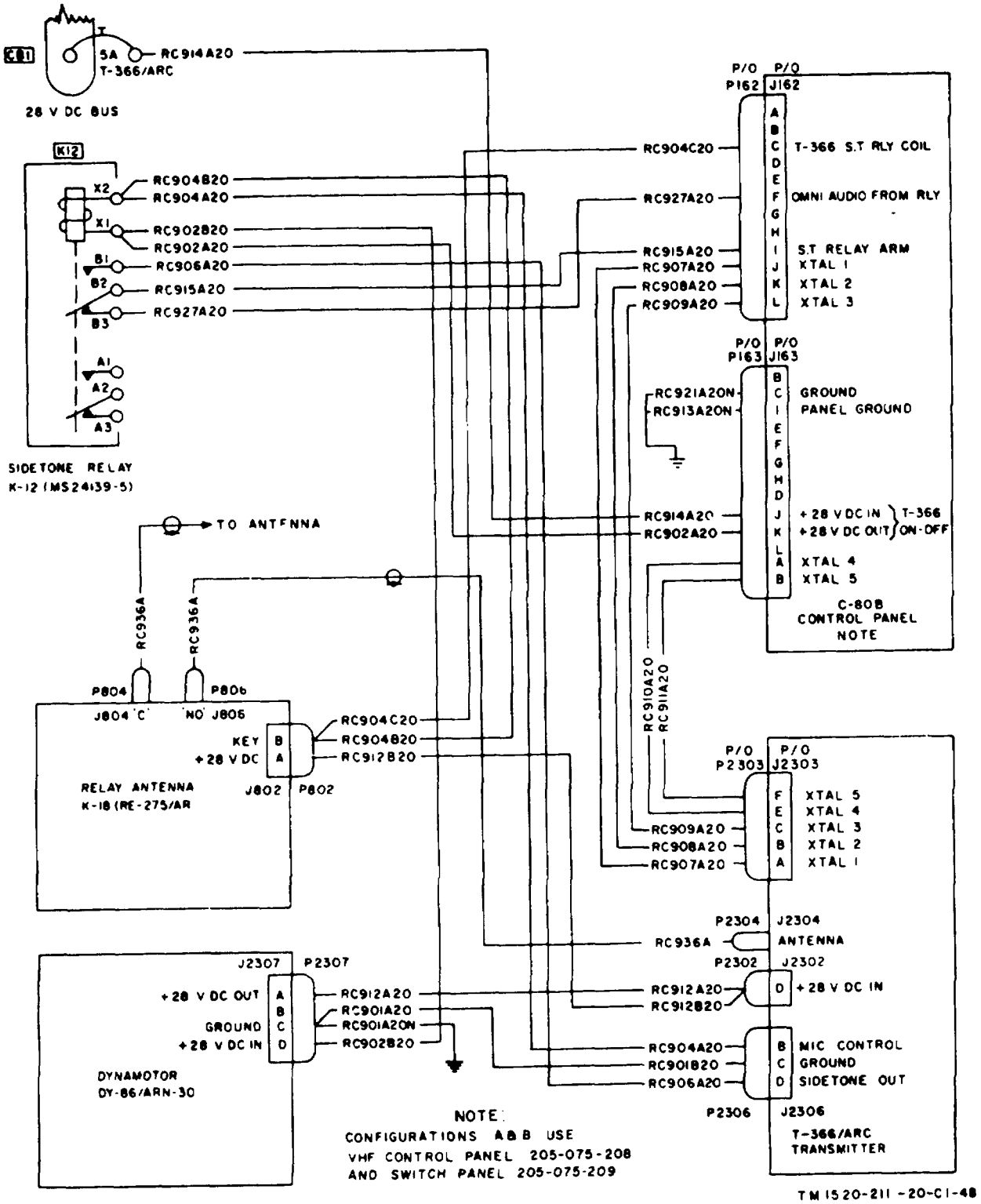


Figure 2-33. Vhf emergency radio transmittter facility wiring diagram.

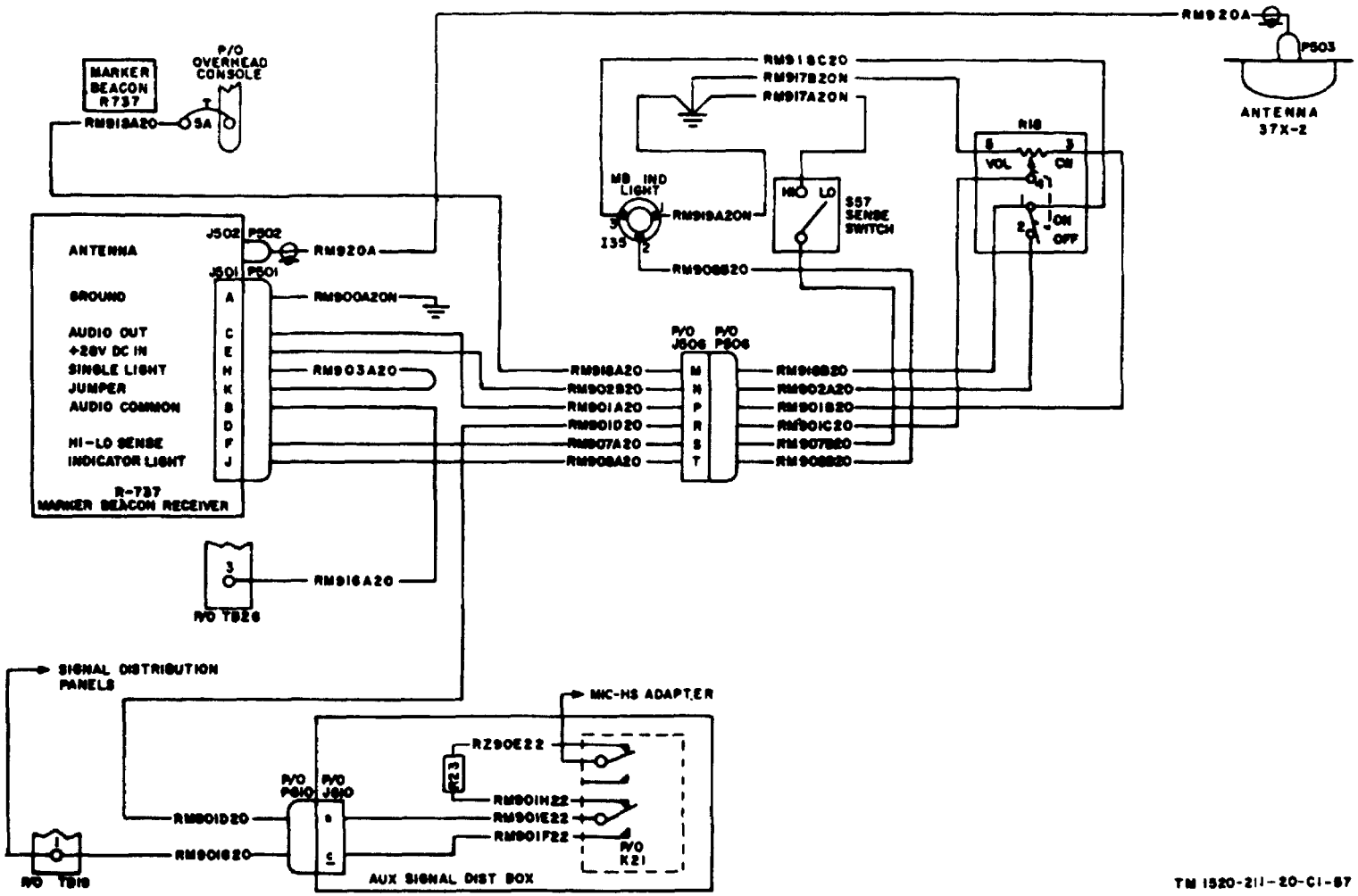


Figure 2-34. Marker beacon receiver facility wiring diagram (configuration A).

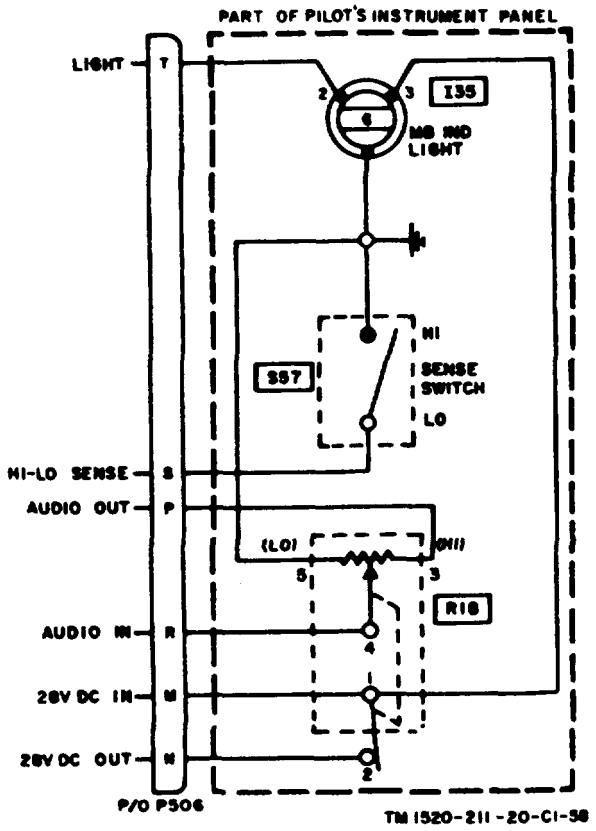


Figure 2-35. Marker beacon receiver controls (instrument panel).

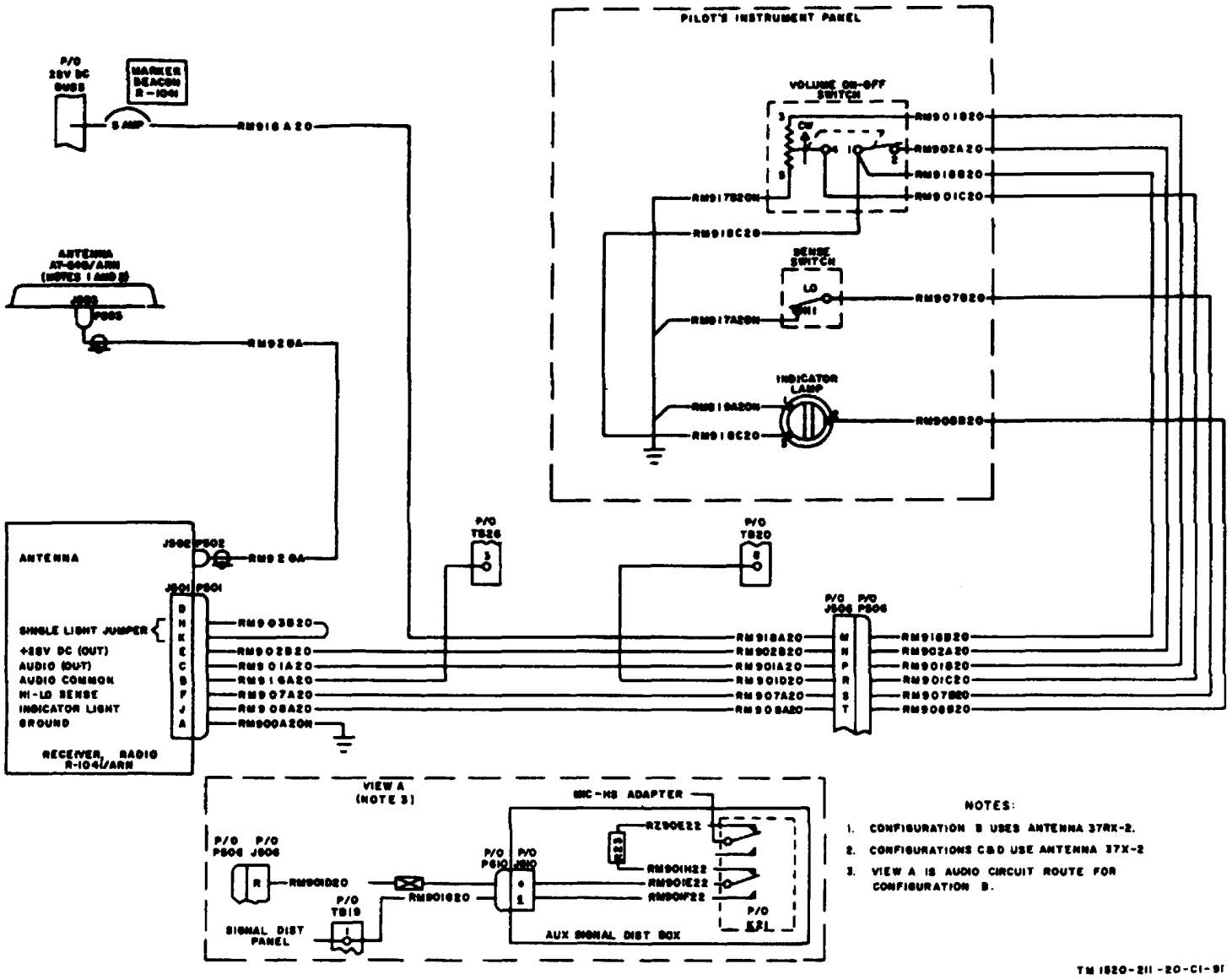


Figure 2-35.1. Marker beacon facility wiring diagram for R-1041/ARN receiver.

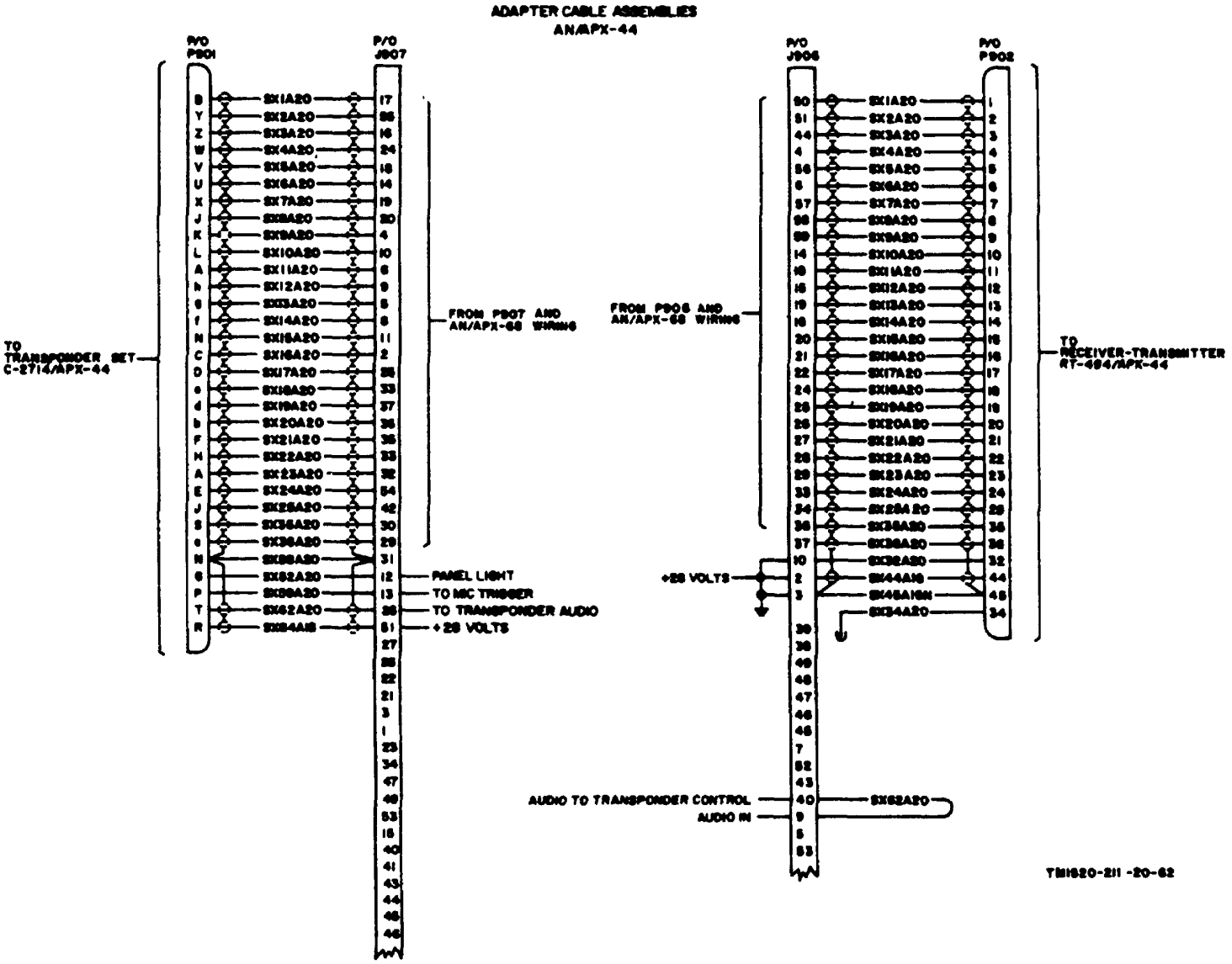


Figure 2-36. Transponder Set AN/APX-44 adapter cables, wiring diagram.

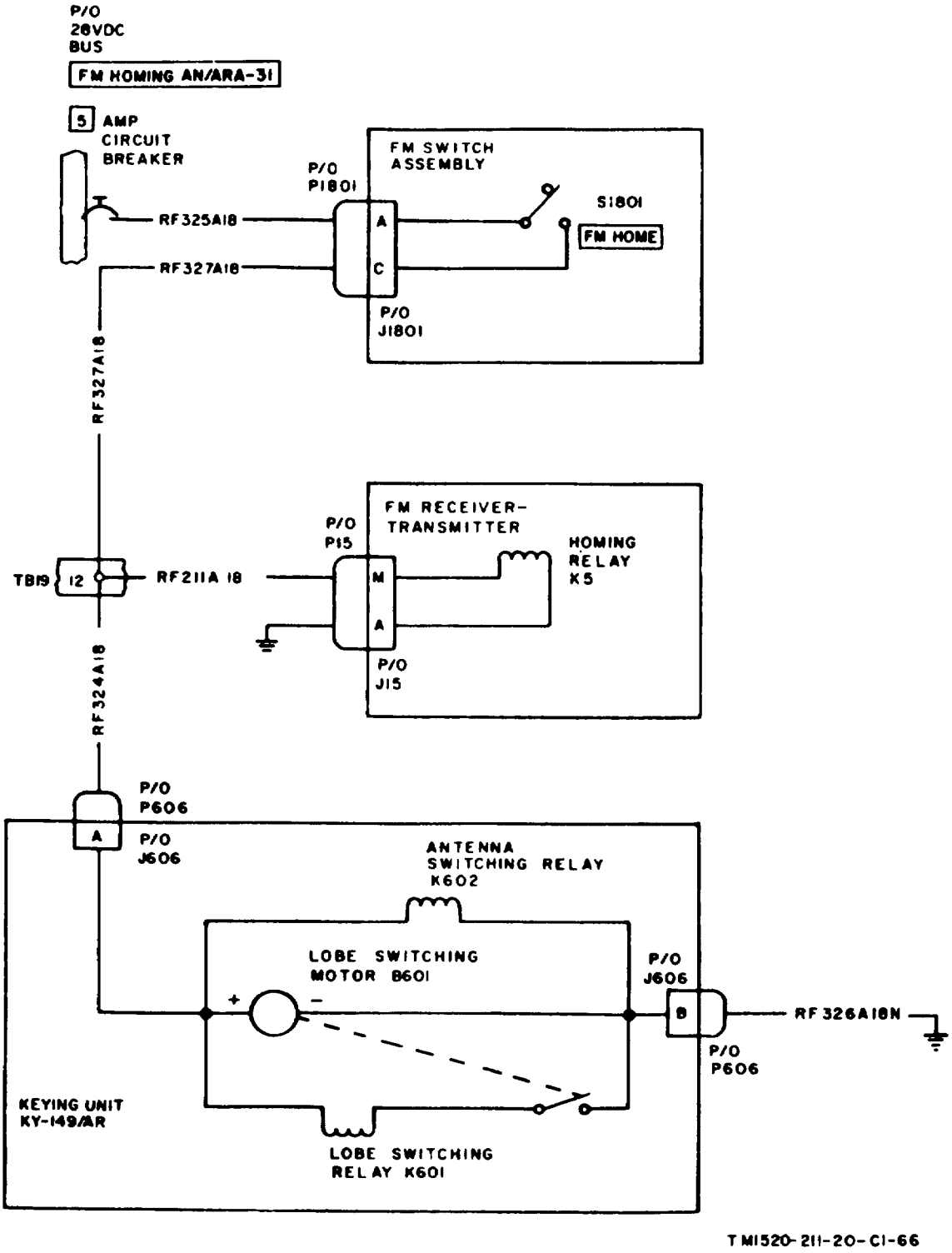


Figure 2-37. Fm homing facility wiring diagram, Antenna Group AN/ARA-31.

Section V. ADJUSTMENTS AFTER REPLACEMENT OR REPAIRS

2-85. Extent of Adjustments

Paragraphs 2-86 through 2-94 contain installation adjustments for electronic equipment reinstalled in the helicopter after repairs or after scheduled periodic pullout checks. The procedures described below must be accomplished before further maintenance checks or operation.

2-86. Adjustment of Radio Set AN/ARC-44

a. Press the FM ARC-44 and INTERCOM SB-329 or INTERCOM C-1611 circuit breaker buttons.

b. Place the BAT switch on the dc power control panel and the POWER switch on the fm control panel to the ON position.

c. Operate the ics switch on the frequency modulation (fm) switch assembly to the up position (only when Panels, Signal Distribution, Radio SB329/AR (signal distribution panels) are installed in the helicopter).

d. Place the operating controls of the fm control panel to the desired operating positions.

e. Connect the receiver output to the pilot's and copilot's headsets by placing the RECEIVERS 1 switch (fig. 2-5) on each distribution panel to the up position.

f. Set the VOL control on the pilot's distribution panel to the midposition.

g. Adjust the VOL control on the fm control panel until background noise level is at a minimum.

h. Set the FM SQUELCH switch on the fm switch assembly to the down position.

i. Adjust the SQUELCH control on the fm receiver-transmitter as instructed below:

Note. **The SQUELCH control is adjusted with no signal input to the receiver.**

(1) Place the fm receiver-transmitter in the receive condition.

(2) Adjust the VOL control (on fm control panel or on pilot's distribution panel) until background noise is at a minimum.

(3) Rotate the SQUELCH control on the front panel of the fm receiver-transmitter fully clockwise.

(4) Rotate the SQUELCH control counterclockwise to the position where background noise ceases; then rotate the SQUELCH control slightly clockwise until a slight amount of background noise is present.

2-87. Adjustment of Radio Set AN/ARC-54

a. Press the FM ARC-54 and INTERCOM C-1611 circuit breaker buttons.

b. Place the BAT switch on the power control panel to ON, and place the power switch on the fm control panel to PTT (ON).

c. Place the controls on the control panel to the desired operating condition.

d. Place the RECEIVERS 1 switch on each distribution panel (fig. 2-5) to the up position.

e. Set the VOL control on the pilot's distribution panel to midposition.

f. Set the SQUELCH control on the fm control panel to the CARR position.

g. Adjust the VOL control on the fm control panel until the background noise level in the headset is at a minimum.

h. Adjust the SQUELCH control on the fm receiver-transmitter as instructed below:

(1) Disconnect the coaxial cable at the tail boom disconnect point.

(2) With the SQ ADJ control on the receiver-transmitter turned fully counterclockwise, adjust the VOL control on the control panel until the background noise in the headset is at a minimum.

(3) Rotate the receiver-transmitter SQ ADJ control clockwise until the background noise just cuts out. Do not rotate the control beyond this point.

(4) Check the squelch setting on several frequencies. If all frequencies selected are not fully squelched, rotate the SQ ADJ control slightly clockwise.

2-88. Adjustment of Radio Set AN/ARC-55

a. Set the ultra-high frequency (uhf) command set in its normal operating condition.

b. Rotate the SENS control knob on the uhf control unit fully counterclockwise.

c. Adjust the MAIN SENS control on the front panel of the uhf receiver-transmitter until a slight hiss is heard in the headset-microphone on the highest gain channel of all channels to be used. Readjust the control slightly until the hissing sound is eliminated.

***Note*. The highest gain channel should be in the vicinity of 280 to 360 mc.**

d. Set the selector switch on the uhf control unit to T/R + G REC.

e. Adjust the GUARD SENS control on the front panel of the uhf receiver-transmitter to a point just below the position at which the squelch circuit operates.

2-89. Adjustment of Transmitter, Radio T-366/ARC

When Transmitter, Radio R-366/ARC has been replaced, its power amplifier-doubler plate circuit must be tuned. The added length of the very-high frequency (vhf) antenna cable may cause the final tank circuit to be slightly out of resonance despite bench tuning. Tune the vhf transmitter for maximum radio frequency (rf) output as follows:

a. Remove the cover of the T-366/ARC vhf transmitter (fig. 2-38), and connect the multimeter (10-volt dc range) between test jack J207 and chassis ground.

b. Turn the switch on the vhf control panel to ON ; and the TRANS selector switch to position : 3, and allow 3 minutes to warm up to insure stabilization.

c. Key the T-366/ARC by depressing the trigger switch on the cyclic stick grip (fig. 2-24) to the second detent. Do not voice-modulate the transmitter during the adjustment.

d. Tune L201 and L202 (fig. 2-38) for maximum reading on the multimeter.

e. Turn the switch on the vhf control panel to OFF.

f. Remove the multimeter and replace the transmitter cover.

g. Disconnect the auxiliary power unit.

2-90. Adjustment of Radio Set AN/ARC-73

a. Transmitter Tuning. Turn on the radio set, and tune it as follows:

(1) Turn the megacycle dial control knob on the transmitter remote control until the assigned megacycle transmitting frequency appears in the FREQ MC indicator window.

(2) Turn the kilocycle (kc) dial control knob until the assigned 50-kc frequency appears in the FREQ MC indicator window.

NOTE:

I. T-366/ARC TRANSMITTER NOT INSTALLED ON CONFIGURATIONS D & E

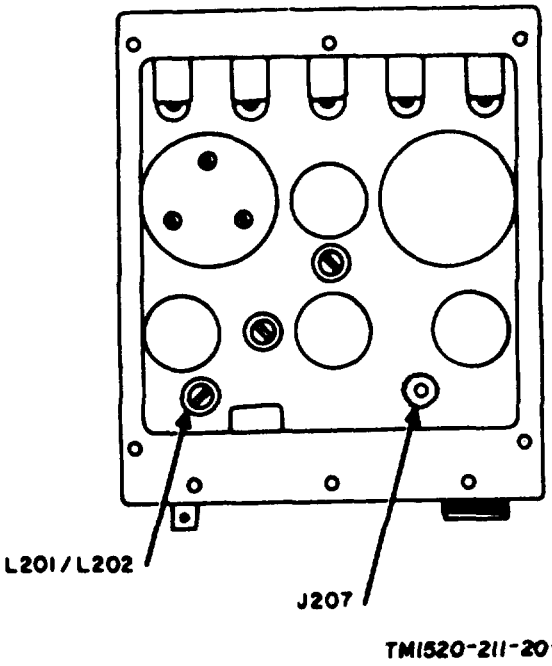


Figure 2-38. Adjustment screw and test jack location, Transmitter, Radio T-366/ARC.

b. Receiver Tuning.

(1) Turn the megacycle dial control knob on the receiver remote control until the assigned receiving frequency (in megacycles) appears in the FREQ MC indicator window.

(2) Turn the kilocycle dial control knob until the assigned 50-kc receiving frequency appears in the FREQ MC indicator window.

(3) Adjust the SQUELCH control so that no annoying noise is heard in the

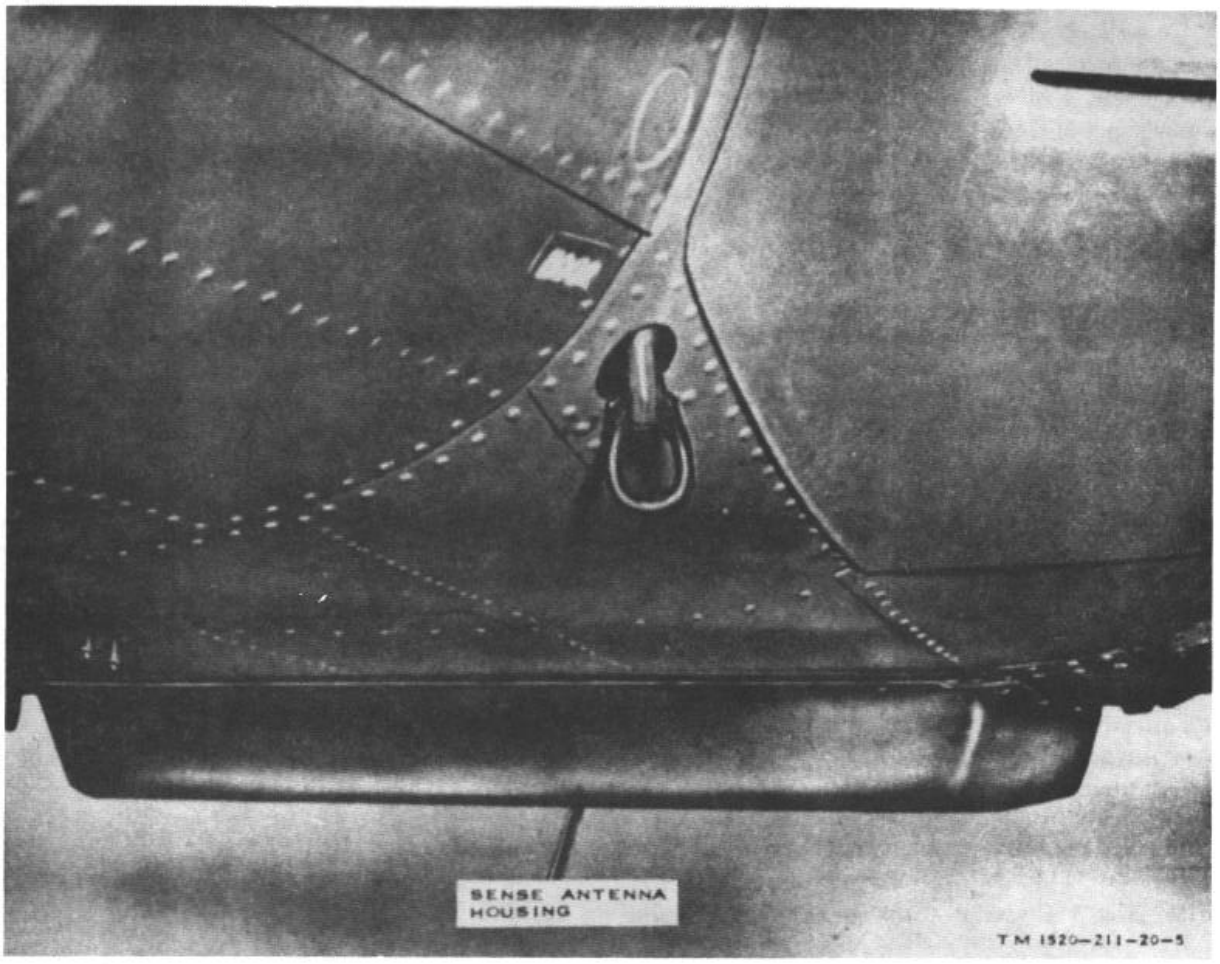


Figure 2-39. Location of automatic direction finder (adf) Sense Antenna (204-075-328)

headset when a signal is not being received.

Note. **Any channel may be opened to permit reception of weak signals by pressing the SQUELCH pushbutton switch on the receiver.**

(4) Adjust the VOL control for proper volume of received signal.

c. Stopping Procedure. Operate the POWER switch on the receiver remote control to OFF. This condition deenergizes all components of the radio set.

2-91. Adjustment of Radio Set AN/ARC-102

a. Depress the HF ARC-102 and INTERCOM C-1611 circuit breaker buttons.

b. Place the BAT switch on the DC POWER control panel to ON.

c. On the pilot's and copilot's distribution panels, place the RECEIVERS 4 switches to ON and the TRANS selector switches to position 4. On the same panels, set the VOL controls to their midposition.

d. Set the mode selector switch on Control, Radio Set C-3940/ARC-94 control unit to the

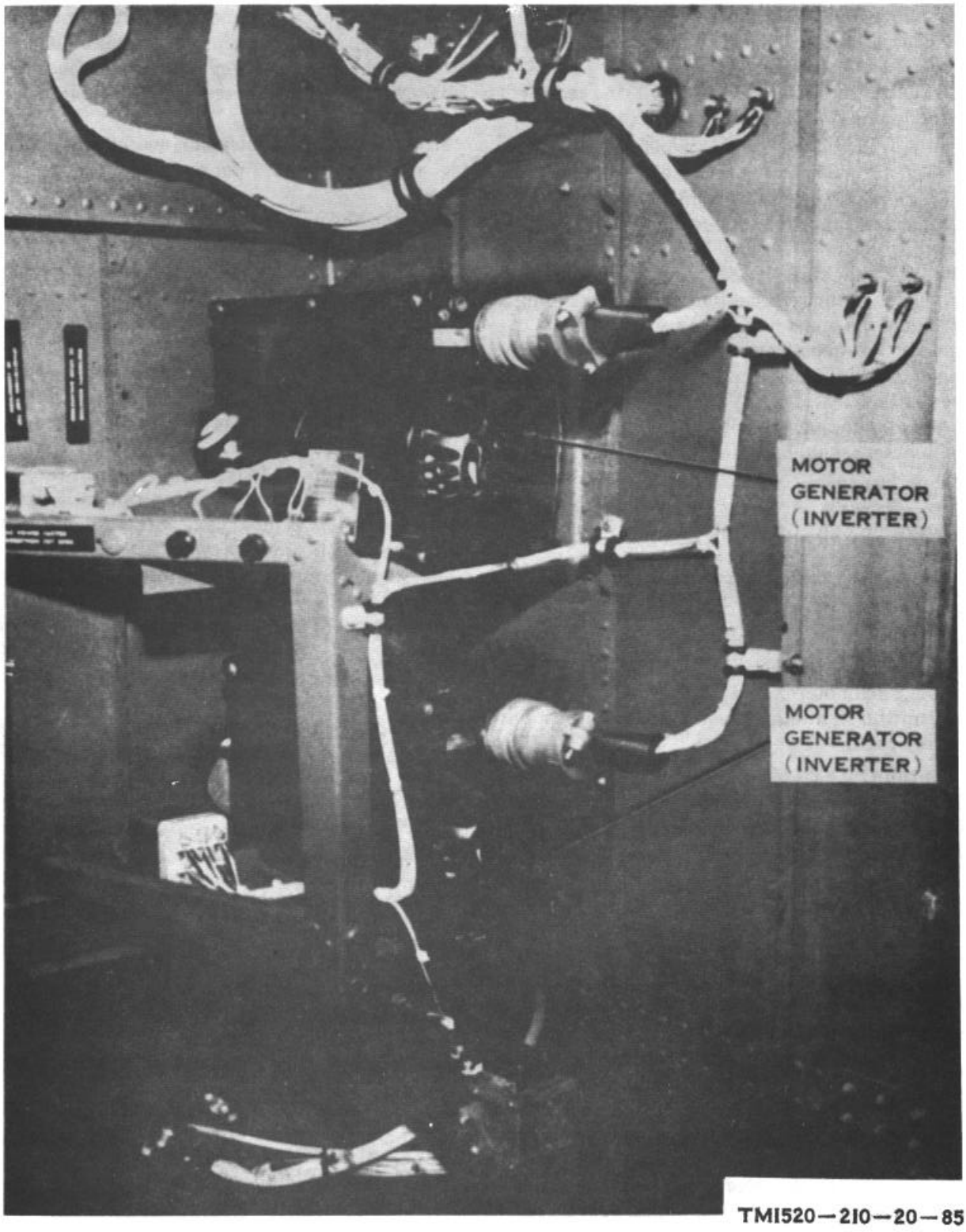


Figure 2-40. Installation of Motor-Generators PU-543.(*)/A.

AM position. Allow 5 minutes for Receiver-Transmitter RT-698/ARC-102 to warm up.

e. Check to see that the blower in the RT-698/ARC-102 is operating.

f. Tune the RT-698/ARC-102 to each of the following WWV frequencies:

2.500 mc	15.000 mc
5.000 mc	20.000 mc
10.000 mc	25.000 mc

Perform an approximate frequency check by listening to WWV with the mode selector switch in the USB, LSB and AM positions during an announcement interval. Voice quality should be good in all three modes.

g. Set the meter selector switch on the front panel to 130 V. The meter should indicate in the red area.

h. Set the meter selector switch to 28 V. The meter should again indicate in the red area.

i. Tune the RT-498/ARC-102 to a frequency on which the transmitter may be keyed.

Note.

To key the transmitter, depress the pilot's or copilot's trigger switch to position 2, or depress the footswitch.

j. Set the meter selector switch to 1500 watts. When the transmitter is not being keyed, the meter should read zero. Key the transmitter, and the meter should indicate in the red area.

Caution:

The blower must speed up when the RT-M/ARC-102 is keyed. If it does not, immediately unkey the transmitter and investigate.

k. Set the selector switch to PA MA. When the transmitter is not being keyed, the meter should read zero. Disconnect the coaxial cable jumper from the 500 KC STD jack on the right front panel of the RT-698/ARC-102. Key the transmitter, and the meter should read approximately 300 milliamperes (ma). Unkey the transmitter and replace the coaxial jumper. Again key the transmitter and speak into the microphone. The meter should indicate in the red area and should not vary while the transmitter is being modulated.

l. Set the mode selector switch on the control panel to LSB. When the front panel switch is set to PA MA and the transmitter is not being keyed, the meter should read approximately 260 ma. Key the transmitter, and speak into the microphone. The meter indication should follow the applied audio. The meter indication on audio peaks should be about 30C ma Note the presence of adequate sidetone.

m. Set the mode selector switch on the control panel to USB. Repeat the procedure in/ above.

n. Set the mode selector switch on Control, Radio Set C-3940/ARC-94 to the AM position. The RT-698/ARC-102 and Network, Impedance Matching CU-991/AR must have been turned on for at least 5 minutes before the following tests are initiated.

o. Rotate the channel selector of the radio set control to any channel, making certain that the channel used is free of other radio communication.

p. The CU-991/AR should begin the tuning cycle unless connected for radio silence. In this case, the tuning cycle will not start until the transmitter is keyed. The antenna coupler should complete the tuning cycle in less than 30 seconds.

Caution:

The maximum duty cycle of the CU-991/AR is 5 minutes on and 5 minutes off. Do not key the transmitter beyond this time limit.

q. Upon completion of the tuning cycle, observe the CU-991/AR SWR meter. The SWR meter should indicate below the red mark.

r. Select several channels at random within the 2- to 25-mc range, and repeat the checks outlined in p and q above for each channel.

Note.

Upon completion of each tuning cycle, wait at least 30 seconds before selecting a new channel. This condition will prevent overheating time delay relay K711.

s. After the CU-991/AR has passed the preceding tests, a test of actual communication is advisable. Use at least three frequencies (if possible) within the range of 2 to 25 mc, and establish two-way communication with the operation tower or with ground stations located several miles from the helicopter.

2-92. Adjustments of Radio Set AN/ARN 30(*)

For proper operation, the mechanical linkage between Control, Radio Set C-3436(*)/ARN-30 and Receiving Set, Radio R-1021/ARN-30D

must be adjusted. This is accomplished as follows:

a. Connect the mechanical linkage cable between the C-3436(*)/ARN-30 vhf navigation control unit and the RT-1021/ARN-30D vhf navigation receiver, without regard to the setting of the dial on the vhf navigation control unit or to the tuning of the vhf navigation receiver.

b. Use the tuning crank on the C-3486(*) /ARN-30 vhf navigation control unit to turn the frequency dial fully counterclockwise.

c. Disconnect the mechanical linkage at the rear of the C-3436(*)/ARN-30 vhf navigation control unit.

d. Turn the tuning dial on the C-3436(*) /ARN-O30 vhf navigation control unit with the tuning crank until the small dot about one-eighth inch to the right of the 125-mc line comes directly under the triangular-shaped reference mark.

e. Replace the mechanical linkage; be careful not to change the relative position of the shaft or the spline to which it is attached.

f. Test the accuracy of the dial positioning by tuning in several stations of known frequency.

2-93. Adjustment of Direction Finder Set AN/ARN-59(V)

a. Tuning Dial. To calibrate the tuning dial of Control, Receiver C-2275/ARN with the adf receiver tuning capacitor, follow the procedure below.

(1) On the C-2275/ARN, rotate the tuning crank counterclockwise until it hits the mechanical stop. Do not force it beyond this point.

(2) Disconnect the mechanical linkage at the rear of the C-2275/ARN.

(3) Turn the tuning crank until the line just to the right of the high frequency end of the dial is aligned with the reference line.

(4) Reconnect the mechanical linkage to the rear of the C-2275/ARN. Be careful not to change the relative position of the shaft or the spline to which it is attached.

b. Loop Compensation. For loop compensation procedures, refer to TB 11-5826-217-30/1.

2-94. Compensation of Aircraft Magnetic Compass J2 and AN/ASN-43

Caution:

The magnetic compass system is a delicate instrument and should not be handled by untrained personnel.

a. Check the alignment of the remote compass transmitter to see that the fore-and-aft markings on the transmitter case line up with the centerline of the helicopter.

b. Set the helicopter on a compass rose, and connect a source of external power to the helicopter (para 2-4).

c. Refer to TM 11-6605-200-35 for complete compensating (calibrating) procedure.

d. Refer to TM 11-6605-202-35 for complete compensating procedures for AN/ASN-43 compass system.

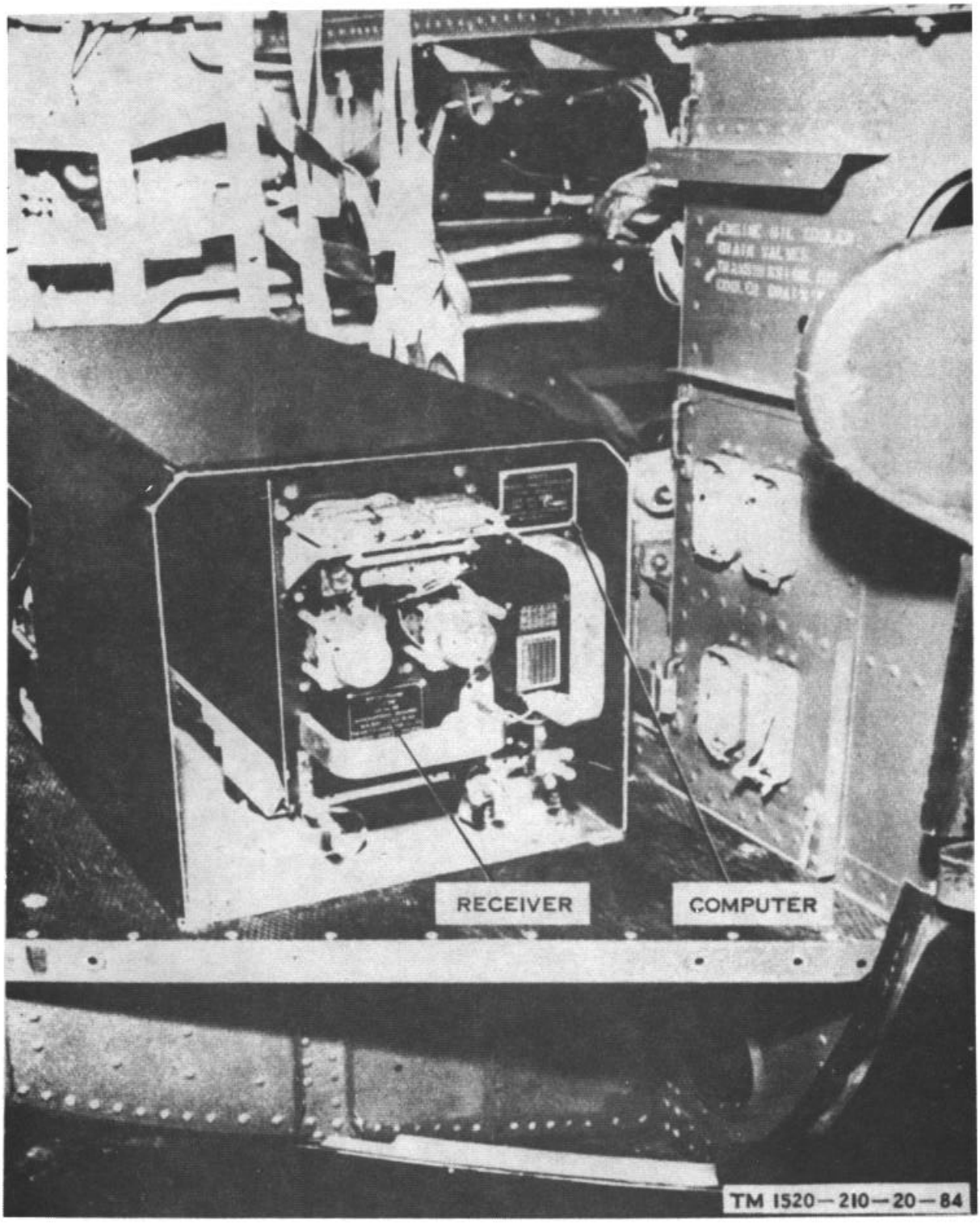


Figure 2-41. AN/ASN-7, receiver and computer location.

Figure 2-42. AN/ASN-72, control panels and instruments location. (Deleted)

Figure 2-43. AN/ASN-72, flight log display head location. (Deleted)

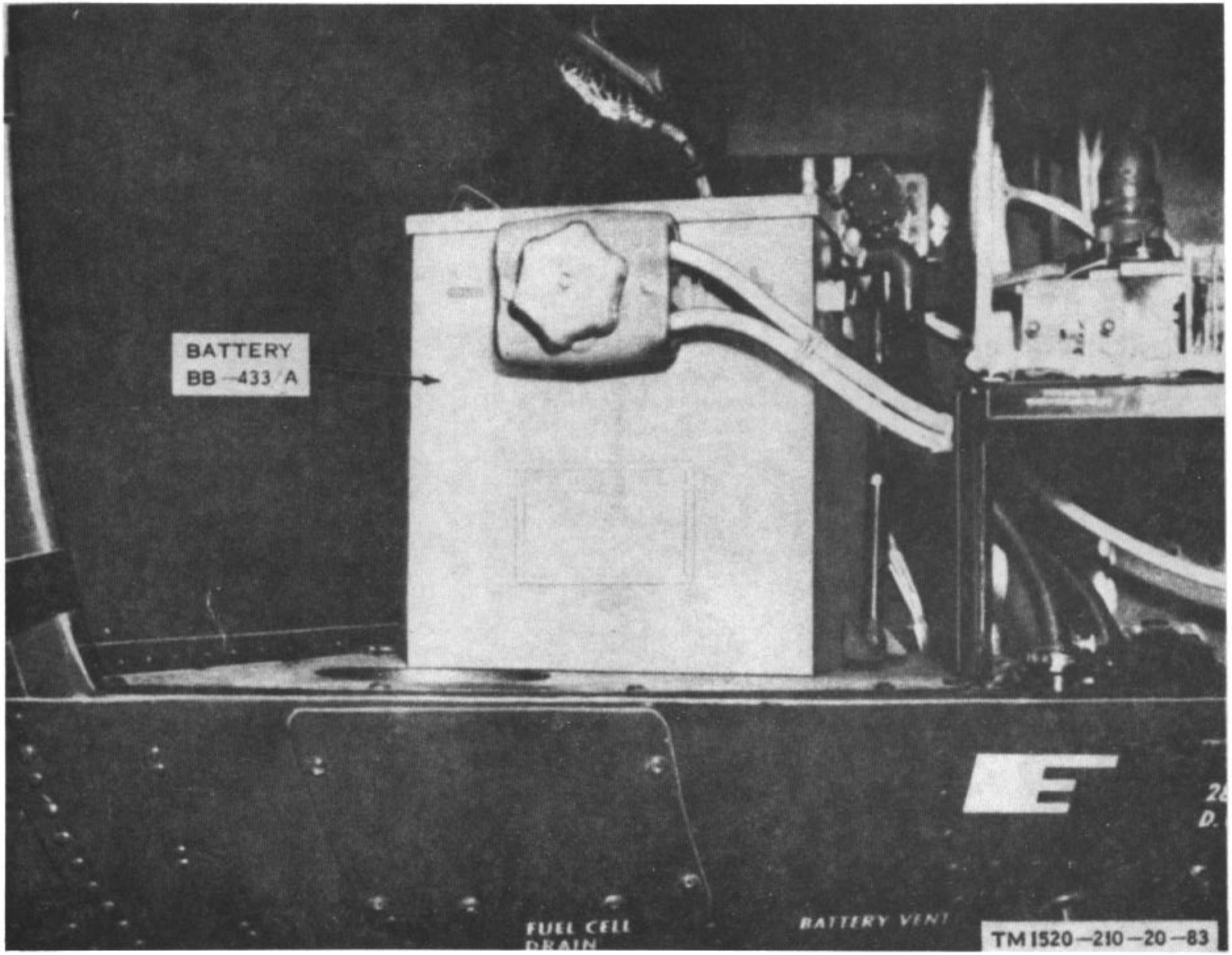


Figure 2-44. Battery, Storage BB-433/A location.

CHAPTER 3

BLOCK DIAGRAM ANALYSIS

3-1. Configuration Systems and Facilities

The purpose, operation, and interoperation of the various circuits (electronic, electrical, mechanical, and electromechanical) in these electronic equipment configurations (figs. 412, 4-13, 4-14, and 4-16) and in their individual electronic equipments are explained in this chapter and also in the technical manuals covering certain electronic components of the electronic equipment configuration (app. 1).

Familiarity with the electronic equipment configuration and the individual electronic equipments, how they work, and why they work the way they do, is important in rapidly and effectively troubleshooting the electronic equipment configuration and the individual electronic equipments.

3-2. Radio Set AN/ARC-44

(figs. 3-1 and 4-3)

The AN/ARC-44 fm liaison set provides the following facilities:

a. Two-way audio communication within the helicopter (interphone) and two-way communication between the aircraft and ground stations in a frequency range of 24.0 to 51.9 mc is provided. Primary power of +28 volts dc is supplied through circuit breaker FM ARC-44, INTERCOM SB-329, or INTERCOM C1611 on the dc circuit breaker panel. Components of the AN/ARC-44 fm liaison set include a Receiver-Transmitter, Radio RT-294 (*)/ARC-44, Control Panel Assembly 204075-219 (SA-474/AR modified) (fm switch assembly), and three Panels, Signal Distribution, Radio SB-329/AR. Antenna AT-454(*)/ ARC for the system is mounted on the tail boom. Keying Unit KY-149/AR is used in conjunction with the AN/ARC-44 fm liaison set to allow for the use of Antenna Group AN/ARA-31 with the RT-294(*)/ARC-44 fm receiver-transmitter.

b. Selection of fm or homing reception is accomplished by the fm switch assembly on each of the distribution panels.

3-3. Radio Set AN/ARC-54

(figs. 3-2 and 4-24)

a. Radio Set AN/ARC-54 is a lightweight airborne radio set that provides the pilot and copilot of the helicopter with two-way communication between helicopter and ground stations within the tactical frequency modulation band of 30.0 to 69.9 megacycles.

b. The AN/ARC-54 fm liaison set is used for air-to-air and air-to-ground communication and for homing. Primary +28 volts dc is supplied through circuit breaker AN ARC-54 or C-1611/AIC on the dc circuit breaker panel. Components of the AN/ARC-.54 include Receiver-Transmitter RT-348/ARC-5.1, Control, Radio Set C-3835/ARC-54, and Antenna AT-765/ARC, which is mounted on the tail boom. Antenna Assembly 637A-2 is also used with the RT-348/ARC-54 to provide a homing mode. Two external relays, designated K53 and K54 and mounted near the RT-348/ARC-54 are controlled)by a switch on the C-3835/ARC-54 control panel and are energized when the switch is set to HOME. The energized relays transfer homing signals from Receiving Set, Radio AN/ARN-30(*) or AN/ARN-82 to the AN/ARC-54 to operate Indicator, Course ID-453/ARN-30 or ID-1347/ARN-82.

3-4. Radio Set AN/ARC-S1(*)X

(fig. 3-3)

a. The AN ARC-51(*)/X uhf command set

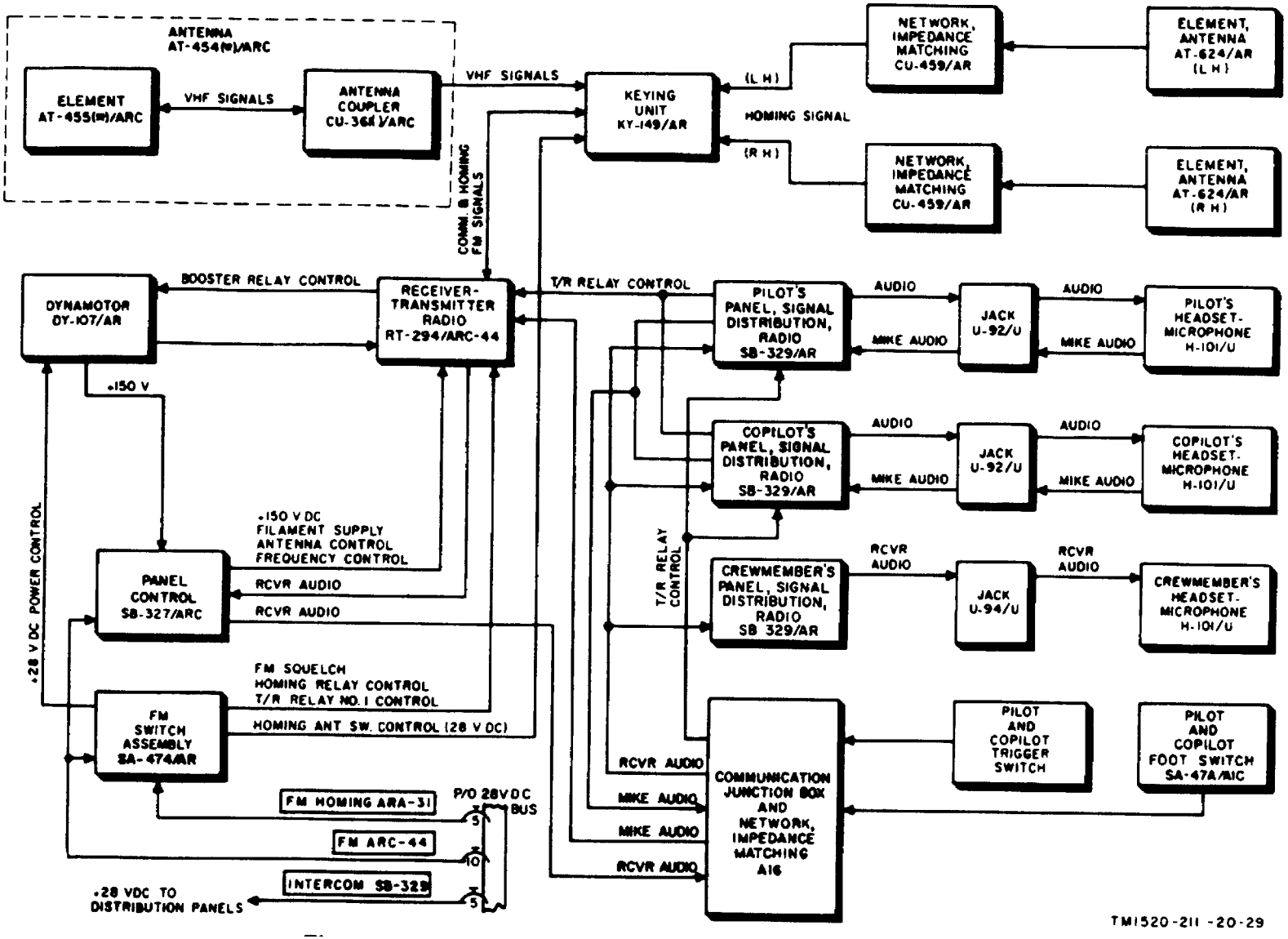


Figure 3-1. Fm liaison facility diagram, Radio Set AN/ARC-44, configurations A through D.

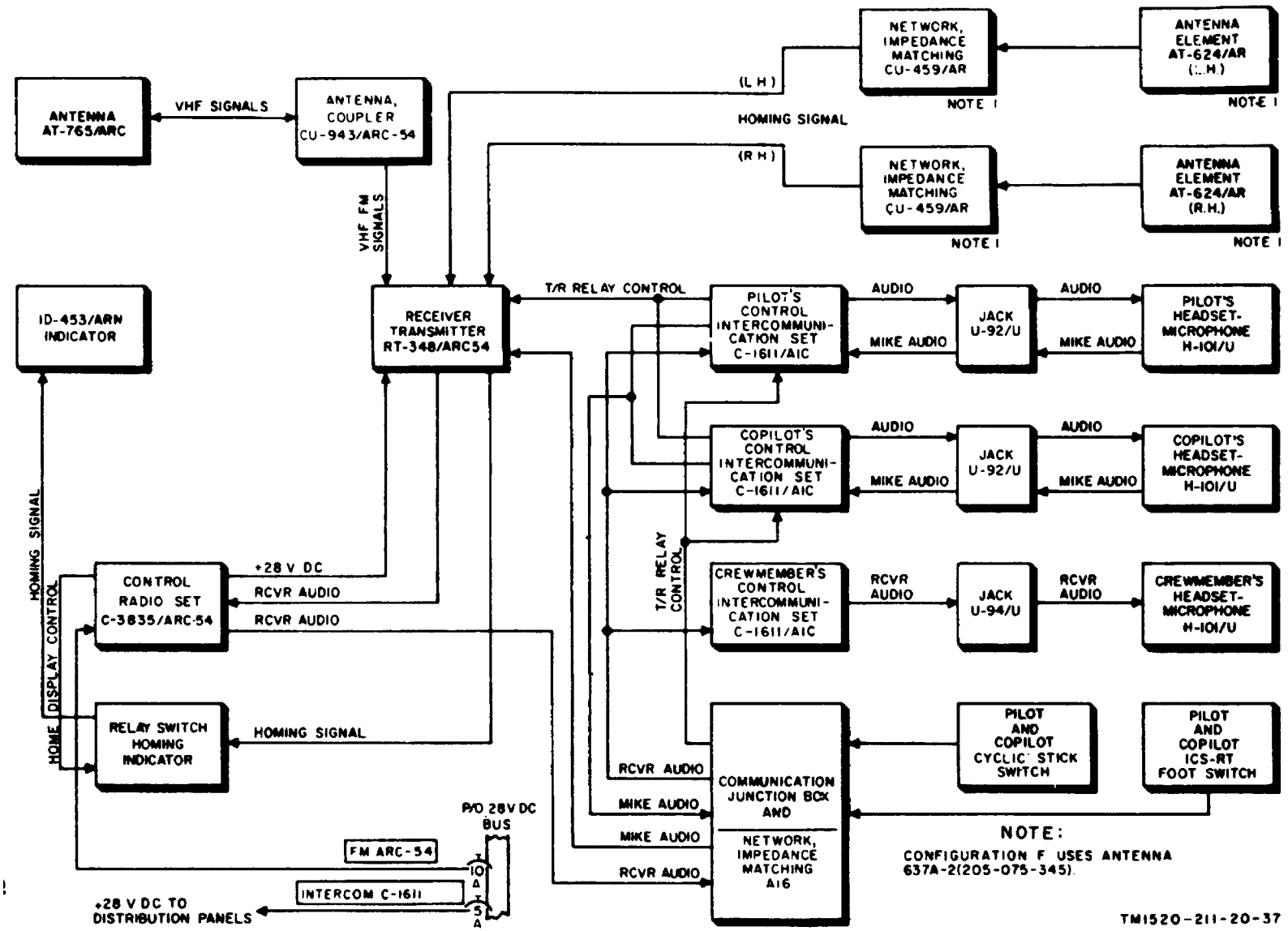


Figure 3-2. Fm liaison facility block diagram, Radio Set AN/ARC-54 (configurations A through H).

provides amplitude modulation (am.) voice communication within the uhf band of 225.0 to 399.9 me. Radio Set AN/ARC-51X is tuned in increments of .1 mc, and Radio Set AN/ ARC-51BX is tuned in increments of .05 mc. Two-way communication is provided between helicopters in flight, helicopter and ground, or helicopter and surface ships. Transmission and reception are conducted on the same frequency using a common antenna. Components of the AN/ARC-51X are: Receiver-Transmitter RT-702/ARC-51X, Mounting MT-2653/ARC, and Control, Radio Set C-4677/ARC-51X, an external blower, and a reflectometer. Components of the AN/ARC-51BX are: the RT-742/ARC-51BX, the MT-2653/ARC, and the C6287/ARC-51BX, an external blower, and a reflectometer. Control units and receiver-transmitters are not interchangeable and must be used only with their respective radio sets. Primary power +28 volts dc is applied to the AN/ARC-51(*)X through circuit breaker UHF ARC-51.

b. A guard channel, which is a part of the receiver-transmitter, monitors a fixed frequency channel. The receiver-transmitter is the main unit of the radio set and is pressurized. The external blower and reflectometer are installed on the receiver-transmitter case. Connections for primary power and signals for the AN/ARC-51(*)X are made on the front of the receiver-transmitter and on the rear of the radio set control. Connections to Antenna AT-1108/ARC are made from the reflectometer. The transmitter portion of the AN/ARC-51 (*) X may be tone-modulated for emergency or direction finding purposes.

3-5. Radio Set AN/ARC-55(*)

(figs. 4-25 and 3-4)

a. The AN/ARC-55(*) provides two-way communications between the helicopter and ground installations. The AN/ARC-55(*) is capable of providing transmission and reception on any one of 1,750 frequency channels in the frequency band of 225.0 to 399.9 mc. A guard channel, in the frequency range of 238.0 to 248.0 mc,, is provided to monitor a predetermined frequency. The transmitter portion of the AN/ARC-55 (*) can be tone-modulated for emergency or direction finding purposes. Transmission and reception is accomplished with Antenna AT-450/ARC or Antenna AT-1108/ARC (Antenna 37R-2U).

b. Primary +28 volts dc is supplied to the AN/ARC-55(*) through the UHF ARC-55 circuit breaker. The +28 volts dc for auxiliary signal distribution relay K21 is supplied through the FM ARC-44 circuit breaker, and +28 volts dc for the filaments of the Panel", Signal Distribution, Radio SB-329/AR panels is supplied through the INTERCOM SB-329 circuit breaker. When the selector switch on Control C-1827/ARC-55 is set to T/R+G REC, +28 volts dc is applied to Receiver-Transmitter RT-349(*)/ARC-55. Frequency setting and receiver sensitivity are controlled at the C-1827/ARC-55. When cyclic stick switch X942-2 on either the pilot's or copilot's cyclic grip is pressed to the second position (second detent), a ground (mike control) is placed on relays in the RT-349/ARC-55 from the cyclic stick switch, through the SB-329/ AR panels and the C-1827/ARC-55, to the RT-349 (*)/ARC-55.

c. With the RT-349 (*)/ARC-55 prepared for operation (b above), the pilot or copilot may transmit from the microphone portion of Headset-Microphone H-101/U, depending on which cyclic stick switch is operated (pilot's or copilot's). The mike audio signal (audio normal) originating in the microphone portion of the headset-microphone is amplified in the SB-329/AR and coupled through Network, Impedance Pad A16, through energized contacts of relay K21, to the RT-349(*)/ARC-55.

d. Incoming amplitude-modulated RF signals received by the AT-450/ARC or AT-1108/ARC are fed to the receiver portion of the RT-349(*)/ARC-55. The RF signs are demodulated and amplified and coupled, through the C-1827/ARC-55 (audio normal), pilot's auxiliary signal distribution panel, the impedance pad, and the SB-329/AR panels, to the H-101/U headsets. If the power supply to the AN/ARC-44 fails, making the SB-329/AR and

relay K21 inoperative, audio signals (audio emergency) can be applied from the microphone portion of the H--1O1/U, through deenergized contacts of relay K21, Headset-Microphone Adapter MX-1646/AIC, relay K21, and the C--1827/ARC-55, to the RT-349(*)/ARC-55.

3-5.1 Proximity Warning Facility YG-1054
(fig. 3-2.1)

Proximity Warning Facility YG-1054 is an airborne receiver-transponder which provides the pilot with an audio visual alarm when similarly equipped aircraft are within the protected airspace surrounding his vehicle. The system regards any similarly equipped helicopter coming within a selective range of 1,000, 2,000 or 5,000* feet and within an altitude band of plus or minus 300 feet, as an intruder. Whenever an intruding aircraft enters the protected airspace surrounding the helicopter, the system automatically compares the two altitudes and activates an audio and a visual alarm system. The audio alarm is a beeping tone in the aircraft intercommunication system. The visual alarm is a flashing arrow segment on the front of the receiver-transponder panel, indicating that the intruding helicopter is either at a higher altitude, at the same altitude, or at a lower altitude than the helicopter. These warnings alert the pilot to the presence of helicopters within a set range in order to avoid a mid-air collision. The Proximity Warning Facility is operated by 28 volts dc from the essential bus and is protected by the PROX WARN circuit breaker on the circuit breaker panel. Integral lighting, operated by the 28 volts dc from the pedestal lighting control is incorporated in the receiver-transponder.

*NOTE: Earlier version transponders with part number HG1001AC01 have a maximum range of 3000 feet.

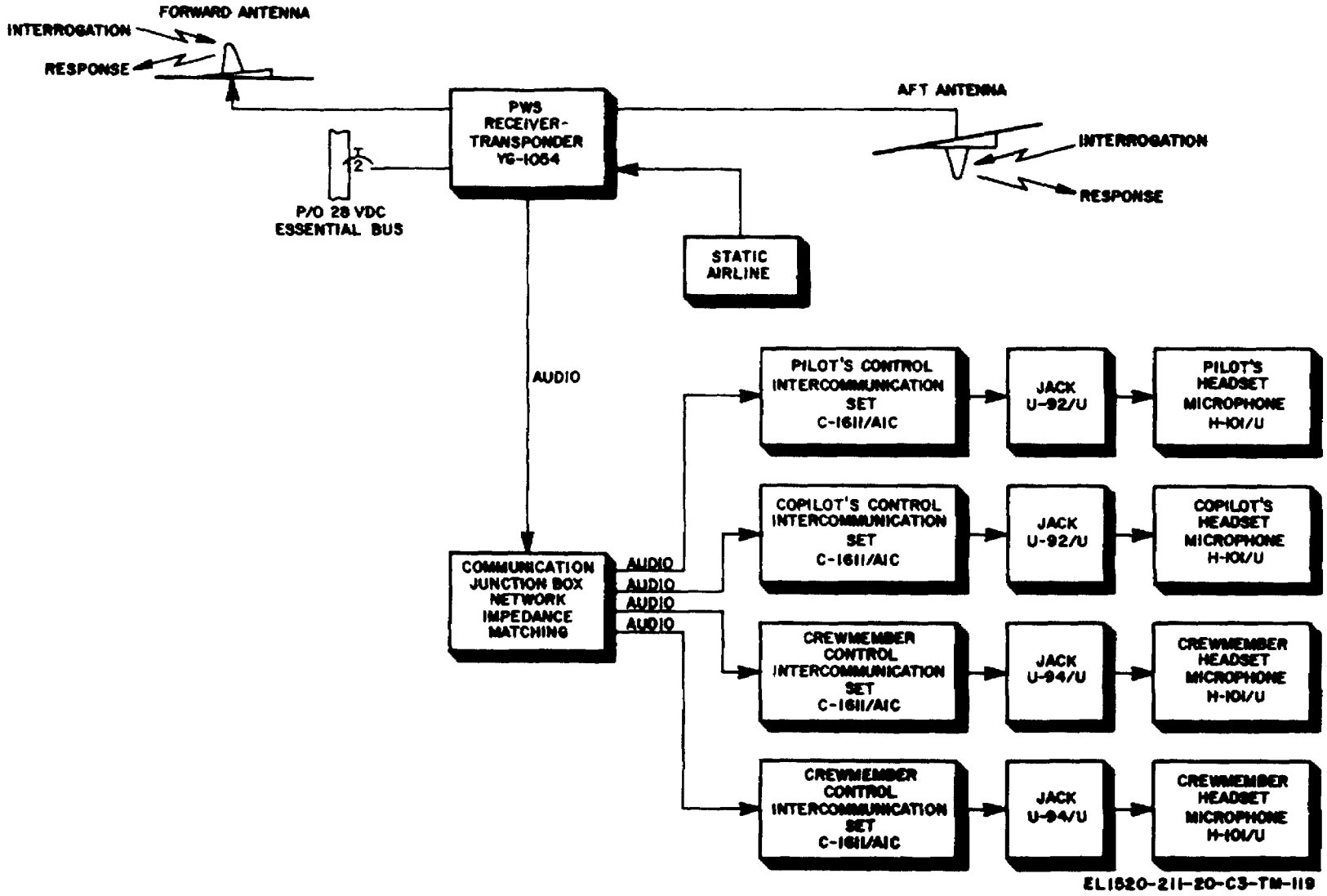


Figure 3-2.1 Proximity warning facility. block diagram. Transponder YG-1054.

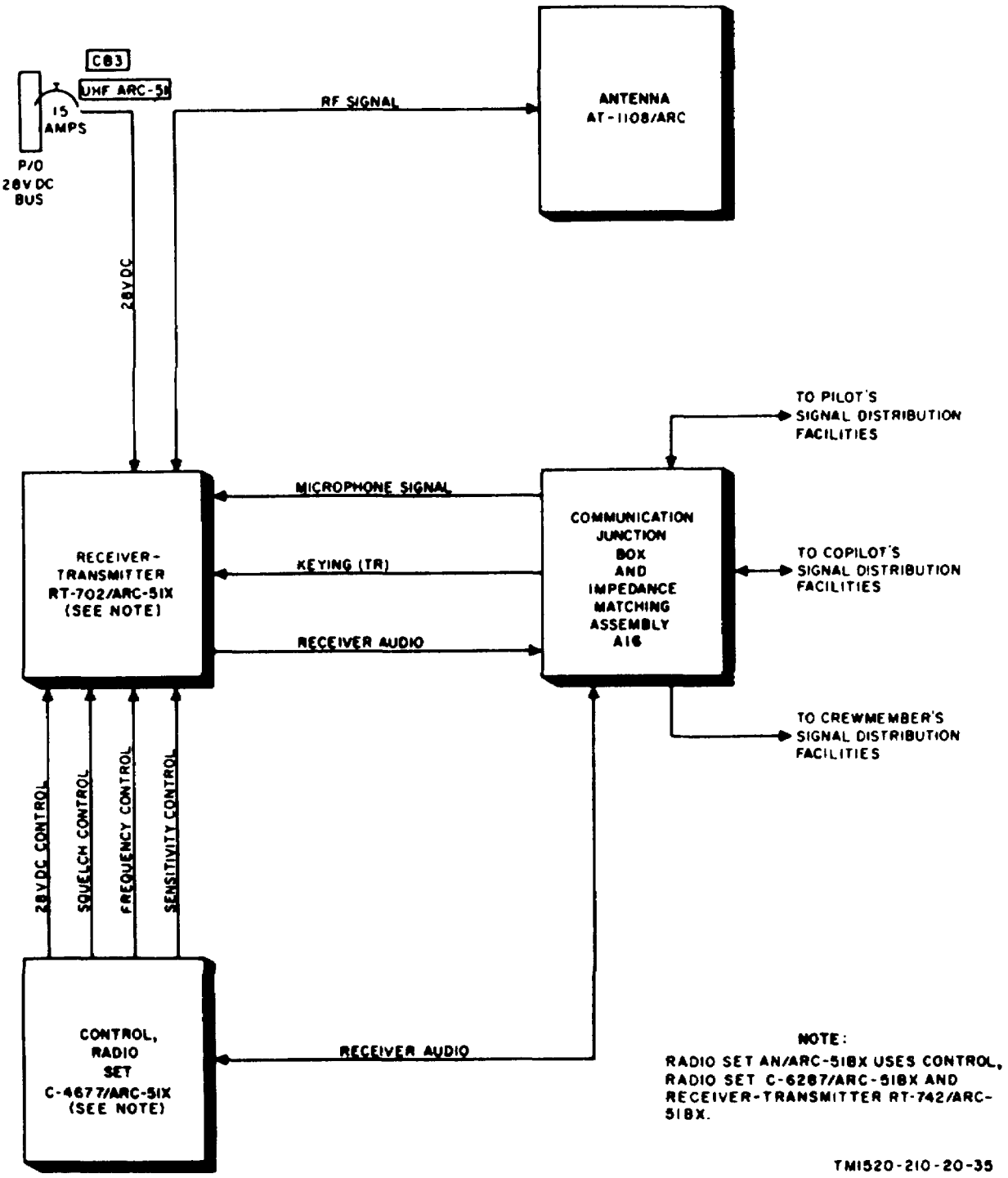


Figure 3-3. Uhf command facility block diagram, Radio Set AN/ARC-51(*)X.

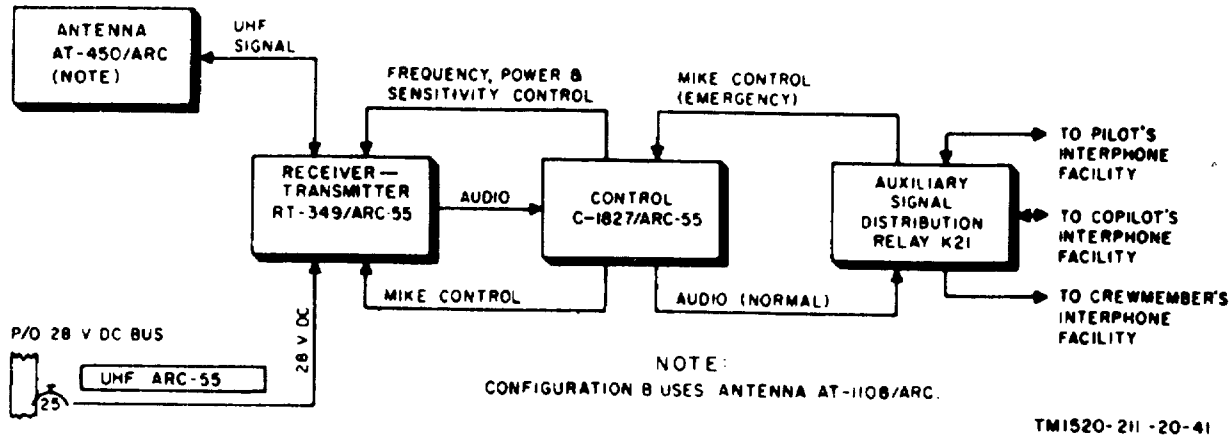


Figure 3-4. Uhf command facility block diagram, Radio Set AN/ARC-S5.

3-6. Radio Set AN/ARC-73

(fig. 3-5)

a. The AN/ARC-73 is an airborne radio communications set which provides air-to-ground and air-to-air transmission and reception of am. in the vhf range of 116.00 to 151.95 mc. Transmission and reception can be accomplished at the same or different frequencies, but not simultaneously, by the use of Control, Radio Set C-4074A/ARC-73. The C-4074A/ARC-73 enables the operator to turn on the set and select the function and frequency desired and to adjust the audio volume and squelch level. Other components of the AN/ARC-73 include Receiver, Radio R-1123 (*) /ARC-73, Transmitter, Radio T-879(*)/ARC-73, and Antenna AT-1108/ARC (or Antenna 37R-21J). Primary power (+28 volts dc) is applied to the AN/ ARC-73 through VHF XMTR ARC-73 and VHF RCVR ARC-73 circuit breakers on the dc circuit breaker panel. When the power switch on the C-4074A/ARC-73 is in the ON position, power relay K28 is energized, and +28 volts dc is applied to the T-879(*)/ARC-73 and R-1123(*)/ARC-73.

b. Selecting a frequency on the C-4074A/ ARC-73 causes a voltage to be applied to the autopositioner in the receiver and transmitter which tunes them to the selected frequency.

3-7. Radio Set AN/ARC-102

(fig. 3-6)

a. The AN/ARC-102 is an airborne communications set which provides air-to-air and also air-to-ground communications with fixed or mobile ground stations. The AN/ARC-102 transmits and receives communications in the high frequency (hf) band over a 28-mc band between 2.0 and 29.999 mc.

b. The AN/ARC-102 includes Receiver-Transmitter RT-689/ARC-102; Control, Radio Set C-3940/ARC-94; Network, Impedance Matching CU-991/AR; and Antenna, Longwire PN 205-706-027 or PN 204-075-609. Primary 4 28 volts dc is supplied through HF ARC-102 circuit breaker on the dc circuit breaker panel.

c. The primary operating mode for AN/ ARC-102 is the single sideband (ssb) mode. The AN/ARC-102 can also transmit a compatible am. signal to provide for communications with stations that have only am. capability. In the ssb mode, the maximum power of the RT-698/ARC-102 is used to transmit one sideband, instead of both sidebands and the carrier as in the am. mode. This provides more effective and reliable communications.

d. The pilot or copilot may select the mode of operation by setting the mode selector switch on Control, Radio Set C-3940/ARC-94 to USB (upper sideband), LSB (lower sideband), AM (amplitude modulation), DATA, or CW (continuous wave). Selection of transmission and reception is controlled by the selector switch on Control, Intercommunication Set C-1611/AIC. The crewmember can receive signals from the receiver only by setting the

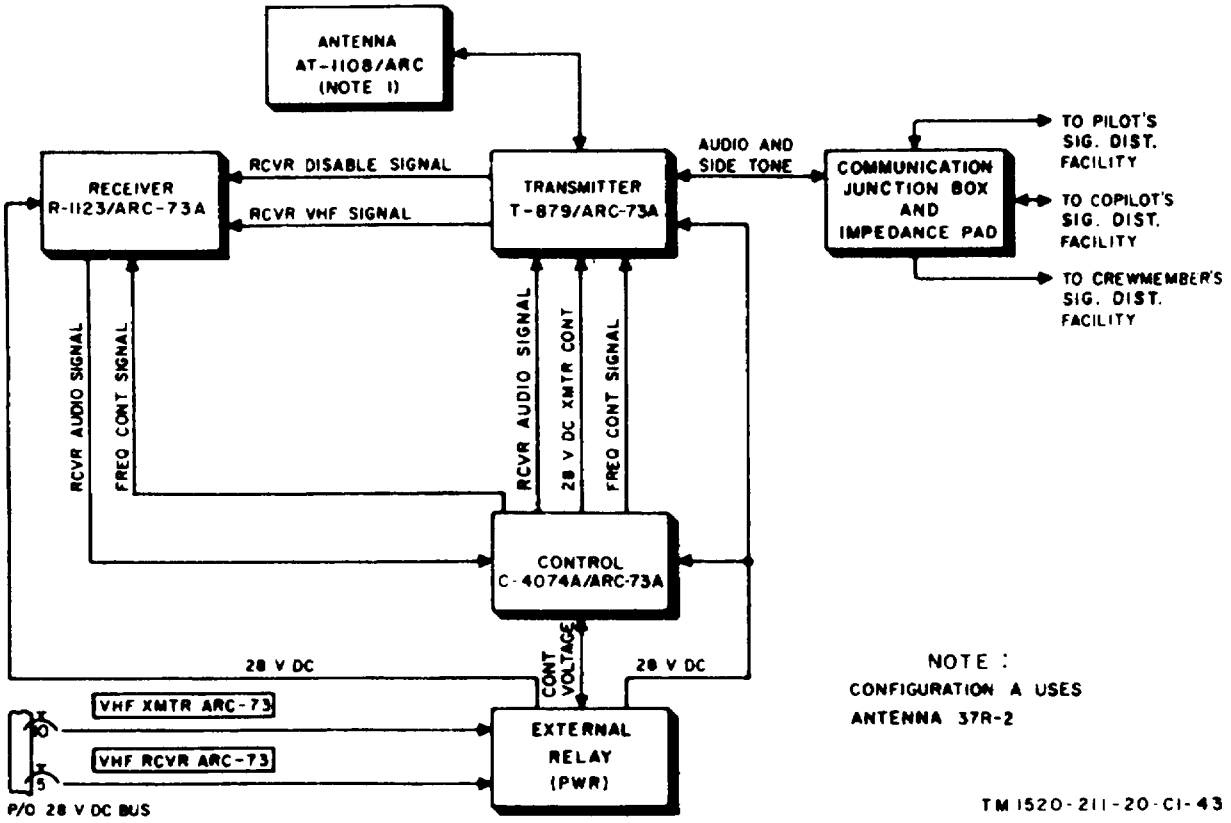


Figure 3-5. Vhf command facility block diagram.

TRANS selector switch on Panel, Signal Distribution, Radio SB-329/AR to position 4.

3-8. Transmitter, Radio T-366/ARC (Emergency Vhf)

(fig. 3-7)

a. The vhf radio transmitter is a five-channel crystal-controlled, voice, amplitude-modulated transmitter that permits transmission of signal from the helicopter to ground in any 2-megacycle band between 116.0 and 132.0 megacycles. Components of the emergency vhf transmitter include the transmitter, oscillator relay, dynamotor power unit (Filter, Direct Current, Power F-726/AR, ARC type P-12), relay switch, control panel, and switch panel.

b. The control panel (204-075-708), on the pedestal between the pilot and copilot, contains the operating controls for the vhf communication system. The internal components include a selector switch and an emergency transmitter switch. The selector in position 1 is for normal operation with the vhf AN/ARC-73 (*) radio set. In case of failure of the vhf AN/ARC-73(*), the emergency transmitter switch can be set to EMERG XMTR, and the selector switch can be turned to the desired frequency.

c. The switch panel (204-075-704) is mounted on the pedestal between the pilot and copilot. In case of vhf transmitter failure, either may switch to STBY VHF for emergency transmission.

3-9. Receiving Set, Radio AN/ARN-30D (Vhf Navigation Set)

(fig. 3-8 and 3-9)

a. When receiving vhf navigation signals,

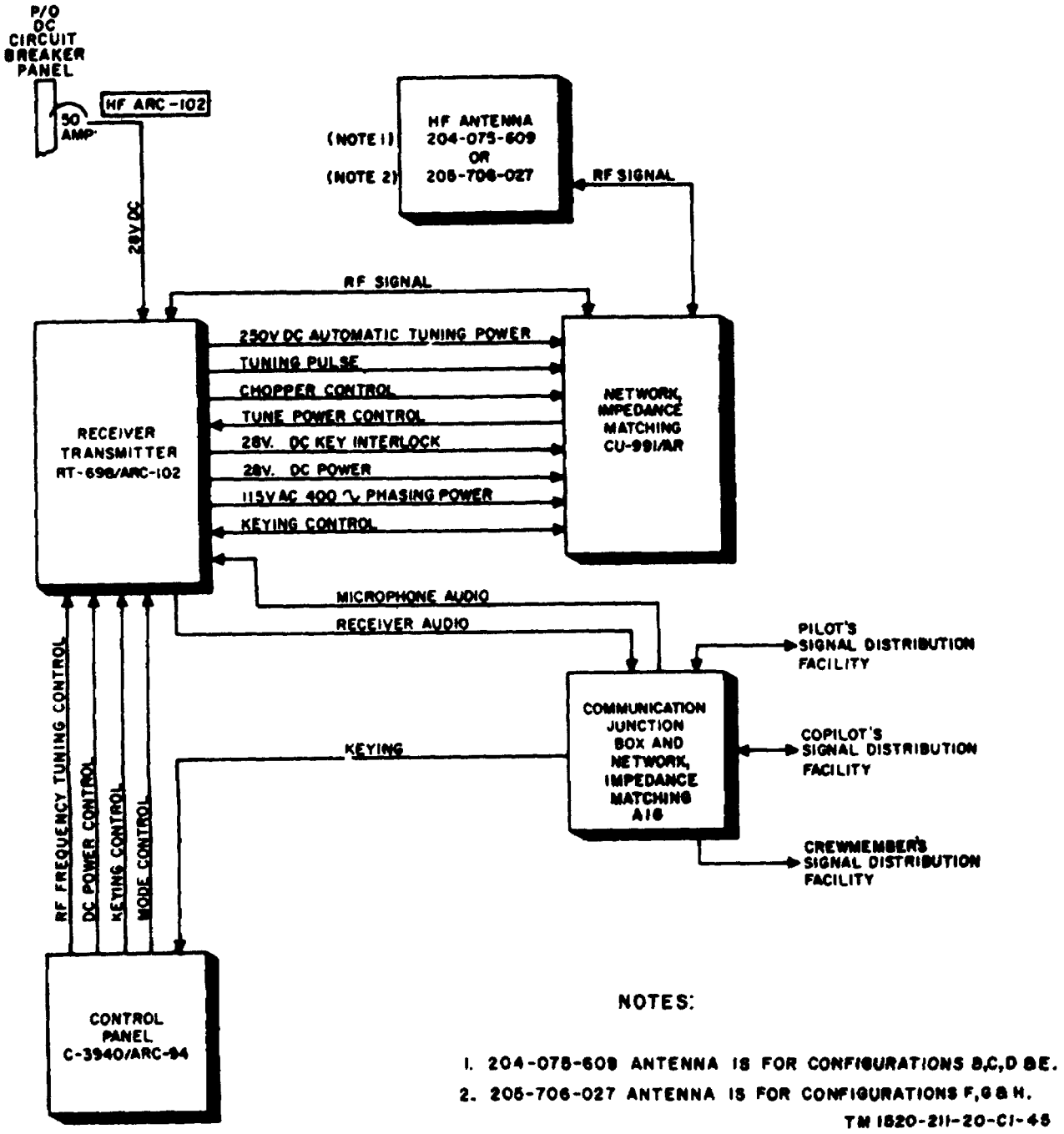


Figure 3-6. Hf ssb/am. Facility block diagram.

the receivers NAV switches on the distribution panels are in the UP position and the VOL controls on the navigation control units are set clockwise (on). Power is supplied to the vhf navigation facility through the OMNI

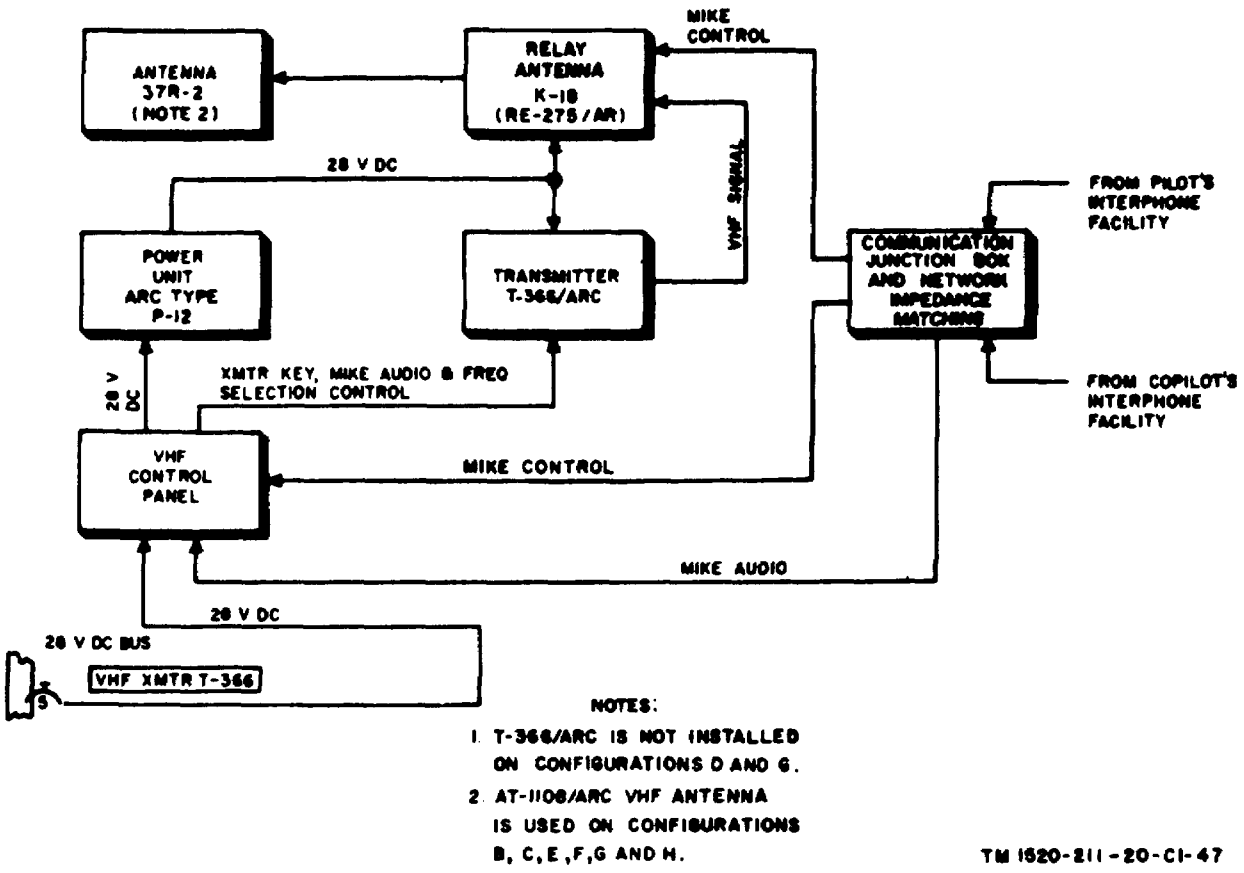


Figure 3-7. Vhf emergency radio transmitter facility block diagram.

ARN-30 circuit breaker when the bus relay is closed. Power is applied to the copilot's signal distribution relay through the FM ARC-44 circuit breaker. Low power is supplied to the distribution panels through the INTERCOM SB-329 or INTERCOM C-1611/AIC circuit breaker.

All other dc supplies for the vhf navigation set are supplied by Power Supply PP-2792/ ARN-30D. Signals picked up by the vhf navigation antenna are coupled to the vhf navigation receiver. The operation frequency of the vhf navigation receiver is controlled by the vhf navigation control unit. The type of signal reception desired is selected by frequencies tuned on the navigation control unit.

Selection of very-high frequency ommi-directional radio range (vor) frequencies causes the vhf signal from the vor station to be fed to the omni circuits of the converter. The signal is then converted to visual-track information and fed to the course indicator. Selection of localizer frequencies causes the received signal to be fed to the localizer circuits in the converter, which, in turn, feeds the signal to the course indicator. At the same time, flag alarm data are fed to the course indicator from the vhf navigation receiver.

b. The audio part of the receiver signal is routed to the vhf navigation control unit where its level may be adjusted. Under normal operating conditions, the audio output of the vhf navigation control unit is fed through the energized copilot's auxiliary signal distribution relay and the impedance pad to the distribution panels where the signal is further amplified

fled and coupled to the headset portions of the headset-microphones. Under emergency operating conditions, the audio out/put of the vhf navigation control unit is fed through the deenergized copilot's auxiliary signal distribution relay, the copilot's headset-microphone adapter, the deenergized headset transfer relay to the headset portions of the pilot's and copilot's headset-mircrophones.

c. The AN/ARN-30E is functionally the same as the AN/ARN-SOD but includes the C-3436A/ARN-30E control unit, which has the additional capability of tuning an associated glideslope receiver (if installed) while controlling the R-1021/ARN receiver. Both glideslope and localizer frequencies are automatically tuned by the control unit.

3-9.1. Receiving Set, Radio AN/ARN-82 (Vhf Navigation Set)

(fig. 3-7.1)

a. When receiving vhf navigation signals, the RECEIVERS NAV switches on the distribution panels are in the UP position. Set power switch to the PWR position and the VOL control set to approximately midrange on the navigation control unit (C-6878/ARN82). Power is supplied to the vhf navigation facility through the VHF NAV OMNI ARN82 circuit breaker. Power is supplied to the distribution panels through the INTERCOM C-1611/AIC circuit breakers. Signals picked up by the vhf navigation antennas are coupled to the vhf navigation receiver. The operating frequency of the vhf navigation receiver (R1388/ARN-82) is controlled by the vhf navigation control unit. The type of signal reception desired is selected by frequencies tuned on the navigation control unit. Selection of very high-frequency omnidirectional radio range (vor) frequencies causes the vhf signal from the vor station to be fed to the omnicircuits of the receiver. The signal is then converted to visual-track information and fed to the pilot's and copilot's course indicators. Selection of localizer frequencies causes the received signal to be fed to the localizer circuits in the receiver, which in turn, feeds the signal to the course indicator (ID-1347/ARN-82). At the same time, flag alarm data is fed to the course indicator (ID-1347/ARN-82) from the vhf navigation receiver.

Note.

When the AN/ARC-54 is operating in the HOME mode, the ID-1347/ARN-82 course indicator is automatically switched by relays K-53 and K-54 to homing inputs from the AN/ARC-54.

b. The audio part of the receiver signal is routed to the vhf navigation control unit where its level may be adjusted. The audio output of the vhf navigation control unit is fed to the impedance pad and to the distribution panels where the signal is further amplified and coupled to the headset portions of the headset-microphones.

3-10. Direction Finder Set AN/ARN-59(V) (Adf Receiver)

(fig. 3-10)

When receiving automatic directional signals, the RECEIVERS NAV switches on the distribution panels are in the up position and the COMP-ANT-LOOP switches on the adf control units are at COMP. Power is applied to the facility through the RADIO CMPS AN/ARN-59 circuit breaker. The FM RCVR circuit breaker supplies power to the auxiliary signal distribution relays, and the distribution panel circuit breaker supplies low power to the distribution panels. All alternating current (ac) and dc power for the adf set is supplied by the adf dynamotor. Operation of the adf dynamotor is controlled from the adf control unit (C-2275/ARN). The adf control unit also controls the operating frequency of the adf receiver. The directional signals picked up by the sense antenna are coupled to the adf receiver where they are combined to produce an antenna drive control voltage and an audio signal. The antenna drive control voltage is applied to the drive motor in the adf antenna (Antenna, Loop AT-780/ARN). The motor drives the antenna so that it continues to face the transmitting station. Synchro positioning signals are sent from the adf antenna to the azimuth indicator, which displays directional information to the pilot and copilot. Under normal operating conditions, the audio signals are applied to the distribution panels through energized copilot's auxiliary signal distribution relay and impedance matching pad A16.

The audio signals are amplified in the distribution panels and routed to the headsets. Under emergency operation, the audio signals are coupled through the deenergized copilot's auxiliary signal distribution relay, through the copilot's headset-microphone adapter, through the copilot's auxiliary signal distribution relay again, and through the deenergized headset transfer relay, to the headset portions of the pilot's and copilot's headset-microphones.

3-10.1. Direction Finder Set AN/ARN-83 (Adf Receiver)

(fig. 3-7.2)

When receiving automatic directional signals, the RECEIVERS NAV switches on the distribution panels are in the up position and the function switch on the direction finder control (C-6899/ARN-83) is in the adf position. Power is applied to the facility through the LF NAV ADF AN/ARN-83 circuit breaker. The INTERCOM C-1611/AIC circuit breaker supplies power to the distribution panels. The adf control unit (C-6899/ARN-83) controls the operating frequency of the adf receiver. The directional signals picked up by the sense antenna are coupled to the adf receiver where they are combined with the directionalsignals picked up by the loop antenna (AS-1863/ARN-83) to position the indicator synchros which displays directional information to the pilot and copilot indicators. The audio signals are applied to the distribution panels through impedance-matching pad A16.
The audio signals are amplified in the distribution panels and routed to the headsets.

3-11. Aircraft Magnetic Compass System Type J2

(fig. 3-12)

a. The magnetic compass system consists of a remote compass transmitter with a singlecycle error compensator, a gyro control, a magnetic compass amplifier, a magnetic compass indicator, and a COMPASS SLAVING switch. The magnetic compass compass system is a directional indicating system in which the indication of a magnetic compass is stabilized by a gyro. The gyro control provides a stable magnetic reference from which the heading of the helicopter may be determined. The remote compass transmitter slaves the spin axis of the gyro to the magnetic heading of the helicopter. The remote compass transmitter is a direction-sensing unit and is provided with a single-cycle error compensator (fig. 3-12) to reduce distortion caused by magnetic parts and electrical equipment in the vicinity of the remote compass transmitter. The magnetic compass amplifier is used to amplify the slaving drive signals to the gyro. The COMPASS SLAVING switch is used to start and stop gyro slaving. The output signals of the gyro control are displayed on the pilot's and copilot's compass indicators. The indication represents the magnetic heading of the helicopter in degrees.

b. The remote compass transmitter contains a flux valve, which is suspended in the horizontal plane. The remote compass transmitter develops three synchro stator voltages that represent the sensed direction of the helicopter. The single-cycle error compensator (fig. 3-12) provides a magnetic-quadrant error correction for the flux valve directional signal to the compensate for any error introduced by the airframe or any magnetic material or electrical equipment in the vicinity. The compensated flux valve directional signal is applied to the three stator connections on the flux valve synchro in the gyro control. If the gyro is misaligned with the sensed direction, a synchro error signal is developed that is amplified in the magnetic compass amplifier. The amplifier signal is fed back to the gyro control as a gyro slaving drive signal. The drive signal controls a torque motor that drives the gyro (in the gyro control) into alignment with the remote compass transmitter. This action slaves the gyro to the earth's magnetic meridian. The COMPASS SLAVING switch allows the operator to slave or free the gyro. The gyro can be slaved only when the COMPASS SLAVING switch is placed to IN. When the switch is placed to OUT, a relay in the magnetic compass amplifier operates to cut off the drive signal to the control field of the slaving torque motor in the gyro control. The gyro is no longer slaved to the remote compass transmit

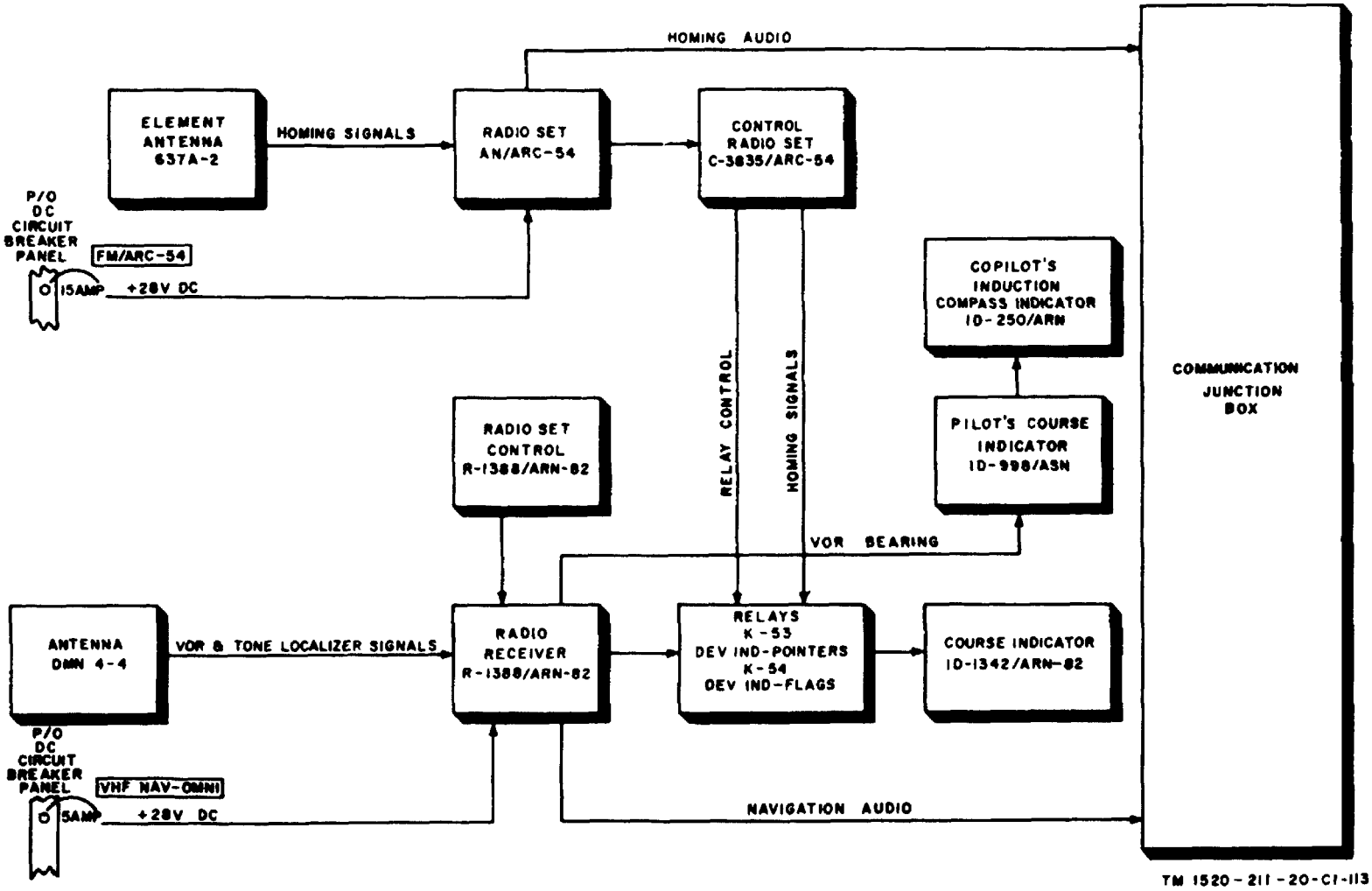


Figure 3-7.1 Vhf navigation and fm homing facilities, block diagram, AN/ARN-32.

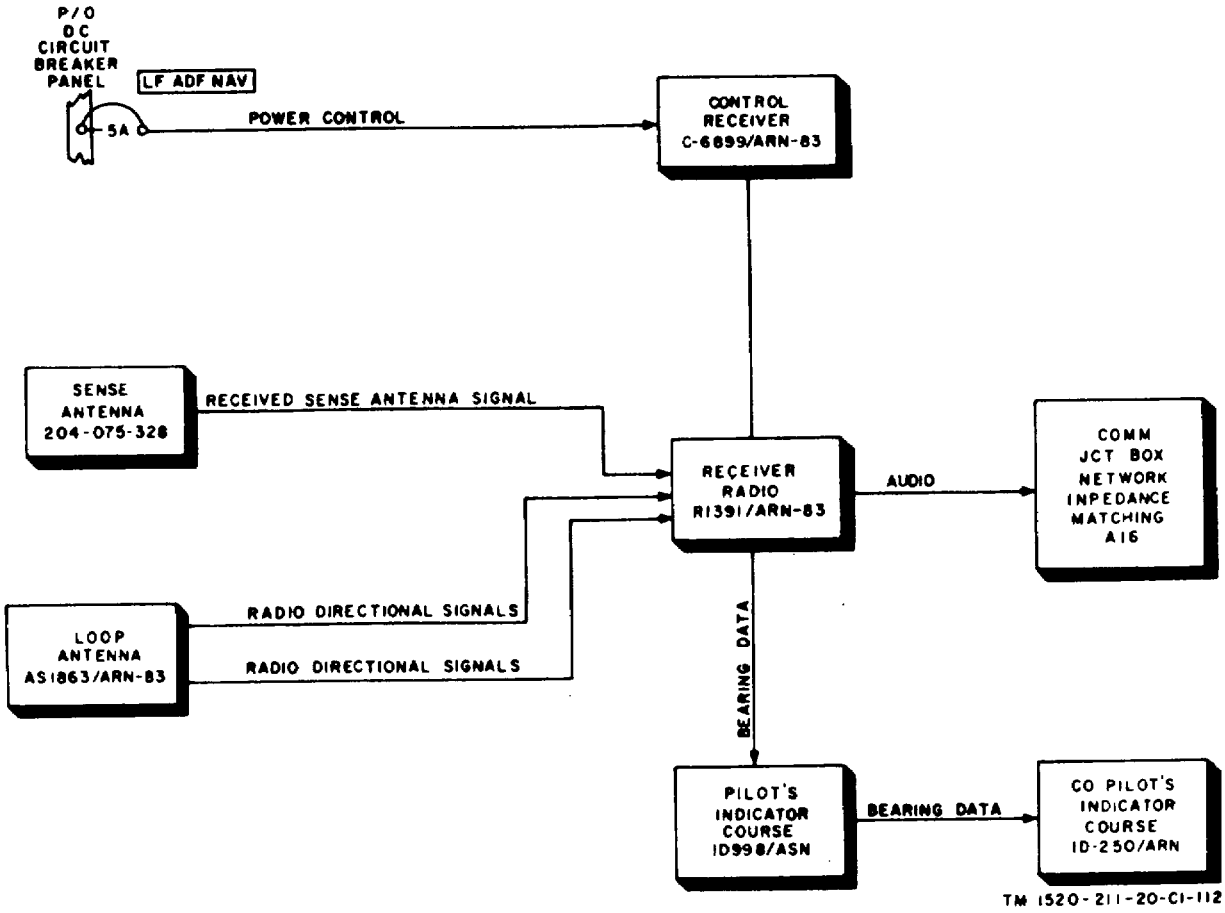


Figure 3-7.2. Direction Finder Set AN/ARN-83, block diagram.

ter, and the heading will be determined by the gyro control only. The output of the gyro control is applied to the magnetic compass indicator as magnetic heading synchro data.

3-11.1. Aircraft Gyromagnetic Compass System Type AN/ASN-43

(fig. 3-11)

a. The gyromagnetic compass system consists of a remote compass transmitter with a single-cycle error compensator, a directional gyro, a magnetic compass indicator, a course indicator, and a COMPASS SLAVING switch.

The gyromagnetic compass system is a directional indicating system in which the indication of a magnetic compass is stabilized by a gyro. The gyro provides a stable magnetic reference from which the heading of the helicopter may be determined. The remote compass transmitter slaves the spin axis of the gyro to the magnetic heading of the helicopter.

The remote compass transmitter is a direction-sensing unit and is provided with a single-cycle error compensator to reduce distortion caused by magnetic parts an electrical equipment in the vicinity of the remote compass transmitter. The COMPASS SLAVING switch is used to start and stop gyro slaving.

The output signals of the directional gyro are displayed on the pilot's and copilot's compass indicators. The indication represents the magnetic heading of the helicopter in degrees.

b. The remote compass transmitter contains a flux valve which is suspended in the horizontal plane.

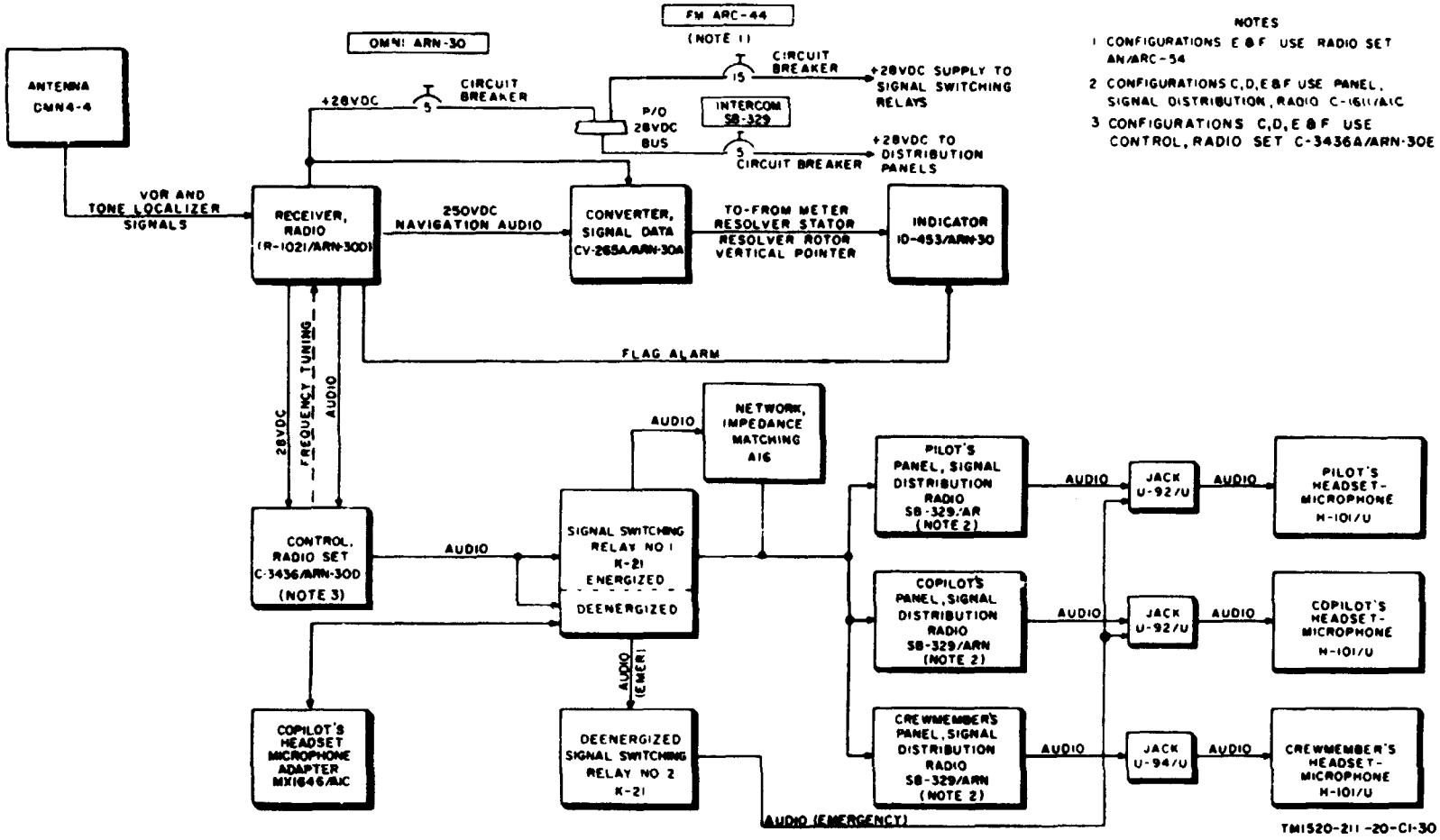


Figure 3-8. Vhf navigation and fm homing facilities, block diagram.

Figure 3-9. Navigation facilities block diagram. (Deleted)

The remote compass transmitter develops three synchro stator voltages that represent the sensed direction of the helicopter.

The single-cycle error compensator provides a magnetic-quadrant error correction for the flux valve directional signal to compensate for any error introduced by the airframe or any magnetic material or electrical equipment in the vicinity. The compensated flux valve directional signal (reference heading) is applied to the magnetic compass indicator. A heading error signal is developed and applied directly to directional gyro. If the directional gyro is misaligned with the sensed direction, a synchro heading error signal is developed that is amplified in the directional gyro. The amplified signal is a gyro slaving drive signal. The drive signal controls a torque motor that drives the gyro into alignment with the remote compass transmitter. This action slaves the gyro to the earth's magnetic meridian. The COMPASS SLAVING switch allows the operator to slave or free the gyro. The gyro can be slaved only when the COMPASS SLAVING switch is placed to MAG. When the switch is placed to DG, a relay in the directional gyro operates to cut off the drive signal to the control field of the slaving torque motor in the directional gyro.

The gyro is no longer slaved to the remote compass transmitter, and the heading will be determined by the directional gyro only. The output (stabilized reference) of the directional gyro is applied to the magnetic compass indicator as magnetic heading synchro data.

3-12. Receiver, Radio R-737/ARN (Marker Beacon)

(fig. 3-13)

The marker beacon receiver set provides the pilot and copilot with visual and aural indications for determining the position of the helicopter in relation to a 75-mc marker beacon transmitting station. The marker beacon receiver set is used in conjunction with the fm liaison set. When the helicopter is within the radiated field of the marker beacon transmitting station, the MARKER BEACON indicator lamp illuminates, and an aural tone (continuous or

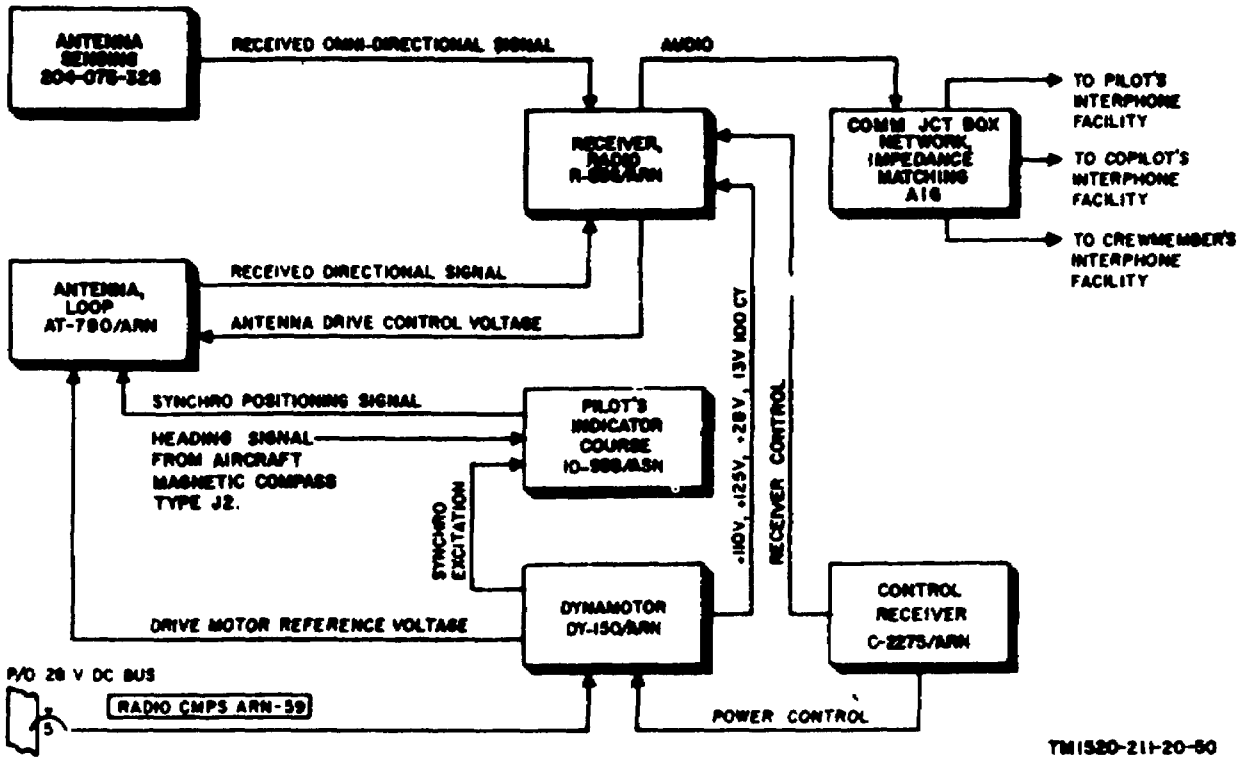


Figure 3-10. Low frequency (lf) adf navigation facility block diagram

coded, depending on the type of marker beacon) is heard in the headset. The audio signal is strongest directly over the transmitting station and diminishes in strength as the helicopter passes through the signal cone. With proper maps and the marker beacon facility, the pilot can determine the exact position of the helicopter. Components of the marker beacon receiver set include the marker beacon antenna, the marker beacon receiver, the MARKER BEACON indicator lamp, and the marker beacon Primary power (+28 volts dc) is applied to the marker beacon receiver set through the MARKER BEACON circuit breaker on the dc circuit breaker panel.
VOLUME CONTROL.

3-13. Receiver, Radio R-1041/ARN (Marker Beacon)

(fig. 3-13)

When receiving marker beacon signals, the RECEIVERS MB switches on the distribution panels are in a up position, and the MARKER BEACON VOLUME control is rotated clockwise to turn on the marker beacon receiver.
Power is supplied to the marker beacon facility through the marker beacon receiver circuit breaker. Power is applied to the auxiliary signal distribution relays through the fm XCVR circuit breaker and to the distribution panels through the distribution panel circuit breaker.
With the marker beacon receiver operating, signals received by the marker beacon antenna are coupled to the marker beacon receiver where the 75-mc marker beacon signal is converted to an audio signal. When the signal is received, a relay in the marker beacon receiver is energized, which applies the lamp illuminating signal to the MARKER BEACON indicator lamp. The lamp lights at the same rate and for the same duration as the modulation of the marker beacon signal. The audio signal in the marker beacon receiver is .amplified and applied through the volume control on the marker beacon instrument panel (fig. 2-35) to the copilot's auxiliary signal distribution relay. When the copilot's auxiliary signal distribution relay is energized

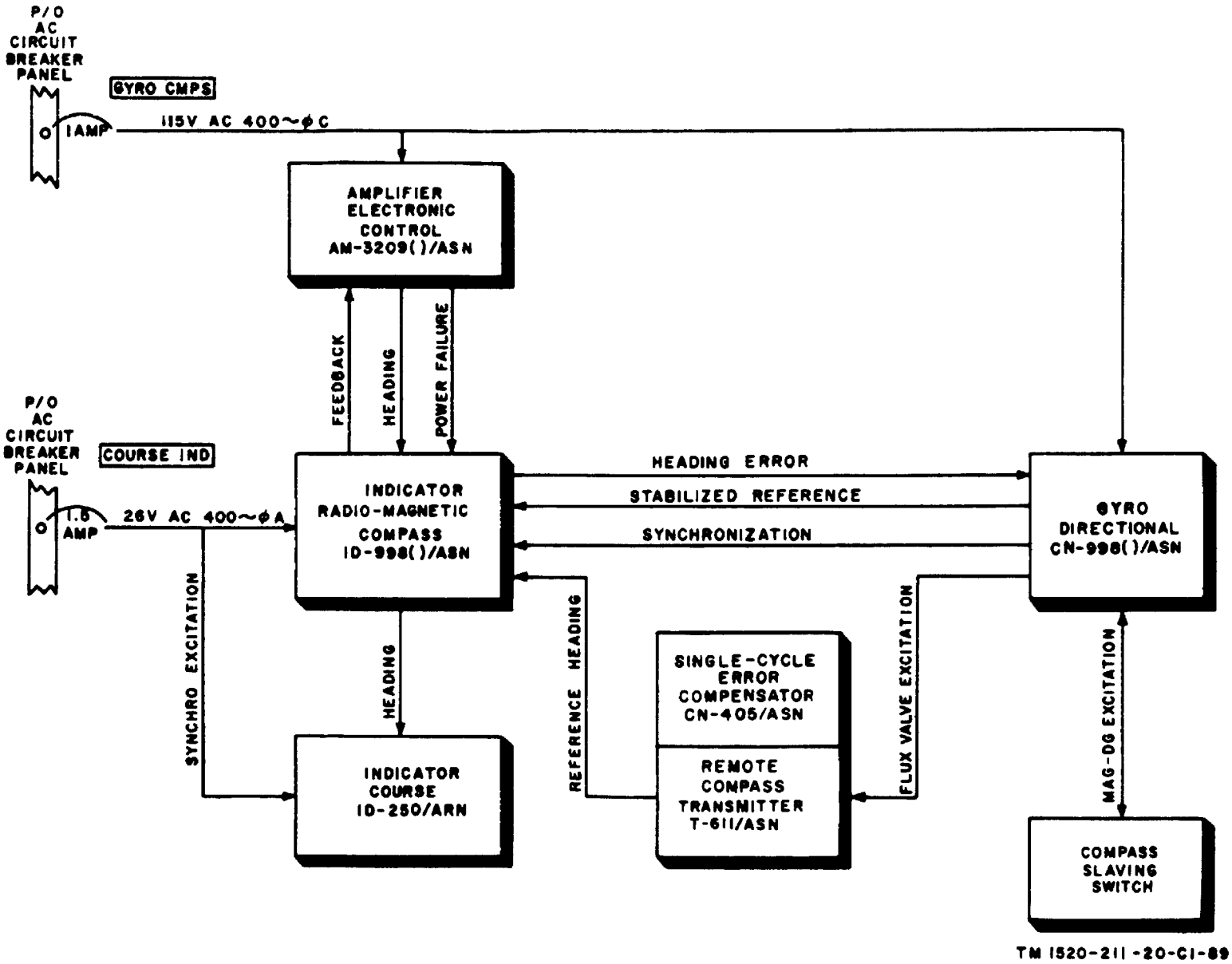


Figure 3-11. Gyro magnetic compass facility block diagram.

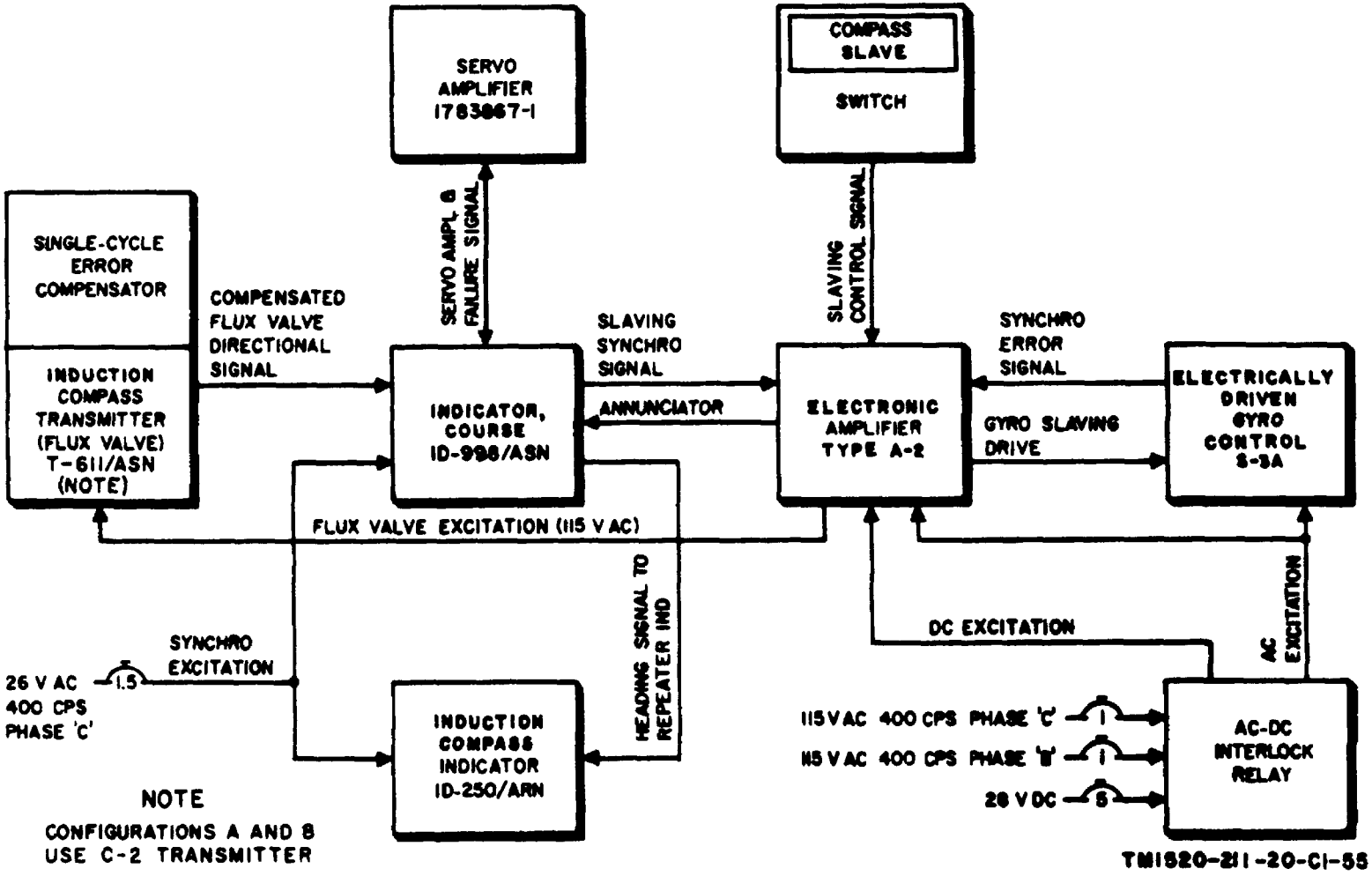


Figure 3-12. Gyro magnetic compass error compensator facility block diagram.

(normal operating condition), the audio signal is applied to the distribution panels, where the signal is further amplified and then distributed to the headset portions of the headset-microphones. In emergency operation, when the copilot's auxiliary signal distribution relay is deenergized, the audio signal from the marker beacon instrument panel is coupled through the deenergized copilot's auxiliary signal distribution relay again and to the headset portions of the pilot's and copilot's headset microphones. The HI-LO switch on the marker beacon control panel selects the marker beacon sensitivity. When the switch is set to LO, receiver sensitivity is reduced, and the marker beacon reacts to nearby transmitting stations only.

3-14. Panel, Signal Distribution, Radio SB-329/AR (Control Panel)
(fig. 3-14)

a. For interphone operation, the fm liaison set must be energized by pressing the FM ARC-44 and INTERCOM SB-329 circuit breakers on the dc circuit breaker panel and operating the ICS switch on the fm switch assembly to the up position. This provides a +28-volt dc supply for the pilot's and the copilot's ics relays and the auxiliary signal distribution relays. Operating power for the distribution panels is supplied by Dynamotor DY-107/AR. Primary power for the dynamotor and 28 volts dc for the distribution panels are supplied through the SB-329/AR PANEL circuit breaker. Before a particular station (pilot or copilot) can transmit over the interphone system, the TRANS selector switch on the distribution panel of the transmitting station must be placed to INT. This allows interphone transmission from the transmitting station to the other distribution panels, regardless of the position of the TRANS selector switches on the other distribution panels. If all stations wish to transmit and receive from and to each station, the

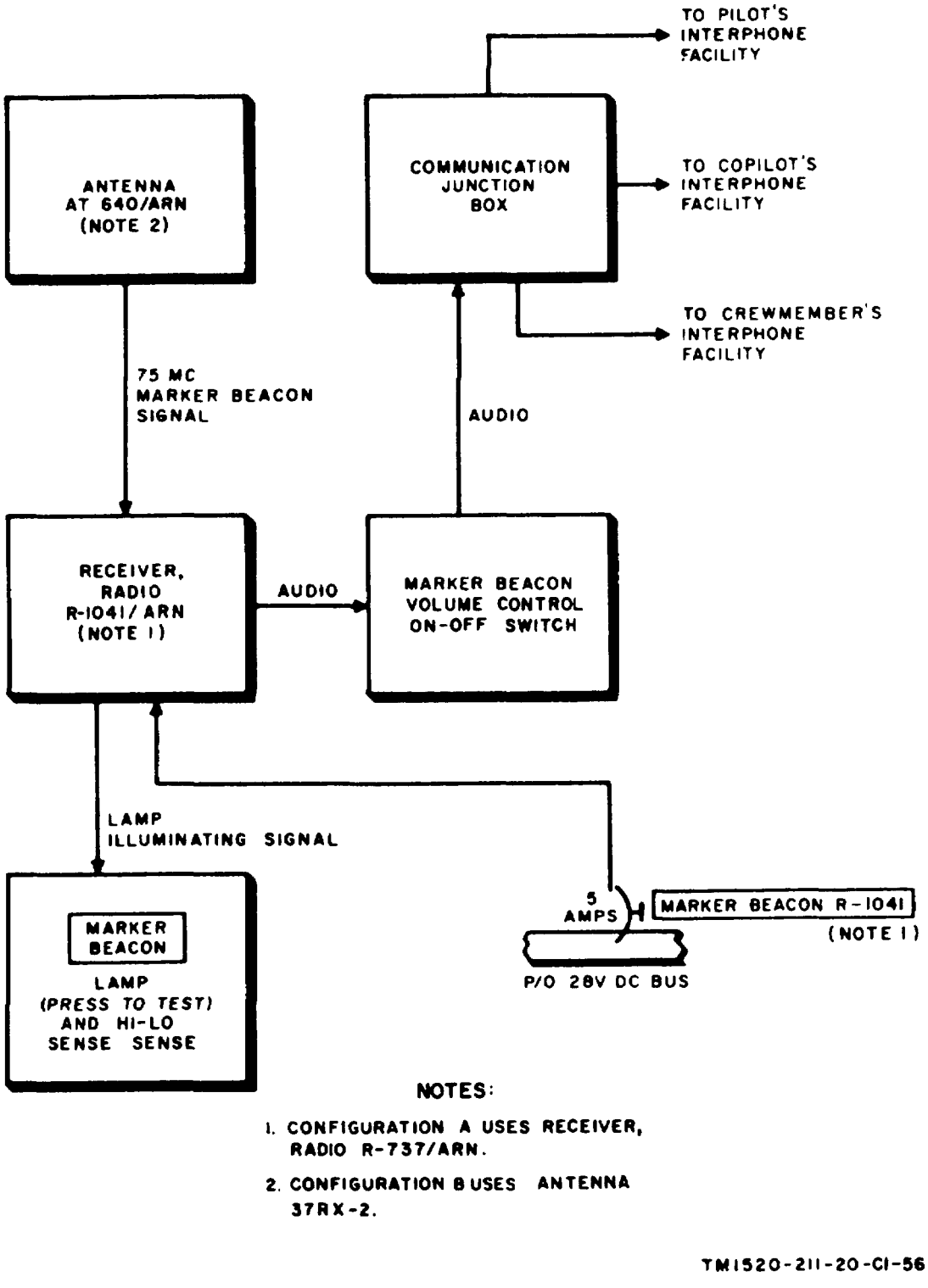


Figure 3-13. Marker beacon receiver facility block diagram.

TRANS selector on each distribution panel must be positioned to INT.

b. When the TRANS selector switch on the distribution panel is set so that INT appears in the window and the trigger switch on either the pilot's or copilot's cyclic control grip is depressed to position 1 (first detent), the resultant interphone audio signal is present in all headsets. When the pilot's or copilot's trigger switch is depressed to position 1 (first detent), the corresponding interphone relay is energized, and the audio signal (microphone audio) from the microphone is fed through Jack U-92/U, the energized auxiliary signal distribution relay, the distribution panel (interphone audio), and the applicable ics relay, to the audio impedance-matching network. The signal is routed through the audio impedance-matching network and through the other distribution panels (microphone audio) to the corresponding headset.

3-15. Control, Intercommunications Set C-1611 (*)/AIC (Distribution Panel)

(fig. 3-15)

a. In configurations C, D, E, F, G, and H which use the C-1611(*)/AIC, the auxiliary signal distribution box, which also contains the pilot's and copilot's auxiliary signal distribution relay keying diodes, and emergency microphone headset adapters, is eliminated. The functions of these components are no longer required due to the high reliability of the transistors incorporated in the C-1611(*)/AIC radio distribution panels.

b. The C-1611(*)/AIC distribution panel differs from the SB-329/AR distribution panel in several respects, as follows:

(1) The C-1611(*)/AIC is a solid-state (transistor)unit consisting of a microphone preamplifier with automatic gain control (agc), feedback signal line control, a microphone-power amplifier, a headset amplifier, and a power filter.

(2) The C-1611(*)/AIC requires only 28-volt dc power for complete operation of all amplifiers.

(3) The C-1611(*)/AIC is ready for service as soon as the 28 volts dc is applied.

(4) The C-1611 (*)/AIC is independent of other systems, since it does not require the power supply required by the SB-329/AR distribution panel.

(5) A group of 150-ohm resistors is provided across one section of the transmitter interphone selector switch to provide constant impedance to the input of the transmitter modulator when one or more transmitters are selected. Transmitter keying control is provided by another section of the same switch.

(6) When in use, the C-1611(*)/AIC may be operated in any of three modes, as determined by the settings of the switch (transmitter-interphone select switch) and RECEIVERS switches S1 through S7 in the control circuits. The three modes of operation used are: two-way (air-to-air and air-to-ground) radio communication, radio reception monitoring, and intercommunication (interphone and private interphone) between members of the aircraft crew (refer to TM 11-5831-201-15).

(7) In the two-way radio communication mode of operation, the microphone signal is connected to the microphone preamplifier, the microphone amplifier, and the control circuit to the radio transmitter selected by the transmit-interphone selector switch. The output of the radio receiver associated with the selected radio transmitter is also selected by the transmit-interphone selector switch through the control circuits to the headset amplifier for amplification and application to the earphones.

(8) In the control circuits, all receiver outputs in the helicopter (except the emergency receiver output) are selected by the RECEIVERS switches. Regardless of the selected mode of operation, the output of the emergency receiver is applied through the control circuits to the headset amplifier. The output signal of the receiver selected by a RECEIVERS switch is passed through the control circuits to

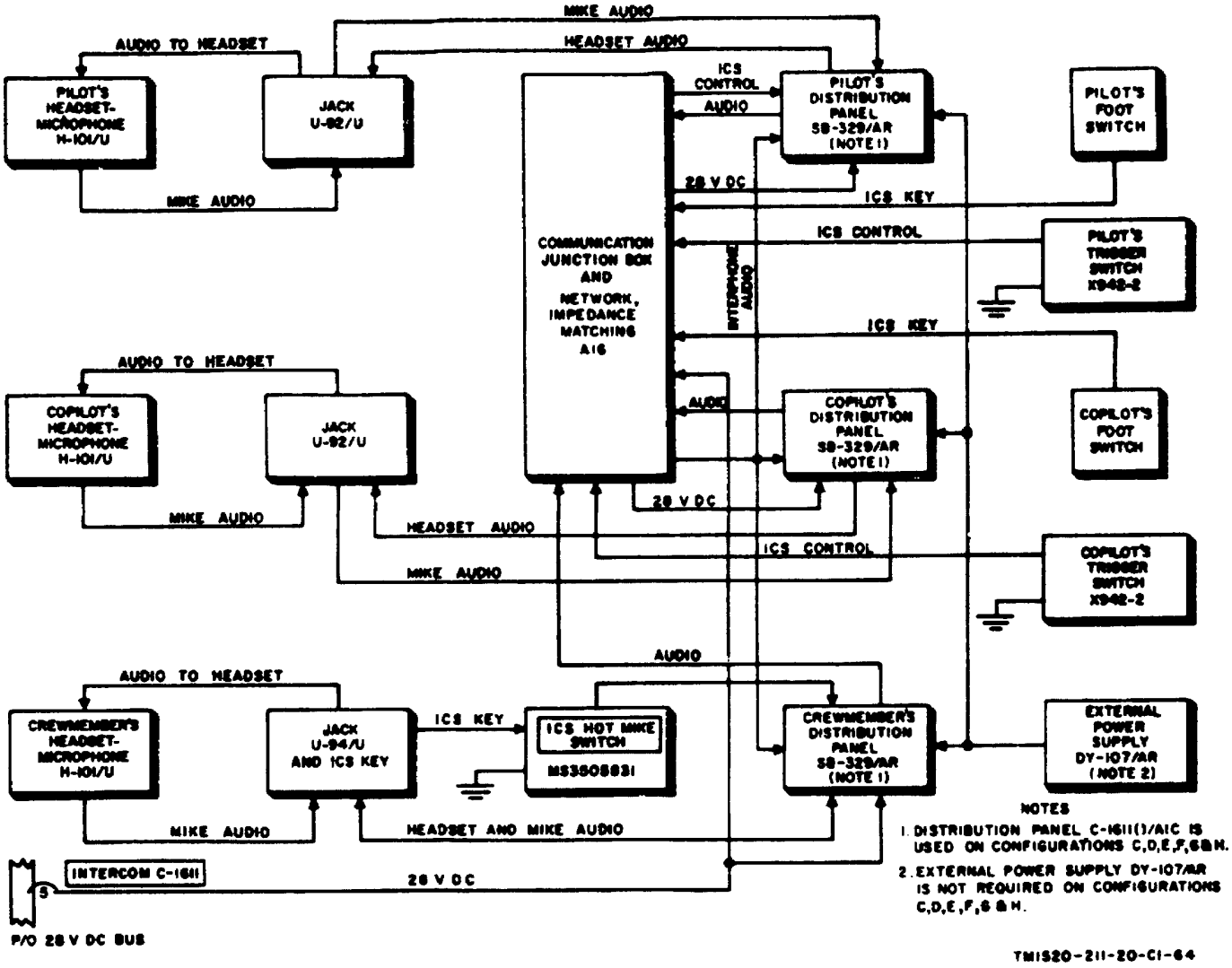


Figure 3-14. Interphone facility block diagram.

the headset amplifier, where it is amplified and applied to the earphones.

(9) If members (pilot, copilot, or crewmember) of the helicopter crew desire to intercommunicate, they may do so by setting the transmitter phone selector switch to INT or to PVT for private, uninterrupted conversation. Through this arrangement, the microphone output signaled by a member's voice is passed through the microphone preamplifier, the microphone amplifier, and the control circuits to the headset amplifier and to the interphone or private interphone line. The signal portion applied to the headset amplifier is received by the earphone as sidetone. The amplified signal is applied to the interphone line and received by other stations connected to the same line (PVT).

(10) The C-1611(*)/AIC has positions for four receiver-transmitters, and all four positions are connected at the pilot's and copilot's stations. Only the receiver mixer switch is connected at the crew station. The rotary function selector switch has six positions, which are connected as follows at the pilot's and copilot's stations.

Position	Function
PVT	HOT MIKE
INT	Ics.
1	Fm liaison (AN/ARC-44, configurations C and D). Fm liaison (AN/ARC-54, configurations E, F, G, and H).
2	Uhf command (AN/ARC-51X).
3	Vhf liaison (AN/ARC-73).
4	Hf ssb/am (AN/ARC-102, configurations E, F. G, and H).

(11) Regardless of the position selected on the C-1611(*)/AIC control panel at the crew station, the microphone will always be connected to the interphone. For the headset to be connected at the crew station, the mixer switch must be in the ON position, or the rotary function selector switch must be in the PVT (HOT MIKE) or INT position. The NAV receiving switch and associated circuitry is designed to accept up to three navigation receivers, to be mixed and fed simultaneously into the intercommunication system. Three receivers, the AN/ARN-30(*) or AN/ARN-02 omnirange, the R1041(*)/ARN markor beacon, and the AN/ARN-59 or AN/ARN-83(V) adf receiver are connected to the NAV receiving mixer switch. There are six mixer switches in all, including the NAV receiving switch. The switches other than the NAV switch are connected as follows at interphone stations:

Position	Function
1	Fm liaison (AN/ARC-44, configurations C and D). Fm liaison (AN/ARC-54, configurations E, F, G, and H).
2	Uhf command (AN/ARC-51X).
3	Vhf liaison (AN/ARC-73).
4	Hf ssb/am (AN/ARC-102, configurations E, F. G, and H).
INT	Ics audio.

Note. **The AN/ARC-73 vhf system is an alternate for the AN/ARC-51(*)X uhf system (both will not be installed at the same time). The AN/ARC-102 hf is an alternate for the AN/ARC 4 fm.**

3-16. Auxiliary Signal Distribution Box

(fig. 3-16, 3-17, and 3-18)

a. The auxiliary signal distribution box contains a relay and two headset microphone adapters, one each for the pilot and copilot. The auxiliary signal distribution box enables the pilot and copilot to communicate with the uhf command set and to pick up signals from the navigation equipment if the distribution panels should become inoperative.

b. The auxiliary signal distribution relay is energized by 28-volts dc furnished by Dynamotor DY-107/AR when the fm liaison set is energized. Audio signals from the headset microphones are fed through the closed contacts of the energized auxiliary signal distribution relay to the distribution panels for application to all headsets and to the uhf command set for transmission purposes.

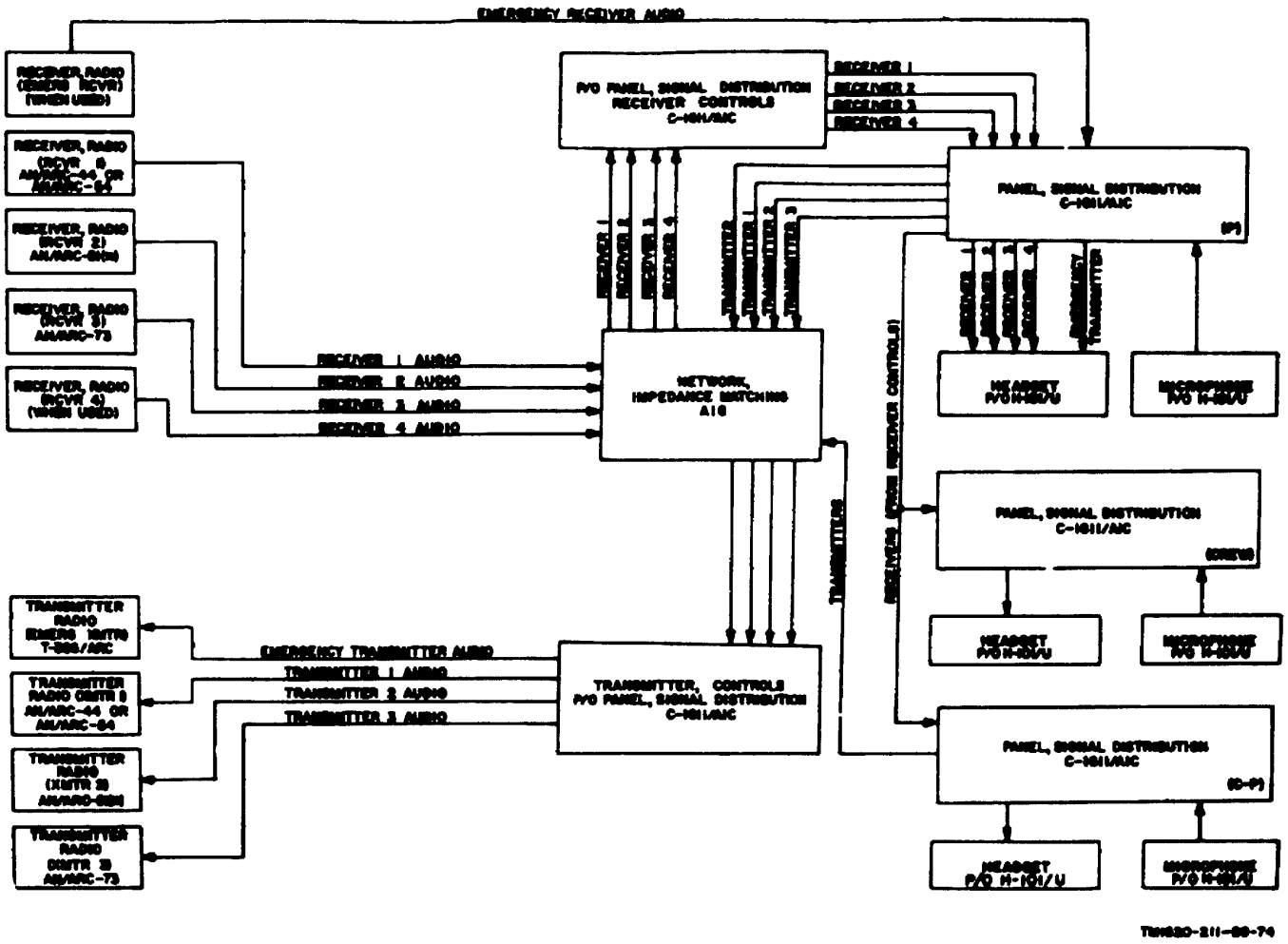


Figure-3-15. Intercommunications interaction block diagram (Configurations C through H, C-1611/AIC).

c. When the auxiliary signal distribution re lay is energized, audio from the adf set, the marker beacon receiver set and the navigation set are fed through the closed contacts of the auxiliary signal distribution relay to the distribution panels for application to all crewmember's headsets.

d. The auxiliary signal distribution relay cannot be energized if dc power is not available at the FM ARC-44 circuit breaker. With the relay in a deenergized condition, audio signals cannot pass into the distribution panels. Under these conditions, the deenergized relay will connect the audio signals to and from the operating equipment through headset microphone adapters.

3-17. Antenna Group AN/ARA-31
(fig. 3-19)

When the FM HOME switch on the fm switch assembly is up, the homing signal input circuit to the fm receiver-transmitter is connected to the homing antenna through the antenna keyer. At the same time, homing circuits in the fm receiver-transmitter are energized. Horning signals received by each of the homing antenna elements are coupled to the antenna keyer, where they are compared in phase to produce a resultant signal at each end of a phasing line. The resultant signals are combined and fed to the fm receiver-transmitter where they are amplified and detected before being fed to the headset portions of the headset-microphones through the same route as the received fm signals.

3-18. Deleted.

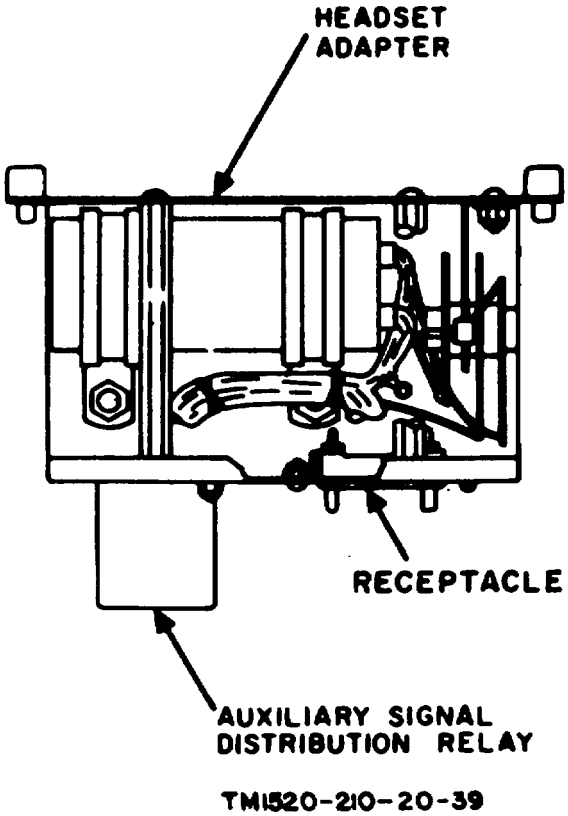


Figure 3-16. Auxiliary signal distribution relay location.

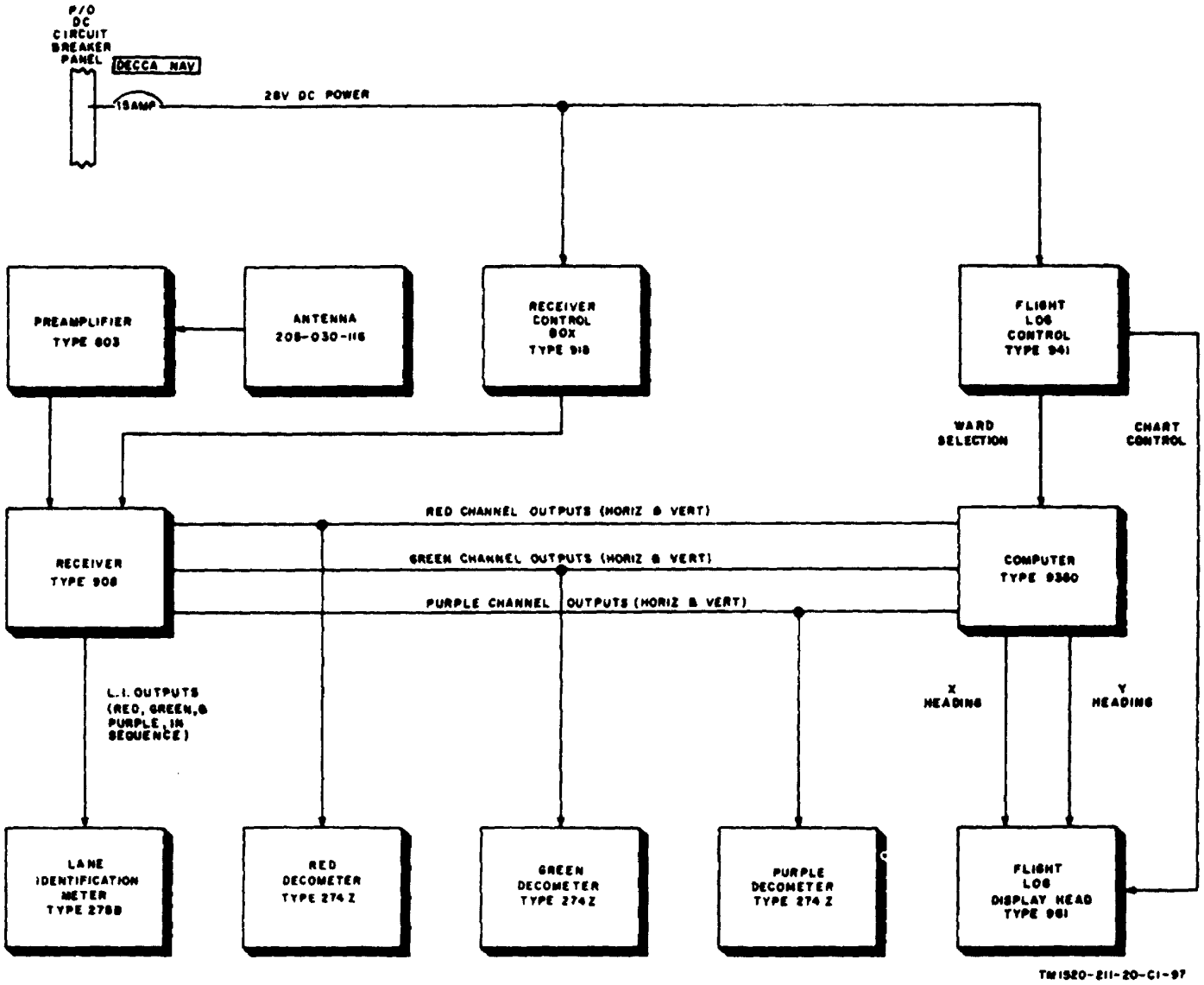


Figure 3-16.1. AN/ASN-72 facility block diagram.

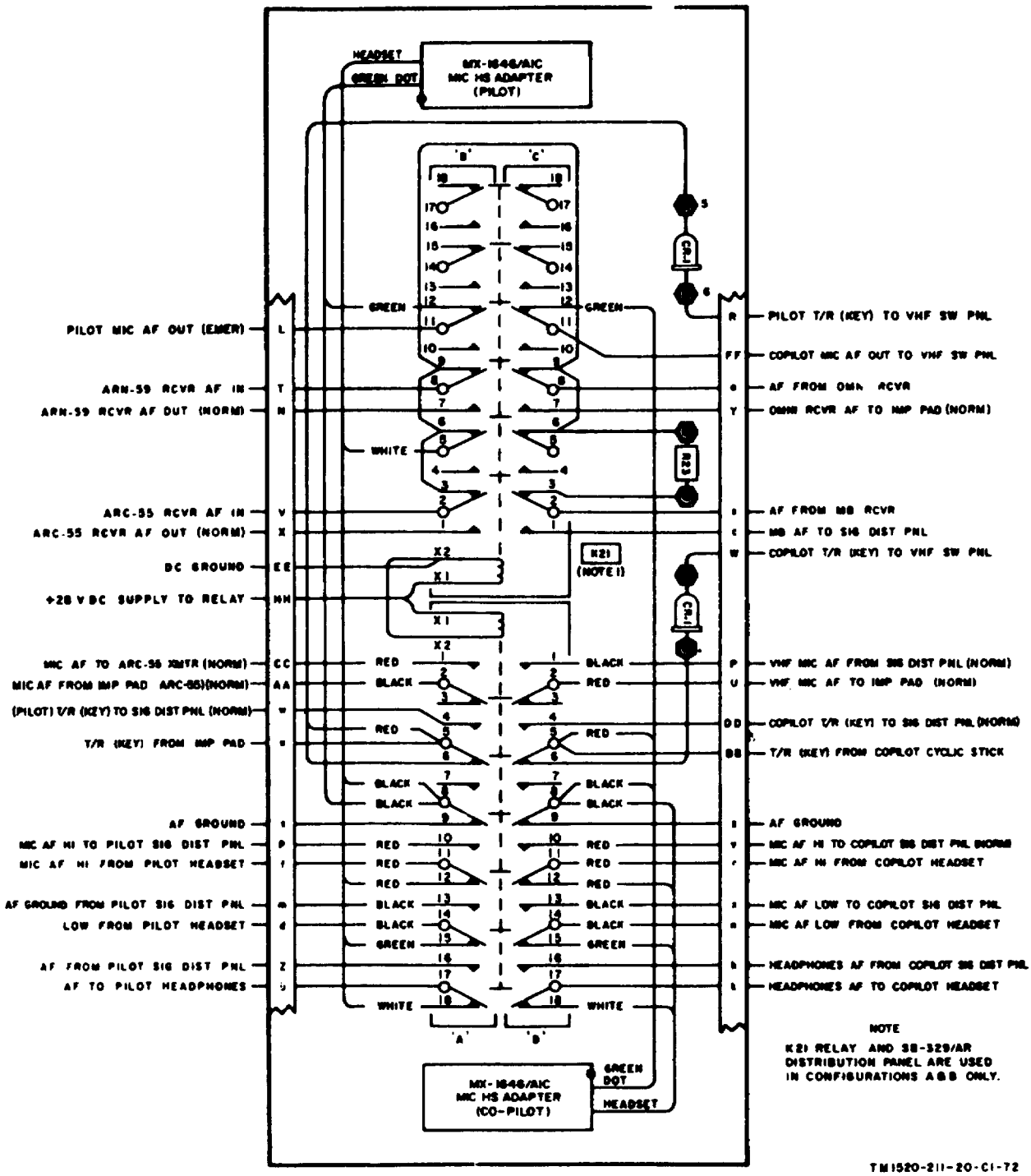


Figure 3-17. Auxiliary signal distribution box schematic diagram (typical).

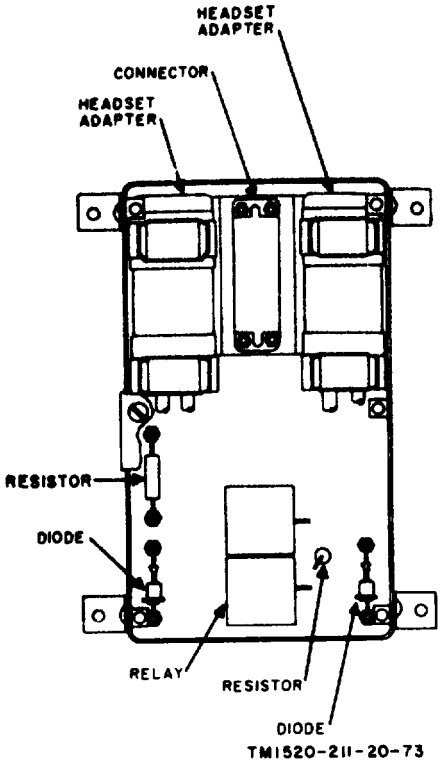


Figure 3-18. Auxiliary signal distribution box.

3-19. Antenna Assembly 637A-2 (205-075-345) (Fm Homing)

(fig. 3-20)

Configurations A through H use the Collins type 637A-2 homing antenna, mounted laterally on the helicopter to provide left and right signal comparison. It is connected to the left and right dipole antenna connections of the AN/ARC-54 radio. The antenna is a one-piece unit resembling a towel rack.

3-20. Transponder Set AN/APX-44 (IFF Set)

(figs. 3-21 and 3-22)

a. The transponder set receives all interrogations through Antenna AT-884/APX-44. The antenna receives and transmits horizontally polarized signals in all directions. The received signal frequency is 1,030 mc. Interrogations received by the antenna are fed through the duplexer to the receiver section of Radar Receiver-Transmitter RT-494/APX-44. The duplexer allows the transponder set to receive and transmit with the same antenna, without using mechanical switching parts. The receiver is a superheterodyne type with broadband characteristics to accommodate RF pulses without distortion. Its sensitivity is controlled by the NORM and LOW positions of the master control in Transponder Set Control C-2714/ APX-44 and, automatically, by the interrogation rate. The video pulses from the receiver have had all undesirable pulses, such as pulses of unequal amplitude, pulses too narrow in width, or pulses spaced less than 2 microseconds (μsec) after the first pulse, eliminated. The video pulses from the receiver are a pulse pair for each interrogation; the time between the pulses of a pair will be either 3, 5, or 8 μsec, depending on the interrogation mode.

b. The video from the receiver, in the form of interrogation pulse pairs, is applied to the decoder, which performs the following functions:

(1) Determines whether a proper interrogation has been received.

(2) Determines interrogation mode of the received signal.

(3) Generates mode-sensing gate pulses that enable the mode sensitivity encoder circuits to accept a selected reply train of pulses.

(4) Generates main gate pulses to blank out all interrogations for a period of 120 μsec after a received pulse pair (which allows time to complete a reply and avoids multiple replies), and to synchronize encoder reply train construction.

3-21. Navigation Set, Position Fixing AN/ASN-72

(figs. 415 and 3-16.1)

Navigation Set, Position Fixing AN/ASN-72 is an airborne hyperbolic navigational system which receives low frequency, unmodulated, continuous wave signals from four ground stations and provides the pilot with aircraft present position data. The navigation set provides the following visual displays of aircraft present position:

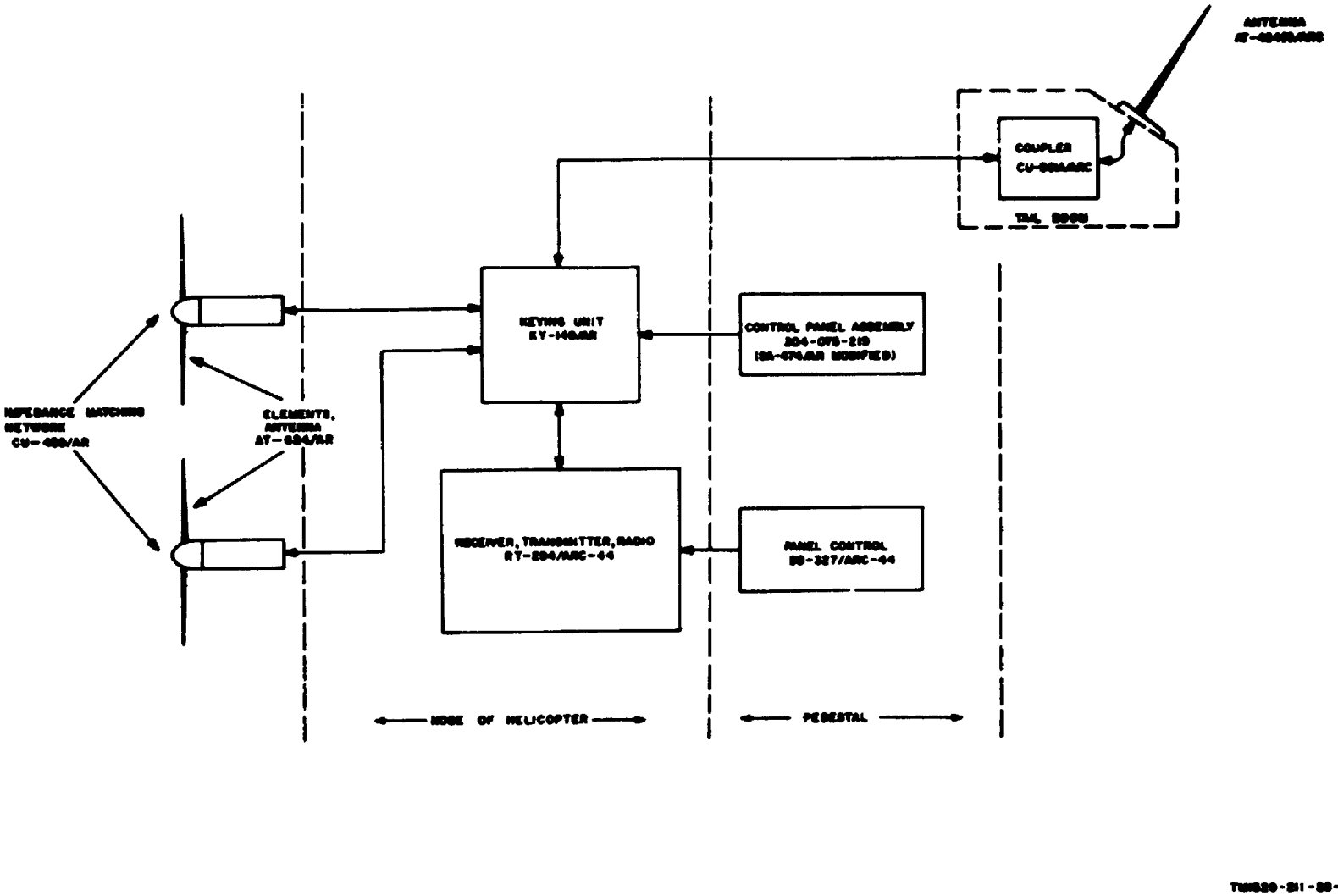


Figure 3-19. Fm homing facility block diagram Antenna Group AN/ARA-31.

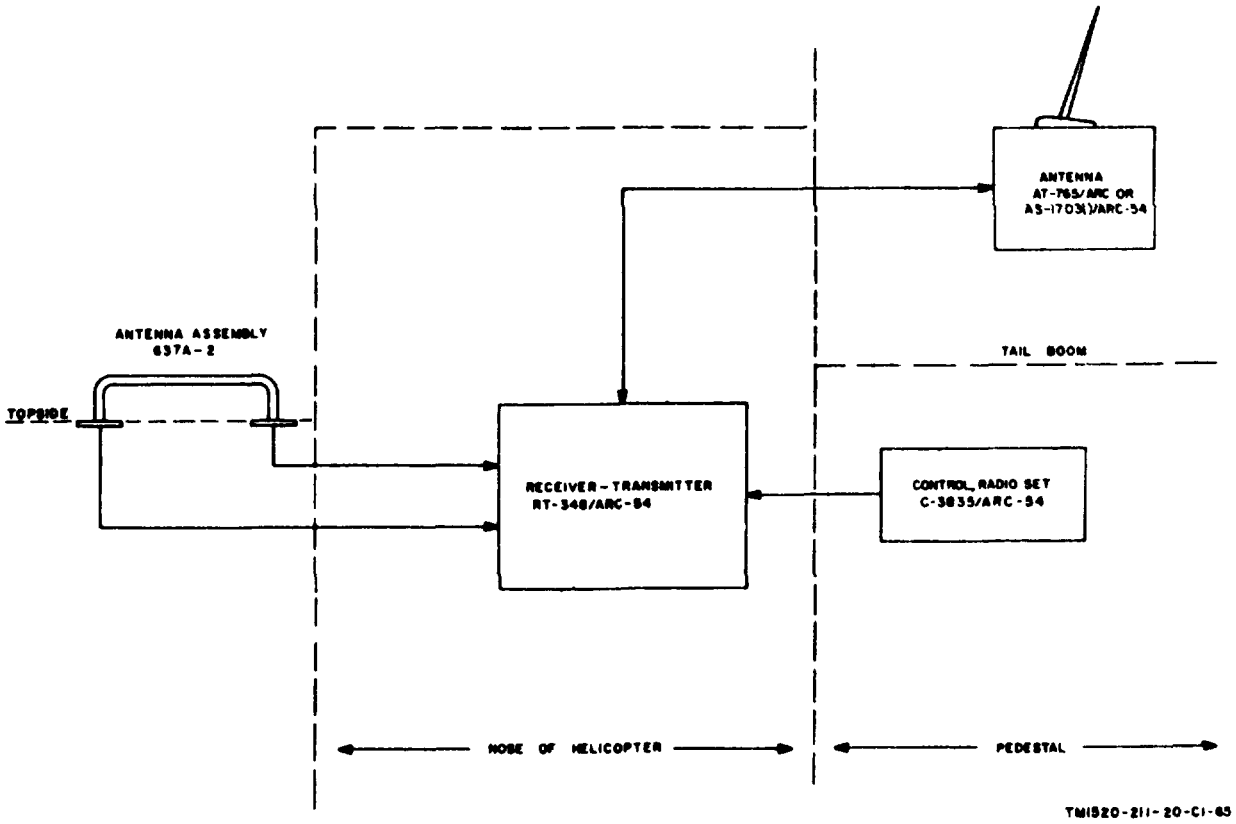


Figure 3-20. Fm homing facility block diagram.

a. Three decometers, designated as red, green, and purple, and calibrated in the lane and zone units into which the area covered by the ground stations is divided by the hyperbolic system of grids. The readings obtained from any two of the decometers are referred to maps or charts on which are imprinted the lane and zone units. When the readings from the two decometers are plotted on the chart, the point at which the readings intersect indicate aircraft present-position.

b. The navigation set consists of a preamplifier and receiver (fig. 2-41) with a control box and four display meters (fig. 2-24.2), and a computer (fig. 2-41) with a flight log control and a flight log display (fig. 2-24.2).

3-22. Battery, Storage BB-433/A
(fig. 2-44)

Battery, Storage BB-433/A is a rechargeable, 24-volt, nickel-cadmium battery. Electrical connection to the storage battery is made through a two-terminal, male connector at the front of the battery case. Each of the 19 cells contains removable filler cap vent plug that allows any gas given off by the cell to escape. During charge or discharge of the storage battery, no appreciable chemical change takes place in the electrolyte; therefore, testing the specific gravity of the electrolyte cannot determine the state of discharge of the battery. Refer to charging procedures in TM 11-6140-205-12.

3-23. Motor Generators PU-543(*)/A
(fig. 2-40)

Two inverters, one in use and one spare to be switched in should the first inverter fail, are provided. The 28-volt dc motor drives

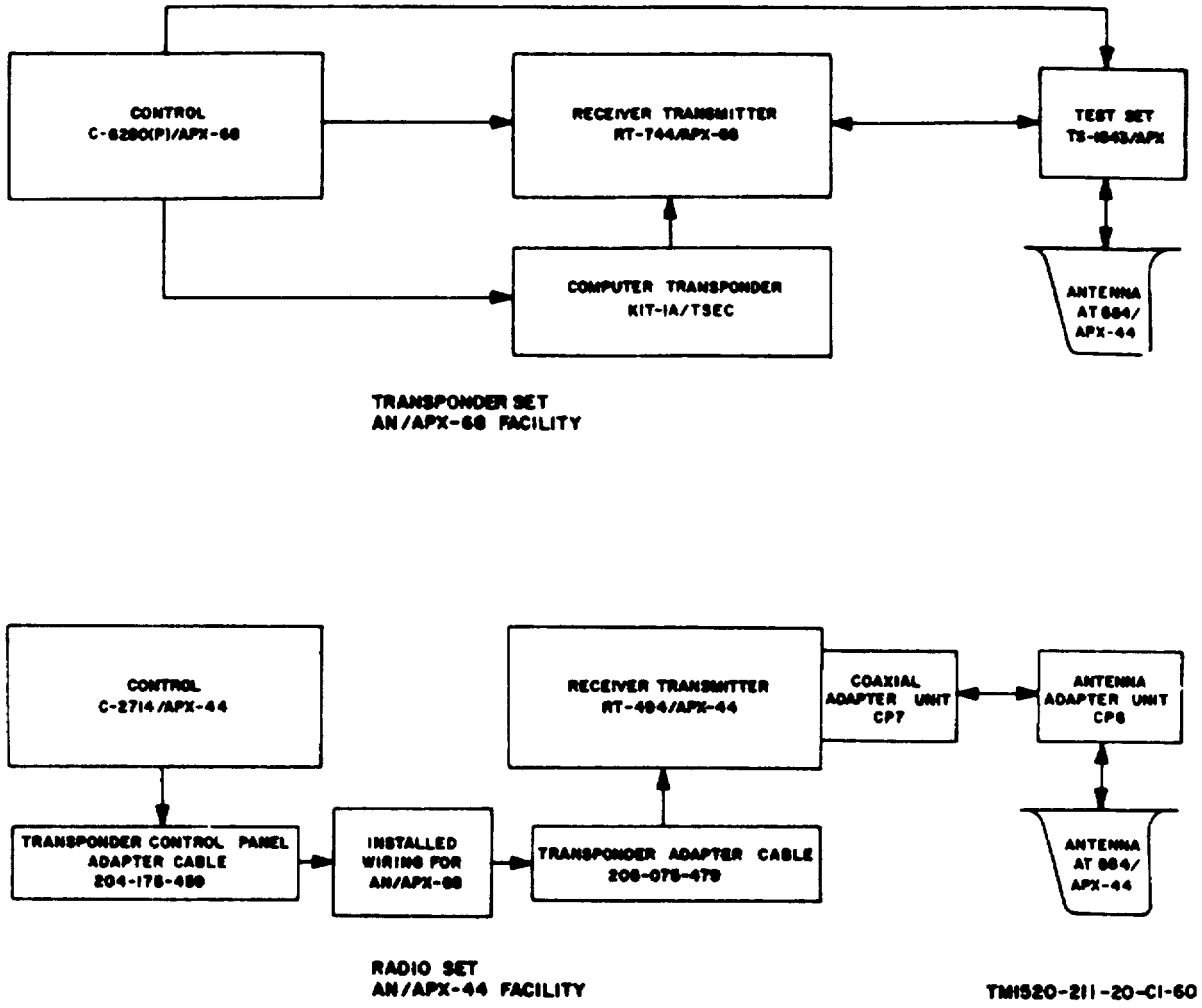


Figure 3-21. I ff transponder block diagram (Transponder Sets AN/APX-44 and AN/APX-68).

a. 115-volt, 400-cycle ac generator to supply power to the J2 compass system (fig. 4-7). Inverter output, both voltage and frequency, is regulated by a transistorized regulator system mounted above the motor-generator housing.

3-24. Attitude Indicating System (Pilot's)
(fig. 4-22)

The attitude indicating system consists of a pilot's attitude indicator type 4006G, located on the pilot's section of the instrument panel. Also included is a rate switching gyro MC-1, roll and pitch gyro MD-1, and an indicator amplifier, type 5404G, which are located in the nose compartment. The attitude indicating system is operated by 3 phase, 116-volt ac electrical power, supplied by the inverter, and is protected by PILOT ATTD circuit breakers on the AC circuit breaker panel. Integral lighting, operated by 28 volts dc from the essential bus, is incorporated in the indicator.

3-25. Attitude Indicating System (Copilot's)
(fig. 4-22)

The copilot's attitude indicating system, type J-8, is a self-contained system located on the copilot's section of the instrument panel. The attitude indicator is operated by 3-phase,

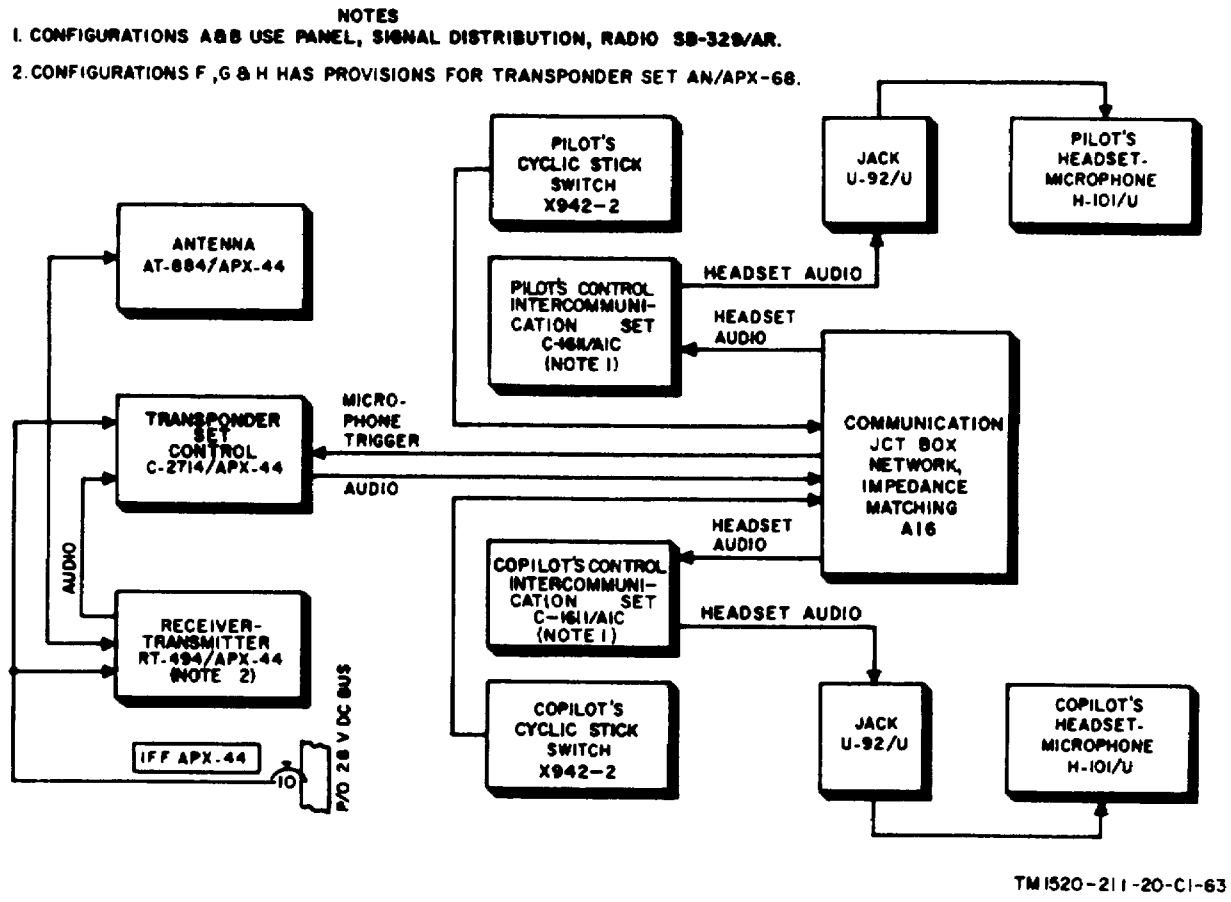


Figure 3-22. IFF transponder block diagram (Transponder Set AN/APX-44).

115-volt ac electrical power, supplied by the inverter, and is protected by COPILOT ATTD circuit breakers on the AC circuit breaker panel.

3-26. Secure-Voice Equipment

The secure-voice encoder/decoder (TSCE/KY28) and secure-voice control indicator (C8157/ARC) are used in conjunction with the AN/ARC-54 fm facility only, to provide secure, two-way voice communications. The encoder portion of the secure-voice encoder/decoder translates the microphone audio to coded voice for application to the AN/ARC-54 fm radio transmitter. Secure audio signals from the AN/ARC-54 fm radio receiver are applied to the secure-voice encoder/decoder for translation to clear audio.

APPENDIX I

REFERENCES

DA Pam 310-4	Index of Technical Manuals, Technical Bulletins, Supply Manuals (types 7, 8, and 9), Supply Bulletins, and Lubrication Orders.
DA Pam 310-7	U.S. Army Equipment Index of Modification Work Orders.
MWO 55-1520-211-34/23	Complete Provisions for AN/ARC-102 Single Side Band HF Radio (UH-1B) Aircraft.
MWO 55-1520-211-34/38	Modification of UH-1B Aircraft and Installation of Decca Navigation System (UH-1B Aircraft).
SB 11-573	Painting and Preservation Supplies Available for Field Use for Electronics Command Equipment.
TB 746-10	Field Instructions for Painting and Preserving Electronics Command Equipment.
TB 11-5826-217-30/1	Correction of Quadrantal Error for Direction Finder Set AN/ARN-59(V) and Radio Compass AN/ARN-6 Loop Antennas in Army Aircraft.
TM 11-520	Operation and Maintenance: Radio Receiving Set AN/ARN-30.
TM 11-526-25	Maintenance Instructions: Radio Set, ARC Type 12.
TM 55-1500-323-15	Organizational, DS, GS, and Depot Maintenance Manual: Installation Practices for Aircraft Electric and Electronic Wiring.
TM 11-5820-518-20	Organizational Maintenance Manual (Including Repair Parts and Special Tool Lists): Radio Sets AN/ARC-51X and AN/ARC-51BX.
TM 11-5821-204-12	Operator's and Organizational Maintenance Manual: Radio Set AN/ARC-44.
TM 11-5821-217-12	Organizational Maintenance Manual: Radio Sets AN/ARC-73 and AN/ARC-73A
TM 11-5821-225-24	Organizational and Field Maintenance Manual: Radio Sets AN/ARC-27, AN/ARC-27A, AN/ARC-55, AN/ARC-55A, and AN/ARC-55B.
TM 11-5821-244-12	Operator and Organizational Maintenance Manual: Radio Set AN/ARC-54 and Control Indicator C-8157/ARC.
TM 11-5821-248-12	Organizational Maintenance Manual: Radio Set AN/ARC-102.
TM 11-5826-204-12	Organizational Maintenance Manual: Direction Finder Set AN/ARN-59(V)
TM 11-5826-207-10	Operator's Manual: Radio Receiving Sets AN/ARN-30A, AN/ARN-30B, and AN/ARN/30C.
TM 11-5826-208-12	Operator's and Organizational Maintenance Manual: Receiving Set, Radio AN/ARN-68 and Receiver, Radio R-1041/ARN.
TM 11-5826-215-12	Organizational Maintenance Manual: Receiving Sets, Radio AN/ARN-30-D and AN/ARN-30E, Including Repair Parts and Special Tool Lists.
TM 11-5826-219-12	Operator and Organizational Maintenance Manual: Receivers, Radio R-1041/ARN, R-1041A/ARN, and R-1041B/ARN.
TM 11-5826-225-12	Organizational Maintenance Manual: Direction Finder Set AN/ARN-83.
TM 11-5826-226-12	Organizational Maintenance Manual: Radio Receiving Set AN/ARN-82.

TM 11-5826-228-12	Organizational Maintenance Manual: Navigation Set, Position Fixing AN/ASN-72.
TM 11-5831-201-15	Organizational, DS, GS, and Depot Maintenance Manual (Including Repair Parts and Special Tool Lists): Controls, Intercommunication Set C-1611/AIC, C-1611A/AIC, C-1611B/AIC, C-1611C/AIC, and C-1611 AIC.
TM 11-5895-217-12	Operator and Organizational Maintenance Manual: Including Repair Parts List: Transponder Sets AN/APX-44 and AN/APX-44B.
TM 11-5985-200-12	Operator and Organizational Maintenance Manual: Antenna Groups AN/ARA-31 and AN/ARA-56 and Switch Assemblies SA-474/AR and SA-474A/AR.
TM 11-6125-220-12	Organizational Maintenance Manual: Motor-Generators PU-543/A, PU-543A/A, PU-543B/A, and PU-543C/A (MS-21983).
TM 11-6140-203-15-1	Operator, Organizational, DS, GS, and Depot Maintenance Manual: Aircraft and Nonaircraft Nickel-Cadmium Batteries (General).
TM 11-6605-200-12	Operation and Organizational Maintenance: Aircraft Magnetic Compass Type J-2.
TM 11-6605-200-35	Field and Depot Maintenance Manual: Compass, Magnetic, Aircraft J-2 System.
TM 11-6605-202-12	Organizational Maintenance Manual: Gyromagnetic Compass Set AN/ASN-43.
TM 11-6605-202-35	DS, GS, and Depot Maintenance Manual: Gyromagnetic Compass Set AN/ASN-43.
TM 11-6625-203-12	Operator and Organizational Maintenance: Multimeter AN/URM-105, Including Multimeter ME-77/U.
TM 38-750	The Army Maintenance Management System (TAMMS).
TM 55-1520-218-20	Organizational Maintenance Manual: Army Model UH-1A Helicopter.
TM 55-1520-219-20	Organizational Maintenance Manual: Army Model UH-1B Helicopter.
TM 55-1520-220-20	Organizational Maintenance Manual: Army Model UH-1C Helicopter.
Honeywell Inc.	Operation and Service Instructions: Proximity Warning System, Honeywell Inc. Model YC--1054

APPENDIX II

MAINTENANCE ALLOCATION

Section I. INTRODUCTION

A2-1. General

The appendix provides a summary of the maintenance operations covered in the equipment literature for Installation Items for Electronic Equipment Configuration Army Model UH-1B and UH-1D. It authorizes levels of maintenance for specific maintenance functions on repairable items and components and the tools and equipment required to perform each function. This appendix may be used as an aid in planning maintenance operations.

A2-2. Explanation of Format for Maintenance Allocation Chart

a. Group Number. Group numbers correspond to the reference designation prefix assigned in accordance with ASA Y32.16, Electrical and Electronics Reference Designations. They indicate the relation of listed items to the next higher assembly.

b. Component Assembly Nomenclature. This column lists the item names of component units, assemblies, subassemblies, and modules on which maintenance is authorized.

c. Maintenance Function. This column indicates the maintenance level at which performance of the specific maintenance function is authorized. Authorization to perform a function at any level also includes authorization to perform that function at higher levels. The codes used represent the various maintenance levels as follows:

Number	Maintenance Category (or level)
O/C	Operator's/Crew
O	Organizational
F	Direct support
H	General support
D	Depot

d. Tools and Equipment. The numbers appearing in this column refer to specific tools and equipment which are identified by these numbers in section III.

e. Remarks. Self-explanatory.

A2-3. Explanation of Format for Tool and Test Equipment Requirements

The columns in the tool and test equipment requirements chart are as follows:

a. Tools and Equipment. The numbers in this column coincide with the numbers used in the tools and equipment column of the MAC. The numbers indicate the applicable tool for the maintenance function.

b. Maintenance Category. The numbers in this column indicate the maintenance category normally allocated the facility.

c. Nomenclature. This column lists tools, test and maintenance equipment required to perform the maintenance functions.

d. Federal Stock Number. This column lists the Federal stock number.

e. Tool Number. Not used.

SECTION II. MAINTENANCE ALLOCATION

MAINTENANCE ALLOCATION CHART

GROUP NUMBER	COMPONENT ASSEMBLY NOMENCLATURE	MAINTENANCE FUNCTIONS											TOOLS AND EQUIPMENT	REMARKS
		INSPECT	TEST	SERVICE	ADJUST	ALIGN	CALIBRATE	INSTALL	REPLACE	REPAIR	OVERHAUL	REBUILD		
	INSTALLATION ITEMS SUCH AS CABLE HARNESSES, JUNCTION BOXES, COUPLERS, PLUGS, SOCKETS AND SWITCHES FOR ELECTRONIC EQUIPMENT IN UH-1B AND UH-1D	0	0	0				0		F			1 3 2	
	CABLE ASSEMBLY, RF	0	0						0	0			1 3	
	RADIO SET AN/ARC-51(*)X								0				3	See MAC TM 11-5820-518-12
	RADIO SET AN/ARC-73(*)								0				3	CPO TM 11-5821-217-12
	RADIO SET AN/ARC-54								0				3	See MAC TM 11-5821-244-12
	RADIO SET AN/ARC-102								0				3	See MAC TM 11-5821-248-12
	RECEIVER SET R-1297( )/AR								0				3	SWP
	CONTROL, INTERCOMMUNICATION SET C-1611(*)/AIC								0				3	See MAC TM 11-5831-201-15
	ANTENNA GROUP AN/ARA-31/56								0				3	See MAC TM 11-5985-200-12
	RECEIVING SET, RADIO AN/ARN-30(*)								0				3	See MAC TM 11-5826-207-12P See MAC TM 11-5826-215-12
	DIRECTION FINDER SET AN/ARN-59(*)								0				3	See MAC TM 11-5826-204-12
	RMI INDICATOR ID-250/ARN								0				3	
	RMI INDICATOR ID-998/ASN								0				3	
	ANTENNA AS-1304/ARN-30 (IMN 4-4)	0	0						0	0			1 3	
	ANTENNA AT-640( )/ARN	0	0						0	0			1 3	

MAINTENANCE ALLOCATION CHART

GROUP NUMBER	COMPONENT ASSEMBLY NOMENCLATURE	MAINTENANCE FUNCTIONS											TOOLS AND EQUIPMENT	REMARKS
		INSPECT	TEST	SERVICE	ADJUST	ALIGN	CALIBRATE	INSTALL	REPLACE	REPAIR	OVERHAUL	REBUILD		
	UH-1B, -1D (continued)													
	ANTENNA COUPLER CN-942 ( )/ARC-54								**O**				**3**	**See MAC TM 11-5821-244-12**
	ANTENNA COUPLER CU-991 ( )/AR								**O**				**3**	**See MAC TM 11-5915-201-15**
	ANTENNA KIT (ANTIPRECIPITATION)								**O**				**3**	
	RADIO RECEIVER SET R-1041(*)/ARN								**O**				**3**	**CPO TM 11-5826-219-12**
	EMERGENCY UHF T-366/ARN								**O**				**3**	**See MAC TM 11-5821-207-12P**
	NAVIGATION RECEIVER AN/ASN-72								**O**				**3**	**See MAC TM 11-5826-228-12**
	IFF MARK XII COMPUTER KIT-1A/TSEC								**O**				**3**	**SWP**
	VOICE SECURITY TSEC/KY-28								**O**				**3**	**CPO Army Security Agency**
	TRANSFORMER SET AN/APX-68/72								**O**				**3**	**CPO**
	GYRO MAGNETIC COMPASS J2								**O**				**3**	**See MAC TM 11-6605-200-12**
	AMPLIFIER, ELECTRONIC CONTROL AM-3209( )/ASN								**O**				**3**	**See MAC TM 11-6110-211-15**
	VERTICAL GYRO DISPLACEMENT CONTROL MD-1	**O**							**O**				**3**	
	VGI RATE SWITCHING GYRO MC-1	**O**							**O**				**3**	
	MOTOR GENERATOR PU-543(*)/A								**O**				**3**	**See MAC TM 11-6125-220-12**
	CONVERTER CV-1275/ARN								**O**				**3**	**See MAC TM 11-5826-223-15P**
	BATTERY BB-433( )/A								**O**				**3**	**See MAC TM 11-6140-205-12**
	ANTENNA AT-1108( )/ARC	**O**							**O** **O**				**1** **3**	

MAINTENANCE ALLOCATION CHART

GROUP NUMBER	COMPONENT ASSEMBLY NOMENCLATURE	MAINTENANCE FUNCTIONS											TOOLS AND EQUIPMENT	REMARKS
		INSPECT	TEST	SERVICE	ADJUST	ALIGN	CALIBRATE	INSTALL	REPLACE	REPAIR	OVERHAUL	REBUILD		
	UH-1B, -1D (continued)													
	FM HOMER AS-1922/ARC	**O**	**O**										**1**	
									O	**O**			**3**	
	RADIO SET AN/ARC-44								**O**				**3**	**See MAC TM 11-5821-204-12**
	RADIO SET AN/ARC-55(*)								**O**				**3**	**See MAC TM 11-5821-210-12P**
	ANTENNA AT-450/ARC								**O**				**3**	
	PANEL, SIGNAL DISTRIBUTION RADIO SB-329/AR								**O**				**3**	**See MAC TM 11-5821-204-12**
	HEADSET MICROPHONE H-101(*)/U								**O**				**3**	**See MAC TM 11-5965-215-15**
	TRANSPONDER SET AN/APX-44								**O**				**3**	**See MAC TM 11-5895-217-12**
	GYRO MAGNETIC COMPASS AN/ASN-43								**O**				**3**	**See MAC TM 11-6605-202-12**
	RECEIVING SET, RADIO AN/ARN-82								**O**				**3**	**See MAC TM 11-5826-226-12**
	DIRECTION FINDER SET AN/ARN-83								**O**				**3**	**See MAC TM 11-5826-225-12**
	PROXIMITY WARNING FACILITY HONEYWELL P/N YG-1054	**O**	**O**						**O**					**Replace defective receiver/transponder**

SECTION III. TOOL AND TEST EQUIPMENT REQUIREMENTS

TOOL AND TEST EQUIPMENT REQUIREMENTS

TOOLS AND EQUIPMENT	MAINTENANCE CATEGORY	NOMENCLATURE	FEDERAL STOCK NUMBER	TOOL NUMBER
		UH-1B, -1D (continued)		
1	O	MULTIMETER AN/URM-105	6625-581-2036	
2	H,D	TOOL KIT T-100/G	5180-605-0079	
3	O,F	TOOL KIT T-101/G	5180-064-5178	
4	O	**GROUND TRANSPONDER TEST SET FOR PROXIMITY** WARNING FACILITY (HONEYWELL P/N UG2330AA01)	**NSN**	

GLOSSARY

The list of unusual terms and their definitions are as follows:

Aft-At, near, or toward the rear of an aircraft (helicopter); also the rear section of an aircraft (helicopter).

Airframe-Structural components of an aircraft (helicopter) including the framework and the skin.

Attitude-The aspect that an aircraft (helicopter) presents at any given moment, as determined by its inclinations about its three axes.

Automatic direction finder-Radio compass facility which permits automatic indication of the direction of the station to which it is tuned.

Basic signal electronic equipment-Equipment for which the Electronics Command has logistic and maintenance responsibility and for which there are Department of the Army publications covering troubleshooting, testing, aligning, and repairing of the equipment through replacing maintenance parts repairing specific maintenance parts. These equipments are used without modification in more than one aircraft, and are government furnished to the aircraft manufacturer for installation.

Bearing-Position of an aircraft (helicopter) with respect to true or magnetic north. Measured in degrees, 0° to 360°.

Bus-A conductor or group of conductors which serve as a common connection for two or more circuits.

Compass rose-A graduated circle marked in degrees and/or directions, for calibration of aircraft (helicopter) magnetic compassed.

Configuration-A group of various equipments interconnected and interrelated to provide a large system that has numerous functions and capabilities.

Course-A planned route or direction of flight referenced to points on the earth.

Flux valve-A direction-sensing element activated by the earth's magnetic field.

Fore-At, near, or toward the front of the aircraft (helicopter); also the front section of an aircraft (helicopter).

Heading-The relative direction in which the aircraft (helicopter) is pointed.

Homing-Navigation toward a point.

Hot mike-Microphone always on (no-push-to-talk function).

Marker beacon-Radio beacon placed along a runway to indicate the position of the aircraft (helicopter).

Null-Zero signal indication.

Omnidirectional-In all directions.

Safety wire-Steel wire tied through holes in equipment mounting hardware to keep the equipment fastenings securely mounted, regardless of vibrations.

Sense antenna-An antenna used to resolve a 1800 ambiguity in a directional antenna.

Slaved-Synchronized with, forced to follow or duplicate an action.

To-from meter-Indicates the direction an aircraft (helicopter) is heading in relation to a vor station.

Tone localizer-A transmitted signal with tones that identify the aircraft's (helicopter's) direction from the' runway during final approach or landing.

Visual-aural range-Radio range that transmits information for visual and aural interpretation in the aircraft (helicopter). Information enables the pilot to follow a prescribed course.

INDEX

CHAPTER 4

FINAL ILLUSTRATIONS

The illustrations in this chapter provide complete circuitry of the helicopter electronic configuration wiring. These illustrations show point-to-point wiring between connectors, terminals, electronic components, etc, for each electronic equipment operational facility.

(Figures 4-1 through 4-30 located in back of manual)

By Order of the Secretary of the Army:

HAROLD K. JOHNSON,
General United State Army,
Chief of Staff.

Official:

KENNETH G. WICKHAM,
Major General, United State Army,
The Adjutant General.

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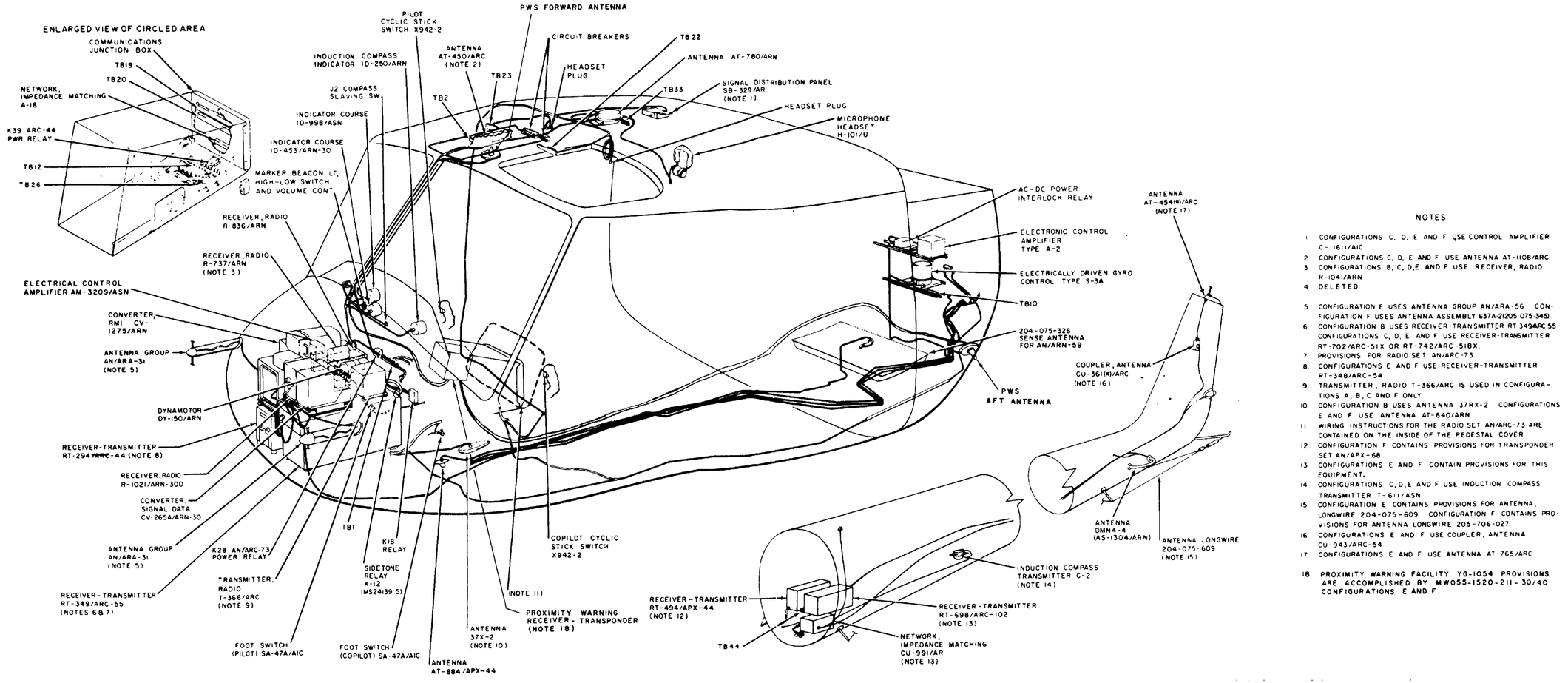


NOTES

1. CONFIGURATIONS C, D, E AND F USE CONTROL AMPLIFIER C-11611/AIC
2. CONFIGURATIONS C, D, E AND F USE ANTENNA AT-1108/ARC
3. CONFIGURATIONS B, C, D,E AND F USE RECEIVER, RADIO R-1041/ARN
4. DELETED
5. CONFIGURATION E USES ANTENNA GROUP AN/ARA-56. CONFIGURATION F USES ANTENNA ASSEMBLY 637A-2(205-075-345)
6. CONFIGURATION B USES RECEIVER-TRANSMITTER RT-349ARC-55 CONFIGURATIONS C, D, E AND F USE RECEIVER-TRANSMITTER RT-702/ARC-51X OR RT-742/ARC-51BX.
7. PROVISIONS FOR RADIO SET AN/ARC-73.
8. CONFIGURATIONS E AND F USE RECEIVER-TRANSMITTER RT-348/ARC-54.
9. TRANSMITTER, RADIO T-366/ARC IS USED IN CONFIGURATIONS A, B, C AND F ONLY.
10. CONFIGURATION B USES ANTENNA 37RX-2. CONFIGURATIONS E AND F USE ANTENNA AT-640/ARN.
11. WIRING INSTRUCTIONS FOR THE RADIO SET AN/ARC-73 ARE CONTAINED ON THE INSIDE OF THE PEDESTAL COVER.
12. CONFIGURATION F CONTAINS PROVISIONS FOR TRANSPONDER SET AN/APX-68.
13. CONFIGURATIONS E AND F CONTAIN PROVISIONS FOR THIS EQUIPMENT.
14. CONFIGURATIONS C, D, E AND F USE INDUCTION COMPASS TRANSMITTER T-611/ASN.
15. CONFIGURATION E CONTAINS PROVISIONS FOR ANTENNA, LONGWIRE 204-075-609. CONFIGURATION F CONTAINS PROVISIONS FOR ANTENNA LONGWIRE 205-706-027.
16. CONFIGURATIONS E AND F USE COUPLER, ANTENNA CU-943/ARC-54.
17. CONFIGURATIONS E AND F USE ANTENNA AT-765/ARC.
18. PROXIMITY WARNING FACILITY YG-1054 PROVISIONS ARE ACCOMPLISHED BY MWO55-1520-211-30/40 CONFIGURATIONS E AND F.

Figure 4-1. Outline of helicopter, showing relative location of electronic equipment components and cable routing.

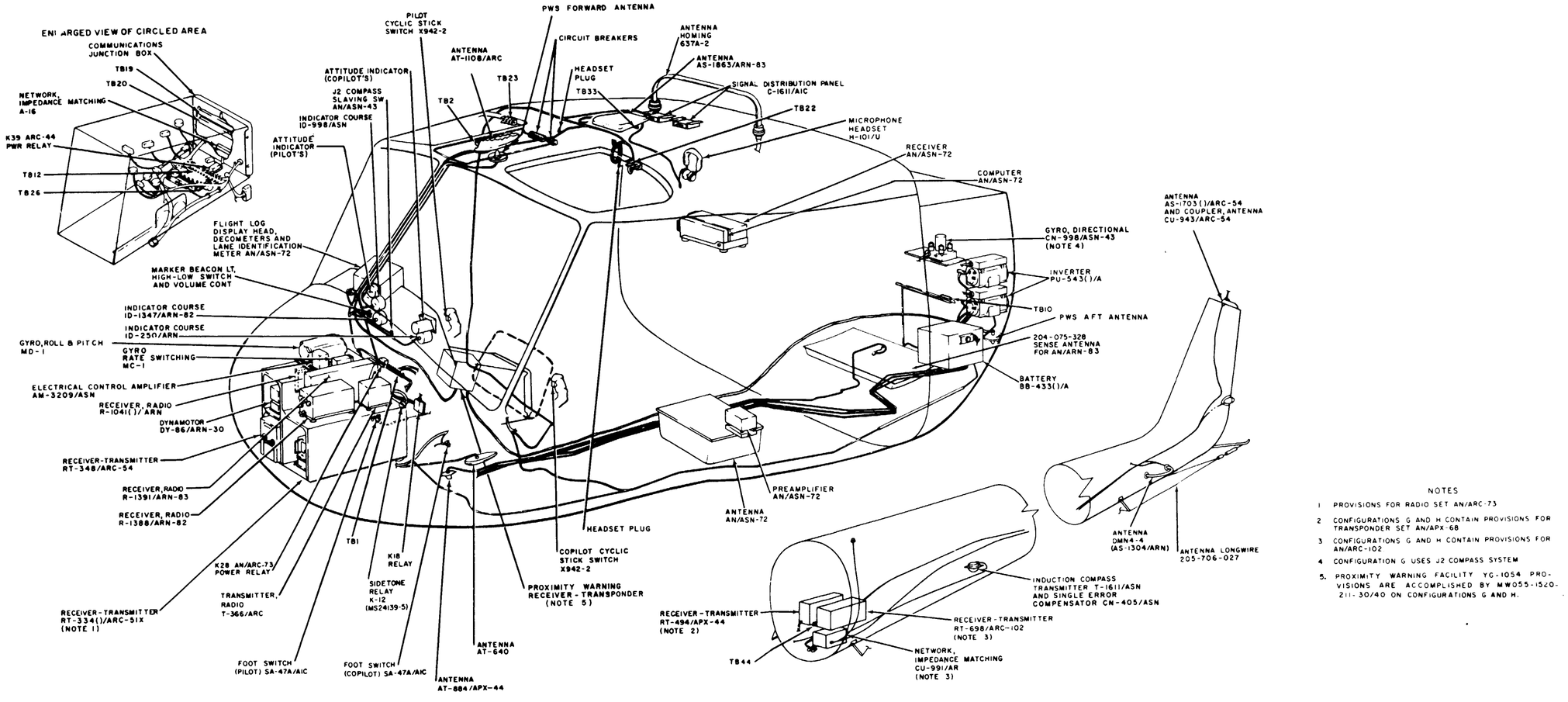


Figure 4-1 1 Outline drawing of helicopter, showing relative location of electronic equipment components and cable routing (configurations G and H).

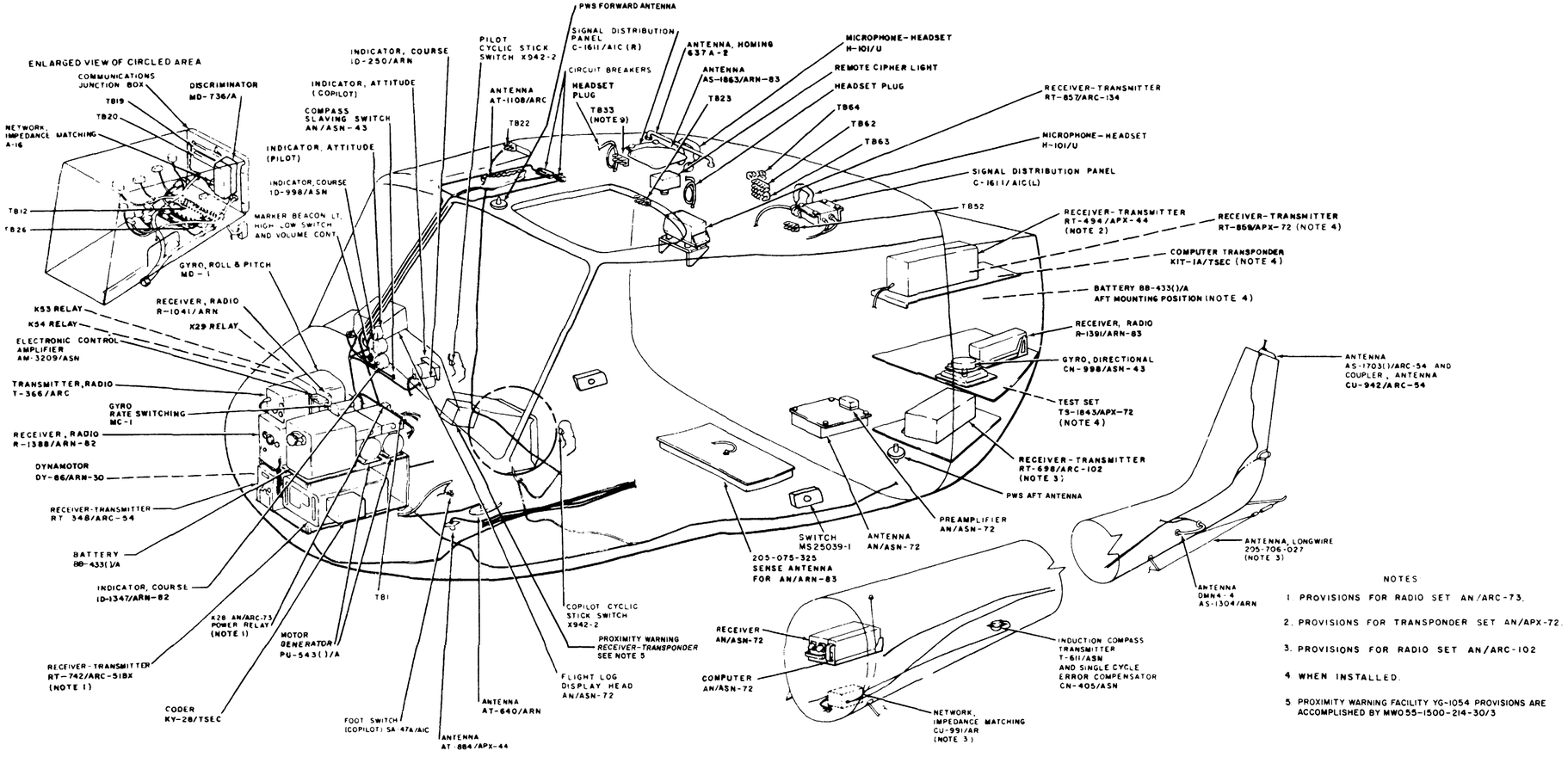
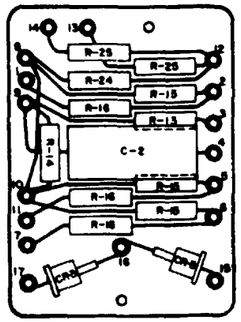
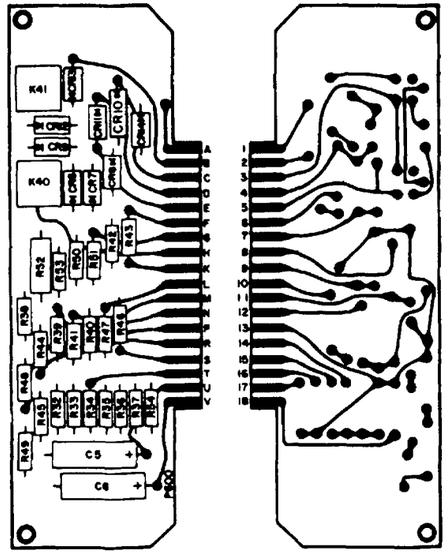


Figure 4-1.2 Outline drawing of helicopter showing relative location of electronic equipment components and cable routing.



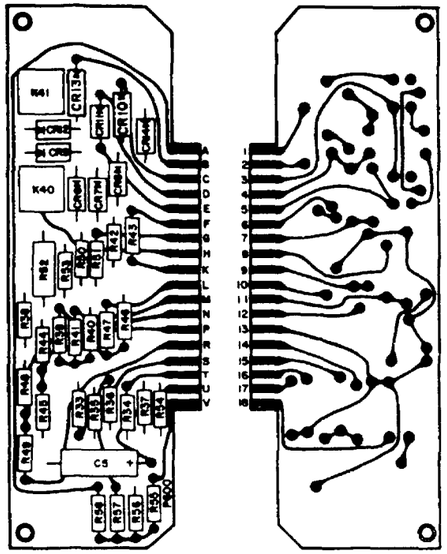
REF DESIG	PART NUMBER	PART DESIGNATION
C2	CP054IK474K	CAPACITOR, 47 ufd 100V DC
CR3	IN4408	DIODE, PIV 1000V, 300 MA
R13	RC32GF162J	RESISTOR, 100K, 3 MA
R14	RC30GF122J	1.2K ~, 1 W
R15	RC32GF121J	120 ~, 1 W
R16	RC30GF221J	220 ~, 1 W
R24	RC30GF681J	680 ~, 1 W
R25	RC32GF682J	RESISTOR, 6.8K ~, 1 W

204-075-349
CONFIGURATIONS A&B



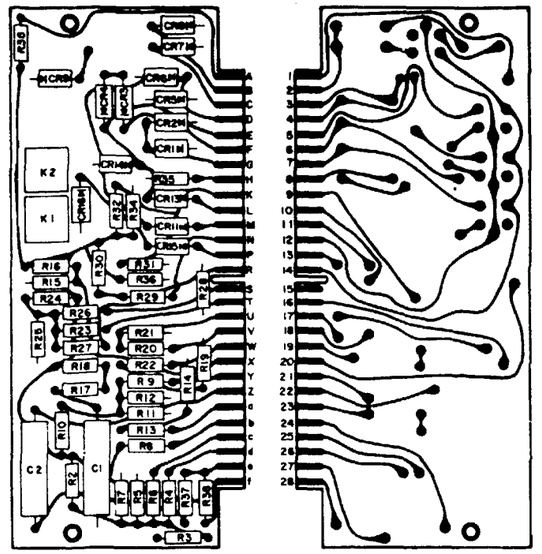
REF DESIG	PART NUMBER	PART DESIGNATION
C5	CL25BJ180UP3	CAPACITOR, 18 ufd 50V DC
C6	CL25BJ180UP3	CAPACITOR, 18 ufd 50V DC
CR6	IN2071	DIODE
CR7		
CR8		
CR9		PIV 600 VOLTS 750 MA @ 25°C
CR10		
CR11		
CR12		
CR13		
CR14	IN2071	DIODE
K40	C2A-126	RELAY, SPDT
K41	C2A-126	RELAY, SPDT
R32	RC20GF151J	RESISTOR, 150 ~, 1/2 W, 5%
R33	680J	68
R34	101J	100
R35	101J	100
R36	272J	27K
R37	151J	150
R38	680J	68
R39	101J	100
R40	101J	100
R41	101J	100
R42	221J	220
R43	331J	330
R44	330J	33
R45	820J	82
R46	121J	120
R47	121J	120
R48	560J	56
R49	560J	56
R50	221J	220
R51	RC20GF820J	82 1/2 W
R52	RC32GF221J	220 1 W
R53	RC20GF820J	82 1/2 W
R54	RC20GF151J	RESISTOR, 150 ~, 1/2 W, 5%

204-075-379
CONFIGURATIONS C&D



REF DESIG	PART NUMBER	PART DESIGNATION
C5	CL25BJ180UP3	CAPACITOR, 18 ufd 50V DC
CR6	IN2071	DIODE
CR7		
CR8		
CR9		PIV 600 VOLTS 750 MA @ 25°C
CR10		
CR11		
CR12		
CR13		
CR14	IN2071	DIODE
K40	C2A-126	RELAY, SPDT
K41	C2A-126	RELAY, SPDT
R53	MS35043-61	RESISTOR, 82 ~, 1/2 W, 5%
R34	63	100
R35	63	100
R36	63	100
R37	67	150
R38	58	68
R39	63	100
R40	63	100
R41	63	100
R42	71	220
R43	75	330
R44	51	33
R45	61	82
R46	66	120
R47	65	120
R48	67	150
R49	67	150
R50	71	220
R51	MS35043-61	82 1/2 W
R52	MS36044-65	220 1 W
R53	MS35043-61	82 1/2 W
R54	67	150
R55	81	560
R56	67	150
R57	59	68
R58	MS35043-59	RESISTOR- 68 ~, 1/2 W, 5%

204-075-383
CONFIGURATION E



REF DESIG	PART NUMBER	PART DESIGNATION
C1	CL25BJ180UP3	CAPACITOR, 18 ufd 50V DC
C2	CL25BJ180UP3	CAPACITOR, 18 ufd 50V DC
CR1	IN2071	DIODE
CR2		
CR3		
CR4		
CR5		
CR6		
CR7		PIV 600 VOLTS 750 MA @ 25°C
CR8		
CR9		
CR11		
CR12		
CR13		
CR14		
CR15		
CR16	IN2071	DIODE
K1	C2A-126	RELAY, SPDT
K2	C2A-126	RELAY, SPDT
R2	RC20GF121J	RESISTOR, 120 ~, 1/2 W, 5%
R3	101J	100
R4	101J	100
R5	101J	100
R6	101J	100
R7	101J	100
R8	151J	150
R9	101J	100
R10	680J	68
R11	101J	100
R12	101J	100
R13	101J	100
R14	101J	100
R15	331J	330
R16	221J	220
R17	820J	82
R18	560J	56
R19	121J	120
R20	121J	120
R21	RC20GF 121J	RESISTOR, 120 ~, 1/2 W, 5%
CONTINUED-		

REF DESIG	PART NUMBER	PART DESIGNATION
R22	RC20GF121J	RESISTOR, 120 ~, 1/2 W, 5%
R23	561J	560
R24	151J	150
R25	680J	68
R26	680J	68
R27	680J	68
R28	680J	68
R29	151J	150
R30	151J	150
R31	820J	82
R32	221J	220
R33	820J	82
R34	221J	220
R35	151J	150
R36	151J	150
R37	560J	56
R38	RC20GF560J	RESISTOR, 56 ~, 1/2 W, 5%

204-075-399
CONFIGURATION F, G & H

TM1520-211-20-CI-68

Figure 4-2. Impedance-matching network (A16), parts layout and wiring diagram.

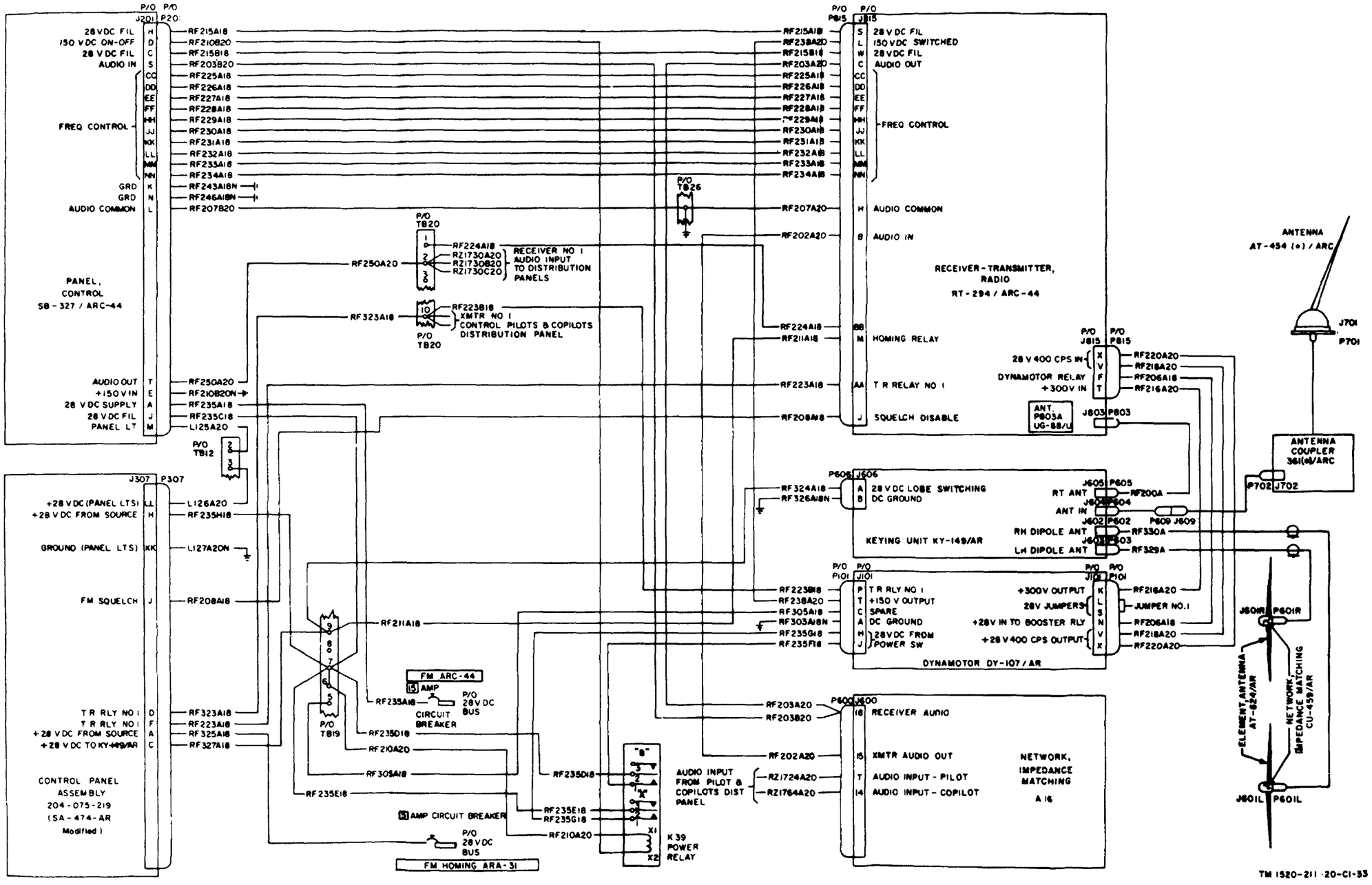


Figure 4-3. Fm liaison facility wiring diagram, Radio Set AN/ARC4-44

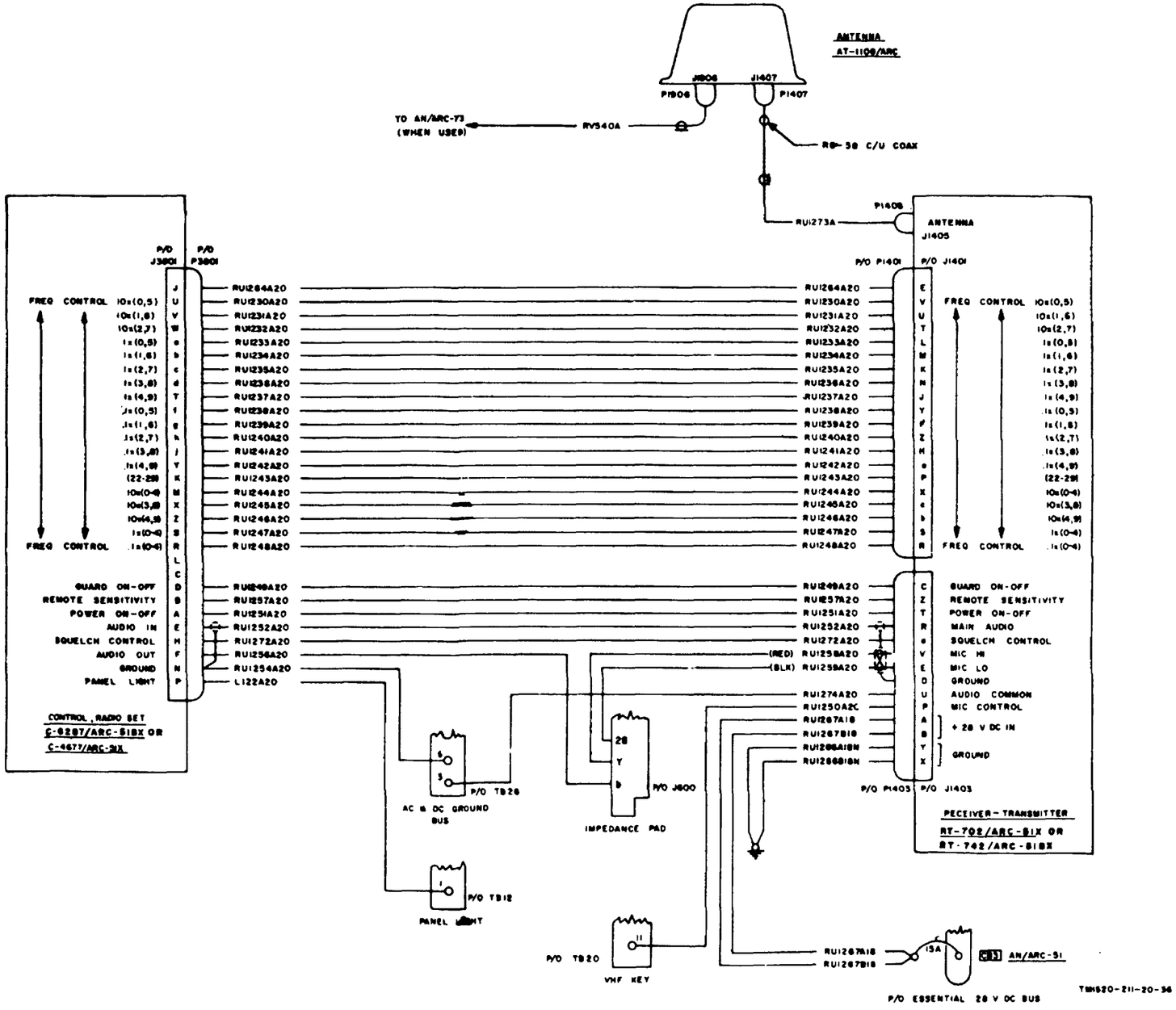


Figure 4-4. Uhf command facility wiring diagram, Radio Set AN/ARC-51(*)X.

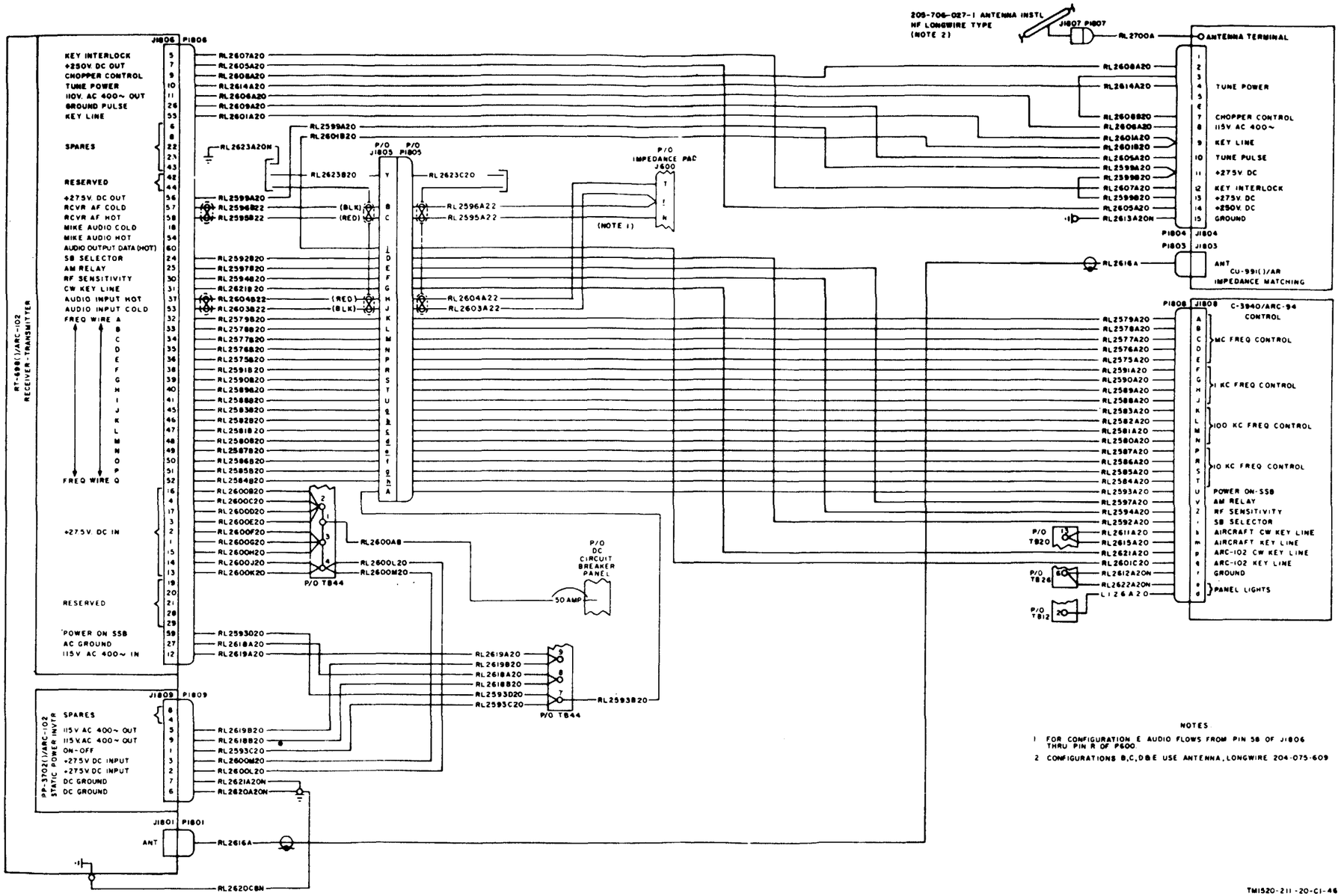


Figure 4-5. Hf ssb/AM facility wiring diagram, Radio Set AN/ARC-102.

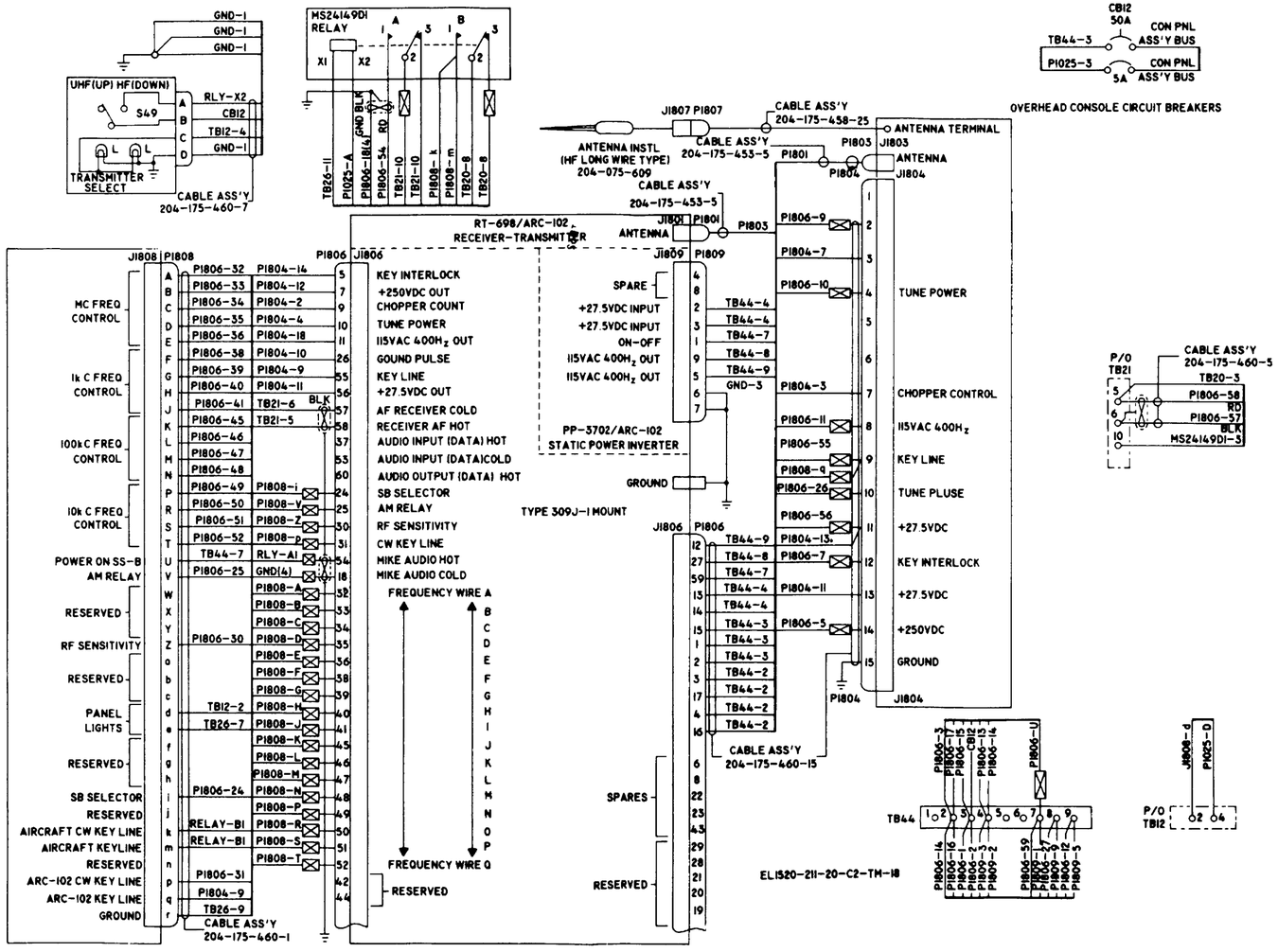


Figure 4.5.1 H.f ssb/am facility, wiring diagram Radio Set AN/ARC-102 (1962-series).

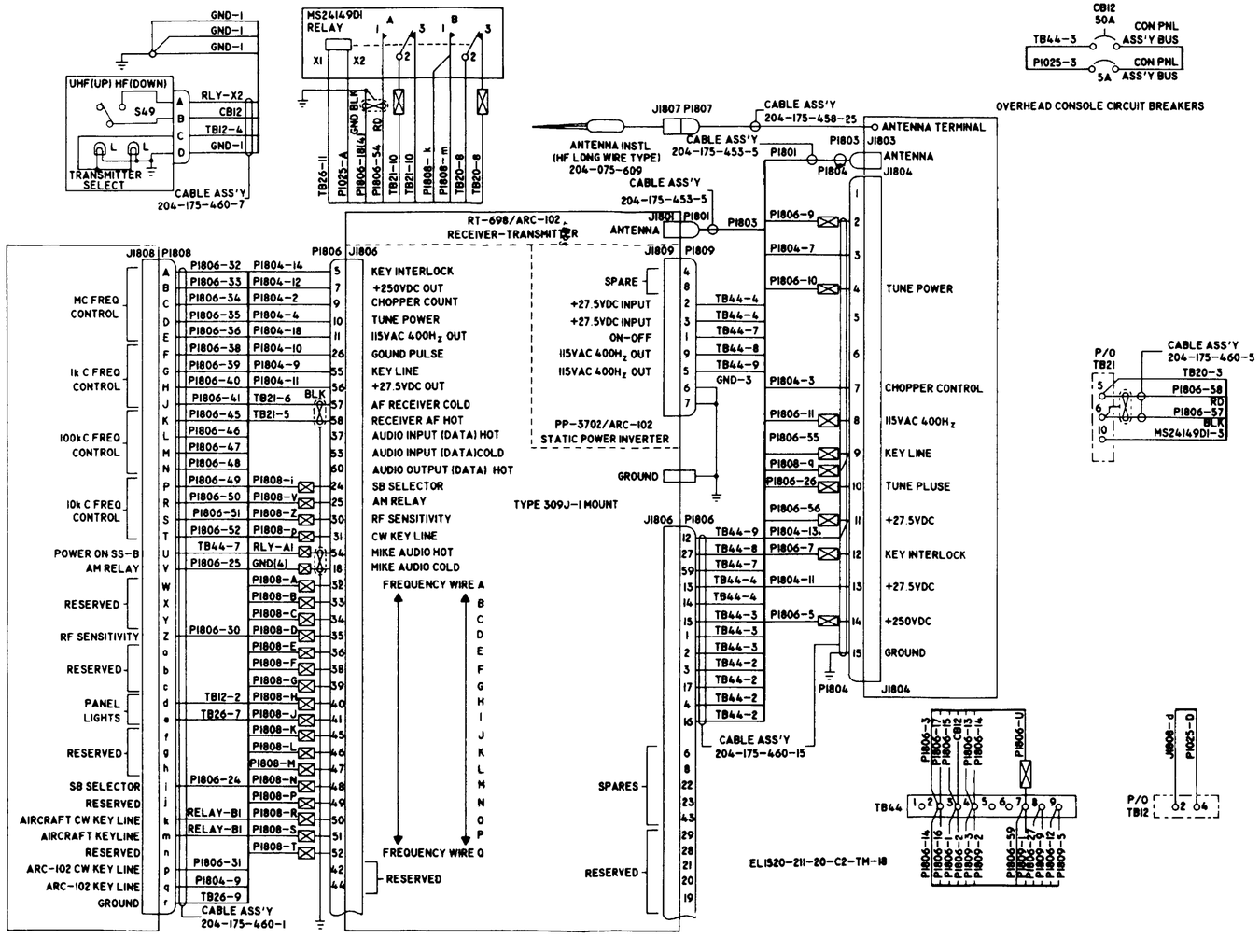


Figure 4-5.1 H.f ssb/am facility, wiring diagram Radio Set AN/ARC-102 (1962-series).

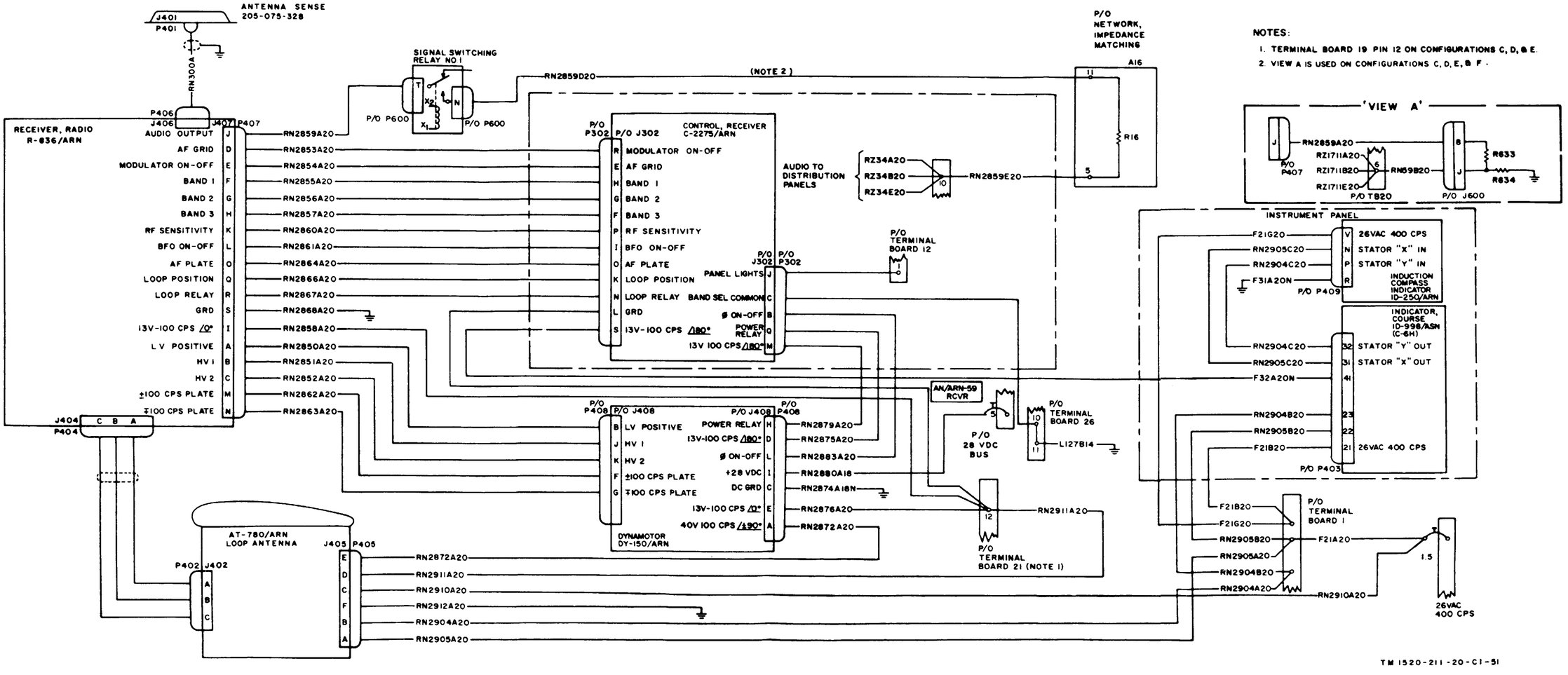


Figure 4-6. Lf adf navigation facility wiring diagram, AN/ARN-59(V).

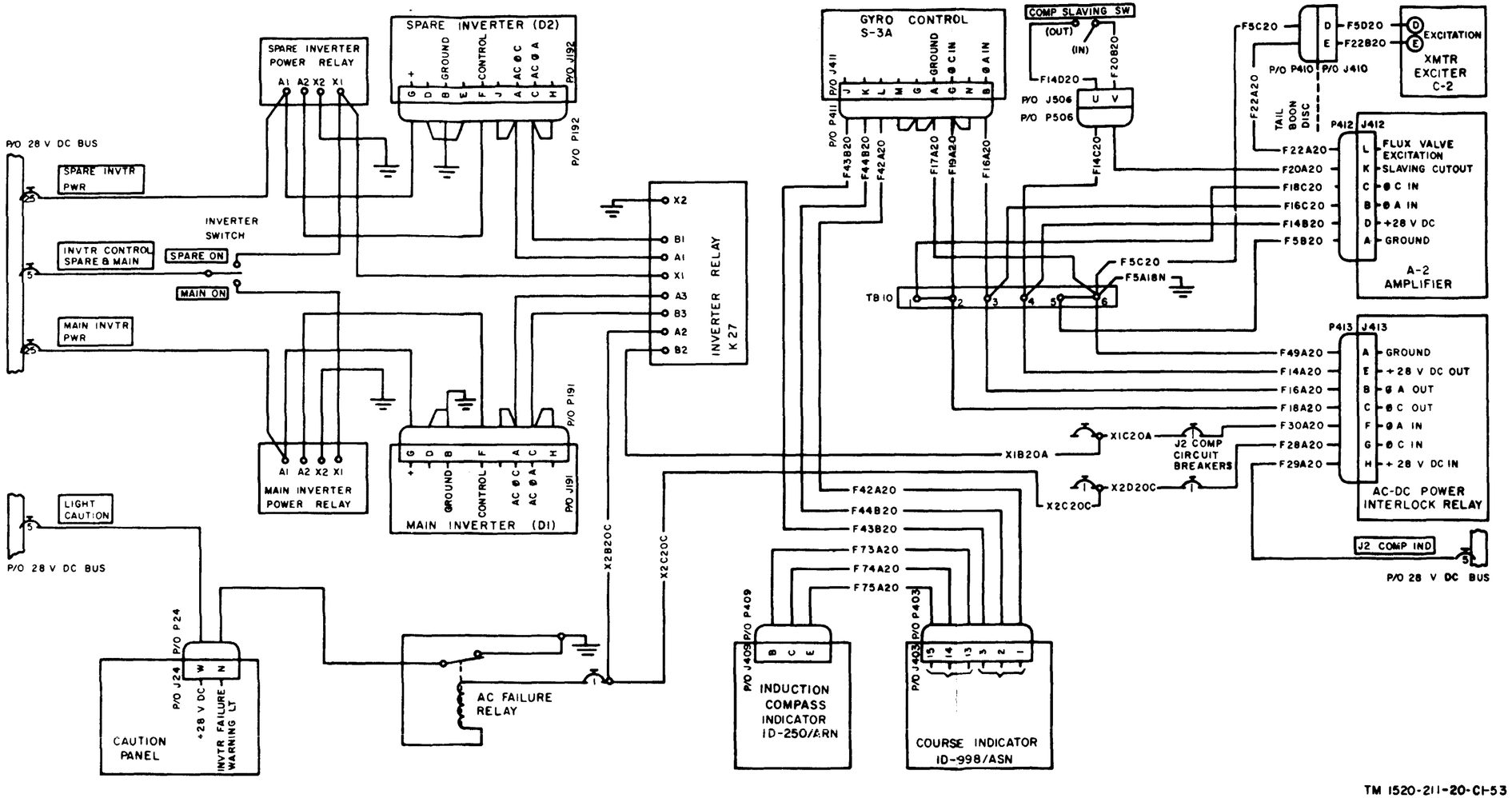


Figure 4-7. Gyromagnetic J2 compass facility wiring diagram.

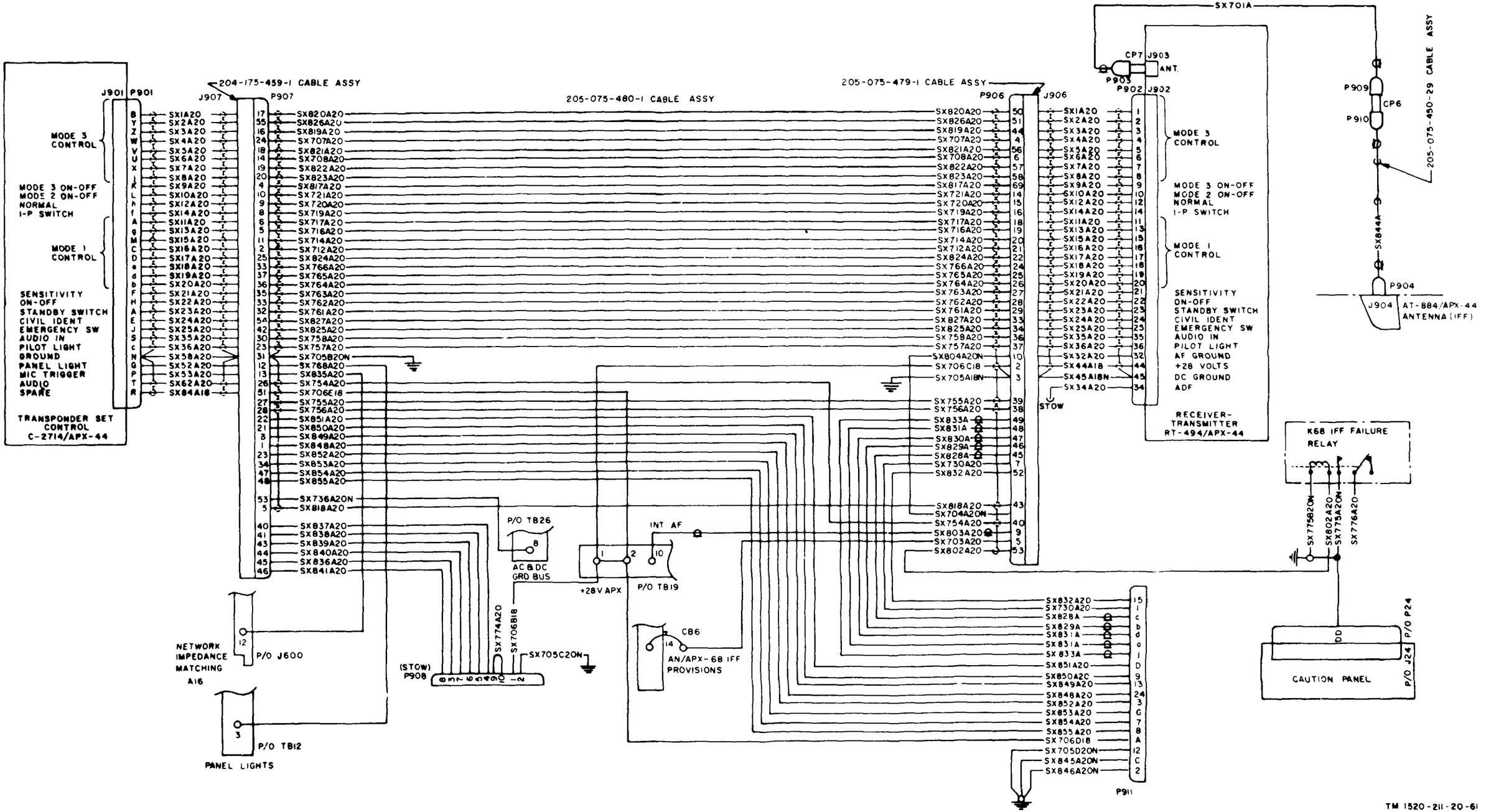
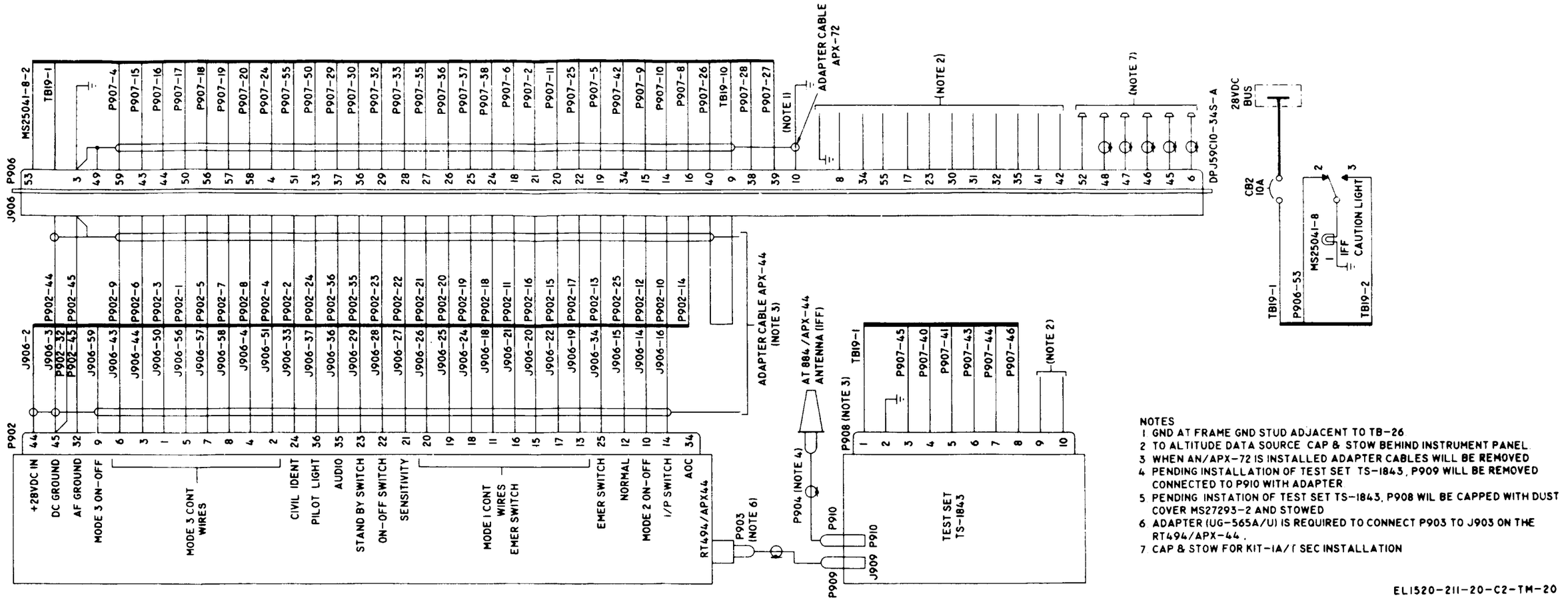


Figure 4-8. IFF transponder facility wiring diagram (Transponder Set AN/APX-44).



NOTES
1 GND AT FRAME GND STUD ADJACENT TO TB-26
2 TO ALTITUDE DATA SOURCE CAP & STOW BEHIND INSTRUMENT PANEL.
3 WHEN AN/APX-72 IS INSTALLED ADAPTER CABLES WILL BE REMOVED
4 PENDING INSTALLATION OF TEST SET TS-1843, P909 WILL BE REMOVED CONNECTED TO P910 WITH ADAPTER
5 PENDING INSTATION OF TEST SET TS-1843, P908 WIL BE CAPPED WITH DUST COVER MS27293-2 AND STOWED
6 ADAPTER (UG-565A/U) IS REQUIRED TO CONNECT P903 TO J903 ON THE RT494/APX-44.
7 CAP & STOW FOR KIT-1A/TSEC INSTALLATION

EL1520-211-20-C2-TM-20

Figure 4-8.1(1). IFF Transponder Set AN/APX-44/72 facility, wiring diagram, configurations A, B, C, and E (part 1 of 2).

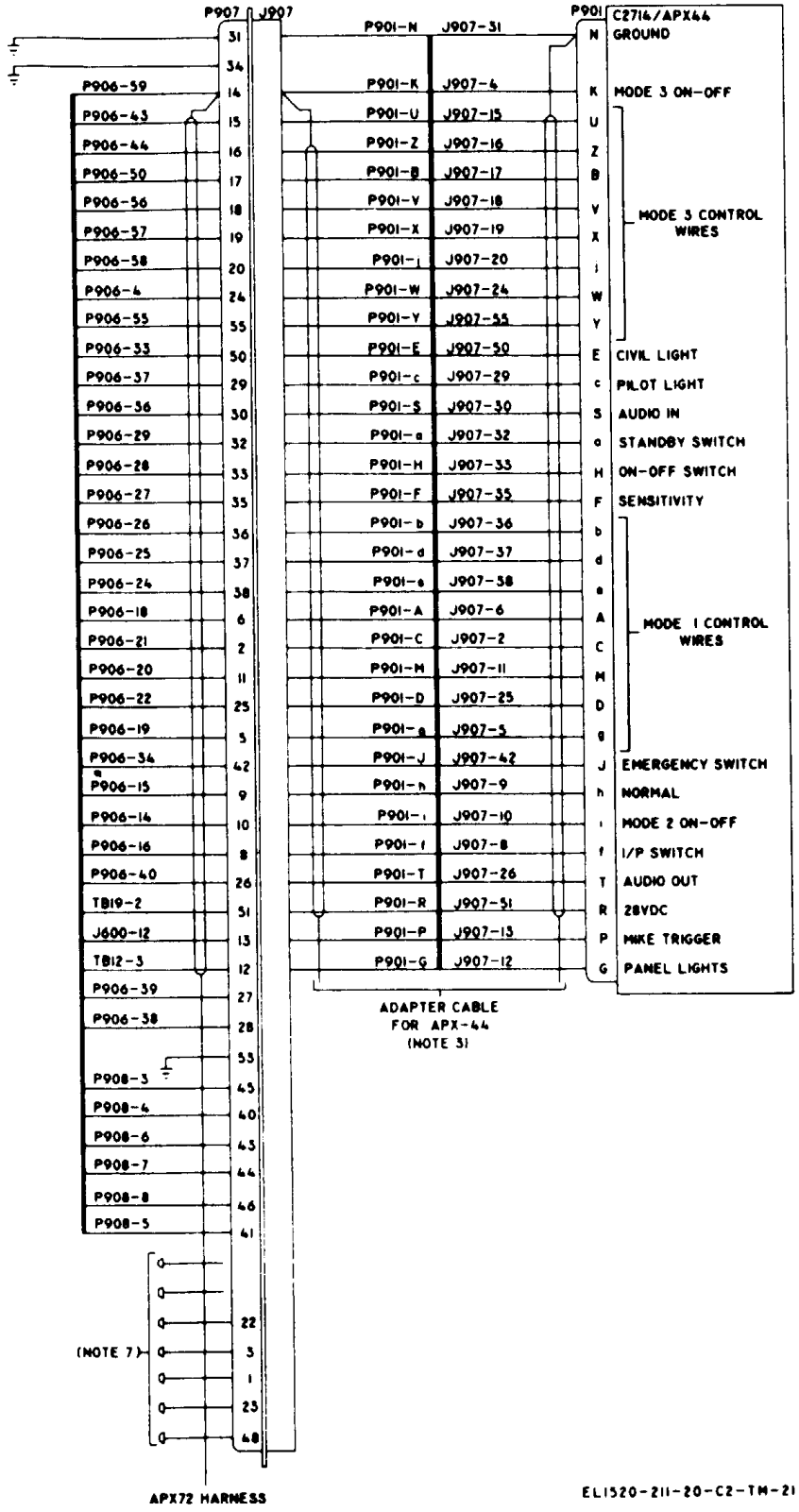


Figure 4-8.1(2). IFF Transponder Set AN/APX-44/72 facility, wiring diagram, configurations A, B, C, and E (part 2 of 2)

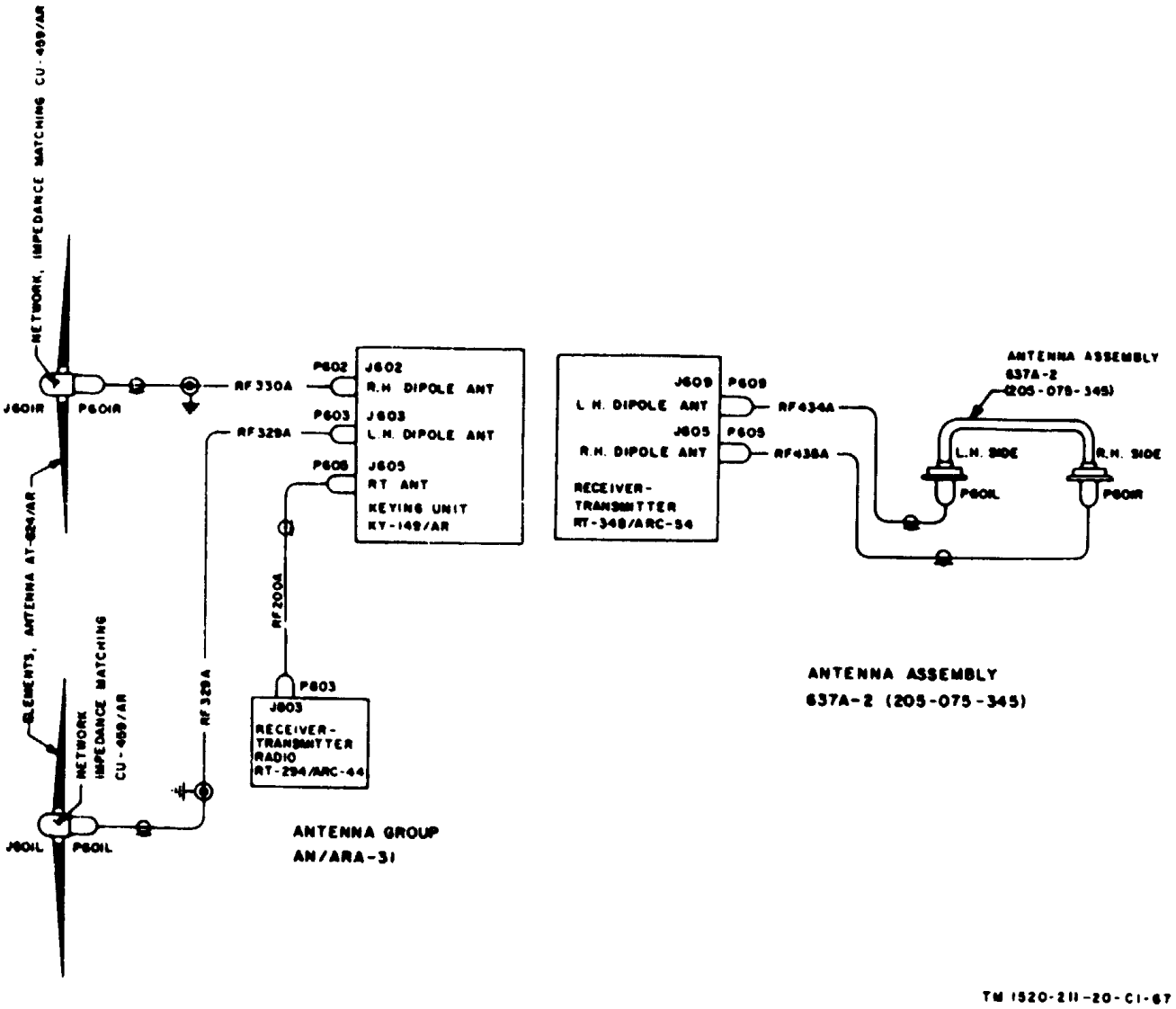


Figure 4-9. Fm homing Antenna Groups AN/ARA-31 and 637-A wiring diagram

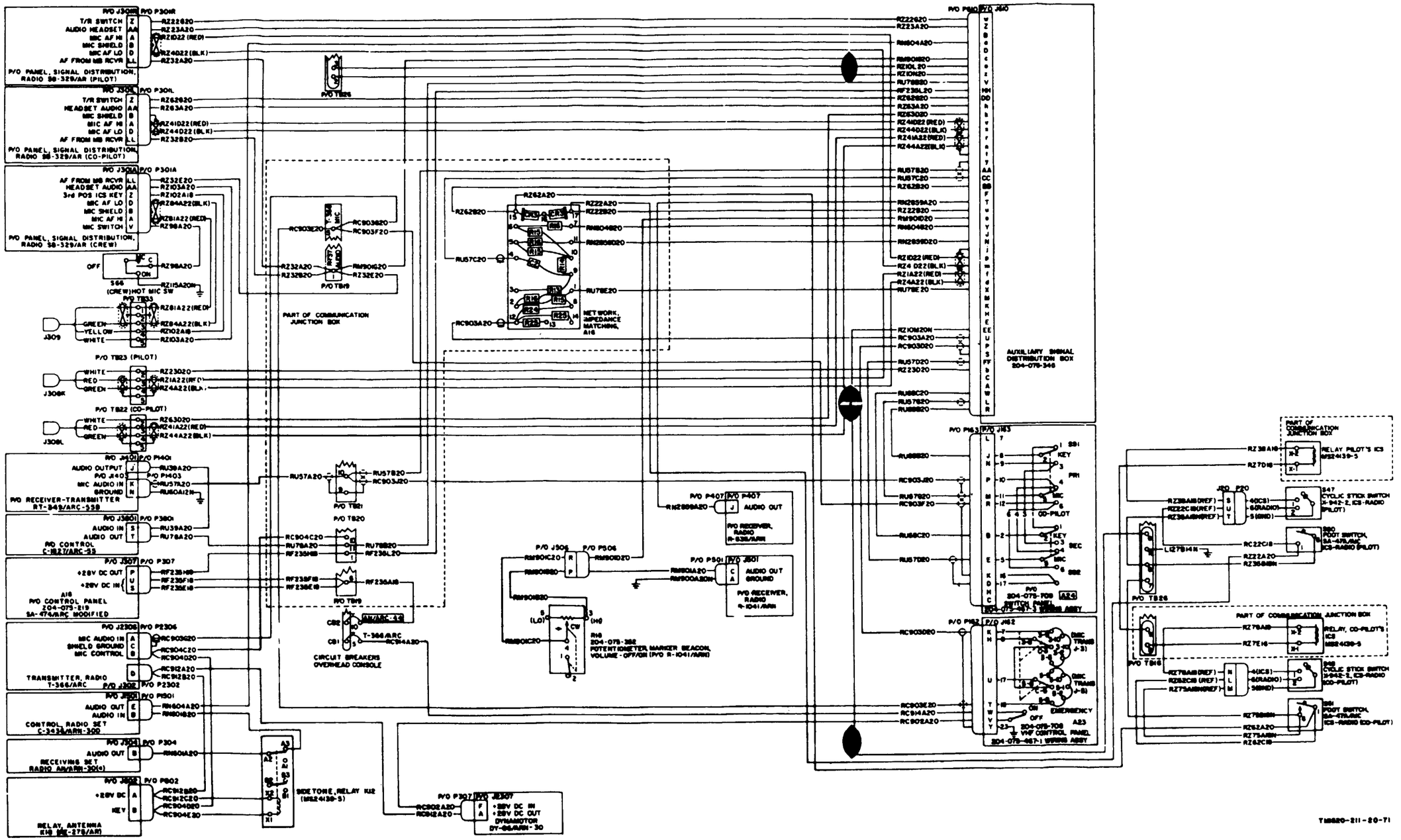


Figure 4-10. Auxiliary signal distribution box interconnecting wiring diagram (configurations A and B)

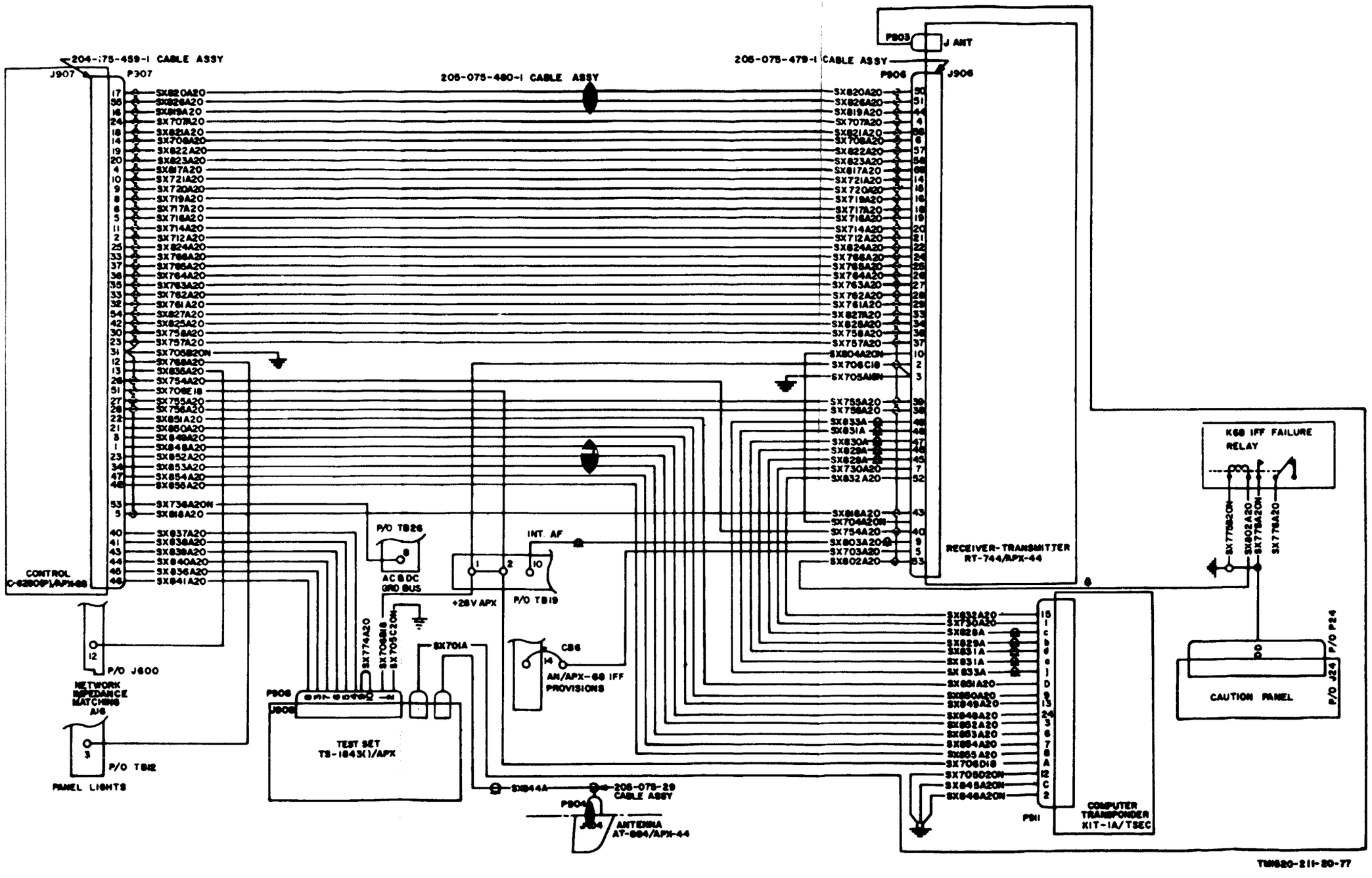


Figure 4-11. Iff transponder facility wiring diagram (Transponder Set AN/APX-68).

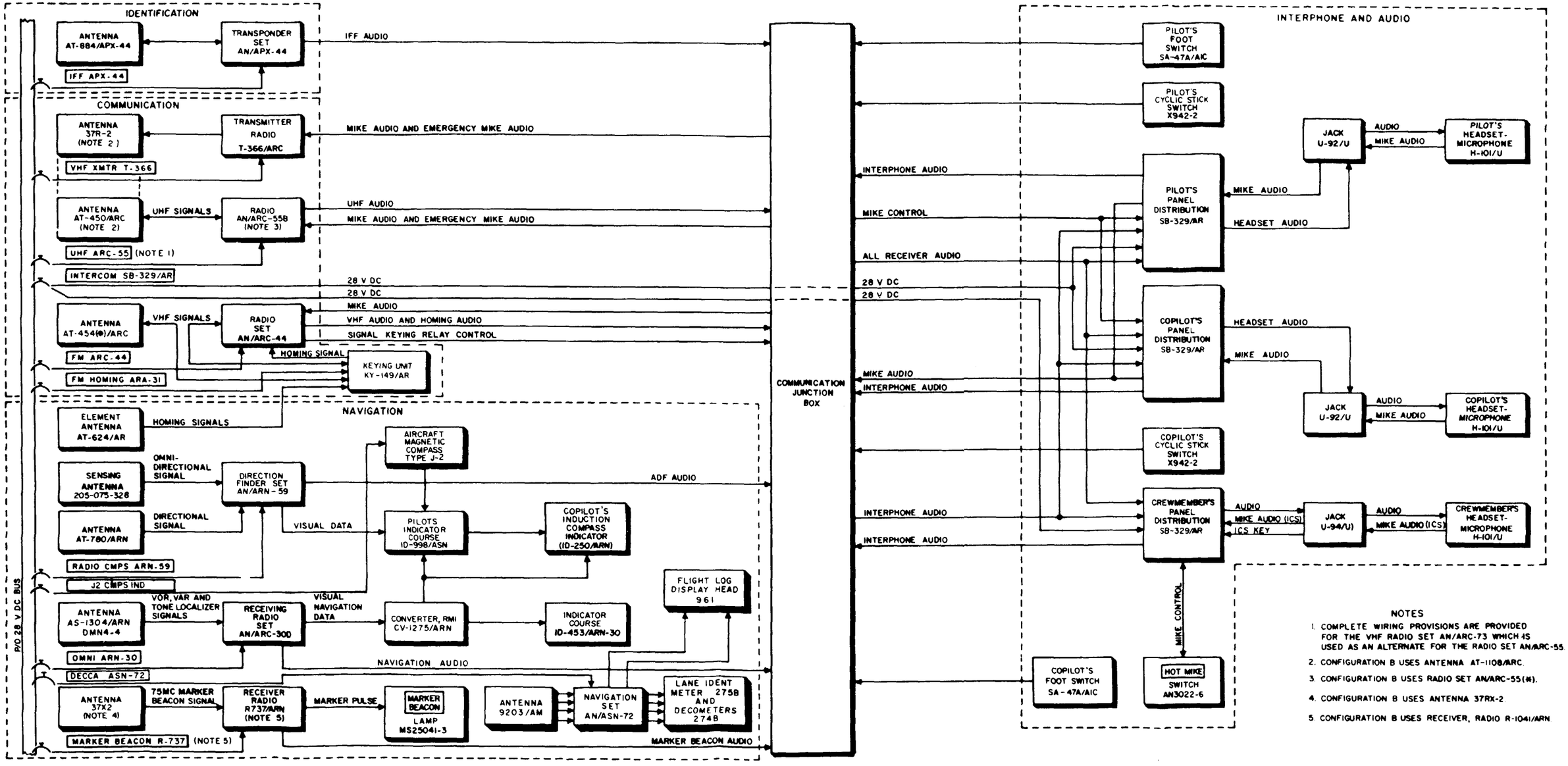


Figure 4-12. Configuration A and B, block diagram.

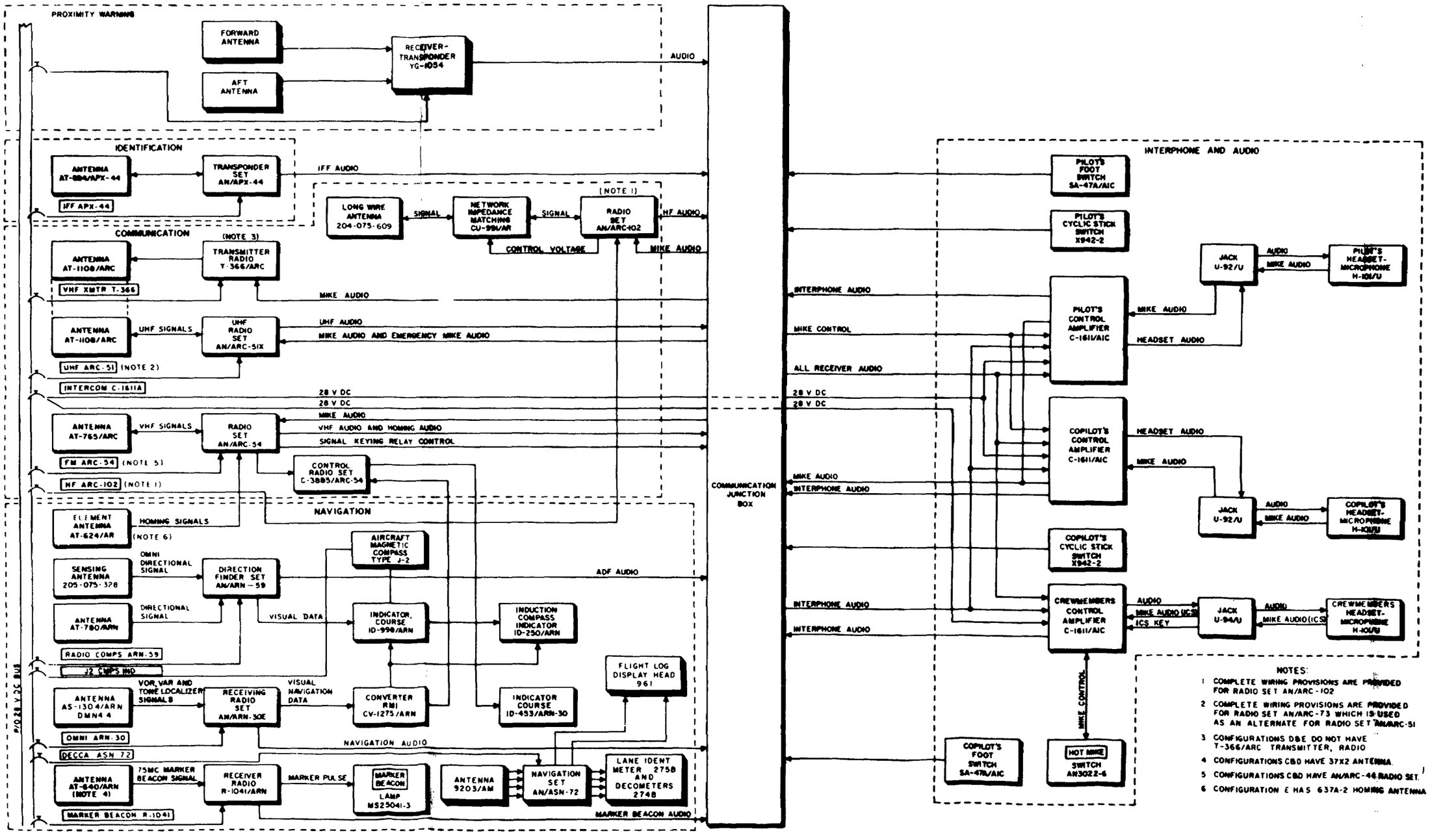


Figure 4-13. Configuration C, D, and E, block diagram.

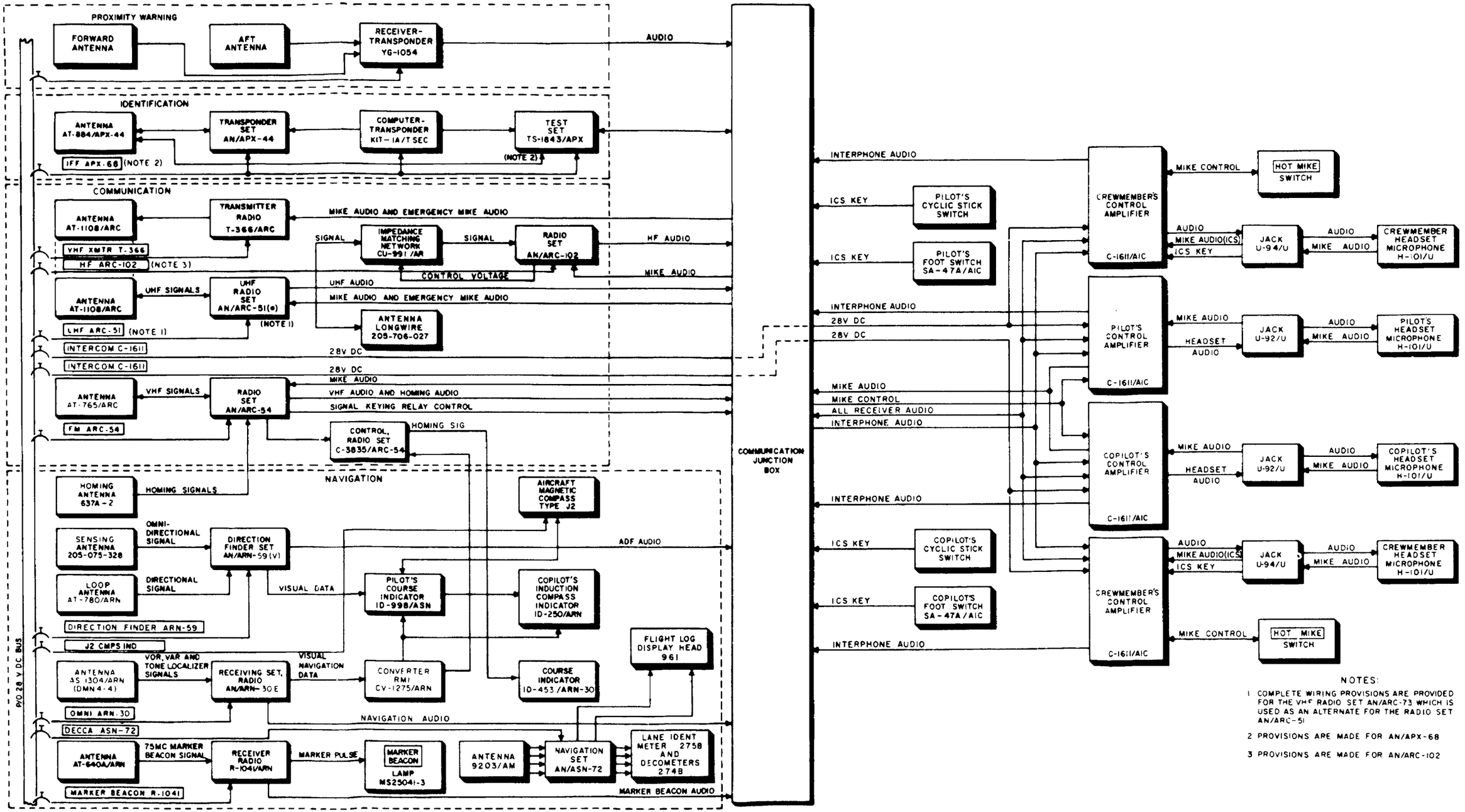


Figure 4-14. Configuration F, block diagram.

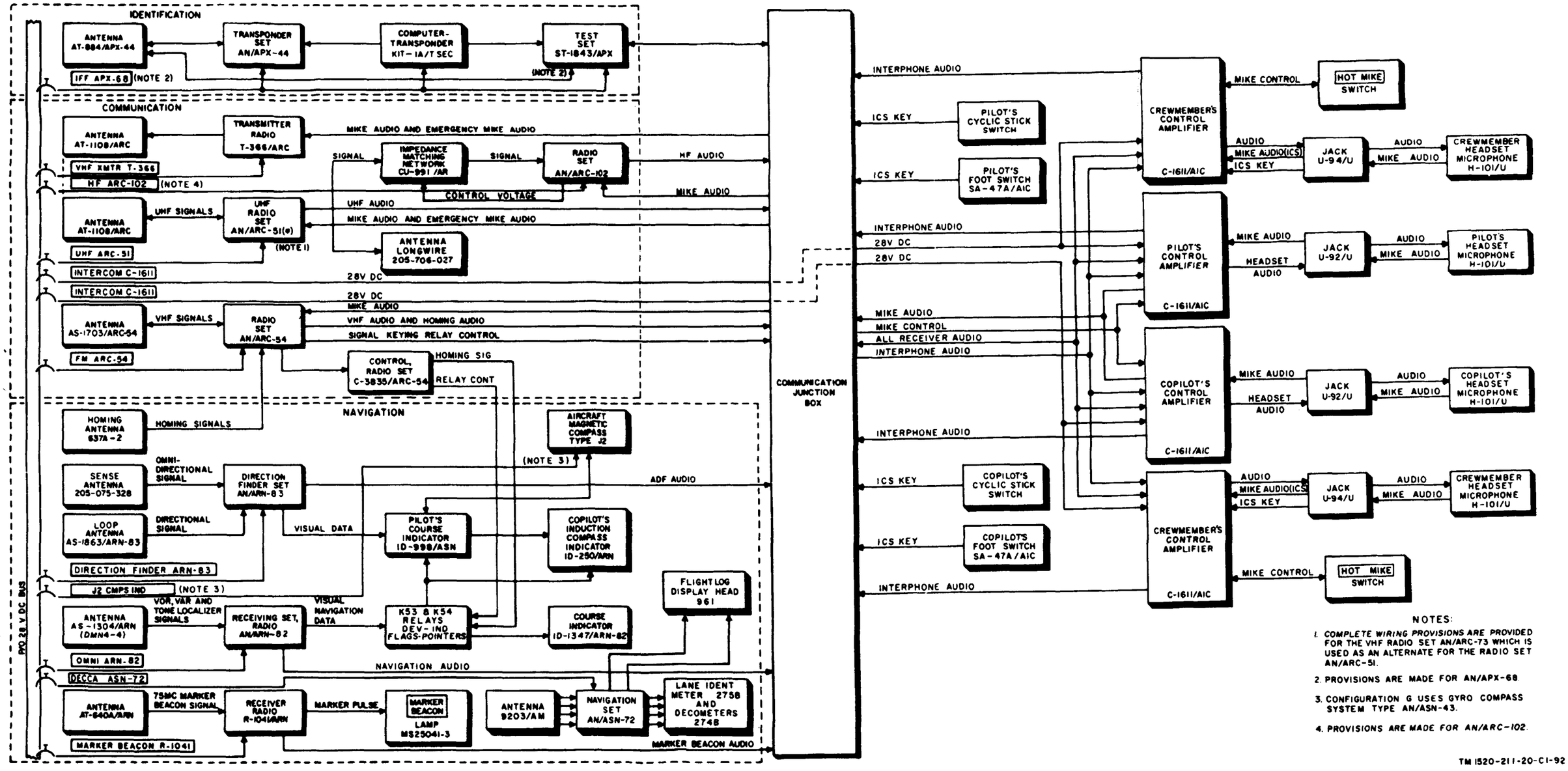


Figure 4-16. Configurations G and H, block diagram.

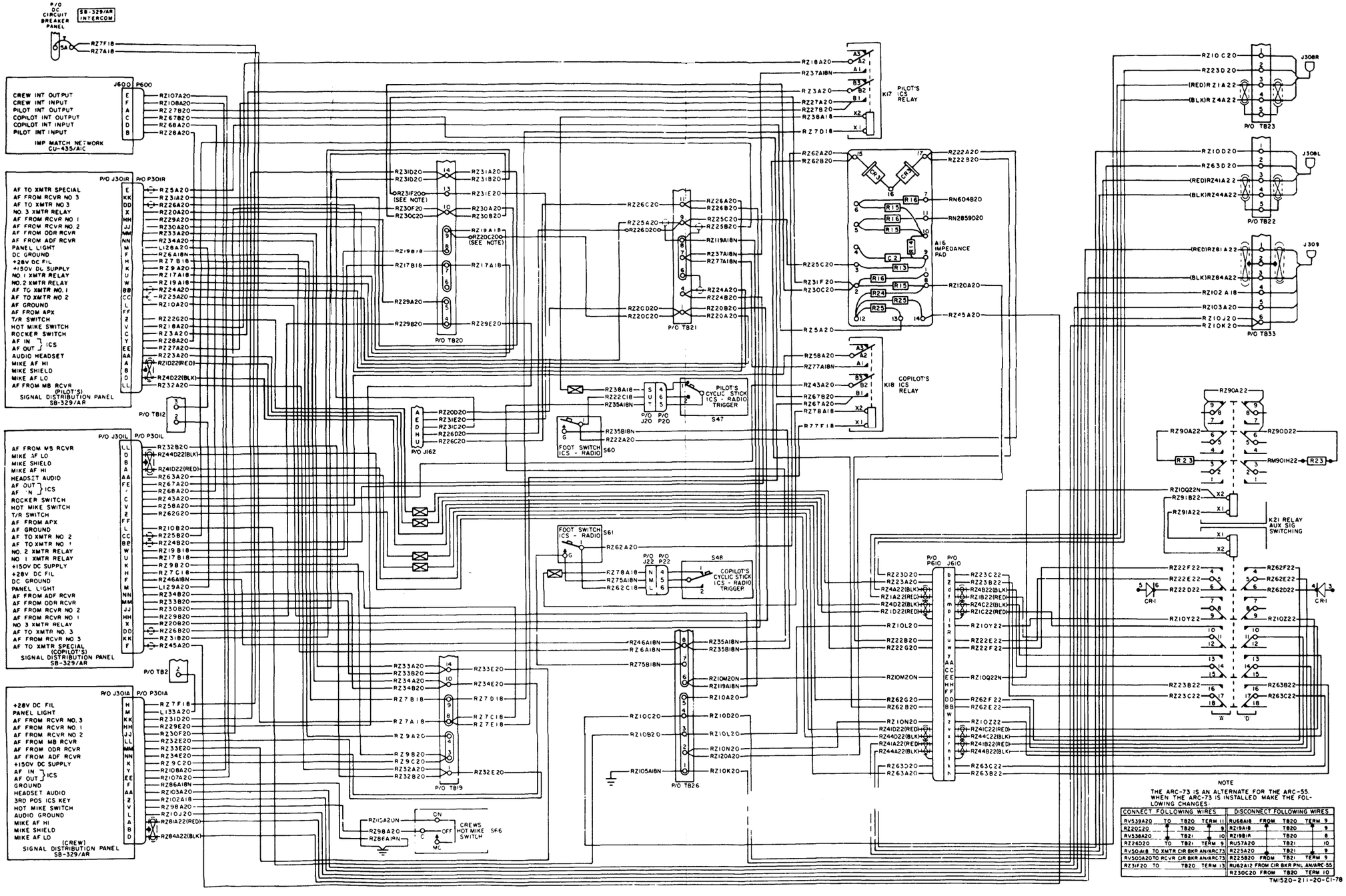


Figure 4-17. Interunit circuitry wiring diagram, SB-329/AR, configurations A and B.

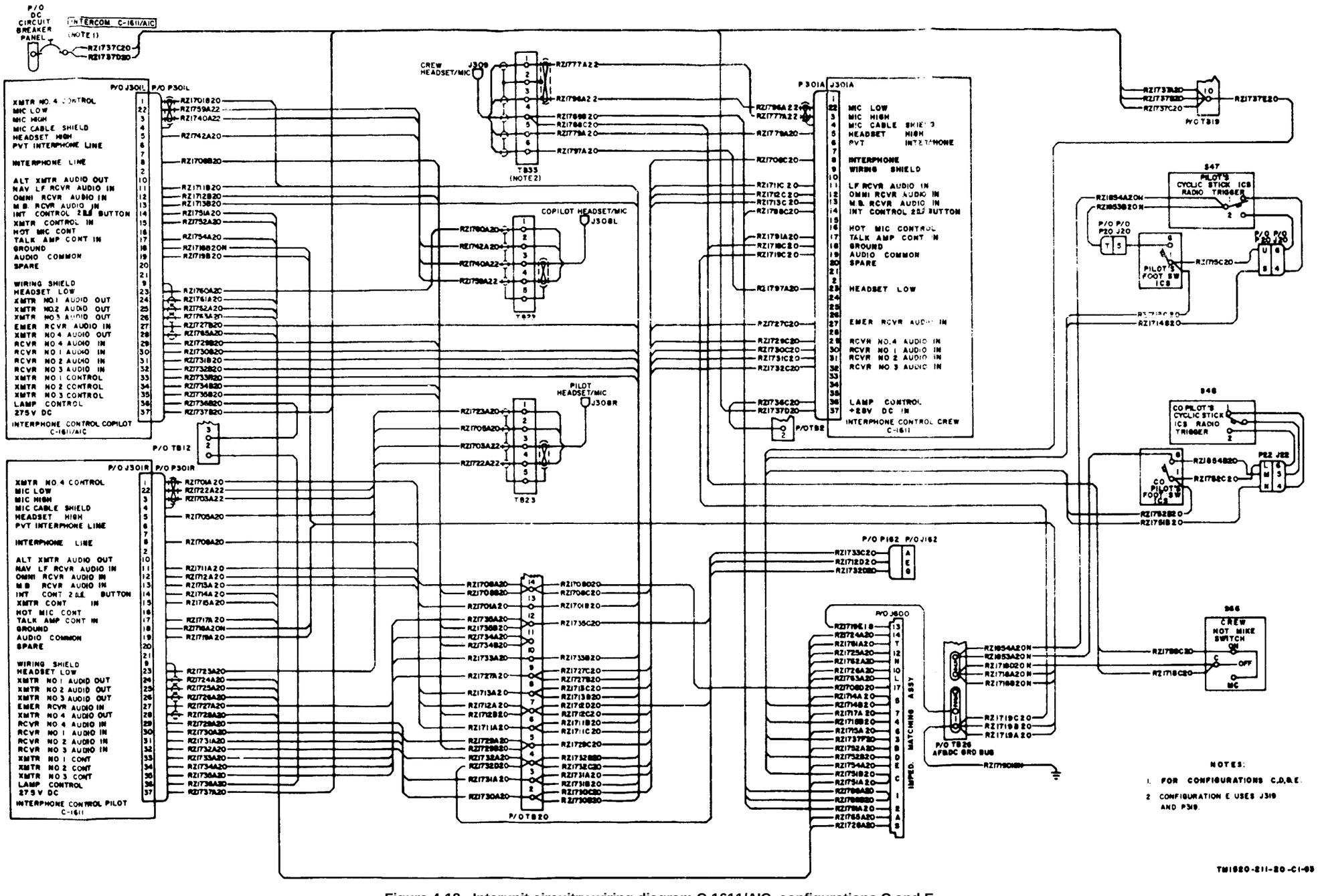


Figure 4-18. Interunit circuitry wiring diagram C-1611/AIC, configurations C and E.

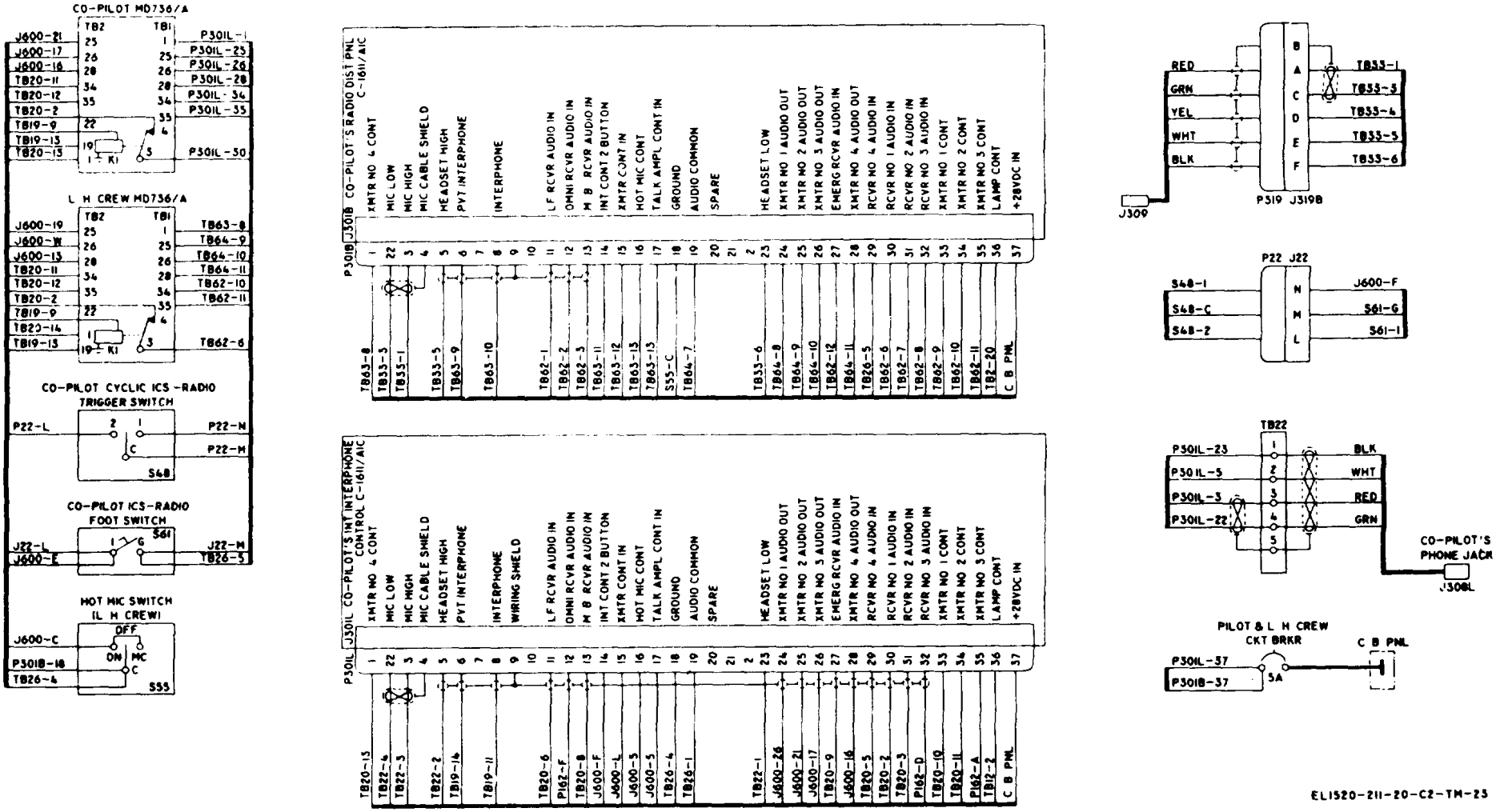


Figure 4-18.1 (2). Intercommunication Control Set C-1611/AIC, interunit circuitry, wiring diagram, configuration B (part 2 of 3).

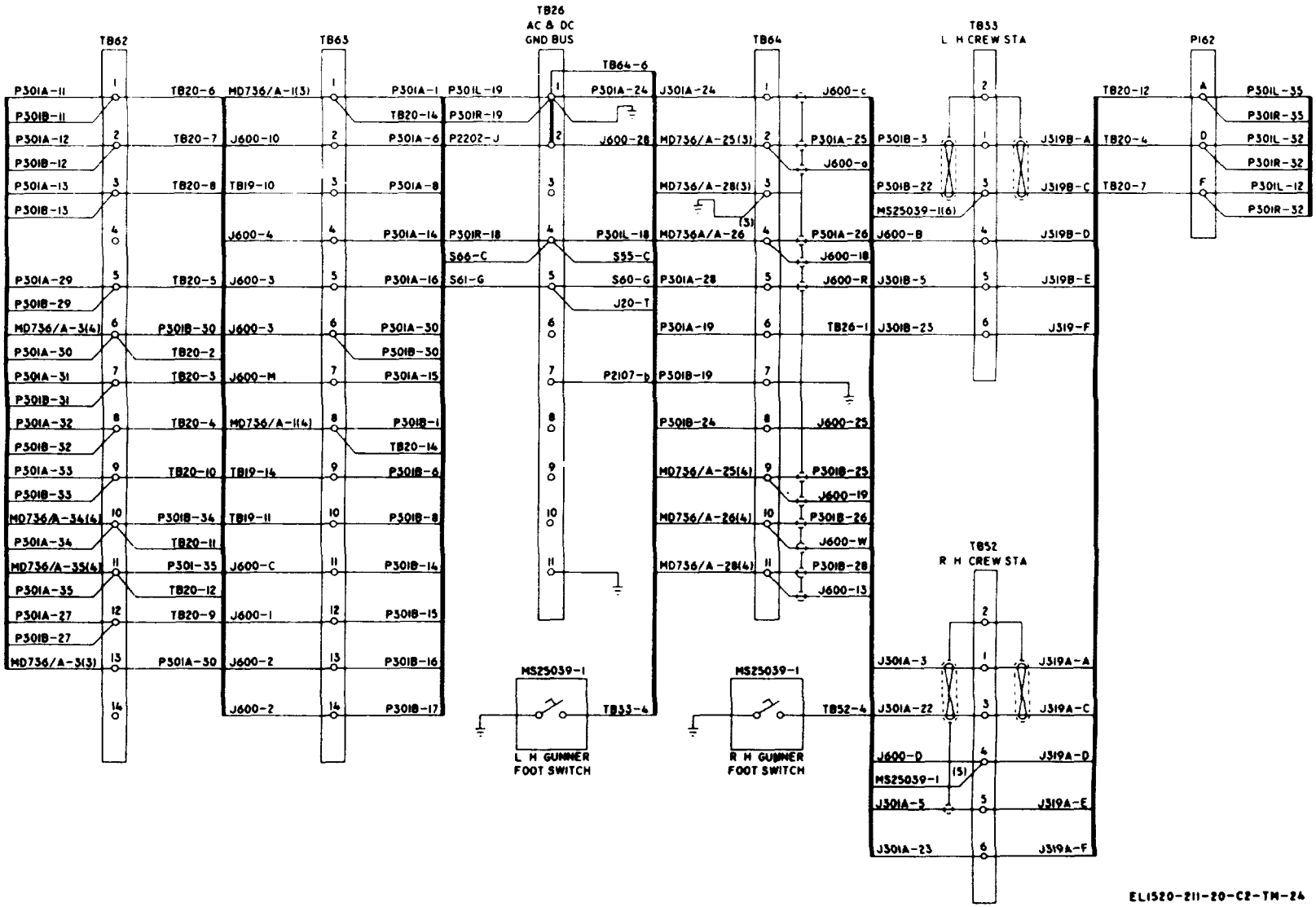


Figure 4-18.1 (3). Intercommunication Control Set C-1611/AIC, interunit circuitry, wiring diagram, configuration B (part 3 of 3).

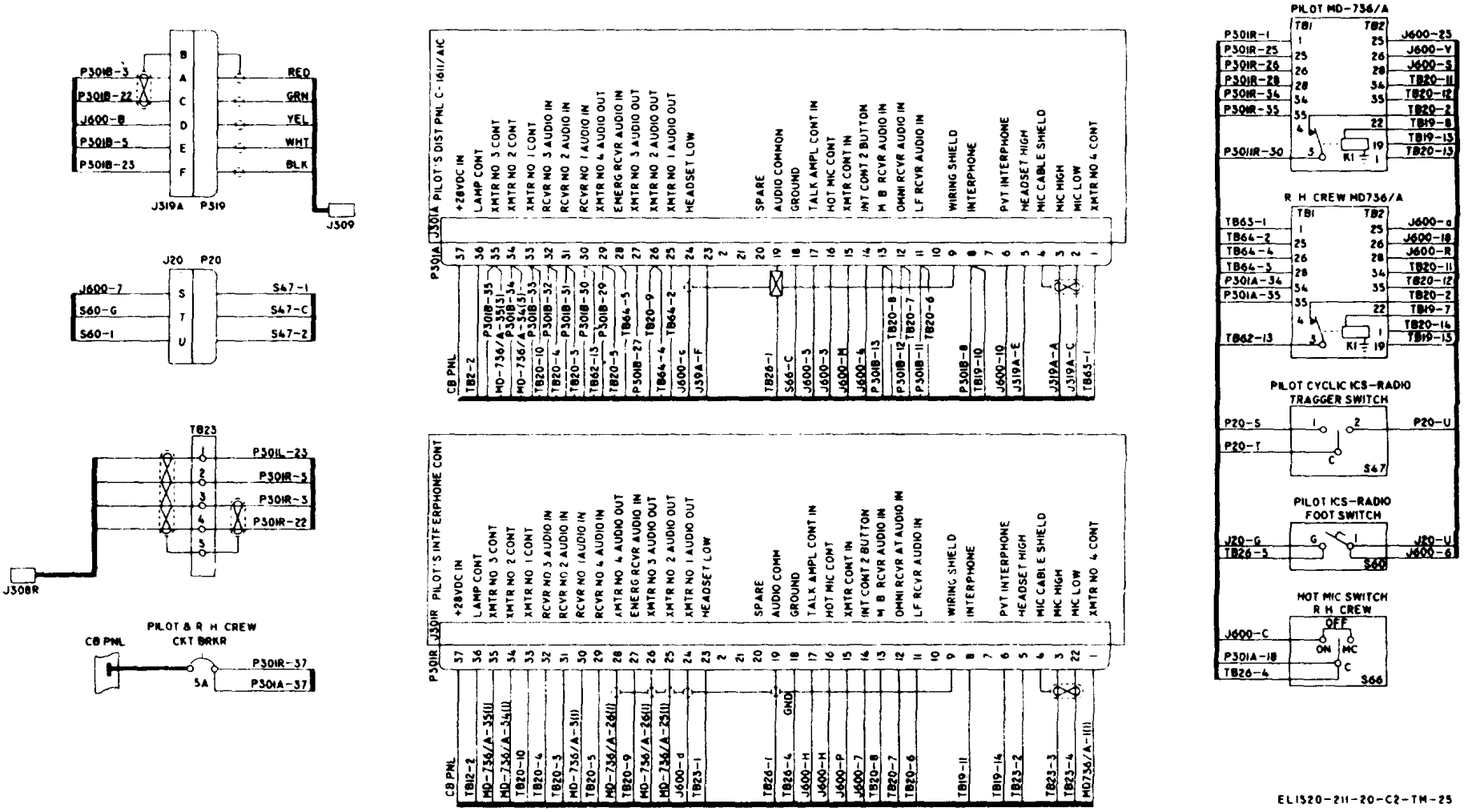


Figure 4-18.2 (1). Intercommunication Control Set C-1611/AIC, interunit circuitry, wiring diagram, configurations A, C, D, E, and F (part 1 of 3.)

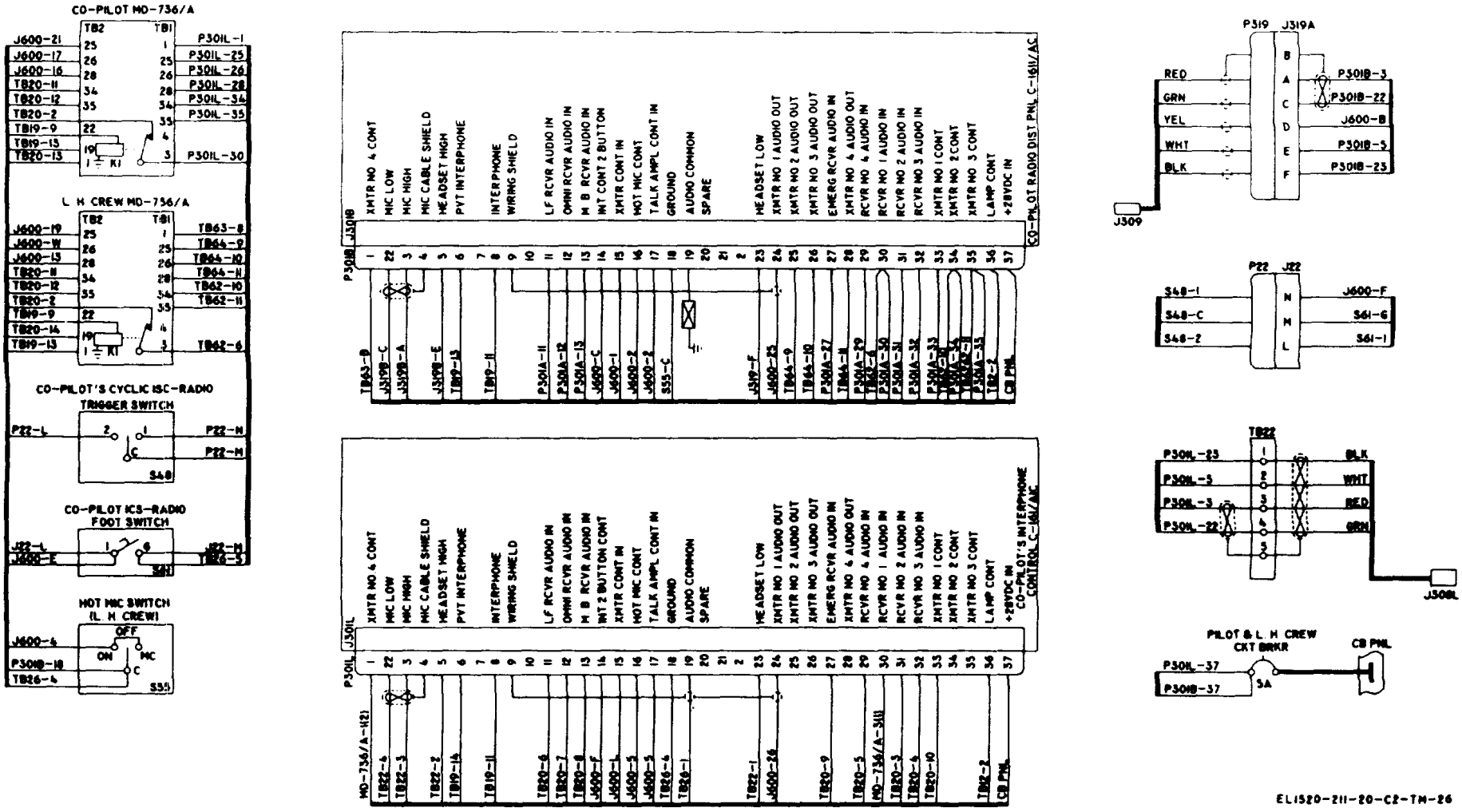


Figure 4-18.2 (2). Intercommunication Control Set C-1611/AIC, interunit circuitry, wiring diagram, configurations A, C, D, E, and F (part 2 of 3).

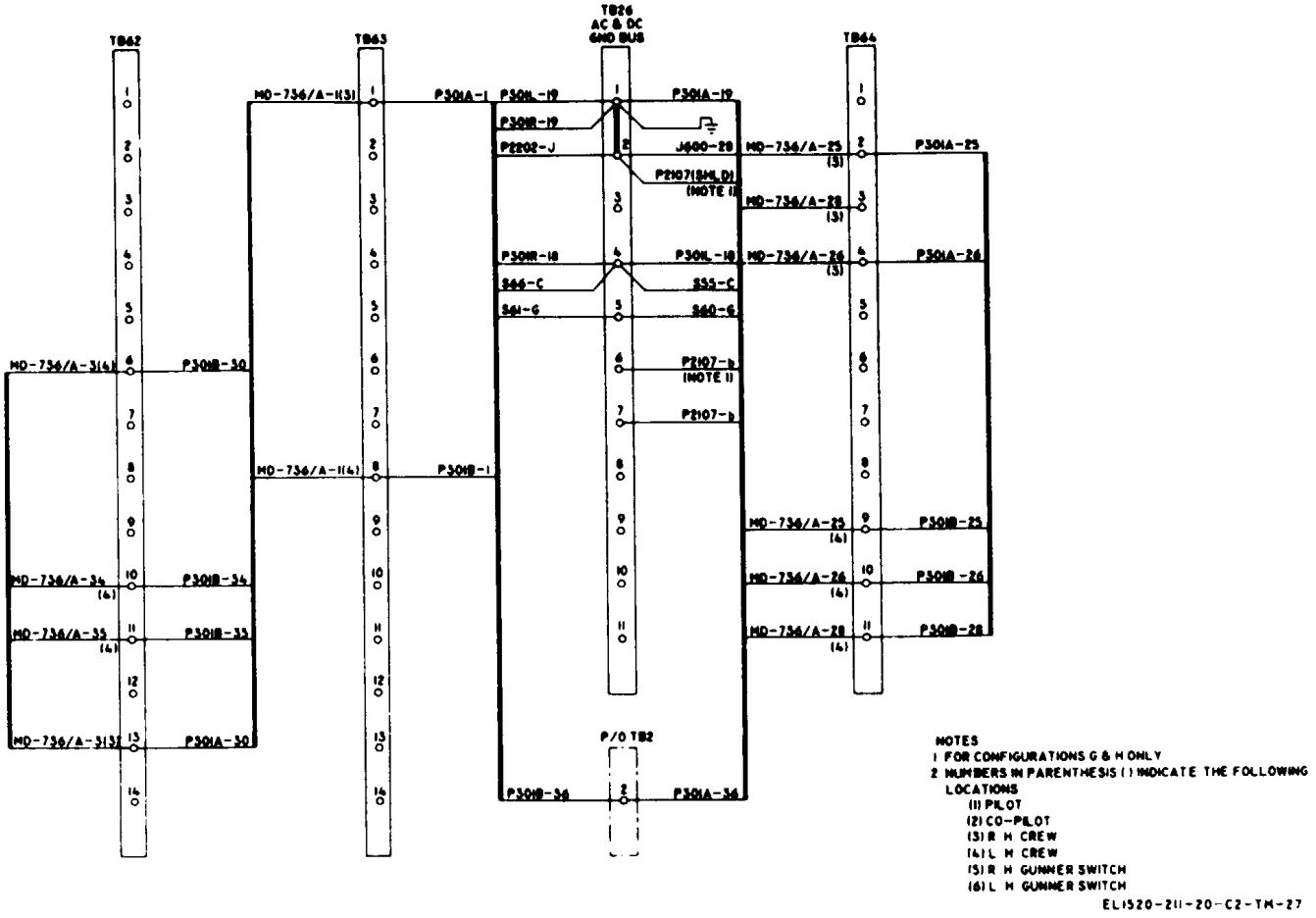
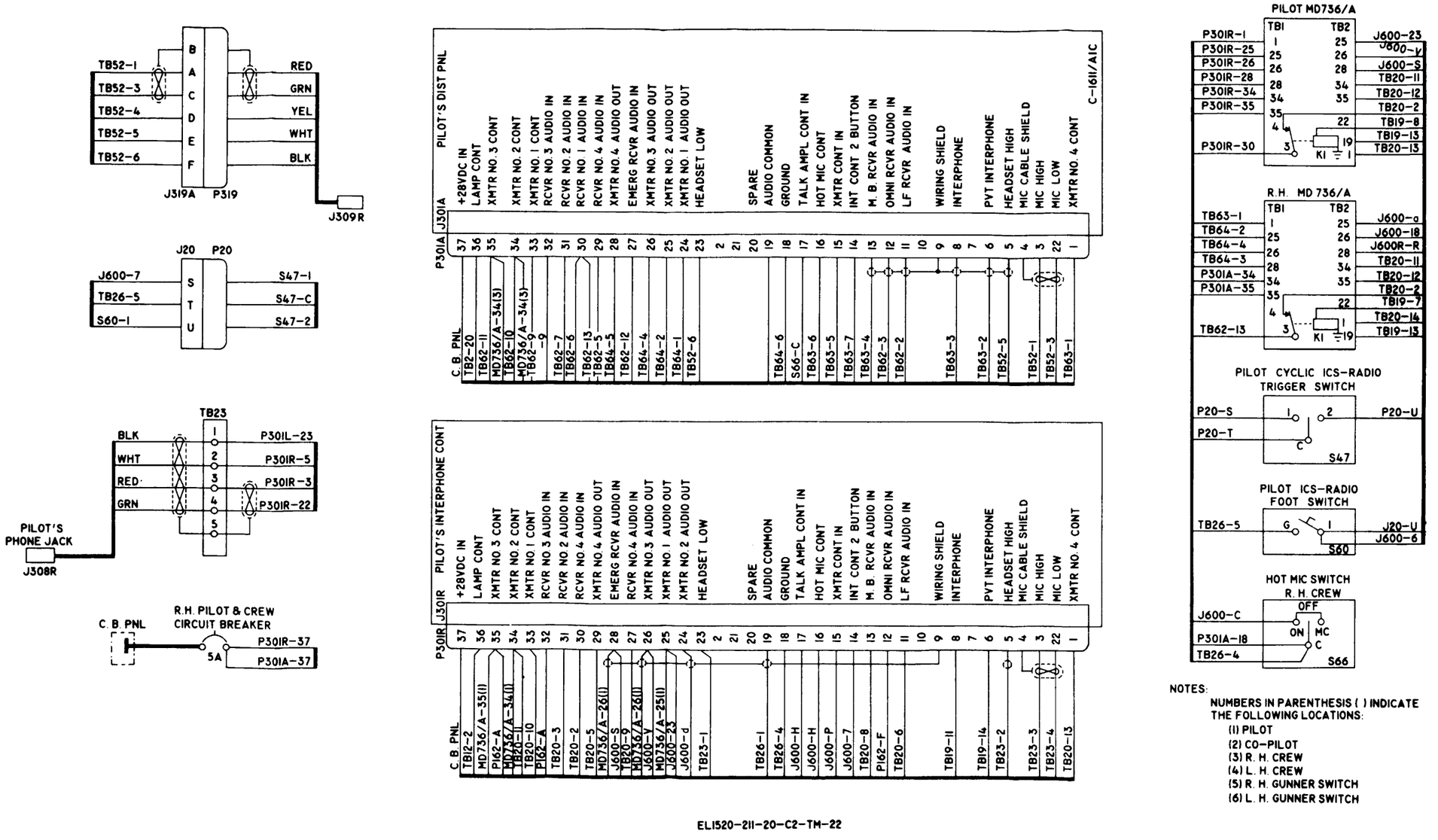


Figure 4-18.2 (3). Intercommunication Control Set C-1611/AIC, interunit circuitry, wiring diagram, configurations A, C, D, E, and F (part 3 of 3).



NOTES:

NUMBERS IN PARENTHESIS ( ) INDICATE THE FOLLOWING LOCATIONS:

(1) PILOT
(2) CO-PILOT
(3) R. H. CREW
(4) L. H. CREW
(5) R. H. GUNNER SWITCH
(6) L. H. GUNNER SWITCH

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Figure 4-18.1(1). Intercommunication Control Set C-1611/AIC, interunit circuitry, wiring diagram, configuration B (part 1 of 3).

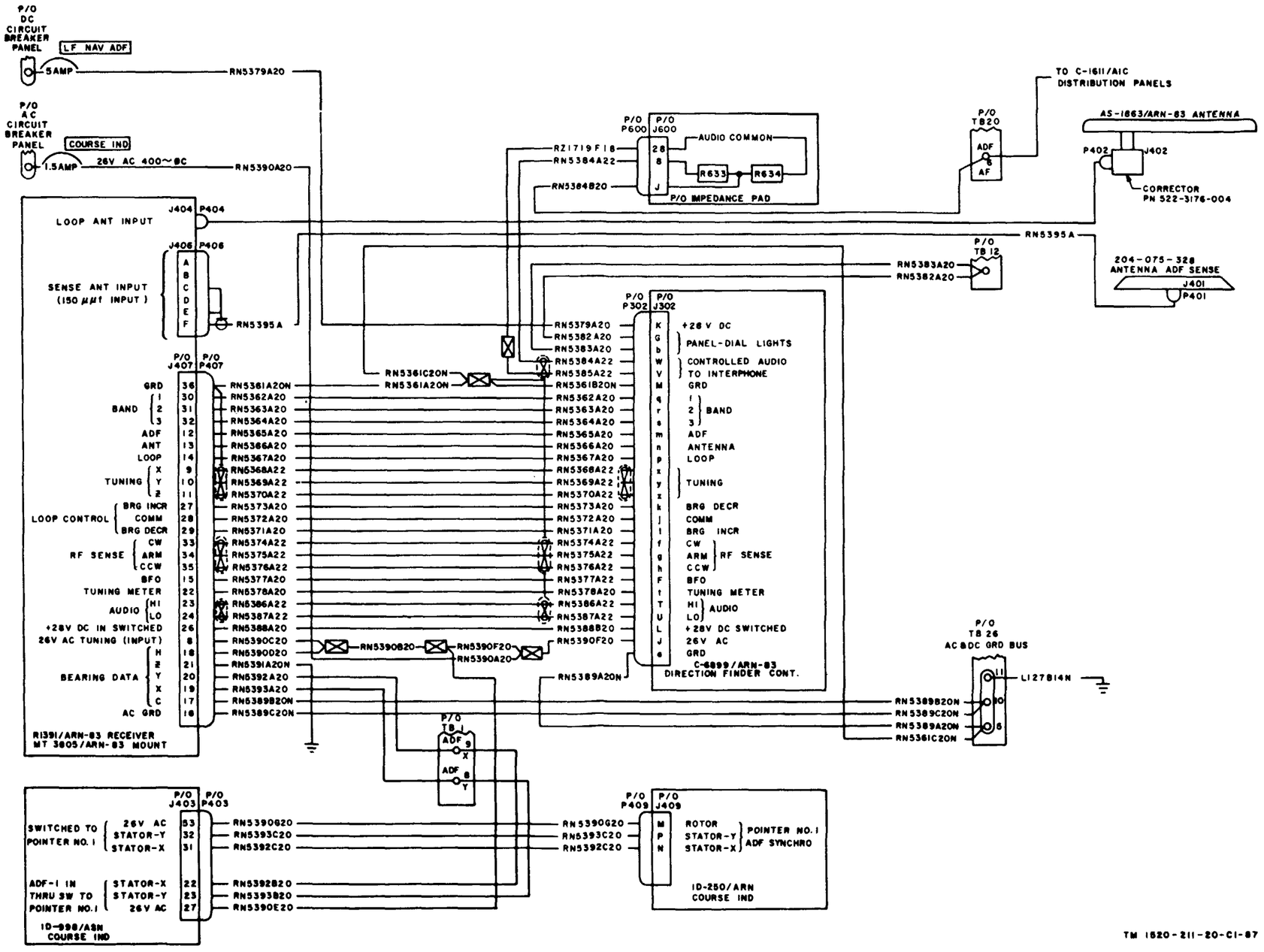


Figure 4-19. Adf navigation facility wiring diagram, configurations G and H.

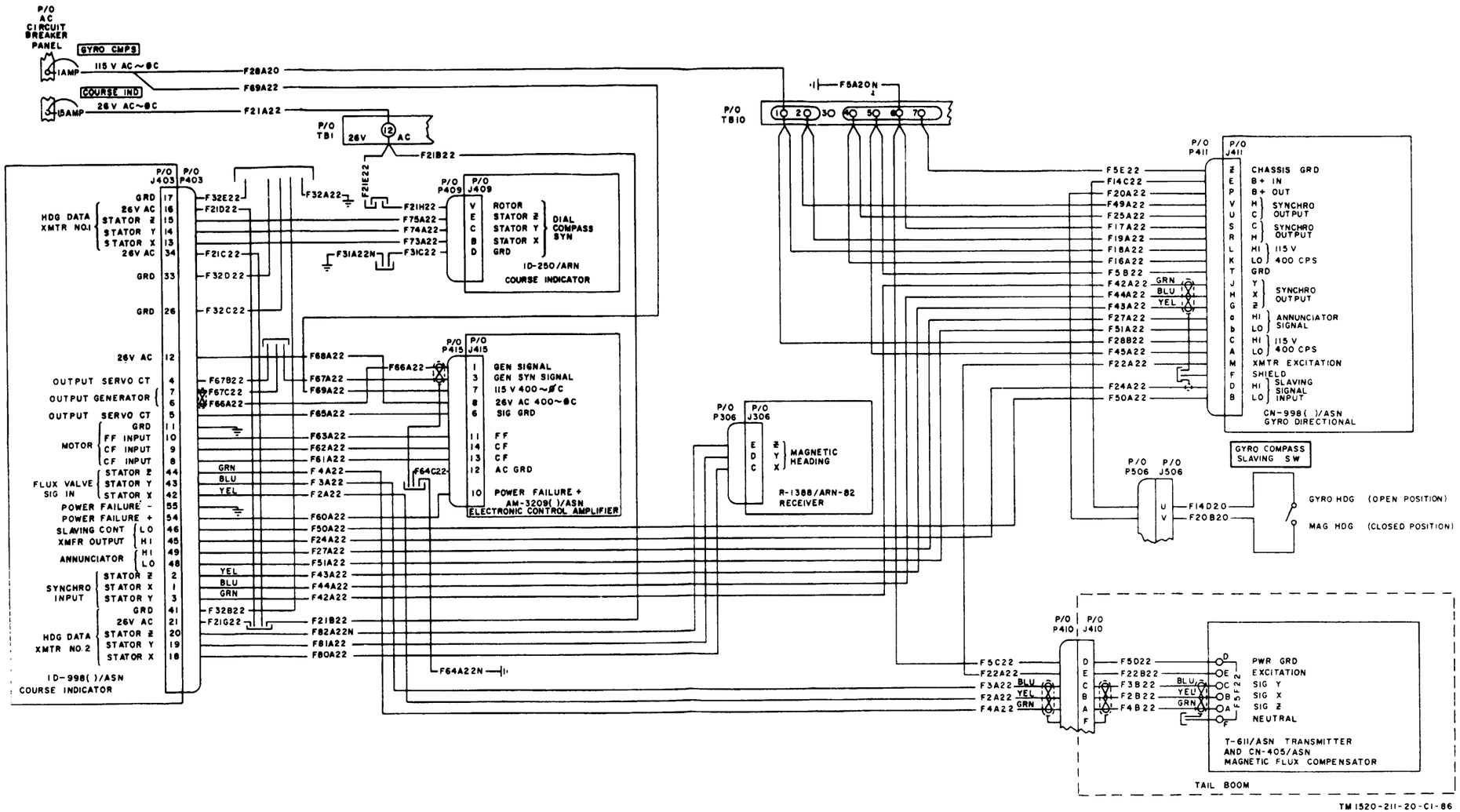


Figure 4-20. AN/ASN-43 gyromagnetic compass facility wiring diagram.

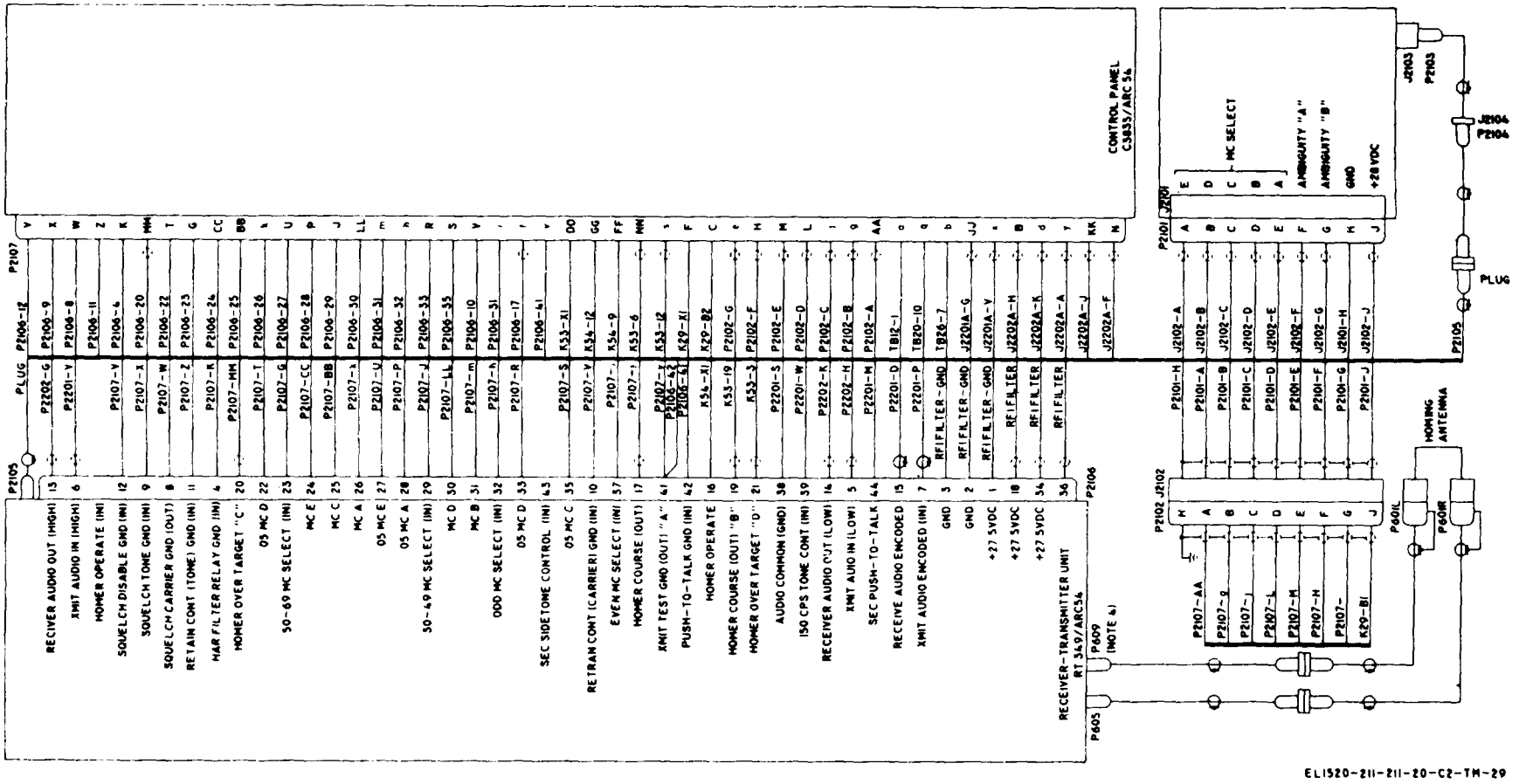


Figure 4-21. Fin liaison facility wiring diagram, Radio Set AN/ARC-54, configurations AB,C,D, and F (part 2 of 2).

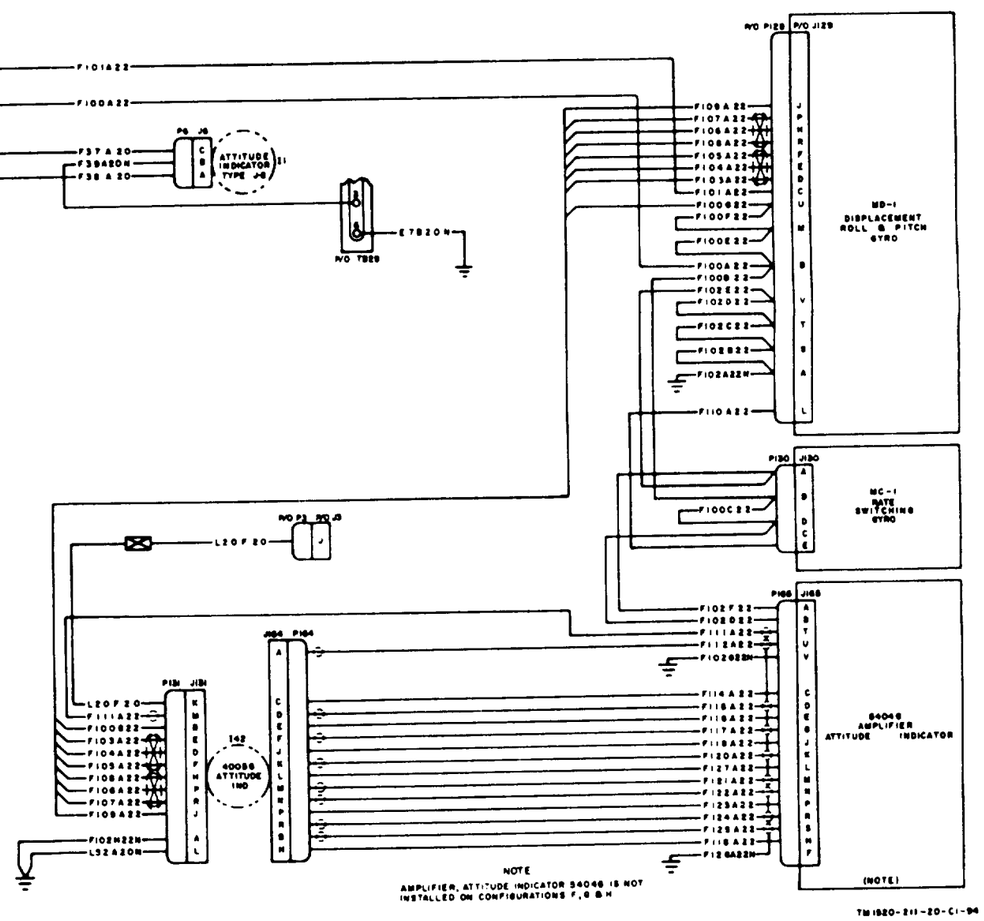


Figure 4-22. Attitude indicating system wiring diagram.

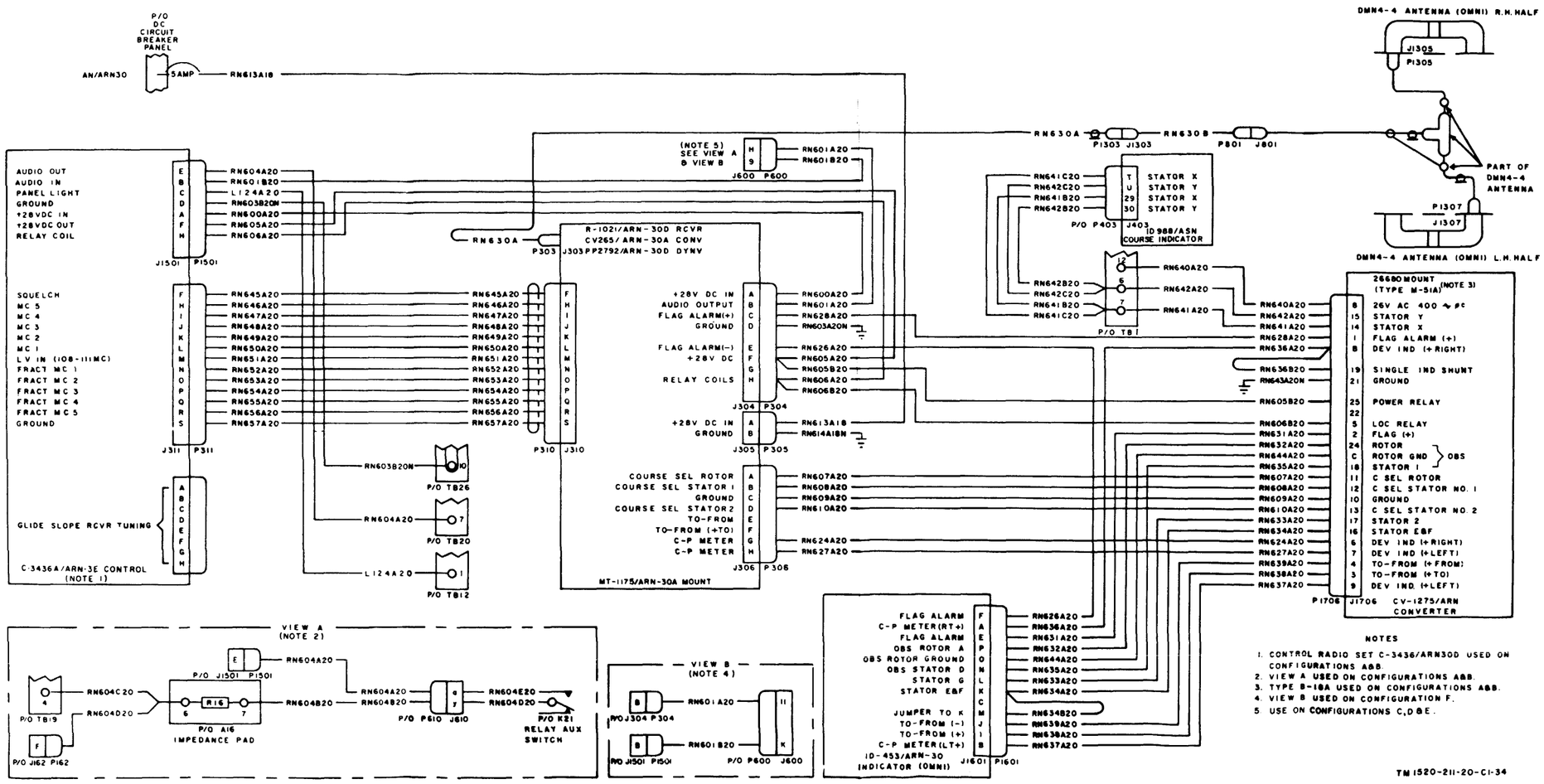


Figure 4-23. Vhf navigation facility wiring diagram, Radio Set AN/ARN-30.

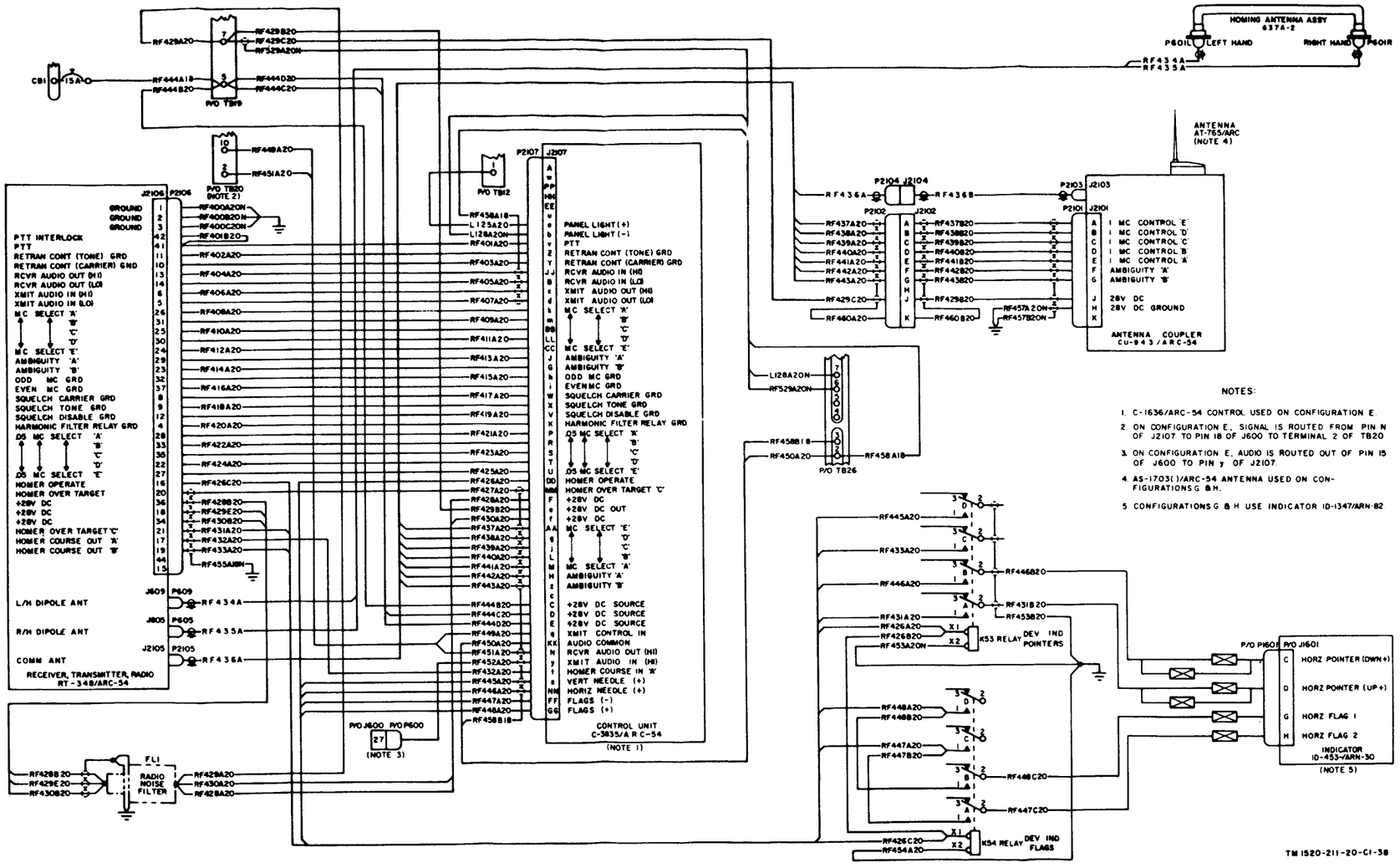


Figure 4-24. Fm liaison facility wiring diagram, Radio Set AN/ARC-54.

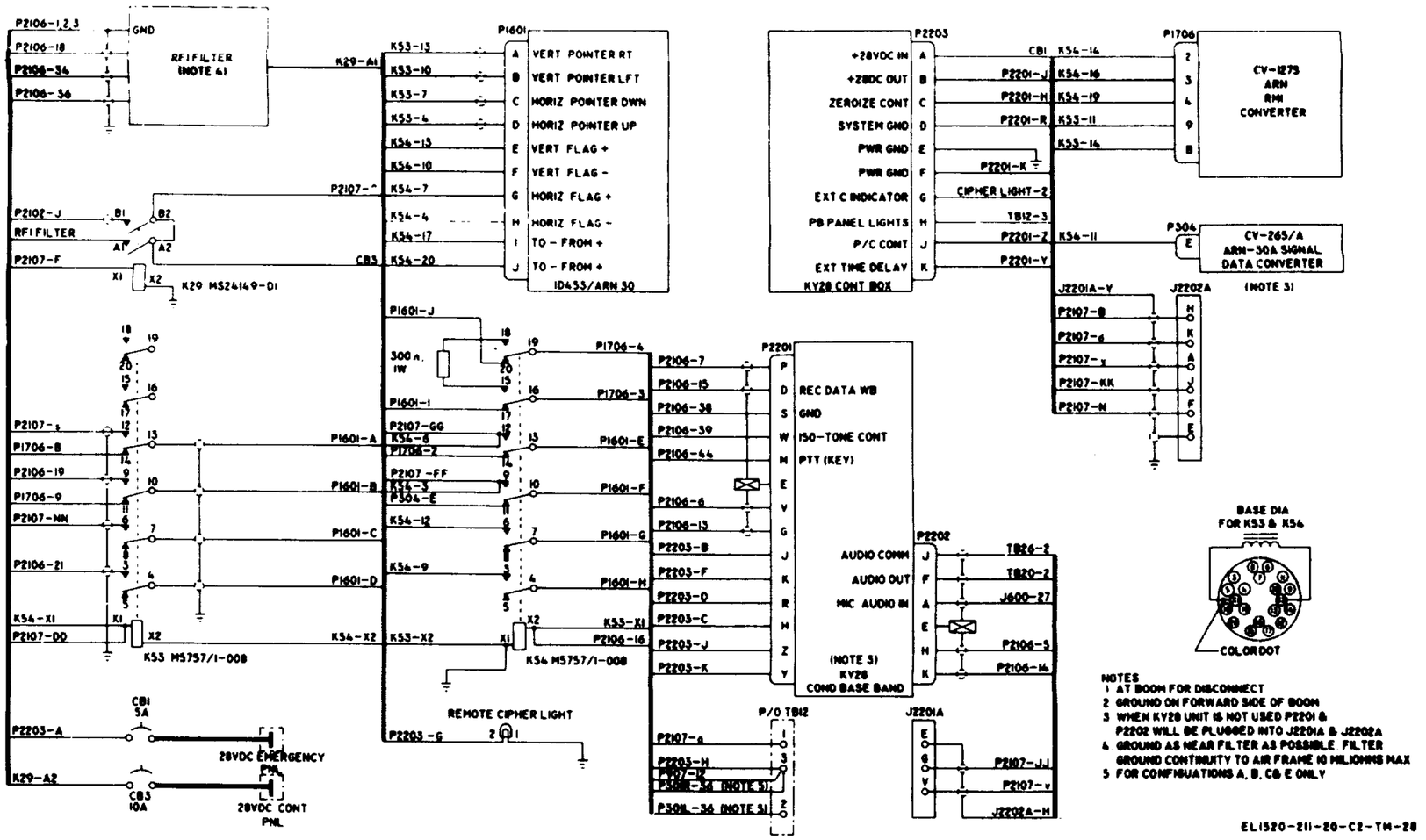


Figure -4-24.1(1). Fm liaison facility wiring diagram, Radio Set AN-ARC-54, configurations A,B,C,C, and F (part 1 of 2).

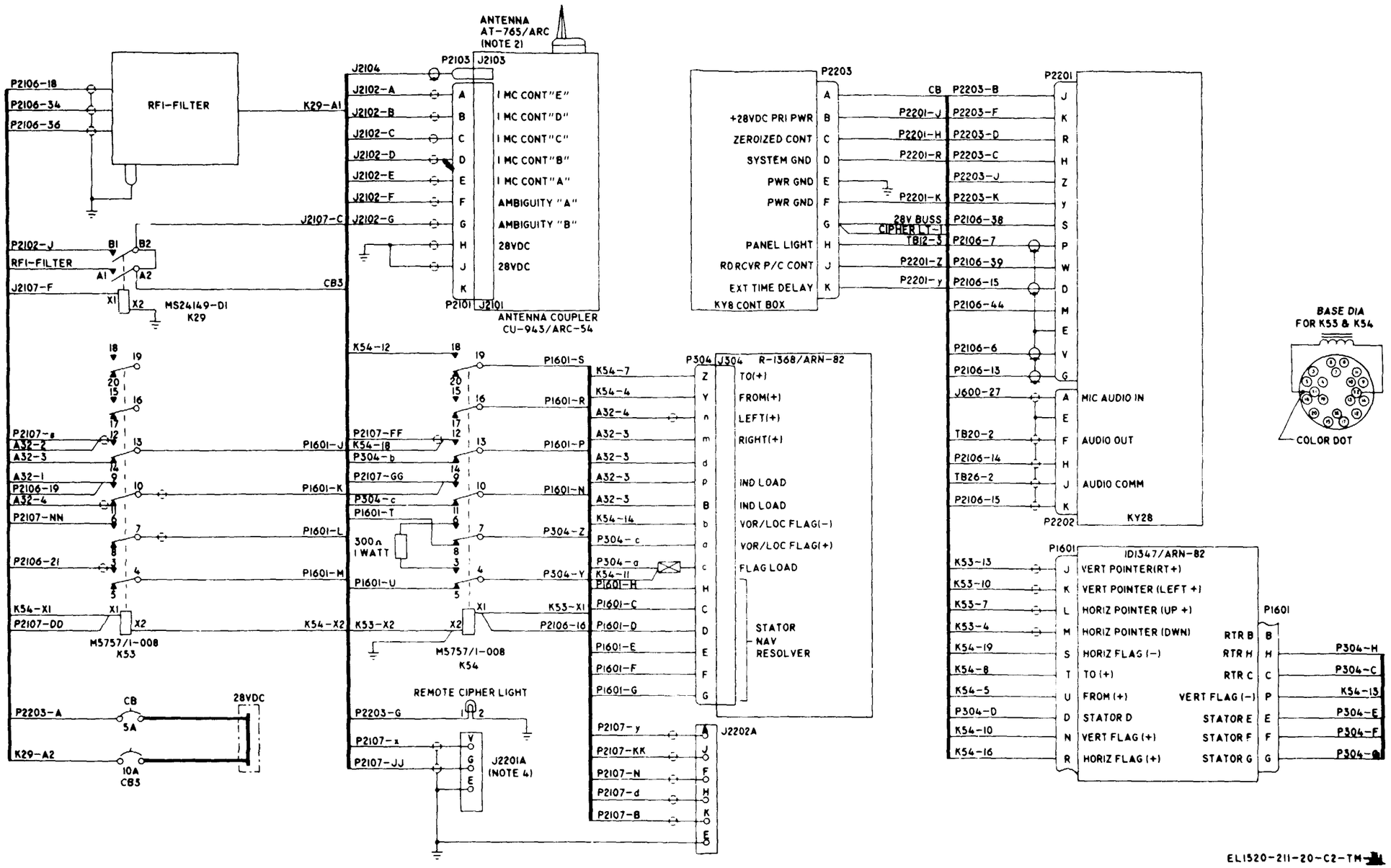


Figure 4-24.2(2). Fm liaison facility wiring diagram, Radio Set AN/ARC-54, configuration E, G, and H (part 2 of 2).

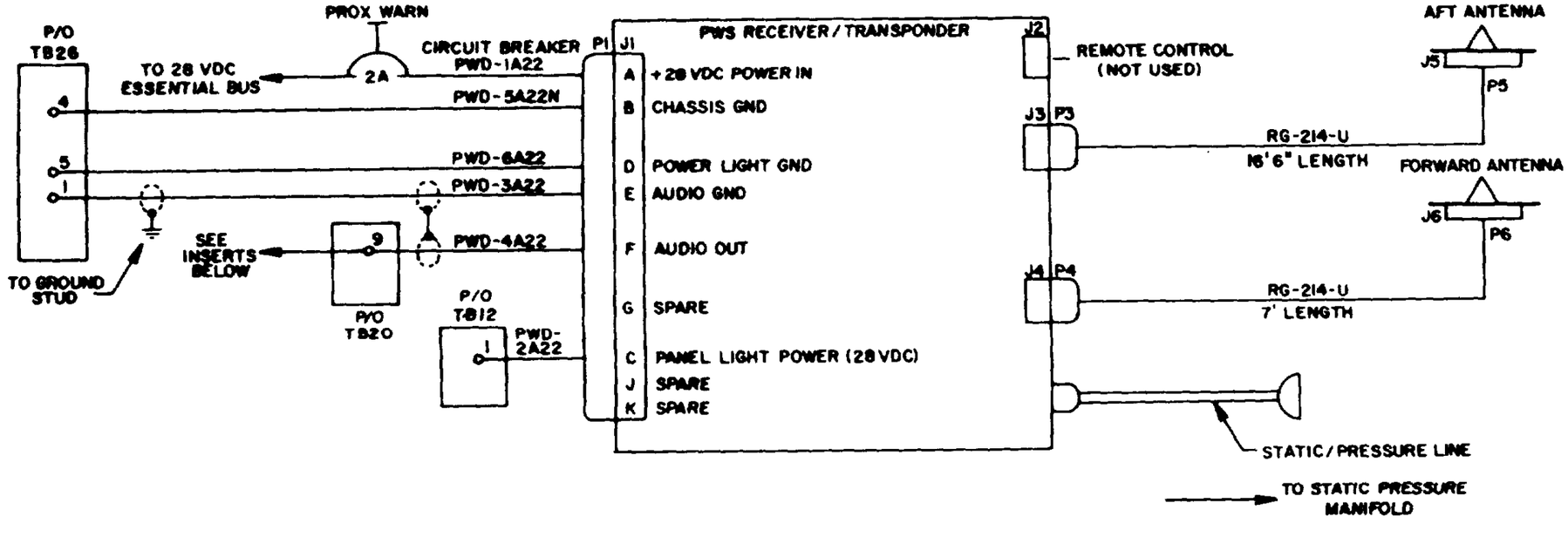
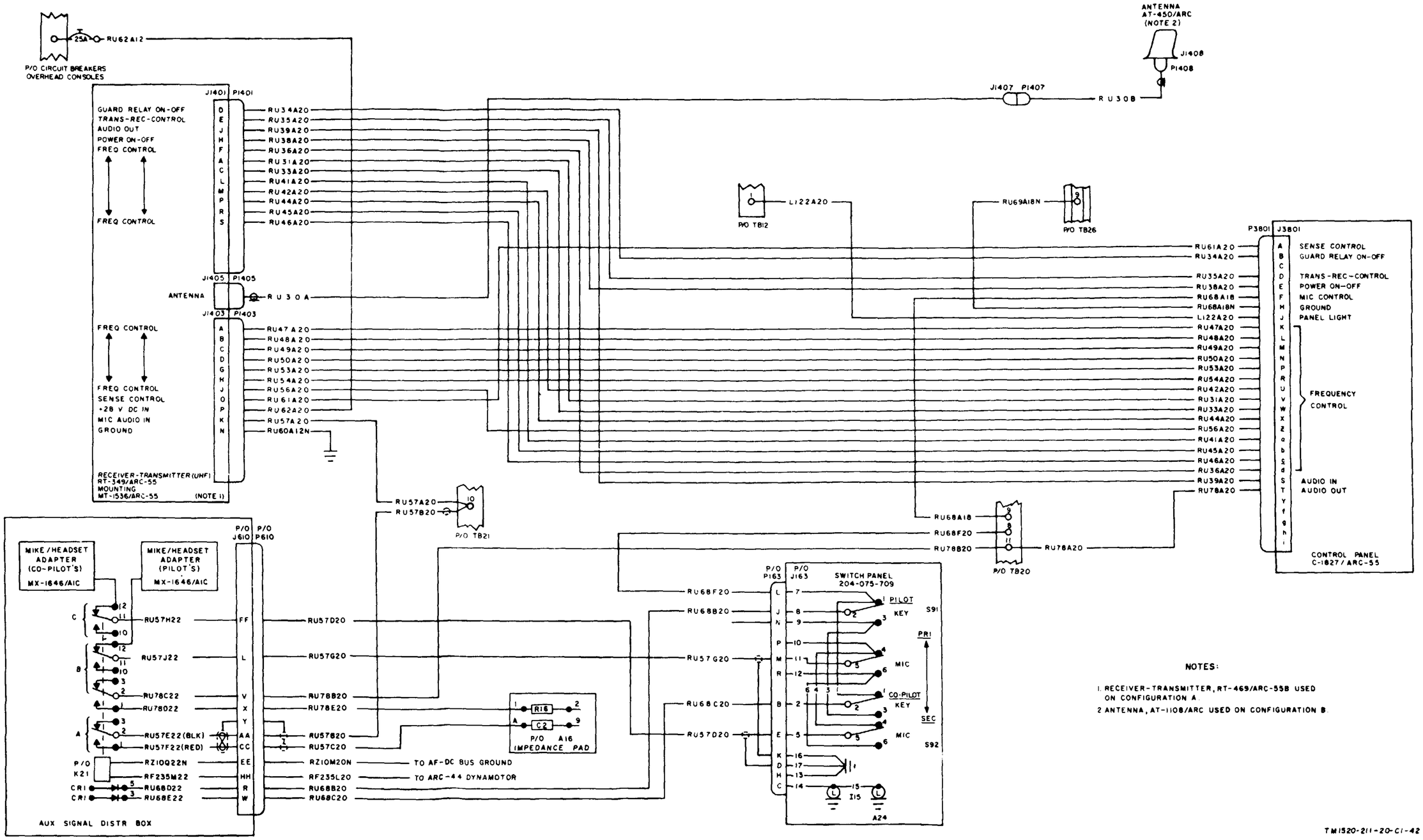


Figure 4--24.3 Proximity warning facility, wiring diagram



NOTES:

1. RECEIVER-TRANSMITTER, RT-469/ARC-55B USED ON CONFIGURATION A.
2. ANTENNA, AT-1108/ARC USED ON CONFIGURATION B.

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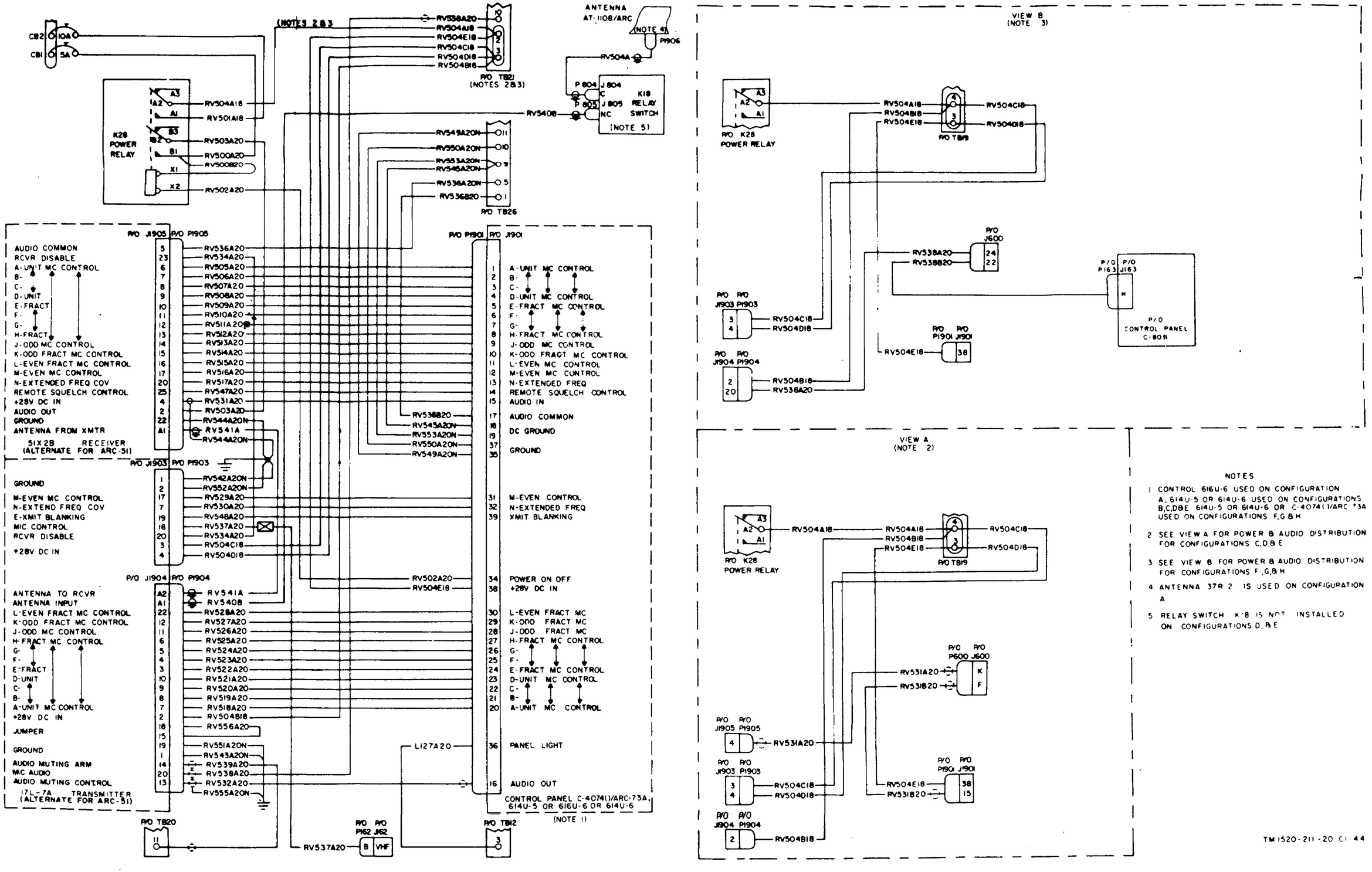
Figure 4-25. Uhf command facility wiring diagram, Radio Set AN/ARC-65.



NOTES

1 CONTROL 616U-6 USED ON CONFIGURATION A, 614U-5 OR 614U-6 USED ON CONFIGURATIONS B,C,DBE 614U-5 OR 614U-6 OR C-4074()/ARC 73A USED ON CONFIGURATIONS F,G,B,H

2 SEE VIEW A FOR POWER & AUDIO DISTRIBUTION FOR CONFIGURATIONS C,D,B,E

3 SEE VIEW B FOR POWER & AUDIO DISTRIBUTION FOR CONFIGURATIONS F,G,B,H

4 ANTENNA 37R-2 IS USED ON CONFIGURATION A

5 RELAY SWITCH K18 IS NOT INSTALLED ON CONFIGURATIONS D, B, E

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Figure 4-26. Vhf command facility wiring diagram.

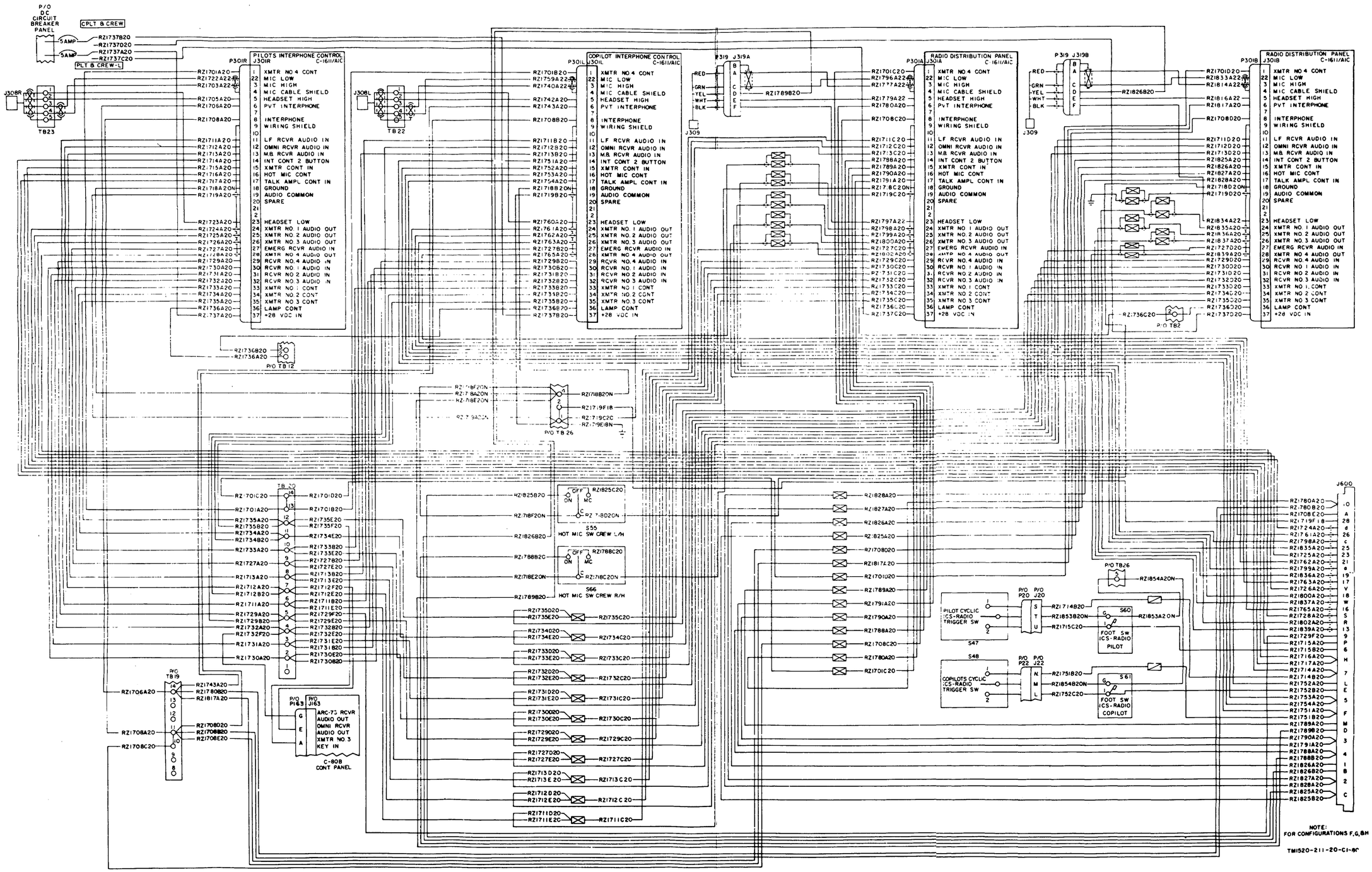

Figure 4-27. Interunit circuitry wiring diagram, C-1611/AIC, configurations F, G, and H.

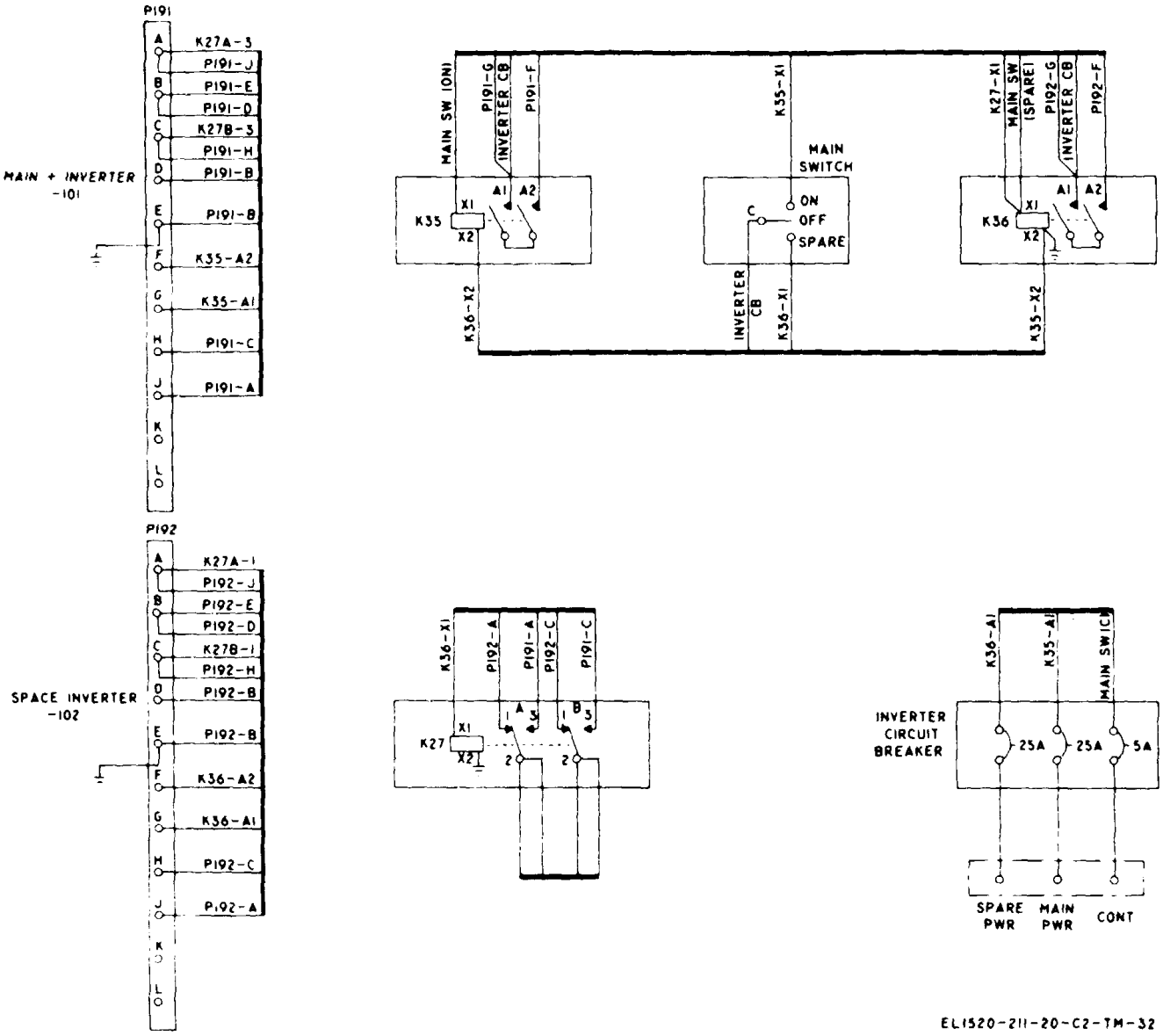

Figure 4-28. Inverter PU-543/A wiring diagram.

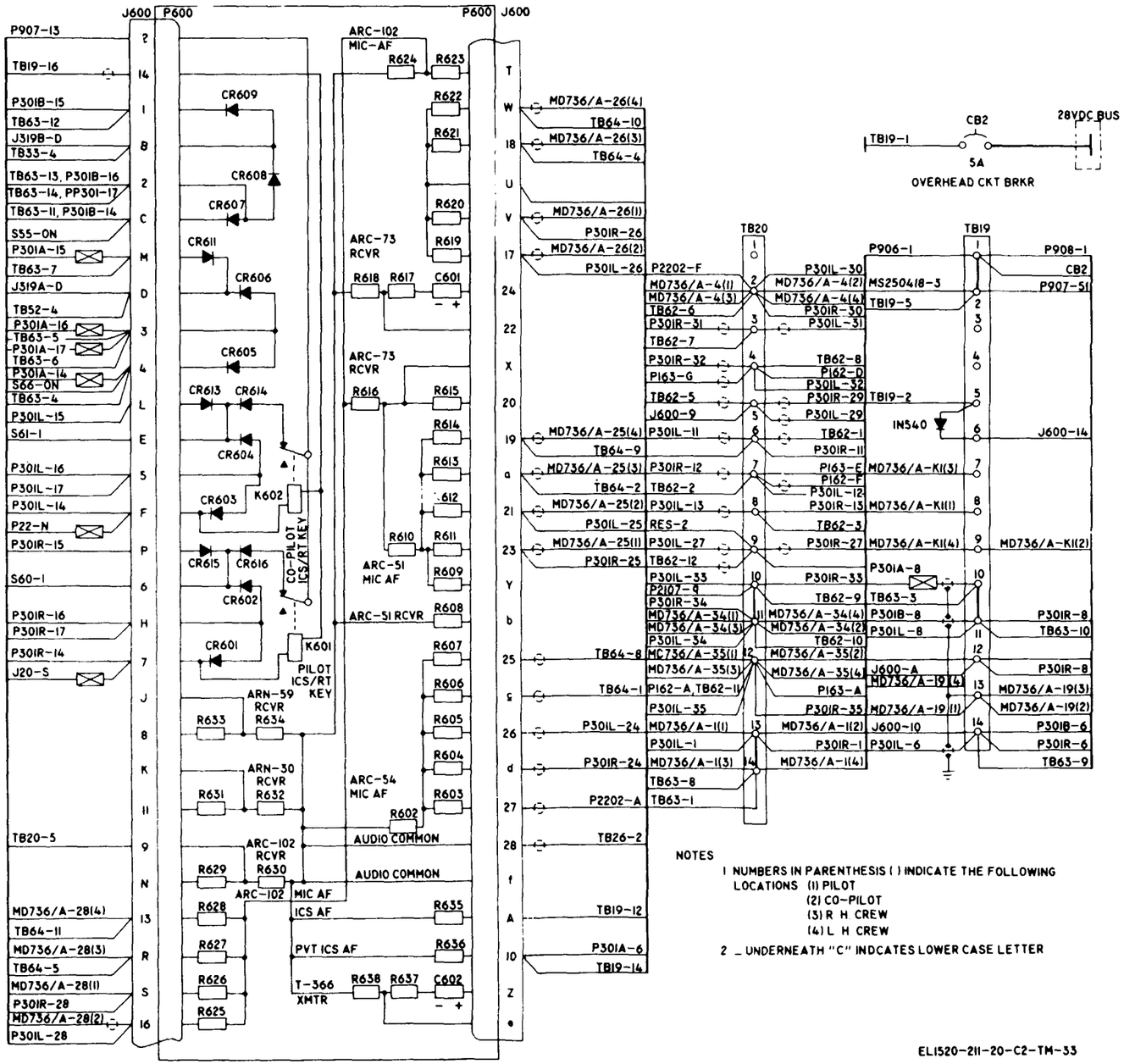

Figure 4-29. J600 connection, wiring diagram, configurations A and B.

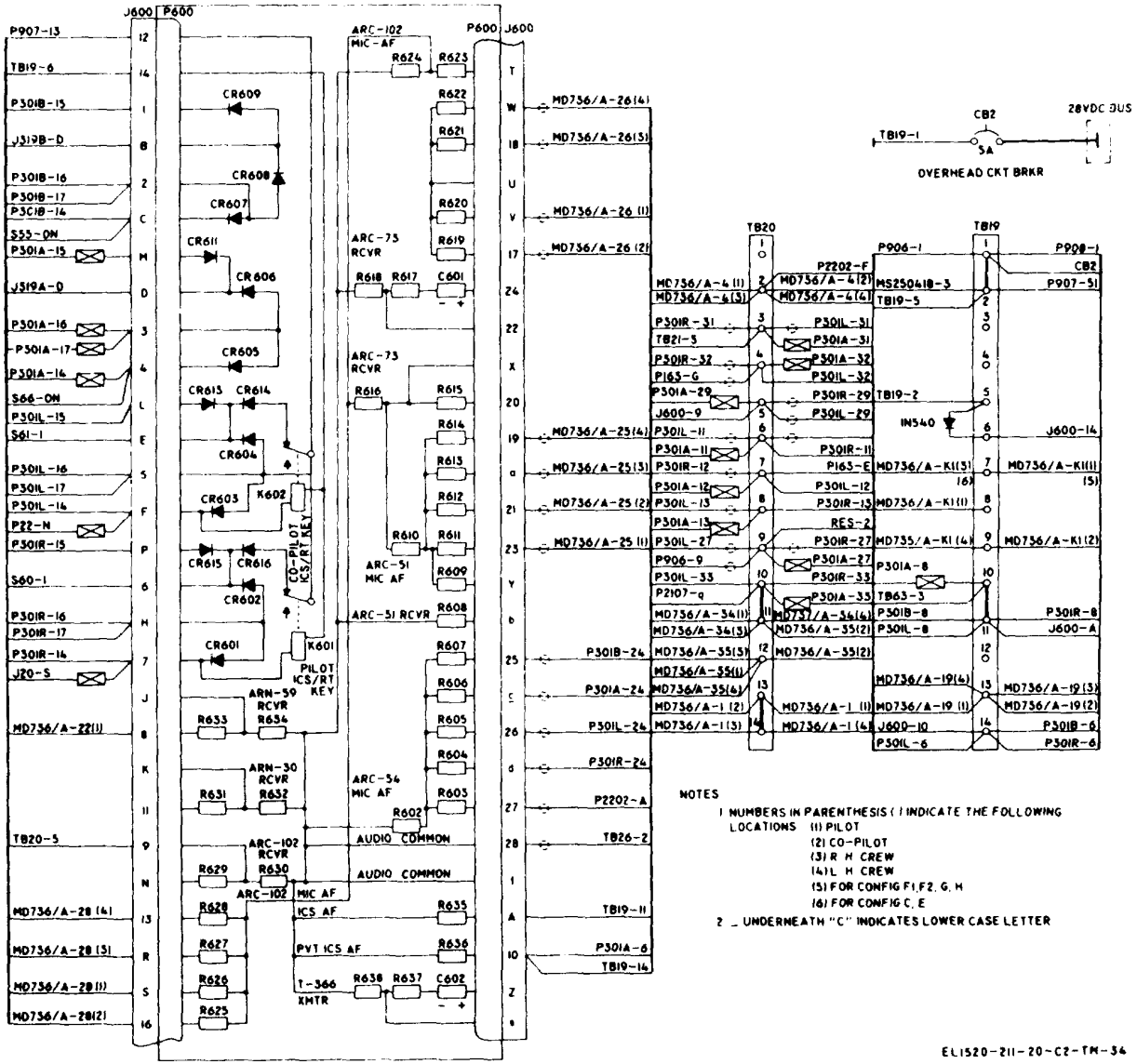

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Figure 4-30. J600 connection, wiring diagram, configurations C,E,F,G, and H.

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