ORGANIZATIONAL MAINTENANCE MANUAL
ELECTRONIC EQUIPMENT
CONFIGURATION
ARMY MODEL CH-54B HELICOPTER

This copy is reprint which includes current pages from Changes 1 through 5.

HEADQUARTERS, DEPARTMENT OF THE ARMY
JANUARY 1970

WARNING

DANGEROUS VOLTAGES EXIST IN THIS CONFIGURATION

Be careful when working around the 115-volt ac output of the generators or external power. These voltages are present throughout the electronic configuration wiring.

DON'T TAKE CHANCES!

RF BURNS

Do not stand near Radio Set AN/ARC-102. Radio Set AN/ARC -131 antennas when the transmitters are operating.

WARNING

DANGEROUS CHEMICALS ARE USED IN NICKEL-CADMIUM BATTERIES

The electrolyte used in nickel-cadmium batteries contains potassium hydroxide (KOH), which is a caustic chemical agent. Serious and deep burns of body tissue will result if the electrolyte comes in contact with the eyes or any part of the body. 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 contaminated areas. Continue flushing with large quantities of clean water for at least 15 minutes. Seek medical attention without delay.

Change 5

TECHNICAL MANUAL No. 11-1520-217-20-2

HEADQUARTERS
DEPARTMENTS OF THE ARMY
WASHINGTON, D C., *19 January 1970*

ORGANIZATIONAL MAINTENANCE MANUAL
ELECTRONIC EQUIPMENT CONFIGURATION ARMY MODEL CH-54B
HELICOPTER

CHAPTER 1
INTRODUCTION

Section I. GENERAL

1-1. Scope of Manual

a. This manual covers organizational maintenance of the electronic equipment configuration in Army model CH-54B helicopter, serial number 69-18472 and subsequent. The manual includes instructions for organizational maintenance personnel to perform periodic preventive maintenance and troubleshooting procedures for the electronic communications, identification, navigational, automatic flight control system, attitude indicating system, power systems, and voice warning system when the equipment is installed in the helicopter. This manual also includes instructions for organizational maintenance personnel to perform periodic preventive maintenance and troubleshooting procedures for the universal military pod (pod) interphone station. This manual also lists tools and test equipment required by organizational maintenance personnel to maintain the configuration.

b. Operating instructions are contained in TM 55-1520-217-10-2. This manual supplements TM 55-1520-217-20-2-1 and TM 55-1520-217-20-2-2 to provide complete organizational maintenance instructions. The majority of the basic electronic equipments are covered in detail in other technical manuals; the pertinent technical manuals are listed in appendix A. 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 nomenclature containing an asterisk (*) is used to indicate all models of an equipment item covered in this manual. Control, Intercommunication Set C-1611(*)/AIC represents Controls, Intercommunications Set C-1611/AIC, C-1611A/AIC, C-161B/AIC, C-1611C/AIC, and C-1611D/AIC. Indicator, Radio Magnetic ID-250(*)/ARN represents indicators, Radio Magnetic ID-250/ARN and ID-250AIARN.

1-2. Indexes of Publications

a. DA Pam 310-4. Refer to 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. Maintenance forms, records, and reports which are to be used by maintenance personnel at all maintenance levels are listed in and prescribed by 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.

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.

1-3.1. Reporting of Errors

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 Serial Numbers

There is only the single basic configuration of this helicopter. The serial numbers of all helicopters within this particular configuration are 69-18472 and subsequent. On helicopter serial No. 70-18485 and subsequent, control panel configuration is as shown in figure 2-7.01. On helicopter serial No. 70-18488 and subsequent, the pod interphone station receives audio signals from the fm liaison radio facility.

1-5. Facilities and Electronic Equipment

The charts in a through h below list each operational facility provided in the electronic equipment configuration, Army model CH-54B helicopter. The charts lists 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 helicopter. A letter Y in the Configuration column indicates that complete facilities for the component are provided, but the component is not installed. These facilities provide easy installation of the component when required for a special geographical location or mission application. Part numbers in parenthesis are manufacturer's part numbers.

a. Communications (fig. 4-1).

Facility	Equipment or component	Conf.	Remarks
Hf radio	Radio Set AN/ARC-102.		
	Receiver-Transmitter, Radio RT-698/ARC-102.	Y	
	Power-Inverter, Mounting PP-3702/ARC-102.	Y	
	Control, Radio Set C-3940/ARC-94.	Y	
	Antenna Coupler CU-1658/A	Y	
	Mounting MT-3772A/ A	Y	
	HF Wire Antenna (6460-65001-011).	X	
Vhf	Radio Set AN/ARC-134:		
	Receiver-Transmitter, Radio RT-857/ARC-134.	X	
	Mounting MT-3791/ ARC-I 134.	X	
	Control, Radio Set C-7197/ARC-134.	X	
	Antenna AT-I 108/ARC	X	
Fm liaison and homing radio	Radio Set AN/ARC-131.		
	Receiver-Transmitter, Radio RT-823/ARC-131	X	
	Mounting MT-3664/ ARC-131.	X	
	Control, Radio Set C-7088/ARC-131.	X	
	Coupler, Antenna CU-942A/ARC-54 or CU-942B/ARC-54	X	
	Antenna AS-1703/AR	X	
	Antenna AS-1922/ARC	X	
	Kit, Connector FSN 5935-089-8052	X	Used with MT-3664/ARC-131.
	Filter, RF line (O1JX63)	X	
Voice security	T-SEC/KY-28:		Used in helicopter operated outside of CONUS.
	Voice Security System T SEC/KY-28	Y	
	Mounting MT-3802/ ARC	X	
	Indicator Assembly, Control C-8157/ARC.	X	
	Discriminator, Discrete Signal MD-736/A - (3 installed).	X	
Uhf radio	Radio Set AN/ARC-51 BX :		
	Receiver-Transmitter Radio RT-742/ARC-51BX.	X	
	Mounting MT-2653/ARC-51	X	
	Control, Radio Set C-6287/ARC-51BX.	X	
	Cooler, Air, Electronic Equipment HD-615/ARC-51 X.	X	
	Indicator, VSWR-ID-1003/ARC.	X	
	Antenna AT-1108/ARC	X	
	Filter, RF Line (15JX26)	X	

b Identification (fig 4-1).

Facility	Equipment or component	Conf.	Remarks
Iff transponder set	Transponder Set AN/APX-72 :		
	Receiver-Transmitter RT-859/APX-72.	X	

Facility	Equipment or component	Conf.	Remark
	Mounting MT-3809/APX.	X	
	Control Transponder Set C-6280(P)/APX.	X	
	Computer Kit-1A/'SEC	Y	
	Antenna AT-884/APX	X	
	Test Set, Transponder Set TS-1843/APX.	y	
	Mounting MT-3513/APX	Y	

c. Navigation (fig 1-1).

Vor receiving set	Radio Receiving Set AN/ARN-82:		
	Receiver, Radio R-1388/ARN-82.	X	
	Mounting MT-3600/ARN-82.	X	
	Control, Radio Set C-6873/ARN-82.	X	
	Indicator, Course ID-1347/ARN-82.	X	
	Antenna (DMN-4-4)	X	
Adf direction finder	Direction Finder Set AN/ARN-83:		
	Receiver, Radio R-1391/ARN-83.	X	
	Mounting MT-3605/ARN-83.	X	
	Control, Direction Finder C-6899/ARN-83.	X	
	Antenna AS-1863/ARN-83.	X	
	Compensator, RF Inductance 582C-10.	X	
	ADF Wire Antenna (6460-65010-041).	X	
	Relay, adf disable MS24149-D1.	X	
Compass	Gyromagnetic Compass Set AN.':.SN-43:		
	Gyro Directional CN-998/ASN-43.	X	
	Amplifier, Electronic Control AM-3209/ASN.	X	
	Transmitter, Induction Compass T-611/ASN.	X	
	Compensator, Magnetic Flux CN-405/ASN.	X	
	Indicator, Radio Magnetic ID-250(')/ ARN.	X	Copilot's.
	Indicator, Radio Magnetic ID-998/ASN.	X	Pilot's.
	Switch, Compass Slaving MS24523-22.	X	

d. Interphone (fig. 4-1).

Facility	Equipment or component	Conf.	Remarks
Interphone	Intercommunication Set AN /AIC-12:		
	Control, Helicopter Intercommunication Set C-1611 (*) /AIC (5 installed)	X	Pilot's, copilot's, aft pilot's, and crewmembers.
	Junction Box (6490-60240-013)	X	
	RADIO KEY Foot Switch MS25039-1 (3 installed)	X	Pilot's, copilot's, and aft pilot's.
	Jack U-94A/U (2 installed)	X	Pilot's, copilot's and aft pilot's.
		X	No. 1 and No. 2 crewman.
	Cord, Walk Around (6460-61415-011)	X	Ground maintenance Station.
	Cyclic Stick RADIO-ICS Switch (21381-1) (2 installed)	X	Pilot's and copilot's.
	Remote Stick RADIO-ICS Switch (21381-1)	X	Aft pilot's.
	ICS Pod Receptacle U-79A /U	X	Connects to Pod ICS cable assembly.
	Pod ICS Cable Assembly (6455'69013-042)	X	Helicopter to Pod wiring harness.
	Control, Intercommunication Set C-1611(*)/AIC	X	Pod interphone station.
	Cable Assembly (S6162-61625-17)	X	Pod interphone station. (Jack U-94A /U and 360 inches of cable).

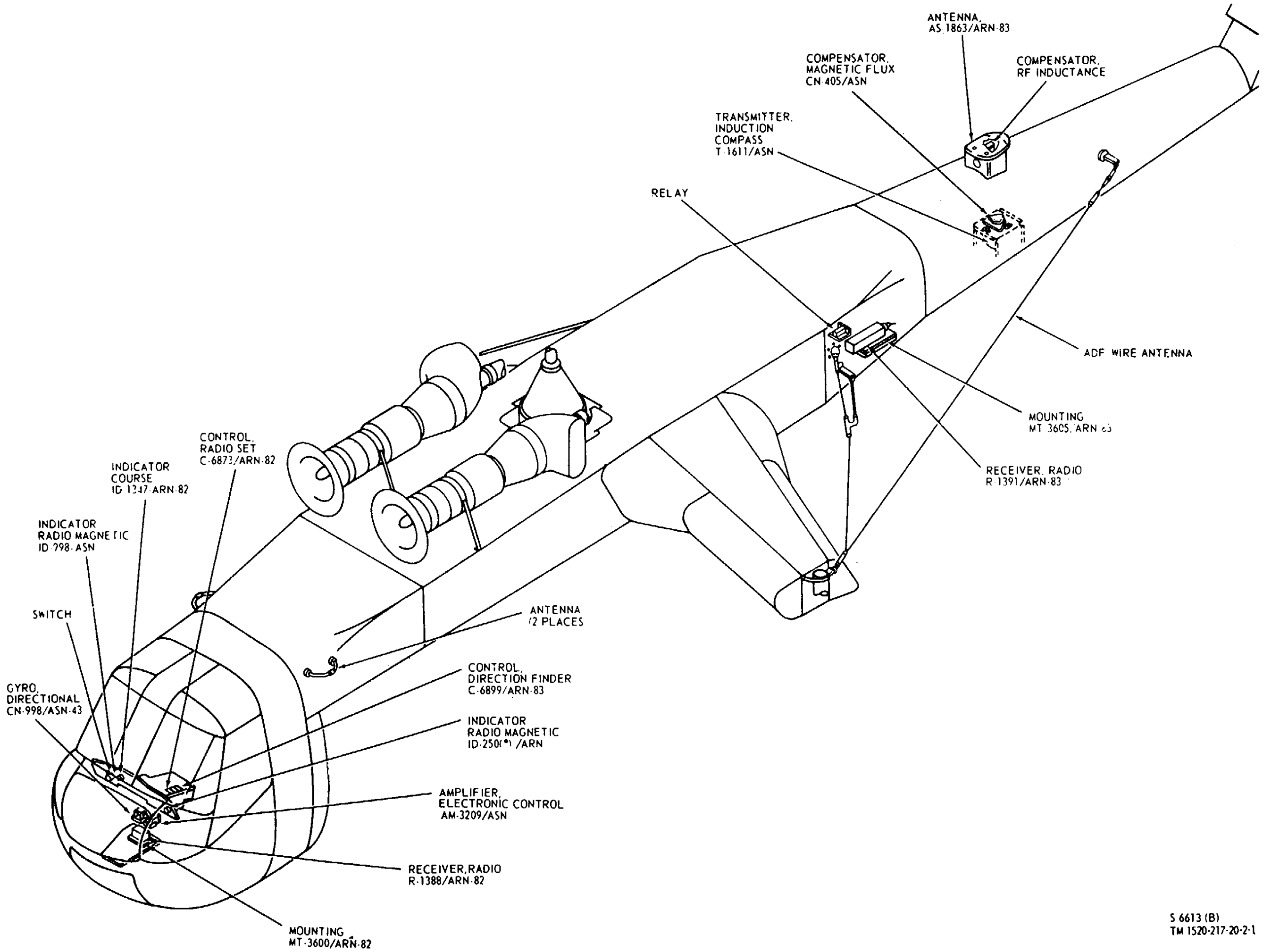


Figure 1-1. Outline drawing of helicopter, showing relative location of navigation equipment components.

Facility	Equipment or component	Conf.	Remarks
	Relay, ICS Keying (BR7Y-9oo-B2-26V)	X	Pod inte-phone station.

e. Power (figs. 2-12 and 2-21).

Power	Battery, Storage BB-434/ U	X	
	Motor-Generator (In-verter) PU-543/A	X	

f. Voice Warning System (fig. 2-12).

AN/ASH19	Voice Warning Reproducer Set AN /ASH-19:		
	Mounting Base MT-3290 X ( )/ASH-19		
	Reproducer-Converter, Voice Signal RP-139 ( )/ASH-19.	X	
	Message Tapes (2 in-stalled) TW-333/ ASH-19.	X	
	Control Panel, Voice Warning System (6490-60305-041)	X	
	Signal Adapter 16445-61386-101)		
	Continuous Inflight Per-formance Recorder (CIPR) AN /AS'H-23:	X	
	Magazine Sound Recor-der MA-27 /ASH-23	X	
	Controller C-8203 /ASH-23	X	
	CIPR ICS Switch MS24524-23		
	Landing Gear Interlock (L.H. Under Frequen-cy Lockout Switch)	X	
	Relay (BR 7X-30-D2-26V) (2 installed)	X	
	JAN-IN 540 Diode (2 in-stalled) Note, Nomenclature within parenthesis provided for reference purpose-	X	

g. Automatic Flight Control System and Stick Trim System (fig. 1-2).

Facility	Equipment or component	Conf.	Remarks
AFCS and Stick Trim	Controller, Engaging, Automatic Pilot C-8478 / ASW (AFCS Control Panel) (6490-60315-041)	X	Following compass system compo-nent is an asso-ciated compo-nent:
	Control, Followup, Auto-matic Pilot C-8476 / ASW (Remote Stick Control Panel) (6490-60131-013)	X	
	Amplifier, Electronic Control AM-6279 /ASW (AFCS Amplifier) (6490-60440-041	X	Gyro, Direc-tional CN-998/ ASN-43.
	Control Monitor C-8477/ ASW (Oscillatory Shut-off Unit) (6490-60410-041)	X	Following attitude indicating system component is an asso-ciated component: Gyro-Scope, Dispce-
	Dehydrator Unit, Non-reactivating HD-769/ ASW-29 (Purifier Chamber Assembly 1338-90C and Indicator, Cartridge and Dew-point 1338-91C)	X	
	Amplifier Electronic Control AM-6280/ASW (Stick Trim A nplifier) (6490-60360-041)	X	ment CN-1314/A (Gyro Ver-tical 6490-60065-101).
	Accelerometer, Electrical, Linear MX-8611/ASW (Lateral Accelerometer) (S6190-61062-0)	X	BAR REL switch on pilot's, co-pilot's, and aft pilot's collective stick grips, AFCS SERVO OFF, TRIM REL., and STICK TRIM but-tons on pi-lot's and copilot's cyclic stick grips are associated components of AFCS.
	Synchronizer, Electrical SN-442/ASW (Dual Channel Synchronizer) (65901-02800-042)	X	
	Gyroscope, Rat e CN-1325/ASW (Rate Gyro) (65901-02003-101)	X	
	Indicator, Stabilization Data ID-1720/ASW (Flight Director Indi-cator) (65450-01037-101)	X	
	Control Altitude, Auto-matic Pilot C-7266/ ASW-29 Altitude Con-troller) (S6190-60012-1)	X	
	Synchro, Transmitter SN-410/ASW-29 Collec-tive Stick Position Sen-sor) (S6190-60030-1).	X	
	Synchro, Transmitter SN-441/ASW (Trim Position Sensor) (65901-02022-043).	X	
	Switch, Airspeed sensing (65450-01040-101)	X	
	Valve, AFCS Servo Shu-toff (HP610100-2C10-1)	X	Valves are associated compo-nents of
	Valve, Yaw Trim Turn-On (6465-61045-101)	X	

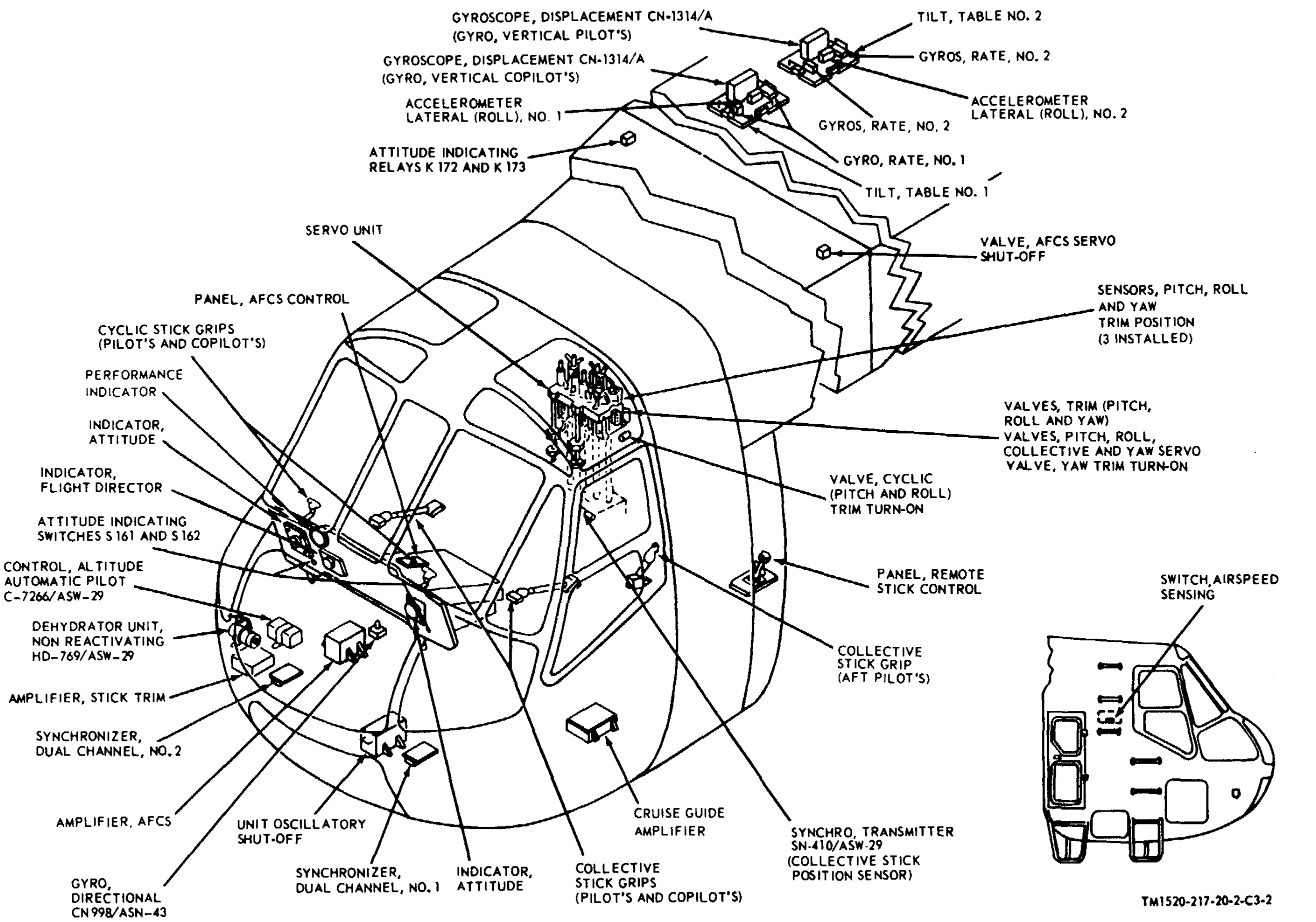


Figure 1-2. Outline drawing of helicopter, showing location of automatic flight control system, attitude indicating system, stick trim system, and performance indicating system components

Facility	Equipment or component	Conf.	Remarks
	Valve, Cyclic Pitch and Roll) Trim Turn-On (6465-62317-101)	X	AFCS and stick trim systems.
	Valves, Trim (Pitch, Roll, and Yaw) (65652-03225-106).	X	
	Valves, Pitch Roll, Collective, and Yaw Servo (6165-63552-40, 222 and -277).	X	

h. Attitude Indicating System (fig. 1-2).

Facility	Equipment or component	Conf.	Remarks
	Indicator, Attitude (4005 WI 12 installed).	X	
	Gyroscope, Displacement CN-1314 A (Vertical Gyro) (6490-60065-101).	X	
	Table, Tilt (6490-60060-013) (2 installed)	X	
	Relay MS25269-D1 (2 installed)	X	
	Switch MS24524-23 12 installed).	X	

i. Performance Indicating System(fig. 1-2).

Facility	Equipment or component	Conf.	Remarks
	Cruise Guide Amplifier (6490.60500).	X	
	Linear Variable Differential Transformer (65901-02055).	X	
	Performance Indicator (S1545- 65273).	X	

1-6. Differences in Electronic Equipment Models

a. Gyromagnetic Compass AN/ASN-43 The external appearance of Indicators, Radio Magnetic ID-250/ARPN and ID-250A/ARN are identical. The only differences are internal and are given in the pertinent technical manual (app. A).

b. Intercommunication Set AN/AIC-1 2. All m o d e is of Control, Intercommunication Set C-1611(*)/AIC are similar in appearance and operation All models are interchangable The differences are external nomenclature and internal circuits. On all models except the C-1611/AIC, the transmit-interphone selector switch has a sixth position marked PVT left of the INT position. The C-1611D/AIC has eight fasteners for installation.

1-7. Equipment Technical Characteristics

a. Radio Set AN/ARC-102. The characteristics of the hf wire antenna are as follows:

Type.. Antiprecipitation.
Impedance .... 52 ohms.
Frequency .... 2 to 29.999 mc.

b. Radio Set AN/ARC-i3,'; Filter, RF line.

Configuration .... Pi type
Current rating .... 10 imperes.
Ac voltage rating .... 125 volts at .100 cps.
Dc voltage rating .... 00 volts de.
Dc resistance .... 022 ohm.

c. Radio Set AN/ARC-5/BX, Filter, RF Line.

Configuration .... Pi type.
Current rating .... 15 amperes
Ac voltage rating .... 125 volts at 400 cps.
Dc voltage rating .... 100 volts de.
Dc resistance .... 0 0 0.0065 ohm.

d. Direction Finder Set AN/ARPN-83.

(1) Compensator RF Inductance.

Compensation .... -10 to +18 degrees.

(2) Adf Wire Antenna.

Impedance .... 52 ohms.
Frequency .... 190 to 1750 kc.

e. Voice Warning System.

(1) Reproducer - Converter, Voice Signal L'P-139( )I/ASH-19.

Voltage	17 to 29 volts dc.
Current	1.75 ampere maximum.
Power	60 watts maximum.
Inputs	Receives positive dc inputs from signal adapter and fault sensors.
Control inputs	Override is normally zero to a momentary voltage level of 17 to 29 volts dc.
	Reset is normally from 17 to 29 volts dc to a momentary open circuit.
	Self-test is normally zero volt to a momentary voltage level to 17 to 29 volts dc.
Number of outputs	audio.
Number of messages	20.
Frequency range	400 to 3000 cps.
Power	250 milliwatts into a 600-ohm load at 1000 cps.
Distortion	10 percent maximum.
Signal-to-noise ratio	30 db minimum.
Wow and flutter	3 percent maximum
Stability	+3 db maximum variation from setting of volume control.
System response	0.5 second maximum from fault input to start of playout.
Maximum warmup time	None.
Temperature	--540 C to +650 C.
Humidity	Room ambient to 90 percent relative.
Altitude	0 to 50,000 feet.

(2) Recorder, Continuous Inflight Performance (CIPR) AN/ASH-23.

Voltage	21 to 30 volts dc.
Power	30 watts.
Frequency response	300-3000 cps.
Audio quality	Wow and flutter 3% maximum Distortion at 1KC 10% maximum.
Sensitivity	Record input level 0.8 VRMS + 6 db.
Input	Balanced, isolated.
Magnetic susceptibility	Shielding provision incorporated.
Drive motor	Brushless.
Motor drive frequency	400 cps + 2% dc to ac solid state inverter drive.
Service life	5000 hours.
Record time	1 hour minimum.
Tape speed	2 ips (nominal) for audio recording. 1/5 ipm for timing pulses during absence of audio input.
Tape magazine	1000 hour tape life Visual remaining-tape indicator.

(3) Signal adapter.

Voltage	28 volts dc.
Current	1.5 ampere maximum.
Input signals	Accepts up to 50 separate inputs consisting of ac and dc signals.
Output signals	Positive dc signals.

f Automatic Flight Control System and Stick Trim System.

(1) AFCS control panel.

Voltage requirements	115 + 2 volts ac, phase B, 400 + 20 cps and 27.5 + 0.5 volts dc.

Inputs .... AFCS amplifier, Gyro Directional CN-998/ASN-43 and Oscillatory shut-off unit.
Outputs .... Stick trim amplifier, AFCS servo valves, Oscillatory shut-off unit, Flight director indicator, cyclic trim turn-on valve, Altitude controller and collective stick position sensor.

(2) Remote stick control panel.

Voltage requirements .... 115 + 2 volts ac, phase B, 400 -20 cps and 27.5 + 0.5 volts dc.
Outputs .... AFCS amplifier and stick trim amplifier.

(3) AFCS amplifier.

Voltage requirements .... 115 + 2 volts ac, phase B, 400 cps and 27.5 + 0.5 volts dc.
Inputs .... Vertical gyro, yaw rate gyro, roll gyro, lateral accelerometers, dual channel synchronizers, remote stick control panel, altitude controller, AFCS control panel.
Outputs .... AFCS control panel, stick trim amplifier, and flight director indicator.

(4) Oscillator? Shut-off unit.

Voltage requirements .... 115 + 2 volts ac phase B, 400 cps and 27.5 + 0.5 volts dc.
Input .... Dc correction signals to AFCS servo valves.
Output .... Channel disengagement function.

(5) Stick trim amplifier.

Voltage requirements .... 112 to 121 volts ac, phase B, 400 + 20 cps and 25 to 29 volts dc.
Temperature .... 55°C to 710C.
Altitude .... 0 to 35000 feet.
Warmup time .... None.

(6) Lateral accelerometers, No. 1 and No. 2.

Voltage requirements .... 115 + 2 volts ac, phase B, 400 - 20 cps.
Warmup time .... Not exceeding 1.0 minute under standard conditions or 2.0 minutes under extreme service conditions.
Sensitivity .... Output 2.330 + .030 volts/g.
Linearity .... Output within + 0.5% of full scale up to half scale and Within + 1.5% of full scale from half scale to full scale.
Range .... -2g to +2g'.
Threshold and resolution .... 0.0005 g.
Hysteresis and friction .... 0.1% of full scale not normal room ambient and + 0.15% of full scale over the temperature extremes.
In-phase null .... 15 millivolts maximum.
Total null .... 25.0 millivolts maximum.
Phase shift .... Not exceeding 8 degrees + 8 degrees with 2 g input.
Damping ratio .... Within limits of 0.52 to 0.70 at 250C.
Natural frequency .... 30 + 2 cps.

(7) Dual channel synchronizers, No. 1 and No. 2.

Voltage requirements .... 115 +2 volts ac, phase B, 400 + 5 cps each channel and 27.5 + 0.5 volts dc each channel.
Input .... Vertical gyro.
Output .... Nullduring synchronization; proportional gyro signal during retention mode.

(8) Rate gyros, No. 1 and No. 2 (2 roll, 2 yaw).

Voltage requirements	115 2 volts ac, phase B, 400 + 5 cps.
Input resistance	10.000 ohms.
Current	130 microamperes starting and 100 microamperes.
Range	to 40 degrees per second.
Sensitivity	0.115 volts per degree per second + 10%.
Linearity	0.75% of full scale.
Threshold and resolution	0.1 degree per second.
Phase shift	7 degree maximum.
Damping ratio	0.4 to 1.3
Temperature range	-550C (650F) to 71°C (158°F).
Natural frequency	21 cps minimum.
Output	Rate signals to AFCS amplifier.

(9) Flight director indicator.

NOTE:

Selector knob provides for four modes of operation, however only the 0 (ON-ON) and A (AFCS) modes are used.

Pointer and bar coil sensitivity	100-0-100 microamperes full scale deflection - 2%.
Bar flag coil sensitivity	180-240 microamperes.
Pointer and bar coil resistance	1000 ohms + 2%.
Bar flag coil resistance	100,000 ohms + 5%.

(10) Altitude controller.

Voltage requirements	115 + 11.5 volts ac, phase B, 400 + 20 cps and 27.5 + 0.5 volts dc.
Output	6 + 0.5 millivolts per foot, 400 cps.
Operating range	1000 to 25,000 feet.

(11) Collective stick position sensor.

Synchro input voltage	115 2 ac, phase B, 400 - 5 cps.
Synchro input current	0.007 ampere.
Synchro input power	0.142 watts.
Synchro sensitivity	0.33 volts ac per angular degree of rotation (linearity + 50 degrees).
Rotor resistance	794 ohms.
Stator resistance	62 ohms.
Input	To AFCS amplifier.
Clutch operating voltage	27.5 + 0.5 volts de.
Input current	0.5 ampere maximum.

(12) **Pitch, roll and yaw trim position sensors.**

Synchro voltage requirements	115 + 2 volts ac, phase B, 400+ 20 cps.
Synchr.o output	0.200 volt ac per degree of shaft rotation when operated into 10k load.
Synchro phase shift	6 degrees maximum.
Dc resistance	880 ohms.
Synchrio linearity	0.5% over a range of + 50 degrees.
Synchr.o null voltage	15 millivolts.
Output	To stick trim amplifier.
Clutch operating voltage	23 to 29 volts de.
Response time	48 milliseconds maximum at 28 volts de.

(13) AFCS servo shut-off valve.

Coil voltage requirements	18 to 30) volts (lc.
Coil current drain	5 amperes maximum at 21 volts de.
Temperature	--65-'F to 1-160G)F.

(14) Yaw trim turn-on valve

Coil voltage requirements .... 18 to 32 volts dc.
Temperature .... 27°F fluid and 1500F ambient.

(15) Cyclic (pitch and roll) trim turn-on valve.

Coil voltage requirements .... 18 to 30 volts de.
Coil resistance .... 40 + 2 ohms at 680F.

(16) Trim valves (pitch, role and yaw).

Current requirements .... Operating + 16 milliamperes, Quiescent 4 milli-
.... amperes.
Temperature .... -650F to +2750F.
.... Altitude 0 to 30,000 feet.
Vibration .... 2 "g" vibration over frequency range of 5 to 60 cps.
Dc resistance .... 1000 + 100 ohms at 770F with resistance of coil
.... pairs matched.
Input .... From stick trim amplifier.
.... Output Signals:
Altitude retention .... Ac signal to AFCS amplifier representing altitude
.... error differential.
Altitude synchronization .... Null (ac) to AFCS amplifier.

(17) Pitch, roll, collective and yaw servo valve.

Coil voltage requirements .... 115 2 volts ac, phase B, 400 + 20 cps.
Coil current requirements .... Operating maximum 24 milliamperes, Quiescent 5
.... + 1 milliamperes.
Dc resistance .... 1000 ohms + 10%.
Input .... AFCS control panel.

(18) **Switch, Airspeed Sensing**.

Contact rating .... 2 amperes at 28 volts dc.

f. Attitude , Indicating System.

(1) Indicatcr, attitude 4005W.

Voltage requirements .... 115 + 2.3 volts ac, phas ' B, 40(0 - 2(cl)s aul 27
± 0.5 volts de.
Power 20 va (maximum).
Trim adjustment .... 15 - 5 degrees climb, 7.5 - 2.5 degrees dive (pitch)
14 + 6 degrees left bank, 14 + 6 degrees right
bank (roll).

(2) Gyroscope, Displacement CN-1314/A (vertical gyro).

Operating voltage .... 115 + 2 volts ac, phase B, 400 - 5i cps.
Gimbal freedom .... Unlimited freedom in roll Minimum of 82 degrees
in pitch.
Drift Not greater than 15 degrees per hour at 250C and
not greater than 24 degrees over the temperature
range of -540C to +710C.
Initial erection .... Within 1 degree of vertical in pitch and roll within
60 seconds at +250C .... Shall erect to this position
in less than 90 seconds over the temperature range
of -540C to +710C.
Final erection .... Gyro shall erect to within 0.50 of vertical i-i pitch
and roll within 2 minutes after initial erection
period.
Normal erection rate .... Shall be between 1.50 and 30 per minute at 25.C.
Shall be between 1.0° and 3.5° .... per minute over
the temperature range of -540C +710C.
Fast erection rate .... Not less than 20° per minute between temperature
-540C and +710C.
Power interruption .... After 5 minutes of operation, power interruption
shall not cause gyro to develop errors iq verticality

exceeding +1° for a minimum of 40 seconds after interruption of power. Gyro gimbal freedom shall not be less than + 820 in pitch and - 600 in roll during this period.

Gyro motor failure detector	Speed detector opens set of contacts when motor
failure occurs	Contacts shall open at wheel speed of 5000 rpm minimum.
Synchro transmitter output	Continuous for 3600 roll and 820 pitch.
Synchro electrical signal output	11.8 + 1/4 volts line-to-line maximum.

(3) Transfer relay.

Voltage requirement	27.5 + 0.5 volts dc.

h. Performance Indicating System.

(1) Cruise guide amplifier.

Voltage requirements	115 + 4 volts ac, phase 400 + 20 cps and 27.5 ± 0 5 volts

(2) Linear variable differential transformer.

Excitation voltage requirement	26 volts ac, 400 ± 5 cps
Linear range	+: 0025 inches
Linearity	0 O 5% of nominal full scale
Total null	Less than 0 010 volts ac
Temperature coefficient	+- 0 435%/100°F
Sensitivity	0.065 volts ac per mil (0 001") +5% - 0%
Load	500 ohms minimum at 400 cps

1-8. Description of Equipment Components

a. Radio Set AN/ARC-102 (fig. 2-15). The hf wire antenna is on the right side of the helicopter connected between the pylon and landing gear support. A separate coaxial antenna wire completes the connection from the lead-through insulator to the Network, Impedance Matching CU-991/AR. The CU-991/AR provides impedance matching between the Receiver-Transmitter, Radio RT-698/ARC-102 and the antenna. The antenna is used for transmission and reception.

b. Direction Finder Set AN/ARN-83.

(1) Compensator, RF inductance. The 582C10 provides error correction for any electromagnetic field distortion induced into Antenna AS1863/ARN-83 by metal parts of the helicopter, in addition to that built into the antenna. It is mounted directly on the output connector of the AS-1863/ARN-83.

(2) Adf wire antenna (fig. 2-18). The adf wire antenna (sense) is on the left side of the helicopter and is connected between landing gear support and station 672. The adf wire antenna is used with Antenna AS-1863/ARN-83 to provide automatic direction finding. The lead-in feeds through the helicopter skin and is coupled to Receiver, Radio R-1391/ARN-83 by an antenna cable.

c. Voice Warning System AN/ASH-19 (fig. 1-3).

(1) Reproducer-Converter, Voice Signal RP139( )/ASH-19. The RP-139( )/ASH-19 consists of a metal housing with a plug-in assembly cover. The metal housing contains an insulator, line (low pass) filter, electronic input gate assembly, fault input signal assembly, audio frequency amplifier assembly, volume controls, time totalizing meter, switching logic assembly, audio reproducer assembly, electrical connector assembly, and clamping diode. Two electrical connectors are located on the side of the housing. The RP-139 ( ) 7 ASH-19 automatically provides one of 20 prerecorded human voice warning messages to indicate the occurrence of a monitored fault.

(2) Base. Mounting MT-3290 (/ASH-I9. The MT-3290( )/ASH-19 consists of a flexible plastic vibration isolator located between two metal plates. The lower plate contains mounting holes for installing the base. The upper plate contains four holes for access to the mounting hardware, a channel located at the rear, and two captive bushings with wingnuts located at the front. The channel and wingnuts are used to secure the RP-139( )/ASH-19 in the MT-3290( )/ASH19.

(3) Continuous Inflight Performance Recorder (CIPR) AN/( )ASH-23. The AN/ASII23 is a four-channel recorder that records on an interrupted basis. Three of the four tracks are available for recording audio data; the fourth track is used for timing pulses. The AN/ASH-23 consists of a Magazine Sound Recorder MA-27/ASH-23 and a Controllelr C-8203/ASH-23. The MA-27/ASH 23 consists of a water-sealed magnetic tape, the tape guide mechanism, and the magnetic recording heads. The C-8203/ASH-23 consists of the tape transport drive mechanism and control, power/speed regulation, audio gain and power amplification, and associated electronics.

(4) Control panel, voice warning system. The control panel contains one toggle switch, three pushbutton switches, and two lamps. The panel is housed in a rectangular metal case with a 10pin electrical connector (J915) at the rear of the unit. The toggle switch is the power turn-on switch controlling operating power to the RP139( )/ASH-19 and the AN/ASH-23. Power is supplied automatically in flight. The OVERRIDE pushbutton switch initiates override of the highest

priority channel. The RESET pushbutton switch resets all overridden channels, permitting the highest priority channel to be played out again. The TEST pushbutton switch initiates self-test of all 20 channels.

(5) Signal adapter. The signal adapter accepts up to 50 various types of voltage input signals from fault monitors and provides conditioning and logic switching of these signals for use by the input circuits of the RP-139 ( ) /ASH-19. The signal adapter also provides for the operation of some of the caution capsules associated with voice warning system.

d. Automatic Flight Control System (AFCS) (fig. 1-4).

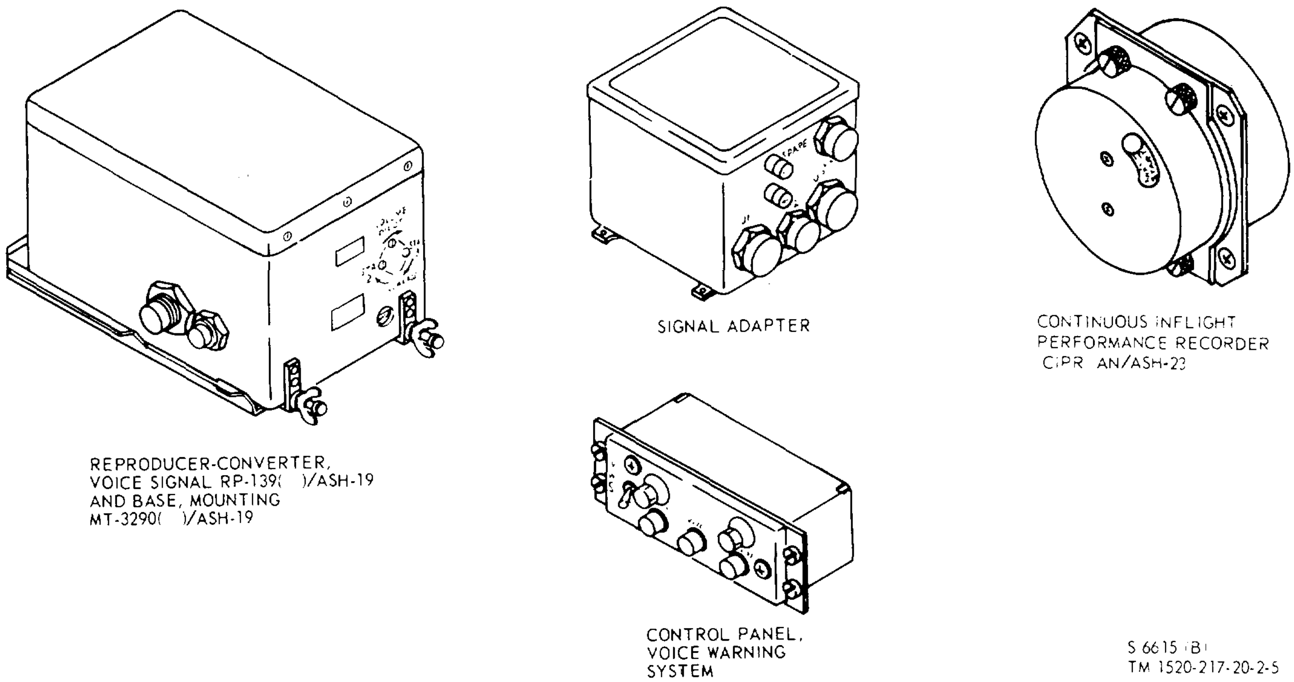


Figure 1-3. Components of voice warning system AN/ASH-19.

(1) Controller, altitude (fig. 1-4 -i). The altitude controller senses barometric pressure (static) and generates a voltage proportional to altitude difference from a desired altitude for use in the altitude control channel. The controller is housed in a cylindrical airtight metal case. The case is divided into halves which are separated by an O-r'ing and held together by screws. The assembly is mounted within a box-like frame. Starting from one end of the case are two vector boards containing a relay and associated circuitry; next in line are the connections of the servo motor to the gear assembly, and of the gear assembly through a threaded shaft to the bellows. The bellows has an arm which has a jeweled point and touches a shunt bar at the jeweled point. The shunt bar is under spring tension and is parallel to an E transformer. The E transformer is the last part of the controller and is mounted on a vector board with some associated circuitry. The flange which joins the two controller halves also acts as the mounting for the case to its shockmount. The unit has an eight-pin electrical connector and a pressure fitting at opposite ends of the case. The shockmount contains an eight pin connector and a static pressure connector.

(2) Amplifier, AFCS (fig. 1-4 3). The AFCS amplifier processes inner and outer control loop signals, provides outputs to the AFCS servo valves, and provides outputs to the stick trim amplifier The AFCS amplifier is housed in a rectangular case consisting of a chassis and two

access covers. Four mounting brackets attached to the sides of the chassis provide mounting points. A handle is provided at the front to aid in removal and installation. A 32-pin and a 41-pin connector at the front of the AFCS amplifier provide all electrical connections during normal operations. Five fuses mounted at the front of the chassis provide circuit protection for the AFCS amplifier. Two potentiometers provide a means of adjustment for accelerometer quiescent state pulling. A time totalizing meter indicates amount of AFCS amplifier operation time. Guides inside the chassis provide convenient removal and installation of the yaw sync, power supply, pitch, roll, and the yaw modules. Module connectors at the bottom of the AFCS amplifier provide all electrical connections to the modules.

(3) Amplifier, stick trim (fig. 1-4)). The stick trim amplifier provides outputs to the stick trim valves resulting in movement of the cyclic sticks (pitch and roll) and the tail rotor pedals. The stick trim amplifier is housed in a rectangular case consisting of a chassis. a front deck, and two access covers. Four mounting brackets attached to the sides of the chassis provide mounting points. A handle is provided on the front deck to aid in removal and installation. A 26-pin connector at the front provides all electrical connections during normal operations. Four potentiometers mounted at the front of the chassis provide a means of adjusting stick trim rate. The inside of the chassis contains guides, providing convenient removal and installation of the yaw, roll, and pitch modules. Electrical connections to the module are provided by three connectors mounted at the front of the chassis.

(4) Control panel, AFCS (fig. 1-4). The AFCS control panel provides switches and circuitry for engagement an(l disengagement of AFCS and stick trim. Also the YAW TRIM control allows the pilot to effect changes to the helicopter heading. The AFCS control panel is housed in a rectangular case attached at the rear deck with four Dzus fasteners. The front panel is mounted on a chassis which contains two time delay relays. The front panel contains a six-section pushbutton matrix switch, a single section pushbutton engage switch, a YAW TRIM control and two panel lights. Four Dzus fasteners are contained on the front panel to provide for mounting. Two relay brackets are mounted on the chassis; one containing six relays and the other containing seven relays. Mounted on the relay brackets are the diode deck, containing diodes and resistors, and the rear deck, containing a 55-pin and a 41pin connector. The connectors provide all electrical connections during normal operations.

(5) Control panel, remote stick (fig. 1-402). The remote stick control panel allows the aft pilot to control the helicopter in pitch, roll, and yaw axes. The panel may be operated in either NORM or AUX modes. The remote stick control panel is housed in a rectangular metal case with all controls located on the front panel. The controls consist of two pushbutton mode engage switches and a remote stick grip housing a STICK TRIM switch, a CARGO release switch, and ICS/ RADIO switch. The remote stick grip is spring loaded to the center position. Two sets of ganged potentiometers and a single potentiometer are mechanically controlled by the remote stick grip to provide electrical outputs when the remote stick grip is moved. The remote stick control panel contains a power supply, stick output, and signal amplifier modules, which provide automatic stick trim. Electrical connections are provided through the bottom of the remote stick control panel by a 41-pin connector.

(6) Oscillatory Shutoff unit (fig. 1-4 02). The oscillatory shutoff unit (OSU) samples all AFCS dc correction signals for amplitude and frequency components. If established parameters are met, the OSU will automatically disengage the incorrect dc correction signal from the appropriate AFCS servo valve. The oscillatory shutoff unit is housed in a rectangular case consisting of a chassis and two access covers. Four mounting brackets attached to the sides of the chassis provide mounting points. A handle is provided at the front to aid in removal and installation. Five fuses mounted on the front of the chassis provide circuit protection for the oscillatory shutoff unit.
Four test switches mounted on the front of chassis aid in testing. Electrical connections are provided through the front of the chassis by a 32-pin connector. Circuitry is contained on nine modules supported by guides inside the chassis, providing convenient removal and installation. Nine connectors at the bottom of the chassis provide all electrical connections to the modules.

(7) Gyros. rate No. 1 and No. 2 (roll and yaw) (fig. 1-4). The rate gyros sense rate-of-change from any fixed attitude, producing a signal whose amplitude and phase are directly related to rate-of-change and direction-of-change. The rate gyro is contained in a cylindrical frame mounted in a rectangular mount. Four holes are

provided at the bottom of the mount for mounting. Two cylindrical covers are attached to the ends of the mount. An eight-pin connector contained in the larger cover provides electrical connections to the rate gyro.

(8) Sensor, trim position (pitch', roll, and yaw) (fig. 1-4 ®). The trim position sensor provides a reference signal to the outer control loop and also provides a damping signal to the stick trim amplifier. The trim position sensor consists of an electrically operated clutch and a synchro. The synchro contains a rotor and a stator. A shaft extends from the clutch to provide mechanical input. The clutch mechanical output rotates the synchro rotor. Two terminals mounted on the clutch housing provide electrical connection to the clutch. Four wires extend from the synchro, pro viding electrical input to the rotor and electrical output from the stator. A six-pin connector connected to the wires provides all electrical connections during normal operations.

(9) Sensor, Collective Stick Position (fig. 1-4®). The collective stick position sensor provides a damping signal to the altitude control channel during collective stick open loop operation. The collective stick position sensor consists of an electrically operated clutch and a synchro. The synchro contains a rotor and a stator. A shaft extends from the clutch to provide mechanical input. The clutch mechanical output rotates the synchro rotor. Two wires from the clutch and four wires from the synchro connected to a sixpin connector provide electrical connections during normal operations.

(10) **Switch, Airspeed Sensing (fig. 1-2 and 1-4(2)).** The airspeed sensing switch has an adjusting screw located on the bottom of the switch between the pilot static line connections. Differential pressure is used to operate a pair of contacts which, when closed, completed an electrical circuit.

e. AFCS Associated Components.

(1) Servo unit. The servo unit provides hydraulic power assist for the primary flight controls. The servo unit is divided into four sections, one for each -control channel. Each section contains an AFCS servovalve and power piston. Pitch, roll, and yaw contain stick trim valves at the top of the unit. The altitude section contains an open-loop spring located at the bottom of the unit.

(2) Collective stick grips. The pilot's, copilot's, and aft pilot's grips contain a BAR. REL.. switch which momentarily disengages the altitude control channel during manual altitude changes.

(3) Cyclic stick grips. The pilot's and copilot's grips each contain three system controls: The A. F. C. S. SERVO OFF button provides a method for momentarily disengaging pressure to the AFCS servovalves. The TRIM REL. button momentarily disengages the stick trim system while establishing a nee' reference position for the cyclic stick. The STICK TRIM button allows longitudinal and lateral repositioning of cyclic sticks to establish a new reference for the system.

(4) AFCS se1vov,alves. The AFCS servovalves receive inner control loop dc correction signal inputs from AFCS. The servovalves convert the dc signal into mechanical outputs to reposition the main and tail rotor blades. Each servovalve has a four-pin electrical control-. Hydraulic pressure is applied through ports on the flat portion when installed on the servo unit.

(5) Trim valves. The trim valves receive outer control loop control signals from the stick trim amplifier. The three trim valves (pitch, roll and yaw) convert the control signals into mechanical outputs to reposition the cyclic sticks in pitch and roll and the tail rotor foot pedals. Each trim valve has a three-pin electrical connector. Hydraulic pressure is applied through ports on the flat portion when installed on the servo unit.

(6) Directional Gyro (AN/ASN-43). The directional gyro provides heading reference to the AFCS yaw control channel.

(7) Vertical gyros. The two vertical gyros provide pitch and roll attitude information to the AFCS pitch and roll control channels.

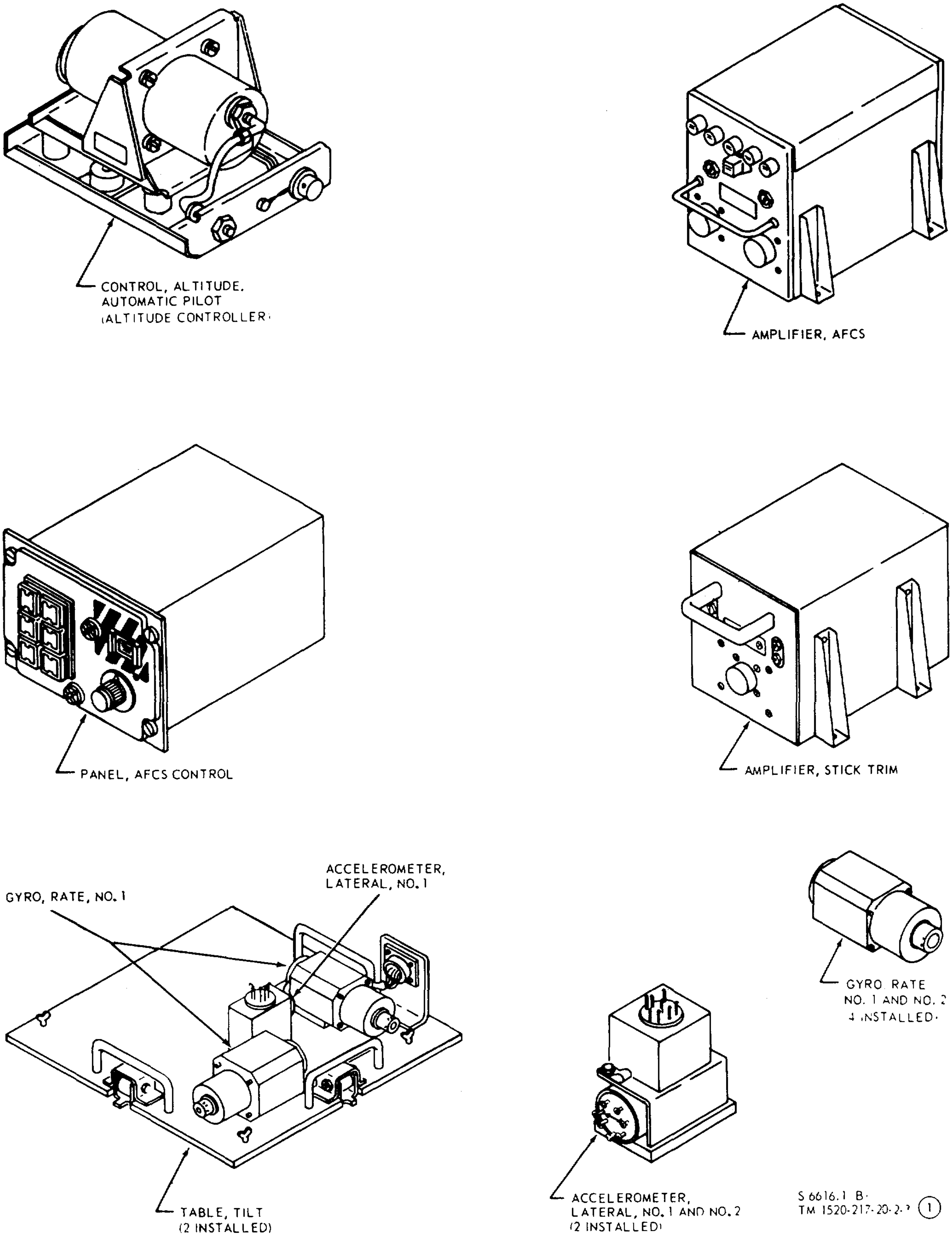


Figure 1-4. Components of automatic flight control system and stick trim system (part 1 of 2)

f. Attitude Indicating System (fig. 1-5).

(1) **Gyroscope, Displacement CN-1314/A** (vertical gyros)The vertical gyros sense helicopter pitch and roll attitudes with respect to a level attitude aced contain a built-in power failure detector feature. The unit is contained in a hermetically sealed case with a 26-pin electrical connector, a nameplate, and a time totalizing meter at one end of the unit. The top of the unit has an arrow with DIRECTION OF FLIGHT printing. Three tapped mounting holes beneath the case are used to .secure the vertical gyros to the tilt tables.

(2) Indicator, attitude 4005 W. The pilot's and copilot's attitude indicators display helicopter pitch and roll attitudes. Each is housed in a hermetically sealed case with the dial and trim knobs at the front and an electrical connector at the rear of each unit. The dial face consists of a fixed aircraft symbol and bank index, and a universally mounted sphere with a white horizon bar. The pitch and roll trim knobs adjust the reference of the sphere.

(3) Table, tilt. The tilt tables provide a mounting surface for the two vertical gyros. The tilt tables simulate normal flight pitch and roll attitudes during ground maintenance procedures. On each side of each tilt table there is a handle.

g. Performance Indicating System (fig. 1-6).

(1) Linear variable differential transformer (LVDT). The LVDT is an integral part of each rotary wing servo unit assembly. Only the LVDT within the right lateral unit assembly is used. The LVDT electrically senses helicopter vibratory loads. The electrical signal proportional to the helicopter vibrator load is fed to the cruise guide amplifier.

(2) Cruise guide amplifier. An electrical signal from the LVDT is supplied to the cruise guide amplifier. The signal is amplified, demodulated, and filtered. The output signal is fed to the performance indicator. The amplifier circuitry is housed in an alumal case containing four mounting brackets. A cover is secured to the top of the case with four screws. One end of the case contains an electrical connector and a nameplate.

(3) Performance indicator. The output signal of the cruise guide amplifier is fed to the performance indicator. The performance indicator on the instrument panel indicates the maximum safe steady state condition for all flight regimes, including maneuvers, that should not be exceeded from a controllability viewpoint as affected by blade stall. The indicator is housed in a sealed case with the dial and pointer at the front and an electrical connector at the rear of the case for connection to the cruise guide amplifier. The dial is calibrated in a range of zero to 100 in increments of 5, providing a direct indication of the degree of blade stall during flight. For range markings, refer to TM 55-1520217-20-2.

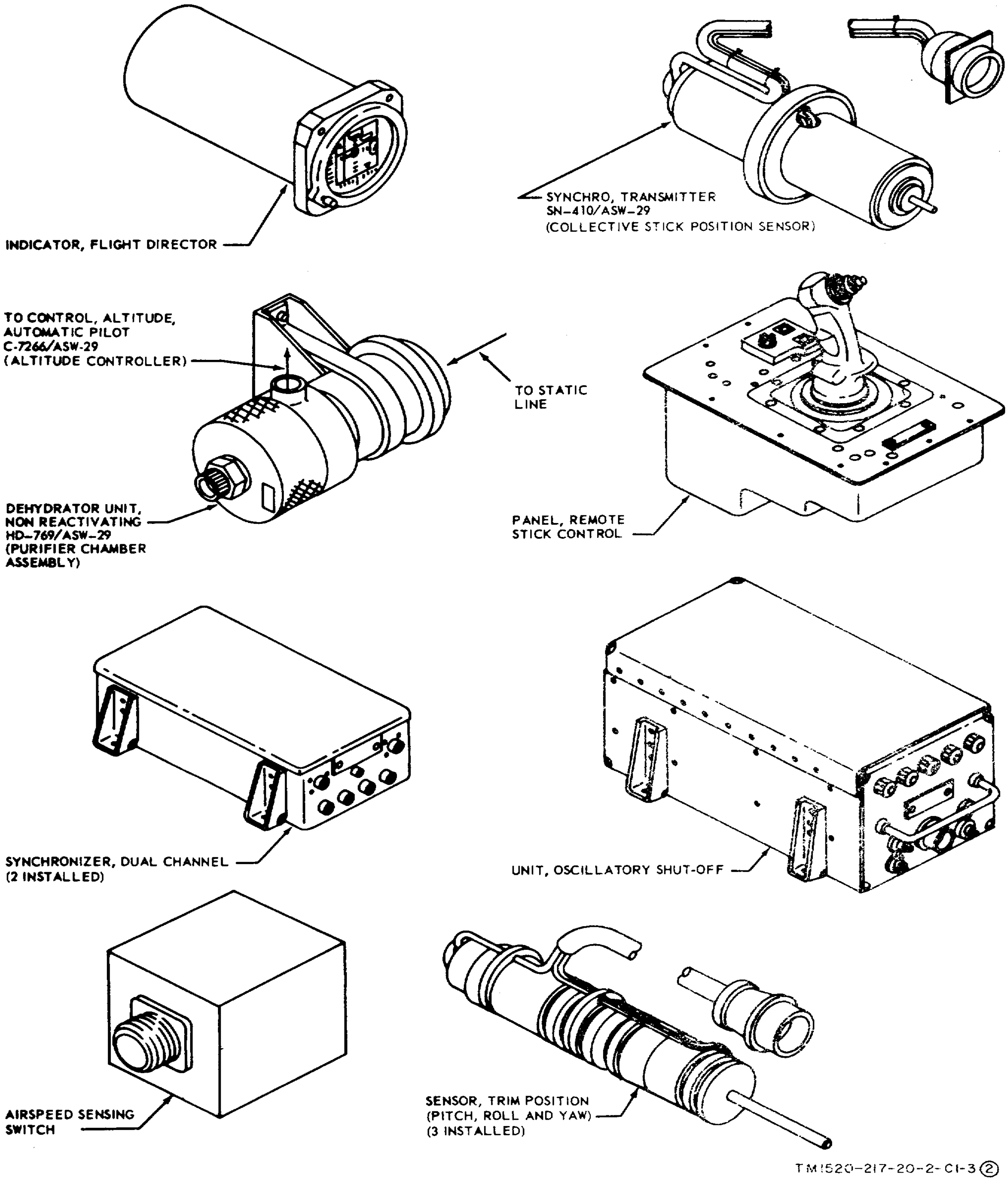


Figure 1-4(2). Components of automatic flight controls, system and stick trim system (part 2 of 2).

which is used during maintenance. Below each handle is a support which, when lowered, provides a 100 tilt. During normal operation, each tilt table is secured in position with four fasteners.

(4) GYRO NORM-ALT switches. The pilot and copilot GYRO NORM-ALT switches are mounted on the instrument panel. The pilot's GYRO NORM-ALT switch when positioned to GYRO NORM. provides signal paths from the pilot's vertical gyro to the pilot's attitude indicator. When positioned to ALT, a relay is energized providing signal paths from the copilot's vertical gyro to the pilot's attitude indicator. Also, when the switch is positioned to ALT, operating voltages from the copilot's system are transferred to the pilot's system. The copilot's GYRO NORM ALT switch when positioned to GYRO NORM provides signal paths from the copilot's vertical gyro to the copilot's attitude indicator. When positioned to ALT, a relay is energized providing signal paths from the pilot's vertical gyro to the copilot's attitude indicator. Also, when the switch is positioned to ALT, operating voltages from the pilot's system are transferred to the co-pilot's system.

(5) Relays K172 and K173. Relays K172 and K173 are located in the right-hand side of the attic area. Relay K172 is controlled by the pilot's GYRO NORM-ALT switch S161. Relay K173 is controlled by the copilot's GYRO NORMALT switch S162.

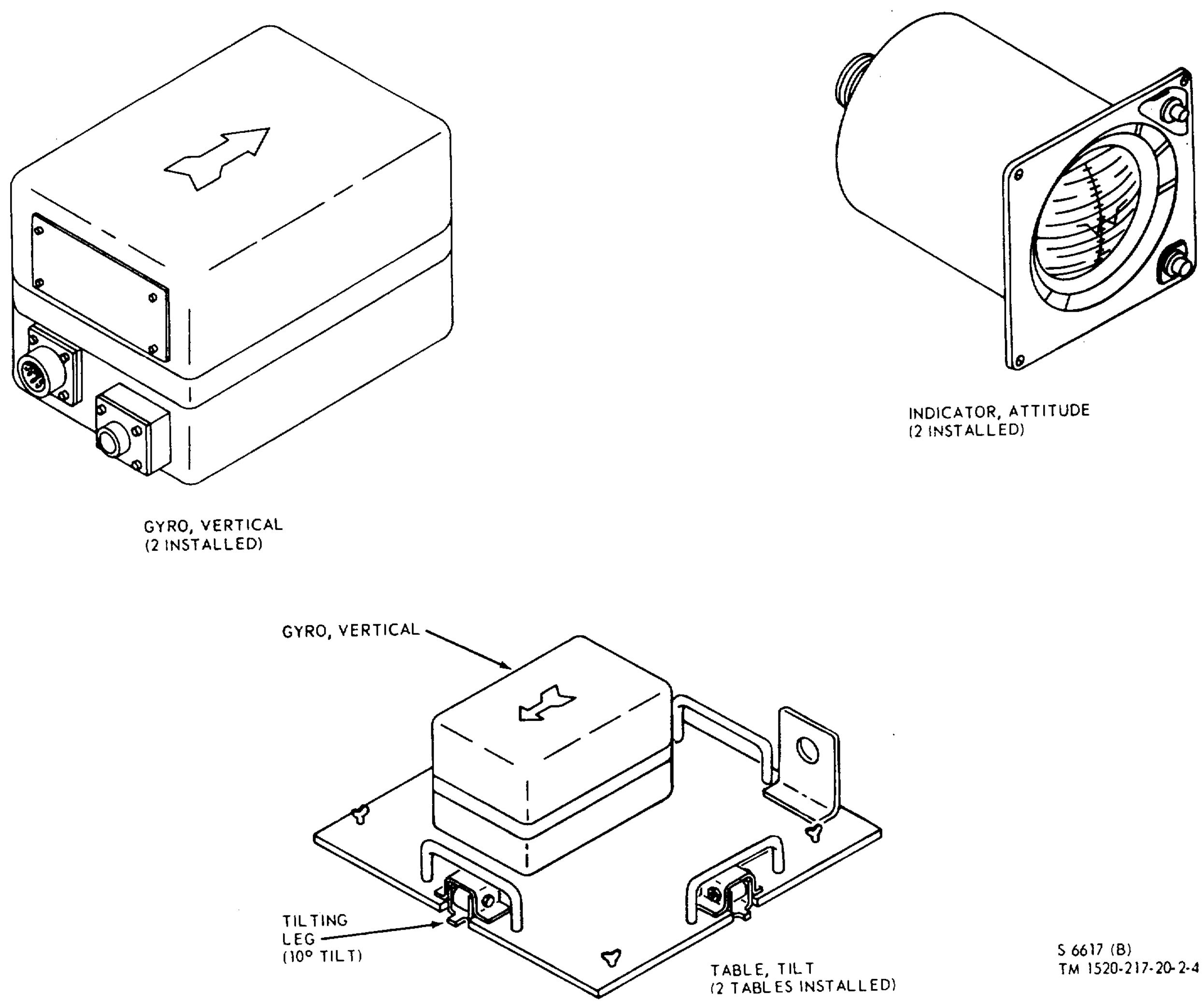


Figure 1-5. Components of attitude indicating system.

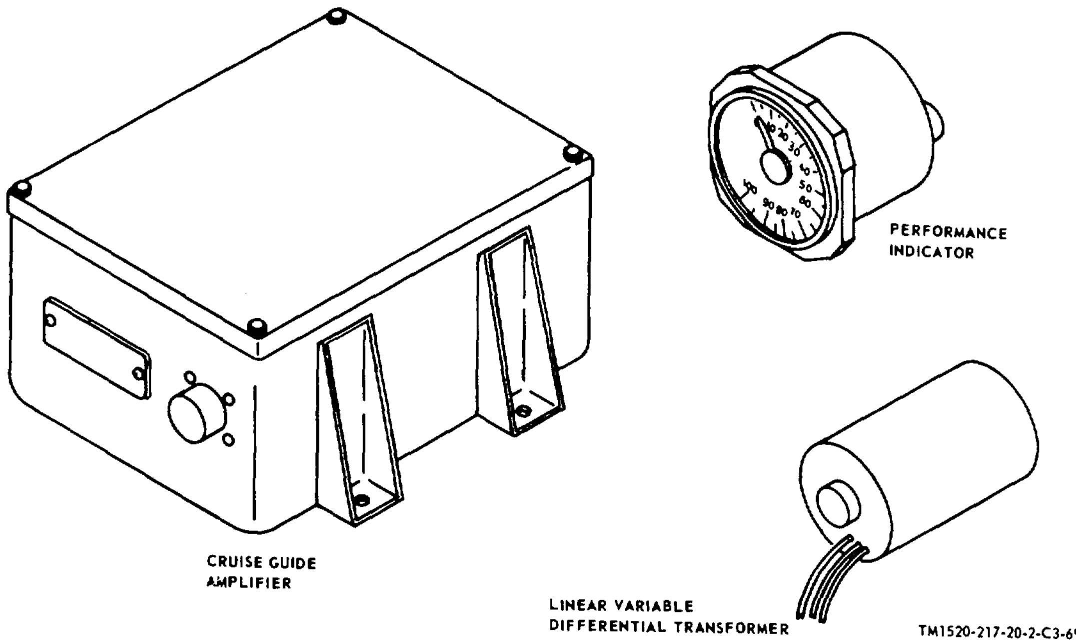


Figure 1-6. Components of performance indicating system

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 the applicable paragraphs covering the specific maintenance functions. These maintenance duties supplement the daily, intermediate, and periodic preventive maintenance checks and services contained in the organizational maintenance manual on the helicopter (TM 55-1520-217-20/2). The procedures covered in this manual will be performed concurrent with the helicopter periodic preventive maintenance checks and services. The results of the preventive maintenance checks and services will be recorded in accordance with TM 38-750.

a. Periodic preventive maintenance checks and services (para 2-7).
b. Cleaning and repainting (para 2-8).
c. Servicing (para 2-9).
d. Troubleshooting (para 2-10).
e. Repair (para 2-12).
f. Adjustment after replacement or repairs (para 2-23).

2-2. Tools, Test Equipment, and Materials Required

A list of parts authorized for organizational maintenance of the helicopter electronic equipment configuration appears in TM 55-1520-217-20P and TM 11-1520-217-20P-2. Major electronic equipment components when removed from the helicopter for higher maintenance level, are replaced by serviceable components from maintenance float stock or on a direct exchange (DX) basis from higher level Maintenance organizations (direct support maintenance) Tools, materials, and test equipment required for organizational maintenance are listed below. Part number in parenthesis indicate manufacturers part numbers.

a. *Tools.*
(1) Wire Retriever Tool MS 25119-1.
(2) Toolkit, Repair TK-101/G.
(3) Connector Maintenance Set, Electrical, Crimp Type (P/N 6470-90270-041).
(4) Applicator, caulking gun.
(5) Toolkit, Battery Service TK-90/G.
(6) Maintenance, Electronic Equipment MK 1004/ARC (TM 11-6625-1635-12).

b. *Test Equipment.*
(1) Multimeter AN/URM-105 (TM 11-6625-203-12).
(2) Test Set, Transponder Set AN/APM-123(V) (TM 11-6625-667-12).
(3) Tester, Pitot and Static Systems part No. REIC 340000 (TM 55-4920-231-14).
(4) Test Set, Electrical AN/UPM-93 (TM 11-6625-303-12).
(5) Analyzer Charger, Battery AN/ASM-137. (TB 11-6625-678-35/1).
(6) Test Set, Radio Frequency Power AN/URM-120 (TM 11-6625-446-15).
(7) Test Set, Flight Line, Flight Control Set AN/ASM-418 (TM 11-4920-293-12-1).
(8) Test Set, Performance Indicating System (6470-90320-041).

c. *Materials.*

WARNING:

The fumes of trichloroethane are toxic. Provide thorough ventilation whenever used. DO NOT use near an open flame. Trichloroethane is not flammable, but exposure of the fumes to an open flame converts the fumes to highly toxic, dangerous gases.

(1) Cleaning compound, trichloroethane, Fed. Spec. O-T-620, Type I.
(2) Cleaning cloth, FSN 8305-170-5062.
(3) Boric acid, crystals, commercial pure (solution 3 percent by weight -(required) FSN 6750-174-5454.
(4) Safety wire.

FSN	*Description*	*Diameter*	*Unit of Issue*
9505-221-2650	Safety Wire, Corrosion Resistant Steel	0.020 in	Spool

(5) Sealing compound (antenna installations). Materials required:

Base	*Class*	*Accelerator*	*Parts Base (ict)*	*Parts Acceler-ator (ict)*
EC1675A	B-2	EC1675B	100	10

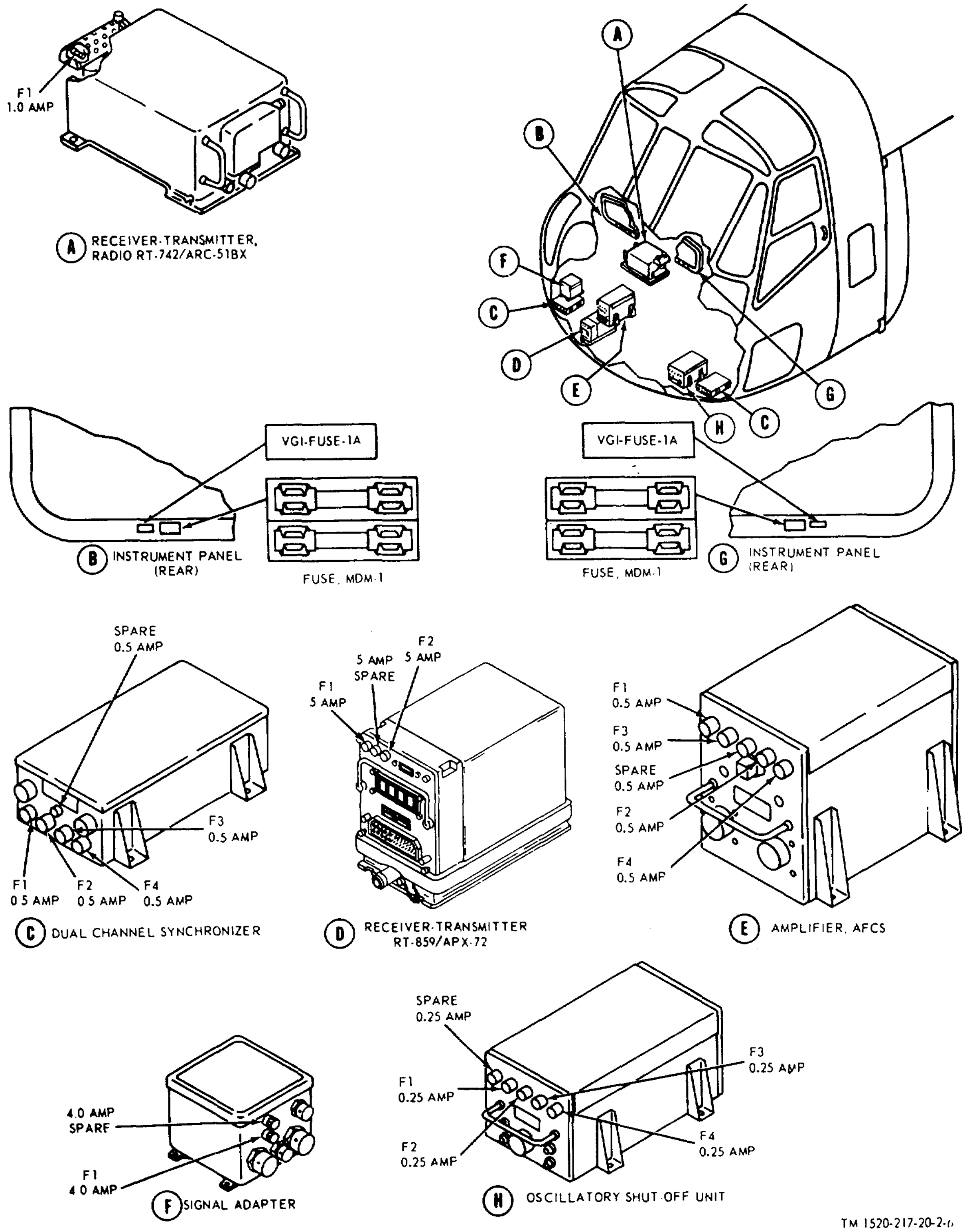


Figure 2-1. Location of fuses on major components.

NOTES:

1. EC items may be obtained from Minnesota 5'ining and Manufacturing Co., St. Paul, Minnesota.

2. Paragraph 2-9*a,* indicates method of preparation before application.

2.3. Fuse and Circuit Protective Device Locations

The charts below list the location and rating of all fuses and circuit breakers that provide circuit protection for the electronic equipment. Fuses within the electronic equipment configuration are accessible without removing the equipment from the aircraft except for the fuse within HD-615/ARC-51X. Be sure that fuses of the propel value ale inserted in the fuseholders of all components indicated. Press all circuit breakers that have tripped.

a. Fuse Locations.

Equipment	Rating	Location	Figure No.
Radio Set AN/ARC-51BX	28V., 1.0 amp	Within HD-615/ARC-51X	2-1
Transponder Set AN/APX-72	115., 3.0 amp	RT-859/APX-72	2-1
	Spare 5.0 amp		
	28v, 5.0 amp		
Automatic flight control system	Spare 0.25 amp	Oscillatory shutoff unit	2-1
	115v, 0.25 amp	Oscillatory shutoff unit	2-1
	15v, 0.25 amp	Oscillatory shutoff unit	2-1
	5v, 0.25 amp	Oscillatory shutoff unit	2-1
	15v, 0.25 amp	Oscillatory shutoff unit	2-1
	115v, 0.5 amp	AFCS amplifier	2-1
	28v, 0.5 amp	AFCS amplifier	2-1
	Spare, 0.5 amp	AFCS amplifier	2-1
	115v, 0.5 amp	AFCS amplifier	2-1
	28v, 0.5 amp	AFCS amplifier	2-1
	Spare, 0.5 amp	Dual channel synchronizer	2-1
	115v, 0.5 amp	Dual channel, synchronizer	2-1
	115, 0.5 amp	Dual channel, synchronizer	2-1
	28v, 0.5 amp	Dual channel, synchronizer	2-1
	28v, 0.5 amp	Dual channel synchronizer	2-1
Voice Warning System AN/ASH-19	125v, 4.0 amp	Signal adapter	2-1
	Spare 125v, 4.0 amp		
Attitude indicating system	28v, 1 amp	Behind instrument panel on right and left side	2-1
	Spare, 1 amp		
	28v, 1 amp		
	Spare, 1 amp		

b. Circuit Breaker Locations.

Equipment	Rating	Location	Marketing	Figure No
Radio Set AN/ARC-102	10 and 50 amp	Copilot DC RAD BUS circuit breaker panel	ARC-102	2-2
Radio Set AN/ARC-102	5 amp	Pilot RADIO ac circuit breaker panel	OC ARC-102	2-2
Radio Set AN/ARC-134	15 amp	Pilot DC RAD BUS circuit breaker panel	ARC-134	2-2
Radio Set AN/ARC-131	15 amp	Pilot DC RAD BUS circuit breaker panel	ARC-131	2-2
Radio Set AN/ARC-51BX	15 amp	Pilot DC RAD BUS circuit breaker panel.	ARC-51BX	2-2
Transponder Set AN/APX-72	10 am	Copilot DC RAD BUS circuit breaker panel.	APX-72	2-2
Radio Receiving Set AN/ARN-82	5 amp	Copilot DC RAD BUS circuit breaker panel.	ARN-82	2-2
Direction Finder Set AN/ARN-83	5 amp	Pilot DC RAD BUS circuit breaker panel.	ARN-83	2-2
Gyromagnetic Compass Set AN/ASN-43	5.5, and 5 amp	Pilot RADIO ac circuit breaker panel. 0C ASN-43 0B ASN-43	26V;C ASN-43	2-2
Intercommunication Set AN/AIC-12	5 and 5 amp	Pilot DC RAD BUS circuit breaker panel	AIC-12 PILOT and CREW	2-2
	5 and 5 amp	Copilot DC RAD BUS circuit breaker panel.	AIC-12 COPILOT and AFT PILOT.	2-2
	5 amp	Pod CIRCUIT BREAKER and MASTER SWITCH Panel	ICS	2-4

Equipment	Rating	Location	Marking	Figure No
Automatic flight control system	5 amp	No. 2 AC PRI BUS circuit breaker panel.	AFCS	2-2
	5 amp	No. 1 AC PRI BUS circuit breaker	AFCS	2-2
	5 amp	DC PRI BUS circuit breaker panel.	No. 1 AFCS	2-2
	5 amp	DC PRI BUS circuit breaker panel.	No 2 AFCS	2-2
	5 amp	DC PRI BUS circuit breaker panel.	AFCS SERVO	2-2
	5 amp	DC PRI BUS circuit breaker panel.	AFCS SERVO SHUTOFF.	2-2
Stick trim system	5, 5, and 5 amp.	No. 1 AC PRI BUS circuit breaker panel.	BEEPER TRIM	2-2
		No 2 AC PRI BUS circuit breaker panel.	BEEPER TRIM	2-2
		DC PRI BUS circuit breaker panel.	BEEPER TRIM	2-2
Attitude indicating system	5 amp	No. 2 AC PRI BUS circuit breaker panel.	VGI PILOT	2-2
	5 amp	DC PRI BUS circuit breaker panel.	VGI PILOT	2-2
	5 amp	No. 1 AC PRI BUS circuit breaker panel.	VGI COPILOT	2-2
	5 amp	DC PRI BUS circuit breaker panel	VGI COPILOT	2-2
Motor-Generator PU-543/A	5 amp	Left side in attic compartment	INV OUT	2-21
Voice Warning System AN/ASH-19.......	5 amp	DC PRI BUS circuit breaker panel	AN/ASH-19 CONT	2-2
	5 amp	DC PRI BUS circuit breaker panel	AN/ASH-19	2-2
Performance indicating system	5, 5, 5, and 5 amp	No. 1 AC PRI BUS circuit breaker panel.	PERF IND AMPL	2-2
		PERF IND XMFR	2-2	
			AUTO XMFR NO. 1	2-2
		DC PRI BUS circuit breaker panel	PERF IND	2-2

2-4. Auxiliary Power Unit Connection (fig. 2-5).

a. Dc Power. To prevent excessive drain on the helicopter battery, connect the 27.5 ± 0.5 volts output at approximately 300 amperes (for full load) of the auxiliary power unit (electrical), before operating the electronic equipment for performance of the operational checks or troubleshooting the helicopter electronic equipment configuration. Coordinate connection of the auxiliary power unit with the helicopter clew chief or helicopter repair personnel. To connect the auxiliary power unit, proceed as follows:

(1) Set MASTER SWITCH control panel BAT switch to OFF.

(2) Connect auxiliary power unit plug to helicopter 28 VO TS D. C. receptacle (fig. 2-5), located on right side of the helicopter neat pilot's window.

(3) Set MASTER SWITCH control panel EXT POWER switch to ON.

NOTE:

When auxiliary power unit plug is inserted into receptacle with the EXT POWER switch set to ON, external power relay is energized, and electrical power is supplied direct to primary dc bus for distribution.

b. Ac Power. Ac power is required for operation of various systems and facilities of helicopter equipment configuration. To obtain ac power, connect 115 ± 3 volts, 400 ± 20 cps, three-phase, A-B-C phase rotation, wye (four-wire) output of the auxiliary power unit (electrical) to the helicopter as follows:

(1) Set MASTER SWITCH control panel BAT switch to ON.

(2) Connect auxiliary power unit plug to helicopter 115 VOLTS A. C. receptacle (fig. 2-5), located on right side of helicopter near pilot's window.

(3) Set MASTER SWITCH control panel EXT POWER switch to ON.

(4) Set external power monitor panel EXT PWR switch momentarily to RESET, located beneath shelf in right-hand electronics compartment.

NOTE:

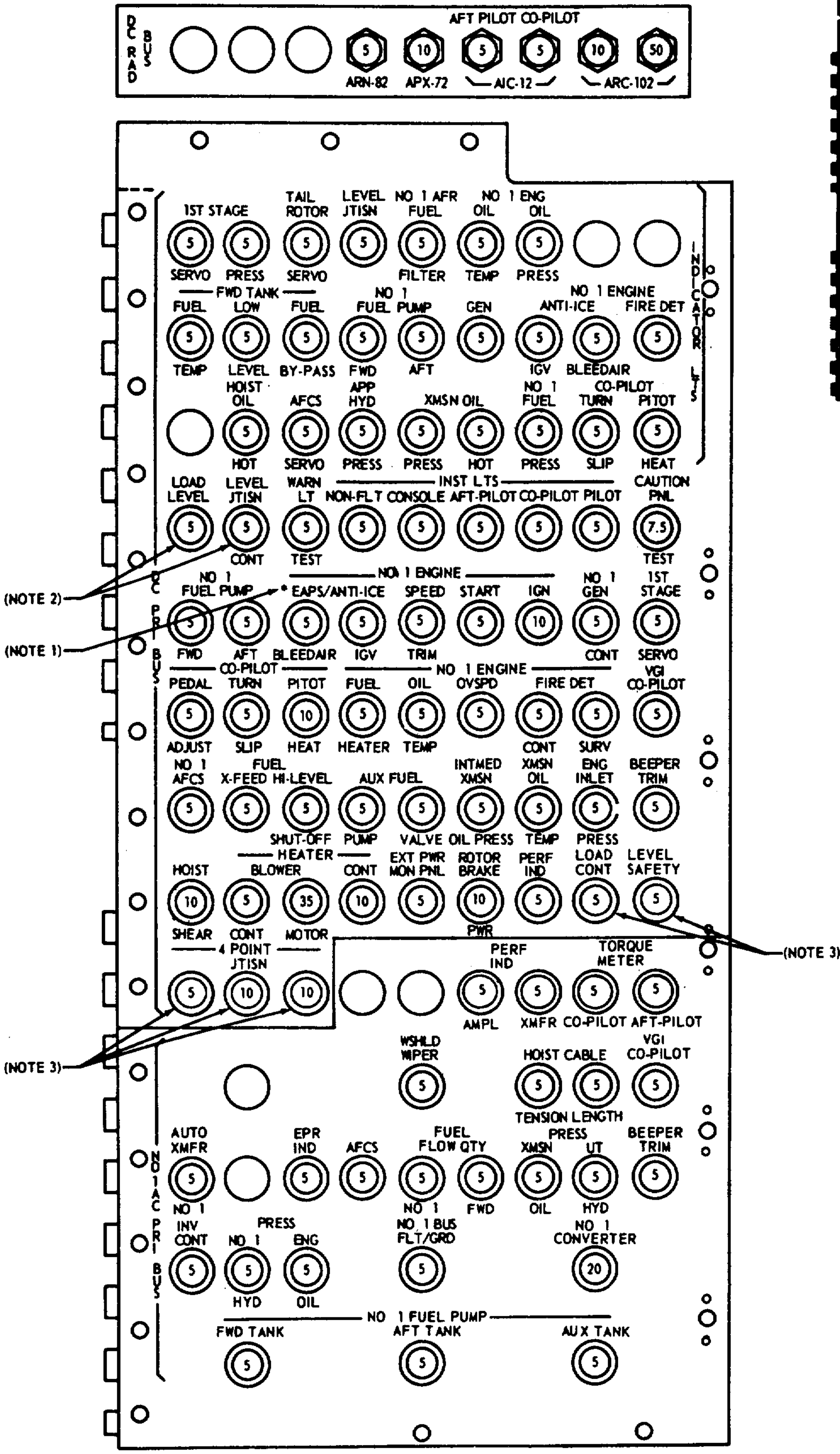
When EXT PWR switch has been momentarily set to RESET and external ac power fails to energize helicopter ac system, auxiliary power unit frequency and/or phase rotation output is incorrect.

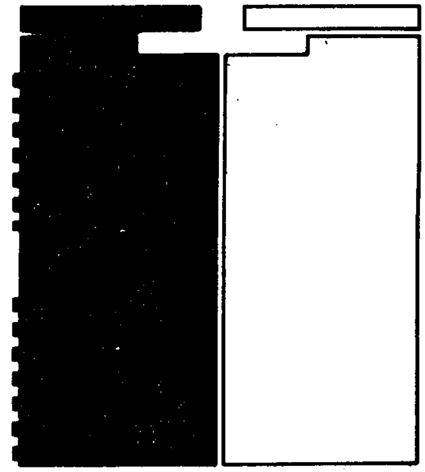
c. Hydraulic Power. Hydraulic is required for operation of afcs hydraulic components. The external hydraulic connections are made to the helicopter first stage hydraulic system at the first stage manifold on the hydraulic panel aft of the main gearbox.

(1) Connect test stand lines to first stage quick-disconnects on hydraulic panel.

(2) Establish pressure of 3000 psi and flow rate of six gpm by maintaining first stage reservoir level at approximately FULL mark. First stage pressure is then reduced to 1500 psi for AFCS operation.

d. Pod Ac and Dc Power-Pod Attached To Helicopter. Ac and Dc electrical power is supplied to the pod from the helicopter during ground operations. The helicopter is connected to the auxiliary power unit (*a* and b above) which supplies power to two POD PWR AC and



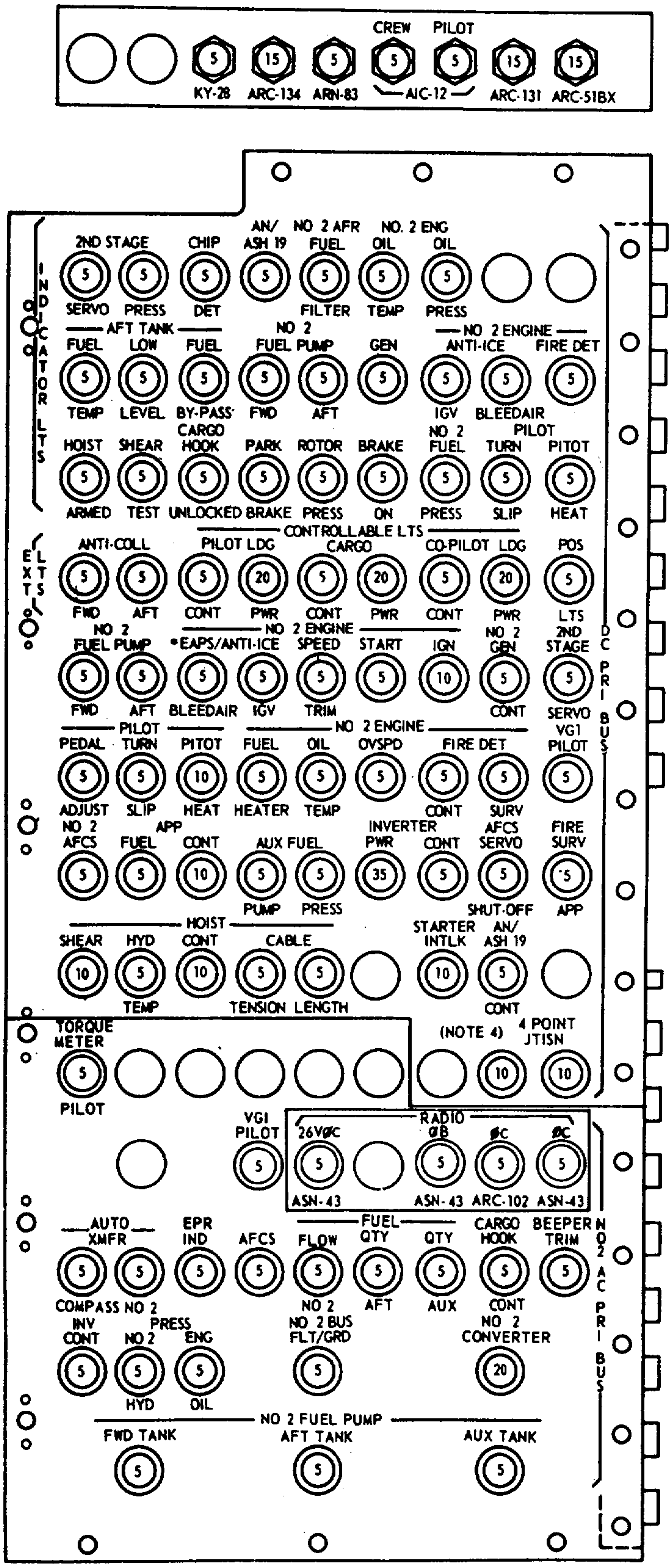


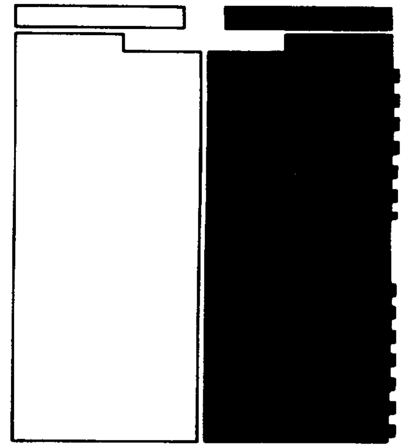
NOTES:

1. * WHEN ENGINE AIR PARTICLE SEPARATOR (EAPS) IS INSTALLED, AN IDENTIFICATION PLATE CHANGES NOMENCLATURE FROM EAPS/ANTI-ICE TO EAPS BLOWER.
2. ON HELICOPTER SERIAL NO. 70-18485 AND SUBSEQUENT, LOAD LEVEL AND LEVEL JTISN CIRCUIT BREAKERS ARE REPLACED BY LOAD LEVEL RELEASE PWR (10 AMP) AND CONT (5 AMP) CIRCUIT BREAKERS.
3. ON HELICOPTER SERIAL NO. 70-18485 AND SUBSEQUENT ONLY.
4. 4 POINT JTISN CIRCUIT BREAKERS ARE ADDED ON HELICOPTER SERIAL NO. 70-18485 AND SUBSEQUENT.

TM 1520-217-20-2-C2-7 ①

Figure 2-2. (1). Location of circuit breakers on overhead circuit breaker panels (part 1 of 2).





TM 1520-217-20-2-C2-7 ②

Figure 2-2 (2). Location of circuit breakers on overhead circuit breaker panels (part 2 of 2).

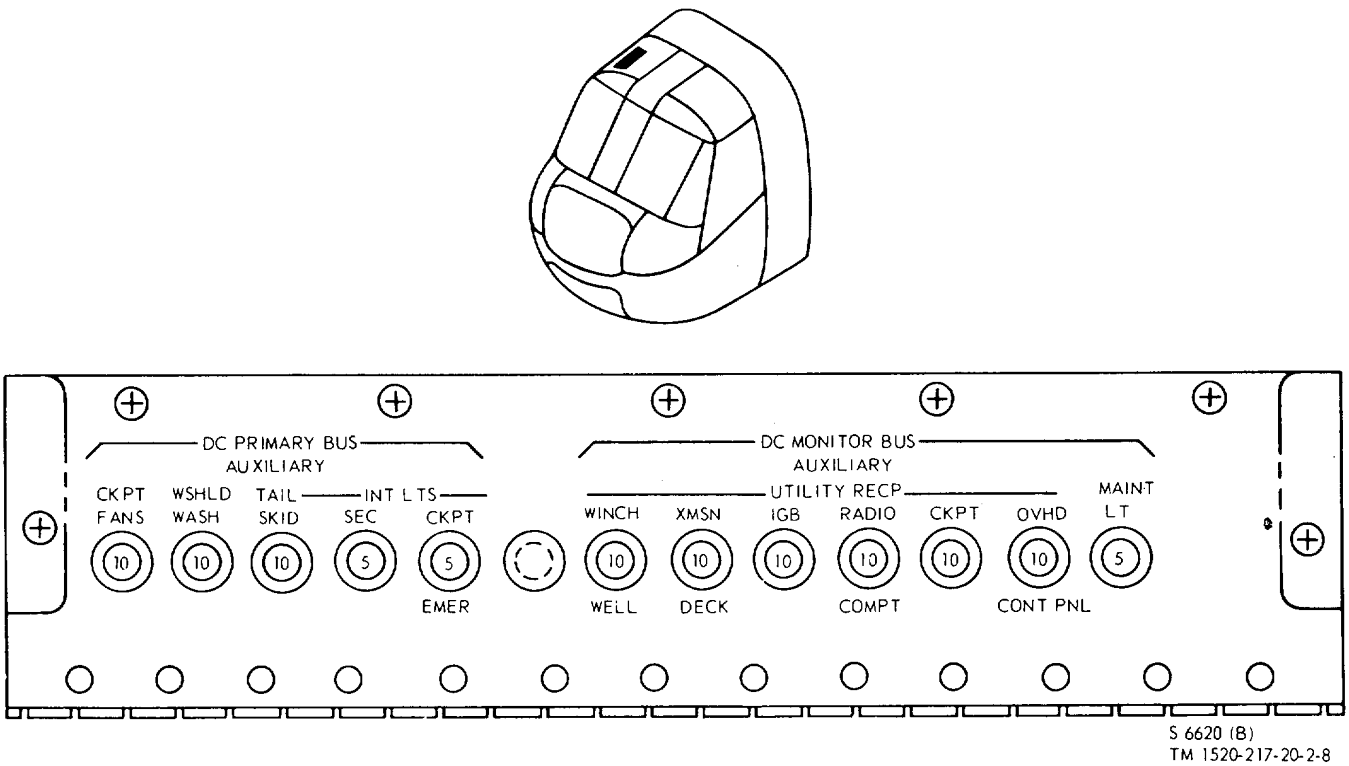


Figure 2-3. Location of circuit breakers on DC auxiliary circuit breaker panel.

DC receptacles on the left side of the helicopter above the storage compartment access door. To obtain power to the pod, proceed as follows:

(1) Remove both pod harness plugs from their stowed position on dummy receptacles on the left hand forward section of the pod, and connect to helicopter POD PWR AC and POD PWR DC receptacles.

(2) Set helicopter MASTER SWITCH panel POD PWR switch to ON.

(3) Engage circuit breakers on helicopter POD PWR circuit breaker panel.

(4) Set pod CIRCUIT BREAKER and MASTER SWITCH panel EMER POWER CUTOUT switch to ON.

(5) Engage pod CIRCUIT BREAKER and MASTER SWITCH panel circuit breakers.

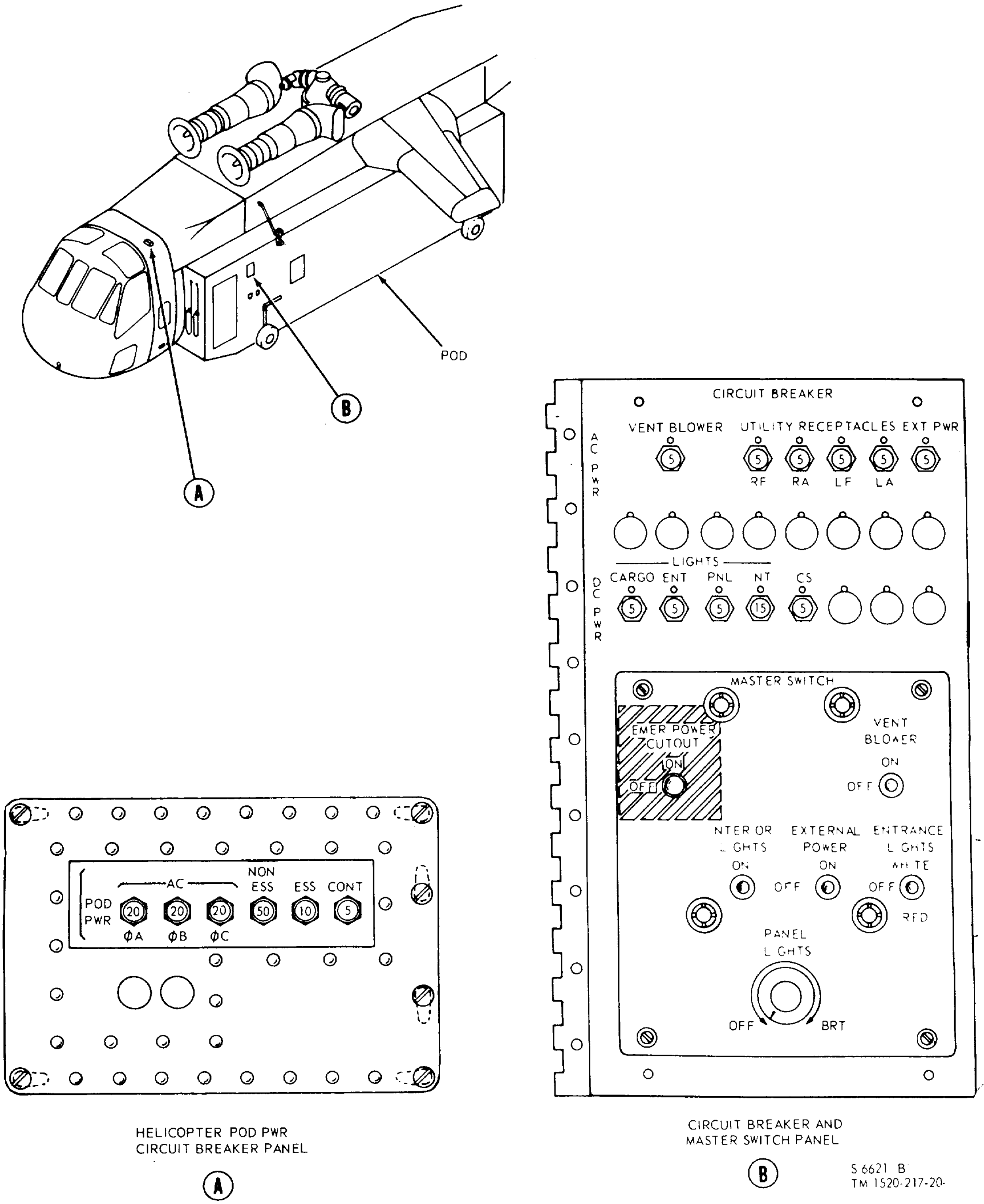


Figure 2-4. Location of circuit breakers on pod circuit breaker panels.

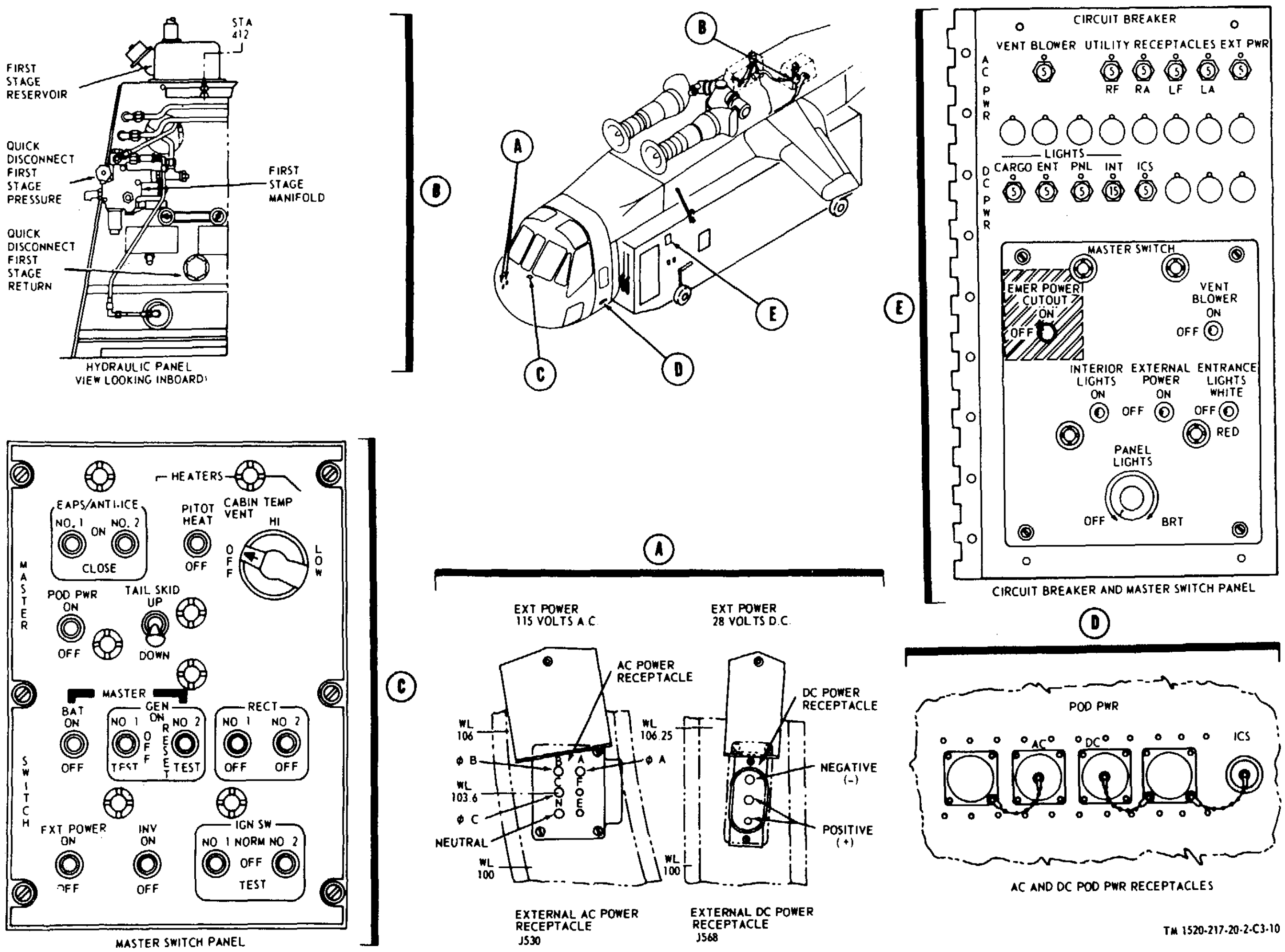


Figure 2-5. External power receptacles

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 mainte-nance is the responsibility of all maintenance levels concerned with the configuration, 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 CH-54B helicopter at the organizational level are made at daily, intermediate, and periodic intervals 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 an, d Services. The maintenance checks and services procedures provided by TM 55-1520-217-20/2 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 what the normal conditions are; the *References* column lists the paragraph and publications that contain additional information. If a defect cannot be remedied by the organizational repairman, higher level maintenance or repair is required.

b. Records and Reports. Records and reports of these checks and services and maintenance forms and records to be used and maintained for the electronic equipment configuration are specified in TM 38-750. Paragraph 1-3 contains additional information concerning the submission of specific forms.

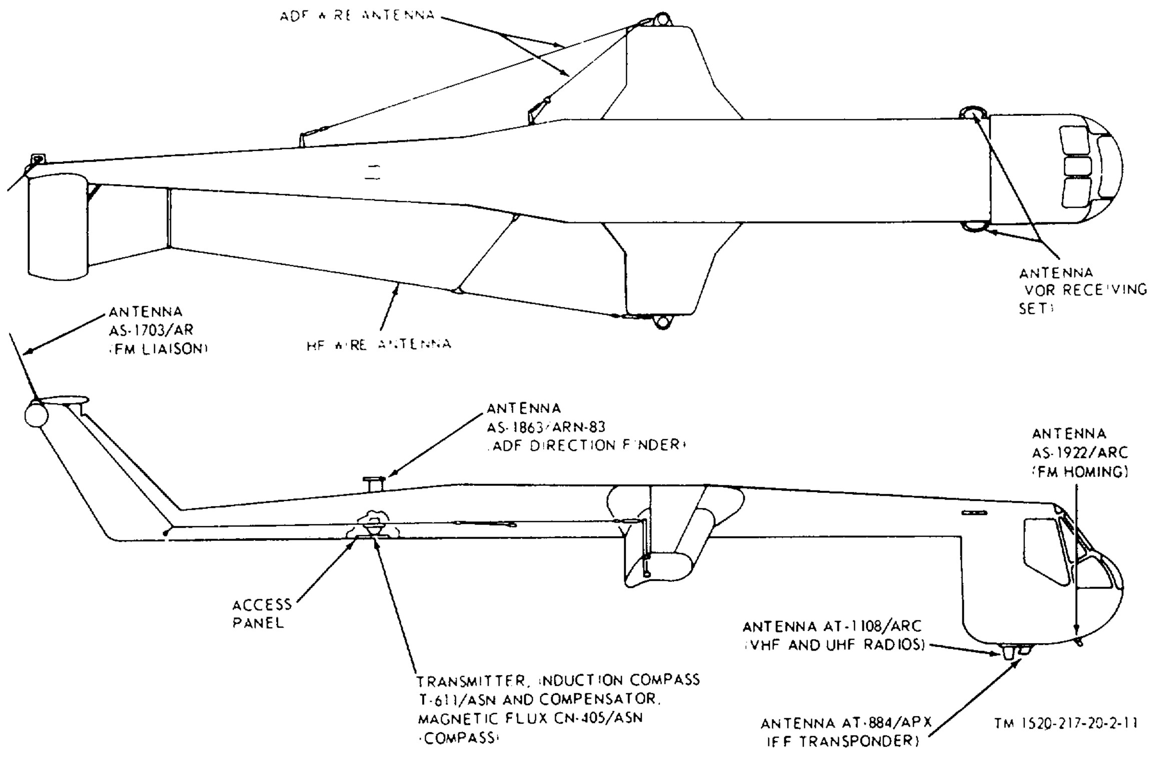


Figure 2-6. Outline drawing of helicopter, showing location of antennas and flux valve.

2-6. Preventive Maintenance Checks and Services Intervals

a. General. Preventive maintenance checks and services are performed on the helicopter on a daily, intermediate, and periodic basis. The helicopter daily preventive maintenance checks and services are performed each calendar day or after approximately 8 hours of flying time. The helicopter intermediate preventive maintenance checks and services are performed after approximately 25 hours of flying time. The helicopter periodic preventive maintenance checks and services 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 helicopter. Daily preventive maintenance checks and services are not performed on the electronic equipment configuration. The daily checks are accomplished when the pilot or operator performs the preflight checks. The preflight checks are in TM 551520-217-10/2. 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 helicopter. This action establishes an interval of approximately 50 flying hours between the electronic equipment configuration intermediate preventive maintenance checks and services. The intermediate preventive maintenance checks and services for the electronic equipment are included in TM 551520-217-20PMI. 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 an 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 higher maintenance level using the form specified in TM 38-750. Perform all of the checks and services in the applicable preventive maintenance checks and services chart (para 2-7). Whenever a normal condition or result is not 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 equipment 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 organization.

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

d. Pullout Interval Chart.

Component	Pullout interval (flying hours)	Procedure (reference)
Radio Set AN/ARC-102.		
Receiver-Transmitter, Radio RT-698/ARC-102	300	Para 2-13*f*(1) and (2).
Power-Inverter, Mounting PP-3702/ARC-102	300	Para 2-13*f*(3) and (4).
Control, Radio Set C-3940/ARC-94	300	
Antenna Coupler CU-1658/A	300	
Mounting MT-3772A/A		
Hf Wire Antenna		
Radio Set AN/ARC-134:		
Receiver-Transmitter RT-857/ARC-134	300	Para 2-*13b*(1) and (2).
Control, Radio Set C-7197/ARC-134	300	
Mounting, MT-3791/ARC-134		

Component	Pullout Interval (flying hours)	Procedure (reference)
Radio Set AN, ARC-131:		
Receiver-Transmitter, Radio RT-323/ARC-131	300	
Mounting MT-3664/ARC-131		
Kit, Connector FSN 5935-089-8062		
Control, Radio Set C-7088/ARC-131		
Coupler, Antenna CU-942A/ARC-54 or CU 942B/ARC-54	300	Para 2-16*e* and *f*
Antenna AS-1703/AR		
Antenna AS-1922/ARC		
Filter, RF Line		
Voice Security System T SEC/KY-28:		
Voice Security System T SEC/KY-28		
Mounting MT-3902/ARC		
Control Indicator Assembly C-8157/ARC		
Discriminator, Discrete Signal MD-736/A		
Radio Set AN/ARC-51BX:		
Receiver-Transmitter, Radio RT-742/ARC-51BX	300	Para 2-13*d* (1) and (2).
Mounting MT-2653/ARC	300	
Control, Radio Set C-6287/ARC-51BX		
Cooler, Air, Electronic Equipment HD-615/ARC-51BX	300	(Note 1)
Indicator, VSWR ID-1003/ARC		
Antenna AT-1108/ARC		
Filter, RF Line		
Transponder Set AN/APX-72:		
Receiver-Transmitter RT-859 ( )/APX-72	300	Para 2-13*g*(1) and (2).
Mounting MT-3948/APX		
Transponder Set Control C-6280(P)/APX	300	
Radio Receiving Set AN/ARN-82:		
Receiver, Radio R-1388/ARN-82	300	Para 2-13*e*(1) and (2).
Mounting MT-3600/ARN-82	300	
Control, Radio Set C-6873/ARN-82	300	
Indicator, Course ID-1347/ARN-82		Para 2-15.
Antenna		
Direction Finder Set AN/ARN-83:		
Receiver, Radio R-1391/ARN-83	300	Para 2-13*k* (1) and (2).
Mounting MT-3605/ARN-83		
Control, Directional Finder C-6899/ARN-83	300	Para 2-14.
Antenna AS-1863/ARN-83		
Compensator, RF Inductance		
Adf Wire Antenna		
Adf Disable Relay		
Gyromagnetic Compass Set AN/ASN-43:		
Gyro, Directional CN-998/ASN-43	600	Para 2-13*j*(1) and (2).
Amplifier, Electronic Control AM-3209/ASN-43	300	Para 2-13*j*(3) and (4).
Transmitter, Induction Compass T-611/ASN		Para 2-13*j*(4) and (5).
Compensator, Magnetic Flux CN-405/ASN		Para 2-13*j*(4) and (5).
Indicator, Radio Magnetic ID-250(*)/ARN		Para 2-15.
Indicator, Radio Magnetic ID-998/ASN		Para 2-15.
Switch, Compass Slaving		
Intercommunication AN/AIC-12:		
Control, Intercommunication Set C-1611(*)/AIC	600	Para 2-14.
Junction Box		
RADIO KEY Foot Switch		
Jack U-92A/U		
Jack U-94A/U		
Cyclic Stock RADIO-ICS Switch		
Remote Stick RADIO-ICS Switch		
Pod Receptacle U-79A/U		
ICS Cable Assembly (POD)		
Cable Assembly (POD)		

Component	Pullout Interval (flying hours)	Procedure (reference)
ICS Cable Assembly (POD)		
Cable Assembly (POD)		
Cord		
Relay, Pod Keying		
Automatic Flight Control System and Stick Trim System:		
Control Panel, AFCS		
Control Panel, Remote Stick		
Amplifier, AFCS		
Unit, Oscillatory Shutoff		
Dehydrator Unit, Nonreactivating HD-769/ASW-29(Note 2) (Purifier Chamber Assembly and Indicator, Cartridge and Dewpoint.)		
Amplifier, Stick Trim		
Accelerometers, Lateral No. 1 and No. 2		
Synchronizers, Dual Channel No. 1 and No. 2		
Gyros, Rate, No. 1 and No. 2 (2 roll, 2 yaw)		
Indicator, Flight Director Control, Altitude, Automatic		
Pilot C-7226/ASW-29		
Controller, Altitude Synchro, Transmitter SN-410/ASW-29)	600	Para 2-18a and b.
Sensor, Collective Stick Position		
Sensors, Pitch and Roll Trim Position		
Attitude Indicating System:		
Gyroscope, Displacement CN-1314/A (Gyro, Vertical)		
Indicator, Attitude 4005W	200	Para 2-15.
Table, Tilt		Para 2-19*a*.
Relay		Para 2-19*c*.
Switch		
Performance Indicating System:		
Linear Variable differential transformer		Para 2-19.1.
Cruise Guide Amplifier		Para 2-19.1.
Performance Indicator		Para 2-15.
Power:		
Battery, Storage BB434/U.	(Note 4)	Para 2-20.
Motor-Generator PU-543/A	(Note 5)	Para 2-20.
Voice Warning System AN/ASH-19:		
Reproducer-Converter, Voice Signal RP-139( )/ASH-19		Para 2-13*i*(1) and (2)
Mounting Base MT-3290( )/ASH-19		
Control Panel, Voice Warning System		
Recorder, Continuous Inflight Performance (CIPR)	400	Para 2-13*i*(5) and (6)
AN/ASH-23		
Signal Adapter	400	Para 2-13*i*(9) and (10)
Switch, CIPR ICS		
Relay		
JAN-IN 540 Diode		

NOTES

1. Remove and clean filter at approximately 2-week intervals, depending on operating environment.

2. Inspect daily and replace as necessary.

3. Dash line (---) in *Pullout interval* column indicates that the component is removed only when it is malfunctioning.

4. Refer to TM 11-6140-203-15-2 for pullout interval of Battery, Storage B B-434/U.

5. Every 200 flight hours, clean and inspect the exterior, inspect brushes for wear, and check output voltage and frequency. To indicate maximum permissible wear, the brushes have 1/32 inch wide wear mark (groove). In the preferred brushes, the wear mark is a diagonal groove in the bottom width of the brush, while in some it is a parallel groove in the top edge of the brush. Under normal conditions, wear down to the end of the wear mark (approximately half the original brush length) will yield a minimum of 500 operations hours service at full load. After 900 flying hours, the inverter will be removed from the aircraft and sent to the depot for overhaul. In addition, inverters that are used for 600 or more flying hours in extensive preflight operation, or that are operationally unsatisfactory, will be sent to the depot for overhaul.

CAUTION

To avoid improper installation, inspect and reinsert the brushes one at a time. If brushes are

worn down to the wear mark, remove the inverter and send to the next higher level of maintenance for installation of new brushes.

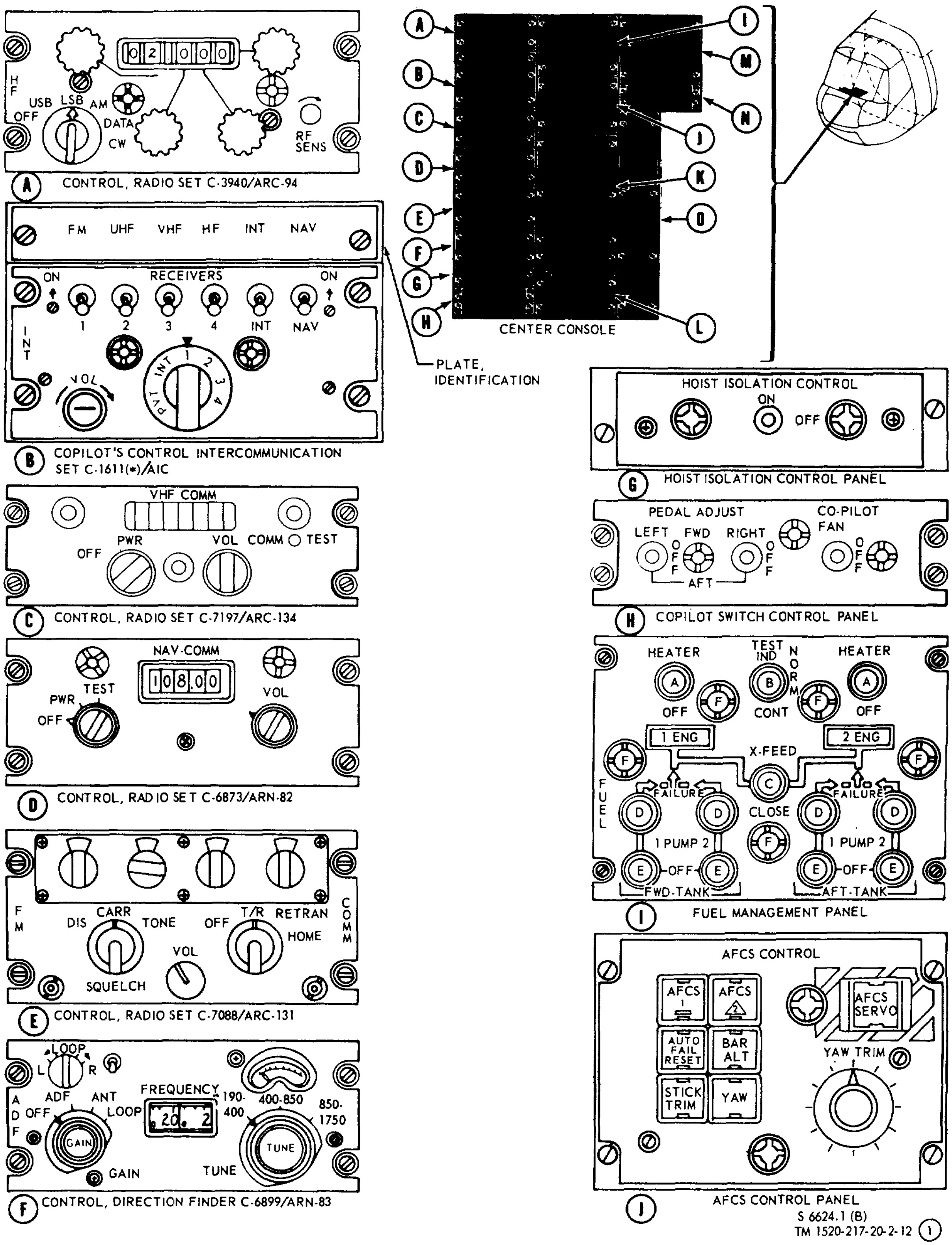


Figure 2-7 (1). Location of controls used for equipment operational check (On helicopters prior to Serial No. 70-18485) (part 1 of 6).

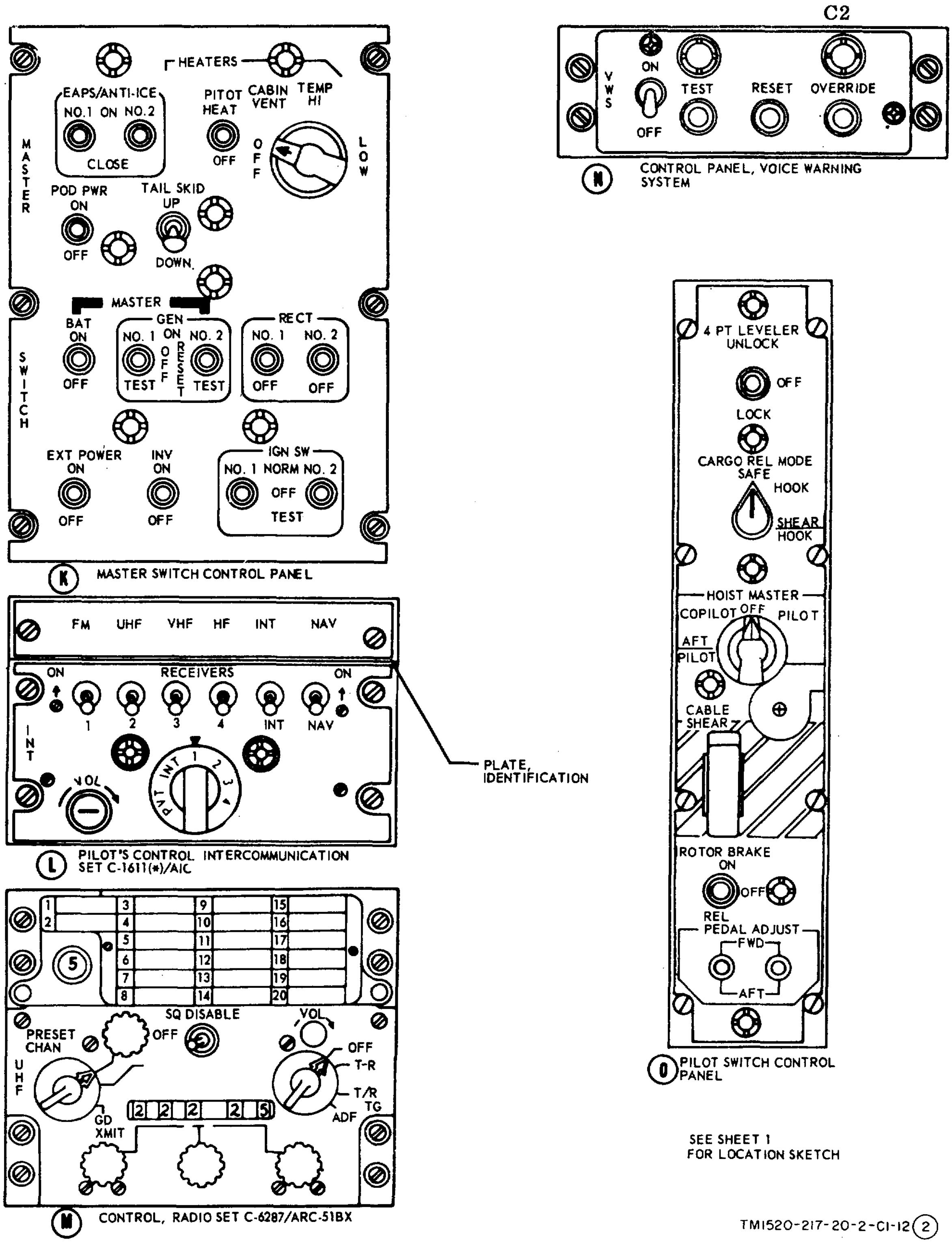


Figure 2-7(2). Location of controls used for equipment operational check (On helicopters prior to Serial No. 70-18485.) (part 2 of 6).

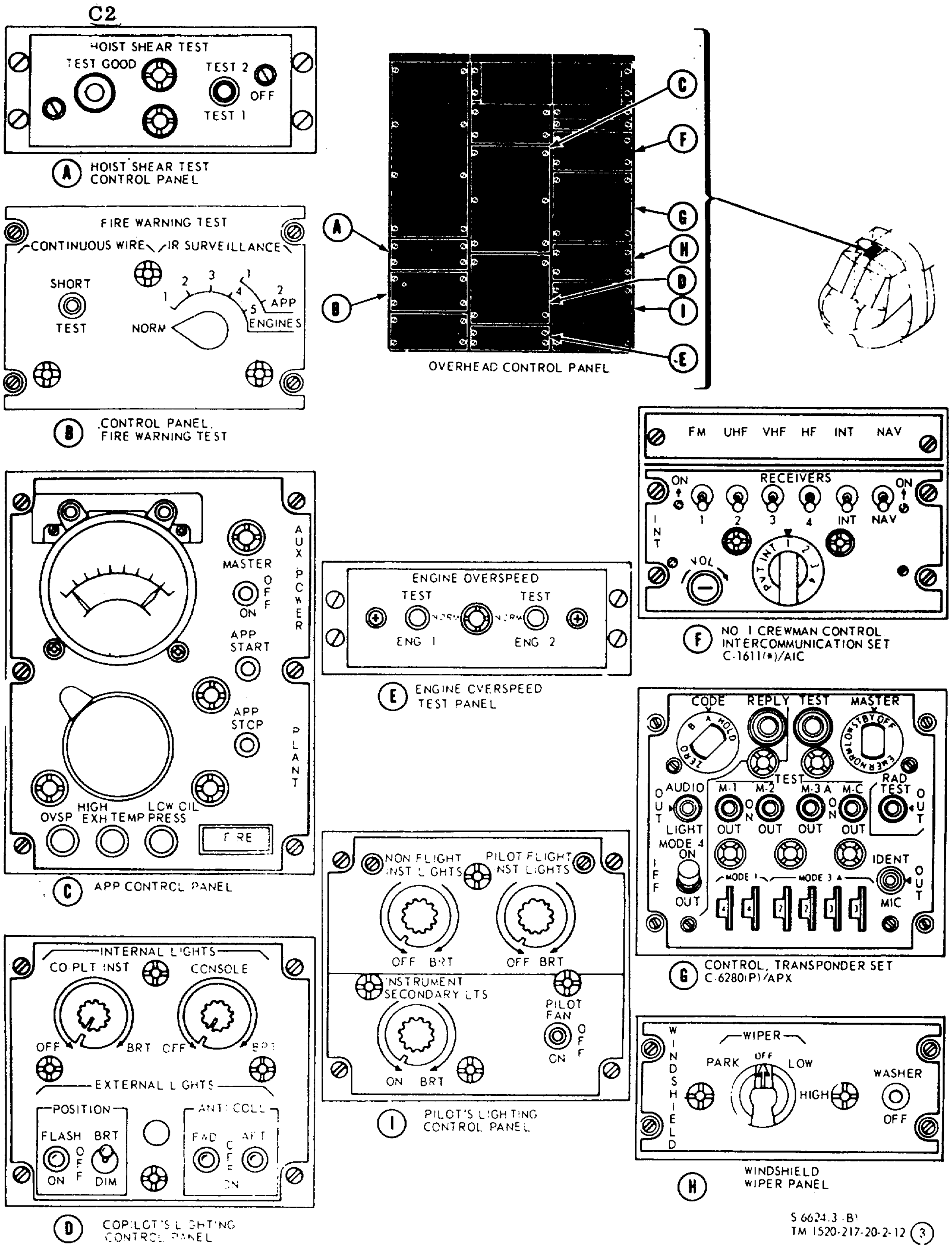


Figure 2-7(3). Location of controls used for equipment operational check (On helicopters prior to Serial No. 70-18485.) (part 3 of 6).

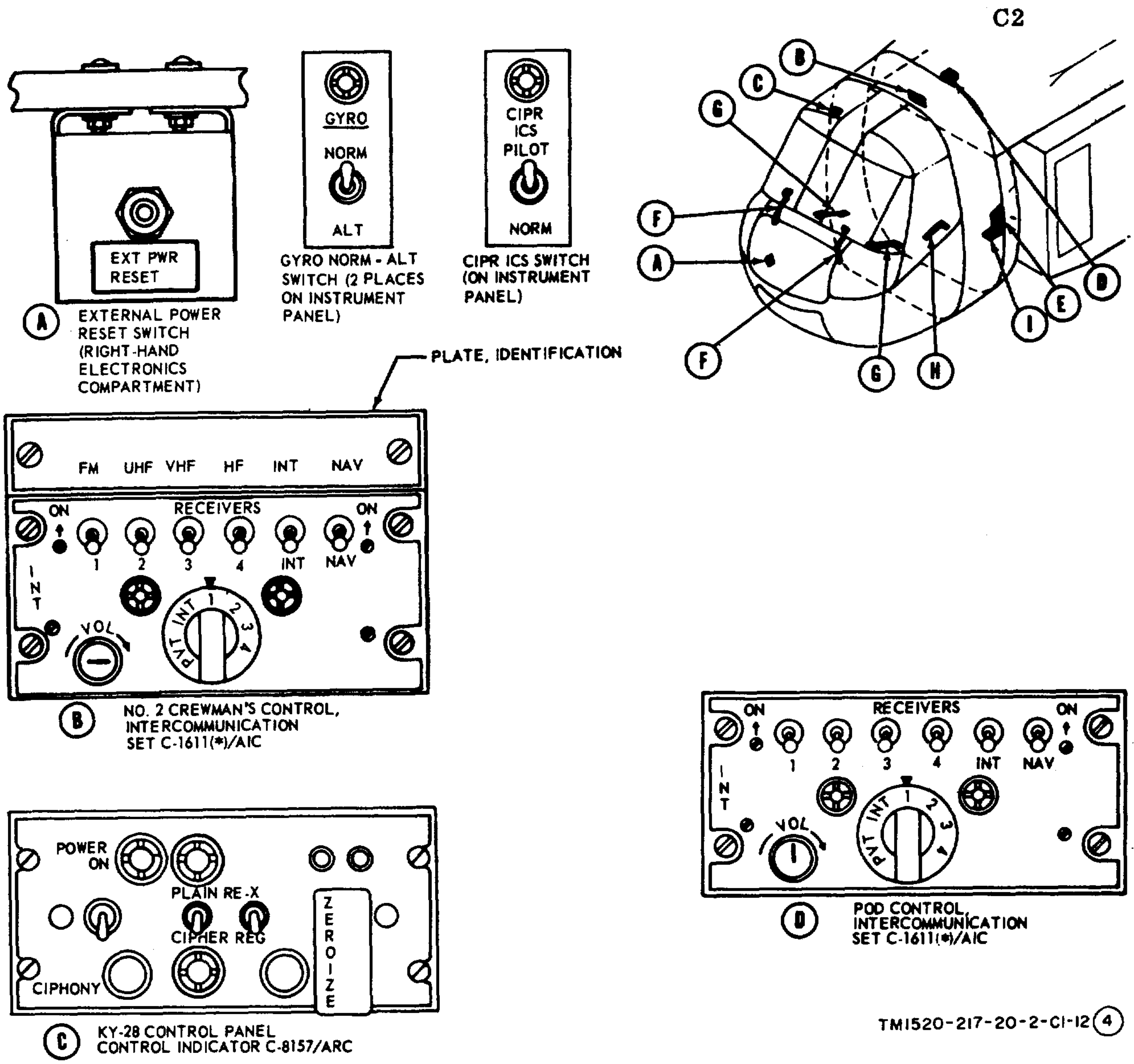


Figure 2-7 (4). Location of controls used for equipment operational check (On helicopters prior to Serial No. 70-18485.) (part 4 of 6).

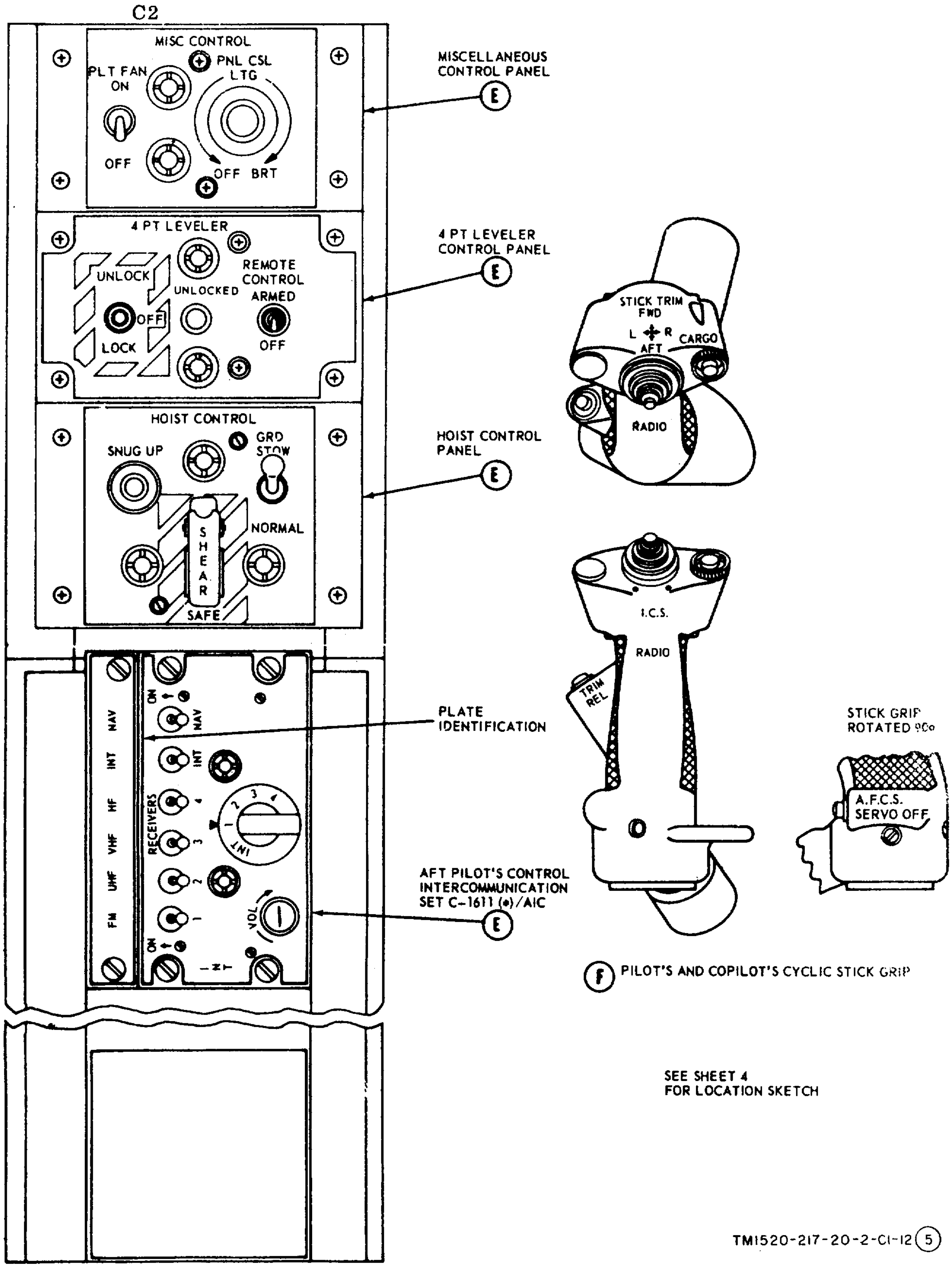
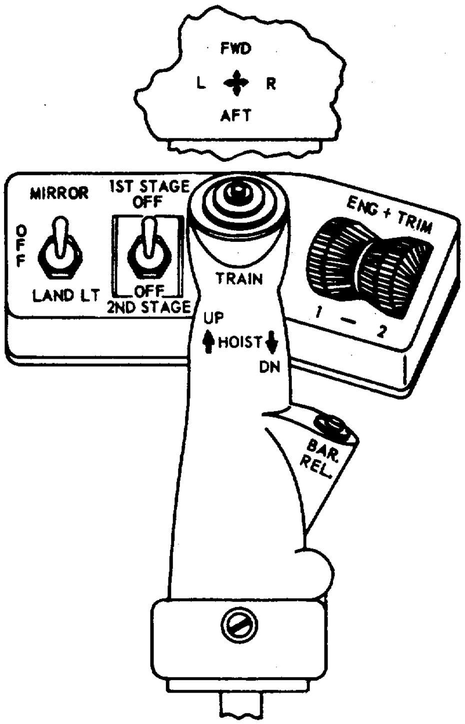
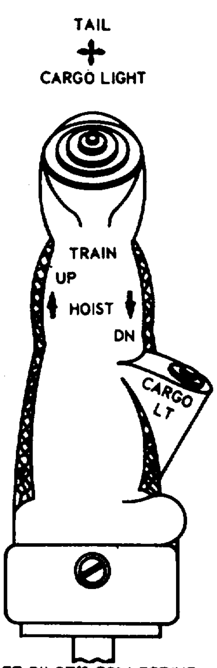


Figure 2-7(5). Location of controls used for equipment operational check (On helicopters prior to Serial No. 70-18485.) (part 5 of 6).

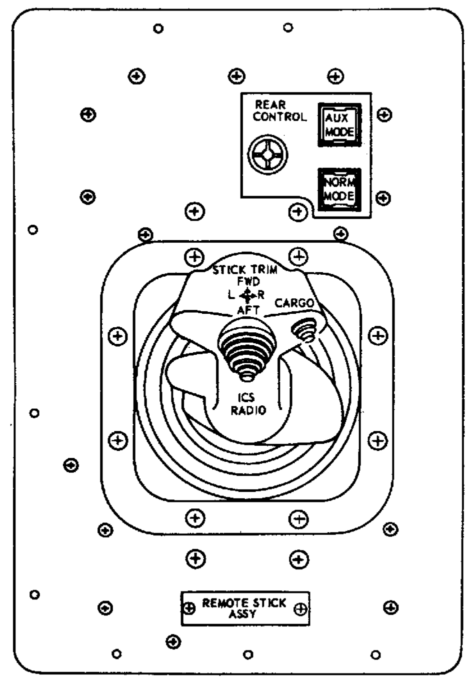
SEE SHEET 4
FOR LOCATION SKETCH



(6) PILOT'S AND COPILOT'S COLLECTIVE STICK GRIP



(8) AFT PILOT'S COLLECTIVE STICK GRIP



(1) CONTROL PANEL, REMOTE STICK

TM1520-217-20-2-C1-12 (6)

Figure 2-7 (6). Location of controls used for equipment operational check (On helicopters prior to Serial No. 70-18485.) (part 6 of 6).

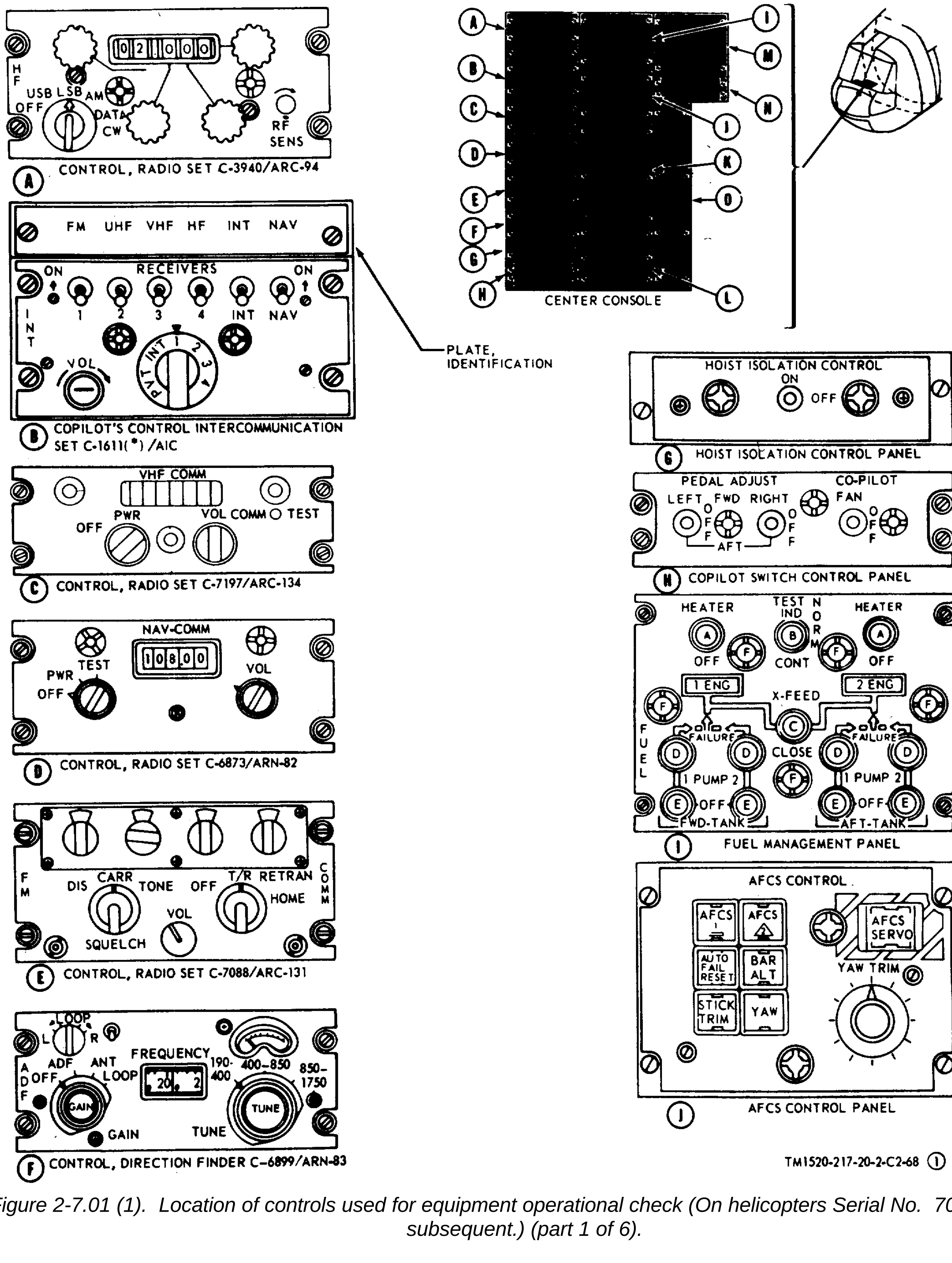


Figure 2-7.01 (1). Location of controls used for equipment operational check (On helicopters Serial No. 70-18485 and subsequent.) (part 1 of 6).

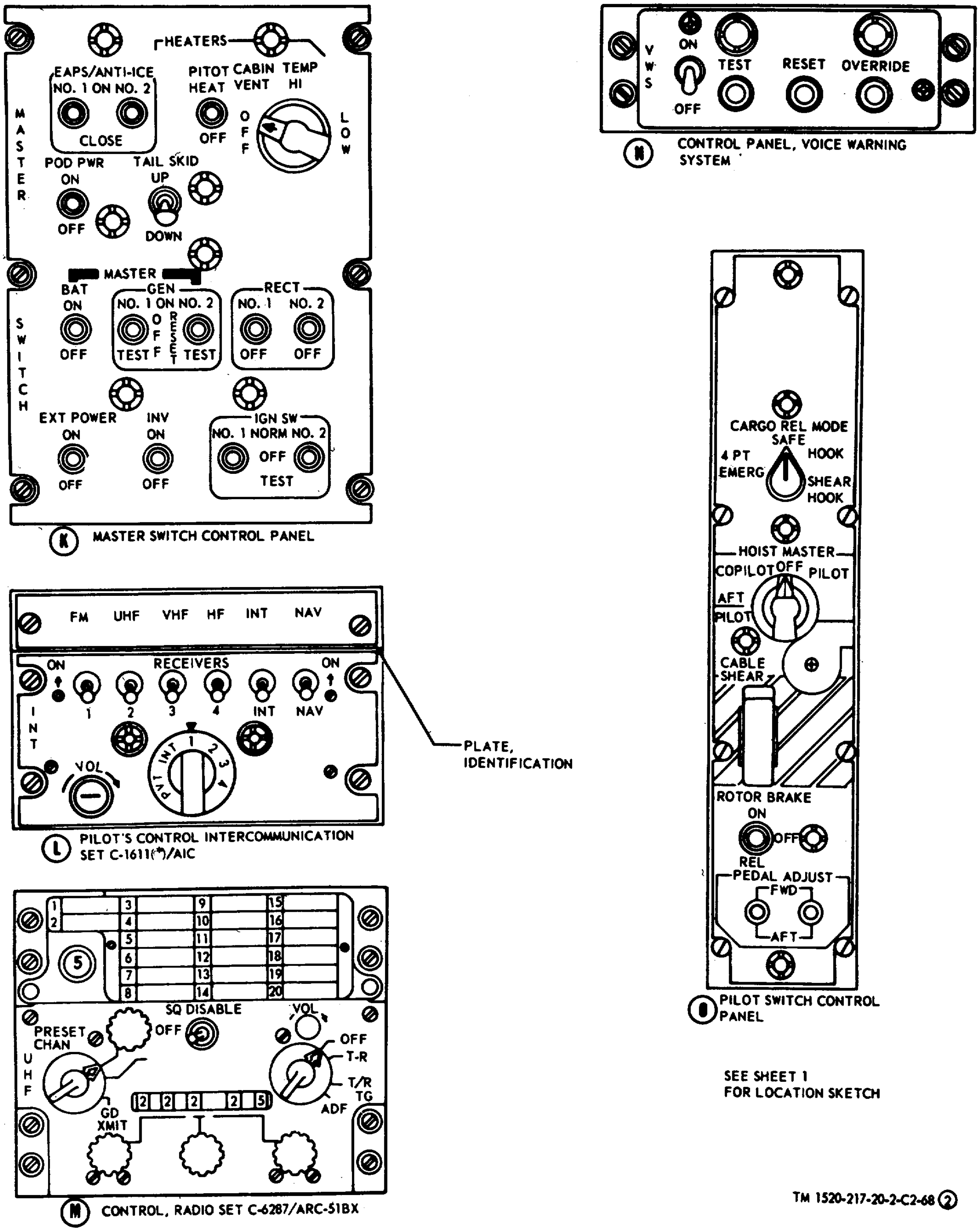


Figure 2-7.01 (2). Location of controls used for equipment operational check (On helicopters Serial No. 70-18485 and subsequent.) (part 2 of 6).

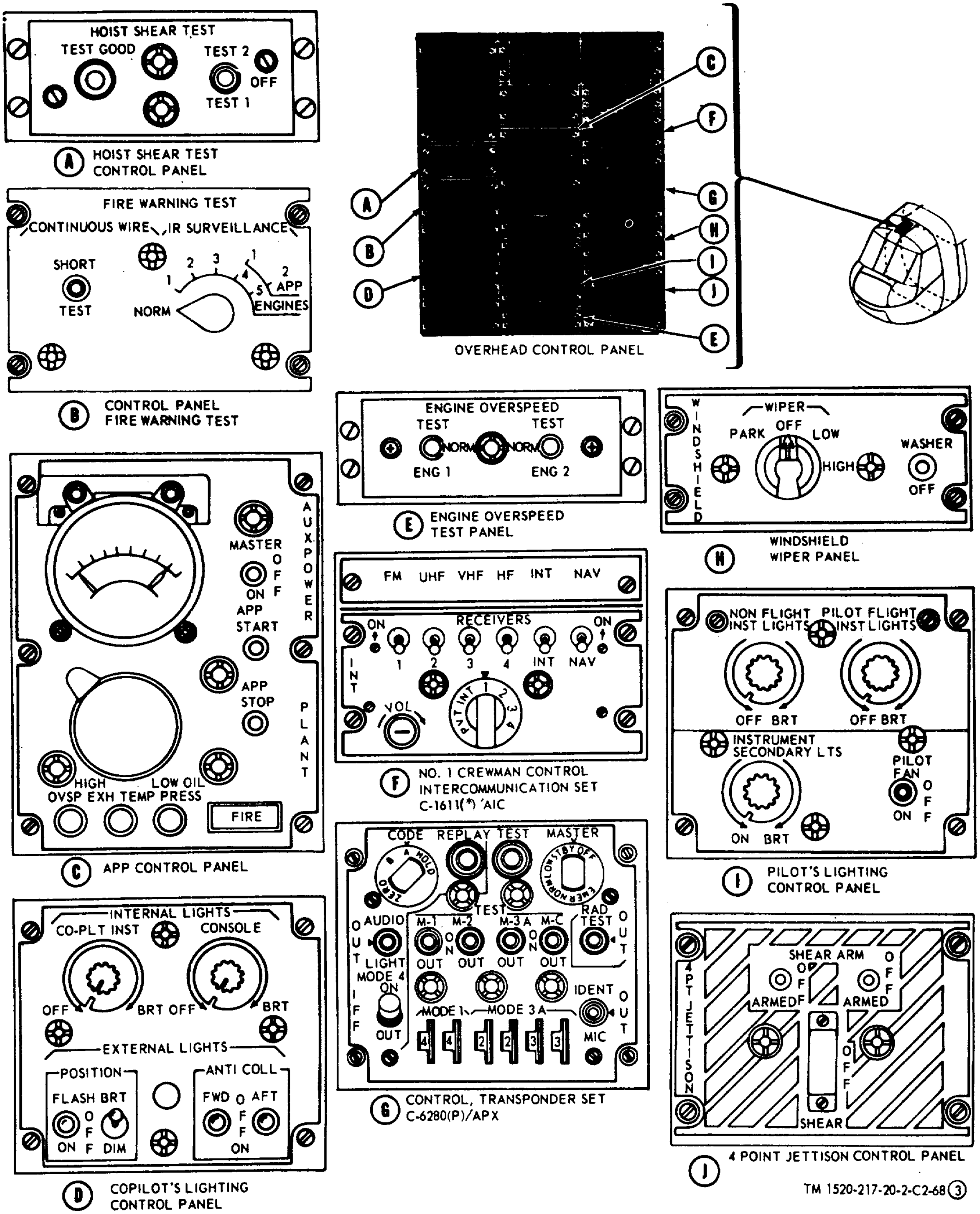


Figure 2-7.01 (3) . Location of controls used for equipment operational check (On helicopters Serial No. 70-18485 and subsequent.) (part 3 of 6).

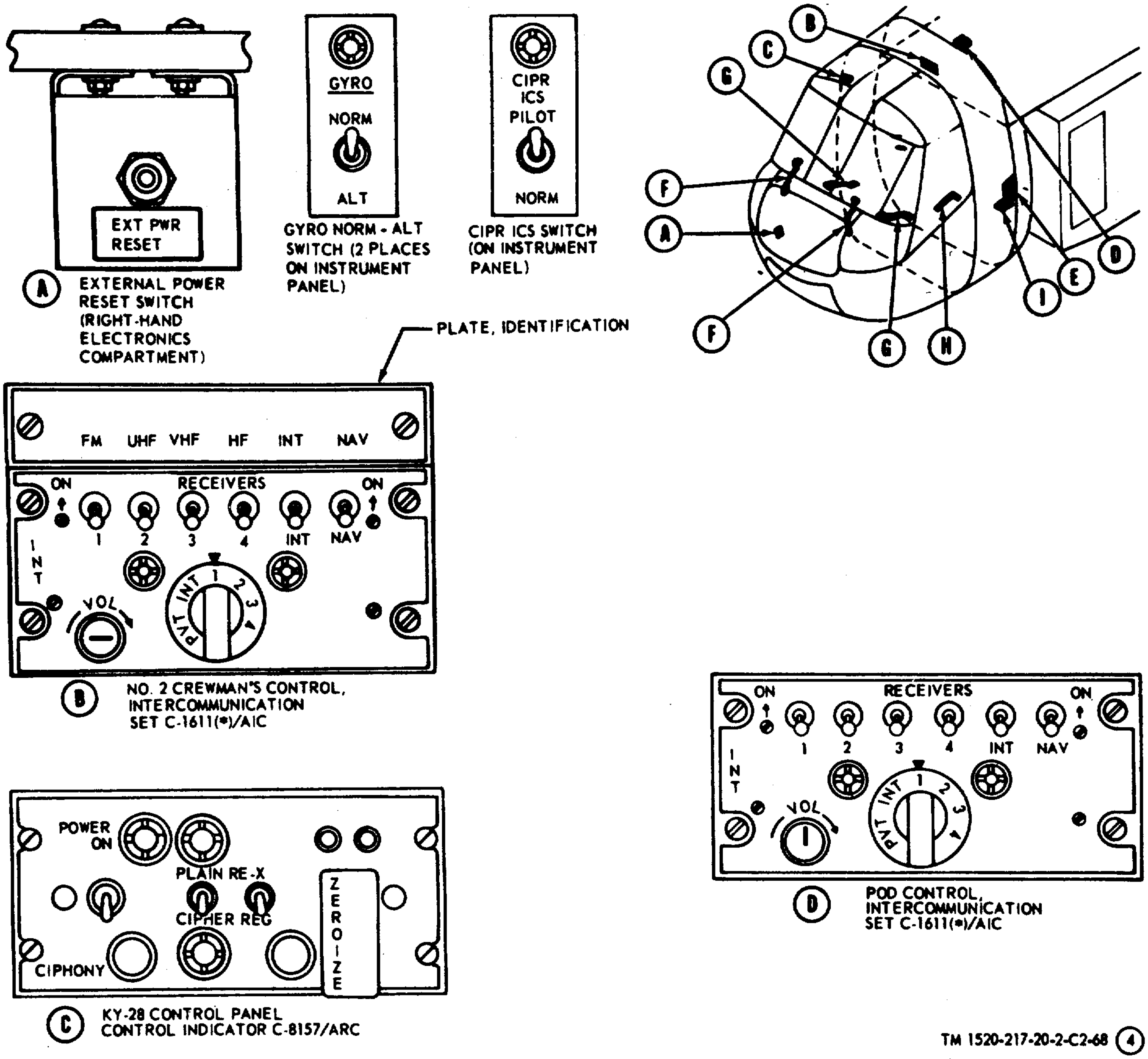


Figure 2-7.01(4). Location of controls used for equipment operational check (On helicopters Serial No. 70-18485 and subsequent.) (part 4 of 6).

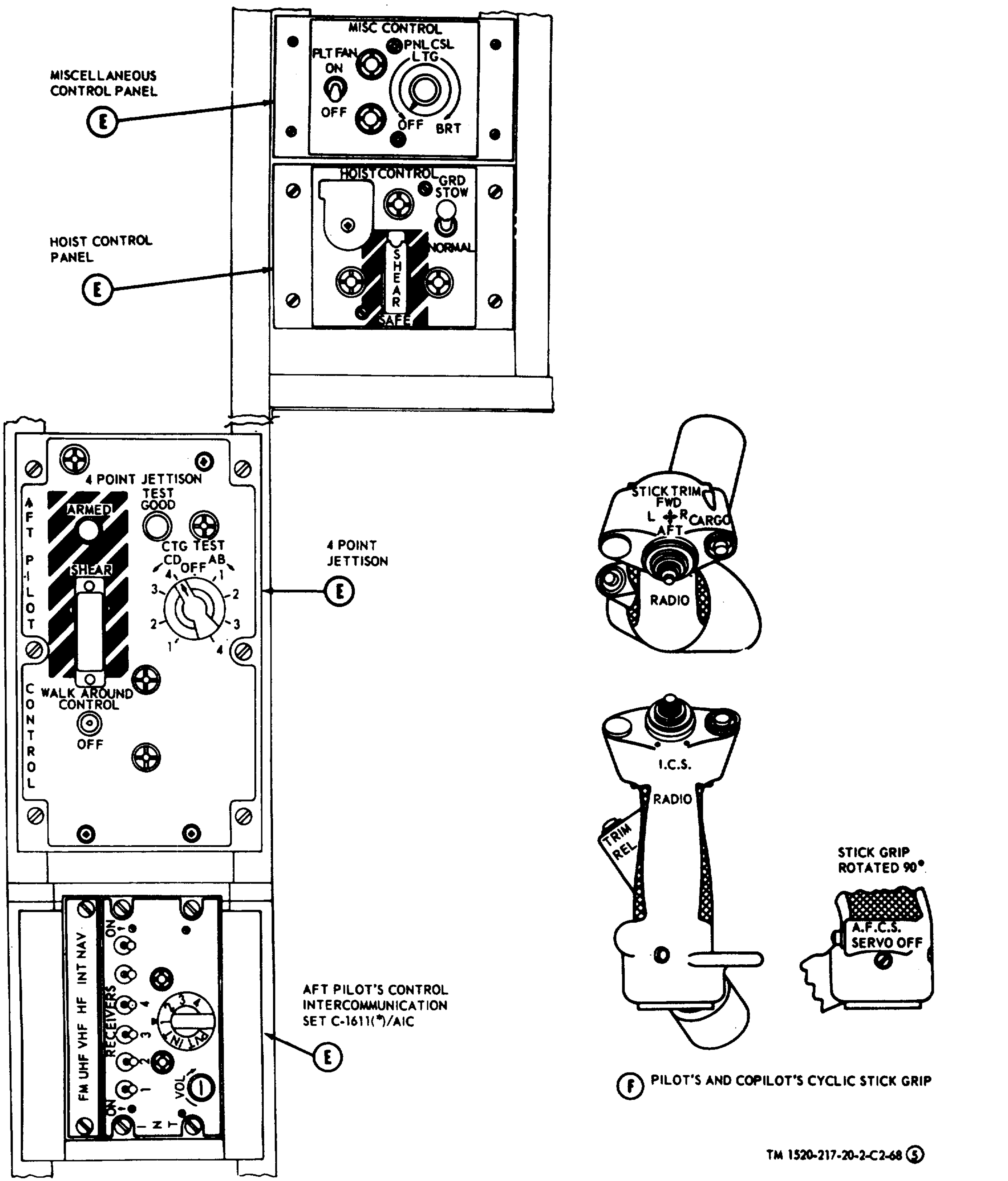


Figure 2-7.01 (5). Location of controls used for equipment operational check (On helicopters Serial No. 70-18485 and subsequent.) (part 5 of 6).

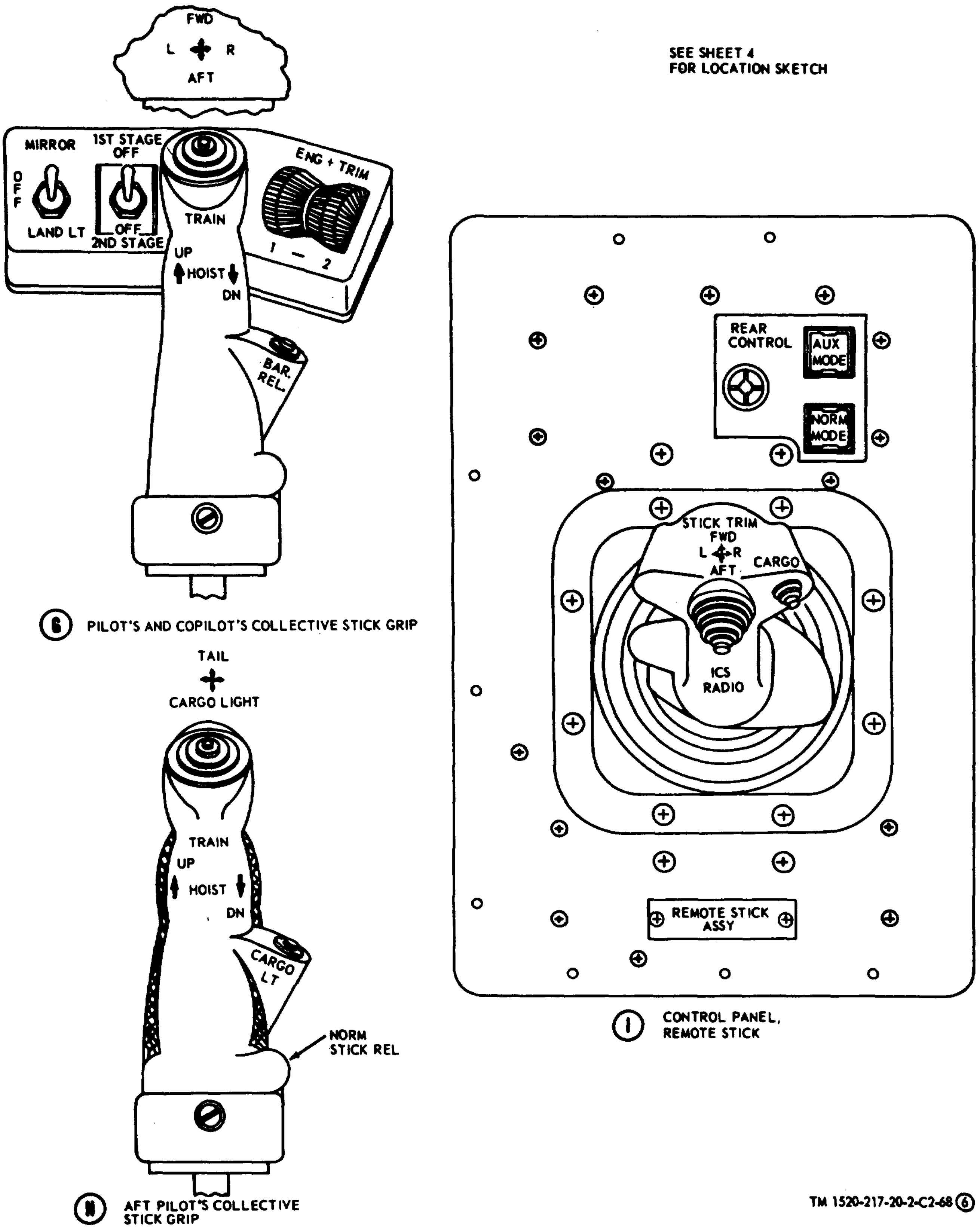


Figure 2-7.01 (6). Location of controls used for equipment operational check (On helicopters Serial No. 70-18485 and subsequent.) (part 6 of 6).

2-7. Periodic Preventive Maintenance Checks and Services Chart

Seq No.	Item to be Inspected	Procedure	Paragraph reference
		POWER-OFF INSPECTION	
1	Entire configuration	Inspect entire electronic configuration (figs. 1-1, 1-2, and 4-1) for completeness and general condition. Remove all electronic equipment scheduled for bench tests (pull out intervals, para 2-6c).	Para. 1-5, 1.6, 2-8, and 2-9; TM 61520-217-20/2.
2	Cable assemblies (throughout length).	Check cable assemblies for cuts, dirt, grease, and broken connectors. Clean cable assemblies and replace those with cuts or broken connectors.	Para 2-8; TM55-1500-123-25
3	Publications.	Check that following pertinent publications are available: *a.* Operator's manuals are complete and in usable condition. *b.* All changes pertinent to equipment are on hand. *c.* Organizational maintenance manual is complete and in usable condition.	Appx. A.
4	Modification work Orders.	Check DA Pam 310-4 to determine if new applicable MWO's have been published; check to see that all URGENT MWO's have been applied to equipment, and that all NORMAL MWO's have been scheduled.	DA Pam 310-7.
5	Antennas.	Inspect all antennas (figs. 2-6 and 2-15 through 2-18) as follows: *a.* Check all antennas for security of mounting, damage, or fatigue. Inspect insulators for signs of cracks or burn marks; clean with cleaning compound.'(When inspecting AS-1703/AR antenna, also inspect CU-942A/ARC-54.) or CU-942B/ARC-54.) *b.* Inspect for cleanliness; clean with clean lint-free cloth. *c.* Inspect all exposed lead-Ins and connectors for any sign of damaged or frayed wires or insulation.	Paras 2-8 and 2-16.
6	External interphone receptacles	*a.* Inspect for dirty, loose bent, or broken pins. *b.* Dust caps for proper installation and broken bead chains	*a.* Para 2-8. *b.* None.
7	Decals, stencils, and other insignia	Inspect all pertinent equipment which are externally mounted on helicopter, for completeness and legibility.	TM 55-1520-217-20/2.
8	Forward electronic compartments and upper nose compartment components, and associated interconnecting cabling installations.	Perform physical checks of installed components (figs. 2-10 through 2-13) as follows: *a.* Open all four access doors. *b.* Check Purifier Chamber Assembly (fig. 2-9); if dewpoint indicator is not blue in color, replace cartridge and dewpoint indicator. *c.* Check Battery, Storage BB-434U for leakage. If battery is leaking (wet), remove and replace. If corrosion is present, remove powdery or crusty deposit with nylon bristle brush. (Do not use wire brush.) Check vents for obstructions. Inspect cable leads and terminals for corrosion and tightness, mounting, and cover for security. *d.* Inspect all other components, for proper installation, tightness of all equipment fasteners, signs of over-heating and proper installation of connectors. *e.* Inspect for collapsed, loose, or mechanical binding of shock mounts *f* Inspect for completeness and security of safety wiring *g.* Inspect all interconnecting cabling and connectors between installed equipment units, and from units to terminal boards and relays for deterioration and damage. Replace any cabling that is frayed or has broken connectors. *h.* Inspect terminal boards, connectors, bonding jumpers, and ground straps for fraying and loose attaching hardware.	*a.* None. *c.* Para 2-9*c, d,* and *e*; TM 11 6140-20612. *d.* Para 1-6, 1-6, 2-13, 2-21, and 2-22. *e.* None. *f.* Pare 2-21; TM 65-1500-323-26. *g.* Para2-22; TM 55-1500-323-25. *h.* TM 55-1500-323-25.

Seq No.	Item to be Inspected	Procedure	Paragraph reference
		i. Close all four access doors if inspection requirements have been met and equipment unit replacements have been made.	*i.* Para 2-6.
9	Attic compartment components and associated Inter, connecting cabling installations.	Perform physical checks of installed components as follows: *a.* Clean PU-648/A with cleaning compound. Check for damage, evidence of overheating, and commutator for pitting (fig. 2-21). Check attaching hardware for looseness. *b.* Inspect circuit breaker and panel for security and damage. *c.* Inspect for completeness and security of safety wiring. *d.* Inspect all interconnecting cabling and connectors for deterioration and damage. Replace cabling that is frayed or has broken connectors.	 *a.* Paras 2-8 and 2-20c and d. *b.* None. *c.* Para 2-21; TM 655-1500-323-265. *d.* Paras 2-8, 2-22; TM 55-15O0 323-26.
10	Flight controls Inclosure components and associated installations.	Perform physical checks of installed components as follows: a. Unscrew and remove lower two cockpit flight controls inclosure covers. b. Inspect position sensors, collective and trim (pitch, roll and yaw) (figs. 2 and 2-19) for proper installation and tightness of attaching hardware. Inspect interconnecting cabling connections, arm, link, and bracket for proper installation. c. Secure lower two cockpit flight controls inclosure covers.	 *a.* TM 66-1520-217-20/2. *b.* Para 2-18 *o* through *y.* *c.* TM 65-1520-217-20/2.
11	Hoist well components and associated cabling installations.	Perform physical checks of installed components as follows: a. Check Table, Tilt (fig. 2-20) grounding straps, knurled screw fasteners, and connectors for tightness. b. Inspect Gyro, Vertical (fig. 2-20) tightness of attaching hardware, alignment, and signs of overheating. Check cable harness for tightness and condition. c. Inspect Gyros, Rate and Lateral Accelerometers No. 1 and No. 2 (fig. 2-20) for tightness of attaching hardware. Inspect for signs of overheating. *d.* Inspect cable harness and connector for condition and tightness.	 *a.* Paras 2-19a and b, and 2-22; TM55-1500-323-25. *b.* Para 2-19*c* and *d*, 2-22; TV 55-1500-323-25. *c.* Para 2-8*s* through *v*, 2-22; TM55-1500-323-25. *d.* None.
12	Aft main fuselage compartment cornponents and associated interconnecting cabling installations.	Perform physical checks of installed components (figs. 1-1 and 4-1) as follows: *a.* Open access cover between fuselage stations 490 and 510. *b.* Inspect Antenna Coupler CU-1658 /A Receiver, Radio R-1391 /ARN-83; and Relay for proper installation, tightness of all equipment fasteners, signs of overheating, and proper installation of connections. *c.* Inspect for collapsed, loose, or mechanical binding of, shock mounts. *d.* Inspect for completeness and security of safety wiring. *e.* Inspect all interconnecting cabling and connectors between installed equipment units, and from units to terminal boards, and relays. for deterioration and damage. *f.* Replace any cabling that is frayed or has broken connectors. *g.* Inspect terminal boards, connectors, bonding jumpers, and ground straps for fraying and loose attaching hardware. *h.* Secure access cover between fuselage stations 490 and 510 with attaching hardware, if inspection requirements have been met and equipment unit replacements have been made.	 *a.* TM 55-1520-217-20 /2. *b.* Paras 1-5, 1-6, and 2-13 k (1) and (2). *c.* None. *d.* Para 2-21; TM 55-1500-323-25. *e.* Paras 2-13, 2-22; TM 55-1500-323-25. *f.* Para 2-22; TM 55-1500-323-25. *g.* TM 55-i500-323-25. *h.* Para 2-6; TM 55-1520-217-20/2.

Seq No.	Item to be Inspected	Procedure	Paragraph reference
13	Boom compass compartment component and associated interconnecting cabling installations.	Perform physical checks of installed component (figs. 2-6 and 2-16) as follows:	
		a. Remove screws securing compass compartment cover at bottom of fuselage at station 613.	*a.* TM6-1620-217-20/2.
		b. Inspect Transmitter, Induction Compass T-611/ASN for proper installation, tightness of attaching hardware and proper installation of connections.	*b.* Paras 1-5, 1-6, and 2-13*j*(1) and(2).
		c. Secure access cover with attaching hardware, if inspection requirements have been met and equipment unit replacement has been made.	*c.* Para 2-6; TM 55-1520-217-20/2.
14	Pullout check replacement equip ment.	*a.* Replace all units of electronic configuration that were removed for pullout checks.	*a.* Para 2-6c.
		b. When reinstalling electronics equipment that were scheduled for pullout checks, make sure mountings are securely installed and bonded to shelves, and that safety wiring is complete and secure (TM 55-1500-323-25). Tighten equipment fasteners.	*b.* Paras 2-13 through 2-21.
		c. Safety-wire all units.	*c.* Para 2-21
		d. Perform necessary adjustments to replaced units.	*d.* Para 2-2w
		e. Secure any cover or door at compartment where component replacement was made if not previously secured.	*e.* TM 55-1520-217-2012.
15	Cockpit and aft pilot's cockpit interior inspection.	*a.* Check headset-microphones and associated receptacles for possible damage. Check to see that they are clean and properly connected and that cabling is free of cuts or breaks.	Paras 2-8 and 2-17.
		b. Microphone keying switches during operation: check trigger, button, and foot operated switches for smooth action.	*b.* Para 2-17.
		c. Check that caling is not frayed or deteriorated.	*c.* Para 2-17.
		d. Check that foot operated switches are free of dents.	*d.* Para 2-17.
		e. Check that all control and circuit breaker panels are clean and that paint is not scratched or marked (figs. 2-2, 2-7, 2-7. 01, and 2-8).	*e.* Para 2-8
		f. Check all knobs for security.	*f.* Para 2-14.
		g. Check all switches for positive detent action.	g. Para 2-14.
		h. Inspect for loose, fogged, broken, or illegible indicators.	*h.* Para 2-15.
		i. Check for up-to-date frequency cards in the frequency card holders. Check all decals. stencils, and other insignia for legibility. (Refer to sequence No. 7 above, for external decals, stencils, and other insignia.)	*i.* None.
16	Pod exterior and interior inspection.	*a.* Inspect cable assembly between helicopter ICS receptacle and pod for deterioration and damage. Replace cable assembly if fraying or if connectors are broken.	*a.* Para 2-22; TM 55-1500-323-25.
		b. Check headset-microphone and associated receptacle for possible damage. Check for cleanness and proper connection and that cabling is free of cuts or breaks.	*b.* Paras 2-8 and 2-17.
		c. Microphone keying switch during operation: check button operated switch for smooth action.	*c.* Para 2-17.
		d. Check that cabling is not frayed or deteriorated.	*d.* Para 2-17.
		e. Check that C-1611(')/AIC is clean and that paint is not scratched or marked (rig. 2-1).	*e.* Para 2-8.
		f. Check C-1611(*)/AIC knobs for security.	*f.* Para2-14.
		g. Check C-16l1(*)/AIC switches for positive detent action.	*g.* Para 2-14.
		h. Check all decals, stencils, and other insignia for legibility.	*h.* None.

Seq No.	Item to be Inspected	Procedure	Paragraph reference
		i. Inspect interconnecting cabling and connectors between C-1611(*)/AIC, terminal board, ICS keying relay, and ICS circuit breaker for deterioration and damage. Replace any cabling that is frayed or has broken connectors. *j.* Inspect terminal board and connectors for fraying and loose attaching hardware.	*i* Para 2-22, TM 55-1500-323-25 *j.* TM 55-1500-323-25

OPERATIONAL PRESET

Note. Electrical power to operate the equipment configuration may also be obtained by operating the ac generators and the dc transformer rectifier. Sequence Nos. 21 and 22 provide procedures for starting the generators and the transformer-rectifiers. If external electrical power is used. omit sequence No. 21 and 22.

Seq No.	Item to be Inspected	Procedure	Paragraph reference
17	External electrical auxiliary power unit.	Connect electrical auxiliary power unit to helicopter which will supply three phase power at 115 3 volts ac, 400 20 cps, A-B-C phase rotation, Wye (four-wire) output. *Note.* For operational checks requiring only de poser, connect an electrical auxiliary power unit to helicopter which will supply 27 5 0 5 volt, dc at approximately 300 ampere (for full load Set EXT POWER switch to ON only.	Para2-4.
18	Electrical power control switches on MASTER SWITCH panel (fig. 2-7 (2) *a.* BAT *b.* EXT POWER	*a.* Set BAT switch to ON. *b.* Set EXT POWER switch to ON.	*a.* None. *b.* None.
19	EXT PWR RESET switch in right-hand electronics compartment (fig. 2-11).	Set EXT PWR RESET switch to RESET.	None.
20	External hydraulic	Connect external hydraulic lines to helicopter. test stand.	Para 2-4.
21	Controls and lights on APP control panel.	*a.* Set W&ASTER switch to ON. HIGH TEMP and OVSP lights illuminate. *b.* Press APP START button. The compressor speed shall accelerate immediately followed by APP light - off as shown on the T 5 gage. Hold APP START button until Ng gage indicates 40%/, . The advisory panel APP ON light shall illuminate during the start and remain on. *c.* Release APP START button after 40%, Ng. The APP shall accelerate to approximately 100% with slight delay at 74 to 80% during clutch engagement. *Caution:* If clutch engagement delays more than 4 seconds, abort start by depressing APP STOP button. *Note.* APP will automatically shutdown if T exceed, (571 C) (1060 F), compressor overspeed occurs (110%), or loss oil pressure is experienced.	*a.* None. *b.* None. *c.* None.
22	GEN NO. 1 and NO. 2, RECT NO. 1 and NO. 2 switches on MASTER SWITCH panel.	*a.* Set GEN switches to ON. *b.* Set RECT switches to ON. ***OPERA TIONAL PRESET-POD***	*a.* None. *b.* None.
23	Pod Power Application	Apply power to pod as outlined in referenced paragraph.	Para 2-4.

Note. Operational check, for the pod interphone station C-1611 (*}/AIC are the same as for the No. 1 and No. 2 crewmen's, stations during operational check, for the AN/ARC-102, the AN/ARC-134, the AN/A RC-51BX. and the AN/AIC-12.

OPERA TIONAL CHECK, RADIO SET AN/AR C- 102 (HF RADIO FA CILITY)

Seq No.	Item to be Inspected	Procedure	Paragraph reference
24	VOL controls on all C-1611(*)/AIC	Adjust VOL controls to midposition.	None.
25	RF SENS control on C-3940 /ARC-94.	Adjust control fully clockwise.	None.
26	RECEIVERS HF and transmit-interphone selector switches on pilot's C-1611(*)/AIC.	*a.* Set RECEIVERS HF switch to ON. *b.* Rotate transmit-interphone selector switch to 4.	*a.* None. *b.* None.
27	ARC-102 circuit breakers on over-head left DC RAD BUS circuit breaker panel and ØC ARC-102 circuit breaker on overhead right RADIO ac cir-cuit breaker panel.	*a.* Engage ARC-102 dc circuit breakers. *b.* Engage ØC ARC-102 ac circuit breaker.	*a.* None. *b.* None.
28	Mode selector switch and frequency con-trols on C-3940./ ARC-94.	*a.* Set mode selector switch to LSB. Background noise is heard in headset. *b.* Select desired frequency by adjusting megacycle and kilo-cycle dial controls. Hf radio facility is mute while RT-698/ ARC-102 tunes to frequency.	*a.* Para 2-11, item No. 1. *b.* Para 2-11, item No. 2.
29	Monitor meter on RT-698, / ARC-102.	Rotate RT-698' ARC-102 test switch to 28V, 130V, and CAL TONE positions. Meter indications are as follows: ***Switch Pos.*** .... ***Meter Ind.*** **28V** .... **Red area** **130V** .... **Red area** **CAL TONE** .... **1,000 cps tone heard in headset**	Para 2-11, item No. 3.
30	Pilot's cyclic stick RADIO-ICS switch (cyclic stick key-ing switch) and monitor meter on RT-698/' ARC-102.	*a.* Press keying switch to RADIO until 1, 000 cps tone is heard in headset. *b.* With keying switch pressed to RADIO, rotate RT-698, ARC-102 test switch to PA MA and 1500V. Meter indica-tions are a follows:	*a.* Para 2-11, item No. 4. *b.* Para 2-11, item No. 5
31	RF SENS control on C-3940/ ARC-94 and VOL control on pilot's, copilot's, aft pilot's, and crewmen stations C-1611(*)/ AIC.	*a.* Adjust RF SENS control for desired audio level during reception. *b.* Adjust VOL controls for desired audio level. ***Switch Pos.*** ***Meter Ind.*** **PA MA** .... **300 ma** **1500V** .... **Red area**	*a.* Para 2-11, item No. 6. *b.* None.
32	RF SENS control on C-3940, ARC-94 and pilot's cyclic stick keying switch.	*a.* Adjust RF SENS control for minimum background noise. *b.* Press keying switch to RADIO once to tune CU-1658/A. Upon completion of tuning, press keying switch to RA-DIO and establish two-way voice communications with control tower or local operating hf radio facility. *c.* Sidetone (during transmission) is clear. Received audio signals are clear and adequate for good reception. Transmitted signals have adequate readability and strength for good communication. *d.* Release keying switch. Transmission shall ceased.	*a.* Para 2-11, item No. 7. *b.* Para 2-11, item No. 8. *c.* Para 2-11, item No. 10. *d.* None.

Seq No.	Item to be Inspected	Procedure	Paragraph reference
33	Pilot's RADIO KEY foot switch.	*a.* Press foot switch. Procedure and results are the same as in sequence No. 30 a and b and sequence No. 32 *a* and *c* above. *b.* Release foot switch. Transmission shall cease.	*a.* Para 2-11, item No. 9. *b.* None.
34	Mode selector switch and frequency selector controls on C-3940/ ARC-94.	Set mode selector switch to USB. Procedure and results are the same as in sequence Nos. 28 through 33 above.	Para 2-11, item Nos. 1 through 10.
35	Mode selector switch and frequency selector controls on C-3940 /ARC-94.	Set mode selector switch to AM. Procedure and results are the same as in sequence Nos. 28 through 33 above.1 through 10.	Para 2-11, item Nos.
36	Mode selector switch and frequency selector controls on C-3940 /ARC-94.	*a.* Set mode selector switch to CW. Background noise is heard in headset. *b.* Select desired frequency by adjusting megacycle and kilocycle dial controls. HF radio facility is mute while RT-698 /ARC-102 tunes to frequency. *Note.* Select frequency on C-3940/ARC-94 one kilocycle below desired frequency	*a.* Para 2-11, item No. 1 *b.* Para 2-11, item No.2.
37	Repeat sequence Nos. 30, 32, and 33 above for cw reception and transmission.	Procedure and results are the same as in sequence Nos. 30, 32, and 33 above for cw reception and transmission.	Para 2-11, item Nos. 4, 5, and 7 through 10.
38	Repeat sequence Nos. 30 through 37 above at copilot's and aft pilot's position.	*a.* Procedure and results are the same as in sequence Nos. 30 through 37 above.4 through 10. *b.* Procedure and results for cyclic stick keying switch and RADIO KEY foot switch are the same as in sequence Nos. 30, 32 and 33 above.	*a.* Para 2-11, item Nos. *b.* Para 2-11, item Nos. 11 through 14.
39	RECEIVERS HF switch and VOL control on pod, No. 1 and No. 2 crewmen's C-1611(*)/AIC.	*a.* Set RECEIVERS HF switch to ON. Received audio signal is clear. *b.* Adjust VOL control for desired audio level.	*a.* Para 2-11, item No. 15. *b.* None.
40	INTERNAL LIGHTS CONSOLE control on copilot's lighting control panel.	Rotate CONSOLE control toward BRT. The C-3940 /ARC-94 lamps illuminate and increase in intensity.	Para 2-11, item No. 16.
41	Mode selector switch on C-3940 /ARC-94.	Set mode selector switch to OFF.	Para 2-11, item No. 17.
42	Megacycle and kilocycle dial controls on C-7197/ ARC-134.	Select desired frequency by adjusting dial controls.	Para 2-11, item No. 18.
43	VOL controls on all C-1611 (*)/ AIC.	Rotate VOL controls to mid-position.	None.
44	ARC-134 circuit breaker on overhead right DC RAD BUS circuit breaker panel.	Engage ARC-134 circuit breaker.	None.

Seq No.	Item to be Inspected	Procedure	Paragraph reference
45	OFF/ PWR switch on C-7197/ ARC-134.	Rotate switch to PWR.	None.
46	RECEIVERS VHF switch and transmit-interphone selector switch on pilot's C-1611(*)/ AIC.	a. Set RECEIVERS VHF switch to ON. b. Rotate transmit-interphone selector switch to 3.	a. None. b. Para 2-11, item No. 20.
47	COMM TEST button on C-7197/ ARC-134.	Press COMM TEST button on C-7197/ ARC-134. Receiver rush noise shall be heard in headsets. Adjust VOL control if necessary.	Para 2-11, item No. 21.
48	VOL controls on C-7197/ ARC-134 and pilot's. con-pilot's, and aft pilot's C-1611 (*) / AIC.	a. Adjust C-7197/ ARC-134 VOL control for desired audio level b. Adjust C-1611 (*)/ AIC VOL controls for desired audio level	a. Para 2-11, item No. 22. b. None.
49	Pilot's cyclic stick RADIO-ICS switch (cyclic stick keying switch).	a. Press keying switch to RADIO and established two-way communications with control tower or local operating vhf radio facility. b. Sidetone (during transmission) is clear. Received audio signals are clear and adequate for good reception. Transmitted signals have adequate readability and strength for good communications. c. Rotate meter selector switch on front of RT-857, / ARC-134 to PWR OUT 100 WFS and press keying switch to RADIO. Meter on front of RT-857/ ARC-134 shall indicate at least 0.15 milliampere. d. Release keying switch. Transmission shall cease.	a. Para 2-11, item Nos. 19 and 23. b. Para 2-11, item No. 24. c. Para 2-11, item No. 25. d. None.
50	Pilot's RADIO KEY foot switch.	a. Press foot switch. Procedure and results are the same as in sequence No. 49 a. and b. b. Release foot switch. Transmission shall cease.	a. Para 2-11, item No.26. b. None.
51	Repeat sequence Nos. 49 and 50 at copilot's and aft pilot's positions.	Procedure and results are same as in sequence No. 49 *a* and *b,* and sequence No. 50.	Para 2-11, item Nos. 27 through 30.
52	RECEIVER switch and VOL control on No. 1 and No. 2 crewmen's and pod station C-1611(*)/ AIC.	a. Set RECEIVERS switch to VHF. Received audio signal is clear. b. Adjust VOL control for desired audio level.	a. Para 2-11, item No. 31. b. None.
53	INTERNAL LIGHTS CONSOLE control on copilot's lighting control panel.	Rotate CONSOLE control toward BRT C-7197/ ARC-134 lamps illuminate and increase in intensity.	Para 2-11, item No. 32.
54	OFF/ PWR switch on C-7197/ARC-134.	Set OFF/ PWR switch to OFF.	None.
		OPERATIOANAL CHECK, RADIO SET AAN/ARC-131 (FM LIAISON A.D HOMING RADIO FACILITY)	
55	Megacycle controls on C-7088/ ARC-131.	Select desired frequency by rotating metacycle controls.	Para 2-11, item No. 33.

Seq No.	Item to be Inspected	Procedure	Paragraph reference
56	SQUELCH and VOL controls on C-7088/ ARC-131.	*a.* Set SQUELCH Control to CARR. *b.* Set VOL controls to midposition.	*a.* None. *b.* None.
57	VOL controls on all C-1611 (*) / AIC.	Rotate VOL controls to midposition.	None.
58	SQ ADJ screwdriver control on RT-823/ ARC-131.	Adjust SQ ADJ control fully counterclockwise.	None.
59	ARC-131 circuit breaker on over-head right DC RAD BUS circuit breaker panel.	Engage ARC-131 circuit breaker.	None.
60	Mode control switch on C-7088/ ARC-131.	Set switch to T/ R. Check for blower operation in RT-823/ ARC-131.	Para 2-11, item No. 34.
61	RECEIVERS FM and transmit-inter-phone selector switches on pilot's C-1611(*)/ AIC.	*a.* Set RECEIVERS FM switch to ON. *b.* Rotate transmit-interphone selector switch to 1.	*a.* None. *b.* None.
62	TEST METER, TEST SWITCH and XTMR TEST button on RT-823/ ARC-131.	Refer to paragraph 3-7 of TM11-5820-670-12.	Para 2-11, item No. 35.
63	Megacycle controls on C-7088/ ARC-131.	Rotate megacycle controls on C-7088/ ARC-131 to a local fm station. Channel changing tone is heard in headset while radio set is tuning.	Para 2-11, item Nos. 36 through 40.
64	SQ ADJ screwdriver control on RT-823/ ARC-131.	Rotate SQ ADJ control on RT-823/ ARC-131 until background noise just cuts out. Audio in headset is clear and undistort-ed.	Para 2-11, item No. 39.
65	VOL control on C-7088/ ARC-131 and VOL control and RECEIVERS FM switches on pilot's, copilot's and aft pilot's C-1611(*) / AIC.	*a.* Adjust C-7088/ ARC-131 VOL control for desired audio lev-el. *b.* Set C-1611 (*)/ AIC RECEIVERS FM switches to ON. *c.* Adjust C-1611(*)/ AIC VOL controls for desired audio lev-el.	*a.* Para 2-11, item No. 40. *b.* None. *c.* Para 2-11, item No. 50.
66	Pilot's cyclic stick RADIO-ICS switch (cyclic stick key-ing switch).	*a.* Press keying switch to RADIO and establish two-way communications with control tower or local fm facility. *b.* Sidetone (during transmission) is clear. Received audio signals are clear and adwquate for good reception. Transmitted signals have adequate readability and strength for good communications. *c.* Release keying switch. Transmission shall cease.	*a.* Para 2-11, item Nos. 47 and 48. *b.* Para 2-11, item Nos. 41 and 46. *c.* None.
67	Pilot's RADIO KEY foot switch.	*a.* Press foot switch. Procedure and results are the same as in sequence No. 65 *a* and *b*. *b.* Release foot switch. Transmission shall cease.	*a.* Para 2-11, item Nos. 47 and 48. *b.* None.
68	Repeat sequence Nos. 66 and 67 at copilot's and aft pilot's positions.	Procedure and results are the same as in sequence No. 66 *a* and *b* and sequence No. 67.	Para 2-11, item Nos. 49 through 52.

Seq No.	Item to be Inspected	Procedure	Paragraph reference
69	RECEIVERS FM switch and VOL control on No. 1, No. 2, crewmen's and pod C-1611(*)/AIC.	*a.* Set RECEIVERS FM switch to ON. Received audio signal is clear. *b.* Adjust VOL controls for desired audio level.	*a.* Para 2-11, item No. 53. *b.* None.
70	Mode control switch and SQUELCH control on C-7088/ ARC-131.	Set mode control switch to HOME and SQUELCH control to CARR. Observe ID-1347/ ARN-82. Vertical pointer flag shall disappear and vertical bar shall deflect left or right, depending on bearing of transmitter (vertical bar remains centered if helicopter is aligned with bearing to transmitter). *Note.* Over-the-station position is indicated by horizontal bar. This function can only be observed during flight.	Para 2-11, item Nos. 54 and 55.
71	INTERNAL LIGHTS CONSOLE control on copilot's lighting control panel.	Rotate CONSOLE control toward BRT. The C-7088/ARC-131 lamps illuminate and increase in intensity.	Para 2-11, item No. 56.
72	Mode control switch on C-7088 /ARC-131.	Set switch to OFF.	None

If the voice security system is installed, the following item, will apply.

a. Set the POWER ON switch (voice security control-indicator to the ON position during the following check. Set the POWER ON switch to OFF when the Discriminator, Discrete Signal MD-736/A operational check is completed.

b. Set the PLAIN-CIPHER switch to the PLAIN position, and set the RE-X-REG switch to REG position

c. The VOL control on the fm control panel will be inoperative.

Seq No.	Item to be Inspected	Procedure	Paragraph reference
73	RECEIVERS-FM and transmitter selector switches (C-1611(*)/ AIC).	*a.* Set RECEIVNRS-FM switch to ON. *b.* Set transmitter selector switch to 1.	*a.* None. *b.* None.

If the voice security system is installed, a constant alarm tone Is ill be heard In the headset when the fm mode switc*h* is set to T/R After approximately 2 seconds, the constant tone will change to an interrupted tone. After the alarm tone change, to an interrupted tone key, the fm transmitter momentarily The tone should stop. If it does not or if the tone has not sounded, no traffic will be passed. Refer to paragraph 2-1*1*, item No. 57 and 58. for troubleshooting procedures

Seq No.	Item to be Inspected	Procedure	Paragraph reference
74	Mode and SQUELCH switches, VOL control, and frequency selectors I fm control panel); and Vol control (C-1611(*)/ AIC).	*a.* Set SQUELCH switch to DIS. *b.* Set mode switch to T /R. *c.* Set frequency selectors to frequency of local fm station. *d.* Adjust VOL controls for comfortable listening level at each position.	*a.* None. *b.* None. *c.* None. *d.* None.
75	Transmitter selector switch (pilot's C-1611(*)/AIC) and microphone switch pilot's cyclic stick or foot switch).	*a.* Set the transmitter selector switch to positions 2, 3, and 4, in succession. Press one of the pilot's microphone switches momentarily while the transmitter selector switch is in each position. *b.* The fm receiver audio should be interrupted at the pilot's position each time a microphone switch is pressed. Fm reception at the copilot's and aft pilot's positions should be unaffected.	*a.* None. *b.* Para 2-11, item Nos. 57 and 58.
76	Transmitter selector switch (copilot's C-1611(*)/AIC) and microphone switch (copilot's cyclic stick or foot switch).	Repeat the procedures in sequence No. 75 from the copilot's position. The copilot's fm reception should be interrupted each time a microphone switch is pressed, but the pilot's and aft pilot's reception should be unaffected.	Para 2-11, item Nos. 57 and 58.

Seq No.	Item to be Inspected	Procedure	Paragraph reference
77	Transmitter selector switch (aft pilot's C-1611(*)/AIC) and microphone switch (aft pilot's remote stick keying switch or foot switch).	Repeat the procedures in sequence No. 75 from the aft pilot's position. The aft pilot's fm reception should be interrupted each time a microphone switch is pressed, but the pilot's and copilot's reception should be unaffected.	Para 2-11, item Nos. 57 and 58.
		OPERATIONAL CHECK, RADIO SETAN/AR C-51BX (UHF RADIO FACILITY)	
78	Air pressure indicator.	Check that air pressure indicator show 3 to 5 psi internal pressure in RT-742/ARC-51BX (center head protrudes when air pressure is 3 to 5 psi).	Para 2-11, item No. 59.
79	HD-6151 ARC-51X air filter.	*a.* Remove and inspect air filter. *b.* Clean filter if dirty.	*a.* None. *b.* None.
80	Mode selector switch and megacycle controls on C-6287 / ARC-51BX.	*a.* Set mode selector switch to MAN position. *b.* Select desired frequency by adjusting megacycle controls.	*a.* None. *b.* Para 2-11, item No. 60.
81	VOL control on all 611(*)/AIC.	Adjust VOL controls to mid-position.	None.
82	VOL control on C-6287 /ARC-51BX.	Adjust VOL control to mid-position.	None
83	ARC-51BX circuit breaker on overhead right DC RAD BUS circuit breaker panel.	Engage ARC-51BX circuit breaker.	None.
84	Function select switch on C-6287 / ARC-51BX and external blower on RT-742 /ARC-51BX.	*a.* Set function select switch to T /R position. *b.* Check for operation of external blower on RT-742 /ARC-1BX. Note: External blower operates, only when internal temperature of RT-742/ARC-SIBX exceeds 35 Ct95 F'	*a.* None. *b.* Para 2-11, item No. 62.
85	RECEIVERS UHF and transmit-interphone selector switches on pilot's C-1611(*)/ AIC.	*a.* Set RECEIVERS UHF switch to ON. *b.* Rotate transmit-interphone selector switch to 2.	*a.* None. *b.* Para 2-11, item No. 63
86	SQ DISABLE switch on C-6287 /ARC-51BX.	Set switch to OFF. Listen for rushing audio noise in headset. Set switch to ON. Audio noise shall cease.	Para 2-11, item No. 64.
87	VOL control on C-6287 /ARC-51BX and pilot's, co-pilot's, aft pilot's and pod and crewmen stations C-1611(*)/AIC.	*a.* Adjust C-6287 /ARC-51BX VOL control for desired audio level. *b.* Adjust C-1611(*)/AIC VOL controls for desired audio level.	*a.* Para 2-11, item No. 65. *b.* None
88	Mode selector switch and PRESET CHAN control on C-6287 / ARC-51BX.	*a.* Set mode selector switch to PRESET CHAN. *b.* Select desired frequency by adjusting PRESET CHAN control. Listen for 800 cps audio tone in headset during tuning cycle.	*a.* None. *b.* Para 2-11, item No. 66.

Seq No.	Item to be Inspected	Procedure	Paragraph reference
89	Pilot's cyclic stick RADIO-ICS switch (cyclic stick keying switch) and VSWR ID-1003 /ARC indicator on RT-742 / ARC-51BX.	*a.* Press pilot's cyclic stick keying switch to RADIO and obser VSWR ID-1003/ARC-51BX power output. Power output is at least 16 watts. *b.* With keying switch pressed to RADIO, press PRESS FOR REFL POWER switch on RT-742/ARC-51BX VSWR ID-1003/ARC indicator. Reflected power is less than 5 watts. *c.* Establish two-way communication with control tower or local operating uhf facility on at least three frequencies. Sidetone (during transmission) is clear. Received audio signals are clear and adequate for good reception. Transmitted signals have adequate readability and strength for good communications. *d.* Release keying switch. Transmission shall cease.	*a.* Para 2-11, item Nos. 67 and 69. *b.* Para 2-11, item No. 70. *c.* Para 2-11, item Nos. 61 and 71. *d.* None.
90	Pilot's RADIO KEY foot switch.	*a.* Press foot switch. Procedure and results are the same as in sequence No. 89 *a* through *c.* *b.* Release foot switch. Transmission shall cease.	*a.* Para 2-11, item No. 68. *b.* None.
91	Repeat sequence Nos. 89 and 90 at copilot's and aft pilot's positions.	Procedure and results are the same as in sequence Nos. 89 and 90.	Para 2-11, item Nos. 72 through 75.
92	RECEIVERS switch and VOL control on No. 1 and No. 2 crewmen's C-1611(*)AIC.	*a.* Set RECEIVERS UHF switch to ON. Received audio signal is clear. *b.* Adjust VOL control for desired audio level.	*a.* Para 2-11, item No. 76. *b.* None
93	Function selector switch and mode selector switch on C-287/ARC-51BX.	Set function selector switch to T/R-G position. Arrange for communications check on assigned guard receiver fre-' quency. Listen for clear, intelligible audio in headset.	Para 2-11, item No. 77.
	INTERNAL LIGHTS CONSOLE control on copilot's lighting control panel.	Rotate CONSOLE control toward BRT. The C-6287/ARC 51BX lamps illuminate and increase in intensity.	Para 2-11, item No. 78.
95	Function selector switch on C-6287 / ARC-51BX.	Set switch to OFF.	None.
96	APX-72 circuit breaker, on left DC RAD BUS circuit breaker panel.	Engage APX-72 circuit breaker.	Para 2-11, item No.79.
97	AN /APM-123 (V) transponder test	Prepare test set for operation as directed in TM 11-6625-667-12. Use nonradiation method, test hood coupling. set. *Note:* Control positions (code, mode, etc. must agree smith control position of AN/APM-123(V).	TM 11-6625-667-12.
98	Controls and switches on C-6280 (P) /APX and RT-859 /APX-72.	a. Set MASTER control to ST BY. Allow equipment to warm up for 3 minutes and then set to NORM. *b.* Set MODE 2 code selector on RT-859 I/APX-72 to 5555. *c.* Set INDENT-MIC, M-2, M-3 /A, M-C and MODE 4 switch to OUT. *d.* Set MODE 1 code selector to 73. *e.* Set MODE 3/A code selector to 0000. *f.* Set M-1 switch to ON.	*a.* Para 2-11, item No. 79. *b.* None *c.* None *d.* None. *e.* None. *f.* None.

Seq No.	Item to be Inspected	Procedure	Paragraph reference
99	Controls and switches on AN/APM-123(V).	*a.* Set FUNCTION switch to SYSTEM. Set MODE switch to 1. *b.* Set CODE AB switch to 73 (CD CODE always 00 for model). *c.* Press PRESS-TO-TEST switch ACCEPT indicator shall illuminate. *d.* If REJECT indicator lights, turn PRESS-TO-TEST switch to LOCK. Set FUNCTION switch to FREQ-POWER. REJECT indicator shall illuminate.	*a.* None. *b.* None. *c*. None. *d.* Para 2-11, item No. 80.
100	M-1 and M-2 switches on C-6280(P)/APX.	Set M-1 switch to OUT and M-2 switch to ON.	None.
101	FUNCTION, PRESS-TO-TEST, MODE, and CODE switches on AN/APM-123(V).	*a.* Set FUNCTION switch to SYSTEM. Set MODE switch to 2. *b.* Set CODE A, B, C, and D switches to 5555. *c.* Press PRESS-TO-TEST switch ACCEPT indicator shall illuminate. *d.* If REJECT indicator lights, turn PRESS-TO-TEST switch to LOCK. Set FUNCTION switch to FREQ-POWER. REJECT indicator shall illuminate.	*a.* None. *b.* None. *c.* None. *d.* Para 2-11, item No. 80.
102	M-2 and M-3/A switches on C-6280(P)/APX.	Set M-2 switch to OUT and M-3/A switch to ON.	None
103	FUNCTION, PRESS-TO-TEST, MODE, and CODE switches on AN/ APM-123(V).	*a.* Set FUNCTION switch to SYSTEM. *b.* Set MODE switch to 3/A. *c.* Set CODE A, B, C, and D switches to 7777. *d.* Press PRESS-TO-TEST switch. ACCEPT indicator shall illuminate. *e.* If REJECT indicator lights, turn PRESS-TO-TEST switch to LOCK. Set FUNCTION switch to FREQ-POWER. REJECT indicator shall illuminate.	*a.* None. *b.* None. *c.* None. *d.* None. *e.* Para 2-11, item No. 80.
104	MASTER control and M-1 switch on C-6280(P)/ APX.	*Note*: Emergency operation may interfere with distress, signals. Perform test as quickly as possible. *a.* Set MASTER control to EMER *b.* Set M-1 to ON, all other mode switches to OUT. .	*a.* None. *b.* None.
105	FUNCTION, MODE and PRESS-TO-TEST switches on AN/ APM-123(V).	*a.* Set FUNCTION switch to EMER. *b.* Set MODE switch to 1. *c.* Press PRESS-TO-TEST switch. ACCEPT indicator shall illuminate.	*a.* None. *b.* None. *c.* Para 2-11, item No. 81.
106	M-1 and M-2 switches on C-6280 (P)/ APX.	Set M-1 to OUT and M-2 to ON.	None.
107	MODE and PRESS-TO-TEST switches on AN/ APM-123(V).	*a.* Set MODE switch to 2. *b.* Press PRESS-TO-TEST switch. ACCEPT indicator shall illuminate.	*a.* None. *b.* Para 2-11, item No. 81.
108	M-2 and M-3/ A switches on C-6280(P)/ APX.	Set M-s to OUT and M-3 A to ON.	None.
109	MODE and PRESS-TO-TEST switches on AN/ APM-illuminate. 123(V).	*a.* Set MODE switch to 3 A. *b.* Press PRESS-TO-TEST switch. ACCEPT indicator shall	*a.* None. *b.* Para 2-11, item No. 81.
110	MASTER and IDENT-MIC switches on C-6280(P)/ APX.	Set MASTER switch to NORM and IDENT-MIC switch to IDENT.	None.

Seq No.	Item to be Inspected	Procedure	Paragraph reference
111	FUNCTION and PRESS-TO-TEST switches on AN/ APM-123(V).	*a.* Set FUNCTION switch to IDENT. *b.* Press PRESS-TO-TEST switch. ACCEPT indicator shall illuminate.	*a.* None. *b.* Para 2-11, item No. 81.
112	IDENT-MIC switch onC-6280(P)/APX.	Set IDENT-MIC switch to MIC. Momentarily press each of the interphone systems keying switches in turn while performing sequence No. 113.	None.
113	PRESS-TO-TEST switch on AN/APM-123(V).	Press PRESS-TO-TEST switch. ACCEPT indicator shall illuminate.	Para2-11. item No. 81 and 82.
114	AN/ APM-123(V).	Turn off test set.	TM11-6625-667-12.
115	Controls and switches on C-6280(P)/ APX when used in conjunction with TS-1843/ APX.	*a.* Set MASTER switch to NORM. *b.* Set IDENT-MIC switch to OUT. *c.* Set M-1, M-2, M-3/ A and M-C to ON. *d.* RAD TEST-MON switch to OUT. *e.* Set M-1 switch to TEST. TEST light on C-6280(P)/ APX shall illuminate.and 83. *f.* Set M-1 switch to ON and M-2 switch to TEST. TEST light on C-6280 (P) / APX shall illuminate. *g.* Set M-2 switch to ON and M-3/ A switch to TEST. TEST light on C-6280(P) / APX shall illuminate.	*a.* None. *b.* None. *c.* None. *d.* None. *e.* Para 2-11, item Nos. 79 *f.* Para 2-11, item No. 83. *g.* Para 2-11, item No. 83.
116	INTERNAL LIGHTS CONSOLE control on copilot's lighting control panel.	Rotate CONSOLE control toward BRT. Panel lamps on C-6289(P)/ APX shall illuminate and increase in intensity.	Para 2-11, item No. 84.
117	MASTER control on C-6280(P)/ APX.	Set MASTER control to OFF.	None.
		OPERATIONAL CHECK. RADIO SET AN/ARN-82 (VOR RECEIVING SET FACILITY)	
118	ARN-82 circuit breaker on left DC RAD BUS circuit breaker panel and ASN-43 26V ØC circuit breaker on right RADIO ac circuit breaker panel.	*a.* Engage ARN-82 circuit breaker. *b.* Engage ASN-43 26VOC circuit breaker.	*a.* None. *b.* None.
119	OBS control on ID-1347/ ARN-82.	Set OBS control for 0 indication under course index.	None.
120	Power switch on C-6873/ ARN-82	*a.* Set power switch to TEST. Vertical bar of ID-1347/ ARN-82 shall center and to/ from indicator shall indicate FR. *b.* With compass facility operating note heading indication of compass card on ID-998/ ASN and ID-250(*)/ ARN indicators. Double-barred pointers shall indicate compass heading +180 degrees (6 o'clock position). *c.* Set power switch to PWR.	*a.* Para 2-11, item Nos. 85 and 86. *b.* Para 2-11, item No. 87. *c.* None.
121	Frequency and VOL controls on C-6873/ ARN-82.	*a.* Set frequency controls to one of communication frequencies. *b.* Set VOL control to mid-position.	*a.* Para 2-11, item No. 88. *b.* None.
122	RECEIVERS NAV switch and VOL control on all C-1611(*)/	*a.* Set RECEIVERS NAV switch to ON. and 90. *b.* Establish radio contact with control tower using one of helicopter facilities and request tower to transmit on pre-and 90.	*a.* Para 2-11, item Nos. 89 *b.* Para 2-11, item Nos. 89

Seq No.	Item to be Inspected	Procedure	Paragraph reference
	AIC, and VOL control on C-6873/ ARN-82.	viously selected frequency. Tower is heard clearly in headset at all stations. *c*. Adjust VOL controls on C-6873/ ARN-82 and C-1611 (*)/ AIC for desired audio level.	*c*. None.
123	Power switch on C-6873/ ARN-82.	Set switch to TEST. Noise is heard in headset. Set power switch to PWR. Noise is not heard (proper squelch).	Para 2-11, item No. 91.
		OPERATIONAL CHECK, RADIO SET AN/ARN-83 (ADF DIRECTION FINDER FACILITY)	
124	ARN-83 circuit breaker on right DC RAD BUS circuit breaker panel and ASN-43 26V C circuit breaker on right RADIO ac circuit breaker panel.	*a*. Engage ARN-83 circuit breaker. *b*. Engage ASN-43 26V C circuit breaker.	*a*. Para 2-11, item No. 92. *b*. Para 2-11, item No. 92.
125	RECEIVERS NAV switches on all C-1611 (*)/AIC.	Set RECEIVERS NAV switch to ON.	None.
126	C-6899/ARN-83 Function switch and GAIN control.	*a*. Set function switch to ANT. *b*. Rotate GAIN control clockwise and listen for noise in headset.	*a*. None. *b*. Para 2-11, item Nos. 92 and 93.
127	C-6899/ARN-83 range switch and Tune control.	*a*. Set range switch to each of three frequency ranges and tune to local radio station. Check that range switching takes place and dial indicates correct frequency range. *b*. Observe that tuning meter indicates signal strength and audio is heard in headset.	*a*. Para 2-11, item No. 94. *b*. Para 2-11, item No. 95.
128	BFO-OFF switch.	Set BFO-OFF switch to BFO. Tune to local radio station and listen for beat notes in headset. Zero-beat on station and observe that sound is cut off.	Para 2-11, item No. 96.
129	LOOP and function switches.	*a*. Set function switch to ANT and tune to radio station of known bearing. *b*. Set up hf radio facility for transmission. While hf radio facility is keyed, reception of radio station is interrupted and R-1391/ARN-83 is disabled. *c*. Set function switch to LOOP. Using LOOP switch, rotate pilot's and copilot's Indicators, Radio Magnetic ID-998/ ASN and ID-250(*)/ARN single-barred pointer for aural null in headset. Observe that bearing indicator pointer will indicate two nulls displaced 180 degrees apart. *d*. Set LOOP switch to center position and function switch to ADF. Observe that bearing indicator pointer rotates and shows bearing of radio station (one null).	*a*. None. *b*. Para 2-11, item No. 97. *c*. Para 2-11, item Nos. 98 through 102. *d*. Para 2-11, item Nos. 98 through 102.
A130	INTERNAL LIGHTS CONSOLE control on copilot's light control panel.	Rotate CONSOLE control toward BRT. The C-6899/ARN-83 panel lamps illuminate and increase in intensity.	Para 2-11, item No. 103.
		OPERATIONAL CHECK, GYROMAGNETIC COMPASS SET AN/ASN-43 (COMPASS FACILITY)	
131	ASN-43 B ASN-43 C, and ASN-43 26V C circuit breakers on overhead right RADIO ac circuit breaker panel.	*a*. Engage ASN-43 B and ASN-43 C circuit breakers. *b*. Engage ASN-43 26V C circuit breaker.	*a*. None. *b*. None.

Seq No.	Item to be Inspected	Procedure	Paragraph reference
132	Power failure indicator on ID-998/ ASN.	Observe that power failure indicator has disappeared.	Para 2-11, item Nos. 104 and 105.
133	COMPASS SLAVING switch on instrument panel.	Set COMPASS SLAVING switch to IN.	None
134	Synchronizing knob on ID-998/ ASN.	Adjust synchronizing knob until annunciator is centered (nulled).	Para 2-11 item No. 146
135	ID-998/ASN and ID-250(*) / ARN compass card heading indications.	Check that ID-988/ASN and ID-250(*)/ARN compass card headings agree with known magnetic heading. Not heading indication.	Para 2-11, item Nos. 107 through 109.
136	Synchronizing knob on ID-998/ ASN.	Adjust synchronizing knob clockwise until heading shown on compass card is 10 degrees greater than heading noted in sequence No. 135. Observe that annuniciator moves fully to dot (.).	
		b. Check that heading shown on compass card returns to heading noted in sequence No. 135, 1 degree after 10 minutes.	*b*. Para 2-11, item Nos. 107 and 110.
		c. Adjust synchronizing knob counterclockwise until heading shown on compass card is 10 degrees less that heading noted in sequence No. 135. Observe that annunciator moves fully to cross (+).	*c*. None.
		d. Check that heading shown on compass card returns to heading noted in sequence No. 135, 1 degree after 10 minutes. Check that this heading is same as heading noted in b above, 1 degree.	*d*. Para 2-11, item Nos. 107 and 110.
		e. Adjust synchronizing knob clockwise until heading indicated on compass card is 30 degrees greater that heading noted in sequence No. 135. Note new heading.	*e*. None.
		f. Check that heading shown on compass card is only 10 to 25 degrees greater than heading noted in sequence No. 135 after 5 minutes.	*f*. Para 2-11, item Nos. 107 and 111.
		g. Adjust synchronizing knob counterclockwise until heading. shown on compass card is 30 degrees less than heading noted in sequence No. 135. Note new heading.	None.
		h. Check that heading shown on compass card is only 10 to 25 degrees less than heading noted in sequence No. 135 after 5 minutes.	*h*. Para 2-11, item Nos. 107 and 111.
		OPERATIONAL CHECK, INTERCOMMUNICATION SET AN/AIC-12 (INTER PHONVE SYSTEM)	
137	AIC-12 PILOT, CREW, COPILOT, and AFT PILOT circuit breakers on overhead DC RAD BUS circuit breaker panel.	Engage AIC-12 circuit breakers.	None.
138	Transmit-interphone selector switch and RECEIVERS switch on all C-1611 (*) , ' AIC, cyclic stick RADIO-ICS switch (Cyclic stick keying switch), and pilot's RADIO KEY foot switch.	*a*. Set RECEIVERS INT switches to ON at copilot's, aft pilot's, and No. 1 and No. 2 crewmen's stations. Set pilot's transmitinterphone selection switch to any position except INT. Press pilot's cyclic stick keying switch to ICS; make test call to each station in turn and ask for reply. Speech is clear and free from interference. Sidetone is clear in pilot's headset.	*a*. Para 2-11, item Nos. 112 and 113.
		b. Release pilot's cyclic stick keying switch. Interphone audio at receiving stations shall cease.	*b*. None.

Seq No.	Item to be Inspected	Procedure	Paragraph reference
		c. Set pilot's transmit-interphone selector switch to INT. Press pilot's cyclic stick keying switch to RADIO; make test call to each station in turn and ask for reply. Speech is clear and free from interference. Sidetone is clear in pilot's headset. *d*. Release pilot's cyclic stick keying switch. Interphone audio at receiving stations shall cease. *e*. Press pilot's RADIO KEY foot switch. Result is the same as in *c* above. *f*. Release pilot's RADIO KEY foot switch. Result is the same as in *d* above. *g*. Adjust VOL control for desired audio level at all stations. *h*. Repeat *a* through *f* above, from copilot's and aft pilot's stations.113, 115, and 116. *i* Repeat *c* and *d* above, from No. 1 and No. 2 crewmen's stations, pressing mike button on Jack U-94A/U	c. Para 2-11, item No. 116. d. None. e. Para 2-11, item Nos. 115. f. None. g. Para 2-11, item No. 118. h. Para 2-11, item Nos. 112, i. Para 2-11, item No. 117.
139	Connect headset with walk-around cable at external ground matintenance connector.	Press mike button; make test call to each station in turn and ask for reply. Speech is clear and free from interfearence. Note: With mike button pressed, No. 2 crewman has equivalent of hot mike.	Para 2-11, item No. 114.
140	Transmit-interphone selector switch on pilot's C-1611(*)/ AIC	Set switch to 1.	None.
141	Mode control switch on C - 7088/ARC- 131	Set switch to PTT to turn on FM facility.	None.
142	Pilot's cyclic stick keying switch.	Press keying switch to RADIO and speak into microphone. Sidetone is clear.	Para 2-11, item No. 119:
143	Transmit- interphone selector switch on pilot's C-1611(*)/ AIC.	Set transmit-interphone selector switch to 2.-	None.
144	Function selector switch on C-6287, ARC-51BX.	Set switch to T/R to turn on uhf radio facility.	None.
145	Pilot's cyclic stick keying switch.	Press keying switch to RADIO and speak into microphone. Sidetone is clear.	Para 2-11, item No. 119.
146	Transmit-interphone selector switch on pilot's C-1611(*)/ AIC.	Set transmit-interphone selector switch to 3.	None.
147	OFF/PWR switch on C -7197/ARC -134.	Rotate switch to PWR.	None.
148	Deleted	Deleted Deleted	
149	Pilot's cyclic stick keying switch.	Press keying switch to RATDIO and speak into microphone. Sidetone is clear.	Para2-11, item No. 119.
150	Deleted	Deleted Deleted	

Seq No.	Item to be Inspected	Procedure	Paragraph reference
151	Deleted	Deleted Deleted	
152	Transmit-interphone selector switch on pilot's C-1611(*)/ AIC.	Set transmit-interphone selector switch to 4.	None.
153	Function selector switch on C-3940/ ARC-94.	Set function selector switch to USB to turn on hf radio facil-ty.	None.
154	Pilot's cyclic stick keying switch.	Press keying switch to RADIO and speak into microphone. Sidetone is clear.	Para 2-11, item No. 119.
155	RECEIVERS NAV switch on all C-1611(*)/AIC.	Set RECEIVERS NAV switch to ON.	None.
156	Power switch on C-6873/ ARN-82.	Set power switch to PWR. Receiver noise is audible in all headsets.	Paras 2-11, item No. 120.
157	Function switch on C-6899/ ARN-83.	Set function switch to ADF. Receiver noise is audible in all headsets.	Para 2-11, item No. 120.
158	Repeat sequence Nos. 140 through 154 at copilot's and aft pilot's positions.	Procedure and results are the same.	Para 2-11, item No. 119 - or 120.
159	Transmit-interphone selector switch on C-1611 ( )/ AIC. (All models except C-1611/ AIC).	Operate transmit-interphone selector switch to PVT, and all other stations. Sidetone should be heard while talking. Talk in both directions to check the private interphone line.	Para 2-11, item Nos. 121 and 122.
160	INTERNAL LIGHTS CONSOLE control on copilot's lightning control panel and AFT PILOT'S CON-SOLE and PANEL LIGHTS control panel.	Rotate controls toward BRT. The C-1611(*)/ AIC lamps Illu-minate and increase in intensity.	Para. 2-11, item No. 123.
161	MASTER BAR and GEN NO. 1 and NO. 2 switches on MASTER SWITCH panel.	Set switches to OFF.	None.
162	External dc power supply	Connect external dc power supply to helicopter.	Para 2-4.
163	INVERTER PWR and CONT circuit break-ers on overhead right circuit breaker panel.	Engage circuit breakers.	Para 2-11, item No. 124.
164	OUT circuit break-er in attic compartment.	Engage circuit breaker.	Para 2-11, item No. 124.
165	EXT POWER and INV switches on MASTER SWITCH panel.	*a.* Set switches to ON. Fuel quantity indicators shall indicate fuel level. *b.* Connect electrical test set to PU-543/ A. Press down on power test set selector switch and rotate knob to 150. Test set shall indicate 115 volts ac.	*a.* Para 2-11, item No. 124. *b.* Para 2-11, item No. 125.

Seq No.	Item to be Inspected	Procedure	Paragraph reference
		c. Set INV switch to OFF. Fuel quantity indicators shall indicate zero. *d.* Set EXT POWER switch to OFF.	*c.* None. *d.* None.
166	External dc power supply.	Disconnect external de power supply from helicopter. *OPERATIONAL CHIECK, VOICE WARNING SYSTEM AN/ASH-19*	Para 2-4
167	CAUTION PNL TEST circuit breaker.	Engage CAUTION PNL TEST circuit breaker.	None.
168	TEST switch on caution-advisory panel.	Press TEST switch. All capsules shall illuminate.	Para 2-11, item Nos. 126 and 127.
169	AN/ASH-19 CONTROL POWER and WARN LIGHT circuit breakers.	Engage circuit breakers. VWS OFF and CIPR NOT RECORDING capsules shall illuminate.	Para 2-11, item Nos. 128 and 129.
170	Switches on voice warning system control panel.	*a.* Set ON-OFF switch to ON. VWS OFF causule shall extinguish immediately and CIPR NOT RECORDING capsule shall extinguish after a short delay. *b.* Press and release TEST switch. Message channel 1 plays. out. *c.* Press and release OVERRIDE switch. Message channel 2 plays out. *d.* Press and release RESET switch Message channel 1 plays out. *e.* Press and release OVERRIDE switch and allow message to play out at least twice in 20 seconds. *f.* Repeat step e above 18 times. Message channels 3 through 20 play out successively and message channel 20 continues to play out. *Note.* All 20 channels must be over-ridden to release the test relay and return the Rf-139( )/ASH-19 normal operation.	*a.* Para 2-11, item Nos. 130 through 132. *b.* Para 2-11, item No. 133. *c.* Para 2-11, item No. 334. *d.* Para 2-11, item No. 133. *e.* Para 2-11, item No. 135. *f.* Para 2-11, item No. 136
171	INTERNAL LIGHTS CONSOLE on copilot's lighting control panel.	Rotate CONSOLE control toward BRT. Panel lamps on voice warning control panel and CIPR ICS switch lamp on instrument panel shall illuminate and increase in intensity.	Para 2-11, item No. 137.
		OPERATIONAL CHECK, ATTITUDE INDICATING SYSTEM	
172	Pilot's and copilot's GYRO NORM-ALT switches.	Position pilot's and copilot's GYRO NORM-ALT switches on instrument panel to GYRO NORM.	None.
173	VGI PILOT circuit breakers on overhead circuit breaker panel.	*a.* Engage circuit breakers and simultaneously start elapsed time clock on instrument panel. *b.* When pilot's attitude indicator OFF flag is masked, stop elapsed time clock. Time shall be within 60 seconds. *c.* Reset elapsed time clock.	*a.* None. *b.* Para 2-11, item No. 141. *c.* None.
174	VGI CO-PILOT circuit breakers on overhead circuit breaker panel.	*a.* Engage circuit breakers and simultaneously start elapsed time clock on instrument panel. *b.* When copilot's attitude indicator OFF flag drops from view. stop elapsed time crock. Time shall be within G0 seconds. *c.* Reset elapsed time clock	*a.* None. *b.* Para 211, item, No. 112. *c.* None.

Seq No.	Item to be Inspected	Procedure	Paragraph reference
175	Pitch and roll trim knobs on pilot's and copilot's attitude indicators.	*a.* Turn both knobs on pilot's and copilot's attitude indicators to extreme counterclockwise position. Indicators shall read 15±5 degrees climb and 14±6 degrees left bank. *Note.* Indications observed (extent of trim control) depend upon helicopter being level. *b.* Turn both knobs on pilot's and copilot's attitude indicators, to extreme clockwise position. Indicator shall read 7.5±2.5 degrees dive and 14±6 degrees right bank. *Note.* Indications observed (extent of trim control depend upon helicopter being level. *c.* Align both knobs to center indicator.	*a.* Para 2-11, Item No. 143. *b.* Para 2-11, item No. 143. *c.* None.
176	Pilot's vertical gyro on R/H tilt table.	Loosen fasteners securing tilt table and raise back to simulate 10-degrees nose down. Pilot's attitude indicator shall read 10+-1 degrees dive.	Para 2-11, item No. 144.
177	Copilot's vertical gyro on L/H tilt table.	Loosen fasteners securing tilt table and raise front to simulate 10-degrees nose up. Copilot's attitude indicator shall read 10+1 degrees climb.	Para 2-11, item No. 144.
178	Pilot's GYRO NORM-ALT switch.	*a.* Position pilot's GYRO NORM-ALT switch to ALT. *b.* Pilot's attitude indicator shall repeat readings of copilot's attitude indicator. *c.* Position pilot's GYRO NORM-ALT switch -to GYRO NORM.	*a.* None. *b.* Para 2-11, item No. 145. *c.* None.
179	Copilot's GYRO NORM-ALT switch. attitude indicator.	*a.* Position copilot's GYRO NORM-ALT switch to ALT. *b.* Copilots' attitude indicator shall repeat readings of pilot's *c.* Position copilot's GYRO NORM-ALT switch to GYROC. NORM.	*a.* None. *b.* Para 2-11, item No. 146. *No*ne.
180	Pilot's vertical gyro on R/H tilt table.	*a.* Lower tilt table. *b.* Raise left side of tilt table to simulate 10-degrees right roll. Pilot's attitude indicator shall read 10 ± 1 degree right roll.	*a.* None. *b.* Para 2-11, item No. 144.
181	Copilot's vertical gyro on L/H tilt table.	*a.* Lower tilt table. *b.* Raise right side of tilt table to simulate 10-degrees left roll. Copilot's attitude indicator shall read 10 ± 1-degrees left roll.	*a.* None. *b.* Para 2-11, item No. 144.
182	Pilot's GYRO NORM-ALT switch.	*a.* Position pilot's GYRO NOR M-ALT switch to ALT. *b.* Pilot's attitude indicator shall repeat readings of copilot's attitude indicator. *c.* Position pilot's GYRO NORM-ALT switch to GYRO NORM.	*a.* None. *b.* Para 2-11, item No. 145. *c.* None.
183	Copilot's GYRO NORM-ALT switch.	*a.* Position copilot's GYRO NORM-ALT switch to ALT. *b.* Copilot's attitude indicator shall repeat readings of pilot's attitude indicator. *c.* Position copilot's GYRO NORM-ALT switch to GYRO *d.* Lower L/H and R/H tilt tables. *Caution*: Insure tilt tables are level and secured at end of testing procedures.	*a.* None. *b.* Para 2-11, item No. 146. *c.* None. NOR M. *d.* None.
184	Preliminary procedures.	OPERATIONAL CHECK, AUTOMATIC FLIGHT CONTROL SYSTEM <u>Warning:</u> Ensure no personnel are working on or near main or tail rotor blades during system testing. There will be blade movement which could cause injury.	

Seq No.	Item to be Inspected	Procedure	Paragraph reference
		a Insure that blades are clear and unlocked. It is necessary that blades be able to move during testing.	*a.* None.
		b. Insure that there are no rigging pins installed unless otherwise directed.	*b.* None.
		c. Insure rigging of flight controls and/or rotor blades is not in progress.	c. None.
		d. Apply external auxiliary electrical and hydraulic power or start-APP. If APP is used, external hydraulic power is not required. If external electrical power is used, ensure that EXT POWER CONNECTED advisory capsule illuminates. If not, do not proceed until helicopter electrical system is functioning properly and EXT POWER CONNECTED capsule illuminates.	*d.* Para 2-4b and c.
		e. Insure that 1st and 2nd STAGE switch on collective stick grips is centered.	*e.* None.
185	Overhead circuit breaker panel circuit breakers used for AFCS operation.	*a.* Insure the following ac circuit breakers are disengaged: AFCS 1, AFCS 2, BEEPER TRIM 1, and BEEPER TRIM 2.	*a.* None.
		b. Insure the following dc circuit breakers are disengaged: AFCS 1, AFCS 2, BEEPER TRIM, AFCS SERVO, and AFCS SERVO SHUT-OFF.	*b.* None.
186	Switches on AFCS control panel and remote stick control panel.	*a.* Place switches on AFCS control panel in OFF/NORMAL position.	*a.* None.
		b. Place switches on remote stick control panel in OFF/NORMAL position.	*b.* None.
187	Test setup of line test set (LTS) in helicopter.	Connect LTS according to following procedure:	
		a. Open pressure equalizer valve first and then test panel cover assembly from LTS.	*a.* Figure 2-7.1.
		b. Place LTS on seat--	*b.* Figure 2-7.1.
		c. Insure all switches and circuit breakers on LTS are in OFF/ NORMAL position.	*c.* Figure 2-7.1.
		d. Remove cable assemblies W1, W2, and W5 from cover assembly.	*d.* Figure 2-7.1.
		e. Open upper-nose electronics compartment access door.	*e.* Figure 2-7.1.
		f. Remove helicopter receptacles, P624 and P625, from AFCS amplifier plugs marked J841 and J842.	*f.* Figure 2-7.1.
		g. Connect single end of W1 cable assembly marked TO TEST SET J101 to LTS plug marked J101.	*g.* Figure 2-7.1.

Seq No.	Item to be Inspected	Procedure	Paragraph reference
		h. Connect single end of cable assembly W2 marked to TEST SET J102 to LTS plug marked J102.	*h.* Figure 2-7.1.
		i. Pass branched ends of cable assemblies W1 and W2 under right-hand section of instrument panel to AFCS amplifier in uppernose electronics compartment.	*i.* Figure 2-7.1.
		j. Disconnect helicopter connectors from AFCS amplifier. Connect receptacle of branched end of cable assembly W1 marked TO J841 and P624 to plug marked J841 on AFCS amplifier and connect plug of branched end of cable assembly W1 to helicopter receptacle P624.	*j.* Figure 2-7.1.
		k. Connect receptacle of branched end of cable assembly W2 marked TO J842 and P625 to plug marked J8412 on AFCS amplifier and connect plug of branched end of cable assembly W2 to helicopter receptacle P625.	*k*. Figure 2-7.1.
		l. Disconnect helicopter connector from oscillatory shutoff unit and connect cable assembly W5 to helicopter connector. Cable assembly W5 must be used for pitch, roll, yaw, and collective channel tests and for simulated signal test of these channels.	*l.* None.
188	Overhead circuit breaker panel circuit breakers used for AFCS operation.	*a.* Engage the following ac circuit breakers: AFCS 1, AFCS 2, BEEPER TRIM 1, BEEPER TRIM 2, VGI PILOT, VGI CO-PILOT, and ASN-43 ϕ B. *b.* Engage the following dc circuit breakers: AFCS 1, AFCS 2, BEEPER TRIM, AFCS SERVO, AFCS SERVO SHUT-OFF, VGI PILOT, and VGI CO-PILOT.	*a.* None. *b.* None.
189	Self-test of LTS-------------	*a.* Set PWR 115VAC and PWR 28VDC switches to ON position. PWR 116VAC and PWR 28VDC indicator lamps shall illuminate and remain on for duration of self-test. *b.* Turn SIM SIG TEST switch to ± VAC position and set AC-SIM SIG switch to + ϕ position. AC OUTPUT meter shall indicate 1 ± 0.1 volt ac. Set AC-SIM SIG switch to - ϕ position. AC OUTPUT meter indicator shall show slight movement but shall return and indicate 1 ± 0.1 volt ac. *c*. Turn SIM SIG TEST switch to ± 2VAC position and leave AC-SIM SIG switch in - 0 position.	*a.* Para 2-11, item No. 147. *b.* Para 2-11, item No. 148. *c.* Para 2-11, item No. 148.

Seq No.	Item to be Inspected	Procedure	Paragraph reference
		AC OUTPUT meter shall indicate 2 ± 0.2 volts ac. Set AC-SIM SIG switch to + ϕ position. AC OUTPUT meter indicator shall show slight movement but shall return and indicate 2 ± 0.2 volts ac. Return AC-SIM SIG switch to - g position.	
		d. Turn SIM SIG TEST switch to ± 1VDC position. Set SIM SIG-DC switch to + position. The AMPL OUTPUT meter indicator shall move right to indicate 1 ± 0.1 volt dc. Set SIM SIG-DC switch to - position. The AMPL OUTPUT meter indicator shall move left to indicate -1 ± 0.1 volt dc.	*d.* Para 2-11, item NO. 149.
		e. Turn SIM SIG switch to HARDOVER position and SIM SIG TEST to +10 VDC position. The AMPL OUTPUT meter indicator shall move right to indicate 10 ± 1 volts dc.	*e.* Para 2-11, item NO. 149.
		f. Turn SIM SIG and SIM SIG TEST switches to OFF position.	*f.* None.
		g. Set PWR 115VAC and PWR 28VDC switches to OFF position. PWR 115VAC and PWR 28VDC indicator lamps shall extinguish.	*g.* None.
190	AFCS power test ----------	*a.* Set PWR 115VAC and PWR 28VDC switches to ON. PWR 115VAC and PWR 28VDC indicator lamps shall illuminate and remain on for AFCS power test.	*a.* None.
		b. Turn AFCS POWER switch to NO. 1 28VDC position. AFCS POWER-28VDC indicator lamp shall illuminate.	*b.* Para 2-11, item NO. 150.
		c. Turn AFCS POWER switch to NO. 2 28VDC position. AFCS POWER -28VDC indicator lamp shall illuminate.	*c.* Para 2-11, item NO. 150.
		d. Turn AFCS POWER switch to NO. 115VAC position. AFCS POWER-115VAC indicator lamp shall illuminate.	*d.* Para 2-11, item NO. 151.
		e. Turn AFCS POWER switch to NO. 2 115VAC position. AFCS POWER-115VAC indicator lamp shall illuminate.	*e.* Para 2-11, item NO. 151.
		f. Turn AFCS POWER switch to AMPL 115VAC position. AFCS POWER-115VAC indicator lamp shall illuminate.	*f.* Para 2-11, item NO. 151.
		g. Turn AFCS POWER switch to AMPL 28VDC position. AFCS POWER-28VDC indicator lamp shall illuminate.	*g.* Para 2-11, item NO. 150.
		h. Turn AFCS power switch to OFF. Leave PWR 115VAC and PWR 28VDC switches in ON position.	*h.* None.

Seq No.	Item to be Inspected	Procedure	Paragraph reference
191	Time delay and AFCS control panel test.	*a*. Press AUTO FAIL RESET switch on AFCS control, if it is illuminated. AUTO FAIL RESET switch shall extinguish.	*a*. Para 2-11, item NO. 152.
		b. Press AFCS 1 and AFCS 2 switches on AFCS control panel. AFCS 1 and AFCS 2 switches shall illuminate.	*b*. Para 2-11, item NO. 153.
		c. Disengage AFCS 1 and AFCS 2 ac circuit breakers on overhead circuit breaker panels and wait 5 minutes before continuing test. AFCS 1 switch shall extinguish immediately and AFCS 2 switch shall extinguish after approximately 1 minute.	*c*. Para 2-11, item NO. 154.
		d. Engage AFCS 1 ac circuit breaker on overhead circuit breaker Panel and start elapsed time clock on instrument panel to record time required for AUTO FAIL RESET switch or AFCS 1 switch to illuminate. AUTO FAIL RESET switch or AFCS 1 switch shall illuminate in 60 ± 15 seconds.	*d*. Para 2-11, item NO. 155.
		e. Press AUTO FAIL RESET switch, if illuminated. AUTO FAIL RESET switch shall extinguish and remain off for remainder of time delay and AFCS control panel test. AFCS 1 switch shall illuminate.	*e*. Para 2-11, item NO. 156.
		f. Engage AFCS 2 AC circuit breaker on overhead circuit breaker Panel and start elapsed time clock on instrument panel to record time required for AFCS 2 switch to illuminate. AFCS 2 switch shall illuminate in 604- 15 seconds.	*f*. Para 2-11, item NO. 157.
		g. Press AFCS SERVO switch. AFCS SERVO switch shall illuminate.	*g*. Para 2-11, item NO. 158.
		h. Press STICK TRIM switch. STICK TRIM switch shall illuminate. *Note.* AFCS SERVO switch must be pressed before STICK TRIM switch.	h. Para 2-11, item NO. 159.
		i. Press BAR ALT switch. BAR ALT switch shall illuminate.	*i*. Para 2-11, item NO. 160.
		j. Press YAW switch. YAW switch shall illuminate.	*j*. Para 2-11, item NO. 161.
		k. Press and hold AFCS. SERVO OFF switch on pilot's cyclic stick grip. AFCS servo shall disengage, making an audible sound, and AFCS SERVO and STICK TRIM switches on AFCS control panel shall extinguish and AFCS SERVO PRESS caution capsule shall illuminate.	*k*. Para 2-11, item Nos. 102 and 163.
		l. Release AFCS. SERVO OFF switch on pilot's cyclic stick grip. AFCS servo shall reengage, and AFCS SERVO and STICK TRIM switches shall illuminate and AFCS SERVO PRESS caution capsule shall extinguish.	*l*. Para 2-11, item Nos. 164 and 165.

Seq No.	Item to be Inspected	Procedure	Paragraph reference
		m. Press and hold AFCS. SERVO OFF switch on copilot's cyclic stick grip. AFCS servo shall disengage, making an audible sound and AFCS SERVO and STICK TRIM switches shall extinguish and AFCS SERVO PRESS caution capsule shall illuminate.	*m.* Para 2-11, item Nos. 162 and 163
		n. Release AFCS. SERVO OFF switch on copilot's cyclic stick grip. AFCS servo shall reengage and AFCS SERVO STICK TRIM switches shall illuminate and AFCS SERVO PRESS caution capsule shall extinguish.	*n.* Para 2-11, item Nos. 164 and 165.
		o. Press and hold TRIM REL. Switch on pilot's cyclic stick. STICK TRIM switch on AFCS control panel shall extinguish.	*o.* Para 2-11, item NO. 166.
		p. Release TRIM REL. switch on pilot's cyclic stick. STICK TRIM switch shall illuminate.	*p.* Para 2-11, item NO. 167.
		q. Press and hold TRIM REL. Switch on copilot's cyclic stick. STICK TRIM switch shall extinguish.	*q.* Para 2-11, item NO. 166.
		r. Release TRIM REL. switch on copilot's cyclic stick. STICK TRIM switch shall illuminate.	*r.* Para 2-11, item NO. 167.
		s. Press and hold BAR. REL. Switch on pilot's collective stick. BAR ALT switch on AFCS control panel shall extinguish.	*s.* Para 2-11, item NO. , 168.
		t. Release BAR. REL. switch on pilot's collective stick grip BAR ALT switch shall illuminate.	*t.* Para 2-11, item NO. 169.
		u. Press and hold BAR. REL. Switch on copilot's collective stick grip. BAR ALT shall extinguish.	*u.* Para 2-11, item NO. 168.
		v. Release BAR. REL. switch on copilot's collective stick grip. BAR ALT shall illuminate.	*v.* Para 2-11, item NO. 169.
		w. Press off all illuminated switches on AFCS control panel. All illuminated switches shall extinguish	*w.* Para 2-11, item NO. 170.
192	Pitch channel test----------	*a.* Set flight director to AFCS mode-------------------------------------	*a.* Para 2-11, item NO. 171.
		b. Press on AFCS 1 switch on AFCS control panel and AFCS 1 switch shall illuminate. Both off flags on flight director shall disappear.	*b.* Para 12-11, item Nos. 172 and 173
		c. Press on AFCS SERVO switch first and then STICK TRIM switch on AFCS control panel. These switches shall illuminate.	*c.* Para 2-11, item NO. 174.
		d. Center cyclic stick---	*d.* Para 2-11, item NO. 175.
		e. Turn AMPL OUTPUT-B switch to NO. 1 P AMPL position and NO. 1-SEINSOR OUTPUT switch to PR + PROP. position.	*e.* None.

Seq No.	Item to be Inspected	Procedure	Paragraph reference
		f. Disconnect both plugs from NO. 1 dual channel synchronizer on left side of electronics compartment.	*f.* Figure 2-12
		g. Disconnect helicopter connector from oscillatory shutoff unit in nose electronics compartment and connect cable assembly W5 to helicopter connector.	*g.* None.
		h. Raise front of NO. 1 tilt table in helicopter hoist well to simulate nose up attitude and hold in this position.	*h.* Figures 1-2 and 2-20.
		(1) AC OUTPUT meter shall indicate voltage and shall return to null.	(1) Para 2-11, item NO. 176.
		(2) AMPL OUTPUT meter shall indicate negative dc voltage and shall return to null.	(2) Para 2-11, item NO. 177.
		(3) Flight director indicator horizontal bar shall move up and shall return to null.	(3) Para 2-11, item NO. 178.
		(4) Cyclic stick shall move forward and shall return to center.	(4) Para 2-11, item NO. 179.
		i. Return NO. 1 tilt table to level position.	*i.* None.
		(1) AC OUTPUT meter shall indicate voltage and shall return to null.	(1) Para 2-11, item NO. 176.
		(2) AMPL OUTPUT meter shall indicate positive dc voltage and shall return to null.	(2) Para 2-11, item NO. 180.
		(3) Flight director indicator horizontal bar shall move down and shall return to null.	(3) Para 2-11, item NO. 181.
		(4) Cyclic stick shall move aft and shall return to center.	(4) Para 2-11, item NO. 1'82.
		j. Reconnect both plugs to NO. 1 dual channel synchronizer and raise and hold NO. 1 tilt table to simulate 5-degree nose-up attitude.	*j.* None.
		(1) AC OUTPUT meter shall indicate voltage and shall return to steady state of 3.5 ± 0.5 volts ac.	(1) Para 2-11, item NO. 183.
		(2) AMPL OUTPUT meter shall indicate negative dc voltage and shall return to null.	(2) Para 2-11, item NO. 177.
		(3) Flight director indicator horizontal bar shall move up and shall return to null.	(3) Para 2-11, item NO. 178.
		(4) Cyclic stick shall move forward and shall return to a stationary position of 0.75 ± 0.25 inch forward of center.	(4) Para 2-11, item NO. 184.

Seq No.	Item to be Inspected	Procedure	Paragraph reference
		k Turn-NO. 1-SENSOR OUTPUT switch to PVG position and AC OUTPUT meter shall indicate 1.0 ± 0.1 volt ac.	*k.* Para 2-11, item NO. 185.
		l. Turn NO. 1-SENSO, R OUTPUT switch to OFF position and A-AMPL OUTPUT switch to NO. 1 P SYNC position. AC OUTPUT meter shall indicate 2 ± 0.2 volts ac.	*l.* Para 2-11, item NO. 186.
		m. Without moving cyclic stick, press TRIM REL. switch on cyclic stick. AC OUTPUT meter shall return to null. Release TRIM REL. switch.	*m.* Para 2-11, item NO. 187.
		n. Set flight director indicator to ON-ON mode. Horizontal OFF flag shall appear.	*n.* Para 2-11, item NO. 189.
		o. Turn AMPL OUTPUT-B switch to OFF position, A-AMPL OUTPUT switch to HORIZ BAR position, and NO. 1-SENSOR OR OUTPUT to PR + PROP position.	*o.* None.
		p. Return NO. 1 tilt table to level position. (1) AC OUTPUT meter shall indicate voltage and shall return to steady state of 3.5 ± 0.5 volts ac. (2) AMPL OUTPUT meter shall indicate positive dc voltage and shall return to null. (3) Flight director indicator horizontal bar shall move down and shall return to null. (4) Cyclic stick shall move aft and shall return to original center.	*p.* None. (1) Para 2-11, item NO. 183. (2) Para 2-11, item NO. 180. (3) Para 2-11, item NO. 181. (4) Para 2-11, item NO. 182.
		q. Turn NO. 1-SENSOR OUTPUT to PVG position and AC OUTPUT meter shall indicate null.	*q.* Para 2-11, item NO. 190.
		r. Turn NO. 1-SENSOR OUTPUT switch to OFF position, and A-AMPL OUTPUT switch to NO. 1 P SYNC position and AC OUTPUT meter shall indicate 2 ± 0.2 volts ac.	*r.* Para 2-11, item NO. 191.
		s. Press TRIM REL. switch on cyclic stick, keeping stick centered. AC OUTPUT meter shall return to null. Release TRIM REL switch.	*s.* Para 2-11, item NO. 187.
		t. Return flight director to AFCS mode.	*t.* Para 2-11, item NO. 171.
		u. Press off AFCS 1 switch and press on AFCS 2 switch on AFCS control panel. AFCS 1 switch shall extinguish and AFCS 2 switch shall illuminate. Both flight director indicator OFF flags shall disappear.	*u.* Para 2-11, item Nos. 172 and

Seq No.	Item to be Inspected	Procedure	Paragraph reference
		v. Turn A-AMPL OUTPUTS switch to OFF position, AMPL OUT-PUT-B switch to NO. 2 P AMPL position, and SENSOR OUTPUT-NO. 2 switch to PR + PROP. position.	*v*. None.
		w. Disconnect both plugs from No. 2 dual channel synchronizer on right side of nose electronics compartment.	w. Figure 2-12.
		x. Raise front of NO. 2 tilt table in helicopter hoist well to simulate nose up attitude and hold in this position.	*x*. Figure 1-2.
		(1) AC OUTPUT meter shall indicate voltage and shall return to null.	(1) Para 2-11, item NO. 193.
		(2) AMPL OUTPUT meter shall indicate negative dc voltage and shall return to null.	(2) Para 2-11, item NO. 177.
		(3) Flight director indicator horizontal bar shall move up and shall return to null.	(3) Para 2-11, item NO. 178.
		(4) Cyclic stick shall move forward and shall return to center.	(4) Para 2-11, item NO. 179.
		y. Return NO. 2 tilt table to level position.	*y*. None.
		(1) AC OUTPUT meter shall indicate voltage and shall return to null.	(1) Para 2-11, item NO. 193.
		(2) AMPL OUTPUT meter shall indicate positive dc voltage and shall return to null.	(2) Para 2-11, item NO. 180.
		(3) Flight director indicator horizontal bar shall move down and shall return to null.	(3) Para 2-11, item NO. 181.
		(4) Cyclic stick shall move aft and shall return to center.	(4) Para 2-11, item NO. 182.
		z. Reconnect both plugs to NO. 2 dual channel synchronizer and raise front of NO. 2 tilt table to simulate 5 degree nose up attitude and hold in this position.	*z*. None.
		(1) AC OUTPUT meter shall indicate a voltage and shall return to steady state of 3.5 ± 0.5 volts ac.	(1) Para 2-11, item NO. 194.
		(2) AMPL OUTPUT meter shall indicate negative dc voltage and shall return to null.	(2) Para 2-11, item NO. 177.
		(3) Flight director indicator horizontal bar shall move up and shall return to null	(3) Para 2-11, item NO. 178.

Seq No.	Item to be Inspected	Procedure	Paragraph reference
		(4) Cyclic stick shall move forward and shall return to stationary position of 0.75 ±0.25 inch forward of center.	(4) Para 2-11, item No. 184.
		aa. Turn SENSOR OUTPUT-NO. 2 switch to PVG position and AC OUTPUT meter shall indicate 1.0 +0.1 volt ac.	*aa.* Para 2-11, item No. 195.
		ab. Turn SENSOR OUTPUT-NO. 2 switch to OFF position and A-AMPL OUT, PUT switch to NO. 2 P SYNC position. AC OUTPUT meter shall indicate 2 O+0 volts ac.	*ab.* Para 2-11, item No. 196.
		ac. Press TRIM REL. switch on cyclic stick, keeping stick centered. A;C OUTPUT meter shall return to null. Release TRIM REL. switch.	ac. Para 2-11, item No. 1, 97.
		ad. Set flight director indicator to ON-ON mode and vertical *OFF* flag shall appear.	*ad.* Para 2-11, item No. 198.
		ae. Turn AMPL OUTPUT-B switch to OFF position, A-AMPL OUTPUT switch to VERT PTR, and SENSOR OUTPUT-NO. 2 switch to PR + PROP position.	*ae*. None.
		af. Return No. 2 tilt table to level position.	af. None.
		(1) AC OUTPUT meter shall indicate voltage and shall return to steady state of 3.5 ±0.5 volts ac.	(1) Para 2-11, item No. 194.
		(2) AMPL OUTPUT meter shall indicate positive dc voltage and shall return to null.	(2) Para 2-1'1, item No. 180.
		(3) Flight director indicator vertical pointer shall move down and shall return to null.	(3) Para 2-11, item No. 199.
		(4) Cyclic stick shall move aft and shall return to original center.	(4) Para 2-11, item No. 182.
		ag. Turn SENSOR OUTPUT-NO. 2 switch to PVG position. AC OUTPUT meter shall indicate null	ag. Para --11, item No. 20)0.
		ah. Turn SENSOR OUTPUT-NO. 2 switch to OFF position and A-AMPL OUTPUT switch to NO. 2 P SYNC position. AC OUTPUT meter shall indicate 2± 02 volts ac.	*ah.* Para 2-11, item No. 201.
		ai. Press TRIM REL. switch on cyclic stick, keeping stick centered. AC OUTPUT meter shall return to null. Release TRIM REL. switch.	*ai.* Para 2-11, item No. 197.

Seq No.	Item to be Inspected	Procedure	Paragraph reference
		aj. Return AFCS control panel switches to OFF/NORMAL position.	*aj.* None.
		ak Return LTS switches except for PWR 115VAC and 28VDC switches to OFF/NORMAL position.	*ak.* None.
193	Simulated signal test of pitch channel. (By substituting a simulated signal input to the AFCS amplifier instead of the actual sensor input, a trouble can be isolated as being a malfunctioning sensor or amplifier.)	*a.* Press on AYCS 1 switch on AFCS control panel. AFCS 1 switch shall illuminate.	a. Para 2-1'1, item No. 173.
		b. Press on NORM MODE switch on remote stick control panel. NORM MODE switch shall illuminate.	*b.* Para 2-11, item No. 202.
		c. Set flight director indicator to AFCS mode.	c. Para 2-11, item No. 171.
		d. Turn SIM SIG switch to No. 1 P REM STK position, AMPL OUTPUT-B switch to No. 1 P AMPL position, and set SIM SIG-DC switch to + position.	*d.* None.
		(1) Flight director indicator horizontal bar shall move down 2 +0.25 divisions.	(1) Para 2-11, item No. 203.
		(2) AMPL OUTPUT meter shall indicate 5 ±0.5 volts dc.	(2) Para 2-11, item No. 180.
		e. Set SIM SIG-DC switch to position.	*e.* None.
		(1) Flight director indicator horizontal bar shall move up 2 ±0.25 divisions.	(1) Para 2-11, item No. 204.
		(2) AMPL OUTPUT meter shall indicate -5 ± 0.5 volts de.	(2) Para 2-11, item No. 177.
		f. Set flight director indicator to ON-N mode.	*f.* Para 2-11, item No. 189.
		g. Turn AMPL OUTPUT-B switch to OFF position and turn A-AMPL OUTPUT switch to HORIZ BAR position.	*g.* None.
		(1) Flight director indicator horizontal bar shall move up 2 ± 0.25 divisions.	(1) Para 2-11, item No. 204.
		(2) AMPL OUTPUT meter shall indicate -5 +0.5 volts de.	(2) Para 2-11, item No. 177.
		h. Set SIM SIG-DC switch to + position.	*h.* None.
		(1) Flight director indicator horizontal bar shall move down 2 + 0.25 divisions.	(1) Para 2-l1, item No. 203.
		(2) AMIPL OUTPUT meter shall indicate 5 +0.5 volts dc.	(2) Para 2-11, item No. 180.
		i. Press on AFCS 2 switch on AFCS control panel. AFCS 2 switch shall illuminate.	*i.* Para 2-1'1, item No. 205.
		j. Press off AFCS 1 switch on AFCS control panel. AFCS 1 switch shall extinguish.	*j.* Para 2-11, item No. 206.

Seq No.	Item to be Inspected	Procedure	Paragraph reference
		k. Set flight director indicator to AFFCS mode.	*k.* Para 2-11, item No. 1171.
		l. Turn SIM SIG switch to No. 2 P REM STK position, AMPL OUTPUT-B switch to No. 2 P AIMPL position, and set SIM SIG-DC switch to + position.	*l.* None.
		(1) Flight director indicator horizontal bar shall move down 2 ± 0.25 divisions.	(1) Para 2-11, item No. 203.
		(2) AM-PL OUTPUT meter shall indicate 5 +0.5 volts dc.	(2) Para 2-11, item No. 180.
		m. Set SIM SIG-DC switch to -7ia. None. position.	
		(1) Flight director indicator horizontal bar shall move up 2 ±0.25 divisions.	(1) Para 2-11, item No. 204.
		(2) AMPL OUTPUT meter shall indicate -5 +0±0.5 volts dc.	(2) Para 2-11, item No. 177.
		n. Set flight director indicator ON-ON mode.	*n.* Para 2-11, item No. 189.
		o. Turn AMPL OUTPUT-B switch to OFF position and A-AMPL OUTPUT switch to VERT PTR.	o. None.
		(1) Flight director indicator(1) Para 2-11, item No. 207. vertical pointer shall move up 2 ±0.25 divisions.	
		(2) AMPL OUTPUT meter shall indicate -5 ± 0.5 volts dc.	(2) Para 2-11, item No. 177.
		p. Set SIM SIG-DC switch to + position.	*p.* None.
		(1) Flight director indicator vertical pointer shall move down 2 ±0.25 divisions.	(1) Para 2-11, item No. 208.
		(2) AMPL OUTPUT meter shall indicate 5 ±0.5 volts de.	(2) Para 2-11, item No. 180.
		q. Return AFCS control panel and remote stick control panel switches to OFF/NORMAL position.	q. None.
		r. Return LTS switches except for PWR 115VAC and 28VDC switches to OFF/NORMAL positions.	r. None.
194	Roll channel test	a. Set flight director to A FS mode	*a.* Para 2-11, item No. 171
		b. Press on AFGS '1 switch on AFCS control panel and AFOS 1 switch shall illuminate. Both OFF flags on flight director shall disappear.	*b.* Para 2-11, item Nos. 172 and 173
		c. Press on A'FCS SERVO switch first and then STICK TRIM switch on AFCS control. APOS SERVO and STICK TRIM switches shall illuminate.	*c.* Para 2-11, item Nos. 155 and 6. 156

Seq No.	Item to be Inspected	Procedure	Paragraph reference
		d. Center cyclic stick	*d*. Para 2-11, item No. 175.
		e. Turn AMPL OUTPUT-B switch to No. 1 R AMPL position and No. 1-SENSOR OUTPUT switch to RRG position.	*e*. None.
		f. Disconnect both plugs on No. 1 dual channel synchronizer on left side of nose electronics compartment.	*f*. Figure 2-12.
		g. Raise slowly No. 1 tilt table to simulate right bank and slowly return it to level.	*g*. Figure 2-20.
		(1) AC OUTPUT meter shall indicate ac voltage while table is moving, indicating rate gyro output.	(1) Para 2-11, item No. 209.
		(2) A-MPL OUTPUT meter shall indicate positive de voltage while raising No. 1 tilt table and negative de voltage while returning it to level position.	(2) Para 2-11, item No. 210.
		(3) Flight director indicator vertical bar shall move left while tilting and right while returning to level.	(3) Para 2-11, item No. 211.
		(4) Cyclic stick shall move left while raising No. 1 tilt table and right while return- ing it to level position.	(4) Para 2-11, item No. 212.
		h. Reconnect both plugs to No. 1 dual channel synchronizer.	*h*. None.
		i. Turn NO. I-SENSOR OUTPUT switch to RR + PROP posi- tion.	*i*. None.
		j. Raise left side to No. 1 tilt table to simulate 5 degree right roll and hold in this position.	*j*. Figure 2-10.
		(1) AC OUTPUT meter shall indicate voltage and shall return to steady state of 3.5 + 0.5 volts ac.	(1) Para 2-11, item No. 21;3.
		(2) AMPL OUTPUT meter shall indicate positive dc voltage and shall return to null.	(2) Para 2-11, item No. 180.
		(3) Flight director indicator vertical bar shall move left and shall return to null.	(3) Para 2-11, item No. 214.
		(4) Cyclic stick shall move left and shall return to stationary position 0.5 +0.25 inch left of center.	(4) Para 2-11, item No. 215.
		k. Turn NO. 1-SENSOR OUTPUT switch to RVG position. AC OUTPUT meter shall indicate 1.0 +0.1 volt ac.	*k*. Para 2-11, item No. 216.
		l. Turn NO. 1-SENSOR OUTPUT switch to OFF position and turn A-AM'PL OUTPUT switch to No. 1 R SYNC posi- tion. AC OUTPUT meter shall indicate 2 +0.2 volts ac.	*l*. Para 2-11 l, item No. 217.

Seq No.	Item to be Inspected	Procedure	Paragraph reference
		m. Press TRIM REL. switch on cyclic stick, keeping stick 0. 50 4 0. 25 inch left of center. AC OUTPUT meter shall return to null. Release TRIM REL. switch.	*m.* Para 2-11, item No. 187.
		n. Set flight director indicator tog ON-ON mode. Horizontal OFF flag shall appear.	*n.* Para 2-11, item No. 189.
		o. Turn A-AMPL OUTPUT switch to VERT B'AR position, AMPL OUTPUT-B switch to OFF position, and NO. 1-SE)N'SOR OUTPUT switch to RR+PROP position.	*o.* None.
		p. Return No. 1 tilt table to level position.	*p.* None.
		(1) AC OUTPUT meter shall indicate voltage and shall return to steady state of 3.5 ±*0.5 volts ac.	(1) Para 2-11, item No. 213.
		(2) AMPL OUTPUT meter shall indicate negative dc voltage and shall return to null.	(2) Para 2-11, item No. 177.
		(3) Flight director indicator vertical bar shall move right and shall return to null.	(3) Para 2-11, item No. 218.
		(4) Cyclic stick shall move right and shall return to original center.	(4) Para 2-11, item No. 219.
		q. Turn NO. , -SENSOR OUTPUT switch to RVG position. AC OUTPUT meter shall indicate null.	*q.* Para 2-11, item No. 220.
		r. Turn NO. 1-SENSOR OUTPUT switch to OFF position and A-AMPL OUTPUT switch to No. 1 R SYNC position. AC OUTPUT meter shall indicate 2 0.2 volts ac.	*r.* Para 2-11, item No. 221.
		s. Press TRIM REL. switch on cyclic stick keeping stick centered. AC OUTPUT meter shall return to null. Release TRIM REL. switch.	*s.* Para 2-11, item No. 18'7.
		t. Return flight director indicator to AFCS mode.	*t.* None
		u. Pres off AFCS I1 switch and press on AFCS 2 switch on AFCS control panel.	*u.* None.
		v. Turn A-AMPL OUTPUT switch to OFF position and AMPL OUTPUT-B switch to NO. 2 R AMPL and SENSOR OUTPUT-NO. 2 switch to RRG position.	*v.* None.
		w. Disconnect both plugs from No. 2 dual channel synchronizer on right side of nose electronics compartment	*w.* Figure 2-12.

Seq No.	Item to be Inspected	Procedure	Paragraph reference
		x. Raise slowly No. 2 tilt table to simulate right bank and slowly return it to level position.	*x.* Figure 2-20.
		(1) AC OUTPUT meter shall indicate ac voltage while table is moving, indicating rate gyro output.	(1) Para 2-11, item No. 222.
		(2) AMPL OUTPUT meter shall indicate dc voltage while raising No. 2 tilt table and negative dc voltage while returning it to level.	(2) Para 2-11, item No. 210.
		(3) Flight director indicator vertical bar shall move left while tilting and right while returning to level.	(3) Para 2-11, item No. 211.
		(4) Cyclic stick shall move left while raising No. 2 tilt table and right while returning it to level position.	(4) Para 2-11, item No. 212.
		y. Reconnect both plugs to No. 2 dual channel synchronizer.	*y.* None.
		z. Turn SENSOR OUTPUT-NO. 2 switch to RR+PROP. position.	*z.* None.
		aa. Raise left side of No. 2 tilt table to simulate 5 degree right roll and hold in this position.	*aa.* Figure 2-20.
		(1) AC OUTPUT meter shall indicate voltage and shall return to steady state of 3.5 +0.5 volts ac.	(1) Para 2-11, item No. 223.
		(2) AMPL OUTPUT meter shall indicate positive de voltage and shall return to null.	(2) Para 2-11, item No. 180.
		(3) Flight director indicator vertical bar shall move left and shall return to null.	(3) Para 2-11, item No. 214.
		(4) Cyclic stick shall move left and shall return to stationary position 0.50 +0.25 inch left of center.	(4) Para 2-11, item No. 215.
		ab. Turn SENSOR OUTPUT-NO. 2 switch to RVG position. AC OUTPUT meter shall indicate 1.0 _0.1 volt ac.	*ab.* Para 2-11, item No. 224.
		ac. Turn SENSOR OUTPUT-NO. 2 switch to OFF position and A-AMPL OUTPUT switch to No. 2 R SYNC position. AC OUTPUT meter shall indicate 2 _0.2 volts ac.	*ac.* Para 2-11, item No. 225.
		ad. Press TRIM REL. switch on cyclic stick, keeping stick centered. AC OUTPUT meter shall return to null. Release TRIM REL. switch.	*ad.* Pars 2-11, item No. 197.

Seq No.	Item to be Inspected	Procedure	Paragraph reference
		ae. Set flight director indicator to ON-ON mode. Vertical OFF flag shall appear.	*ae*. Para 2-11, item No. 198.
		af. Turn AMPL OUTPUT-B switch to OFF position and A-AM, PL OUTPUT switch to HORIZ PTR and SENSOR OUTPUT-NO. 2 switch to RR + PROP. position.	*af*. None.
		ag. Return No. 2 tilt table to level position.	*ag*. None.
		(1) AC OUTPUT meter shall indicate voltage and shall return to steady state 3.5 ± 0.5 volts ac.	(1) Para 211, item No. 223.
		(2) AMPL OUTPUT meter shall indicate negative de voltage and shall return to null.	(2) Para 2-11, item No. 177.
		(3) Flight director indicator horizontal pointer shall move right and shall return to null.	(3) Para 2-11, item No. 226.
		(4) Cyclic stick shall move right and shall return to original center.	(4) Para 2-11, item No. 219.
		ah. Turn SENSOR OUTPUT-NO. 2 switch to RVG position. AC OUTPUT meter shall indicate null.	*ah*. Para 2-11, item No. 227.
		ai. Turn SENSOR OUTPUT-NO. 2 switch to OFF position and A-AMPL OUTPUT switch to NO. 2 R SYNC position. AC OUTPUT meter shall indicate 2 ± 0.2 volts.	*ai*. Para 2-11, item No. 228.
		aj. Press TRIM REL. switch on cyclic stick, keeping stick centered. AC OUTPUT meter shall return to null. Release null TRIM REL. switch.	*aj*. Para 2-11, item No. 197.
		ak. Return AFCS control panel switches to OFF/NORMAL positions.	*ak* None.
		al. Return LTS switches except for PWR 115VAC and 28VDC switches to OFF/NORMAL positions.	*al*. None.
195	Simulated signal test of roll channel. (By substituting a simulated signal input to the AFCS amplifier instead of the actual sensor input, a trouble can be isolated as being **a** faulty sensor or amplifier.)	*a*. Press on following switches on AFCS control panel AFCS 1, AFCS SERVO (press on before STICK TRIM), and STICK TRIM. These switches shall illuminate.	*a*. Para 2-11, item No. 229.
		b. Press on NORM MODE switch on remote stick control panel. NORM MODE switch shall illuminate.	*b*. Para 2-11, item No. 202.
		c. Set flight director indicator to AFCS mode.	*c*. Para 2-11, item No. 171.

Seq No.	Item to be Inspected	Procedure	Paragraph reference
		d. Turn SIM SIG switch to NO. 1 LAT ACCEL position, AMPL OUTPUT-B switch to NO. 1 R A/MPL position, NO. 1-SENSOR OUTPUT switch to LAT ACCEL position, and set AC-SI-M SIG switch to +0 position.	*d.* None.
		(1) AC OUTPUT meter shall indicate 0.8 ± 0.1 volt ac.	(1) Para 2-11, item No. 230.
		(2) AMPL OUTPUT meter shall indicate 5 ±0.5 volts dc.	(2) Para 2-11, item No. 180.
		(3) Flight director indicator vertical bar shall move left 2 ±0.25 divisions.	(3) Para 2--11, item No. 231.
		e. Set AC-SIM SIG switch to position.	e. None.
		(1) AC OUTPUT meter shall indicate 0.8 ±0.1 volt ac.	(1)Para 2-11, item No. 230.
		(2) AMPL OUTPUT meter shall indicate -5 ±0.5 volts dc.	(2) Para 2'11, item No. 177.
		(3) Flight director indicator vertical bar shall move right 2 ±0.25 divisions.	(3)Para 2-11, item No. 232.
		f. Set flight director indicator to ON-ON mode.	f. Para 2-11, item No. 189.
		g. Turn AMPL OUTPUT-B switch to OFF position and A-AMPL OUTPUT switch to VERT BAR position.	*g.* None.
		(1) AC OUTPUT meter Shall indicate 0.8 ±0.1 volt ac.	(1) Para 2-11, item No. 230.
		(2) AMPL OUTPUT meter shall indicate-5 ±0.5 volts dc.	(2) Para 2-1, 1, item No. 177.
		(3) Flight director indicator vertical bar shall move right 2 ±0.25 divisions.	(3) Para 2-11, item No. 262.
		h. Set AC-SIM SIG switch to + ø	*h.* None.
		(1) OUTPUT meter shall indicate 0.8 +0.1 volt ac.	(1) Para 2-11, item No. 'o0.
		(2) AMPL OUTPUT meter shall indicate 5 ±0.5 volts de.	(2) Para 2-11, item No. 180.
		(3) Flight director indicator vertical bar shall move left 2 _0.25 divisions.	(3) Para 2-11, item No. 2'&1.
		i. Set flight director indicator to AFCS mode.	i. Para 2-11, item No. 171.
		j. Turn SIM SIG switch to NO. 1 R REM STK position, AMPL OUTPUT-B switch to NO. 1 R AMPL position No. 1-SEN-SOR OUTPUT switch to OFF position, and set SIM SIG-DC switch to + position.	j. None.
		(1) AM, PL OUTPUT meter shall indicate 5 ±0.5 volts dc.	(1) Para 2-11, item No. 180.

Seq No.	Item to be Inspected	Procedure	Paragraph reference
		(2) Flight director indicator vertical bar shall move left 2 ±0.25 divisions.	(2) Para 2-11, item No. 231.
		k. Set SIM SIG-DC switch to position.	*k.* None.
		(1) A.MPL OUTPUT meter shall indicate -5 ±0.5 volts dc.	(1) Para 2-11, item No. 177.
		(2) Flight director indicator vertical bar shall move right 2 ± 0.25 divisions.	(2) Para 2-11, item No. 232.
		l. Set flight director indicator to ON-ON mode.	l. Para 2-11, item No. 189.
		m. Turn AMPL OUTPUT-B switch to OFF position and A-AMPL OUTPUT switch to VERT BAR position.	m. None.
		(1) AMPL OUTPUT meter shall indicate -5 ±0.5 volts de.	(1) Para 241l, item No. 177.
		(2) Flight director indicator vertical bar shall move right 2 ±0.25 divisions.	(2) Para 2-11, item No. 232.
		n. Set SIM SIG-DC switch to + position.	n. None.
		(1) AMPL OUTPUT meter shall indicate 5 ± 0.5 volts dc.	(1) Para 2-11, item No. 180.
		(2) Flight director indicator vertical bar shall move left 2 ± 0.25 divisions.	(2) Para 2-11, item No. 23l.
		o. Set flight director indicator to AFCS mode.	o. Para 2-11, item No. 171.
		p. Center cyclic stick and press off NORM mode switch on remote stick control panel. NORM mode switch shall extinguish.	p. Para 2-11, item No. 175.
		q. Turn SIM SIG switch to NO.1 RRG position, A-AMPL OUT-PUT switch to OFF position, AMPL OUTPUT-B switch NO. 1 R AMPL position, NO. 1-SENSOR OUTPUT switch to RRG position, and AC-SIM SIG switch to +0 position.	q. None.
		(1) AC OUTPUT meter shall indicate 2 ±0.25 volts ac.	(1) Para 2-11, item No. 2a3.
		(2) AMPL OUTPUT meter shall indicate 5 +0.5 volts dc.	(2) Para 2-141, item No. 180.
		(3) Flight director indicator vertical bar shall move left 2 ±0.25 divisions.	(3) Para 2-11, item No. 231.
		(4) Cyclic stick shall move left	(4) Para 2-11, item No. 234.
		r. Set AC-SIM SIG switch to position.	*r.* None.
		(1) AC OUTPUT meter shall indicate 2 ± 0.25 volts ac.	(1) Para 2-11, item No. 233.
		(2) AMPL OUTPUT meter shall indicate -5 ±0.5 volts ac.	(2) Para 2-11, item No. 177.

Seq No.	Item to be Inspected	Procedure	Paragraph reference
		(3) Flight director indicator vertical bar shall move right 2± 0.25 divisions.	(3) Pars 2-11, item No. 232.
		(4) Cyclic stick shall move right	(4) Para 2-11, item No. 235.
		s. Set flight director indicator to ON-ON mode	s. Para 2-11, item No. 189.
		t. Turn AMPL OUTPUT-B switch to OFF position and A-AMPL OUTPUT switch to VERT BAR posi-tion.	t. None.
		(1) AC OUTPUT meter shall indicate 2 ±0.25 volts ac.	(1) Para 2-11, item No. 233.
		(2) AIMPL OUTPUT meter shall indicate -5 ±0.5 volts de.	(2) Para 2-11, item No. 177.
		(3) Flight director indicator vertical bar shall move right 2 ±0.25 divisions.	(3) Para 2-11, item No. 232.
		u. Set AC-SIM SIG switch to + position.	u. None.
		(1) AC OUTPUT meter shall indicate 2 + 0.25 volts ac.	(1) Para 241, item No. 233.
		(2) AMPL OUTPUT meter shall indicate 5 +0.5 volts dc.	(2) Para 2-11, item No. 180.
		(3) Flight director indicator vertical bar shall move left 2 ± 0.25 divisions.	(3) Para 2-11, item No. 231.
		(4) Cyclic stick shall move left	(4) Para 2-11, item No. 234.
		v. Press on AFCS 2 switch on AFCS control panel. AFCS 2 switch shall illuminate.	v. Pars 2-11, item No. 205.
		w. Press off AFCS 1 switch on AFCS control panel. AFCS 1 switch shall extinguish.	v. Para 2-11, item No. 206.
		x. Set flight director indicator to AFCS mode.	x. Para 2-11, item No. 17, 1.
		y. Turn SIM SIG switch to NO. 2 LAT ACCEL position and AMPL OUTPUT-B switch to NO. 2 R AMPL and press on NORM mode switch on remote stick control panel. NORM mode switch shall illuminate.	y. Pars 2-11, item No. 202.
		(1) AC OUTPUT meter shall indicate 0.8 +0.1 volt ac.	(1) Para 2-1.1, item No. 236.
		(2) AMPL OUTPUT meter shall indicate 5 -0.5 volts dc.	(2) Para 2-11, item No. 180.
		(3) Flight director indicator vertical bar shall move left 2 ±0.25 divisions.	(3) Pars 2-11, item No. 231.
		z. Set AC-SIM SIG switch to position.	z. None.
		(1) AC OUTPUT meter shall indicate 0.8 ±0.1 volt ac.	(1) Pars 2-11, item No. 236.
		(2) AMPL OUTPUT meter shall indicate -5 ±0.5 volts dc.	(2) Para 2-11, item No. 177.

Seq No.	Item to be Inspected	Procedure	Paragraph reference
		(3) Flight director indicator vertical bar shall move right 2 ±0.25 divisions.	(3) Pars 2-11, item No. 2
		aa Set flight director indicator to ON-ON mode.	*aa.* Para 2-11, item No. 189.
		ab. Turn AMPL OUTPUT-B switch to OFF position and A-AMPL OUTPUT switch to HORIZ PTR position.	*ab.* None.
		(1) AC OUTPUT meter shall indicate 0.8 ± 0!1 volt ac.	(1) Para 2-11, item No. 236.
		(2) AMPL OUTPUT meter shall indicate -5 ±0.5 volts de.	(2) Para 2-11, item No. 177.
		(3) Flight director indicator horizontal pointer shall move right 2 ±0.25 divisions.	(3) Para 2-11, item No. 237.
		ec. Set AC-SIM SIG switch to + position.	*ac.* None.
		(1) AC OUTPUT meter shall indicate 0.8 tO.1 volt ac.	(1) Para 2-11, item No. 236.
		(2) AMPL OUTPUT meter shall indicate 5 +0.5volts dc.	(.2) Para 2-11, item No. 180.
		(3) Flight director indicator horizontal pointer shall move left 2 ± 0.25 divisions.	(3) Para 2-11, item No. '?8.
		ad. Set flight director indicator to AFCS mode.	*ad.* Para 2-11, item No. 171.
		ae. Turn SIM SIG switch to NO. 2 R REM STK, A-AMPL OUT-PUT switch to OFF position, AMPL OUTPUT-B switch to NO. 2 R AMPL, and set SIM SIG-DC switch to + position.	*ae.* None.
		(1) AMPL OUTPUT meter shall indicate 5 ± 0.5 volts dc.	(1) Para 2-11, item No. 180.
		(2) Flight director indicator vertical bar -shall move left 2 +0.25 divisions.	(2) Para 2-'11, item No. Z31.
		af. Set SIIM SIG-DC switch to - position.	*af.* None.
		(1) AMPL OUTPUT meter shall indicate -5 +0.5 volts dc.	(1) Para 2-11, item No. 177.
		(2) Flight director indicator vertical bar shall move right 2 +0.25 divisions.	(2) Para 2-11, item No. 232.
		ag. Set flight director indicator to ON-ON mode.	*ag.* Para 2-11, item No. 189.
		ah. Turn AMPL OUTPUT-B switch to OFF position and A-AMPL OUTPUT switch to HORIZ PTR position.	ah. None.
		(1) AMPL OUTPUT meter shall indicate -5 t 0.5 volts dc.	(1) Para 2-11, item No. 177.

Seq No.	Item to be Inspected	Procedure	Paragraph reference
		(2) Flight director indicator horizontal pointer shall move right 2 +0, 25 divisions.	(2) Para 2-11, item No. 239
		ai. Set SIM SIG-I)C switch to + position.	*ai.* None.
		(1) AMPL OUTPUT meter shall indicate 6 ±0.5 volts dc.	(1) Para 2411, item No. 180.
		(2) Flight director indicator horizontal pointer shall move left 2 ± 0.25 divisions.	(2) Para 2-11, item No. 240.
		aj. Set flight director indicator to AFCS mode and press off NORM mode switch on remote stick control panel. NORM mode switch shall extinguish.	*aj.* Para 2-11, item No. 171.
		ak Turn SIM SIG switch to NO. 2*ak.* None. RRG position, A-AMPL OUTPUT switch to OFF position, AMPL OUTIPUT-B switch to NO. 2 R AMPL, NO. 1-SEBNSOR OUTPUT switch to OFF position, and SENSOR OUTPUT-NO. 2 switch to RRG position, and set A, C-SIM SIG switch to +) position.	
		(1) AC OUTPUT meter shall indicate 2 ± 0.25 volts dc.	(1) Para 2-11, item No. 241.
		(2) AMPIL OUTPUT meter shall indicate 5 ±0.5 volts dc.	(2) Para 2-11, item No. 180.
		(3) Flight director indicator vertical bar shall move left 2 +0.25 divisions.	(3) Para 2-11, item No. 231.
		al. Set AC-SIM SIG to -o position	*al.* None.
		(1) AC OUTPUT meter shall indicate 2 + 0.25 volts dc.	(1) Para 2-11, item No. 241.
		(2) AMPL OUTPUT meter shall indicate -5 +0.5 volts dc.	(2) Para 2-11, item No. 177.
		(3) Flight director indicator vertical bar shall move right 2 ±0.25 divisions.	(3) Para 2-11, item No. 232.
		(4) Cyclic stick shall move right.	(4) Para 2-11, item No. 25.
		am. Set flight director indicator to ON-ON mode.	*am.* Para 2-11, item No. 1189.
		an. Turn AM!PL OUTPUT-B switch to OFF position and A-AMIPL OUTPUT switch to HORIZ PTR position.	*an.* None.
		(1) AC OUTPUT meter shall indicate 2 ± 0.25 volts ac.	(1) Para 2-11, item No. 941.
		(2) AMPL OUTPUT meter shall indicate -5 ±0.5 volts dc.	(2) Para 2-11, item No. 177.

Seq No.	Item to be Inspected	Procedure	Paragraph reference
		(3) Flight director indicator horizontal pointer shall move right 2 ±0.25 divisions.	(3) Para 211, item No. 239.
		ao. Set AC-SIM SIG switch to + ø position.	*ao.* None.
		(1) AC OUTPUT meter shall indicate 2 0.25 volts ac.	(1) Para 2-11, item No. 241.
		(2) AMPL OUTPUT meter shall indicate 5 ± 0.25 volts dc.	(2) Para 2-11, item No. 180.
		(3) Flight director indicator horizontal, pointer shall move left 2 ± 025 divisions.	(3) Para 241, item No. 240.
		(4) Cyclic stick shall move left.	(4) Para 2-11, item No. 234.
		ap. Return remote stick control panel switches to OF/INOR-MAL positions.	*ap.* None.
		aq. Return AFOS control panel switches to OFF/NORMAL positions.	*aq.* None.
		ar. Return LTS switches except for PW¶R 111VAC and 28VDC switches to OFF/NORIMAL positions.	ar. None.
196	Yaw channel test	a. Set flight director to AFOS mode	a. Para 2-11, item No. 171.
		b. Press on following switches on AFCS control panel: AFCS 2, YAW, AFOS SERVO (before STICK TRIM), and STICK TRIM. Center YAW TRIM control on AFCS control panel.	*b.* Par 2-11, item No. 242.
		c. Center yaw pedals and collective sticks. Lock collective stick with friction lock.	c. Para 211, item No. 24'3.
		d. Turn AFCS POWER switch to YAW SYNC position. AFVS POWEf28VDC lamp shall illuminate.	*d.* Para 2-11, item No. 244.
		e. Press all four pedal switches on yaw pedals one at a time. AFCS POWER lamp shall extinguish when each switch is pressed.	e. Para 2-11, item No. 246.
		I. Position PEDAL switch to ON position.	f. None.
		g. Press all four pedal switches on yaw pedals one at a time. AFCS -28VDC lamp shall illuminate when each switch is pressed.	g. Para 2-11, item No. 246.
		h. Turn AFCS power switch to OFF position and position PEDAL switch to OFF position.	h. None.
		i. Turn AMPL OUTPUT-B switch to No. 2 Y AIIPL and SENSOR OUTPUT-NO. 2 switch to YRG position.	i. None.

Seq No.	Item to be Inspected	Procedure	Paragraph reference
		j. Raise No. 2 tilt table slowly to simulate a nose left direction slowly return it to center.	*j.* Figure 220.
		(1) AC OUTPUT meter shall indicate ac voltage while No. 2 tilt table is moving in either direction, indicating yaw rate gyro output.	(1) Para 2-11, item No. 247.
		(2) A, MPL OUTPUT meter shall indicate negative dc voltage while No. 2 tilt table is moving left and positive dc voltage while returning to center.	(2) Para 2-11, item No. 248.
		(3) Flight director indicator horizontal pointer shall move right while No. 2 tilt table is moving left and shall move left while No. 2 tilt table is returning to center.	(3) Para 2-11, item No. 249.
		(4) Yaw pedals shall move right while No. 2 tilt table is moving left and shall move left while No. 2 tilt table is returning to center.	(4) Para 2-11, item No. 250.
		k. *Turn* SENSOR OUTPUT-NO. 2 HDG position and center yaw pedals.	*k.* None.
		l. Turn YAW TRIM control on1. None. AFCS control panel right one-quarter turn.	
		(1) AC OUTPUT meter shall initially indicate approxi-mately 1 volt ac and then shall indicate decrease to approximately 0.5 volt ac.	(1) Para 2-11, item No. 251.
		(2) Yaw pedals shall move slowly to extreme right position and AC OUTIPUT meter shall indicate in-crease of voltage while yaw pedals are moving.	(2) Para 2-11, item No. 252.
		m. As soon as yaw pedals have reached extreme right position, turn YAW TRIM control on AFCS control panel left one-half turn from its present point, and record time it takes for yaw pedals to go from extreme right position to extreme left position. Yaw pedals shall go from extreme right to extreme left position in 60 -'15 seconds.	***m.*** Para 2-11, item No. 25.
		n. Recenter yaw pedals, pressing on pedal switches on yaw pedals and releasing at center. AC OUTPUT meter shall return to null.	*n.* Para 2-11, item No. 254.

Seq No.	Item to be Inspected	Procedure	Paragraph reference
		o. Turn YAW TRIM control on AFCS control panel left one quarter turn. (1) AC OUTPUT meter shall initially indicate approximately 1 volt ac and then shall indicate decrease to approximately 0.5 volt ac. (2) Yaw pedals shall move slowly to extreme left position and AC OUTPUT meter shall indicate increase of voltage while yaw pedals are moving.	*o.* None. ('1) Para 2-11, item No. 251. (2) Para 2-11, item No. 255.
		p. As soon as yaw pedals have reached extreme left position, turn YAW TRIM control on AFCS control panel right one-half turn from its present point, and record time it takes for yaw pedals to go from extreme left position to extreme right position. Yaw pedals shall go from extreme left to extreme right position in 60 t 15 seconds. ***Note.*** Difference between pedal time from left to right and right to left shall not be greater than 15 seconds.	*p.* Para 2-1.1, item No. 256.
		q. Press pedal switch on yaw pedals and recenter yaw pedals. Release pedal switch on yaw pedals. AC OUTPUT meter shall return to null.	*q.* Para 2-11, item No. 25.
		r. Position AIRSPEED switch to SIM position and turn SENSOR OUTPUT-NO. 2 switch to RRG position. Press pedal switch on yaw pedals and hold.	*r.* None.
		s. Disconnect lateral accelerometer from No. 2 tilt table and raise No. 2 tilt table slowly to simulate right bank and slowly return it. to level position.	*s.* Figure 2-12.
		(1) AC OUTPUT meter shall indicate ac voltage while No. 2 tilt table is moving, indicating roll rate gyro output.	(1) Para 2-11, item No. 257.
		(2) AMPL OUTPUT meter shall indicate negative dc voltage while No. 2 tilt table is being raised and positive dc voltage while returning it to level position.	(2) Para 2-11, item No. 258.
		(3) Flight director indicator horizontal pointer shall move right while No. 2 tilt table is being raised and left while returning it to level, position.	(3) Para 2-11, item No. 259.
		(4) Yaw pedals shall move right while No. 2 tilt table is being raised and left while returning it to level position.	(4) Para 241, item No. 260.

Seq No.	Item to be Inspected	Procedure	Paragraph reference
		t. Release pedal switch on yaw pedals and turn SENSOR OUTPUT-NO. 2 -switch to LAT ACCEL position. -Press pedal switch on yaw pedals and hold.	*t.* None.
		u. Reconnect plug to lateral accelerometer on No. 2 tilt table. Flight director indicator horizontal pointer shall be at null.	*u.* Para 2-11, item No. 261.
		v. Position AIRSPEED switch to NORM position and set yaw pedals to full left position, pressing and releasing pedal switch on yaw pedals at full left position.	*v.* None.
		w. Position AIRSPEED switch to SIM. Press right pedal switch on yaw pedal and hold.	*w.* None.
		x. Raise and position No. 2 tilt table 10 degrees to simulate right bank and record time it takes for yaw pedals to go from full left position until movement stops.	*x.* Figure 2-20.
		(1) AC OUTPUT meter shall indicate 0.4 ±0.1 volt ac.	(1) Para 2-11, item No. 262.
		(2) AMPL OUTPUT meter shall indicate -2.5 ±0.25 volts dc.	(2) Para 2-11, item No. 263.
		(3) Flight director indicator horizontal pointer shall move right 1 ± 0.25 division.	(3) Para 2-11, item No. 264.
		(4) Yaw pedals shall move from full left position until movement stops in 80 ±20 seconds.	(4) Para 2-11, item No. 265.
		y. Turn SENSOR OUTPUT-NO. 2 switch to STK TRIM position. AC OUTPUT meter shall indicate less than 0.1 volt ac.	*y.* Para 2-11, item No. 266.
		z. Position AIRSPEED switch to NORM. position and set yaw pedals to full right position, pressing and releasing full right position.	*z.* None.
		aa. Return No. 2 tilt table to level position and then raise and position it 10 degrees to simulate left bank.	*aa.* None.
		ab. Position AIRSPEED switch to SIM. Press left pedal switch on yaw pedal and hold. Record time it takes for yaw pedals to go from full right position until movement stops.	*ab.* None.
		(1) AC OUTPUT meter shall indicate less than 0.1 volt ac.	(1) Para 2-11, item No. 266.
		(2) AMPL OUTPUT meter shall , indicate 2.5 ± 0.25 volts dc.	(2) Para 2-1'1, item No. 267.

Seq No.	Item to be Inspected	Procedure	Paragraph reference
		(3) Flight director indicator horizontal pointer shall move left 1 +0.25 division.	(3) Para 2-11, item No. 268.
		(4) Yaw pedals shall move from full right position until movement stops in 80 ± 20 seconds. ***Note.*** Time difference for left pedal and right pedal movement shall not be more than 20 seconds.	(4) Para 2-11, item No. 269.
		ac. Turn SENSOR OUTPUT-NO. 2 switch to LAT ACCEL position. AC OUTPUT meter shall indicate 0.4 +0.1 volt ac.	ac. Para 2-11, item No. 270.
		ad. Set AIRSPEED switch to NORM. position and release pedal switch on yaw pedals.	*ad.* None.
		(1) AC OUTPUT meter shall remain at 0.4 -0.1 volt ac.	(1) Para 2-11, item No. 271.
		(2) AMPL OUTPUT meter shall return to null after a slight delay.	(2) Para 2-11, item No. 272.
		(3) Flight director horizontal pointer shall return to null after slight delay.	(3) Para 2-11, item No. 273.
		(4) Yaw pedals shall remain at center.	(4) Para 2-11, item No. 274.
		ae. Return No. 2 tilt table to level position. AC OUTPUT meter shall return to null.	*ae.* Para 2-11, item No. 27-5.
		af. Press off AFCS 2 on AFCS control panel and press on .FCS 1.	af. None.
		ag. Turn A.IMPL OUTPUT-B switch to NO. 1 Y AMPL position, SENSOR OUTPUT-No. 2 switch to OFF position and NO. 1-SENSOR OUTPUT switch to YRG position.	ag. None.
		ah. Raise No. 1 tilt table slowly to simulate a nose left direction and slowly return it to center.	ah. Figure 2-20.
		(1) AC OUTPUT meter shall indicate voltage while No. 1 tilt table is moving, indicating yaw rate gyro output.	(1) Para 2-11, item No. 276.
		('2) AMPL OUTPUT meter shall indicate negative dc voltage while table is moving left and positive de voltage while returning to center.	(2) Para 2-11, item No. 277.
		(3) Flight director horizontal pointer shall move right while No. I tilt table is moving left and left while returning to center position.	(3) Para 2-11, item No. 278.
		ai. Position AIRSPEED snitch to SIM, and turn No. 1-SENSOR OUTPUT to RRG position. Press pedal switch on yaw pedals and hold.	ai. None.

Seq No.	Item to be Inspected	Procedure	Paragraph reference
		aj. Disconnect No. 1 lateral accelerometer from No. 1 tilt table and raise No. 1 tilt table slowly to simulate right bank position and return it slowly back to level position.	*aj.* None.
		(1) AC OUTPUT meter shall indicate ac voltage while No. 1 tilt table is moving indicating roll rate gyro output.	(1) Para 2-11, item No. 279.
		(2) AMPL OUTPUT meter shall indicate negative dc voltage while No. 1 tilt table is being raised and positive dc voltage while being returned to center.	(2) Para 2-11, item No. 280.
		(3) Flight director indicator horizontal pointer shall move right while No. 1 tilt table is being raised and left while being returned to level position.	(3) Para 2-1, -1, item No. 281.
		ak. Turn NO. 1-SENSOR OUTPUT switch to LAT ACCEL position.	*ak.* None.
		al. Reconnect plug to No. 1 lateral accelerometer on No. 41 tilt table. Flight director indicator horizontal pointer shall be at null.	*al.* Para 2-11, item No. 282.
		am. Raise and position No. 1 tilt table 10 degrees to simulate right bank.	*am.* None.
		(1) AC OUTPUT meter shall indicate 0.4 +0.1 volt ac.	(1) Para 2-11, item No. :&3.
		(2) AMPL OUTPUT meter shall indicate -2.5 + 0.25 volts dc.	(2) Para 2-11, item No. 284.
		(3) Flight director indicator pointer shall move right 1 +025 division.	(3) Para 2-11, item No. 285.
		an. Return No. 1 tilt table to level position and then raise and position it 10 degrees to simulate a left bank.	*nt.* Figure '-20.
		(1) AC OUTPUT meter shall indicate 0.4 +0.1 volt ac.	(1) Para 2-11, item No. 286.
		(2) A-MPL OUTPUT meter shall indicate 2.5 ±0.25 volts dc.	(2) Para 2-11, item No. 287.
		(3) Flight director indicator horizontal pointer shall move left 1 ± 0.25 division.	(3) Para 2-11, item No. 288.
		ao. Position AIRSPEED switch to NORM. position and release pedal switch on yaw pedal.	*ao.* None.
		(1) AC OUTPUT meter shall remain at 0.4 *0.1 volt ac.	(1) Para 2-11, item No. 289.
		(2) AMPL OUTPUT meter shall return to null.	(2) Para 2-11, item No. 290.

Seq No.	Item to be Inspected	Procedure	Paragraph reference
		(3) Flight director indicator horizontal pointer shall return to null. *ap.* Return No. *1* tilt table to level position. AC OUTPUT meter shall return to null. *aq.* Return AFCS control panel switches to OFF/NORMAL positions. *ar.* Return LTS switches except for PWR 115VAC and 28VDC switches to OFF/NORMAL positions.	(3) Para 2-11, item No. 291. *ap.* Para 2-11, item No. 292. *aq*. None. *ar*. None.
197	Simulated signal test of yaw channel. (By substituting a simulated signal input to the APCS amplifier instead of the actual sensor input, trouble can be isolated as being a faulty sensor or amplifier.)	*a.* Press on following switches on AFCS control panel: AFCS 1, AFCS SERV<O (press on before STICK TRIM), STICK TRIM, and YAW. *ab.* Set flight director indicator to AFCS mode. *c.* Center yaw pedals and cyclic stick *d.* Turn SIM SIG switch to No. 1*d.* None. LAT ACCEL position, NO. 1-SENSOR OUTPUT switch to LAT ACCEL position, AMIPL OUTPUT-B switch to NO. 1 Y AMPL position, press and hold switch on yaw pedals position, AIRSPEED switch to SIM position, and AC-SIM SIG switch to +o, position. (1) AC OUTPUT meter shall indicate 0.8 ±0.1 volt ac. (2) AMPL OUTPUT meter shall indicate 5 +0.5 volts dc. (3) Flight director indicator horizontal pointer shall move left 2 + 0.25 divisions. *e.* Set AC-SIM SIG switch to -0 position. (1) AC OUTPUT meter shall(1) Para 2-11, item No. 230. indicate 0.8 +0.1 volt ac. (2) DC OUTPUT meter shall(2) Para 2-11, item No. 177. indicate -5 ±0.5 volts dc. (3) Flight director indicator(3) Para 2-11, item No. 295. horizontal pointer shall move right 2 +0.25 divisions. *f.* Release pedal switch on yaw pedals. *g.* Turn SIM SIG switch to No. 1 RRG position, NO. 1-SENSOR OUTPUT switch to RRG position, and set AC-SIM SIG to +, . Press and hold pedal switch on yaw pedals. (1) AC OUTPUT meter shall indicate 2 +0.25 volts ac. (2) AMPL OUTPUT meter shall indicate -5 ±0.5 volts dc.	*a.* Para 2-11, item No. 293. *b.* Para 2-41, item No. 171. *c.* Para 2-11, item No. 243. (1) Para 2-11, item No. 230. (2) Para 2-11, item No. 180. (3) Para 2-11, item No. 294. e. None. *f.* None. *g.* None. (1) Para 2-11, item No. 233. (2) Para 2-11, item No. 177.

Seq No.	Item to be Inspected	Procedure	Paragraph reference
		(3) Flight director indicator horizontal pointer shall move right 2 t.25 divisions.	(3) Para 211, item No. 296.
		h. Set AC-SIM SIG switch to position.	*h.* None.
		(1) AC OUTPUT meter shall indicate 2 ± 0.25 volts ac.	(1) Para 2-11, item No. 233.
		(2) AMPL OUTPUT meter shall indicate 5 ±+0! volts de.	(2) Pars 211, item No. 130.
		(3) Flight director indicator horizontal pointer shall move left 2 ± 0.25 divisions.	(3) Para 2-11, item No. 297.
		i. Release pedal switch on yaw pedals.	*i.* None.
		j. Turn SIM SIG switch to No. 1 YRG position, NO. 1-SEiNSOR OUTPUT switch to YRG position, position AIRSPEED switch to NORM. position, and AC-SIM SIG switch to +) position.	*j.* None.
		(1) AC OUTPUT meter shall indicate 0.8 +0.1 volt ac.	(1) Para 2-11, item No. 236.
		(2) AMPL OUTPUT meter shall indicate 5 + 0.5 volts de.	(2) Para 2-11, item No. 180.
		(3) Flight director indicator horizontal pointer shall move left 2 +0.25 divisions.	(3) Para 2-11, item No. 294.
		k. Set AC-SIM SIG switch to-Ø position.	*k.* None.
		(1) AC OUTPUT meter shall(1) Para 2-11, item No. 236. indicate 0.8 ±0., 1 volt ac.	
		(2) AMPL OUTPUT meter(2) Para 2-11, item No. 177. shall indicate -5 +0.5 volts dc.	
		(3) Flight director indicator(3) Para 2-11, item No. 295. horizontal pointer shall move right 2 +0.25 divisions.	
		l. Center yaw pedals	*l.* Para 2-11, item No. 299.
		m. Press on NORM MODE switch on remote stick control panel. NORM MODE switch shall illuminate.	*m.* Para 2-1, 1, item No. 202.
		n. Turn SIM SIG switch to YAW REM STK position and NO. 1-SENSOR OUTPUT switch to OFF position. Set AC-SIM SIG switch to +0 position. Press and release pedal switch on yaw pedals.	*n.* None.
		(1) AMPL OUTPUT meter shall move in negative direction to full limit then in positive direction.	(1) Para 2411, item No. 300.
		(2) Flight director indicator horizontal pointer shall move right to full limit and then left.	(2) Para 2-11, item No. 301.

Seq No.	Item to be Inspected	Procedure	Paragraph reference
		(3) Yaw pedals shall move right and then left *Note.* Above indications will constantly switch from left to right and right to left while signal *is* applied.	(3) Para 2-11, item No. 302.
		o. Center yaw pedals	*o.* Para 2-1'1, item No. 299.
		p. Set AC-SIM SIG switch to -a position and press and release pedal switch on yaw pedals.	*p.* None.
		(1) AMPL OUTPUT meter shall move in positive direction to full limit and then in negative direction.	(1) Para 2-11, item No. 03.
		(2) Flight director indicator horizontal pointer shall move left to full limit and then right.	(2) Para 2-11, item No. 304.
		(3) Yaw pedals shah move left then right.	(3) Para i211, item No. 305.
		q. Press off NORM MODE switch on remote stick control panel. NORM MODE switch shall extinguish. ***Note.*** Above indications will constantly switch from left to right and right to left while signal is applied.	*q.* Para 2-11, item No. 306.
		r. Press off AFCS 1 switch on AFCS control panel and press on AFCS 2 switch. AFCS 1 switch shall extinguish and AFCS 2 switch shall illuminate.	*r.* Para 2-11, item Nos. 205 and 206
		s. Center yaw pedals	*s.* Para 2-11. item No. '29.
		t. Turn SIM SIG switch to NO. 2 LAT ACCEL position, AMPL OUTPUT-B switch to NO. 2 Y AMPL, and SENSOR OUT-PUT-NO. 2 switch to LAT ACCEL position. Position AIRSPEED switch to SIM. Press and hold pedal switch on yaw pedals.	*t.* None.
		(1) AC OUTPUT meter shall indicate 0.8 +0.1 volt ac.	(1) Para 2-11, item No. 236.
		(2) AMPL OUTPUT meter shall indicate -5 +0.6 volt dc.	(2) Para 2-11, item No. 177.
		(3) Flight director indicator horizontal pointer shall move right 2 +0.25 divisions.	(3) Para 2-11, item No. 2J5.
		(4) Yaw pedals shall move right.	(4) Para 2-11, item No. 307.
		u. Set AC-SIM SIG switch to + ϕ position.	*u.* None.
		(1) AC OUTPUT meter shall indicate 0.8 _0.1 volt ac.	(1) Para 2-11, item No. 236.
		(2) AMPL OUTPUT meter shall indicate 5 +0.5 volts dc.	(2) Para 2-11, item No. 180.
		(3) Flight director indicator horizontal pointer shall move left 2 +0.25 divisions.	(3) Para 2-11, item No. 294.
		(4) Yaw pedals shall move left	(4) Para 2-11, item No. 308.
		v. Center yaw pedals and release pedal switch on yaw pedals.	*v.* Para 2-11, item No. 299.

Seq No.	Item to be Inspected	Procedure	Paragraph reference
		w. Turn SIM SIG switch to NO. 2 RRG position and SENSOR OUTPUT-NO. 2 switch to RRG position. Set AC-SIM SIG switch to - position. Press and hold pedal switch on yaw pedals.	w. None.
		(1) AC OUTPUT meter shall indicate 2 +0.25 volts ac.	(1) Para 2-11. item No. 241.
		(2) AMPL OUTPUT meter shall indicate 5 +0.5 volts dc.	(2) Para 2-11, item No. 180.
		(3) Flight director indicator horizontal pointer shall move left 2 + 0.25 divisions.	(3) Para 2-11, item No. 297.
		(4) Yaw pedals shall move left	(4) Para 2-11, item No. 308.
		x. Set AC-SIM SIG switch to + ϕ position.	x. None.
		(1) AC OUTPUT meter shall indicate 2 +t0.5 volts ac.	(1) Para 2-11, item No. 241.
		(2) AMPL OUTPUT meter shall indicate -5 +0.5 volts dc.	(2) Para 2-11, item No. 177.
		('3) Flight director indicator horizontal pointer shall move right 2 ±0.25 divisions.	(3) Para 2-11, item No. 296.
		(4) Yaw pedals shall move right.	(4) Para 2-1, 1, item No. 307.
		y. Center yaw pedals and release pedal switch on yaw pedals. Position AIRSPEID switch to NORM. position.	y. Para 2-11, item No. 29.
		z. Turn SIM SIG switch to NO. 2 YRG position, SENSOR OUT-PUT-NO. 2 switch to YRG position, and set AJC-SIM SIG to -0 position.	z. None.
		(1) AC OUTPUT meter shall(1) Para 2-11, item No. 236. indicate 0.8 + 0.1 volt ac.	
		(2) AMPL OUTPUT meter shall indicate -5 ± 0.5 volts dc.	(2) Para 2-11, item No. 177.
		(3) Flight director indicator horizontal pointer shall move right 2 +0.25 divisions.	(3) Para 2-11, item No. 295.
		(4) Yaw pedals shall move right.	(4) Para 2-11, item No. 307.
		aa. Set AC-SIM SIG switch to + ϕ position.	aa. None.
		(1) AC OUT, PUT meter shall indicate 0.8 ± 0.1 volt ac.	(1) Para 2-11, item No. 2Mt'.
		(2) AMPL OUTPUT meter shall indicate 5 ± 0.5 volts dc.	(2) Para 2-11, item No. 180.
		(3) Flight director indicator horizontal pointer shall move left 2 ± 25 divisions.	(3) Para 2-11, item No. 294.

Seq No.	Item to be Inspected	Procedure	Paragraph reference
		(4) Yaw pedals shall move left. *ab.* Press on NORM MODE switch on remote stick control panel. NORM MODE switch shall illuminate. *ac.* Turn SIM SIG switch to YAW REM STK position and SEN-SOR OUTPUT-NO. 2 switch to OFF position. Center yaw pedals, pressing and releasing pedal switch on yaw pedals. (1) AMIPL OUTPUT meter shall move in negative direction to full 1imit and then in positive direction. (2) Flight director indicator horizontal pointer shall move right to full limit and then left. (3) Yaw pedals shall move right and then left. *Note.* Above indications will constantly switch from right to left and left to right while signal is applied. *ad.* Set AC-SIM SIG switch to -φ position. Center yaw pedals, pressing and releasing pedal switch on yaw pedals. (1) AMPL OUT'PUT meter shall move in direction to full limit and then in negative direction. (2) Flight director indicator horizontal pointer shall move left to full limit and then right. (3) Yaw pedals shall move left and then right. *Note.* Above indications will constantly switch from right to left and left to right while signal is applied. *as.* Turn AFCS POWER switch to Y SYNC COMM position. AFCS POWER-28VDC indicator lamp shall illuminate. *af.* Return remote stick control panel switches to OFF/NORMAL position. *ag.* Return AFOS control panel switches to OFF/NORMAL position. *ah.* Return LTS switches to OFF/ NORMAL positions.	(4) Para 2-11, item No. 308. *ab.* Para 2-11, item No. 202. *ac*. None. (1) Para 2-11, item No. 300. (2) Para 2-11, item No. 301. (3) Para 2-11, item No. 302. *ad.* None. (1) Para 2-, 11, item No. *303.* (2) Para 2-1'1, item No. 304. (3) Para 2-11, item No. 3w5. *as.* Para 2-11, item No. 298. *af.* None. *ag.* None. *ah.* None.
198	Collective channel test	*a.* Center yaw pedals and collective stick. *b.* Set flight director to AFOS mode *c.* Press on AFCS 1, BAR ALT, AFCIS SERVO STICK TRIM and YAW switches on AFCS con-trol panel. Switches shall illuminate Both flight director indicator OFF flags shall disappear and vertical pointer shall be centered. *d.* Turn AMPL O&UTPUT-B switch to COLL AMPL position and SENSOIR OUTPUT NO. 2 switch to COLL POS.	*a.* Para 2-11, item No. 310. *b.* Para 2-11, item No. 171. *c.* Para 2-11, item No. 172, 311 and 312. *d.* None.

Seq No.	Item to be Inspected	Procedure	Paragraph reference
		e. Raise collective stick up until 1.2 volt ac is indicated on AC OUTPUT meter.	*e.* Para 2-11, item No. 313.
		(1) AMPL OUTPUT meter shall indicate -7 ±1 volts **dc.**	(1) Para 211, item No. 314.
		(2) Flight director indicator vertical pointer shall move down 2.5 ±0.5 divisions.	(2) Para 2-11, item No. 315.
		f. Press collective stick, BAR. REL. switch. Release BAR. REL. switch.	*f.* None.
		(1) AC OUTPUT meter shall return to null.	(1) Para 2-11, item No. 316.
		(2) AMPL OUTPUT meter shall return to null.	(2) Para 2-11, item No. 317.
		(3) Flight director indicator vertical pointer shall return to null.	('3) Para 2-11, item No. 318.
		g. Lower collective stick until AC OUTPUT meter shall indicate 1.2 volt ac.	*g.* Para 2-11, item No. 313.
		(1) AMPL OUTPUT meter shall indicate +7±1 volts dc.	(1) Para **2-11,** item No. *300.*
		(2) Flight director indicator vertical pointer shall move up 2.5 ± 0.5 divisions.	(2) Para 2-11, item No. 319.
		(3) Collective stick shall be at original center position.	(3) Para 2-11, item No. 320.
		h. Press collective stick BAR. REL. switch. Release BAR. REL. switch.	*h.* None.
		(1) AC OUTPUT meter shall return to null.	(1) Para 2-11, item No. 316.
		(2) AMPL OUTPUT meter shall return to null.	(2) Para 2-11, item No. 317.
		(3) Flight director indicator vertical pointer shall return to null.	(3) Para 2-11, item No. 318.
		i. Turn SENSOR OUTPUT-NO. 2 switch to BAR. ALT. position.	*i.* None.
		j. Connect Model REIC 340000, Pitot and Static Tester, to pitot and static lines.	*j.* None.
		k. Adjust pitot and static tester for an altitude of 100 feet.	*k.* None.
		(1) AC OUTPUT meter shall indicate 4.5 ±0.5 volts ac.	(1) Para 2-11, item No. 321.
		(2) AMPL OUTPUT meter shall move in negative direction to full limit.	('2) Para 211, item No. 322.
		(3) Flight director indicator(3) Para 211, item No. 323. vertical pointer shall move down to full limit.	
		(4) Collective stick shall move down to full limit.	(4) Para 2-11, item No. 324.
		l. Press collective stick BAR. REL. switch and release AC OUTPUT meter, AMPL OUTPUT meter and flight director indicator vertical pointer shall return to null. Collective stick shall remain down.	*l.* Para 2-11, item No. 325.

Seq No.	Item to be Inspected	Procedure	Paragraph reference
± 0.5 volts positive limit. shall move limit.	ac. (2) (3) (4)	*m*. Return pitot and static tester to altitude of zero feet. (1) (1) Para 2-11, item No. 326. (2) Para 2-11, item No. 327. (3) Para 2-11, item No. 328. (4) Para 2-11, item No. 329.	*m*. None. AC OUTPUT meter shall indicate 4.5 AMPL OUTPUT meter shall move in shall move in positive direction to full Flight director indicator vertical pointer up to full limit. Collective stick shall move up to full
		n. Return collective stick to center and lock in place with friction lock on stick.	*n*. None.
		o. Press off BAR ALT on AFCS control panel.	*o*. None.
		p. Return all LTS switches except for PWR 115VAC and 28VDC switches to OFF/NORMAL condition.	*p*. None.
		q. Gradually adjust pitot and static tester for increase in airspeed. AIRSPEED indicator lamp shall illuminate at 60 ± 2 knots.	*q*. Para 2-11, item No. 330.
		r. Return AFCS control panel switches to OFF/NORMAL positions.	r. None.
		s. Disconnect pitot and static tester from pitot and static lines.	*s*. None.
		t. Return LTS switches except for PWR 115VAC and 24VDC switches to OFF/NORMAL positions.	*t*. None.
199	Simulated signal test of collective channel. (By substituting a simulated	*a*. Center yaw pedals and collective stick. Lock collective stick in place with friction lock.	*a*. Para 2-11, item No. 310.
	signal input to the AFCS	*b*. Set flight director to AFCS mode ----	*b*. Para 2-11, item No. 171.
	amplifier instead of the actual sensor input, a trouble can be isolated as being a faulty sensor or amplifier.)	*c*. Press on AFOS 1, BAR ALT, and AFCS SERVO switches on AFCS control panel. These switches shall illuminate. Both flight director indicator OFF flags shall disappear.	*c*. Para 2-11, item No. 172 and 331.
		d. Turn SIM SIG switch to BAR. ALT position, AMPL OUTPUT-B switch to COLL AMPL position, SENSOR OUTPUT-NO. 2 switch to BAR. ALT position, and set AC-SIM SIG switch to + ϕ position. (1) AC OUTPUT meter shall indicate ± 0.1 volt ac. (2) AMPL OUTPUT meter shall indicate -5 ± 0.5 volts dc. (3) Flight director indicator vertical pointer shall move down 2 ± 0.25 divisions.	*d*. None. (1) Para 2-11, item No. 332. (2) Para.2-11, item No. 177. (3) Para 2-11, item No. 333.
		e. Set AC-SIM SIG switch to ϕ position. (1) AC OUTPUT meter shall indicate 0.6 ± 0.1 volt ac.	*e*. None. (1) Para 2-11, item No. 332.

Seq No.	Item to be Inspected	Procedure	Paragraph reference
		(2) AMPL OUTPUT meter shall indicate 5 $\pm$ 0.5 volts dc. (3) Flight director indicator vertical pointer shall move up 2 $\pm$+0.25 divisions.	(2) Para 2-11 item No. 180. (3) Para 2-11, item No. 384.
		f. Release friction lock on collective stick. (1) Collective stick shall move up to full limit. (2) Flight director indicator vertical pointer shall move back toward null.	*f*. None. (1) Para 2-11, item No. 336. (2) Para 2-11, item No. 336.
		g. Set AC-SIM SIG switch to +ϕ position. (1) Collective stick shall move down to full limit. (2) Flight director indicator vertical pointer shall move down and then back toward null.	*g*. None. (1) Para 2-11, item No. 337. (2) Para 2-11, item No. 838.
		h. Return AFCS control panel switches to OFF/NORMAL positions.	*h*. None.
		i. Return LTS switches except for PWR 115VAC and 28VDC switches to OFF/NORMAL positions.	*i*. None.
200	Remote stick control panel test. (Simulated signal test of remote stick control panel is contained in the simulated signal tests of the pitch, roll. and yaw channels).	*a*. Press on following switches on AFCS control panel: AFCS 1, YAW, AFCS SERVO, and STICK TRIM. These switches shall illuminate.	*a*. Para 2-11, item No. 939.
		b. Press on NORM MODE switch, on remote stick control panel. (1) REAR CONTROL ENGAGED caution capsule on caution-advisory shall illuminate. (2) NORM MODE switch on remote stick control panel shall illuminate.	*b*. None. (1) Para 2-11, item No. 340. (2) Para 2-11, item No. 202.
		c. Turn AFCS POWER switch to NO. 1 REM STK ENG position. AFCS POWER-28VDC indicator lamp shall illuminate.	*c*. Para 2-11, item No. 341.
		d. Turn AFOS POWER switch to NO. 2 REM STK ENG position. AFCS POWER-28VDC indicator lamp shall illuminate.	*d*. Para 2-11, item No. 341.
		e. Press off AFCS 1 switch on AFCS control panel and press on AFCS 2. AFCS 1 switch shall extinguish and AFCS 2 switch shall illuminate. (1) REAR CONTROL ENGAGED caution capsule on caution-advisory panel shall illuminate. (2) NORM MODE switch on remote stick control panel shall illuminate.	*e*. Para 2-11, item Nos 205 and 206. (1) Para 2-11, item No. 340. (2) Para 2-11, item No. 202.

Seq No.	Item to be Inspected	Procedure	Paragraph reference
		f. Turn AFCS POWER switch to NO. 1 REM STK ENG position. AFCS POWER--28VDC indicator lamp shall illuminate.	*f*. Para 2-11, item No. 341.
		g. Turn AFCS POWER switch to NO. 2 REM STK ENG position. AFCS POWER--28VDC indicator lamp shall illuminate.	*g*. Para 2-11, item No. 341.
		h. Press off NORM MODE switch on remote stick control panel. NORM MODE switch shall extinguish.	*h*. Para 2-11, item No. 342.
		i. Press on AUX MODE switch on remote stick control panel. (1) AUX MODE switch on remote stick control panel shall illuminate. (2) REAR CONTROL ENGAGED caution capsule on caution-advisory panel shall illuminate.	 (1) Para 2-11, item No. 343. (2) Para 2-41, item No. 340.
		j. Turn AFCS POWER switch to NO. 1 REM STK ENG position. AFCS POWER-28VDC indicator lamp shall illuminate.	*j*. Para 2-11, item No. 341.
		k. Turn AFCS POWER switch to NO. 2 REM STK ENG position. AFCS POWER-28VDC indicator lamp shall illuminate.	*k*. Para 2-11, item No. 341.
		l. Turn AFCS POWER switch to Y SYNC COMM position. Twist remote stick grip on remote stick control panel right and then left in yaw motion. AFCS POWER-28VDC indicator lamp shall illuminate in each direction grip is twisted.	*l*. Para 2-11, item No. 344.
		m. Turn AFCS POWER switch to OFF position.	m. None.
		n. Press on NORM MODE switch on remote stick control panel and press off AUX MODE switch. NORM MODE switch shall illuminate and AUX MODE switch shall extinguish automatically.	*n*. Para 2-11, item No. 345.
		o. Press off AFCS 2 switch and press on AFCS 1 switch on AFCS control panel. Set flight director to AFPS mode. Turn AMPL OUTPUT-B switch to NO. 1 P AMPL. ***Note*. During remote stick control panel test, all movements of remote stick shall be referenced to helicopter and not to remote stick itself. Example: Move remote stick forward means toward nose of helicopter and move remote stick left means to left of helicopter.**	*o*. Para 2-11, item No. 171.
		p. Move remote stick 1 inch forward of center. (1) AMPL OUTPUT meter shall indicate -5 ± 0.5 volts dc. (2) Flight director indicator horizontal bar shall move up 2 ± 0.25 divisions.	*p*. None (1) Para 2-11, item No.346 (2) Para 2-11, item No. 4.
		q. Move remote stick 1 inch aft of center (1) AMPL OUTPUT meter shall indicate 5 ± 0.5 volts dc.	*q*. None (1) Para 2-11, item No. 348.

Seq No.	Item to be Inspected	Procedure	Paragraph reference
		(2) Flight director indicator horizontal bar shall move down 2 ± 0.25 divisions.	(2) Para 2-11, item No. 349.
		r. Turn AMPL OUTPUT-B switch to NO. 1 R AMPL.	r. None.
		s. Move remote stick 1 inch left of center. (1) AMPL OUTPUT meter shall indicate 5 ± 0.5 volts dc. (2) Flight director indicator vertical bar shall move left 2 ± 0.25 divisions.	a. None. (1) Para 2-1,1, item No. 350. (2) Para 2-11, item No. 351.
		t. Move remote stick 1 inch right of center. (1) AMPL OUTPUT meter shall indicate -5 ± 0.5 volts dc. (2) Flight director indicator vertical bar shall move right 2 ± 0.25 divisions.	t. None. (1) Para 2-41, item No. 352. (2) Para 2-11, item No. 363.
		u. Turn AMPL OUTPUT-B switch to NO.1 Y AMPL.	u. None.
		v. Twist remote stick right in yaw motion. (1) AMPL OUTPUT meter shall indicate negative dc voltage and shall move to full output indication. (2) Flight director indicator horizontal pointer shall move right to complete travel. (3) Yaw pedals shall move right---	v. None. (1) Par, 2-11, item NKo. 354. (2) Para 2-11, item No. 355. (3) Para 2-1,1, item No. 356.
		w. Release remote stick and press and release pedal switch on yaw pedals.	w. None.
		x. Twist remote stick left in yaw motion. (1) AMPL OUTPUT meter shall indicate positive dc voltage and shall move to full output indication. (2) Flight director indicator horizontal pointer shall move left to complete travel. (3) Yaw pedals shall move left---	x. None. (1) Para 2-11, item No. 357. (2) Para 211, item No. 358. (3) Para 2-11, item No. 359.
		y. Turn AMPL OUTPUT-B switch to NO. 1 R AMPL and NO. 1-SENSOR OUTPUT switch to RVG position.	y. None.
		z. Disconnect plug from No. 1 lateral accelerometer on No. 1tilt table and raise and position No. 1 tilt table 10 degrees to simulate a right bank. (1) AC OUTPUT meter shall indicate 2.06 ± 0.25 volts dc. (2) AMPL OUTPUT meter shall indicate + 2.5 ± 0.25 volts dc. (3) Flight director indicator vertical bar shall move left 1 ± 0.25 division.	z. None. (1) Para 211, item No. 360. (2) Para 2-11, item No. 361. (3) Para 211, item No. 362.

Seq No.	Item to be Inspected	Procedure	Paragraph reference
		aa. Return No. 1 tilt table to level position and then raise and position it 10 degrees to simulate a left bank. (1) AC OUTPUT meter shall indicate 2.06 ± 0.25 volts ac. (2) AMPL OUTPUT meter shall indicate -2.5 ± 0.25 volts dc. (3) Flight director indicator vertical bar shall move right 1 ± 0.25 division.	*aa*. None. (1) Para 2-11, item No. 360. (2) Para 2-11, item No. 363. (3) Para 2-11, item No. 364.
		ab. Return No. 1 tilt table to level position. Reconnect plug to No. 1 No. 1 lateral accelerometer. Turn NO. 1-SENSOR OUTPUT switch to LAT ACCEL position.	*ab*. None.
		ac. Raise and position No. 1 tilt table 10 degrees to simulate right bank. (1) AC OUTPUT meter shall indicate 0.4 ± 0.1 volt ac. (2) AMPL OUTPUT meter shall indicate ± 0.5 volt dc. (3) Flight director indicator vertical bar shall move ± 0.25 division maximum.	*ac*. None. (1) Para 2-11, item No. 365. (2) Para 2-11, item No. 366. (3) Para 2-11, item No. 367.
		ad. Return No. 1 tilt to level position and then raise and position it 10 degrees to simulate left bank. (1) AC OUTPUT meter shall indicate 0.4 ± 0.1 volt ac. (2) AMPL OUTPUT meter shall indicate ± 0.5 volts dc. (3) Flight director indicator vertical bar shall move ± 0.25 division maximum.	*ad*. None. (1) Para 2-11, item No. 365. (2) Para 2-11, item No. 366. (3) Para 2-11, item No. 367.
		ae. Return No. 1 tilt table to level position. Press off AFCS 1 switch switch and press on AFCS 2 switch on AFCS control panel. Turn AMPL OUTPUT-B switch to No. 2 P AMPL position and NO. 1-SENSOR OUTPUT switch to OFF position.	*ae*. None.
		af. Move remote stick 1 inch forward of center. (1) AMPL OUTPUT meter shall indicate -5 ± 0.5 volts dc. (2) Flight director indicator horizontal bar shall move up 2 ± 0.25 divisions.	*af.* None. (1) Para 2-11, item No. 346. (2) Para 2-11, item No. 347.
		ag. Move remote stick 1 inch aft of center. (1) AMPL OUTPUT meter shall indicate 5 ± 0.5 volts dc. (2) Flight director indicator horizontal bar shall move down 2 ± 0.25 divisions.	*ag*. None. (1) Para 2-11, item No. 348. (2) Para 2-11, item No. 349.
		ah. Turn AMPL OUTPUT-B switch to NO. 2 R AMPL.	*ah*. None.

Seq No.	Item to be Inspected	Procedure	Paragraph reference
		ai. Move remote stick 1 inch left of center. (1) AMPL OUTPUT meter shall indicate 5 ± 0.5 volts dc. (2) Flight director indicator vertical bar shall move left 2 ± 0.25 divisions.	*ai*. None. (1) Para 2-11, item No. 350. (2) Para 2-41, item No. 351.
		aj. Move remote stick 1 inch right of center. (1) AMPL OUTPUT meter shall indicate -5 ± 0.5 volts dc. (2) Flight director indicator vertical bar shall move right 2 ± 0.25 divisions.	*aj*. None (1) Para 2-11, item No. 352. (2) Para 2-11, item No. 353.
		ak. Turn AMPL OIJTPUT-B switch to NO. 2 Y AMPL.	*ak*. None.
		al. Twist remote stick right in yaw motion. (1) AMPL OUTPUT meter shall indicate negative dc voltage and shall move to full output indication. (2) Flight director indicator horizontal pointer shall move right to complete travel. (3) Yaw pedals shall move right------	*al*. None. (1) Para 2-11, item No. 354. (2) Para 2-11, item No. 355. (3) Para 2-11, item No. 356.
		am. Release remote stick and press and release pedal switch and release pedal switch on yaw pedal.	*am*. None.
		an. Twist remote stick left in yaw motion. (1) AMPL OUTPUT meter shall indicate positive dc voltage and shall move to full output indication. (2) Flight director indicator horizontal pointer shall move left to complete travel. (3) Yaw pedals shall move left.	*an*. None. (1) Para 2-11, item No. 357. (2) Para 2-11, item No. 3658. (3) Para 2-11, item No. 359.
		ao. Turn AMPL OUTPUT-B switch NO. 2 R AMPL and SENSOR OUTPUT-NO. 2 switch to RVG position.	*ao*. None.
		ap. Disconnect plug from No. 2 lateral accelerometer on No. 2 tilt table and raise and position No. 2 tilt table 10 degrees to simulate right bank. (1) AC OUTPUT meter shall indicate 2.06 ± 025 volts ac. (2) AMPL OUTPUT meter shall indicate +2.5 ± 0.25 volts dc. (3) Flight director indicator vertical bar shall move left 1 ± 0.25 division.	*ap*. None. (1) Para 2-11, item No. 368. (2) Para 2-1,1, item No. 361. (3) Para 2-11, item No. 362.
		aq. Return No. 2 tilt table to level position and then raise and then raise and position it 10 degrees to simulate left bank. (1) AC OUTPUT meter shall indicate 2.06 ± 0.25 volts ac.	*aq*. None. (1) Para 2-11, item No. 368.

Seq No.	Item to be Inspected	Procedure	Paragraph reference
		(2) AMPL OUTPUT meter shall indicate -2.5 +0.25 volts dc. (3) Flight director indicator vertical bar shall move right 1 ±-0.25 division.	(2) Para 2-11, item No. 363. (3) Para 2-11, item No. 364.
		ar. Return No. 2 tilt table to level position. Reconnect plug to No. 2 lateral accelerometer. Turn SENSOR OUTPUT-NO. 2 switch to LAT ACCEL position.	*ar*. None.
		as. Raise and position No. 2 tilt table 10 degrees to simulate a right bank. (1) AC OUTPUT meter shall indicate 0.4 ± 0.1 volt ac. (2) AMPL OUTPUT meter shall indicate ± 0.5 volt dc. (3) Flight director indicator vertical bar shall move ± 0.25 division maximum.	*as*. None. (1) Para 2-11, item No. 369. (2) Para 2-11, item No. 366. (3) Para 2-1,1, item No. 367.d
		at. Return No. 2 tilt table to level position and then raise and position it 10 degrees to simulate left bank. (1) AC OUTIPUT meter shall indicate 0.4 ± 0.1 volt ac. (2) AMPL OUTPUT meter shall indicate ± 0.5 volt dc. (3) Flight director indicator vertical bar shall move ± 0.25 division maximum.	*at*. None. (1) Para 2-11, item No. 369. (2) Para 2-11, item No. 366. (3) Para 2-11, item No. 367.
		au. Return No. 2 tilt table to level position. Return all LTS switches except for PWR 115VAC and 28VDC switches to OFF/ NORMAL positions.	*au*. None.
		av. Press on AFCS 1 switch on FACS control panel. Set flight director to ON-ON mode.	*ay*. None.
		aw. Move remote stick forward. Flight director indicator horizontal bar and vertical pointer shall move up simultaneously a maximum of 0.25 division apart.	aw. Para 2-11, item No. 370.
		ax. Move remote stick aft. Flight director indicator horizontal bar and vertical pointer shall move down simultaneously a maximum of 0.25 division apart.	*ax*. Para 2-11, item No. 371.
		ay. Move remote stick left. Flight director indicator vertical bar and horizontal pointer shall move left simultaneously a maximum of 0.25 division apart.	*ay*. Para 2-11, item No. 372.
		az. Move remote stick right. Flight director indicator vertical bar and horizontal pointer shall move right simultaneously a maximum of 0.25 division apart.	*az*. Para 2-11, item No. 37,3.

Seq No.	Item to be Inspected	Procedure	Paragraph reference
		ba. Return AFCS control panel and remote stick control panel switches to OFF/NORMAL positions.	ba. None.
		bb. Return LTS switches except for PWR 115VAC and 28VDC switches to OFF/NORMAL positions.	bb. None.
201	Manual and automatic beeper test.	*a.* Press on following switches on AFCS control panel: AFCS 1, AFCS 2, AFCS SERVO (before STICK TRIM), STICK TRIM, and YAW. All these switches shall illuminate.	a. Para 2-11, item No. 374.
		b. Press on AUX MODE switch on AFCS control panel: AFCS 1, remote stick control panel. This switch shall illuminate.	b. Para 2-11, item No. 202.1.
		c. Set flight director indicator to ON-ON mode.	c. Para 2-11, item No. 189.
		d. Move pilot's cyclic stick to full aft position, pressing TRIM REL. switch on grip and releasing it at full aft position. Push and hold beeper STICK TRIM switch on pilot's cyclic stick forward and record time it takes for cyclic stick to move from full aft position to full forward position. Cyclic stick shall move from full aft position to full forward position in 25 ± 3 seconds.	d. Para 2-11, item No. 375.
		e. Push and hold beeper STICK TRIM switch aft and record time it takes for pilot's cyclic stick to move from full forward position to full aft position. Cyclic stick shall move from full forward position to full aft position in 25 ± 3 seconds.	e. Para 2-11, item No. 376.
		f. Move pilot's cyclic to full left TRIM switch aft and record time position, pressing TRIM REL. switch on grip and releasing it at full left position. Push and hold beeper STICK TRIM switch on cyclic stick right and record time it takes for cyclic stick to move from full left position to full right position. Cyclic stick shall move from full left position to full right position in 25 ± 3 seconds.	f. Para 2-11, item No. 377.
		g. Push and hold beeper STICK TRIM switch left and record time it takes for pilot's cyclic stick to move from full right position to full left position. Cyclic stick shall move from full right position position to full left position in 25 ± 3 seconds.	g. Para 2-11, item No. 378.
		h. Move copilot's cyclic stick to full aft position, pressing TRIM REL. switch on grip and releasing it at full aft position. Push and hold beeper STICK TRIM switch on copilot's cyclic stick forward and record time it takes for cyclic stick	h. Para 2-11, item No. 376.

Seq No.	Item to be Inspected	Procedure	Paragraph reference
		to move from full aft position to full forward position. Cyclic stick shall move from full aft position to full forward position in 25 ± seconds.	
		i. Push and hold beeper STICK TRIM switch aft and record time it takes for copilot's cyclic stick to move from full forward position to full aft position. Cyclic stick shall move from full forward position to full aft position in 25 ± 3 seconds.	*i*. Para 2-11, item No. 376.
		j. Move copilot's cyclic stick to full left position, pressing TRIM REL. switch on grip and releasing it at full left position. Push and hold beeper STICK TRIM switch on cyclic stick right and record time it takes for cyclic stick to move from full left position to full right position. Cyclic stick shall move from full left position to full right position in 25 ±3 seconds.	*j*. Para 2-11, item No. 377.
		k. Push and hold beeper STICK TRIM switch left and record time it takes for copilot's cyclic stick to move from full right position to full left position. Cyclic stick shall move from full full right position to full left position in 25 ± 3 seconds.	*k*. Para 2-11, item No. 378.
		l. Move pilot's cyclic stick to full aft position, pressing TRIM REL. switch on grip and releasing it at full aft position. Push and hold beeper STICK TRIM switch on aft pilot's remote stick grip forward and record time it takes for cyclic stick to move from full aft position to full forward position. Cyclic stick shall move from full aft position to full forward position in 25 ± 3 seconds.	*l*. Para 2-11, item No. 375.
		m. Push and hold beeper STICK TRIM switch aft and record time it takes for pilot's cyclic stick to move from full forward position to full aft position. Cyclic stick shall move from full forward position to full aft position in 25 ± 3 seconds.	*m*. Para 2-11, item No. 376.
		n. Move pilot's cyclic stick to full left position, pressing TRIM REL. switch on cyclic stick grip and releasing it at full left position. Push and hold beeper STICK TRIM switch on aft pilot's remote stick grip right and record time it takes for cyclic stick to move from full left position to full right position. Cyclic stick shall move from full left position to full right position in 25 ± 3 seconds.	*n*. Para 2-11, item No. 377.

Seq No.	Item to be Inspected	Procedure	Paragraph reference
		o. Push and hold beeper STICK TRIM switch left and record time it takes for pilot's stick grip to move from full right position to full left position. Remote stick grip shall move from full right position to full left, position in 25 ± 3 seconds.	o. Para 2-11, item No.378.
		p. Press on NORM MODE switch on remote stick control panel and press off AUX MODE switch. AUX MODE switch shall extinguish and NORM MODE switch shall illuminate.	p. Para 211, item No. 36.
		p.1. Move pilot's cyclic stick to full aft position, pressing TRIM REL. switch on grip and releasing it at full aft position. Push and hold beeper STICK TRIM switch on aft pilot's remote stick grip forward and record time it takes for cyclic stick to move from full aft position to full forward position. Cyclic stick shall move from full aft position to full forward position in 25 ± 3 seconds.	p.1. Para2-11, item No. 379.
		p.2. Push and hold beeper STICK TRIM switch aft and record time It takes for pilot's cyclic stick to move from full forward position to full aft position. Cyclic stick shall move from full forward position to full aft position in 25 ± 3 seconds.	p.2. Para 2-11, item No. 380.
		p.3. Move pilot's cyclic stick to full left position, pressing TRIM REL. switch on cyclic stick	p.3. Para 2-11, item No. 381.

Seq No.	Item to be Inspected	Procedure	Paragraph reference
		grip and releasing it at full left position. Push and hold beeper STICK TRIM switch on aft pilot's remote stick grip right and record time it takes for cyclic stick to move from full left position to full right position. Cyclic stick shall move from full left position to full right position in 25 ± 3 seconds.	
		p.4. Push and hold beeper STICK TRIM switch left and record time it takes for pilot's stick grip to move from full right position to full left position. Remote stick grip shall move from full right position to full left position in 25 ± 3 seconds.	p.4. Para2-11, item No. 382.
		q. Move pilot's cyclic stick grip to full aft position, pressing TRIM REL. switch on cyclic grip and releasing it at full aft position. Move remote stick grip to full forward position, not pressing any switches on grip. Record time it takes for cyclic stick to move from full aft position to full forward position. Cyclic stick grip shall move from full aft position to full forward position in 25 ± 3 seconds.	*q*. Para 2-11, item No. 379.
		r. Move aft pilot's remote stick grip from full forward position to full aft position, not pressing any switches on remote stick grip. Record time it takes for cyclic stick to move from full forward position to full aft position. Cyclic stick shall move from full forward position to full aft position in 25 ± 3 seconds.	*r*. Para 2-11, item No. 380.
		s. Move pilot's cyclic stick to full left position, pressing TRIM REL. switch on cyclic grip and releasing it at full left position. Move remote stick grip from full left position to full right position, not pressing any switches on remote stick grip.	*s*. Para 2-11, item No. 381.

Seq No.	Item to be Inspected	Procedure	Paragraph reference
		Record time it takes for cyclic stick to move from full left position to full right position. Cyclic stick shall move from full left position to full right position in 25 ± 3 seconds.	
		t. Move aft pilot's remote stick grip from full right position to full left position, not pressing any switches on remote stick grip. Record time it takes for cyclic stick to move from full right position to full left position. Cyclic stick shall move from full right position to full left position in 25 ±3 seconds.	*t*. Para 2-11, item No. 82.
		u. Center cyclic stick between forward and aft and right and left.	*u*. None.
		v. Slowly move aft pilot's remote stick grip forward until cyclic stick begins to move. At this point, record position of flight director	*v*. Para 211, item No. 388.

Seq No.	Item to be Inspected	Procedure	Paragraph reference
		indicator horizontal bar and vertical pointer. Flight director indicator horizontal bar and vertical pointer shall be up 2.5 ± 0.25 divisions.	
		w. Slowly move aft pilot's remote stick grip aft until cyclic stick begins to move. At this point, record position of flight director indicator horizontal bar and vertical pointer. Flight director indicator horizontal bar and vertical pointer shall be down 2.5 ± 0.25 divisions.	*w*. Para 2-11, item No. 384.
		x. Slowly move aft pilot's remote stick grip right until cyclic stick begins to move. At this point, record position of flight director indicator vertical bar and horizontal pointer. Flight director indicator vertical bar and pointer shall be right 1.5 ± 0.25 divisions.	*x*. Para 2-11, item No. 385.
		y. Slowly move aft pilot's remote stick grip left until cyclic stick begins to move. At this point, record position of flight director indicator vertical bar and horizontal pointer. Flight director indicator vertical bar and horizontal pointer shall be left 1.5 ± 0.25 divisions.	*y*. Para 2-11, item No. 396.
		z. Return switches AFCS control panel and remote stick control panel switches to OFF/NORMAL position.	*z*. None.
202	Oscillatory shutoff unit (OSU) self test.	*a*. Remove cable assembly W5 from helicopter connector and Reconnect helicopter connector to oscillator shut-off unit.	*a*. None.
		b. Press on all switches on AFCS control panel. These switches shall illuminate.	*b*. Para 2-11, item No. 387.
		c. Press and hold for approximately three seconds ALT TEST switch on OSU located in electronics nose compartment. BAR ALT switch on AFCS control panel shall extinguish and AUTO FAIL RESET switch on AFCS control panel shall illuminate.	*c*. Para 2-11, item No. 388.
		d. Press AUTO FAIL RESET switch on AFCS control panel. AUTO FAIL RESET switch on AFCS control panel shall extinguish, and BAR ALT switch shall illuminate.	*d*. Para 2-11, item No. 389.
		e. Press and hold for approximately three seconds YAW TEST switch ON OSU. YAW and BAR ALT switches on AFCS control panel shall extinguish and AUTO FAIL RESET switch on AFCS control panel shall illuminate.	*e*. Para 2-11, item No. 390.

Seq No.	Item to be Inspected	Procedure	Paragraph reference
		f. Press AUTO FAIL RESET switch on AFCS control panel. AUTO FAIL RESET switch shall extinguish and YAW and BAR ALT switches on AFCS control panel shall illuminate.	*f*. Para 2-11, item No. 301.
		g. Press and hold for approximately three seconds ROLL TEST switch on OSU. AUTO FAIL RESET switch on AFCS control panel shall illuminate.	*g*. Para 2-11, item No. 392.
		h. Press AUTO FAIL RESET switch on AFCS control panel. AUTO FAIL RESET switch shall extinguish.	*h*. Para 2-11, item No. 393.
		i. Press and hold for approximately three seconds. PITCH TEST switch on OSU. AUTO FAIL RESET switch on AFCS control panel shall illuminate.	*i*. Para 2-11, item No. 394.
		j. Press AUTO FAIL RESET switch on AFCS control panel. AUTO FAIL RESET switch shall extinguish.	*j*. Para 2-11, item No. 395.
		k. Press and hold simultaneously for approximately three seconds both ROLL TEST and PITCH TEST switches on OSU. AUTO FAIL RESET switch on AFCS control panel shall illuminate, and AFCS 1 and AFCS 2 switches on AFCS control panel shall extinguish.	k. Para 2-11, item No. 396.
		l. Press AUTO FAIL RESET switch on AFCS control panel. AUTO FAIL RESET switch shall extinguish, and AFCS 1 and AFCS 2 switches on AFCS control panel shall illuminate.	l. Para 2-11, item No. 397.
		m. Return AFCS control panel switches to OFF/NORMAL position and return LTS PWR 115VAC and PWR 28VDC switches to OFF position.	m. None.
203	AFCS servovalves hard-over test.	*a*. Disconnect single end of cable assembly W2 from LTS plug marked J102.	a. Figure 2-7.1.
		b. Disconnect receptacle of branched end of cable assembly W2 marked to J842 & P625 from AFOS amplifier plug marked J842 and disconnect plug of branched end of cable assembly W2 from helicopter receptacle P625. Reconnect helicopter receptacle P625 to AFCS amplifier plug marked J842.	b. Figure 2-7.1.
		c. Place cable assembly W2 in cover assembly and remove W3 cable assembly from cover assembly.	c. None.
		d. Remove AFCS control panel from center console by loosening four Dzus fasteners and lifting it out of console recess.	*d*. Figure 2-7.2.

Seq No.	Item to be Inspected	Procedure	Paragraph reference
		e. Disconnect helicopter receptacle P607 from plug J836 at rear of AFCS control panel. (J836 is bottom connector on back of AFCS control panel.)	*e*. Figure 2-7.2.
		f. Connect end of cable assembly W3 marked TO TEST SET J102 to LTS plug marked J102 and connect end of cable assembly W3 marked to P607 to helicopter receptacle P607.	*f*. Figure 9-7.2.
		g. Press on following switches on AFCS control panel: AFCS 1, AFC SERVO (press on before STICK TRIM), STICK TRIM, YAW, and BAR ALT. These switches shall illuminate.	*g*. Para 2-11, item No. 398.
		h. Set flight director to AFCS mode---	*h*. Para 2-11, item No. 171.
		i. Set PWR 115VAC and PWR 28V9DC switches to ON position and turn SIM SIG switch to HARDOVER position.	*i*. None.
		j. Center yaw pedals and collective and cyclic sticks.	*j*. Para 2-11, item No. 399.
		k. Push COLL HARDOVER switch to UP position. (1) Flight director indicator vertical pointer shall move up to its full limit. (2) Collective stick shall move up to its full limit. (3) Collective control rod in cockpit flight controls inclosure-shall move down.	*k*. None. (1) Para 2-11, item No. 400. (2) Para 2-11, item No. 401. (3) Para 211, item No. 402.
		l. Move collective stick down to check override capability and release it. Collective control rod shall move up when collective stick is moved down.	*l*. Para 2-11, item No. 403.
		m. Push COLL HARDOVER switch to DN position. (1) Flight director indicator vertical pointer shall move down to its full limit (2) Collective stick shall move from full up to full down position. (3) Collective control rod shall move up.	*m*. None. (1) Para 2-11, item No. 404. (2) Para 2-11, item No. 405. (3) Para 2-11, item No. 406.
		n. Move collective stick up to check override capability and release It. Collective control rod shall move down when collective stick is moved up.	*n*. Para 2-11, item No. 407.
		o. Release COLL HARDOVER switch and lock collective stick in center position.	*o*. None.
		p. Push PITCH HARDOVER switch to FWD position. (1) Flight director indicator horizontal bar shall move up to its full limit	*p*. None. (1) Para 2-11, item No. 408.

Seq No.	Item to be Inspected	Procedure	Paragraph reference
		(2) Pitch control rod in cockpit flight controls inclosure Shall move up.	(2) Para 2-11, item No. 409.
		q. Move cyclic stick aft to check override capability and release it. Pitch control rod shall move down when cyclic stick is moved aft.	*q*. Para 2-11, item No. 410.
		r. Push PITCH HARDOVER switch to AFT position. (1) Flight director indicator horizontal bar shall move down to its full limit. (2) Pitch control rod shall move down.	*r*. None. (1) Para 2-11, item No. 411. (2) Para 2-11, item No. 412.
		s. Move cyclic stick forward to check override capability and release it. Pitch control rod shall move up when cyclic stick is moved forward.	*s*. Para 2-11, item No. 413.
		t. Release PITCH HARDOVER switch.	*t*. None.
		u. Pitch ROLL HARDOVER switch to LEFT position. (1) Flight director indicator vertical bar shall move left to its full limit. (2) Roll control rod in cockpit flight controls inclosure shall move up.	*u*. None. (1) Para 2-11, item No. 414. (2) Para 2-11, item No. 415.
		v. Move cyclic stick right to check override capability and release it. Roll control rod shall move down when cyclic stick is moved right.	*v*. Para 2-11, item No. 416.
		w. Push ROLL HARDOVER switch to RIGHT position. (1) Flight director indicator vertical bar shall move right to its full limit. (2) Roll control rod shall move down.	*w*. None. (1) Para 2-11, item No. 417. (2) Para 2-11, item No. 418.
		x. Move cyclic stick left to check override capability and release it. Roll control rod shall move up when stick is moved left.	*x*. Para 2-11, item No. 419.
		y. Release ROLL HARDOVER switch.	*y*. None.
		z. Push YAW HARDOVER switch to left position. (1) Flight director horizontal pointer shall move left to its full limit. (2) Yaw control rod in cockpit flight controls inclosure Shall move down.	*z*. None. (1) Para 2-11, item No. 420. (2) Para 2-11, item No. 421.
		aa. Move yaw pedals right to check override capability and release them. Yaw control rod shall move up when pedals are moved right.	*aa*. Para 2-11, item No. 422.

Seq No.	Item to be Inspected	Procedure	Paragraph reference
		ab. Push YAW HARDOVER switch to RIGHT position. (1) Flight director horizontal pointer shall move right to its full limit. (2) Yaw control rod shall move up.	*ab*. None. (1) Para 2-11, item No. 423. (2) Para 2-11, item No. 424.
		ac. Move yaw pedals left to check override capability and release them. Yaw control rod shall move down when pedals are moved left.	*ac*. Para 2-11, item No. 425.
		ad. Release YAW HARDOVER switch and recenter yaw pedals.	*ad*. None.
		ae. Set PWR 115VAC and PWR 28VDC switches to OFF position and turn SIM SIG switch to OFF position.	*ae*. None.
		af. Return AFCS control panel switches to OFF/NORMAL positions.	*af*. None.
		ag. Disconnect end of W3 cable assembly marked to TEST SET J102 from LTS plug marked J102 and disconnect end of cable assembly W3 marked to P607 from helicopter receptacle P607.	*ag*. Figure 2-7.2.
		ah. Reconnect helicopter receptacle P607 to plug J8L36 at rear of AFCS control panel.	*ah*. Figure 2-7.3.
		ai. Place AFCS control panel in center console recess and secure it to center console by fastening four Dzus fasteners.	*ai*. Figure 2-7.3.
		aj. Place cable assembly W3 in cover assembly.	*aj*. None.
204	Stick trim valves hardover test.	*a*. Open nose electronics compartment access door and position support rods.	*a*. Figure 2-12.
		b. Disconnect helicopter receptacle P608 from stick trim amplifier plug marked J202.	*b*. Figure 2-7.3.
		c. Remove cable assembly W4 from cover assembly.	*c*. None.
		d. Connect end of cable assembly W4 marked to TEST SET J1012 to LTS plug marked J102 and route TO P608 end out of upper-nose electronics compartment and down through space between helicopter fuselage and opened nose electronics compartment access door to shelf containing stick trim amplifier. Connect end of cable assembly W4 marked to P608 to helicopter receptacle P608.	*d*. Figure 2-7.3.
		e. Press on following switches on AFCS control panel: AFCS 1, AFCS SERVO (press on before STICK TRIM), STICK TRIM, YAW, and BAR ALT. These switches shall illuminate.	*e*. Para 2-11, item No. 426.

Seq No.	Item to be Inspected	Procedure	Paragraph reference
		f. Set flight director indicator to AFCS mode.	*f*. Para 2-11, item No. 171.
		g. Set PWR 115VAC and PWR 28VDC switches to ON position and turn SIM SIG switch to HARDOVER position.	*g*. None.
		h. Center yaw pedals and collective and cyclic sticks.	*h*. Para 2-11, item No. 397.
		i. Push PITCH HARDOVER switch to FWD position. (1) Cyclic stick shall move forward to its full limit. (2) Pitch control rod in cockpit flight controls inclosure Shall move up.	*i*. None. (1) Para 2-11, item No. 427. (2) Para 2-11, item No. 428.
		j. Move cyclic stick aft to check override capability and release it. Pitch control rod shall move down when cyclic stick is moved aft.	*j*. Para 2-11, item No. 429.
		k. Push PITCH HARDOVER switch to AFT position and record time it takes for cyclic stick to move from full forward to full aft position. (1) Cyclic stick shall move from full forward to full aft position in 10 ± 3 seconds. (2) Pitch control rod shall move down.	*k*. None. (1) Para 2-11, item No. 430. (2) Para 2-11, item No. 431.
		l. Move cyclic stick forward to check override capability and release it. Pitch control rod shall move up when cyclic stick is moved forward.	*l*. Para 2-11, item No. 432.
		m. Push PITCH HARDOVER switch to FWD position and record Time it takes for cyclic stick to move from full aft to full forward position. Cyclic stick shall move from full aft to full forward position in 10 ± 3 seconds.	*m*. Para 2-l1, item No. 433.
		n. Release PITCH HARDOVER switch.	*n*. None.
		o. Push ROLL HARDOVER switch to LEFT position. (1) Cyclic stick shall move left to its full limit. (2) Roll control rod tin cockpit flight controls inclosure shall move up.	*o*. None. (1) Para 2-11, item No. 434. (2) Para 2-11, item No. 435.
		p. Move cyclic stick right to check override capability and release it. Roll control rod shall move down when stick is moved right.	*p*. Para 2-11, item No. 436.
		q. Push ROLL HARDOVER switch to RIGHT position and record time it takes for cyclic stick to move from full left to full right position.	*q*. None.

Seq No.	Item to be Inspected	Procedure	Paragraph reference
		(1) Cyclic stick shall move from full left to full right position in 10 ± 3 seconds. (2) Roll control rod shall move down.	(1) Para 2-11, item No. 437. (2) Para 2-11, item No. 438.
		r. Move cyclic stick left to check override. Roll control rod shall move up when stick is moved left.	*r*. Para 2-11, item No. 439.
		s. Push ROLL HARDOVER switch to left position and record Time it takes for cyclic stick to move from full right to full left position. Cyclic stick shall move from full right to full left position in 10 ± 3 seconds.	*s*. Para 2-11, item No. 440.
		t. Release ROLL HARDOVER switch.	*t*. None.
		u. Push YAW HARDOVER switch to LEFT position. (1) Yaw pedals shall move left to full limit. (2) Yaw control rod in cockpit flight controls inclosure Shall move down.	*u*. None. (1) Para 2-11, item No. 441. (2) Para 2-11, item No. 442.
		v. Move pedals right to check override capability and release Them by pressing on extrusion of yaw pedal and not by pressing on pedal switch of yaw pedal. Yaw control rod shall move up when pedals move right.	*v*. Para 2-11, item No. 443.
		w. Push YAW HARDOVER switch to RIGHT position and record time it takes for pedals to move from full left to full right position. (1) Yaw pedals shall move from full left to full right position in 12 ± 3 seconds. (2) Yaw control rod shall move up.	*w*. None. (1) Para 2-11, item No. 444. (2) Para 2-11, item No. 445.
		x. Move pedals left to check override capability and release them by pressing on extrusion of yaw pedal and not by pressing on pedal switch of yaw pedal. Yaw control rod shall move down when pedals move left.	*x*. Para 2-11, item No. 446.
		y. Push YAW HARDOVER switch to LEFT position and record Time it takes for pedals to move from full right to full left position. Yaw pedals shall move from full right to full left position in 12 ± 3 seconds.	*y*. Para 2-11, item No. 447.
		z. Release YAW HARDOVER switch. Turn SIM SIG switch to OFF position. Set PWR 115VAC and PWR 28V.DC switches to OFF position. Return AFCS control panel switches to OFF/NORMAL position.	*z*. None.
		aa. Disconnect end of W4 cable assembly marked to P608 from helicopter receptacle P608 and reconnect helicopter receptacle P608 to stick trim amplifier plug marked J202.	*aa*. Figure 2-7.3.

Seq No.	Item to be Inspected	Procedure	Paragraph reference
		ab. Remove TO P608 end of cable assembly W4 from nose electronics compartment and place it in uppernose electronics compartment.	*ab*. Figure 2-7.3.
		ac. Close and secure nose electronics compartment access door.	*ac*. Figure 2-12.
		ad. Disconnect end of cable assembly W4 marked TO TEST SET J10Q from LTS.	*ad*. Figure 2-7.3.
		ae. Disconnect receptacle of branched end of cable assembly Q1 marked to J841 & P624 from AFCS amplifier plug marked J841. Disconnect plug of branched end of cable assembly W1 from helicopter receptacle P624.	*ae*. Figure 2-7.1.
		af. Reconnect helicopter receptacle P624 to AFCS amplifier plug marked J841.	*af*. Figure 2-7.1.

Seq No.	Item to be Inspected	Procedure	Paragraph reference
		ag. Pass branched end of cable assembly W1 under right-hand section of instrument panel into cockpit.	*ag*. Figure 2-7.1.
		ah. Disconnect single end of cable assembly W1 marked TO TEST SET J101 from LTS plug marked J101.	*ah*. Figure 2-7.1.
		ai. Place cable assemblies W1 and W4 in cover assembly and replace cover assembly on LTS. Tighten pressure equalizer valve.	*ai*. None.
		aj. Close and secure upper-nose electronics compartment access door.	*aj*. None.
		OPERATIONAL CHECK, PERFORMANCE INDICATING SYSTEM	
204.1	Overhead circuit breaker panel circuit breakers used for performance indicating system operation and linear variable differential transformer (LVDT) static test.	*a*. Ensure following ac circuit breakers are disengaged (out) on the NO. 1 AC PRI BUS: PERF IND AMPL, AUTO XFMR NO. 1, and PRESS ENG OIL.	*a*. None.
		b. Ensure following DC PRI BUS circuit breaker is disengaged (out): PERF IND.	*b*. None
		c. Ensure that POD PWR ON OFF switch on MASTER SWITCH control panel is set to OFF.	*c*. None.
		d. Disconnect helicopter connector from right lateral servo LVDT receptacle.	*d*. None.
		e. Using multimeter, measure following resistances at LVDT receptacle: <u>Pin</u> — <u>Resistance</u> A to B — 80 to 1000 ohms B to C — Infinite C to D — 160 to 2500 ohms C to A — Infinite	*e*. Para. 211, item No. 448.
		f. Connect helicopter connector to LVDT receptacle.	*f*. None.

Seq No.	Item to be Inspected	Procedure	Paragraph reference
		g. Apply external auxiliary electrical power or start APP. If external power is used, ensure that EXT POWER CONNECTED advisory capsule illuminates. If not, do not proceed until helicopter electrical system is functioning properly and EXT POWER CONNECTOR capsule illuminates.	*g*. Para. 2-4a. and b.
204.2	Test setup of performance indicating system test set in helicopter.	Connect test set according to following procedure:	
		a. Press button on pressure equalizer valve first, then open cover	*a*. None.
		b. Place test set on copilot's seat and remove cables W3, W4, W5, and W8 from cover.	*b*. Figure 2-7.4.
		c. Position test set switches and controls as follows: Control/Switch — Position POWER ACFT/ OFF/BENCH — OFF POWER BENCH/ OFF (two switches) — OFF EXT METER — ACFT METER RANGE — X1 METER — AMPL INPUT MOD ADJ — Pointer on graduation mark 26 VAC CAL — Pointer on graduation mark SIGNAL CONT — Fully CCW OUTPUT — NORM OSC — INT	*c*. None.
		d. Connect cable W8 to test set connector J102.	*d*. Figure 2-7.4.
		e. Connect cable W3 to test set connector J103.	*e*. Figure 2-7.4.
		f. Connect cable W4 to test set connector J104.	*f*. Figure 2-7.4.

Seq No.	Item to be Inspected	Procedure	Paragraph reference
		g. Connect cable W5 to test set connector J105.	*g*. Figure 2-7.4.
		h. Disconnect helicopter cable from XMSN OIL PRESS indicator.	*h*. Figure 2-7.4.
		i. Connect pin connector of W3 to helicopter cable and socket connector of W3 to XMSN OIL PRESS indicator connector.	*i*. Figure 2-7.4.
		j. Route other end of cables W4, W5, and W8 out of left-hand window. Open left-hand electronics com-partment door.	*j*. Figure 2-7.4.
		k. Connect pin connector of W8 to POD PWR DC receptacle.	*k*. Figure 2-7.4.
		l. Remove helicopter cable from cruise guide amplifier and connect W4 connector to helicopter cable.	*l*. Figure 2-7.4.
		m. Connect W5 connector to cruise guide amplifier connector J102.	*m*. Figure 2-7.4.
204.3	Overhead circuit breaker panel circuit breakers used for performance in-dicating system operation	*a*. Engage (press in) following ac circuit breakers on NO.1 ac circuit breakers on AC PRI BUS: PERF IND AMPL, AUTO XFMR NO. 1, and PRESS ENG OIL.	*a*. None.
		b. Engage (press in) PERF IND DC PRI BUS circuit breaker.	*b*. None.
204.4	Helicopter testing of performance indicating system utilizing test set.	*a*. Set POWER/ACFT/OFF/BENCH switch to ACFT. POWER 115 VAC and 28 VAC lamps shall illuminate.	*a*. Para. 211 item No. 449
		b. Set METER switch to LVDT NULL. Meter shall indicate 30 to 70 %.	*b*. Para. 211, item No 450.
		c. Set METER switch to 26 VAC CAL>	*c*. None.
		d. Adjust 26 VAC CAL control for a meter indication of 50%.	*d*. None.

Seq No.	Item to be Inspected	Procedure	Paragraph reference
		e. Set METER switch to AMPL INPUT an adjust SIGNAL CONT for a meter indication of 30%.	*e*. None.
		f. Set METER switch to AMPL OUTPUT. Meter shall indicate 29 to 31%. If required results are not obtained perform steps g. through o.	*f*. None.
		g. Set POWER ACFT/OFF/BENCH switch to OFF.	*g*. None.
		h. Remove cruise guide amplifier from left-hand electronics compartment shelf.	*h*. None.
		i. Place cruise guide amplifier in cockpit area near test set.	*i*. None.
		j. Remove cruise guide amplifier cover (four screws).	*j*. None.
		k. Locate potentiometer R21 (on bottom circuit board, AR2) through access hole.	*k*. None.
		l. Set POWER ACFT/OFF/BENCH switch to ACFT.	*l*. None.
		m. Set METER switch to AMPL INPUT and readjust SIGNAL CONT for a meter indication of 30% if required.	*m*. None.
		n. Set METER switch to AMPL OUTPUT and adjust R21 for a meter indication of 30%. If required result is not obtained perform steps p. and q.	*n*. None.
		o. To ensure cruise guide amplifier gain is correctly adjusted repeat steps m. and n, omitting steps p. and q.	*o*. None.
			NOTE
		of R21.	**Apply Glyptal to adjustment screw**

Seq No.	Item to be Inspected	Procedure	Paragraph reference
		p. Set EXT METER switch to BENCH and adjust R21 for meter indication of 30%.	
		(1) If 30% indication can be obtained.	p(l). Para 211, item No. 451.
		(2) If 30% indication cannot be obtained. 452.	p(2). Para. 211, item No.
		q. Set EXT METER switch to ACFT.	q. None.
		r. Set METER switch to AMPL INPUT.	r. None.
		s. Adjust SIGNAL CONT for a meter indication of 30%.item No. 453. Helicopter performance indicator shall indicate 28 to 32%.	s. Para. 211,
		t. Adjust SIGNAL CONT for a meter indication of 55%.item No. 454. Helicopter performance indicator shall indicate 55 to 65%.	t. Para. 211,
		u. Adjust SIGNAL CONT for a meter indication of 90%.No. 455. Helicopter performance indicator shall indicate 90 to 100% or greater.	u. Para 211, item
		v. Position all test set POWER switches to OFF. Turn off external power or APP.	v. None.
		w. Disengage all circuit breakers and disconnect test set cables and stow in test set cover.	w. None.
		x. Secure cruise guide amplifier cover and mount cruise guide amplifier to left-hand electronics com-partment shelf.	x. None
		y. Connect all helicopter connectors and secure left-hand electronics com-partment door.	y. None.

Seq No.	Item to be Inspected	Procedure	Paragraph reference
		POST OPERATIONAL SHUTDOWN	None
205	Electrical power control switches on MASTER SWITCH panel a. INV. b. RECT NO 1. And NO. 2 c. GEN NO. 1 and NO. 2 d. EXT POWER	A. Set switch to OFF. b. Set Switch to OFF c. Set switch to OFF d Set switch to OFF	
206	Electrical power control switch on pod CIRCUIT BREAKER and MASTER SWITCH panel: a. EMER POWER CUTOUT b. ICS CIRCUIT breaker.	a. Set switch to OFF. b. Disengage circuit breaker.	
207	Helicopter circuit breakers on POD PWR circuit breaker panel on overhead canted bulkhead.	Disengage circuit breakers.	
208	Helicopter POD PWR Switch on MASTER sWITCH panel.	set switch to OFF.	
209	External electrical auxiliary power unit.	Disconnect electrical auxiliary power unit from helicopter.	Para 2-4.
210	External hydraulic test stand.	Disconnect hydraulic test stand from helicopter	Para 2-4.

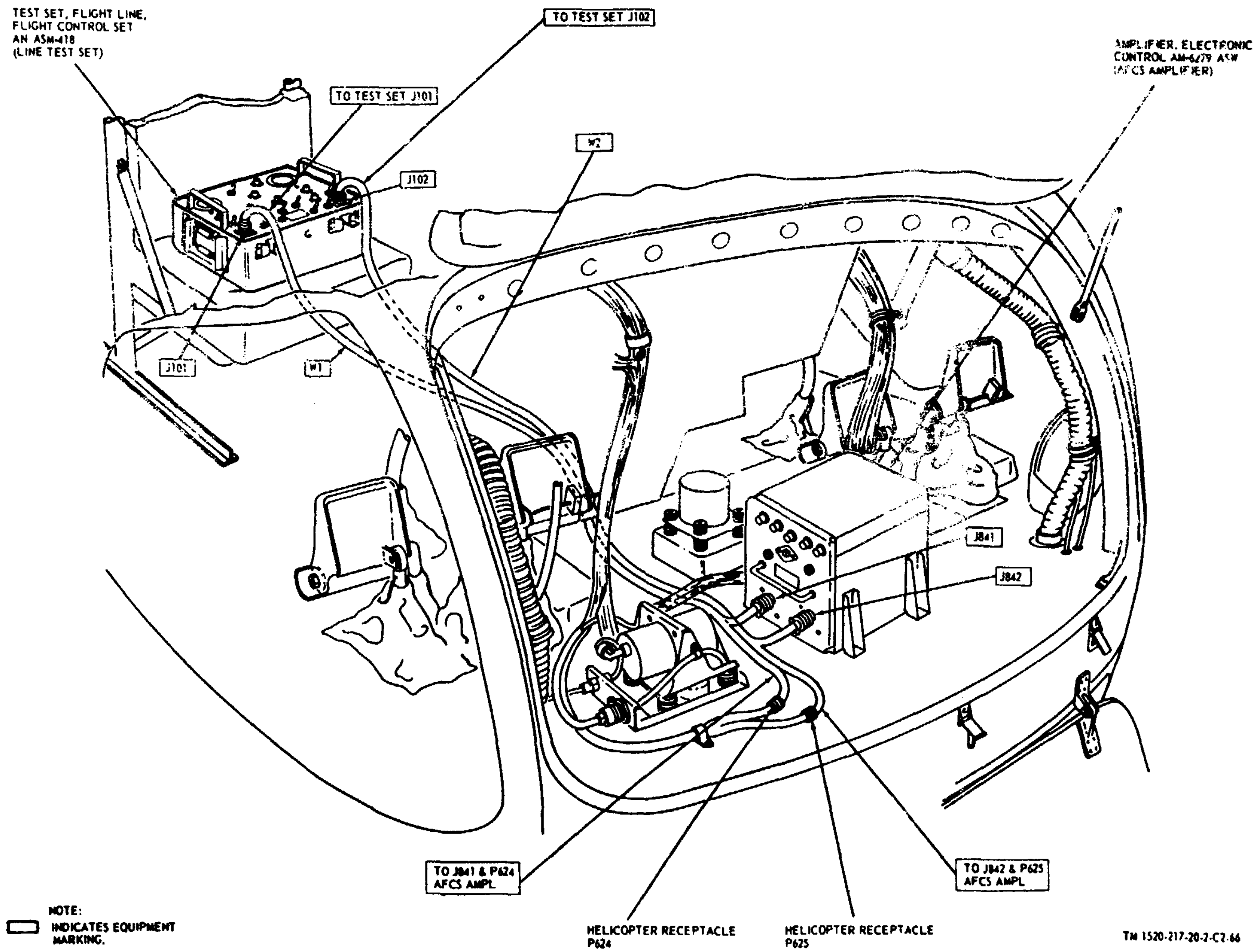


Figure 2-7.1. Line test set setup in helicopter, using W1 and W2 cable assemblies for component testing.

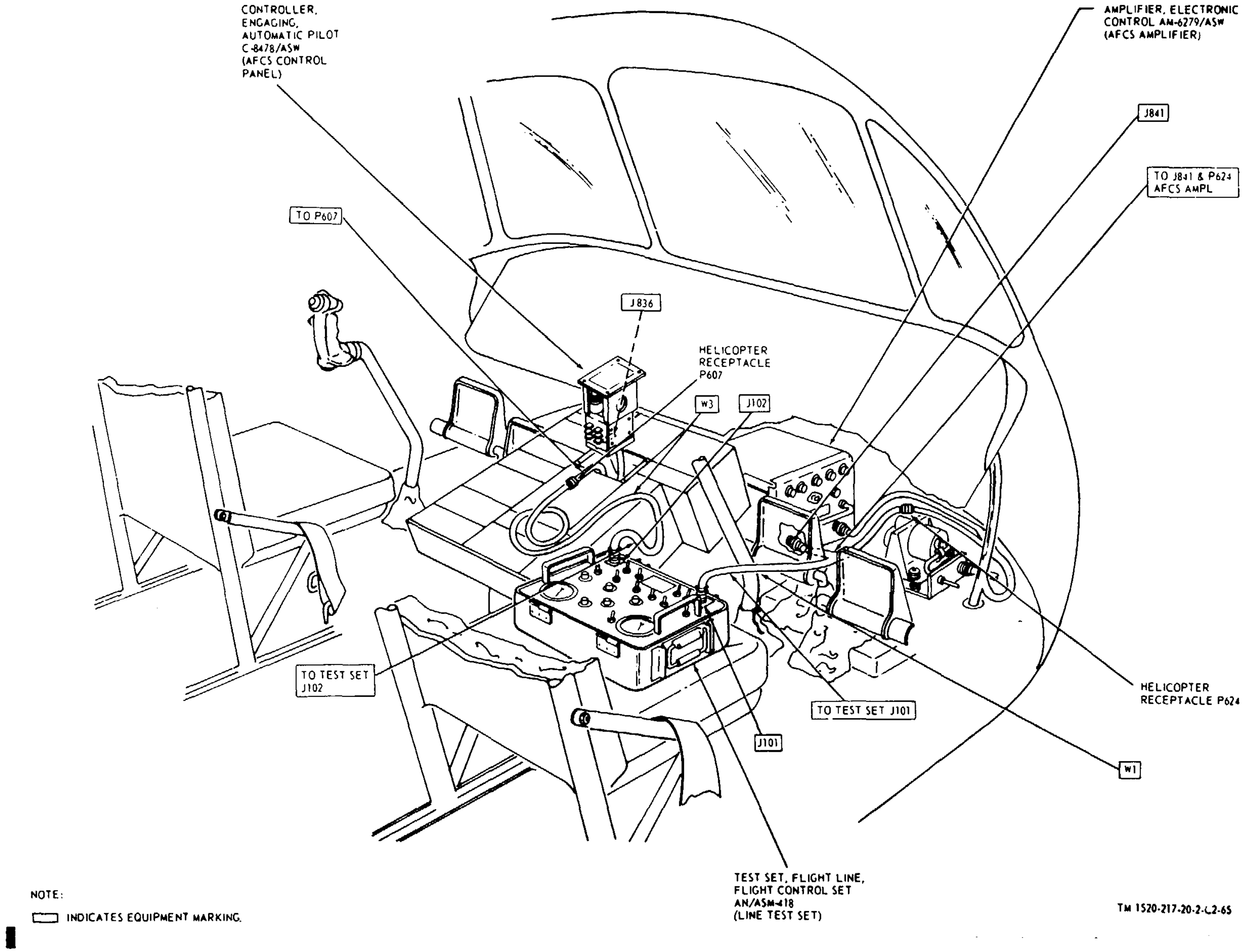


Figure 2-7.2. Line test set setup in helicopter, using W1 and W3 cable assembles for hardover testing of AFCS servovalves.

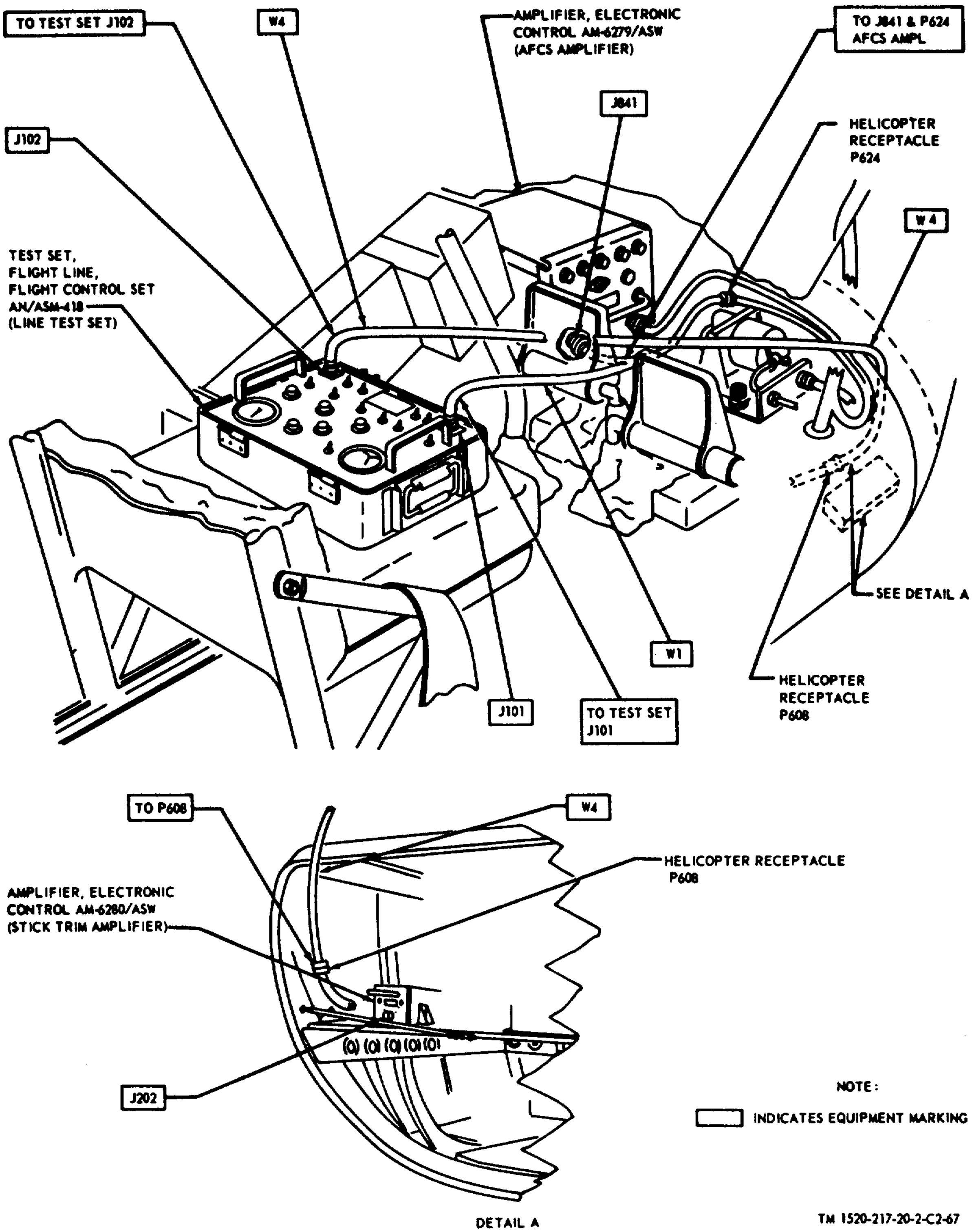


Figure 2-7.3. Line test set setup in helicopter, using W1 and W4 cable assemblies2-40.3 for hardover testing of stick trim values.

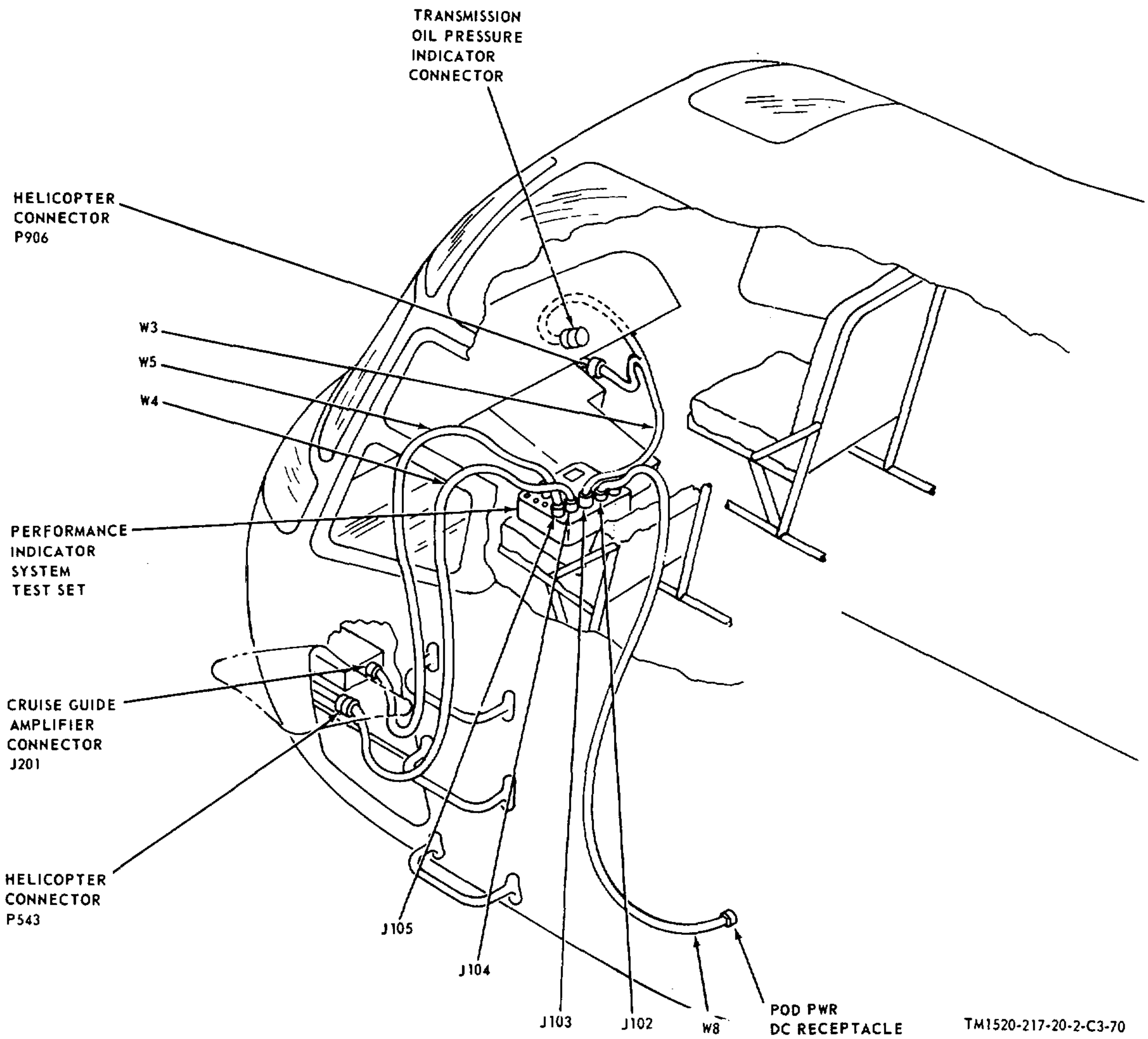


Figure 2-7.4. Line test set setup in helicopter, using performance indicating test set

2-8. General Cleaning and Repainting Instructions

Inspect all items of the configuration for dirt and corrosion. The surfaces shall be free of dirt, grease, and fungus.

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

WARNING

Cleaning compound is flammable and fumes are toxic. Provide adequate ventilation. Do not use near a flame.

b. Remove grease, fungus, and ground-in dirt with a cloth dampened (not wet) with cleaning compound.

c. Remove dust from exposed connectors with a bristle brush (do not use wire brush); remove moisture with dry cloth.

d. Remove rust and corrosion from metal surfaces by lightly sanding them with fine sandpaper. Use only paints, finishes, and preservatives listed in SB 11-573. Brush two thin coats of paint on bare metal to protect it from further corrosion. Refer to applicable cleaning and refinishing practices specified in TM 9-213 and TB 746-10.

2-9. Servicing

a. *Antenna Sealing Instructions .*

(1) *Requirement*., . The following requirements must be observed:

(a) Optimum application conditions for maximum efficiency is obtained when temperature is at 24 + 1C (75 + 20F) and humidity is at 50 + 5 percent.

(b) Application time: Class B-2 sealants shall be minimum of 2 hours and a maximum of 7 hours.

(c) Cured sealant thickness shall be 0.002 to 0.003 inch.

(d) Heat lamps or warm air may be used to promote cure of sealants within temperatures of (490C) (1200°F and (820C) (1800F).

(e) Sealants may be used within temperatures of (-540C) (-650F) and 930C (2000°F.

(f) Sealant stored from one to two weeks may be used if sealant is workable after being thawed out. Recommended usage of sealant shall be within a week of storage.

(2) *Preparation of Sealant.*

NOTE

Due to high viscosity of Class B fillet sealants, use a spatual (15 x 1 inch) and aluminum mixing plate (15 x 5 inches) or applicable mixer.

(a) Use directions on applicable container for amount of sealant to be mixed.

(b) Mix base and accelerator by weight (wt) until mixture is uniform in color, then mix for two additional minutes.

(c) Pour mixture into polyenthylene cartridges (disposable dispensing containers) and identify material by sealant number, lot number, and date of mixing.

(d) Immediately store in refrigerator at temperature of -29°C (-20°F) or lower.

(e) Use old stocks first and remove only amount required.

WARNING

Trichlorenthylene is flammable and fumes are toxic. Provide adequate ventilation. Do not use near flame.

(3) *Cleaning*. Remove all chips, filings, and loose dirt from antenna surface area by using oil free forced air or vacuum cleaner, prior to solvent cleaning. Use suitable brush or cloth saturated in trichlorenthylene or equivalent, to remove oil and grease. Wipe dry immediately before solvent evaporates and insure that all solvent is completely removed from all crevices.

(4) *Application*. After antenna installation, use caulking gun applicator to obtain a uniform bead, followed by a fairing tool (wood, plastic, rubber, or brush). Excess sealant shall be removed immediately with plastic or wooden scraper and wiped clean with trichlorethylene or equivalent before sealant becomes cured (24 hours at room temperature).

b. Purifier Chamber Assembly Dehydrator Unit, Nonreactivating HD-769/ASW-29 Cartridge and Dewpoint Indicator, Replacement (fig. 2-9).

(1) Tie dewpoint indicator plug to desiccator cartridge with twine. Remove and discard O-ring from dewpoint indicator plug.

(2) Tag desiccator cartridge with time and date.

(3) Place removed cartridge and dewpoint indicator in a heat box for minimum of 24 hours.

NOTE

If heat box is not available, fabricate a 12inch cubical box with hinged cover, using ½12inch plywood. At top of one side, install 100watt lamp and base, and attach with an extension cord rated at 110 volts ac. At top of each three remaining sides cut three circular ventilation holes (1/4 in. dia.).

CAUTION

During heat application, do not use dewpoint indicator color as indication of moisture content in desiccator cartridge. Dewpoint indicator requires shorter period of time to dry out.

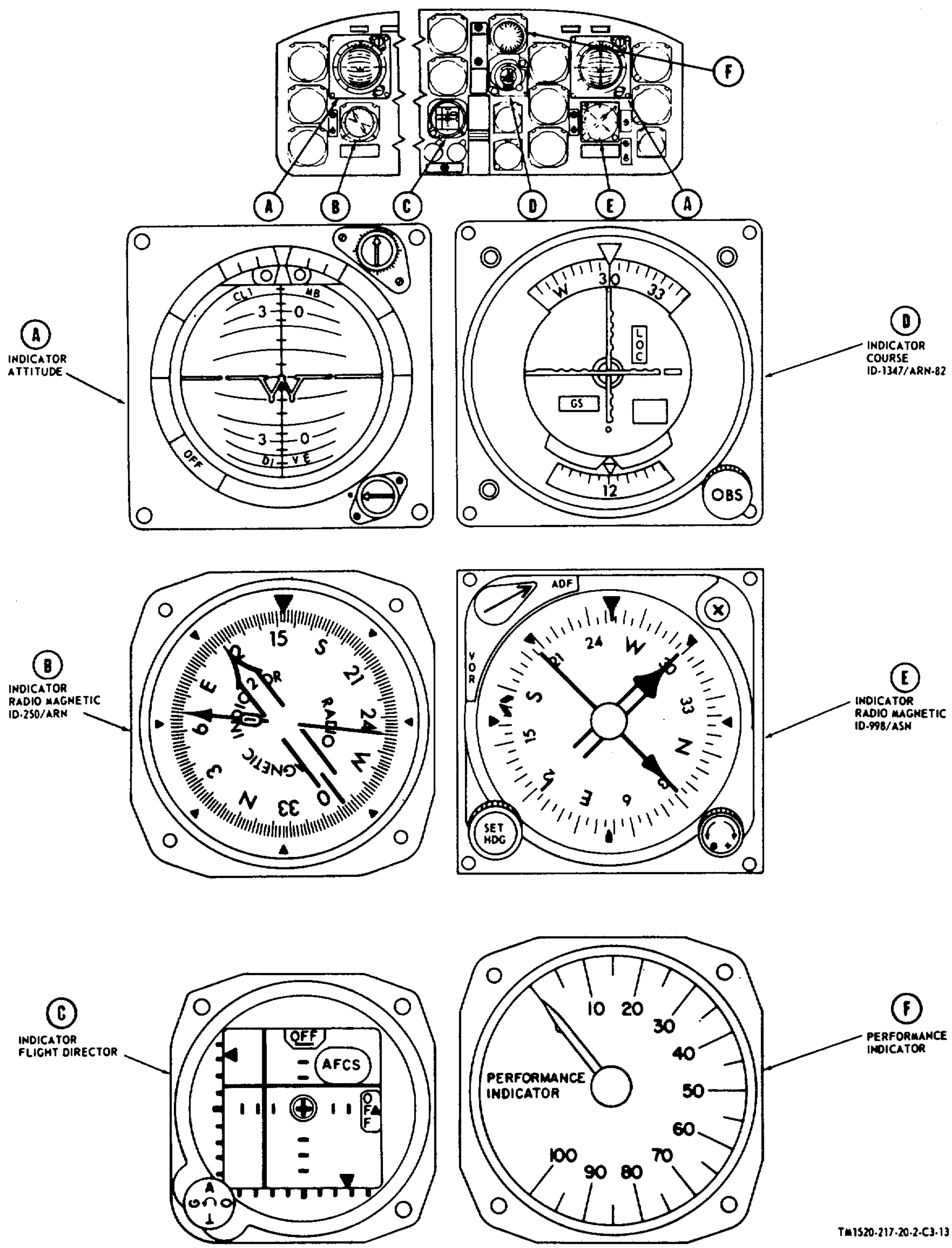


Figure 2-8. Location of instruments on instrument panel

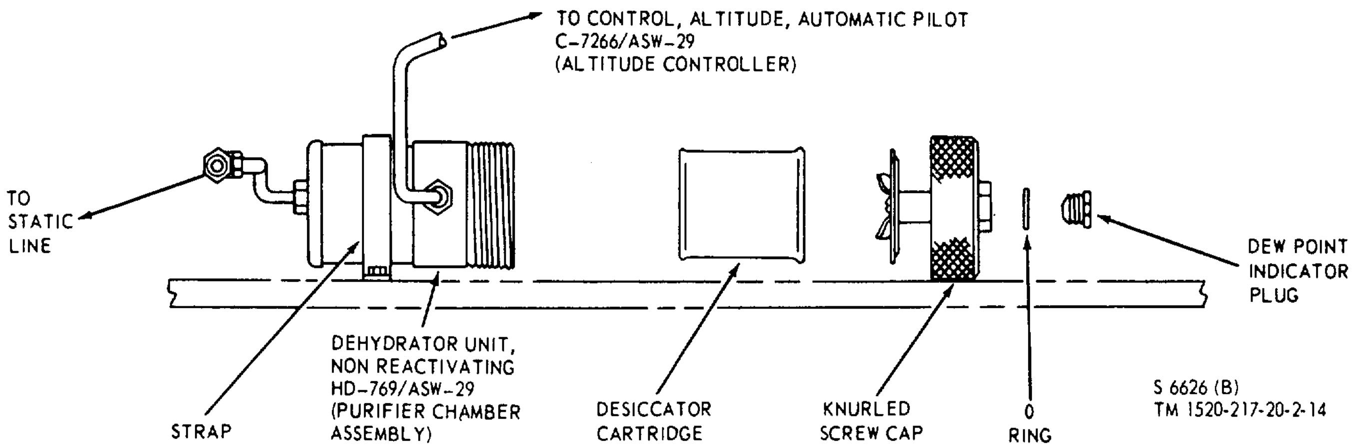


Figure 2-9. Replacement of cartridge and dewpoint indicator

(4) After 24-hour drying period, retain in heat box until actual helicopter installation.

c. Cleaning Battery.

(1) Clean battery case with dry, stiff, fiber brush, and wash with water and dry thoroughly.

(2) Remove cover and examine tops of cells for corrosion. Overcharging can cause gassing and bubbling of electrolyte through the vents, resulting in the formation of potassium carbonate (white powder) on tops of cells. Remove by brushing with dry stiff brush or by washing with water. If water is used, dry thoroughly when washing is completed.

d. Servicing Venting System Servicing battery venting system consists of keeping vent tubing clean and clear of any foreign matter so air will pass freely from air intake through battery case to outside air.

e. Servicing Battery Area. Maintenance of battery area consists of keeping area clean, and free of dust and electrolyte. Whenever battery is removed, area must be cleaned and examined for contamination. If contamination is evident, wash area with a 3-percent by weight solution of boric acid and water, and dry thoroughly.

Section III. TROUBLESHOOTING

2-10. Troubleshooting Information

a. General. Troubleshooting of the helicopter electronic equipment configuration supplements the checks in the periodic preventive maintenance checks and services chart (para 2-7). To troubleshoot the equipment, perform all functions starting with sequence No. 24 in the periodic preventive maintenance checks and services chart and proceed through the items until an abnormal condition or result is observed. When an 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 not result in correction of the trouble, higher level maintenance is required. Paragraphs 2-13 through 2-20 contain step-by-step instructions for performing equipment removal and replacement, and paragraphs 2-23 through 2-26 contain adjustments to be performed after the equipment is replaced.

b. Wiring Diagrams. Detailed interconnecting wiring diagrams for each electronic facility are given in chapter 4. These diagrams will assist the organizational maintenance repairman in troubleshooting an inoperative or malfunctioning facility or system.

2-11. Troubleshooting Chart

Note. Troubleshooting procedures for the pod interphone station C-1611(*)/AIC are the same as for the No. 1 and No. 2 crewmen's station, during troubleshooting of the AN/ARC-102, the AN/ARC-134, the AN/ARC-51BX, and the AN/AIC-12.

TROUBLESHOOTING, RADIO SETAN/ARC-102 (HF RADIO FACILITY)

Item No.	Symptom	Probable cause	Corrective measures
1.	No background noise heard in headset.	a. No power to equipment.	a. Check ARC-102 circuit breakers (fig. 2-2) and interconnecting cabling.
		b. Defective C-3940/ARC-94.	b. Replace C-3940/ARC-94 (para 2-14).
		c. Defective RT-698/ARC-102.	c. Replace RT-698/ARC-102 (para2-13f. (1) and (2).
		d. Defective junction box.	d. Replace junction box (para 2-17 d. and e).
		e. Defective C-1611(*)/AIC.	e. Replace C-1611(*)/AIC (para 2-14).
2	Radio set AN/ARC-102 is not mute after desired fre-quency has been selected.	a. Interconnecting cabling or connector is defective.	a. Check interconnecting cabling or connector.
		b. Defective C-3940/ARC-94	b. Replace C-3940/ARC-94 (para2-14).
		c. Defective RT-698/ARC-102.	c. Replace RT-698/ARC-102 (para 2-13f (1) and (2).
3	Meter does not indi-cate correct reading.	Defective RT-698/ARC-102.	Replace RT-698/ARC-102 (para 2-13f (1) and (2).
4	1, 000 cps tone not heard when pilot's cyclic stick RADIO-ICS switch (cyclic stick keying switch) is pressed to RADIO.	a. Defective cyclic stick keying switch.	a. Replace cyclic stick keying switch (higher maintenance level required).
		b. Defective RT-698/ARC-102.102 (para 2-13f (1) and (2).	b. Replace RT-698/ARC-
		c. Defective CU-1658/A.	c. Replace CU-1658/A (para 2-13f (5) and (6).
5	Meter does not indi-cate correct reading when RT-698/ARC-102 is keyed.	Defective RT-698/ARC-102. (para 2-13 f (1) and (2).	Replace RT-698/ARC-102
6	Cannot adjust radio level.	Defective C-3940/ARC-94. (para 2-14).	Replace C-3940/ARC-94
7	Background noise cannot be controlled by adjusting RF SENS control before transmission.	Defective C-3940/ARC-94. (para 2-14).	Replace C-3940/ARC-94
8	Transmission possible using pilot's RADIO KEY foot switch, but not with cyclic stick keying switch.	Defective cyclic stick keying switch.	Replace cyclic stick keying switch (higher maintenance level required).

Item No.	Symptom	Probable cause	Corrective measures
9	Transmission possible using pilot's cyclic stick keying switch, but not with RADIO KEY foot switch.	Defective RADIO KEY foot switch. c).	Replace RADIO KEY foot switch (para 2-17 b and
10	No two-way communica- tion possible and no(para 2-14). sidetone is heard in headset.	a. Defective C-3940/ARC-94.	a. Replace C-3940/ARC-94
		b. Defective RT-698/ARC-102.	b. Replace RT-698/ARC-102 (para2-13f (1) and (2)).
		c. Defective CU-1658/A.	c. Replace CU-1658/A (para2-13f(5) and (6)).
		d. Defective hf wire antenna or antenna cabling.	d. Check hf wire antenna and antenna cabling. Re- place if necessary. (para 2-16 a and b).
		e. Defective junction box.	e. Replace junction box (para 2-17 d and e).
11	Transmission possible using copilot's RADIO KEY foot switch, but not with cyclic stick keying switch.	Defective copilot's cyclic stick keying switch.	Replace copilot's cyclic stick keying switch (higher maintenance level required
12	Transmission possible using copilot's cyclic stick keying switch, but not with RADIO KEY foot switch.	Defective copilot's RADIO KEY foot switch.	Replace copilot's RADIO KEY foot switch (para 2-17 b and c).
13	Transmission possible using aft pilot's RADIO KEY foot switch, but not with cyclic stick keying switch.	Defective aft pilot's cyclic stick keying switch on remote stick control panel.	Replace remote stick control panel (para 2-14).
14	Transmission possible using aft pilot's cyclic stick keying switch, but not with RADIO KEY foot switch.	Defective aft pilot's RADIO KEY foot switch.	Replace aft pilot's RADIO KEY foot switch (para 2-17 b and c).
15	Cannot monitor audio at No. 1 or No. 2 crewmen's stations.	a. Defective No. 1 crewman's C-1611(*)/AIC.	a. Replace No. 1 crew- man's C-1611(*)/AIC (para 2-14).
		b. Defective No. 2 crewman's C-1611(*)/AIC.	b. Replace No. 2 crewman's C-1611(*)/AIC (para 2-14).
		c. Defective pod C-1611(*) AIC.	c. Replace pod station C-1611(*)/AIC (para 2-14).
16	C-3940/ARC-94 lamps do not illuminate.	Defective C-3940/ARC-94 lamps.	Replace C-3940/ARC-94 lamps.
17	Audio is heard when mode selector switch is at OFF.	Defective C-3940/ARC-94.	Replace C-3940/ARC-94 (para 2-14).

TROUBLESHOOTING. RADIO SETAN/ARC-134 (VHF RA DIO FACILITY)

Item No.	Symptom	Probable cause	Corrective measures
18	Cannot select desired frequency as indicated on C-7197/ARC-134.	Defective C-7197/ARC-134. (para 2-14).	Replace C-7197/ARC-134
19	Transmission and reception not possible.	a. No power to equipment.	a. Check ARC-134 circuit breaker (fig. 2-2) and interconnecting cabling.
		b. Defective C-7197/ARC-134.	b. Check for ground at pin 9 of P111 of RT-857/ ARC-154 with C-7197/ ARC-134 OFF/PWR control turned to PWR. If no ground indicated, replace C-7197/ARC-134 (para2-14).
		c. Defective AT-1108/ARC or antenna cabling.	c. Check AT-1108/ARC and antenna cabling. Replace if necessary (para 2-16 c and d).
20	No reception possible	a. Defective RT-857/ARC-134.	a. Replace RT-857/ARC-134 (para 2-13 b (1) and (2).
		b. Defective junction box.	b. Replace junction box (para 2-17 d and e).
		c. Defective C-7197/ARC-134.	c. Replace C-7197/ARC-134 (para 2-14).
		d. Defective C-1611(*)/AIC.	d. Replace C-1611 (*)/AIC (para 2-14).
21	No rush noise heard when C-7197/ARC-134 (para 2-14). 134 COMM TEST button is pressed.	a. Defective C-7197/ARC-134.	a. Replace C-7197/ARC-
		b. Defective RT-857/ARC-134.	b. Replace RT-857/ARC-134 (para 2-13 b (1) and (2).
22	Cannot adjust audio level.	Defective C-7197/ARC-134.	Replace C-7197/ARC-134 (para 2-14).
23	Transmission possible using pilot's RADIO KEY foot switch, but not with cyclic stick RADIO ICS switch (cyclic stick keying switch).	Defective cyclic stick keying switch.	Replace cyclic stick keying switch (Higher maintenance category required).
24	No transmission possible and no sidetone is heard in headset.	Defective junction box. (para 2-17d and e).	Replace junction box
25	No transmission possible and meter indication is not within specified tolerance.	Defective RT-857/ARC-134.	Replace RT-857/ARC-134 (para 2-13b (1) and (2)).
26	Transmission possible using pilot's cyclic stick keying switch, but not with RADIO KEY foot switch.	Defective RADIO KEY foot switch.	Replace RADIO KEY foot switch (para 2-17 b and c).

Item No.	Symptom	Probable cause	Corrective measures
27	Transmission possible using copilot's RADIO KEY foot switch, but not with cyclic stick keying switch.	Defective copilot's cyclic stick keying switch.	Replace copilot's cyclic stick keying switch (higher main tenance category required).
28	Transmission possible using copilot's cyclic stick keying switch but not with RADIO KEY foot switch.	Defective copilot's RADIO KEY foot switch.	Replace copilot's RADIO KEY foot switch (para 2-17b and c).
29	Transmission possible using aft pilot's RADIO KEY foot switch, but not with cyclic stick keying switch.	Defective aft pilot's cyclic stick keying switch on remote stick control panel.	Replace remote stick control panel (para 2-14).
30	Transmission possible using aft pilot's cyclic stick keying switch, but not with RADIO KEY foot switch.	Defective aft pilot's RADIO KEY foot switch.	Replace aft pilot's RADIO KEY foot switch (para 2-17b and c).
31	Cannot monitor audio at No. 1 or No. 2 crew-men's and pod stations	a. Defective No. 1 crewman's C-1611) /AIC. b. Defective No. 2 crewman's C-1611 *) /AIC. c. Defective pod station C-1611(*)/AIC.	a. Replace No. 1 crew-man's C-1611 (*)/AIC (para 2-14;. b. Replace No. 2 crew-man's C-161 l(* i/AIC (para 2-14 J. c. Replace pod station C-1611('(/AIC(para 2-14).
32	C-7197/ARC-134 lamps do not illuminate.	Defective C-7197/ARC-134.	Replace C-7197/ARC-134 (para 2-14).
		TROULBLESHOOTI.G, RADIO SET AN/ARC-IJS (FM LIAISON AND HOMAING R.4DIO FA CILITY)	
33	Cannot select desired frequency as indicated on C-7088/ARC-131.	Defective C-7088/ARC-131 or loose frequency controls.	Check controls for tightness and tighten or replace as necessary If trouble is not corrected, replace C-7088/ARC-131 (para 2-14).
34	Blower does not operate	a. No power to equipment b. Defective C-7088/ ARC-131. c. Defective RT-823/ ARC-131.	a. Check ARC-131 circuit breaker (fig. 2-2) and interconnecting cabling. b. Replace C-7088/ARC-131 (para 2-141. c. Replace RT-823/ARC-131 (para 2-13c (1 and (2)).

Item No.	Symptom	Probable cause	Corrective measures
35	**TEST METER readings not as specified.**	**a. Defective RT-823/ ARC -131.** **b. Defective AS-1703/ AR, antenna cabling, or CU-942A/ARC -54, or CU-942B/ARC-54**	**a. Replace RT-823/ ARC-131 (para 2-13c (1) and (2)).** **b. Check AS-1703/AR, antenna cabling and CU-942A/ARC-54 or CU-942B/ARC-54. Replace if necessary (para 2-16e and f).**
36	Radio set will not tune to desired fre- quency (controls working properly).	a. Defective C-7088/ARC- 131. b. Defective RT-823/ ARC-131.	a. Replace C-7088/ ARC-131 (para 2-14). b. Replace RT-823/ ARC-131 (para 2-13c (1) and (2)).
37	Radio set continues to cycle (channel tone dues not stop).	a. Defective C-7088/, ARC-131. b. Defective RT-823/ ARC-131.	a. Replace C-7088/ ARC-131 (para 2-14). b. Replace RT-823/ARC- 131 (para 2-13c (1) and (2)).
38	Excessive hum is heard in headset.	a. Defective RT-823/ ARC-131. b. Audio cable shield not properly grounded. c. Defective C-1611(*)/ AIC.	a. Replace RT-823/ ARC-131 (para 2-13c (1) and (2)). b. Check audio cable shield grounds. c. Replace C-1611 (*!/ AIC (para 2-14).
39	Squelch does not operate properly.	a, SQ ADJ control improperly set. b. Defective RT-823/ ARC-131.	a. Adjust SQ ADJ control on RT-823/ARC-131 (para 2-24). b. Replace RT-823/ARC- 131 (para 2-13c(1) and (2)).
40	Cannot adjust volume on C-7088/ARC-131 or on any C-1611(*) /AIC.	a. Defective C-7088/ ARC-131. b. Defective C-1611(')/ AIC.	a. Replace C-7088/ ARC-131 (para 2-14). b. Replace C-1611(*)/ AIC (para 2-14).

Item No.	Symptom	Probable cause	Corrective measures
41	Transmission and reception not possible.	a. No power to equipment b. Defective C-7088/ARC-131. c. Defective RT-823/ ARC-131. d. Defective AS-1703/ AR or CU-942/ ARC-54.	a. Check ARC-131 circuit breaker (fig. 2-2) and interconnecting cabling. b. Replace C-7088/ARC-131 (para 2-14). c. Replace RT-823/ARC-131 (para 2-13c (1) and (21). d. Check AS-1703/AR and antenna cabling. Replace AS-1703/AR if necessary and CU-942/ARC-54 (para 2-16e and f).
42	No sidetone heard in headset.	a. Defective RT-823/ ARC-131. b. Defective junction box. c. Defective C-1611 (* / AIC.	a. Replace RT-823/ARC-131 (para 2-13c(1) and (21). b. Replace junction box (para 2-17d and e). c. Replace C-1611 (* i/ AIC (para 2-14).
43	Received audio is distorted.	a. Defective RT-823/ ARC-131.	A. Replace RT-823/ARC-131 (para 2-13c (1 and (2)).

Item No.	Symptom	Probable Cause	Corrective measures
	b.	Defective audio cabling	*b.* Check all cable connections
	c.	Defective C-1611(*V AIC	*a.* Replace C1611(*)/ AIC (para 2-14).
44	Reception possible, but no transmission	Defective RT-823/ARC-131	Replace RT-823/ARC-131 (par 2-13c (1) and (2)).
45	Transmission possible,	a. Squelch improperly set.................. but no transmission	a. If signal can be heard with SQUELCH control set to DIS, but not to CARR, check squelch adjust-ments (SQ ADJ) on RT-823/ARC131 (para 2-24).
	b	Defective RT.-828/ ARC-131	Replace RT-823/ARC-131 (para 2-13c (1) and (2)).
	c.	Defective C-1611(*)/AIC........................	c. Replace C-1611(*) AIC (pars 2-14).
46	Fm liaison radio facility works on some frequencies, but not on others.	*a.* Defective C-7088/ARC-131.	*a.* Replace C-788/ARC-131 (para 2-14).
	b.	Defective RT-823/ ARC-131	*b.* Replace RT-828/ ARC-131 (para 2-13*c* (1) and (2)).
	c.	Defective CU-942A/ ARC54	*c.* Replace CU-942A/ AR-CM or CU- 942B/ARC-54 (para 2-16e and f.
47	Transmission possible using pilot's RADIO KEY foot switch, but not with cyclic stick RADIO-ICS switch (cyclic stick key- switch .	Defective pilot's stick keying switch	Replace pilot's cyclic stick keying switch. Higher maintenance level require*d)*.
48	Transmission possible using pilot's cyclic stick keying switch, but not with RADIO KEY foot switch.	Defective RADIO KEY foot switch	Replace RADIO KEY foot switch (para 2-17b and c).
49	Transmission possible using copilot's RADIO KEY foot switch, but not with cyclic stick keying switch.	Defective copilot's cyclic stick keying	Replace copilot's cyclic stick keying switch (higher main-tenance level require*d)*.
50	Transmission possible using copilot's cyclic stick keying switch, but not with RADIO KEY foot switch.	Defective copilot's RADIO KEY foot switch and c).	Replace copilot's RADIO KEY foot switch (para 2-17b
51	Transmission possible using aft pilot's RADIO KEY foot switch, but not cyclic stick keying switch.	Defective aft pilot's cyclic stick keying switch	Replace remote stick control panel (para 2-14).

Item No.	Symptom	Probable Cause	Corrective measures
52	Transmission possible using aft pilot's cyclic stick keying switch, but not with RADIO KEY foot switch.	Defective aft pilot's RADIO KEY foot switch	Replace aft pilot's RADIO KEY foot switch (para 2-17b and c).
53	Cannot monitor audio at No. crewmen's and pod	a Defective No. 1 crew-1 or No. 2 man's C-1611(*)/AIC AIC (para 2-14).	*a.* Replace No. 1 crew-man's C-1611(*)/
	b.	Defective No. 2 crew-man's C-1611()/AIC	*b.* Replace No. 2 crew-man's C-1611(*)/AIC (para 2-14).
	c.	Defective pod C -1611(*)/AIC	*c.* Replace pod C-1611(*)/ AIC(para 2-14).
54	Radio set does not operate with mode control switch set to HOME	*a.* Received signal strength inadequate	*a.* Change frequency to local fm station.
		b. Defective C-7088/ ARC131	*b.* Replace C-7088/ ARC-131 (para 2-14).
	c.	Defective RT-823/ ARC-131 (1) and (2)).	*c.* Replace RT-823/ ARC-131 (para 2-13c
	d.	Defective fm homing antenna	*d.* Check antenna AS-1922/ARC and cabling. Replace if necessary (para 2-16*i* and *j.)*
55	ID-1347/ARN-82 does not display cor-rect navigation data	*a.* Defective ID-1347/ ARN-82 (para 2-15).	aL Replace defective ID-1347/ARN-82
	b.	Defective junction box	*b.* Replace junction box (para 2-17*d* box (para 2-17*d* and *e*).
56	C-7088/ARC-131 panel lamps do not illuminate	C-7088/ARC-131 lamps loose in sockets or burned out	Check panel lamps for proper seating and replace if necessary.
57	Fm reception is not interrupted when a microphone switch at the same station is pressed	Defective relay or relay circuit in MD-736/A for that station	Refer to higher level maintenance for cir-cuit repair. Replace MD-736/A (pars 2-13a ( ) and (2 1.
58	Fm Reception is inter-rupted at a given po-spittoon when a micro-phone switch is pressed at another position.	Defective relay circuit in MD-736/A for the position that was not keyed	Refer to higher level maintenance for cir-cuit repair.

TROUBLESHOOTING, RADIO SET AN/ARC-51BX (UHF RADIO FACILITY)

59	Pressure indicator center head does not protrude pressure not up to 3 to 5 psi	Defective RT-742/ARC-Air 51BX cover and (2)I.	Replace RT-742/ARC-51 BX (para 2-13*d* (1
60	Cannot select desired frequency when mode selector switch is in MAN position, as indicated on C-6287/ARC51BX.	Defective C-287/ARC-51BX	Replace C-6287/ARC-51BX (pars 2-14).
61	Transmission and reception not possible	*a.* No power to equipment breaker (fig. 2-2) and	*a.* Check ARC-51BX circuit

Item No.	Symptom	Probable Cause	Corrective measures
			interconnecting cabline.
	b.	Defective C-6287/ARC-51BX	*b.* Replace C-6287/ARC-51BX (para 2-14).
	c.	Defective RT-742/ARC-51BX	*c.* Replace RT-742/ARC-51BX (para 2-13d (1) and (2)).
	d.	Defective (ope*n)* Filter RF Line	*d.* Replace RF line filter. (para 2-13).
	e.	Defective AT-1108/ARC or antenna cabling	*e.* Check AT-1108/ARC and antenna cabling. Replace if necessary (para 2-16c and *d)*.
62	Blower within HD-615/ARC-51X does not operate	*a.* Fuse burned out within HD-615/ARC-51X	*a.* Remove HD-615/ARC-51X air filter (para 2-13d (1) and (2)). Check fuse. Replace fuse (fig 2-1) if defective.
	b.	Defective HD-615/ARC-51X	*b* Replace HD-615/ARC-51X (para 2-13d (1) and (2)).
63	No reception possible	*a.* Defective RT-742/ARC-51BX	*a.* Replace RT-742/ARC-51BX (para 2-13d (1) and (2)).
	b.	Defective C-6287/ARC-51BX	*b.* Replace C-6287/ARC-51BX (para 2-14).
	c.	Defective junction box	*c.* Replace junction box (para 2-17d and e).
	d.	Defective C-1611(*)/ARC	*d.* Replace C-1611(*)/AIC (para 2-14).
64	SQ DISABLE switch on C-6287/ARC-51BX has no effect on receiver audio noise.	*a.* Defective C-6287/ARC-51BX	*a.* Replace C-6287/ARC-51BX *(p*ara 2-14).
	b.	Defective RT-742/ARC-51BX	*b.* Replace RT-742/ARC-51BX (para 2-13d (1) and (2)).
65	Cannot adjust audio level	Defective C-6287/ARC-51BX	Replace C-6287/ARC-51BX (para 2-14).
66	Preset channel selection not possible or no audio tone in headset during channel change cycle	a. .Defective C-6287/ARC-51BX	*a.* Replace C-6287/ARC- (para 2-14).
		b. Defective RT-742/ARC-51 BX	*b.* Replace RT-742/ARC-51BX (para 2-13d (1) and (2)).
67	Transmission possible using pilot's RADIO KEY foot switch, but not with cyclic stick RADIO-ICS switch (cyclic stick keying switc*h)*.	Defective cyclic stick keying switch	Replace cyclic stick keying switch (higher maintenance level require*d)*.
68	Transmission possible using pilot's cyclic stick keying switch, but not with RADIO KEY foot switch.	Defective RADIO KEY foot switch	Replace RADIO KEY foot switch (para 2-17b and c).
69	RT-742/ARC-51BX power output is less than 16 watts.	*a.* Defective RT-742/ARC-51BX	*a.* Replace RT-742/ARC- . 51BX (para 2-13d (1) and (2)).
	b.	Defective VSWR ID-1003/ ARC indicator	*b.* Replace VSWR ID-1003/ ARC (para 2-13d (1) and (2)).
70	RT-742/ARC-51BX reflected power indication	*a.* Defective RT-742/ARC, 51BX	*a.* Replace RT-742/ARC-51BX (para 2-13d (1) and (2)1.

Item No.	Symptom	Probable Cause	Corrective measures
	is more than 5 watts	*b.* Improper cable connections between RT-742/ARC-51BX and AT-1108/ARC	*b.* Check AT-1108/ARC cabling. Replace if necessary (para 2-16c and *d)*.
	c.	Defective VSWR ID-1003/ ARC	*c.* Replace VSWR ID-1003/ ARC (para 2-13d (1) and (2)).
71	No sidetone is heard in headset during transmission.	*a.* Defective RT-742/ARC-51BX	*a.* Replace RT-742/ARC-51BX (para 2-13d (1) and (2)).
	b.	Defective C-6287/ARC-51BX	*b.* Replace C-6287/ARC-51BX (para2-14).
	c.	Defective junction box (para 2-17d and e).	*c.* Replace junction box
72	Transmission possible using copilot's RADIO KEY foot switch, but not with cyclic stick keying switch.	Defective copilot's cyclic stick keying switch maintenance level require*d)*.	Replace copilot's cyclic stick keying switch (higher
73	Transmission possible using copilot's cyclic stick keying switch but not with RADIO KEY foot switch.	Defective copilot's RADIO KEY foot switch	Replace copilot's RADIO KEY foot switch (para 2-17*b* and *c).*
74	Transmission possible using aft pilot's RADIO KEY foot switch, but not with remote stick keying switch.	Defective aft pilot's remote stick keying switch on remote stick control panel.	Replace remote stick control panel (para 2-14).
75	Transmission possible using aft pilot's remote stick keying switch but not with RADIO KEY foot switch.	Defective aft pilot's RADIO KEY foot switch	Replace aft pilot's RADIO KEY foot switch (para 1-17*b* and *c*).
76	Cannot monitor audio at pod or No. 1 or No. 2 crewmen's stations.	*a.* Defective No. 1 C-1611(*) /AIC	a. crewman's at Replace No. 1 crewman's C-1611(*)/AIC (para 2-14).
	b.	Defective No. 2 crewman's C-1611(*)J/AIC	b. Replace No. 2 crewman's C-1611(*)/AIC (para 2-14).
	c.	Defective pod C-1611(*)/ AIC	c. Replace pod station C-1611(*)/AIC (para 2-14).
77	No reception of guard receiver audio	*d.* Defective RT-742/ARC-51BX	*d.* Replace RT-742/ARC-51BX (para2-13d (1)and (2)).
	b.	Defective C-6287/ARC-51BX	*b.* Replace C-6287/ARC-51BX (para 2-14).
78	C-6287/ARC-51BX lamps do not illuminate	Defective C-6287/ARC-51BX	Replace C-6287/A RC-51 BX (para 2-14).
79	Facility inoperative press-to-test REPLY and	*a.* No power to equipment and breaker (fig TEST lights on C-6280(P)/ APX do not illuminate when pressed.	*a.* Check APX-72 circuit 2-2) and interconnecting cabling.
	b.	Defective RT-859/APX-72 fuse	*b.* Check press-to-test REPLY and TEST lights on C-6280(P)/ APX, if lights illuminate, check fuse. Replace fuse (fig. 2-1) if defective.
	c.	Defective C-6280(P)/ APX	*c.* Replace C-6280(P)/ APX (para 2-14).

Item No.	Symptom	Probable Cause	Corrective measures
80	REJECT indicator does not illuminate but ACCEPT indicator does	*a.* Defective RT-859/APX-72 (para 2-13h (a) and (2)). *b.* Defective C-6280(P)/APX *c.* Defective TS-1843/APX *d.* Defective AT-844/APX or antenna cabling	*a.* Replace RT-859/APX-72 *b.* Replace C-6280(P)/APX (para 2-14). *c.* Replace TS-1843/APX (para 2-13h (a) and (2)). *d.* Check AT-884/APX and antenna cabling. Replace if necessary (para 2-16g and h).
81	ACCEPT indicator does not illuminate	*a.* Defective C-6280(P)/APX *b.* Defective RT-859/APX-72	*a.* Replace C-6280(P)/APX (para 2-14). *b.* Replace RT-859/APX-72 (para 2-13g (1) and (2)).
82	ACCEPT indicator does not illuminate when interphone system radio keying switch is pressed.	*a.* Defective keying switches *b.* Defective junction box	*a.* Item No. 72 through 75 above. *b.* Replace junction box (para 2-17d and e).
83	TEST light on C-6280(P)/APX does not illuminate	*a.* Defective C-6280(P)/APX *b.* Defective RT-859/APX-72 *c.* Defective TS-1843/APX	*a.* Replace C-6280(P)/APX (para 2-14). *b.* Replace RT-859/APX-72 (para 2-13g (1) and (2)). *c.* Replace TS-1843/APX (para 2-13 *h* (1) and (2)).
84	C-6280(P)/APX panel lamps do not illuminate.	Defective panel lamps	Replace panel lamps.

TROUBLESHOOTING, RADIO SET AN/ARC-82 (VOR RECEIVING SET FACILITY)

Item No.	Symptom	Probable Cause	Corrective measures
85	Facility inoperative	*a.* No power to equipment *b.* Defective C-6873/ARN-82	*a.* Check ARN-82 circuit breaker and AN S-43 26V circuit breaker (fig. 2-2) and interconnecting cabling. *b.* Replace C-6873/ARN-82 (para 2-14).
86	ID-1347/ARN-82 vertical bar does not center or to/from indicator indicates TO	*a.* Defective R-1388/ARN-82 *b.* Defective ID-1347/ARN-82 *c.* Defective C-6873/ARN-82 *d.* Defective junction box	*a.* Replace R-1388/ARN-82 (para 2-13e (1) and (2)). *b.* Replace ID-1347/ARN-82 (para 2-15). *c.* Replace C-6873/ARN-82 (para 2-14). *d.* Replace junction box (para 2-17d and e).
87	ID-998/ASN and ID-250(*)/ARN double-barred pointers do not indicate 6 o'clock position.	Defective R-1388/ARN-82	Replace R-1388/ARN-82 (para 2-13e (1) and (2)).
88	Cannot select desired frequency	Defective R-1388/ARN-82 or C-6873/ARN-82	Replace R-1388/ARN-82 (para 2-13e (1) and (2)). If not defective, replace C-6873/ARN-82 (para 2-14).

Item No.	Symptom	Probable Cause	Corrective measures
89	No headset audio at pilot's station	*a.* Defective R-1388/ARN-82	*a.* Replace R-1388/ARN-82 (para 2-13e (1) and (2)).
	d.	Defective C-6873/ARN-82	*b.* Replace C-6873/ARN-82 (para 2-14).
	c.	Defective junction box	*c.* Replace junction box (para 2-17d and e).
	d.	Defective C-1611(*)/AIC........................	*d.* Replace C-1611(*)/AIC (para 2-14).
	e.	Defective vor antenna or antenna cabling	*e.* Check vor antenna and antenna cabling. Re-place if necessary (para 2-16k and 1).
90	Cannot monitor audio at copilot's, aft pilot's, or No. 1 and No. 2 crew-men's C-1611(*)/ AIC.	Defective C-1611(*)/AIC at affected station	Replace C-1611(*)/AIC (para 2-14).
91	No squelch..	Defective R-1388/ARN-82	Replace R-1388/ARN-82 (para 2-13e (1) and (2)).

TROUBLESHOOTING, RADIO SET AN/ARN-83 (ADF DIRECTION FINDER FACILITY)

Item No.	Symptom	Probable Cause	Corrective measures
92	Facility inoperative	*a.* No power to equipment	*a.* Check ARN-83 circuit breaker and ASN-43 26V circuit breaker (fig. 2-2) inter-connecting cabling.
	b.	Defective C-6899/ARN-83	*b.* Replace C-6899/ARN-83 (para 2-14).
93	No audio reception .... at pilot's, copilot's, aft pilot's, or No. 1 and No. 2 crewmen's C-1611(*)/AIC	*a.* Defective C-1611(*)/AIC	*a.* Replace C-1611(*)/AIC (para 2-14).
		b. Defective junction box	*b.* Replace junction box (para 2-17d and e).
	c.	Adf wire antenna grounded through normally open contacts of relay (ADF disable relay)	*c.* Insure that ADF disable relay is not energized. If necessary, replace ADF disable relay (para 2-13k (5) and (6)).
94	Cannot select desired frequency range	Defective R-1391/ARN-83 or C-6899/ARN-83	Replace R-1391/ARN-83 (para 2-13k (1) and (2)) If not defective, replace C-6899/ARN-83 (para 2-14).
95	Tuning meter inop-erative, but sound can be heard.	Defective C-6899/ARN-83 .... (para 2-14).	Replace C-6899/ARN-83
96	No beat notes audible in headset.	Defective R-1391/ARN-83 .... (para 2-13k (1) and (2)).	Replace R-1391/ARN-83
97	R-1391/ARN-83 not disabled %when hf radio facility is keyed	Defective ADF disable relay .... (para 2-13k (5) and (6)).	Replace ADF disable relay

Item No.	Symptom	Probable Cause	Corrective measures
98	Null cannot be obtained	*a.* Defective C-6899/ARN-83	*a.* Replace C-6899/ARN-83 (para 2-14).
	b.	Defective R-1391/ARN-83	*b.* Replace R-1391/A RN-83 (para 2-13k (1) and (2)).
	c.	Defective AS-1863/ARN-83 or Compensator, RF Inductance	*c.* Replace AS-1863/ARN-83. If not defective, replace compensator (para 2-16 *m* and *h)*.
99	LOOP switch has no effect on Indicators, Radio Magnetic ID-998/ASN and ID-250(*)/ARN single-barred pointer, but sound can be heard in headset.	*a.* Defective C-6899/ARN-83	*a.* Replace C-6899/ARN-83 (para 2-14).
		b Defective AS-1863/ARN-83 or antenna cabling	*b.* Check AS-1863/ARN-83 and antenna cabling. Replace if necessary (para 2-16 *m* and *h)*.
100	Single-barred pointers of ID-998/ASN and ID-250(*)/ARN inoperative in ADF and LOOP modes dicator (para 2-15).	*a.* Defective R-1391/ARN-83	*a.* Replace R-1391/ARN-83 (para 2-13 k (1) and (2)).
		b. Compare reading of ID-998/ ASN and ID-250(*)/ARN	*b.* If readings differ, replace defective in-
101	ID-998/ASN and ID-250(*)/ARN single-barred pointers rotate in one direction only and do not return to center.	*a.* Defective C-6899/ARN-83 LOOP switch	*a.* Replace C-6899/ARN-83 (para 2-14).
		b. Defective R-1391/ARN-83	*b.* Replace R-1391/ARN-83 (para 2-13k (1) and (2)).
102	ID-998/ASN and ID-250(*)/ARN single-barred pointer have slow response.	Defective R-1391/ARN-83	Replace R-1391/ARN-83 (para 2-13k (1) and (2)).
103	C-6899/ARN-83 panel lamps do not illuminate.	Defective C-6899/ARN-83 lamps	Replace C-6899/ARN-83 (para 2-14).

TROUBLESHOOTING GYROMAGNETIC COMPASS SET AN/ASA-43 (COMPASS FACILITY)

104	Facility inoperative	No power to equipment	Check ASN-43 øB, ASN-43 øC, and ASN-43 26V6øC circuit breakers (fig. 2-21 and interconnecting cabling.
105	ID-998/ASN power .... failure indicator does not disappear.	*a.* Defective ID-998/ASN	*a.* Replace ID-998/ASN (para 2-151.
	b.	Defective AM-3209/ASN........................	*b.* Replace AM-3209/ ASN (para 2-13j. (3) and (4)).
	c.	Defective interconnecting cabling or connectors	*c.* Check interconnecting cabling and connectors.

Item No.	Symptom	Probable Cause	Corrective measures
106	ID-998/ASN annunicator does not center when synchronizing knob is adjusted	*a.* Defective CN-998/ASN-43.............. (para 2-13j	*a.* Replace CN-998/ASN-43 (1) and (2)).
		b. Defective ID-9981/ASN.	*b.* Replace ID-998/ASN (para 2-15).
	c.	Defective T-611/ASN or CN-405/ASN	*c.* Replace T-611/ASN or CN-405/ASN (para 2-13j (5) and (6)).
		Note. Upon replacement, compass alignment is required (higher maintenance level required.	
107	ID-998/ASN compass card heading indication is correct, but ID-250(')/ARN compass card does not agree	a. Defective ID-250(*)ARN	a. Replace ID-250 (*)/ ARN (para 2-15).
		b. Defective ID-998/ASN	*b.* Replace ID-998/ASN (para 2-15).
108	ID-998/ASN and ID-250(*)/ARN compass card do not rotate when synchronizing knob is adjusted.	a. Defective ID-998/ASN	a. Replace ID-998/ASN (para 2-15).
		b. Defective AM-3209/ASN	*b.* Replace AM-3209/ASN (para 2-13j (3) and (4)).
	c.	Defective CN-998/ASN-43	*c.* Replace CN-998/ASN-43 (para 2-13j (1) and (2)).
109	Heading shown on compass cards does not agree with known magnetic heading	*a.* Compass facility is synchronized to wrong null position	*a.* Turn synchronizing knob clockwise until scale dial heading changes by 180 degrees and until annunciator is centered (nulls).
	b.	Defective CN-998/ASN-43.....................	b. Replace CN-998/ASN-43 (para 2-13j (1) and (2)).
	c.	Defective ID-998/ASN	c. Replace ID-998/ASN (para 2-15).
	d.	Defective or misaligned T-611/ASN or CN-405/ ASN	*d.* Replace T-611/ASN or CN-405/ASN (para 2;13j (5) and (6)).
		Note. Upon replacement, compass alignment is, (higher maintenance level required.	
110	Compass card fails to return to same indication 1 degree after after 10 minutes	*a.* Defective CN-998/ASN-43..............	*a.* Replace CN-998/ASN-43 (para 2-13j (1) and (2)).
		b. Defective ID-998/ASN	*b.* Replace ID-998/ASN (para 2-15).
	c.	Defective T-611/ASN or CN-405/ASN	*c.* Replace T-611/ASN or CN-405/ASN (para 2-13j (5) and (6)).
111	Compass facility slaves at wrong rate or fails to slave at all	a. Defective CN-998/ASN-43..............	a. Replace CN-998/ASN-43 (para 2-13j (1) and (2)).
	b.	Defective ID-998/ASN	b. Replace ID-998/ASN (para 2-15).
	c.	Defective T-611/ASN or CN-405/ASN	*c.* Replace T-611/ASN or CN-405/ASN (para 2-13j (5) and (6)).

Item No.	Symptom	Probable Cause	Corrective measures
	TROUBLESHOOTING, INTERCOMMUNICATION SET AN/AIC-12 (INTERPHONE SYSTEM)		
12	No interphone audio signals heard in headsets at all stations and no side tone at transmitting station.	*a..* No power to equipment	*a.* Check AIC-12 circuit breakers (fig. 2-2) and interconnecting cabling.
	b.	Defective transmitting C-1611(*)/AIC	*b.* Replace C-1611(*)/AIC (para 2-14).
	c.	Defective junction box	*c.* Replace junction box (para 2-17d and e).
	d.	Defective cyclic stick RADIO-ICS switch or RADIO KEY foot switch (keying switches)	*d.* Check for continuity at associated connectors with keying switches pressed. Replace keying switches (higher maintenance level require*d)*.
113	No interphone audio signal heard in one headset.	Defective receiving C-1611( )/ AIC	Replace C-1611 (*)/AIC (para 2-14).
114	Interphone transmission possible from No. 2 crewman's station, but not from ground maintenance station.	Defective U-94A/U	Replace associated U-94A/ U (para 2-17h and *i)*.
115	With transmit-interphone selector switch set to INT, interphone transmission possible with RADIO KEY foot switch, but not with cyclic stick keying switch.	Defective cyclic stick keying switch	Replace cyclic stick keying switch (higher maintenance level require*d)*.
116	With transmit-interphone selector switch set to INT, interphone transmission possible with cyclic stick keying switch, but not with RADIO KEY foot switch.	Defective RADIO KEY foot switch	Replace RADIO KEY foot switch (para 2-17 b and c).
117	Interphone transmission not possible from No. 1 or No. 2 crewmen stations.	*a.* Defective U-94A/U.......................	*a.* Replace associated U-94A/U (para 2-17 h and *i)*.
	b.	Defective junction box	*b.* Replace junction box (para 2-17d and e).
118	Audio reception, but VOL control has no effect on audio level at receiving station.	Defective receiving C-1611 (*)/AIC	Replace C-1611(*) /AIC (para 2-14).
119	With Transmit-interphone selector switch set to 1, 2, 3, or 4	*a.* Defective C-1611(8)/AIC at transmitting station	*a.* Replace C-1611(*)/AIC (para 2-14).

Item No.	Symptom	Probable Cause	Corrective measures
	on pilot's, copilot's, or aft pilot's C-1611(*)/ AIC; no sidetone is heard in headset when speaking into microphone.	*b.* Defective associated communication facility	*b.* Check associated communication facility (para 2-7).
120	No monitoring navigation receiver noise heard at one station.	*a.* Defective receiving C-1611(*)/AIC	*a.* Replace C-1611(*)/AIC (para 2-14).
	b.	Defective associated navigation facility	*b.* Check associated navigation facility (para 2-7).
121	No sidetone when talking on private interphone line (all models except C-1611/AIC).	Defective C-1611(*)/AIC	Replace C-1611(*)/AIC (para 2-14).
122	No transmission to other C-1611(*)/AIC when talking on private interphone line (all models except C-1611 /AIC)	*a.* Defective C-1611(*)/ AIC	*a.* Replace C-1611(*)/ AIC (para 2-14).
		b. Faulty interconnecting cabling	*b.* Check interconnecting cabling in accordance with wiring diagram.
123	C-1611(*)/AIC lamps do not illuminate at each station.	Defective C-1611(*)/AIC lamps	Replace C-1611(*)/AIC lamps.

TROUBLESHOOTING, MOTOR-GENERATOR PU-543/A

Item No.	Symptom	Probable Cause	Corrective measures
124	Fuel quantity indicators do not indicate fuel level output from PU-543/A	*a.* Circuit breakers not engaged	*a.* Check PU-543/A INVERTER PWR and CONT No. circuit breakers (fig. 2-2), INV OUT circuit breaker (fig. 2-21) and interconnecting cabling.
	b.	No dc input to PU-543/A	*b.* Disconnect interconnecting cable connector from PU-543/A and using multimeter, check across pins F and ground for 28 volts dc. If not present, check interconnecting cabling (TM 55-1520-217-20/2).
	c.	Defective power relay	*c.* Replace power relay (TM 55-1520-217-20/2).
	d.	Defective MASTER SWITCH panel	*d.* Replace MASTER SWITCH panel (TM 55-1520-217-20/2).
	e.	Defective No. 1 or No. 2 transfer relays	*e.* Check in turn for 28 volts dc at No. 2 relay contact A2 to Al to ground, No. 1 relay contact Al to ground. If not present, replace defective relay (TM 55-1520-217-20/2).
	f.	No input from external electrical power unit	*f.* Check external electrical power unit (para 2-4).
	g.	Defective PU-543/A	*g.* Replace PU-543/A (para 2-20c and *d)*.

Item No.	Symptom	Probable Cause	Corrective measures
125	PU543/A output voltage low	PU-543/A voltage INCREASE VOLTS potentiometer out of adjustment (fig. 2-21).	Adjust for comet output (para 2-26).
		TROUBLESHOOTING, VOICE WARNING SYSTEM/ASH-19	
126	Some capsules do not illuminate.	Defectives capsules	..Replace capsules.
127	All capsules do no illuminate	Defective CAUTION PNL TEST circuit breaker	*a.* Check CAUTION PANEL TEST circuit breaker (fig. 2-21 and inter-connecting cabling.
	b.	Defective caution-advisory panel	*b.* Replace caution-advisory panel.
128	VWS OFF capsule does not illuminate breaker connecting cabling.	*a.* Defective AN/ASH-19 WARN LIGHT circuit (fig. 2-2) and inter-	*a.* Check AN/ASH-19 WARN LIGHT circuit breaker
	b.	Defective AN/ASH-19.........................	..*b.* Check AN/ASH-19 relay.
129	CIPR NOT RECORDING capsule does not illuminate.	a Defective AN/ASH-19 CONTROL POWER circuit breaker	*a.* Check AN/ASH-19 CONTROL POWER circuit breaker (fig. 2-21 and inter-connecting cabling.
	b.	Defective AN/ASH- 23.........................	..*b.* Replace AN/ASH-23 (para 2.13i (5) and (6)).
130	VWS OFF and CIPR NOT RECORDING capsules do not extinguish.	Defective voice warning system control panel	Replace voice warning system control panel (para 2-14).
131	VWS OFF capsule extinguishes but CIPR NOT RECORDING capsule remains illuminated.	Defective AN/ASN-23......................... (para 13i (5) and (6)).	..Replace AN/ASH-23
132	CIPR NOT RECORDING capsule extin-guishes but VWS OFF remains illuminated.	Defective AN/ASH-19 relay.	Check AN/ASH-19 relay.
133	Message channel 1 does not play out	*a.* Defective voice warning system control panel	*a.* Replace voice warning system control panel (para 2-14).
	b.	Defective RP-139 ( )/ASH-19	*b.* Replace RP-139(i/ ASH-19 (para 2-13 *i* (1) and (2)).
134	Message channel 2 does not play out.	Refer to sequence No. 133.	
135	Message does not play out at least twice in 20 seconds.	Defective RP-139( )/ASH-19............... (para 13 *i* (1) and (2)).	..Replace RP-139 ( )/ASH-19

No.	Symptom	Probable Cause	Corrective measures
136	Message, channels 3 through 20 do not play out successively and message channel 20 does not continue to play out.	Refer to sequence No. 135.	
137	Voice warning system control panel and CIPR ICS switch lamps do not illuminate.	Defective voice warning system control panel and CIPR ICS switch lamps	Replace voice warning system control panel and CIPR ICS switch lamps.
138	Following caution capsules illuminated but RP-139 ( )/ASH-19 did not play out associated voice warning message: INTER TRANS OIL PRESS CHIP MAIN TRANS CHIP INTER TRANS CHIP TAIL TRANS TRANS OIL HOT TRANS OIL PRESS AFCS SERVO PRESS 1 ST STAGE SERVO PRESS 2ND STAGE SERVO PRESS 1ST STG TL ROTOR SERVO #1 ENG OIL HOT #2 ENG OIL HOT #1 ENG OIL PRESS #2 ENG OIL PRESS #1 RECTIFIER #2 RECTIFIER #1 GENERATOR #2 GENERATOR #1 ENG FUEL BYPASS #2 ENG FUEL BYPASS #1 FUEL PRESS #2 FUEL PRESS #1 ENG FUEL FLOW #2 ENG FUEL FLOW #1 ENG ANTI-ICE ON #2 ENG ANTI-ICE ON HOOK NOT OPEN ROTOR DROOP MAIN TRANS TORQUE #1 ENG FLAME OUT #2 ENG FLAME OUT #1 ENG N 1 #1 ENG T 5 #1 ENG TORQUE #2 ENG N 1 #2 ENG T 5 #2 ENG TORQUE	Defective signal adapter (para 2-13 *i* (9) and (10)).	Replace signal adapter

Item No.	Symptom	Probable Cause	Corrective measures
139	Following caution capsules did not illuminate but RP-139 ( )/ASH-19 played out associated voice warning message: #1 ENG FUEL FLOW #2 ENG FUEL FLOW HOOK NOT OPEN ROTOR DROOP MAIN TRANS TORQUE #1 ENG FLAME OUT #2 ENG FLAME OUT #1 ENG N 1 #1 ENG T 5 #1 ENG TORQUE #2 ENG N 1 #2 ENG T 5 #2 ENG TORQUE	Defective signal adapter........................	..Replace signal adapter (para 2-*13i* (9) and (10)).
140	Following indicators on instrument panel indicated fault condition but caution panel and RR-139 (/ ASH-19 did not provide aural and visual warnings: Torque System Indicators Engine N 1 Tachometers Exhaust Gas Temperature System Indicators Triple Tachometers Fuel Flow System Indicators	Defective signal adapter........................	..Replace signal adapter (para 2-13 (9) and (10)).
	TROUBLESHOOTING, ATTITUDE INDICATING SYSTEM		
141	Pilot's attitude indicator OFF flag is not covered within 60 seconds	*a..* Defective VGI PILOT circuit breakers	a Replace circuit breakers (TM 55-1520-217-20-2)
		b. Defective vertical gyro....................	..*b.* Replace vertical gyro (para 2-19 *c* and *d)*.
	c.	Defective relay K172............................	..*c.* Replace relay K172 (para 2-19 *e* and *d)*.
	d.	Defective pilot's attitude indicator	*d.* Replace attitude indicator (para 2-15).
	e.	Defective interconnecting cabling	*e.* Check interconnecting cabling in accordance with wiring diagram.
142	Copilot's attitude indicator OFF nag does not drop from view within 60 seconds	*a.* Defective VGI COPILOT circuit breakers	*a.* Replace circuit breakers (TM 55-1520-217-20/21).
		b. Defective vertical gyro....................	..*b.* Replace vertical gyro (para 2-19c and *d)*.
	c.	Defective relay K173............................	..*c.* Replace relay K 173 (par :- 19 *e* and *f*).
	d.	Defective copilot's attitude indicator	*d.* Replace attitude indicator (para 2-15.

Item No.	Symptom	Probable Cause	Corrective measures
143	Pilot's attitude indicator and/or co-pilot's attitude indicators pitch and roll trim knobs produce improper results.	Defective attitude indicator	Replace attitude indicator (para 2151).
144	Improper pilot and/or copilot vertical gyro output displayed on pilot and/or copilot attitude indicators *c* *d*	a Defective vertical gyro (par 2-19 c and d. *b* Defective attitude indicator Defective relay K172 and/or K173 Defective relay K172 and/or K173	a Replace vertical gro *b* Replace attitude indicator (para 2-15). *c* Replace relay K172 and/or K173 (para 2-19 *e* and *f*.) **Note**: Check that arms provide 10-degrees tilt when fully extended.
145	Pilot's attitude indicator does not repeat readings of copilot's attitude indicator *c.*	*a* Defective pilot's attitude indicator *b.* Defective relay K172 Defective switch S161	*a.* Replace attitude indicator (par 2165). *b.* Replace relay K172 (para 2.19 e and). *c.* Replace switch (TM 55-1520,217-20/21.
146	Copilot's attitude indicator does not repeat readings of pilot's attitude indicator *c.*	*a.* Defective copilot's attitude indicator: *b.* Defective relay K173 Defective switch S162	*a.* Replace attitude indicator (para 2-15). *b.* Replace relay K 17I (para 2.19 *e* and *j)*. *c.* Replace switch (TM 55-1520-217-20/21.

Item No.	Symptom	Probable Cause	Corrective measures
147	PWR 115 VAC and/or PWR 28VDC indicator lamp will not illuminate *c.* *d.*	*a.* Faulty LTS *b.* No power to AFCS Blown fuse in AFCS amplifier Faulty AFCS amplifier	*a.* Replace LTS. (TM 11-4920-293-12-1). *b.* Check all AFCS circuit breakers. *c.* Replace fuse. *d* Replace AFCS amplifier (para 2-18 g and h).
148	AC OUTPUT meter will not indicate required voltage reading.	Faulty LTS	Replace LTS (TM 11-4920-293-12-1).
149	AMPL OUTPUT meter will not indicate required volt-	Faulty LTS	Replace LTS (TM 11-4920-293-12-1).
150	AFCS POWDER-28 VDC indicator lamp will not illuminate c. d.	a. Fault LTS b. No power to AFCS Blown fuse in AFCS amplifier Faulty AFCS amplifier	*a.* Replace LTS (TM 420-293-12-1). *b.* Check all AFCS circuit breakers. *c.* Replace fuse. *d.* Replace AFCS amplifier (para 2-
151	AFCS POWER - 115 VDC indicator lamp will not illum-Inate. c. *d.*	a. Faulty LTS ------------------------------ b. No power to AFCS Blown fuse in AFCS amplifier Faulty AFCS amplifier	-*a.* Replace LTS (TM 11-4920-293-12-1). *b.* Check all AFCS circuit breakers. *c.* Replace fuse *d.* Replace AFCS amplifier para 18 *g* and *h).*
152	AUTO FAIL RESET switch will not extinguish. *b.*	*a.* Faulty oscillatory shut off unit Faulty AFCS control panel	*a.* Replace oscillatory shutoff unit (par 2-18 *k* and *l).* *b.* Replace AFCS control panel (para 2-14).
153	AFCS 1 and/or AFCS 2 *b.* *c.* *d.*	*a.* Faulty AFCS control No power to AFCS Faulty AFCS amplifier Faulty oscillatory shutoff unit	*a.* Replace AFCS control panel (para 2-14). *b.* Check all AFCS circuit breakers. *c.* Replace AFCS amplifier (para 2-18 *g* and *h*). *d.* Replace oscillatory shutoff unit (par 2-18 *k* and *l).*
154	AFCS 1 switch will not extinguish immediately and / or AFCS 2 switch will not will extinguish after approximately 1 minute.	Fault AFCS control panel	Replace AFCS control panel (para 2-14 *a* and *b*).
155	AUTO FAIL RESET or AFCS 1 switch will not illuminate in 60+ 15 seconds *c.* *d.*	*a.* Faulty time delay in AFCS control panel *b.* Faulty AFCS amplifier Faulty oscillatory shutoff unit No power to AFCS	*a.* Replace AFCS control panel (para 2-14 *a* and *b*). *b.* Replace AFCS amplifier (para 2-18 g and h). *c.* Replace oscillatory shutoff unit (para 2-18 *k* and *l*). *d.* Check all AFCS circuit breakers.
156	AUTO FAIL RESET switch will not extinguish, it is illuminated and AFCS 1 switch will not illuminate	*a.* Faulty AFCS amplifier *b.* Faulty oscillatory shutoff unit	*a.* Replace AFCS amplifier (para 2-18 *g* and *h*). *b.* Replace oscillatory shutoff unit (para 2-18 *k* and *l*).
157	AFCS 2 switch will not illuminate in 60+15 seconds *b.*	*a.* Faulty time delay relay in AFCS Faulty AFCS amplifier	*a.* Replace AFCS control panel (para *a* and *b*). *b.* Replace AFCS amplifier (para 2-18 *g* and *h*).

Item No.	Symptom	Probable Cause	Corrective measures
	c.	Faulty oscillatory shutoff unit t	*c.* Replace oscillatory shutoff unit (pars 2 18 *k* and l*)*.
	d.	No power to AFCS -------------------------	*d.* Check all AFCS circuit breakers.
156	AFCS SERVO switch will not a illuminate	*F*aulty AFCS control panel ---------------	*a.* Replace AFCS control panel (para 2-14 *a* and *b*).
	b.	Faulty pressure switch --------------------	*b.* Replace pressure switch (Direct Support TM 5S16-2217-35/ 2).
	c.	Faulty turn on valve ------------------------	*c.* Replace turn on valve (Direct Support TM 55-1520-217-35/ 2).
	d	No power to AFCS -------------------------	*d.* Check all AFCS circuit breakers.
159	STICK TRIM switch will not illuminate	*a.* Faulty AFCS control panel ----------	*a.* Replace AFCS control panel (para 2-14 *a* and *b*).
	b.	Faulty TRIM REL. switch ----------------	*b.* Replace TRIM REL switch (Di rect. Support TM 55-1520-217/ 35/2).
	c.	No power to AFCS ------------------------	*c.* Check all AFCS circuit breakers.
160	BAR ALT switch will not illuminate	*a.* Faulty AFCS control panel ----------	*a.* Replace AFCS control panel (para 2-14 a and *b*).
	b.	Faulty oscillatory shutoff unit ------------	*b.* Replace oscillatory shutoff unit (para 2-18 k and 1).
	c.	Faulty BAR REL switch -------------------	*c.* Replace BAR REL switch (Direct Support TM 55-1520-217-35/ *a*).
	d.	No power to AFCS -------------------------	*d.* Check all AFCS circuit breakers.
161	YAW switch will not illumi nate	*a.* Faulty AFCS control panel ----------	*a.* Replace AFCS control panel (para 2-14 *a* and *b*).
	b.	Faulty oscillatory shutoff unit ------------	*b.* Replace oscillatory shutoff unit (*p*ara 2-18 *k* and *l*).
162	AFCS SERVO and STICK TRIM switches will not ex tinguish	*a.* Faulty AFCS control panel ----------	*a.* Replace AFCS control panel (para 2-14 *a* and *b*).
		b. Faulty A.F.C.S. SERVO OFF switch	*b.* Replace A.F.C.S. SERVO OFF switch (Direct Support TM 55-1520-217-4/2).
	c.	Faulty pressure switch ---------------------	*c.* Replace pressure switch (Direct Support TM 55-1520-217-35/ 2).
	d.	Faulty turn on valve------------------------	*d.* Replace turn on valve (Direct Support TM 55-1560-217-5/ .2).
163	AFCS SERVO PRESS cau tion capsule will not illumi nate	*a.* Faulty caution capsule ---------------	*a.* Replace caution capsule (TM 5-1520-217-2).
		b. Faulty pressure switch ---------------	*b.* Replace pressure switch (Direct Support TM 55-1517-56/ 42).
164	AFCS SERVO and STICK TRIM switches will not il luminate	*a.* Faulty AFCS control panel ----------	*a.* Replace AFCS control panel para 2-14 a and b).
		b. Faulty pressure switch ---------------	*b.* Replace pressure switch (Direct Support TM 55-1520-217-35/ 2).
	c.	Faulty turn on valve	*c.* Replace turn on valve (Direct Sup port TM 55-1520-217-45/2).
	d.	Faulty A.F.C.S. SERVO OFF switch	*d.* Replace A.F.C.S. SERVO OFF *s*witch (Direct Support TM 56-1600-17-365/2).
165	AFCS SERVO PRESS caution capsule will not extinguish	*a.* Faulty caution advisory panel -------	*a.* Replace caution advisory panel (Direct Support TM 56-1520-217-35/2).

Item No.	Symptom	Probable Cause	Corrective measures
	b.	Faulty pressure switch ----------------------	Replace pressure switch (Direct Support TM 55-1520-217-35/ 2).
166	STICK TRIM switch will not extinguish with TRIM REL switch pressed on *b.*	*a.* Faulty TRIM REL switch ------------- Faulty AFCS control panel ----------------	*a.* Replace TRIM Support TM 55-1520-;217-5/ 2). *b.* Replace AFCS control panel (para 2-14 *a* and *b*).
167	STICK TRIM switch will not illuminate with TRIM REL switch released *b.*	*a.* Faulty TRIM REL switch ------------- Faulty AFCS control panel ----------------	*a.* Replace TRIM REL switch (Direct Support TM 55-1520-217-35/ 2). *b.* Replace AFCS control panel (para 2-14 *a* and *b*).
168	BAR ALT switch will not ex tinguish with BAR REL switch pressed on	*a.* Faulty AFCS control panel ----------- *b.* Faulty BAR REL. switch -------------	*a.* Replace AFCS control panel (para 2-14 *a* and *b*). *b.* Replace BARREL. switch (Direct Support TM 55-1520-217-35/ 2).
169	BAR ALT switch will not il luminate with BAR REL. switch released	*a.* Faulty AFCS control panel ----------- *b.* Faulty BAR REL. switch -------------	*a.* Replace AFCS control panel (para 2-14 *a* and *b*). *b.* Replace BAR REL switch (Direct Support TM 55 1520-217-35/ 2).
170	AFCS 1, AFCS 2, AFCS SER VO, STICK TRIM, YAW and BAR ALT switches will not extinguish when pressed off.	Faulty AFCS control panel ----------------	Replace AFCS control panel (para 2-14 *a* and *b*).
171	Flight director indicator can not be set to AFCS mode	Faulty flight director indicator--------------	Replace flight director indicator (para 2-15).
172	Both flight director indicator OFF flags will not dis- appear.	Faulty flight director indicator -------------	Replace flight director indicator (para 2-15).
173	AFCS 1 switch will not il luminate	Faulty AFCS control panel ----------------	Replace AFCS control panel (para 2 14 *a* and *b*).
174	AFCS SERVO switch and/or STICK TRIM switch will not illuminate.	Faulty AFCS control panel ----------------	Replace AFCS control panel (para 2-14 *a* and *b*).
175	Cyclic stick cannot be centered *b.*	*a.* Faulty primary flight controls --------- Faulty pitch trim valve	*a.* Check primary flight controls. *b.* Replace pitch trim valve (Direct Support TM 55-1520-217-35/ 2).
176	AC OUTPUT meter will not indicate voltage and/or will not return to null *c.*	*a.* Faulty No. 1 vertical gyro ----------- *b.* Faulty AFCS amplifier Faulty interconnecting cabling	*a.* Replace No. 1 vertical gyro (para 2-19 c and *d)*. *b.* Replace AFCS amplifier (para 2-18 *g* and *h)*. *c.* Check interconnecting cabling in accordance with wiring diagram.
177	AMPL OUTPUT meter will not indicate negative voltage and/or will not re turn to null. For simulated signal test, AMPL OUTPUT meter will not indicate 5 +0.5 volts dc.	Faulty AFCS amplifier ----------------------	Replace AFCS amplifier (para 2-18 *d*, and *h)*.

Item No.	Symptom	Probable Cause	Corrective measures
178	Flight director indicator hori zontal bar will not move up and/or will not return to null	*a.* Faulty flight director indicator --------- *b.* Faulty AFCS control panel -----------	*a.* Replace flight director indicator (para 2-15). *b.* Replace AFCS control panel (para 2-14 *a* and *b*).
179	Cyclic stick will not move for ward and/or will not return to center	*a.* Faulty primary flight controls -------- *b.* Faulty AFCS control panel ----------- *c.* Faulty stick trim amplifier ----------------- *d.* Faulty pitch trim valve --------------------- *e.* Faulty trim position sensor ----------------	*a.* Check primary flight controls. *b.* Replace AFCS control panel (para 2-14 *a* and *b*). *c.* Replace stick trim amplifier (para 2-18 *i* and *j)*. *d.* Replace pitch trim valve (Direct Support TM 551520-421735/ 2). *e.* Replace trim position sensor (para 2-18 *o* and *p)*.
180	AMPL OUTPUT meter will not indicate positive dc volt age and/or will not return to null. For simulated signal test, AMPL OUTPUT me ter will not indicate 5 +0;5 volts do.	Faulty AFCS amplifier ---------------------	Replace AFCS amplifier (para 2-18 *g* and *h)*.
181	Flight director indicator hori zontal bar will not move down and/or will not return to null	*a.* Faulty flight director indicator -------- *b.* Faulty AFCS control panel -----------	*a.* Replace flight director indicator (para 2-15). *b.* Replace AFCS control panel (para 2-14).
182	Cyclic stick will not move aft and/or will not return to center	*a.* Faulty primary flight controls -------- *b.* Faulty AFCS control panel ----------- *c.* Faulty stick trim amplifier ----------------- *d.* Faulty pitch trim valve --------------------- *e.* Faulty trim position sensor ----------------	*a.* Check primary flight controls. *b.* Replace AFCS control panel (para 2-14 a and *b*). *c.* Replace stick trim amplifier (para 2-18 *i* and *j)*. *d.* Replace pitch trim valve (Direct Support TM 55-1520-171-35/ 2). *e.* Replace trim position sensor (para 2-18 *o* and *p)*.
183	AC OUTPUT meter will not indicate voltage and/or will not return to steady state of 3.5 +0.5 volts ac	*a.* Faulty No. 1 dual channel synchronizer ----------- *b.* Faulty No. 1 vertical gyro ------------ *c.* Faulty AFCS amplifier ---------------------	*a.* Replace No. 1 dual channel syn chronizer (para 2-18 m and *n)*. *b.* Replace No. 1 vertical gyro (para 2-10 *c* and *d)*. *c.* Replace AFCS amplifier (para 2-18 *g* and *h)*.
184	Cyclic stick will not move for ward and/or will not return to stationary position of 0.75 ±0.25 inch forward of center	*a.* Faulty primary flight controls -------- *b.* Faulty AFCS control panel ----------- *c.* Faulty stick trim amplifier ----------- *d.* Faulty pitch trim valve --------------------- *e.* Faulty trim position sensor ----------------	*a.* Check primary flight controls. *b.* Replace AFCS control panel (para 2-14 a and *b)*. *c.* Replace stick trim amplifier (para 2-18 *i* and *j)*. *d.* Replace pitch trim valve (Direct Support TM 55-1520-217-35/ 2). *e.* Replace trim position sensor (para 2-18 *o* and *p)*.
185	AC OUTPUT meter will not indicate 1.0 ±0.1 volt ac	Faulty No. 1 vertical gyro ----------------	Replace No. 1 vertical gyro (para 2-19 *c* and *d)*.
186	AC OUTPUT meter will not indicate 2 +O.2 volts ac	*a.* Faulty No. 1 vertical gyro ----------- *b.* Faulty No. 1 dual channel synchronizer	*a.* Replace No. 1 vertical gyro (para 2-19 *c* and *d)*. *b.* Replace No. 1 dual channel synchro nizer (para 2-18 *m* and *n)*.

Item No.	Symptom	Probable Cause	Corrective measures
187	AC OUTPUT meter will not return to null *b.*	*a.* Faulty TRIM REL. switch on cyclic stick Faulty No. 1 dual channel synchronizer	*a.* Replace TRIM REL switch (Direct Support TM 55-1520-21735/2). *b.* Replace No. 1 dual channel syn chronizer (para 2-18 *m* and *n)*.
188	Flight director indicator hori zontal OFF flag will not appear.	Faulty flight director indicator -------------	Replace flight director indicator (para 2-15).
189	Flight director indicator can not be set to ON	Faulty flight director indicator ------------- ON mode	Replace flight director indicator (para 2-15).
190	AC OUTPUT meter will not indicate null	Faulty No. 1 vertical gyro -----------------	Replace No. 1 vertical gyro (para 2-19 *c* and *d)*.
191	AC OUTPUT meter will not indicate 2 +0.2 volts ac	Faulty No. 1 dual channel synchronizer	Replace No. 1 dual channel syn chronizer (para 2-18 m and *n)*.
192-AF	CS 1 switch will not extin guish and AFCS 2 switch will not illuminate.	Faulty AFCS control panel ----------------	Replace AFCS control panel (para 2-14 a and *b)*.
193	AC OUTPUT meter will not indicate a voltage and/or will not return to null *c.*	*a.* Faulty No. 2 vertical gyro ----------- *b.* Faulty AFCS amplifier ---------------- Faulty interconnecting cable -------------- accordance with wiring diagram.	Replace No. 2 vertical gyro (para 2-19 c and *d)*. *b.* Replace AFCS amplifier (para 2-18 *g* and *h)*. *c.* Check interconnecting cabling in
194	AC OUTPUT meter will not indicate voltage and/or will not return to steady state of 3.5 +0.5 volts ac *c.*	*a.* Faulty No. 2 dual channel synchronizer *b.* Faulty No. 2 vertical gyro ----------- Faulty AFCS amplifier ---------------------	*a.* Replace No. 2 dual channel syn chronizer (para 2-18 *m* and *n)*. Replace No. 2 vertical gyro (para 2-19 *c* and *d)*. *c.* Replace AFCS amplifier (para 2-18 *g* and *h)*
195	AC OUTPUT meter will not indicate 1.0 +0.1 volt ac	Faulty No. 2 vertical gyro -----------------	Replace No. 2 vertical gyro (para 2-19 c and *d)*.
196	AC OUTPUT meter will not indicate 2 + 0.2 volts ac *b.*	*a.* Faulty No. 2 vertical gyro ----------- Faulty No. 2 dual channel synchronizer	*a.* Replace No. 2 vertical gyro (para 2-19 *c* and *d)*. *b.* Replace No. 2 dual channel syn chronizer (para 2-18 m and
197	AC OUTPUT meter will not return to null *b.*	*a.* Faulty TRIM REL switch ------------- Faulty No. 2 dual channel synchronizer	*a.* Replace TRIM REL switch (Direct Support TM 55-1520-217-45/2). *b.* Replace No. 2 dual channel syn chronizer (para 2-18 *m* and *n)*.
198	Flight director indicator verti cal OFF flag will not appear.	Faulty flight director indicator -------------	Replace flight director indicator (para 2-15).
199	Flight director indicator verti cal pointer will not move down and/or will not return to null.	Faulty flight director indicator -------------	Replace flight director indicator (para 2-15).
200	AC OUTPUT meter will not indicate null	Defective No. 2 vertical gyro -------------	.Replace No. 2 vertical gyro (para 2-19 c and *d)*.
201	AC OUTPUT meter will not indicate 2 +.2 volts ac	Faulty No. 2 dual channel synchronizer	Replace No. 2 dual channel syn chronizer (para 218 *m* and *h*).
202	NORM MODE switch on re mote stick control panel will not illuminate	*a.* Faulty remote stick control panel -- *b.* Faulty AFCS control panel -----------	*a.* Replace remote stick control panel (para 2-14 c and *d)*. *b.* Replace AFCS control panel (para 2-14 *a* and *b)*.
202.1	AUX MODE switch on remote stick control panel will not illuminate.	*a.* Faulty remote stick con trol panel	*a.* Replace remote stick con trol panel (para 2-14 c and

Item No.	Symptom	Probable Cause	Corrective measures
	b.	Faulty AFCS control panel	*b.* Replace AFCS control panel (para 2-14 *a* and *b)*.
203	Flight director indicator hori zontal bar will not move down 2 +0.25 divisions. *b.* *c.*	*a.* Faulty flight director indicator ------- Faulty AFCS amplifier --------------------- Faulty AFCS control panel ---------------	*a.* Replace flight director indicator (para 2-15). *b.* Replace AFCS amplifier (para 2-18 *d* and *h)*. *c.* Replace AFCS control panel (para 2-14 *a* and *b)*.
204	Flight directory indicator hori zontal bar will not move up 2 +0.25 divisions *c.*	*a.* Faulty flight director indicator ------- (para 2-15). *b.* Faulty AFCS amplifier --------------- Faulty AFCS control panel ---------------	*a.* Replace flight director indicator *b.* Replace AFCS amplifier (para 2-18 g and *h)*. *c.* Replace AFCS control panel (para 2-14 *a* and *b)*.
206	AFCS 2 switch will not illumi nate	Faulty AFCS control panel ---------------	Replace AFCS control panel (para 2-14 *a* and *b)*.
206	AFCS 2 switch will not extin guish	Faulty AFCS control panel ---------------	Replace AFCS control panel (para 2-14 *a* and *b)*.
207	Flight director indicator verti cal pointer will not move up 2 +0.25 divisions	*a.* Faulty flight director indicator ------- *b.* Faulty AFCS amplifier ---------------	*a.* Replace flight director indicator (para 2-15). *b.* Replace AFCS amplifier (para 2-18 g and *h)*.
208	Flight director indicator verti cal pointer will not move down 2 +0.25 divisions	*a.* Faulty flight director indicator ------- *b.* Faulty AFCS amplifier ---------------	*a.* Replace flight director indicator (para 2-15). *b.* Replace AFCS amplifier (para 2-18 g and *h)*.
209	AC OUTPUT meter will not indicate voltage while No. 1 tilt table is being moved.	Faulty No. 1 roll rate gyro -----------------	.Replace No. 1 roll rate gyro (para 2X18 u and *v)*.
210	AMPL OUTPUT meter will not indicate positive de voltage while raising tilt table and/or will not indicate negative dc volt age while returning it to level position.	Faulty AFCS amplifier ---------------------	Replace AFCS amplifier (para 2-18 *g* and *h*).
211	Flight director indicator verti cal bar will not move left while tilting and right while returning to level	*a.* Faulty AFCS control panel ----------- *b..* Faulty flight director indicator -------	*a.* Replace AFCS control panel (para 2-14 *a* and *b)* *b.* Replace flight director indicator (para 2-15).
212	Cyclic stick will not move left while raising tilt table and right while returning it to level position *d.* *e.*	*a.* Faulty primary flight controls -------- *b.* Faulty AFCS control panel ----------- *c.* Faulty stick trim amplifier ------------ Faulty trim position sensor --------------- Faulty trim valve ---------------------------	*a.* Check primary flight controls. *b.* Replace AFCS control panel (para (para 2-14 a and *b)*. *a.* Replace stick trim amplifier 2-18 *i* and *j)*. *d.* Replace trim position sensor (para 2-18 o and *p)*. *e.* Replace trim valve (Direct Support TM 55-1520217-45/2).
213	AC OUTPUT meter will not indicate voltage and/or will not return to steady state 3.5 +0.5 volts ac *c.*	*a.* Faulty AFCS amplifier --------------- *b.* Faulty No. 1 roll rate gyro ----------- Faulty No. 1 dual channel synchronizer	*a.* Replace AFCS amplifier (para 2-18 *g* and *h)*. *b.* Replace No. 1 roll rate gyro (para 2-18 u and *v)*. *c.* Replace No. 1 dual channel syn chronizer (para 2-18 *m* and *n)*.
214	Flight director indicator verti cal bar will not move left and/or will not return to null	*a.* Faulty AFCS control panel ----------- *b.* Faulty flight director indicator -------	*a.* Replace AFCS control panel (para 2-14 *a* and *b)*. *b.* Replace flight director indicator (para 2-15).

Item No.	Symptom	Probable Cause	Corrective measures
215	Cyclic stick will not move left and/or will not return to stationary position 0.50 +0.25 inch left of center *d.* *e.*	*a.* Faulty primary flight controls -------- *b.* Faulty AFCS control panel .b -------- *c.* Faulty stick trim amplifier ------------ Faulty trim position ------------------------- Faulty trim valve -----------------------------	*a.* Check primary flight controls. Replace AFCS control panel (para (para 2-14 *a* and *b)*. *c.* Replace stick trim amplifier 2-18 *i* and *j)*. *d.* Replace trim position sensor (para 2-18 *o* and *p)*. *e.* Replace trim valve (Direct Support TM 55-J120 17-3512).
216	AC OUTPUT meter will not indicate 1.0 + 0.1 volt ac	Faulty No. 1 vertical gyro -----------------	Replace No. 1 vertical gyro (para 2-19 *o* and *d)*.
217	AC OUTPUT meter will not indicate 2 +0.2 volts ac *b.*	*a.* Faulty No. vertical gyro -------------- Faulty No. 1 dual channel synchronizer	*a.* Replace No. vertical gyro (para 2-19 *c* and *d)*. *b.* Replace No. 1 dual channel syn chronizer (para 2-18 m and *n)*.
218	Flight director indicator verti cal bar will move right and/ or will not return to null.	Faulty flight director-------------------------	Replace flight director (para 2-16).
219	Cyclic stick will not move right and/or will not return to original center *c.* *d.* *e.*	*a.* Defective primary flight controls --- *b.* Faulty AFCS control panel ----------- Faulty stick trim amplifier ------------------ Faulty trim position sensor ---------------- Faulty trim valve -----------------------------	*a.* Check primary flight controls. *b.* Replace AFCS control panel (para 2-14 *a* and *b)*. *c.* Replace stick trim amplifier (para 2-18 *i* and j.). *d.* Replace trim position sensor (para 2-18 *o* and *p)*. *e.* Replace trim valve (Direct Support TM 55-1520-217-35/2).
220	AC OUTPUT meter will not indicate null	Faulty No. 1 vertical gyro -----------------	Replace No. 1 vertical gyro (para 2-19 c and *d)*.
221	AC OUTPUT meter will not indicate 2 +0.2 volts ac *b.*	*a.* Faulty No. 1 vertical gyro .----------- 2-19 c and *d)*. Faulty No. 1 dual channel synchronizer	*a.* Replace No. 1 vertical gyro (para *b.* Replace No. 1 dual channel syn chronizer (para 218 m and *n)*.
222	AC OUTPUT meter will not indicate voltage while No. 2 tilt table is being moved.	Defective No. 2 roll rate gyro -------------	Replace No. 2 roll rate gyro (para 2-18 u and *v)*.
223	AC OUTPUT meter will not indicate voltage or will not return to steady state of 3.5 +0.5 volts ac *c.*	*a.* Faulty AFCS amplifier ---------------- *b.* Faulty No. 2 roll rate gyro ----------- Faulty No. 2 dual channel synchronizer	*a.* Replace AFCS amplifier (para 2-18 g and *h)*. *b.* Replace No. 2 roll rate gyro (para 2-18 *u* and *v)*. *c.* Replace No. 2 dual channel syn chronizer (para 2-18 m and a).
224 a	AC OUTPUT meter will not indicate 1.0 +0.1 volt ac	Faulty No. 2 vertical gyro -----------------	Replace No. 2 vertical gyro (para 2-19 c and *d)*.
225	AC OUTPUT meter will not indicate 2 0.2 volts ac *b.*	*a.* Faulty No. 2 vertical gyro ----------- Faulty No. 2 dual channel synchronizer	*a.* Replace No. 2 vertical gyro (para 2-19 c and *d)*. *b.* Replace No. 2 dual channel syn chronizer (para 2-18 *m* and 7*i)*.
226	Flight director indicator hori zontal pointer will not move right and/or will not return to null.	Faulty flight director-------------------------	Replace flight director (para 2-15).
227	AC OUTPUT meter will not indicate null	Faulty No. 2 vertical gyro -----------------	Replace No. 2 vertical gyro (para 2-19 *c* and *d)*.
228	AC OUTPUT meter will not indicate 2 0.2 volts ac	*a.* Faulty No. 2 vertical gyro ----------- *b.* Faulty No. 2 dual channel synchronizer	*a.* Replace No. 2 vertical gyro (para 2-19 c and *d)*. *b.* Replace No. 2 dual channel syn chronizer (para 2-18 m and *n)*.

Item No.	Symptom	Probable Cause	Corrective measures
229	AFCS 1, AFCS SERVO, and STICK TRIM switches will not illuminate.	Faulty AFCS control panel ----------------	Replace AFCS control panel (para 2-14 a and *b)*.
230	AC OUTPUT meter will not indicate 0.8 +	Faulty LTS ------------------------------------	Replace LTS. 0.1 volt ac.
231	Flight director indicator verti cal bar will not move left 2	Faulty flight director indicator -------------	Replace flight director indicator (para 2-15). +0.25 divisions.
232	Flight director indicator verti cal bar will not move right 2 +0.25 divisions	*a.* Faulty flight director indicator ------- *b* Faulty AFCS control panel -----------	*a.* Replace flight director indicator (para 2-15). *b.* Replace AFCS control panel (para 2-14).
233	AC OUTPUT meter will not indicate 2 +025 volts ac.	Faulty LTS ------------------------------------	Replace LTS.
234	Cyclic stick will not move left	*a.* Faulty primary flight controls -------- *b.* Faulty stick trim amplifier ------------------ *c.* Faulty AFCS control panel ---------------- *d.* Faulty trim position sensor ---------------- *e.* Faulty trim valve -----------------------------	*a.* Check primary flight controls. *b.* Replace tick trim amplifier (para 2-18 i and *j)*. *c.* Replace AFCS control panel (para 2-14 a and *b)*. *d.* Replace trim position sensor (para 2-18 *o* and *p)*. e Replace trim valve (Direct Support TM 55-1520-17-35/2).
235	Cyclic stick will not move right	*a.* Faulty primary flight controls -------- *b.* Faulty stick trim amplifier 6 ---------- *c.* Faulty AFCS control panel ---------------- *d.* Faulty trim position sensor ---------------- *e.* Faulty trim valve -----------------------------	*a.* Check primary flight controls. *b.* Replace stick trim amplifier (para 2-*18 i* and *j)*. *c.* Replace AFCS control panel (para 2-14 *a* and *b)*. *d.* Replace trim position sensor (para 2-18 *o* and *p)*. *e.* Replace trim valve (Direct Support TM 55-1520-217-35/2).
236	AC OUTPUT meter will not indicate 0.8 +0.1 volt ac.	Faulty LTS ------------------------------------	Replace LTS.
237	Flight director indicator hori zontal pointer will not move right 2 + 0.25 divisions.	Faulty flight director indicator -------------	Replace flight director indicator (para 2-15).
238	Flight director indicator hori zontal pointer will not move left 2 + 0.25 divisions.	Faulty flight director indicator -------------	Replace flight director indicator (para 2-15).
239	Flight director indicator hori zontal pointer will not move right 2 +0.25 divisions.	Faulty flight director indicator--------------	Replace flight director indicator (para 2-15).
240	Flight director indicator hori zontal pointer will not move left 2 +0.25 divisions.	Faulty flight director indicator -------------	Replace flight director indicator (para 2-15).
241	AC OUTPUT meter will not indicate 2 +0.25 volts ac.	Faulty LTS ------------------------------------	Replace LTS.
242	AFCS 2, YAW, AFCS SERVO, and STICK TRIM switches will not illuminate.	Faulty AFCS control panel ----------------	Replace AFCS control panel (para 2-14 *a* and *b)*.
243	Yaw pedals and/or collective sticks cannot be centered	*a.* Faulty primary flight controls -------- *b.* Faulty pitch trim valve	*a.* Check primary flight controls. *b.* Replace pitch trim valve (Direct Support TM 55-1520-217-35/2).

Item No.	Symptom	Probable Cause	Corrective measures
244	AFCS POWER 28 VDC lamp will not illuminate	*a.* No power to equipment *b.* Faulty AFCS control panel	*a.* Check all AFCS circuit breakers. *b.* Replace AFCS control panel (para 2-14 *a* and *b)*.
215	Yaw pedal switch will not ex tinguish AFCS POWER 28 VDC lamp.	Faulty yaw pedal switch	Replace yaw pedal switch (Direct Support TM 561520-217-5/2).
246	Yaw pedal switch will not il luminate AFCS POWER-28 VDC lamp.	Faulty yaw pedal switch	.Replace yaw pedal switch (Direct Support TM 55-1520-2173'5/2).
247	AC OUTPUT meter will not indicate ac voltage while No. 2 tilt table moving in either direction.	Faulty No. 2 yaw rate gyro	Replace yaw rate gyro (para 2-18 *u* and *v)*.
248	AMPL OUTPUT meter will not indicate negative dc voltage while No. 2 tilt ta ble is moving left and posi tive dc voltage while it is re turning to center.	Faulty AFCS amplifier	Replace AFCS amplifier (para 2-18 *g* and *b)*.
249	Flight director indicator hori zontal pointer will not move right while No. 2 tilt table is moving left and will not move left while No. 2 tilt table is returning to center.	*a.* Faulty flight director *b.* Faulty AFCS control panel	*a.* Replace flight director (para 2-15). *b.* Replace AFCS control panel (para 2-14).
250	Yaw pedals will not move right while No. 2 tilt table is moving left and will not move left while No. 2 tilt table is returning to center *d.*	*a.* Faulty primary flight controls *b.* Faulty stick trim amplifier *c.* Faulty AFCS amplifier Faulty trim valve	*a.* Check primary flight controls. *b.* Replace stick trim amplifier (para 2-18 *i* and *j)*. *c.* Replace AFCS amplifier (para 2-18 *g* and *h)*. *d.* Replace trim valve (Direct Support TM 55-1520-217-35/2).
251	AC OUTPUT meter will not initially indicate approxi mately 1 volt ac and then will not indicate decrease to approximately 0.5 volt ac.	a. Faulty AFCS amplifier b. Faulty AFCS control panel	a. Replace AFCS amplifier (para 2-18 *g* and *h)*. *b.* Replace AFCS control panel (para 2-14).
252	Yaw pedals will not move slowly to extreme right po sition and AC OUTPUT me ter will not indicate increase in voltage while YAW pedals are moving	*a.* Faulty primary flight controls *b.* Faulty stick trim amplifier *c.* Faulty AFCS amplifier *d.* Faulty trim valve	*a.* Check primary flight controls. *b.* Replace stick trim amplifier (para 2-18 *i* and *j)*. *c.* Replace AFCS amplifier (para 2-18 *g* and *h)*. *d.* Replace trim valve (Direct Support TM 55-1520-217-35/2).
253	Yaw pedals will not go from extreme right to extreme left position in 60 +15 seconds *d.*	*a.* Faulty primary flight controls *b.* Faulty stick trim amplifier . *c.* Faulty trim position sensor Faulty AFCS amplifier	*a.* Check primary flight controls. *b.* Replace stick trim amplifier (para 2-18 *i* and *j)*. *c.* Replace trim position sensor (para 2-18 *o* and *p)*. *d.* Replace AFCS amplifier (para 2-18 *g* and *h)*.
254	AC OUTPUT meter will not return to null *b.*	*a.* Faulty AFCS amplifier Faulty LTS	*a.* Replace AFCS amplifier (para 2-18 *g* and *j)*. *b* Replace LTS.
255	Yaw pedals will not move slowly to extreme left po stion and AC OUTPUT	*a.* Faulty primary flight controls *b.* Faulty stick trim amplifier	*a.* Check primary flight controls. *b.* Replace stick trim amplifier (para 2-18 *i* and *j)*.

Item No.	Symptom	Probable Cause	Corrective measures
	meter will not indicate tin crease in voltage with pedal movement	*c.* Faulty AFCS amplifier *d.* Faulty trim valve	*c.* Replace AFCS amplifier (para 2-18 *g* and *h)*. *d.* Replace trim valve (Direct Support TM 55-1520-217-35/2).
256	Yaw pedals will not go from extreme left to extreme right position in 60 + 15 seconds *d.* *e.*	*a.* Faulty primary flight controls *b.* Faulty stick trim amplifier *c.* Faulty trim position sensor Faulty AFCS amplifier Faulty trim valve	*a.* Check primary flight controls. *b.* Replace stick trim amplifier (para 2-18 *i* and *j)*. *c.* Replace trim position sensor (para 2-18 *o* and *p)*. *d.* Replace AFCS amplifier (para 2-18 *g* and *h)*. *e.* Replace trim valve (Direct Support TM 55-1520-217-35/2).
257	AC OUTPUT meter will not indicate ac voltage while No. 2 tilt table is moving in either direction.	Faulty No. 2 roll gyro	Replace No. 2 roll gyro (para 2-18 *u* and *v)*.
258	AMPL OUTPUT meter will not indicate negative dc voltage while No. 2 tilt ta ble is being raised and posi tive dc voltage while return ing it to level.	Defective AFCS amplifier	Replace No. 2 roll gyro (para 2-18 *h* and *v)*.
259	Flight director indicator hori zontal pointer will not move right while No. 2 tilt table is being raised and left while returning it to level.	*a.* Faulty flight director indicator *b.* Faulty AFCS control panel	*a.* Replace flight director indicator (para 2-15). *b.* Replace AFCS control panel (para 2-14).
260	Yaw pedals will not move right while No. 2 tilt table is being raised and left while returning it to level posi tion *d.*	*a.* Faulty primary flight controls *b.* Faulty stick trim amplifier *c.* Faulty AFCS amplifier Faulty trim valve	*a.* Check primary flight controls. *b.* Replace stick trim amplifier (para 2-18 *i* and *j)*. *c.* Replace AFCS amplifier (para 2-18 *g* and *h)*. *d.* Replace trim valve (Direct Support TM 55-1520-217-35/2)
261	Flight director indicator hori zontal pointer is not at null AFCS amplifier for null.	No. 2 lateral accelerometer null potentiometer is out of adjustment	Adjust No. 2 lateral accelerometer null potentiometer at front of
262	AC OUTPUT meter will not indicate 0.4 +0.1 volt ac	Faulty No. 2 lateral accelerometer	Replace No. 2 lateral accelerometer (para 2-18 s and t).
263	AMPL OUTPUT meter will not indicate 2.5 +0.25 volts dc.	Faulty AFCS amplifier	Replace AFCS amplifier (para 2-18 *g* and *h)*.
264	Flight director indicator hori zontal pointer will not move right 1 ±0.25 division (para 2-14).	*a.* Faulty flight director *b.* Faulty AFCS control panel	*a.* Replace flight director indicator (para 2-15). *b.* Replace AFCS control panel
265	Yaw pedals will not move from full left position until movement stops in 80 +20 seconds *d.* *e.*	*a.* Faulty primary flight controls *b.* Faulty stick trim amplifier *c.* Faulty trim valve Faulty trim position sensor Faulty AFCS amplifier	*a.* Check primary flight controls. *b.* Replace stick trim amplifier (para 2-18 *i* and *j)*. *c.* Replace trim valve (Direct Sup port TM 55-1520-21735/2). *d.* Replace trim position sensor (para 2-18 o and *p)*. *e.* Replace AFCS amplifier (para 2-18 *g* and *h)*.

Item No.	Symptom	Probable Cause	Checks and Corrective Action
266	AC OUTPUT meter will not indicate less than 0.7 volt ac.	Faulty AFCS amplifier *g* and *h*).	Replace AFCS amplifier (para 2-18
267	AMPL OUTPUT meter will not indicate 2.5 +0.25 volts dc.	Faulty AFCS amplifier	Replace AFCS amplifier (para 2-18 *g* and *h*).
268	Flight director indicator horizontal pointer will not move left 1 ±0.25 divisions	*a.* Faulty flight director indicator *b.* Faulty AFCS control panel	*a.* Replace flight director indicator (para 2-16). *b.* Replace AFC'S control panel (para 2-14).
269	Yaw pedals will not move from full right position until movement stops in 80 ±20 seconds	*a.* Faulty primary flight controls *b.* Faulty stick trim amplifier *c.* Faulty trim valve	*a.* Check primary flight controls. *b.* Replace stick trim amplifier (para 2-18 i and j). *c.* Replace trim valve (Direct Support TM 55-1520-217-5/2).
	d.	Faulty trim position sensor	*d* Replace trim position sen- (para 2-18 o and p).
	e.	Faulty AFCS amplifier	*e.* Replace AFCS amplifier (para 2-18 g and h).
270	AC OUTPUT meter will not indicate 0.4 +0.1 volt ac	Faulty No 2 lateral accelerometer	Replace No 2 lateral accelerometer (para 2-18 s and t).
271	AC OUTPUT meter will not remain at 0.4 +0.1 volt ac	Faulty No 2 lateral accelerometer	Replace No 2 lateral accelerometer (para 2-18 s and t).
272	AMPL OUTPUT meter will not return to null after a slight delay.	*F*aulty AFCS amplifier	Replace AFCS amplifier (para 2-18 *g* and *h*).
273	Flight director indicator horizontal pointer will not return to null after a slight delay	*a.* Faulty flight director indicator *b.* Faulty AFCS control panel	a. Replace flight director indicator (para 2-15). b. Replace AFCS control panel (para 2-14).
274	Yaw pedals will not remain at center	*a.* Faulty primary flight controls *b.* Faulty stick trim amplifier	a. Check primary flight controls. b. Replace stick trim amplifier (para 2-18 i and j).
	c.	Faulty trim valve	c. Replace trim valve (.Direct Support TM 55-1520-217-3'5/2).
	d.	Faulty trim position sensor	d. Replace trim position sensor (para 2-18 o and p).
	e.	Faulty AFCS amplifier	e. Replace AFCS amplifier (para 2-18 *g* and *h*).
275	AC OUTPUT meter will not return to null	Faulty No 2 lateral accelerometer	Replace No 2 lateral accelerometer (para 2-18 *s* and i).
276	AC OUTPUT meter will not indicate voltage while No. 1 tilt table is moving.	Faulty No 1 yaw rate gyro	Replace No 1 yaw rate gyro (para 2-18 *u* and *v*).
277	AMPL OUTPUT meter will not indicate negative dc voltage while table is moving left and positive dc voltage while returning to center	Faulty AFCS amplifier	Replace AFCS amplifier (para 2-18 *g* and *h*).
278	Flight director indicator hori- pointer will not have right while No 1 tilt table is moving left and left while returning to center.	*a.* Faulty flight director indicator *b.* Faulty AFCS control panel	*a.* Replace flight director (para 2-zontal 15). *b.* Replace AFCS control panel (para 2-14).
279	AC OUTPUT meter will not indicate ac voltage while No. 1 tilt table is moving.	Faulty No 1 roll rate gyro	Replace No 1 roll rate gyro (para 2-18 u and v).

Item No.	Symptom	Probable Cause	Checks and Corrective Action
280	AMPL OUTPUT meter will not indicate negative de voltage while No. 1 tilt table is being raised and positive dc voltage while being re-turned to center.	Faulty AFCS amplifier	Replace AFCS amplifier (para 2-18 *g* and *h*).
281	Flight director indicator hori-zontal pointer will not move right while No. 1 tilt table is being raised and left while being returned to level posi-tion.	*a.* Faulty flight director indicator *b.* Faulty AFCS control panel (para 2-14).	a. Replace flight director indicator (para 2-15). b. Replace AFCS control panel
282	Flight director indicator horizontal pointer is not at null	No. 1 lateral accelerometer null potentiometer is out of adjustment	Adjust No. 1 lateral accelerometer null potentiometer at front of AFCS amplifier for null.
283	AC OUTPUT meter will not indicate 0.4 +0.1 volt ac	Faulty No. 1 lateral accelerometer	Replace No. 1 lateral accelerometer (para 2-18 s and t).
284	AMPL OUTPUT meter will not indicate -2.5 +0.25 volts dc.	Faulty AFCS amplifier	Replace AFCS amplifier (para 2-18 g and h).
285	Flight director indicator hori-zontal pointer will not move right 1 +0.25 divisions	*a.* Faulty flight director indicator *b.* Faulty AFCS control panel	*a.* Replace flight director indicator (para 2-15). *b.* Replace AFCS control panel (para 2-14).
286	AC OUTPUT meter will not indicate 0.4 ± 0.1 volt ac.	Faulty No. 1 lateral accelerometer	Replace No. 1 lateral accelerometer (para 2-18 s and t).
287	AMPL OUTPUT meter will not indicate 2.5 +0.25 volts dc.	Faulty AFCS amplifier	Replace AFCS amplifier (para 2-18 *g* and *h*.
288	Flight director indicator hori-zontal pointer will not move left 1 +0.25 divisions	*a.* Faulty flight director indicator *b.* Faulty AFCS control panel	*a.* Replace flight director indicator (para 2-15). *b.* Replace AFCS control panel (para 2-14).
289	AC OUTPUT meter will not remain at 0.4 +0.1 volts ac	Faulty No. 1 lateral accelerometer	Replace No. 1 lateral accelerometer (para 2-18 s and t).
290	AC OUTPUT meter will not return to null	Faulty AFCS amplifier	Replace AFCS amplifier (para 2-18 g and h).
291	Flight director indicator hori-zontal pointer will not re-turn to null	*a.* Faulty flight director indicator *b.* Faulty AFCS control panel	*a.* Replace flight director indicator (para 2-15). *b.* Replace AFCS control panel (para 2-14).
292	AC OUTPUT meter will not return to null	Faulty No. 1 lateral accelerometer	Replace No. 1 lateral accelerometer (para 2-18 s and t).
291	AFCS 1, AFCS SERVO, STICK TRIM, and YAW switches will not illumi-nate	*a.* No power to equipment *b.* Faulty AFCS control panel *c.* Faulty AFCS amplifier	*a.* Check AFC'S circuit breakers. *b.* Replace AFCS control panel (para 2-14 a and b). *c.* Replace AFCS amplifier (para 2-18 g and h)
294	Flight director indicator hori-zontal pointer will not move left 2 +0.25 divisions	*a.* Faulty flight director indicator *b.* Faulty AFCS control panel	*a.* Replace flight director indicator (para 2-15). *b.* Replace AFCS control panel (para 2X14)
295	Flight director indicator hori-zontal pointer will not move right 2 ±0.25 divisions	*a.* Faulty flight director indicator *b.* Faulty AFCS control panel	*a.* Replace flight director indicator (para 2-15). *b.* Replace AFCS control panel (para 2-14).

Item No.	Symptom	Probable Cause	Checks and Corrective Action
296	Flight director indicator horizontal pointer will not move right 2 + 025 divisions	*a.* Faulty flight director indicator (para 2-115). *b.* Faulty AFCS control panel	*a.* Replace flight director indicator *b.* Replace AFCS control panel (para 2-14).
297	Flight director indicator horizontal pointer will not move left 2 -0.25 divisions	*a.* Faulty flight director indicator *b.* Faulty AFCS control panel	*a.* Replace flight director indicator (para 2-15). *b* Replace AFCS control panel (para 2-14).
298	AFCS POWER-28VDC indicator lamp will not illuminate.	Faulty LTS	Replace LT.S.
299	Yaw pedals cannot be centered	Faulty primary flight controls	Check primary flight controls.
300	AMPL OUTPUT meter will not move in negative direction to full limit and then in positive direction.	Faulty AFCS amplifier	Replace AFCS amplifier (para 2-18 g and h).
301	Flight director indicator horizontal pointer will not move to full limit and then left	*a.* Faulty flight director indicator *b.* Faulty AFICS control panel	*a.* Replace flight director indicator (para 2-1'5). *b.* Replace AFCS control panel (para 2-14).
302	Yaw pedals will not move right and then left (para 2-18 i and j). *c.* *d.* *e.*	*a.* Faulty primary flight controls *b.* Faulty stick trim amplifier Faulty trim valve Faulty trim position sensor Faulty AFCS amplifier	*a.* Check primary flight controls. *b.* Replace stick trim amplifier *c.* Replace trim valve (Direct Support TM 55-1520-217-3'5/2). *d.* Replace trim position sensor (para 2-18 o and p). *e.* Replace AFCS amplifier (para 2-18 g and h).
303	AMPL OUTPUT meter will not move in positive direction to full limit and then in negative direction.	Faulty AFCS amplifier	Replace AFCS amplifier (para 2-18 g and h).
304	Flight director indicator horizontal pointer will not move left to full limit and then right	*a.* Faulty flight director indicator *b.* Faulty AFCS control panel	*a.* Replace flight director indicator (para 2-15). *b.* Replace AFCS control panel (para 2-14).
305	Yaw pedal will not move left and then right *c.* *d.* *e.*	*a.* Faulty primary flight controls *b.* Faulty stick trim amplifier Faulty trim valve ac Faulty trim position sensor Faulty AFCS amplifier	*a.* Check primary flight controls. *b.* Replace stick trim amplifier (para 2-18 i and j). *R*eplace trim valve (Direct Support TM 55-1520-217-35/2). *d.* Replace trim position sensor (para 2-18 o and p). *e.* Replace AFCS amplifier (para 2-18 g and h).
306	NORM MODE switch will not extinguish	Faulty remote stick control panel	Replace remote stick control panel (para 2-14 c and d).
307	Yaw pedals will not move right *c.* *d.* *c*	*a.* Faulty primary flight controls *b.* Faulty stick trim amplifier Faulty trim valve Faulty trim position Faulty AFCS amplifier e	*a.* Check primary flight controls. *b.* Replace stick trim amplifier (para 2-18 i and j) *c.* Replace trim valve (Direct Support TM 55-15204117-35/2) *d.* Replace trim position sensor (para 2-18 o and p). Replace AFCS amplifier (para 2-18 g and h).

Item No.	Symptom	Probable Cause	Checks and Corrective Action
308	Yaw pedals will not move left	*a.* Faulty primary flight controls *b.* Faulty stick trim amplifier *c.* Faulty trim valve *d.* Faulty trim position sensor *e.* Faulty AFCS amplifier	*a.* Check primary flight controls. *b.* Replace stick trim amplifier (para 2-18 *i* and *j*). *c.* Replace trim valve (Direct Support TM 55-1520-217-3/2). *d.* Replace trim position sensor (para 2-18 *o* and *p*). *e.* Replace AFCS amplifier (para 2 18 *g* and *h*).
309	AMPL OUTPUT meter will not indicate 7±1 volts dc	Faulty AFCS amplifier	Replace AFCS amplifier (para 2-18 *g* and *h).*
310	Yaw pedals and/or collective stick cannot be centered.	Faulty primary flight controls	Check primary flight controls.
311	AFCS 1, BAR ALT, AFCS SERVO, STICK TRIM, and YAW switches will not illuminate.	*a.* Faulty APCS control panel *b.* No power to AFCS	*a.* Replace AFCS control panel. *b.* Check all AFCS circuit breakers.
312	Flight director vertical pointer will not 'be centered	Faulty collective position sensor	Replace collective position sensor (para 2-18 *q* and *r*)
313	AC OUTPUT meter will not indicate 1.2 volt ac on AC OUTPUT meter.	Faulty collective stick position sensor	Replace collective stick position sensor (para 2-18 *q* and *r*).
314	AMPL OUTPUT meter win not indicate -7±1 volts dc	Faulty AFCS amplifier	Replace AFCS amplifier (para 2-18 *g* and *h*).
315	Flight director verttical pointer will not move down 2.5 ±0.5 divisions	*a.* Faulty flight director *b.* Faulty AFCS control panel	*a.* Replace flight director (para 2-15). *b.* Replace AFCS control panel (para 2-14).
316	AC OUTPUT meter will not return to null	*a.* Faulty collective stick BAR. REL. switch. *b.* Faulty collective position sensor	*a.* Replace collective stick BAR.REL. switch (Direct Support TM 55-1520-217-35/2). *b.* Replace collective position sensor (para 2-18 *q* and *r*).
317	AMPL OUTPUT meter will not return to null	Faulty AFCS amplifier	Replace AFCS amplifier (para 2-18 *g* and *h*).
318	Flight director indicator vertical pointer will not return to null	*a.* Faulty flight director indicator *b.* Faulty collective position sensor	*a.* Replace flight director indicator (para 2-15). *b.* Replace collective position sensor (para 2-18 *q* and *r*).
319	Flight director horizontal pointer -Will not move up 2.5 ±0.5 divisions	*a.* Faulty flight director indicator *b.* Faulty AFCS control panel	*a.* Replace flight director indicator (para 2-15). *b.* Replace AFCS control panel (para 2-14 *a* and *b*).
320	Collective stick is not at original center position	*a.* Faulty AFGS amplifier *b.* Faulty collective position sensor	*a.* Replace AFCS amplifier (para 2-18 *g* and *h*). *b.* Replace collective position sensor (para 2-18 *q* and *r).*
321	AC OUTPUT meter will not indicate 4.5 ± 0.5 volts ac	Faulty altitude controller	Replace altitude controller (para 2-18 a and b).
322	AMPL OUTPUT meter will not move in negative direction to full limit	*a.* Faulty AFCS amplifier *b* Faulty collective position sensor *c.* Faulty altitude controller	*a.* Replace AFCS amplifier (para 2-18 *g and h*). *b.* Replace collective position sensor (para 2-18 *q and r*). *c.* Replace altitude controller (para 2-18 *a and b*).

Item No.	Symptom	Probable Cause	Checks and Corrective Action
323	Flight director vertical pointer will not move down to full limit	*a.* Faulty flight director *b.* Faulty AFCS control panel	*a.* Replace flight director (para 2-16). *b.* Replace AFCS control panel (para 2-14).
324	Collective stick will not move down to full limit.	Faulty primary flight controls	Check primary flight controls.
325	AC OUTPUT meter AMPL OUTPUT meter, and flight director horizontal pointer will not return to null	*a.* Faulty collective stick BAR.REL. switch *b.* Faulty altitude controller	*a.* Replace collective stick BAR. REL. switch (Direct Support TM 55-1520-217-35/2). *b.* Replace altitude controller (para 2-18 *a and b*).
	c.	Faulty AFCS amplifier	*c.* Replace AFCS amplifier (para 2-18 *g and h*).
	d.	Faulty AFCS control panel	*d.* Replace AFCS control panel (para 2-14 *a and b*).
	e.	Faulty flight director indicator	*e.* Replace flight director indicator (para 2-15).
	f.	Faulty collective position sensor	*f.* Replace collective position sensor (para 2-18 *q and r*)
326	AC OUTPUT meter will not indicate 4.5 $\pm$ 0.5 volts ac	Faulty altitude controller	Replace altitude controller (para 2-18 *a and b*).
327	AMPL OUTPUT meter will not move in positive direction to full limit	*a.* Faulty AFCS amplifier *b* Faulty collective position sensor	*a.* Replace AFCS amplifier (para 2-18 *g and h*). *b.* Replace collective position eensor (para 2-18 *q and r*).
	c.	Faulty altitude controller	*c.* Replace altitude controller (para 2-18 *a and b*).
328	Flight director indicator vertical pointer will not move up to full limit	*a.* Faulty flight director indicator *b.* Faulty AFCS control panel	*a.* Replace flight director indicator (para 2-15). *b.* Replace AFCS control panel (para 2-14 *a and b*).
329	Collective stick will not move up to full limit.	Faulty primary flight controls	Check primary flight controls.
330	AIRSPEED indicator lamp will not illuminate at 60 $\pm$ 2 knots.	Faulty airspeed switch	Replace airspeed switch (para 2-18 *w and x*).
331	AFCS 1, BAR ALT, and AFCS SERVO switches will not illuminate.	Faulty AFCS control panel	Replace AFCS control panel '(para 2-14 *a and b*).
332	AC OUTPUT meter will not indicate 0.6 $\pm$ 0.1 volt ac.	Faulty LTS	Replace LTS.
338	Flight director indicator vertical pointer will not move down 2 * 0.25 divisions	*a.* Faulty flight director indicator *b.* Faulty AFCS control panel	*a.* Replace flight director indicator (para 2-15). *b.* Replace AFCS control panel (para 2-14).
334	Flight director indicator vertical pointer will not move up 2 $\pm$ 0.25 divisions	*a.* Faulty flight director indicator *b.* Faulty AFCS control panel	*a.* Replace flight director indicator (para 2-15). *b.* Replace AFCS control panel (para 2-14).
335	Collective stick will not move up to full limit	*a.* Faulty AFCS amplifier	*a.* Replace AFCS amplifier (para 2-18 *g and h*).
	b.	Faulty primary flight controls	*b.* Check primary flight controls.
336	Flight director indicator vertical pointer will not move back toward null.	*a.* Faulty AFCS amplifier	*a.* Replace AFCS amplifier (para 2-18 *g and h*).
	b.	Faulty flight director indicator	*b.* Replace flight director indicator (para 2-15).

Item No.	Symptom	Probable Cause	Checks and Corrective Action
	c.	Faulty AFCS control panel	*c.* Replace AFPS control panel (para 2-14).
	d.	Faulty collective position sensor	*d.* Replace collective position sensor (para 2-18 *q and r*).
337	Collective stick will not move down to full limit	*a.* Faulty AFCS amplifier	Replace AFCS amplifier (para 2-18 *g and h*).
	b.	Faulty primary flight controls	*b.* Check primary flight controls.
338	Flight director indicator vertical pointer will not move down and then back toward null	*a.* Faulty AFCS amplifier	*a.* Replace AFCS amplifier (para 2-18 *g and h*).
		b. Faulty flight director indicator	*b* Replace flight director indicator (para 2-16).
	c.	Faulty AFCS control panel	*c.* Replace AFCS control panel (para 2-15).
	d.	Faulty collective position sensor	*d.* Replace collective position sensor (para 218 *q and r*).
339	AFCS 1, YAW, AFCS SERVO and STICK TRIM switches will not illuminate.	Faulty AFCS control panel	Replace AFCS control panel (para 2-1,4 *a and b*).
340	REAR CONTROL ENGAGED caution capsule on caution-advisory panel will not illuminate.	*a.* Malfunctioning remote stick control panel	*a.* Replace remote stick control panel (para 2-14 c and d).
		b. Malfunctioning caution-advisory panel	*b.* Replace caution-advisory panel (TM 55-1520-217-20/2).
341	AFCS POWER-28 VDC indicator lamp will not illuminate	*a.* Malfunctioning remote stick control panel	*a.* Replace remote stick control panel (para 2-14 *c and d*).
		b. No power to AFCS	*b.* Check all AFCS circuit breakers.
	c.	Faulty AFCS control panel	*c.* Replace AFCS control panel (para 2-14 *a and b*).
342	NORM MODE switch on remote stick control panel will not extinguish.	Faulty remote stick control panel	Replace remote stick control panel (para 2-14 *c and d*).
343	AUX MODE switch on remote stick control panel will not illuminate.	Faulty remote stick control panel	Replace remote stick control panel (para 2-14 *c and d*).
344	AFCS POWER-28VDC indicator lamp will not illuminate in each direction grip is twisted	*a.* Faulty remote stick control panel	*a.* Replace remote control panel (para 2-14 *c and d*).
		b. No power to equipment	*b.* Check all AFCS circuit breakers.
		c. Faulty interconnecting cabling	*c.* Check interconnecting cabling in accordance with wiring diagram.
345	NORM MODE switch will not illuminate and/or AUX MODE switch will not extinguish .	Faulty remote stick control panel	Replace remote stick control panel (para 2-14 *c and d*).
346	AMPL OUTPUT meter will not indicate -5± 0.5 volts dc.	*a.* Faulty AFCS amplifier	*a.* Replace AFCS amplifier (para 2-16 *g and h*).
		b. Faulty remote stick control panel	*b.* Replace remote stick control panel (para 2-14 *c and d*).
347	Flight director indicator horizontal bar will not move up 2 ±0.25 divisions	*a.* Faulty flight director indicator	*a.* Replace flight director indicator (para 2-15).
		b. Faulty AFCS control panel	*b.* Replace AFCS control panel (para 2-14).
348	AMPL OUTPUT meter will not indicate 5 ± 0.5 volts dc	*a.* Faulty AFCS amplifier	*a.* Replace amplifier (para 2-18 g and h).
	b.	Faulty remote stick control panel	*b.* Replace remote stick control panel (para 2-14 *c and d*).

Item No.	Symptom	Probable Cause	Checks and Corrective Action
349	Flight director indicator horizontal bar will not move down 2 + 0.25 divisions	*a.* Faulty flight director indicator *b.* Faulty AFCS control panel	a. Replace flight director indicator (para 2-15). b. Replace AFCS control panel (2-14 *a and b*).
350	AMPL OUTPUT meter will not indicate 5 ± 0.5 volts dc.	*a.* Faulty AFCS amplifier *b.* Faulty remote stick control panel	a. Replace AFCS amplifier (para 2-18 *g and h*). b. Replace remote stick control panel (para 2-14 *c and d*).
351	Flight director indicator vertical bar will not move left 2 ± 0.25 divisions	*a.* Faulty flight director indicator *b.* Faulty AFCS control panel	a. Replace flight director indicator (para 2-15). b. Replace AFCS control (para 2-14).
352	AMPL OUTPUT meter will not indicate -5 ± 0.5 volts dc.	*a.* Faulty AFCS amplifier *b.* Faulty remote stick control panel	a. Replace AFCS amplifier (para 2-18 *g and h*). b. Replace remote stick control panel (para 2-14 *c and d*).
353	Flight director indicator vertical bar will not move right 2 ± 0.25 divisions	*a.* Faulty flight director indicator *b.* Faulty AFCS control panel	R-place flight director indicator (para 2-15). b. Replace AFCS control panel (para 2-14).
354	AMPL OUTPUT meter will not indicate negative dc voltage and/or will not move to full output indication.	*a.* Faulty AFCS amplifier *b.* Faulty remote stick control panel	*a.* Replace AFCS amplifier (para 2-18 *g and h*). *b.* Replace remote stick control panel (para 2-14 *c and d*).
355	Flight director indicator horizontal pointer will not move right to complete travel	*a.* Faulty flight director indicator *b.* Faulty AFCS control panel	*a.* Replace flight director indicator (para 2-15). *b.* Replace AFCS control panel (para ,2-14).
356	Yaw pedals will not move right *c.* *d.*	*a.* Faulty primary flight controls *b.* Faulty stick trim amplifier Faulty trim valve Faulty AFCS amplifier	Check primary flight controls. *b.* Replace stick trim amplifier (para 2-18 i and j). *c.* Replace trim valve (Direct Support TM 55-1520-217-35/2). *d.* Replace AFCS amplifier (para 2-18 *g and h*).
357	AMPL OUTPUT meter will not indicate positive dc voltage and/or will not move to full output indication.	*a.* Faulty AFCS amplifier *b.* Faulty remote stick control panel	*a.* Replace AFCS amplifier (para 2-18 *g and h*). *b.* Replace remote stick control panel (para 2-14 *c and d*).
358	Flight director indicator horizontal pointer will not move left to complete travel	*a.* Faulty flight director indicator *b.* Faulty AFCS control panel	*a.* Replace flight director indicator (para 2-15). *b.* Replace AFCS control panel (para 2-14).
359	Yaw pedals will not move left *b.* *c.* *d.*	*a.* Faulty primary flight controls Faulty stick trim amplifier Faulty trim valve Faulty AFCS amplifier	*a.* Check primary flight controls. *b.* Replace stick trim amplifier (para 2-18 i and j). *c.* Replace trim valve (Direct Support TM 1520-217-35/2). *d.* Replace AFCS amplifier (para 2-18 *g and h*).
360	AC OUTPUT meter will not indicate 2.06 + 0.25 volts ac.	Faulty No. 1 vertical gyro	Replace No. 1 vertical gyro (para 2-19 *c and d*).
361	AMPL OUTPUT meter will not indicate 2.5 ± 0.25 volts dc.	Malfunctioning AFCS amplifier	Replace AFCS amplifier (para 2-18 *g and h*).

Item No.	Symptom	Probable Cause	Checks and Corrective Action
362	Flight director indicator vertical bar v:1ll not move left 1 ± 0.25 division	*a.* Faulty flight director indicator *b.* Faulty AFCS control panel	*a* Replace flight director indicator (para 2-15). *b.* Replace AFCS control panel (para 2-14).
363	AMPL OUTPUT meter will not indicate -2.5 ± 0.25 volts dc.	Malfunctioning AFCS amplifier	Replace AFCS amplifier (para 2-18 *g and h*).
364	Flight director indicator vertical bar will not move right 1 ± 0.25 division	*a.* Faulty flight director indicator *b.* Faulty AFCS control panel	*a.* Replace flight director indicator (para 2-15). *b.* Replace AFCS control panel (para 2-14 *a and b*).
365	AC OUTPUT meter will not indicate 0.4 ± 0.1 volt ac	Faulty No. 1 lateral accelerometer	Replace No. 1 lateral accelerometer (para 2-18 s and t).
366	AMPL OUTPUT meter will not indicate + 0.5 volt dc	Faulty AFCS amplifier	Replace AFCS amplifier (2-18 g and h).
367	Flight director indicator vertical bar will not move ± 0.25 division maximum.	*a.* Faulty flight director indicator *b.* Faulty AFCS control panel	*a.* Replace flight director indicator (para 2-15). *b.* Replace AFCS control panel (para 2-14 *a and b*).
368	AC OUTPUT meter will not indicate 2.06 + 0.25 volt ac.	Faulty No 2 vertical gyro	Replace No. 2 vertical gyro (para 2-19 *c and d*).
369	AC OUTPUT meter will not indicate 0.4 + 0.1 volt ac	Faulty No 2 lateral accelerometer	Replace No. 2 lateral accelerometer (para 2-18 a and t).
370	Flight director indicator horizontal bar and vertical pointer will not move up simultaneously a maximum of 0.25 divisions apart	*a.* Faulty remote stick control panel *b.* Faulty AFCS amplifier *c.* Faulty flight director indicator	*a.* Replace remote stick control (para 2-14 *c and d*). *b.* Replace AFCS amplifier (para 2-18 *g and h*). *c.* Replace flight director indicator (para 2-15).
371	Flight director indicator horizontal bar and vertical pointer will not move down simultaneously a maximum of 0.25 division apart	*a.* Faulty remote stick control panel *b.* Faulty AFCS amplifier *c.* Faulty flight director indicator	*a.* Replace remote stick control panel (para 2-14 *c and d*). *b.* Replace AFCS amplifier (para 2-18 *g and h*). *c.* Replace flight director indicator (para 2-15).
372	Flight director indicator vertical bar and horizontal pointer will not move left simultaneously a maximum of 0.25 divisions apart	*a.* Faulty remote stick control panel *b.* Faulty AFCS amplifier *c.* Faulty flight director indicator	*a.* Replace remote stick control panel (para 2-14 *c and d*). *b.* Replace AF,CS amplifier (para 2-18 *g and h*). *c.* Replace flight director indicator (para 2-45).
373	Flight director indicator vertical bar and horizontal pointer will not move right simultaneously a maximum of 0.25 division apart	*a.* Faulty remote stick control panel *b.* Faulty AF,GS amplifier *c.* Faulty flight director indicator	*a.* Replace remote stick control panel (para 2-14 *c and d*). *b.* Replace AFCS amplifier (para 2-18 *g and h*). *c.* Replace flight director indicator (para 2-1.5).
374	AFCS 1, AFCS 2, AFCS SERVO, STIOK TRIM, and YAW switches will not illuminate	*a.* No power to AFCS *b.* Faulty AFCS control panel *c.* Faulty AFCS amplifier	*a.* Check all AFCS circuit breakers. *b.* Replace AFCS control panel (para 2-14 *a and b*). *c.* Replace AFCS amplifier (para 2-18 *g and h*).

Item No.	Symptom	Probable Cause	Checks and Corrective Action
375	Cyclic stick (pilot's, copilot's, or aft pilot's) will not move and/or will not move from full aft position to full for-ward position in 25 ± 3 seconds	*a.* Faulty beeper STICK TRIM switch 1520-217-35/2).	*a.* Replace beeper STICK TRIM switch (Direct Support TM 55-
		b. Stick trim amplifier forward pitch potentiometer needs adjustment correct time.	*b.* Adjust stick trim amplifier forward pitch potentiometer for
	c.	Faulty stick trim amplifier	*c.* Replace stick trim amplifier (para 2-18 *i and j*).
	d	Faulty trim valve	*d.* Replace trim valve (Direct Sup-port TM 55-1520-217-35/2).
376	Cyclic stick (pilot's, copilot's or aft pilot's) will not move and/or will not move from full forward position to full aft position in 25 t 3 seconds	*a.* Faulty beeper STICK TRIM switch required).	*a.* Replace beeper STICK TRIM switch (higher maintenance level
		b. Stick trim amplifier aft roll potentiometer needs adjustment	*b.* Adjust stick trim amplifier aft pitch potentiometer for correct time.
		c. Faulty stick trim amplifier	*c.* Replace stick trim amplifier (para 2-18 *i and j*).
	d.	Faulty trim valve	*d.* Replace trim valve (Direct Sup-port TM 55-1,520-21735/2).
377	Cyclic stick (pilot's, copilot's or aft pilot's) will not move and/or will not move from full left position to full b right position	*a.* Faulty beeper STICK TRIM switch required).	*a.* Replace beeper STICK TRIM switch (higher maintenance level
		b. Stick trim amplifier right roll potentiometer needs adjustment	*b* Adjust stick trim amplifier right roll potentiometer for correct time.
	c.	Faulty stick trim amplifier	*c* Replace stick trim amplifier (para 2-18 *i and j*).
	d.	Faulty trim valve	*d.* Replace trim valve (Direct Sup-port TM 55-1520 217-35/2).
378	Cyclic stick (pilot's, copilot's) will not move and/or will not move from full right po-sition to full left position in 25 ± 3 seconds	*a.* Faulty beeper STICK TRIM switch 1520-217-35/2).	*a.* Replace beeper STICK TRIM switch (Direct Support TM 55
		b. Stick trim amplifier left roll potentiometer needs adjustment	*b.* Adjust stick trim amplifier left roll potentiometer for correct time.
	c.	Faulty stick trim amplifier	*c.* Replace stick trim amplifier (para 2-18 *i and j*).
	d.	Faulty trim valve	*d.* Replace trim valve (Direct Sup-port TM &5-1520-217-35/2).
379	Cyclic stick will not move and/ or will not move from full aft positIon to full forward position in 25 ± 3 seconds correct time.	*a* Faulty remote stick control panel	*a.* Replace remote stick control panel (para 2-14 *c and d*).
		b. Stick trim amplifier forward pitch potentiometer need adjustment	*b.* Adjust stick trim amplifier for-ward pitch potentiometer for
	c.	Faulty stick trim amplifier	*c.* Replace stick trim amplifier (para 2-18 *i and j*).
	d.	Faulty trim valve	*d.* Replace trim valve (Direct Sup-port TM 55-1520-217-35/2).
380	Cyclic stick will not move and/or will not move from full forward position to full aft position in 25 + 3 seconds	*a.* Faulty remote stick control panel	*a.* Replace remote stick control panel (para
		b. Stick trim amplifier aft pitch potentiometer needs adjustment time.	*b.* Adjust stick trim amplifier aft pitch potentiometer for correct
	c.	Faulty stick trim amplifier	*c.* Replace stick trim amplifier (para 2-18 *i and j*).
	d.	Faulty trim valve	*d.* Replace trim valve (Direct Sup-port TM 55-1520-21735/2).
381	Cyclic stick will; not move and/or will not move from full left position to full right position in 25 ± 3 seconds	*a.* Faulty remote stick control panel	*a.* Replace remote stick control panel (para 2-14 *c and d*).
		b. Stick trim amplifier right roll potentiometer needs adjustment	*b.* Adjust stick trim amplifier right roll potentiometer for correct time.

Item No.	Symptom	Probable Cause	Checks and Corrective Action
	c.	Faulty stick trim amplifier	*c.* Replace stick trim amplifier (para 2-18 *i and j*).
	d.	Faulty trim valve	*d.* Replace trim valve (Direct Support TM 55-1,520-217-35/2).
382	Cyclic stick will not move and/or will not move from full right position to full left b position in 25 + 3 seconds time.	*a.* Faulty remote stick control panel	*a.* Replace remote stick control panel (para 2-14 *c and d*).
		b. Stick trim amplifier left roll potentiometer needs adjustment	*b* Adjust stick trim amplifier left roll potentiometer for correct
	c.	Faulty stick trim amplifier	*c.* Replace stick trim amplifier (para 2-18 *i and j*).
	d.	Faulty trim valve	*d.* Replace trim valve (TM 55-1520-217-35/2).
383	Flight director horizontal bar and vertical pointer will not be up 2.5+0.25 divisions (para 2-14 *c and d*).	*a.* Faulty AFCS amplifier	*a.* Replace AFCS amplifier (para 2-18 *g and h*).
		b. Faulty flight director	*b.* Replace flight director (para 2-15).
		c. Faulty remote stick control panel	*c.* Replace remote stick control panel
384	Flight director horizontal bar and vertical pointer will not be down 2.5 + 0.25 divisions	*a.* Faulty AFCS amplifier	*a.* Replace AFCS amplifier (para 2-18 *g and h*).
		b. Faulty flight director	*b.* Replace flight director (para 2-15).
		c. Faulty remote stick control panel	*c* Replace remote stick control panel (para 2-14 *c and d*).
385	Faulty director vertical bar and horizontal pointer will not be right 2.5± 0.25 divisions	*a.* Faulty AFCS amplifier	*a.* Replace AFCS amplifier (para 2-18 *g and h*).
		b. Faulty flight director	*b.* Replace flight director (para 2-15).
		c. Faulty remote stick control panel	*c.* Replace remote stick control panel (para 2-14 *c and d*).
386	Flight director vertical bar and pointer will not be Left 2.5 ±0.25 divisions	*a.* Faulty AFCS amplifier	*a.* Replace AFCS amplifier (para 2-18 *g and h*).
		c. Faulty remote stick control panel	*c.* Replace remote stick control panel (para 2-14 *c and d*).
387	All switches will not illuminate	Faulty AFCS control panel	Replace AFCS control panel (para 2-14 *a and b*).
388	BAR ALT switch on AFCS control panel will not extinguish and AUTO FAIL RESET switch on AFCS control panel will not illuminate.	*a.* Faulty OSU	*a* Replace OSU (para 218 k and I).
		b. Faulty AFCS control panel	*b.* Replace AFCS control panel (2-14).
		c. Faulty interconnecting cabling accordance with wiring diagram.	*c.* Check interconnecting cabling in
389	AUTO FAIL RESET switch on AFCS control panel will not extinguish and BAR ALT switch on AFCS control panel will not illuminate.	*a.* Faulty OSU	*a* Replace OSU (para 2-18 k and 1).
		b. Faulty AFCS control panel	*b.* Replace AFCS control panel (para 2-14).
390	YAW and BAR ALT on AFCS control panel will not extinguish and AUTO FAIL RESET switch on AFCS control panel will not illuminate.	*a.* Faulty OSU	*a.* Replace OSU (para 2-18 k and I).
		b. Faulty AFCS control panel (para 2-14).	*b.* Replace AFCS control panel
391	AUTO FAIL RESET switch on AFCS control panel will not extinguish and YAW and BAR ALT switches on AFCS control panel will not illuminate.	*a.* Faulty OSU	*a.* Replace OSU (para 2-18 k and 1).
		b. Faulty AFCS control panel (para 2-14).	*b.* Replace AFCS control panel

Item No.	Symptom	Probable Cause	Checks and Corrective Action
392	AUTO FAIL RESET switch on AFCS control panel will not illuminate	*a.* Faulty OSU *b.* Faulty AFCS control panel	*a.* Replace OSTJ (para 2-18 k and 1). *b* Replace AFGS control panel (para 2-14).
393	AUTO FAIL RESET switch on AFCS control panel will not extinguish	*a.* Faulty OSU *b.* Faulty AFCS control panel	*a.* Replace OSU (para 2-18 k and 1). *b.* Replace AFCS control panel (para 2-14).
394	AUTO FAIL RESET switch on AFCS control panel will not illuminate	*a.* Faulty OSU *b.* Faulty AFCS control panel	*a.* Replace OSU (para 2-18 k and 1). *.b* Replace AFCS control panel (para 2-14).
395	AUTO FAIL RESET switch on AFCS control panel will not extinguish	*a.* Faulty OSU *b.* Faulty AFCS control pane	*a.* Replace OSU, (para 2-18 k and 1). *b.* Replace AFCS control panel (para 2-14).
396	AUTO FAIL RESET switch on AFCS control panel will not illuminate and AFCS 1 and AFCS 2 switches on AFCS control panel will not extinguish.	*a.* Faulty OSU Faulty AFCS control panel	*a.* Replace OSU (para 2-18 k and 1). *b.* Replace AFCS control panel (para 2-14).
397	AUTO FAIL RESET switch on APCS control panel will not extinguish and AFCS 1 and AFCS 2 switches on AFCS control panel will not illuminate.	*a.* Faulty OSU *b.* Faulty AFCS control panel	*a.* Replace OSU (para 2-18 k and 1). *b.* Replace AFCS control panel (para 2-14).
398	AFCS 1, AFCS SERVO, STICK TRIM, YAW, and BAR ALT switches on AFCS control will not il-luminate	*a.* Faulty AFCS control panel *b.* Faulty AFCS amplifier *c.* No power to AFCS	*a.* Replace AFCS control panel (para 2-14 *a and b*). *b.* Replace AFCS amplifier (para 2-18 g and It). *c.* Check all AFCS circuit breakers.
399	Yaw pedals and collective and cyclic sticks cannot be centered.	Faulty primary flight controls	Check primary flight controls.
400	Flight director indicator vertical pointer will not move up to its full limit.	Faulty flight director indicator	Replace flight director indicator (para 2-15).
401	Collective stick will not move up to its full limit.	Faulty primary flight controls	Check primary flight controls.
402	Collective control rod will not move down	*a.* Faulty collective servocylinder	*a.* Replace collective servocylinder (Direct Support TM 55-1,520-217-35/2).
	b.	Faulty collective control rod	*b.* Repair or replace collective control rod (Direct Support TM 55-1520-217-35/2).
403	Collective control rod will not move up when collective stick is moved down	*a.* Faulty collective servocylinder	*a.* Replace collective servocylinder (Direct Support TM 55-1520-217-365/2).
	b.	Faulty collective control rod	*b.* Repair or replace collective control rod.
	c.	Faulty interconnecting cabling	*c.* Check interconnecting cabling in accordance with wiring diagram.
404	Flight director indicator verti-cal pointer will not move down to its full limit.	Faulty flight director indicator	Replace flight director indicator (para 2-15).

Item No.	Symptom	Probable Cause	Checks and Corrective Action
405	Collective stick will not move from full up to full down position.	Faulty primary flight controls	Check primary flight controls.
406	Collective control rod will not move up	*a.* Faulty collective servocylinder	*a.* Replace collective servocyldnder (Direct Support TM 55-15,20-217-35/2).
	b.	Faulty collective control rod	*b.* Repair or replace collective control rod (Direct Support TM 55-1520-217-35/2).
407	Collective control rod will not move down when collective stick is moved up	*a.* Faulty collective servocylinder	*a.* Replace collective servocylinder (Direct Support TM 55-1520-217-35/2).
	b.	Faulty collective control rod	*b.* Repair or replace collective control rod (Direct Support TM 55-1520-217-35/2).
	c.	Faulty interconnecting cabling	*c.* Check interconnecting cabling in accordance with wiring diagram.
408	Flight director indicator hori-zontal bar will not move up to its full limit.	Faulty flight director indicator	Replace flight director indicator (para 2-15).
409	Pitch control rod will not move up	*a.* Faulty pitch servocylinder	*a.* Replace pitch servocylinder (Direct Support TM 55-1520-217-35/2).
	b.	Faulty pitch control rod	*b.* Repair or replace pitch control rod (Direct Support TM 55-1520-21735/2).
410	Pitch control rod will not move down when cyclic stick is moved aft	*a.* Faulty pitch servocylinder	*a.* Replace pitch servocylinder (Direct Support TM 551520-217-35/2).
	b.	Faulty pitch control rod	*b.* Repair or replace pitch control rod (Direct Support TM 55-1'520-217-35/2).
	c.	Faulty interconnecting cabling	*c.* Check interconnecting cabling in accordance with wiring diagram.
411	Flight director indicator hori-zontal bar will not move down to its full limit.	Faulty flight director indicator (para 2-15).	Replace flight director indicator
412	Pitch control rod will not move down	*a.* Faulty pitch servocylinder	*a.* Replace pitch servocylinder (Direct Support TM 55-1520-217-35/2).
	b	Faulty pitch control rod	*b.* Repair or replace pitch control rod (Direct Support TM 55-1520-217-45/2).
413	Pitch control rod will not move up when cyclic stick is moved forward	*a.* Faulty pitch servocylinder	*a.* Replace pitch servocylinder (Direct Support TM 55-1520-217-35/2).
	b.	Faulty pitch control rod	*b.* Repair or replace pitch control rod (higher maintenance required).
	c.	Faulty interconnecting cabling	*c.* Check interconnecting cabling in accordance with wiring diagram.
414	Flight director indicator verti-cal bar will not move left to	Faulty flight director indicator	Replace flight director indicator (para 2-15). its full limit.
415	Roll control rod will not	*a.* Faulty roll servocylinder 1520-217-35/2).	*a.* Replace roll servocylinder move up (Direct Support TM 55-

Item No.	Symptom	Probable Cause	Checks and Corrective Action
	b.	Faulty roll control rod	*b.* Repair or replace roll control rod (Direct Support TM 56-1620-21735/2).
416	Roll control rod will not move down when cyclic stick is moved right	*a.* Faulty roll servocylinder _	*a.* Replace roll servocylinder (Direct Support TM 65-1520-217-35/2).
	b.	Faulty roll control rod	*b.* Repair or replace roll control rod (Direct Support TM 55-1520-217-45/2).
	c.	Faulty interconnecting cabling	*c.* Check interconnecting cabling in accordance with wiring diagram.
417	Flight director indicator vertical bar will not move right to its full limit.	Faulty flight director indicator	Replace flight director indicator (para 2-15).
418	Roll control rod will not move down	*a.* Faulty roll servocylinder	*a.* Replace roll servocylinder (Direct Support TM 55-1520-21735/2).
	b.	Faulty roll control rod	*b.* Repair or replace roll control rod (Direct Support TM 55-1520-217-5/2).
419	Roll control rod will not move up when stick is moved left	*a.* Faulty roll ervocylinder	*a.* Replace roll servocylinder (Direct Support TM 55-1520-217-45/2).
	b.	Faulty roll control rod	*b.* Repair or replace roll control rod (Direct Support TM 55-1520-217-35/2).
	c.	Faulty interconnecting cabling	*c.* Check interconnecting cabling in accordance with wiring diagram.
420	Flight director indicator borizontal pointer will not move left it its full limit.	Faulty flight director indicator	Replace flight director indicator (para 2-15).
421	Yaw control rod will not move down	*a.* Faulty yaw servocylinder	*a.* Replace yaw servocylinder (Direct Support TM 55-1520-21735/2).
	b.	Faulty yaw control rod	*b.* Repair or replace yaw control rod (Direct Support TM 55-1520-21745/2).
422	Yaw control rod will not move up when pedals are moved right	*a.* Faulty yaw servocylinder	*a.* Replace yaw servocylinder (Direct Support TM s5-1520-217-35/2).
	b.	Faulty yaw control rod	*b.* Repair or replace yaw control rod (Direct Support TM 55-1520-217-45/2).
	c.	Faulty interconnecting cabling	*c.* Check interconnecting cabling in accordance with wiring diagram.
423	Flight director indicator horizontal pointer will not move right to its full limit	Faulty flight director indicator	Replace flight director indicator (Direct Support TM 55-1520 21735/2).
424	Yaw control rod will not move up	*a* Faulty yaw servocylinder	*a.* Replace yaw servocylinder (Direct Support TM 55-1520-21735/2).
	b.	Faulty yaw control rod	*b.* Repair or replace yaw control rod (Direct Support TM 55-1520-21735/2).
425	Yaw control rod will not move down when pedals are moved left	*a.* Faulty yaw servocylinder	*a.* Replace yaw servocylinder. (Direct Support TM 55-1520-21735/2).

Item No.	Symptom	Probable Cause	Checks and Corrective Action
	b.	Faulty yaw control rod	*b.* Repair or replace yaw control rod (Direct Support TM 55-1520-217-35/2).
	c.	Faulty interconnecting cabling	*c.* Check interconnecting cabling in accordance with wiring diagram.
426	AFCS 1, AFCS SERVO, STICK TRIM, and BAR ALT switches will not il-luminate.	*a.* Faulty AFCS control panel *b.* No power to AFCS	*a.* Replace AFCS control panel (para 2-14 *a and b*). *b.* Check all AFCS circuit breakers.
427	Cyclic stick will not move	*a.* Faulty trim valve	*b.* Replace trim valve (Direct Support TM 55-1520-217-35/2).
428	Pitch control rod will not move up	*a.* Faulty pitch servocylinder	*a.* Replace pitch servocylinder (Direct Support TM 55-1520-217-35/2).
	b.	Faulty pitch control rod	*b.* Repair or replace pitch control rod (Direct Support TM 55-1520-217-35/2).
429	Pitch control rod will not move down when cyclic stick is moved aft	*a.* Faulty pitch servocylinder	*a.* Replace pitch servocylinder (Direct Support TM 55-1520-217-35/2).
	b.	Faulty pitch control rod	*h.* Repair or replace pitch control rod (Direct Support TM 55-1520-217-35/2).
	c.	Faulty interconnecting cabling	*c.* Check interconnecting cabling in accordance with wiring diagram.
430	Cyclic stick will not move from full forward to full aft position in 10 + 3 seconds.	*a.* Faulty primary flight controls *b.* Faulty trim valve	*a.* Check primary flight controls. *b.* Replace trim valve (Direct Support TM 55-1520-217-35/2).
431	Pitch control rod will not move down.	*a.* Faulty pitch servocylinder	*a.* Replace pitch servocylinder (Direct Support TM 55-1520-217-35/2).
	b.	Faulty pitch control rod	*b.* Repair or replace pitch control rod (Direct Support TM 55-1520-217-35/2).
432	Pitch control rod will not move up when cyclic stick is moved forward	*a.* Faulty pitch servocylinder *b.* Faulty pitch control rod	*a* Replace pitch servocylinder. *b.* Repair or replace pitch control rod (Direct Support TM 55-1520-217-35/2).
	c.	Faulty interconnecting cabling	*c.* Check interconnecting cabling in accordance with wiring diagram.
433	Cyclic stick will not move from full aft to full for-ward position in 10 ± 3 seconds.	*a.* Faulty primary flight controls *b.* Faulty trim valve	*a.* Check primary flight controls. *b.* Replace trim valve (Direct Support TM 55-1520-217-35/2).
434	Cyclic stick will not move left to its full limit	*a.* Faulty primary flight controls *b.* Faulty trim valve	*a.* Check primary flight controls. *b.* Replace trim valve (Direct Support TM 55-1520-217-35/2).
435	Roll control rod will not move up	*a.* Faulty roll servocylinder	*a.* Replace roll servocylinder (Direct Support TM 55-1520-217-35/2).
	b.	Faulty roll control rod -	*b.* Repair or replace roll control rod (Direct Support TM 55-1520-217-5/2).
436	Roll control rod will not move down when cyclic stick is moved right	*a.* Faulty roll servocylinder	*a.* Replace roll servocylinder (Direct Support TM 55-1520-217-35/2).

Item No.	Symptom	Probable Cause	Checks and Corrective Action
	b.	Faulty roll control rod	*b.* Repair or replace roll control rod (Direct Support TM 55-1520-217 35/2).
	c.	Faulty interconnecting cabling	*c.* Check interconnecting cabling in accordance with wiring diagram.
437	Cyclic stick will not move from full left to full right position in 10 ± 3 seconds	*a.* Faulty primary flight controls *b.* Faulty trim valve	Check primary flight controls. *b.* Replace trim valve (Direct Support TM 55-1520-217-35/2).
438	Roll control rod will not move down	*a.* Faulty roll servocylinder	*a.* Replace roll servocylinder (Direct Support TM 55-1520-217-35/2).
	b.	Faulty roll control rod	*b.* Repair or replace roll control rod (Direct Support TM 55-1520-217-35/2).
439	Roll control rod will not move left	*a.* Faulty roll servocylinder	*a* .Replace roll servocylinder (Direct Support TM 55-1520-217-35,2).
	b.	Faulty roll control rod	*b.* Repair or replace roll control rod (Direct Support TM 55-1520-217-35/2).
	c.	Faulty interconnecting cabling	*c.* Check interconnecting cabling in accordance with wiring diagram.
440	Cyclic stick will not move from full right to full left position in 10 ± 3 seconds	*a.* Faulty primary flight controls *b.* Faulty trim valve	*a* Check primary flight controls. *b.* Replace trim valve (Direct Support TM 55-1520-217-35/2).
441	Yaw pedals will not move left to full limit	*a.* Faulty primary flight controls *b.* Faulty trim valve	*a.* Check primary flight controls. *b* Replace trim valve (Direct Support TM 55-1520-217-35/2).
442	Yaw control rod will not move down	*a.* Faulty yaw servocylinder	*a* Replace yaw servocylinder (Direct Support TM 55-1520-217-35, 2).
	b.	Faulty yaw control rod	*b.* Repair or replace yaw control rod (Direct Support TM 55-1520-217-35 '2).
443	Yaw control rod will not move up when yaw pedals move right	*a.* Faulty yaw servocylinder	*a.* Replace yaw cylinder (Direct Support TM 55,-1520-217-35/2).
	b.	Faulty yaws control rod	*b.* Repair or replace yaw control rod Direct Support TM 55-1520-217-35/2).
	c.	Faulty interconnecting cabling	*c.* Check interconnecting cabling in accordance with wiring diagram.
444	Yaw pedals will not move from full left to full right position in 12 ± 3 seconds	*a.* Faulty primary flight controls *b.* Faulty trim valve	*a.* Check primary flight controls. *b.* Replace trim valve (Direct Support TM 55-1520-217-35/2).
445	Yaw control rod will not move up	*a.* Faulty yaw servocylinder	*a.* Replace servocylinder (Direct Support TM 55-1520-217-35/2).
	b.	Faulty yaw control rod	*b.* Repair or replace yaw control rod (Direct Support TM 55-1520-217-35/2).
446	Yaw control rod will not move down when pedals move left	*a.* Faulty yaw servocylinder	*a.* Release yaw servocylinder (Direct Support TM 55-1520-217-35/2).

Item No.	Symptom	Probable Cause	Checks and Corrective Action
	b.	Faulty yaw control rod	*b.* Repair or replace yaw control rod (Direct Support TM 55-1520-217-34-2).
	c.	Faulty interconnecting cabling	*c.* Check interconnecting cabling in accordance with wiring diagram.
447	Yaw pedals will not move from full right to full left position in 12 + 3 seconds	*a.* Faulty primary flight controls *b.* Faulty trim valve	*a.* Check primary flight controls. *b.* Replace trim valve (Direct Support TM 55-1520-217-34-2).

TROUBLESHOOTING, PERFORMANCE INDICATING SYSTEM

Item No.	Symptom	Probable Cause	Checks and Corrective Action
448	Incorrect resistance readings	*a.* Faulty LVDT	*a.* Replace right lateral servo assembly (higher maintenance required, para 2-19.1).
449	115 VAC and 28 VDC indicator lamps do not illuminate	*a.* No power to performance indicating system circuit breakers.	*a.* Check all performance indicating system
450	Test set meter does not indicate 30 to 70%	*a.* Faulty LVDT	*a.* Replace right lateral servo assembly (higher maintenance required para 2-19.1).
451	30% meter indication cannot be obtained by adjustment of R21.	*a.* Faulty cruise guide amplifier	*a.* Replace amplifier (para 2-19.1).
452	30% meter indication is obtained by adjustment of R21 and 39 on TB6. *c.*	*a.* Faulty wiring *b.* Faulty load resistor, R108 from terminals 38 Faulty performance indicator	*a.* Repair wiring. *b.* Replace resistor R108 *c.* Replace indicator (para 2-15).
453	Helicopter performance indicator does not indicate 28 to 32%	*a* Faulty wiring *b.* Faulty load resistor, R108 *c.* Faulty performance indicator	*a* Repair wiring. *b.* Replace resistor R108. *c.* Replace indicator (para 2-15).
454	Helicopter performance indicator does not indicate 55 to 65%	*a* Faulty cruise guide amplifier *b* Faulty performance indicator	*a* Replace amplifier (para 2-19.1). *b* Replace indicator (para 2-15).
455	Helicopter performance indicator does not indicate 90 to 100% or greater	*a* Faulty cruise guide amplifier *b.* Faulty performance indicator	*a* Replace amplifier (para 2-19.1). *b.* Replace indicator (para 2-15).

Section IV. ELECTRONIC EQUIPMENT CONFIGURATION REPAIRS

2-12. General Repair Techniques

Repair of the helicopter electronic equipment configuration at the organizational maintenance level 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 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 2-21). If replacement of major components still does not correct the trouble, check the electronic equipment configuration interconnecting wiring (figs. 4-10 through 4-26) and repair the wiring or cabling as required (para 2-22).

WARNING:

Before removing or replacing any equipment components, observe following safety precautions:

1. Systems and facilities of electronics configuration use 115 volts ac. Do not

make contact with exposed wires or connectors. Turn off all power supplies before making any connections or disconnections. DON'T TAKE CHANCES!

2. During removal or replacement of antennas, conform to all safety requirements. Be careful when working around antenna or terminals. Radio frequency high voltages exist at these points.

3. If equipment components that are removed are not immediately replaced, insure that all connector ends are capped and stowed and all loose cable ends are properly insulated and stowed in a manner to avoid possibility of shorting, should power accidently be applied.

NOTE:

When removal or replacement of any equipment component requires disassembly or reassembly of any portion of airframe, coordinate the removal or replacement with helicopter organizational maintenance repairman or crew chief.

2-13. Removal and Replacement of Major Electronic Equipment

Components of major electronic equipment other than control panels, indicators, and antennas are located in the forward electronics compartments, upper nose compartment, aft main fuselage, and the helicopter boom (figs 1-1 and 1-2, 2-10 through 2-14, and 4-1). Remove and replace major electronic equipment components by referring to the paragraphs and figures listed below.

Facility	*Component*	*Fig. No*	*Removal para No*	*Replacement para No.*
Voice security system	Voice Security System T SEC/KY-28	2-10	2-13 a (1)	2-13 a (2)
	Mounting MT-38 02/ARC	2-10	2-13 a (3)	2-13 a (4)
	Discriminator, Discrete Signal MD-736/A (3 installed)	2-10	2-13 a (5)	2-13 a (6)
Vhf radio set	Receiver-transmitter RT-857/ARC-134	2-10	2-13 b (1)	2-13 b (2)
	Mounting MT-3791/ARC-134	2-10	2-13 b (3)	2-13 b (4)
FM liaison and homing radio	Receiver-Transmitter Radio RT-823/ ARC-131	2-11	2-13 c (1)	2-13 c (2)
	Mounting MT-3664/ARC-131	2-11	2-13 c (3)	2-13 c (4)
Uhf radio	Receiver-Transmitter, Radio RT-742/ ARC-5 1-BX	2-11	2-13 d (*1*)	2-13 d (2)
	Mounting MT-2653/ARC	2-11	2-13 d (*3*)	2-13 d (4)
Vor receiving set	Receiver, Radio R-1388/ARN-82	2-11	2-13 e (*1*)	2-13 e (2)
	Mounting MT-3600/ARN-82	2-13 e (3)	2-13 e (*4*)	
Hf radio	Receiver-Transmitter, Radio RT-698/ ARC-102	2-12	2-13f (*1*)	2-13f(2)
	Power-Inverter, Mounting PP-3702/ ARC-102	2-12	2-13 f *(3)*	2-13 f(4)
	Antenna Coupler CU-1658/A	2-14 X	2-13 f(*5)*	2-13 f(6)
	Mounting MT-3772A/A	2-13g (7)	2-13 g *(8*)	
Iff transponder set	Receiver-Transmitter RT-859 ( )/ APX-72	2-12	2-13g (*1*)	2-13g (2)
	Mounting MT-3809/APX	2-12	2-13g (*3*)	2-13 g (4)
	Test Set, Transponder set TS-1843/ APX	2-12	2-13h (*1*)	2-13h (2)
	Mounting MT-3513/APX	2-12	2-13h (*3*)	2-13h (4)
Voice Warning System	Reproducer-Converter, Voice Signal RP-139 ( )/ASH-19	2-12	2-13 i (*1*)	2-13 i (2)
	Mounting Base MT-3290/ASH-19	2-12	2-13j (*3)*	2-13 i (4)
	AN/ASH-23	2-12	2-13 i (*5*)	2-13 i (6)
	Support Bracket, Recorder	2-12	2-13 i (*7*)	2-13 i (8)
	Signal Adapter	2-12	2-13 i (*9*)	2-13 i (10)
Compass	Gyro, Directional CN-998/ASN-43	2-13	2-13j (1*)*	2-13j (2)
	Amplifier, Electronic Control AM-3209/ASN	2-13	2-13j (2)	2-13j (4)
	Transmitter, Induction Compass T-611I/ANS	1-1	2-13j (5)	2-13j (6)
	Compensator, Magnetic Flux CN-405/ANS	1-1	2-13j (7)	2-13j (8)
Adf direction finder	Receiver, Radio R-1391/ARN-83	2-14 _	2-13 k (1)	2-13 k (2)
	Mounting MT-3605/ARN-83	2-14 -	2-13 k (3)	2-13 k (4)
	Adf Relay	1-1	2-13k(5)	2-13 k (6)

a. Removal and Replacement of voice security system T SEC/KY-28. Remove all components of the Voice Security System T SEC/KY-28 except control indicator Assembly C28157/ARC, by following the procedures below. Remove the control indicator by following the procedures in paragraph 2-14.

(1) *Removal of voice security system T SEC/KY-28* (fig 2-10).

(a) Open left-hand electronics compartment door and secure with support rod clipped to shelf.

(*b*) Disconnect electrical connectors P70 and P71 from T SEC/KY-28.

(*c*) Using pair of diagonal pliers, cut and remove safety wire from two octagonal nuts on MT-3802/ARC Loosen octagonal nuts.

(*d*) Pull T SEC/KY-28 forward to free from rear guide pins and remove from MT-3802/ARC.

(2) *Replacement of voice security system T SEC/KY-28* (fig 2-10).

(*a*) Place T SEC/KY-28 on MT-3802/ARC and slide into MT-3802/ARC, carefully engaging guide pins at rear of MT-3802/ARC.

(*b*) Engage clamp in forward flange of T SEC/KY-28 and tighten octagonal nuts on MT-3802/ARC.

(*c*) Replace safety wiring on octagonal nuts (para 2-21).

(*d*) Connect P70 and P71 to T SEC/KY-28.

(*e*) Close and secure left-hand electronics compartment door.

(3) *Removal of Mounting MT-3802/A.RC* (fig. 2-10).

(*a*) Open left-hand electronics compartment door and secure with support rod clipped to shelf.

(*b*) Remove voice security system T SEC/KY-28 as described in (1) above.

(*c*) Unscrew mounting screws, washers, and nuts and remove MT-3802/ARC from shelf.

(4*) Replacement of Mounting MT-3802/ARC* (fig 2-10).

(*a*) Place MT-3802/ARC in position on shelf.

(*b*) Determine attachment points and clean surface around all mounting holes to insure good electrical ground contact.

(*c*) Secure MT-3802/ARC to shelf with mounting screws, washers, and nuts.

(*d*) Replace voice security system T SEC/KY-28 on MT-3803/ARC as described in (2) above.

(*e*) Close and secure left-hand electronics compartment door.

(5) *Removal of Discriminators, Discrete Signal MD-736/A Pilot's (upper), Copilot's (middle), Aft Pilot's (lower)* (fig. 2-10).

(*a*) Open left-hand electronics compartment door and secure with support rod clipped to shelf.

(*b*) Remove pilot's MD-736/A by unscrewing screws, washers, and nuts from flange of mounting plate.

(*c*) Remove mounting plate from MD-736/A by unscrewing four screws from plate.

(*d*) Disconnect wires from two internal terminal blocks If MD-736/A is not to be replaced, connect wires to external terminal block adjacent to MD-736/A.

(*e)* Remove aft pilot's MD-736/A and copilot's MD-736/A from shelf by unscrewing screws, washers, and nuts from flange of aft pilot's MD-736/A.

(f) Remove mounting plate from aft pilot's MD-736/A by unscrewing four screws.

(*g*) Disconnect wires from two internal terminal blocks. If MD-736/A is not to be replaced, connect wires to external terminal block adjacent to MD-736/A.

(*h*) Remove mounting plate from copilot's MD-736/A by unscrewing four screws.

(*i*) Disconnect wires from two internal terminal blocks. If MD-736/A is not to be replaced, connect wires to external terminal block adjacent to MD-736/A.

(*j*) Remove copilot's MD-736/A from aft pilot's MD-736/A by unscrewing screws, washers, and nuts.

(6) *Replacement of Discriminators, Discrete Signal MD-73 6/A Pilot's (upper), Copilot's (middle), Aft Pilot's (lower)* (fig. 2-10).

NOTE:

Discrete Signal Discriminator MD-736/A must be replaced with TB 1 facing inboard.

(*a*) Clean surface around all mounting holes to insure good electrical ground contact.

(*b*) Place aft pilot's MD-736/A and co-pilot's MD-736/A back to back and secure with mounting screws, washers, and nuts.

(*c*) Connect wires to two internal terminal blocks in aft pilot's MD-736/A.

(*d*) Connect wires to two internal terminal blocks in copilot's MD-736/A.

(*e*) Place mounting plate on aft pilot's MD-736/A and secure with four screws.

C-

(*f*) Place mounting plate on copilot's MD-736/A and secure with four screws.

(*g*) Place aft pilot's MD-736/A on shelf and secure with screws, washers, and nuts.

(*h*) Connect wires to two internal terminal blocks in pilot's MD-736/A.

(*i*) Place mounting plate on pilot's MD-736/A and secure with four screws.

(*j*) Place pilot's MD-736/A on copilot's MD-736/A, lining up holes in flanges and secure with screws, washers, and nuts.

(*k*) Close and secure left-hand electronics compartment door.

b. *Removal and Replacement of Radio Set AN/ARC-134.* Remove all components of the AN/ARC-134 except Antenna AT-1108/ARC and Control Radio Set C-9197/ARC-134 by following procedures below

Remove the C-7197/ARC-134 and AT-1108/ARC by following procedures in paragraphs 2-14 and 2-16.

(1) *Removal of Receiver-Transmitter RT-857/ARC-134* (fig 2-10).

(*a*) Open left-hand electronics compartment door and secure with support rod clipped to shelf.

(*b*) Using pair of diagonal pliers, cut and remove safety wire from two knurled nuts on MT-3791/ARC-134.

(*c*) Loosen knurled nuts until holddown clamps disengage from RT-857/ARC-134 holddown hooks.

(d) Grasp handle on RT-857/ARC-134 and slide out of MIT-3791/ARC-134.

(2) *Replacement of Receiver-Transmitter RT-857/ARC-134* (fig. 2-10).

(*a*) Place RT-857/ARC-134 on IT-3791/ARC-134 and slide RT,'857/ARC-134 until rear connectors mate with receptacles on MIT-3791/ARC-134.

(*b*) Engage holddown clamps on RT-857, ARC-134 holddown hooks and tighten 3IT-3791/ARC-134 knurled nuts.

(*c*) Replace safety wire on knurled nuts (para 2-21).

(*d*) Close and secure left-hand electronics compartment door.

(3) *Removal of Mounting MT-3791/ARC-134* (fig. 2-10).

(*a*) Open left-hand electronics compartment door and secure with support rod clipped to shelf.

(*b*) Remove RT-857/ARC-134 as described in (1) above.

(*c*) Unscrew mounting screws and remove helicopter connectors P110 and Pill from MT-3791/ARC-134.

(*d*) Unscrew mounting screws, washers, and nuts and remove MT-3791/ARC-134 from shelf.

(4) *Replacement of Mounting MT-3791/ARC-134 (*fig 2-10).

(*a*) Place MT-3791/ARC-134 in position on shelf.

(*b*) Determine attachment points and clean surface around all mounting holes to insure good electrical ground contact.

(*c*) Secure helicopter connectors P110 and Pill to MT-3791/ARC-134 with mounting screws.

(*d*) Secure MT-3791/ARC-134 to shelf with mounting screws, washers, and nuts.

(*e*) Replace RT-857/ARC-134 as described in (2) above.

(*f*) Close and secure left-hand electronics compartment door.

c. Removal and Replacement of Radio Set AN/ARC-131 Remove all components of the AN/ARC -131 except, Control, Radio Set C -7088/ARC-131, Coupler, Antenna CU-942A/ARC -54 or CU-942B/ARC-54, Antenna AS-1703/AR, and Antenna AS-1922/ARC by following the procedures below. Remove C-7088/ARC -131, CU-942A/ARC-54 or CU-942B/ARC-54, AS-1703/AR, and AS-1922/ARC by following the procedures in paragraphs 2-14 and 2-16.

(1) *Removal of Receiver-Transmitter, Radio RT-823/ARC-131* (fig. 2-11).

(*a*) Open right-hand electronics compartment door and secure with support rod clipped to shelf.

(*b*) Release locking handle catch on RT-823/ARC-131 front panel from secured (down) position and pull locking handle out and down.

(*c*) Pull RT-823/ARC-131 forward to free from rear guide pins and rear receptacles and remove RT-823/ARC-131.

(2) *Replacement of Receiver-Transmitter, Radio RT-823/ARC-131* (fig. 2-11).

(*a*) Place RT-823 ARC-131 on MIT-3664/ARC-131 and slide into MIT-3664/ARC-131 carefully engaging connectors and guide holes at rear of RT-823/ARC-131 to MIT-3664 ARC-131 guide pins and receptacles.

(*b*) Lift RT-823/ARC-131 locking handle, press inward, and secure handle by lifting locking handle catch.

(*c*) Close and secure right-hand electronics compartment door.

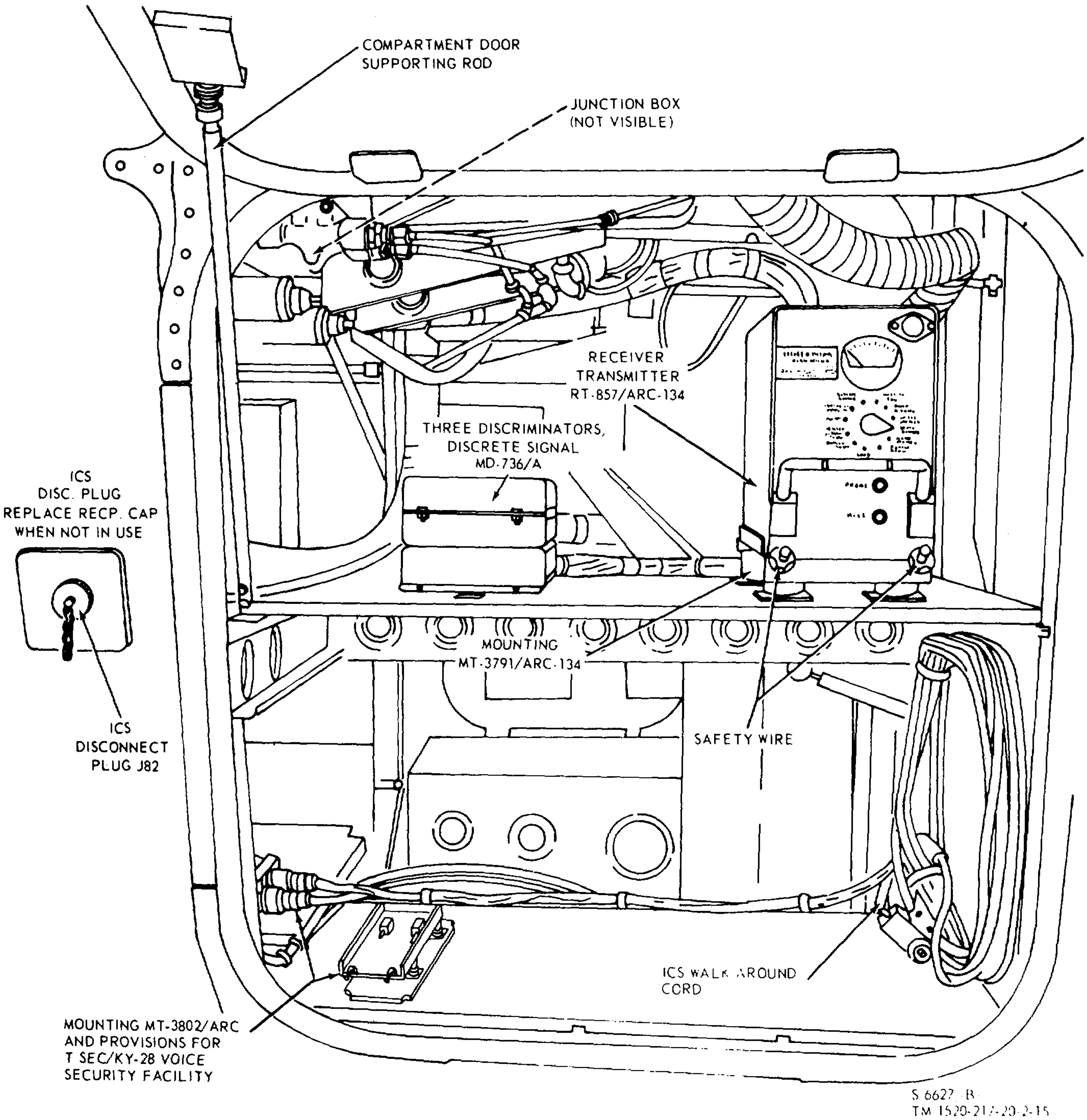


Figure 2-10. Left-hand electronics compartment component location

(3) *Removal of Mounting MT-3664/ARC-131* (fig. 2-11).

(*a*) Open right-hand electronics compartment door and secure with support rod clipped to shelf.

(*b*) Open nose wheel well door by releasing latches and lowering spring-loaded tow ring to gain access to rear of MT-3664/ARC-131.

(*c*) Remove RT-82?)/ARC-1,)1 as described in (1) above.

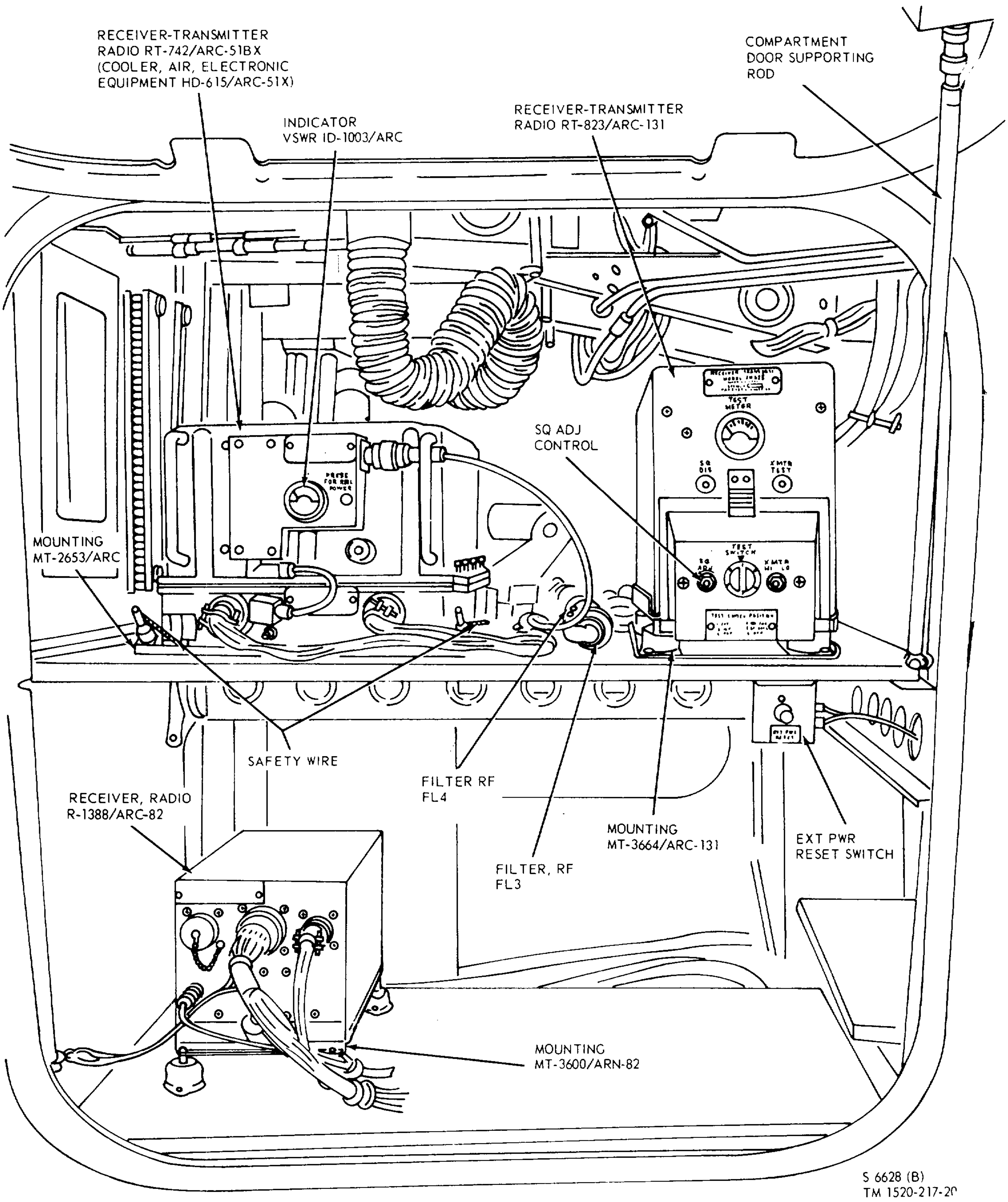


Figure 2-11. Right-hand electronics compartment location.

(*d*) Remove mounting screws securing connector plate to MT-3664/ARC-131 and remove connector plate from MT-3664/ARC-131.

(*e*) Unscrew mounting screws, washers, and nuts and remove MT-3%64/ARC-131 from shelf.

(4) *Replacement of Mounting MT-3664/ARC-131* (fig. 2-11).

(*a*) Place MT-3664/ARC-131 in position on shelf.

(*b*) Determine attachment points and clean surface around mounting holes to insure good electrical ground contact.

(*c*) Secure MT-3664/ARC-131 to shelf with mounting screws, washers, and nuts.

(*d*) Secure helicopter connector plate to MT-3664/ARC-131 with mounting screws.

(*e*) Replace RT-823/ARC-131 as described in (2) above.

(*f*) Close and secure right-hand electronics compartment door.

(*g*) Lower spring-loaded tow ring, push nose wheel well door up, release tow ring, and secure latches.

d. *Removal and Replacement of Radio Set AN/ARC-5IBX*. Remove all components of the AN/ARC-51BX except Control, Radio Set C-6287/ARC-51BX and Antenna AT-1108/ARC by following the procedures below. Remove the C-6287/ARC-51BX and AT-1108/ARC by following the procedures in paragraphs 2-14 and 2-16.

(1) *Removal of Receiver-Transmitter, Radio RT-742/ARC-51BX* (fig. 2-11).

(*a*) Open right-hand electronics compartment door and secure with support rod clipped to shelf.

(*b*) Disconnect antenna connector P54 and electrical connectors P52 and P53 from receptacles on front panel of RT-742/ARC-51BX.

(*c*) Using pair of diagonal pliers, cut and remove safety wire from two wingnuts on RT-742/ARC-51BX Loosen wingnuts and swivel upward to disengage latches on MT-2653/ARC.

(*d*) Grasp both handles on RT-742/ARC-51BX front cover and slide unit off MT-2653/ARC.

(2) *Replacement of Receiver-Transmitter, Radio RT-742/ARC-5 IBX* (fig. 2-11).

(*a*) Place RT-742/ARC-51BX on MT-2653/ARC and slide into MT-2653/ARC.

(*b*) Swivel wingnuts downward to engage latches on MT-2653/ARC. Tighten wingnuts.

(*c*) Replace safety wiring on wingnuts
(para 2-21).

(*d*) Connect antenna connector P54 and electrical connectors P52 and P53 to receptacles on front panel of RT-742/ARC-51BX.

(*e*) Close and secure right-hand electronics compartment door.

(3) *Removal of Mounting MT-2653/ARC* (fig. 2-11).

(*a*) Open right-hand electronics compartment door and secure with support rod clipped to shelf.

(*b*) Remove RT-742/ARC-51BX as described in (1) above.

(*c*) Unscrew mounting screws, washers, and nuts and remove MT-742/ARC-51BX from shelf.

(4) *Replacement of Mounting MT-2 653/ARC* (fig. 2-11).

(*a*) Place MT-2653/ARC on shelf.

(*b*) Determine attachment points and clean surface around mounting holes to insure good electrical ground contact.

(*c*) Secure MT-2653/ARC to shelf with mounting screws, washers, and nuts.

(*d*) Replace RT-742/ARC-n51J'X on MT-2653/ARC as described in (2) above.

(*e*) Close and secure right-hand electronics compartment door.

e. *Removal and Replacement of Radio Receiving Set AN/ARN-82*. Remove all components of the AN/ARN-82 except Control, Radio Set C-6873/ARN-82, Indicator, Course ID-1347/ARN-82 and the vor antenna by following the procedures below. Remove the C-6873/ARN-82, ID-1347/ARN-82, and the vor antenna by following the procedures in paragraphs 2-14, 2-15, and 2-16.

(1) *Removal of Receiver, Radio R-1388/ ARN-82* (fig. 2-11).

(*a*) Open right-hand electronics compartment door and secure with support rod clipped to shelf.

(*b*) Disconnect antenna connector P3 and electrical connectors P1 and P2 from receptacles on front panel of R-1388/ARN-82.

(*c*) Using pair of diagonal pliers, cut and remove safety wire from thumbnut on MT-3600/ARN-82. Loosen thumbnut.

(*d*) Lift up and swivel out thumbnut cylindrical latch to free from front lip of R-1388/ARN-82.

(*e*) Slide R-1388/ARN-82 out of MT-3600/ARN-82.

(2) *Replacement of Receiver, Radio R-1388/ARN-82* (fig 2-11).

(*a*) Place R-13818/ARN-82 on MT-3600/ARN-82 and slide into T-3600/ARN-82, engaging lip at rear of R-1388/ARN-82 into groove at rear of MT-3600/ARN-82.

(*b*) Lift up and engage cylindrical latch of MT-3600/ARN-82 to front lip of R-1388/ARN-82. Tighten thumbnut to secure cylindrical latch.

(*c*) Replace safety wiring on thumbnut (para 2-21).

(*d*) Connect antenna connector P3 and electrical connectors P1 and P2 to receptacles on front panel of R-1388/ARN-82.

(*e*) Close and secure right-hand electronics compartment door.

(3) *Removal of Mounting MT-3600/ARN-82* (fig. 2-11).

(*a*) Open right-hand electronics compartment door and secure with support rod clipped to shelf.

(*b*) Remove R-1388/ARN-82 as described in (1) above.

(*c*) Unscrew mounting screws, washers, and nuts and remove MT-3600/ARN-82 from shelf.

(4) *Replacement of Mounting MT-3600/ARN-82* (fig. 2-11).

(*a*) Place MT-3600/ARN-82 in position on shelf.

(*b*) Determine position of ground straps and clean surface around all mounting holes to insure good electrical ground contact.

(*c*) Secure MT-3600/ARN-82 to shelf with mounting screws, washers, and nuts.

(*d*) Replace R-1388/ARN-82 on MT-3600/ARN-82 as described in (2) above.

(*e*) Close and secure right-hand electronics compartment door.

f. *Removal and Replacement of Radio Set AN/ARC-102*. Remove all components of the AN/ARC-102 except the hf wire antenna and Control, Radio Set C-3940/ARC-94 by following the procedures below. Remove the C-3940/ARC-94 and the hf wire antenna by following the procedures in paragraphs 2-14 and 2-16.

(1) *Removal of Receiver-Transmitter, Radio RT-698/ARC-102* (fig. 2-12).

(*a*) Open nose electronics compartment door and secure with support rods clipped to shelf.

(*b*) Disconnect antenna connector P22 from ANT receptacle on front panel of RT-698/ARC-102.

(*c*) Using pair of diagonal pliers, cut and remove safety wire from two wingnuts on PP-2-70 3702/ARC-102. Loosen wingnuts.

(*d*) Pull FT-698/ARC-102 forward to free from rear guide pins and rear receptacle J21 and remove RT-698/ARC-102 from PP-3702/ARC-102.

(2) *Replacement of Receiver-Transmitter, Radio RT-698/ARC-102* (fig. 2-12).

(*a*) Place RT-698/ARC-102 on PP-3702/ARC-102 and slide into PP-3702/ARC-102, carefully engaging electrical connector at rear of RT-698/ARC-102 to receptacle J21 on PP-3702/ARC-102.

(*b*) Place two compression rings over hooks on bottom corners of RT-698/ARC-102. Tighten wingnuts on PP-3702/ARC-102.

(*c*) Replace safety wiring on wingnuts (para 2-21).

(*d*) Connect antenna connector P22 to ANT receptacle on front panel of RT-698/ARC-102.

(*e*) Close and secure nose electronics compartment door.

(3) *Removal of Power-Inverter, Mounting PP-3702/ARC-102* (fig. 2-12).

(*a*) Open nose electronics compartment door and secure with support rod clipped to shelf.

(*b*) Open nose wheel well door by releasing latches and lowering spring-loaded tow ring to gain access to PP-3702/ARC-102.

(*c*) Remove RT-698/ARC-102 as described in (1) above.

(*d*) Remove PP-3702/ARC-102 rear cover to gain access to receptacle J21, unscrew mounting screws securing J21 to PP-3702/ARC-102, and remove J21.

(*e*) Remove mounting screws, washers, and nuts and remove PP-3702/ARC-102 from shelf.

(4) *Replacement of Power-Inverter, Mounting PP-3702ARC-102* (fig. 2-12).

(a) Place PP-3702/ARC-102 in position on shelf.

(*b*) Determine position of ground straps and clean surface around all mounting holes to insure good electrical ground contact.

(*c*) With PP-3702/ARC-102 rear cover removed, secure helicopter receptacle J21 to PP-3702/ARC-102 with mounting screws. Replace PP-3702 rear cover.

(*d*) Secure PP-3702/ARC-102 to shelf with mounting screws, washers, and nuts.

(*e*) Replace PRT-69'8/ARC-102 on PP-3702/ARC-102 as described in (2) above.

(*f*) Close and secure nose electronics compartment door.

(g) Lower spring-loaded tow ring, push nose wheel well door up, release tow ring, and secure latches.

(5) Removal of Antenna Coupler CU1658/A (fig. 2-142 (2).

(a) Unsnap fasteners securing aft fuselage access cover between stations 490 and 510. Remove access cover.

(b) Disconnect antenna connector P2 and electrical connector J1 from receptacles on front panel of CU-1658/A. Remove antenna connector E102.

(c) Using pair of diagonal pliers, cut and remove safety wire from knurled nuts on MT3772A/A. Loosen knurled nuts.

(d) Pull CU-1658/A forward to free from rear guide pins and remove CU-1658/A from MT3772/A.

(6) Replacement of Antenna Couple CU1658/A (fig. 2-14 0).

(a) Place CU-1658/A on MT-3772A/A and slide in to engage rear guide pins.

(b) Place clamps over forward flanges of CU-1658/A and tighten knurled nuts.

(c) Replace safety wiring on knurled nuts (para 2-21).

(d) Connect antenna connector P2 and electrical connector J1 to receptacles on front panel of CU-1658/A. Connect wire antenna to antenna connector E102.

(e) Replace aft fuselage access cover and secure with fasteners.

(7) Removal of Mounting MT-3772A/A.

(a) Unsnap fasteners securing aft fuselage access cover between stations 490 and 510. Remove access cover.

(b) Remove CU-1658/A as described in (5) above.

(c) Unscrew mounting screws, washers, and nuts and remove MT-3772A/A from shelf.

(8) Replacement of Mounting MT-3772A/A.

(a) Place MT-3772A/A in position on shelf.

(b) Determine position of ground straps and clean surface around all mounting holes to insure good electrical ground contact.

(c) Secure MT-3772A/A to shelf with mounting screws, washers, and nuts.

(d) Replace CU-1658A/A on MT-3772A/A as described in paragraph (6) above.

(e) Replace aft fuselage access cover and secure with fasteners.

g. Removal and Replacement of Transponder Set AN/APX-72 (fig. 2-12). Remove all components of the AN/APX-72 except Control,. Transponder Set C-6280(P)/APX and Antenna AT884/APX by the following procedures below. Remove the C-6280(P)/APX and AT-884/APX by following the procedures in paragraphs 2-14 and 2-15.

(1) Removal of Receiver-Transmitter RT859/APX-72 (fig. 2-12).

(a) Open nose electronics compartment door and secure with support rods clipped to shelf.

(b) Disconnect power and control cable connector P99 and antenna connector P107 from front of RT-859/APX-72.

(c) Using pair of diagonal pliers, cut and remove safety wire from two hexagon nuts on MT-3809/APX-72.

(d) Loosen hexagon nuts until disengaged from RT-859/APX-72 holddown hooks.

(e) Grasp handle on front of RT-859/APX-72 and lift RT-859/APX-72 up and out of MT-3809/APX-72.

(2) Replacement of Receiver-Transmitter RT-859/APX-72 (fig. 2-12).

(a) Position rear of RT-859/APX-72 on MT-3809/APX-72. Grasp handle on front of RT 859/APX-72 and raise slightly while sliding 0] MT-3809/APX-72 until protruding lip of RI 859/APX-72 engages recess on rear of MT-3'809/ APX-72.

(b) Tighten hexagon nuts on MT-3809/ APX-72 to holddown hooks on RT-859/APX-72.

(c) Connect power and control cable connector P99 and antenna connector P107 to front of RT-859/APX-72.

(d) Replace safety wire on hexagon nuts (para 2-21).

(e) Close and secure nose electronics compartment door.

(3) Removal of Mounting MT-3809/APX-72 (fig. 2-12).

(a) Remove RT-859/APX-72 as described in (1) above.

(b) Unscrew mounting screws, washers, and nuts and remove MT-3809/APX-72 from shelf.

(4) Replacement of Mounting MT-3809/ APX-72 (fig. 2-12).

(a) Clean surface around all mounting holes to insure good electrical ground contact.

(b) Place MT-3809/APX-72 in position on shelf (hexagon nuts facing aft).

(c) Secure MT-3809/APX-72 to shelf with mounting screws, washers, and nuts.

(d) Replace RT-859/APX-72 on MT-3809/ APX-72 described in (2) above.

h. Removal and Replacement of Test Set, Transponder Set TS-1843/APX (fig. 2-12). Cabling and space are provisional for the installation of the TS-1843/APX. A UG-29B/U connector is inserted between the antenna cable and the cable that connects to J5 ANT connector on the RT859/APX-72. The UG-29B/U completes the RF path to the antenna, when the TS-1'843/APX is not installed.

(1) Removal of Test Set, Transponder Set TS-1843/APX (fig. 2-12).

(a) Disconnect transponder connector P92, antenna connector P93, and power connector P91.

(b) Loosen two Dzus fasteners on front of TS-1843/APX.

(c) Slightly raise front of TS-1843/APX and slide forward on MT-3513/APX and remove.

(2) Replacement of Test Set, Transponder Set TS-1843/APX (fig. 2-12).

(a) Place rear of TS-1843/APX on MT3513/APX.

(b) Slightly raise front of TS-1843/APX and slide aft until seated.

(c) Tighten two Dzus fasteners on front of TS-1843/APX.

(d) Connect transponder connector P92, antenna connector P93, and power connector P91.

(3) Removal of Mounting MT-3513/APX (fig. 2-12).

(a) Remove TS-1843/APX as described in (1) above.

(b) Unscrew mounting screws, washers, and nuts and remove from shelf.

(4) Replacement of Mounting MT-3513/ APX (fig. 2-12).

(a) Clean surface around all mounting holes to insure good electrical ground contact.

(b) Place MT-3513/APX, in position on shelf.

(c) Secure MT-3513/APX to shelf with mounting screws, washers, and nuts.

(d) Replace TS-1843/APX as described in (2) above.

i. Removal and Replacement of Voice Warning System AN/ASH19 (fig. 2-12). Remove all components of the voice warning system except for the voice warning system control panel by following the procedures below. Remove the voice warning system control panel by following the procedures in paragraph 2-14.

(1) Removal of Reproducer-Converter, Voice Signal RP-139( )/ASH-19 (fig. 2-12).

(a) Open nose electronics compartment door and secure with support rods clipped to shelf.

(b) Disconnect two cable connectors from left side of RP-139( )/ASH-19.

(c) Loosen two wingnuts until disengaged from RP-139 ( )/ASH-19.

(d) Remove RP-139 ( )/ASH-19 from MT3290/ASH-19 by sliding it forward.

(2) Replacement of Reproducer-Converter, Voice Signal RP-139 ( )/ASH-19 (fig. 2-12).

(a) Place RP-139( )/ASH-19 on MT3290 ( )/ASH-19 and slide it back into channel of mount.

(b) Tighten two wingnuts on MT-3290 ( ) /ASH-19 to secure RP-139( )/ASH-19.

(c) Connect two cable connectors to side of RP-139( )/ASH-19.

(d) Close and secure nose electronics compartment door.

(3) Removal of Mounting Base MT-3290( ) /ASH-19 (fig. 2-12).

(a) Remove RP-139( )1/ASH-19 as described in (1) above.

(b) Unscrew mounting screws and washers and remove MT-3290( )/ASH-19 from shelf.

(4) Replacement of Mounting Base MT-3290 ( )/ASH-19 (fig. 2-12).

(a) Clean surface around all mounting holes to insure good electrical ground contact.

(b) Place MT-3290( )/ASH-19 on shelf (wingnuts facing forward).

(c) Secure MT-3290( )/ASH-19 to shelf with mounting screws and washers.

(d) Replace RP-139( )/ASH-19 on MT3290( )/ASH-19 as described in (2) above.

(5) Removal of AN/ASH-23 (fig. 2-12).

(a) Open nose electronics compartment door and secure with support rods clipped to shelf.

(b) Disconnect one cable connector from back of AN/ASH-23.

(c) Unscrew mounting screws, washers, and nuts and remove AN/ASH-23 from support bracket.

(6) Replacement of AN/ASH-23 (fig. 2-12).

(a) Clean surface around all mounting holes on support bracket.

(b) Place AN/ASH-23 in position on support bracket with receptacle facing toward the back.

(c) Secure AN/ASH-23 to support bracket with mounting screws, washers, and nuts.

(d) Connect one cable connector to back of the AN/ASH-23.

NOTE:
The tape cartridge section, sound Recorder MA-27/ASH-23, can be removed without removing the entire AN/ASH23 by unscrewing the four one-quarter turn disconnect screws.

(7) Removal of Support Bracket, Recorder (fig. 2-12).

(a) Remove AN/ASH-23 as described in (5) above.

(b) Unscrew mounting screws and washers and remove support bracket from shelf.

(8) Replacement of Support Bracket, Recorder (fig. 2-12).

(a) Clean surface around all mounting holes.

(b) Place support bracket on shelf with holes facing to back.

(c) Secure support bracket to shelf with mounting screws and washers.

(d) Replace AN/ASH-23 on support bracket as described in (6) above.

(9) Removal of Signal Adapter (fig. 2-12).

(a) Open nose electronics compartment door and secure with support rods clipped to shelf.

(b) Disconnect four cable connectors from left side of signal adapter.

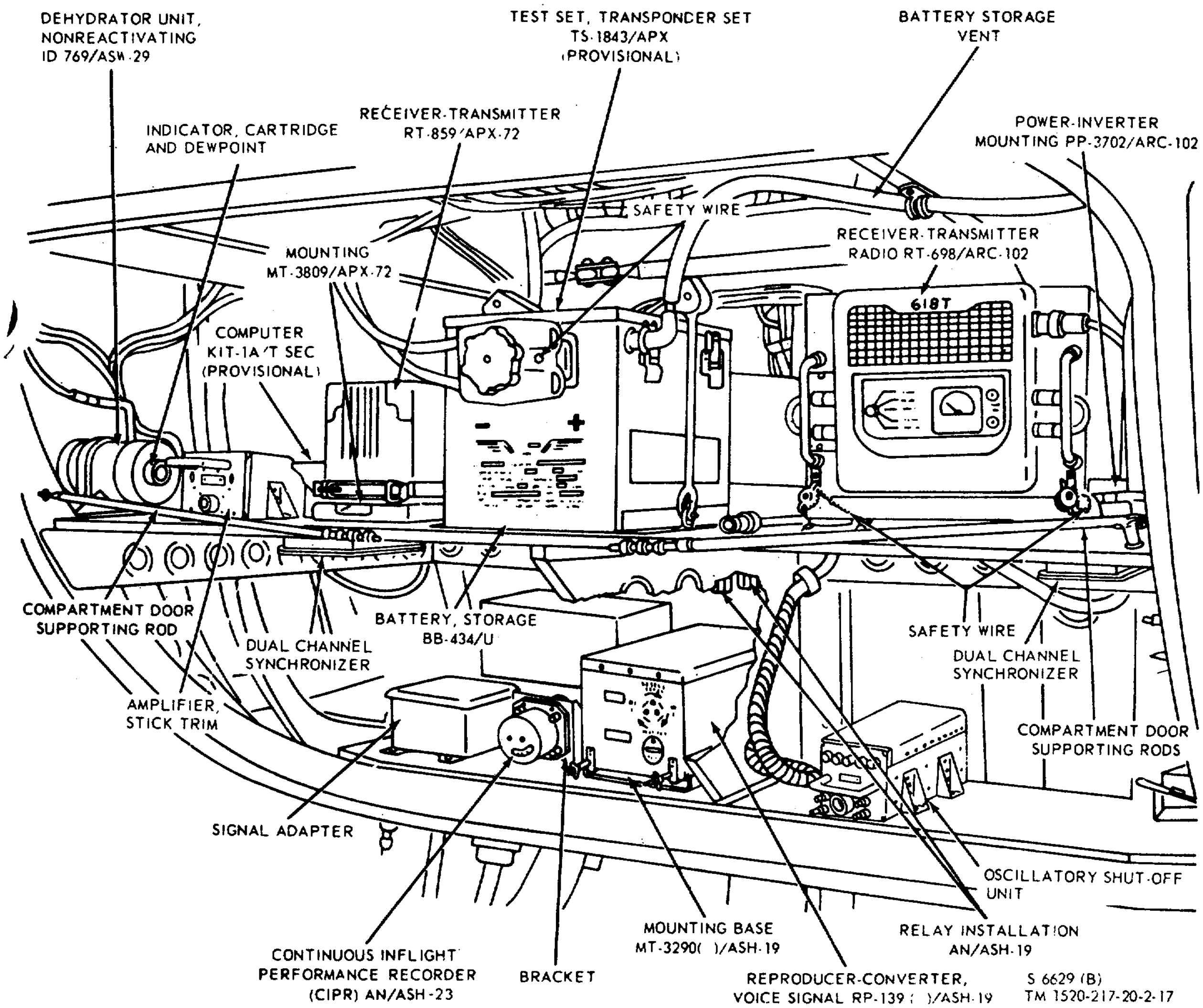


Figure 2-12. Nose electronics compartment component location.

(c) Unscrew mounting screws and washers and remove signal adapter from shelf.

(10) Replacement of Signal Adapter (fig. 2-12).

(a) Clean surface around all mounting holes.

(b) Place signal adapter on shelf with receptacles facing to left.

(c) Secure signal adapter to shelf with mounting screws and washers.

(d) Connect four cable connectors to left side of signal adapter.

(e) Close and secure nose electronics compartment door.

j. Removal and Replacement of Gyromagnetic Compass Set AN/ASN-43. Remove all components of the AN/ASN-43 except Indicator, Radio Magnetic ID-250(*)/ARS and Indicator, Radio Magnetic ID-998/ASN by following the procedures below. Remove the ID-250(*) 'ARN and ID998/+SN by following the procedures in paragraph 2-15.

(1) *Removal of Gyro, Directional CN-998/ AS.-43 (fig. 2-13).*

(a) Open upper nose compartment door and secure with support rods clipped to door frame.

(b) Disconnect electrical connector P48 from CS-998.'ASN-43.

(c) Unscrew mounting bolts and remove C.-998AXSS--43 from cockpit floor.

CAUTION

Handle CS-998. 'ASN-43 carefully to avoid damage to gyro.

(2) *Replacement of Gyro, Directional CN99&i4S.V-43 (fig. 2-13).*

(a) Determine CS-998'ASN-43 position on cockpit floor and clean surface around attachment points to insure good electrical ground contact.

(b) Secure CS-998 'ASN-43 to cockpit floor with mounting bolts.

(c) Connect P48 to CS-998 'ASS-43.

(d) Close and secure nose electronics compartment door.

(3) Removal of Amplifier, Electronic Control AMJ-3209/ASN (fig. 2-13).

(a) Open upper nose compartment door and secure with support rods clipped to door frame.

(b) Remove washers and nuts securing A,M-3209,'ASN to support bracket. Disengage AMX-3290 ASN connector from receptacle P419 on bracket and remove AM-3209/ASN.

(4) *Replacement of Amplifier, Electronic* Control Amplifier, AM-3209/ASN (fig. 2-13).

(a) Clean surface around mounting holes on forward side of mounting bracket to insure good electrical ground contact.

(b) Engage AM-3209'ASN connector to receptacle P49 on support bracket and secure A.I3209/ASN-43 to bracket with mounting nuts and washers.

(c) Close and secure nose electronics compartment door.

(5) Removal of Transmitter, Induction Compass T-61 I/ASN and Compensator, Magnetic Flux CN-405/ASN (fig. 1-1).

(a) Gain access to T-611/ASN and CN405.'ASN by unsnapping fasteners which secure boom compass compartment access cover at station 613, and by unsnapping fasteners which secure access cover between stations 490 and 510.

(b) Disconnect and tag wiring to T-611 ASN.

(c) Remove screws which secure T-611f ASN and CN-405 'ASS to support bracket.

(6) Replacement of Transmitter, Induction Compass T-61 I/ASN and Compensator, Magnetic Flux C.-405/ASN(fig. 1-1).

(a) Position T-611/ASN and CX-405 ASN on support bracket and secure with screws.

(b) Connect correct wiring to T-611/ASN (fig. 4-18).

(c) Replace and secure boom compass compartment access cover at station 613 and access cover between stations 490 and 510 with fasteners.

k. Removal and Replacement of Direction Finder Set .4N/ARN.-83. Remove all components of the AN' 'ARN-83 except Control, Direction Finder C-6899/ARN Antenna AS-1863'/ARN-83. Compensator, RF Inductance, and Adf wire antenna. by following the procedures below. Remove the C-6899/ARS-83, AS-1863 ARN-83 and compensator, and the adf wire antenna by following the procedures in paragraphs 2-14 and 2-16.

(1) *Removal of Receiver, Radio R-1391/ ARN-83 (fig. 2-14 (1)),* (a) Unsnap fasteners securing aft fuselage access cover between stations 490 and 510. Remove access cover.

(b) Disconnect antenna connectors P25 and P26 from antenna receptacles on front panel of R-1391,'ARN-83.

(c) Using pair of diagonal pliers, cut and remove safety wire from locknut on MT-3605/ ARN-83. Loosen locknut and push nut down to clear hook on front of R-1391 /ARN-83.

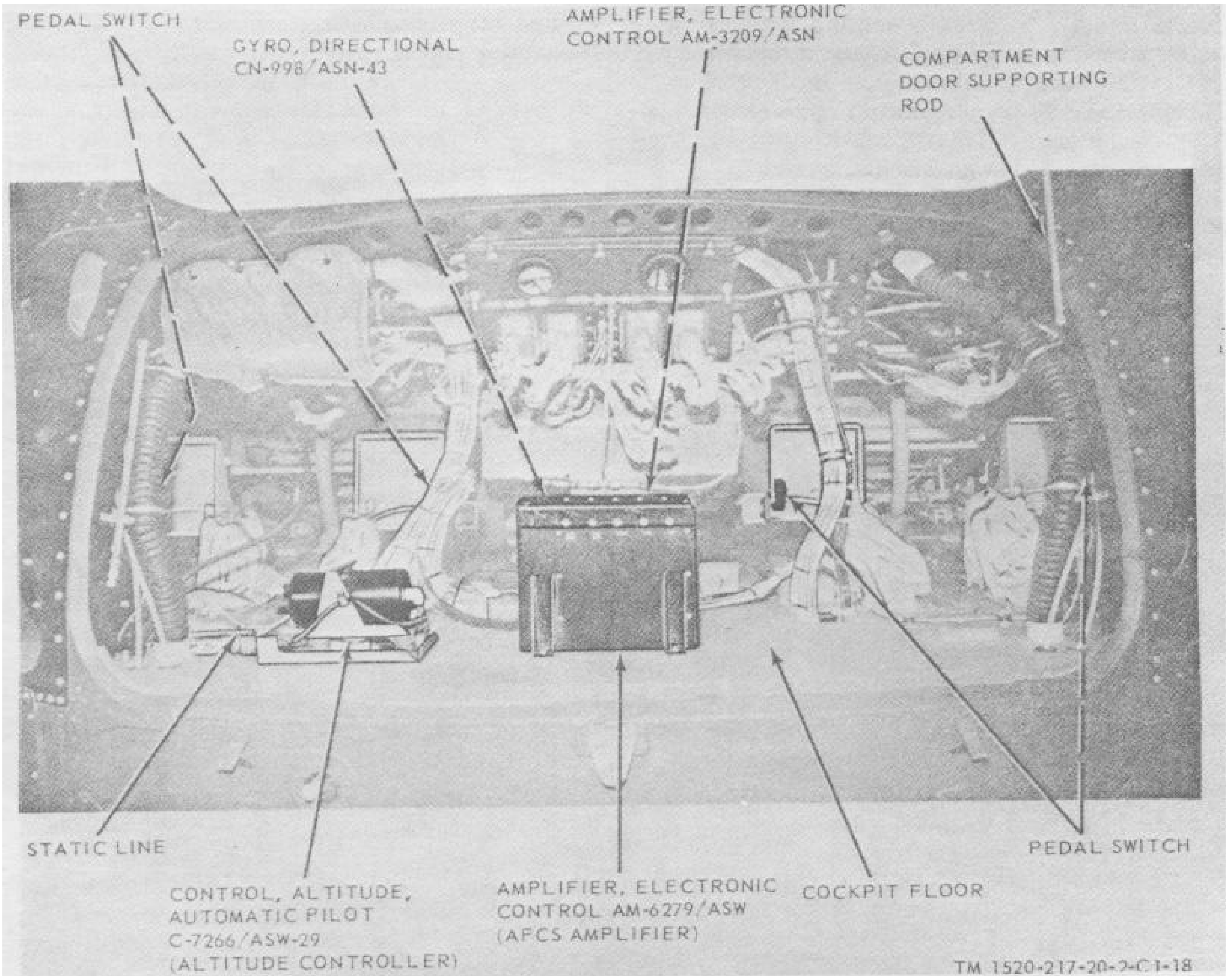


Figure 2-13. Upper nose compartment component location.

(d) Grasp handle on front of R-1391/ ARN-83, pull unit forward. and remove from MT-3605/ARN-83.

(2) *Replacement of Receiver, Radio R-1391/ ARN-83* (fig. 2-14 (1)).

(a) Place R-1391/ARN-83 on MT-3605/ ARN-83 and slide into MT-3605/ARN-83, carefully engaging connector at rear of R-1391/ ARN-83 to receptacle P24 on MT-3605/ARN83.

(*b)* Engage MT-3605/RN-83 locknut with hook on front of R-1391/ARN-83 and tighten locknut.

(c) Replace safety wiring on locknut (para 2-21).

(d) Connect antenna connectors P25 and P26 to correct receptacles on front panel of R1391/ARN-83.

(e) Replace aft fuselage access cover and secure with fasteners.

(3) Removal of Mounting MT-3605/ARN83 (fig. 2-14 (1)).

(a) Unsnap fasteners securing aft fuselage access cover between stations 490 and 510. Remove access cover.

(b) Remove R-1391/ARN-83 as described in (1) above.

(c) Unscrew 'mounting screws and remove helicopter receptacle P24 from R-1391/ARN-83.

(d) Unscrew mounting screws, washers, and nuts and remove R-1391/ARN-83 from shelf.

(4) Replacement of Mounting MT-3605/ ARN-83 (fig. 2-14 (1)).

(a) Place MT-3605/ARN-83 in position on shelf.

(b) Determine position of attachment points and clean surface around all mounting holes to insure good electrical ground contact.

(c) Secure helicopter receptacle P24 to MT43605/ARN-83 with mounting screws.

(d) Secure MT3605/ARN-83 to shelf with mounting screws, washers, and nuts.

(e) Replace R-1391/ARN-83 on MT3605/ARN-83 as described in (2) ,above.

(f) Replace aft fuselage access cover and secure with fasteners.

(5) *Removal of Adf relay* (fig. 1-1).

(a) Unsnap fasteners securing aft fuselage access cover between 'stations 490 and 510. Remove access cover.

(b) Disconnect wires. Unscrew screws, washers, and nuts and remove relay from shelf.

(6) *Replacement of Adf relay* (fig. 1-1).

(a) Clean surface around all mounting holes to insure good electrical ground contact.

(b) Place relay on shelf and secure with screws, washers and nuts. Reconnect wires.

(c) Replace aft fuselage access cover and secure with fasteners.

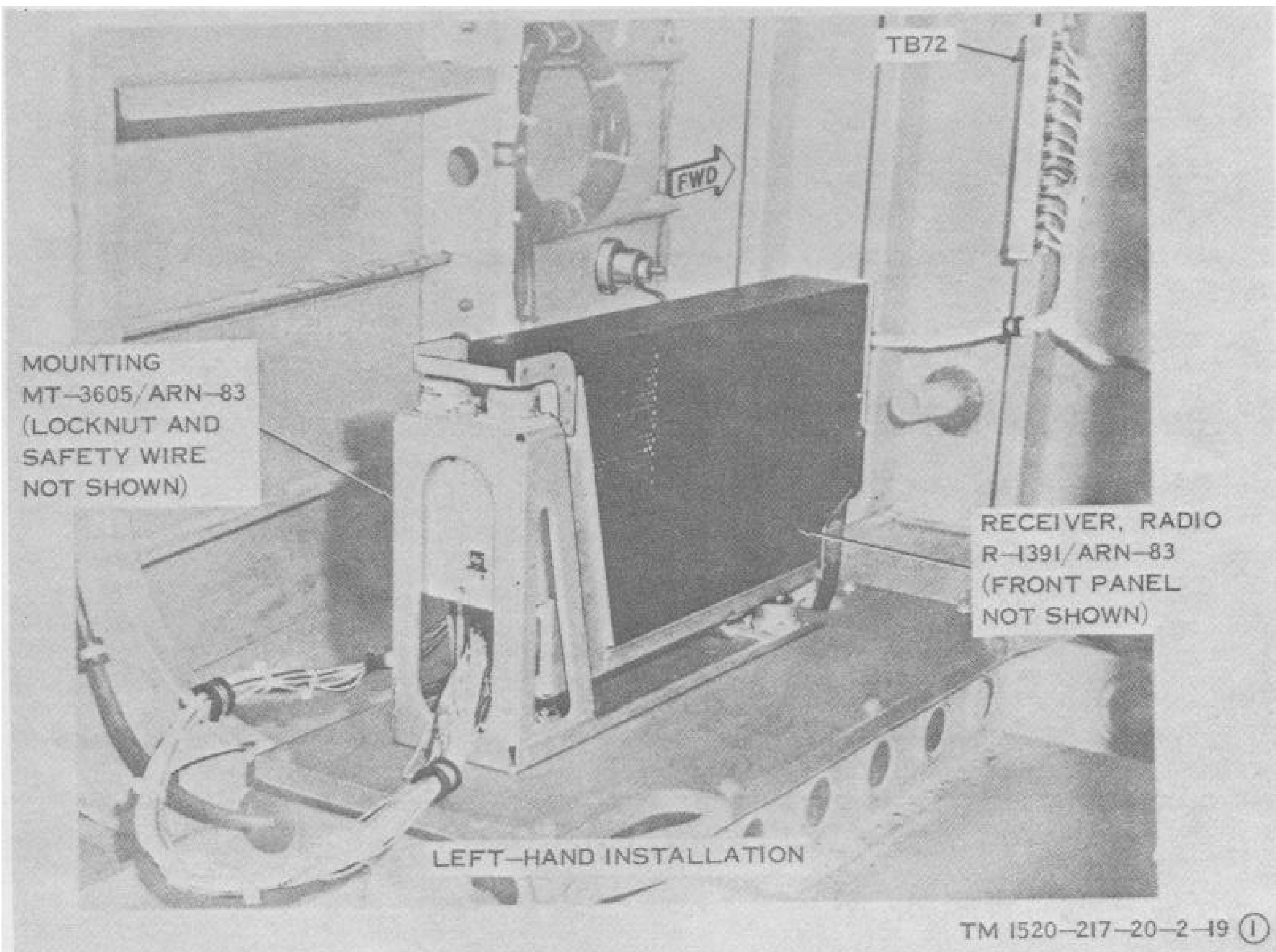


Figure 2-14. (1). Aft main fuselage component location (part 1 of 2).

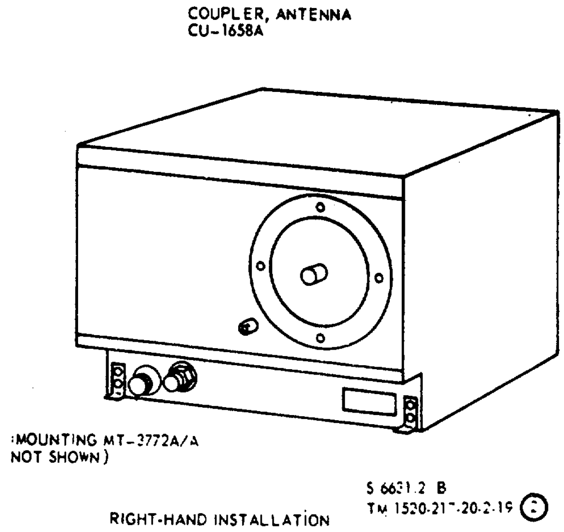


Figure 2-14 (2). Aft main fuselage component location (Part 2 of 2).

2-14. Removal and Replacement of Control Panels

The control panels are mounted on the center console and the overhead control panel in the cockpit (fig. 2-7 and 2-7.01) in the pod, and in areas of accessibility for the aft pilot and the No. 2 crewman (fig. 2-7 and 2-7. 01).

a. Removal of Control Panel. The control panels are fitted to standard Dzus strips at all locations.

(1) Loosen fasteners which secure control panel.

(2) Lift control panel out of console recess (lower from overhead control panel) to gain access to connector at rear of unit. Pull C-1611 (*)/ AIC out of bracket at pod interphone station.

(3) Disconnect connector and remove control panel.

b. Replacement of Control Panel.

(1) Connect connector at rear of control panel.

(2) Lower control panel into console recess (lift into recess on overhead control panel) and secure with fasteners. Slide C-1611(*)/AIC into bracket at pod interphone station.

c. Removal of Remote Stick Control Panel (fig 2-7(6)).

(1) Remove screw which secure remote stick control panel to airframe.

(2) Lift remote stick control panel from airframe to gain access to connector at rear of unit.

(3) Disconnect connector and remove remote stick control panel.

d. Replacement of Remote Stick Control Panel.

(1) Reconnect connector at rear of remote stick control panel.

(2) Position remote stick control panel on airframe and secure with screws.

2-15. Removal and Replacement of Panel. Mounted Indicators

The indicators are located on the instrument panel in front of the pilot and copilot (fig. 2-8).

a. Removal of Panel-Mounted Indicator.

(1) Remove mounting screws and light shield (if applicable), and pull indicator out of panel to gain access to connector at rear of unit.

(2) Disconnect connector and remove indicator from instrument panel.

b. Replacement of Panel Mounted Indicator.

(1) Connect plug to indicator and position on instrument panel. Secure indicator to instrument panel with attaching screws.

(2) Position light shield (if applicable) on indicator and secure to instrument panel.

(3) Check that lamps in light shield are properly installed.

2-16. Removal and Replacement of Antennas

The antenna locations are shown in figure 2-6.

WARNING

During removal or replacement of antennas, conform to all safety requirements of TB SIG 291. Injury or DEATH could result from failure to comply with safe practices.

a. Removal of HF Wire Antenna (figs. 2-6 and 2-15).

(1) Unsnap and disconnect tension takeup unit from swivel on forward antenna mast.

(2) Unscrew support sleeve on antenna lead through elbow.

(3) Unscrew lead-through elbow on lead through insulator.

(4) Remove antenna wire from insulator.

(5) Remove hardware securing shackle to mast at base of tail pylon. Free tension unit from shackle and replace shackle on mast.

(6) Unsnap and disconnect antenna takeup from swivel at stabilizer. Remove wire antenna from helicopter.

(7) Unscrew and back off sleeve from tension takeup and remove antenna wire.

(8) Cut wire approximately 1 1/2 inch from fitting and remove sleeve.

(9) Remove wire insulation.

(10) Slide wire retriever onto wire and push in or tap in retriever to release chuck.

(11) Using pliers, remove wire.

(12) Unscrew and back off end caps of antenna strain insulator.

(13) Remove wire from both ends of strain insulator as described in (8) through (11) above.

(14) Unscrew and back off end caps of tee connector.

(15) Remove wire from tee connector as described in (8) through (11) above.

(16) Remove antenna wire from transition tee. Remove transition tee from tension unit and discard transition tee.

(17) Unscrew and back off end caps of antenna strain insulator.

(18) Remove wire from both ends of strain insulator as described in (8) through (1)) above.

(19) Unscrew and back off support sleeve from antenna takeup unit.

(20) Remove wire from takeup unit as described in (8) through (11) above.

NOTE

Any component part, other than transition tee, which is not physically damaged or worn excessively may be continued in use.

b. Replacement of HF Wire Antenna (figs. 2-15 and 2-16).

(1) Replace any worn or defective components. Cleans reused detail parts with trichloroethane.

(2) Cut wire for segment between antenna takeup and strain insulator to required length.

NOTE

Exposed wire length between antenna takeup support sleeve and strain insulator shall be 1.50 0.25 inch.

(3) Remove 3/8-inch insulation from both ends of wire segment.

(4) Place support sleeve on wire segment and push wire into tension takeup. Tighten support sleeve by hand.

(5) Push wire into strain insulator and tighten cap by hand.

(6) Cut antenna wire to required length for segment between antenna strain insulator and tee connector.

(7) Remove 3/8-inch insulation from both ends of wire.

(8) Push wire into strain insulator and tighten cap by hand.

(9) Install transition tee tubing on antenna wire. Thread transition tee on tension unit and tighten by hand. Feed end of wire through transition tee, through tension unit hook within transition tee. Set tubing in place at aft opening of transition tee.

(10) Install tubing over end of wire and set in place at forward opening of transition tee.

(11) Push wire into tee connector and tighten cap by hand.

(12) Cut antenna wire to approximate length for segment between antenna tee connector and antenna strain insulator; allow a few extra inches for later cutting to correct the length ((25) below).

(13) Remove 3%-inch insulation from end of wire.

(14) Push wire into tee connector and tighten cap by hand.

(15) Cut antenna wire to required length for segment between antenna tee connector and lead through.

(16) Remove %8-inch insulation from one side and l/,-inch insulation from other side of wire segment.

(17) Push wire stripped to :/8-inch into tee connector and tighten cap by hand.

(18) Cut antenna wire to required length for segment between antenna strain insulator and tension takeup unit.

NOTE

Exposed wire length between strain insulator and tension takeup support sleeve shall be 1.00 + 0.37 inch when installed.

(19) Remove 3,/8-inch insulation from both ends of wire segment.

(20) Push wire into strain insulator and tighten cap by hand.

(21) Place support sleeve on wire segment and push wire into tension takeup. Tighten sleeve by hand.

(22) Connect tension takeup unit on swivel at forward antenna mast of helicopter.

(23) Connect antenna takeup on swivel at stabilizer.

(24) Connect tension unit to shackle on mast at base of tail pylon and secure with attaching hardware.

(25) Apply tension on antenna with wire end held against strain insulator until spring pointer on tension takeup unit is opposite reference arrow. Note exact wire length required to maintain tension and cut wire.

(26) Remove 3/-inch insulation from end of wire segment.

(27) and disconnect tension takeup unit from swivel on forward antenna mast.

(28) Push wire into strain insulator and tighten cap by hand.

(29) Replace tension takeup unit on swivel at antenna mast. Recheck antenna tension.

(30) Slide support sleeve and lead-through elbow over wire segment from antenna tee connector.

NOTE

Coat wire under support sleeve with a lubricant for ease of assembly.

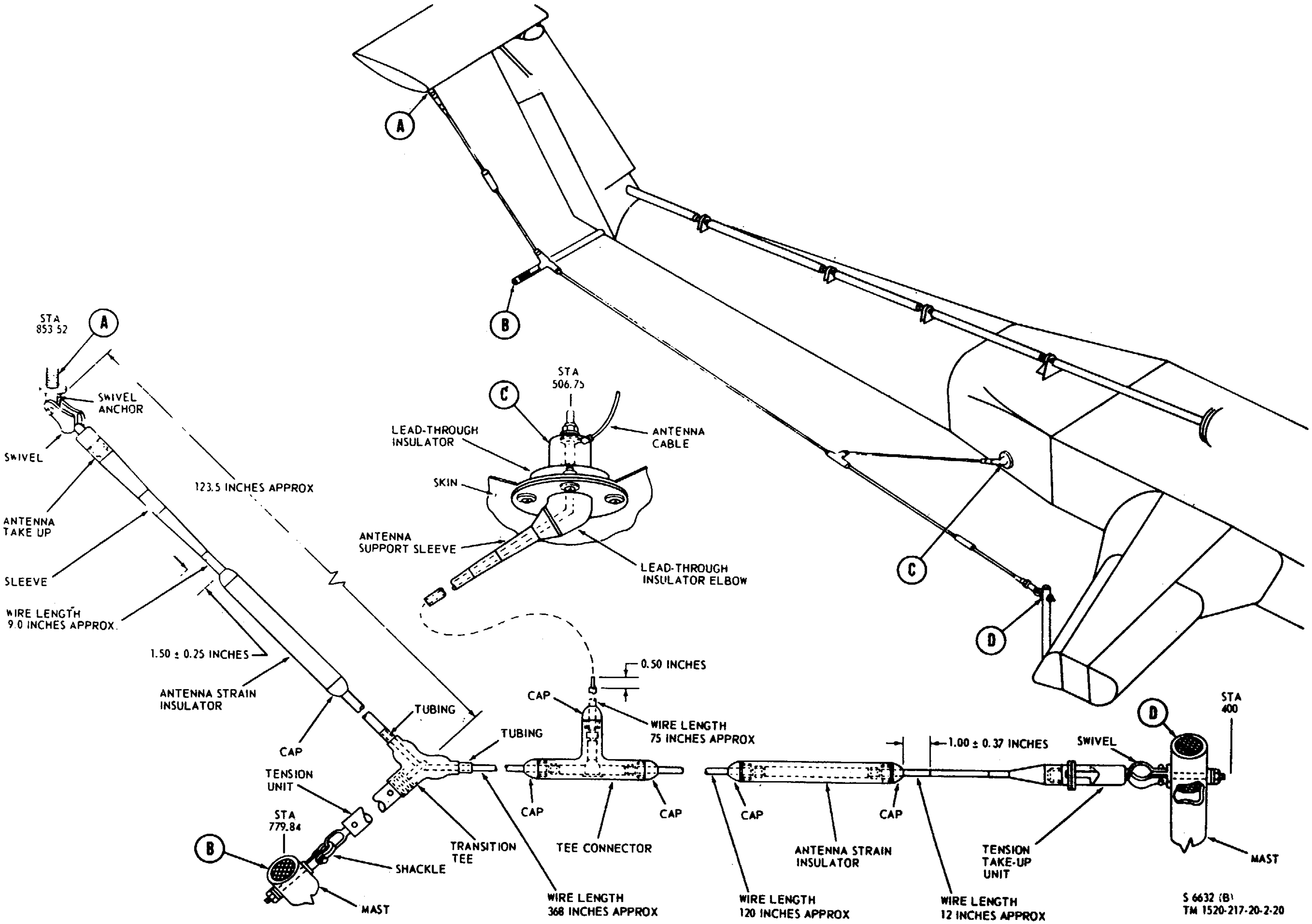


Figure 2-15. Hf radio antenna Installation.

(31) Push wire firmly into lead-through insulator. Screw lead-through elbow onto lead through insulator.

(32) Screw support sleeve onto lead-through elbow.

(33) Ensure that tubing at openings of transition tee are in position and apply heat to shrink transition tee.

(34) When transition tee is cool drill two #30 holes in sides and fill transition tee with sealing compound as described in paragraph 2-9.

c. Removal of Antenna AT-II1108/ARC (figs. 2-6 and 2-16).

(1) Unscrew mounting screws and washers securing antenna to helicopter skin.

(2) Lower antenna from fuselage to gain access to antenna connectors.

(3) Disconnect RF cable connectors from antenna base and remove antenna.

d. Replacement of Antenna AT-I 108/ARC (figs. 2-6 and 2-16).

(1) Clean mating surfaces between antenna and helicopter skin to insure good electrical ground contact.

(2) Connect uhf RF cable connector to aft connector on antenna base.

(3) Connect vhf cable connector to forward connector on antenna base.

(4) Place antenna in position over mounting holes.

(5) Secure antenna to fuselage with mounting screws and washers.

(6) Apply sealing compound around periphery of antenna and screw heads to form watertight seal as described in paragraph 2-9.

e. Removal of Antenna AS-1703/AR and Coupler, Antenna CU-942A/ARC-54 or CU942B/ARC-54 (figs. 2-6 and 2-17).

CAUTION

Damage may result to antenna and antenna coupler fiberglass housings if they are dropped. Be extremely careful not to drop these items when removing them from helicopter.

(1) Unscrew and remove antenna from antenna coupler threaded receptacle. (Use 5/8-inch open end wrench.) (2) Disconnect electrical and RF connectors om coupler base.

(3) Unscrew mounting screws securing antenna coupler and mounting parts (gasket and doubler plate) to bracket (adapter) and remove antenna coupler and mounting parts.

f. Replacement of Antenna AS-1703 AR and Coupler, Antenna CU-942A/ARC-54 or CU942B/ARC-54 (figs. 2-6 and 2-17)/.

(1) Clean mating surfaces between antenna coupler and bracket to insure good electrical ground contact.

(2) Position gasket, then put antenna coupler over mounting holes.

(3) Place doubler plate in position under bracket and secure antenna coupler to bracket with attaching screws.

(4) Connect electrical and RF connectors to coupler base.

NOTE

When installing CU -942B/ARC -54, cap and secure nine conductor control/power cable for future use with CU-942A/ARC-54.

(5) Screw antenna into threaded receptacle on antenna coupler and tighten. (Use 5/8-inch open end wrench.)

(6) Apply sealing compound around periphery of antenna coupler to form watertight seal as described in paragraph 2-9.

CAUTION

When installing antenna, make certain antenna is facing right and aft.

g. Removal of Antenna AT-884/APX (figs.2-6 and 2-16),

(1) Unscrew attaching screws and washers securing antenna to helicopter skin.

(2) Lower antenna from fuselage to gain access to antenna connector.

(3) Disconnect antenna cable connector and remove antenna.

h. Replacement of Antenna AT-884/APX (figs.2-6 and 2-16).

(1) Clean mating surfaces around periphery of antenna and helicopter skin to insure good electrical ground contact.

(2) Connect antenna cable to antenna connector and position antenna on fuselage.

(3) Secure antenna to fuselage with attaching screws and washers.

(4) Apply sealing compound around periphery of antenna and screw heads to form watertight seal as described in paragraph 2-9.

i. Removal of Antenna AS-I 922/APC (figs. 2-6 and 2-16).

(1) Unscrew attaching screws securing antenna to helicopter skin.

(2) Lower antenna from fuselage to gain access to antenna connectors.

(3) Disconnect antenna cable connectors and remove antenna.

j. Replacement of Antenna AS-1922/ARC (figs. 2-6 and 2-16

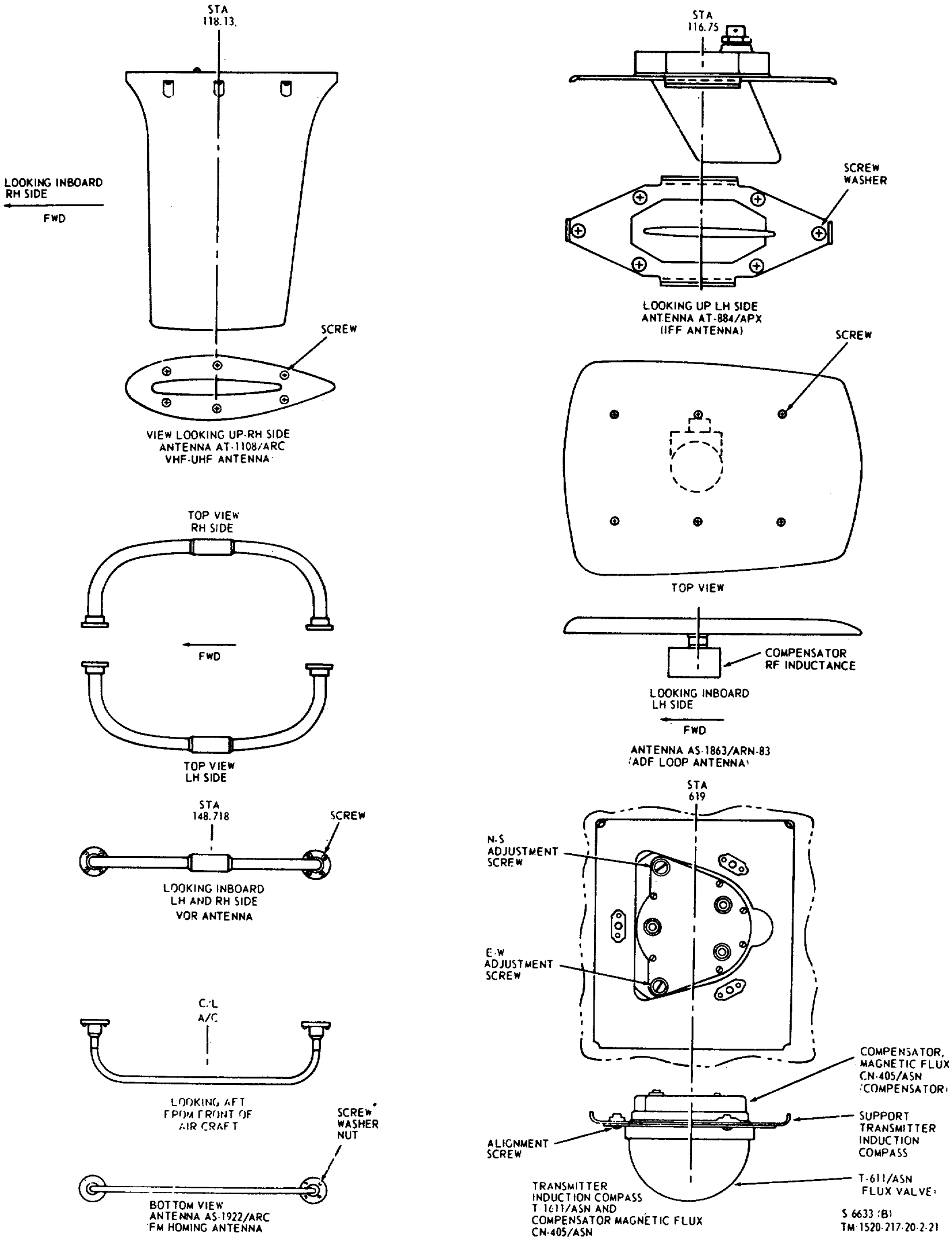


Figure 2-16. Antennas and flux valve installation.

(1) Clean mating surfaces around periphery of antenna and helicopter skin to insure good electrical ground contact.

(2) Connect antenna cables to antenna connectors and position antenna on fuselage.

(3) Secure antenna to fuselage with attaching screws.

(4) Apply sealing compound around periphery of antenna and screw heads to form watertight seal as described in paragraph 2-9.

*k. Removal of Vor Antenna (*figs. 2-6 and 2-16).

NOTE

Two antennas, on opposite sides of fuselage, are installed on helicopter. Removal procedures are same for both antennas.

(1) Unscrew attaching screws securing antenna to helicopter skin.

(2) Lower antenna from fuselage to gain access to antenna connector.

(3) Disconnect antenna cable connector and remove antenna.

l. Replacement of Vor Antenna (figs. 2-6 and 2-16).

NOTE

Two antennas, on opposite sides of fuselage, are installed on helicopter. Replacement procedures are same for both antennas.

(1) Clean mating surfaces around periphery of antenna and helicopter skin to insure good electrical ground contact.

(2) Connect antenna cable to antenna connector and position antenna on fuselage.

(3) Secure antenna to fuselage with attaching screws.

m. Removal of Antenna AS-1863/ARN-83 and Compensator, RF Inductance (figs. 2-6 and 2-16).

(1) Unscrew attaching screws securing antenna to support.

(2) Lift antenna from support to gain access to antenna connector.

(3) Disconnect antenna cable connector and remove antenna.

(4) Disconnect compensator from antenna.

n. Replacement of Antenna AS-1863/ARN83 and Compensator, RF Inductance (figs. 2-6 and 2-16).

(1) Connect compensator to antenna.

(2) Connect antenna cable connector to connector of attached compensator and position antenna on antenna fuselage mount.

(3) Secure antenna to fuselage mount with attaching screws.

o. Removal of Adf Wire Antenna (figs. 2-6 and 2-18).

(1) Unsnap and disconnect tension takeup unit from swivel on aft antenna mast.

(2) Remove cotter pin from tension unit mounted to shackle on landing gear housing.

(3) Unscrew sleeve support on antenna lead-through elbow.

(4) Unscrew lead-through elbow on lead through insulator.

(5) Remove antenna wire from insulator.

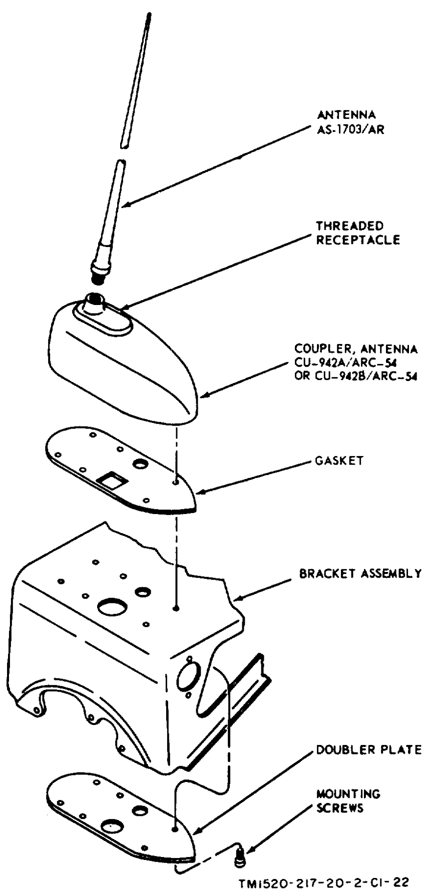


Figure 2-17. Fm liaison antenna and coupler installation.

(6) Unsnap and disconnect antenna takeup from swivel on mast below lead-through. Remove wire antenna from helicopter.

(7) Unscrew and back off sleeve from tension takeup and remove antenna wire.

(8) Cut wire approximately 1% inch from fitting and remove sleeve.

(9) Remove wire insulation.

(10) Slide wire retriever onto wire and push in or tap in retriever to release chuck.

(11) Using pliers, remove wire.

(12) Unscrew and back off end caps of antenna strain insulator.

(13) Remove wire from both ends of strain insulator as described in (8) through (11) above.

(14) Pull antenna wire through tension unit to free wire from insulator. Remove L-splice cap.

(15) Unscrew and back off end caps of tee connector.

(16) Remove wire from tee connector as described in (8) through (11) above.

(17) Unscrew and back off sleeve from antenna takeup unit.

(18) Remove wire from takeup unit as described in (8) through (11) above.

NOTE

Any component part which is not physically damaged or worn excessively may be continued in use.

p. Replacement of Adf Wire Antenna (figs. 2-6 and 2-18).

(1) Replace any worn or defective components. Clean reused detail parts with trichloroethane..

(2) Cut wire to required length for segment between tee connector and lead-through.

(3) Remove %-inch insulation from both ends of wire.

(4) Push wire into tee connector and tighten cap by hand.

(5) Cut wire to required length for segment between same end of tee connector and antenna strain insulator.

NOTE

Exposed wire length between tee connector and strain insulator shall be 3 inches when installed.

(6) Remove %-inch insulation .from both ends of wire.

(7) Push wire into tee connector and tighten cap by hand.

(8) Push wire into strain insulator and tighten cap by hand.

(9) Cut wire to required length for segment between strain insulator and antenna takeup.

NOTE

Exposed wire length between strain insulator and antenna takeup support sleeve shall be 0.75 + 0.25 inch when installed.

(10) Remove %-inch insulation from both ends of wire.

(11) Push wire into strain insulator and tighten cap by hand.

(12) Place support sleeve on wire segment and push wire into antenna takeup. Tighten sleeve by hand.

(13) Cut wire to approximate length for segment between other side of tee connector and antenna strain insulator; allow a few extra inches for later cutting to correct the length ((25) below).

(14) Remove %-inch insulation from end of wire.

(15) Push wire into tee connector and tighten cap by hand.

(16) Feed wire through hook on tension unit .

(17) Measure antenna wire for required length from tee connector to tension takeup unit.

(18) Cut wire to required length for segment between antenna strain insulator and tension takeup unit.

NOTE

Exposed wire length between strain insulator and tension takeup support sleeve shall be 0.75 + 0.25 inch when installed.

(19) Remove %-inch insulation from both ends of wire.

(20) Push wire into strain insulator and tighten cap by hand.

(21) Place support sleeve on wire segment and push wire into tension takeup unit. Tighten sleeve by hand.

(22) Connect tension takeup unit on swivel at aft antenna mast of helicopter.

(23) Connect antenna takeup on swivel at mast below lead-through.

(24) Connect tension unit to shackle on shackle anchor and secure with cotter pin.

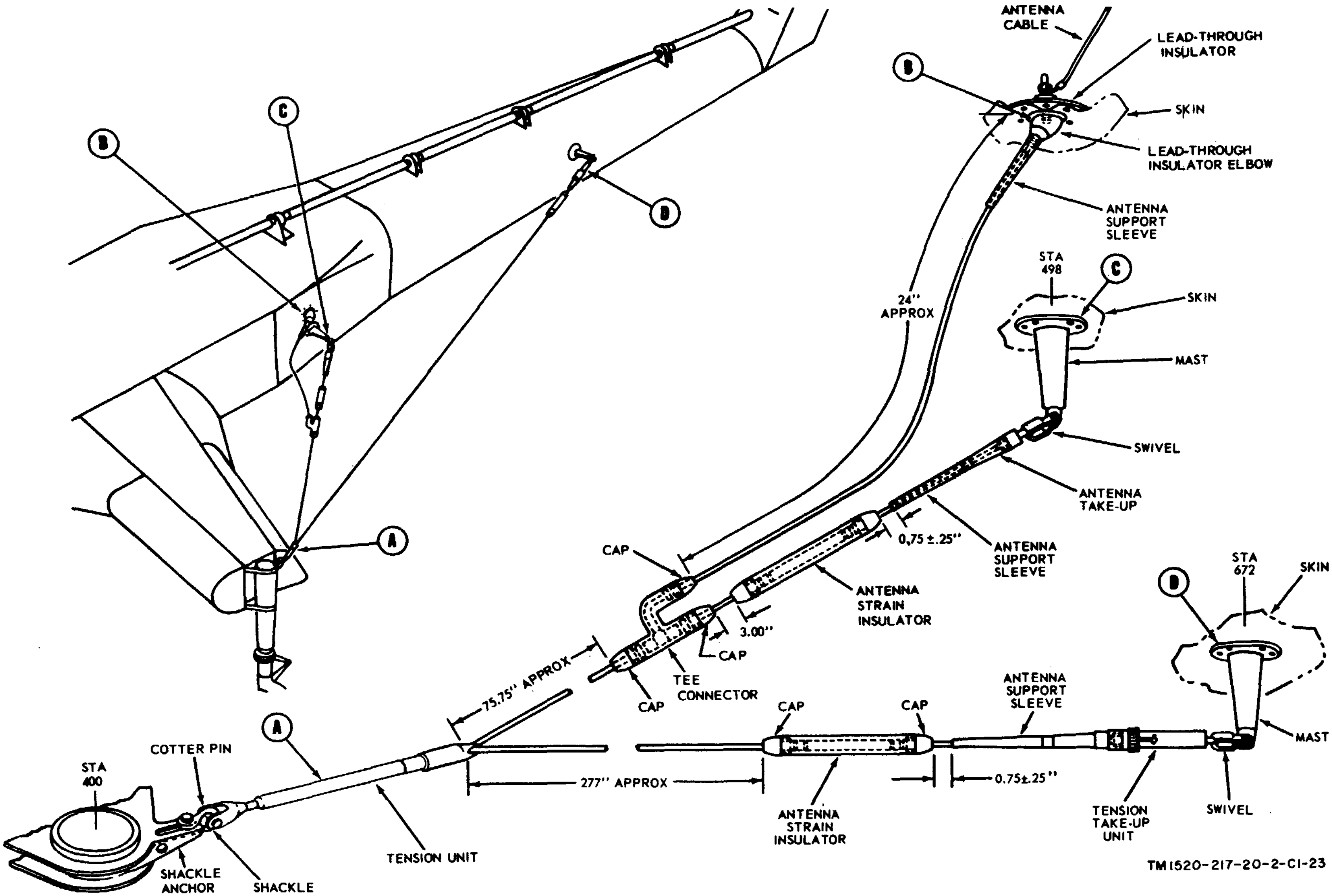


Figure 2-18. Adf direction finder (sense) antenna installation.

(25) Apply tension on antenna with wire end held against antenna strain insulator until spring pointer on tension takeup unit is opposite reference arrow.'(If necessary, read just wire I length between it tension unit and tee connector.) Note exact wire length required to maintain tension on takeup and cut wire at strain insulator.

(26) Remove 3/8-inch insulation from end of wire segment.

(27) Unsnap and disconnect tension takeup unit from swivel on forward antenna mast.

(28) Push wire into strain insulator and tighten cap by hand.

(29) Replace tension takeup unit on swivel at antenna mast. Recheck antenna tension.

(30) Slide support sleeve and lead-through elbow over wire segment from antenna tee connector.

NOTE

Coat wire under support sleeve with a lubricant for ease of assembly.

(31) Push wire firmly into leadthrough insulator. Screw lead-through elbow onto .leadthrough insulator. Screw support sleeve onto lead-through elbow.

2-17. Removal and Replacement of Intercommunication

Set AN/AIC-12 Remove all components of the AN/AIC-12 except Control, Intercommunication Set C-1611(*)/AIC by following the procedures below. Remove the C-1611(*)/AIC by following the procedures in paragraph 2-14.

a. Removal and Replacement of Cyclic Stick RADIO-ICS and Remote Stick RADIO-ICS Switches. A higher maintenance level is required for the removal of a control stick keying switch.

b. Removal of RADIO KEY Foot Switches (fig. 4-1).

(1) Remove the two screws and washers that secure foot switch and detach switch.

(2) Disconnect wiring and remove switch.

c. Replacement of RADIO KEY Foot Switches (fig. 4-1).

(1) Connect wiring to terminals of foot switch.

(2) Insert switch in mounting and attach with two screws and washers.

d. Removal of Junction Box (fig. 2-10).

(1) Open electronics compartment left-hand door and secure with support rods clipped to door frame.

(2) Open nose wheel well door by releasing latches and lowering spring-loaded tow ring to obtain access to junction box.

(3) Remove two electrical connectors from junction box.

(4) Remove four bolts, nuts, spacers, and washers securing junction box to helicopter airframe, and remove junction box.

e. Replacement of Junction Box, (fig. 2-10).

(1) Open electronics compartment, left-hand door and secure with support rods clipped to door frame.

(2) Place junction box in position on helicopter airframe.

(3) Attach bolts and washers in each of mounting holes, position spacers between junction box and airframe, and secure nuts.

(4) Connect two electrical connectors to junction box.

(5) Release support rods, clip rods to door frame, and close and secure electronics compartment door.

(6) Lower spring-loaded tow ring, push nose wheel well door up, release spring-loaded tow ring and secure latches.

f. Removal of Pilot's, Copilot's, and Aft Pilot's Jacks U-92A/U (fig. 4-1).

(1) Unscrew jack cover and slide back along headset-microphone cord.

(2) Unsolder wiring from terminals on body of jack and remove jack.

g. Replacement of Pilot's, Copilot's an(d Aft Pilot's Jacks U-92A/U (fig. 4-1).

(1) Unscrew cover from interphone jack and slide over headset-microphone cord.

(2) Solder wiring to terminals on body of jack as follows:

(a) Green wire to No. 1, microphone negative.

(b) White wire to No. 2, headset positive.

(c) Red wire to No. 3, microphone positive.

(d) Black wire to No. 4, headset negative.

(e) Shield to center post.

(3)Slide cover over body and screw into place.

h. Removal of No. 1 Crewman's, No.2 Crewman's, Ground Maintenance and Pod Station's Interphone Jacks U-94A/U (fig. 4-1).

(1) Remove interphone jack screws and disassemble jack.

(2) Unsolder wiring from terminals and remove jack from headset-microphone cord.

i. Replacement of No. 1 Crewmans, No. 2 Crewman's, Ground Maintenance and(Pod Station's Interphone lacks U-94A/U (fig. 4-1).

(1) Remove interphone jack screws and disassemble jack.

(2) Solder wiring from headset-microphone cord to terminals of jack as follows:

(a) Green wire to No. 1, microphone negative.

(b) White wire to No. 2, headset positive.

(c) Red wire to No. 3, microphone positive.

(d) Black wire and jumper wire to No. 4, headset negative.

(e) Yellow wire to one contact of switch, interphone key positive.

(f) Jumper wire to other contact of switch, interphone key negative.

(3) Replace molded halves of jack and secure with screws.

j. Removal of Pod Receptacle U-79A/U (fig. 4-1).

(1) Remove aft pilot's seat (higher maintenance level required).

(2) Unscrew mounting screws and remove access plate under aft pilot's seat.

(3) Unthread dust cap and remove cap from U-79A/U.

(4) Unthread mounting nut and pull U-79A/ U into aft pilot's cockpit. Discard gasket.

(5) Unsolder wiring from U-79A/U.

k. Replacement of Pod Receptacle U-79A/U (fig. 4-1).

(1) Solder wiring to U-79A/U (fig. 4-19).

(2) Position U-79A/U and gasket in mounting hole in helicopter skin and secure with nut.

(3) Replace dust cap.

(4) Align access plate under aft pilot's seat and secure with mounting screws.

(5) Install aft pilot's seat (higher maintenance level required).

l. Removal of ICS Disconnect Plug1 J82 (fig. 2-10).

(1) Unthread dust cap and remove cap from J82.

(2) Unscrew four screws, washers, and nuts and pull J82 into electronics compartment.

(3) Remove wiring pins from J82.

m. Replacement of ICS Disconnect Plug J82 (fig. 2-10).

(1) Install wiring pins in J82 (fig. 4-19).

(2) Clean area around mounting holes on inside of helicopter skin to insure good electrical ground.

(3) Position J82 in large mounting hole, install lug of dust cap chain at lower forward mounting hole, and secure with four screws, washers and nuts.

(4) Thread dust cap on J82.

2-18. Removal and Replacement of Automatic Flight Control System Components

Procedures for the removal and replacement of the AFCS amplifier, stick trim amplifier, oscillatory shut-off unit, dual channel synchronizers, altitude controller, collective stick position sensor, stick trim position sensors and airspeed sensing switch are contained in the a through x below. Remove the flight director indicator, AFCS control panel, and remote stick control panel by following the procedures in paragraphs 2-14 and 2-15.

a. Removal of Altitude Controller (figs. 1-2 and 2-13).

NOTE

Perform procedure as described in (1) through (8) below to remove controller. Perform procedure as described in (1), (2), and (9) below to remove shock mount.

(1) Open upper nose compartment door and secure with support rods clipped to door frame.

(2) Remove electrical connector and static pressure connector from shock mount.

(3) Using pair of diagonal pliers, cut and remove safety wiring from electrical connector.

(4) Remove nut securing controller electrical connector to shock mount and remove connector.

(5) Unscrew and remove clamp securing controller electrical cable to shock mount.

(6) Remove nut securing controller static pressure connector to shock mount and remove connector.

(7) Remove bolts securing controller to shock mount.

(8) Remove controller with attached cables and hoses.

(9) Unscrew shock mount from floor.

b. Replacement of Altitude Controller (figs. 1-2 and 2-13).

NOTE

Perform procedure as described in (1) through (4) below to replace shock mount. Perform procedure as described in (1) and (5) through (9) below to replace controller.

(1) Open upper nose compartment door and secure with support rods clipped to door frame.

(2) Place shock mount in position on floor.

(3) Determine position of ground strap, clean surface around attachment point to insure good electrical ground contact.

(4) Secure shock mount to floor with attaching screws.

(5) Bolt controller to shock mount.

(6) Attach controller static pressure connector to shock mount with nut.

(7) Secure controller electrical connector to shock mount and replace safety wiring.

(8) Place electrical cable into clamp and screw clamp to shock mount.

(9) Connect static pressure connector and electrical connector to shock mount.

(10) Release support rods, clip rods to door frame, and close and secure upper nose compartment door.

c. Removal of Purifier Chamber Assembly and Indicator, Cartridge and Dewpoint (figs. 2-9 and 2-12).

NOTE

When dewpoint indicator crystals are pink, change or service cartridge and dewpoint indicator. When crystals are .blue, no change is required.

(1) Open nose electronics compartment door and secure with support rods clipped to shelf.

(2) Remove dewpoint indicator plug and O-ring.

(3) Remove knurled screwcap with strap wrench.

(4) Remove desiccator cartridge from purifier chamber.

NOTE

Perform dewpoint indicator and cartridge servicing as described in paragraph 2-9b.

d. Replacement of Purifier Chamber Assembly and Indicator, Cartridge and Dewpoint (figs. 2-9 and 2-12).

NOTE

Cartridge and dewpoint indicator plug may be replaced with service unit or new cartridge kit obtained from supply. If serviced unit is to be installed, new O-ring for dewpoint indicator plug must be obtained from supply.

(1) Insert desiccator cartridge into purifier chamber. On installation of new desiccator cartridge, listen for pressure release.

(2) Install knurled screwcap and secure with strap wrench.

(3) Install O-ring on dewpoint indicator plug and tighten indicator plug in knurled screwcap.

(4) Release support rods, clip rods to shelf, and close and secure nose electronics compartment door.

e. Removal of Purifier Chamber Assembly (figs. 1-2 and 2-12).

(1) Open nose electronics compartment door and secure with support rods clipped to shelf.

(2) Disconnect and cap static line and altitude controller line from purifier chamber parts.

(3) Unscrew attaching screws and washers securing purifier chamber and strap to shelf.

(4) Remove strap and purifier chamber from shelf.

f. Replacement of Purifier Chamber Assembly (figs. 1-2 and 2-12).

(1) Position purifier chamber and strap on shelf and secure with attaching screws.

(2) Remove caps from static line and altitude controller line and connect to purifier chamber.

(3) Tighten both line connectors with torque wrench and tubing spanner wrench using 40 to 60 inch-pounds of torque (4) Release support rods, clip rods to shelf, and close and secure nose electronics compartment door.

g. Removal of AF(S Amplifier (figs. 1-2 and 2-13).

(1) Open upper nose compartment door an i secure with support rods clipped to door frame.

(2) Disconnect electrical connectors from amplifier.

(3) Remove screws and washers securing amplifier to shelf.

(4) Remove amplifier.

h. Replacement of AFCS Amplifier (fig. 2-13).

(1) Position amplifier over mounting holes and secure with screws and washers.

(2) Connect electrical connectors.

(3) Close and secure upper nose compartment door.

i. Removal of Stick Trim Amplifier (figs. 1-2 and 2-12).

(1) Open nose electronics compartment door and secure with support rods clipped to shelf.

(2) Disconnect electrical connector from amplifier.

(3) Remove screws and washers securing amplifier to shelf.

(4) Remove amplifier.

j. Replacement of Stick Trim Amplifier (fig. 2-12).

(1) Position amplifier over mounting holes and secure with screws and washers.

(2) Connect electrical connector.

(3) Close and secure nose electronics compartment door.

k. Removal of Oscillatory Shutoff Unit (OSU) (figs. 1-2 and 2-12).

(1) Open nose electronics compartment door and secure with support rods clipped to shelf.

(2) Disconnect electrical connector from OSU.

(3) Remove screws and washers securing OSU to shelf.

(4) Remove OSU.

l. Replacement of Oscillatory Shut-off Unit (OSU) (fig. 2-12).

(1) Position OSU over mounting holes and secure with screws and washers.

(2) Connect electrical connector.

(3) Close and secure nose electronics compartment door.

m. Removal of Dual Channel Synchronizer (figs. 1-2 and 2-12).

(1) Open nose electronics compartment door and secure with support rods clipped to shelf.

(2) Disconnect electrical connector from synchronizer.

(3) Holding synchronizer, remove screws and washers securing synchronizer to underside of upper shelf.

(4) Remove synchronizer.

n. Replacement of Dual Channel Synchronizer (fig. 2-12).

(1) Position synchronizer over mounting holes on underside of upper shelf and secure with screws and washers.

(2) Connect electrical connector.

(3) Close and secure nose electronics compartment door.

o. Removal of Trim Position Sensor (Pitch, Roll, and Yaw) (figs. 1-2 and 2-19).

(1) Unscrew and remove flight controls inclosure cover.

(2) Unscrew and remove cover from servo cylinder.

(3) Disconnect plug from trim position sensor receptacle.

(4) Remove safety wire from screws on receptacle and remove screws securing receptacle to bracket.

(5) Loosen screws and nuts on arm and remove arm from trim position sensor shaft.

(6) Remove safety wire on screws securing trim position sensor to bracket. Loosen screws and rotate cleats to unlocked position.

(7) Remove receptacle and trim position sensor from bracket.

p. Replacement of Trim Position, Sensor **(Pitch, Roll, and Yaw) (figs. 1-2 and 2-19).**

(1) Position trim position sensor into bracket, rotate cleats to locked position and tighten screws. Install safety wire on screws.

(2) Position receptacle into bracket and secure with screws. Install safety wire on screws.

(3) Install arm on trim position sensor shaft, ensuring arm is properly engaged in servocylinder linkage.

(4) Tighten screws on arm.

(5) Install cover and secure with screws.

(6) Install flight controls enclosure cover and secure with attaching screws.

q. Removal of Stick Position Sensor (Collective) (figs. 1-2 and 2-19).

(1) Unscrew and remove lower two cockpit flight controls enclosure covers.

(2) Disconnect plug from stick position sensor receptacle on bracket. Unscrew receptacle from bracket.

(3) Unbolt arm from link.

(4) Remove cotter pin, bolt, bushing, washers, and nut securing link to flight controls and remove link.

(5) Remove safety wire from screws on arm.

(6) Loosen screws securing shaft of clutch in slot of arm and remove arm.

(7) Remove screws, 'washers, nuts, and cleats securing stick position sensor to bracket.

(8) Slide clutch through hole in bracket and remove stick position sensor.

r. Replacement of Stick Position Sensor (Collective) (figs. 1-2 and 2-19).

(1) Bolt link to flight controls. Insure bushing is installed.

(2) Bolt arm to link.

(3) Lower stick position sensor receptacle on bracket.

NOTE

Ensure white dot on clutch is aligned with white dot on synchro.

(4) Slide clutch through hole in bracket until flange is against bracket and secure stick position sensor to bracket.

(5) Move arm until shaft of clutch is in slot. Secure shaft to arm and safety wire screws.

(6) Screw stick position sensor receptacle to bracket. Connect plug to receptacle on bracket and replace all safety wiring.

(7) Place lower two cockpit flight controls inclosure covers in position and secure with attaching hardware.

s. Removal of Lateral Accelerometers, No. I and No. 2 (figs. 1-2 and 2-20).

(1) Remove tilt tables as described in paragraph 2-19a.

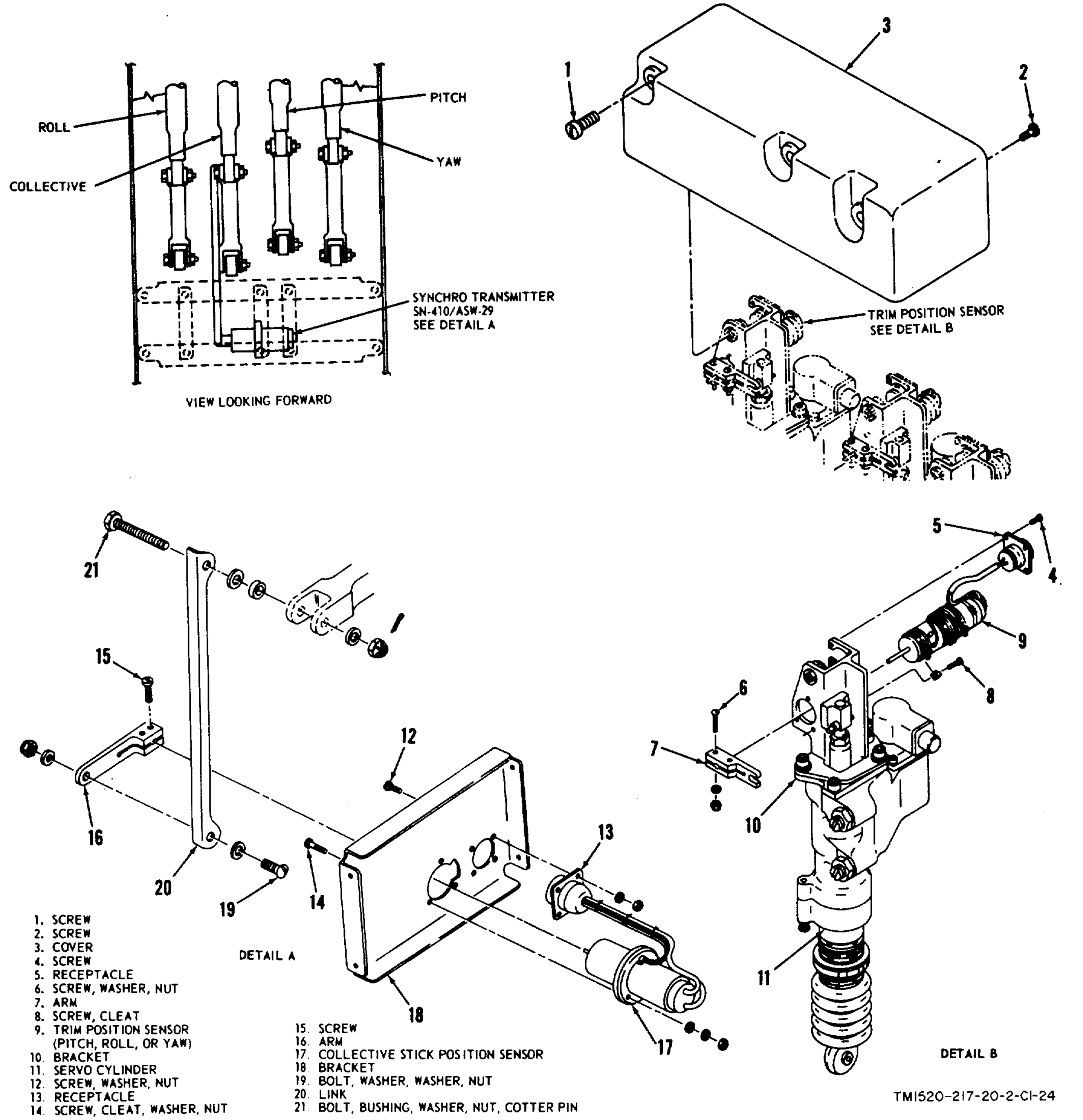


Figure 2-19. Automatic flight control system--position sensors installation.

(2) Remove screws securing lateral accelerometers receptacle to tilt table brackets and remove receptacles from each tilt table bracket.

(3) Holding lateral accelerometers securely, unscrew and remove from underside of each tilt table.

t. Replacement of Lateral Accelerometers, No. 1 and No. 2 (fig. 1-2).

(1) Align lateral accelerometers on each removed tilt table and secure with attaching screws from underside of tilt tables.

(2) Screw harness receptacle to connector bracket.

(3) Replace tilt tables as described in paragraph 2-19b .

u. Removal of Gyros, Rate No. 1and No 2 (figs. 1-2 and 2-20).

(1) Remove tilt tables as described in paragraph 2-19a.

(2) Holding rate gyro No. 1 securely, unscrew and remove from underside of each tilt table.

(3) Holding rate gyro No. 2 securely, unscrew and remove from rate gyro No. 2 rate gyro mounting bracket on each tilt table.

v. Replacement of Gyro, Rate No. I and No. 2 (fig. 1-2).

(1) Align rate gyro No. 1 on tilt tables and secure with attaching screws from underside of tilt tables.

(2) Align rate gyro No. 2 on tilt tables and secure with attaching screws to each tilt table rate gyro mount bracket.

(3) Replace tilt tables as described in paragraph 2-19b.

w. Removal of Airspeed Sensing Switch (fig 1-2)

(1) Remove safety wiring from electrical plug.

(2) Disconnect electrical plug.

(3) Disconnect pitot static lines from airspeed sensing switch by loosening nuts.

(4) Remove airspeed sensing switch from intercostal installation by removing screws.

x. Replacement of Airspeed Sensing Switch (fig 1-2)

(1) Secure airspeed sensing switch to intercostal installation with screws.

(2) Reconnect pitot static lines to airspeed sensing switch by tightening nuts.

(3) Reconnect electrical plug.

(4) Replace safety wiring.

2-19. Removal and Replacement of Attitude Indicating System

Remove all components of the attitude indicating system except Indicator, Attitude 4005W, by following the procedures below. Remove the attitude indicator by following the procedures in paragraph 2-15.

CAUTION

Do not remove Gyroscope, Displacement CN-1314A (vertical gyros) for at least 20 minutes after power has been removed. Gyros are delicate instruments and must be handled with extreme care. Always handle in the horizontal attitude or damage may result to internal detail parts.

a. Removal of Table, Tilt (figs. 1-2 and 2-20).

(1) Gain access to tilt table through hoist well.

CAUTION:

Do not handle tilt table for at least 20 minutes after electrical power has been removed as damage may result to the vertical gyro.

(2) Disconnect connectors from tilt table bracket and components.

(3) Disconnect tilt table grounding strap.

(4) Release screw fasteners and lift tile table from hoist well.

b. Replacement of Table, Tilt (figs. 1-2 and 2-20).

(1) Replace the vertical gyro on tilt table as described in d below.

(2) Position tilt table in hoist well and secure fasteners.

(3) Connect connectors to tilt table bracket and components.

(4) Connect grounding strap between the tilt table and shelf.

c. Removal of Vertical Gyro (figs. 1-2 and 2-20).

(1) Remove tilt table as described in a above.

(2) Holding unit securely, unscrew and remove from underside of tilt table.

d. Replacement of Vertical Gyro (figs. 1-2 and 2-20).

(1) Align unit on removed tilt table and secure with attaching screws from underside of tilt table.

(2) Install tilt table in hoist well as described in b above.

e. Removal of Relays K172 and K1 73 (fig. 1-2).

(1) Remove wires from terminal block.

(2) Remove nuts from relay mounting brackets.

(3) Remove relays with attached wires from relay mounting brackets.

(4) Unsolder wires from relay terminals.

NOTE:

Do not discard wires.

f. Replacement of Relays K172 and K173 (fig. 1-2).

(1) Solder wires to relay terminals.

(2) Insert relay mounting studs into relay mounting brackets and secure.

(3) Secure wires to terminal block.

2-19.1. Removal and Replacement of Performance Indicating System Components. Remove the cruise guide amplifier by following the procedures below. Remove the performance indicator by following the procedures in paragraph 2-15. The linear variable differential transformer (LVDT) is located in the right lateral servo unit assembly and the removal is performed at a higher maintenance level.

a. Removal of cruise guide amplifier (fig. 2-1).

(1) Open left hand electronics compartment door.

(2) Disconnect electrical connector.

(3) Remove screws and washers securing amplifier to shelf.

(4) Remove amplifier.

b. Replacement of cruise guide amplifier (fig. 2-1).

(1) Position amplifier over mounting holes and secure with screws and washers.

(2) Connect electrical connector.

(3) Close and secure left hand electronics compartment door.

2-20. Removal and Replacement of Power Components a. Removal of Battery, Storage BB-434/U (fig. 2-12).

CAUTION

Before disconnecting battery, insure that MASTER BAT switch is set OFF and all battery loads are disconnected by pulling appropriate circuit breakers. Any substantial load on battery could cause damage to connector pin sockets and battery receptacle pins when removing.

(1) Open nose electronics compartment door and secure with support rod clipped to shelf.

(2) Using pair of diagonal pliers, cut and remove safety wiring from battery connector.

(3) Unscrew connector from battery.

(4) Disconnect venting tube-from battery.

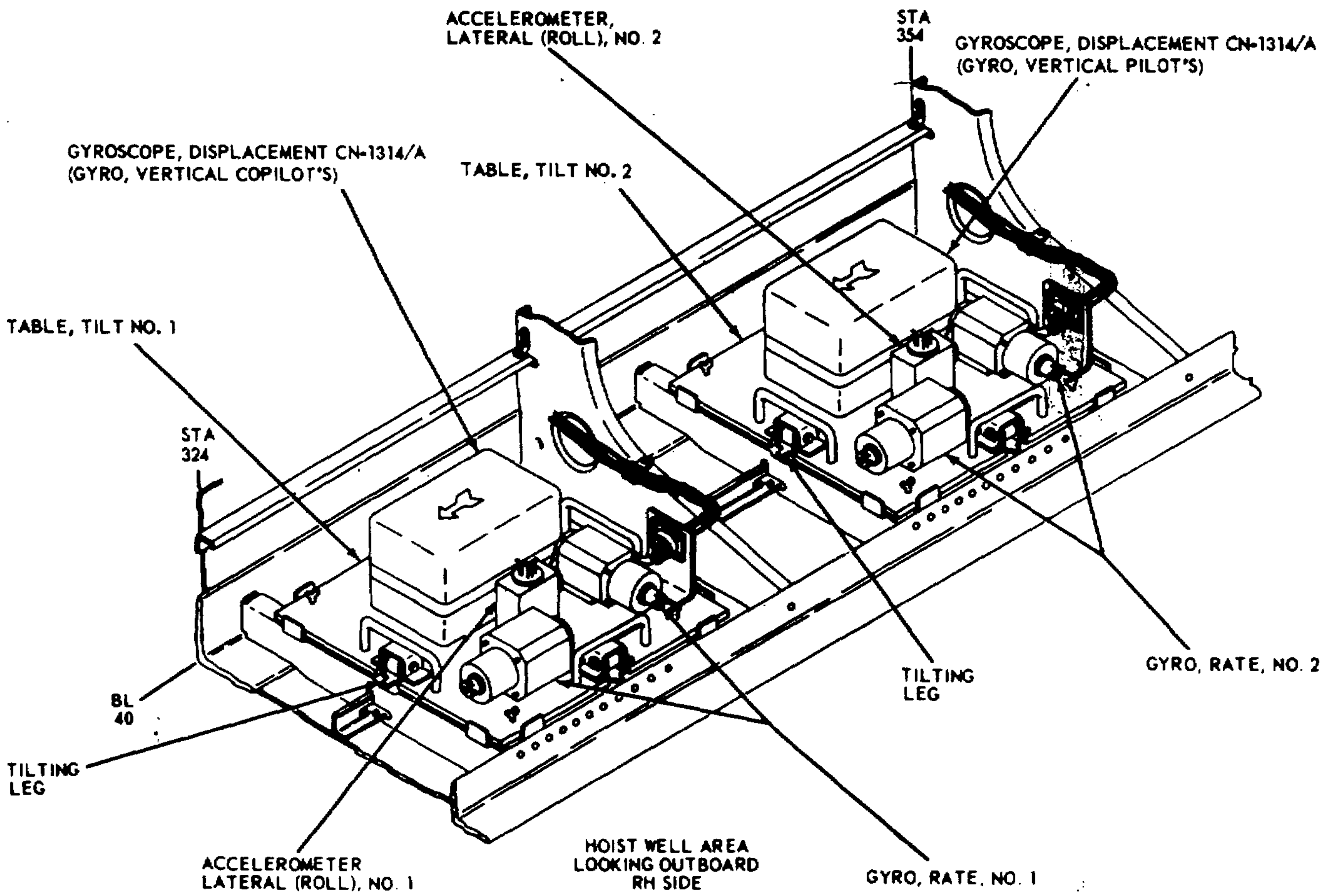


Figure 2-20. Tilt table component location.

(5) Lift up. retaining clamps and remove battery retaining bar.

(6) Remove battery from shelf.

b. Replacement of Battery, Storage BB-434/U (fig. 2-12).

(1) Position BB-434/U on shelf, with cable receptacle facing front.

(2) Slip retaining bar over rods and press retaining clamps inward.

(3) Fit venting tube to BB-434/U vent fitting.

CAUTION

Before connecting BB-434/U, insure that MASTER BAT switch is set to OFF and all battery loads are disconnected by Dulling appropriate circuit breakers. Any substantial load on BB434/U could cause damage to connector pin sockets and receptacle pins when installing.

(4) Install and secure connector to BB434/U.

(5) Install safety wiring on connector.

(6) Release support rods, clip rods to shelf, and close and secure nose electronics compartment door.

c. Removal of Motor-Generator PU-543/A (fig. 2-21).

(1) Using pair of diagonal pliers, cut and remove all safety wiring fastened to PU-543/A electrical plug.

(2) Disconnect electrical plug from PU543/A.

(3) Remove attaching screws -and remove PU-543/A from attic shelf.

d. Replacement of Motor-Generator PU-543/ A. (fig. 2-21).

(1) Position PU-543/A on attic shelf and secure in place with attaching screws.

(2) Connect electrical plug to PU--543A and safety wire plug.

2-21. Safety Wiring

(figs. 2-10 through 2-13, 2-19, and 2-21)

To prevent loosening during service, -attaching hardware and electrical connectors for compo-

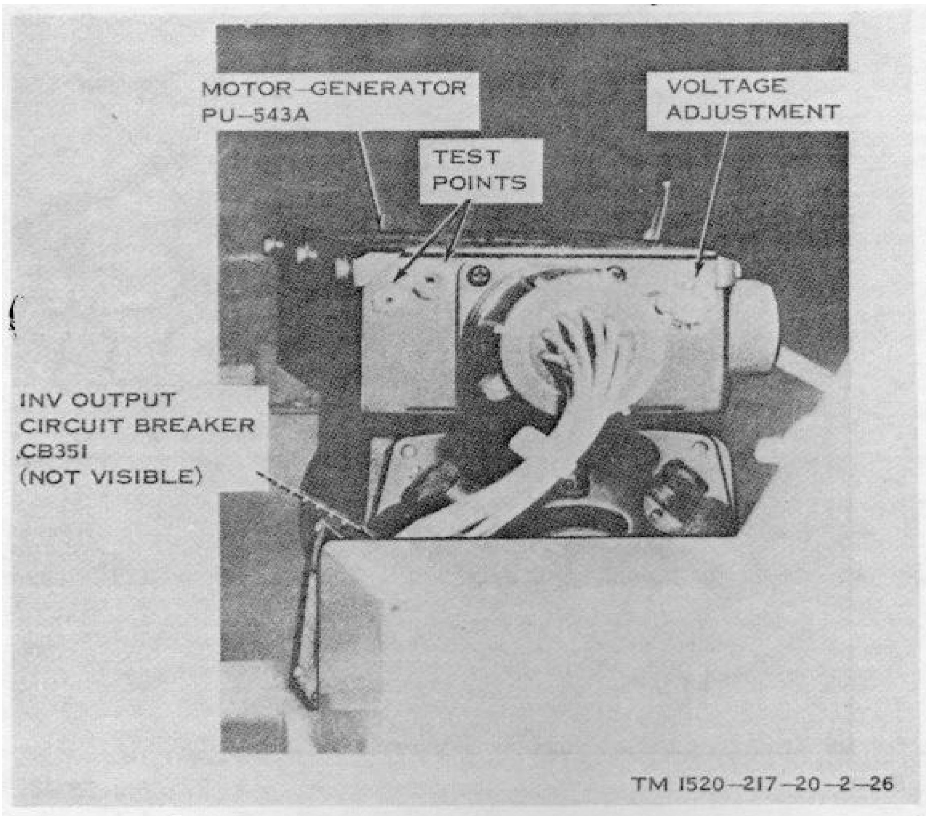


Figure 2-21. Motor-Generator PU-543/A location

nents of electronic equipment configuration must be secured with safety wiring. Tighten applicable mounting hardware and install safety wiring, arranged in such a manner that loosening of hardware will cause safety wiring to tighten. Use only new safety wire and be careful not to kink wire. Use double twist method of safety wiring whenever possible. Use single wire method of safety wiring whenever necessary and for all emergency devices, areas difficult to reach, and for small screws in closely spaced pattern. Perform all safety wiring in accordance with TM 55-1500-323-2L5 and a through c below, using Federal stock No. 9505-221-2650 corrosion-resistant steel wire. All threaded connectors shall be safety wired except: shock mounted equipment connectors, cockpit area instrument and control panel connectors, and Government-furnished equipment which does not have safety wire provisions.

a. Install safety wiring so that safety wire will be put in tension when part tends to loosen.

NOTE

Care shall be taken to insure that safety wiring is tight but not overstressed.

b. Pigtail of 1/4 to 1/2 inch (three to six twists) shall be made at end of wiring. Pigtail shall be bent back or under to prevent it from snagging.

c. Electrical connectors which require safety wiring and/or which employ screws or coupling rings to fasten individual parts of plug together as one unit shall be safety wired in accordance with these general instructions and TM 55-1500323-25

2-22. Wiring Repairs

a. General. When removal and replacement of major components have not corrected a trouble within facility of electronic equipment configuration, troubles in electronic equipment configuration interconnecting cabling may be the cause. Refer to electronic configuration facility wiring diagrams (figs. 4-10 through 4-26) for inter-unit wiring details. For general instructions in repairing helicopter electronic configuration, Refer to TM 1500-323-25 and TMI 55-405-3.

b. Wire Numbers. The wiles of 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 A wire size. The last symbol N, commonly called the ground letter-, identifies a cable which completes a circuit to ground.

Code	*Function*
RPC	Emergency radio facility
RF	Fm liaison and homing radio facility
RL	Hf radio facility
RN	Navigation facilities
RU	Uhf' radio facility
RV and APC134	Vhf command radio facility
RZ	Interphone system
SX	Identification system
C	Automatic Flight Control System, Stick T)rim System and Voice warning System AN ASH-19
F	Attitude indicating system, compass system, and performance indicating system.
KY28	Security Facility
L	Lighting
P	DC Power
X	AC Power

c. Connector Replacement. Repair and or replacement data for crimp-type connectors is given in d through g below.

NOTE:

The crimp-type connectors ale used to facilitate maintenance or repair in a in restricted area. Use connector Maintenance Set, Electrical Crimp-Type when replacing crimp-type connectors. A crimp-type handtool is used for crimping wires to connectors. The handtool contains three contact positioners. The two positioners not in use are stored ill the handle and held in place by a lock screw. Other special crimping positioners, spate male and female parts, insertion and retraction tools, and plugs for sealing grommet holes in environmental connectors, ate provided with maintenance set. A chart, included with maintenance set, provides for connector selection by either MIL-type or manufacturer's number to determine collect items required. A numbered triangle on chart refers to a corresponding tube in maintenance set. The positioners are described as follows:

Contact positioner	Color	Gage wire
20	Red	20, 22, 24
16	Blue	16, 18, 20
12	Yellow	12, 14

NOTE:

The majority of the crimp-type connectors used are manufactured by the following companies:

Bendix Cop, Scintilla Division, Sidney, N.Y.

Cannon Electric Co., Los Angeles, Calif.

Amphenol 'Western Division of Amphenol Borg Electric Corp., Chatswotth (Los Angeles), Calif.

d. Preparation of Wire

(1) Cut wire to desired length. Strip A/inch of insulation from end for insertion into size 16

contacts 3/16 inch for size 20) in accordance with TM 55150032325.

(2) Check to insure strands of conductors are not separated. If necessary, reform by lightly twisting strands together.

e. Crimping.

(1) Please holding pressure of crimping tool positioner lock screw and slide latch away from positioner. Slide positioner release bar downward and remove positioner from tool.

(2) Select positioner for desired size and store others in handle.

(3) Move positioner release bar downwall and seat positioner into tool. Release bar, slide latch forward, and tighten lock screw.

(4) Insert stripped end of wire into contact wire-well. Insure that wire has bottomed and wire strands are visible in inspection hole. With size 20 contacts, wire insulation must extend into insulation well.

(5) Insert contact into crimping tool as far as possible with handles fully opened. Handles cycle in one direction:

fully opened fully closed fully opened.

(6) Close tool handles to fully closed position to crimp. Handles will not release until complete uniform and reliable crimp is provided.

(7) Remove contact and check to insure contacts are properly crimped and , ends are visible in inspection hole in contact wire well.

f. Removal of Contacts.

(1) Remove securing device and slide back from connector shell.

NOTE:

When using elbow type connector remove back cover and clamp to facilities contact, removal.

(2) Insert proper extraction tool at front of connector with slight twisting motion until tool bottoms in insert hole. Slight increase in resistance will be noted before tip bottoms.

NOTE:

Maintain true axial alignment of removal tool with connector shell to avoid bending contact.

(3) Push spring-loaded thrust assist knob) of tool forward to extent of travel. Contact shall be disengaged and visible from rear of connector shell.

g. Installing Contacts.

(1) remove securing device (clamps, elbow) from back of connector. Retain grommet or insert.

(2) Slide grommet or insert and securing device over wires in proper sequence of assembly.

NOTE

When using elbow type connector, remove back cover and clamp to facilitate assembly.

CAUTION

If contact becomes separated from insertion tool during operation, do not probe to reposition tool on contact. Remove contact and reinstall.

(3) Snap contact into proper insertion tool and push forward into connector hole until contact is felt to snap into position. Slight increase in resistance may be felt just before contact is seated.

(4) Fill all unused holes in connector with an uncrimped contact. In addition, insert double ended nylon sealing plug in unused grommet with one end protruding from rear of grommet.

(5) Fasten securing device to connector-. Assembly elbow and clamp, if any. Center wires at bar clamp and position clamp grommet. Secure bar clamp.

Section V. ADJUSTMENTS AFTER REPLACEMENT OR REPAIRS

2-23. Extent of Adjustments

Paragraphs 2-24 through 2-26 contain installation adjustments for electronic equipment reinstalled in the helicopter after repairs or after the scheduled periodic pullout checks. The procedures described below must be accomplished prior o further maintenance checks or operation. The following equipment requires adjustment after replacement.

a. Radio Set AN/ARC-131. Whenever Receiver-Transmitter, Radio RT823/ARC-131 is replaced, squelch setting must be checked and readjusted if necessary. Follow procedures given in paragraph 2-24 to readjust AN/ARC-131.

b. Gyromagnetic Compass Set AN/ASN-43 (fig. 2-11).

(1) Whenever AN ASN-43 is operated in free gyro local mode, local latitude must be inserted.

On Gyro, Directional CN998/ASN43, rotate LATITUDE Control Knob to desired latitude in which helicopter is to be operated.

(2) Whenever AN/ASN43 components are replaced, compass swinging procedure shall be performed (higher maintenance level required).

c. Automatic Flight Control System, Whenever stick position sensor (collective) or pedal switches are replaced, applicable checks and readjustments must be made. Follow procedures given in paragraph 225 for applicable checks and readjustments.

d. Motor-Generator PU543/A. Whenever PU543/A is replaced, output voltage must be checked and readjusted if necessary. Follow procedures given in paragraph 226 to readjust voltage output.

2-24. Adjustment of Radio Set AN/ARC-131 (fig. 2-11)

a. Disconnect coaxial connector from AS-1703/ AR.

b. Turn on AN/ARC-131 by setting mode control switch on C-7088/ARC-131 to T/R.

c. Set SQUELCH control to CARR.

d. With SQ ADT control on RT-823/ARC-131, turned fully counterclockwise, adjust VOL control for desired audio level of background noise.

e. Rotate SQ ADJ control clockwise until back ground noise just cuts out. Do not rotate control beyond this point.

f. Check squelch settings on several frequencies selected are not fully squelched. Rotate SQ ADJ control slightly clockwise.

g. Turn off AN/ARC131 by setting mode control switch on C7088/ARC131 to OFF. Reconnect coaxial connector to AS1702/AR.

2-25. Adjustment of Automatic Flight Control System

a. Yaw Pedal Switches Adjustment (fig 2-22).

(1) Turn on AFCS by pressing AFCS 1 AFCS.2, and YAW buttons on AFCS control panel.

(2) Apply force between 1 and 5 pounds to pedal under test. Pedal switch shall actuate and null yaw control channel. If switch does not actuate, loosen pedal spring by turning adjustment screw counterclockwise.

(3) Slowly decrease force applied to pedal. Switch shall close when force drops below 1 pound. If switch does not close, tighten pedal spring by turning adjustment screw clockwise.

b. Stick Position Sensor (Collective). (Fig 1-2 and 2-19). Apply procedures in paragraph 2-7, sequence numbers 184 and 198 to check for correct installation of stick position sensor (collective).

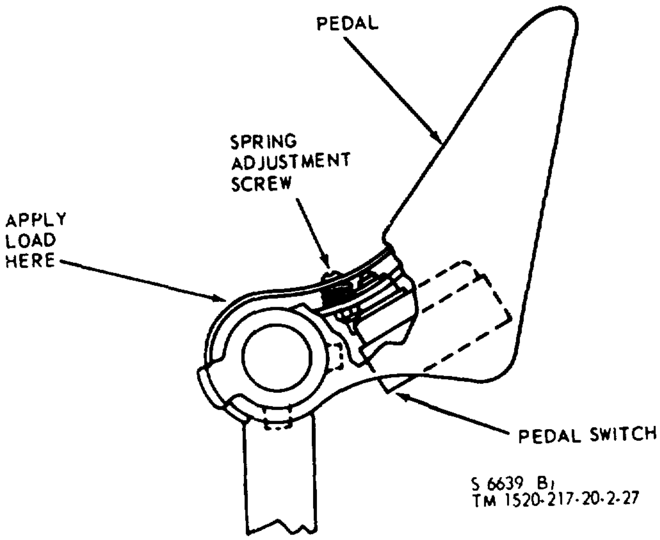


Figure 2-22. Automatic flight control system - yaw pedal switch adjustment.

2-26. Motor-Generator PU-543/A (fig. 2-21)

a. Insure MASTER BAT switch and GEN NO 1 and NO. 2 switches are set to OFF.

b. Connect dc auxiliary electrical power unit to helicopter.

c. Engage INVERTER PWR and CONT circuit breakers on overhead circuit breaker panel Engage INV OUT circuit breaker in attic compartment adjacent to motor-generator PU-543/A.

d. Set EXT POWER and INV switches to ON. Engage all PU-543/A load circuit breakers.

e. Connect multimeter (ac scale) across PU543/A test points.

f. Loosen locknut adjacent to J2 power connector and, with screwdriver, adjust output voltage to obtain 115 + 6 volts ac.

g. Tighten locknut without disturbing adjustment setting.

h. Set EXT POWER and INV switches to OFF and disconnect dc auxiliary electrical power unit.

CHAPTER 3
BLOCK DIAGRAM ANALYSIS

3-1. Configuration Systems and Facilities (fig. 4-1)

The electronic equipment configuration in Army model CH-54B helicopter provides the pilot and copilot with hf, vhf, fm, uhf, and interphone communications, automatic direction finding (in low frequency ranges and broadcast bands), fm homing, vor reception, and coded identification facilities. A compass facility provides the helicopter magnetic heading to the navigation indicators. An automatic flight control system provides for selective attitude retention in all flight axes, improving the helicopter handling characteristics. An attitude indicating system provides pitch and roll attitudes with reference to the horizon. The aft pilot is provided with the same communication and navigation capability as the pilot and copilot except for fm homing, IFF audio reception, and compass control and monitoring. The jump seat No. 1 crewman, the No. 2 crewman, and the ground maintenance station are provided with interphone capability and hf, vhf, fm, uhf, adf, and vor reception capability. The pod interphone station is provided with interphone capability and hf, vhf, and uhf reception capability through the pod ICS receptacle U-79A/U. On helicopters serial No. 70-18488 and subsequent, the pod interphone station is also provided with fm reception through the pod ICS receptacle U-79A/U. A private interphone line is connected between the pod interphone station and all other stations. Functionally, the configuration is divided into communications, identification, navigation, interphone, automatic flight control, attitude indicating, voice warning, performance indicating, and power systems. Each system (shown in broken lines, fig. 4-2) is composed of facilities, and each facility is represented as a solid line or broken line block within its specified system in the diagram. A solid block represents an installed facility. A broken line block represents complete provisions which have been installed.

a. Communications (fig. 4-2).

(1) General. The communications system consists of the hf radio (Radio Set AN/ARC-102), vhf radio (Radio Set AN/ARC-134), fm liaison radio (Radio Set AN/APC-131), and uhf radio (Radio Set AN/ARC-51BX). Audio inputs and outputs are connected to the interphone system through the junction box. Primary dc and ac power is supplied from the 28-volt dc and 115-volt ac busses through circuit breakers on the overhead control panel circuit breaker panels.

(2) Hf radio communications. The hf radio (Radio Set AN/ARC-102) provides the pilot, copilot, and aft pilot with two-way, amplitude-modulated communication. The No. 1 crewman, the No.-2 crewman, the pod, and the ground maintenance stations have only monitoring capability. Signals received by the antenna are detected and amplified within the hf receiver-transmitter, and the resultant audio is fed to the junction box for distribution to the interphone system. Microphone audio from the interphone system is modulated and amplified by the receiver-transmitter. The receiver-transmitter is tuned to the desired frequency and the resulting modulated RF signals are applied to the antenna for transmission.

(3) Vhf radio communications. The vhf radio (Radio Set AN/ARC-134) provides the pilot, copilot, and aft pilot with two-way amplitude-modulated command communication, including the emergency vhf frequency range. The No. 1 crewman, No. 2 crewman, the pod, and ground maintenance stations have only monitoring capability. Signals received by the antenna are detected and amplified within the vhf receiver and the resultant audio is fed to the junction box for distribution to the interphone system. Microphone audio from the interphone system is modulated and amplified by the transmitter. The transmitter is tuned to the desired frequency and the resulting modulated RF signals are applied to the antenna for transmission. The vhf portion of the combined vhf-uhf antenna is used for transmission and reception.

(4) Fm liaison radio communications and fin homing. The fm liaison radio (Radio Set AN/ARC-131) provides the pilot, the copilot and the aft pilot with two-way, frequency-modulated communication. The No. 1 crewman, the No. 2 crewman, and the ground maintenance stations have only monitoring capability. On helicopters serial No. 70-18488 and subsequent, the pod station has monitoring capability. Signals received by the fm receiver-transmitter and the resultant audio is fed to the junction box for distribution to the interphone system. Microphone audio from the interphone system is modulated and amplified by the receiver-transmitter. The receiver-transmitter is tuned to the desired frequency and the resulting modulated RF signals are applied to the antenna for transmission. Whenever the T SEC/KY-28 security facility is installed, fm liaison audio reception and transmission may be coded. The fm radio, in conjunction with a homing antenna, provides the pilot and copilot with a homing facility. The homing facility enables the pilots to head the helicopter toward or away from any fm transmitter. When the homing mode is selected, fm signals received by the homing antenna are detected in the receiver-transmitter and developed into left and right homing signals. The homing signals are fed to switching relays within the junction box and applied to the vor coarse indicator for display.

(5) Uhf radio communications. The uhf radio (Radio Set AN/ARC-51BX) provides the pilot, the copilot and the aft pilot with two-way , amplitude-modulated voice communication. The No, 1 crewman, the No, 2 crewman, the pod, and the ground maintenance stations have only monitoring capability. Signals received by the antenna are detected and amplified within the vhf receiver-transmitter and the resultant audio is fed to the junction box for distribution to the interphone system. Microphone audio from the interphone system is modulated and amplified by the receiver-transmitter. The receiver-transmitter is tuned to the desired frequency and the resulting modulated RF signals are applied to the antenna for transmission.

b. Identification System (fig. 4-2). The identification system is comprised of the ANAPX-72. The iff (identification friend or foe) transponder set identifies the aircraft & the ground radar interrogating stations. RF interrogating signals received by the antenna are amplified and decoded within the iff receiver-transmitter to produce the require reply signals. The reply pulses are assembled from the interrogation signals and manually selected codes within the receiver-transmitter and applied to the antenna for transmission. If desired, the reply pulses may be monitored by audio signals from the receiver-transmitter, which are then applied to the junction box for distribution to the interphone system. Primary dc power is supplied from the 28-volts dc bud through a circuit breaker on the overhead control panel circuit breaker panel.

c. Navigation System (fig. 4-2)

(1) General. The navigation system consists of the vor receiving set (radio Receiving Set AN/ARN-82), adf direction finder (Direction Finder Set AN/ARN-83), and compass (Gyromagnetic Compass Set AN/AR43). An additional navigation function is provided by the fm homing portion of the fm liaison and homing facility. The vor receiving set and adf direction finder audio outputs are connected to the interphone system through the junction box. Primary dc and 115-volt ac busses through circuit breakers on the overhead control panel circuit breaker panels. Units requiring 26 volts ac are supplied from an autotransformer, the input signals are routed directly to the navigation indicators.

(2) Vor receiving set. The vor receiving set (Radio Receiving Set AN/ARN-82) provides the pilot and copilot with vhf omnidirectional range localizer, and audio signals. The aft pilot, No. 1 crewman, the No. 2 crewman, and the ground maintenance stations have only audio monitoring capability. In addition, the vor receiving set is used as a vhf emergency communications receiver. A balanced loop-type antenna is used for the reception of vor signals, and identify tone audio. The vor signals are detected and amplified within the vor receiver, and the navigation signals. The navigation signals are used to

drive the vor course indicator and No. 2 pointers of the radio magnetic indicators. The audio signals, or the vhf emergency communications signals, are fed to the junction box for distribution to the interphone system.

(3) Adf direction finder. The adf direction finder (Direction Finder Set AN/AR.N-83) provides the pilot and the copilot with visual and aural indication of the relative bearing from which RF signals are being received. The aft pilot, No. 1 crewman, the No. 2 crewman, and the ground maintenance stations have only audio monitoring capability. Separate adf loop and adf sense antennas are used for reception of the adf signals. The signals are used for homing and position fixing, and the adf receiver can be used for broadcast reception. The adf signals from both antennas are detected and amplified within the adf receiver, and the adf bearing signals are separated from the audio signals. The adf bearing signals are used to drive the No. 1 pointers of the radio magnetic indicators. The audio signals are fed to the junction box for distribution to the interphone system.

(4) Compass. The compass (Gyromagnetic Compass Set AN/ASN-43) provides a visual indication of the helicopter magnetic heading on the pilot's and copilot's radio magnetic indicators, and heading reference signals for the vor receiving set, adf direction finder, and automatic flight control system.

d. Interphone System (fig. 4-2).

(1) The interphone system consists of the following equipment:

Helicopter

(a) Five control units (C-1611(*)/AIC).
(b) Three jacks (U-92A/U).
(e) Three jacks (U-94A./J).
(d) Three ICS-RADIO switches.
(e) Three RADIO KEY foot switches.
(f) One pod receptacle (U-79A/U).
(t) One junction box.

Pod

(a) ICS cable assembly.
(b) One control unit (C-1611(*)/AIC).
(c) Cable assembly.
(d) ICS keying relay.
(e) One jack (U-94A/U).

(2) From the 28volt dc primary bus, de power is supplied to the pilot's, the copilot's, and the aft pilot's INT (ics) control units through individual dc circuit breakers. Dc power to the No. 1 and No. 2 crewman's stations is supplied through a single dc circuit breaker. The ics control units provide intercommunication between the pilot, the copilot, the aft pilot, and the crew stations. The No. 2 crewman's and the ground maintenance jacks are connected in parallel to the No. 2 crewman's ics control unit. The ground maintenance jack is provided with a walk around extension cord. The pod receptacle is connected to hf, vhf, uhf, and interphone circuits and may be used for audio reception if an external pod is attached to the helicopter. On helicopters serial No. 7018488 and subsequent, the pod receptacle is connected to the fm receive audio circuit. Receiver outputs are connected either through the junction box or directly to the ics control units. Microphone outputs are connected through the junction box. Desired receiver audio can be monitored as selected at the individual ics control unit. At the pilot's, the copilot's and the aft pilot's stations only, radio transmissions can be made by the selection of the desired transmitter on the ics control unit. During hf, uhf, and vhf transmission, Discriminator, Discrete Signal MD 736/A eliminates fm audio reception by the ics control unit. The pilot, the copilot, and the aft pilot are provided with momentary two position RADIOICS switches in the cyclic sticks. The ICS position enables interphone communications; and the RADIO position in parallel with the RADIO KEY foot switch enables radio communications. The No. 1 crewman, the No. 2 crewman, the ground maintenance stations and pod interphone ics switches are contained in the jacks and are used for interphone purposes only. The junction box provides impedance-matching interphone communications and radio receivers audio inputs. It also contains relay., for switching navigation display information between the fm homing portion of the fm liaison radio facility and vor receiving set facility.

e. Automatic Flight Control System (AFCS) (figs. 42 and 43).

(1) The Automatic Flight Control System (AFCS) stabilizes helicopter attitude (pitch and roll), altitude (collective), and heading (yaw) selected by the pilot.AFCS compensates for combinations of temporary or continuous (steady state) aerodynamic disturbances: encountered during automatic cruise flight requirement pickup and release hovering operations. AFCS utilizes sensor inputs representing the deviation of the helicopter from the desired (pilot selected) flight regime.

(2) The helicopter AFCS consists of an inner control loop (inner loop) and an outer control loop (outer loop). The inner loop has unlimited rate response aid limited helicopter control authority. The outer loop has limited rate response and total helicopter control authority. The outer loop complements the inner loop by providing the total helicopter authority. Both inner and outer loops may be overridden by the pilot at any time through the use of primary flight controls.

(3) The inner loop functions in an AFCS mode, an ONON mode, a normal remote mode, and an auxiliary remote mode. In the AFCS and the ONON modes, signals from the sensors are applied to the AFCS amplifier. Within the AFCS amplifier, the signals are processed and applied through the AFCS control panel to the outer loop stick trim amplifier, the flight director indicator, the oscillatory shutoff unit,. and the AFCS servovalves. The inner loop reacts to the AFCS amplifier output to the servovalve by repositioning the main or tail rotor blades to compensate for the disturbance which created the sensor signals. As the helicopter responds to the movement of the blades, the sensor signal decreases, decreasing the signal to the servovalves. The output of the AFCS amplifier is monitored on the flight director indicator and sampled by the oscillatory shutoff unit. Within certain fixed parameters, the oscillatory shutoff unit senses an undesirable AFCS amplifier output signal and automatically disengages the malfunctioning channel.

(4) The outer loop slick trim amplifier receives pitch, roll, and yaw signals from the AFCS amplifier. These signals are processed in the stick trim amplifier and applied to the stick trim valves.

Activating the stick trim valves causes a power piston in the servocylinder to move. Power piston movement produces a movement of the cyclic sticks (pitch and roll) or the tail rotor pedals (yaw). The movement of these primary flight controls results in extending the overall AFCS authority. Movement of the cyclic sticks and tail rotor pedals is sensed by the trim position sensors and fed back to the stick trim amplifier as a damping signal.

(5) The normal and auxiliary remote modes operate in basically the same manner. Movements of the cyclic stick grip on the remote stick control panel produce pitch, roll, or yaw command signals which are applied to the AFCS amplifier and are processed as previously described. During the normal remote mode, pitch and roll outer loop command signals are applied to the stick trim amplifier where they are processed as previously described. Applying signals in pitch and roll to outer loop gives the aft facing pilot total cyclic authority with a clamping factor provided by the inner loop.

f. Voice Warning System AN/ASH19 (fig. 42). The voice warning system provides a prerecorded voice warning message and caution advisory panel indication when a monitored fault is sensed. The Signal Adapter processes fault signals for use by the Reproducer-Converter, Voice Signal RP139( )/ASH19 and the caution advisory panel. The Continuous Inflight Performance Recorder (CIPR) AN/ASH23 records the voice warning messages from the RP139( )/ASH19 and the pilot. The pilot records on the AN'/ASH23 by positioning two switches. The RP139( )/ ASH19 feeds the audio message to the junction box, the pilot's, copilot's and aft pilot's interphone system. Primary dc power is supplied from the 28volt de bus through circuit breakers on the auxiliary circuit breaker panel.

g. Attitude Indicating System (fig. 42). The attitude indicating systems provide a visual display of the helicopter pitch and roll attitudes on the pilot's and copilot's attitude indicators. The pilot's and copilot's attitude indicating systems are separate and operate independently. In the event of a failure in either system the respective attitude indicator OFF flag will appear. Should either system's vertical gyro malfunction, the GYRO NORMALT switches mounted on the instrument panel allow either pilot to switch to the other pilot's system. Both attitude indicators now will utilize one vertical gyro output. Ac output signals from the pilot's and copilot's vertical gyros provide attitude reference information to the AFCS. Primary ac and dc power is supplied from the 115volt and 28volt busses through circuit breakers on the overhead circuit breaker panels.

h. Performance Indicating System (fig. 42). The performance indicating system provides a visual display of percent of blade stall. The linear variable differential transformer (LVDT) senses helicopter vibratory loads. The electrical signal proportional to the helicopter vibratory load is fed to the cruise amplifier. The cruise guide amplifier amplifies, demodulates, and filters the LVDT signal. The resultant signal is fed to the performance indicator. Primary ac and dc power is supplied from the 115volt and 28volt busses through circuit breakers on the overhead circuit breaker panel.

3-2. Hf Radio Facility (fig. 31)

a. Communications.

(1) Reception. Incoming RF signals are received by the hf wire antenna and applied through Antenna Coupler CU1658/A to Receiver-Transmitter, Radio RT698/ARC102 (hf receiver-transmitter). The hf antenna coupler automatically matches the impedance between the hf antenna and the hf receiver-transmitter at frequencies determined by the hf receiver--transmitter. The receiver-transmitter is tuned to the incoming signal frequency by the frequency selection controls with the mode selector switch set to the desired mode (USB, LSB, AM, or CW) on Control, Radio Set C3940/ARC94 (hf control unit). The DATA mode is not used in this installation. Within the receiver portion of the receiver-transmitter, the RF signal is detected and amplified. The receiver audio volume is controlled by the RF sensitivity control on the hf control unit. From the receiver the resulting receiver audio is applied to the junction box fixed attenuating resistors. From the junction box, the attenuated receiver audio signal is applied in parallel paths to the pilot's, copilot's aft pilot's and No. 1 and No. 2 crewmen's stations Control, Intercommunication Set C1611 (*)/AIC (ics control unit). When the RECEIVERS HF switch on any ics control unit is set to ON, the attenuated receiver audio is fed through the VOL control for further attenuation and applied to the headset amplifier circuit. From the ics control unit, the attenuated receiver audio is

applied to the associated headset when selected. The receiver audio is also applied to pod Receptacle U79A/U.

(2) Transmission. Only the pilot, copilot, and aft pilot have the capability to transmit over the hf radio facility. Mike audio from the pilot's, the copilot's, or the aft pilot's mike is initially fed to the associated ics control unit. When the transmit-interphone selector switch is set to 4 and the pilot's and the copilot's cyclic stick keying switch or aft pilot's keying switch is pressed to RADIO, the transmit mike audio is amplified by the microphone preamplifier circuit. The transmit keying function may be also accomplished by pressing the pilot's, the copilot's, or the aft pilot's RADIO KEY foot switch. From the ics control unit the mike audio is applied to the junction box 3-4.1

and fed across a fixed attenuating network. From the junction box, the transmit mike audio is applied to the receiver-transmitter. Within the transmitter portion, the mike audio is modulated and amplified. The receiver-transmitter is tuned to the desired frequency by the frequency selection controls with the hf control unit mode selector switch set to the desired mode (USB, LSB, or AM) and when the receiver-transmitter is keyed. With the mode selector switch set to CW, a continuous cw tone is transmitted when the pilot's and copilot's cyclic stick keying switch or aft pilot's stick keying switch is pressed to RADIO. The transmit keying function for cw tone may also be accomplished by pressing the pilot's, copilot's or aft pilot's RADIO KEY foot switch. Whenever a frequency is being selected, a tune pulse is applied to the hf antenna coupler. With the tune pulse applied, the antenna coupler then automatically disconnects the keying function so the transmitter cannot be keyed during the tuning cycle. The antenna coupler maintains the correct antenna impedance automatically and the key interlock voltage from the antenna coupler is removed from the transmitter keying circuits if the tuning cycle is incomplete within 8 to 12 seconds. From the receiver-transmitter, modulated RF is applied through the antenna coupler to the antenna. When the transmitter is keyed, 28 volts dc energizes the antenna transfer relay within the receiver-transmitter, thereby grounding the receiver audio.

b. Power Distribution. Power to operate the hf radio facility is supplied from the dc primary bus and from the ac primary bus. Power from the dc primary bus is supplied to the dc radio on the overhead left DC RAD BUS circuit breaker panel. From the engaged 50ampere ARC102 circuit breaker, 28 volts dc is applied to the high voltage power supply module within the hf receiver-transmitter which supplies dc operating voltages for circuits of the receiver-transmitter and antenna coupler. From the engaged 10ampere ARC102 circuit breaker, 28 volts dc is applied to one set of contacts and solenoid of the on-off relay and to one set of contacts on the 400 cycle interlock relay within the receiver-transmitter. Power from the ac primary bus is supplied to the ac radio bus on the overhead right RADIO circuit breaker panel. From the engaged 5ampere (C ARC102 circuit breaker, 115 volts ac is applied to the second set of contacts of the on-off relay and the solenoid of the 400cycle interlock relay, energizing the relay. When the mode selector switch on the hf control unit is set to any position other than OFF, the on-off relay is energized and the 28 volts dc and 115 volts ac, 400 cps are distributed to circuits for receiver-transmitter operation. The receiver-transmitter operates only when there are both 115volt ac400cps and 28volt dc power applied. From the receiver-transmitter, 28 volts dc and 115 volts ac is applied to the antenna coupler for proper operation. From the receiver-transmitter, 28 volts dc is also applied to the adf direction finder facility adf disable relay solenoid. The adf disable relay is energized whenever the transmitter is keyed. The power-inverter, which is part of the Mounting, Power-Inverter PP3702/ ARC102 is not used in this installation. From the copilot's lighting control panel INTERINAL LIGHTS CONSOLE control on the overhead control panel, 28 volts dc is applied to the hf control unit for panel illumination.

3-3. Vhf Radio Facility (fig. 32)

a. Communications.

(1) Reception. Incoming RF signals are received by the vhf portion of Antenna AT1108/ ARC (vhf-uhf antenna) and applied through normally closed contacts of an antenna relay within Receiver-Transmitter RT857/ARC134 (vhf radio facility) to the receiver circuits. The receiver-transmitter is tuned to the incoming signal frequency by the frequency selection controls on Control, Radio Set C7197/ARC134 (vhf control unit). Within receiver-transmitter, the RF signal is amplified, mixed, filtered, and detected. The resulting receiver audio is applied through the junction box fixed attenuating resistors to the vhf control unit. Within the vhf control unit, the audio signal is attenuated through the volume control. From the vhf unit, the attenuated receiver audio is applied in parallel paths to the pilot's, copilot's, aft pilot's, and No. 1 and No. 2 crewmen's stations Control, Intercommunication Set C1611(*)/AIC (ics control unit). When the RECEIVERS VHF switch on any ics control unit is set to ON, the receiver audio is fed through the VOL control for further attenuation and applied to the headset amplifier circuit. From the ics control unit, the attenuated receiver audio is applied to the associated headset when selected. The receiver audio is also applied to pod Receptacle U79A/U.

(2) Transmission. Only the pilot, copilot, and aft pilot have the capability to transmit over the vhf radio facility. Mike audio from the pilot's, copilot's, or aft pilot's mike is initially fed to the

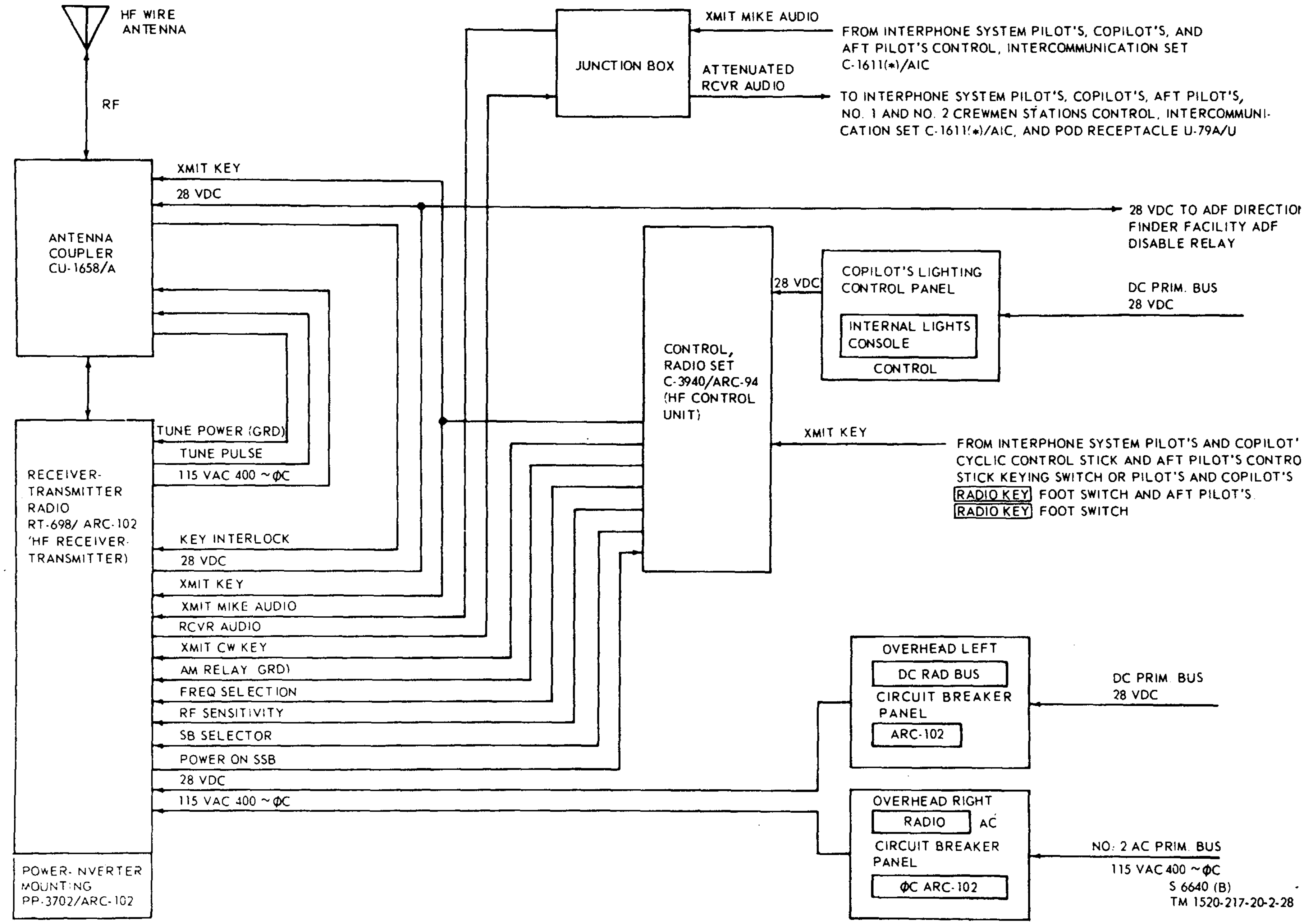


Figure 3-1. Hf radio facility, block diagram

associated ics control unit. When the transmit-interphone selector switch is set to 3 and the pilot's or copilot's cyclic stick keying switch or aft pilot's remote stick keying switch is pressed to RADIO, the transmit mike audio is amplified by the microphone preamplifier circuit. The transmit keying function may also be accomplished by pressing the pilot's, copilot's, or aft pilot's RADIO KEY foot switch. From the ics control unit, the mike audio is applied to the junction box and fed across a fixed attenuating network within the junction box. From the junction box, the transmit mike audio is applied to the vhf radio facility transmitter. Within the transmitter, the mike audio is limited, amplified, and modulated. The transmitter is tuned to the desired frequency by the frequency selector controls on the vhf control unit, and the resulting modulated RF signals are applied to the normally open contacts of the antenna relay within the vhf radio facility. From the normally open contacts, the modulated RF signals are applied to the vhf portion of the vhf-uhf antenna.

b. Power Distribution. Power to operate the vhf radio facility is supplied from the dc primary bus to the dc radio bus on the overhead right DC RAD BUS circuit breaker panel. From the engaged 15ampere ARC134 circuit breaker, 28 volts dc is applied to the vhf radio facility. When the OFF/PWR switch on the vhf control unit is turned to PWR, a ground path is completed allowing the applied 28 volts dc to energize the vhf radio facility. Within the vhf radio facility, the dc voltage is applied to a 27volt dc suppressed bus. The output of the suppresser is applied to a voltage regulator and to the transmitter power supply. From the copilot's lighting control panel INTERNAL LIGHTS CONSOLE control on the overhead control panel, 28 volts dc is applied to the vhf control unit for panel illumination.

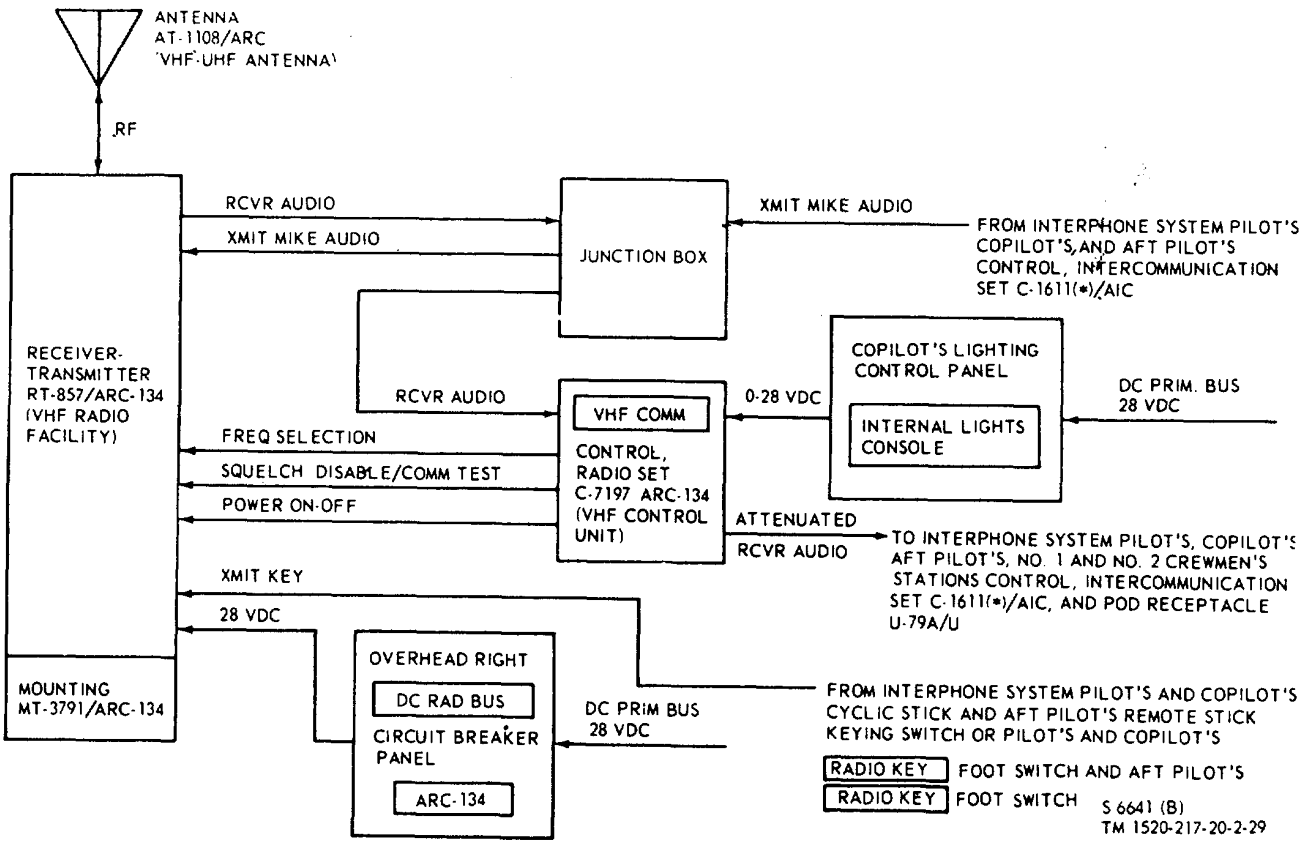


Figure 3-2. Vhf radio facility, block diagram.

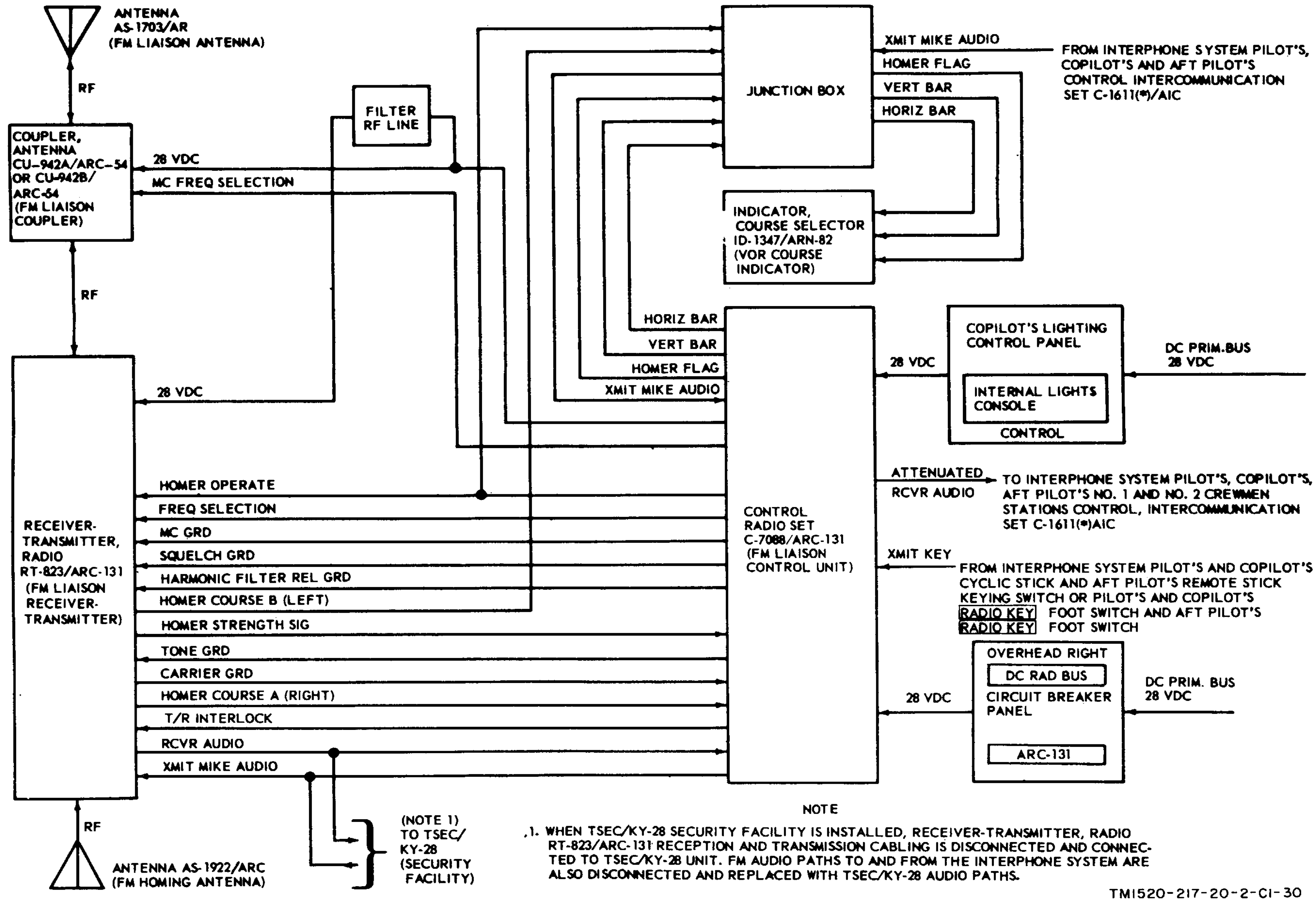


Figure 3-3. FM liaison and homing radio facility.

3-4. Fm Liaison and Homing Radio Facility(fig. 33)

a. Communications.

(1) Reception. Incoming RF signals are received by the communications Antenna AS1703/AR (fm liaison antenna) and applied to Coupler, Antenna CU942A/ARC54 or CU942B/ARC,54 (fm liaison coupler). The fm liaison coupler provides the necessary impendence matching between the fm liaison antenna and Receiver-Transmitter, Radio RT823/ARC131 (fm liaison receiver-transmitter). From the fm liaison coupler, the RF signal is applied to the fm liaison receiver-transmitter. The receiver is tuned to the incoming signal frequency by rotating the frequency selector controls on Control Radio Set C7088/ARC131 (fm liaison control unit). Within the receiver, the RF signal is amplified, mixed, limited, and detected. The resulting receiver audio is applied to the fm liaison control unit, the receiver audio signal is attenuated through the volume control. From the fm liaison control unit, the attenuated receiver audio signal is applied to the pilot's, copilot's, aft pilot's, and No. 1 and No. 2 crewmen's stations Control, Intercommunication Set C1611(*)/ AIC (ics control unit). When the RECEIVERS FM switch on any ics control unit is set to ON, the receiver audio is fed through the VOL control for further attenuation and applied to the headset amplifier circuit. From the ics control unit the attenuated receiver audio is applied to the associated headset when selected. The receiver audio is also applied to pod receptacle U79A/U.

NOTE

Whenever T SEC/KY28 security facility is installed, normal fm liaison radio reception cabling is disconnected from the fm liaison receiver-transmitter and T SEC/KY28 cabling is connected.

(2) Transmission. Only the pilot, copilot, and aft pilot have the capability to transmit over the fm liaison radio facility. Transmitted mike audio from the pilot's, copilot's, or aft pilot's mike is initially fed to the associated ics control unit. When the transmit-interphone selector switch is set to 1, and the pilot's or copilot's cyclic stick keying switch or aft pilot's remote stick keying switch is pressed to RADIO, the transmit mike audio is amplified by the microphone preamplifier circuit. The transmit keying function may also be accomplished by pressing the pilot's, copilot's, or aft pilot's RADIO KEY foot switch. From the ics control unit, the transmitted mike audio is applied to the junction box and fed across a fixed attenuating network. From the junction box, the transmitted mike audio is applied to the fm control unit. On the control unit the frequency of the transmitter is selected by rotating the frequency selector controls. From the fm liaison control unit, the transmitted mike audio is routed to the fm liaison receiver-transmitter where the signal is amplified and applied to an fm modulator. From the fm liaison receiver-transmitter an RF signal, modulated by the transmitted mike audio, is applied through the fm liaison coupler to the fm liaison antenna.

NOTE

Whenever T SEC/KY28 security facility is installed, normal fm liaison radio transmission cabling is disconnected from the fm liaison receiver-transmitter and T SEC/KY28 cabling is connected.

b. Homing.

(1) When the fm liaison control unit mode selector switch is set to HOMIE, the communication homing relay within the receiver-transmitter is energized to accept fm homing antenna signals. The RF signal from the right or left section of Antenna, Homing AS1922/ARC (fm homing antenna), is alternately sampled by the homer diode 'switching circuit at a drive 100 cps rate. The 100cps components of the amplified and detected homing signal are synchronously compared with the 100cps drive signal so that the sampled signal from one section of the fm homing antenna is a right homing signal. From the other section of the antenna, the sampled signal is a left homing signal. The homer course A (right) signal is applied from the receiver-transmitter to the fm liaison control unit, fed across the HOME position of the mode selector switch, and applied to the junction box as a vertical bar signal. Within the junction box, the signal is applied to a vor fm switching relay. When the relay is energized, the vertical bar signal is applied to Indicator, Course ID1347/ARN82 (vor course indicator). The homer course B (left) signal is fed from the fm receiver-transmitter direct to the junction box. Within the junction box, the signal is fed across contacts of a second vor fm switching relay and applied to the vor course indicator as a vertical bar signal. The vertical bar of the vor course indicator uses these signals to provide a visual indication of the helicopter heading relative to the homing station. If the two signals have the same strength, the vor course indicator vertical bar is centered, indicating that the helicopter is on course. If the left signal has a greater amplitude than the right, the vertical bar
would deflect

left. The pilot must then fly the helicopter left to assume an on course heading.

(2) From the receiver-transmitter, there is also a homer strength signal which provides a visual indication of relative signal strength by deflecting the horizontal bar down within the vor course indicator to indicate the helicopter passing over a homing station. The homer strength signal is also applied from the receiver transmitter to the fm liaison control unit, fed across the HOME position of the mode selector switch, and applied to the junction box as a horizontal bar signal. Within the junction box, the signal is fed across contacts of the vor-fm switching relay and applied to the vor course indicator horizontal bar. When the received signal is weak, the horizontal bar deflects up. The homer strength signal is fed directly from the fm receiver-transmitter to the junction box as a horizontal bar signal, and fed across contacts of vor-fm switching relay. From the junction box, the signal is applied to the vor course indicator horizontal bar. When strong signals are received, the horizontal bar deflects down toward center. The junction box relays are energized by setting the mode selector switch of the fm liaison control unit to the HOME position.

(3) When the SQUELCH control on the fm liaison control unit is set to CARR, a path is provided for the carrier ground (reliability signal) to flow from the fm liaison receiver-transmitter to the fm liaison control unit, across the HOME position of the mode selector switch, and applied to the junction box as a homer flag signal. Within the junction box, carrier ground is applied to a vor-fm switching relay. The switching relay is energized when the mode selector switch on the fm liaison control unit set to HOME. The carrier ground is fed through the energized switching relay to the vor course indicator homer flag circuit. The flag provides a visual indication of the reliability of the homing signal. When the flag is visible, the homing signal is reliable. When the flag is out of sight, the homing signal is unreliable for use.

c. Power Distribution. Power to operate the fm liaison and homing radio facility is supplied from the dc primary bus to the dc radio bus on the overhead right DC RAD BUS circuit breaker panel. From the engaged 15ampere ARC131 circuit breaker, 28 volts dc is applied to the fm liaison control unit. When the mode selector switch is set to T/R, RETAIN or HOME, the 28 volts dc from the fm liaison control unit is distributed in parallel paths to the fm liaison coupler and through the RF line filter to the receiver-transmitter. Within the receiver-transmitter, the dc voltage is applied to two 5ampere fuses. From one fuse, the dc voltage is applied directly to the power supply assembly. The power supply assembly provides a regulated 24volt dc output, converted to 400 cps for operating the cooling fan during transmission, and for operating the voltage regulator assembly and an unregulated 27.5volt dc output. The voltage regulator provides a regulated 16volt dc output. From the second fuse, the dc voltage is distributed within the receiver-transmitter to provide power for other circuitry. From the copilot's lighting control panel INTERNAL LIGHTS CONSOLE control on the overhead control panel, 28 volts dc is applied to the fm liaison control unit for panel illumination.

3-5. Uhf Radio Facility (fig. 34)

a. Communications.

(1) Reception. Incoming RF signals are received by the uhf portion of Antenna AT1108/ ARC (vhf uhf antenna) and applied to INDICATOR, VSWR ID1003/ARC (uhf reflectometer). The RF signals from the reflectometer are applied to the receiver portion of the Receiver-Transmitter, Radio RT742/ARC51BX (uhf receiver-transmitter). The receiver is tuned to the incoming signal frequency by the frequency selection controls with the function selector switch set to the T/R position on Control, Radio Set C6287/ ARC51BX (uhf control unit). With the function switch set to T/R, only the main receiver within the uhf receiver-transmitter is in operation. Within the main receiver, the RF signal is detected and amplified. As the actual headset audio, the resulting main receiver audio signal is applied to the uhf control unit. Within the uhf control unit, the main receiver audio signal is attenuated through the volume control. From the uhf control unit, the attenuated main receiver audio signal is applied in parallel paths to the pilot's, copilot's, aft pilot's, No. 1 and No. 2 crewmen's stations Control, Intercommunication Set C1611(*)/AIC (ics control units), and to a junction box load resistor. When the RECEIVERS UHF switch on any ics control unit is set to ON, the attenuated main receiver audio is fed through the VOL control for further attenuation and applied to the headset amplifier circuit. From the ics control unit, the receiver audio is applied to the associated headset. The attenuated main receiver audio is

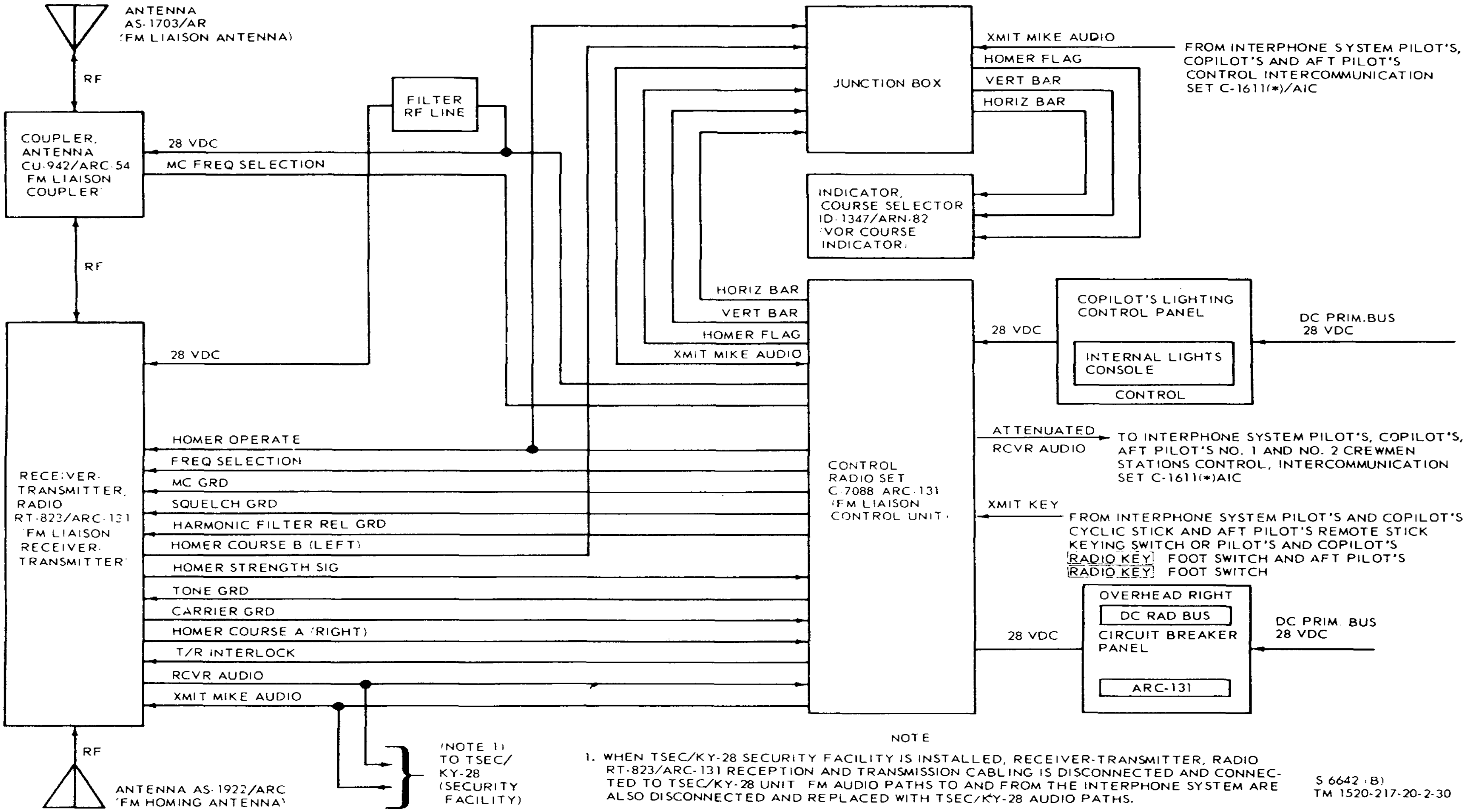


Figure 3-3. Fm liaison and homing radio facility, block diagram.

also applied to pod Receptacle U79A/U. The guard receiver within the uhf receiver-transmitter is tuned to the incoming signal frequency by the frequency selection controls with the function selector switch set to T/R G position on the uhf control unit. With the function switch to T/R + G, both the main receiver and guard receiver are in operation. Within the guard receiver, the incoming RF guard signal is detected. The audio output of the guard receiver is amplified within the modulator and audio module of the main receiver. As the actual headset audio, the resulting guard receivers audio signal is distributed in the same manner as the main receiver headset audio. The ADF position of the function switch is not used in this configuration.

(2) Transmission. Only the pilot, copilot, and aft pilot have the capability to transmit over the uhf radio facility. Mike audio from the pilot's, copilot's, or aft pilot's mike is initially fed to the associated ics control unit. When the transmit interphone selector switch is set to 2 and the pilot's and copilot's cyclic stick or aft pilot's stick keying switch is pressed to RADIO, transmit mike audio is amplified by the microphone preamplified circuit. The transmit keying function may also be accomplished by pressing the pilot's, the copilot's, or the aft pilot's RADIO KEY foot switch. From the ics control unit, the mike audio is applied to the junction box and fed across a fixed attenuating network. From the junction, the transmit mike audio is applied to the transmitter portion of the uhf receiver-transmitter. Within the transmitter, the mike audio is modulated and amplified. The transmitter is tuned to the desired frequency by the frequency selection controls with the function selector switch set to T/R or T/R + G position on the uhf control unit. Normal transmit frequency is selected by either of two methods on the uhf control unit by setting the mode selector switch to the desired mode. With the mode selector switch set to PRESET CHAN, transmit frequency is selected from the assigned preset channel with the PRESET CHAN control. With the mode selector switch set to MAN, the transmit frequency is selected by manually adjusting the megacycle controls to the desired frequency. The guard transmit frequency is selected by three methods on the uhf control unit by setting the mode selector switch to the desired mode. With the mode selector switch set to GD XMIT, the guard transmit frequency is selected automatically. With the mode selector switch set to PRESET CHAN, the guard transmit frequency is selected from the assigned preset channel with the PRESET CHAN control. With mode selector switch set to MAN, the guard transmit frequency is selected by manually adjusting the megacycle controls to the assigned frequency. The resulting modulated RF signals are applied to the uhf portion of the vhf uhf antenna through the uhf reflectometer and a high pass filter. When the transmitter is keyed during the transmitting mode, 28volt de receiver disable voltage from the transmitter section is applied to the receiver section. Within the receiver, the receiver disable voltage is applied to the receiver disable relay, energizing the relay, thereby grounding the receiver audio.

b. Power Distribution. Power to operate the uhf radio facility is supplied from the dc primary bus to the dc radio bus on the overhead right DC RAD BUS circuit breaker panel. From the engaged 15ampere ARC51BX circuit breaker, 28 volts dc is applied through an RF line filter to one set of contacts and solenoid of the uhf power control relay within the receiver-transmitter. When the function switch on the uhf control unit is set to T/R or T/R + G, ground is provided to the other side of the uhf power control relay solenoid, completing the voltage path and energizing the relay. With the function switch in the T/R + G position, ground is also applied to the guard relay within the receiver-transmitter. Within the main receiver and guard receiver, which is part of the uhf receiver-transmitter, the dc voltage is distributed to circuits for main receiver and guard receiver operation. Within the transmitter, one de path supplies filament voltage. The second path supplies voltage to the power supply module. From the power supply module, power is applied to Cooler, Air, Electronic Equipment HD615/ARC51X (uhf external blower). From the copilot's lighting control panel INTERNAL LIGHTS CONSOLE control on the overhead control panel, 28 volts dc is applied to the uhf control unit for panel illumination.

3-6. Iff Transponder Set Facility (fig. 35)

a. Interrogation Signals. Incoming RF interrogations signals are received by Antenna AT884/ APX (IFF antenna) and fed to a duplexer within Receiver-Transmitter RT859/APX72 (IFF receiver-transmitter). The duplexer allows use of the same antenna for reception and transmission without mechanical switching. The receiver is pretuned to an incoming signal frequency of 10()0 megacycles. Sensitivity of the receiver stages can be operated at a reduced or a normal level when Control, Transponder Set C-6280 (P) /APX (IFF

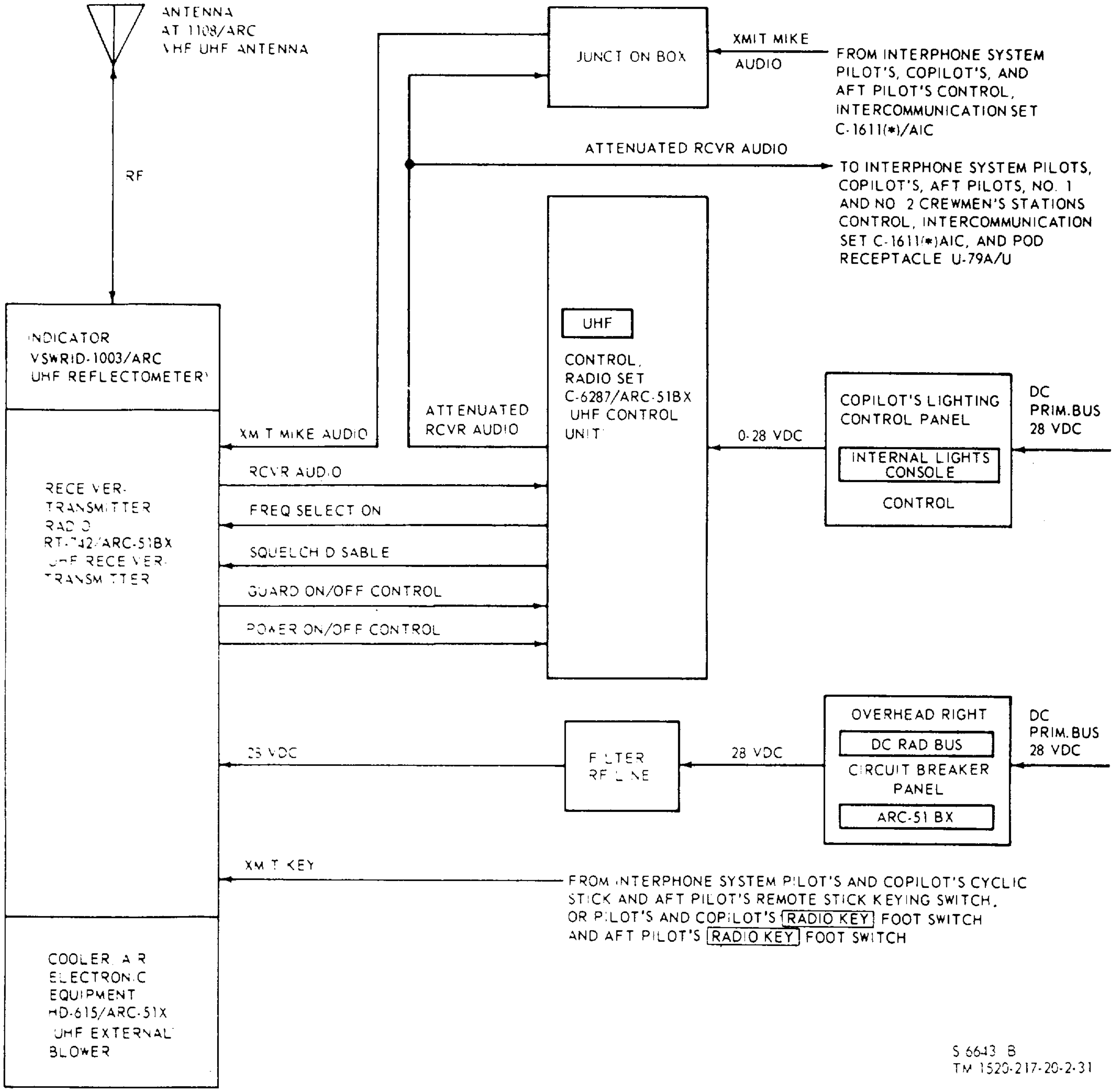


Figure 3-4. Uhf radio facility, block diagram.

control unit) MASTER switch is set to LOW or NORM. From the duplexer, the interrogation signals are applied to the receiver-transmitter to be amplified. After amplification, the signal is detected as pulse pairs and is fed to a decoder. The decoder stage determines whether a proper interrogation signal has been received and what mode the interrogation signals represent. The decoder outputs are used to trigger encoder stage reply pulses of the same mode as the interrogation pulses. To avoid multiple replies, the decoder output also blanks out incoming interrogation pulses while the reply pulses are being transmitted. The mode 4 circuit receives all pulses and searches for mode 4 interrogation. When mode 4 is detected, it suppresses the receiver while a mode 4 reply is prepared and sent. The mode 4 circuit receives the proper reply from Computer KIT1A/ T SEC (IFF computer) and passes it through the encoder to the transmitter.

b. Reply Signals. Modes 1, 2, 3/A, test, and C enabling signals from the IFF control unit are required for the decoder to respond to any given mode. The decoder checks the selected input signal for valid code and proper mode (except for mode 4 which is fed directly to the mode 4 circuit). If valid, the decoder signal is fed to the encoder which prepares the coded reply. Mode 1 and mode 3/A codes, if desired, are selected and indicated by the IFF control unit code controls, and the mode 2 is selected by switches on the front panel of the IFF receiver-transmitter. When IFF control unit, modes 1, 2, 3/A, and C switches are positioned to TEST the selected mode enables the Test Set, Transponder Set TS1843/APX (IFF test set) to interrogate the transponder while also enabling the transponder to reply. The IFF test set will also measure he characteristics of the reply and illuminate the TEST light on the IFF control unit when the reply is satisfactory. When the master control switch is turned to STBY, the IFF receiver-transmitter is placed in a warmup condition and also prevents the encoder from triggering the modulator, preventing a reply to an interrogation for tactical reasons. When turned to EMER, and automatic transmission of emergency reply signals is generated. Replies are transmitted only upon reception of interrogation pulses, which determine the mode of reply in conjunction with the IFF control unit switch settings. The transponder facility transmits identification of position signals by means of an IDENTMIC switch. When the switch is momentarily set to IDENT, identification of position may be transmitted. When the IDENTMIC switch is set to MIC, identification position replies may be transmitted when the pilot's, copilot's, or aft pilot's radio keying switches are keyed during normal radio communications. When all IFF control unit switches are set to ON, the decoder allows only the reply code determined by the interrogation mode to be passed to the transmitter. The transmitter consists of a modulator, oscillator, and power amplifier. The input to the modulator is the selected coded reply. Within the modulator, the coded reply is adjusted for pulse width and amplified. The amplified output is fed to the oscillator which provides a 1090 megacycle pulsed RF output to the power amplifier. The RF reply pulses from the power amplifier are applied to the duplexer which routes them through the IFF test set to the IFF antenna.

c. Audio. Audio signals are developed from the transmitter power amplifier. If desired, the reply pulses can be monitored by setting the MODE 4 AUDIOLIGHT switch to AUDIO. When the MODE 4 AUDIOLIGHT switch is set to AUDIO, an audio enable path is completed from the IFF control unit to the mode 4 audio generator circuits within the receiver-transmitter. Also, a mode 4 reply light enable voltage is fed from the IFF receiver-transmitter to the REPLY light on the IFF control unit. The REPLY light provides visual monitoring of valid mode 4 interrogation and replies. The output from the audio generator is fed to the junction box. Within the junction box, the audio signal is fed in parallel paths through isolation capacitors. From the junction box, the audio is fed to the pilot's and copilot's Control, Intercommunication Set C1611(*)/AIC (ics control unit) and applied to the headset amplifier circuit. From the ics control unit, the attenuated audio signal is applied to the pilot's and copilot's headset.

d. Power Distribution. Power to operate the IFF transponder set facility is supplied from the dc primary bus to the de radio bus on the overhead left DC RAD BUS circuit breaker panel. From the engaged 10ampere APX72 circuit breaker, 28 volts dc is applied in parallel paths. The first path is fed to the I/P relay within the junction box. The I/P relay is energized when the solenoid ground path is completed by a closed interphone transmit keying switch. The second path is fed to the IFF control unit and distributed for IFF transponder operation. The third path is fed to an internal power relay within the IFF test set. The fourth path is fed to an internal power relay within the IFF receiver-transmitter. The power relay is energized whenever the MASTER switch on the IFF control unit is turned to any position except OFF, completing the power relay control path to the IFF receiver-transmitter. With the power relay energized, a 28volt dc switched voltage is fed from the IFF receiver-transmitter to the IFF computer. When an IFF computer is installed, the IFF caution/advisory panel capsule is connected. The IFF capsule illuminates whenever the IFF computer indicates an improper mode 4 reply or a mode 4 reply is not present. Also, when the IFF computer is installed, a ground path is provided through a landing gear interlock when the helicopter is on the ground, which disables mode 4 operation. When weight is taken off the landing gear, the interlock is opened and mode 4 operation becomes activated.

3-7. Vor Receiving Set Facility (fig. 3-6)

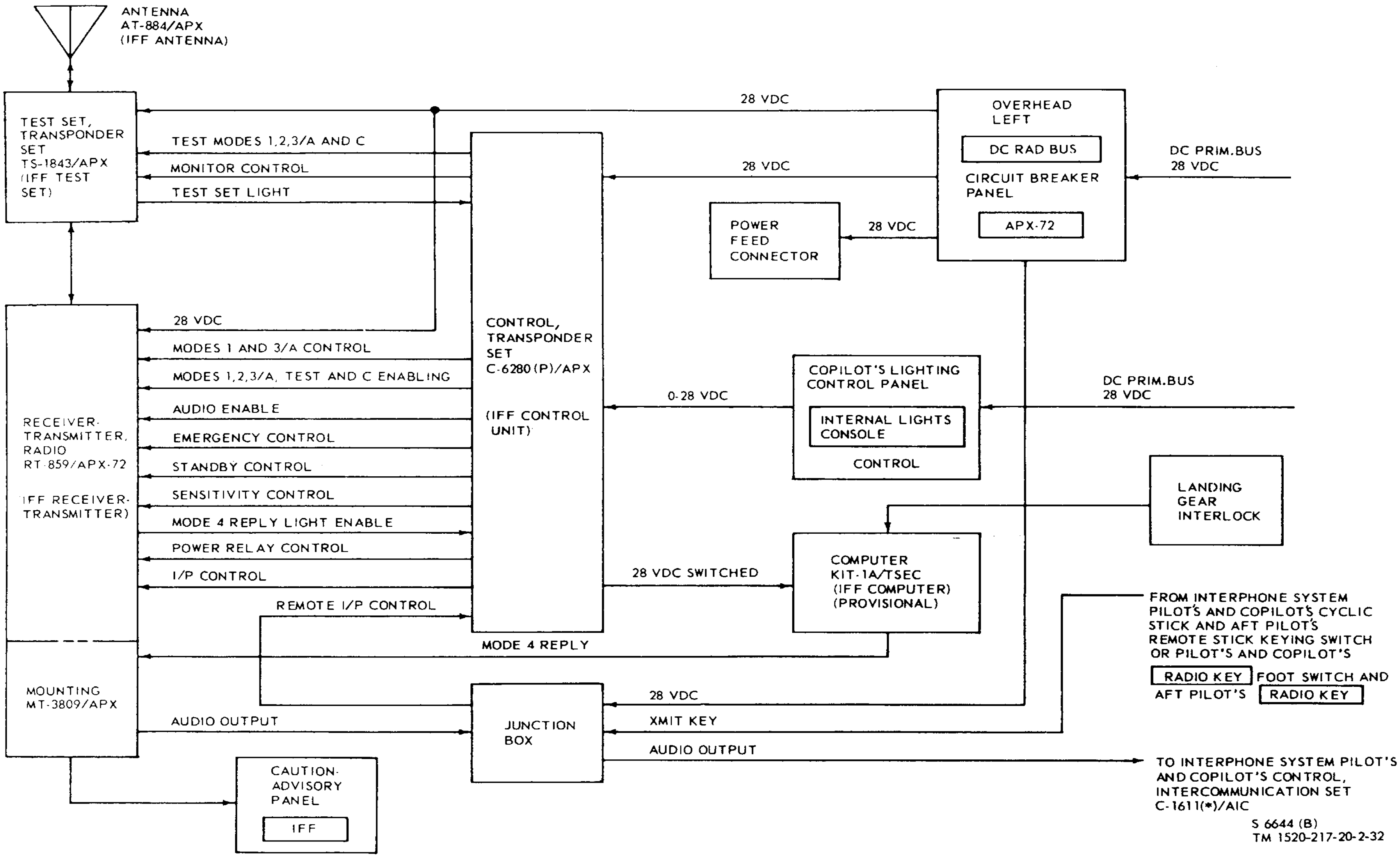


Figure 3-5. Iff transponder set facility, block diagram.

a. Audio. Incoming RF signals are picked up by Antenna DMN44 (vor antenna) and fed to Receiver, Radio R1388/ARN82 (vor receiver). Within the vor receiver, the RF signals are amplified, demodulated, and fed to the decoder. After detection and resultant audio is separated into two parallel paths. The navigation audio signals are developed in the manual instrumentation section, and the receiver audio signals are filtered to remove navigation audio signals and are fed to Control, Radio Set C6873/ARN82 (vor control unit). The receiver audio is attenuated by the vor control unit VOL control. The attenuated receiver audio signal is fed through attenuation and load resistors in the junction box and in parallel paths to the pilot's, copilot's, aft pilot's, and No. 1 and No. 2 crewmen's stations Control, Intercommunication Set C1611 (*) /AIC (ics control unit). When the RECEIVER NAV switch on any ics control unit is set to ON, the attenuated vor audio is fed through the VOL control for further attenuation and applied to the headset amplifier circuit. From the ics control unit, the receiver audio is applied to the associated headset. During emergency vhf radio operation, the vor-vhf antenna relay is energized, substituting Antenna AT1108/ARC (vhf-uhf antenna) for the vor antenna as the antenna input to the vor receiver.

b. Navigation Signals.

(1) Vor. RF signals from a vor station picked up by the vor antenna are fed to the receiver. The receiver is set to the desired vor frequeny by frequency selection controls on the vor control unit. Within the vor receiver, the rf signals are amplified, demodulated, and fed to the detector. In the vor mode the vor receiver audio from the detector contains voice or tone signals which identify the received station. The identity audio tone (receiver audio) is distributed as described in a above as receiver audio. The navigation output signals from the detector contain variable-phase and reference phase signals which correspond to helicopter bearing from the received station, and are fed to the receiver manual instrumentation section. In the manual instrumentation section, the audio is filtered out and voltages corresponding to variable-phase and reference-phase signals are detected and separated into parallel paths. In the variable-phase channel, the variable-phase signal is filtered, demodulated, and routed to the deviation-phase comparator. In the reference-phase channel, the reference-phase signal is filtered, demodulated, and routed to a phase-shifter resolver rotor in Indicator, Course ID1347/ARN82 (vor course indicator). The position of the vor course card, which is set by rotating the OBS control, corresponds to the amount of phase shift introduced to the reference-phase signal. The phase-shifted reference signal is then fed to the deviation-phase comparator, which provides a vor heading deviation output voltage whose polarity and amplitude (direction and amount of deviation) is a resultant of the variable-phase and reference-phase signals received from the vor station. When vor signals of sufficient strength to reliably operate the vor course indicator are present, a vor/lcl vertical flag output is also produced by the deviation-phase comparator. The vor/lcl heading deviation output and vor/lcl vertical flag signals are routed to the junction box, through normally-closed contacts of a junction box relay, and fed to the vertical bar and vertical flag of the vor course indicator. The variable-phase and the reference-phase signals are applied to a to/from phase comparator circuit. The to/from phase comparator circuit develops a signal output which is applied to the vor course indicator TO/FROM flag indicating toward or away from the vor station. The to/from comparator output is also fed to a load resistor in the junction box. The automatic instrumentation section in the receiver is also fed variable-phase and reference-phase signals, which are compared and synchronized with compass heading signals from the pilot's ID998/ASN. The automatic vor heading output is a vor heading signal which indicates radio magnetic bearing of the received vor station.
This signal is fed directly to the double-barred pointers of pilot's ID998/ASN and copilot's ID250(*)/ARN. When a vor frequency has been selected and the vor control unit power switch is set to TEST, the phase input of both the variable-phase and reference-phase channel is the same, and a known indication can be expected when the vor course indicator course card is set to a predetermined position.

(2) Localizer. RF signals from a localizer station picked up by the vor antenna are fed to the vor receiver. When the vor receiver is set to one of the localizer frequencies by frequency selection controls on the vor control unit, a localizer-energize signal from the vor control unit is fed to the vor receiver to activate the localizer circuits of the manual instrumentation section. Within the vor receiver, the rf signals are amplified and detected. In the localizer mode the headset audio from the detector is distributed as described

in a above. The navigation audio signals from the detector contain 90cps and 150cps signals which correspond to helicopter position left or right of a straight line approach to a runway. The localizer circuits control the vertical deviation bar and vertical flag of the vor course indicator when a localizer frequency is selected by the vor control unit. The 90cps and 150cps audio signals are separated by filters, rectified, and coupled to an amplitude comparator. The comparator develops a dc localizer-deviation output whose polarity is determined by a relative strength comparison of the 90cps and 150cps signals. The vertical flag output indicates if either or both signals are of sufficient strength for reliable operation. The localizer heading deviation output and vertical flag signals are routed to the junction box, through normally-closed contacts of a junction box relay, and fed to the vertical deviation bar and vertical flag of the vor course indicator. In the localizer mode, the vor course indicator TO/FROM indicator is blanked and the course card setting has no effect on the vertical bar indication.

c. Power Distribution. Power to operate the vor receiving set facility is supplied from the dc primary bus to the dc radio bus on the overhead left DC RAD BUS circuit breaker panel. From the engaged 5ampere ARN82 circuit breaker, 28 volts dc is applied to the vor control unit power switch and to the frequency selection controls. When the power switch is set to PWR or TEST, 28 volts dc is applied to the receiver B+ power supply for receiver operation. When a communication frequency is selected, 28 volts dc is routed to a relay in the receiver to enable the receiver tuning circuits to select communication frequencies, and to operate the receiver squelch circuit. All frequency selection paths are ground returns from the receiver tuning matrix. The power switch TEST position provides a ground return from the receiver test-energize circuits. From the ARN82 circuit breaker, 28 volts dc is also connected to the radio magnetic indicator servo amplifier in the automatic instrumentation section of]he receiver. Power from the No. 2 ac primary bus auto-transformer is supplied to the overhead right RADIO ac circuit breaker panel. From the engaged 5ampere 26 V ,C ASN43 circuit breaker, 26 volts ac is applied in parallel paths to the vor receiver automatic instrumentation section heading synchro circuit, and to the double-barred pointer synchros of the radio magnetic indicator. From the copilot's lighting control panel INTERNAL LIGHTS CONSOLE control on the overhead control panel, 28 volts dc is applied to the vor control unit for panel illumination.

3-8. Adf Direction Finder Facility (fig. 3-7)

a. Adf Operation. When Control, Direction Finder C6899/ARN83 (adf control unit) function switch is set to ADF, incoming RF signals are applied to the loop circuit of the Receiver, Radio R1391/ARN83, (adf receiver) by two antennas. From Antenna AS1863/ARN83 (adf loop antenna), the RF signals pass through the compensator RF inductance (adf loop antenna compensator) which minimizes magnetic field distortion caused by the helicopter airframe and are applied to the receiver resolver circuit. The signals are modulated and amplified and fed to a mixing stage. From the adf sense antenna RF signals are fed directly to the mixer stage and algebraically added to the resolver circuit output signals. From the receiver mixer stage, phase sensitive voltages corresponding to direction of the received station are applied to a loop servo motor, which provides a synchronized adf bearing signal to the single-barred pointers of the pilot's and copilot's Indicators, Radio Magnetic ID998/ASN and ID250(*)/ARN, to display magnetic bearing of the received station relative to helicopter magnetic heading. An audio component from the mixer stage is detected, amplified, and fed to the adf control unit GAIN control as receiver audio. Whenever the hf radio facility transmitter is keyed, the receiver audio path to the C6899/ARN83 is bypassed and connected to ground through normally open contacts of the adf disable relay. From the GAIN control, the receiver audio passes through fixed attenuation resistors in the junction box and is applied to the pilot's, copilot's, aft pilot's, and No. 1 and No. 2 crewmen's stations Control, Intercommunication Set C1611(*)AIC (ics control unit). When the RECEIVERS NAV switch on any ics control unit is set to ON, the receiver audio is applied through the headset amplifier circuit. From the ics control unit, the audio is applied to the associated headset when selected.

b. Antenna Operation. When the adf control unit function switch is set to ANT, incoming RF signals are received by the sense antenna and fed to the receiver. In this mode, the adf loop antenna is not used and the radio magnetic indicators single-barred pointers are inoperative. The receiver is tuned to the incoming signal frequency by a tuning synchro (TUNE control) in the adf control unit, and the signals are detected and am

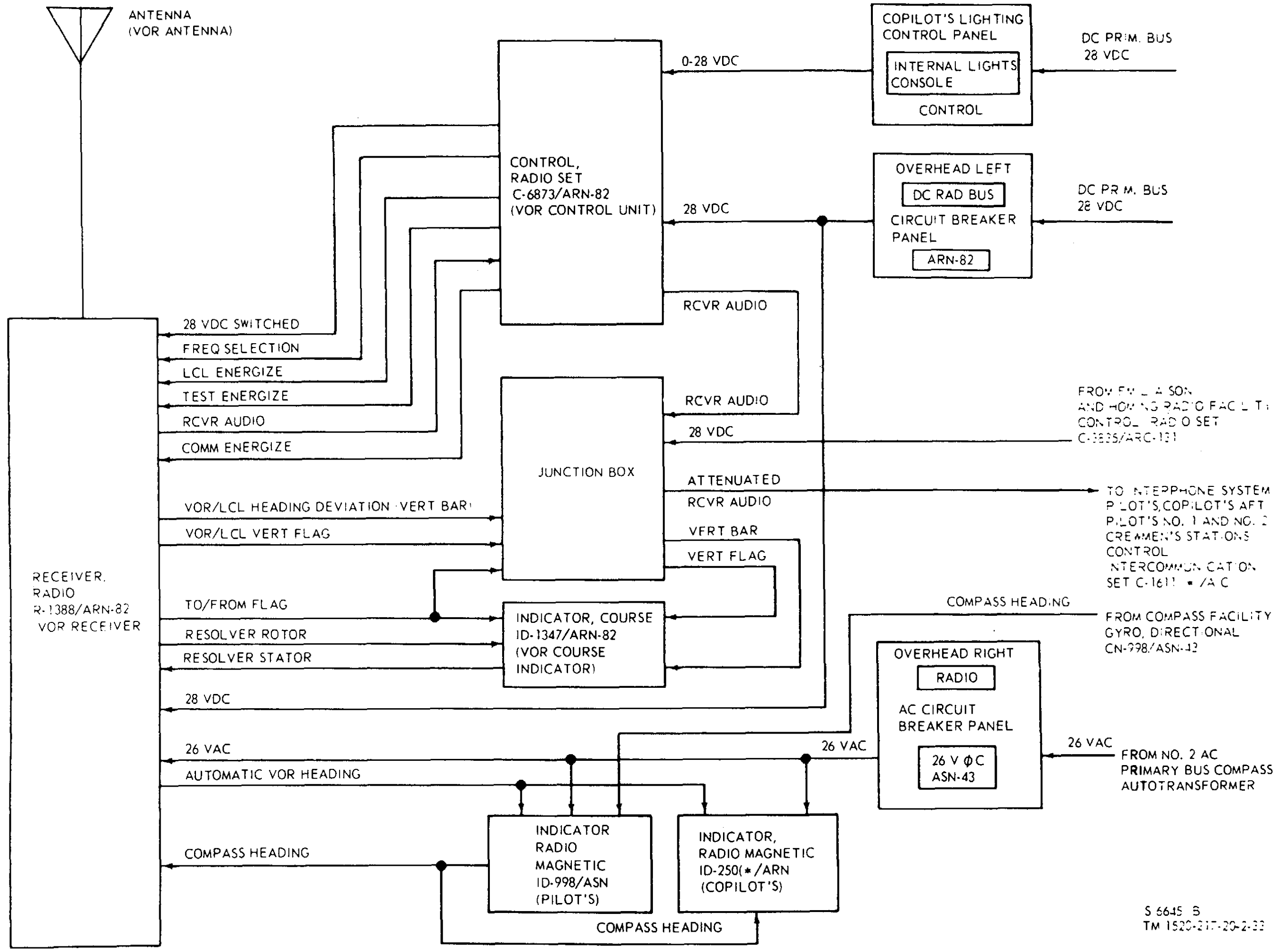


Figure 3-6. Vor receiving set facility, block diagram.

plified. The resultant audio signal is attenuated by the adf control unit GAIN control and applied to fixed attenuation resistors in the junction box. From the junction box, the audio signal is distributed in parallel paths to the ics control unit at the pilot's, copilot's, aft pilot's, and No. 1 and No. 2 crewmen's stations.

c. Manual Loop Operation. When the adf control unit function switch is set to LOOP, the adf loop antenna is connected to the receiver and the sense antenna is disconnected (within the adf receiver). The receiver operates in a similar manner as for adf operation, except that bearing to the adf station is manually tuned for display on the radio magnetic indicators. When the adf control unit LOOP control is rotated L or R, a loop synchro circuit in the receiver rotates the single-barred pointers of the radio magnetic indicators left or right, to simulate adf loop antenna rotation (loop antenna is fixed and cannot rotate). Helicopter magnetic heading is fed from the compass facility to the compass cards of the indicators. Bearing of the adf station can be determined by listening to the audio for an aural null, or watching the adf control unit tuning meter for a reduction in output (null).

d. Bfo Operation. A beat frequency oscillator (bfo) circuit, operated by the adf control unit BFO switch, aids in tuning for a zero beat or supplying audio for continuous wave (CW) signals in any mode of operation.

e. Power Distribution. Power to operate the adf direction finder facility is supplied from the dc primary bus to the dc radio bus on the overhead right DC RAD BUS circuit breaker panel. From the engaged 5ampere ARN83 circuit breaker, 28 volts de is applied to the adf control unit function switch. When the function switch is set to ADF, ANT, or LOOP positions, 28 volts dc is applied in parallel paths, through the adf control unit band switch to the receiver band select circuits, and to the receiver power supply. Power from the No. 2 ac primary bus auto-transformer is supplied to the overhead right RADIO ac circuit breaker panel. From the engaged 5ampere 26 V)C ASN43 circuit breaker, 26 volts ac is applied to the adf control unit function switch. When the function switch is set to ADF, ANT, or LOOP positions, 26 volts ac is applied in parallel paths through the adf control unit tuning synchro to the adf receiver tuning circuit, synchro circuits, and to the radio magnetic indicators single-barred pointer synchro. From the INTERNAL LIGHTS CONSOLE control on the copilot's light control panel, 28 volts dc is applied to the adf control unit for panel illumination.

3-9. Compass Facility (fig. 3-8)

a. Free Gyro Operation. Within Gyro, Directional CN998/ASN43 (compass directional gyro) a stable reference heading synchro output signal is provided by the heading and slaving synchros which are driven by the gyro motor. Any change in the helicopter azimuth heading is coupled to the gyro motor gimbals, producing a change in the output of the synchros. The heading synchro output is fed to a servo synchro in Indicator, Radio Magnetic ID-998/ASN (pilot's radio magnetic indicator). The servo synchro is mechanically linked to the compass card, generator, motor, slaving synchro, and transmitting synchro in the pilot's radio magnetic indicator. When the pilot's radio magnetic indicator receives a heading synchro signal from the compass directional gyro, a servo synchro output signal from a winding of the servo synchro is applied to Amplifier, Electronic Control AM3209/ASN (compass amplifier) and amplified. The amplified control signal (motor drive signal) is routed back to the pilot's radio magnetic indicator to drive the compass card motor. As the compass card rotates and approaches the corresponding heading indication, a feedback signal from the pilot's radio magnetic indicator generator is mixed with the servo synchro signal within the compass amplifier to dampen the motor rotation. When the proper compass card indication is reached, the servo synchro input to the compass amplifier drops to zero and motor rotation stops. A synchro transmitter in the pilot's radio magnetic indicator, also linked to the compass card, produces a compass heading signal corresponding to compass card position. This compass heading signal is fed in parallel paths to the compass card of Indicator, Radio Magnetic ID250 (*) /ARN (copilot's radio magnetic indicator) and to Receiver, Radio R1388/ARN82 (vor receiver). The output from the compass directional gyro slaving synchro is fed to the AFCS control panel. Processing of the gyro is accomplished automatically by a leveling torquer within the compass directional gyro. When the COMPASS SLAVING switch is set to OUT, the MAGDG relay within the compass directional gyro is in the DG MODE (deenergized). Latitude correction can then be accomplished manually using the LATITUDE control at the base of the compass directional gyro. The compass directional gyro LATITUDE switch is set to N or S, depending on which hemisphere

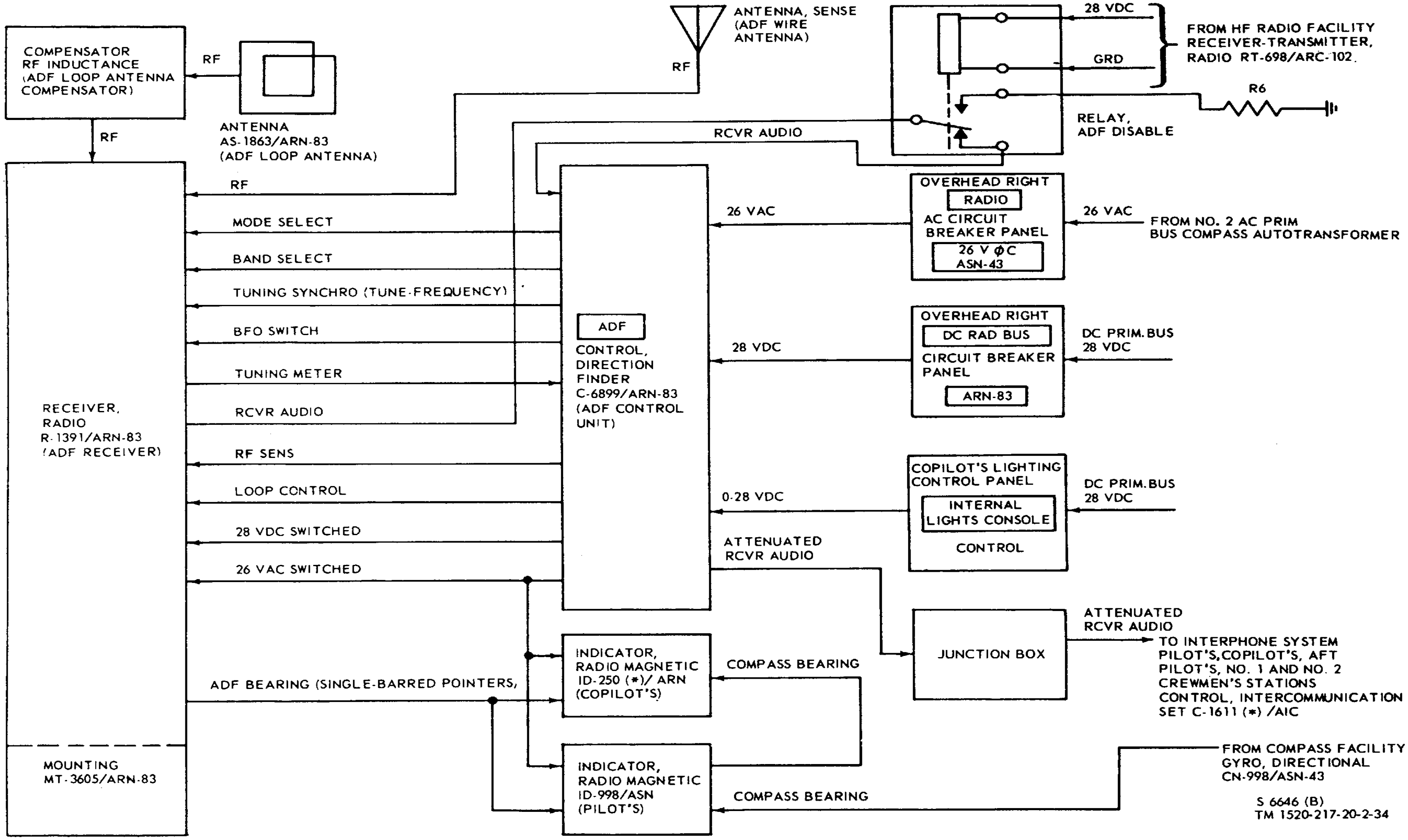


Figure 3-7. Adf direction finder facility, block diagram

the facility is to be operated in. The latitude correction signals in the DG mode are then routed from the LATITUDE control to either the north or south slaving torquers for processing the gyro. The power failure flag of the pilot's radio magnetic indicator is operated by a dc voltage from the compass amplifier which removes the flag from view under normal conditions. Adf bearing signals from Receiver, Radio R1391/ARN83 (adf receiver) are routed in parallel paths to the single-barred pointers of the pilot's and copilot's radio magnetic indicators. Vor heading signals from the vor receiver are routed in parallel paths to the double-barred pointers of the pilot's and copilot's radio magnetic indicators.

b. Magnetically Slaved Operation. Compass operation in the magnetically slaved mode is similar to free gyro operation except that latitude correction is accomplished by slaving the gyro to the earth's magnetic field. Transmitter, Induction Compass T611/ASN (flux valve) is excited by 23.5 volts ac from the compass directional gyro and produces a reference heading signal corresponding to the horizontal component of the earth's magnetic field. The Compensator, Magnetic Flux CN405/ASN (compensator) provides a correction for the flux valve to offset magnetic deviations introduced in the flux valve by the helicopter airframe. The flux valve reference heading signal is fed to a slaving synchro mechanically linked to the compass card within the pilot's radio magnetic indictor. Any misalignment between the compass card heading and that sensed by the flux valve will create a heading error signal in a winding of the pilot's radio magnetic indicator slaving synchro. When the COMPASS SLAVING switch is set to IN, the MAGDG relay within the compass directional gyro is energized and operating power is applied to the control amplifier. The heading error signal from the pilot's radio magnetic indicator is fed to the compass directional gyro control amplifier and is amplified and demodulated to produce a dc signal whose amplitude and polarity are related to amount and direction of the heading error. This signal is fed to the pilot's radio magnetic indicator annunciator flag, which indicates direction of heading error by dot and cross symbols or correction or error (null) when neither symbol is visible. Manual nulling is accomplished by rotating pilot's radio magnetic indicator synchronizing knob. A second output of the control amplifier is a dc current which is used to precess the gyro, causing changes in the output of the compass directional gyro heading synchro and automatically slaving the system to a null.

c. Power distribution. Power to operate the compass facility is supplied from the No. 2 primary bus to the overhead right RADIO ac circuit breaker panel. From the engaged 5ampere /C ASN43 and 0B ASN43 circuit breakers, 115 volts ac is applied in parallel paths to the compass directional gyro and to the compass amplifier. Within the compass directional gyro, ac power is supplied through an rfi filter to the gyroscope field windings, to the time totalizing meter; another path routes the ac power to the heading and slaving synchros. The power supply transformer provides excitation power to the control amplifier and 23.5volt ac excitation to the flux valve. Within the compass amplifier, ac power is applied to the power supply transformer and through a phase shifting capacitor to the pilot's radio magnetic indicator motor. The power supply transformer provides excitation power for the amplifier circuit and 26 volts ac excitation to the pilot's radio magnetic indictor generator. Power from the No. 2 ac primary bus auto-transformer is also supplied to the overhead right RADIO ac circuit breaker panel. From the engaged 5ampere 26V XC ASN43 circuit breaker, 26 volts ac is applied in parallel paths to the pilot's radio magnetic indicator synchro transmitter and to the copilot's radio magnetic indictor compass card synchro.

3-10. Interphone System (fig. 48)

a. Interphone, Pilot, Copilot, and Aft Pilot. Interphone communications from the pilot's, the copilot's, and the aft pilot's stations can be conducted in one of three modes. In the first mode, Control, Intercommunication Set C1611 (*)/AIC (ics control unit) RECEIVERS INT switch must be set to ON. When the cyclic stick keying switch is pressed to ICS (interphone keying), mike audio from the operator's mike is initially applied to his ics control unit, where it is amplified and distributed in parallel paths to his headset as side-tone and to the interphone line. From the operator's ics control unit, the interphone microphone audio is distributed in parallel paths to all crew stations. With the RECEIVERS INT switch set to ON at the receiving ics control unit, the incoming interphone audio is applied to the headset amplifier. From the headset amplifier, the audio is applied through the associated Jack U92A/U to the headset. In this mode, interphone communications is possible regardless of the position of

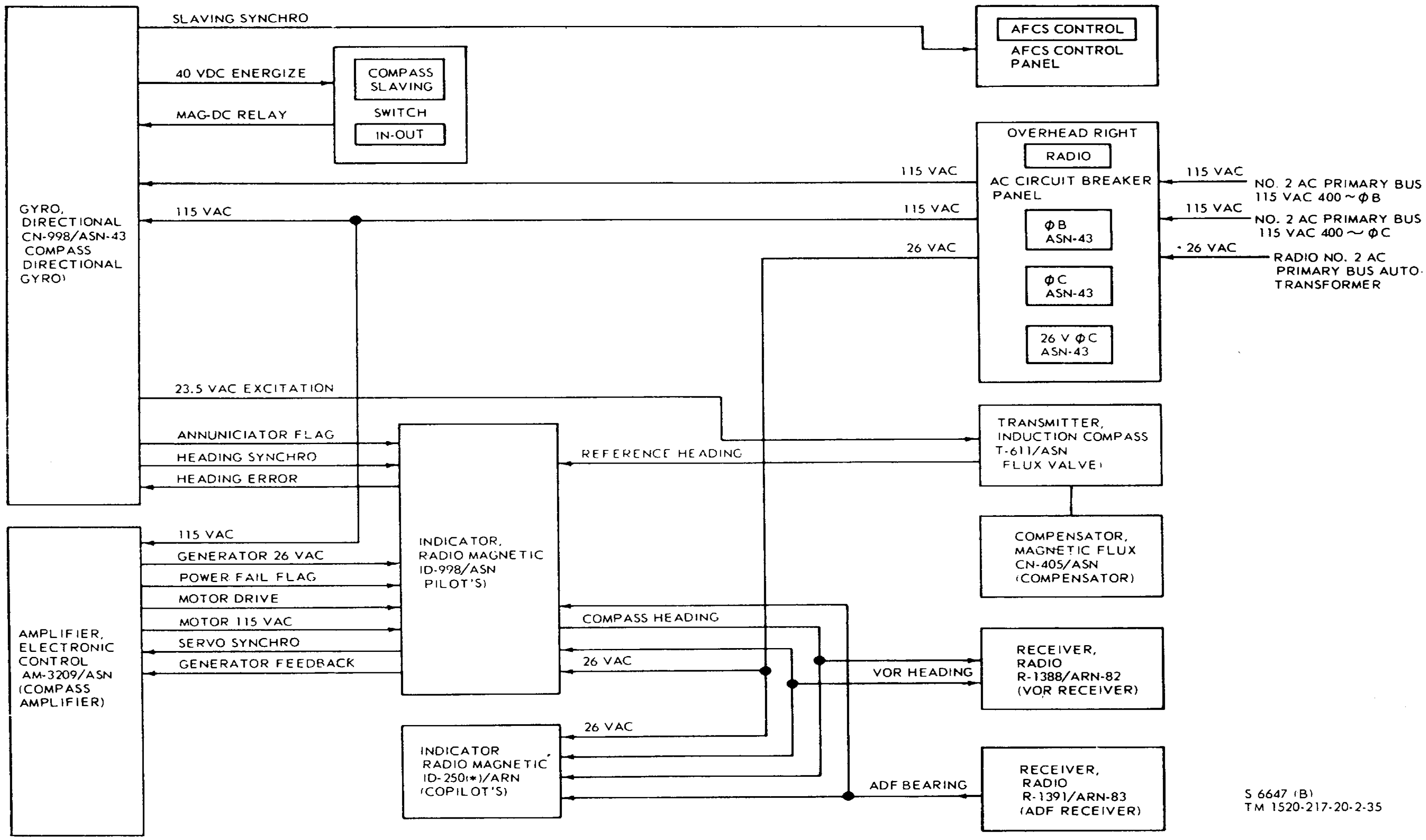


Figure 3-8. Compass facility, block diagram

the ics control unit transmit-interphone selector switch. From the operator's ics control unit, the interphone audio is applied to a junction box loading resistor. In the second mode, if the RECEIVERS INT switch is set at OFF, then the transmit-interphone selector switch set to INT, interphone communications is established by pressing the cyclic stick keying switch either to ICS or RADIO or pressing the RADIO KEY foot switches. The processing and distribution of audio remains the same as in the first mode. For this installation, only the dynamic microphone is used for radio and interphone voice transmission. In the third mode, the transmit-interphone selector switch must be set to PVT. With the transmit-interphone selector switch set to PVT and the cyclic stick keying switch is pressed to ICS, mike audio is initially applied to the ics control unit where it is amplified and distributed in parallel paths to the headset as side-tone and to the interphone line. When the cyclic stick keying switch is not pressed, mike audio is applied to the ics control unit where it is amplified and distributed in parallel paths to the headset as side-tone and to the private interphone line. Three Discriminators, Discrete Signal MD736/A are installed between the junction box and the pilot's, copilot's, and aft pilot's ics control unit in the hf, vhf, and uhf xmit audio lines.

b. Interphone, No. 1 and No. 2 Crewmen's Stations. Interphone communications from the crewmen's stations can be conducted in one of three modes. In the first mode, the ics control unit RECEIVERS INT switch must be set to ON. When the mike button on the Jack U94A/U at the operating station is pressed (interphone keying), mike audio is initially applied to the ics control unit where it is amplified and distributed in parallel paths to the headset as side-tone and to the interphone line. From the operator's ics control unit, the interphone audio is distributed in parallel paths to all crew stations. In this mode, interphone communications are possible regardless of the position of the ics control unit transmit-interphone selector switch. In the second mode, if the RECEIVERS INT is set at OFF, then the transmit-interphone selector switch must be set to INT. With the transmit-interphone selector switch set to INT and when the mike button is pressed on Jack U94A/U, processing and distribution of interphone audio is the same as in the first mode. In the third mode, the transmit-interphone selector switch must be set to PVT. With the transmit-interphone selector switch set to PVT and the mike button is pressed to Jack U-94A/U, mike audio is initially applied to the ics control unit where it is amplified and distributed in parallel paths to the headset as side-tone and to the interphone line. When the mike button is not pressed on Jack U94A/U, mike audio is applied to the ics control unit where it is amplified and distributed in parallel paths to the headset as side-tone and to the private interphone line.

3-11. Battery

The battery facility consists of nickel-cadmium storage battery with vents, a battery relay, and a BATTERY MASTER switch. Battery power is used for limited ground operation when no external power is available, and as an emergency source of power to the dc essential bus in the event of failure of both generators and/or rectifiers. When the BATTERY MASTER switch is set to OFF, the battery supplies power to the battery bus only. When the switch is set to BATTERY MASTER, the battery relay is energized, allowing battery power to be connected to the dc primary bus, in addition to normal connection to the battery bus. The battery is located in the nose section forward of the cockpit and is accessible through the access door. The battery is a 24volt, 22amperehour at a 2hour rate, nickel-cadmium type, and uses potassium hydroxide as the electrolyte. The battery is fitted with a cover and gasket, preventing electrolyte spillage into the battery compartment. Inlet and outlet hose fittings are embodied in the battery case to permit venting of the battery.

3-12. Motor Generator

The motor-generator, rated at 115 volts ac, 250 volt-amperes, 400 cycles, has a self-contained electronic voltage control system. With 28 volts dc applied, it operates continuously when the generators or ac external power are off, to provide ac power for engine instruments prior to, and during, engine starts. As soon as the engines are operating at 100 percent Nr, and either generator is functioning properly, the motor-generator is deactuated. Test jacks and a potentiometer are installed for adjusting the motor-generator output.

3-13. Voice Warning System AN/ASH19 (fig. 39)

a. Signal Flow.

(1) The sources of input signals to the Reproducer-Converter, Voice Signal RP139( )/ ASH19 are the fault sensors, the Signal Adapter, and the Control Panel, Voice Warning System

(VWS). The RP139( )/ASH19 has 20 message channels containing prerecorded voice warning messages. Each of these messages is assigned a priority based on its relative importance. The priority system permits the RP139( )/ASH19 to select and play out the highest priority message when multiple input signals occur. The RP139 ( ) /ASH19 selects and plays out the remaining messages of lower priority when the OVERRIDE push switch on the VWS control panel is pressed and released in succession.

(2) The fault sensors are referred to as belonging to one of four groups only for purposes of the following explanation. Four groups of fault sensors provide input signals to the RP139( )/ ASH19. (For detailed block diagram of the fault sensors, see figure 49.) Upon detecting a fault, a fault sensor of the first group feeds a +28 volt dc signal to fault indicators located on the instrument panel and to the RP139( )/ASH19. The RP139 ( )/ASH19 selects and plays out the appropriate message channel. This audio output signal is fed in three parallel paths from the RP139( )/ASH19. The first path is fed to the Continuous Inflight Performance R e c o r d e r (CIPR) AN/ASH23 which changes its speed from 1/5 inch per minute for recording timing pulses to 2 inches per second for audio recording. The second path is fed to three parallel fixed resistors in the junction box for attenuation. The third path is fed to the pilot's, copilot's, and aft pilot's Control, Intercommunication Set C1611 (*)/AIC (ics control unit). From the ics control units, the audio signal is applied to the respective headsets. When the RP139 ( )/ASH19 provides an audio input to the ics control units simultaneous with the audio input of some other facility, both audio signals will be received simultaneously in the headsets.

(3) Upon detecting a fault, a fault sensor of the second group feeds a +28volt dc signal to the appropriate caution capsule, illuminating it, and to the switching logic circuitry of the signal adapter. After processing the signal, the signal adapter feeds a +28volt dc signal to the RP139 ( )/ASH19. From the RP139( ) /ASH19 the signal path is the same as that in the first group.

(4) Upon detecting a fault, a fault detector of the third group feeds a +28volt dc.signal to the appropriate caution capsule, illuminating it, and to the RP1,9( )/ASH19. From the RP139 ( )/ASH19 the signal path is the same as that in the first group.

(5) Upon detecting a fault, a fault sensor of the fourth group feeds a +28volt dc signal to the switching logic circuitry of the signal adapter, or an ac signal, or a dc signal of varying voltage level to the switching logic and signal conditioning circuitry of the signal adapter. After processing the signal, the signal adapter feeds a +28volt dc signal to the appropriate caution capsule, illuminating it, and a +28volt dc signal to the RP139( )/ASH19. From the RP139( )/ASH19 the signal path is the same as that in the first group.

(6) When the RP139( )/ASH19 receives multiple input signals, it selects and plays out the message of the highest priority. All the appropriate caution capsules are illuminated. The RP139 ( ) /ASH19 continues to play out the highest priority message until the input fault signal is removed, or an input signal of higher priority is received and then this message is played out continuously, or an override signal is initiated. Pressing and releasing in succession the OVERRIDE push switch on the VWS control panel permits all the messages of lower priority to be played out. During use of this switch, the caution capsules remain illuminated. These capsules are extinguished only by the removal of the input fault signals. Pressing and releasing the RESEI push switch on the VWS control panel permit, the highest priority message to be played out again provided the input fault signal is still present. Pressing and releasing the TEST push switch on the VWS control panel initiates self-test of all 20 channels by providing an input signal that simulates the input fault signals and is applied simultaneously to all channel inputs. The TEST switch does not illuminate the caution capsules associated with the voice warning messages. With the helicopter on the ground, the power switch on the VWS control panel must he positioned to ON before any of its push switches are used.

(7) The pilot can record on the AN/ASH23 by positioning the CIPR ICS switch on the instrument panel to PILOT and the selector switch on his ics control panel to PVT. Both switches must be positioned to record on the AN/ASH23. The audio output path is fed from the pilot's microphone through the ics control panel, through the CIPR ICS switch, and through a fixed attenuating resistor in the junction box to the AN/ ASH23.

b. Power Distribution.

(1) Power to operate the voice warning system and its associated warning light is supplied from the dc primary bus to the AN/ASH19 CONT and AN/ASH19 circuit breakers located on the right-hand overhead circuit breaker panel.

With the helicopter on the ground, 28 volts dc is applied in parallel paths. The first path is fed from the engaged 5ampere AN/ASH19 circuit breaker through the closed contacts of de-energized relay No. 2 to the VWS OFF caution capsule illuminating it. The second path is fed from the engaged 5ampere AN/ASH19 CONT circuit breaker through relay No. 1 to ground through the closed landing gear interlock, energizing relay No. 1 and opening the dc path to relay No. 2. The third path is fed from the same 5amp circuit breaker to the VWS control panel and the signal adapter, providing automatic turn-on of the signal adapter. In the VWS control panel, power is available at the panel power switch for operating the RP139 ( ) /ASII19 and the AN/ASH23. The fourth path is fed from the same 5amp circuit breaker to the CIPR ICS switch and is available for operating the AN/ASH23. Relays No. 1 and No. 2 are paralleled by diodes to eliminate transients during their operation.

(2) With the helicopter airborne, 28 volts dc applied in parallel paths, and the landing gear interlock is opened removing the ground from relay No. 1. With relay No. 1 de-energized, the first path is fed from the engaged 5amp AN/ASH19 CONT circuit breaker through a jumper across relay No. 1 to relay No. 2 to ground, causing relay No. 2 to energize. With relay No. 2 energized, the path from the engaged AN/ASH19 circuit breaker is opened, extinguishing the VWS OFF caution capsule. The second path is fed from the same 5amp circuit breaker through a jumper across relay No. 1 to the VWS control panel, the RP139( )/ASH19, and the AN/ASH23, providing automatic turn-on of the RP139 ( ) /ASH19 and the AN/ASH 23. The third and fourth paths are the same as those with the helicopter on the ground.

3-14. Automatic Flight Control System (AFCS)

a. Pitch Control Channel (fig. 44).

(1) The pitch control channel functions in an inner and outer control loop The inner control loop operates within the limits of the servo power piston at a rate determined by the rate of the helicopter movement. The outer control loop operates within the same limits as the primary flight controls; the rate being limited by the response of the primary flight controls. Both inner and outer control loops operate, using certain common components. Inner loop components are the oscillatory shutoff unit, the flight director indicator, and the AFCS servo valve. Outer loop components are the stick trim amplifier, the stick trim valve, and the cyclic trim position sensor. All other components are common to both inner and outer control loops.

(2) AFCS operates in either the A (AFCS) or 0 (ONON) modes. The pitch control channel is divided into No. 1 and No. 2 systems which are independent. Either No. 1 or No. 2 may be selected or both may be engaged simultaneously. Engagement of one of the systems is the AFCS mode, while engagement of both systems is the ONON mode. Each system has a separate vertical gyro, a separate dual channel synchronizer, and separate inputs from the remote stick control panel.

(3) No. 1 and No. 2 systems are identical so only the No. 1 system is discussed. Any pitch displacement from the desired helicopter attitude will be sensed by the vertical gyro which produces a proportional ac displacement signal. This signal is applied to the AFCS pitch control channel in two paths. The proportional ac displacement signal is applied directly to the pitch module where it is processed and becomes a dc correction signal. The proportional ac displacement signal is also applied through a dual channel synchronizer to another circuit path in the pitch amplifier module where it is processed and becomes a rate plus proportional signal. Both processed signals are applied to the AFCS control panel where the dc correction signal is routed to the oscillatory shutoff unit, the flight director indicator, and the AFCS servovalve, and the rate plus proportional signal is applied to the outer control loop stick trim amplifier.

(4) The dc correction signal is applied to the oscillatory shutoff unit which samples the signal and, if the signal is within specific frequency and amplitude parameters, will produce a channel disengage command causing the dc correction signal to be removed from the servovalve. If the dc correction signal is acceptable, it is applied to the flight director indicator horizontal bar (A mode) providing the pilot with a visual indication of the amount of AFCS authority remaining in the servovalve. The dc correction signal applied to the servovalve control solenoid produces a movement of the flapper valve which in turn produces movement of the power piston. The power piston is connected through control rods to the main rotor tandem servo which moves and repositions the main rotor blades. As the main rotor blades are moved, the helicopter begins to return to the desired attitude. When the helicopter returns to the desired attitude, the signal from the vertical gyro decreases and a rate signal which is derived in the AFCS amplifier aids in preventing overshoot.

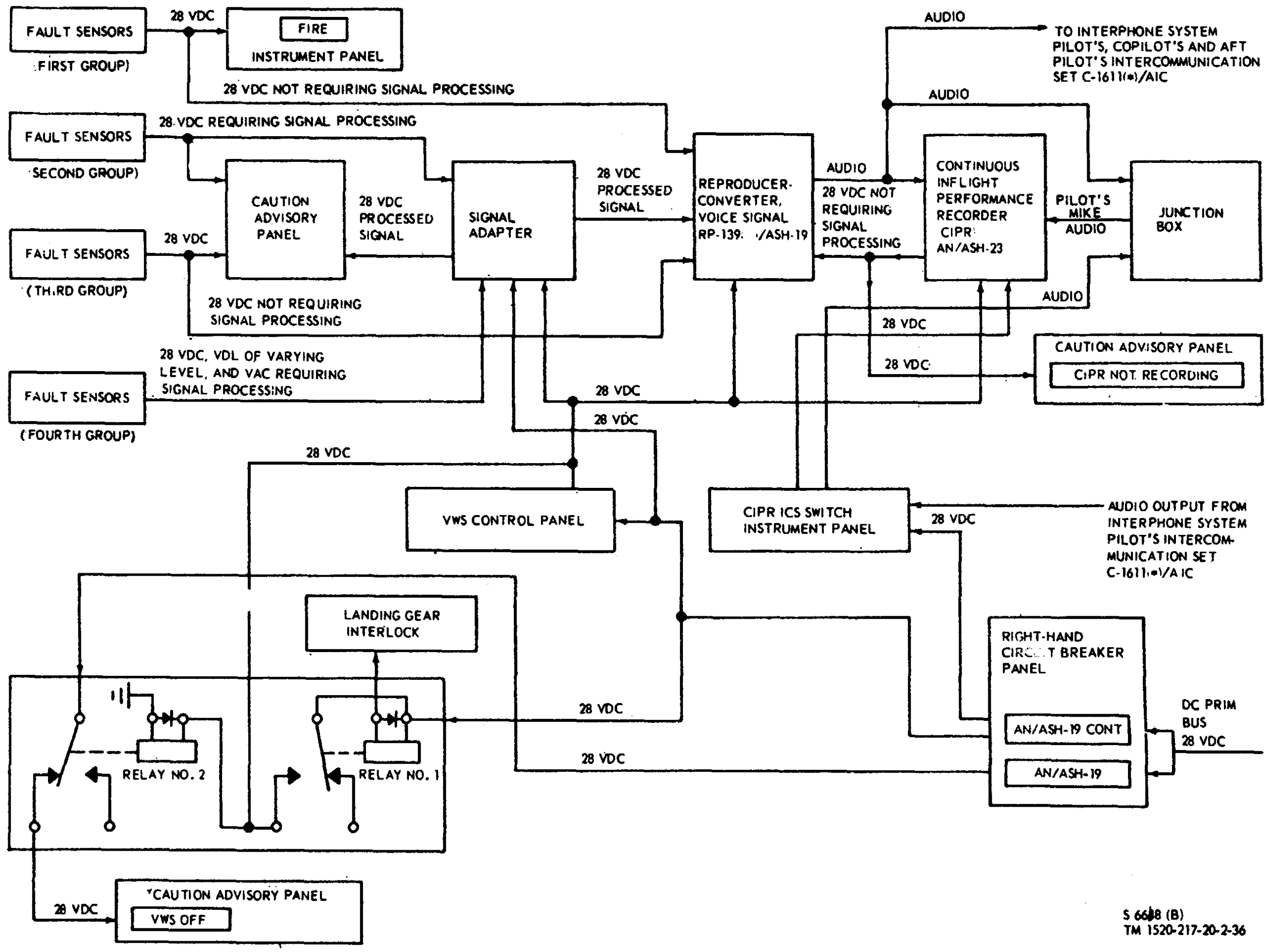


Figure 3-9. Voice warning system AN/ASH-19, block diagram

(5) In the ONON mode, both vertical gyro signals are processed through the channel as previously described and are summed in the AFCS control panel before being applied to the AFCS servovalve. No. 1 correction signal is applied to the horizontal bar and No. 2 correction signal is applied to the vertical pointer of the flight director indicator directly from the AFCS amplifier. Should either No. 1 or No. 2 system fail, the other system would provide AFCS control in the pitch channel.

(6) The rate plus proportional signal applied to the stick trim amplifier pitch module is processed in the amplifier becoming an outer loop control signal. This signal is applied to the stick trim valve which causes the stick trim power piston to move. Movement of the stick trim power piston produces cyclic stick movement which will aid the inner loop in stopping the helicopter movement away from the desired attitude. The stick trim power piston is also mechanically connected to a position sensor. Displacement of the piston causes the sensor to produce a signal which is fed back to the input of the stick trim amplifier to dampen cyclic stick movement rate. At the helicopter responds to inner and outer loop signals, the cyclic stick moves in the opposite direction to aid in preventing overshoot.

(7) The remote stick control panel operates in a NORM and an AUX mode. Movement of the pane! cyclic stick grip produces ac signals, in the NORAI mode, which are applied to the AFCS amplifier where they are processed, becoming dc correction signals. changing the pitch attitude of the helicopter. In the NORM mode only, signals are also applied to the stick trim amplifier where they are processed, becoming outer loop control signals. repositioning the cyclic sticks. In the AUX mode and NORM mode the cyclic sticks may be slowly trimmed to the desired position by pressing the STICK TRIM switch to either FWD or AFT.

(8) When it is desired to change the attitude of the helicopter using the cyclic stick, pressing the TRIM PEL button energizes the dual channel synchronizer. Activation of the dual channel synchronizer produces
a nulled synchronizer proportional ac displacement signal for routing to the AFCS amplifier. This is done to provide the outer loop with a null reference signal which becomes the helicopter attitude to be maintained.

b. Poll Contzt7ol Channel (fig. 45).

(1) Roll control channel inner control loop operation is similar to pitch control channel operation as previously described. Outer control 1llp operation is the same is described from pitch control channel. The roll channel has a No. 1 and a No. 2 system. Each system has three sensors; a vertical gyro, rate gyro, and lateral accelerometer. The vertical gyro signal is applied in the same manner as for pitch. However, the proportional ac displacement signal applied to the AFCS amplifier roll module is only processed when remote stick NORM or AUX modes are functional. The rate gyro signal is processed by the AFCS amplifier where it becomes the dc correction signal. The rate signal is also processed and routed to the yaw control channel. The lateral accelerometer signal is processed in the AFCS amplifier and is routed to the yaw control channel.

(2) The rate gyro produces a signal having an amplitude which is dependent on rate of helicopter movement and phase which is dependent on direction of movement. The lateral accelerometer produces an accel signal proportional to the lateral rate of displacement change the roll axis. The roll rate signal and the filtered accelerometer signal are applied to the yaw control channel to enable the pilot to make a coordinated turn without having to use the tail rotor foot pedals. As the pilot moves the cyclic stick in the roll axis, helicopter roll attitude will change, with the result that the rate gyro and the lateral accelerometer will produce signals. These signals are applied to the. yaw control channel producing a heading change as long as the pedal switches are activated, and the helicopter is flying at forward speeds exceeding 60 knots.

(3) In either NORM or AUX remote stick modes, the proportional ac displacement signal from the vertical gyro is combined in the AFCS amplifier with the lateral accelerometer signal producing a pure accelerometer signal by nulling out the attitude component of the accelerometer signal. This signal is applied to the yaw control channel. The filtered accel signal is also combined with the remote dc command signal, processed, and applied to the output of the AFCS amplifier as the de correction signal. In the AUX and NORM modes the cyclic sticks may be slowly trimmed to the desired position by pressing STICK TRIM switch to either L (left or R (right).

(4) The dc correction signal in the AFCS mode is applied to the vertical bar of the flight director indicator through the AFCS control panel. During ONON mode operation, the No. 1 dc correction signal is applied to the vertical bar and the No. 2 dc correction signal is applied C2, to the horizontal pointer of the flight director indicator.

c. Yaw Control Channel (fig. 46).

(1) The yaw control channel is operated in inner and outer control loops. The inner control loop provides inputs to the AFCS servovalve re3-26. 1

suiting in tail rotor blade movement. The outer control loop provides commands to the stick trim valve which repositions the tail rotor foot pedals, repositioning the tail rotor blades. The yaw control channel within the AFC,S amplifier consists of two identical amplifiers within the yaw module and the synchronizer portion of the bar alt/yaw sync module. The yaw control channel operates in a heading hold mode, a synchronizing mode, a coordinated turn mode, and a remote mode.

(2) During heading hold mode, any deviation from desired heading is routed from the directional gyro, through the AFCS control panel YAW TRIM control, to the chassis mounted synchronizer control transformer in the AFCS amplifier. This proportional signal is applied to the synchronizer amplifier, summed with the yaw ac damping signal and integral ac heading signal, processed, and applied to the yaw module in the stick trim amplifier where it is processed and routed to the yaw stick trim valve. The integral ac heading signal, by nulling the yaw ac damping signal, permits accurate heading hold during steady-state aerodynamic disturbances or during collective power changes. Signals to the stick trim valve produce tail rotor foot pedal movement resulting in a change of tail rotor blade position. Simultaneously with a change producing a proportional signal from the directional gyro, the yaw rate gyro produces a signal whose amplitude Js determined by the rate of change and whose phase is determined by direction of change. The rate signal is applied to the yaw module in the AFCS amplifier where it is processed, becoming the dc correction, signal. The dc correction signal is sampled by the oscillatory shutoff unit which will disengage the yaw channel if he signal is within certain parameters. The dc correction signal is also applied to the horizontal pointer on the flight director indicator and to the AFCS servovalve control solenoid. A signal on the control solenoid produces a flapper valve movement which in turn causes the power piston to move. The power piston is mechanically connected to the main rotor tandem servo and any power piston movement produces a corresponding tandem servo movement. Tandem servo movement in, translated into tail rotor blade movement. The Fate signal is phased so that it opposes any helicopter movement and will produce inner loop signals which will dampen the tail rotor pedal inputs and reduce overshoot.

(3) If the pilot desires to use the tail rotor foot pedals to manually change the helicopter heading, he will place the yaw control channel in a synchronizing mode. Microswitches on the pedals open, removing voltage from the synchronizer amplifier. The signal from the directional gyro is nulled out by a mechanical synchronizer within the AFCS amplifier so that while the helicopter U heading is changing, no signal is being applied to the outer loop. Simultaneously, the rate gyro signal is being processed within the yaw module I to provide rate damping for the inner 'control loop. When desired heading is reached, the foot pedals are released and a null reference voltage is ,applied to the . outer loop.

(4) With the helicopter flying above 60 knots and with the pedal switches depressed, the pilot may attempt a coordinate turn. To do this, the pilot moves his cyclic 'stick in the roll axis. A heading signal from the directional gyro is synchronized as described in (3) above and the yaw rate gyro signal is washed out. Simultaneously, roll rate and filtered accel signals are applied to the yaw module. These signals are processed becoming inner loop dc correction and chopped rate outer loop signals. The inner loop correction signals are applied to the control solenoid of the AFCS servovalve. The chopped rate I outer loop signal is applied to the stick trim amplifier. The resultant of inner and outer control loop .actions is to produce a constant helicopter I rate of turn with minimum 'slip or skid.

(5) Remote mode of operation occurs in either NORM or AUX modes. Rotating the remote stick grip clockwise or counterclockwise produces an ac command signal which is routed through the synchronizer amplifier to the AFCS amplifier and to the stick trim amplifier which repositions the helicopter to the desired heading. The yaw rate gyro signal provides both inner loop and outer loop damping.

d. Altitude Control Channel (fig. 47).

(1) The altitude control channel operates in ,an altitude retention mode and a synchronizing mode. The altitude control channel receives sensor signals from the altitude controller and a synchro transmitter. Barometric altitude is sensed by the altitude controller and a signal representing helicopter deviation from a desired altitude is applied to the bar alt amplifier within the AFCS amplifier. This signal is processed becoming the dc correction signal. The dc correction, signal is applied through the AFCS control panel to the oscillatory shutoff unit which will disengage the altitude channel if the signal is within certain parameters. The dc correction 'signal is applied to the vertical pointer on the flight director indicator -and to the AFCS servo control solenoid. Sig-

nals on the solenoid result in flapper valve movement which in turn causes power piston movement. Movement of the power piston results in main rotor tandem servo movement which in turn is translated into movement of all main rotor blades collectively. If the servo power piston reaches its maximum travel, the open loop spring compresses causing the collective sticks to move. As the collective stick moves, the synchro transmitter produces a signal to oppose this movement. The signal is applied to the bar alt amplifier resulting in a damping factor being applied to the AFCS servo.

(2) If the pilot wishes to change altitude, pressing the BAR REL button will put both altitude controller and synchro transmitter in synchronizing modes. When the desired altitude is reached, releasing the BAR REL button applies null reference voltages to the bar alt amplifier.

e. Power Distribution (fig. 47.1) (1) From the 28volt dc primary bus, 28 volts dc is routed from the NO. 1 AFCS and the NO. 2 AFCS circuit breakers (fig. 47.1 (1)). With the NO. 1 AFCS circuit breaker CB663 engaged, volts dc is routed in parallel paths to the No. 1 dual channel synchronizer and the AFCS amplifier. Within the No. 1 dual channel synchronizer, 28 volts dc is routed through F3 to contacts B1 and B2 of ARIK1 to provide operating voltage for the pitch synchronization circuit and through F4 to contacts B1 and B2 of AR2 K1 to provide power for the roll synchronization circuit. Within the AFCS amplifier, 28 volts dc is routed through F3 to provide operating voltage for yaw module A5. From F3, 28 volts dc is routed to contact No. 5 of time delay relay K1 in the AFCS control ,panel.

(2) After a 60second time-delay, K1 contacts close, permitting 28 volts dc to be routed in parallel paths through contacts No. 5 and 7 to the oscillatory shutoff unit and through CR3 to the AUTO FAIL RESET switch (fig. 47.1 (1)). From the AUTO FAIL RESET switch, 28 volts dc is routed to the fail light actuator circuit in the oscillatory shutoff unit. From the fail light actuator circuit, 28 volts dc is routed back to the AUTO FAIL RESET switch to ground, illuminating the AUTO FAIL RESET switch is pressed off and the oscillatory shutoff unit senses no malfunction, the AUTO FAIL RESET switch remains extinguished until the oscillatory shutoff unit disengages a malfunctioning AFCS channel. With a malfunction sensed, the AUTO FAIL RESET switch illuminates, indicating disengagement of a malfunctioning channel. Within the 328 oscillatory shutoff unit, 28 volts dc is routed in parallel paths to the No. 1 yaw disengage circuit, the No. 1 pitch disengage circuit, the No. 1 roll disengage circuit, and the altitude channel disengage circuit. From the No. 1 yaw disengage circuit, 28 volts dc is routed to AFCS 1 switch movable contact A. From the No. 1 pitch disengage circuit, 28 volts dc is routed to AFCS 1 switch movable contact B. From the No. 1 roll disengage circuit, 28 volts dc is routed to AFCS 1 switch movable contact C. From the altitude channel disengage circuit, 28 volts dc is applied through the series connected BAR. REL. switches on the pilot's and copilot's collective stick grips to the normally-closed contact of bar alt interlock relay K17.

(3) When the AFCS 1 switch is pressed on, 28 volts dc is routed in parallel paths from AFCS 1 gang switch movable contacts A, B, and C (fig. 47.1 (1)). From movable contact A, 28 volts dc is routed in parallel paths to energize No. 1 yaw input control relay K8, through diode CR8 in parallel paths to the YAW switch and to energize K17, and through CR11 to energize yaw output control relay K12. With K17 operated, 28 volts dc, which is routed from the oscillatory shutoff unit altitude channel disengage circuit through series connected BAR. REL. switches on the pilot's and copilot's collective stick grips to the normally closed contact of K17, is now routed to the normally-open contact of K17. From the normally-open contact of K17, 28 volts dc is routed to the BAR ALT switch.

(a) With the YAW switch pressed on, 28 volts dc is routed in parallel paths to illuminate the YAW switch, to energize the yaw sync gate control relay K18, to provide 28 volts dc for the yaw circuitry in the stick trim amplifier, and to provide 28 volts dc at the airspeed switch and the pilots and copilot's yaw pedal switches. Dc voltage of 28 volts is routed through the normally-closed yaw pedal switches in parallel paths to the bar alt/yaw sync module Al as a heading retention command voltage and through CR123 in ,parallel paths to energize the clutch in the yaw trim position 'sensor and the turn-on, valve in the yaw trim turn-on valve. With a pedal switch in the normally-open position, 28 volts dc is routed in parallel paths to the bar alt/yaw sync module Al in the AFCS amplifier as a yaw sync command voltage and to yaw module A5 in the AFCS amplifier as a coordinated turn gating voltage. When airspeed is greater than 60 knots, the airspeed switch closes and routes 28 volts dc in parallel paths to yaw module A5 in the AFCS am plifier as a coordinated turn gating voltage and through CR124 in parallel paths to operate the clutch in the yaw trim position sensor and the turn-on valve in the yaw trim turn-on valve. In a coordinated turn executed at an airspeed greater than 60 knots, 28 volts dc for the clutch in the yaw trim position sensor and the turn-On valve in the yaw trim turn-on valve is provided through the airspeed switch; otherwise, the 28 volts dc is provided through the normally-closed pedal switches.

(b) With the BAR ALT switch pressed on, 28 volts dc is routed in parallel paths to illuminate the BAR ALT switch and to operate the altitude input control relay K5, the altitude output control relay K10, the altitude controller relay K101, and the clutch of the collective stick position sensor.

(4) From movable contact B, 28 volts dc is routed in two parallel paths (fig. 47.1 (1)). In the first path, 28 volts dc is routed from movable contact B through CR7 in parallel paths to illuminate AFCS I switch, to operate stick trim power transfer relay K16 and outer loop input control relay K15, to the remote stock control panel and the flight director indicator. In the second path, 28 volts dc is routed in parallel paths from movable contact B to operate the No. 1 pitch input control relay K4, and through CR15 in parallel paths to operate pitch output control relay K9 and pitch outer loop output control relay K14.

(a) With 28 volts dc applied to the flight director indicator, voltage is available to operate the mechanisms for the bar off flag in the ONOK)N mode, and through CR116 for the bar off flag in the AFCS mode and the pointer off flag in the AFCS mode.

(b) Through CR3, 28 volts dc is routed to the NORM MODE and AUX MODE switches on the remote stick control panel. With the NORM MODE switch pressed on, 28 volts dc is routed in parallel paths to illuminate the NORM MODE switch, to the switch actuator Q5, to provide operating voltage for the remote stick threshold-amplifiers, to CR6, and to the normally open contact of the AUX MODE switch. Through CR6, 28 volts dc is routed in parallel paths to illuminate the REAR CONTROL ENGAGED caution capsule on the caution advisory panel, to the yaw remote stick microswitch S3, and to provide remote stick engage voltage for the bar alt/yaw sync mod A1, pitch module A3 and roll module A4. When the yaw remote stick microswitch is activated, 28 volts do is routed to the bar alt/ yaw sync module Al as a yaw sync command voltage. From the normally open contact of the AUX MODE switch, 28 volts dc is routed to the aft pilot's cyclic stick grip STICK TRIM switch ((18) below) and to CR5. From CR5, the 28volt dc paths are the same as those from CR6. When the AUX MODE switch is pressed on, the NORM MODE switch automatically goes off. With the AUX MODE switch pressed on, 28 volts dc is routed in parallel paths to illuminate the AUX MODE switch, to the aft pilot's cyclic stick grip STICK TRIM switch ((18) below), and to CR5. From CR5, the 28volt dc paths are the same as those from CR6.

(5) From movable contact C, 28 volts dc is routed in two parallel paths (fig. 47.1 (1)). In the first path, 28 volts dc is routed from movable contact C through CR6 in parallel paths to illuminate the AFCS 1 switch, to operate K16 and K15, and to provide voltage for the flight director indicator and the remote stick control panel as described in (4) (a) and (b) above. In the second path, 28 volts dc is routed from movable contact C in parallel paths to energize the No. 1 roll input control relay K11, and through CR25 in parallel 'paths to operate the roll output control relay K6 and roll outer loop output control relay K19.

(6) With the NO. 2 AFCS circuit breaker CB463 engaged, 28 volts dc is routed in parallel paths to the No. 2 dual channel synchronizer and the AFCS amplifier (fig. 47.1 (1)). Within the No. 2 dual channel synchronizer, 28 volts dc is distributed as in the No. 1 dual channel synchronizer as described in (1) above. Within the AFCS amplifier, 28 volts de is routed through F4 to provide voltage for the bar alt/yaw sync module Al, yaw module A5, the integrator, and the synchronizer. From F4, 28 volts dc is routed to contact No. 5 of time delay relay K2 in the AFCS control panel.

(7) After a 60second time delay, K2 contacts close, permitting 28 volts dc to be routed through contacts No. '5 and 7 to the oscillatory shutoff unit and through CR4 in parallel paths to the AUTO FAIL RESET switch and through normally closed contact of K18 to the bar alt/yaw sync module Al in the AFCS amplifier as a yaw sync command voltage (fig. 47.1 (1)). From the AUTO FAIL RESET switch, 28 volts dc is routed through CR4 to the fail light actuator circuit in the oscillatory shutoff unit as described in (2) above. Within the oscillatory shutoff unit,

28 volts dc is routed in parallel paths to the No. 2 yaw disengage circuit, the No. 2 pitch disengage circuit, and the No. 2 roll disengage circuit. From the No. 2 yaw disengage circuit, 28 volts dc is routed to AFCS 2 switch movable contact A. From the No. 2 pitch disengage circuit 28 volts de is routed to AFCS 2 switch movable contact B. From No. 2 roll disengage circuit, 28 volts dc is routed to AFCS 2 switch movable contact C.

(8) With AFCS 2 switch pressed on, 28 volts dc is routed in parallel paths from AFCS 2 gang switch movable contacts A, B, and C (fig. 47.1 (1)). From movable contact A, 28 volts dc is routed in parallel ,paths to CR9 and CR10 and to operate the No. 2 yaw input control relay K3. From CR10, 28 volts dc operates K12. From CR9, 28 volts dc is routed in parallel paths to operate K17 and to the YAW switch. With the YAW switch pressed on, 28 volts dc is routed as described in (3) (a) above. With BAR ALT switch pressed on, 28 volts de is routed as described in (3) and (3) (b) above.

(9) From movable contact B, 28 volts dc is routed in parallel paths to CR5, CR16, and to the No. 2 pitch input control relay K13 (fig. 47.1 (1)). From CR5, 28 volts dc is routed in parallel paths to illuminate the AFCS 2 switch and to provide voltage for the flight director indicator and the remote stick control panel. The voltage for the flight director indicator operates the pointer off flag mechanism in the ONON mode and through CR115 in parallel paths operates the pointer off flag mechanism in the AFCS mode and the bar off flag mechanism in the AFCS mode. Within the remote stick control panel, 28 volts dc is routed through CR4 in parallel paths to the NORM MODE and AUX MODE switches. The voltage is distributed in the remote stick control panel in the same way as described in (4) (b) above.

(10) From movable contact C, 28 volts dc is routed in two parallel paths (fig. 47.1 (1)). In the first path, 28 volts dc is routed in parallel paths to operate the No. 2 roll input control relay K7 and through CR29 in parallel paths to operate K6 and K19. In the second path, 28 volts dc is routed through CR2 in parallel paths to illuminate AFCS 2 switch and to provide voltage for the flight director indicator and the remove stick control panel as described in (9) above.

(11) With AFCS SERVO circuit breaker CB625 engaged, 28 volts dc is routed through the normally-closed contacts of the AFCS servo pressure switch in parallel paths to activate the signal adapter and to illuminate the AFCS SERVO PRESS caution capsule on the caution-advisory panel (fig. 47.1 (2)). With AFCS SERVO SHUTOFF circuit breaker CB456 engaged, 28 volts dc is routed through the normally-closed contacts of the AFCS SERVO switch to operate the control solenoid of the AFCS servo shutoff valve. With this solenoid operated, pressure is kept out of the AFCS servo, maintaining the AFCS servo pressure switch in the normally-closed position.

(12) With the AFCS SERVO switch pressed on, the control solenoid of the AFCS servo shutoff valve is restored, permitting pressure to be applied to the AFCS servo which moves the AFCS servo pressure switch to the normally open position (fig. 47.1 (2)). In the normally-open 'position, the AFCS servo pressure switch opens the 28volt path to deactivate the signal adapter unit and extinguish the AFCS SERVO PRESS caution capsule. At the same time, ,28 volts dc is routed from the AFCS SERVO circuit breaker CIB625 through the normally-open contacts of the AFCS servo pressure switch in parallel paths to illuminate the AFCS SERVO switch and to operate the stick trim interlock control relay K20. When the A.F.C.S. SERVO OFF switch on either the pilot's or copilot's cyclic stick grip is pressed on, the control solenoid of the AFCS servo 'shutoff valve is operated and functioning is as described in (11) above. When the A.F.C.S. SERVO OFF switch is released, the operation already described returns.

(13) With BEEPER TRIM circuit breaker CB641 engaged, 115 volts dc is routed to the normally-open contact of K16 (fig. 47.1 (3)). With the AFCS control panel AFCS 1 switch pressed on, K16 is operated, permitting the 115 volts ac to be routed from CB641 to the normally-closed contacts of the AFCS control panel STICK TRIM switch. With the AFCS 1 switch pressed off, K16 is not operated and 115 volts ac is routed from engaged BEEPER TRIM circuit CB491 through the normally-closed contacts of K16 to the normally-closed contacts of the STICK TRIM switch. With the AFCS control panel AFCS SERVO switch pressed on, K20 is operated, permitting 28 volts dc to be routed from the engaged

BEEPER TRIM circuit breaker CB655 through the series connected TRIM REL. switches of the pilot's and copilot's cyclic stick grips and through the normally open contacts of operated K20 to the normally closed contacts of the STICK TRIM switch.

(14) With the STICK TRIM switch pressed on, 115 volts ac is routed in parallel paths from contact B and the normally-open contact of the STICK TRIM switch to the roll trim and pitch trim position sensors as an excitation voltage and to the stick trim amplifier (fig. 47.1 (3)). Within the stick trim amplifier, 115 volts ac is routed in parallel paths through contacts B2 and B1 of restored AR1K11 as an excitation voltage for the pitch demodulator and through contacts B2 and B1 of restored AR2K1 as an excitation voltage for the roll demodulator.

(15) With the STICK TRIM switch pressed on, 28 volts dc is routed in parallel paths from contact A and the normally open contact of the STICK TRIM switch to illuminate the STICK TRIM switch, to operate the stick trim turn-on valve solenoid, to the pilot's and copilot's cyclic stick grip STICK TRIM switches and to the stick trim amplifier (fig. 4-7.1(3)). Within the stick trim amplifier, the 28 volts dc is routed in parallel paths to contacts A1 and A2 of restored AR1Kl and to contacts AlandA2ofrestored AR2K1. From contact A2 of restored ARIK1, 28 volts dc is routed in parallel paths to provide operating voltage for the pitch circuitry, to operate the pitch trim position sensor, AR2K1 of the No. 2 dual channel synchronizer and AR2K1 to the No. 1 dual channel channel synchronizer. From contact A2 of restored AR2 K1, 28 volts dc is routed in parallel paths to provide operating voltage for the roll circuitry, to operate the roll trim position sensor, AR1K1 of the No. 1 dual channel synchronizer and AR1K1 of the No. 2 dual channel synchronizer.

(16) With either the pilot's or copilot's cyclic stick grip stick trim switches positioned to FWD, 28 volts de is routed from the FWD position in parallel paths to variable resistor PR1 and AR1CR1 of the stick trim amplifier (fig. 4-7.1 (3)). From PR1, 28 volts dc is routed to the pitch trim valve and from it to ground. From AR1CR1, 28 volts dc is routed to AR1K1. With AR1K1 operated the 28-volt de path to the pitch circuitry and the 115-volt ac path to the pitch de- modulator are opened. The pitch trim position sensor, AR2K1 of the No. 2 dual channel synchronizer and AR2K1 of the No. 1 dual channel synchronizer are restored. With the STICK TRIM switch positioned to AFT, 28 volts dc is routed from the AFT position in parallel paths to variable resistor PR2 and AR1CR2 of the stick trim amplifier. From PR2, 28 volts dc is routed to the pitch trim valve and from it to ground. From AR1CR2, 28 volts do is routed to operate ARIK1. With ARIKI operated, the results are the same as for the FWD position. With the STICK TRIM switch positioned to R, 28 volts dc is routed from the R position in parallel paths to variable resistor RR1 and AR2CR1. From RR1, 28 volts dc is routed to the roll trim valve and from it to ground. From AR2CR1, 28 volts dc is routed to operate AR2K1. With AR2K1 operated, the 28 volt dc path to the roll circuitry and the 115-volt ac path to roll demodulator in the stick trim amplifier are opened. The roll trim position sensor, AR1K1 of the No. 1 dual channel synchronizer and AR1K1 of the No. 2 dual channel synchronizer are restored. With the STICK TRIM switch positioned to L, 28 volts dc is routed from the L position in parallel paths to variable resistor RR2 and AR2CR2. From RR2, 28 volts dc is routed to the roll trim valve and from it to ground. From AR2CR2, 28 volts de is routed to operate AR2K1. With AR2K1 operated the results are the same as for the R position.

(17) With either the pilot's or copilot's cyclic stick grip TRIM REL switch pressed on, the 28-volt dc path from BEEPER TRIM circuit breaker CB655 through K20 to the STICK TRIM switch is opened (fig. 4-7.1 (3)). This removes 28 volts dc from the STICK TRIM switch, extinguishing it. The solenoid of the stick trim turn- on valve is restored, and 28 volts dc is removed from the pilot's and copilot's cyclic stick grip STICK TRIM switches. Within the stick trim amplifier, 28 volts dc is removed from contacts Al and 2 of AR1Kl and AR2Kl. Also with the TRIM REL switch pressed on, the following solenoids and relays are restored: pitch trimposition sensor, AR2K1 of the No. 2 dual channel synchronizer, AR2K1 of the No. 1 dual channel synchronizer, the roll trim position sensor, AR1K1 of the No. 2 channel synchronizer, and ARIK1 of the No. 1 dual channel synchronizer.

(18) With AFCS 1 and/or AFCS 2, AFCS SERVO and STICK TRIM switches pressed on, and the NORM MODE or AUX MODE switch on the remote stick control panel pressed on, 28 volts do is applied to the aft pilot's cyclic stickgrip STICK TRIM switch (fig. 4-7.1 (1) and (3)). With the STICK TRIM switch positioned to FWD, 28 volts do is routed in parallel paths from the FWD position to AR1CR2 and variable resistor PR2. From PR2, 28 volts do is routed to the pitch trim valve and from it to ground. From AR1CR2, 28 volts dc is routed to operate AR1K1. With AR1K1 operated, the 28-volt dc path to the pitch circuitry and the 115-volt ac path to the pitch demodulator are opened. The pitch trim position sensor, AR2K1 of the No. 2 dual channel synchronizer and AR2K1 of the No. 1 dual channel synchronizer are restored. With the STICK TRIM switch positioned to AFT, 28 volts de is routed from the AFT position in parallel paths to PR1 and AR1CR1 of the stick trim amplifier. From PR1, 28 volts dc is routed to the pitch trim valve and from it to ground. From ARiCR1, 28 volts dc is routed to operate AR1K1. With AR1K1 operated, the results are the same as for the FWD position. With the STICK TRIM switch positioned to R, 28 volts dc is routed from the R position in parallel paths

to variable resistor RR2 and AR2CR2. From RR2, 28 volts dc is routed to the roll trim valve and from it to ground. From AR2CR2, 28 volts dc is routed to operate AR2K1. With AR2K1 operated, the 28-volt dc path to the roll circuitry and the 115-volt ac path to the roll demodulator in the stick trim amplifier are opened. The roll trim position sensor, AR1K1 of the No.1 dual channel synchronizer and AR1K1 of the No. 2 dual channel synchronizer are restored. With the STICK TRIM switch positioned to L, 28 volts dc is routed in parallel paths from position L to variable resistor RR1 and AR2CR1. From RR1, 28 volts dc is routed to the roll trim valve and from it to ground. From AR2CR1, 28 volts dc is routed to operate AR2K1. With AR2K1 operated, the results are the same as for the R position.

(19) From engaged AFCS circuit breaker CB696, 115-volts ac is routed in parallel paths to the altitude controller, the No. 1 dual channel synchronizer, and the collective stick position sensor (fig. 4-7.1 (2)). Within the No. 1 dual channel synchronizer, the 115 volts ac is routed in AR2K1 as pitch excitation and through F2 and the contacts of AR1K1 as roll excitation. From CB696, 115 volts ac is also routed in parallel paths to the power supply in the oscillatory shutoff unit, the No. 1 roll rate gyro, the No. 1 lateral accelerometer, the No. 1 yaw rate gyro, and the No. 1 power supply in the remote stick control panel. From CB696, 115 volts ac is also routed to the series connected AFCS amplifier and AFCS control panel. Within the AFCS amplifier, the 115 volts ac is routed through F1 and is distributed as excitation voltage. Within the AFCS control panel, 115-volts ac is routed to K1.

(20) From engaged AFCS circuit breaker CB496, 115 volts ac is routed in parallel paths to the No. 2 dual channel synchronizer, the yaw module of the stick trim amplifier, and the No. 2 roll rate gyro (fig. 4-7.1 (2)). Within the No. 2 dual channel synchronizer, the 115 volts ac is routed in parallel paths through Fl and the contacts of AR2K1 as pitch excitation voltage and through F2 and the contacts of ARIK1 as roll excitation voltage. From CB496, 115 volts ac is also routed in parallel paths to the No. 2 yaw rate gyro, No. 2 lateral accelerometer, the yaw trim position sensor, and to the No. 2 power supply in the remote stick control panel. From CB496, 115 volts ac is also routed to the series connected AFCS amplifier and the AFCS control panel. Within the AFCS amplifier, 115 volts ac is routed through F2 and is distributed as excitation voltage. Within the AFCS control panel, 115 volts ac is routed to K2.

(21) Figure 4-7.1 (4) presents a summary in table form of the AFCS engagement and disengagement switches. To see what a switch does in the AFCS system, read across to the right of the switch in both the engagement section and disengagement section. For example, when the STICK TRIM switch on the AFCS panel is pressed on, reading across to the right of the switch in the engagement section shows that ac excitation and B + are applied to the roll and pitch circuitry in the stick trim amplifier (fig. 4-7.1 (3)), ARiK1 and AR2K1 in both the No. 1 and No. 2 dual channel synchronizer are operated (fig. 4-7.1 (3)), the solenoid of the stick trim turn-on valve is operated (fig. 4-7.1 (3)), ac excitation is applied to the pitch and roll trim position sensors and dc voltage is applied to the pitch clutch solenoid and the roll clutch solenoid (fig. 47.1 (3)). Reading across to the right of the STICK TRIM switch in the disengagement section shows that with AR1K1 and AR2K1 of the No. 1 and No. 2 dual channel synchronizer operated because the STICK TRIM switch is pressed on, ac and dc power are moved from the pitch and roll circuitry in the No. I and No. 2 dual channel synchronizers (fig. 4-7.1 (1) and (2)).

3-15. Attitude Indicating System
(fig. 3-10)

a. Signal Flow.

(1) The attitude indicating system is comprised of two separate systems for the pilot and copilot. Both systems provide a visual display of helicopter pitch and roll attitudes with reference to the horizon. The pilot's and copilot's systems each consist of a Gyroscope, Displacement CN1314/A (vertical gyro), a relay, a GYRO NORMALT switch, and an attitude indicator.

(2) In the pilot's system, helicopter pitch and roll attitudes are sensed by the pilot's vertical gyro. The vertical gyro provides proportional ac displacement signal outputs in the AFCS amplifier and dual channel synchronizers, to the copilot's normally open contacts of relay K173, and through the pilot's normally closed contacts of relay K172 to the pilot's attitude indicator. Should the pilot's vertical gyro become inoperative, the pilot can switch from GYRO NORM position to S161 to the ALT (alternate) position causing relay K172 to energize. The energized relay provides a path for the pitch and roll ac displacement

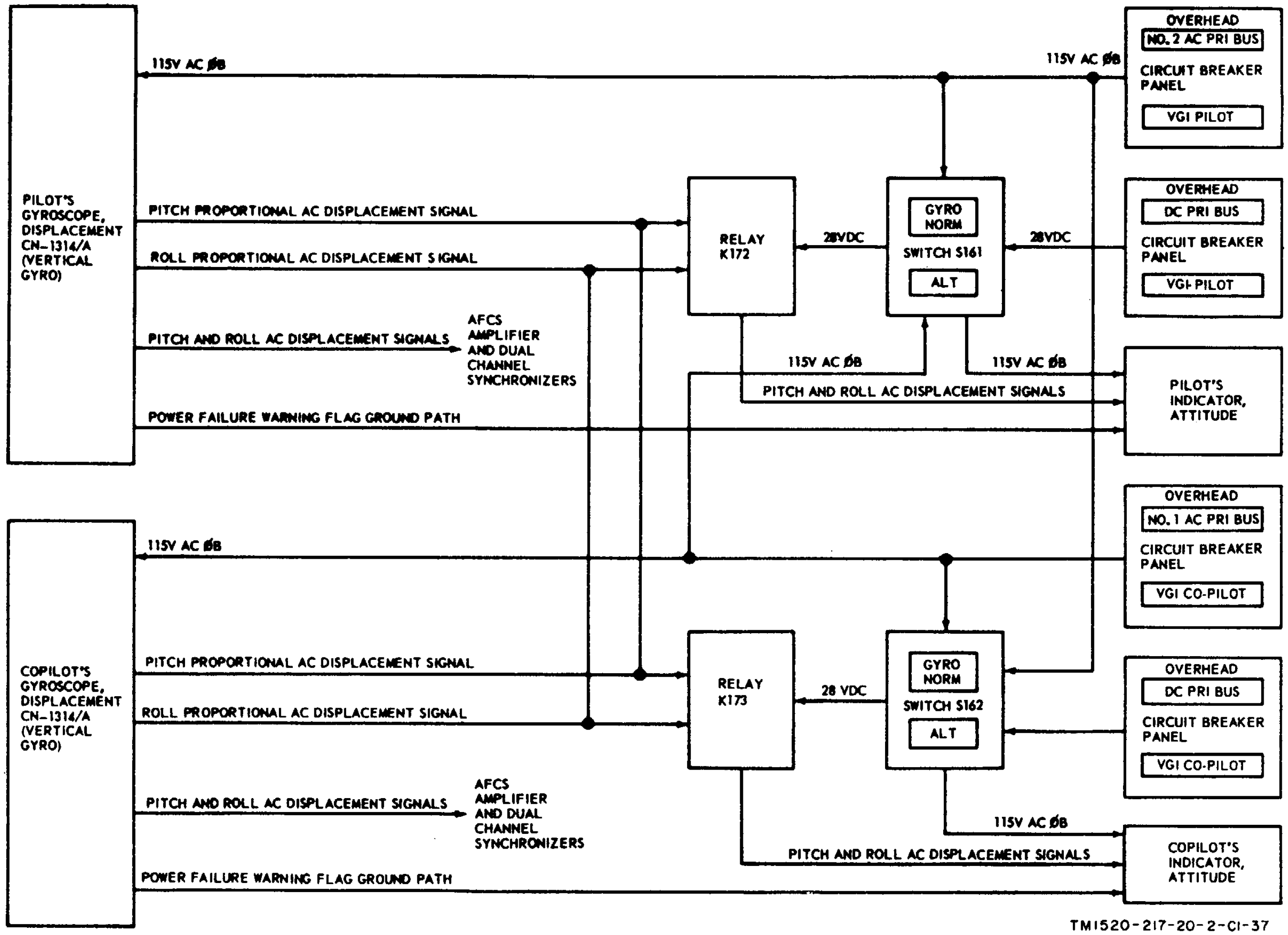


Figure 3-10. Attitude indicating system, block diagram

signals from the copilot's vertical gyro to be fed to the pilot's attitude indicator.

(3) In the copilot's system, helicopter pitch and roll attitudes are sensed by the copilot's vertical gyro. The vertical gyro provides proportional ac displacement signal outputs to the AFCS amplifier and dual channel synchronizers, to the pilot's normally-open contacts of relay K172, and through the copilot's normally-closed contacts of relay K173 to the copilot's attitude indicator. Should the copilot's vertical gyro become inoperative, the copilot can switch from the GYRO NORM position on S162 to the ALT position causing relay K173 to energize. The energized relay provides a path for the pitch and roll ac displacement signals from the pilot's vertical gyro to be fed to the copilot's attitude indicator.

b. Power Distribution.

(1) The pilot's system receives 115 volts ac, phase B, 400 cps from the No. 2 AC PRI BUS through a 5-ampere VGJ PILOT circuit breaker. With the circuit breaker engaged, ac power is applied to the pilot's vertical gyro and to the pilot's and copilot's GYRO NORM-ALT switches. Within the vertical gyro the ac power is distributed for internal circuit operation. When the pilot's GYRO NORM-ALT switch is positioned to GYRO NORM, the ac power path is completed through switch S161 to the pilot's attitude indicator. Should the pilot's system have a power malfunction, the pilot can position the GYRO NORM-ALT switch S-161 to ALT. In the ALT position the ac power from the copilot's system is completed through switch S161 to operate the pilot's vertical gyro. A power failure warning flag ground path is completed through contacts of an internal relay within the vertical gyro at the completion of the start cycle allowing the flag on the pilot's attitude indicator to be out of view. Should a power failure occur, the ground path is incomplete and the flag on the pilot's attitude indicator will be in view.

(2) The pilot's system receives 28 volts dc from the DC PRI BUS through 5-ampere VGI PILOT circuit breaker. With the circuit breaker engaged, dc power is applied to the pilot's GYRO NORM-ALT switch S161. With switch S161 positioned to ALT, dc power is completed through the switch to the solenoid of relay K172, energizing relay K172.

(3) The copilot's system receives 115 volts ac, phase B, 400 cps from the No. 1 AC PRI BUS through a 5-ampere VGI CO-PILOT circuit breaker. With the circuit breaker engaged, ac power is applied to the copilot's vertical gyro and to the pilot's and copilot's vertical gyro and to the pi- lot's and copilot's GYRO NORM-ALT switches. Within the vertical gyro the ac power is distributed for internal circuit operation. When the co-pilot's GYRO NORM-ALT switch is positioned to GYRO NORM, the ac power path is completed through switch S162 to the copilot's attitude indicator. Should the copilot's system have a power malfunction, the copilot can position the GYRO NORM-ALT switch to S162 to ALT, in the ALT position the ac power from the pilot's system is completed through switch S162 to operate the co- pilot's vertical gyro. A power failure warning flag ground path is completed through contacts of an internal relay within the vertical gyro at the completion of the start cycle allowing the flag on the copilot's attitude indicator to be out of view. Should a power failure occur, the ground path is incomplete and the flag on the pilot's attitude in- dicator will be in view.

(4) The copilot's system receives 28 volts dc from the DC PRI BUS through a 5-ampere VGI CO-PILOT circuit breaker. With the circuit breaker engaged, dc power is applied to the co- pilot's GYRO NORM-ALT switch S162. With switch S162 positioned to ALT, dc power is completed through the switch to the solenoid of relay K173, energizing relay K173.

3-16. Performance Indicating System (fig. 3-11).

a. Signal Flow. The performance indicating system provides the pilot with a constant visual indication of condition of helicopter blade stall, which is proportional to helicopter vibratory loads. Vibratory loads are influenced by conditions of rpm, gross weight, altitude, tempera- ture, load factor, airspeed, and fuselage attitude. The system consists of a linear variable differential transformer (LVDT), a cruise guide amplifier, and a performance indicator. An electrical signal proportional to vibratory loads is produced by a linear variable differential transformer. The proportional vibratory load signal is fed to the cruise guide amplifier. Within the cruise guide amplifier the proportional vibratory load signal is amplified, demodulated, and filtered. The resultant signal is then fed to the performance indicator. The performance indicator indicates percent of blade stall. The indicator is graduated from zero to 100 percent in 5% increments.

b. Power Distribution.

(1) The performance indicating system receives electrical power of 26 volts ac, single phase, 400 cps to the linear variable differential transformer, as an excitation voltage, by the No. 1 PRI BUS auto-transformer through a 5-ampere PERF INDIC XMFR circuit breaker. The cruise guide amplifier receives electrical power of 115 volts ac, single phase, 400 cps by the No. 1 AC PRI BUS through 5-ampere PERF IND AMPL circuit breaker. The 115 volts ac is fed to the cruise guide amplifier demodulator circuit as a reference voltage.

(2) The cruise guide amplifier receives 28 volts dc from the DC PRI BUS through a 5-ampere PERF IND circuit breaker. Within the cruise guide amplifier the 28 volts dc is fed to the power supply and regulator circuits.

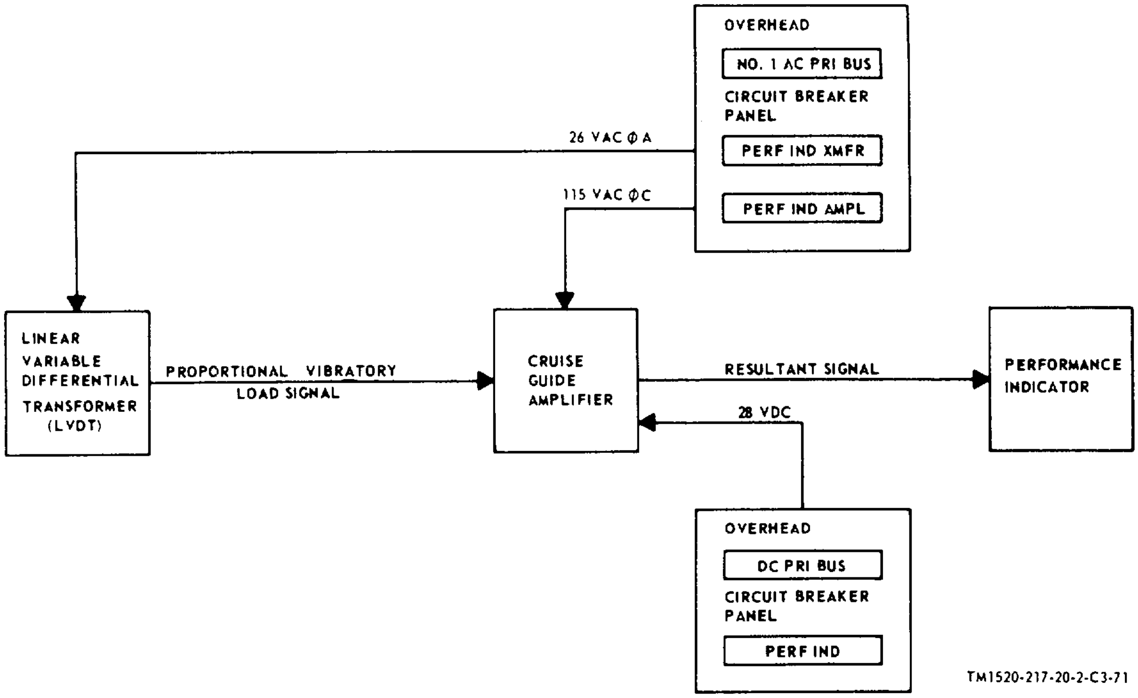


Figure 3-11. Performance indicating system, block diagram

CHAPTER 4

FINAL ILLUSTRATIONS

4-1. General

The wiring diagram illustrations in this chapter provide complete circuitry of the helicopter electronic configuration wiring. A wire code identification chart is provided in paragralh 2-22.

4-2. Wiring Diagrams Chart

The chart below lists the equipment facility or system and the wiring diagram figure number to facilitate location of the diagrams.

Electronic equipment facility or system	Wiring diagram fig. No.	Facility code letter
Hf radio facility	4-10	A
Vhf radio facility	4-11	B
Performance indicating system	4-11.1	C
Fm liaison and homing radio facility	4-12	D
Voice security facility	4-13	Q
IFF transponder facility	4-14	E
Vor receiving set facility	4-15	F
Adf direction finder facility	4-16	H
Compass facility	4-17	I
Interphone system	4-18	J
Automatic flight control system	4-19	K
Stick trim system	4-20	M
Attitude indicating system	4-21	G
Voice warning system	4-22	N
Post terminal charts	4-23	R
Disconnect plug and receptacle charts	4-24	X
External relay chart	4-25	Y
	4-26	Z

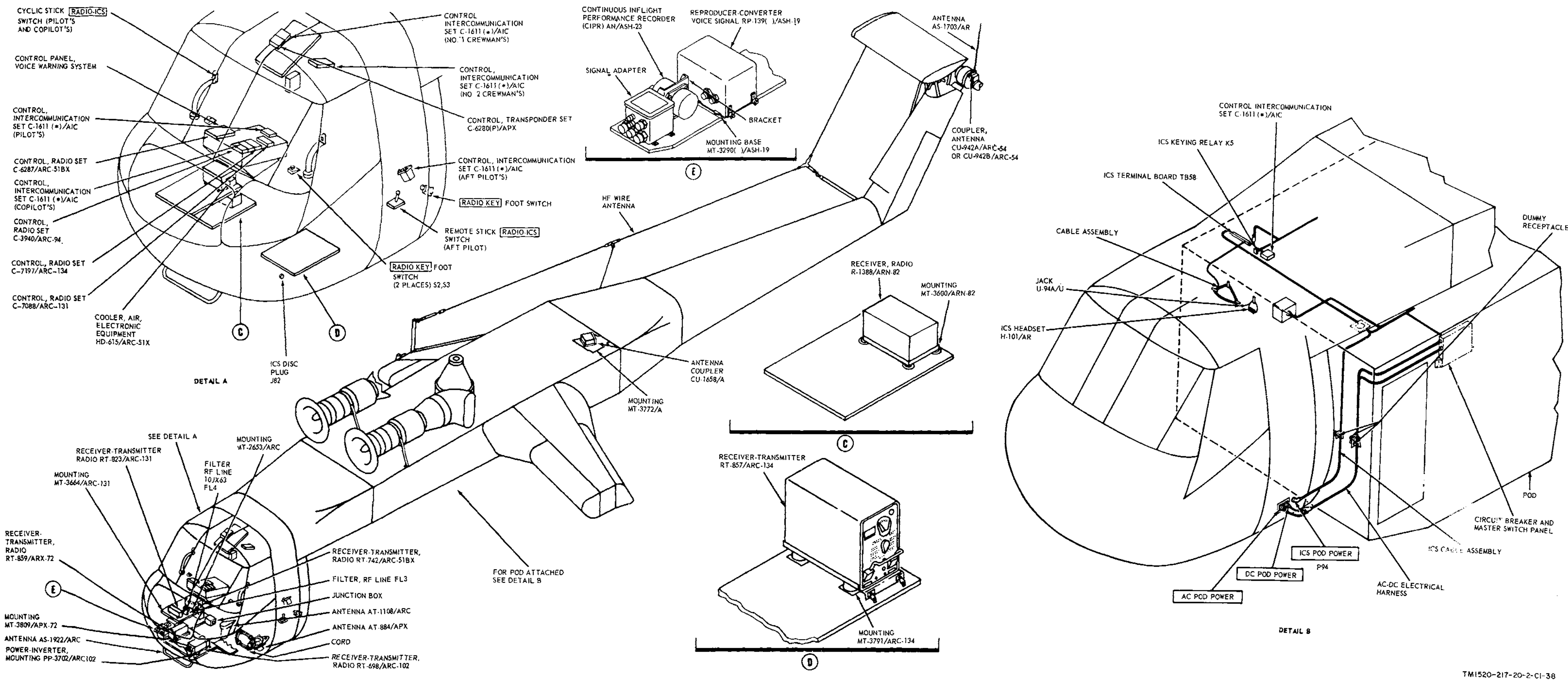


Figure 4-1. Outline drawing of helicopter, showing relative location of communication, identification, interphone, and voice warning equipment components.

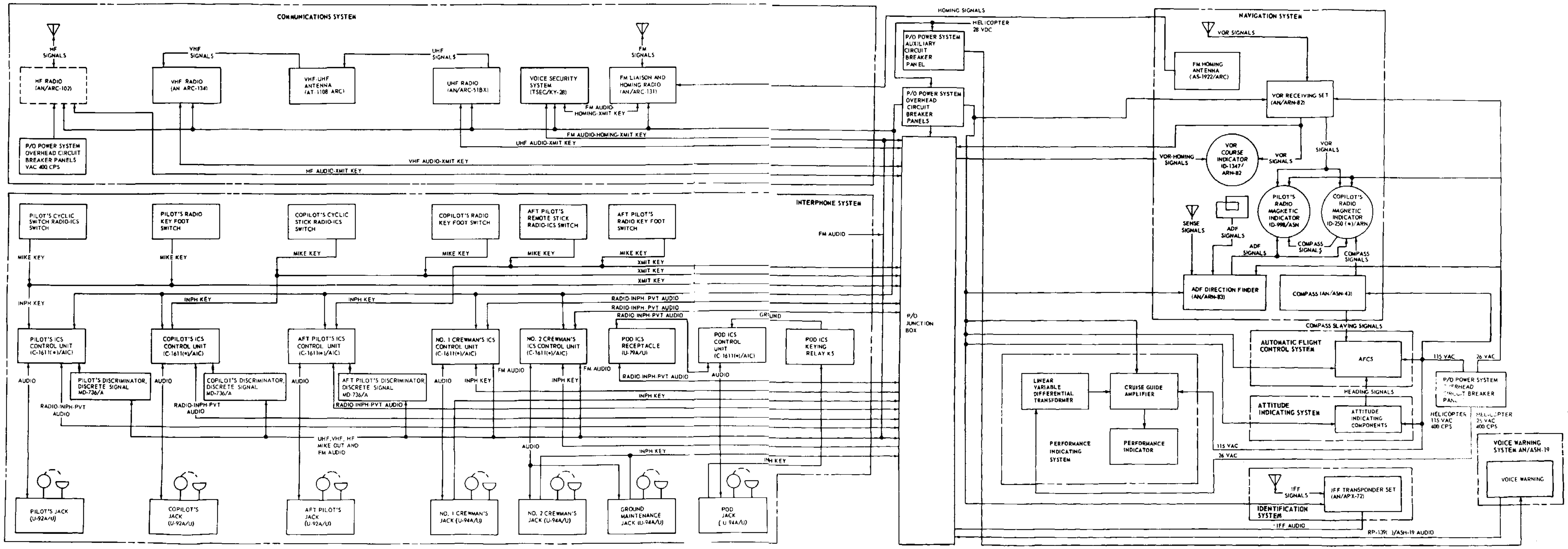


Figure 4-2. Electronic equipment configuration, block diagram.

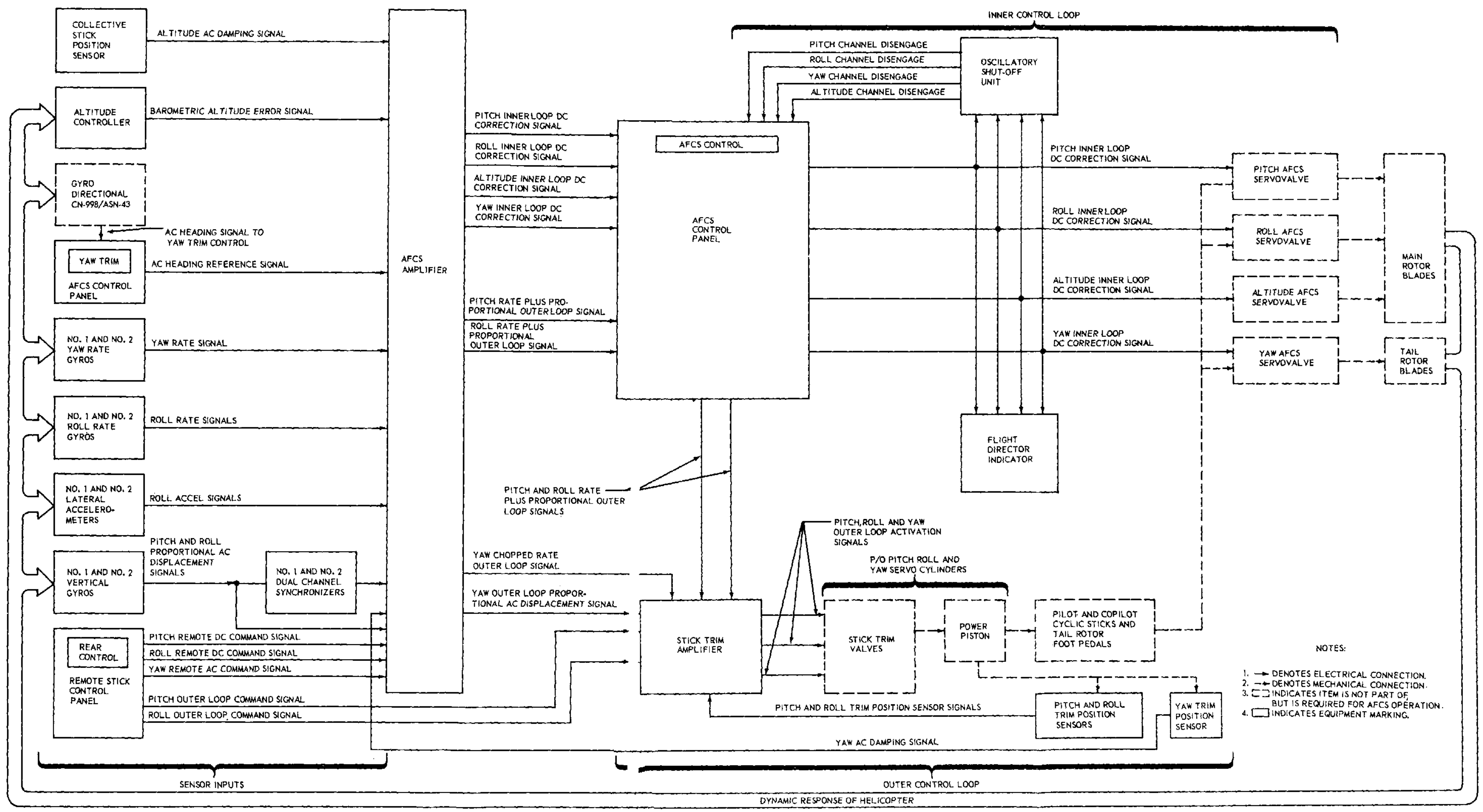


Figure 4-3. Automatic flight control system and stick trim system, block diagram.

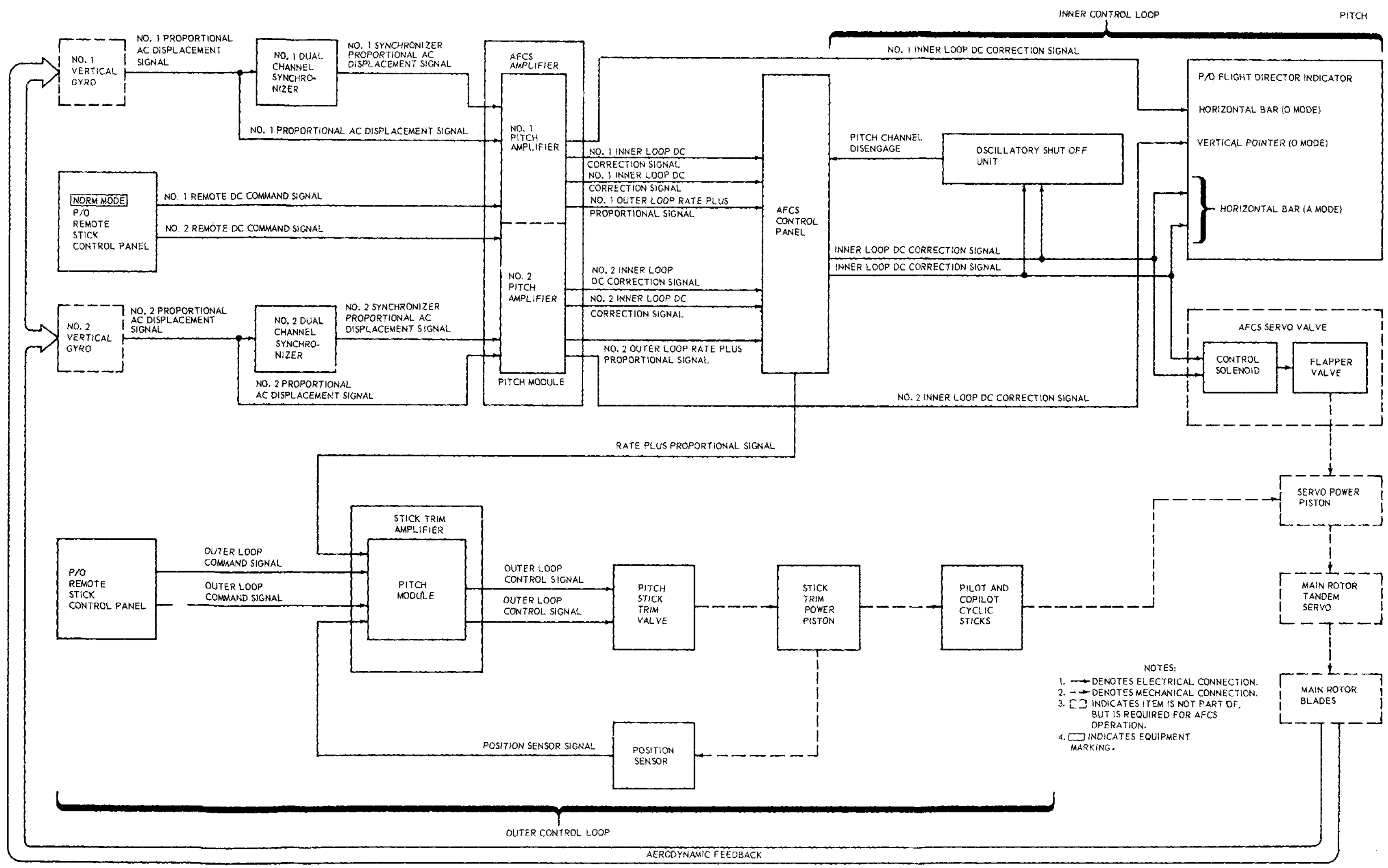


Figure 4-4. Automatic flight control system - pitch control channel, block diagram.

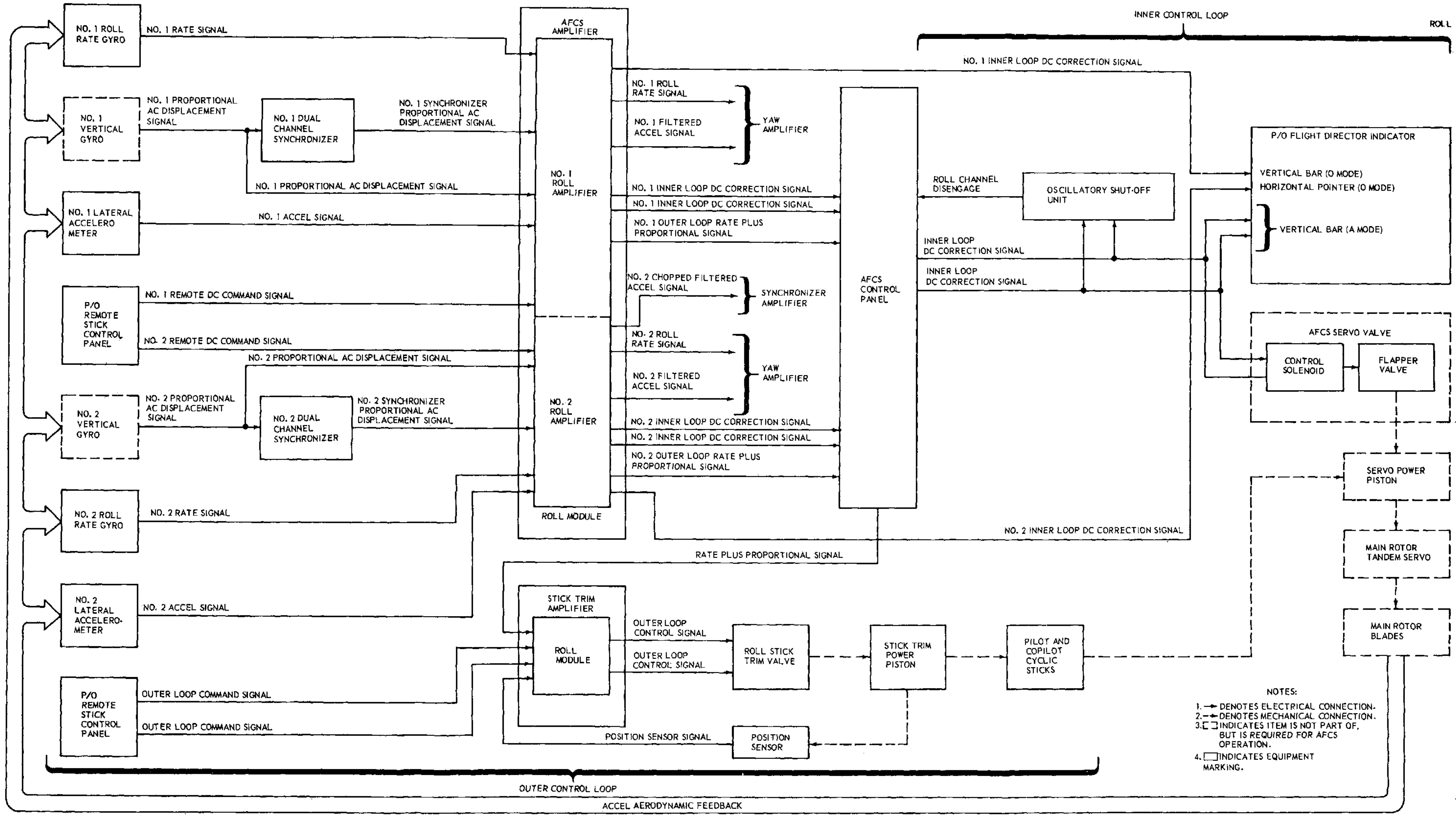


Figure 4-5. Automatic flight control system - roll control channel, block diagram.

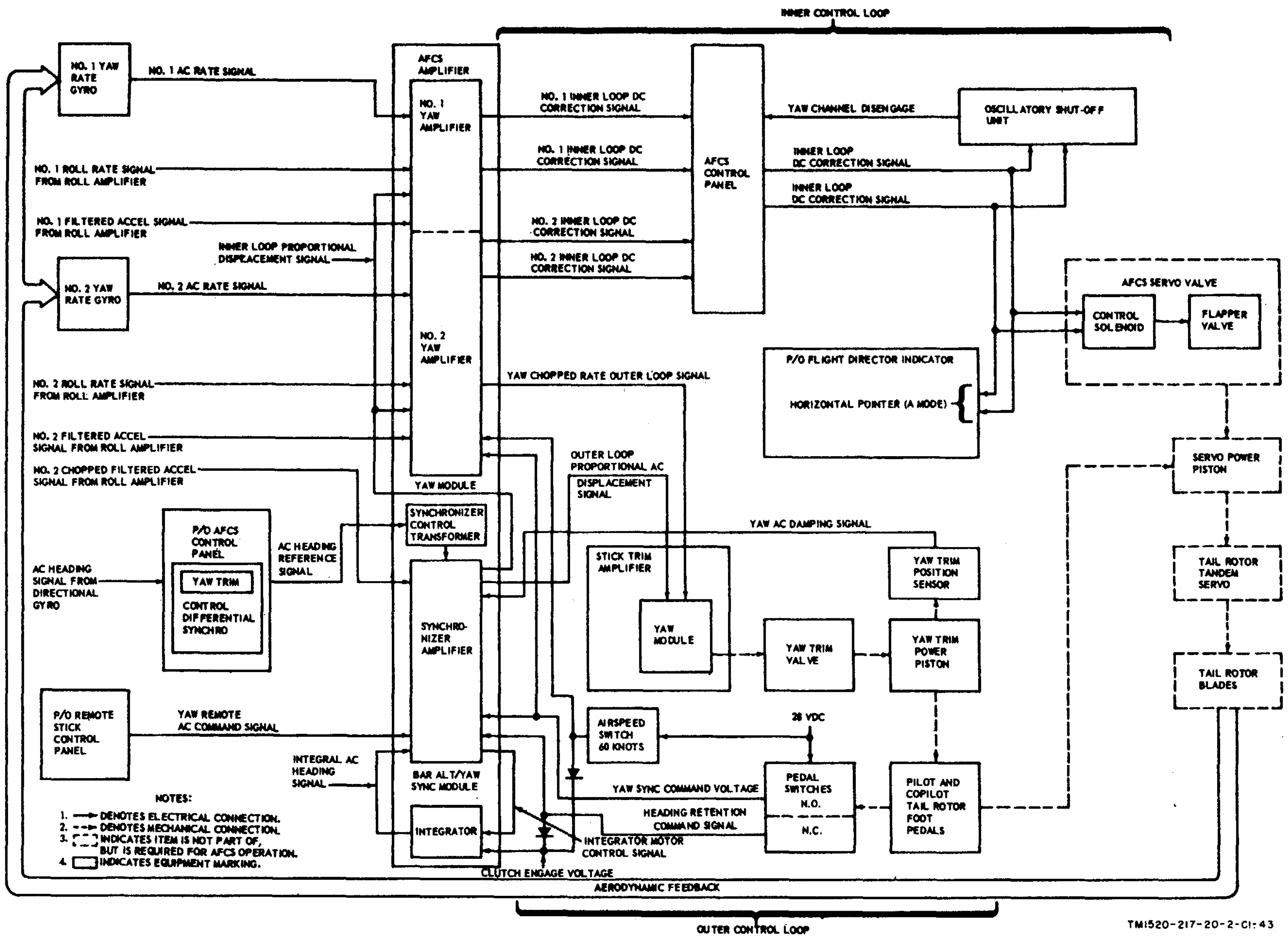


Figure 4-6. Automatic flight control system - yaw control channel, block diagram

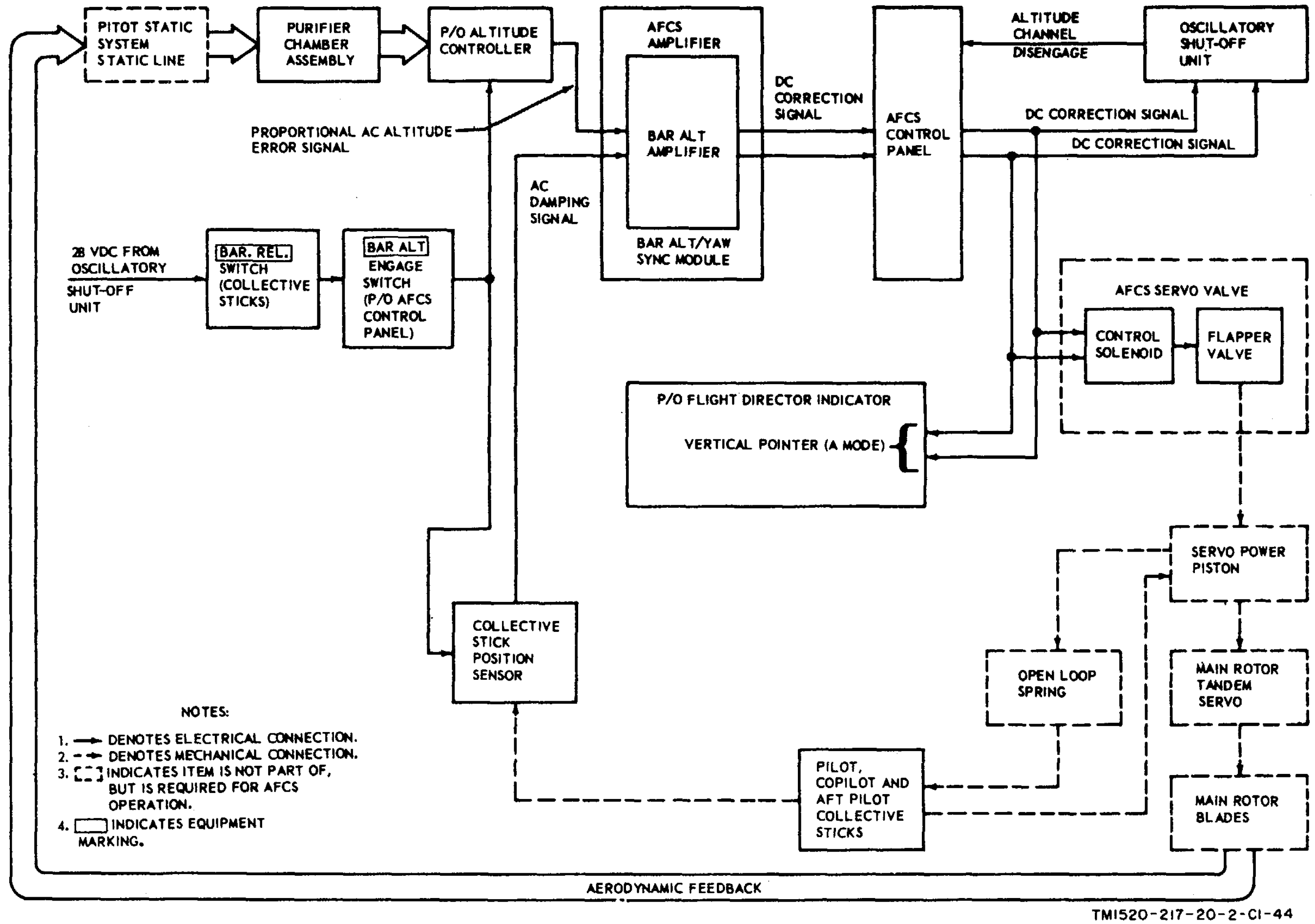


Figure 4-7. Automatic flight control system - altitude control channel, block diagram.

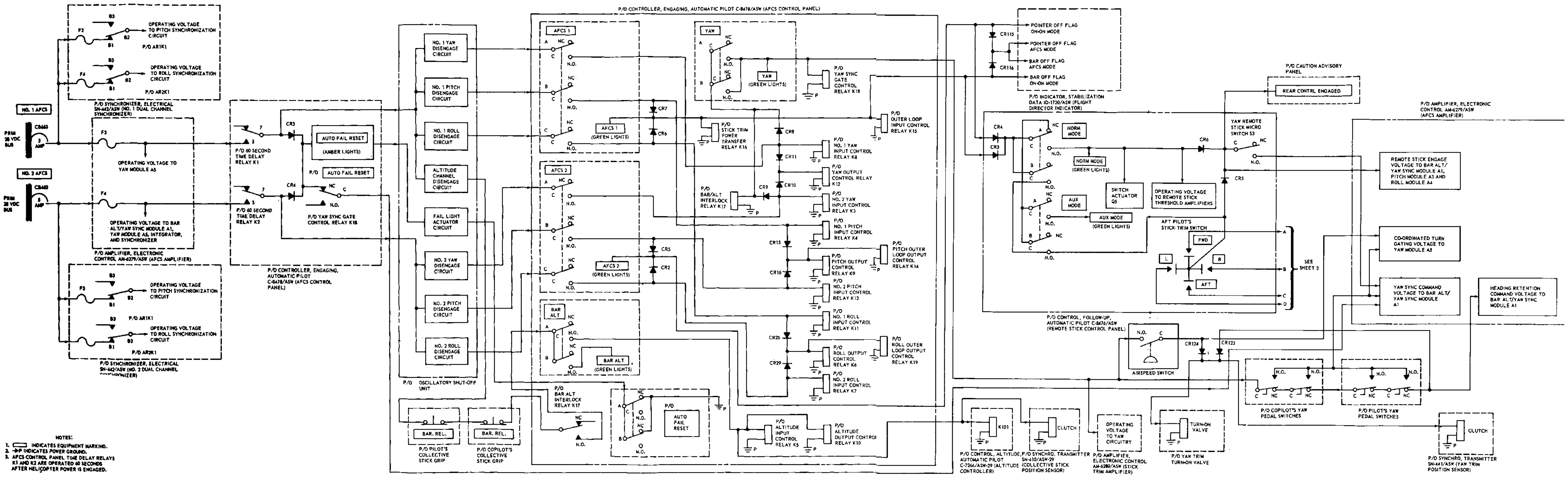


Figure 4-7.1 (7). Automatic flight control system, ac and dc power distribution and relay sequence, simplified schematic diagram (part 1 of 4).

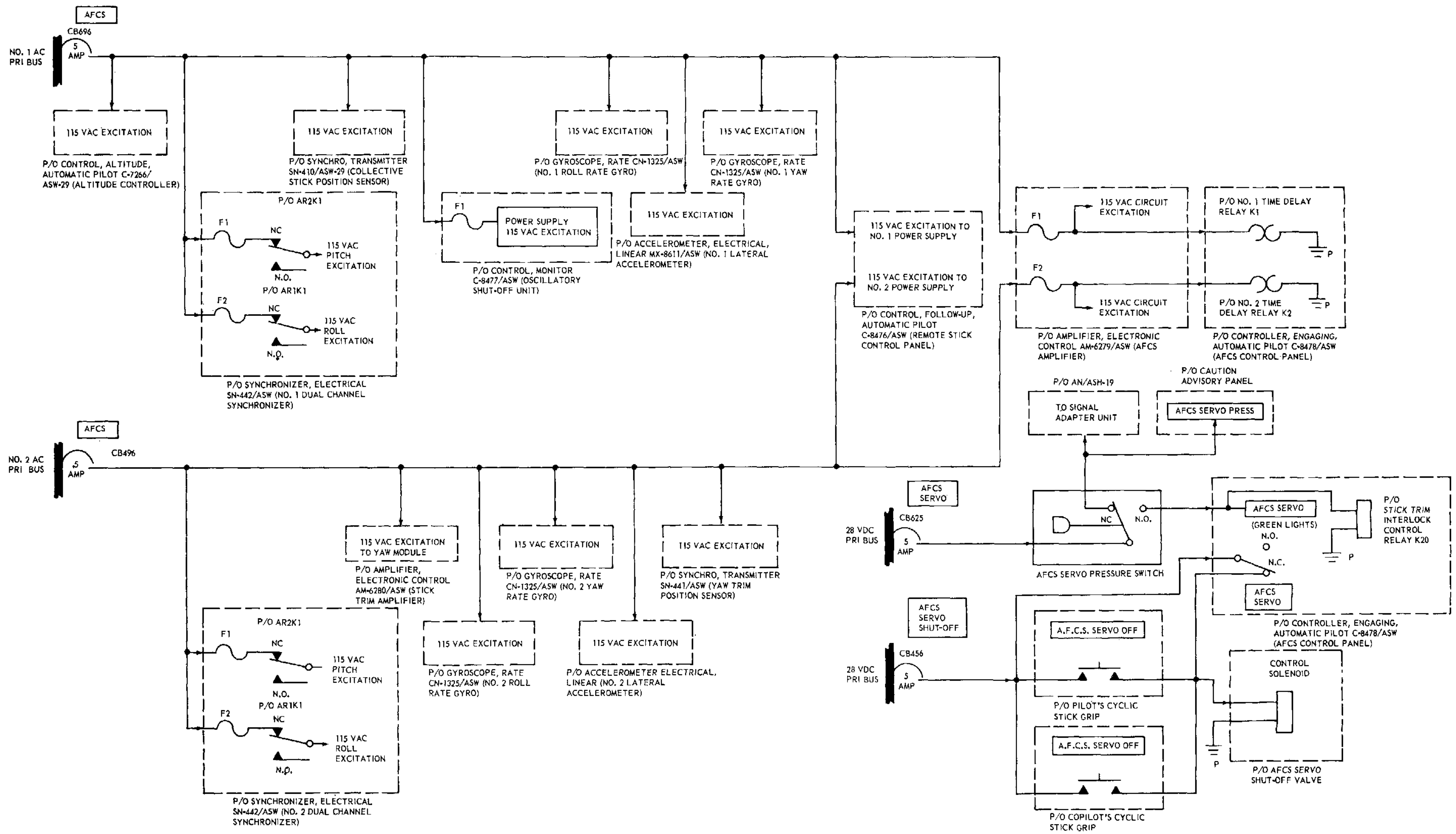


Figure 4-7.1 (7). Automatic flight control system, ac and dc power distribution and relay sequence, simplified schematic diagram (part 2 of 4).

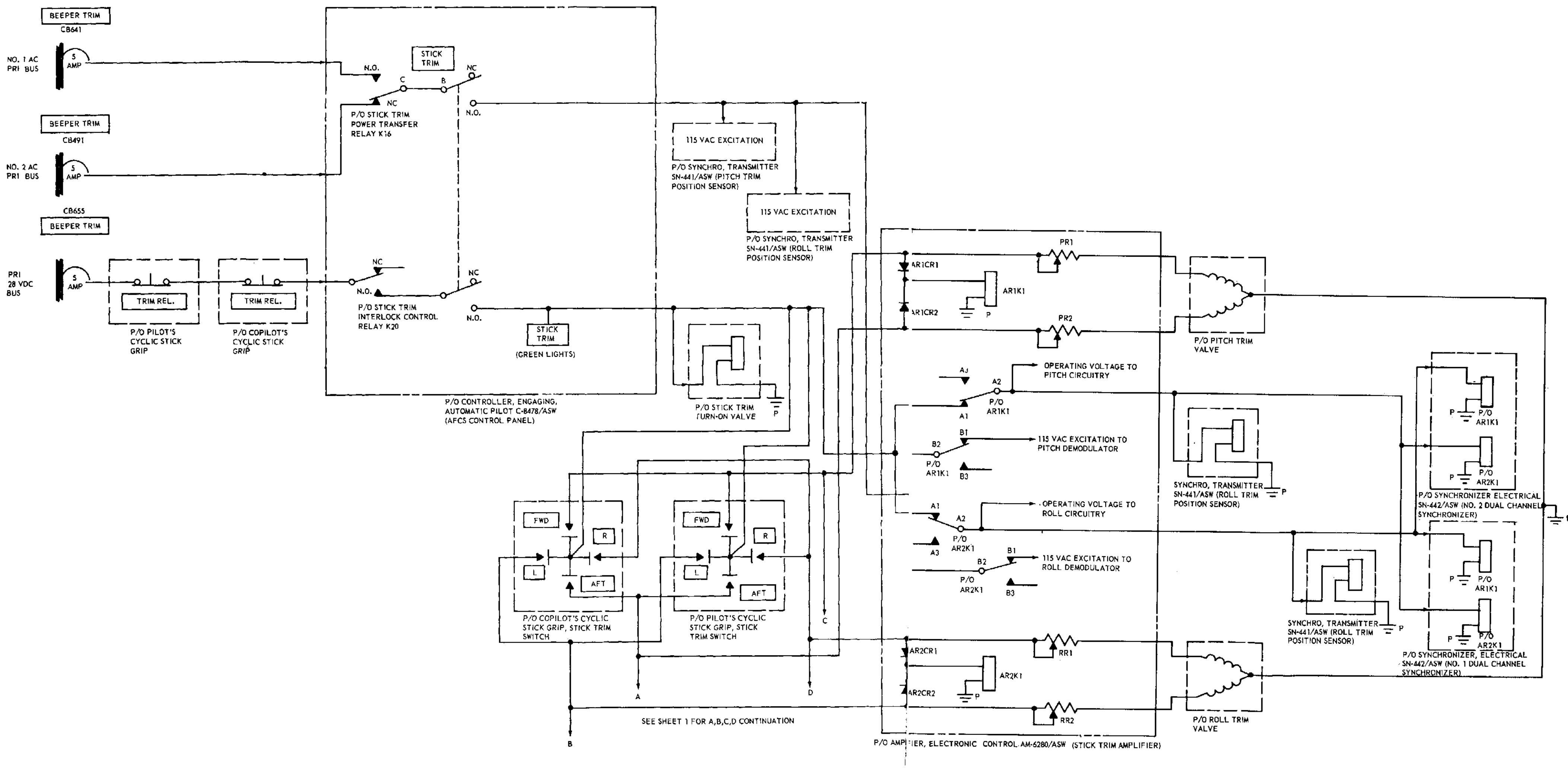


Figure 4-7.1 (7). Automatic flight control system, ac and dc power distribution and relay sequence, simplified schematic diagram (part 3 of 4).

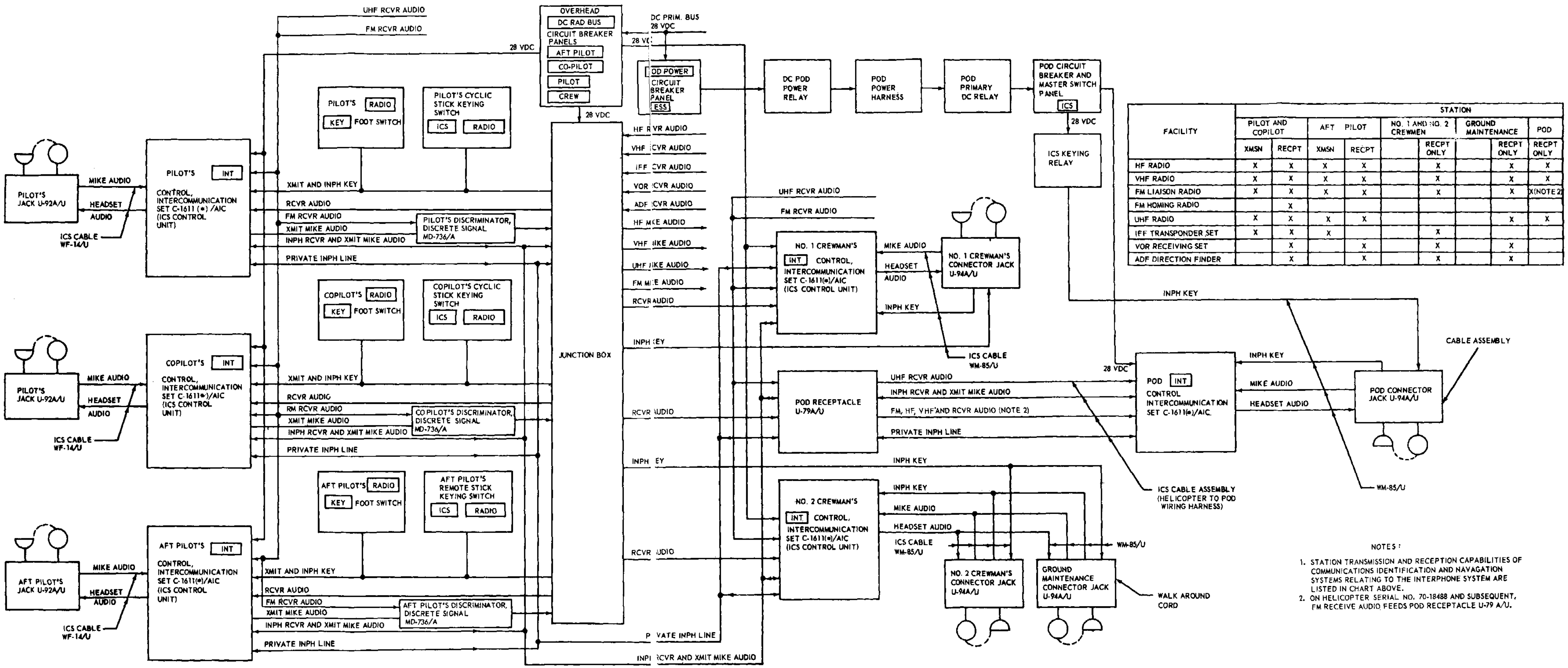
	AFCS CONTROL PANEL K1	K2	K3	K4	K5	K6	K7	K8	K	K10	K11	K12	K13	K14	K15	K16	K17	K18	K19	K20
ENGAGEMENT SWITCHES	(NOTE 3)	(NOTE 3)																		
AFCS CONTROL PANEL																				
YAW																		X		
AFCS 1				X		X		X	X		X	X		X	X	X	X		X	
AFCS 2			X			X	X		X			X	X	X			X		X	
BAR ALT					X					X										
STICK TRIM																				
AFCS SERVO																				X
AFCS SERVO (OFF POSITION)																				
REMOTE STICK CONTROL PANEL																				
NORM MODE																				
AUX MODE																				
OSCILLATORY SHUT-OFF UNIT																				
PITCH TEST																				
YAW TEST																				
ROLL TEST																				
ALT TEST.																				
CYCLIC STICK GRIP - PILOT COPILOT, AFT PILOT																				
STICK TRIM (FWD,AFT)																				
STICK TRIM (L, R)																				
CYCLIC STICK GRIP - PILOT, COPILOT																				
TRIM REL.																				
A.F.C.S. SERVO OFF																				
OVERHEAD CIRCUIT BREAKER PANELS																				
AFCS CB 696	X																			
AFCS CB 496		X																		
AFCS CB 663																				
AFCS CB 463																				
DISENGAGEMENT SWITCHES																				
AFCS CONTROL PANEL																				
STICK TRIM																				
AFCS SERVO																				
OSCILLATORY SHUT-OFF UNIT																				
PITCH TEST				X					X				X	X						
ROLL TEST						X	X				X								X	
YAW TEST			X		X			X		X		X					X	X		
ALT TEST					X.					X										
CYCLIC STICK GRIP - PILOT, COPILOT, AFT PILOT																				
STICK TRIM (FWD, AFT)																				
STICK TRIM (L,R)																				
CYCLIC STICK GRIP - PILOT, COPILOT																				
TRIM REL.																				
COLLECTIVE STICK GRIP - PILOT, COPILOT																				
BAR. REL.					X					X										
PEDAL SWITCHES (WHEN ACTIVATED BELOW 60 KNOTS)																				

	AFCS AMPLIFIER INTEGRATOR CLUTCH SOLENOID	STICK TRIM AMPLIFIER AR1K1	AR2K1	ROLL AC EXCITATION	PITCH AC EXCITATION	YAW B+	ROLL B+	PITCH B+	OSCILLATORY SHUT-OFF UNIT A2K1	A3K1	A4K1	A5K1
ENGAGEMENT SWITCHES												
AFCS CONTROL PANEL												
YAW	X					X						
AFCS 1												
AFCS 2												
BAR ALT												
STICK TRIM				X	X		X	X				
AFCS SERVO												
AFCS SERVO (OFF POSITION)												
REMOTE STICK CONTROL PANEL												
NORM MODE												
AUX MODE												
OSCILLATORY SHUT-OFF UNIT												
PITCH TEST									X			
YAW TEST										X		
ROLL TEST											X	
ALT TEST.												X
CYCLIC STICK GRIP - PILOT COPILOT, AFT PILOT												
STICK TRIM (FWD,AFT)		X										
STICK TRIM (L, R)			X									
CYCLIC STICK GRIP - PILOT, COPILOT												
TRIM REL.												
A.F.C.S. SERVO OFF												
OVERHEAD CIRCUIT BREAKER PANELS												
AFCS CB 696												
AFCS CB 496												
AFCS CB 663												
AFCS CB 463												
DISENGAGEMENT SWITCHES												
AFCS CONTROL PANEL												
STICK TRIM												
AFCS SERVO												
OSCILLATORY SHUT-OFF UNIT												
PITCH TEST												
ROLL TEST												
YAW TEST	X					X						
ALT TEST												
CYCLIC STICK GRIP - PILOT, COPILOT, AFT PILOT												
STICK TRIM (FWD, AFT)					X			X				
STICK TRIM (L,R)				X			X					
CYCLIC STICK GRIP - PILOT, COPILOT												
TRIM REL.							X	X				
COLLECTIVE STICK GRIP - PILOT, COPILOT												
BAR. REL.												
PEDAL SWITCHES (WHEN ACTIVATED BELOW 60 KNOTS)	X											

	DUAL CHANNEL SYNCHRONIZER (NO. 1) AR1K1	AR2K1	PITCH AC EXCITATION	ROLL AC EXCITATION	PITCH B+	ROLL B+	DUAL CHANNEL SYNCHRONIZER (NO. 2) AR1K1	AR2K1	PITCH AC EXCITATION	ROLL AC EXCITATION	PITCH B+	ROLL B+
ENGAGEMENT SWITCHES												
AFCS CONTROL PANEL												
YAW												
AFCS 1												
AFCS 2												
BAR ALT												
STICK TRIM	X	X					X	X				
AFCS SERVO												
AFCS SERVO (OFF POSITION)												
REMOTE STICK CONTROL PANEL												
NORM MODE												
AUX MODE												
OSCILLATORY SHUT-OFF UNIT												
PITCH TEST												
YAW TEST												
ROLL TEST												
ALT TEST.												
CYCLIC STICK GRIP - PILOT COPILOT, AFT PILOT												
STICK TRIM (FWD,AFT)			X		X				X		X	
STICK TRIM (L, R)				X		X				X		X
CYCLIC STICK GRIP - PILOT, COPILOT												
TRIM REL.			X	X	X	X			X	X	X	X
A.F.C.S. SERVO OFF												
OVERHEAD CIRCUIT BREAKER PANELS												
AFCS CB 696			X	X								
AFCS CB 496									X	X		
AFCS CB 663					X	X						
AFCS CB 463											X	X
DISENGAGEMENT SWITCHES												
AFCS CONTROL PANEL												
STICK TRIM			X	X	X	X			X	X	X	X
AFCS SERVO												
OSCILLATORY SHUT-OFF UNIT												
PITCH TEST												
ROLL TEST												
YAW TEST												
ALT TEST												
CYCLIC STICK GRIP - PILOT, COPILOT, AFT PILOT												
STICK TRIM (FWD, AFT)		X						X				
STICK TRIM (L,R)	X						X					
CYCLIC STICK GRIP - PILOT, COPILOT												
TRIM REL.	X	X					X	X				
COLLECTIVE STICK GRIP - PILOT, COPILOT												
BAR. REL.												
PEDAL SWITCHES (WHEN ACTIVATED BELOW 60 KNOTS)												

	ALTITUDE CONTROLLER K101	FLIGHT DIRECTOR INDICATOR FLAG CIRCUIT	STICK TRIM TURN-ON VALVE TURN-ON VALVE	YAW TRIM TURN-ON VALVE	AFCS SERVO SHUT-OFF VALVE CONTROL SOLENOID	COLLECTIVE STICK POSITION SENSOR CLUTCH	PITCH TRIM POSITION SENSOR CLUTCH SOLENOID	AC EXCITATION	YAW TRIM POSITION SENSOR CLUTCH	ROLL TRIM POSITION SENSOR CLUTCH SOLENOID	AC EXCITATION	AN/ASH-19 SIGNAL ADAPTER LOGIC SWITCHING CIRCUIT B+	CAUTION-ADVISORY PANEL AFCS SERVO PRESS	REAR CONTRL ENGAGED
ENGAGEMENT SWITCHES														
AFCS CONTROL PANEL														
YAW				X					X					
AFCS 1		X												
AFCS 2		X												
BAR ALT	X					X								
STICK TRIM			X				X	X		X	X			
AFCS SERVO														
AFCS SERVO (OFF POSITION)					X							X	X	
REMOTE STICK CONTROL PANEL														
NORM MODE														X
AUX MODE														X
OSCILLATORY SHUT-OFF UNIT														
PITCH TEST														
YAW TEST														
ROLL TEST														
ALT TEST.														
CYCLIC STICK GRIP - PILOT COPILOT, AFT PILOT														
STICK TRIM (FWD,AFT)														
STICK TRIM (L, R)														
CYCLIC STICK GRIP - PILOT, COPILOT														
TRIM REL.														
A.F.C.S. SERVO OFF					X							X	X	
OVERHEAD CIRCUIT BREAKER PANELS														
AFCS CB 696														
AFCS CB 496														
AFCS CB 663														
AFCS CB 463														
DISENGAGEMENT SWITCHES														
AFCS CONTROL PANEL														
STICK TRIM														
AFCS SERVO					X									
OSCILLATORY SHUT-OFF UNIT														
PITCH TEST														
ROLL TEST														
YAW TEST	X			X		X			X					
ALT TEST	X					X								
CYCLIC STICK GRIP - PILOT, COPILOT, AFT PILOT														
STICK TRIM (FWD, AFT)							X							
STICK TRIM (L,R)										X				
CYCLIC STICK GRIP - PILOT, COPILOT														
TRIM REL.			X				X			X				
COLLECTIVE STICK GRIP - PILOT, COPILOT														
BAR. REL.	X					X.								
PEDAL SWITCHES (WHEN ACTIVATED BELOW 60 KNOTS)				X					X					

Figure 4-7.1 (7). Automatic flight control system, ac and dc power distribution and relay sequence, simplified schematic diagram (part 4 of 4).



FACILITY	STATION								
	PILOT AND COPILOT		AFT PILOT		NO. 1 AND NO. 2 CREWMEN		GROUND MAINTENANCE		POD
	XMSN	RECPT	XMSN	RECPT		RECPT ONLY		RECPT ONLY	RECPT ONLY
HF RADIO	X	X	X	X		X		X	X
VHF RADIO	X	X	X	X		X		X	X
FM LIAISON RADIO	X	X	X	X		X		X	X(NOTE 2)
FM HOMING RADIO		X							
UHF RADIO	X	X	X	X				X	X
IFF TRANSPONDER SET	X	X	X			X			
VOR RECEIVING SET		X		X		X		X	
ADF DIRECTION FINDER		X		X		X		X	

NOTES:

1. STATION TRANSMISSION AND RECEPTION CAPABILITIES OF COMMUNICATIONS IDENTIFICATION AND NAVAGATION SYSTEMS RELATING TO THE INTERPHONE SYSTEM ARE LISTED IN CHART ABOVE.
2. ON HELICOPTER SERIAL NO. 70-18488 AND SUBSEQUENT, FM RECEIVE AUDIO FEEDS POD RECEPTACLE U-79 A/U.

Figure 4-8. Interphone system, block diagram

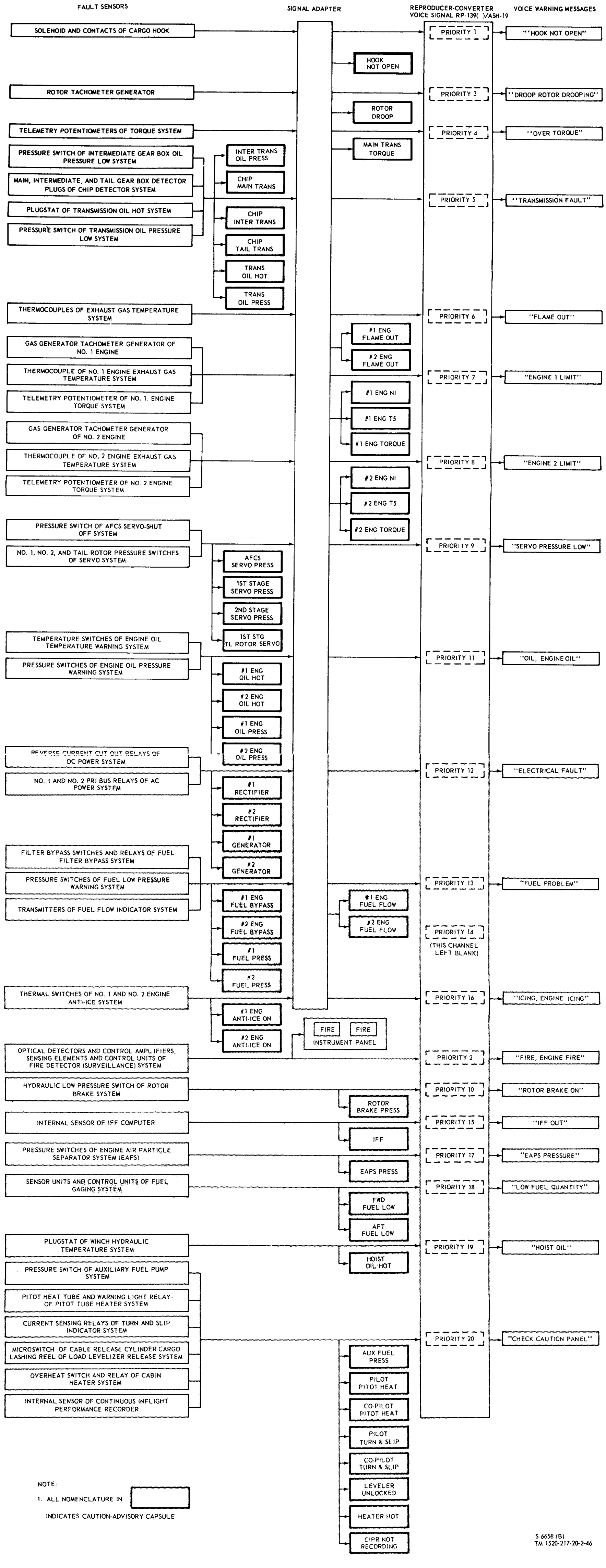


Figure 4-9. Voice Warning System AN/ASH-19 fault sensors, block diagram.

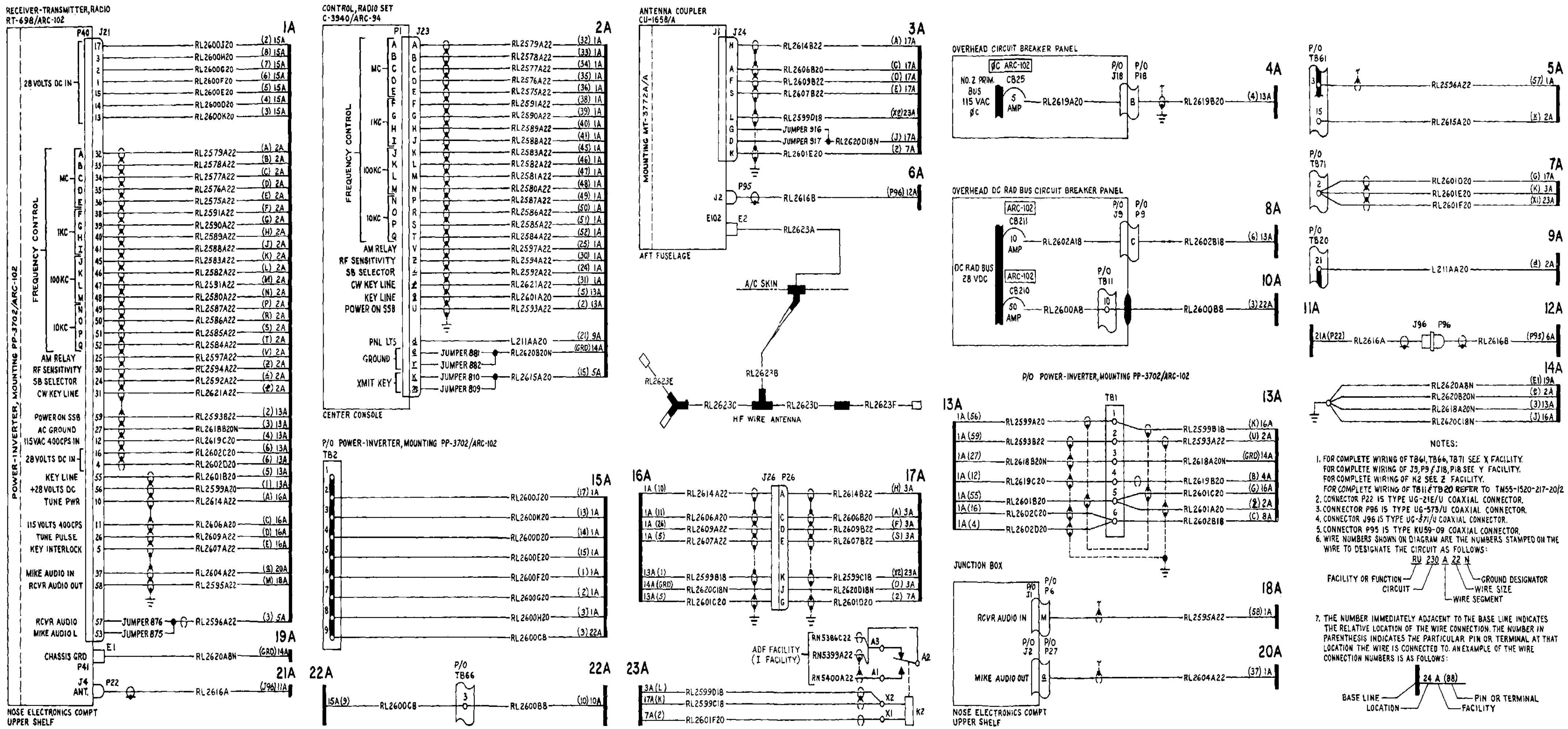


Figure 4-10. Radio Set AN/ARC-102 (hf radio facility), wiring diagram.

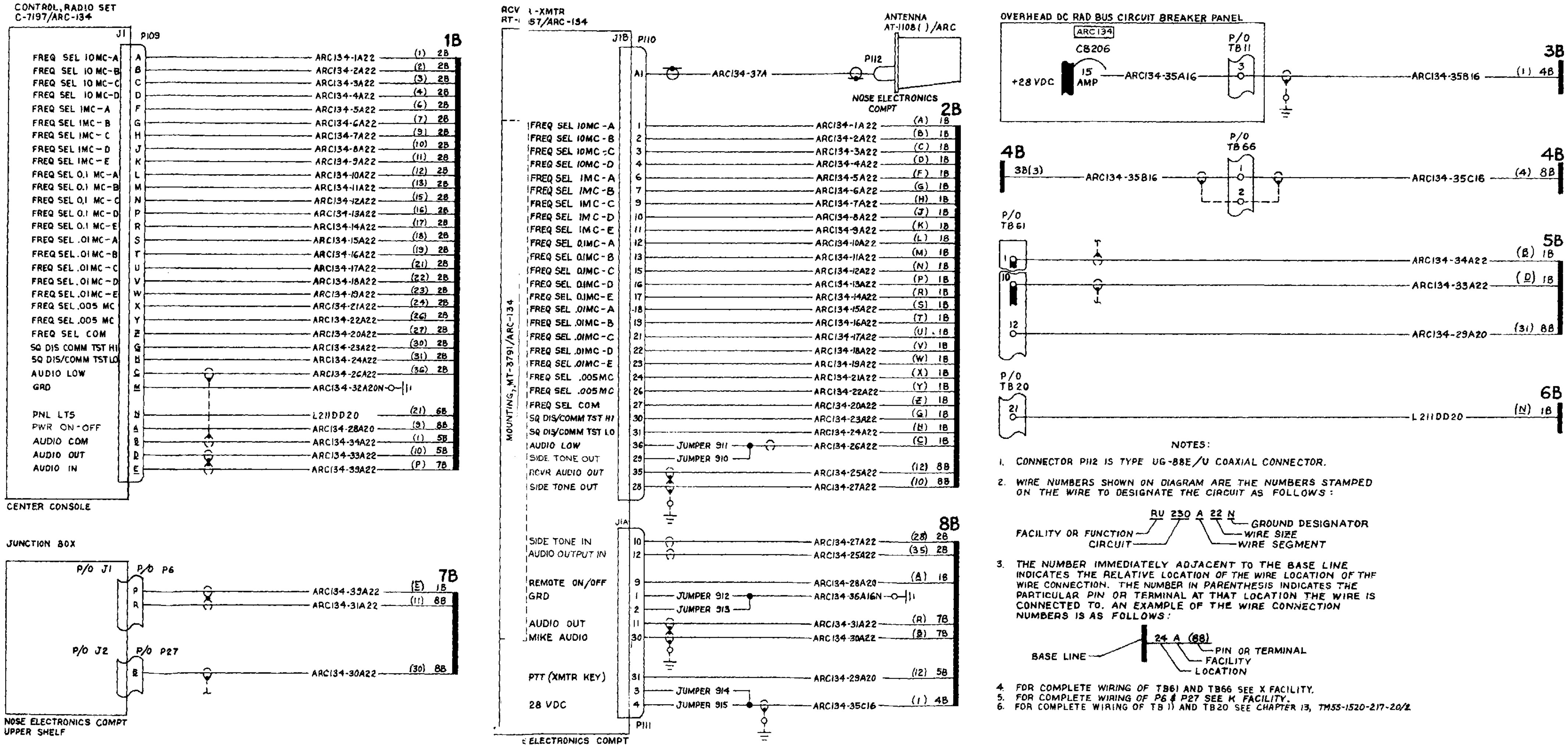


Figure 4-11. Radio Set AN/ARC-134 (vhf radio facility), wiring diagram.

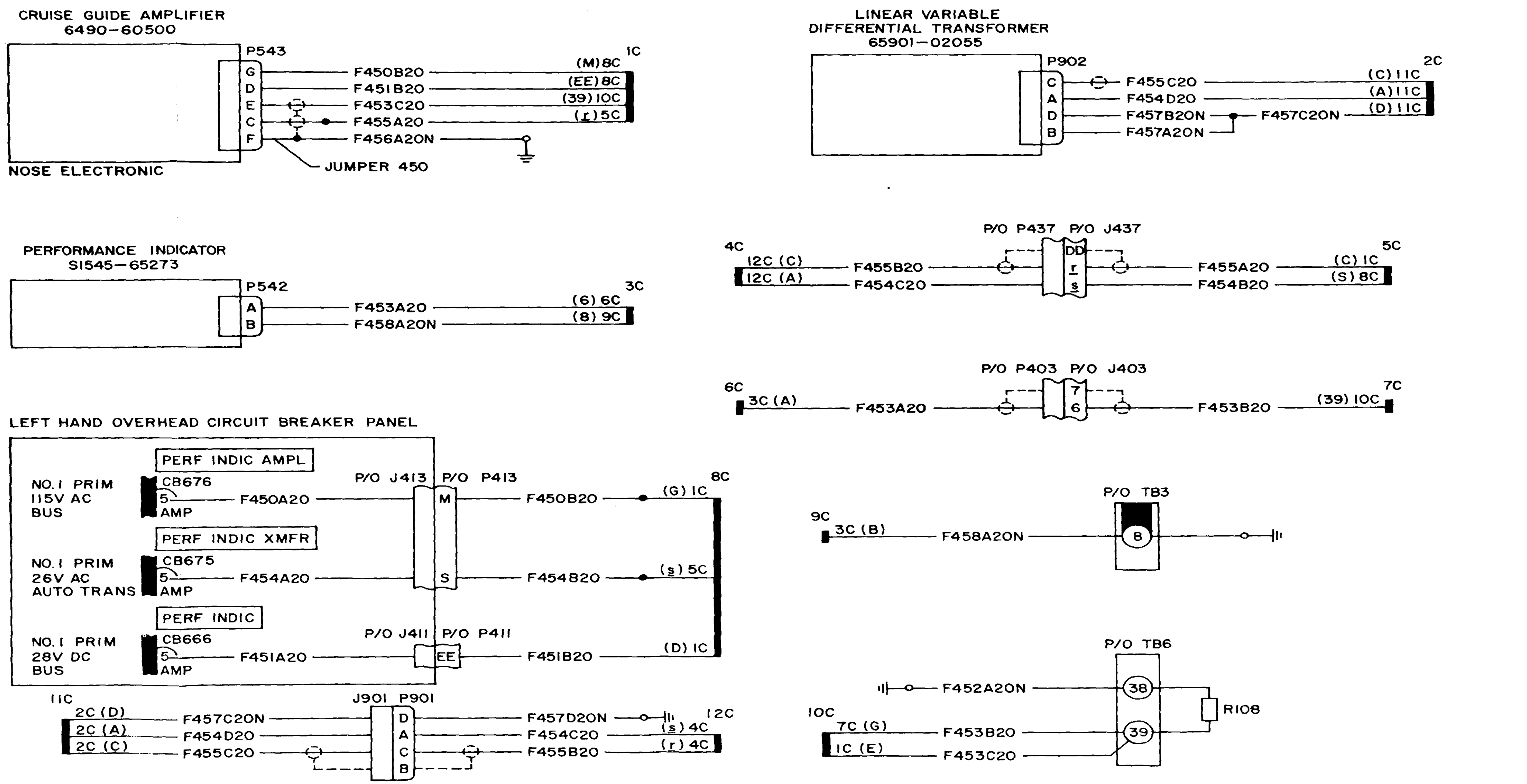


Figure 4-11.1. Performance indicating system, wiring diagram.

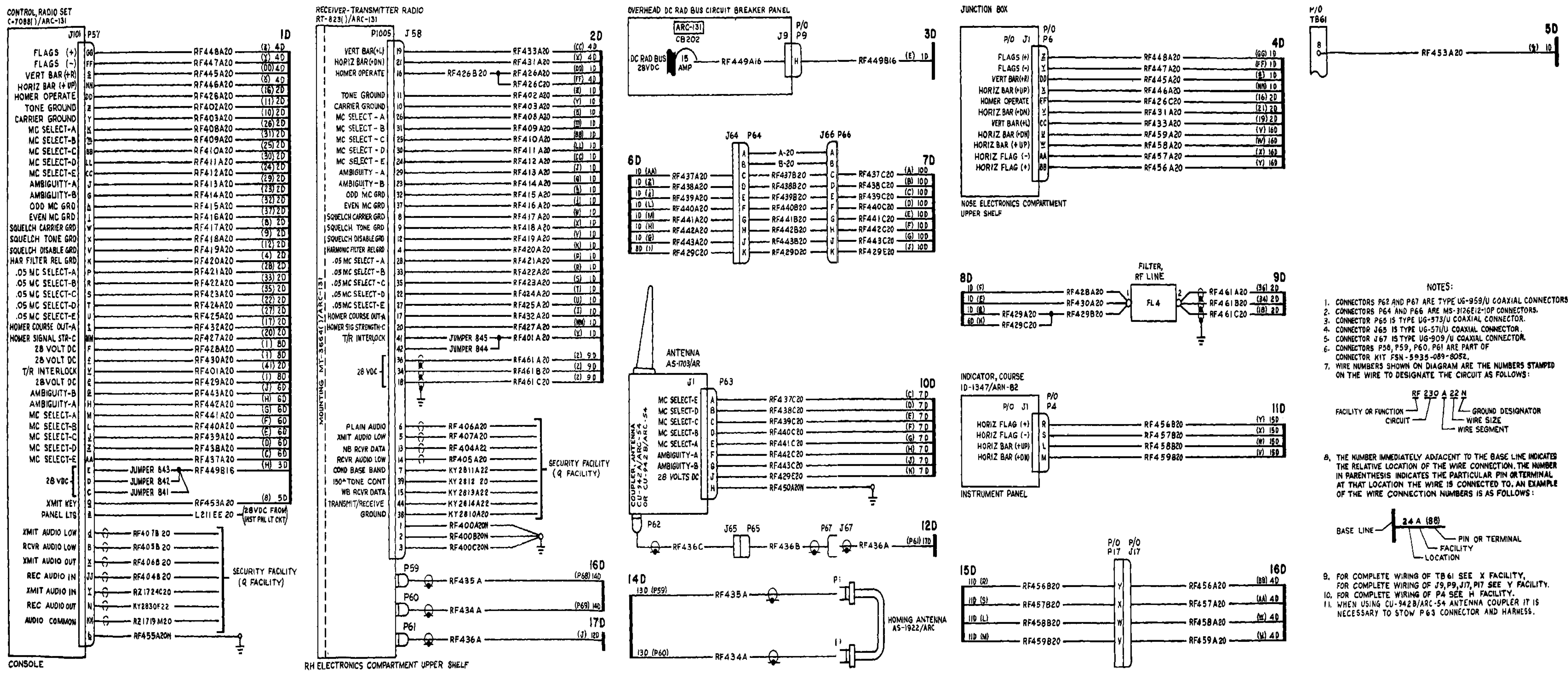


Figure 4-12. Radio Set AN/ARC—131 (fm liaison and homing radio facility), wiring diagram.

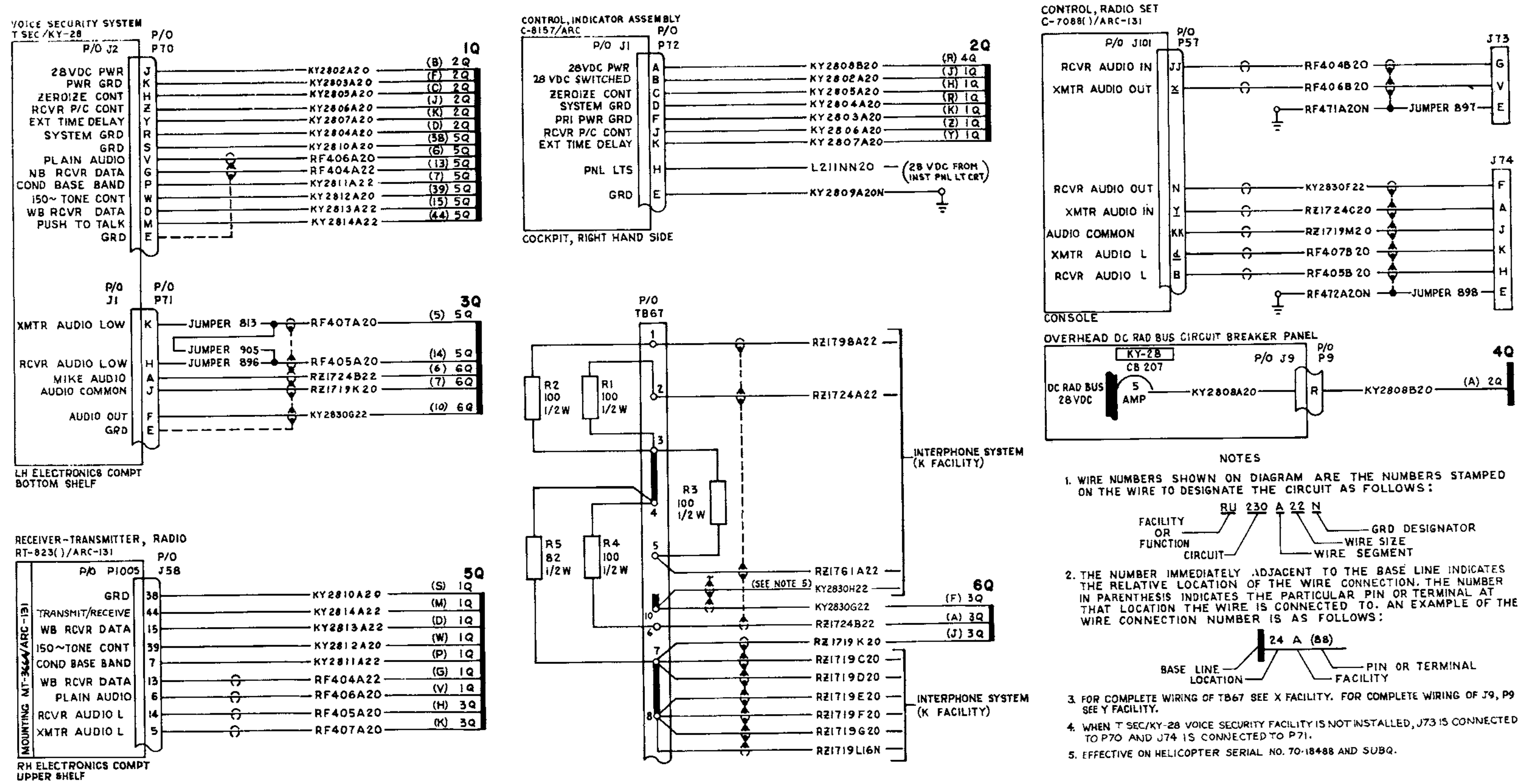


Figure 4-13. T SEC/KY-28 (security facility), wiring diagram.

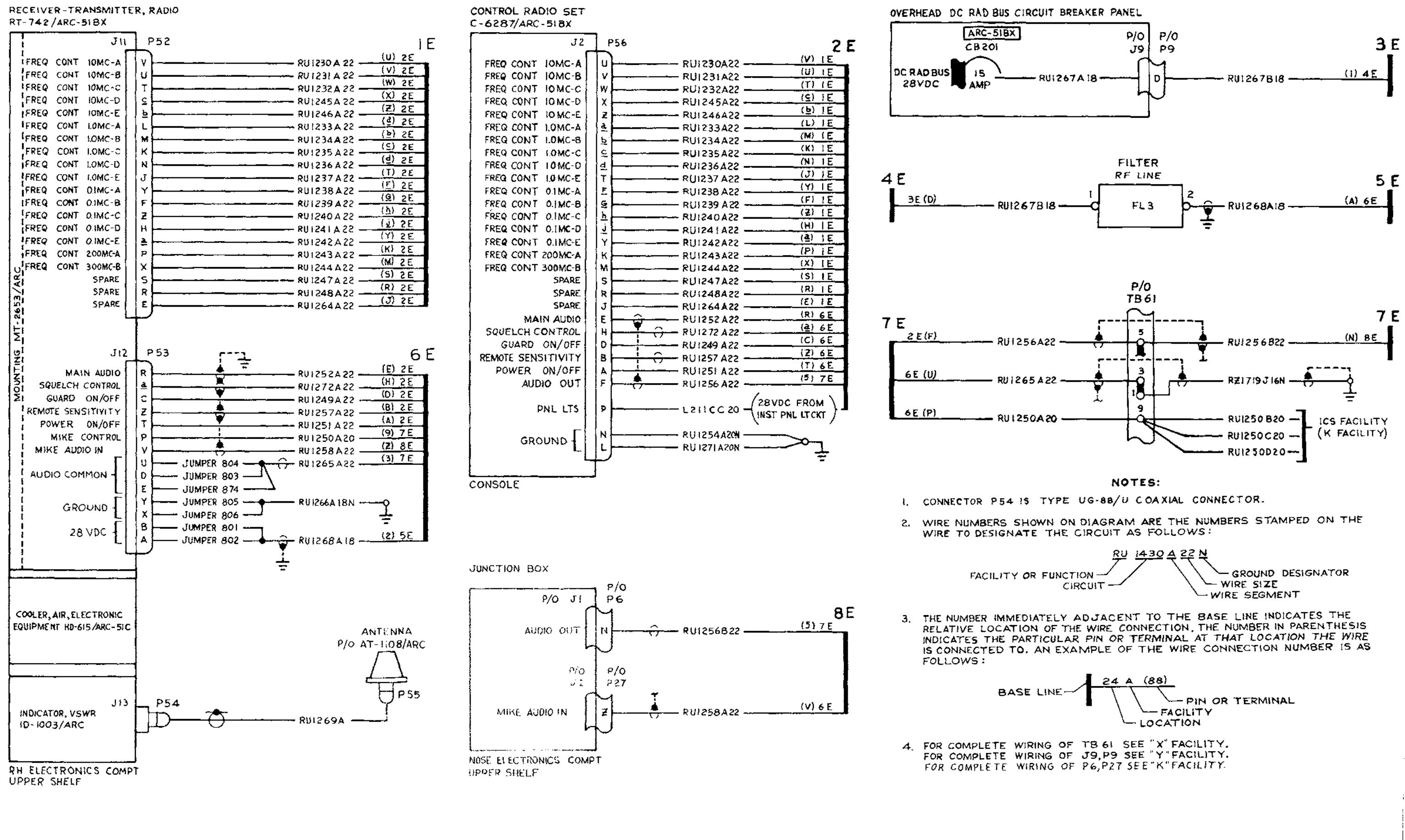


Figure 4-14. Radio Set AN/ARC-51 BX (uhf radio facility), wiring diagram.

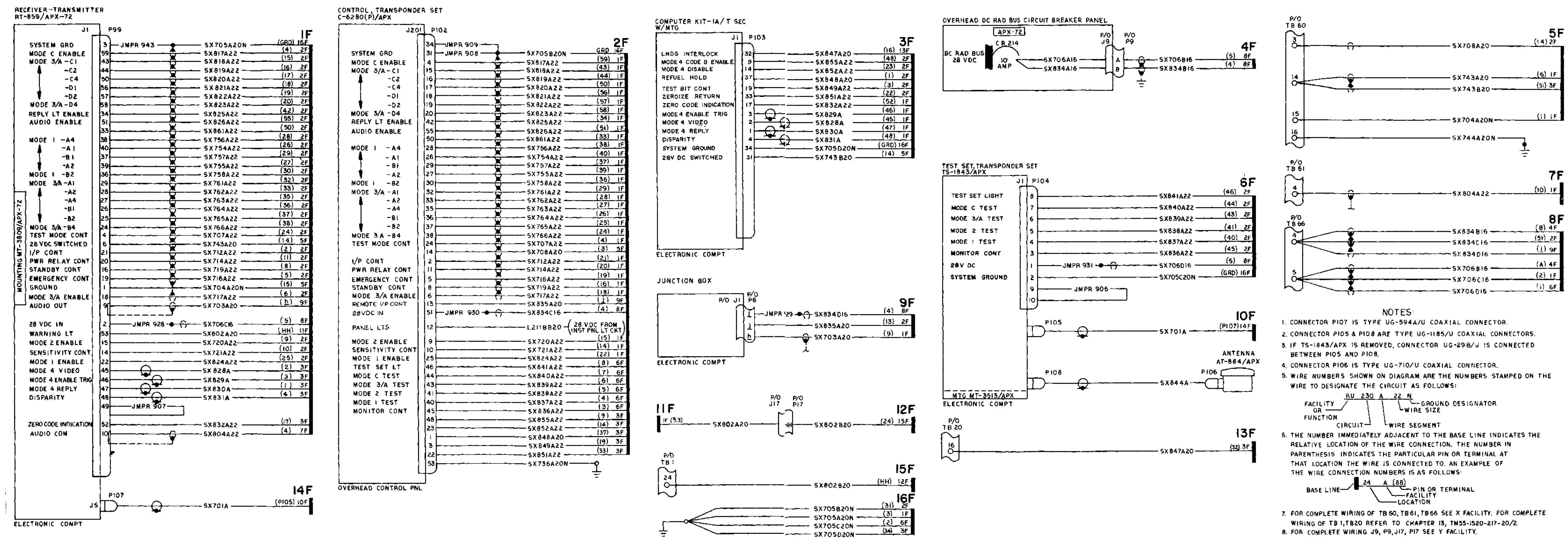


Figure 4-15. Transponder Set AN/APX-72 (IFF Transponder Set facility), wiring diagram.

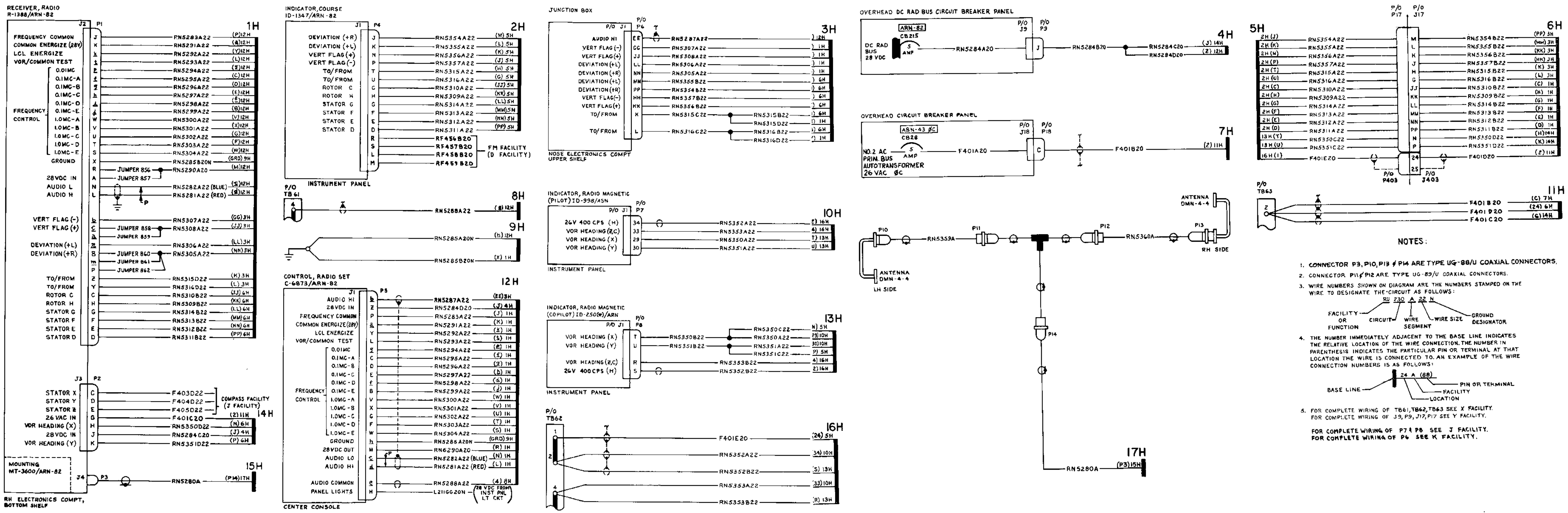


Figure 4-16. Radio receiving Set AN/ARN-82 (vor receiving set facility

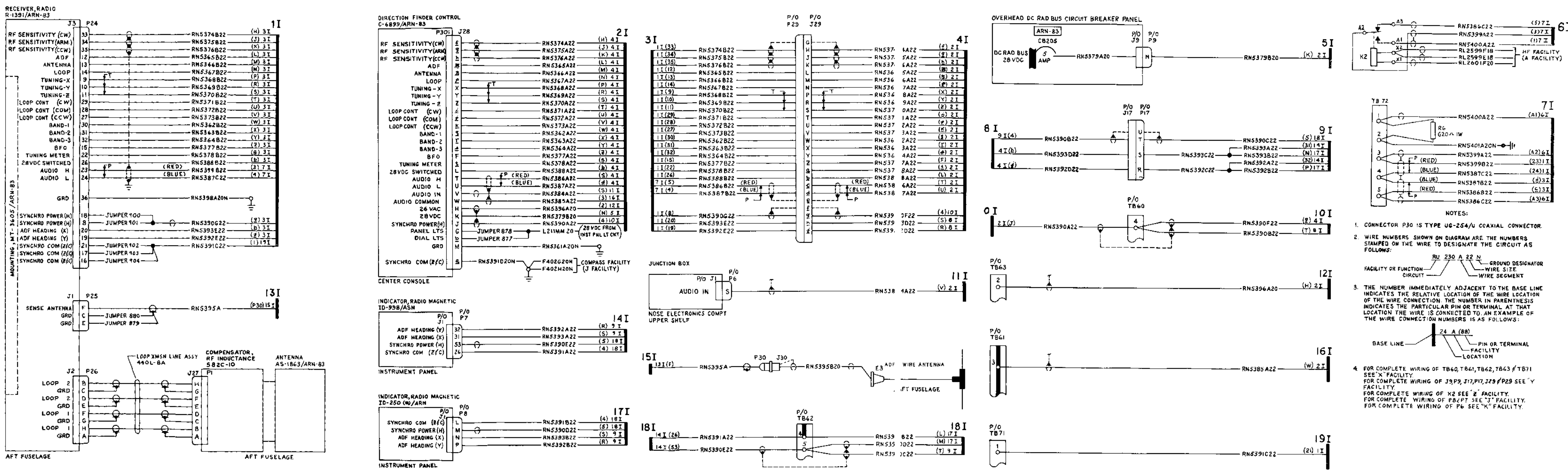


Figure 4-17. Direction Finger Set AN/ARN-83 (adf direction finder facility) wiring diagram.

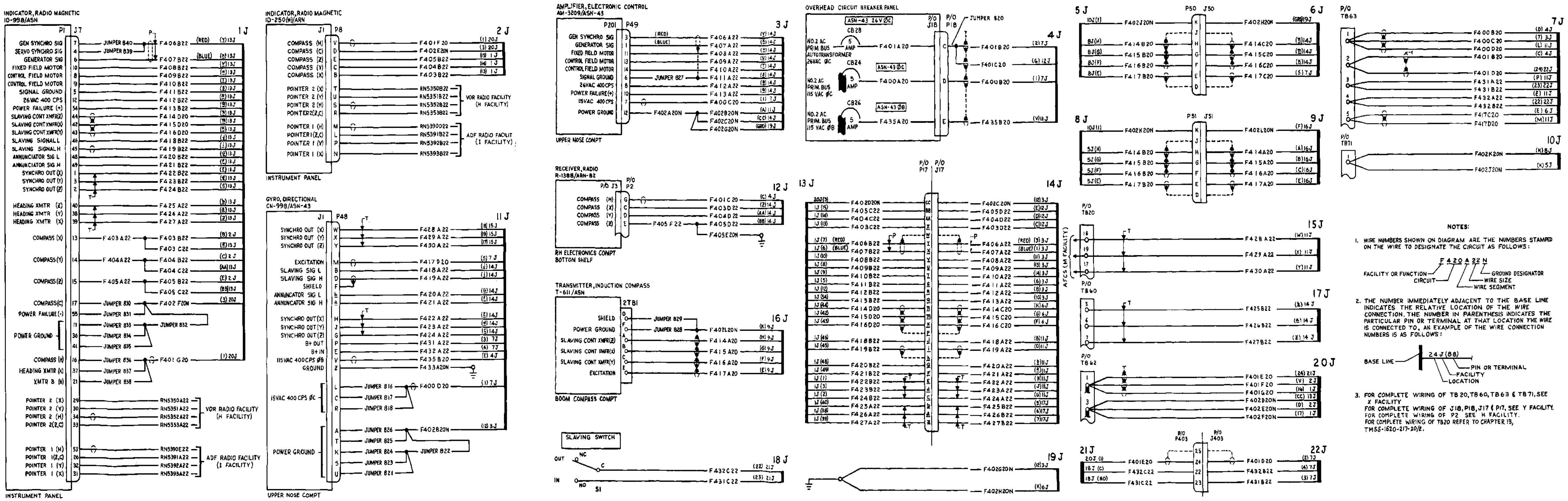


Figure 4-18. Gyromagnetic Compass Set AN/ASN-43 (compass facility), wiring diagram.

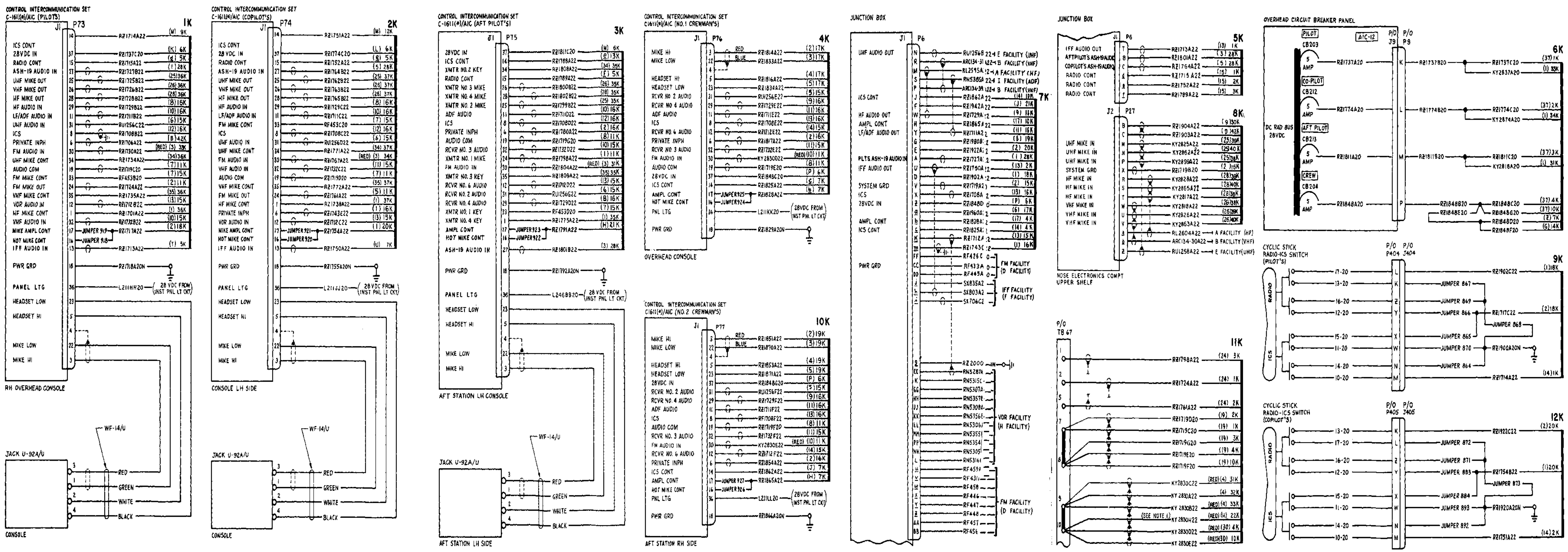


Figure 4-19.(1). Intercommunication Set AN/AIC-12 (interphone system), wiring diagram (part 1 of 4).

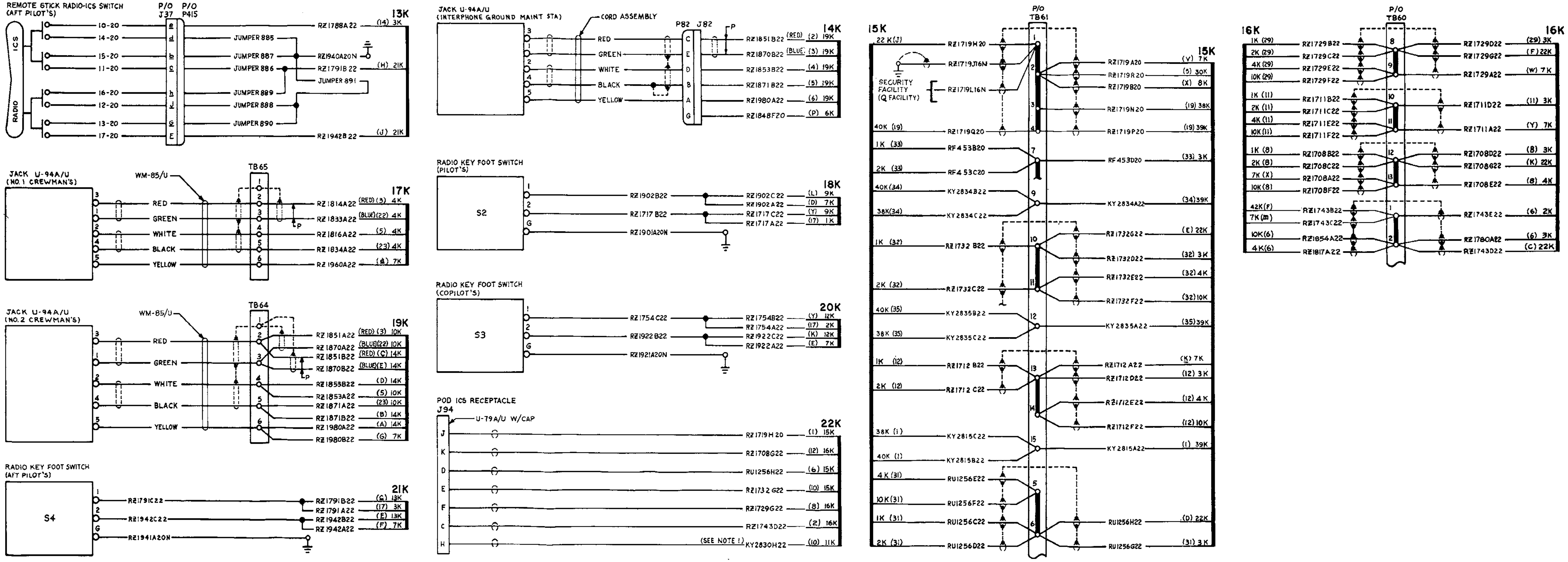


Figure 4-19.(2). Intercommunication Set AN/AIC-12 (interphone system), wiring diagram (part 2 of 4).

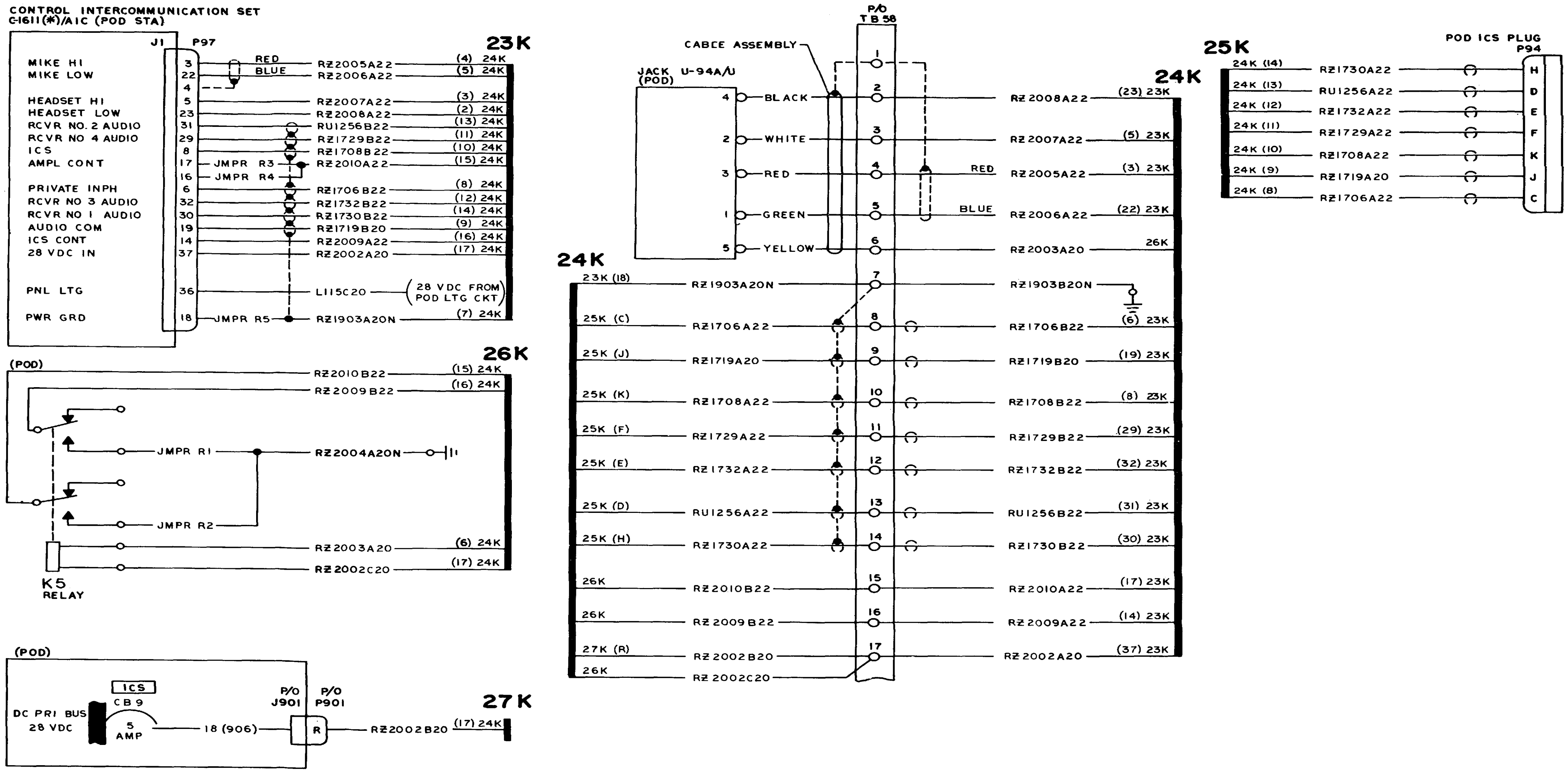


Figure 4-19.(3). Intercommunication Set AN/AIC-12 (interphone system), wiring diagram (part 3 of 4).

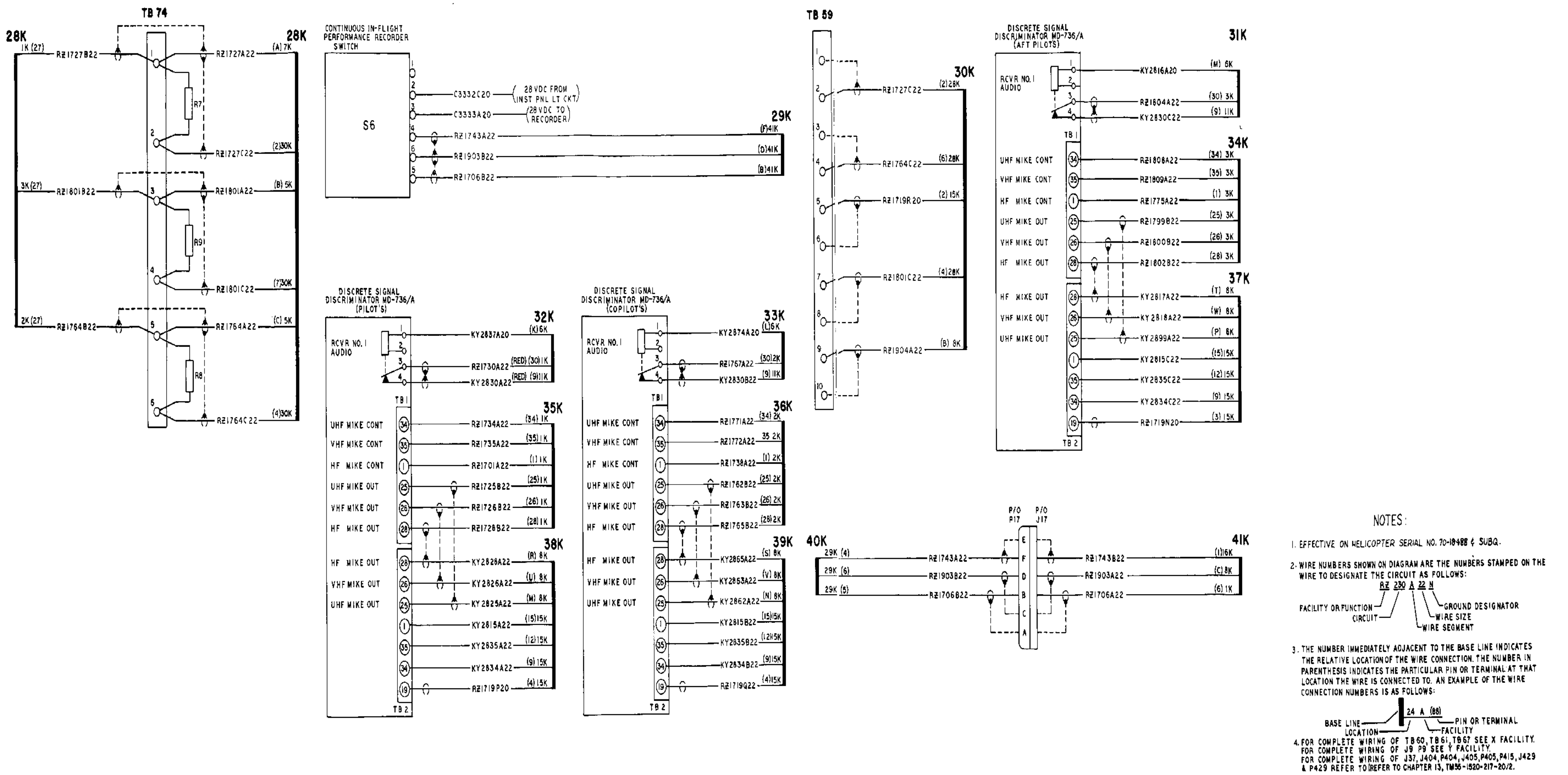


Figure 4-19.(4). Intercommunication Set AN/AIC-12 (interphone system), wiring diagram (part 4 of 4).

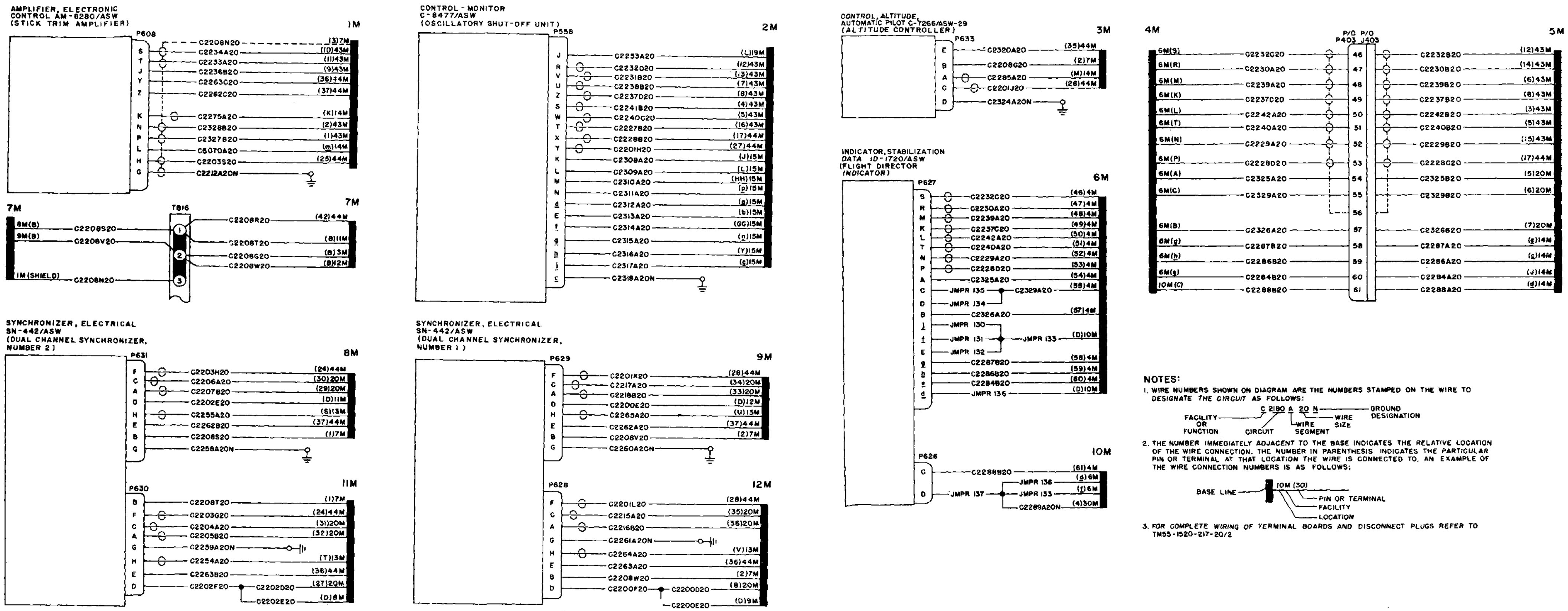


Figure 4-20. (1). Automatic flight control system wiring diagram (part 1 of 5)

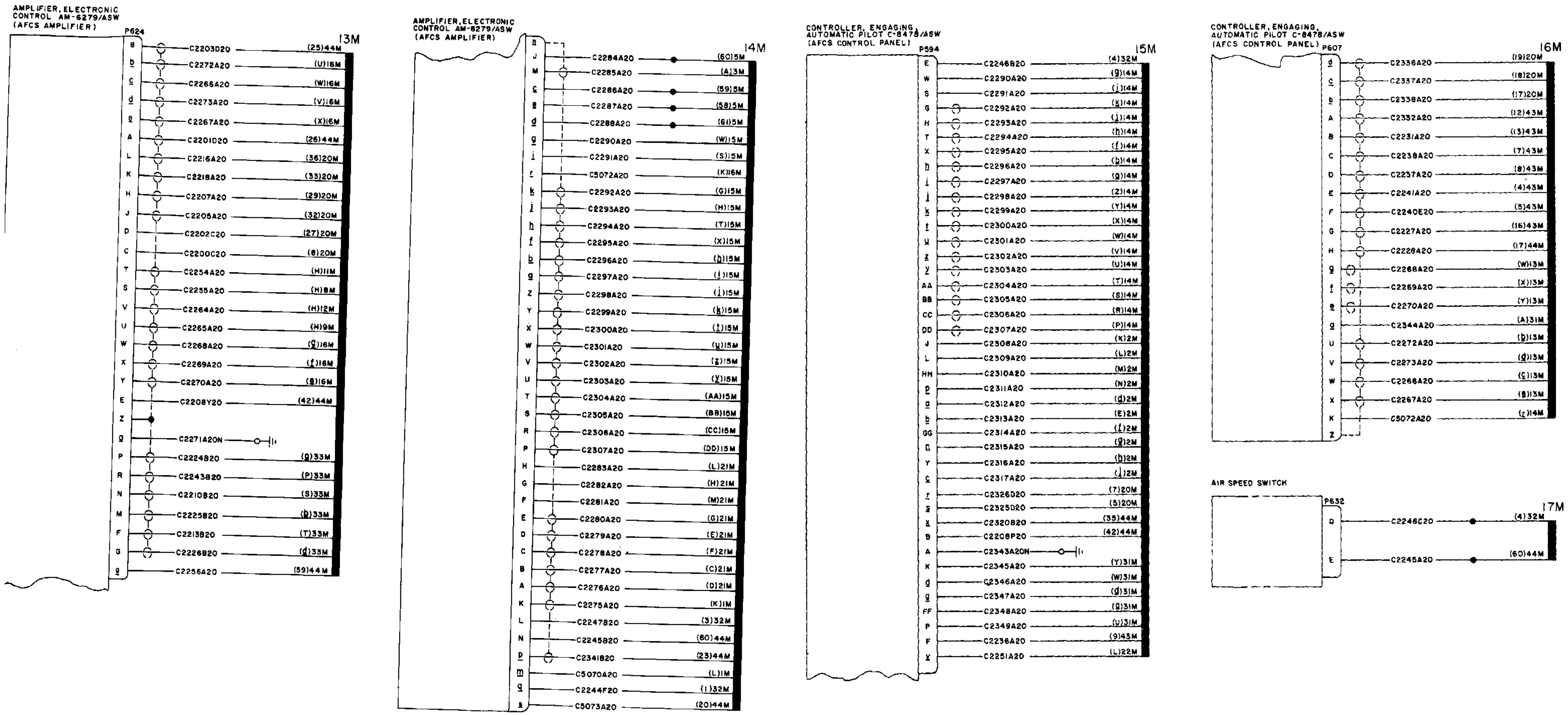


Figure 4-20 (2). Automatic flight control system, wiring diagram (part 2 of 5)

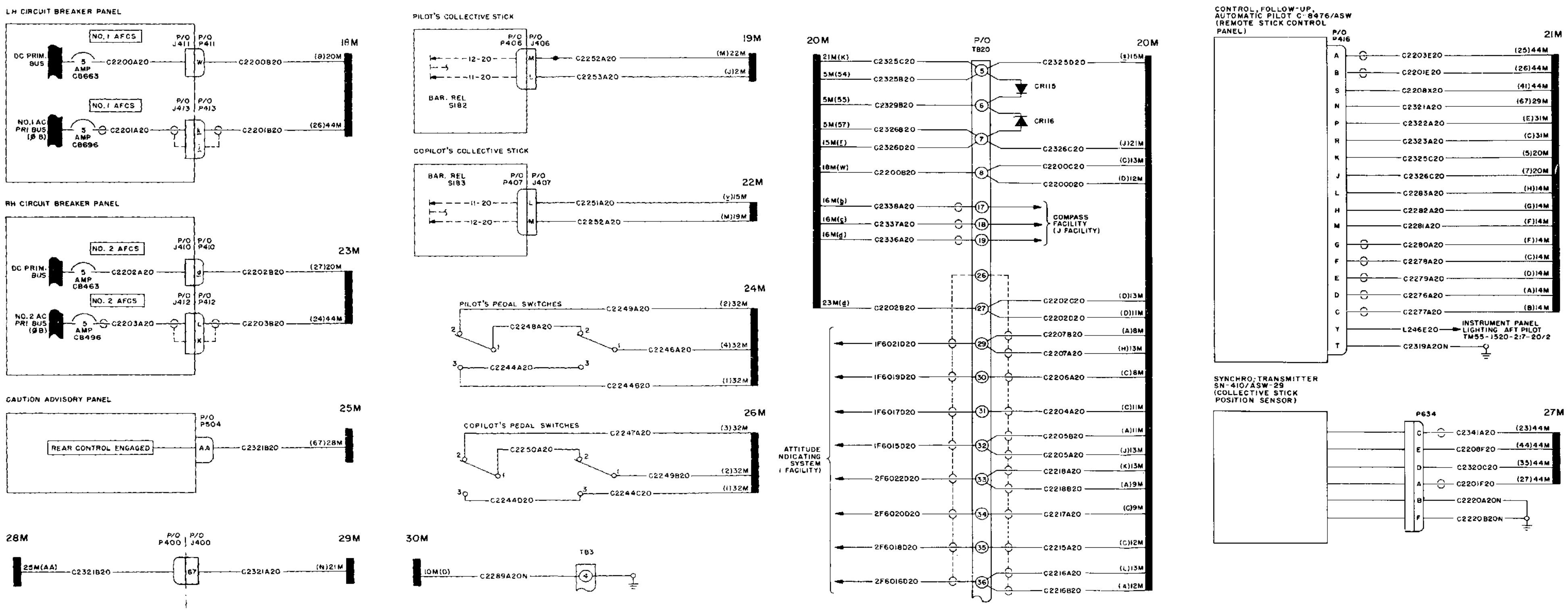


Figure 4-20 (3). Automatic flight control system, wiring diagram (part 3 of 5)

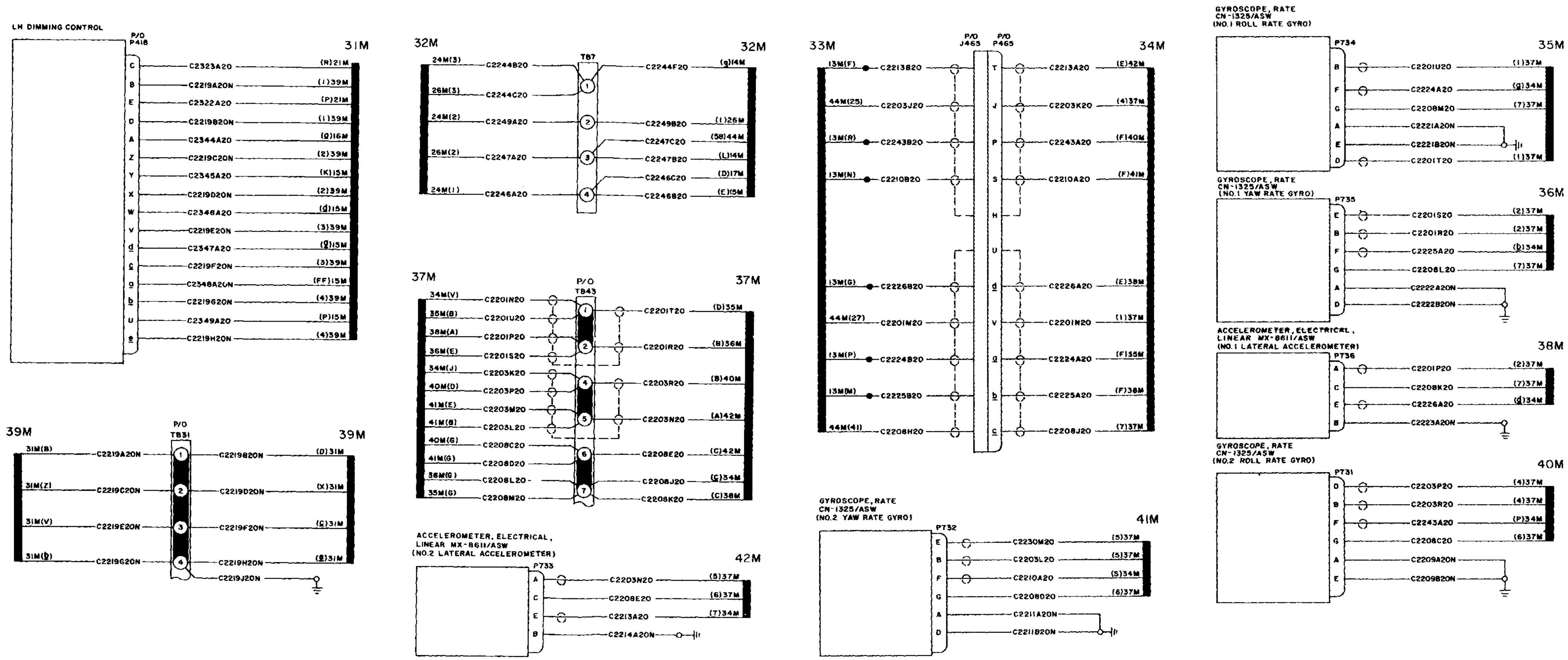


Figure 4-20 (4). Automatic flight control system, wiring diagram (part 4 of 5)

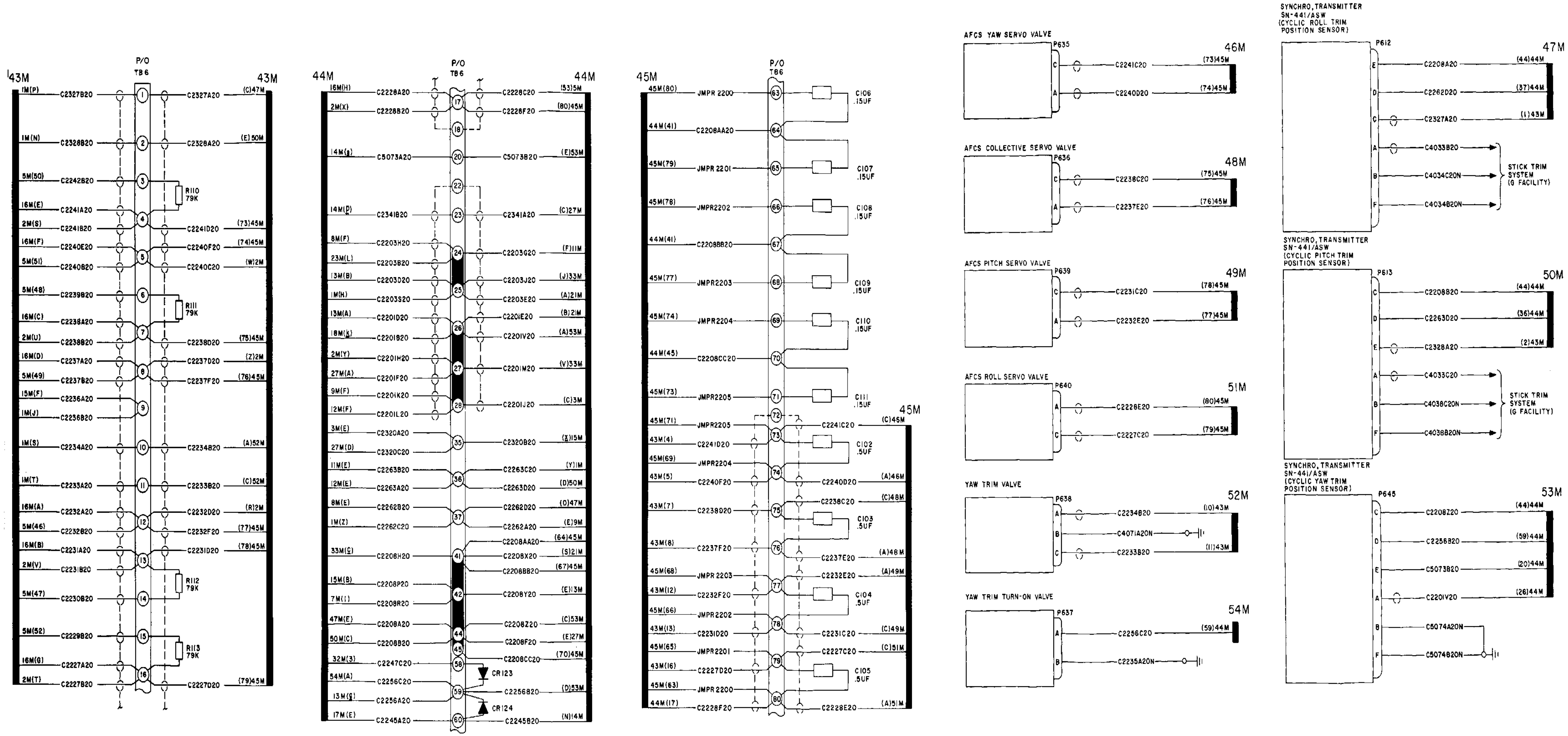


Figure4-20 (5). Automatic flight control system, wiring diagram (part 5 of 5)

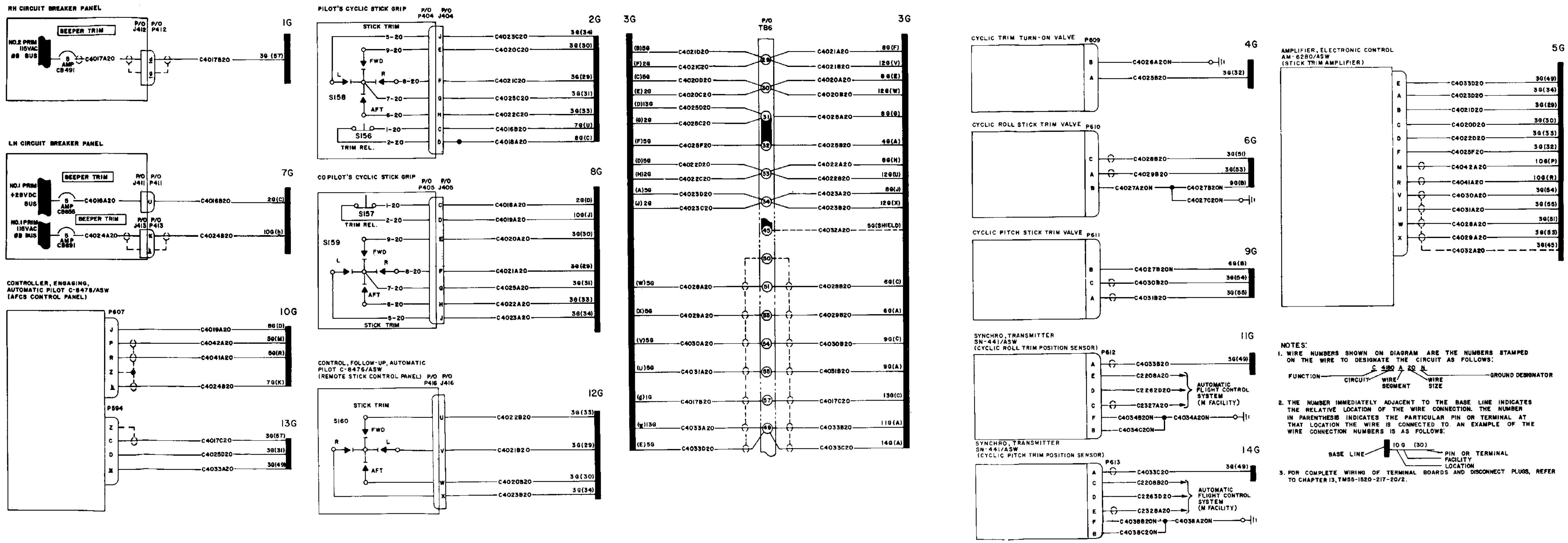


Figure 4-21. Stick trim system, wiring diagram.

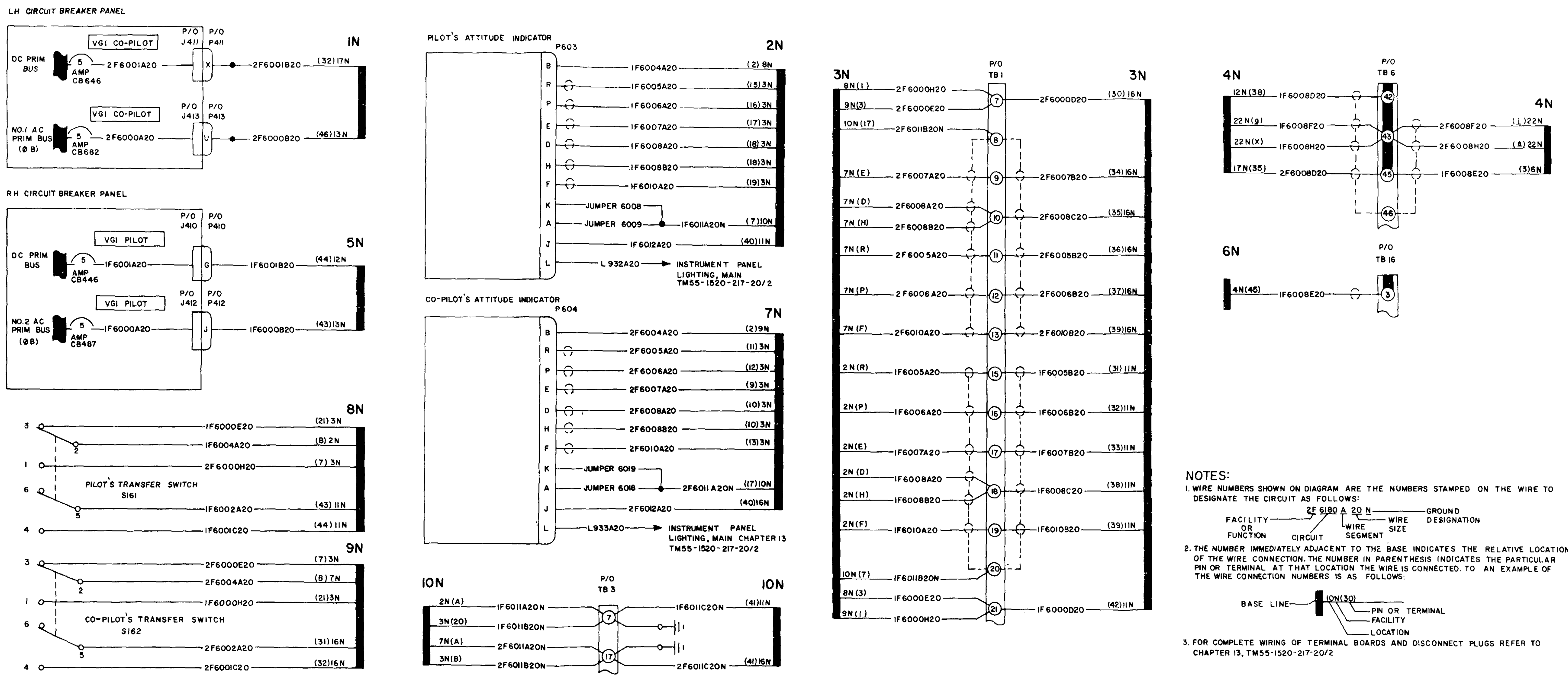


Figure 4-22. (1). Attitude indicating system, wiring diagram (part1 of 3)

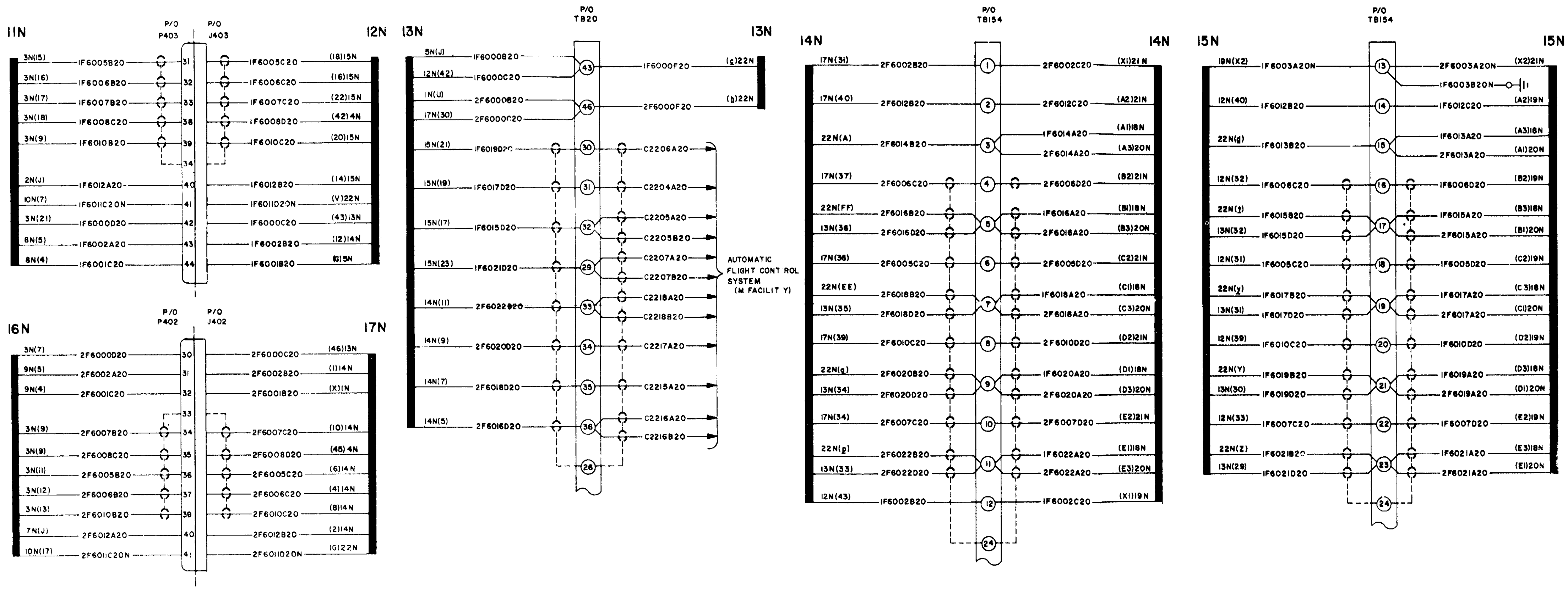


Figure 4-22 (2). Attitude indicating system, wiring diagram (part 2 of 3)

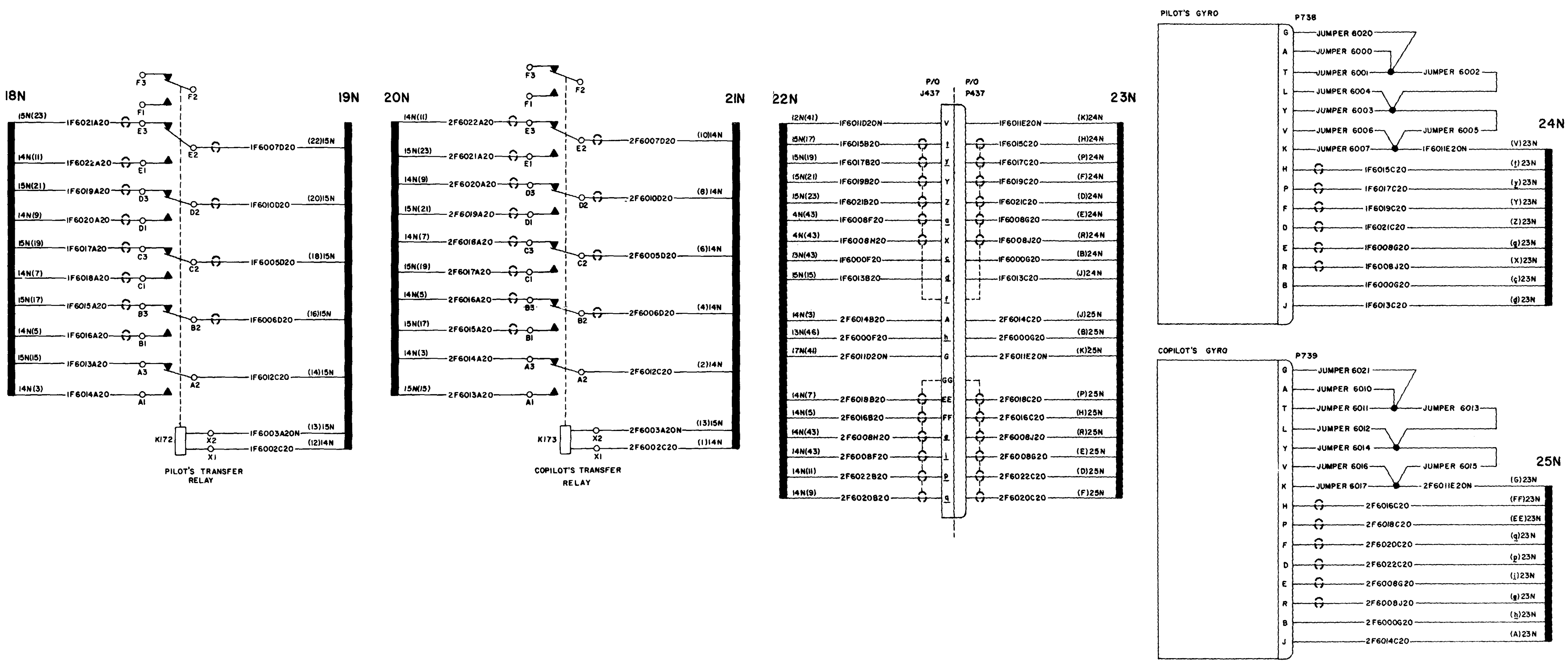


Figure 4-22 (3). Attitude indicating system, wiring diagram (part 3 of 3)

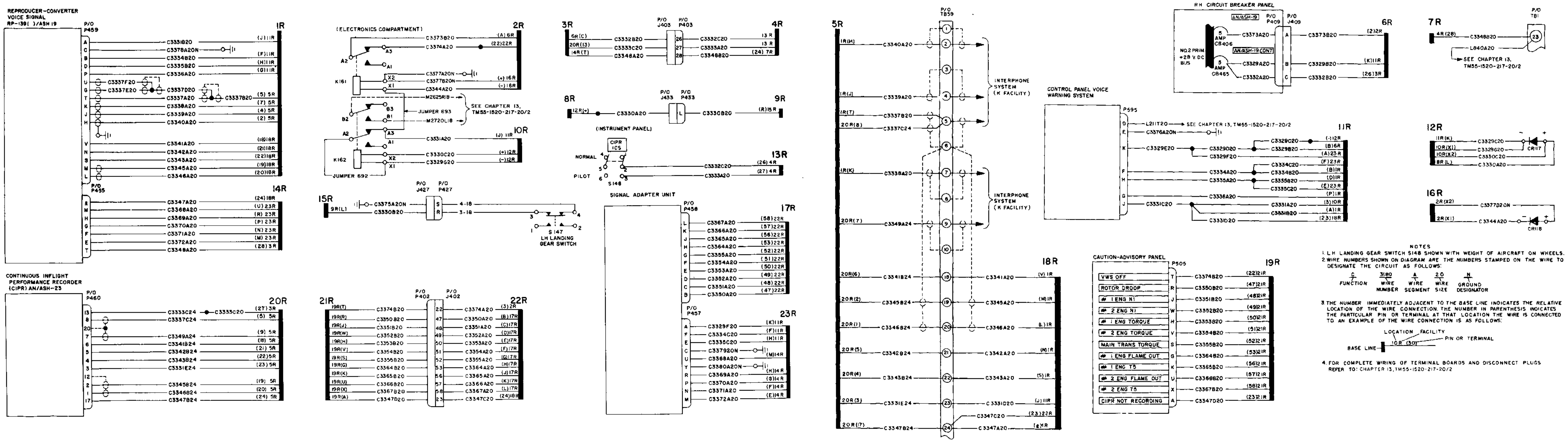


Figure 4-23. Voice Warning System AN/ASH-19, wiring diagram.

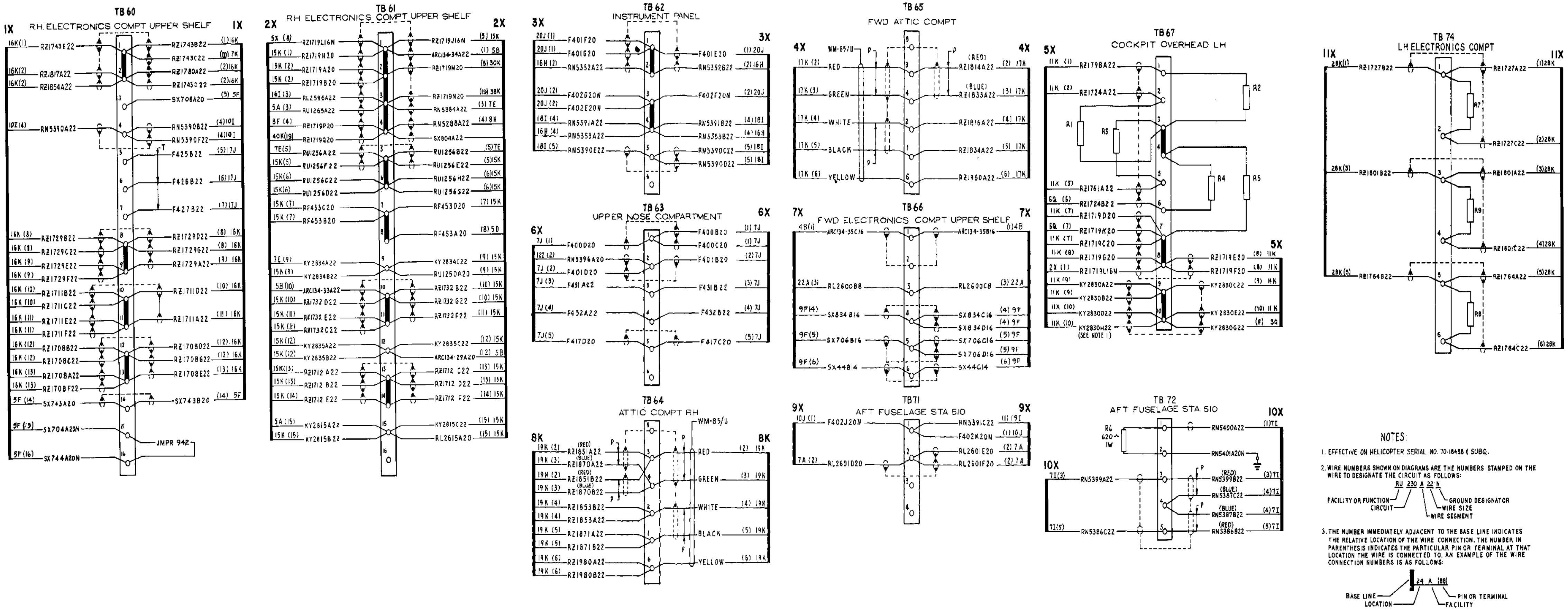


Figure 4-24. Post terminal charts.

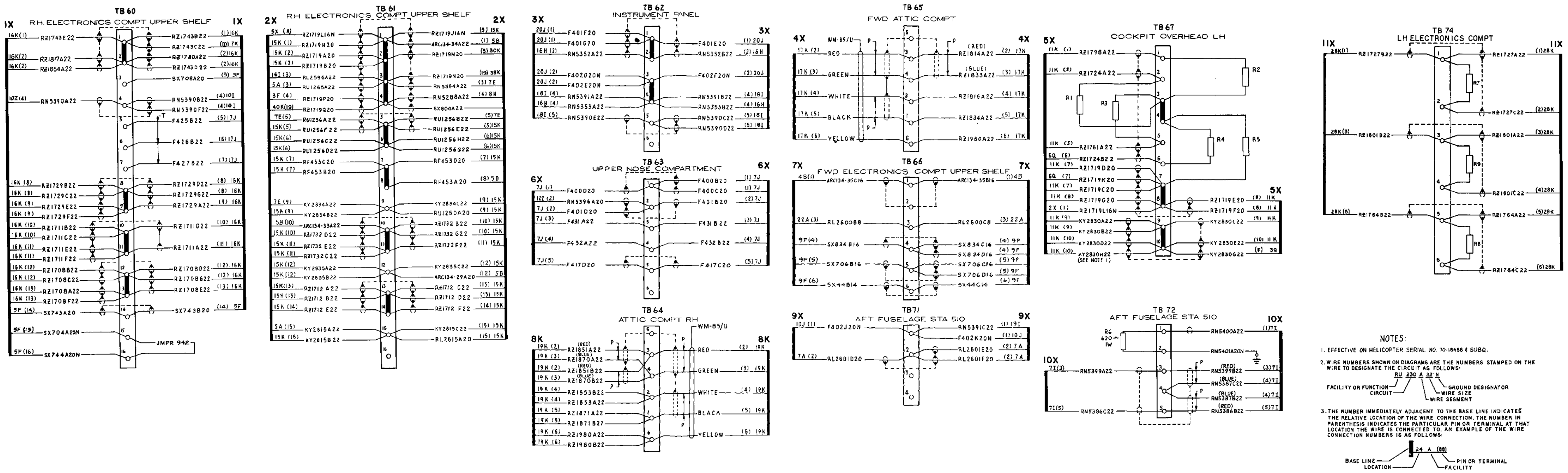


Figure 4-25. Disconnect plug and receptacle charts.

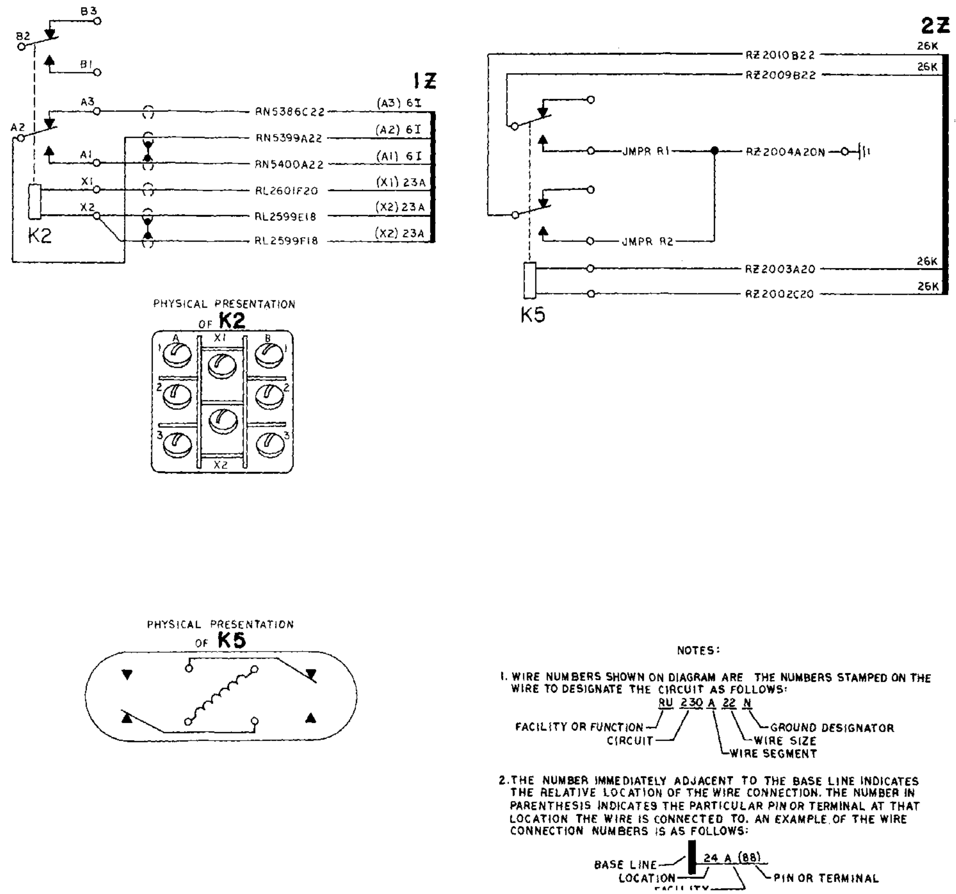


Figure 4-26. External relay chart.

APPENDIX A
REFERENCES

A-i. The complete technical manual for the electronic equipment in Helicopter, Army model CH-54B includes

TM 11-1520-217-20P-2	Organizational Maintenance Repair Parts and Special tool Lists Electronics Equipment Configuration Army Model CH-54B Helicopter
TM 55-1520-217-10/2	Operator's Manual; Helicopter, Army Model CH-54B
TM 55-1520-217-CL/2	Operator's and Crewmember's Checklist; Helicopter, Army Model CH-54B
TM 55-1520 217-20/2	Organizational Maintenance Manual; Helicopter, Army Model CH-54B
TM 55-1520-217-20PMD/2	Daily Inspection Checklist; CH-54B Helicopter Preventive Maintenance
TM 55-1520-217-20PMI/2	Intermediate Inspection Checklist; CH-54B Helicopter Preventive Maintenance
TM 55-1520-217-20PMP/2	Periodic Inspection Checklist; CH-54B Preventive Maintenance
TM 55-1520-217-20P-2	Organizational Maintenance Repair Parts and Special Tools Lists: Helicopter, Cargo Transport CH-54A (Sikorsky), FSN 1520-964-9601 (CH-54A), FSN 2840-904-2461(T73P1),2840-919-7975 (JFTD12A-1)

A-2. The following publications cover equipment, practices, and regulations directly related to this manual:

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
TB 746-10	Field Instructions for Painting and Preserving Electronics Command Equipment
TM 9-213	Painting Instructions for Field Use
TM 11-4920-293-12-1	Operator and Organizational Maintenance Manuals; Test Set, Flight Line, Flight Control Set AN/ASM-418
TM 11-525-10	Operating Instructions; Radio Set ARC Type 12
TM 11-5820-518-20	Operator and Organizational Maintenance Manual; Radio Sets AN/ARC-51X and AN/ARC-51BX
TM 11-5820-670-12	Organizational Maintenance Manual Radio Set AN/ARC-131
TM 11-5821-277-25-1	Organizational DS, GS, and Depot Maintenance Manual; Radio Set AN/'ARC-134
TM 11-5821-248-12	Operator and Organizational Maintenance Manual; Radio Set AN/ARC-102
TM 11-5821-286-20	Organizational Maintenance Manual; Reproducer Set, Voice Warning AN/ASH-19
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 11-5831-201-15	Operator's and Organizational Maintenance Manual; Control, Intercommunication Set C-1611 (*)/AIC
TM 11-5895-490-20	Receiver-Transmitter, Radio RT-859/APX-72 and Mountings MT-3809/APX-72 and MT-3948/APX-
TM 11-6125-220-12	Operator and Organizational Maintenance Manual; Motor-Generator PU-543/A (MS-21903)
TM 11-6140-213-15-1	Operator, Organizational, DS, GS and Depot Maintenance Manual, Aircraft and Nonaircraft Nickel-Cadmium Batteries (General)
TM 11-6140-203-15-2	Operator's Organizational, DS, GS, and Depot Maintenance Manual. Including Repair Parts and Special Tools Lists; Aircraft Nickel-Cadmium Batteries
TM 11-6140-206-12	Operator and Organizational Maintenance Manual; Battery, Storage BB-434/U (MS-24497-1)
TM 11-6605-202-12	Organizational Maintenance Manual; Gyromagnetic Compass AN/ASN-43
TM 11-6625-203-12	Operation and Organizational Maintenance; Multimeter AN/URM-105 Including Multimeter ME-77/U
TM 11-6625-303-12	Operator and Organizational Maintenance Manual; Electrical Power Test Sets AN/UPM-93 and AN/UPM-100
TM 11-6625-320-12	Organizational Maintenance Manual; Voltmeter, Electronic ME-30E/U
TM 11-6625-667-12	Organizational Maintenance Manual; Test Set, Transponder AN/APM-123(V)
TM 38-750	The Army Maintenance Management System (TAMMS)
TM 55-405-3	Army Aviation Maintenance Engineering Manual: Maintenance of Aircraft Systems
TM 55-1500-323-25	Installation Practices for Aircraft Electric and Electronic Wiring
TM 55-4920-231-14	Tester, Pitot and Static Systems Part Number REIC 340000

APPENDIX B
MAINTEN,ANCE ALLOCATION

Section I. INTRODUCTION

B-1. General

This appendix provides a summary of the maintenance operations covered in the equipment literature for electronic equipment installation items for the CH54B. It authorizes categories 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.

B-2. Maintenance Functions

Maintenance functions will be limited to and defined as follows:

a. Inspect. To determine serviceability of an item by comparing its physical, mechanical, and electrical characteristics with established standards.

b. Test. To verify serviceability and to detect incipient electrical or mechanical failure by use of special equipment such as gages, meters, etc.
This is accomplished with external test equipment and does not include operation of the equipment and operator type tests using internal meters or indicating devices.

c. Service. To clean, to preserve, to charge, and to add fuel, lubricants, cooling agents, and air. If it is desired that elements, such as painting and lubricating, be defined separately, they may be so listed.

d. Adjust. To rectify to the extent necessary to bring into proper operating range.

e. Align. To adjust two or more components or assemblies of an electrical or mechanical system so that their functions are properly synchronized.
This does not include setting the frequency control knob of radio receivers or transmitters to the desired frequency.

f. Calibrate. To determine the corrections to be made in the readings of instruments or test equipment used in precise measurement. Consists of the comparison of two instruments, one of which is a certified standard of known accuracy, to detect and adjust any discrepancy in the accuracy of the instrument being compared with the certified standard.

g. Install. To set up for use in an operational environment such as an encampment, site, or vehicle.

h. Replace. To replace unserviceable items with serviceable like items.

i. Repair. To restore an item to serviceable condition through correction of a specific failure or unserviceable condition. This function includes, but is not limited to welding, grinding, riveting, straightening, and replacement of parts other than the trial and error replacement of running spare type items such as fuses, lamps, or electron tubes.

j. Overhaul. Normally, the highest degree of maintenance performed by the Army in order to minimize time work in process is consistent with quality and economy of operation. It consists of that maintenance necessary to restore an item to completely serviceable condition as prescribe(by maintenance standards in technical publications for each item of equipment. Overhaul normally does not return an item to like new, zero mileage, or zero hour condition.

k. Rebuild. The highest degree of materiel maintenance. It consists of restoring equipment as nearly as possible to new condition in accordance with original manufacturing standards. Rebuild is performed only when required by operational considerations or other paramount factors and then only at the depot maintenance category. Rebuild reduces to zero the hours or miles the equipment, or component thereof, has been in use.

l. Symbols. The uppercase letter placed in the appropriate column indicates the lowest level at which that particular maintenance function is to be performed.

B-3. Explanation of Format

a. Column 1, Group Number. Column I lists group numbers, the purpose of which is to identify components, assemblies, subassemblies and modules with the next higher assembly.

b. Column 2, Functional Group. Column 2 lists the noun names of components, assemblies, subassemblies and modules on which maintenance is authorized.

c. Column 3, Maintenance Functions. Column 3 lists the maintenance-category at which performance of the specific maintenance function is authorized. Authorization to perform a function at any category also includes authorization to perform that function at higher categories. The codes used represent the various maintenance categories as follows:-

Code *Maintenance Category*
C......... Operator/crew
0 .... Organizational maintenance
F .... Direct support maintenance
H......... General support maintenance
D......... Depot maintenance

d. Column 4, Tools and Test Equipment. Column 4 specifies, by code, those tools and test equipment required to perform the designated function. The numbers appearing in this column refer to specific tools and test equipment which are identified in table I.

e. Column 5, Remarks. Self-explanatory.

B-4. Explanation of Format of Table I, Tool and Test Equipment Requirements

The columns in table I 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 maintenance allocation chart. The numbers indicate the applicable tool for the maintenance function.

b. Maintenance Category. The codes 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 of the specific tool or test equipment.

e. Tool Number. Not used.

Section II. Maintenance Allocation Chart

(1) GROUP NUMBER	(2) FUNCTIONAL GROUP	(3) MAINTENANCE FUNCTIONS A INSPECT	B TEST	C SERVICE	D ADJUST	E ALIGN	F CALIBRATE	G INSTALL	H REPLACE	I REPAIR	J OVERHAUL	K REBUILD	(4) (5) TOOLS AND EQUIPMENT	REMARKS
1	INSTALLATION ITEMS SUCH AS CABLE	0												Visual inspection
	HARNESS, JUNCTION BOXES, PLUGS		O										1,8	Continuity
	SOCKETS, AND SWITCHES FOR ELECTR-													
	ONIC EQUIPMENT INSTALLATION IN THE													
	CH-54B								0				2,6,7	Connectors, switches
			F										3	Signal Trace
										F			4,6,7	Junction Box, Cabling
			H										3	Signal Trace
										H			4	Cable Harness
											D		3,4	
2	RADIO SET AN/ARC-51( )X	0	0	0					0				2	See Note #2: TM 11-5820-518-12
3	RADIO SET AN/ARC-134( )	0	0	0					0				2,10	See Note #2: TM 11-5821-277-20
3A	ANTENNA AT-1108( )/ARC	0												Visual inspection
			0										1	Continuity
				0					0				2	
4	RADIO SET AN/ARC-102	0		0					0				2	See Note #2: TM 11-5821-248-12
			0										1,14	
4A	COUPLER, ANTENNA CU-1658/A	0	0	0					0				2	See Note #2: TM 11-5821-271-15
4B	ANTENNA ANTI-PRECIPITATION TYPE													
	(MIL-A-7965)	0												Visual inspection
			0										1	Continuity
				0					0				2	
5	RADIO SET AN/ARC-131	0	0	0	0	0							2	See Note #2: TM 11-5820-670-12
5A	COUPLER, ANTENNA CU-942( )/ARC								0				2	See Note #2: TM 11-5821-244-12
5B	HOMING ANTENNA AS-1922( )/ARC	0												Visual inspection
			0										1	Continuity
				0					0				2	
5C	ANTENNA AS-1703/AR	0												Visual inspection
			0										1	Continuity
				0					0				2	
6	RECEIVING SET, RADIO AN/ARN-82								0				2	See Note #2: TM 11-5826-226-12

Section II. Maintenance Allocation Chart

(1) GROUP NUMBER	(2) FUNCTIONAL GROUP	(3) MAINTENANCE FUNCTIONS A INSPECT	B TEST	C SERVICE	D ADJUST	E ALIGN	F CALIBRATE	G INSTALL	H REPLACE	I REPAIR	J OVERHAUL	K REBUILD	(4) (5) TOOLS AND EQUIPMENT	REMARKS
	CH-5hB (continued)													
6A	ANTENNA (Nm-4-4) AS-134/ARN	0											1	Visual inspection continuity
			0											
				0					0				2	
7	DIRECTION PINER SET AN/ARN-83	0	0	0					0				2	See Note #2: TM 1u-5826-225-12
7A	ANTENNA AS-1863/AN	0	0	0					0				2	See Note #2: TM 11-5826-225-12
8	RECEIVER-TRANSMITTER, RADIO RT-859	0		0									2	See Note #2: TM 11-5895-490-20
	/APX		0						0				1,11	
8B	ANTENNA AT-884/APx	0	0	0					0				2	See Note #2: TM 1l-5895-217-12
9	GTRO MAGNETIC COMPASS AN/ASN-43( )	0	0	0	0				0				2	See Note #2: TM 1-6605-202-12
10	RECORDER SET, VOICE WARNING													
	AN/ASH-19	0	0	0					0				2	See Note #2: TM 1u-5821-286-20
11	RECORER SET, SOUND (CIPR) AN/ASH-23								0				2	See Note #2: TM 11-5835-239-12
13	BATTERY BB-434/V								0				2,9,15	See Note #2: TM 11-6140-203-15-2
14	CONTROL, INTERCOMMUNICATIONS SET													
	C-1611( )/AIC								0				2	See Note #2: TM 11-5831-201-15
9A	INDICATOR, COURSE ID-250/ARN								0				2	See SB 11-497
9B	RADIO MAGNETIC COMPASS INDICATOR													
	ID-998( )/ASN								0				2	See SB 11-497
15	MOTOR GENERATOR PU-543/A	0	0	0	0								1,2	See Note #2: TM 11-6125-220-12
									0				2,13	
16	VOICE SECURITY EQVIPMENT TSEC/KY-28													See Note #1
8C	Computer Kit-LA/TSEC													See Note #1

Section II. Maintenance Allocation Chart

(1) GROUP NUMBER	(2) FUNCTIONAL GROUP	(3) MAINTENANCE FUNCTIONS A INSPECT	B TEST	C SERVICE	D ADJUST	E ALIGN	F CALIBRATE	G INSTALL	H REPLACE	I REPAIR	J OVERHAUL	K REBUILD	(4) (5) TOOLS AND EQUIPMENT	REMARKS
17	AFCS	0												Visual Inspection
	AN/ASW-( )		0										1,5,12	System Check
									0				2,8	Faulty Black Box
17A	Controller, Engaging	0												Visual Inspection
	Automatic Pilot		0										1,5	Operation
	C-8478/ASW								0				2	Black Box
										H			3	Operation
			H										4,6,7,16,22, 28	Piece Parts
			D										3,12,17,22	Operation
												D		
17B	Control, Follow-up	0												Visual Inspection
	Automatic Pilot		0										1,5	Operation
	C-8476/ASW												2	Black Box
										H			3,16,17,21, 22,26,27	Continuity and Operation
			H										4,28	Piece Parts
			D										3,16,17,26	Operation
												D		
17C	Amplifier, Electronic	0												Visual Inspection
	Control		0										1,5	Operation
	AM-6279/ASW								0				2	Fuses, Black Box
			F										3,16,17,21, 22,26	Continuity and Operation

Section II. Maintenance Allocation Chart

(1) GROUP NUMBER	(2) FUNCTIONAL GROUP	(3) MAINTENANCE FUNCTIONS A INSPECT	B TEST	C SERVICE	D ADJUST	E ALIGN	F CALIBRATE	G INSTALL	H REPLACE	I REPAIR	J OVERHAUL	K REBUILD	(4) (5) TOOLS AND EQUIPMENT	REMARKS
										F			,6,7	Replace Modules and Assemblies
			H										3,16,17,22, 26	Operation
										H			14,28	Piece Parts
						H							3,16,17,21, 22,25	
			D										3,16,17,22, 25,26,27	Operation
										D			4,6,7,28	
17D	Control Monitor C-8477/ASW	0												Visual Inspection
			0										1,5	Operation
									0				2	Fuses, Black Box
			F										3,26	Continuity and Operation
										F			4,6,7,28	Replace Modules and Assemblies
			H										3,16,17,21, 22,25,26,27	Operation
										H			4,28	Piece Parts
			D										3,16,17,21, 22,25,26,27	Operation
17E	Amplifier Electronic Control AM-6280/ASW	0												Visual Inspection
			0										1,5	Operation
									0				2	Black Box
			F										3,26	Continuity and Operation
										F			4,6,7,28	Peplace Modules and Assemblies
			H										3,21,22,25, 26,27	Operation
										H			4,28	Piece Parts
						H							3,21,22,25, 27	
			D										3,21,22,25, 26,27	Operation

Section II. Maintenance Allocation Chart

(1) GROUP NUMBER	(2) FUNCTIONAL GROUP	(3) MAINTENANCE FUNCTIONS											(4) (5) TOOLS AND EQUIPMENT	REMARKS
		A INSPECT	B TEST	C SERVICE	D ADJUST	E ALIGN	F CALIBRATE	G INSTALL	H REPLACE	I REPAIR	J OVERHAUL	K REBUILD		
										D			l4,6,7,28	
											D			
17F	Accelerometer	0												Visual Inspection
	Electrical, Linear		0										1,5	Operation
	MX-8611/ASW								0				2	Black Box
			H										3,17,26	Continuity Check on Wiring
														Harness and Connector
										H			4,6,7	Piece Parts
			D										3,17,20,26	Operation
										D			4,28	
											D			
17G	Synchronizer,	0												Visual Inspection
	Electrical		0										1,5	Operation
	SN442/ASW								0				2	Fuses, Black Box
			H										3,16,17,21,	Operation
													26,27	
										H			4,28	Piece Parts
						H							16,17,21	
			D										3,16,17,21,	Operation
													26,27	
17H	Gyroscope, Rate	0												Visual Inspection
	CN-1325/ASW		0										1,5	Operation
			0										2	Black Box
									0				3,16,17,20,	Operation
													21	
										D			4,28	Piece Parts
											D			

Section II. Maintenance Allocation Chart

(1) GROUP NUMBER	(2) FUNCTIONAL GROUP	(3) MAINTENANCE FUNCTIONS A INSPECT	B TEST	C SERVICE	D ADJUST	E ALIGN	F CALIBRATE	G INSTALL	H REPLACE	I REPAIR	J OVERHAUL	K REBUILD	(4) (5) TOOLS AND EQUIPMENT	REMARKS
17I	Indicator	0												Visual Inspection
	Stabilization Data		0										3,26	Operation
	ID-1720/ASW								0				2	Black Box
			D										3,19	Operation
										D			4,28	Piece Parts
											D			
17J	Control Altitude	0												Visual Inspection
			0										1,5	Operation
	C-7266/ASW-29								0				2	Black Box
			H										3,12,16,17, 18,22,23,24, 25,26,27	Operation
										H			4,28	Piece Parts
						H							16,17,18,22, 23,24,25	
			D										3,12,16,17, 18,22,23,24, 25,26,27	Operation and Depot O/H STD
						D							16,17,18,22, 23,24,25	
										D			4,6,7	
											D			
17K	Synchro, Transmitter	0												Visual Inspection
	SN-410/ASW-29		0										1,5	Operation
									0				2	Black Box
			F										3,17,26	Continuity and Operation
										F			4,28	Harness, Synchro, Clutch and Connector
			D										17,26	Depot O/H STD
											D			

Section II. Maintenance Allocation Chart

(1) GROUP NUMBER	(2) FUNCTIONAL GROUP	(3) MAINTENANCE FUNCTIONS A INSPECT	B TEST	C SERVICE	D ADJUST	E ALIGN	F CALIBRATE	G INSTALL	H REPLACE	I REPAIR	J OVERHAUL	K REBUILD	(4) (5) TOOLS AND EQUIPMENT	REMARKS
17L	Synchro, Transmitter	0												Visual Inspection
	SN-41/ASW		0										1,5	Operation
									0				2	Black Box
			F										3,17,26	Continuity and Operation
										F			4,28	Harness, Synchro, Clutch and Connector
			D										17,26	Depot O/H STD
											D			

TOOLS AND TEST EQUIPMENT REQUIREMENTS

TOOLS AND EQUPMENT	MAINTENANCE CATEGORY	NOMENCLATURE	FEDERAL STOCK NUMBER	TOOL NUMBER
		CH-54B (continued)		
1	0	Lultimeter AN/URM-105	6625-581-2036	
2	0	Tool Kit TK-101/G	51806-5178	
3	F,H,D	Hiltimeter AN/USM-223	6625-999-7465	
4	F,H,D	Tool Kit TK-1O/G	5180-610-8177	
5	0	Test Set, Flight Line, Flight Control Set AN/ASM-418		
6	O,F,D	Wire Retriever Tool	5120-602-o947	
7	O,F,D	Connector Maintenance Set, Electrical, Crimp Type	5120-063-0795	
8	0	Applicator Caulking Gun	5120-075-3335	
9	0	Tool Kit, Battery Service TK-90/G	5180-542-5812	
10	0	Maintenance, Electronic Equipment KI-1004/AIC	5821-926-7292	
11	0	Test Set, Transponder Set AN/APH-123(V)	6625-0694951	
12	O,H,D	Pitot and Static Tester	4920-475-7161	
13	0	Test Set, Electrical Power AN/UPM-931	6625-581-2097	
14	0	Test Set, R.F., Power AN/URM-120	6625-813-8430	
15	0	Analyter-Charger Battery AN/ASM-137	6135-7884181	
16	H,D	Voltmeter IE-227( )/U	6625-892-5117	
17	F,H,D	Voltmeter, Electronic HE-30E/U	6625-643-1670	
18	H,D	Voltmeter ME-223/U	6625-810-3917	
19	D	fultimeter 15-26B/u	6625-542-6407	

TOOLS AND TEST EQUIPMENT REQUIREMENTS				
TOOLS AND EQUIPMENT	MAINTENANCE CATEGORY	NOMENCLATURE	FEDERAL STOCK NUMBER	TOOL NUMBER
20	D	Table, Tilting, Gyro Instrument Testing H-347A (Rate of turn table)	4920-929-5856	
21	H,D	Stop Watch S-10	6645-719-8670	
22	F,H,D	Oscilloscope AN/USM-281A	6625-228-2201	
23	H,D	Resistor Decade ZM-16B/U	6625-669-0266	
24	H,D	Transformer, Variable Power CN-16/U	5950-235-2086	
25	H,D	Capacitor, Decade MI-4618/0	6625-220-9441	
26	F,H,D	Test Set, Bench, Flight Control Set AN/As-417		
27	H,D	Test Set, Semiconductor Device TS-1836/	6625-893-2628	
28	F,H,D	Tool Kit T-100/G	5180o-605-oo79	

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