TM 11-1520-228-20-1

TECHNICAL MANUAL

ORGANIZATIONAL MAINTENANCE MANUAL

ELECTRONIC EQUIPMENT CONFIGURATION ARMY MODEL OH-58C HELICOPTER

NSN 1520-01-020-4216

This copy is a reprint which includes current pages from Changes 1 through 7.

HEADQUARTERS, DEPARTMENT OF THE ARMY

MAY 1978

WARNING

DANGEROUS VOLTAGES EXIST IN THESE CONFIGURATIONS

Be careful when working on the 115-volt ac output circuits of the inverters.

RF BURNS

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

DANGEROUS CHEMICALS ARE USED IN NICKEL-CADMIUM BATTERIES

The electrolyte used in nickel-cadmium batteries contains potassium hydroxide (KOH), which is a caustic agent. Serious and deep bums of body tissue will result if the electrolyte comes in contact with the eyes or any part of the body. Use robber 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.

DO NOT TAKE CHANCES!

Change
No. 7

HEADQUARTERS
DEPARTMENT OF THE ARMY
Washington, DC, 1 June 1993

ORGANIZATIONAL MAINTENANCE MANUAL; or AVIATION UNIT MAINTENANCE MANUAL

ELECTRONIC EQUIPMENT CONFIGURATION ARMY MODEL OH-58C WITH AIR-TO-AIR STINGER (ATAS) MISSILE SYSTEM HELICOPTER

(NSN 1520-01-020-4216) (EIC: ROB)

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Remove pages	*Insert pages*
i and ii	i and ii
1-2.1/(1 -2.2 blank) through 1-8.2	1-2.1/(1-2.2 blank) through 1-8.2
1-9 through 1-12	1-9 through 1-12
2-2.1 /(2-2.2 blank) through 2-1 2.1/(2-1 2.2 blank)	2-2.1 /(2-2.2 blank) through 2-12.1/(2-12.2 blank)
2-15 and 2-16	2-15 and 2-16
none	2-16.1 and 2-16.2
2-25 through 2-28	2-25/(2-26 blank) through 2-28
2-42.1 through 246	2-42.1 through (2-45 blank)/2-46
2-59 through 2-62	2-59 and 2-60
3-1 through 3-10	3-1 through 3-10.1/(3-10.2 blank)
3-21 through 3-24	3-21/(3-22 blank) through (3-23 blank)/3-24
A-1 and A-2	A-1 and A-2
B-3 through B-9/(B-10 blank)	B-3 through B-26
C-1/(C-2 blank)	C-1/(C-2 blank)
Index 1 through Index 5/(Index 6 blank)	Index 1 through Index 5/(index 6 blank)
FO-2.1	none
none	FO-4 and FO-5

3. File this change sheet in front of the manual for reference purposes.

By Order of the Secretary of the Army:

GORDON R. SULLIVAN
General, United States Army
Chief of Staff

Official:

MILTON H. HAMILTON
Administrative Assistant to the
Secretary of the Army

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Change
No. 6

HEADQUARTERS
DEPARTMENT OF THE ARMY
Washington, DC, 15 June 1990

ORGANIZATIONAL MAINTENANCE MANUAL;
OR AVIATION UNIT MAINTENANCE MANUAL

ELECTRONIC EQUIPMENT CONFIGURATION
ARMY MODEL OH-58C AND OH-48C WITH AIR-TO-AIR
STINGER (ATAS) MISSILE SYSTEM HELICOPTERS
(NSN 1520-01-020-4216)

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Remove pages	Insert pages
a and b	a through c/(d blank)
i and ii	i and ii
1-1 and 1-2	1-1 through 1-2.1/ (1-2.2 blank)
None	1-4.1 and 1-4.2
1-5 through 1-8	1-5 through 1-8
1-8.1/(1-8.2 blank)	1-8.1 through 1-8.3/ (1-8.4 blank)
1-9 and 1-10	1-9 through 1-12
None	2-2.1/(2-2.2 blank)
2-3 through 2-4.1/(2-4.2 blank)	2-3 through 2-4.2
2-9 through 2-12.1/(2-12.2 blank)	2-9 through 2-12.1/ (2-12.2 blank)
2-15 and 2-16	2-15 and 2-16
2-31 and 2-32	2-31 and 2-32
2-35 and 2-36	2-35 and 2-36
2-41 through 2-42.4	2-41 through 2-42.5/ (2-42.6 blank)
2-43 and 2-44	2-43 through 2-44.1/ (2-44.2 blank)
23-61 and 2-62	2-61 and 2-62
3-1 through 3-4	3-1 through 3-4.1/ (3-4.2 blank)

Remove pages	Insert pages
3-5 through 3-8	3-5 through 3-8.1/ (3-8.2 blank)
3-9 and 3-10	3-9 and 3-10
3-23/(3-24 blank)	3-23 and 3-24
None	3-25/(3-26 blank)
A-1 and A-2	A-1 and A-2
B-1 through B-4	B-1 through B-4
C-1/(C-2 blank)	c-1/(C-2 blank)
Index 1 through Index 4	Index 1 through Index 5/ (Index 6 blank)
FO1	FO1
FO2 (Sheet 1 of 6)	FO2 (Sheet 1 of 6)
None	FO3 (Sheet 1 of 3)
None	FO3 (Sheet 2 of 3)
None	FO3 (Sheet 3 of 3)

3. File this change sheet in front of the publication for reference purposes.

By Order of the Secretary of the Army:

CARL E. VUONO
General, United States Army
Chief of Staff

Official:

WILLIAM J. MEEHAN II
Brigadier General, United States Army
The Adjutant General

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CHANGE
No. 5

HEADQUARTERS
DEPARTMENT OF THE ARMY
Washington, DC, 1 January 1989

ORGANIZATIONAL MAINTENANCE MANUAL
OR AVIATION UNIT MAINTENANCE MANUAL

ELECTRONIC EQUIPMENT CONFIGURATION
ARMY MODEL OH-58C HELICOPTER
(NSN 1520-01-020-4216)

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Remove pages	*Insert pages*
i and ii	i and ii
l-4.1/(1-4.2 blank)	l-4.1/(1-4.2 blank)
2-5 and 2-6	2-5 and 2-6
2-9 and 2-10	2-9 and 2-10
2-55 and 2-56	2-55 and 2-56
FO 2 ①	FO 2 ①
FO 2 ③	FO 2 ③

2. Make the following pen and ink changes to the transmittal sheet for change 4, 1 December 1987.

a. Paragraph 2, Remove pages and Insert pages columns, change Index 1 through Index 5/(Index6blank) to read: Index 1 through Index 4.

b. Paragraph, Insert pages column, delete reference to Figure FO 1.1.

3. File this change sheet in the front of the publication for reference purposes.

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CHANGE

No. 4

HEADQUARTERS
DEPARTMENT OF THE ARMY
Washington, DC, 1 December 1987

Aviation Unit Maintenance Manual
ELECTRONIC EQUIPMENT CONFIGURATION
ARMY MODEL OH-58C HELICOPTER
(NSN 1520-01-020-4216)

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Remove pages	*Insert pages*
i and ii	i and ii
l-l through l-4	1-1through l-4
None	1-4.1/(1-4.2 blank)
l-7 and l-8	l-7and 1-8
None	1-8.1/(1-8.2 blank)
l-9 and l-10	l-9 and l-10
2-3 and 2-4	2-3 and2-4
None	2-4.1/(2-4.2 blank)
2-5 and 2-6	2-5 and 2-6
2-9 and 2-10	2-9 and 2-10
None	2-12.1/(2-12.2 blank)
None	2-42.1 through 2-42.4
2-59 and 2-60	2-59 through 2-62
3-l through 3-4	3-l through 3-4
3-21/(3-22blank)	3-21 through 3-23/(3-24 blank)
A-l and A-2	A-1 and A-2
B-7 and B-8	B-7 and B-8
None	B-9/(B-10 blank)
C-1/(C-2blank)	C-l/(C-2blank)
Index l through Index 5/(Index 6 blank)	Index 1 through Index5/(Index6 blank)
None	Figure FO-1.1
None	Figure FO-2.l (Sheet 1)
None	Figure FO-2.l (Sheet2)

3. File this change sheet in the front of the publication for reference purposes.

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General, United States Army
Chief of Staff

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CHANGE
No. 3

HEADQUARTERS
DEPARTMENT OF THE ARMY
WASHINGTON, DC, *9 November 1982*

Organizational Maintenance Manual;

Or Aviation Unit Maintenance Manual

ELECTRONIC EQUIPMENT CONFIGURATION

ARMY MODEL OH-MC HELICOPTER

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3. Added or revised illustrations are indicated by a vertical bar in front of the figure caption.
4. Remove and insert pages as indicated below

Remove	*Insert*
Warning A	a and b
i and ii	i and ii
l-l through 1-10	1-1 through 1-10
2-1 and 2-2	2-1 and 2-2
2-5 through 2-12	2-5 through 2-12
2-23 through 2-26	2-23 through 2-26
2-31 and 2-32	2-31 and 2-32
2-43 through 2-48	2-43through 2-48
2-59 and 2-60	2-59 and 2-60
3-1 and 3-2	3-1 and 3-2
A-1 and A-2	A-1 and A-2
B-3 though B-8	B-3 through B-8

5. File this change sheet in front of the publication for reference purposes.

ByOrder of the Secretary of the Army:

E. C. MEYER
General United States Army
Cheif of Staff

Official:

ROBERT M. JOYCE
Major General, United States Army
The Adjutant General

Distribution

To be distributed in accordance with DA Form 12-31, Organizational Maintenance Requirements for OH-58 Aircraft.

5 SAFETY STEPS TO FOLLOW IF SOMEONE IS THE VICTIM OF ELECTRICAL SHOCK

1. DO NOT TRY TO PULL OR GRAB THE INDIVIDUAL
2. IF POSSIBLE, TURN OFF THE ELECTRICAL POWER
3. IF YOU CANNOT TURN OFF THE ELECTRICAL POWER, PULL, PUSH, OR LIFT THE PERSON TO SAFETY USING A DRY WOODEN POLE OR A DRY ROPE OR SOME OTHER INSULATING MATERIAL
4. SEND FOR HELP AS SOON AS POSSIBLE
5. AFTER THE INJURED PERSON IS FREE OF CONTACT WITH THE SOURCE OF ELECTRICAL SHOCK, MOVE THE PERSON A SHORT DISTANCE AWAY AND IMMEDIATELY START ARTIFICIAL RESUSCITATION

WARNING

- Before removing or installing the battery, be sure that the aircraft battery switch is off and the battery, if overheated, has cooled down. Removal or reconnection of the battery connector while the battery is under load may result in explosion, electrical arching, and possible severe burns to personnel.

- When an item of avionics equipment is removed from the aircraft, and is not replaced, appropriate measures must be taken to secure the loose cables and connectors to prevent the connectors from interfering with the aircraft control systems.

- **DEATH ON CONTACT MAY RESULT IF SAFETY PRECAUTIONS ARE NOT OBSERVED**

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

WARNING

- Adequate ventilation should be provided while using TRICHLOROTRIFLUOROETHANE. Prolonged breathing of vapor should be avoided. The solvent should not be used near heat or open flame; the products of decomposition are toxic and irritating. Since TRICHLOROTRIFLUOROETHANE dissolves natural oils, prolonged contact with the skin should be avoided. When necessary, use gloves which the solvent cannot penetrate. If the solvent is taken internally, consult a physician immediately.

WARNING

JETTISON

- All ground safety pins must be removed before flight. Failure to do so will prevent emergency jettison of stores CS.

WARNING

EXTERNAL STORES

- Prior to performing any maintenance functions that require external stores removal, impulse cartridges shall be removed from ejector racks. Remove impulse cartridges from ejector racks prior to placing helicopter in a hangar to prevent possible injury to personnel and damage to equipment. Exception: Impulse cartridge removal is not necessary when helicopter is to be stored in hangar for a short term providing JETTISON circuit breaker is opened and warning signs indicate that helicopter has an armed jettison system CS.

WARNING

EXPLOSIVES

- The Air-lb-Air Stinger (ATAS) missile contains explosives. All applicable safety regulations will be strictly enforced. Explosive components containing electrical wiring must be protected at all times from stray voltages or induced electrical currents. Handling operations should not be performed during electrical storms (CS).

WARNING

TOXIC MATERIALS

- Do not touch the ATAS missile IR dome. If it breaks, mercury thallium liquid may be released. This material is toxic to unprotected skin. Avoid all contact with the released material unless protective equipment, such as a respirator, impervious protective gloves, and chemical goggles, is being worn. If the skin or eyes are exposed to the spilled material, immediately flush with water. Any person exposed to the released material should be promptly referred to a physician (CS).

CAUTION

- Take every possible step to keep the nickel-cadmium battery as far away as possible from the lead-acid type of battery, Do not use the same tools and materials (screwdriver, wrenches, gloves, apron, etc.) for both types of batteries. Anything associated with the lead-acid battery, even air, must never come in contact with the nickel-cadmium battery or its electrolyte. Even a trace of sulfuric acid fumes from a lead-acid battery could result in damage to the nickel-cadmium battery, If sulfuric acid has been inadvertently mixed with the electrolyte in the battery, the upper areas of the cells will appear greenish in color. In such cases, the battery must be replaced.

Technical Manual

No. 11-1520-228-20-1

HEADQUARTERS
DEPARTMENT OF THE ARMY
Washington, DC, 30 May 1978

Organizational Maintenance Manual; or Aviation Unit Maintenance Manual

ELECTRONIC EQUIPMENT CONFIGURATION ARMY MODEL OH-58C WITH AIR-TO-AIR STINGER (ATAS) MISSILE SYSTEM HELICOPTER

(NSN 1520-01-020-4216) (EIC: ROB)

REPORTING ERRORS AND RECOMMENDING IMPROVEMENTS

You can help improve this manual. If you find any mistakes, or if you know of a way to improve the procedures, please let us know. Mail your letter, DA Form 2028 (Recommended Changes to Publications and Blank Forms) or DA Form 2028-2 located in back of this manual direct to: Commander, US Army Communications-Electronic Command and Fort Monmouth, ATTN: AMSEL-LC-LM-LT, Fort Monmouth, New Jersey 07703-5007.

In either case a reply will be furnished direct to you.

TABLE OF CONTENTS

LIST OF ILLUSTRATIONS

LIST OF ILLUSTRATIONS - **continued**

CHAPTER 1

INTRODUCTION

Section I. GENERAL

1-1. Scope.

a. This manual covers maintenance of the electronic equipment configuration in Army model OH-58C helicopter. Designator symbol (C) for OH-58C and (CS) for the Air-To-Air Stinger (ATAS) missile system installed on the OH-58C are used to show limited effectivity of data. No designator symbols will be used when data applies to both configurations. The manual includes instructions for organizational maintenance personnel to perform periodic preventive maintenance and troubleshooting procedures for the electronic communications, navigational equipment, and Air-To-Air Stinger (ATAS) missile system (CS) when the equipment is installed in the aircraft. This manual also lists tools and test equipment required by maintenance personnel to maintain the conjuration.

b. Operating instructions are contained in TM 55-1520-228-10. Some of the electronic equipments used in this configuration are covered in detail in other technical manuals; when servicing components of these electronic equipments independent of the aircraft, refer to the applicable technical manuals listed in appendix A.

c. Maintenance of Army aircraft is transitioning to three categories of maintenance. These maintenance categories are Aviation Unit Maintenance (AVUM); Aviation Intermediate Maintenance (AVIM); and Depot Maintenance AVUM and AVIM will replace organizations direct support, and general support maintenance. In the interim, as maintenance units are reorganized into three categories of maintenance activities, this publication will be used by AVUM or organizational maintenance personnel for the maintenance of the electronic equipment configuration. The maintenance allocation chart (MAC) in appendix B is configured to the three-category maintenance concept where the code O represents AVUM; the code F represents AVIM and D represents depot maintenance. Those organizations not yet assigned complete AVUM responsibilities should use caution in utilization of this publication. Whatever maintenance is performed must consider available skills, tools, test equipment, and time required to perform the maintenance.

d. Throughout this manual, the following terms are used:

(1) Configuration includes all basic electronic equipment and electronic installation items.

(2) Basic electronic equipment is Government-furnished equipment for which there are Department of the Army publications covering detailed maintenance instructions.

(3) Electronic installation items are items furnished by the airframe manufacturer for which there are no official publications covering maintenance instructions.

(4) System is a major subdivision of the configuration for example communications system

(5) Facility is a group of components that are interrelated to perform a function or service ;for example ultra-high frequency (uhf) command radio facility.

(6) Component is an individual item of a facility for example: UHF receiver-transmitter.

e. Block diagram discussions of the configuration basic electronic equipment and installation items are covered in chapter 9.

1-2. Consolidated Index Of Army Publications and Blank Forms

Refer to the latest issue of DA Pam 25-30 to determine whether there are new editions, changes, or additional publications pertaining to the equipment.

1-3. Maintenance Forms, Records, and Reports

a. Reports of Maintenance and Unsatisfactory Equipment. Department of Army forms and procedures used for equipment maintenance will be those prescribed by DA Pam 738-750, as contained in Maintenance Management Update.

b. Reporting of Item and Packaging Discrepancies. Fill out and forward SF 364 (Report of Discrepancy (ROD)) as prescribed in AR 735-11-2/DLAR 4140.55/ SECNAVINST 4355.18/AFR 400-54/MCO 4430.3J.

c. *Transportation Discrepancy Report (TDR) (SF 361).* Fill out and forward Transportation Discrepancy Report (TDR) (SF 361) as prescribed in AR 55-38/NAVSUPINST 4610.33C/AFR 75-18/MCO P4610.19D/DLAR 4500.15.

1-3.1. Administrative Storage

Administrative storage of equipment issued to and used by Army activities will have preventive maintenance performed in accordance with the PMCS charts before storing. When removing the equipment from administrative storage, the PMCS should be performed to assure operational readiness.

1-3.2. Reporting Equipment Improvement Recommendations (EIR).

If your equipment needs improvement, let us know. Send us an EIR. You, the user, are the only one who can tell us what you don't like about your equipment. Let us know why you don't like the design or performance. Put it on an SF 368 (Product Quality Deficiency Report). Mail it to: Commander, U.S. Army Communications – Electronics Command and Fort Monmouth, ATTN: AMSEL-PA-MA-D, Fort Monmouth, New Jersey 07703-5000. We'll send you a reply.

1-3.3. Destruction of Army Electronics Materiel

Destruction of Army electronics materiel to prevent enemy use shall be in accordance with TM 750-244-2.

Section II. DESCRIPTION OF CONFIGURATION AND ELECTRONIC EQUIPMENT

1-4. Configuration and Serial Numbers.

Two configurations are covered in this manual. All serial numbers of helicopter model OH-58 C and CS covered by this manual are included within these configurations.

1-5. Facilities and Electronic Equipment.

The figure and chart below show and list each operational facility provided in helicopter model OH-58 C and CS . The chart lists all electronic equipment components used for each facility indicated in the equipment or component column. Components are listed by Army part number and/or manufacturer's part number. A letter X in the Configuration column indicates that the particular component was installed in the aircraft. A letter Y in the Configuration column indicates that complete facilities for the component are provided but the component is not installed. Numbers in parentheses indicate quantities. These facilities provide easy installation of the equipment when required for a special geographical location or mission application. A common name, used throughout the manual, is also listed for each item in the Common Name column.

a. Communications Facilities. (Figure 1-1 through 1-3.)

Facility	Equipment or component	Common name	Configuration
Intercommunication and audio	Control, Communication System C-6533/ARC.	ICS panel	X
	Network, Avionics, Electrical and Armament, 206-075-483.	Impedance matching network	X
	Discriminator, Discrete Signal MD-1101/A	Audio threshold system	X
	or		
	Discriminator, Discrete Signal MD-1219/A	Audio threshold system	X
Liaison	Radio Set AN/ARC-l14 Antenna, FM Homing AS-2670/ARC-l14 (LS) and AS-2486/ARC-l14 (RS)	No. 1 FM Homing antenna **(left side and right side)**	X X
	Radio Set AN/ARC-l14 Antenna, FM No.2, see at right	No. 2 FM radio FM antenna No 2	X X AS-2485/ ARC-114
	Filter, FM Low Pass, 205-075-380	Filter	X
	OR		
	Radio Set AN/ARC-201 AS-4166/ARC (LS) AS-4167/ARC (RS) AM-7189/ARC	No. 1 FM Homing Antennae (left and right side) IFM Amplifier	X X X X
	Radio Set AN/ARC-201 AS-3841/ARC CY-8515	No. 2 FM No. 2 FM Antenna Battery Box	X X X
Voice Security	Computer, Voice security TSEC/KY-28	Secure-voice encoder/decoder	Y
	Control Indicator, Voice Security C-8157/ARC	Secure-voice control indicator	X
	Mounting MT-3802/ARC	Mount	X
	Light, Remote Cipher	Cipher light	X
	OR		
	TSEC/KY-58, Computer No. 1 Z-AHP, Control No. 1 TSEC/KY-58, Computer No. 2 Z-AHP, Control No. 2	No. 1 Encoder/decoder No. 1 Control/Indicator No. 2 Encoder/Decoder No. 2 Control/Indicator	Y Y Y Y
	Switch, zeroize	Zeroize switch	X
VHF command	Radio Set AN/ARC-l15	VHF command radio	X
	Falter, VHF, BandPass 205-075-382	Filter	X

Facility	Equipment or component	Common name	Configuration
UHF command	Radio Set AN/ARC- 164 or AN/ARC- 116	UHF command radio	X
	Filter, UHF High Pass 205-075-381	Filter	X
	Antenna, UHF AS-2487/ARC-116	UHF antenna	X
Antenna	Antenna VHF and FM 206-075-518- 1	VHF/FM antenna	X

b. Navigation Facilities. (Figure 1-1 through 1-3.)

Facility	Equipment or component	Common name	Configuration
Gyromagnetic Compass	Gyromagnetic Compass Set AN/ASN-43	Gyromagnetic compass	X
	Transmitter, Induction Compass T-61l/ASN	Compass transmitter	X
	Compensator, Magnetic Flux CN-405/ASN	Flux compensator	X
	Gyro, Directional CN-998-ASN-43	Directional gyro	X
	Heading-Radio Bearing Indicator ID=1351/A.	HRBI	X
	Switch, DIR GYRO-MAG	Slaving switch	X
Automatic Direction Finder	Direction Finder Set AN/ARN-89	Adf	X
	Receiver, Radio R- 1496/ARN-89	Adf receiver	X
	Control, Radio Set C-7392/ ARN-89	Adf control	X
	Amplifier, Impedance Matching AM-4859/ARN-89	Impedance matching amplifier	X
	Antenna AS-2108/ARN-89	Adf loop antenna	X
	Sense antenna, 206-032-310	Adf sense antenna	X
VOR/ILS (CONUS NAV)	Control Panel, VOR/ILS C-10048/ARN-123 (V)	VOR/ILS control panel	X
	Indicator, Course Deviation ID-1347C/ARN-123 (V)	CDI	X
	Receiver, VOR R-2023/ARN-123 (V)	VOR receiver	X
	Mount, VOR Receiver MT-4834/ ARN-123 (V)	VOR receiver mount	X

Facility	Equipment or component	Common name	Configuration
	Antenna, Glideslope AS-3188/ ARN (214-077-092-1)	Glideslope antenna	X
	Antenna, VOR AS-1304/ARN	VOR/LOC antenna	X
	Antenna, Marker Beacon AT-640/ARN	Marker Beacon Antenna	X
Radar Altimeter	Indicator/Receiver /Transmitter RT-1115/APN-209	Radar altitude indicator	X
	Antenna, Radar Altimeter AS-2595/APN-194	Radar altimeter antenna	X

c. Radar Warning Facility. (Figure 1-1 through 1-3.)

Facility	Equipment or component	Common name	Configuration
Radar Warning	Control Panel, Radar Warning C-9326/APR-39	Radar warning control panel	X
	Indicator, Radar Warning ID-1150/APR-39	Radar warning indicator	X
	Comparator, Radar Warning CM-440/APR-39	Comparator	X
	Receiver, Radar Warning R-1838/APR-39	Dual receiver	X
	Antenna, Blade AS-2890/ APR-39	Blade antenna	X
	Antenna, Spiral AS-2891/ APR-39	Right spiral antenna	X
	Antenna, Spiral AS-2892/ APR-39	Left spiral antenna	X

d. Identification Facility. (Figure 1-1 through 1-3.)

Facility	Equipment or component	Common name	Configuration
Identification	Transpondor Set AN/APX-100	**Transponder Set**	**X**
	Receiver-Transmitter, RT-1285( )/ APX-100	**Transponder radio**	**X**
	Computer, Transponder KIT-1A/TSEC	**Transponder computer**	**X**
	Antenna AT-884(*)/APX-44	**Transponder antenna**	**X**
	Antenna 206-077-1091	**Transponder antenna**	**X**
	Light, Code Hold	**Mode 4 light**	**X**
	Switch, Code Hold	**Code hold switch**	**X**

e. Proximity Warning Facility. (Figure 1-1 through 1-3.) Proximity Warning Facility YG-1054 (PWS) is primarily intended for use by training commands in high density aircraft areas to avoid mid-air collisions. The proximity warning facility which can be applied to the communications facilities designated Y in the configuration column.

Facility	Equipment or component	Common name	Configuration
Proximity. Warning	Proximity Warning Receiver-Transponder, YG-1054 Antenna	Proximity warning	Y

f. Power Source. (Figure 1-1 through 1-3.)

Facility	Equipment or component	Common name	Configuration
AC Source	Inverter, Static PP-6376A/A	Inverter	X
DC Source	Battery, Storage BB-676/A	Battery	X

g. Armament Facility (Figure 1-1 through 14.)

Facility	Equipment or component	Common name	Conjuration
Armament	Control Panel, ATAS 206-075-037-103	ATAS control panel	x
	Unit, Pilot Display 206-371-001-101	Pilot display unit	x
	Unit, Electronics 206-371-002-101	Electronic unit	x
	Assembly Interface Electronic 481-100002	Interface electronics assembly	x
	Assembly ATAS Launcher 481-200440	Launcher assembly	Y

1-6. Differences in Electronic Equipment Models. Two basic configurations are covered in this manual. All serial numbers of helicopter model *OH-5* and covered by this manual are covered within these conjurations.

1-7. Electronic Technical Characteristics. Electronic components within the scope of this manual not covered in separate Department of the Army Technical Manuals include the following

a Audio Threshold System. (MD-1101/A)

Voltage Requirement . . . . 28 Vdc
Input Signal . . . . . Audio
Output Signal . . . . . Audio
Provisions . . . . . Three solid-state threshold circuits and relay/diode audio switching network.

b. Impedance Matching Network, 206-075-483-1.

Provisions. . . . . Eight 150-ohm loading and distribution resistors for audio, blocking diodes for electrical test circuits, and two diode/relay/resistance networks for the armament system.

c. Antenna VHF/FM, 206-075-581.

Type . . . . . Vertically polarized monople
Frequency . . . . . 30 to76 MHz
Impedance . . . . . 52 ohms

d. Filter, FM Low Pass, 205-075-380,

Type . . . . . Low pass, bidirectional
Impedance . . . . . 50 ohms
Power . . .. 25watts maximum
Attenuation . . . . . 55 db minimum-l16 to 135 MHz, 70 db minimum-135 to 400 MHz.

e. Audio Threshold System MD-1219/A.

Voltage Requirement . . . ...28 Vdc
Input Signal . . . . . Audio
Output Signal . . . . . Audio
Provisions . . . . . Five Solid-state threshold circuits and relay/diode audio switching network.

f. Antenna, VHF/FM, 4490002-501

Type . . . . . Vertically polarized monopole
Frequency . . . .30 to 88 Mhz
Impedance . . . .52 ohms

Insertion loss . . . . . 0.5 db maximum-30 to 76 MHz
Vswr . . . . . 1.5:l maximum

e. Capacitor Board A3, 204-075-850-9.
provisions . . . . . Three 250 microfarad capacitors in parallel with 2200 ohm resistor,

f. Filter, VHF Bandpass, 205-075-382.
Type . . . . . Bandpass, bidirectional
impedance . . . . . 50 ohms
Power . . . . . 15watts maximum
Attenuation. . . . . 80 db minimum-30 MHz; 65 db minimum-45 MHz; 60 db minimum-60 MHz; 55 db minimum-55 MHz; 35 db minimum- 152 to 400 MHz
Insertion loss. . . . . 0.5 maximum
Vswr . . . . . 1.5:1 maximum-l16 to 150 MHz

g. *Filter, UHF High Pass, 205-075-381.*
Type ..... Highpass, bidirectional
Impedance . . . . . 50 ohms
Power . . . . . 15 watts, maximum
Attenuation. . . . . 70 db maximum to 136 MHz; 50 db minimum- 136 to 150 MHz
Insertion 1oss. . . . . 0.5 db maximum-225-400 MHz
Vswr . . . . . 1.5:l maximum

h. Antenna Sense, 206-032-310.
Type . . . . . 0.35 meter
Frequency . . . . . 100 to 3000 KHz
Impedance . . . . . 50 ohms

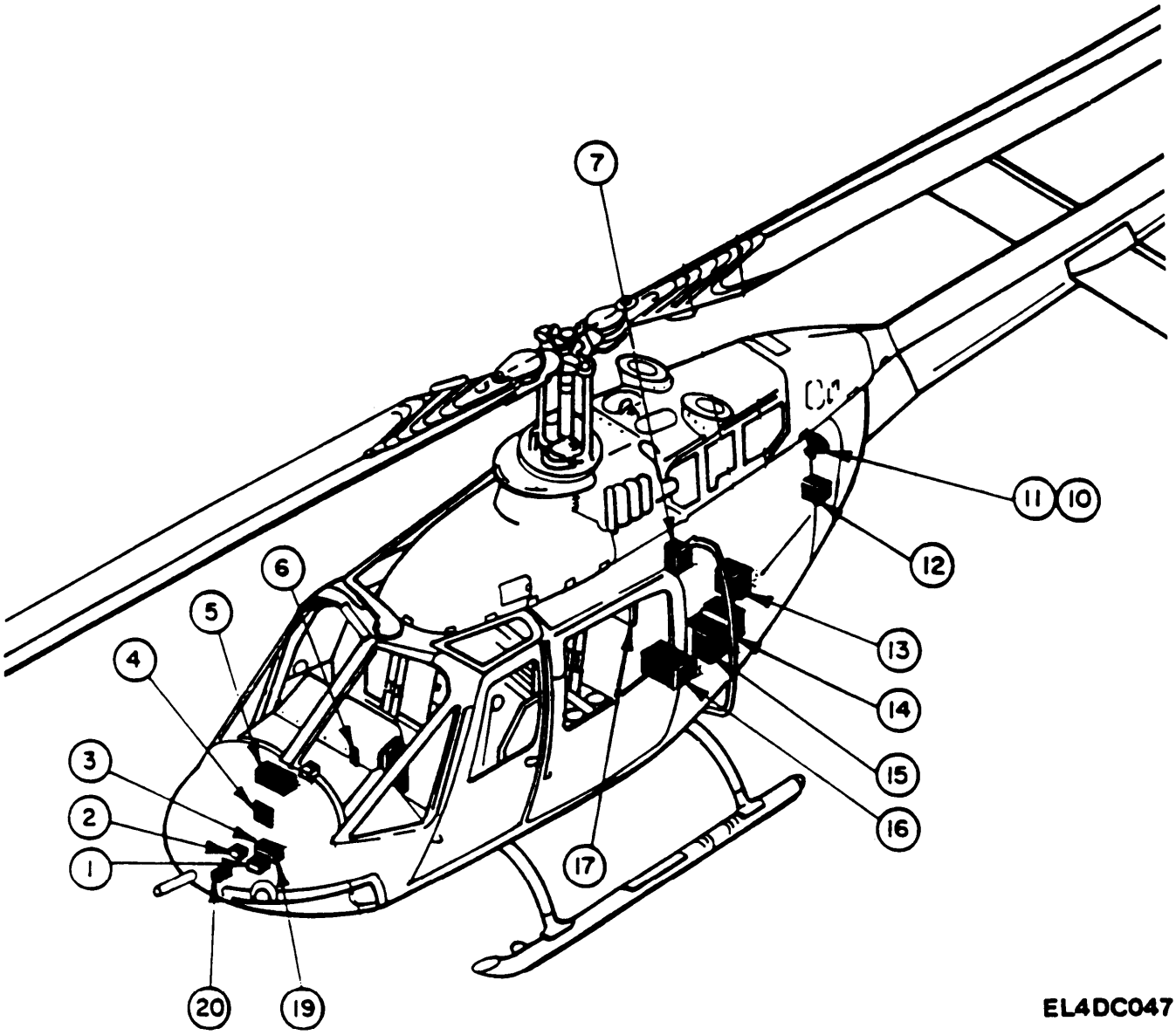
i. Inverter, Static, PP-6375A/A
Input voltage. . . . . 20.0 to 29.0 Vdc
Output voltage . . . . . 105.0 to 122.0 Vac single phase at zero load
Output power . . . . . 65 Va continuous, 100 VA for 1 minute
Output waveshape. . . . . Sinusoidal
Output frequency . . . . . 400 Hz, ±5 percent

1-8. Description of Electronic Components

Description of electronic components within the scope of this manual not covered in separate Department of the Army Technical Manuals including the following

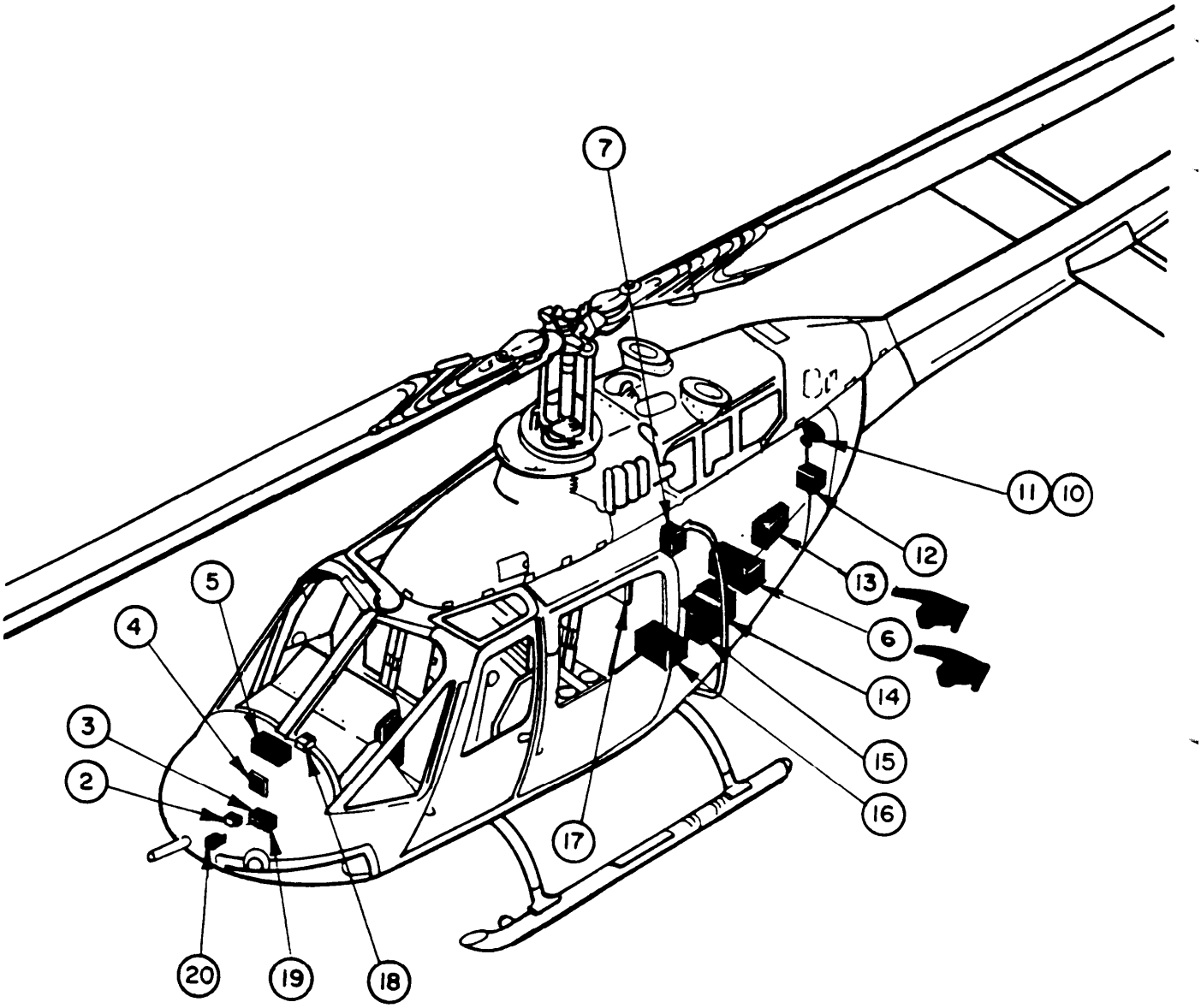
a. *Audio Threshold System (MD-1101/A). The* secure-voice encoder/decoder (TSEC KY-28), secure voice control-indicator (C-8167/ARC) and audio threshold system are used in conjunction with the No. 1 FM set to provide secure, two-way voice communications. The audio threshold system has no exposed controls. It operates in conjunction with each non-secure communications radio and the secure AN/ARC-114 radio when the KY-28 system is energized and in the CIPHER mode. When the KY-28 voice security system is not installed, or is de-energized, or is operated in the PLAIN mode normal two-way radio communication and sidetone are obtained. When the KY-28 system is operated in the CIPHER mode, the TSEC/KY-28 computer and the audio threshold system become an integral part of the secure two-way communication. The computer encodes/decodes the communication. The audio threshold system serves to ensure adequate audio crosstalk isolation in the aircraft intercommunication radio (with the KY-28 system in CIPHER mode and the pilot communicating on the secure (No. 1) AN/ARC-114, the pilots radio sidetone will be present at the other ICS stations, however, if either of the other stations keys a non-secure radio (AN/ARC-115, AN/ARC-164, AN/ARC-166, or No. 2 AN/ARC-114) the secure radio sidetone will be muted from the ICS station keying the non-secure radio). This is the only action of the audio-threshold system which is observable by an occupant of the aircraft.

b. Impedance Matching Network. 206-075-483-1. The impedance matching network is a printed circuit card to which discrete components are soldered. These components are protected by moisture and fungus-resistant varnish. One edge of the card plugs into a connector; the corners opposite this edge contain mounting screw holes. Eight resistors provide audio signal loading and distribution. Three diodes provide dc blocking for electrical system tests and two relay/resistor/diode networks are provided for the armament system. Refer to TM 55-1520-228-23 for detailed description



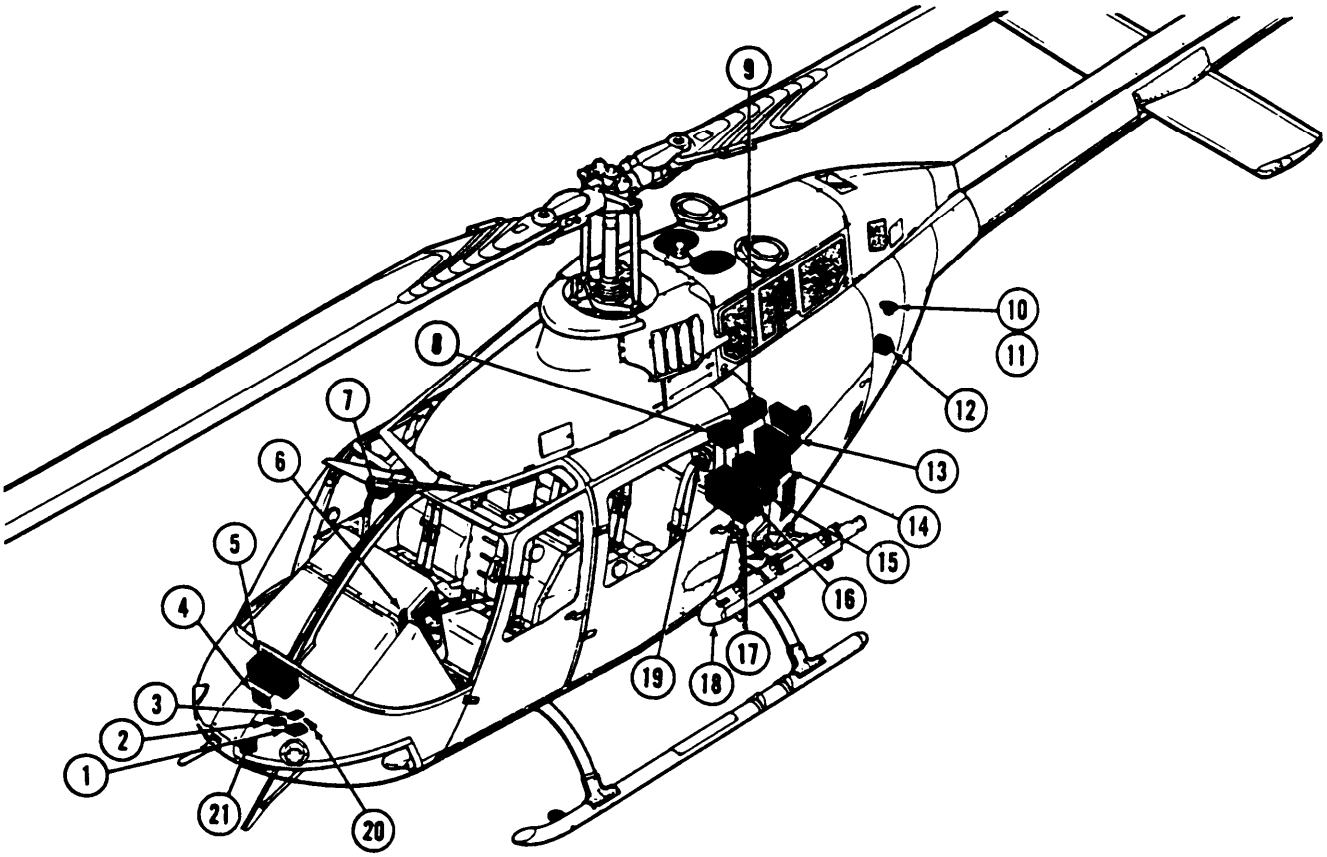
1. Filter, FM low pass
2. Filter, UHF bandpass
3. Filter, VHF bandpass
4. Impedance matching network
5. Audio threshold system, MD-1101/A
6. Filter, FM low pass
7. Comparator, radar warning
8.
9.
10. Transmitter, induction compass
11. Compensator, magnetic flux
12. Receiver, radar warning
13. Receiver VOR/ILS
14. Computer, transponder
15. Computer, voice security (KY28)
16. Receiver, ADF
17. Amplifier, impedance matching
18.
19. Gyro, directional
20. Receiver, radar warning

Figure 1-1. Equipment location - helicopter



1.
2. Filter, UHF bandpass
3. Filter, VHF bandpass
4. Impedance matching network
5. Audio threshold system, MD-1219/A
6. IFM amplifier, AM-7189/A
7. Comparator, radar warning
8.
9.
10. Transmitter, induction compass
11. Compensator, magnetic flux
12. Receiver, radar warning
13. Receiver VOR/ILS
14. Computer, transponder
15. Computer, voice security KY-58
16. Receiver, ADF
17. Amplifier, impedance matching
18.
19. Gyro, directional
20. Receiver, radar warning

Figure 1-1.1. Equipment location - helicopter with AN/ARC-201



NOTE

LEFT HOMING ANTENNA REMOVED WHEN ATAS MISSILE PYLON IS INSTALLED EXCEPT HELICOPTERS WITH AN/ARC-201 SYSTEMS.

1. Filter, FM low pass
2. Filter, UHF high pass
3. Filter, VHF band pass
4. Impedance matching network
5. Audio threshold system (MD-1101/A)
6. Filter, FM low pass
7. Unit pilot display
8. Unit electronics
9. Comparator, radar warning
10. Transmitter, induction compass
11. Compensator, magnetic flux
12. Receiver, radar warning
13. Receiver, VOR/ILS
14. Computer, transponder
15. Computer, voice security (KY28)
16. Assembly, interface electronics
17. Receiver, ADF
18. Assembly, launcher
19. Amplifier, impedance matching
20. Gyro, directional
21. Receiver, radar warning

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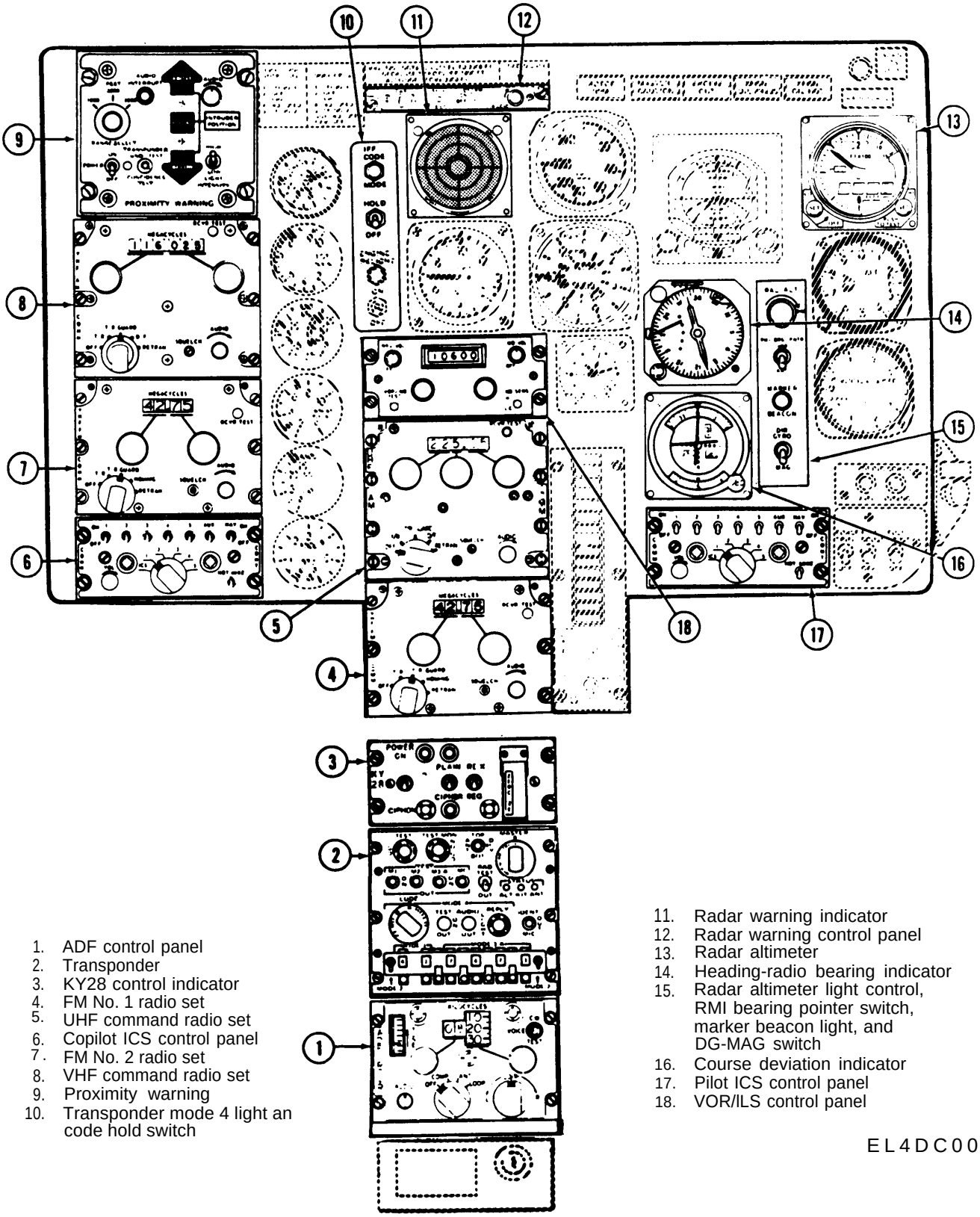
Figure 1-1.2. Equipment location - helicopter with ATAS



1. ADF control panel
2. Transponder
3. KY28 control indicator
4. FM No. 1 radio set
5. UHF command radio set
6. Copilot ICS control panel
7. FM No. 2 radio set
8. VHF command radio set
9. Proximity warning
10. Transponder mode 4 light an code hold switch
11. Radar warning indicator
12. Radar warning control panel
13. Radar altimeter
14. Heading-radio bearing indicator
15. Radar altimeter light control, RMI bearing pointer switch, marker beacon light, and DG-MAG switch
16. Course deviation indicator
17. Pilot ICS control panel
18. VOR/ILS control panel

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Figure 1-2. Equipment location – Instrument panel

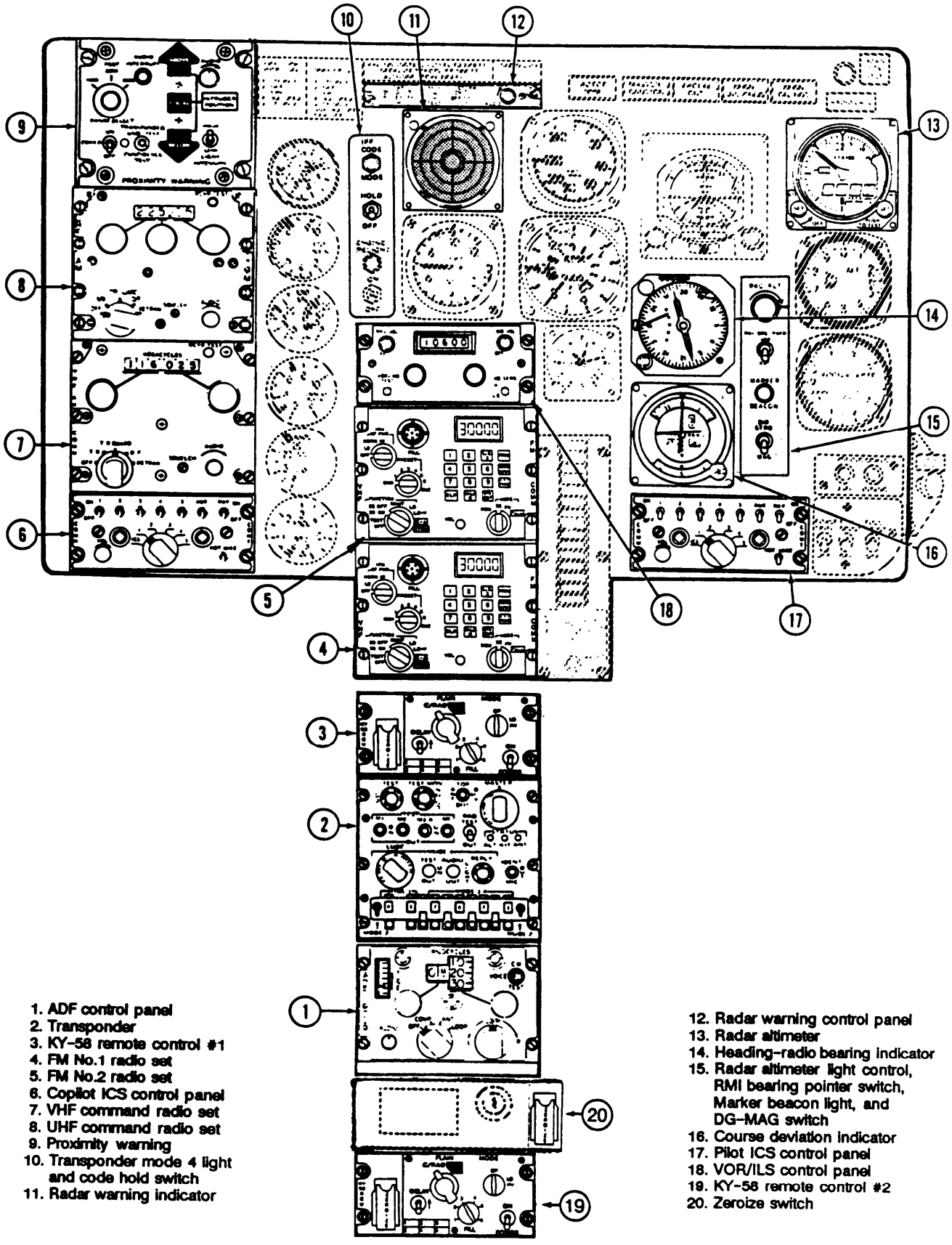
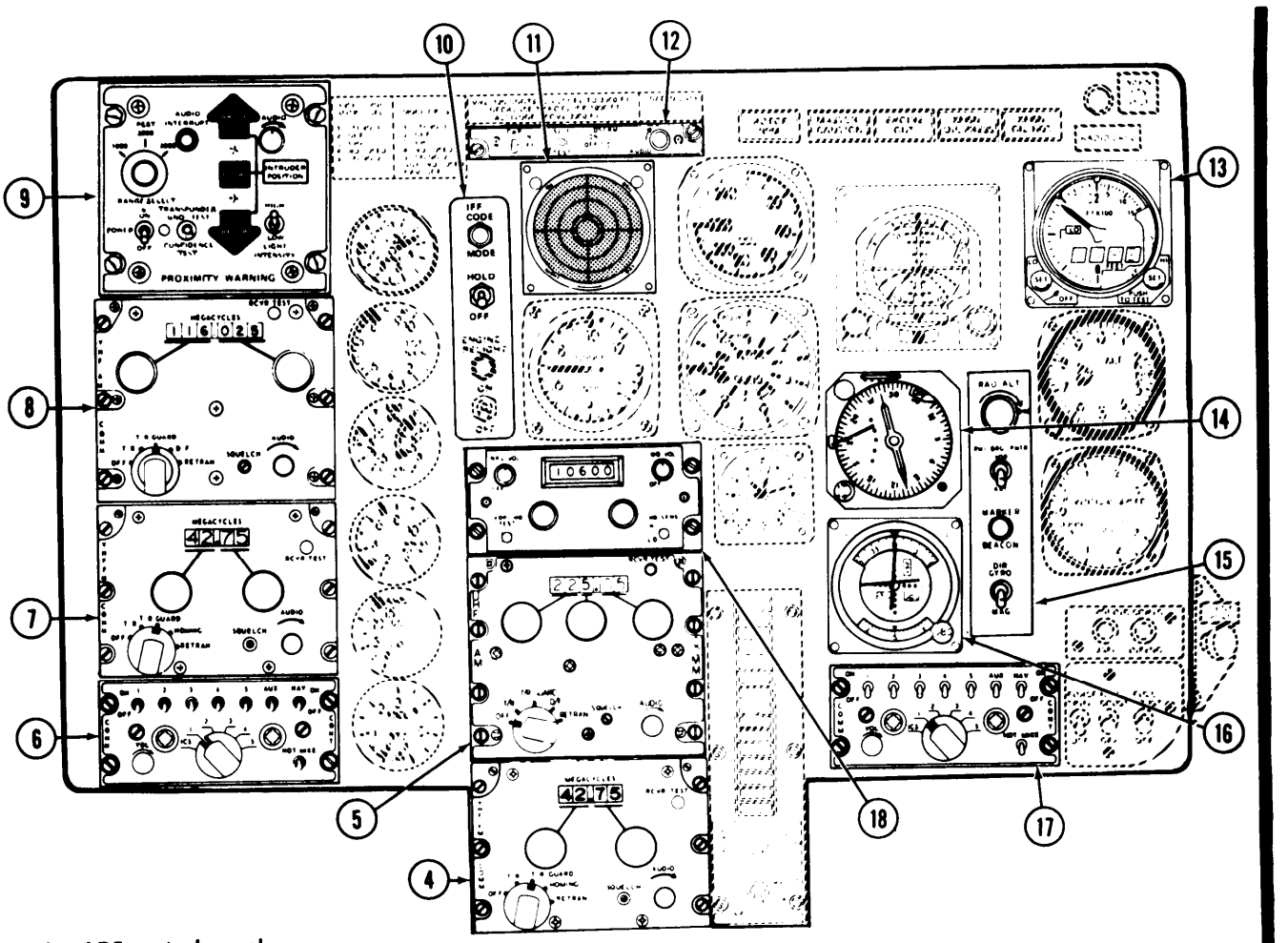
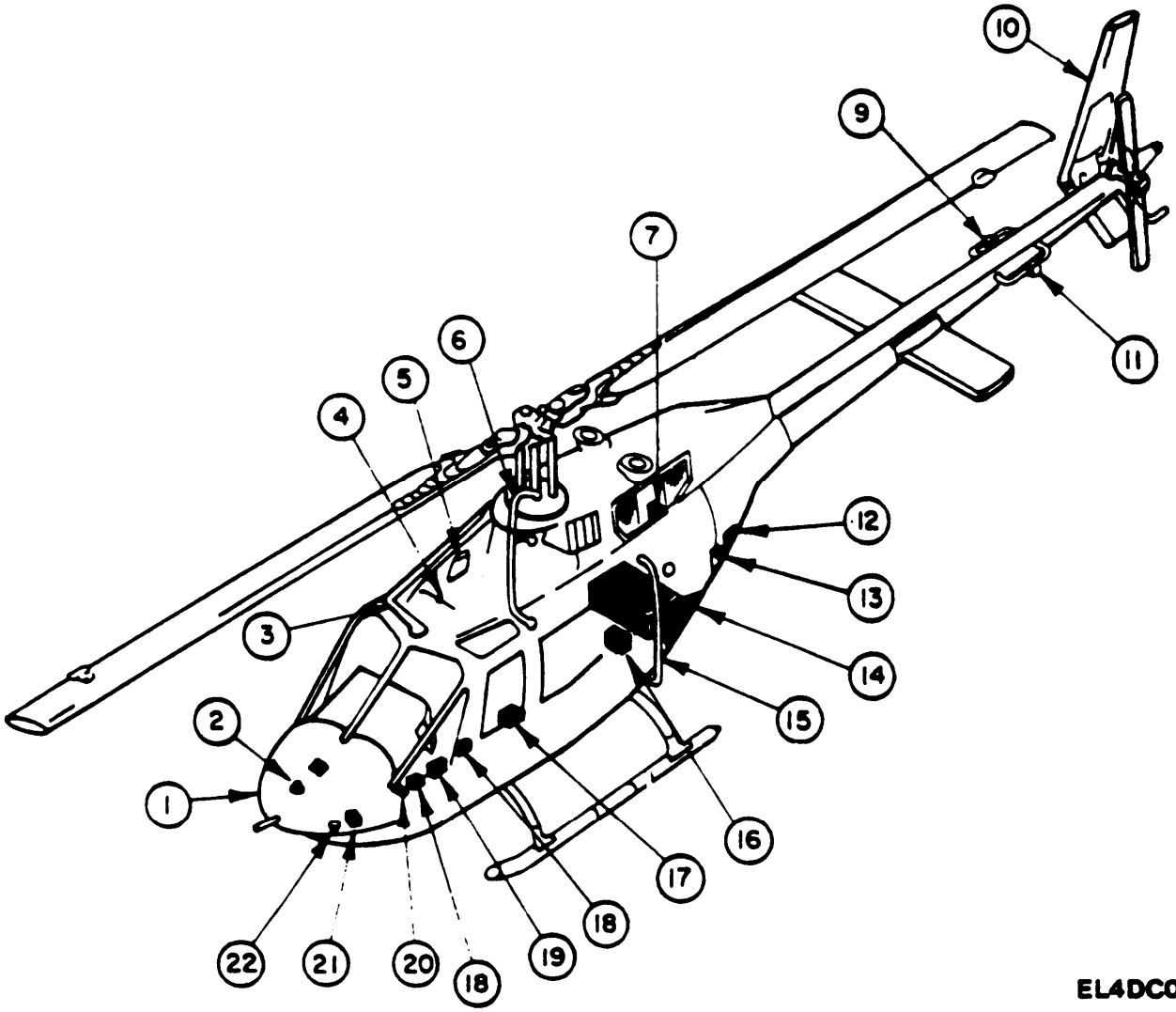


Figure 1-2.1. Equipment location - Instrument panel with AN/ARC-201 & TSEC/KY58.



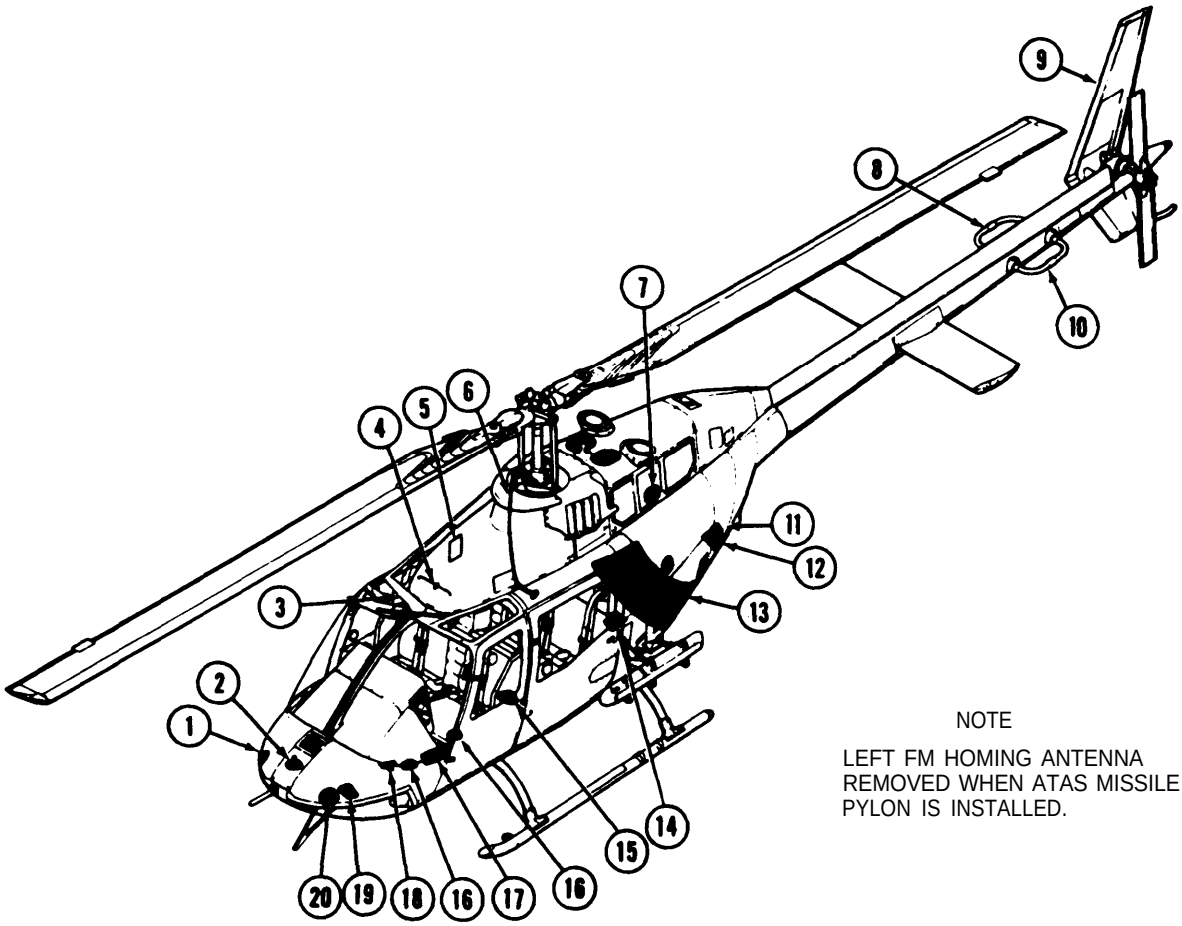
1. ADF control panel
2. Transponder
3. KY28 control indicator
4. FM No. 1 radio set
5. UHF command radio set
6. Copilot ICS control panel
7. FM No. 2 radio set
8. VHF command radio set
9. Proximity warning
10. Transponder mode 4 light and code hold switch
11. Radar warning indicator
12. Radar warning control panel
13. Radar altimeter
14. Heading-radio bearing indicator
15. Radar altimeter light control, RMI bearing pointer switch, marker beacon light, and DG-MAG switch
16. Course deviation indicator
17. Pilot ICS control panel
18. VOR/ILS control panel
19. ATAS control panel

Figure 1-2.2. Equipment location – Instrument panel with ATAS CS



1. Antenna, radar warning - forward right side (AS-2892 ( )/ApR-39)
2. Antenna, proximity warning - fowvard
3. Antenna, FM No. 2
4. Antenna, glideslope
5. Antenna, transponder - top
6. Antenna, FM homing - right side
7. Antenna, radar warning - aft right side (AS-2891 ( )/APR-39)
8.
9. Antenna, VOR - right side
10. Antenna, VHF/FM
11. Antenna, VOR - left side
12. Antenna, radar warning - aft left side (AS2892 ( )/APR-39)
13. Antenna, proximity Warning - aft
14. Antenna, ADF sense
15. Antenna, FM homing - left side.
16. Antenna, ADF loop
17. Antenna, radar warning - blade
18. Antenna, radar altimeter
19. Antenna, marker beacon
20. Antenna, transponder - bottom (normal)
21. Antenna, UHF
22. Antenna, radar warning-foward left side (AS-2891 ( ) 1 APR-39)
23. Antenna, transpondor - bottom (If APN-209 Installed)

Figure 1-3. Antenna location



NOTE

LEFT FM HOMING ANTENNA REMOVED WHEN ATAS MISSILE PYLON IS INSTALLED.

1. Antenna, radar warning - foward right side (AS-2892 ( )/APR-39)
2. Antenna, proximity warning - forward
3. Antenna, FM No. 2
4. Antenna, glideslope
5. Antenna, transponder - top
6. Antenna, FM homing - right side
7. Antenna, radar warning - aft right side (AS2891 ( )/APR-39)
8. Antenna, VOR - right side
9. Antenna, VHF/FM
10. Antenna, VOR - left side
11. Antenna, radar warning - aft left side (AS2892 ( )/APR-39)
12. Antenna, proximity warning - aft
13. Antenna, ADF sense
14. Antenna, ADF loop
15. Antenna, radar warning - blade
16. Antenna, radar altimeter
17. Antenna, marker beacon
18. Antenna, transponder - bottom
19. Antenna, UHF
20. Antenna, radar warning - forward left side (AS-2891 ( ) / APR-39)

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Figure 1-3.1. Antenna location with ATAS CS

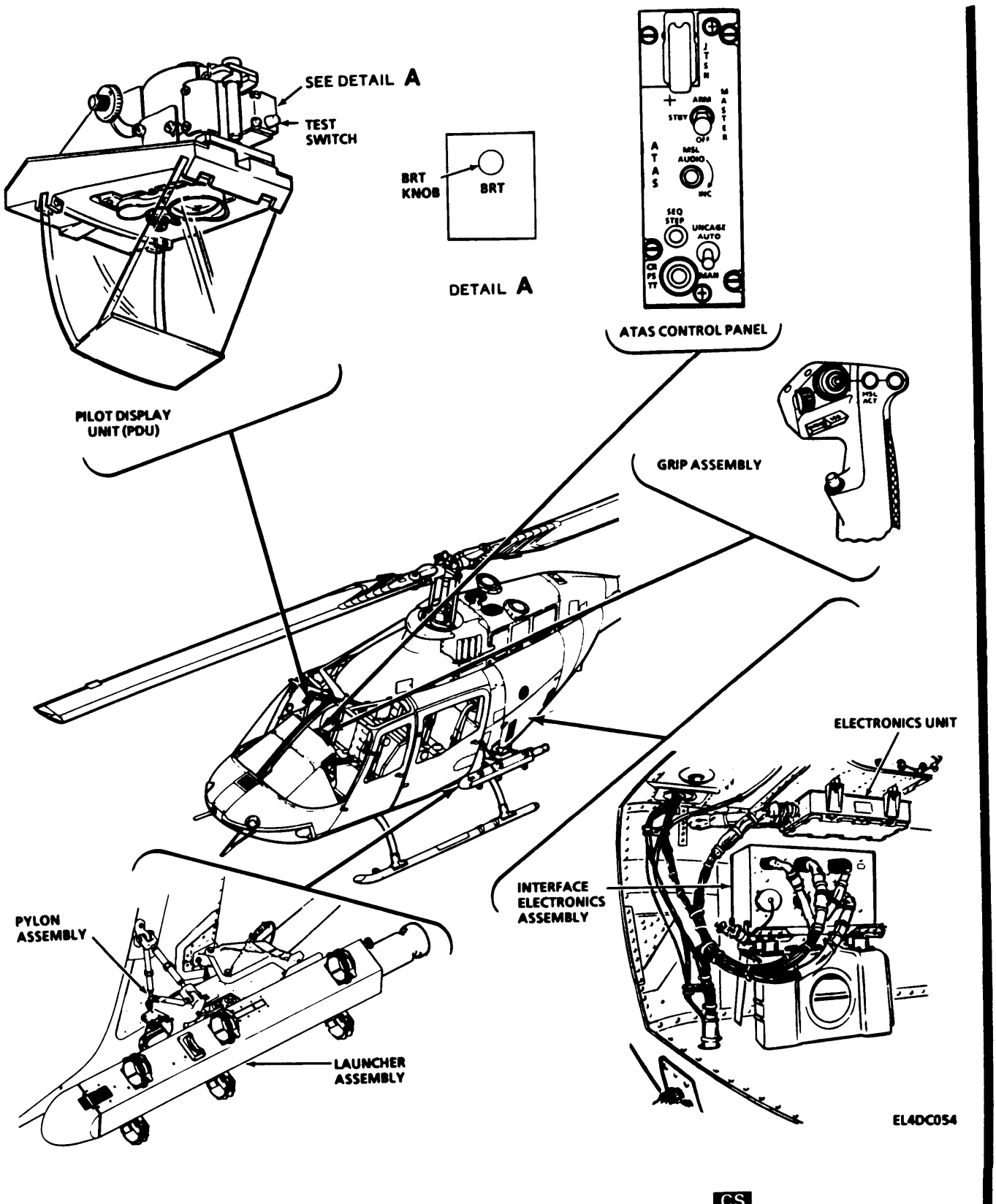

Figure 1-4. Equipment location – ATAS missile system CS

of impedance matching network circuits not used in helicopter audio circuits.

c. Antenna, VHF/FM, 206-075-518. The VHF/FM antenna is an encapsulated unit which is riveted into the upper half of the vertical stabilizer. Electrical connection is by two quick-disconnect connectors located near the tail rotor gearbox.

d. Filter, FM Low Pass, 205-075-380. The fm low pass filter reduces spurious signals to and from the liaison facility radios. It will pass signals between 30 and 76 MHz in either direction.

e. Capacitor Board A3, 204-075-850-9. Capacitor board A3 provides a capacitive load for the No. 1 FM radio homing steering signals. The load provides damping for the fm homing pointer.

f. Filter, VHF Bandpass, 205475-382. The vhf bandpass filter reduces spurious signals to and from the vhf command radio. It will pass signals between 116 and 150 MHz in either direction.

g. Filter, UHF High Pars, 205-075-381. The uhf bandpass filter reduces spurious signals to and from the uhf command radio. It will pass signals between 225 and 400 MHz in either direction.

h. Antenna, Sense, 206--032-310. The sense antenna is a navigation antenna and is part of the aft lower fuselage fairing.

i. Inverter, Static, PP-6376 A/A. The inverter is housed in a sealed rectangular metal case. A six pin quick-disconnect plug mounted on one end of the unit provides electrical connection. The unit is secured to the helicopter by four screws through flanges at the bottom.

j. Audio Threshold System MD-1219/A. The audio threshold system has no exposed controls. The system serves to ensure adequate audio crosstalk isolation. If the pilot is transmitting on any radio, sidetone and receive audio will be present at his and the other ICS stations. If any crew member keys another radio at the same time, the pilots sidetone and receive audio will be muted from that crew members ICS station. Muting the audio to the transmitting ICS station eliminates the potential of crosstalk developing. The audio threshold system provides this protection to each ICS station and radio. This design improves the operation of the secure-voice system (TSEC/KY-58) when used with either or both FM No. 1 and FM No.2 in providing secure communications.

k. Switch, Zeroize. The zeroize switch provides a means of zeroizing all special codes contained in TSEC/KIT-lA, AN/ARC-201, and TSEC/KY-58. The switch guard prevents accidental activation of the zeroize fiction.

j. Remote Fill Housing, 4290206-501. The remote fill housing provides a means of loading transec variables to either KY-58 from the pilots compartment. Electrical connection is by two wire harness's with quick disconnects which run from the rear of the fill housing to the KY-58 mounts in the aft avionics compartment.

CHAPTER 2

MAINTENANCE INSTRUCTIONS

Section 1. 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 55-1520-228-23 series). The procedures covered in this manual will be performed concurrently with the aircraft periodic preventive maintenance checks and services, The results of the preventive maintenance checks and services will be recorded on applicable maintenance forms in accordance with instructions in TM 38-750.

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

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

c. Troubleshooting (para. 2-10).

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

A list of parts authorized for organizational maintenance of the electronic equipment configuration appears in TM 11-1520-228-20P. Major electronic equipment components, when removed from the helicopter for higher category maintenance, are replaced by serviceable components from maintenance float stock, or on a direct exchange (DX) basis from higher category maintenance organizations (direct support maintenance). Tools, materials, and test equipment required for organizational maintenance are listed below:

a. Tools. All tools required are contained in:

(1) Tool Kit, Electronic Equipment TK-101/G.

(2) Maintenance Kit, Electronic Equipment MK-693A.

(3) Torque Wrench T-8438.

(4) Insertion Tool CIT-C2 (71468).

(5) Insertion Tool CIT-C1 (71468).

b. Test Equipment.

(1) Multimeter AN/USM-223.

(2) Test Set, Transponder AN/APM-123A(V).

(3) Simulator, Radar Signal SM-736/UPM.

(4) * Signal Generator SG-13/ARN (VOR signal generator).

(5) * Test oscillator BC-376 (MB signal generator).

* Use until Test Set, Receiver AN/ARM-186 becomes available.

c. Materials.

(1) Trichlorotrifluorethane.

(2) Sandpaper, fine, No. 000.

(3) Cleaning cloth (lint free).

(4) Soft bristle brush.

(5) Lubricating oil, general purpose preservative.

(6) The following safety wire can be requisitioned.

FSN	Description	Diameter (inch)	Unit of issue
9505-554-1421	Safety wire, steel corrosion-resistant	0.032	Spool
9505-242-7527	Safety wire, steel corrosion-resistant	0.047	Spool
9505-00-554-1420	Safety wire, steel corrosion-resistant annealed	0.063	Spool

2-3. Fuse and Circuit Protective Device Locations (figure 2-1).

a. The push-pull type dc circuit breakers are located on the overhead console and are accessible to the pilot and copilot stations. The ac circuit breakers share the same panel with the dc circuit breakers, and are located near the aft end of the overhead console.

b. The chart below lists the locations and ratings of all accessible fuses and circuit breakers that provide circuit protection for the electronic equipment. Ensure that fuses of the proper value are inserted in the fuseholders of all the component indicated. Depress all press-to-set circuit breakers that have tripped.

Equipment	Circuit breaker rating	Placard
Audio control panels	28 Vdc 5 amp	ICS
No. 1 FM radio	28 Vdc 5 amp	FM No. 1
No. 2 FM radio	28 Vdc 5 amp	FM No. 2
VHF command radio	28 Vdc 5 amp	VHF
UHF command radio	28 Vdc 5 amp	UHF
ADF	28 Vdc 5 amp	ADF
Gyromagnetic compass set	115 Vac 1/2 amp	GYRO CMPS
Transponder	28 Vdc 5 amp	IFF
Secure-voice encoder/ decoder	28 Vdc 5 amp	SPEECH SECURITY
Proximity warning facility YG-1054	28 Vdc 2 amp	PROX WARN
VOR/ILS	28 Vdc 2 amp	CONUS NAV
	115 Vac 1 amp	CONUS NAV

Equipment	Circuit breaker rating	Placard
Radar altimeter	28 Vdc 2 1/2 amp	RDR ALT
Radar warning	28 Vdc 5 amp	RDR WRN
Air-to-Air Stinger (ATAS) Missile System [illegible]	28 Vdc 15 amp 28 Vdc 1 amp 28 Vdc 7 1/2 amp 28 Vdc 5 amp	ATAS PWR [illegible] ATAS CONT [illegible] JETTISON [illegible] MSS [illegible]
AN/ARC- 114A radio set (On rear of radio set)	Fuse 28 Vdc F1	
AN/ARC-115 radio set (On rear of radio set]	Fuse 28 Vdc F1	
AN/ARC-116 radio set (On rear of radio set)	Fuse 28 Vdc F1	
AN/APX-100 transponder (On receiver-transmitter)	Fuse 28 Vdc 5 amp	
secure-voice encoder/ decoder	28 Vdc 5 amp	SPEECH SECURITY #2
FM Amplifier	28 Vdc 10 amp	IFM AMP

2-4. Auxiliary Power Unit Connections.

a. To prevent excessive drain on the helicopter battery, connect an auxiliary power unit when performing power-on periodic inspection of the electronic equipment configuration. Aircraft Ground Servicing Unit, Multipurpose MA-1, or equivalent, should be used.

CAUTION

Do not connect the auxiliary power unit to the helicopter before checking with the helicopter crew chief.

b. To connect the auxiliary power unit to the helicopter, turn the helicopter battery (BAT) switch on the dc power panel on the overhead console to the OFF position.

CAUTION

Reversed polarity between the helicopter battery circuit and auxiliary power unit can damage electrical parts and cause a serious fire.

c. Connect the auxiliary power unit plug to the helicopter external power receptacle low on the right rear side of the helicopter.

NOTE

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

d. Start the auxiliary power unit.

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 of all maintenance categories concerned with the configurations. Preventive maintenance includes the inspection, testing, and repair or replacement of components that inspections and tests indicate would probably fail before the next scheduled service period. Preventive maintenance checks and services of the electronic equipment configuration for the helicopter at the organizational level are made at daily and periodic intervals (TM 55-1520-228-23 and TM 55-1520-228-23PMP) unless otherwise directed by the commanding officer. The

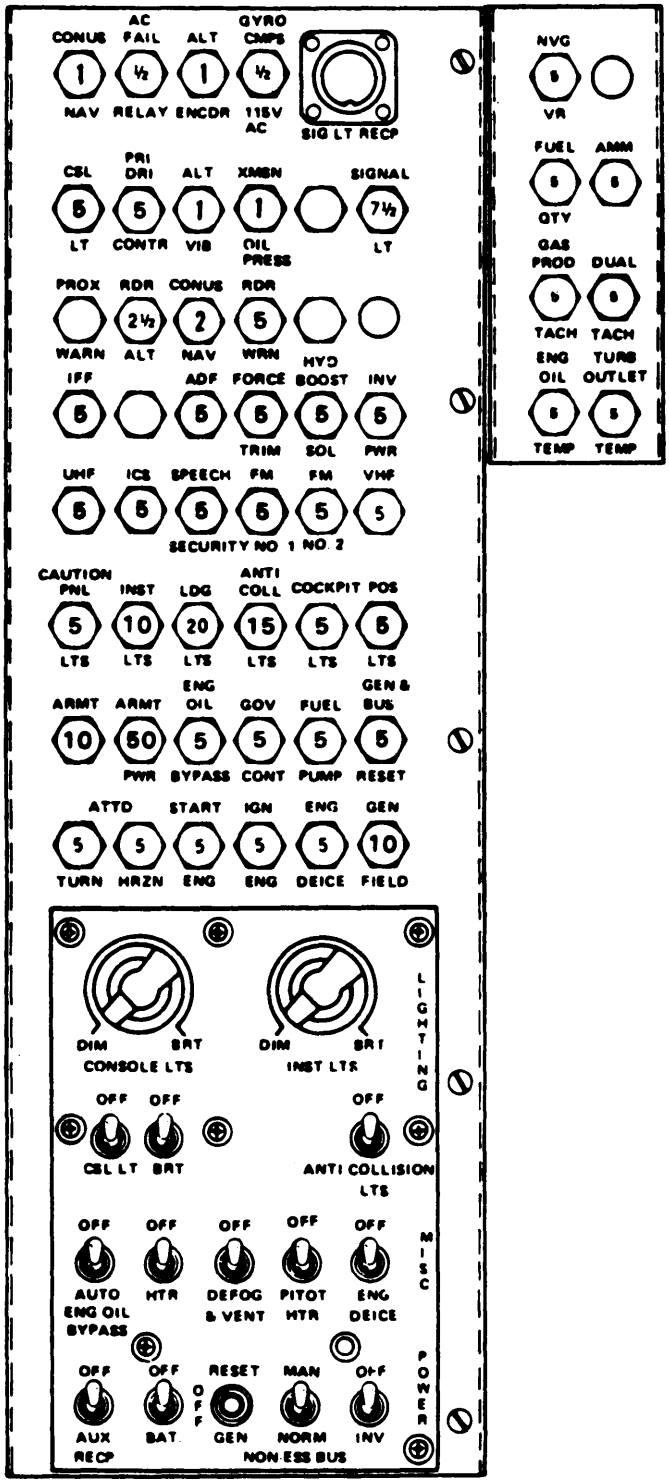

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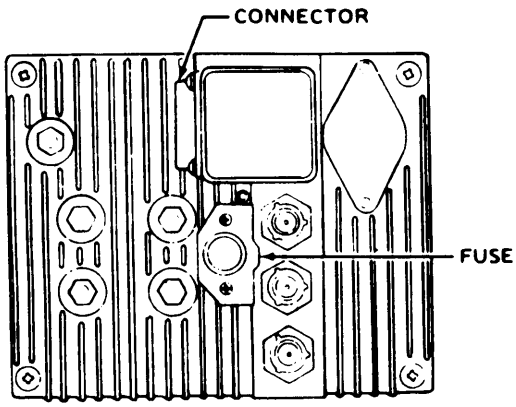
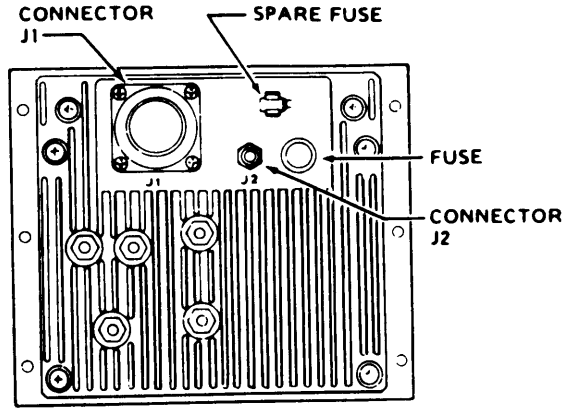
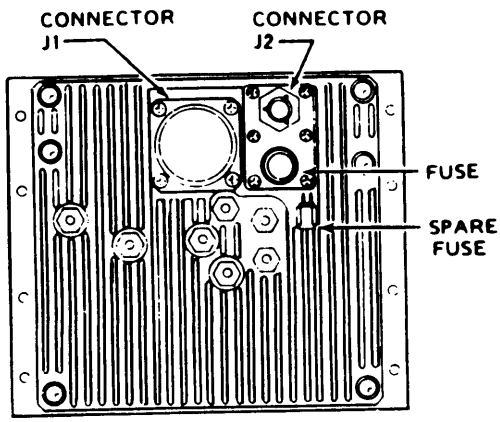
Figure 2-1. Circuit breaker and fuse location (Sheet 1 of 2)



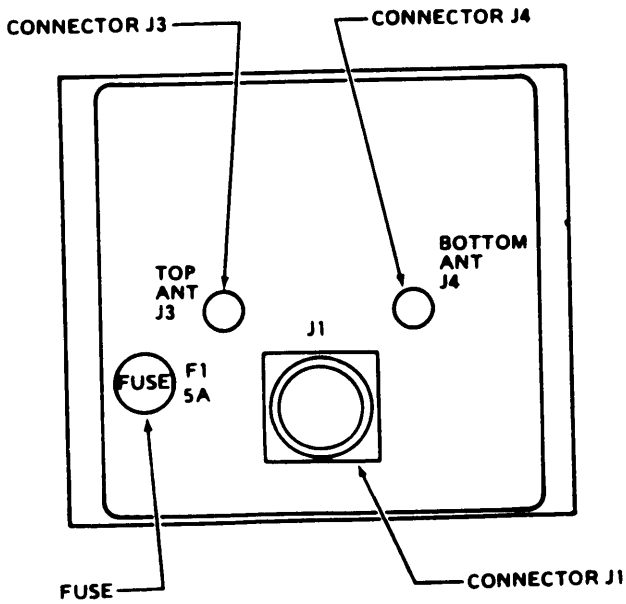
AN/ARC-114A RADIO SET
(REAR VIEW) FUSE LOCATION



AN/ARC-115 RADIO SET
(REAR VIEW) FUSE LOCATION



AN/ARC-116 RADIO SET
(REAR VIEW) FUSE LOCATION



RT-1285( )/APX-100 RECEIVER-TRANSMITTER
FUSE LOCATION (REAR VIEW)

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Figure 2-1. Circuit breaker and fuse location (Sheet 2 of 2)

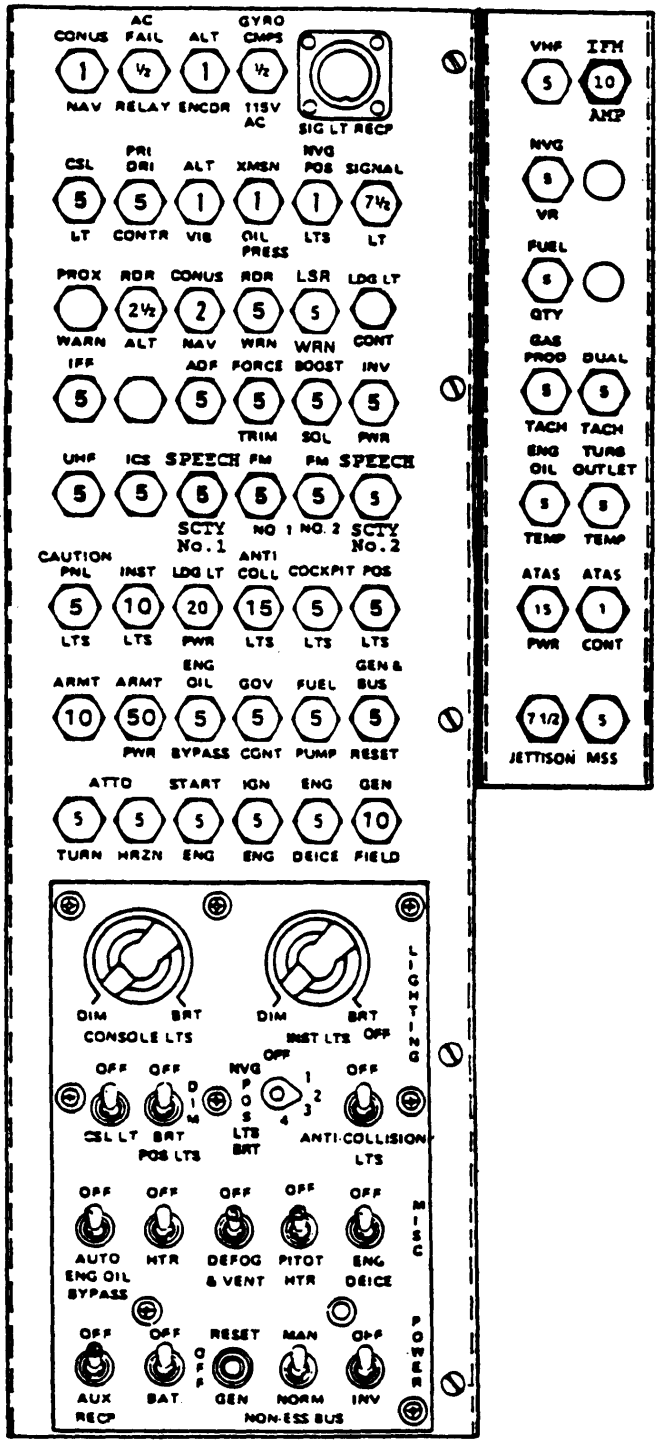

Figure 2-1.1 Circuit breaker location AN/ARC-201 & TSEC/KY-58.

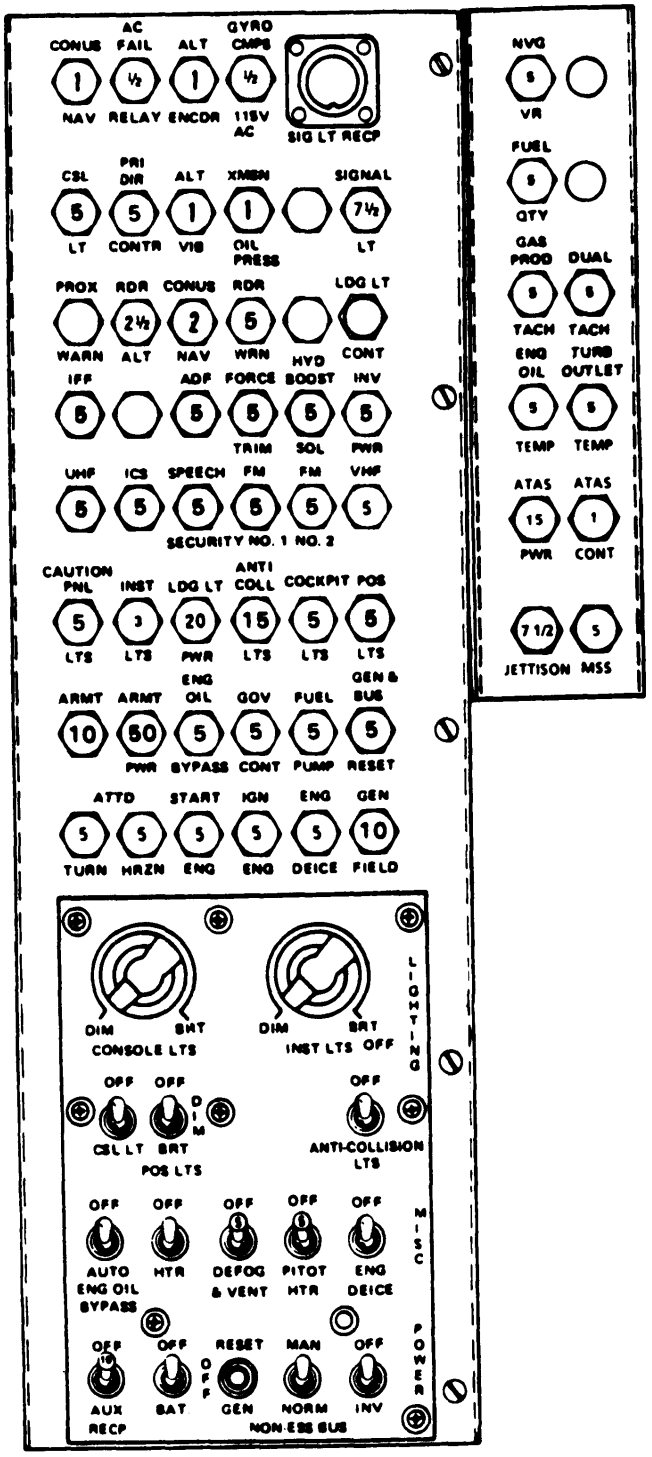

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Figure 2-1.2. Circuit breaker and fuse location ATAS

maintenance checks and services of the electronic configuration should be performed at the same time as the inspection of the helicopter.

a. Maintenance Checks and Services. The maintenance check and service procedures provided by TM 55-1520-228-23 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 electronic equipment configuration in good general (physical) condition and in good operating condition. To assist the organizational maintenance repairman in maintaining combat serviceability, the periodic preventive maintenance checks and services chart (Para. *2-7)* and avionics master wiring diagrams indicate what to check, how to check, and the normal conditions; the References column lists the paragraphs and publications that contain additional information. If a defect cannot be remedied by the organizational repairmen, higher category of maintenance or repair is required.

b. Maintenance Forms and Records. Records and reports of these checks and services and the maintenance forms and records to be used and maintained on the electrical equipment configuration are specified in DA Pam 738-750. Paragraph 1-3 contains additional information concerning the submission of specific forms.

2-6. Preventive Maintenance Check and Service Intervals.

a. General. Preventive maintenance checks and services are performed on the electronic equipment on a daily and periodic basis. The daily preventive maintenance checks and services (TM 55-1520-228-PMD) are performed each calendar day or after approximately 8 hours of flying time, The periodic preventive maintenance checks and services of the electronic equipment configuration are performed at the same time as the maintenance checks and services of the helicopter. This action establishes an interval of approximately 300 flying hours between the electronic equipment configuration periodic configuration are performed at the same time as the maintenance checks and services of the helicopter. This action establishes an interval of approximately 300 flying hours between the electronic equipment configuration periodic preventive maintenance checks and services, All deficiencies or shortcomings noticed 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 DA Pam 738-750. Equipment having a deficiency that cannot be corrected at the organizational maintenance level should be deadlined and reported to a higher maintenance category, using the form specified in DA Pam 738-750. Perform all of the checks and services in the preventive maintenance checks and services chart (Para. 2-7). Whenever an abnormal or unsatisfactory condition or result is observed, take corrective action in accordance with the paragraph listed in the References column.

b. Phase Pullout Checks. During the phase inspection of the helicopter, each of the avionics items will be inspected (Para. 2-7). Components will only be removed if found to be operational y defective or operation is degraded to a level where safety of personnel or completion of mission is questionable. When components must be removed from the helicopter, they will be replaced by equivalent service components from maintenance float stock, or on a direct exchange basis, from the direct sup port maintenance organization.

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

NOTE

The dashline (—) in the pullout intervals (flying hours) column of the chart indicates that the component is only removed when malfunctioning.

Component	Pullout interval (flying hours)	Procedure (references)
Intercommunication and Audio		
Control, Communication System C-6533/ARC		Para. 2-15

Component	Pullout interval (flying hours)	Procedure (references)
Network, Avionics, Electrical, and Armament, 206-075483	--	Para. 2-67
Audio Threshold System, MD-1101/A		Para. 2-16
Audio Threshold System, MD-1219/A		Para. 2-67.
Liaison - FM No.1 and FM No.2		
Radio Set AN/ARC-l14		Para. 2-19
Radio Set AN/ARC-201		Para. 2-67.
Antenna, FM Homing, LS & RS	--	Para. 2-24
Antenna, FM No.2	--	Para. 2-66
Filter, FM Low Pass 205-075-380	--	Para. 2-28
Battery Box, CY-8515/ARC-201		Para. 2-67.
IFM Amplifier, AM-7189/A (ARC-201)	--	Para. 2-67.
Voice Security		
Computer, Voice Security TSEC/KY-28	--	Para. 2-21
Computer, Voice Security TSEC/KY-58		Para. 2-67.
Control Indicator, C-8157/ARC (KY-28)		Para. 2-20
Control Indicator, Z-AHP (KY-58)		Para. 2-67
VHF Command		
Radio Set AN/ARC-l 15		Para. 2-25
Filter, VHF, Band Pass		Para. 2-28
Antenna VHF and FM 206-075-518 and 4490002-501 (ARC-201)	--	Para. 2-23
UHF Command		
Radio Set AN/ARC-l 16	--	Para. 2-26
Filter, UHF High Pass	--	Para. 2-28
Antenna, UHF AS-2487/ARC-l16	--	Para. 2-27

Component	Pullout interval (flying hours)	Procedure (referanccs)
Gyromagnetic Compass AN/ASN-43		
Gym, Directional, CN-998/ASN	Aligned once-a-year	Para. 2-31
Transmitter, Induction Compass, T-611/ASN	Aligned once-a-year	Para. 2-29
Compensator, Magnetic Flux, CN-405/ASN	Aligned once-a-year	Para. 2-30
Heading-Radio Bearing Indicator, ID-1351/A	—	Para. 2-32
Automatic Direction Finder AN/ARN-89( )		
Control, Radio Set C-7392( )/ARN-89	-	Para. 2-35
Receiver, Radio R-l496( )/ARN-89	-	Para. 2-34
Amplifier, Impedance Matching, AM-4859/ARN-89	-	Para. 2-26
Antenna AS-2108/ARN-89	—	Para. 2-37
VOR/ILS Navigation Facility AN/ARN-123		
Control Panel, VOR/ILS C-10048/ARN	-	Para. 2-38
Indicator, Course Deviation, ID-1347C/ARN	—	Para. 2-39
Receiver, VOR, R-2023/ARN	-	Para. 2-40
Antenna, Glideslope, AS-3188-ARN	—	Para. 2-41
Antenna, VOR, AS-1304/ARN	—	Para. 2-42
Antenna. Marker Beacon AT-640/ARN	—	Para. 2-43
Radar Altimeter		
Indicator/Receiver/Transmitter RT-1115( )/APN-209	-	Para. 2-44
Antenna, Radar Altimeter, AS-2595( )/APN-194	—	Para. 2-45
Radar Detecting Set AN/APR-39 (VI)		
Control Panel, Radar Warning C-9326( )/APR		Para. 2-43

Component	Pullout interval (flying hours)	Procedure (references)
Indicator, Radar Warning, IP-1150/APR-39	-	Para. 2-47
Comparator, Radar Warning CM-440( )/APR	-	
Receiver, Radar Warning R-1838( )/APR	-	Para. 2-49
Antenna, Blade, AS-2890( )/APR	—	Para. 2-51
Antenna, Spiral, AS-2891( )/APR	—	Para. 2-50
Antenna, Spiral, AS-2892( )/APR	—	Para. 2-50
Identification Facility AN/APX-100		
Receiver-Transmitter, RT-1285( )/APX-100	-	Para. 2-52
Antenna, AT-884/APX-44	—	Para. 2-55
Antenna, 206-077-109-1	—	Para. 2-54
Computer, Transponder, Kit-1A/TSEC	-	Para. 2-53
Proximity Warning Facility YG-1054 (PWS)		
Proximity Warning Receiver-Transponder YG-1054	—	Para. 2-58
Antenna Proximity Warning	—	Para. 2-59
AC Power Source		
Inverter, Static, PP-6376A/A	—	Para. 2-62
DC Power Source		
Battery, Storage, BB-676/A	-	TM 55-1520-228-23
Armament Facility CS		
Control Panel, ATAS 206-075-037-103	—	TM 55-1520-228-23
Unit, Pilot Display 206-371-001-101	—	TM 55-1520-228-23
Unit, Electronics 206-371-002-101	—	TM 55-1520-228-23
Assembly Interface Electronics 481-100002	—	TM 55-1520-228-23
Assembly, ATAS Launcher 481-200440	—	TM 55-1520-228-23

2-7. Preventive Maintenance Checks and Services Charts.

a. *Power-Off Inspection of Electronic Configuration.*

Item No.	Item to be inspected	Procedure	References
		POWER-OFF INSPECTION	
1	Entire configuration	Inspect the entire electronic configuration (figures 1-1 through 1-4) for completeness, general condition, and cleanliness. Remove all electronic equipment scheduled for bench tests.	Para. 1-6 and TM 55-1520-228-23 Series
2	publications	Check to see that pertinent publications are available: *a.* Operator manuals are complete and in usable condition without missing pages. *b.* All Changes pertinent to the equipment are on hand. *c.* Organizational maintenance manual is complete and in usable condition.	App. A
3	Modification work orders	Check DA Pam 25-30 to determine if new applicable MWO's have been published; check to see that all URGENT MWO's have been applied to the equipment, and that all NORMAL MWO's have been scheduled.	DA Pam 25-30
4	Battery	Check the battery in accordance with the appropriate technical manual.	TM 11-6140-203-14-2 TM 55-1520-228-23
5	Frequency cards, decals, stencils and other insignia.	Check for up-to-date frequency cards in the frequency card holders. Check all decals, stencils, and other insignia for legibility,	TM 55-1520-228-10
6	Headset-microphones	Check the headset-microphone receptacles for possible damage. Check to see that they are clean and properly connected and that the wiring is free of cuts or breaks.	
7	Microphone switches	Check all trigger-and-foot-operated switch wiring for fraying.	
8	Indicator	Check indicators (figure 1-2) for cracked bezels, loose knobs, loose or missing mounting screws and discoloration of the dials.	
9	Control panels	*a.* Check to see that all control panels are clean and the paint is not scratched or marked.	*a.* Para. 2-8, figs. 1-2. and 2-1

Item No.	Item to be inspected	Procedure	References
9 (Cont.)		*b.* Check all knobs for tightness.	*b.* None
		c. Check all switches for positive detent action.	*c.* None
		d. Check to see that cables are not frayed, cut, or damaged.	*d.* None
10	Antennas	*a.* Check all antennae and replace any that are damaged (fig. 1-3).	*a.* Para. 2-24, 2-25,2-28, 2-38,2-42, 2-43,2-44, 2-46, 2-51, 2-52, 2-55, and 2-59
		b. See that antennas are properly secured.	*b.* None
		c. Check for cleanliness, clean with a clean, lint-free cloth.	*c.* None
		d. Inspect all exposed lead-ins for any sign of damage or frayed wires or insulation.	*d.* None
11	Gyro compass flux valve	Check for cleanliness; clean housing with trichlorotrifluoroethane and make sure that unit is securely mounted.	Para. 2-8, fig. 1-1
12	Equipment shock mounts	When reinstalling electronics equipment, make sure that chock mounts are securely installed and bonded to shelves or structure and that safety wiring is secure (TM 55-1500-323-25). Tighten equipment clamps.	None
13	Terminal board	Use trichlorotrifluoroethane to clean exterior of terminal board. Check for structural failure and loose connections.	Para. 2-8
14	Cable assemblies	Check cable assemblies for cuts, dirt, grease, and broken connector. Clean cable assemblies and replace those with cuts of broken connectors.	None
15	ATAS launcher assembly (S)	*a.* Check coolant pressure gage shows greater than 4500 psi. If less than 4500 psi the coolant bottle must be recharged.	*a.* TM 9-1440-431-23
		b. Check auto latch assembly for missing or broken parts.	*b.* TM 9-1440-431-23

Item No.	Item to be inspected	Procedure	References
15 (Cont.)		*c.* Check adapter for surface corrosion, broken or missing hardware.	*c.* TM 9-1440-431-23
		d. Check electrical interface connectors for cracks, corrosion, damage, and secure mounting.	*d.* TM 9-1440-431-23

Preliminary Control Settings for Operational Check (fig. 1-2, and 2-1).

Control panel	Control	Position
Audio control panel	Receivor selector switches 1, 2, 3, 4, 5	OFF
	Function selector switch	Any position
	VOL control	Fully counterclockwise
	HOT MIKE switch	Down (off)
VHF command radio	Function *selector switch*	OFF
	Megahertz and kilohertz controls	Any position
	RCVR TEST pushbutton	Extended
	AUDIO control	Any position
UHF command radio (AN/ARC-164 or AN/ARC-116)	Function selector switch	OFF
	100-10 megahertz, 1 megahertz, kilohertz controls.	Any position
	RCVR TEST pushbutton	Extended
	AUDIO control	Any position
No. 1 and No. 2 FM radio (AN/ARC-114)	Function selector switch	OFF
	Megahertz and kilohertz controls	Any position
	RCVR TEST pushbutton	Extended
	AUDIO control	Any position
No.1 and No.2 FM Radio (AN/ARC-201)	Function selector switch	OFF
	Mode selector switch	SC
	Audio control	Any position
Adf receiver	COMP-ANT-LOOP switch	OFF
	LOOP L-R control	Any position
VOR/ILS (CONUS NAV)	NAV VOL-OFF control	OFF
	MB VOL-OFF control	OFF
	VOR/MB TEST switch	OFF
	MB SENS switch	High
	Megahertz and fractional Megahertz selectors	Any position
Radar Altimeter	ON-OFF switch	OFF
	Self Test pushbutton	Extended

Control panel	Control	Position
Radar Warning	PWR switch	OFF
	SELF TEST pushbutton	Extended
	DSCRM switch	OFF
	AUDIO control	Any position
	CW-VOICE Test switch	Any position
Transponder control	M-1, M-2 switch	OUT
	M-3/A, M-C switch	OUT
	CODE	Classified
	MASTER control	OFF
	AUDIO-LIGHT control	OUT
	RAD TEST-MON control	OUT
	MODE 4 switch	OUT
	IDENT-MIC control	OUT
	MODE 1 control	Any position
	Mode 3/A control	Any position
	ANT switch	DIV
Proximity Warning YG-1054	POWER ON/OFF switch	OFF
	AUDIO control	Midposition
	LIGHT INTENSITY switch	HIGH position
ATAS CS	MASTER switch	OFF
	JTSN switch	Cover down
	MSL AUDIO control	Midrange position
	UNCAGE switch	AUTO
Pilot display unit (PDU) CS	BRT knob	Full clockwise position

c. Preliminary Procedures for Operational Check.

Sequence No.	Item	Procedure	Reference
1	Battery switch	Set to OFF position	None
2	External power unit	Connect the 28-volt dc external power source	None
3	Avionic equipment circuit breakers	Energize all avionic equipment circuit breakers to supply power to the avionics equipment.	None

d. Operational (Power-On) Checks.

NOTE

Before starting the operational checks, make sure that the preliminary control settings and procedures (b and c above) have been accomplished,

Item No.	Item to be inspected	Procedure	References
		OPERATIONAL CHECK, INTERCOMMUNICATION AND AUDIO FACILITY	
1	ICS control panel	Verify that ICS circuit breaker, which energizes the distribution panel is in. Set the distribution panel C-6533( )/ARC control as follows: *a.* Rotary selector switch to ICS. *b.* Receiver switches to the down (off) position. *c.* Turn the VOL control clockwise until a rushing noise is heard in headset.	Figures 2-1 and 2-2 Para. 2-11 Item No. 1
2	Pilot microphone switch (cyclic)	Key the pilot cyclic stick switch to ICS and speak into the microphone. Sidetone is heard in pilot headset, and received audio is heard in headsets at the other stations.	Figure 2-5 Para. 2-11 Item No. 2
3	Copilot microphone switch (cyclic)	Key the copilot cyclic stick switch to ICS and speak into the microphone. Sidetone is heard in copilot headset and received audio is heard in headsets at the other stations.	Figure 2-6 Para. 2-11 Item No.3
4	Crew microphone switch (pushbutton)	Key the crew pushbutton switch and speak into the microphone. Sidetone is heard in crew headset and received audio is heard in headsets at the other stations.	Para. 2-11 Item No. 4

Item No.	Item to be inspected	Procedure	References
5	Copilot foot switch	Press the copilot foot switch and speak into the microphone. Sidetone is heard in the copilot headset and received audio is heard in headsets at the other stations.	Figure 2-5 Para. 2-11 Item No. 5
	ICS control	Place HOT MIKE switch to on (up) position and speak into the microphone. Sidetone is heard in headset, and received audio is heard in other headsets.	Figure 2-2 Para. 2-11 Item No. 6
		POWER-ON, LIAISON-FM NO. 1 AND FM NO. 2 (AN/ARC-114)	
		NOTE The power-on check for FM No. 2 is identical to FM No. 1 except the homing function of FM No. 2 is not used. Allow mandatory 1 minute warm up time prior to keying transmitter.	
7	FM No. 1 and FM No. 2 circuit breakers	Verify that FM No. 1 and FM No. 2 circuit breakers are in.	Figure 2-1 Para. 2-11 Item No. 7
8	ICS control panel	Perform steps in Item No. 15 through 18 with ICS control rotary selector in the No. 1 position for FM No. 1 or No. 5 position for FM No. 2,	Figure 2-2
9	Receiver-transmitter and function selector switch	**NOTE** For operational check procedures covering secure-voice control indicator, refer to TM 11-5895-555-24 (app A). When operating No. 1 fm facility in secure voice mode, no other transmitter should be keyed. Refer to warning decal located on third ICS station in communications pedestal. With both the C-8157/ARC voice control indicator and the KY-28 secure-voice encoder/decoder installed in the helicopter, the locating plate installed over the PLAIN CIPHER switch on the control indicator must be removed before operation in the CIPHER MODE is possible.	Figure 2-25 Para. 2-11 Item No. 9

Item No.	Item to be inspected	Procedure	References
9 (Cont.)		*a.* Set function selector switch to T/R position. *b.* Rotate the megahertz control to 30.05 MHz on the MEGAHERTZ indicator. *c.* Depress and hold the RCVR TEST push button and listen for a tone in the headset. Release pushbutton. *d.* Repeat step c. for three additional frequencies across the band. **WARNING** Do not use the guard channel frequency setting. Transmission on this frequency should only occur when emergency conditions exist. *e.* Rotate the frequency controls to frequency of a local vhf-fro station. *f.* For FM No. 1, position ICS control panel rotary selector to No. 1 and position No. 1 mixing switch to On. For FM No. 2, position rotary selector to No. 2 and position No. 5 mixing switch to ON. Establish communications with the station by keying transmitter and speaking into microphone. Adjust AUDIO control to a suitable level.	
10	Guard receiver and function selector switch	*a.* Place function selector switch T/R GUARD *b.* Arrange for communications check on guard receiver frequency. Listen for clear, intelligible audio in headset. **NOTE** Guard channel reception is not affected by the settings of the megahertz or kilohertz control. If guard channel signals are heard while receiving signals on a main receiver communication channel, detune the main receiver by rotating the	Para. 2-11 Item No. 10

Item No.	Item to be inspected	Procedure	References
10 (Cont.)		megahertz control to an open channel. This will permit only the priority guard channel signal to be monitored.	
11	Homing output function selector switch C.	a. Place FM No. 1 radio set function selector switch to HOMING.	Para. 2-11 Item No. 11
		b. Rotate the frequency controls to a known fm homing station.	
		c. Observe homing information on heading-radio bearing indicator.	

POWER-ON, LIAISON-FM NO.1 AND FM NO.2 (AN/ARC-201)

NOTE

KY-58 control indicator (Z-AHP or Z-AHP Bypass Assy.) must be installed for normal operation.

11.1	FM No.1 and FM No.2	Verify that FM No.1 and FM No.2 circuit breakers are in.	Fig. 2-1.1. Para. 2-11 Item No. 68
11.2	ICS control panel	Perform FM No. 1 test with ICS selector in position 1. FM No.2 with ICS selector in position 5.	Fig. 2-2
11.3	Receiver/transmitter and IFM.	a. Set function selector switch to TEST. Unit displays: 1. All dashes, 1 sec. 2. "E", 3 sec. 3. "8"s, 3 sec. 4. "GOOD" 5 see, then extinguishes. b. Set FUNCTION selector switch to SQ OFF position, MODE select to SC and PRESET selector to MAN. c. Insert frequency of a local vhf-fm station. 1. Press FREQ then CLR button on key pad. 2. Insert desired frequecy by using key pad. 3. Press STO/ENT button on key pad. d. Establish communications. e. Repeats steps c and d for three additional frequencies.	Fig. 2-4.1 Para. 2-11 Item No. 69
	(FM NO.1 ONLY) -----	f. Connect a thru-line wattmeter at the output of the IFM amplifier. Use a 50 watt element with a frequency range within that of the FM. g. Set the IFM RF PWR selector on AN/ARC-201 to LO and key radio. 1. Wattmeter = 2.5 watts min.	

Item No.	Item to be inspected	Procedure	References
11.3 (Cont)		h. Set the IFM RF PWR selector to NORM and key radio. 1. Wattmeter = 10 watts min. i. Set the IFM RF PWR selector to HI and key radio. 1. Wattmeter = 40 watts min. j. Set the IFM RF PWR selector to OFF.	
		NOTE If IFM is not installed IFM RF PWR selector must be in OFF position to have sidetone during transmission.	
11.4	Frequency Hopping and Time of Day	**NOTE** To perform a communications check in frequency hopping mode the other fm station must be a AN/ARC-201 SINCGARS radio. The steps listed below must be performed on both radios.	
	FH --------	a. Insert frequency. b. Set FUNCTION selector switch to LD-V. MODE selector to FH and PRESET selector to MAN. 1. Display reads FILL T. c. Connect ECCM fill device. Set power switch to ON and selector switch to T1. d. Press the H-LD/O key. 1. Display reads STO T then COLD. e. Set FUNCTION selector switch to LD on AN/ARC-201 and T1 to 1 on ECCM fill device. f. Press H-LIMO. 1. Display reads hopset number g. Press STO/ENT then 1. 1. This stores HOPSET data in preset 1.	
		NOTE Time of day (TOD) on both radio's must be within 1 minute of each other to communicate with each other.	
	TOD ------—--	h. Press TIME key once on AN/ARC-201. i. Press CLR and enter day number then press ENT key. 1. Display reads day number. j. Press TIME key again. k. Press CLR and enter hours and minutes then press ENT. 1. Display reads hours and minutes. l. Set FUNCTION selector to SQ OFF, MODE selector to FH and PRESET selector to 1 on both radio's. m. Establish communications.	

Item No.	Item to be inspected	Procedure	References
11.5	Homing (FM NO.1 ONLY)	a. Set MODE selector switch to HOM. b. Set frequency to a known FM homing station. c. Observe homing information on heading-radio bearing indicator.	
		POWER-ON, VHF COMMAND (AN/ARC- 115)	
		NOTE Allow mandatory 1 minute warmup time prior to keying transmitter.	
12	VHF circuit breaker	Verify that VHF circuit breaker is in.	Figure 2-1 Para. 2-11 Item No, 12
13	ICS control panel	Perform sequences 15 through 18 with ICS control rotary selector in the No. 3 position.	Figure 2-2
14	Receiver-transmitter function selector switch	*a.* Set function selector switch to T/R position.	Figure 2-7 Para. 2-11 Item No. 14
		b. Rotate the frequency controls to 116.05 MHz on the MEGACYCLES indicator.	
		c. Depress and hold the RCVR TEST pushbutton and listen for a tone in the headset. Release pushbutton.	
		d. Repeat step c., for three additional frequencies across the band.	
		WARNING Do not use the guard channel frequency setting. Transmission on this frequency should only occur when emergency conditions exist.	

Item No.	Item to be inspected	Procedure	References
14 (Cont.)		e. Rotate the frequency controls to frequency of a local vhf-am station. f. Position ICS control panel mixing switch No. 3 to ON and establish communications with the station by keying transmitter and speaking into microphone. Adjust AUDIO control to a suitable level.	
16	Guard receiver and function selector switch.	Place radio set function selector switch on T/R GUARD. Arrange for communications check on guard receiver frequency. Listen for clear, intelligible audio in headset. **NOTE** Guard channel reception is not affected by the settings of the megahertz or kilohertz control. If guard channel signals are heard while receiving signals on a main receiver communication channel, detune the main receiver by rotating the megahertz controls to an open channel. This will permit only the priority guard channel signal to be monitored.	Para. 2-11 Item No. 15
		POWER-ON, UHF COMMAND (AN/ARC-116 OR AN/ARC-164)	
		NOTE Allow mandatory 1 minute warmup time prior to keying transmitter.	
16	UHF circuit breaker	Verify that UHF circuit breaker is in,	Figure 2-1 Para. 2-11. Item No. 16
17	ICS control panel	Perform sequences 15 through 18 with ICS control rotary selector switch in the No. 2 position.	Figure 2-2
18	Radio set control	a. Set function selector switch to T/R position.	Figure 2-8 Para. 2-11 Item No. 18
		b. Rotate the frequency controls to 225.05 MHz on the MEGACYCLES indicator.	

Item No.	Item to be inspected	Procedure	References
18 (Cont.)		*c.* Depress and hold the RCVR TEST push button and listen for a tone in the headset. Release pushbutton. *d.* Repeat step c., at frequency settings for three additional frequencies across the band. Do not use the guard channel frequency setting. Transmission on this frequency should only occur when emergency conditions exists. *e.* Rotate the frequency controls to frequency of a local uhf-am station. *f.* Position ICS control panel mixing switch No. 2 to ON and establish communications with the station by keying transmitter and speaking into microphone. Adjust AUDIO control for a suitable level.	
19	Guard receiver and function selector switch	Place radio set function select switch on T/R GUARD. Arrange for communications check on guard receiver frequency of 243.0 mc. Listen for clear, intelligible audio in headset. **NOTE** Guard channel reception is not affected by the settings of the megahertz or kilohertz control. If guard channel signals are heard while receiving signals on a main receiver communication channel, detune the main receiver by rotating the megahertz controls to an open channel. This will permit only the priority guard channel signal to be monitored.	Para. 2-11 Item No. 19
		POWER-ON, GYROMAGNETIC COMPASS (AN/ASN-43)	
20	GYRO CMPS circuit breaker	Verify the GYRO CMPS circuit breaker is in. Heading radio bearing indicator should indicate approximate heading of helicopter.	Figure 2-1 Para. 2-11 Item No. 20

Item No.	Item to be inspected	Procedure	References
20 (Cont.)		**NOTE** It is important that the location and position of the helicopter or any major magnetic object in the immediate vicinity is not changed during the comparison of repeat heading checks.	
21	DIR GYRO-MAG switch (located on the switch panel)	Set the DIR GYRO-MAG switch to the MAG position (down).	
22	Synchronizing knob	*a.* Synchronize the system by turning the synchronizing knob on the heading-radio bearing indicator in the direction indicated by the annunciator, until the annunciator returns to its center position. **NOTE** Unless the helicopter engine is running, the indicator should be tapped lightly before it is read. *b.* Check the magnetic heading of the system, using the indicator. *c.* Turn the synchronizing knob, on the indicator until the heading indication is 10° greater than indicated in b., above. Watch the annunciator. A dot (.) should appear. Observe the indicator long enough to detect that the system is slaving downward. *d.* Synchronize the system as indicated in a., above and note the heading on the indicator. *e.* Turn the synchronizing knob to a heading 10° less than indicated in d., above. Watch the annunciator. A cross (+) should appear. Observe the indicator long enough to detect that the system is slaving upward.	Figure 1-2 Para. 2-11 Item No. 22
23	Panel lights	Check to see that the indicator panel lights are on when the INST LTS control is set away from the DIM position.	

Item No.	Item to be inspected	Procedure	Reference
24	Latitude knob	Set the latitude knob and north-south switch on directional gyro for test site latitude.	
25	DIR GYRO-MAG switch (drift rate test)	*a.* Set the DIR GYRO-MAG switch to the DIR GYRO (up) position. Record the heading indication. Wait a minimum of 30 minutes, record the heading indication and the elapsed time. *b.* Calculate the gyro drift in degrees per hour by multiplying the difference in the two heading indications by 60/t, where t equals time in minutes between recorded headings. The maximum acceptable gyro drift shall be 5½°. *c.* Remove power from the system and note that the OFF power warning flag appears in the face of the indicator.	
26	Gyromagnetic compass set (compass rose procedure)	*a.* The following precaution shall be observed while on the compass rose. All magnetic material in the aircraft shall be secured in the position occupied in normal flight. All controls and levers shall be placed in their normal positions. All observers or participants who are near the remote transmitter during swinging shall have no magnetic material on their persons. This includes tools, pocket knives, mechanical pencil, metal watchbands, eyeglasses with magnetic frames, badges, etc. *b.* Rotate the aircraft about the compass rose assuring that the indicator on the heading-radio bearing indicator coincides with the compass rose within ±3°.	
		POWER ON, AUTOMATIC DIRECTION FINDER FACILITY (AN/ARN-89(B))	
27	ADF circuit breaker	Verify that the ADF circuit breaker is in.	Figure 2-1 Para. 2-11 Item No. 27
27.1	RMI BRG PNTR switch	Position RMI BRG PNTR switch to ADF.	Figure 1-2
28	OFF-COMP-ANT-LOOP mode selector (located on the adf control panel.	Select the ANT position.	

Item No.	Item to be inspected	Procedure	References
29	CW-VOICE-TEST switch	Set to the VOICE position.	
30	AUDIO control Receiver select switch (located on the audio control panel).	Turn to midrange. Set NAV to the up position, all others to the down position.	
31	VOL control	Turn to midrange.	
32	OFF-COMP-ANT-LOOP mode selector. (All further switches and controls referred to will be located on the adf control panel.)	*a*. Select the ANT position and allow a few minutes for warmup. *b*. Turn the KILOCYCLES control knobs to frequencies for three stations located from 10 to 100 miles from the aircraft. Check for interference, using the aircraft equipment. Select COMP and LOOP, checking for interference in each mode.	Figure 2-13 Para. 2-11 Item No. 32
33	Sense antenna	*a*. Select the LOOP position on the OFF-COMP-ANT-LOOP switch. Turn to one of the stations used in sequence 22 b. *b*. Adjust the LOOP L-R control to obtain a maximum indication on the TUNE meter. *c*. Adjust the AUDIO control to obtain a mid-scale indication on the TURN meter. *d*. Repeat b. and c. above until the sharpest peak is obtained. *e*. Adjust the AUDIO control to a TUNE meter setting three divisions from the bottom of the scale. *f*. Select the ANT position on the OFF-COMP-ANT-LOOP switch. The TUNE meter should read approximately three divisions from the bottom of the scale.	
34	LOOP-L-R switch	*a*. With the OFF-COMP-ANT-LOOP switch set to the LOOP position, rotate the LOOP L-R switch to the extreme right position. The heading-radio bearing indicator should rotate clockwise. Release the LOOP L-R switch, it should return to the	

Item No.	Item to be inspected	Procedure	References
34 (Cont.)		midposition and the heading-radio bearing indicator should stop rotating	
		b. Rotate LOOP L-R switch to the extreme left position, The heading-radio bearing indicator should rotate counterclockwise. Release the LOOP L-R switch. It should return to the midposition and the heading-radio bearing indicator should stop rotating.	
		c. Select either the right or left position on the LOOP L-R switch. Observe that two nulls (180±2 degrees apart) of the audible signal (or of tuning meter deflection), can be detected as the bearing indicator rotates through 360°.	
		d. Set the LOOP L-R switch to rotate the heading-radio bearing indicator 90° from the selected station bearing	
		e. Set the CW-VOICE-TEST toggle switch in the CW position, and check for a beat frequency oscillator (BFO) tone in the audio system. Rotate the KILOCYCLES control knobs through the selected station frequency. The BFO tone should vary.	
		f. Return the CW-VOICE TEST switch to VOICE position.	
35	OFF-COMP-ANT-LOOP switch (ANT mode)	*a.* Set the OFF-COMP-ANT-LOOP to the ANT position. Turn the AUDIO control to check for smoothness of operation.	
		b. Set the CW-VOICE-TEST toggle switch to the CW position, and check for a BFO tone in the audio system. Rotate the KILOCYCLES control knobs through the selected station frequency. The BFO tone should vary.	
		c. Return the CW-VOICE-TEST switch to the VOICE position.	
36	OFF-COMP-ANT-LOOP switch (COMP mode)	set the OFF-COMP-ANT-LOOP switch to the COMP position. Rotate the KILOCYCLES control knobs to several stations, observing that the heading-radio bearing indicator exhibits a bearing suitable for the station received.	

Item No.	Item to be inspected	Procedure	References
36 (Cont.)		**NOTE** For accurate bearing, compass must be on and synchronized.	
		NOTE With all connections made and secured, perform procedures given below with the helicopter on the ground and external primary *power* applied.	
37	ON HELICOPTER TUNING PROCEDURE	*a.* Note the frequency of a local am or cw radio station.	
		b. Set the control unit CW-VOICE TEST switch to CW or VOICE, as applicable. Set COMP-ANT-LOOP selector switch on the control unit to COMP.	
		c. With the coarse and fine tune controls, set the KILOCYCLES dial to the frequency of the local radio station.	
		d. Adjust the AUDIO control for a reading that is below 3 divisions on the TUNE meter.	
		e. Repeat the procedure of d. and e. above until a sharp peak in reading is obtained.	
		f. Adjust the AUDIO control for a comfortable level.	
		g. The bearing pointer should indicate station bearing.	
		POWER-ON, VOR FACILITY (AN/ARN-123)	
38	CONUS NAV circuit breakers	Verify that CONUS NAV circuit breakers are in.	Figure 2-1 Para. 2-11 Item No. 38
39	RMI BRG PTR switch	Position RMI BRG PTR switch to VOR.	Figure 1-2
40	VOR/ILS control	Rotate NAV VOL control clockwise from OFF position.	Figure 2-14

Item No.	Item to be inspected	Procedure	References
41	VOR/Signal generator	Position VOR signal generator near helicopter, connect suitable antenna, energize generator, and set to radiate a zero degree VOR signal on 108.00 MHz,	
42	VOR/ILS control HRBI, and CDI	*a* Tune VOR/ILS control to 108.00 MHz. Verify that NAV flag on CDI retracts. *b.* Position CDI OBS knob to 315 degrees, and energize VOR/MB TEST switch on VOR/ILS control. *c.* Check that signal adequacy flag remains out of view, that course deviation bar is approximately centered (within the first deviation dot), that the ambiguity indicator displays TO, and that the bearing pointer on the heading-radio bearing indicator indicates 315±5 degrees. *d* Release VOR/MB TEST switch. **NOTE** Marker beacon light will flash and a tone will be audible while the VOR/MB TEST switch is energized. *e.* Adjust OBS knob until course deviation bar centers. Check that COURSE indication and bearing pointer read within ±5 degrees of the selected bearing of the signal generator and within 3 degrees of each other, and the ambiguity indicator displays TO. *f.* Repeat step *e.* for VOR signal generator bearings of 45, 90, 135, 180, 270, and 315 degrees. *g.* Rotate OBS knob through 360 degrees and check for proper TO/FROM indications. *h.* Rotate OBS knob for full scale left and right course deviations on CDI. Verify that course indications read 10±2 degrees from center course (0 degrees). *i.* Adjust VOR signal generator for an audio modulated signal. With appropriate mixer switches on, monitor headset audio for a tone and determine that rotating the NAV VOL control on the VOR/ILS control will vary the audio level. Leave the volume control at a comfortable listening level.	Para. 2-11 Item No. 42
43	VOR Signal genarator	Select a frequency of 117.90 MHz and a bearing of O degrees on the VOR signal generator.	
44	VOR/ILS control	Select a frequency of 117.90 MHz on the VOR/ILS control.	Figure 2-14
45	CDI	Adjust the OBS knob on the CDI until the course deviation bar is centered. With the deviation bar centered, and the ambiguity indicator indicating TO, verify that the bearing pointer is also indicating a bearing of approximately 0 degrees.	Figure 1-2 Para 2-11 Item No. 46
46	VOR Signal generator	Set VOR signal generator for localizer operation and tune to 108.10 MHz.	
47	VOR/ILS control	Set to 108.10 MHz.	Figure 2-14
48	VOR Signal generator, CDI	*a.* If necessary, increase VOR signal generator output level until NAV flagon the CDI is out of view. **NOTE** The course pointer on the HRBI must be pointing towards top of the indicator for proper L/R localizer indications. *b.* Adjust VOR signal generator for right deflection (90 MHz). Observe that the course deviation bar on the CDI is deflected to the right. *c.* Adjust VOR signal generator for left deviation (150 MHz). Observe that the course deviation bar on the CDI ia deflected to the left.	Para 2-11 Item No. 48
49	VOR Signal generator	Set VOR signal generator for glideslope operation and tune to 334.7 MHz.	
50	VOR/ILS control	set to 108.10 MHz.	Figure 2-14
51	VOR Signal generator, CDI	*a.* If necessary, increase VOR signal generator output level until GS flag on CDI is out of view. *b.* Adjust VOR signal generator for a centered glideslope output. Observe that the vertical deviation pointer on the CD I is centered.	Para 2-11 Item No. 51

Item No.	Item to be inspected	Procedure	References
52	MB signal generator, VOR/ILS control marker beacon lights, and audio.	*a.* Set the MB signal generator for outer (400 Hz) marker operation. Observe that the marker beacon light illuminates and a 400 Hz tone is audible in the pilot and copilot headsets. *b.* Actuate the MB SENS HI LO switch on the VOR/ILS control and determine that HI position results in more sensitivity than the LO position. *c.* Set the MB signal generator for middle (1300 Hz) marker operation. Observe that the marker beacon illuminates and a 1300 Hz tone is audible in the pilot and copilot headsets.	Para 2-11 Item No. 52
	POWER-ON, RADAR ALTIMETER FACILITY (AN/APN-209)		
63	Radar altimeter circuit breakers	Verify that the RDR ALT circuit breaker is in	Figure 2-1 Para. 2-11 Item No. 53
64	Radar altitude indicator	*a.* Turn LO SET control knob clockwise from OFF position *b.* Set HI warning bug to 800 feet. c. After approximately two minutes warmup observe OFF flag disappears, pointer indicares 0±5 feet, digital display reads -0, or 0 to 3 feet. *d.* Turn LO SET control clockwise until LO warning bug reads between 10 and 60 foot. Verify that LO warning light illuminates. *e.* Push and hold HI SET control knob to actuate PUSH TO TEST condition. *f.* Verify that pointer indicates 1000 ±175 feet, digital display reads 1000±100 feet. LO warning light is extinguished, and HI warning light is illuminated. g. Release HI SET control knob. h. Verify that pointer indicates 0 ±5 feet, digital display reads -0 or 0 to 3 feet, LO warning light illuminates, and HI warning light extinguishes.	Figure 1-2 Para. 2-11 Item No. 54

Item No.	Item to be inspected	Procedure	References

POWER-ON, RADAR WARNING FACILITY (AN/APR-39)

NOTE

If AN/APR-39A(V)1 is installed refer to TM 11-5841-294-12 for complete Operational and Troubleshooting procedures.

55	Radar warning circuit breaker	Verify RDR WRN circuit breaker is in.	Figure 2-1 Para. 2-11 Item No. 55
56	Radar warning control panel missile alert audio	Position PWR switch to ON and adjust AUDIO as desired.	Figure 2-16
		NOTE This test is performed in two modes; DISCRM ON and DISCRM OFF.	
57	Radar warning control panel, and radar warning indicator	Depress SELF TEST switch. Verify that within approximately 3 seconds the indicator displays a forward (0°) or aft (180°) strobe and a 1.2 KHz audio tone is heard. Check that in approximately 3 seconds later the opposite strobe appears and the audio tone changes to 2.4 KHz. **NOTE** In the DISCRM OFF mode both strobes will appear simultaneously.	Figure 2-16 and 1-2 Para. 2-11 Item No. 57

For additional operational checks using a signal simulator (SM-674 ( ) UPM) refer to the following steps and charts.

58 Position switches as indicated below and point the radar simulator into the aft antenna group at a relative bearing of 180” aft. Squeeze the trigger switch and check for specified indication.

AN/APR-39 CONTROL	SIGNAL SIMULATOR CONTROLS			
DISCRM SWITCH	TRK/SCAN SWITCH	PW SWITCH	PRF SWITCH	AN/APR-39 INDICATION
OFF	TRK	WIDE	LO	A strobe at approximatey 180° and PRI tone

Item No.	Item to be inspected	Procedure	References

58 (Cont.)

NOTE

If no indication are obtained in item No. 58 approach the antennas until close enough to obtain indication. The radar simulator may have to be within 3 feet (approximately).

59 Position switches as indicated below and point the radar simulator into the forward antenna group at a relative bearing of 0°. Squeeze the trigger switch and check for specified indications.

AN/APR-39 CONTROL	RADAR SIGNAL SIMULATOR CONTROLS			
DISCRM SWITCH	TRK/SCAN SWITCH	PW SWITCH	PRF SWITCH	AN/APR-39 INDICATIONS
a. O N	TRK	WIDE	LO	No display
b. O N	TRK	NAR	LO	No display
c. O N	TRK	NAR	HI	A strobe at approximately 0° and a PRI tone with frequency higher than in item No. 58.
d. O N	SCAN	NAR	HI	A flashing strobe at approximately 0°, MA lamp flashes, warning tone.
e. O N	SCAN	NAR	HI	A flashing strobe and PRI tone.
f. O N	TRK	NAR	HI	After few seconds a flashing strobe, MA lamp flashes and audio warning tone.
g. O F F	GDNC	NAR	HI	MA lamp flashes and warning tone is heard.

NOTE

If no indications are obtained in item No. 69, approach the antennas until close enough to obtain indication. The radar simulator may have to be within 3 feet (approximately). If no missile alert audio or flashing lamp, be sure the line of sight is clear between the simulator and both the blade antenna and both spiral antennas.

Item No.	Item to be inspected	Procedure	References
		POWER-ON, IDENTIFICATION FACILITY (AN/APX-100)	
60	IFF circuit breaker	Verify IFF circuit breaker is in.	Figure 2-1 Para. 2-11 Item No. 60
61	Receiver-transmitter	*a.* Position MASTER switch to STBY (allow 2 minutes for warmup).	Figure 2-19 Para. 2-11 Item No. 61
		b. Select assigned MODE 1 and MODE 3/A codes by depressing and releasing pushbutton for each switch until desired number is visible.	
		c. Operate PRESS-TO-TEST feature and observe that lamp indicators illuminate.	
		d. Position M-1 switch to TEST and observe that no indicators illuminate. Return switch to ON.	
		e. Repeat step d. for M-2, M-3/A, and M-C mode switches.	
		f. Position MASTER switch to NORM.	
		g. Position MODE 4 rotary switch to A and set a code in the external computer.	
		h. Position MODE 4 AUDIO/OUT/LIGHT switch to OUT.	
		i. Position MODE 4 TEST/ON/OUT switch to TEST and observe that TEST GO indicator illuminates and that MODE 4 REPLY indicator does not illuminate. Return switch to ON.	
		j. Position ANT switch to BOT.	
		k. Repeat steps d. and e., except observe that TEST GO indicator illuminates.	
		l. Position ANT switch to TOP and repeat step k.	
		m. Position ANT switch to DIV and repeat step k.	

Item No.	Item to be inspected	Procedure	References
61 (Cont.)		**WARNING** Do not make checks with the MASTER switch in EMER or with M-3/A codes 7600 or 7700 without first obtaining authorization from the interrogating station(s). *n.* Obtain cooperation of interrogating station to exercise TEST mode, then execute steps o, p, and q. *o.* Position RAD TEST/MON switch to RAD TEST and verify that TEST MOD reply was received. *p.* Return RAD TEST/MON switch to ON. *q.* Position MASTER switch to OFF.	
		POWER-ON, PROXIMITY WARNING SYSTEM (YG-1054)	
62	PROX WARN circuit breaker	Verify PROX WARN circuit breaker is in.	Figure 2-1 Para. 2-11 Item No. 62
63	Receiver transponder	Set POWER switch ON and wait at least one minute.	Para. 2-11 Item No. 63
		NOTE Types of ground operational tests are possible; a transponder ground test and a confidence test. The transponder ground system checkout uses a remote ground transponder. The confidence test is a go/no-go type check (self-test) that is normally performed in flight, which can also be performed on the ground. Both types of tests are covered.	
64	Receiver-transponder	For the confidence test, place the TRANSPONDER GND TEST/CONFIDENCE TEST switch to CONFIDENCE TEST. The receiver/transponder ABOVE, EQUAL and BELOW indicator lamps should alternately flash on and off and a pulsing audio alarm should be heard in the pilot and copilot headsets.	Para. 2-11 Item No. 64
65	Receiver-transponder	*a.* For the transponder ground test, place the Ground Transponder tester UG233-0AA01	Para. 2-11 Item No. 65

Item No.	Item to be inspected	Procedure	References
65 (Cont.)		within line of sight of the aircraft Distance up to 3000 feet may be used. Set the power switch ON. *b.* In the aircraft, set the TRANSPONDER GND TEST/CONFIDENCE TEST switch to TRANSPONDER GND TEST position. If the Proximity Warning system is operating properly, the BELOW EQUAL and ABOVE indicator lamps will flash in cycle and the audio alarm should be heard in the pilot and copilot headsets. The ground transponder simulates another helicopter that cycles from 180 feet above to 180 feet below ground level once every 16 seconds. *c.* Set the POWER switch OFF. **NOTE** The signal from the Ground Transponder will be decoded only by those receiver-transponders which are in the transponder ground test condition.	
		OPERATIONAL CHECK, ARMAMENT FACILITY CS	
65.1	Air-To-Air Stinger (ATAS) Missile System CS.	Refer to TM 55-1520-228-23 for ATAS missile system operational check.	
		POWER-ON, AC INVERTER-STATIC (PP-6376 A/A)	
66	INV PWR and AC FAIL circuit breakers	Verify INV PWR and AC FAIL circuit breakers are in; inverter switch in OFF position. **NOTE** AC POWER caution light should illuminate.	Figure 2-1 Para. 2-11 Item No. 66
67	Inverter switch	*a.* Place inverter switch to INV position. **NOTE** AC POWER caution light should extinguish.	Para. 2-11 Item No. 67

Item No.	Item to be inspected	Procedure	References
		b. Place inverter switch to OFF position. **NOTE** AC Power caution light should illuminate.	
68	Helicopter ac power	Set inverter switch to OFF to de-energize the helicopter ac electrical circuits.	Figure 2-1
69	Auxiliary power unit	Disconnect auxiliary power unit.	

2-8. General Cleaning and Repainting Instructions

Inspect all items of each configuration for dirt and corrosion. The surfaces should be free of dirt, grease, lint, and fungus.

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

WARNING

Adequate ventilation should be provided while using TRICHLOROTRIFLUORO-ETHANE. Prolonged breathing of vapor should be avoided. The solvent should not be used near heat or open flame; the products of decomposition are toxic and irritating. Since TRICHLOROTRI-FLUOROETHANE dissolves natural oils, prolonged contact with the skin should be avoided. When necessary, use gloves which the solvent cannot penetrate. If the solvent is taken internally, consult a physician immediately.

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

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

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

CAUTION

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

2-9. Battery Inspection and Servicing

Inspection and servicing procedures for nickel-cadmium batteries are contained in TM 11-6140-203-16-2, Operator's Organizational, field and depot maintenance manual including repair parts and special tools list: Aircraft nickel-cadmium batteries and TM 55-1520-228-23.

NOTE

Nickel-cadmium batteries shall not be serviced while installed in the helicopter. The battery shall be removed and serviced every 100 hours by authorized battery shop personnel only. Refer to TM 11-6140-203-15-2.

Section III. TROUBLESHOOTING

2-10. General Troubleshooting Information

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

starting with item No. 1 in paragraph d. of the 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 sequence number and turn to the corresponding sequence number in the troubleshooting chart (paragraph 2-11). If the corrective measures indicated do not result in correction of the trouble, higher category maintenance is required. Paragraphs 2-13 through 2-67 contain step-by-step instructions for performing equipment removal and replacement.

2-11. Troubleshooting Chart.

NOTE

In the following steps refer to paragraph C-2. for index to wiring diagrams to continuity check wiring.

Item No.	Symptom	Probable trouble	Correction
		INTERCOMMUNICATION AND AUDIO FACILITY	
1	No headset noise at one station (pilot or co-pilot)	*a.* Circuit breaker open or defective.	*a.* Check and replace circuit breaker.
		b. Defective headset.	*b.* Replace headset/microphone.
		c. Defective ICS control panel.	c. Replace ICS control panel (para. 2-15).
2	No sidetone or interphone signals heard when pilot cyclic stick ICS switch is operated.	*a.* Defective pilot headset/microphone or ICS control panel.	*a.* Position pilot HOT MIKE switch up. If no sidetone or interphone signals heard replace pilot headset/microphone. If audio signals are not heard after replacing pilot headset/microphone replace pilot ICS control panel (para. 2-15). If audio signals are heard proceed to next step.
		b. Defective ICS switch.	*b.* If sidetone or interphone signals are heard when HOT MIKE switch is operated, replace pilot cyclic stick ICS switch (para. 2-18).
3	No sidetone or interphone signals heard when copilot cyclic stick ICS switch is operated.	*a.* Defective copilot headset/microphone or ICS control panel.	*a.* Actuate copilot foot switch and/or position copilot HOT MIKE switch up. If no sidetone or interphone signals heard replace copilot headset/microphone. If audio signals are not heard after replacing copilot headset/microphone replace copilot ICS control panel (para. 2-15). If audio signals are heard proceed to next step.

Item No.	Symptom	Probable trouble	Correction
3 (Cont.)		*b.* Defective ICS switch.	*b.* If sidetone or interphone signals are heard when foot switch or HOT MIKE switch is operated, replace copilot cyclic stick ICS switch (para. 2-18).
4	No sidetone or interphone signals heard when crew pushbutton switch is operated.	*a.* Defective crew headset/microphone or ICS control panel.	*a.* Position HOT MIKE switch up. If no sidetone or interphone signals heard, replace crew headset/microphone. If audio signals are not heard after replacing crew headset/microphone replace crew ICS control panel (para. 2-15). If audio signals are heard proceed to next step.
		b. Defective switch.	*b.* If sidetone or interphone signals are heard when HOT MIKE switch is operated, replace crew pushbutton switch.
5	No sidetone or interphone signals heard when copilot foot switch is operated. (Normal performance when using cyclic switch.)	Defective foot switch.	Replace foot switch (para. 2-17).
6	HOT MIKE switch in on (up) position, no sidetone or interphone signals are heard.	Defective HOT MIKE switch.	Replace defective ICS control panel (para. 2-15).

LIAISON — FM NO. 1 AND FM NO. 2 (AN/ARC-114)

NOTE

The troubleshooting procedure for FM No. 2 is identical to FM No. 1 except the homing function of FM No. 2 is not used No receiver audio could be caused by a defective Audio ThreshoId System, 206-075-697.

7	Circuit breaker will not *stay clod* (in).	*a.* Defective circuit breaker.	*a.* Check and replace circuit breaker.
		b. Defective radio set.	*b.* Replace radio set (para. 2-19).
9	*a.* No tone heard in headset when RCVR TEST pushbutton is depressed.	Defective radio set.	Replace radio set (para. 2-19).

Item No.	Symptom	Probable trouble	Correction
9 (Cont.)	*b.* No sidetone heard during transmission, or unsatisfactory two-way communications,	*a.* Defective radio set.	*a.* Replace radio set (para. 2-19).
		b. Defective coax cable.	*b.* Check and repair coax cable.
		c. Defective antenna.	c. Replace antenna (para. 2-23).
10	With function selector switch in T/R GUARD position, guard channel signal is not audible. NOTE Guard channel reception is not affected by the settings of the megahertz or kilohertz control. If guard channel sIgnals are heard while receiving signals on a main receiver communication channel, detune the main receiver by rotating the megahertz control to an open channel, This will permit only the priority guard channel signal to be monitored.	Defective radio set.	Replace radio set (para. 2-19).
11	With function selector switch in HOMING position, no indication on homing indicator when receiving rf carrier .	a. Defective FM homing antenna.	*a.* Replace FM homing antenna (para. 2-24).
		b. Defective heading-radio bearing indicator.	*b.* Replace indicator (para. 2-32).
		c. Defective radio set,	c. Replace radio set (para. 2-20).
	VHF COMMAND (AN/ARC-l 15)		
12	Circuit breaker will not stay closed (in).	a. Defective circuit breaker.	*a.* Check and replace circuit breaker.
		b. Defective radio set.	*b.* Replace radio set (para. 2-25).
14	a. *No* tone heard in headset when RCVR TEST pushbutton is depressed.	*a.* Defective fuse F1.	*a.* Replace fuse (fig. 2-1).
		b. Defective radio set.	*b.* Replace radio set (para. 2-25).

Item No.	Symptom	Probable trouble	Correction
14 (cont.)	*b.* No sidetone heard during transmission or unsatisfactory two-way communications.	*a.* Defective fuse.	*a.* Replace fuse (fig. 2-1).
		b. Defective radio set.	*b.* Replace radio set (para. 2-25)
		c. Defective coax cable.	*c.* Check and repair coax cable.
		d. Defective antenna.	*d.* Replace antenna (para. 2-23).
15	With function selector switch in T/R GUARD position, guard channel signal is not audible. **NOTE** Guard channel reception is not affected by the settings of the megahertz or kilohertz control. If guard channel signals are heard while receiving signals on a main receiver communication channel, detune the main receiver by rotating the megahertz control to an open channel. This will permit only the priority guard channel signal to be monitored.	Defective radio set.	Replace radio set (para. 2-25).
		UHF COMMAND (AN/ARC-l 16)	
16	Circuit breaker will not stay closed (in).	*a.* Defective circuit breaker.	*a.* Check and replace circuit breaker.
		b. Defective radio set.	*b.* Replace radio set (para. 2-26).
18	*a.* No tone heard in headset when RCVR TEST pushbutton is depressed.	*a.* Defective fuse,	*a.* Replace fuse (fig. 2-l).
		b. Defective radio set.	*b.* Replace radio set (para. 2-26).
	b. No sidetone heard during transmission.	*a.* Defective fuse.	*a.* Replace fuse (fig. 2-1).
		b. Defective radio set.	*b.* Replace radio set (para. 2-26).
		c. Defective coax cable.	*c.* Check and repair coax cable.
		d. Defective antenna.	*d.* Replace antenna (para. 2-27).

Item No.	Symptom	Probable trouble	Correction
19	With function selector switch in T/R GUARD position, guard channel signal is not audible.	*a.* Loose or dirty connector on radio act.	*a.* Check tightness and cleanliness of connector. Tighten or clean as necessary.
		b. Defective radio set.	*b.* Replace radio set (para. 2-26).
		GYROMAGNETIC COMPASS (AN/ASN-43)	
20	Circuit breaker will not stay closed (in).	Defective circuit breaker.	Check and replace circuit breaker.
22	*a.* Annunciator will not move.	*a.* Defective directional gyro.	*a.* Replace directional gyro (para. 2-31).
		b. Defective heading-radio bearing indicator.	*b.* Replace heading-radio bearing indicator (para. 2-32).
		c. Defective compass transmitter.	*c.* Refer to next higher category of maintenance for replacement.
		d. Slaving switch in DC position or defective.	*d.* Check switch position and continuity.
	b. Scale dial does not move, but annunciator does move.	*a.* Defective heading-radio bearing indicator.	*a.* Replace heading-radio bearing indicator (para. 2-32).
		b. Defective directional gyro	*b.* Replace directional gyro (para. 2-31).
	c. Annunciator and scale dial move, but final heading shown on scale dial is incorrect.	*a.* System not synchronized.	*a.* Turn synchronizing knob clockwise until scale dial changes by 180° and until annunciator is centered (nulls).
		b. Defective directional gyro	*b.* Replace directional gyro (para. 2-31).
		c. Defective heading-radio bearing indicator.	*c*. Replace heading-radio bearing indicator (para. 2-32).
		d. Defective compass transmitter.	*d.* Refer to higher category of maintenance for replacement,
		e. Compass requires alignment.	*e*. Calibration of system on compass rose by higher maintenance personnel required.
	d. Scale dial does not return to same indication ±1°.	*a.* Defective directional gyro.	*a.* Replace directional gyro (para. 2-31).

Item No.	Symptom	Probable trouble	Correction
22 (Cont.)		*b.* Defective heading-radio bearing indicator.	*b.* Replace heading-radio bearing indicator (para. 2-32).
		c. Defective compass transmitter.	*c.* Refer to higher category of maintenance for replacement.
	e. Compass set slaves at wrong rate or not at all.	*a.* Defective directional gyro.	*a.* Replace directional gyro (para. 2-31).
		b. Defective heading-radio bearing indicator.	*b.* Replace heading-radio bearing indicator (para. 2-32).
		c. Defective compass transmitter.	*c.* Refer to higher category of maintenance for replacement.
	AUTOMATIC DIRECTION FINDER FACILITY (AN/ARN-89B)		
27	Circuit breaker will not stay closed.	*a.* Defective circuit breaker.	*a.* Check and replace circuit breaker.
		b. Defective ADF receiver.	*b.* Replace ADF receiver (para. 2-34).
		c. Defective ADF control.	*c.* Replace ADF control (para. 2-35).
32	*a.* No TUNE meter indication or audio output signal in the ANT mode.	*a.* Defective impedance matching amplifier.	*a.* Replace impedance matching amplifier (para. 2-36).
		b. Defective control unit.	*b.* Replace control unit (para. 2-35).
		c. Defective receiver,	*c.* Replace receiver (para. 2-34).
		d. Defective antenna cable.	*d.* Replace cable.
		e. Defective cabling.	*e.* Check continuity. Refer to higher category of maintenance for replacement.
		f. Defective sense antenna.	*f.* Replace sense antenna.
		g. Verify RMI BRG PNTR twitch positioned to ADF.	*g.* If RMI BRG PNTR switch is in ADF position, replace witch.
	b. Unable to obtain correct compass heading in COMP mode.	a. Defective receiver.	*a.* Replace receiver (para. 2-34).
		b. Defective control unit.	*b.* Replace control unit (para. 2-35).

Item No.	Symptom	Probable trouble	Correction
32 (Cont.)		*c.* Defective loop antenna or coax cable.	*c.* Replace antenna or coax cable.
	c. No TUNE meter indication or audio output signal in the LOOP MODE.	*a.* Defective receiver.	*a.* Replace receiver (para. 2-35).
		b. Defective control unit.	*b.* Replace control unit (para. 2-35).
		c. Defective loop antenna.	*c.* Replace loop antenna (para. 2-37).
		d. Defective loop antenna cable(s).	*d.* Replace loop antenna cable(s).
		e. Defective cabling.	*e.* Check continuity. Refer to higher category of maintenance for replacement.
		VOR/ILS (AN/ARN-123)	
38	*a.* DC circuit breaker will not stay closed.	*a.* Defective circuit breaker.	*a.* Check and replace circuit breaker.
		b. Defective VOR/ILS control or receiver.	*b.* Replace VOR/ILS control or receiver (para. 2-38).
	b. AC circuit breaker will not stay closed.	*a.* Defective circuit breaker.	*a.* Check and replace circuit breaker.
		b. Defective VOR receiver.	*b.* Replace VOR receiver (para. 2-40).
		c. Defective heading-radio bearing indicator.	*c.* Replace heading-radio bearing indicator (para. 2-32).
		d. Verify RMI BRG PNTR switch positioned to VOR.	*d.* If RMI BRG PNTR switch is in VOR position, replace switch.
42	*a.* Heading-radio bearing and course indicators operate improperly.	*a.* Defective VOR/ILS control.	*a.* Replace VOR/ILS control (para. 2-38).
		b. Defective VOR receiver.	*b.* Replace VOR receiver (para. 2-40).
		c. Defective antenna.	*c.* Replace antenna (para. 2-42).
	b. Heading-radio bearing or course indicator operates improperly.	Defective indicator.	Replace indicator (para. 2-32 or 2-39).

Item No.	Symptom	Probable trouble	Connection
45	OBS knob inoperative	Defective indicator.	Replace indicator (para. 2-39).
48	Course indicator operates improperly.	*a.* Replace VOR/ILS control (para. 2-38).	*a.* Defective VOR/ILS control.
		b. Defective VOR receiver.	*b.* Replace VOR receiver (para. 2-40).
		c. Defective antenna.	*c.* Replace antenna (para. 2-43).
51	*a.* Course indicator operates improperly.	*a.* Defective VOR/ILS control.	*a.* Replace VOR/ILS control (para. 2-38).
		b. Defective VOR receiver.	*b.* Replace VOR receiver (para. 2-40).
		c. Defective glideslope antenna.	*c.* Replace glideslope antenna (para. 2-41).
	b. Course indicator operates improperly.	Defective indicator	Replace indicator (para. 2-32 or 2-39).
52	Marker beacon signal not heard in headset nor do lights for MARKER BEACON flash.	*a.* Defective VOR/ILS control.	*a.* Replace VOR/ILS control (para. 2-38).
		b. Defective MB receiver.	*b.* Replace VOR/ILS receiver (para. 2-40).
		c. Defective marker beacon antenna.	*c.* Replace marker beacon antenna (para. 2-43).
		RADAR ALTIMETER (AN/APN-209)	
53	Circuit breaker will not stay closed.	*a.* Defective circuit breaker.	*a.* Check and replace circuit breaker.
		b. Defective indicator.	*b.* Replace indicator (para. 2-44).
54	Indicator will not respond properly.	*a.* Defective indicator.	*a.* Replace indicator (para. 2-44).
		b. Defective antenna.	*b.* Replace antenna (para. 2-45).
		RADAR WARNING (AN/APR-39)	
55	Circuit breaker will not stay closed.	a. Defective circuit breaker.	*a.* Check and replace circuit breaker.
		b. Defective radar warning control panel.	*b.* Replace control panel (para. 2-46),
57	System fails to SELF TEST properly.	*a.* Defective radar warning control panel.	*a.* Replace control panel (para. 2-46).
		b. Defective azimuth indicator.	*b.* Replace indicator (para. 2-47).

Item No.	Symptom	Probable trouble	Correction
57 (Cont.)		*c.* Defective comparator.	*c.* Replace comparator (para. 2-48).
		d. Defective dual receiver.	*d.* Replace dual receiver (para. 2-49).
		IDENTIFICATION FACILITY (AN/APX-100(V))	
60	No output in any mode of operation	Circuit breaker open or defective.	Check and replace circuit breaker.
61	*a.* No output in any mode of operation.	*a.* MASTER switch *on* control panel set to OFF OR STBY.	*a.* Check MASTER control position. Place in LOW or NORM.
		b. Defective cable or loose connections.	*b.* Check cable and connections. Replace or tighten as applicable.
		c. Defective fuse in receiver-transmitter.	c. Check and replace fuse.
		d. Defective receiver-transmitter.	*d.* Replace receiver-transmitter (para. 2-52).
	b. Indication weak or intermittent in any or all modes of operation.	*a.* Power supply in receiver-transmitter abnormal.	*a.* Replace receiver-transmitter (para. 2-52).
		b. Receiver-transmitter coder operations abnormal.	*b.* Replace receiver-transmitter (para. 2-52.)
	c. Improper response from one mode. All others normal.	*a.* Applicable mode enable switch on control panel in OUT position.	*a.* Verify applicable mode enable switch is in ON position.
		b. Improper code setting in applicable mode switch.	*b.* Check for proper code setting.
		c. Defective receiver-transmitter.	*c.* Replace receiver-transmitter (para. 2-52).
	d. STATUS ANT light illuminates in the self-test mode.	*a.* Defective coaxial antenna cable connector.	*a.* Repair or replace connector.
		b. Defective receiver-transmitter.	*b.* Replace receiver-transmitter (para. 2-52).
	e. STATUS KIT light illuminates when Mode 4 is operated.	*a.* Defective transponder computer.	*a*. Replace transponder computer (para. 2-53).
		b. Defective receiver-transmitter.	*b*. Replace receiver-transmitter (para. 2-52).
		c. Defective wiring,	*c*. Repair wiring.

Item No.	Symptom	Probable trouble	Correction
61 (Cont.)	*f.* STATUS ALT light illuminates.	*a.* Defective altimeter encoder.	*a.* Replace altimeter encoder.
		b. Defective receiver-transmitter.	*b.* Replace receiver-transmitter (para. 2-52).
		c. Defective wiring.	*c.* Repair wiring.
		PROXIMITY WARNING SYSTEM (YG-1054)	
62	Circuit breaker will not stay closed.	*a.* Defective circuit breaker.	a. Check and replace circuit breaker.
		b. Defective receiver-transponder.	*b.* Replace receiver-transponder (para. 2-58).
63	Receiver-transponder power on lamp does not light.	Panel lamp loose in socket or defective.	Check panel lamp for proper seating and replace if necessary.
	NOTE The ABOVE, EQUAL, and BELOW lamps normally light and cycle one time when power is initially applied,		
64	Receiver-transponder ABOVE, EQUAL, and BELOW lamps do not light when CONFIDENCE TEST switch is ON.	*a.* Panel lamps defective, *b.* Receiver-transponder defective.	*a.* Replace panel lamps, *b.* Replace receiver-transponder (para. 2-58).
65	Receiver-transponder ABOVE, EQUAL, and BELOW Lamps do not cycle when TRANSPONDER GND TEST switch is ON using the Ground Transponder test set.	*a.* See item 64. *b.* Receiver-transponder defective. *c.* Ground transponder test set,	*a.* See item 64. *b.* Replace receiver-transponder (para. 2-58). *c.* Check ground transponder. Repair or replace as required,
		ARMAMENT FACILITY CS	
65.1	Air-To-Air Stinger (ATAS) Missile System CS.	Refer to TM 55-1520-228-23 for ATAS missile system troubleshooting.	

Item No.	Symptom	Probable trouble	Correction
		AC INVERTER-STATIC (P-6376A/A)	
66	Circuit breaker will not stay closed.	*a.* Defective circuit breaker.	*a.* Check and replace circuit breaker.
		b. Defective inverter.	*b.* Check and replace inverter.
		c. Defective AC FAIL relay.	*c.* Check and replace relay.
67	AC POWER caution light is illuminated.	*a.* Defective INV switch.	*a.* Check and replace INV switch.
		b. Defective AC FAIL relay.	*b.* Check and replace relay.
		c. Defective inverter.	*c.* Check and replace inverter.

LIAISON - FM NO.1 AND FM NO.2 (AN/ARC-201)

NOTE

The troubleshooting procedure for FM No.2 is identical to FM No. 1 except IFM and Homing function of FM No.2 is not used. No receiver audio could be caused by a defective Audio Threshold System (MD-1219/A).

68	Circuit breaker will not stay in.	*a.* Defective circuit breaker.	*a.* Replace circuit breaker.
		b. Defective radio.	*b.* Replace (para. 2-19).
69	No sidetone or poor two-way communication.	*a.* Defective radio	*a.* Replace.
		b. Defective coax cable	*b.* Repair coax cable.
		c. Defective IFM	*c.* Replace IFM.
		d. Defective antenna	*d.* Replace antenna.

NOTE

If IFM is not installed, IFM RF PWR selector on AN/ARC-201 radio must be in OFF position to have sidetone during transmission.

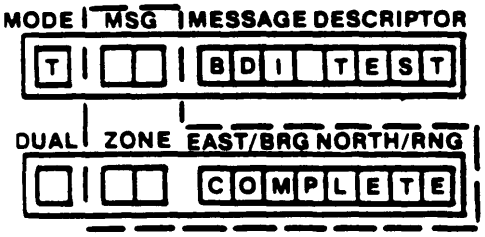
Item No.	Symptom	Probable trouble	Correction
70	Display reads:		
	a. FAIL 7	a. Defective wiring	a. Repair wire.
	b. FAIL 8	b. Defective radio.	b. Replace.
	c. FAIL 1	c. Defective radio.	c. Replace.
	d. FAIL 3	d. Defective radio.	d. Replace.
71	Receive audio and sidetone are good but transmitter output is not modulated.	a. KY-58 Z-AHP control indicator or Z-AHP Bypass assembly not installed.	a. Install KY-58 Z-AHP control indicator or Z-AHP Bypass assembly.
	NOTE Due to design of AN/ARC-201 interface wiring, Z-AHP control or Z-AHP Bypass assembly must be installed at all times for the FM system to function properly.		
72	With FUNCTION selector in HOM position no indication on homing indicator when receiving rf carrier.	a. Defective fm homing antenna.	a. Replace antenna.
		b. Defective bearing indicator.	b. Replace indicator.
		c. Defective radio.	c. Replace radio.

PLRS TEXT DELETED
PAGES 2-42.2 thru 2-42.6

NOTE

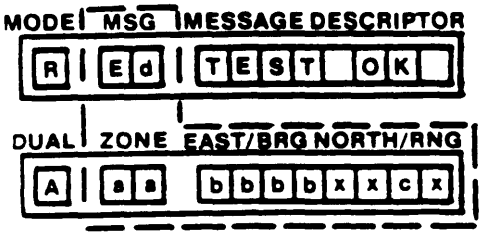
In the NORTH/RNG field is a decimal count that stare at 01 and increments one count each time the EAST/BRG field increments a 15-degree step.

(9) After a CDP displays 345 in EAST/BRG field and 24 in NORTH/RNG field. the CDP should display the following:



(10) Observe OUT-OF-NET indicator on the CDP. The OUT-OF-NET indicator should blink until radio set enters a PLRS net and MSG RCVD indicator lights to indicate that BUU test status message is available for display on the CDP.

(11) Press RCVD key on CDP. and CDP displays the BUU test status message as follows:



(a) aa in the ZONE field is AR for rotary wing or AF for fixed wing aircraft.

(b) bbbb in the EAST/BRG field represents the PLRS ID (BUU serial number) set in the BUU switches.

(c) c m the NORTH/RNG field rcprcscnts guard channel set in the BUU. Normally channel 4 unless otherwise directed.

(d) The XS in the NORTH/RNG field are of no value to the AVUM.

(e) Ed in the MSG field indicates what crypto variables are loaded as follows:

E1 = Current variable only

E2 = Current and next variable

E5 = Rekey and current variable

E7 = Rekey, current. and next variable

(12) If a PLRS net is available. the radio set should enter the net within 1 minute. After entering PLRS net. send message to request your position. Your position should be received within 1 minute.

b. PLRS Facility Troubleshooting Chain

Item No.	Symptom	Probable cause	Corrective measure
1	PLRS DC circuit fails to stay in.	*a.* Defective voltage regulator.	*a.* Replace voltage regulator.
		b. Defective control display panel.	*b.* Replace control display panel.

Item No.	Symptom	Probable cause	Corrective measure
		c. Defective receiver-transmitter.	c. Replace recet~er-transmitter,
		d. Defective wiring.	*d.* Repair wiring.
2	RELAY JCT circuit breaker fails to stay in.	*a.* Defective relay junction box.	*a.* Repair or replace relay junction box.
		b. Defective wiring.	*b.* Repair wiring.
3	POWER indicator on BUU or display on CDP do not light.	*a.* Defective BUU.	*a.* Replace BUU.
		b. Defective voltage regulator.	*b.* Replace voltage regulator.
		c. Defective CDP.	*c.* Replace CDP.
		d. Defective wlring.	*d.* Repair wiring.
4	MESSAGE DESCRIPTOR displays any of the following: FA FAULT BA FAULT OSC LIM	*a.* Defective BUU.	*a.* Replace BUU.
5	MESSAGE DESCRIPTOR displays “SDU ALRM”.	*a.* Defective BUU.	*a.* Reinitialize BUU.
			b. Replace BUU.
6	MESSAGE DESCRIPTOR displays “NO VAR”.	*a.* No crypto variable.	*a.* Reload crypto variables.
		b. Keep alive battery weak.	*b.* Replace keep alive battery.
			c. Replace BUU.
	MESSAGE DESCRIPTOR displays “T WARNG”.	*a.* No crypto variable.	*a.* Reload crypto variable.
		b. Defective BUU.	*b.* Replace BUU.
8	MESSAGE DESCRIPTOR displays “ANT FAIL”.	*a.* Connectors loose.	*a.* Check antenna cable connections.
		b. Defective antenna.	*b.* Replace antenna.
		c. Defective BUU.	*c.* Replace BUU.
		d. Defective cable.	*d.* Replace cable.
9	OUT OF NET indicator does not flash off and on.	*a.* Defective control display panel.	*a.* Replace control display panel.
		b. Defective receiver-transmitter.	b. Replace receiver-transmitter.

Item No.	Symptom	Probable cause	Corrective measure
10	Indicator panel assembly does not indicate message alert.	*a.* Defective relay junction box.	*a.* Replace control display panel.
		b. Defective receiver-transmitter.	*b.* Replace recewer-transmitter.
11	Bearing data not indicated on BHI.	*a.* Defective relay junction box.	*a.* Replace relay junction box.
		b. Defective indicator panel assembly.	*b.* Replace indicator panel assembly.
		c. Defective control display panel.	*c.* Replace control display panel.
		d. Defective BUU.	*d.* Replace BUU.
12	Heading data not indicated on VOR and control display panel.	*a.* Defective relay junction box.	*a.* Replace relay junction box.
		b. Defective compass.	*b.* Replace compass.
		c. Defective control display panel.	*c.* Replace control display panel.

Section IV. ELECTRONIC EQUIPMENT CONFIGURATION REPAIRS

2-12. General Repair Techniques. Repair of the helicopter electronic configuration at the organization 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 electronic connectors (paragraph 2-68). If the replacement of major component still does not correct the trouble. check the electronic equipment configuration wiring, and repair the wiring, or cabling as required [paragraph 2-69).

2-13. Electronic Equipment Component Removal and Replacement. The following procedures include information required for the removal and replacement of the major electronic equipment components installed in the helicopter configuration.

WARNING

Verify battery switch is in OFF position prior to removal and replacement of any electronic equipment components.

WARNING

When an item of avionics equipment is removed from the aircraft, and is not replaced, appropriate measures must be taken to secure the loose cable connectors to prevent the connectors from interfering with the aircraft control systems.

CAUTION

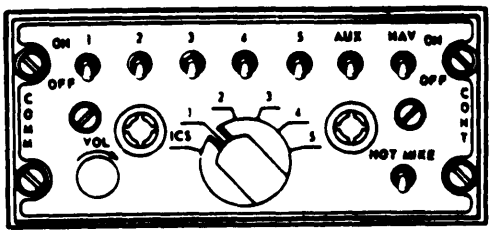
Ensure rf bonding straps or wires that are installed on units are reconnected after replacing units.

2-14. Coordinating Removal and Replacement. When removal or replacement of any component requires disassembly or reassembly of any portion of the airframe, coordinate removal or replacement with the organizational maintenance crew chief.

2-15. Removal and Replacement of Control, Communication System (ICS Control Panel). (Figure 2-2.)

a. Removal.

(1) Loosen spring-lock fasteners securing ICS control panel to bracket assembly.



EL4DC-6

Figure 2-2. ICS control panel

(2) Gain access to spring-lock fasteners on rear of ICS control panel electrical connector assembly and loosen spring lock fasteners.

b. Replacement.

(1) Place ICS control panel in a position to mate electrical connector assembly and fasten spring lock fasteners.

(2) Position and secure ICS control panel to bracket assembly with spring-lock fasteners.

2-16. Removal and Replacement of Audio Threshold System (fig. 2-3).

a. Removal.

(1) Disconnect electrical connectors from audio threshold.

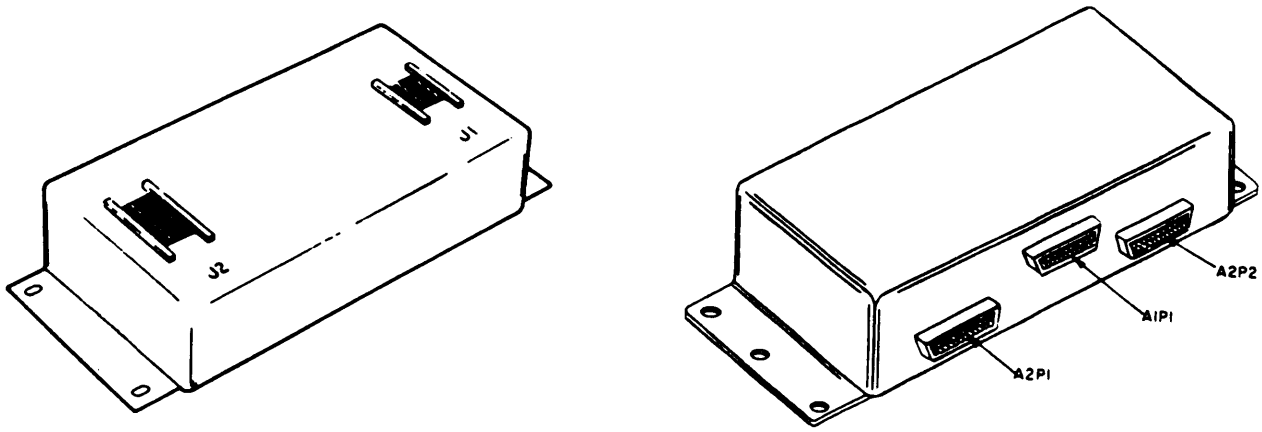


Figure 2-3. Audio Threshold System (MD-1101/A & MD-1219/A).

(2) Remove and retain mounting screws and washers.

b. Replacement.

(1) Position audio threshold into place and secure using retained screws and washers.

(2) Connect electrical connectors to audio threshold.

2-17. Removal and Replacement of Foot Switch.

a. Removal.

(1) Disconnect and tag wires attached to foot switch.

(2) Remove and retain screws and washers securing foot switch to cabin floor.

b. Replacement.

(1) Connect tagged wires to foot switch.

(2) Secure foot switch to cabin floor using retained screws and washers.

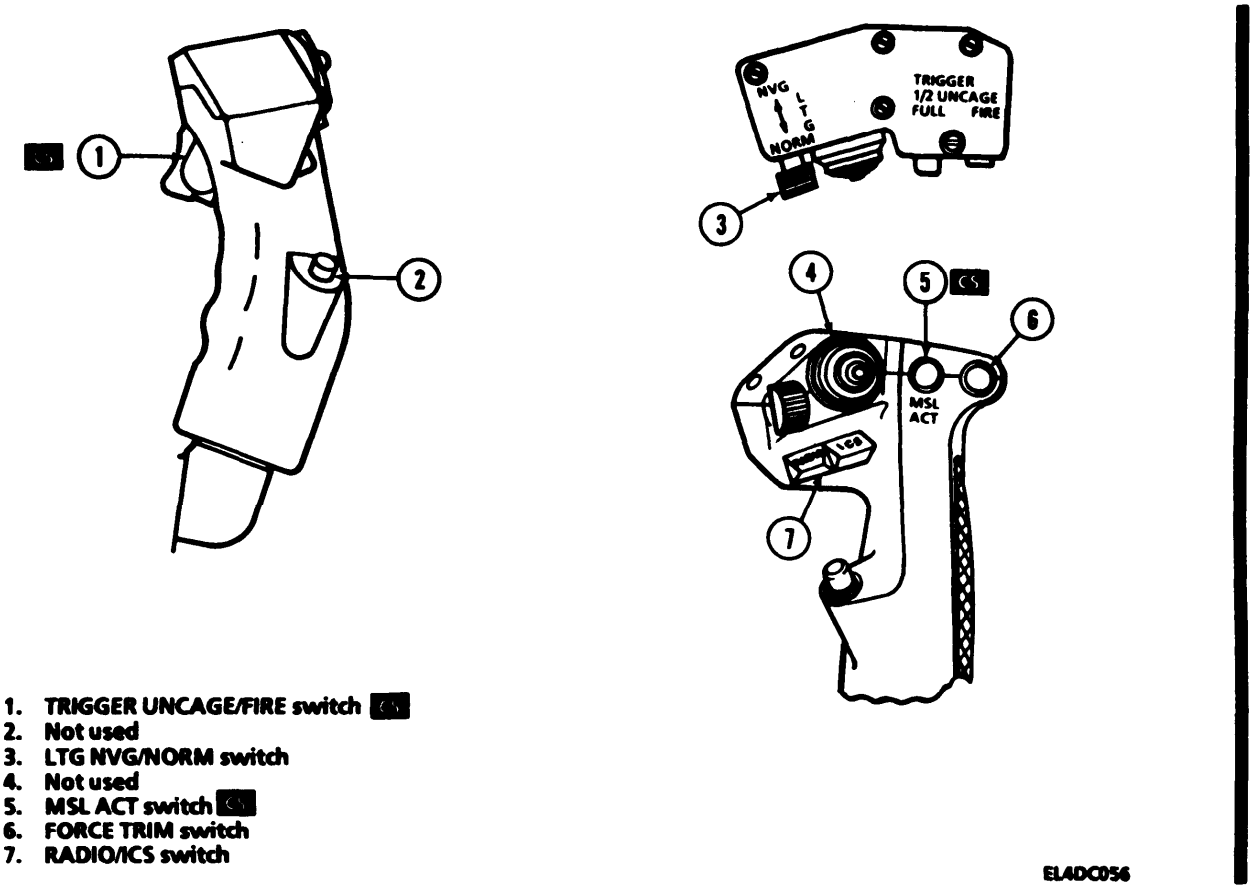
2-18. Removal and Replacement of RADIO ICS Rocker Switch. (Figure 2-4.)

a. Removal of Switch.

(1) Remove the two screws underneath the RADIO ICS rocker switch to release the RADIO ICS rocker switch.

(2) Loosen clamps at base of the stick, and carefully slide the RADIO ICS rocker switch out from the grip assembly.

(3) Carefully unsolder and tag the three wires *to* remove the RADIO ICS rocker switch.



1. TRIGGER UNCAGE/FIRE switch CS
2. Not used
3. LTG NVG/NORM switch
4. Not used
5. MSL ACT switch CS
6. FORCE TRIM switch
7. RADIO/ICS switch

Figure 2-4. Grip assembly

b. Replacement of Switch.

(1) Carefully solder the three wires to the RADIO ICS rocker switch. Remove tags from wires.

(2) Slide the RADIO ICS rocker switch into the grip in such a manner that the wires do not kink chafe, or bind.

(3) Remove slack from cable assembly and tighten clamps at base off the stick.

(4) Secure the RADIO ICS ROCKER SWITCH with screws.

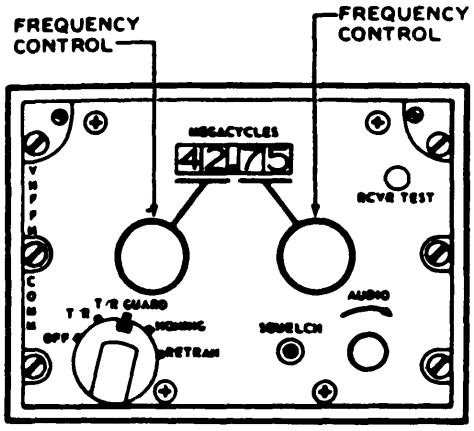
2-19. Removal and Replacement of VHF FM Radio Set, FM No. 1 and FM No. 2 (AN/ARC-114). (Figure 2-5.)

NOTE

When system FM No. 2 is removed and helicopter is scheduled to fly, interconnecting cable must be stowed

a. Removal.

(1) Loosen spring-lock fasteners that secure radio set to mounting panel.



EL4DC-9

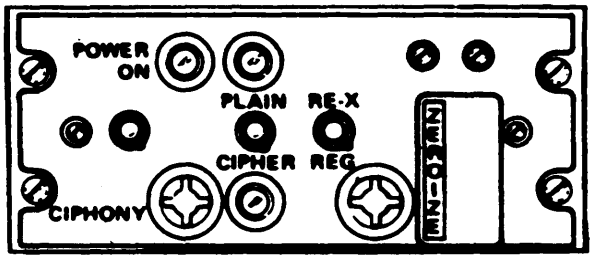
Figure 2-5. VHF-FM radio set (AN/ARC-114)

(2) Slide radio set out of mounting panel and disconnect coaxial cable and electrical connectors.

b. Replacement.

(1) Connect coaxial cable and electrical connectors.

(2) Slide radio set into mounting panel and secure with the six spring-lock fasteners.



EL4DC-10

Figure 2-6. KY-48 secure voice control (G-8157/ARC)

2-20. Removal and Replacement of KY-28 Secure-Voice Control (C8157/ARC) (Figure 2-6.)

a. Removal.

(1) Loosen spring-lock fasteners that attach secure-voice control to horizontal console.

(2) Gain access to rear of secure-voice control and disconnect electrical connectors.

(3) Lift secure-voice control out of horizontal console.

b. Replacement.

(1) Position secure-voice control in horizontal console and connect electrical connectors.

(2) Attach secure-voice control to horizontal console by turning spring-lock fasteners one-quarter turn.

2-21. Removall and Replacement of Secure Voice Encodor/Docodor (TSEC/KY-28). (Figure 1-1.)

a. Removal.

(1) Disconnect electrical connectors from front of secure voice encoder/decoder.

(2) Cut and remove safety wire and loosen hold-down nuts securing encoder/decoder to mount.

(3) Lift encoder/decoder from mount.

b. Replacement.

(1) Position secure-voice encoder/decoder in mount.

(2) Tighten and safety wire hold-down nuts.

(3) Connect electrical connectors to front of encoder/decoder.

2-22. Removal and Replacement of Remote Cipher Light (Voice-Security).

u. To remove the remote cipher light, remove the retainer nut at its rear; then disconnect the wire.

b. To replace the remote c:pher light, place the retainer nut over the wires, connect the wires the light, and tighten the retainer nut.

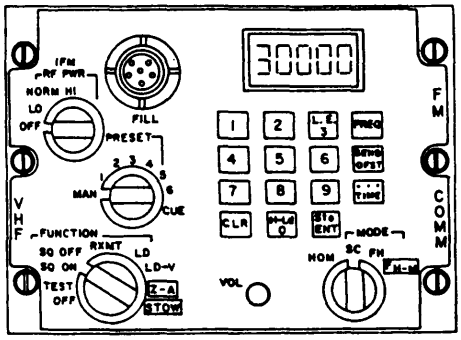


Figure 2-6.1 VHF FM Radio set (AN/ARC-201)

2-22.1. Removal and Replacement of VHF FM Radio Set, FM No.1 and FM No.2 (AN/ARC-201) (Figure 2-6.1).

a. Removal

(1) Loose spring-look fasteners that secure radio set to mounting panel.

(2) Slide radio set out of mounting panel and disconnect coaxial cables and electrical connectors.

b. Replacement

(1) Position radio set in place and connect coaxial cables and electrical connectors.

(2) Slide radio set into mounting panel and secure six spring-lock fasteners.

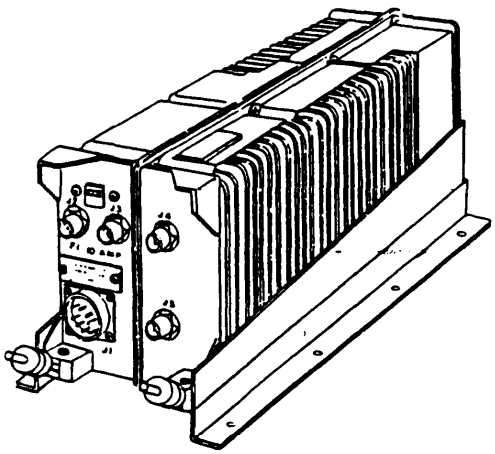


Figure 2-6.2. IFM Amplifier (AM-71891A)

2-22.2. Removal and Replacement of IFM Amplifier (AM-7189/A) (Figure 2-6.2).

a. Removal.

(1) Disconnect coaxial cables and electrical connectors from unit.

(2) Loosen self-locking fasteners securing unit to mounting tray.

(3) Remove IFM amplifier.

NOTE

Connect coaxial cables to IFM Bypass Assembly whenever IFM amplifier is removed.

b. Replacement.

(1) Position IFM amplifier in mounting tray and tighten self-locking fasteners.

(2) Connect coaxial cables and electrical connectors to IFM amplifier.

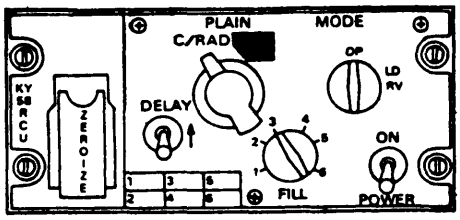


Figure 2-6.3. KY-58 secure voice control (Z-AHP)

2-22.3. Removal and Replacement of KY-58 Secure Voice Control (Z-AHP) (Fig. 2-6.3).

a. Removal.

(1) Loosen spring-lock fasteners that attach secure-voice control to horizontal console.

(2) Lift control carefully from console and disconnect electrical connector.

b. Replacement.

(1) Connect electrical connector to rear of secure voice contrl.

(2) Position secure voice control in horizontal console and tighten four springlock fasteners.

2-22.4. Removal and Replacement of Secure Voice Encoder/Decoder (KY-58) (Fig.l-l).

a. Removal.

(1) Loosen spring-lock fasteners that attach secure voice encoded/decoder to aft equipment rack enclosure.

(2) Slide encoder/decoder out of aft equipment rack enclosure and remove connectors.

(3) Connect electrical connectors to bypass connectors of rack enclosure.

b. Replacement.

(1) Disconnect electrical connectors from bypass connectors and connect to encoder/decoder.

(2) Slide encoder/decoder into rack enclosure and tighten spring-lock fasteners.

2-22.5. Removal and Replacement of FM Homing Antennas. (Fig. 1-3) (AWARC-201 w/ATAS)

a. Removal

(1) Loosen and remove two screws from the top mounting bracket.

(2) Loosen and remove the four screws from the bottom bracket.

(3) Carefully pull the unit from the aircraft skin.

(4) Disconnect the coaxial cable from the unit.

(5) Remove the horning antenna.

b. Replacement

(1) Connect the coaxial cable connectors to the FM horning antenna.

(2) Position the antenna against the aircraft skin and install two screws in the top mounting bracket.

(3) Install four screws in the bottom bracket.

2-23. Removal and Replacement of VHF/FM Antenna (206-076-518). (Figure 1-3.)

NOTE

For removal and replacement instructions for the VHF/FM antenna refer to TM 55-1520-228-23.

2-24. Removal and Replacement of FM Homing Antennas. (Figure 1-3.)

a. Removal.

(1) Loosen and removal the two holding screws from the top and bottom mounting brackets.

(2) Remove the four holding screws rom the center mounting bracket.

(3) Carefully pull the unit from the aircraft skin.

(4) Disconnect the coaxial cable from the unit

(5) Remove the homing antenna.

b. Replacement.

(1) Connect the coaxial cable connectors to the FM homing antenna.

(2) position antenna against the aircraft skin and install four holding screws in the center mounting bracket.

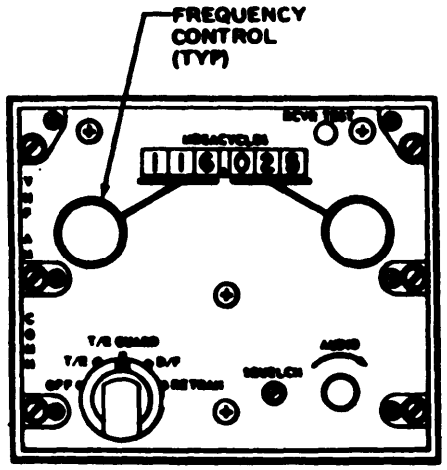
(3) Install two holding screws in the top and bottom mounting brackets.

2-25. Removal and Replacement of VHF AM Radio Set (AN/ARC-115). (Figure 2-7.)

a. Removal.

(1) Loosen spring-lock fasteners that secure radio set to mounting panel.

(2) Slide radio set out of mounting panel and disconnect the coaxial cable and electrical connectors.



EL4DC-11

Figure 2-7. VHF-AM set (AN/ARC-18)

b. Replacement.

(1) Connect the coaxial cable and electrical connectors.

(2) Slide radio set into mounting panel and secure with the six spring-lock fasteners.

2-26. Removal and Replacement of UHF AM Radio Set (AN/ARC-116 or AN/ARC-164). (Figure 2-8.

a. Removal.

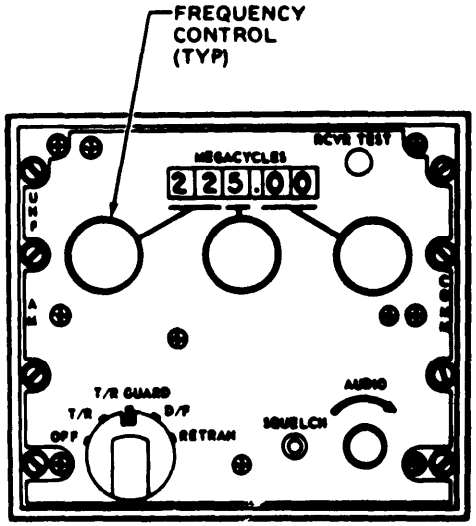
(1) Loosen spring-lock fasteners that secure radio set to mounting panel.

(2) Slide radio set out of mounting panel and disconnect coaxial cable and electrical connectors.

b. Replacement.

(1) Connect coaxial cable and electrical connectors to radio set.

(2) Slide radio set into mounting panel and secure with the eight spring-lock fasteners.



EL4DC012

Figure 2-8. UHF-AM radio set (AN/ARC-116)

2-27. Removal and Replacement of UHF Antenna (Figure 1-3.)

a. Removal.

(1) Remove and retain the six screws and washers that attach antenna to underside of helicopter.

(2) Disconnect coaxial cable connector from antenna.

b. Installation.

(1) Connect coaxial cable to antenna.

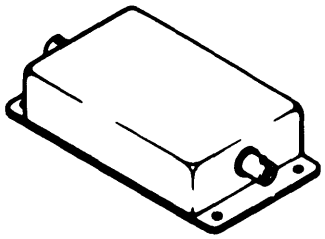
(2) Position the antenna on underside of helicopter and install with the six screws and washers retained in removal procedure

NOTE

Remove protective finish from mounting surface of antenna and helicopter to provide a good electrical bond to helicopter.

2-28. Removal and Replacement of Filters (FM Low Pass, VHF Band Pass, and UHF High Pass). (Figure 2-9.)

a. Removal.



RADIO SET FILTER
(TYPICAL)

EL4DC013

Figure 2-9. FM, VHF, and UHF filters

(1) Gain access to the filters in the horizontal) console forward of the instrument panel.

(2) Disconnect coaxial cable from each end of filter to be removed.

NOTE

FM low pass and VHF band pass filters are stacked.

(3) Remove and retain attaching hardware for reinstallation.

(4) Remove filter.

b. Raplacement.

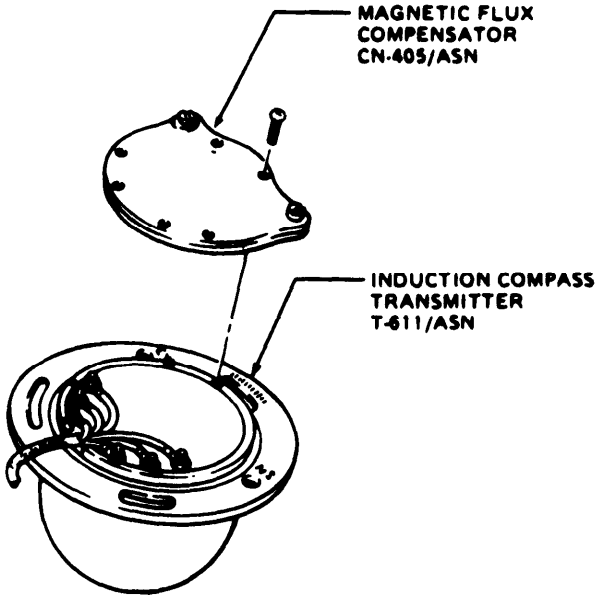
(1) Remove paint to provide good electrical bond. Position filter and install with hardware retained in removal procedure.

(2) Connect coaxial cable to filter.

2-29. Removal and Replacement of Compass Transmitter (T-611/ASN). (Figure 2-10.)

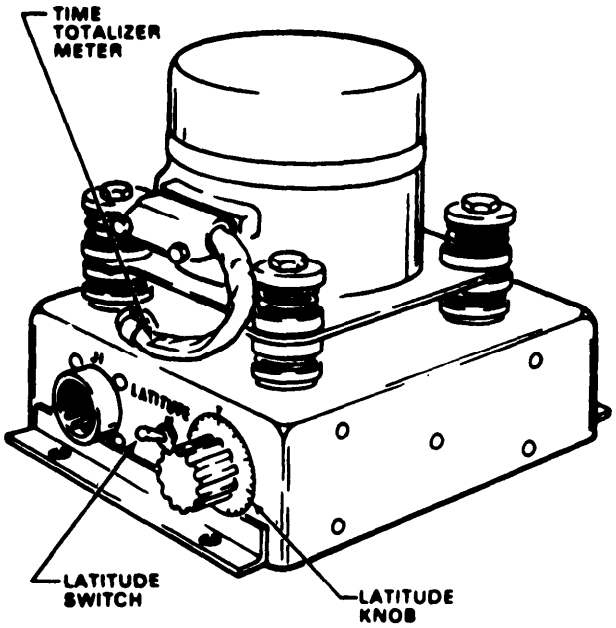
NOTE

Organizational repairmen should not attempt to remove or replace unit. If removal or replacment is required, it must be done by a higher category of maintenance repairmen.



EL4DCO14

Figure 2-10. Magnetic compass transmitter and flux compensator



EL4DCO15

Figure 2-11. Directional gyro (CN-998/ASN-43)

2-30. Removal and Replacement of Magnetic Flux Compensator (CN-405/ASN). (Figure 2-10.)

NOTE

Organizational repairmen should not attempt to remove or replace unit. If removal or replacement is required, it must be done by a higher category of maintenance repairmen.

2-31. Removal and Replacement of Directional Gyro (CN-996/ASN-43). (Figure 2-11.)

a. Removal.

(1) Disconnect the electrical connector from J1 on the base of the directional gyro.

(2) Remove and retain the four screws and washers that connect the base of the unit to the aircraft.

CAUTION

Be very careful when handling the directional gyro. Do not drop or let it receive hard shocks; shocks can easily damage the unit and cause inaccuracy and early failure.

b. Replacement.

(1) Position gyro and install with four screws and washers retained in removal procedure.

(2) Connect the electrical connector to J 1 on base of directional gyro.

2-32. Removal and Replacement of Heading-Radio Bearing indicator (ID-1351/A). (Figure 1-2.)

NOTE

Refer to TM 55-1520-228-23 for heading-radio bearing indicator removal and replacement procedure.

2-33. Removal and Replacement of DIR GYRO-MAG Switch. (Figure 1-2.)

a. Removal.

(1) Remove and retain the four screws holding the switch panel on.

(2) Remove the switch panel.

(3) While holding the switch from the rear of the instrument panel, remove the holding nut.

(4) Remove the switch and disconnect wires.

b. Replacement.

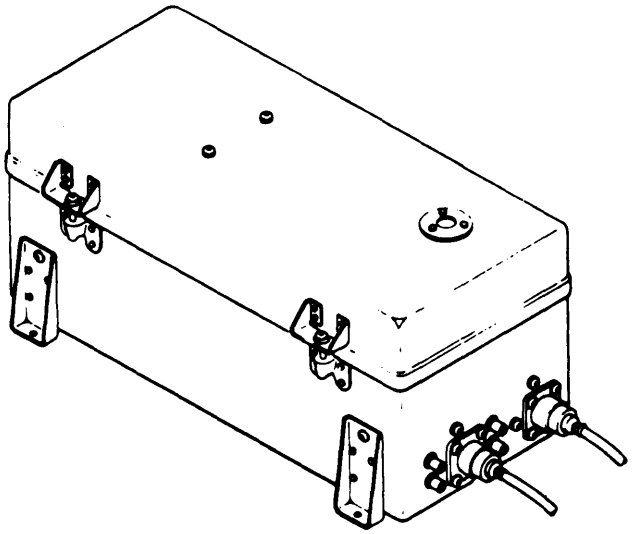
(1) Connect wires to switch.

(2) Position switch in instrument panel and install with holding nut.

(3) Position switch panel and install with the four screws retained in removal procedure.

2-34. **Removal and Replacement of ADF Receiver (R-1496/ARN-89).** (Figure 2-12.)

a. Removal.



ELAOCO16

Figure 2-12. ADF receiver (R-1496/ARN-89)

(1) Disconnect adf interconnecting cable and helicopter interface cable from respective connectors.

(2) Remove and retain the mounting screws and washers from the mounting brackets.

(3) Remove the receiver from the mounting surface.

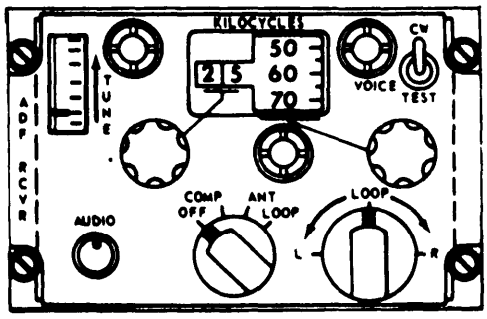
b. Replacement.

(1) Position receiver and install mounting screws and washers through the mounting brackets.

(2) Connect the interconnecting cables to receiver.

2-35. Removal and Replacement of ADF Control (C-7392/ARN-89). (Figure 2-13.)

a. Removal.



EL4DC017

Figure 2-13. ADF control (C-7392/ARN-89)

(1) Loosen the four spring-lock fasteners that attach adf control to horizontal console.

(2) Gain access to and disconnect the electrical connectors from 2J1 and 2J2 on the adf control.

(3) Remove the adf control from the horizontal console.

b. Replacement.

(1) Connect electrical connectors to 2J1 and 2J2 on adf control.

(2) Position adf control in horizontal console.

(3) Secure adf control to the horizontal console with the four spring-lock fasteners.

2-36.1 Replacement of Sense Antenna. (Figure 2-13.1).

NOTE

Check and record the dimensions of the antenna to be replaced.

a. Replace the aluminum foil tape if required by peeling the tape from the surface.

b. Clean the mating surface of the foil tape antenna with Methyl-Ethyl-Ketone.

Buff terminal with fine crocus cloth to assure good bonding.

d. Install new tape (Scotch No. 49 or Y916A, FSCM 76261) starting surface contact at center *of* panel and smoothing out all wrinkles as you go, in all direction.

e. Trim tape as shown on figure 2-13.1. (Refer to dimensions recorded earlier).

f. Check for continuity between terminal and all four comers of the tape.

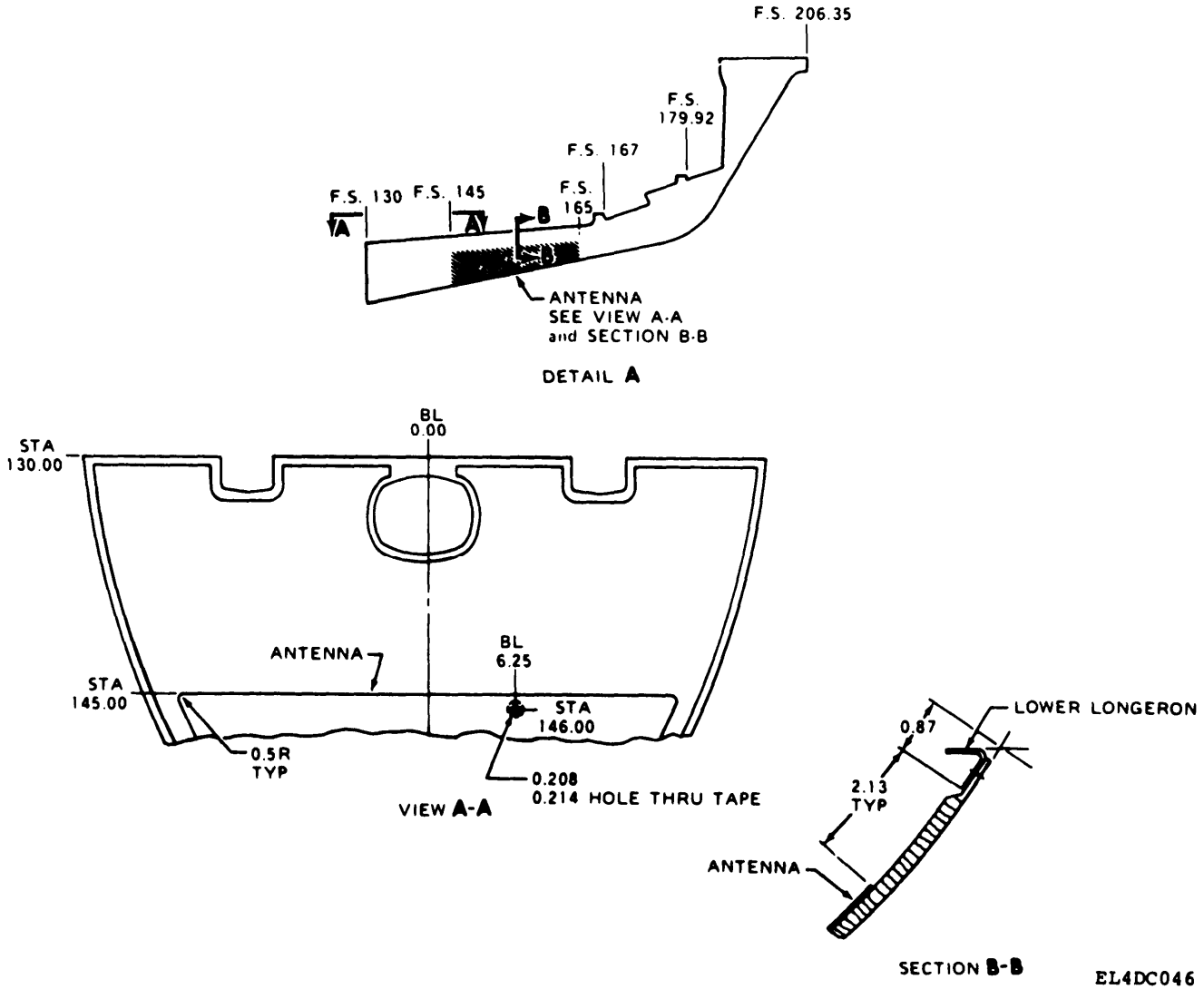


Figure 2-13.1. Sense antenna

2-36. Removal and Replacement of Impedance Matching Amplifier (AM-4859/ARN-89). (Figure l-l.)

a. Removal.

(1) Disconnect cable plug 3Pl from the amplifier.

(2) Disconnect the sense antenna lead from standoff insulator 3E 1.

(3) Remove and retain the two mounting screws and washers from the mounting brackets and remove the impedance matching amplifier.

b. Replacement.

(1) Position impedance matching amplifier and install to underside of avionics compartment floor with two screws and washers.

(2) Connect sense antenna lead to 3E1 and cable connector to 3P1 of amplifier.

2-37. Removal and Replacement of Loop Antenna (AS-2108/ARN-89). (Figure 1-3.)

a. Removal.

(1) Remove and retain the eight screws and washers that secure the adf loop antenna.

(2) Carefully lower antenna from the aircraft skin until connectors can be reached.

(3) Disconnect coaxial cables from connectors 4J1 and 4J2.

(4) Remove the loop antenna.

b. Replacement.

NOTE

Remove protective finish from antenna mounting surface for a good electrical bond.

(1) Connect coaxial cables to 4J1 and 4J2 on loop antenna.

(2) Install loop antenna to underside of helicopter with eight screws and washers.

2-38. Removal and Replacement of VOR/lLS Control Panel (C-10048/ARN-123). (Figure 2-14,)

a. Removal.

(1) Loosen the four spring-lock fasteners that secure control panel to instrument panel.

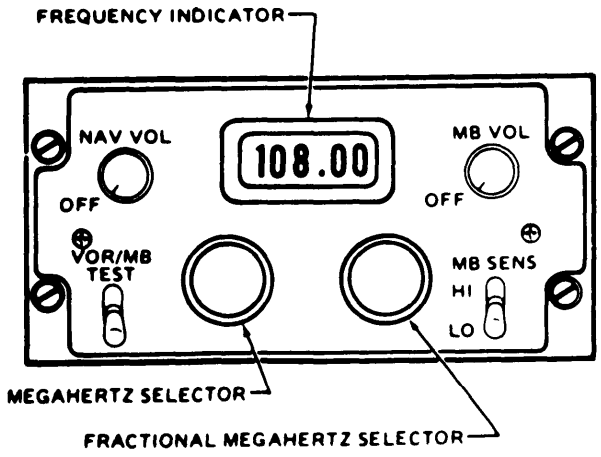
(2) Disconnect electrical connector from rear of control panel.

(3) Remove control panel.

b. Replacement.

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

(2) Position control on instrument panel and secure with the four spring-lock fasteners.



EL4DC-18

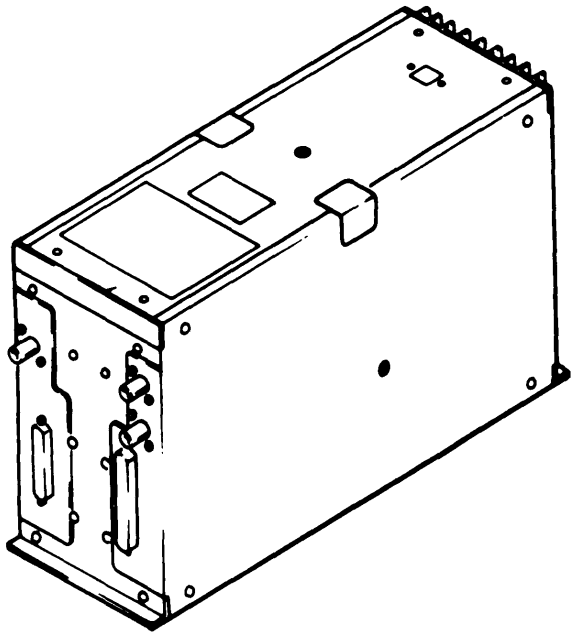
Figure 2-14. VOR/lLS control (C-I0048/ARN-123)

2-39. Removal and Replacement of Course Deviation Indicator (ID-1347C/ARN-123). (Figure 1-2.)

NOTE

Refer to TM 55-1520-228-23 for removal and replacement procedures for course deviation indicator.

2-40. Removal and Replacement of VOR/ILS Receiver (R-2023/ARN-123). (Figure 2-15.)



EL4DC019

Figure 2-15. VOR/ILS receiver (R-2023/ARN-123)

a. Removal.

(1) Disconnect coaxial and electrical connectors from front of VOR/ILS receiver.

(2) Cut and remove safety wire.

(3) Loosen hold-down nuts and lift receiver from mount.

b. Replacement.

(1) Position VOL/ILS receiver in mount.

(2) Tighten and safety wire hold-down nuts that secure receiver to mount.

(3) Connect coaxial and electrical connectors to front of receiver.

2-41. Removal and Replacement of Glideslope Antenna (AS-3188/ARN). (Figure 1-3.)

a. Removal.

(1) Gain access to antenna on interior surface of forward transmission fairing and disconnect coaxial connector.

(2) Remove and retain two screws and remove antenna from fairing.

b. Replacement.

(1) Install antenna on interior surface of forward transmission fairing with two screws.

(2) Connect coaxial connector to antenna.

2-42. **Removal and Replacement of VOR Antenna (AS-1304/ARN).** (Figure 1-3.)

a. Removal.

(1) Remove and retain screws securing antenna to helicopter.

(2) Disconnect rf cable connector from antenna.

b. Replacement.

NOTE

Remove protective finish from antenna mounting surface for good electrical bond before mounting. Do not apply sealant between antenna and airframe mounting surface. Add bead of sealant around edges of antenna base after installation.

(1) Connect rf cable connector to antenna.

(2) Secure antenna to helicopter using retained screws. Apply MIL-S-8802 sealant.

2-43. Removal and Replacement of Marker Beacon Antenna (AT-640/ARN). (Figure 1-3.)

a. Removal.

(1) Remove and retain screws securing antenna to underside of helicopter.

(2) Disconnect coaxial connector from antenna.

b. Replacement.

NOTE

Remove protective finish from antenna mounting surface for electrical bond before mounting. Do not apply sealant between antenna and airframe mounting surface. Add bead of sealant around edges of antenna base stir installation.

(1) Connect coaxial connector to antenna.

(2) Secure antenna to helicopter using retained screws. Apply MIL-S-8802 sealant.

2-44. Removal and Replacement of Radar Altimeter Indicator/Receivor/Transmitter (RT-1115/APN-206). (Figure 1-2.)

a. Removal.

(1) Remove and retain mounting screws securing indicator in instrument panel assembly.

(2) Carefully pull indicator out of instrument panel assembly, and disconnect electrical and coaxial cable connectors.

b. Replacement.

(1) Connect electrical and coaxial cable connectors.

(2) Position and secure indicator in instrument panel assembly with retained screws.

2-45. Removal and Replacement of Radar Altimeter Antennas (AS-2595/APN-194). (Figure 1-3.)

a. Removal.

(1) Remove and retain screws securing antenna to underside of helicopter.

(2) Disconnect rf cable connector from antenna.

b. Replacement.

NOTE

Remove protective finish from antenna mounting surface for electrical bond before mounting, Do not apply sealant between antenna and airframe mounting surface. Add bead of sealant around edges of antenna base after installation.

(1) Connect rf cable connector to antenna.

(2) Secure antenna to helicopter using retained screws. Apply MIL-S-8802 sealant.

2-46. Removal and Replacement of Radar Warning Control Panel (C-9326/APR-39). (Figure 2-16.)

EL4DC-20

Figure 2-16. Radar warning control (C-9326/APR-39)

a. Removal.

(1) Loosen spring-lock fasteners that secure radar warning control panel to instrument panel,

(2) Disconnect electrical connector from rear of control panel.

b. Replacement.

(1) Connect electrical connector to rear of radar warning control panel,

(2) Position and secure control panel to instrument panel with spring-lock fasteners.

2-47. Removal and Replacement of Radar Warning Indicator (IP-1150/APR-39). (Figure 1-2.)

a. Removal.

(1) Remove and retain mounting screws securing indicator in instrument panel assembly.

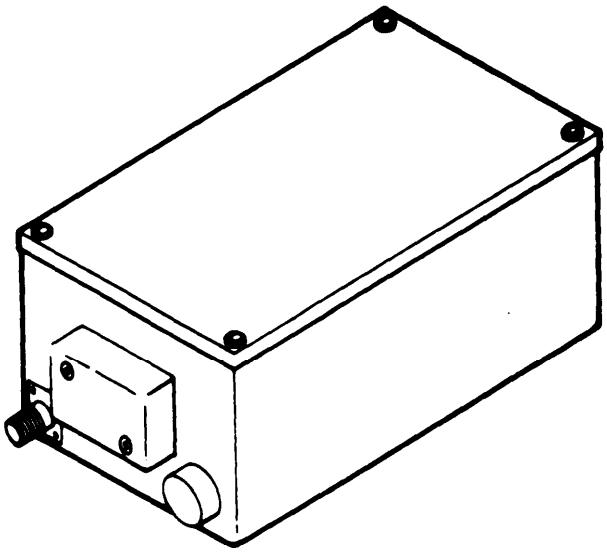
(2) Carefully pull indicator out of instrument panel assembly, and disconnect electrical connector.

b. Replacement.

(1) Connect electrical connector to indicator.

(2) Position and secure indicator in instrument panel assembly with retained screws.

2-48. Removal and Replacement of Radar Warning Comparator (CM-440/APR-39). (Figure 2-17.)



EL4DC021

Figure 2-17. Radar warning comparator (CM-440/AFR-39)

a. *Removal.*

(1) Remove and retain screws and washers securing comparator.

(2) Disconnect electrical and coaxial cable connectors from comparator.

(3) Remove comparator.

b. Replacement.

CAUTION

Ensure screws are proper length before mounting comparator. If screws are too long, they may damage equipment.

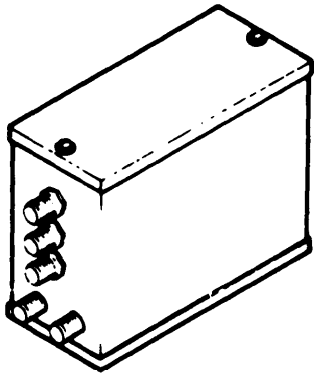
NOTE

Remove finish from mounting surface to provide good electrical bond.

(1) Position and secure comparator using retained screws and washers.

(2) Connect electrical and coaxial cable connectors to comparator.

2-49. **Removal and Replacement of Radar Warning Dual Receiver(s) (R-1838/APR-39).** (Figure 2-18.)



EL4DC022

Figure 2-18. Radar warning dual receiver (R-1838/APR-39)

a. Removal.

(1) Remove and retain screws and washers securing receiver(s).

(2) Disconnect coaxial cable connectors from receiver(e).

b. Replacement.

CAUTION

Ensure screws are proper length before mounting receivers. If screws are too long, they may damage equipment.

NOTE

Remove finish from mounting surface to provide good electrical bond.

(1) Connect coaxial cables to receiver(s).

(2) Secure receiver(s) using retained *screws* and washers.

2-50. Removal and Replacement of Radar Warning Spiral Antenna(s) (AS-2891/APR-39 and AS-2892/APR-39). (Figure 1-3.)

a. Removal.

(1) Remove and retain four screws that attach antenna to helicopter.

(2) Disconnect coaxial cable connector from antenna.

(3) Remove antenna.

b. Replacement.

NOTE

Remove protective finish from antenna mounting surface for good electrical bond before mounting. Do not apply sealant between antenna and airframe mounting surface. Add bead of sealant around edges of antenna base after installation.

(1) Connect coaxial cable connector to antenna.

(2) Position and install antenna using retained screws, Apply MIL-S-8802 sealant.

NOTE

Antenna must be installed with the white dot Up.

2-51. Removal and Replacement of Radar Warning Blade Antenna (AS-2890/APR-39). (Figure 1-3.)

a. Removal.

(1) Remove and retain screws securing antenna to underside of helicopter.

(2) Disconnect coaxial cable connector from antenna.

(3) Remove antenna.

b. Replacement.

NOTE

Remove protective finish from antenna mounting surface for good electrical bond before mounting. Do not apply sealant between antenna and airframe mounting surface. Add bead of sealant around edges of antenna base after installation.

(1) Connect coaxial cable connector to antenna.

(2) Position and secure antenna to helicopter using retained screws. Apply MIL-S-8802 sealant.

2-52. Removal and Replacement of Receiver-Transmitter (RT-1156/APX-100). (Figure 2-19.)

a. Removal.

(1) Loosen spring-lock fasteners that attach receiver-transmitter to horizontal console.

(2) Disconnect electrical and antenna connectors from rear of receiver-transmitter.

(3) Remove receiver-transmitter from console.

b. Replacement.

(1) Connect electrical and antenna connectors to rear of receiver-transmitter.

(2) Slide the receiver-transmitter into the horizontal console and engage the guide pins in the rear.

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

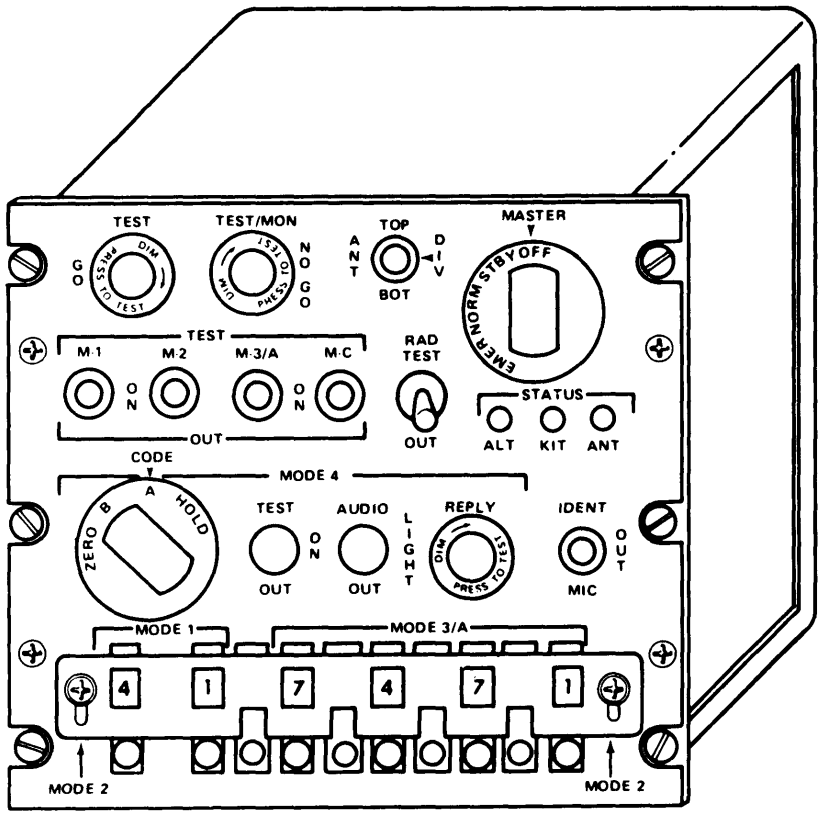
2-53. Removal and Replacement of Transponder Computer (KIT-1A/TSEC). (Figure 1-1.)

a. Removal.

(1) Disconnect electrical connector from computer.

(2) Remove and retain mounting screws and washers ftom computer.

(3) Carefully remove computer from its mounting.



EL4DC023

Figure 2-19. Receiver-transmitter (RT-1285( )/APX-100)

b. Replacement.

(1) Carefully position computer in place and secure using retained mounting screws and washers.

(2) Connect electrical connector to computer.

2-54. **Removal and Replacement of Transponder Top Antenna (208-077-109-1).** (Figure 1-3.)

a. Removal.

(1) Gain access to antenna connector through door in forward transmission fairing and disconnect coaxial cable.

(2) Remove and retain four screws, washers and nuts that attach antenna to forward transmission fairing.

(3) Remove antenna.

b. Replacement.

NOTE

Clean mating surfaces of antenna and fairing to provide a good electrical bond. Do not apply sealant between antenna and air frame mounting surface. Add bead of sealant around edges of antenna base after installation.

(1) Position antenna on forward transmission fairing and install with four screws, washers, and nuts.

(2) Apply a bead of MIL-S-8802 sealant around edges of antenna base.

(3) Connect coaxial cable to antenna.

2-55. Removal and Replacement of Transponder Bottom Antenna (AT-884/APX-44). (Figure 1-3.)

a. Removal.

(1) Remove and retain six screws that secure antenna to underside of helicopter.

(2) Carefully lower antenna and disconnect coaxial cable connector.

(3) Remove antenna.

b. Replacement.

NOTE

Clean mating surface of antenna to provide a good electrical bond.

(1) Connect coaxial cable connector to antenna.

(2) Position antenna and install with six retained screws.

2-56. Removal and Replacement of Code Hold Switch. (Figure 1-2.)

a. Removal,

(1) Remove and retain two screws that attach switch panel to instrument panel,

(2) Remove switch panel.

(3) Hold switch from rear of instrument panel and remove its holding nut.

(4) Remove switch and disconnect wires.

b. Replacement.

(1) Connect wires to switch.

(2) Insert switch from rear of instrument panel and install with its holding nut,

(3) Position switch panel and install with two retained screws.

2-57. Removal and Replacement of Mode. 4 Light. (Figure 1-2.)

a. Removal.

(1) Remove and retain two screws that attach switch panel to instrument panel.

(2) Remove switch panel.

(3) Hold light from rear of instrument panel and remove its holding nut.

(4) Remove light and disconnect wires.

b. Replacement.

(1) Connect wires to light.

(2) Insert light from rear of instrument panel and install with its holding nut.

(3) Position **switch panel and install with two** retained screws,

2-58. Removal and Replacement of Proximity Warning Receiver-Transponder (YG-1054).

a. Removal,

(1) Loosen spring-lock fasteners that attach receiver-transponder to instrument panel.

(2) Disconnect electrical and coaxial cable connectors from rear of receiver-transponder,

(3) Disconnect static air line from rear of receiver-transponder.

(4) Remove receiver-transponder.

NOTE

When the Proximity Warning System YG-1054 is removed from the aircraft, the static air line which was fastened to the PWS unit must be plugged and tested prior to flight,

b. Replacement

(1) Connect static air line to rear of receiver-transponder.

(2) Connect electrical and coaxial connectors to rear of receiver-transponder.

(3) Position receiver-transponder in instrument panel and secure with spring-lock fasteners.

2-59. Removal and Replacement of Proximity Warning Antennas. (Figure 1-3.)

a. Removal of Forward PWS Antenna.

(1) At the nose of the aircraft, remove the four screws which secure the PWS forward antenna to the wedge assembly.

(2) Remove the RTV sealant between the antenna and wedge assembly.

(3) Carefully lift the antenna off of the wedge assembly about 2 inches and disconnect the antenna cable connector from the base of the antenna.

NOTE

When the proximity warning system antenna is removed and is to be installed at a later unspecified date, the antenna mounting holes must be properly covered during the interim period.

b. Replacement of Forward PWS Antenna.

(1) Position the antenna above the wedge assembly and connect the antenna cable connector to the base of the antenna.

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

(3) Insert four 8-32 x ¼ inch screws into the antenna and wedge assembly. Tighten all screws securely.

(4) Apply a small bead of RTV sealant between the antenna and wedge assembly and to the tops of the mounting screws.

c. Removal of Aft PWS Antenna.

NOTE

The following procedure includes the removal of the aft antenna mount and ground strap. The mount and ground strap must be replaced on the aircraft whether or not the antenna is to be replaced.

(1) Inside the cargo compartment directly over the aft antenna, remove the screw, washer and nut securing the ground strap.

(2) Underneath the aircraft at the aft PWS antenna location, remove the four screws which secure the antenna mount to the aircraft.

(3) Allow the antenna and antenna mount to hang loosely from the aircraft. Remove the four screws which secure the antenna to the mount.

(4) Disconnect the antenna cable connector from the mount.

(5) Remove all traces of RTV sealant from the antenna mount and aircraft skin.

NOTE

Perform (6), (7), and (8) below only if the PWS aft antenna is not to be replaced immediately, otherwise omit and continue with antenna replacement procedure.

(6) Secure the ground strap inside the cargo compartment near the aft antenna location with hardware previously removed.

(7) Position the antenna mount on the skin of the aircraft and align holes. Inside the aircraft, position the two nut plates over the antenna mounting holes. Secure the antenna mount with the four screws previously removed.

(8) Apply a small bead of RTV sealant between the mount and the skin of the aircraft.

NOTE

When the proximity warning facility antenna is removed and is to be installed at a later unspecified date, the antenna mounting holes must be covered during the interim period.

d. Replacement of Aft PWS Antenna.

(1) With the aft antenna mount removed from the aircraft, pass the antenna cable from the aircraft through the mount and connect cable connector to base of PWS antenna.

(2) Position the antenna on top of the mount and align holes. Secure antenna with three 8-32x3/4-inch screws.

(3) Pass the ground strap from inside the aircraft into the antenna mount, secure the ground strap in the mount with one 8-32x1-1/4-inch screw, washer and nut. The 1 l/4-inch screw is inserted through the antenna.

(4) Position the antenna mount on the skin of the aircraft and align holes. Inside the aircraft, position the two nut-plates previously removed over the antenna mounting holes. Secure the antenna mount with the four screws previously removed.

(5) Apply a small bead of RTV sealant between the antenna mount and the skin of the aircraft. Apply a second bead between the antenna and mount.

2-60. Replacement of Lamps in Proximity Warning Receiver-Transponder.

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

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

2-61. Replacement of Control Panel Lamps

a. Remove lamp housing from control panel by firmly grasping and turning lamp housing counterclockwise.

b. Pull lamp forward and out of housing mounting.

c. Verify replacement lamp is in good condition and lamp flange is flush with housing mounting.

d. Insert and turn lamp housing clockwise until secure in control panel.

2-62. Removal and Replacement of Invertor (PP-6376/A).

a. *Removal.*

(1) Disconnect electrical connector.

(2) Remove and retain four screws and washers that attach inverter to shelf aft of passenger seat.

(3) Remove inverter.

b. Replacement.

(1) Position inverter on shelf aft of passenger seat and install with four retained screws and washers.

(2) Connect electrical connector to inverter.

2-63. Removal and Replacement of Battery (BB-676/A)

CAUTION

Do not attempt to remove or replace the battery when any power is being used on the aircraft systems. Place the BAT switch to OFF and disconnect the external power source; otherwise arcing may damage the contacts of the aircraft battery connector or the battery case connector.

a. Removal.

(1) Ensure that power is off.

(2) Disconnect battery cable connector by turning handle counterclockwise.

(3) Disconnect two vent tubes from battery case.

(4) Remove mounting bolts and washers; then lift battery from compartment.

b. Replacement Battery.

(1) Place battery on shelf, aligned for connections.

(2) Install mounting bolts and washers, then tighten securely.

(3) Connect two vent tubes to battery case and tighten clamps.

(4) Insert cable connector into battery receptacle and secure by turning knob clockwise.

2.64. Removal and Replacement of Capacitor Board A3 (204-075-850-9).

a. Removal.

CAUTION

High voltages (1l5 Vac, 400 Hz and 28 Vdc) exist in and around the instrument panel. Be sure that all power to the aircraft is off.

(1) Ensure that the FM No. 1 and GYRO CMPS circuit breakers and BAT switch on the overhead console are off.

NOTE

The capacitor board is on the right side at the rear of the instrument panel near the nose of the aircraft.

(2) Gain access to the defective capacitor board and tag and disconnect the four wires connected to the capacitor board terminals.

(3) Remove capacitor board.

b. Replacement.

NOTE

High voltages (115 Vat, 400 Hz and 28 Vdc) exist in and around the instrument panel. Be sure that all power to the aircraft is off.

(1) Ensure that the FM No. 1 and GYRO CMPS circuit breakers and BAT switch on the overhead console are off.

(2) Secure the capacitor board in the aircraft with two screws and washers.

(3) Attach wires to capacitor board terminals and remove wire tags.

2-65. Removal and Replacement of Integral Lighted Panels.

a. Removal.

(1) Remove and retain knobs and switches that interfere with removing integral lighted panel.

(2) Remove and retain mounting screws.

(3) Carefully pull integral lighted panel apart from unit.

b. Replacement.

(1) Carefully mate integral lighted panel to unit.

(2) Secure integral lighted panel to unit with mounting screws.

(3) Replace knobs and switches that were removed.

2-66. Removal and Replacement of FM Antenna No. 2 (Figure 1-3.)

a. Removal of FM Antenna No. 2.

(1) Be sure that all power to the aircraft is off.

(2) While holding the antenna to prevent damage, remove the six holding screws.

(3) Carefully raise the antenna from the aircraft skin, disconnect coaxial cable, and remove the unit.

(4) Unscrew the probe supported radiating dipole (horizontal element) from the vertical probe.

b. Replacement of FM Antenna No. 2.

(1) Be sure that all power to the aircraft is off.

(2) Connect the probe supported radiating dipole (horizontal element) to the vertical probe.

(3) While carefully holding the antenna to prevent damage, connect coaxial cable, and place the unit on the aircraft skin.

(4) Tighten the six holding screws.

2-67. Removal and Replacement of Impedance Matching Network (206-67543).

WARNING

Lethal voltages exist in and around the instrument panel. Be sure that all power to the aircraft is off.

a. Removal Impedance Matching Network.

(1) Be sure BAT switch on the overhead console is OFF.

(2) Enter the forward compartment in a sideprone position. Reach around the rear of the instrument panel. Remove the two screws holding the impedance matching network to the mounting tray.

(3) Pull the card away from the mounting connector and remove.

b. Replacement of Impedance Matching Network.

(1) Be sure BAT switch on the overhead console is off.

(2) Gain access to the nose bay equipment area as stated in (2) of removal procedures.

(3) Place the impedance matching network in the mounting tray and gently slide the network into the connector.

(4) Replace the two mounting screws, securing the card to the tray.

2-67.1 thru 2-67.5 PLRS TEXT DELETED.

2-67.6 Removal and Replacement of ATAS Missile System Components CS. Refer to TM 55-1520-228-23 for Air-To-Air Stinger (ATAS) missile system component removal and replacement procedures.

2-68. safety Wiring.

a. General. All attaching hardware and electrical connectors for the components of the electronic equipment configuration must be secured with safety wire to prevent loosening during service. Tighten the applicable mounting hardware and install safety wire. arranged in such a way that loosening of the hardware will cause the safety wire to tighten. Use new safety wire and be careful not to kink the wire.

b. corrosion-Resistant Wire. Use steel corrosion-resistant wire, installed in the double-twist method for the mounting hardware and electrical connectors of all components of the electrical equipment configuration. For complete safety wiring practices, sea TM 55-1500-323-25.

2-69. Wiring Repairs. When removal and replacement of major components have not corrected a trouble within a facility of the electronic configuration. troubles in the electronic equipment configuration wiring may be the cause. Refer to the facilities *or* systems wiring diagrams for interunit wiring details. For generalinstructions repairing in the helicopter electronic configuration. refer to TM 55-1520-228-23.

(2) Position control display panel into instrument panel: secure spring-lock fasteners.

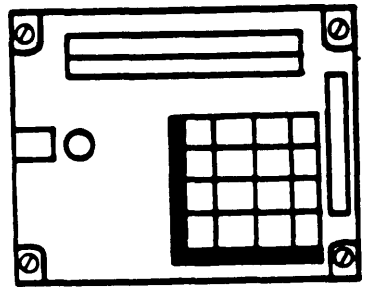


Figure 2-21. Control display panel (C-10829/ASQ-177(V)).

2-67.3. Removal and Replacement of PLRS Indicator Panel. (Figure 2-22.)

a. Removal.

(1) Remove two screws securing indicator panel to instrument panel.

(2) Disconnect electrical connector from rear of indicator panel.

b. Replacement.

(1) Connect electrical connector to rear in indicator panel.

(2) Position Indicator panel into instrument panel: insert and tighten two screws.

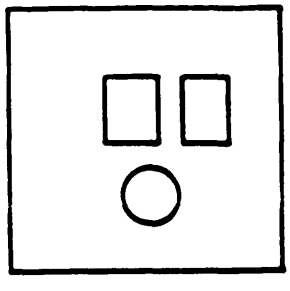


Figure 2-22. PLRS indicator panel.

2-67.4. Removal and Replacement of PLRS Relay Junction Box. (Figure 2-23.)

a. Removal.

(1) In the nose of the aircraft disconnect electrical connectors from relay junction box.

(2) Remove four screws securing relay junction box to shelf.

b. Replacement

(1) *Position relay* junction box on shelf insert and tighten four screws.

(2) Connect electrical connectors to relay junction box.

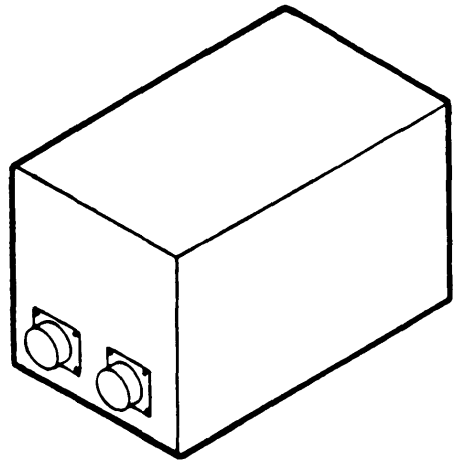


Figure 2-23. PLRS relay junction box.

2-67.5. Removal and Replacement of PLRS Antenna. (Figure 2-24.)

a. Removal.

(1) On aircraft cowling remove four screws securing antenna to doubler plate.

(2) Disconnect cable connector from antenna.

(3) Lift off antenna.

b. Replacement.

(1) Connect cable connector to antenna.

NOTE

Clean mating surfaces of antenna and doubler plate to provide a good electrical bond. Do not apply sealant between antenna and doubler plate.

(2) Position antenna on doubler plate. insert. and tighten four screws.

(3) Add a bead of RTW sealant around edges of antenna base after installation.

2-67.6 Removal and Replacement of ATAS Missile System Components CS. Refer to TM 55-1520-228-23 for Air-lb-Air Stinger (ATAS) missile system component removal and replacement procedures.

2-68. Safety Wiring.

a. General. All attaching hardware and electrical connectors for the components of the eletronlc equipment configuration must be secured with safety wire to prevent loosening during service. Tighten the applicable mounting hardware and install safety wire. arranged in such a way that loosening of the hardware will cause the safety wire to tighten. Use new safety wire and be careful not to kink the wire.

b. Corrosion-Resistant Wire. Use steel corrosion-resistant wire, Installed in the double-twist method for the mounting hardware and electrical connectors of all components of the electrical equipment configuration. For complete safety wiring practices, see TM 55-1500-323-25.

2-69. Wiring Repairs. When removal and replacement of major components have not corrected a trouble within a facility of the electronic configuration, trouble. in the electronic equipment configuration wiring may be the cause. Refer to the facilities or systems wiring diagrams for interunit wiring details. For general instructions in repairing the helicopter electronic configuration, refer to TM 55-1520-228-23.

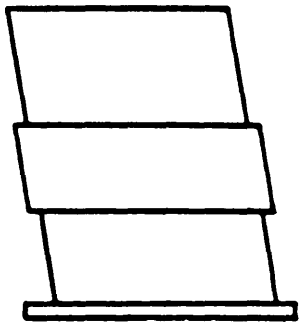


Figure 2-24. PLRS antenna.

CHAPTER 3

BLOCK DIAGRAM ANALYSIS

3-1. Configuration, Systems and Facilities.

a. The electronic equipment configuration in the OH-58C helicopter provides the pilot and copilot with interphone, communications, navigation, radar warning, identification, and proximity warning capabilities. The pilot also receives an aural tone from the ATAS missile system CS.

b. The interphone control provides pilot, copilot, and crew with interphone communications and selection of a radio set for communications.

c. The communications facilities provide uhf and vhf amplitude-modulated (am) command and vhf frequency modulated (fro) liaison. FM No. 1 AN/ARC-114 systems are equipped with secure voice. FM No.1 & 2 AN/ARC-201 systems are equipped with secure voice. The No. 1 FM can be used in conjunction with the No.2 FM for radio relay operation (ARC-114 and ARC-201). The ARC-114 provides homing capability only on models without ATAS. The ARC-201 provides homing on all models. The FM No. 1 AN/ARC-201 is also equipped with an Improved FM amplifier (IFM) which has selectable RF power settings.

d. The navigational facilities include an automatic radio direction finder (adf), a compass slaved directional gyro, the homing function of the No. 1 fm facility CS , the VOR/ILS facility the radar altimeter facility and the position location reporting system. The output signals of the navigational facilities are displayed as visual steering information on the heading-radio bearing indicator, course deviation indicator, marked beacon light, radar altimeter indicator, and PLRS control display panel. The VOR/ILS facility also provides audio signals from the ground transmitters.

e, The radar warning facility consists of the radar warning equipment and provides enemy radar detection information which is displayed on the radar warning indicator. An audio signal is also heard in the headsets.

f. The identification facility consists of the IFF transponder equipment and provides pilot identification of position reply codes, emergency reply codes and personal identification.

g. The proximity warning system is used for detection of similarly equipped aircraft. A visual/aural alarm signals aircraft intrusion.

g. 1. The armament facility provides defensive and limited offensive air-to-air combat capabilities. The Air-To-Air Stinger (ATAS) missile system consists of the pilot display unit (PDU), interface electronics assembly (IEA), electronics unit (EU), control panel, and launcher assembly. The PDU located in the pilot station is used for target acquisition and provides a display of the system built-in test (BIT) check. The ATAS control panel is located on the center console. The control panel electronically controls the IEA, EU, and provides selection of emergency jettison. The IEA and EU are located in the avionics compartment. The launcher assembly is attached to the pylon assembly by an adapter CS.

h. All receiver, transmitter, and proximity warning facility audio signals are connected to identical communication control (audio control) panels in the pilot, copilot, and crew positions. Each audio control panel provides selection and amplification of any desired receiver or transmitter audio signal for application to the headset/microphone. The audio control panels also provide an interphone function allowing the pilot, copilot, and a crew to converse using their headsets/microphones.

i. Functionally, the configuration can be divided into three systems and three facilities: these are the interphone-audio, communications, and navigation systems, and the radar warning, identification, and proximity warning facilities. Each system consists of one or more facilities. Each facility comprises a number of electronic components interconnected by electronic installation items to provide the required capabilities. The electronic components of each facility are represented on the block diagram (fig. FO-1) as solid-line blocks.

3-2. Interphone-Audio System.

a. The interphone-audio system consists of the following equipment:

(1) Three audio control panels (C-6533/ARC).

(2) Three headset/microphone cords (WM-85/U).

(3) Three headset/microphones (H-101A/U).

(4) An audio terminal strip and impedance-matching network.

(5) Two cyclic-stick mounted microphone switches.

(6). One footswitch (copilot side).

(7) One pushbutton (crew station).

(8) An audio threshold system (MD-1101/A or MD-1219/A)

b. The audio control panels (C-6533/ARC) are the only control points of the interphone-audio system. The audio control panels provide intercommunication between the pilot, copilot, and crew. Receiver outputs are connected through the impedance matching network to the receiver selector switches in the audio control panels. The impedance matching network consists of a printed circuit card containing eight fixed, carbon resistors. Each resistor is connected across a receiver audio output circuit. The resistors properly load the receiver audio circuits to prevent receiver audio distortion and provide stable audio system operation Microphone-audio and transmitter-keying circuits are connected to the audio terminal strip where they are distributed to the audio control panels. Audio output from the audio control panels is applied through the terminal strip to the pilot, copilot, and crew headsets. Receivers can be monitored and the audio level controlled as selected at the individual audio control panel. Receiver audio signals can be selected separately on the audio control panels. Radio transmissions can be controlled from each position hy selecting the desired transmitter on the spective audio control panel. The pilot and copilot are provided with two microphone switches on each cyclic stick. The microphone switches are used to key the radio transmitters or operate the interphone circuit as desired. A HOT MIKE switch on each audio control panel provides hand-free operation of the interphone function. A foot-switch located adjacent to the copilot seat and a pushbutton on the crew headset cord are used to provide operation of the radio transmitters. A single 5-ampere circuit breaker located on the overhead console protects the primary dc input wiring to all audio control panels. The impedance matching network serves as the connection point for the system audio wiring. The audio threshold system serves to eliminate low level microphone audio noise while minimizing the attenuation of high level signals. A relay and diode matrix are included for audio switching.

3-3. Communications System.

a. General. The communications system contains the No. 1 and No.2 fm facilities (AN/ARC-l 14 or AN/ARC-201) which provide communication, horning, retransmission and secure-voice operations; secure-voice encoder-decoder (TSEC/KY-58) with the secure-voice control indicator (Z-AHP);; vhf command facility (AN/ARC-l15); and uhf command facility (AN/ARC-164 or AN/ARC-116). Audio inputs and outputs are connected to the pilot, copilot, and crew audio control panels (C-6533/ARC) in the interphone-audio system through the audio terminal strip and the impedance matching network. Primary dc power for the uhf command facility and the audio control panels is supplied by the 28 Vdc essential bus through circuit breakers in the overhead console. Primary dc power to the remaining communications facilities is supplied by the 28 Vdc nonessential bus through circuit breakers in the overhead console.

b. No. 1 Fm Facility (AN/ARC-114). The No. 1 fm facility provides two-way, frequency-modulated liaison communications. The facility provides 920 selectable channels between 30.00 and 75.95 MHz in steps of 0.05 MHz, Transmission and reception are on the same frequency. A separate guard receiver is included in the radio set to monitor the 40.5 MHz fm distress frequency. The vhf fm antenna is used with the transmitter and guard receiver, and either the vhf fm antenna or the homing antennas **C** are used with the main receiver. Secure communications are possible when the secure-voice encoder/decoder is used with the No. 1 fm facility. The homing function of the No. 1 fm facility supplies outputs to the steering meter portion of the heading-radio bearing indicator (ID-1351/A) to provide visual steering indication for homing on a received signal **C.** A warning indicator is provided in the heading-radio bearing indicator to inform the pilot of an inadequate homing signal **C.** Additionally retransmission of received signals is also provided by the No. 1 fm facility when it is used in conjunction with the No. 2 fm facility, described below,

b. 1. No. 1 Fm Facility (AN/ARC-2Ol). The No. 1 AN/ARC-201 fm facility provides the same coverage as the AN/ARC-114 with the following additions. The AN/ARC-201 facility provides selectable channels between 30 MHz and 87.975 MHz in steps of .025 MHz. Transmission and reception are on the same frequency except when operating in the frequency hopping mode. The No. 1 AN/ARC-201 is also equipped with an improved FM amplifier (IFM) which is controlled by the ARC-201 and provides improved communications over a greater range.

c. No. 2 *Fm Facility (AN/ARC-l14).* The No.2 fm facility is identical to No. 1 fm facility except that no previsions are included for homing or secure-voice operation. The No. 2 fm facility includes a separate antenna to allow the No. 1 fm facility to transmit while the No. 2 fm facility receives, and vice-versa. The audio and keying circuits of the two facilities are interconnected to provide extended-range communications by retransmission of signals received on either fm facility. Clear-voice communications may be relayed by the combined fm facilities. Retransmission of ground station signals is the main purpose of the No. 2 fm facility.

c. 1. No. 2 *Fm Facility (AN/ARC-2O1).* The No. 2 fm facility is identical to No. 1 fm facility except no provisions for homing or IFM operation are included. Provisions are provided for TSEC/KY-58 secure voice operation. The No.2 fm facility includes a separate antenna to allow the No. 1 fm facility to transmit while the No.2 fm facility receives, and vice-versa. The audio and keying circuits of the two facilities are interconnected to provide extended-range communications by retransmission of signals received on either fm facility. Clear-voice or secure voice communications may be relayed by the combined fm facilities. Retransmission of ground station signals is the main purpose of the No.2 fm facility.

d. Secure-Voice Equipment. The secure-voice encoder/decoder TSEC/KY-58 and secure-voice control indicator ZAHP are used with the fm facilities to provide secure, two-way voice communications. Helicopters with AN/ARC-l 14 radios only FM No. 1 is equipped for secure-voice. Helicopters with AN/ARC-201 radios FM No. 1 and 2 are equipped for Secure-voice. The encoder portion of the secure-voice encoder/decoder translates the microphone audio to coded voice for transmission across the fm radio. Secure audio signal from the fm radio receiver is applied to the secure-voice encoder/decoder for translation to clear-voice audio.

e. Vhf Communal Facility. Vhf command facility provides two-way, amplitude-modulated command communications. The vhf command facility provides 1,360 selectable frequency channels between 116.000 and 149.975 MHz in steps of 0.025 MHz. Transmission and reception are on the same frequency using the. vhf portion of the vhf/fro antenna. A separate guard receiver is included in the facility to monitor the 121.5 MHz vhf distress frequency. The receivers are disabled during transmitter operation.

f. Uhf Command Facility. The uhf command facility provides two-way, amplitude-modulated command communications. The uhf command facility provides 3,500 selectable frequency channels between 225.00 and 399.95 MHz in steps of 0.05 MHz. Transmission and reception are on the same frequency using the uhf antenna. A separate guard receiver is included in the facility to monitor the 243.00 MHz uhf distress frequency. Both receivers are disabled during transmitter operation.

3-4. Navigation System.

a. General. The navigation system consists of the adf (AN/ARN-89); gyromagnetic compass set (AN/ASN-43); homing function **C** of the No. 1fm facility (AN/ARC-l14); VOR/ILS (CONUS NAV) facility (AN/ARN-123); radar altimeter (AN/APN-209); and position location reporting system. Primary power to the adf, VOR/ILS, radar altimeter, and PLRS is supplied by the 28 Vdc essential bus through the ADF, CONUS NAV, RDR ALT, PLRS, and RELAY JCT circuit breakers in the overhead console. Ac power to the VOR receiver and heading-radio bearing indicator (for VOR operation) is supplied by the 115/26 Vac auto-transformer through the CONUS NAV circuit breaker in the overhead console.

b. Adf. The adf (AN/ARN-89) provides the pilot and copilot with visual indications of the relative bearing to the station being received. The adf radio-bearing indications can be used for homing and obtaining a position or fix on a received station. The adf receiver has one continuous-tuning frequency range of 100 to 3,000 KHz. The adf radio-bearing information is displayed on the heading-radio bearing indicator. Three modes of operation allow the adf to function as an automatic direction finder, a manual direction finder, or as an am communications receiver. A beat-frequency oscillator (BFO) is included to provide an audible

indication of unmodulated carrier signals. The adf provides its own 26 Vat, 400 Hz source for adf heading-radio bearing indicator operation.

c. Gyromagnetic Compass Set. The gyromagnetic compass set (AN/ASN-43) provides a visual indication of the aircraft magnetic heading on the heading-radio bearing indicator. Two modes of operation, slaved and directional, are available. The normal mode is the slaved mode, in which the directional gyro is slaved to the earth's magnetic meridian by the flux valve compass. The directional gyro mode is used in latitudes where magnetic heading information is unreliable, such as above 78 degrees north latitude and below 69" south latitude. In these areas, the unslaved directional gyro maybe used to provide heading information. Manual updating of correct heading must be made to compensate for drift in this mode.

d. Homing Function No. 1 Fm Facility. The homing function of the No. 1 fm facility provides the pilot with a visual indication for steering to the site of a transmitting fin station. Visual steering information for horning is displayed on the heading-radio bearing indicator. FM homing capability is not provided for ATAS equipped helicopters with AN/ARC-114 radios.

c. VOR/ILS. The VOR/ILS (CONUS NAV) facility (AN/ARN-123) enables the operator to determine his present position, direction to a given point, and fly a pre-determined flight path to a desired destination relative to a VOR facility. The localizer circuitry provides a visual and aural display of the helicopter position relative to a straight approach line to the runway. The marker beacon circuitry provides a visual display to indicate helicopter position and distance to the landing area relative to a straight line approach to the runway. Glideslope receiver provides fly up-fly down information during an ILS approach to an ILS equipped runway. The VOR/ILS receiver receives the combined VOR (vhf omni-range) and LOC (localizer) signals over a frequency range of 108.00 to 117.95 MHz, GS (glideslope) signals over a frequency range of 329.15 to 336.00 MHz, and MB (marker beacon) signals on 75.00 MHz from ground transmitters. The signals are de-modulated as required to drive the heading-radio bearing indicator, course deviation indicator, and marker beacon lamp. Audio signals may also be received from the ground transmitters through the helicopters interphone system. All controls for the facility are located on and performed by the VOR/ILS control. All control signals are routed from the control to the receiver.

f. Radar Altimeter. The radar altimeter facility (AN/APN-209) consists of radar altitude indicator, transmitting antenna, and a receiving antenna. The facility is a short pulse, terrain tracking and altitude sensing radar system that measures and visually indicates actual clearance in feet between the helicopter and terrain over a range from zero to 1500 feet. The indicator contains all the electronic components necessary for the generation, reception, and tracking of the radar pulses. The indicator provides precise altitude indications with a manually set low-level and high-level warning flag to warn when a predetermined low or high altitude limit has been reached. One control knob is used to set the low altitude limit index, and turn the facility on. Another control knob is used to set the high altitude limit index, and operate the self-test mode. Two antennas are used to obtain the isolation of signals required during transmitting and receiving of rf signals. The rf signals transmitted toward the terrain by the transmitting antenna, are in a conical beam 35 degrees wide allowing the helicopter to maneuver and still provide reflected rf signals to be received by the receiving antenna. The indicator tracks the leading edge of the reflected rf signal so that the altitude signal provided to the indicator is always the altitude of the helicopter to the nearest terrain.

3-5. Radar Warning Facility. The radar warning system (AN/APR-39) consists of an azimuth indicator, control panel comparator, two dual receivers, four spiral antennas, and a blade antenna. The system provides the operator with both visual and audible warning when a radar threat environment is encountered, whenever an operator requires sufficient warning to aid in the evasion necessary for mission completion. The system can sort out, identify threat radar signals, and display identified threats.

3-6. Identification Facility. The aircraft identification facility is transponder set AN/APX-100(V). This facility identifies the aircraft as friendly to ground radar interrogating stations. The transponder receives, decodes, and responds to characteristic interrogation pulses by IFF, ground stations supplemented with the selective identification feature (sif), and to civil ground radar systems. The receiver section operates on a single

preset frequency of 1,030 MHz, and the transmitter operates on a single preset frequency of 1,090 MHz. The equipment can also be used to transmit specially coded emergency signals or position identifying signals. In Mode 4 the transmitted pulses are also supplied as audio pulses to the audio control panel. The audio signal from the identification facility is connected directly to the audio amplifiers in the interphone-audio system and will be heard on the headsets regardless of audio control panel switch setting or volume control level.

3-7. Proximity Warning Facility. The proximity warning facility is Receiver-Transponder YG-1054. This facility provides the pilot and copilot with audio/visual intrusion indications of a similarly equipped aircraft within a radius of 5,000 feet and in an altitude band of plus or minus 300 feet. The transponder communicates with other transponder with pulsed pairs of two 55±20 nanosecond wide pulses, separated by 450±50 nanoseconds. A pitot-static tube provides a pressure input to a barometric pressure sensor in the receiver-transponder. This barometric pressure provides a consistent altitude reference over the communication range of the system. Two quarter-wave stub type antennas are combination **transmitting and receiving antennas. The transmitter-receiver operates at a frequency of 5.08 GHz. A visual display consisting of flashing arrows indicates that the intruding aircraft is either at a higher altitude, at the same altitude or at a lower altitude than the helicopter. The audio signal from the proximity warning facility is connected directly to the audio amplifiers in the interphone-audio system and will be heard on all headsets.**

3-7.1. Armament Facility. The Air-To-Air Stinger (ATAS) missile system rpvides defensive and limited offensive air-to-air combat capabilities. The ATAS missile system enables the pilot to continue the mission while locating and engaging targets. The pilot controls the engagement with the pilot cyclic grip and visual display on the pilot display unit (PDU). System electronic control is provided by the interface electronics assembly (IEA).

3-8. Interphone-Audio System, Block Diagram. (Fig. 3-1., MD-1101/A (Fig. 3-1.1., MD-1219/A)

a. Interphone Operation. Interphone operation between the pilot, copilot, and one passenger is possible when any or all audio control panel transmitter selector switches are set to the ICS position, and the pilot or copilot cyclic stick ICS or RADIO pushbutton or the crew pushbutton or the copilot footswitch is depressed. Interphone operation

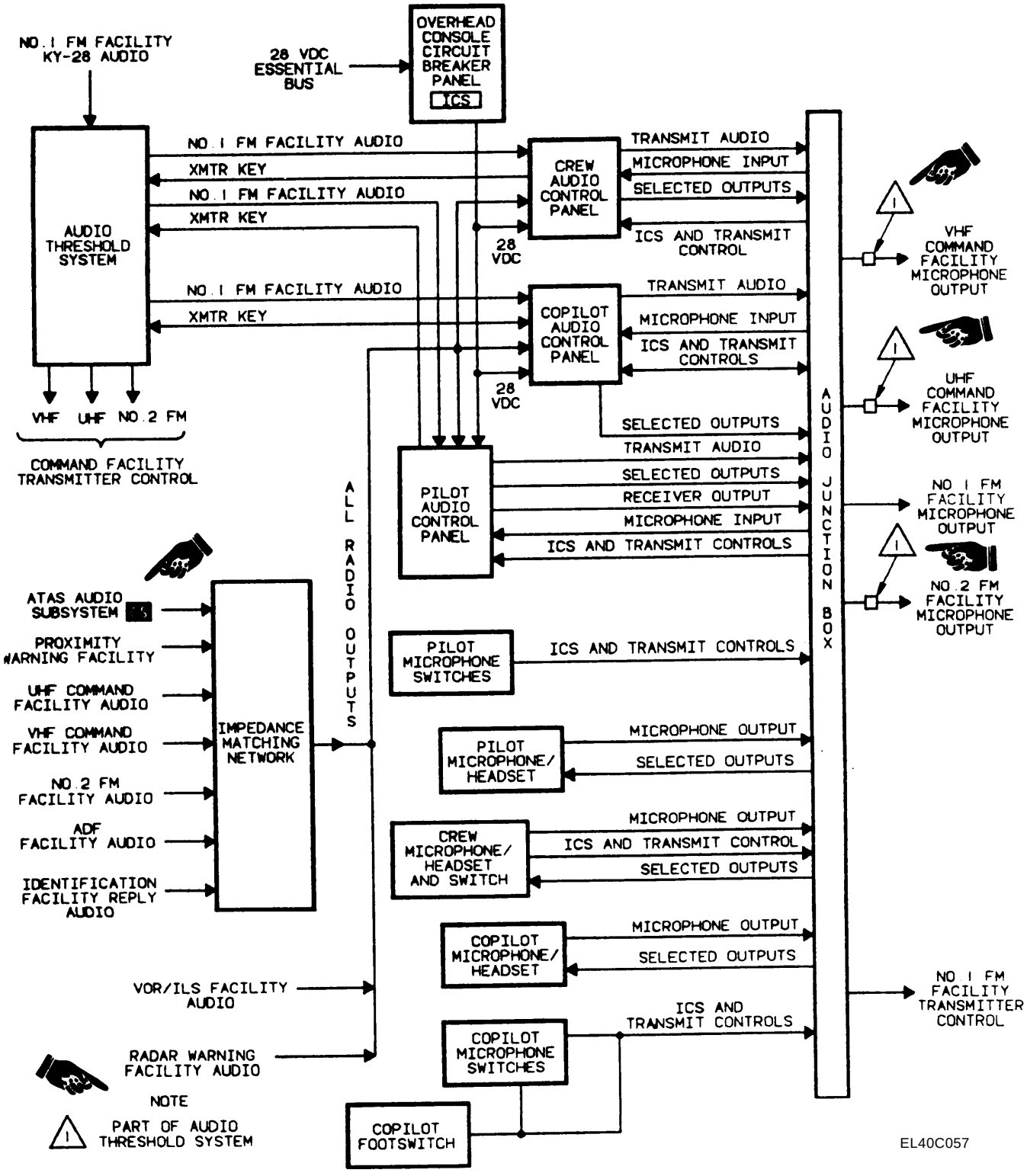


Figure 3-1. Intercommunication and audio facility, block diagram

is also possible from the pilot and copilot positions by pushing the cyclic stick ICS buttons regardless of selector switch positions. - A HOT MIKE switch is provided at each audio control panel to allow handfree interphone operation. The HOT MIKE switch circuit configuration is such that the microphone audio will be applied to the interphone circuit only, regardless of transmitter-selector switch position. Microphone output is routed from the headset-microphone through the audio terminal strip, to each audio control panel. The received audio is amplified in the audio control panels. The VOL control on the audio control panels is used to adjust the level of the audio which is then routed to the headsets.

b. Receiuer-Monitoring. Audio output from the communications and adf receivers and the mode 4 operation of the transponder is applied to the impedance matching network for loading and distribution to the audio control panels. Audio from the KY-28 communications security unit is switched in the audio threshold system and applied to the pilot, copilot, or crew audio control panels with the RCVR NO. 1 switch selected. Toggle switches on the audio control panels select and apply the receiver audio outputs to the audio control panel amplifiers. The communications receiver outputs are selected by the numbered toggle or rotary selector switches on the audio control panels. The toggle switch marked 4 is not used. The adf receiver audio is selected by the NAV toggle switch. The VOR receiver audio is selected by the AUX toggle switch. The radar warning audio is connected directly to the audio control panel amplifier with no switch or volume control. Reply-pulse audio from mode 4 operation of the transponder is also connected directly to the audio control panel amplifier with no switch or volume control. adf amplification, the audio signal is fed from the audio control panels to the audio terminal strips where it is distributed to the headsets.

c. Transmitter Modulation. The radio transmitters may be keyed and modulated from each station. Any desired transmitter may be keyed and modulated when the transmitter-selector switch on any audio control panel is set to select that transmitter, and the microphone switch for that respective audio control panel is pushed. Microphone output is routed from the microphone to the audio control panels. From the audio control panels, the microphone output is routed through the audio terminal strip to the selected radio transmitter. The transmitter-keying circuit is routed from the microphone switches through the audio terminal strip to the audio control panels. The transmitter selector switch in each audio control panel connects the respective keying circuit to the selected radio transmitter.

d. Power Distribution. Primary power to operate the interphone audio system is supplied by the 28 Vdc essential bus through the 5-ampere ICS circuit breaker in the overhead console.

3-9. No. 1 Fm Facility, Block Diagram. (Figure 3-2., AN/ARC-l 14) (Figure 3-2.1., AN/ARC-201)

a. Communications. The No. 1 fm radio transmitter and main receiver operate on the same frequency and are simultaneously tuned by frequency selector knobs on the front panel. A fixed-tuned guard receiver is included with the No. 1 fm radio to provide constant monitoring of the fm distress frequency regardless of the main radio frequency setting. During normal communications, the aircraft vhf fm antenna is used for transmission and reception.

(1) *Reception without voice security.* Signals picked up by the antenna are applied to the facility receivers. In the main and guard receivers, the signals are selected, amplified, and converted to audio signals. The audio signal level is adjusted by the volume control on the facility front panel and is then applied to the impedance matching network through a patch cable, if the secure-voice encoder/decoder is not installed; or through bypass switches in the secure voice encoder/decoded, if it is installed. The impedance matching network loads and distributes the receiver audio signal to the pilot, copilot, and crew audio control panels for selection. When the appropriate switch selection is made, the audio is amplified in the audio control panel. The audio level is further adjusted by the audio control panel volume (VOL) control. Selected audio is fed to the operators (pilot, copilot, or crew) headset.

(2) *Reception with voice security.* In voice-security operation, encoded signals from the antenna are applied to the facility receivers. In the main receiver, the signals are selected, amplified, and converted to coded audio signals. The coded audio signal is then applied to the secure-voice encoder/decoder for translation to clear voice audio. The resulting decoded audio output is applied to the impedance matching network. The impedance

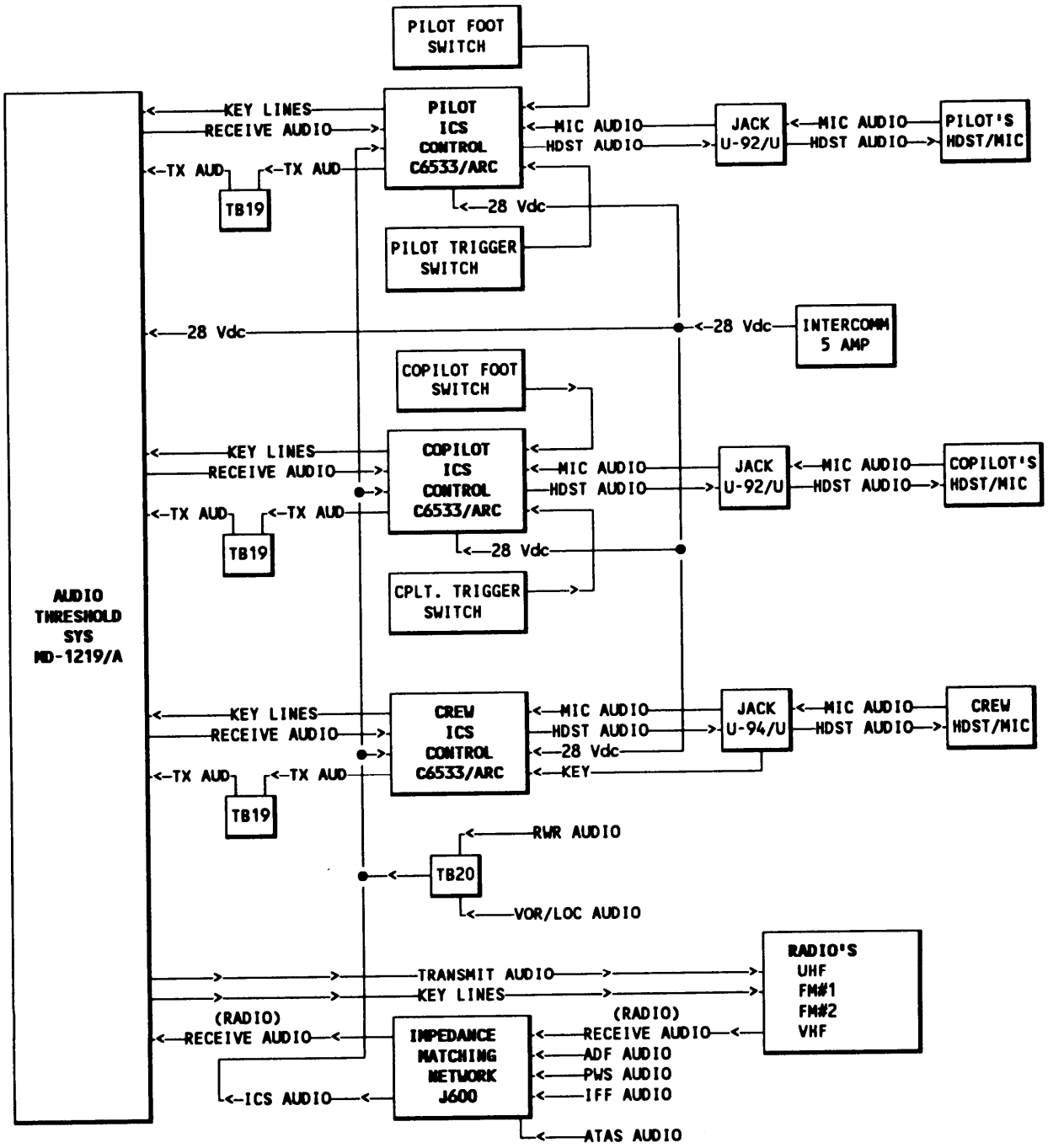


Figure 3-1.1. Intercommunication and audio facility with MD-1219/A, block diagram

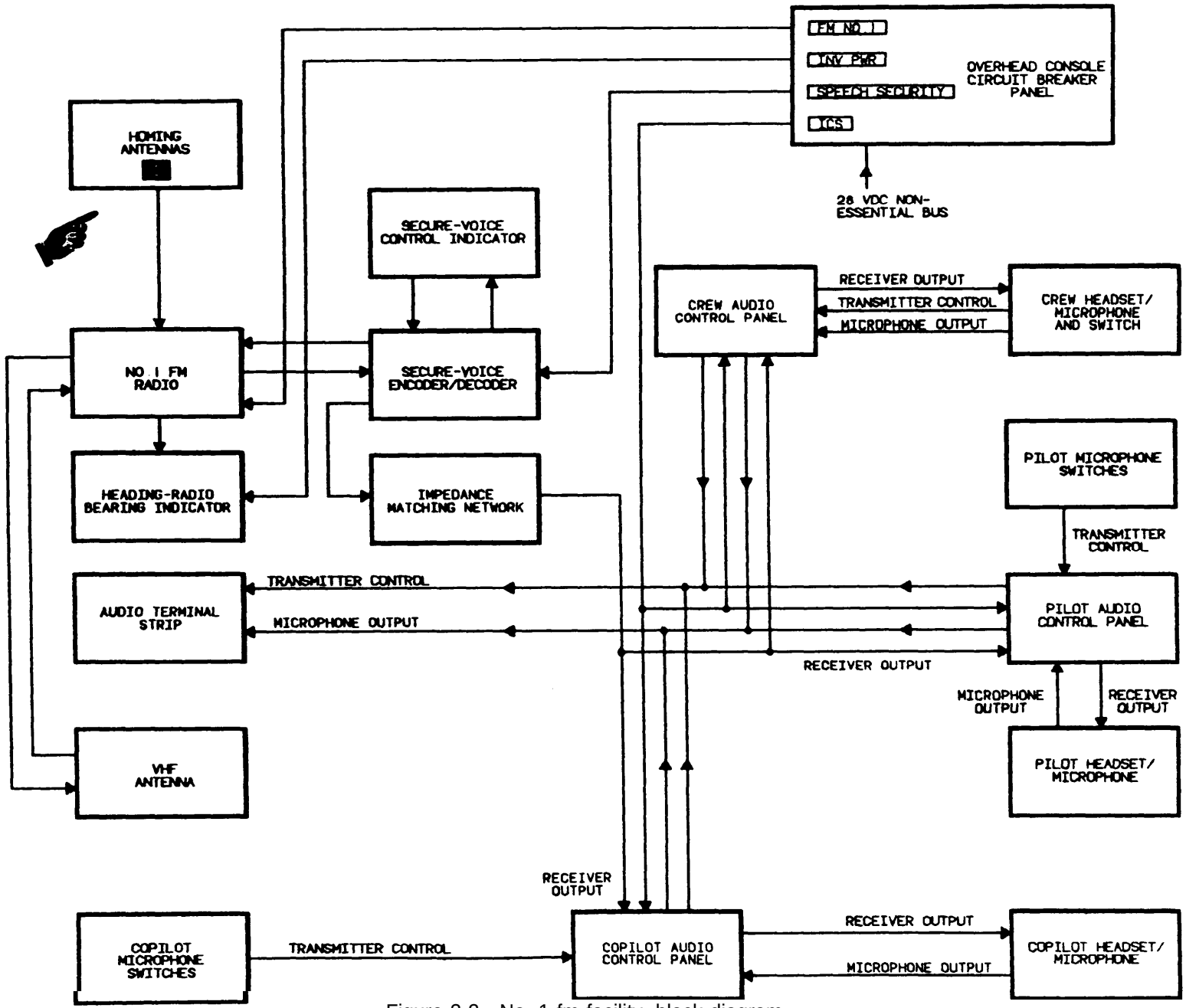


Figure 3-2. No. 1 fm facility, block diagram

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matching network loads and distributes the decoded audio to the pilot, copilot, and crew audio control panels for selection. When the appropriate switch selection is made, the audio is amplified in the audio control panel. The audio signal level is further adjusted by the audio control panel VOL control, and the decoded audio signal is then fed to the operators (pilot, copilot, or crew) headset. Control of the voice-security computer is accomplished by the secure-voice control indicator. Microphone audio from the audio control panels is attenuated slightly by the audio threshold system, a system designed to eliminate low-level audio,

(3) *Transmission without voice security.* Microphone audio from the pilot, copilot, and crew headsets is applied to the respective audio control panels for selection by the transmitter selector switch. When the appropriate selector switch setting is made, and the associated microphone button (RADIO pushbutton on the cyclic sticks) is depressed, the microphone output is amplified in the audio control panel and applied to the No. 1 fm radio transmitter through a patch cable, if the secure voice encoder/decoder is not installed, or through bypass switches within the secure voice encoder/decoder if it is installed. Sidetone audio is routed back to the headsets in the same way as receiver audio (1) above. The modulated rf signals from the transmitter are applied to the vhf antenna for radiation to the receiving stations.

(4) *Transmission with voice security.* Microphone output from the pilot, copilot, and crew headset microphones is applied to the respective audio control panels for selection by the transmitter selector switch. When the appropriate switch setting is made, and the associated microphone button (RADIO pushbutton on the cyclic sticks) is depressed, the microphone output is amplified in the audio control panel and applied to the voice-security computer where it is encoded (or left clear) as determined by the PLAIN-CIPHER switch setting on the secure-voice control indicator. The encoded audio is applied to the No. 1 fm radio transmitter. Sidetone audio is developed within the secure voice encoder/decoder and is routed back to the headsets in the same way as the receiver audio (2) above. The modulated rf signals from the transmitter are applied to the VHF/FM antenna for radiation to the receiving stations.

b. Radio-Signal Relay Operation. For radio-signal relay operation, both No. 1 and No. 2 fm facilities are required. The function selector switches on both fm radio front panels are set to the RETRAN position. Each ground station involved is paired to one fm facility in the aircraft. For example, a given ground station and a given fm facility are set to communicate on the same frequency. Due to signal feedback interference, it is not possible to retransmit and receive on the same frequency. Therefore, the operating frequencies of the two aircraft fm facilities must be well separated. With this configuration, signals transmitted by the ground station of one communicating pair are received by the aircraft fm facility in that pair. The receiver in that fm facility converts the ground station signals to transmitter control and audio signals. Through interconnecting cabling between the two aircraft fm facilities, the received control and audio signals are applied to the transmitter of the aircraft fm facility used in the second communicating pair. The control and audio signal key and modulate the aircraft fm facility transmitter in the second communicating pair and the resultant rf signals are transmitted to and received by the ground station in the second communicating pair. During the radio signal relay operation, the aircraft maintains an altitude and position that provides line-of-sight communication between the aircraft and both ground stations, thus making possible communications that would otherwise be prohibited by the geographic locations of the ground stations.

c. Homing . (Figure 3-3.) The No. 1 fm facility in conjunction with the fm homing antennas, develops course deviation (steering), signal adequacy, and station approach signals. The received rf signals are routed from the left and right homing antennas to the No. 1 fm radio which compares the two signals and develops a course deviation signal. This course deviation signal is applied to the heading radio bearing indicator (ID-1351/A) and drives the steering meter. In addition, the rf input to the No. 1 fm radio is monitored; the output of the monitoring circuit is applied to the signal adequacy indicator and the station approach meter on the heading-radio bearing indicator. In the event of B + power failure, a red flag will appear in the heading-radio bearing indicator. The audio signals from the No. 1 fm radio are applied to the impedance matching network. The audio signal from the impedance matching network is applied to all audio control panels where it is amplified and the volume controlled before application to the pilot, copilot, and crew headsets. FM homing capability is not provided for ATAS equipped helicopters with AN/ARC-l 14.

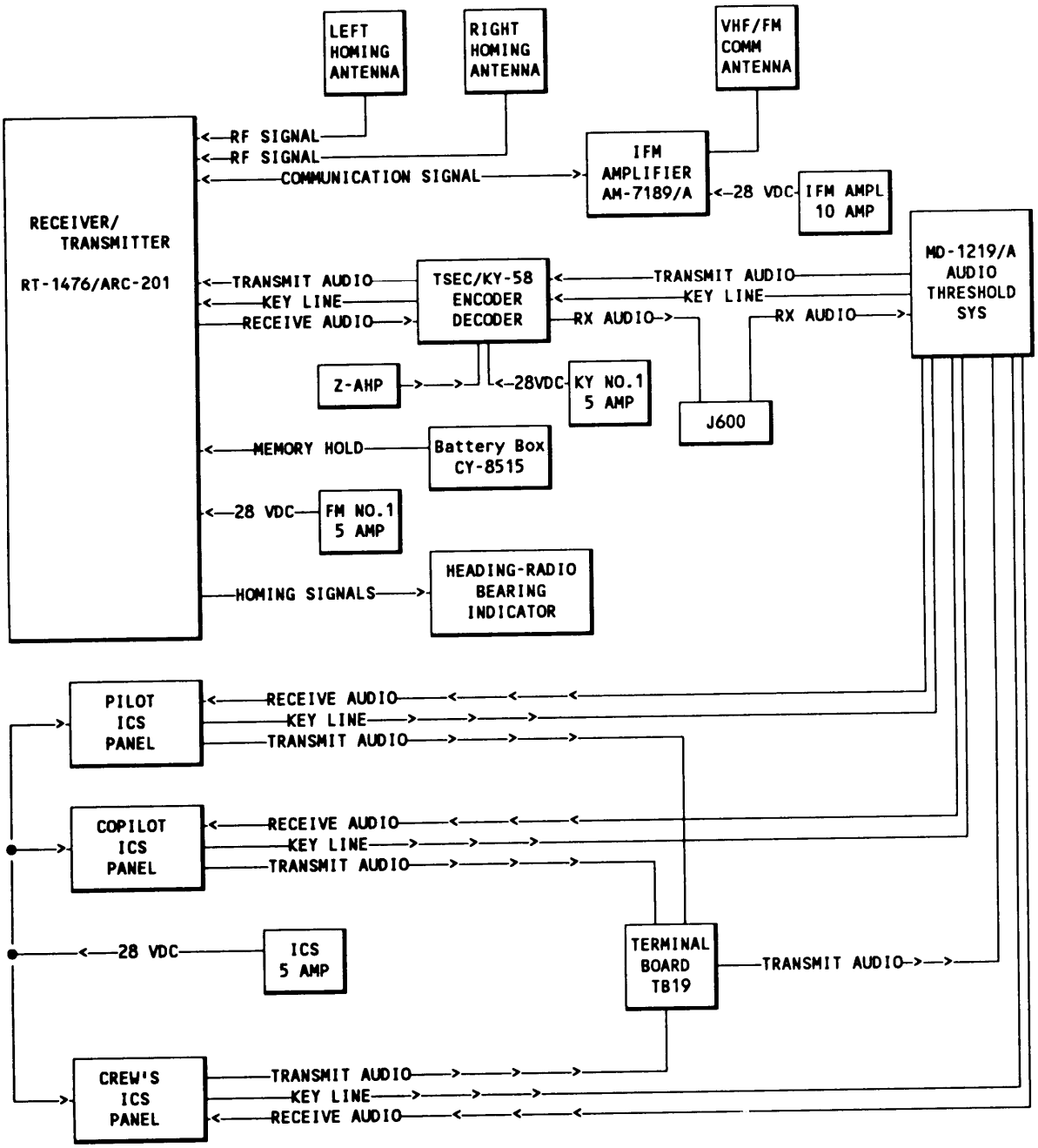

Figure 3-2.1. No. 1 fm facility AN/ARC-201, block diagram

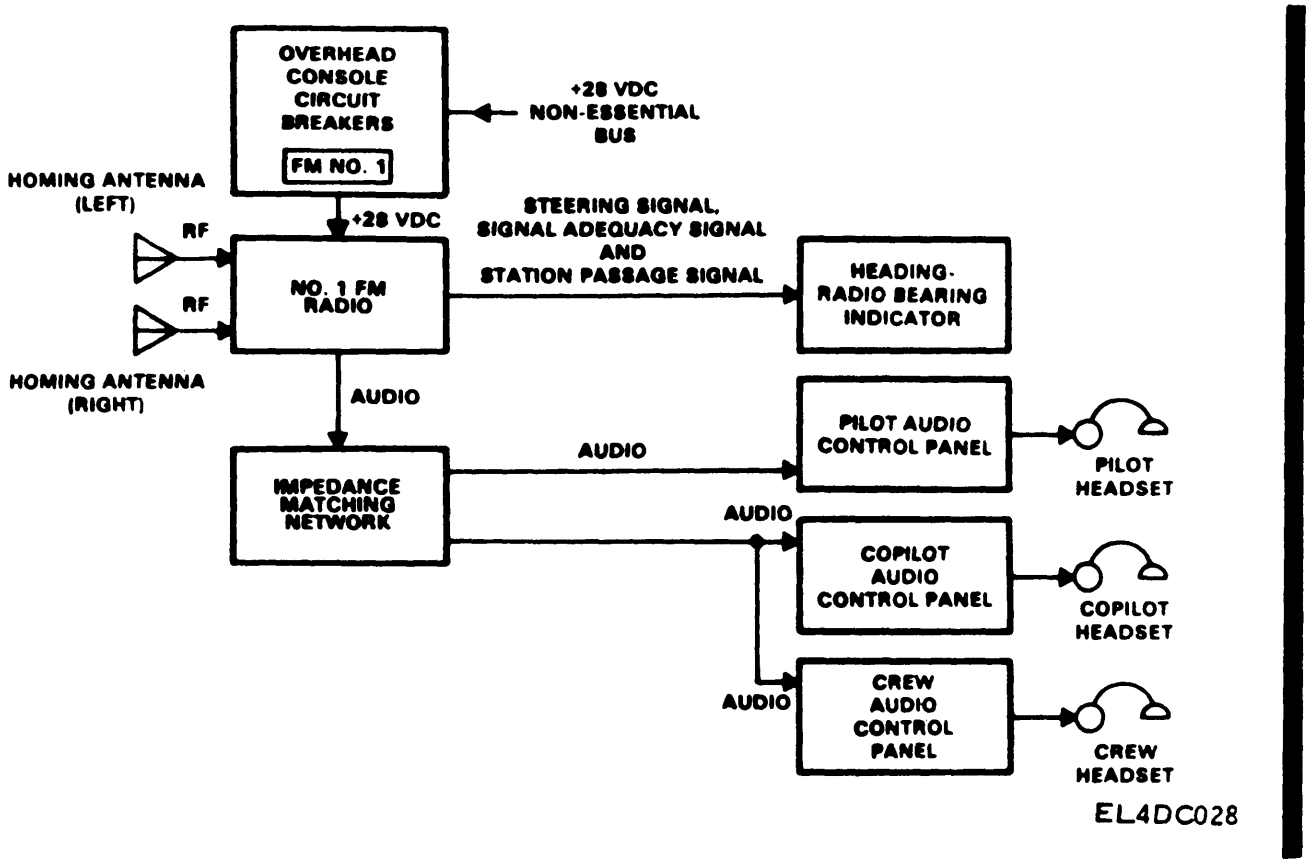

Figure 3-3. No. 1 fm facility homing function, block diagram

d. No. 1 Fm Facility Power Distribution. Primary power to operate the fm facility is supplied from the aircraft 28 Vdc nonessential bus through the FM No. 1 circuit breaker in the overhead console. Primary power to the secure-voice encoder/decoder is supplied by the aircraft 28 Vdc nonessential bus through the SPEECH SECURITY circuit breaker in the overhead console.

3-10. No.2 Fm Facility, Block Diagram. (Figure 3-4, AN/ARC-l 14) (Figure 3-4.1. AN/ARC-201)

a. Communications. The No. 2 fm radio transitter and main receiver operate on the same frequency and are simultaneouely tuned by frequency selector knobs on the front panel. A fixed-tuned guard receiver is included with the No. 2 fm radio to provide constant monitoring of the fin distress frequency regardless of the main radio frequency setting.

(1) *Reception.* Signals picked up by fm antenna No. 2 are allied to the facility receivers. In the main and guard receivers, the radio signals are selected, amplified, and converted to audio signals. The audio signal level, is *adjusted* by the volume control on the facility front panel and is then applied to the impedance matching network. The impedance matching network loads and distributes the receiver audio to the pilot copilot, and crew audio control panels *for* selection. When the appropriate switch selection is made, the audio signal is amplified in the audio control panel. The audio signal level is further adjusted by the audio control panel VOL control, and the selected audio signal is then fed to the *operators* (pilot, copilot or crew) headset.

(2) *Transmission.* Microphone output from the pilot, copilot, or crew headset/microphones is applied to the respective audio control panels for selection by the transmitter selector switch. When the appropriate selector switch setting is made, and the associated microphone button (RADIO pushbutton on the cyclic sticks) is depressed, the microphone output is amplified in the audio control panel and applied to the No. 2 fm facility

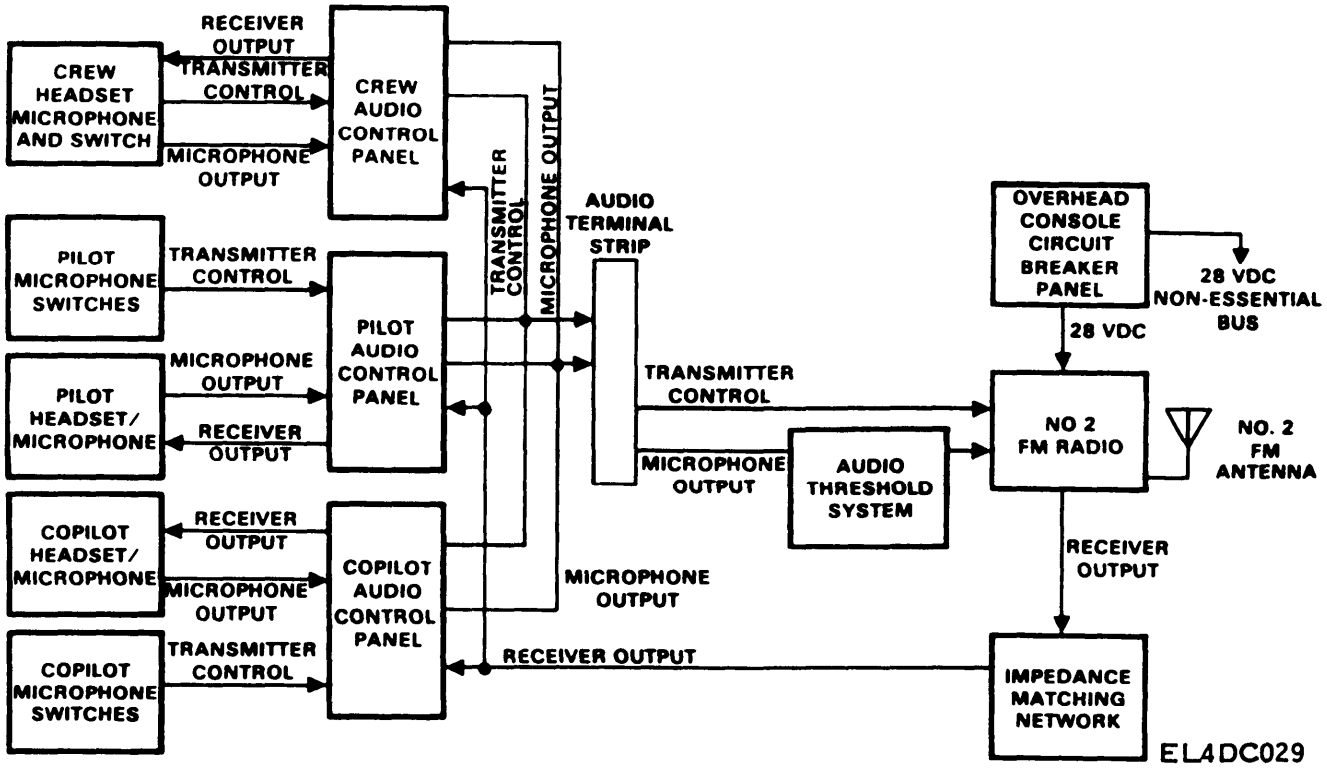

Figure 3-4. No. 2 fm facility, block diagram

transmitter. Sidetone audio is routed back to the headsets in the same way as receiver audio ((1) above). The modulated rf signals from the transmitter are applied to the No. 2 fm antenna for radiation to the receiving stations. Microphone audio from the audio control panels is attenuated slightly by the audio threshold system, a system designed to eliminate low-level audio noise.

b. Radio Signal Relay Operation. (Refer to paragraph 3-9, b.)

c. No. 2 Fm Facility Power Distribution. Primary power to operate the No. 2 fm facility is supplied by the aircraft 28 Vdc nonessential bus through the FM No. *2* circuit breaker in the overhead console.

3-11. Vhf Command Facility, Block Diagram.

(Figure 3-5.)

a. Communications. The vhf command radio transmitter and main receiver operate on the same frequency and are simultaneously tuned by frequency selector knobs on the front panel. A fixed-tuned guard receiver is included with the vhf command radio to provide constant monitoring of the vhf distress frequency regardless of the main radio frequency setting. The aircraft vhf antenna is used for transmission and reception.

(1) *Reception.* Signals picked up by the antenna are applied to the radio. In the main and guard receivers, the signals are selected, amplified, and converted to audio signals. The audio signal level is adjusted by the volume control on the facility front panel and the signal is then applied to the impedance matching network. The impedance matching network loads and distributes the receiver audio signal to the pilot, copilot, and crew audio control panels for selection. When the appropriate switch selection is made, the audio signal is amplified in the audio control panel. The audio signai level is further adjusted by the audio control panel volume (VOL) control. Selected audio is fed to the operators (pilot, copilot, or crew) headset.

(2) *Transmission.* Signals from the pilot, copilot, or crew microphone are applied to the respective audio control panels for selection by the

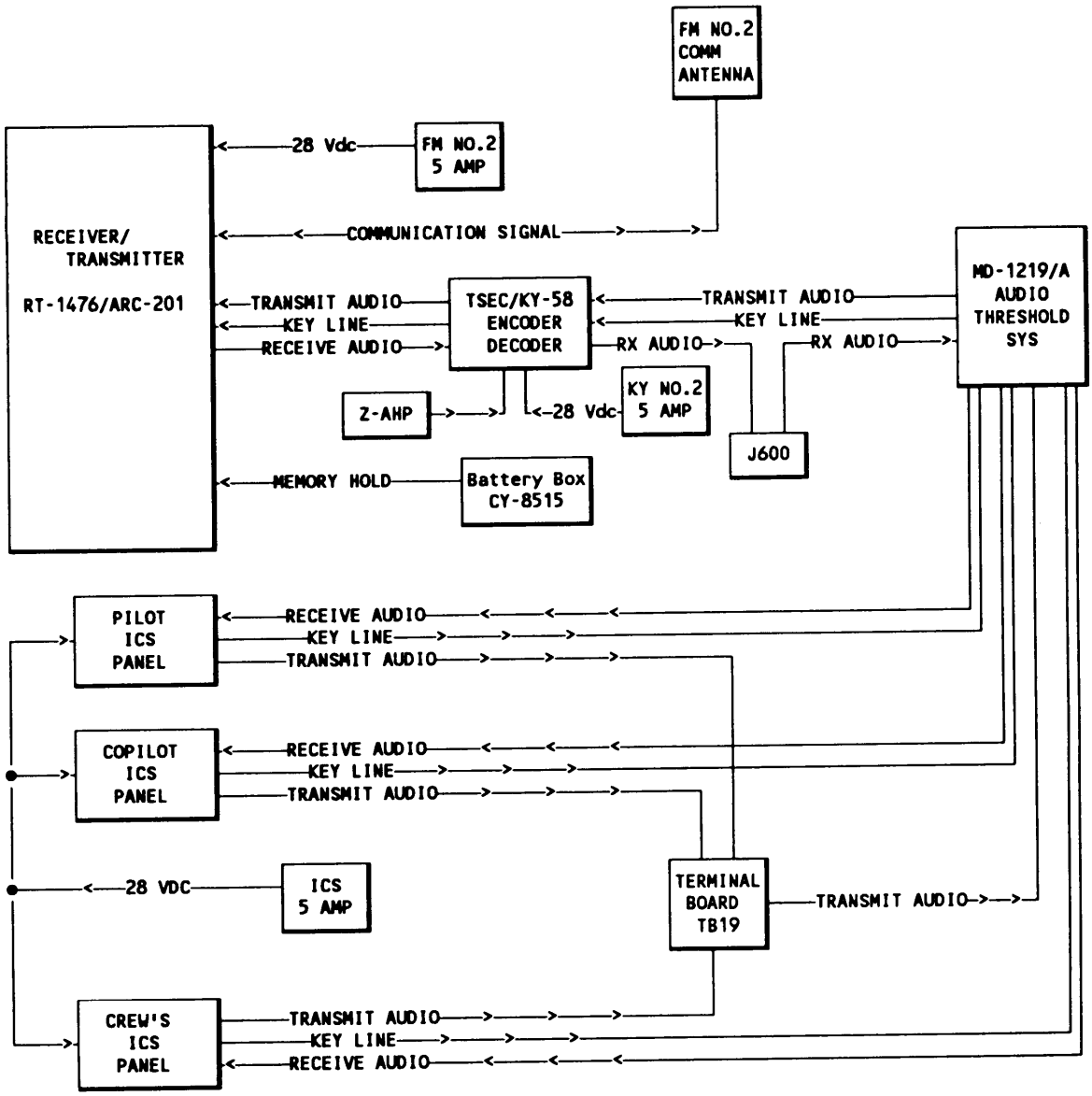

Figure 3-4.1. No.2 fm facility AN/ARC-201, block diagram

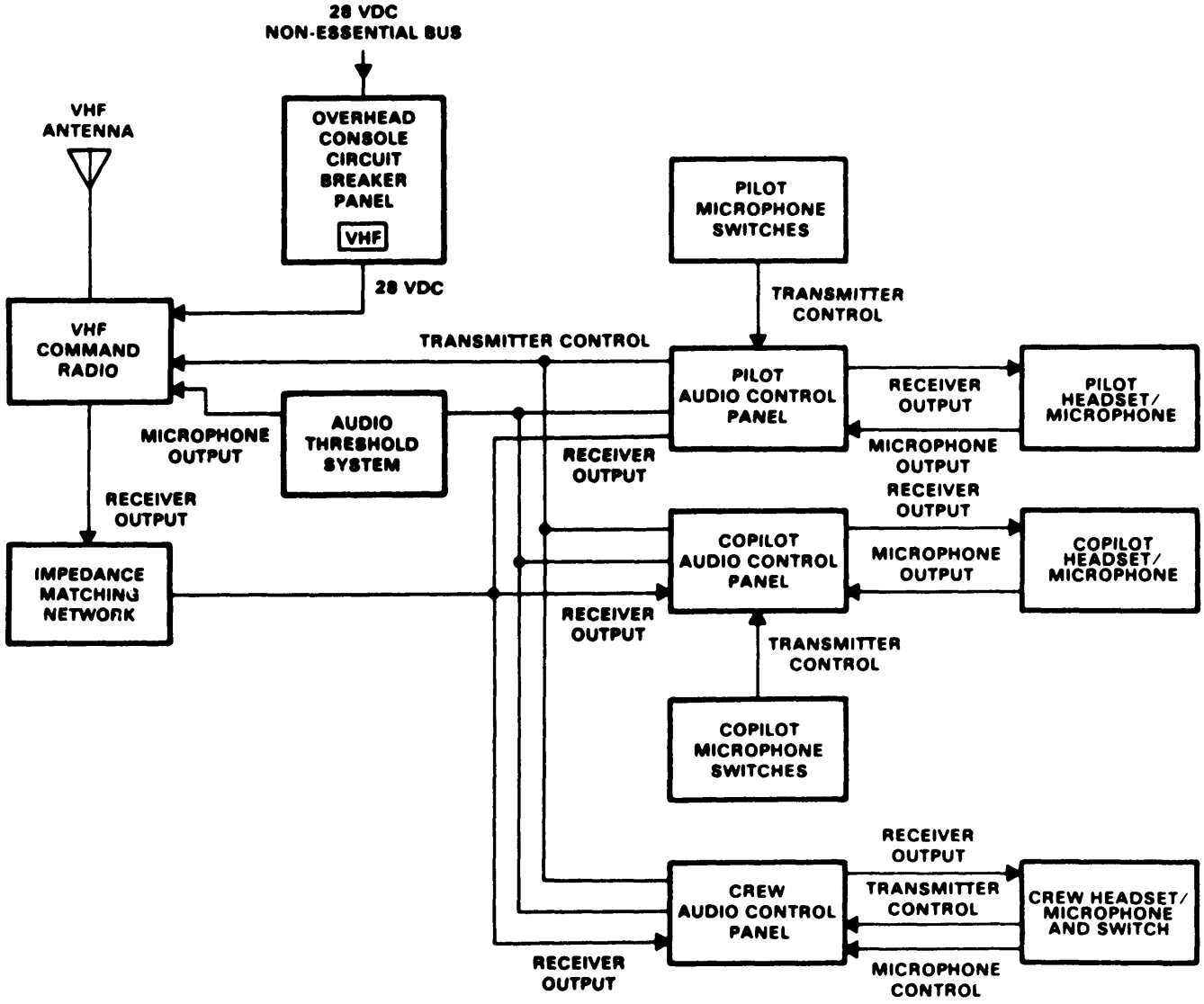

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Figure 3-5. Vhf command facility, block diagram.

transmitter selector switch. When the appropriate selector switch setting is made, and the associated microphone button (RADIO pushbutton on the cyclic sticks) is depressed, the microphone output is amplified in the audio control panel and applied to the vhf command facility transmitter. Sidetone audio is routed back to the headsets in the same way as receiver audio (1) above. The modulated rf signals from the transmitter are applied to the antenna for radiation to the receiving stations.

b. Vhf Command Facility Power Diatribution. Primary power to operate the vhf command facility is supplied by the aircraft 28 Vdc nonessential bus through the VHF circuit breaker in the overhead console.

3-12. Uhf Command Facility, Block Diagram.

(Figure 3-6.)

a. Communications. The uhf command radio transmitter and main receiver operate on the same frequency and are simultaneously tuned by frequency selector knobs on the front panel. A fixed-tuned guard receiver is included with the uhf command radio to provide constant monitoring of

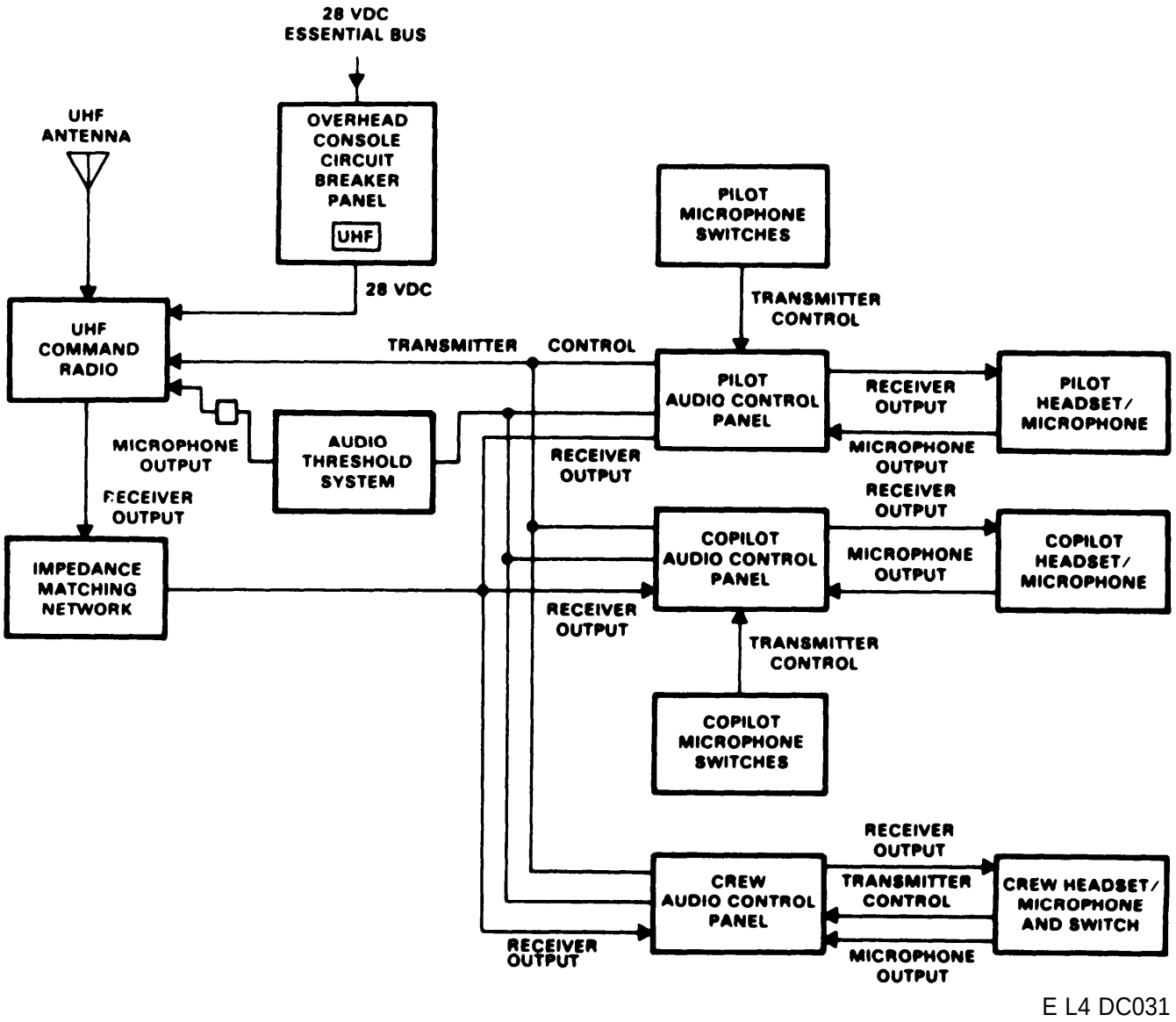

Figure 3-6. Uhf command facility, block diagram (AN/ARC-l16 or AN/ARC-164)

the uhf distress frequency regardless of the main receiver-transmitter frequency setting. The aircraft uhf antenna is used for transmission and reception.

(1) *Reception*. Signals picked up by the antenna are applied to the radio. In the main and guard receivers, the signals are selected, amplified, and converted to audio signals. The audio signal level is adjusted by the volume control on the front panel and the signal is then applied to the impedance matching network. The impedance matching network loads and distributes the receiver audio signal to the pilot, copilot, and crew audio control panels for selection. When the appropriate switch selection is made, the audio signal is amplified in the audio control panel. The audio signal level is further adjusted by the audio control panel volume (VOL), control. Selected audio is fed to the operator (pilot, copilot, or crew) headset.

(2) *Transmission.* Microphone audio from the pilot, copilot, and crew headsets is applied to the respective audio control panels for selection by the transmitter selector switch. When the appropriate selector switch setting is made and the associated microphone button (RADIO pushbutton on the cyclic sticks) is depressed, the microphone output is amplified in the audio control panel and applied to the uhf command facility transmitter. Sidetone audio is routed back to the headsets in the same way

as receiver audio (1) above. The modulated rf signals from the transmitter are applied to the antenna for radiation to the receiving stations. Microphone audio from the audio control panels is attenuated slightly by the audio threshold system, a system designed to eliminate low-level audio noise.

b. Uhf Command Facility Power Distribution. Primary power to operate the uhf command facility is supplied by the aircraft 28 Vdc essential bus through the UHF circuit breaker in the overhead console.

3-13. Gyromagnetic Compass Facility, Block Diagram. (Figure 3-7.)

a. Modes of Operation. The gyromagnetic compass set has two operating modes. When operating in the DIR GYRO mode, the aircraft heading is indicated on a compass card as referenced to the directional gyro. In the MAG mode, the directional gyro is slaved to the magnetic field of the earth. The desired operating mode is selected by the DIR GYRO-MAG switch on the instrument panel.

b. Operating Circuits. The basic operating circuits of the gyromagnetic compass set include the power distribution and power supply circuitry, the free directional gyro circuitry, and the slaved directional gyro circuitry.

c. Power Distribution. The 115 Vat, 400 Hz power for the gyromagnetic compass set is supplied from the GYRO COMPASS circuit breaker on the overhead console. This power is applied to the heading synchro transmitter in the directional gyro to the heading synchro receiver in the heading-radio bearing indicator and through an rfi filter to the directional gyro motor. The 26 Vat, 400 Hz power for the compass transmitter is provided from the power transformer in the gyroscope base. In addition, the output of the power transformer is applied to a rectifier circuit to provide +40 Vdc through the DIR GYRO-MAG switch and to the control amplifier (in the MAG mode only).

d. Free Directional Gyro Circuitry. When power is applied to the facility and the directional gyro reaches operating speed, a stable output signal is sent from the heading synchro transmitter in the directional gyro to the heading synchro receiver in the heading-radio bearing indicator. The compass card azimuth is referenced to the stabilized direction of the gyroscope. Alignment of the compass card is accomplished with the synchronizing knob. The synchronizing knob (in free directional gyro operation only) allows the compass card azimuth to be changed to agree with the known heading of the aircraft. The rotation of the earth causes an apparent drift in the directional gyro, called earth's rate drift. The latitude knob on the directional gyro base controls the voltage to one of two torquing coils that precesses the gyro to correct for the drift rate. The correct torquing coil for north or south latitude is selected by the latitude switch on the directional gyro.

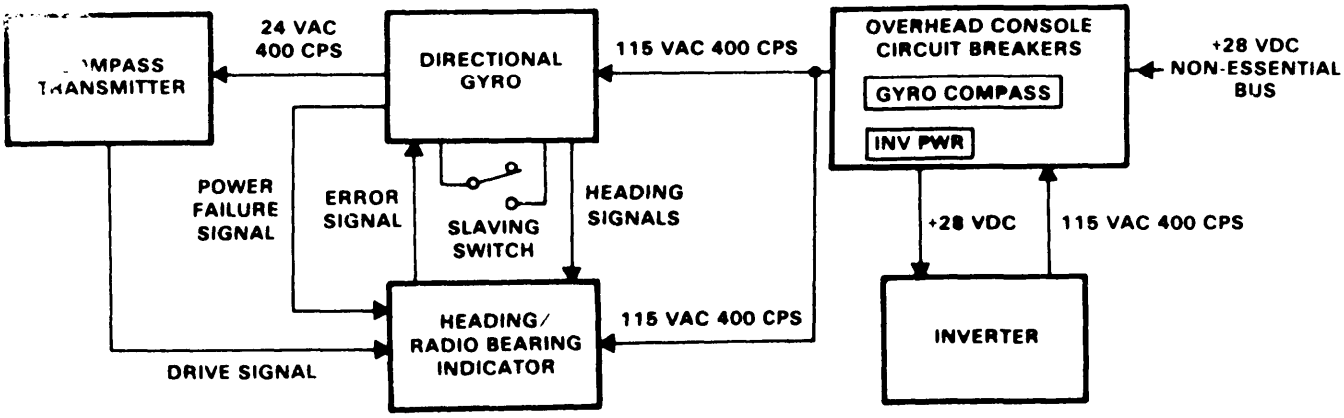

Figure 3-7. Compass facility, block diagram

e. Slaued Dimtional Gym Circuitry. In the MAG mode of operation, the heading synchro receiver in the heading-radio bearing indicator receives a stable signal from the directional gyro as in the DIR GYRO mode. In addition, the shaft of the heading synchro receiver is coupled to the mechanical input of the differential synchro transmitter in the heading-radio bearing indicator. The electrical input to the differential synchro transmitter is received from the compass transmitter. The output of the compass transmitter is referenced to the flux lines of the earth's magnetic field. The differential synchro transmitter sums the mechanical angle (from the heading synchro receiver shaft) and electrical angle (from the compass transmitter) to produce a three-wire electrical error signal. This three wire error signal output is applied to the slaving synchro in the directional gyro. The two-wire output from the slaving synchro rotor is applied to the input of the control amplifier. The output (slaving signal) of the control amplifier is applied to the torquing coils to process the directional gyro. The torquing coils are disconnected from the latitude correction circuit in the MAG mode of operation by a relay controlled by the DIR GYRO-MAG switch. When the directional gyro position corresponds with the compass transmitter position, the error signal is zero. The synchronizing knob is used to manually synchronize the directional gym with the compass transmitter. A signal from the control amplifier is applied to the annunciator to show the amount of misalignment and the direction the synchronizing knob will have to be turned to synchronize. A leveling circuit is included in the directional gyro which consists of a leveling switch and a leveling torquer. When the gyro is not level, the leveling switch is closed and the leveling torquer is energized. The leveling torquer precesses the directional gyro in the correct direction to maintain its level.

3-14. Adf Facility, Block Diagram. (Figure 3-8.)

a. Modes of Operation. The adf has three operating modes selected by the fiction switch on the adf control panel. When operating in the COMP mode, the set may be used for homing or automatic direction finding. The ANT mode permits reception of radio range navigation or radio broadcast stations. The LOOP mode is used for aural null homing and manual direction finding. Paragraphs b through g below, describe signal and power distribution in, adf. Unless otherwise noted, signal

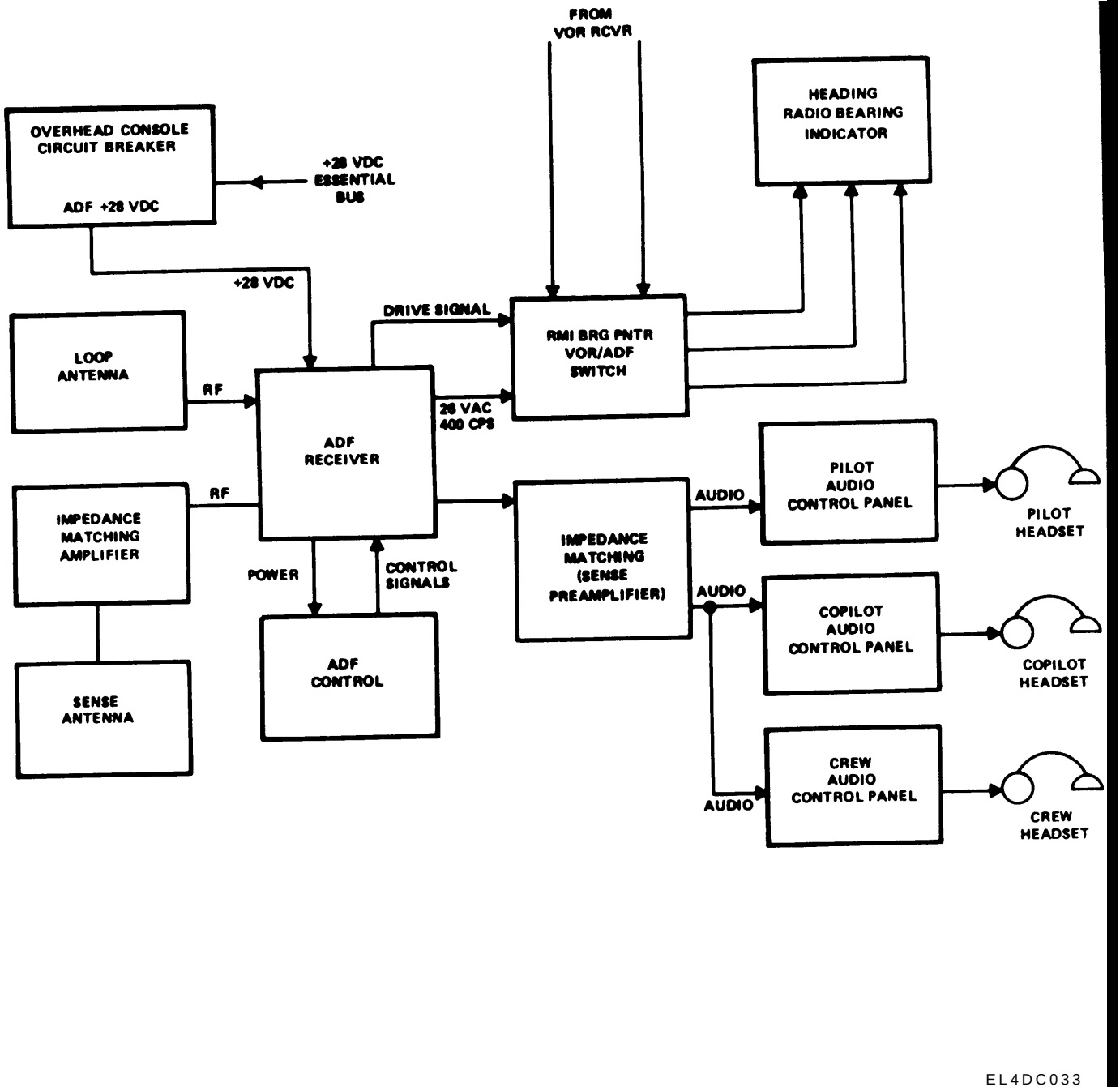

Figure 3-8. Adf facility, block diagram

and power distribution is the same for all three operation modes.

b. Rf Signals. Rf signals are applied to the adf receiver from the adf sense antenna or the adf fixed loop antenna.

(1) The adf sense antenna receives the incoming signal and applies it through an impedance matching amplifier to the adf receiver in the ANT or COMP modes. In the ANT mode, the sense antenna is used for tuning purposes and for reception of radio range navigation and broadcast stations. In the COMP mode, the signal from the sense antenna is compared with the signal from the adf fixed loop antenna for automatic direction finding.

(2) The adf fixed loop antenna receives the incoming signal and applies it to COMP and LOOP modes. The adf fixed loop antenna is used for manual or automatic direction finding.

c. Antenna Control Signals.

(1) *Antenna switching.* The mode switch on the adf control panel selects the antenna to be used. In the ANT mode, the adf sense antenna is used alone. In the COMP mode, both the adf sense and the adf fixed loop antennas are used. In the LOOP mode, the fixed loop antenna is used alone.

(2) *Antenna phasing signals.* Signals from the fixed loop are applied to the adf receiver in the adf (COMP) and loop modes. In the adf mode, the loop signals are processed automatically by a null-seeking servo loop. A resolver in the adf receiver electrically simulates rotation of the fixed loop antenna until the incoming rf signal is at a minimum level. At this point, rotation stops and the loop position is processed in the receiver for adf bearing information (f below). The signal from the adf sense antenna is used to cancel out ambiguous nulls in the servo loop. In the loop mode, the antenna signals are processed manually by the L-R control on the adf control panel. The loop antenna control effectively rotates the loop fast or slow in either direction. The adf sense antenna is not used in the loop mode and two nulls are present for each signal received.

d. Receiver Frequency Control Signals. Two tuning controls allow tuning to any frequency in the 100 to 3000 KHz band. The frequency determining oscillators are contained in the control panel. Output from them are routed through coaxial cable to the adf receiver to tune the receiver to the desired frequency.

e. Audio. Audio from the adf receiver is routed through the AUDIO control on the adf control panel and through the impedance matching network to the audio control panels. In the audio control panels, the audio is selected, amplified, and its volume controlled. The audio is fed from the audio control panels to each headset, through their respective jacks.

f. Adf Bearing Signals. Adf bearing signals are obtained from a synchro transmitter in the adf receiver. The adf bearing signals are routed from the synchro transmitter to the synchro receiver in the heading-radio bearing indicator.

g. Power Distribution. Primary power to operate the adf facility is supplied from the aircraft *28* Vdc essential bus through the ADF circuit breaker in the overhead console. The dc power is routed to a connector on the adf receiver. When the function switch in the adf control panel is in the ANT, COMP, or LOOP positions, 28 Vdc is fed to the adf receiver. Power (115 Vat, 400 Hz) is also supplied, through the GYRO COMPASS breaker in the overhead console, to the directional gyro and to the heading-radio bearing indicator.

3-15. VOR/ILS (CONUS NAV) Facility, Block Diagram. (Figure 3-9.)

a. Modes of Operation. The VOR/ILS receiver combines VOR (vhf omni range), LOC (localize), GS (glideslope), and MB (marker beacon) operation. The NAV VOL control on the VOR/ILS control panel operates the VOR and LOC while the MB VOL control operates the marker beacon. The frequency selector knobs on the VOR/ILS control panel tune the VOR/LOC frequency indicated on the control panel. At the same time, the GS is tuned to connect paired frequency. The marker beacon is fix-tuned to 75 MHz.

b. RF signals. Rf signals are applied to the VOR/ILS *receiver* by the VOR/LOC, glideslope, and marker beacon antennas.

(1) The VOR/LOC antenna is designed to receive rf signals over the 108.00 through 117.95 MHz frequency range. The antenna applies the

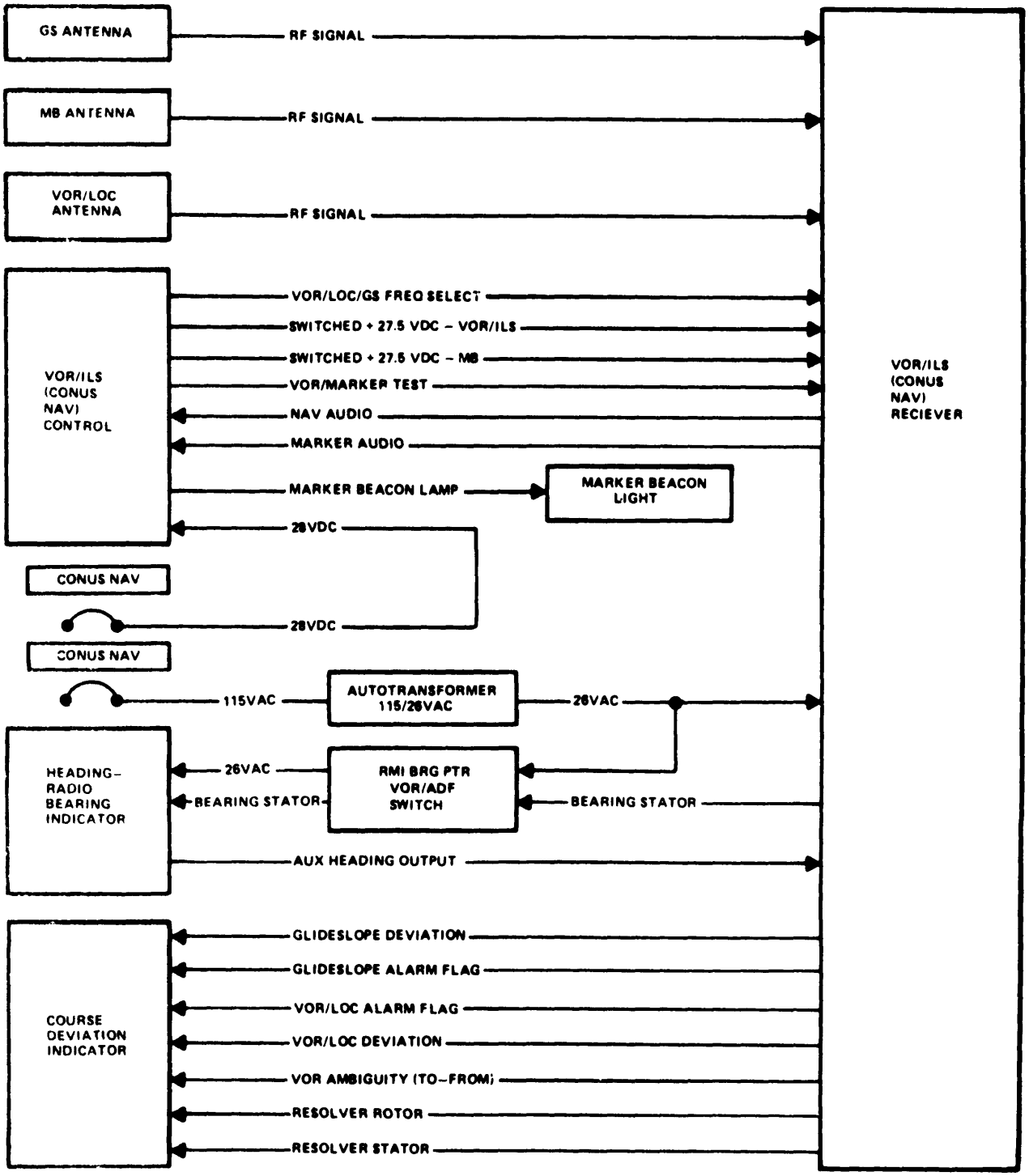

Figure 3-9. VOR/ILS (CONUS NAV) facility, block diagram

incoming rf signal to the VOR/LOC section of the VOR/ILS receiver.

(2) The glideslope antenna is designed to receive rf signals over the 329.15 through 335.00 MHz frequency range. The antenna applies the incoming rf signal to the glideslope section of the VOR/ILS receiver.

(3) The marker beacon antenna is designed to receive a 75.00 MHz rf signal. The antenna applies the incoming rf signal to the marker beacon section of the VOR/ILS receiver.

c. Audio. Audio from the VOR/ILS receiver is muted through the NAV VOL and MB VOL controls on the VOR/ILS control panel to the ICS control panels. Also, when MB audio is received and routed through the VOR/ILS control panel, dc voltage is switched to power the marker beacon light.

d. Marker Beacon. Rf signals from the ground transmitter are received by the marker beacon section of the VOR/ILS receiver and demodulated to provide marker beacon audio and operation of the marker beacon light.

e. VOR/LOC. Rf signals from the ground transmitter are received by the VOR/LOC section of the VOR/ILS receiver and demodulated to provide navigation audio and operation of the NAV warning flag, to-from indicator, and VOR/LOC deviation needle and OBS resolver on the course deviation indicator and the bearing pointer on the heading-radio bearing indicator.

f. G/ideslope. Rf signals from the ground transmitter are received by the glideslope section of the VOR/ILS receiver and demodulated to provide operation of the GS warning flag and the glideslope deviation needle.

g. Power Distribution. Primary power to operate the VOR/ILS facility is supplied from the helicopter 28 Vdc essential bus through the CONUS NAV (dc) circuit breaker in the overhead console. The dc power is routed to a connector on the VOR/ILS control panel and switched as required to the VOR/ILS receiver and marker beacon light. 26 Vac power is supplied from the 115/26 Vac autotransformer through the CONUS NAV (at) circuit breaker in the overhead console. The ac power is routed to a connector on the VOR/ILS receiver and also through the RMI BRG PTR switch, in the VOR position, to the heading-radio bearing indicator.

3-16. Radar Altimeter Facility, Block Diagram. (Figure 3-10.)

a. Transmit-Receive. The indicator/receiver/transmitter (RT-1115/APN-209) generates rf output signals which are transmitted toward the terrain by the transmitting antenna. These rf signals are

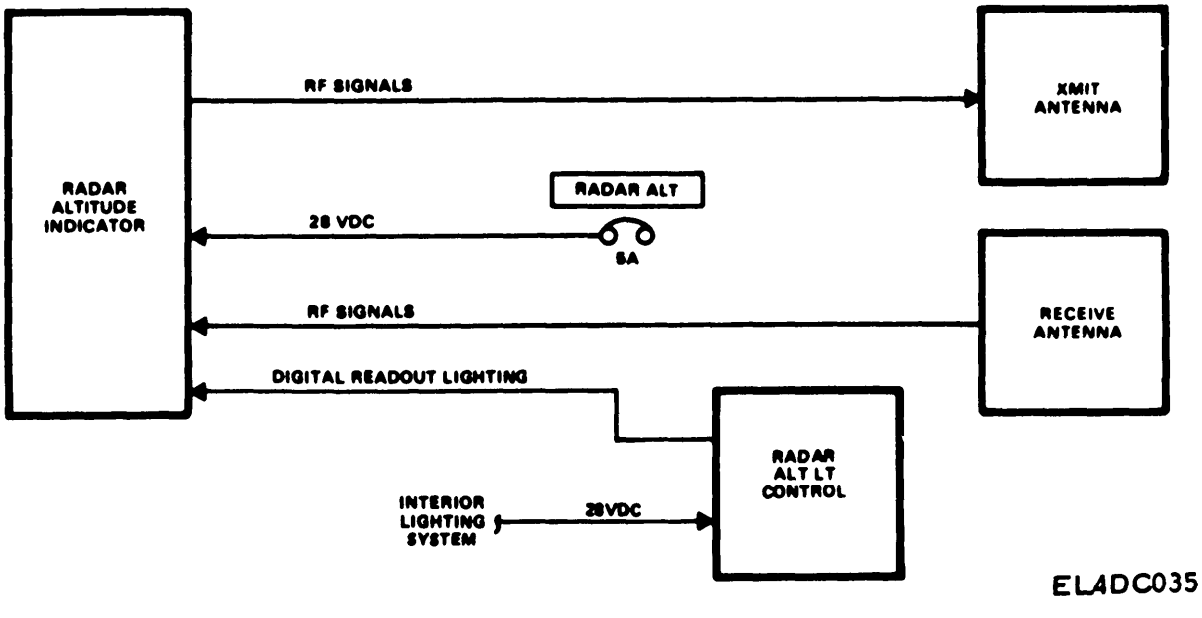

Figure 3-10. Radar altimeter facility, block diagram

reflected from the terrain and received by the receiving antenna. The receiver tracks the leading edge of the reflected rf signal so that the altitude signal provided to the indicator is always the altitude of the helicopter to the nearest terrain. Intensity of the digital readout lighting is controlled by the RADAR ALT light control on the instrument panel.

b. Power Distribution and Control. Power is applied to the radar altimeter facility from the RADAR ALT circuit breaker. When the RADAR ALT circuit breaker is depressed, 28 Vdc is applied to the radar altitude indicator.

3-17. Radar Warning Facility, Block Diagram. (Figure 3-11.)

a. *Receiving.* Signals picked up by the antennas are passed through the dual receivers to the compensator. Display and unblank drive signals are then routed from the compensator to the azimuth indicator. All controls for the system are located on and performed by the control panel. Control signals are routed from the control panel to the compensator and azimuth indicator.

b. Power Distribution and Control. Power is applied to the radar warning system from the RDR

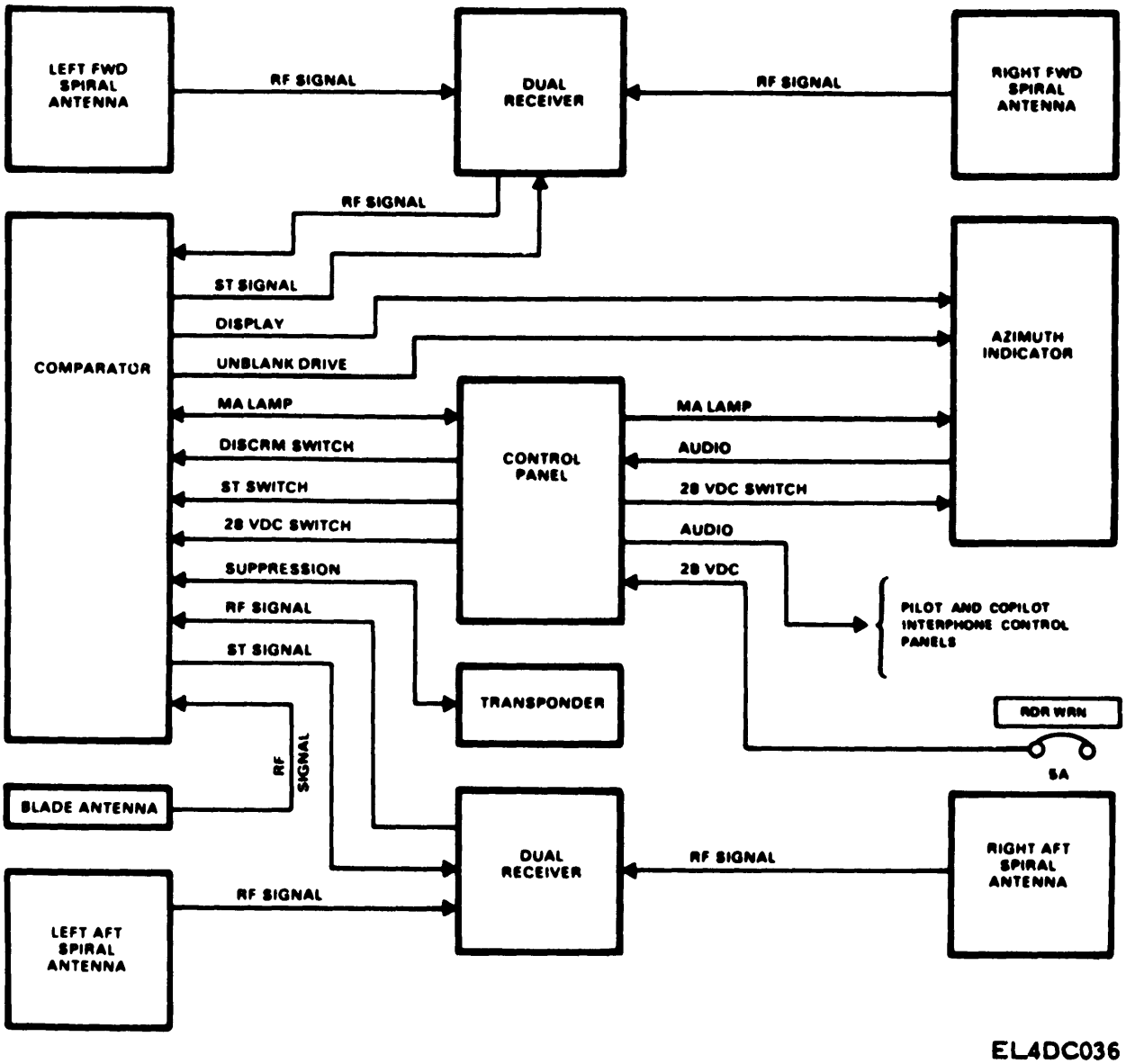

Figure 3-11. Radar warning facility block diagram

WRN circuit breaker. When the RDR WRN circuit breaker is pushed, 28 Vdc is applied to the control panel.

3-18. Transponder Facility Block Diagram. (Figure 3-12.) The transponder consists of a transponder r/t unit, two transponder antennas, code light, and code hold switch. The transponder functions to receive, decode and respond to characteristic interrogations of military or civilian ground based stations. The military stations employ an IFF system modified with selective identification feature (SIF). The transponder provides an in-flight self-test capability, and allows monitoring of the coded reply external interrogations.

a. Receive Transmit Path and Control,

(1) When operating normally, the transponder receives a coded interrogation RF signal in a line of sight range. Interrogation RF signals of 1,030 MHz are picked up by both the top and the bottom antennas and are routed through an RF distribution sub-assembly to the top and bottom receivers respectively. Each receiver converts the RF signal into video, the amplitude of which is proportional to the log of the signal strength at the antenna which feeds it. Both videos are compared in the Diversity Processor and the stronger of the two is utilized to provide the Coder II with digital pulses. The decision made by the Processor as to which is the stronger video is indicated to the RF Distribution sub-assembly, so that it may cause the transmitted reply to be radiated from the appropriate antenna. The digital pulses are decoded by Coder I, where a digital delay line is utilized to identify the spacing between the pulses and thus recognize the interrogation mode received. For all modes except Mode 4 the settings of the switches on the Control Panel cause a reply train in the appropriate mode to be encoded by the Coder I and Coder II modules and sent to the Modulator. If decoding identifies the interrogation as Mode 4, and the Control Panel has enabled Mode 4, a signal is sent to the Mode 4 module so that it will take the Mode 4 challenge video word directly from the Processor and pass it to the external Mode 4 Computer. The resulting Mode 4 reply is then sent to the Modulator. The Modulator/Transmitter sub-assembly generates the RF reply pulses. These are routed by the RF Distribution Subassembly to the top or bottom antenna, depending upon the diversity decision made by the Processor. During transmission, any signals passed by either Receiver are not decoded.

(2) The transponder control MASTER switch determines whether the transponder produces a coded reply for normal or emergency purposes. The IDENT-MIC switch on the transponder control provides identification of position if desired. The mode selector switches and mode code control switches on the transponder control, select and control the desired reply code. Transmitted replies can be monitored by the pilot, copilot, and crew since the transponder radio develops an audio output signal. This signal is routed from the transponder radio to the impedance matching network and then to each audio control panel. Emergency signals are enabled from the EMER switch on the transponder control. The RAD-TEST-MON-OUT switch on the transponder control in MON position enables transponder monitor circuits. The BIT circuitry is utilized to provide monitoring of normal transponder operation. For each decode of an interrogation the resulting encoded RF radiation is sampled and verified that the reply is in the correct mode and has the proper information pulses. An error causes the TEST/MON NO-GO indicator to illuminate. When the mode switches are set to the TEST position, the transponder generates an interrogation pulse for the desired mode. If the transmitted interrogation pulse is correct, the TEST GO indicator illuminates.

b. Power Distribution and Control. The aircraft essential bus supplies +28 volts to the IFF circuit breaker, located in the overhead console. With the IFF circuit breaker pushed, +28 Vdc power is applied to the transponder. The MASTER switch on the transponder control provides power to the transponder dc power circuits.

3-19. Proximity Warning Facility, Block Diagram. (Figure 3-13.) The transponder consists of a receiver-transponder radio, two antennas and a connection to the helicopter static airline. The transponder functions to interrogate incoming received signals, decode and respond if the signals are properly transmitted. An audio/visual alarm alerts the pilot and copilot when a similarly equipped aircraft is within a selective range of 1000, 2000 or 5000 feet and within an altitude band of plus or minus 300 feet.

a. Receive Transmit Path. When operating normally, the transponder receives a coded interrogation rf signal in a line of sight, up to 5000 feet. The transponder antennas located at the nose and under the fuselage of the aircraft will detect rf

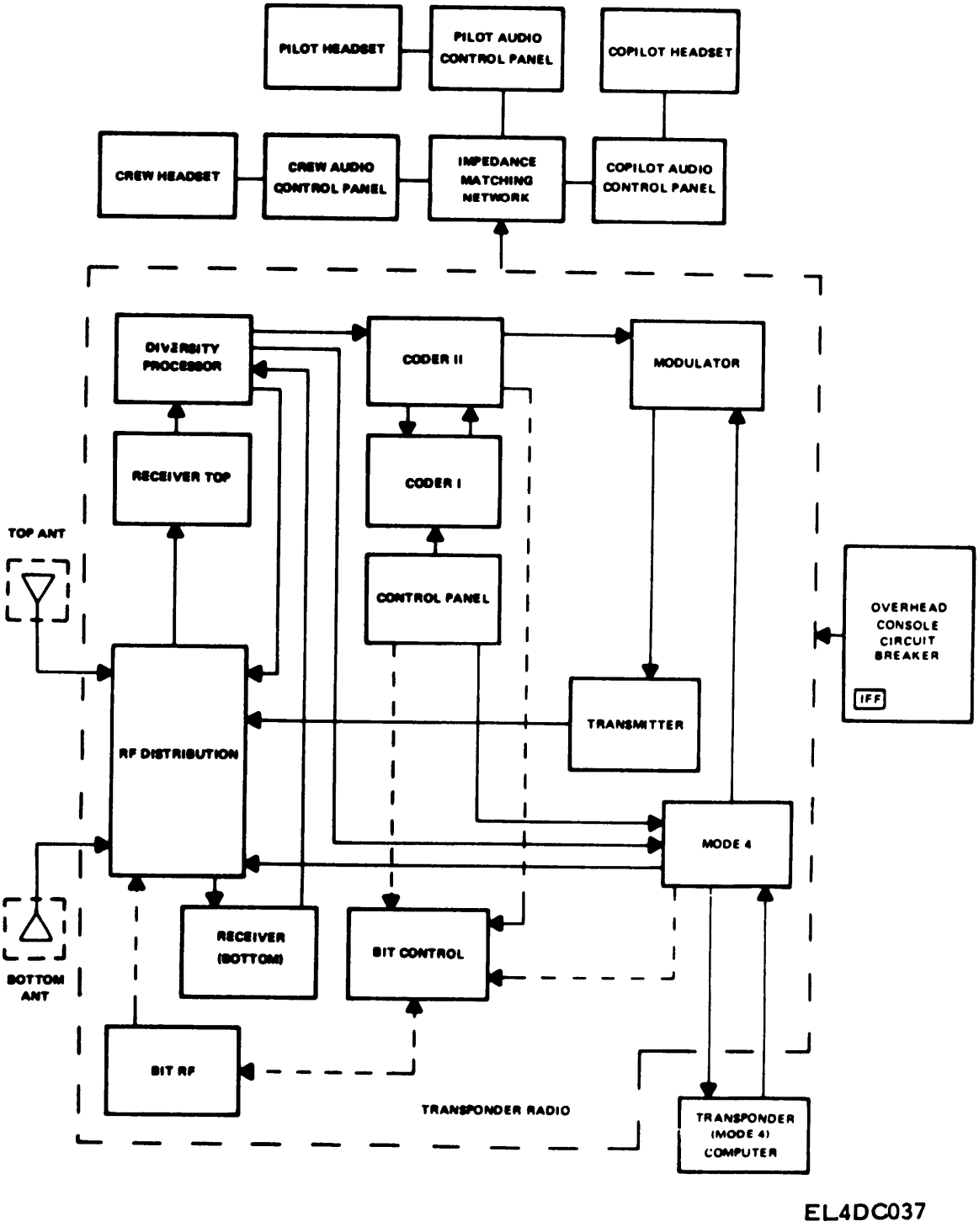

Figure 3-12. Transponder facility, block diagram

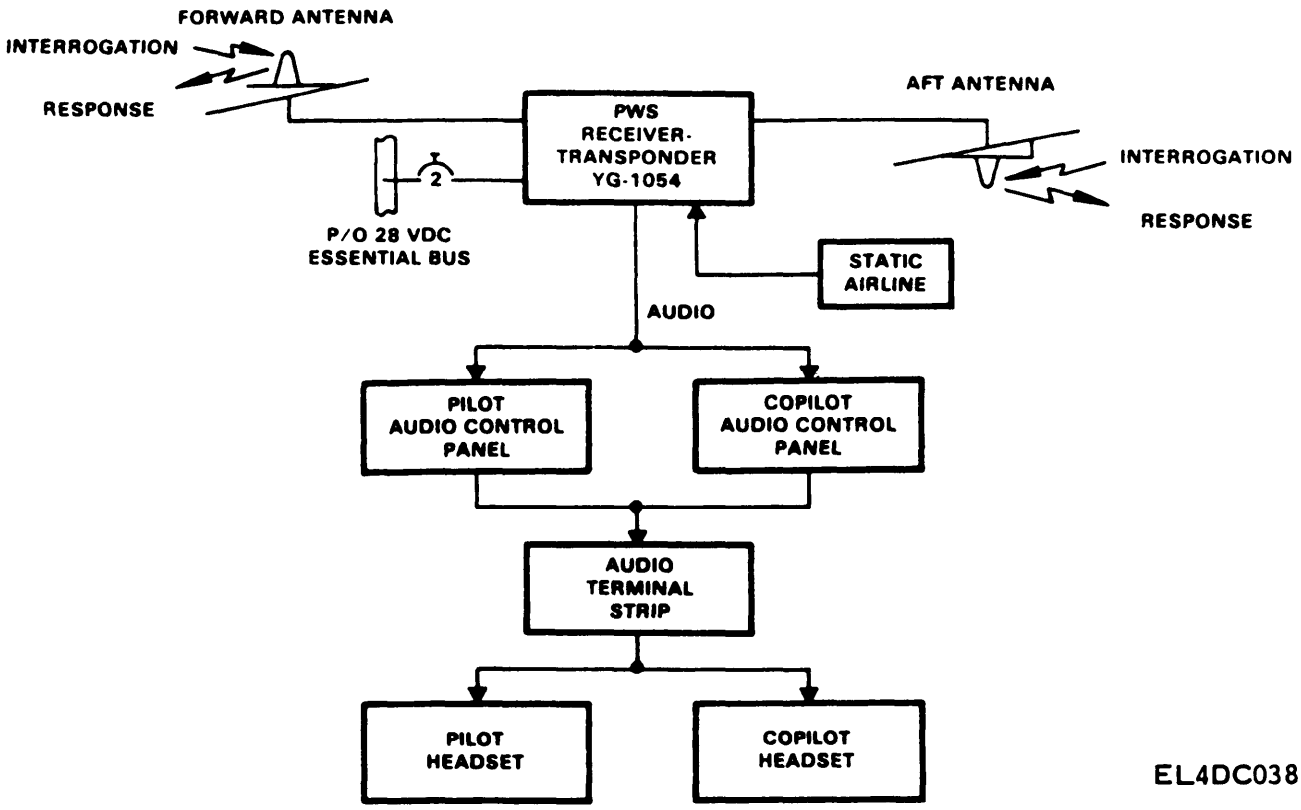

Figure 3-13. Proximity warning facility, block diagram

signals of 5.08 GHz. The rf signal is processed by the transponder. When a proper pair of transmitted pulses are received, the transponder transmits a similar pair of pulses to the interrogating transponder and produces an audio visual alarm for the pilot and copilot at both locations. The visual alarm consists of two arrows separated by a bar. The upper arrow labeled (ABOVE) when flashing indicates an intruding aircraft is between 110 and 300 feet above the flightpath of the helicopter. With the bar segment labeled EQUAL and the ABOVE lamps flashing, the intruding aircraft is between 80 and 110 feet above. With only the EQUAL lamp flashing, the range is 80 feet above and 80 feet below. With the EQUAL and BELOW lamps flashing, the distance is between 80 and 110 feet below. The BELOW lamp when flashing indicates a range of 110 to 300 feet below. A TRANSPONDER GND TEST/CONFIDENCE TEST switch permits unit to accept signals from a ground transponder. In CONFIDENCE TEST position, switch initiates confidence test.

b. Audio Distribution. The warning audio signal from the transponder is routed to the impedance matching network to the audio control panels. In the audio control panels, the audio is amplified and its volume controlled. The audio signals are routed from the audio control panels to each headset, through their respective jacks.

c. *Power Distribution and Control.* The aircraft essential bus supplies +28 volts to the PROX WARN circuit breaker located in the overhead console. With PROX WARN circuit breaker pushed, +28 Vdc power is applied to the receiver-transponder. The POWER ON/OFF applies +28 Vdc to the transponder circuitry.

All data on pages 3-22 and 3-23, including figure 3-14, deleted.

3-22. Armament Facility, Block Diagram (Figure 3-15.) CS

a. Description. The pilot uses the ATAS control panel to set conditions for engagement. The interface electronics assembly (IEA) electronically controls all data processing functions during target engagement. Processed seeker position data is superimposed on the pilot display unit (PDU). The IEA provides the interface between the launcher assembly and the missile sight subsystem. The selected missile will fire when the pilot initiates the fire command.

b. Power Distribution and Control. The aircraft non-essential bus supplies 28 Vdc to the ATAS PWR, ATAS CONT, and MSS circuit breakers. The aircraft essential bus supplies 28 Vdc to the JETTISON circuit breaker. The circuit breakers are located in the overhead console. The interface electronics assembly (IEA) distributes power when the MASTER switch is activated. When power is initially applied, the IEA will automatically perform a built-in test (BIT) which will be displayed for 5 seconds on the pilot display unit (PDU).

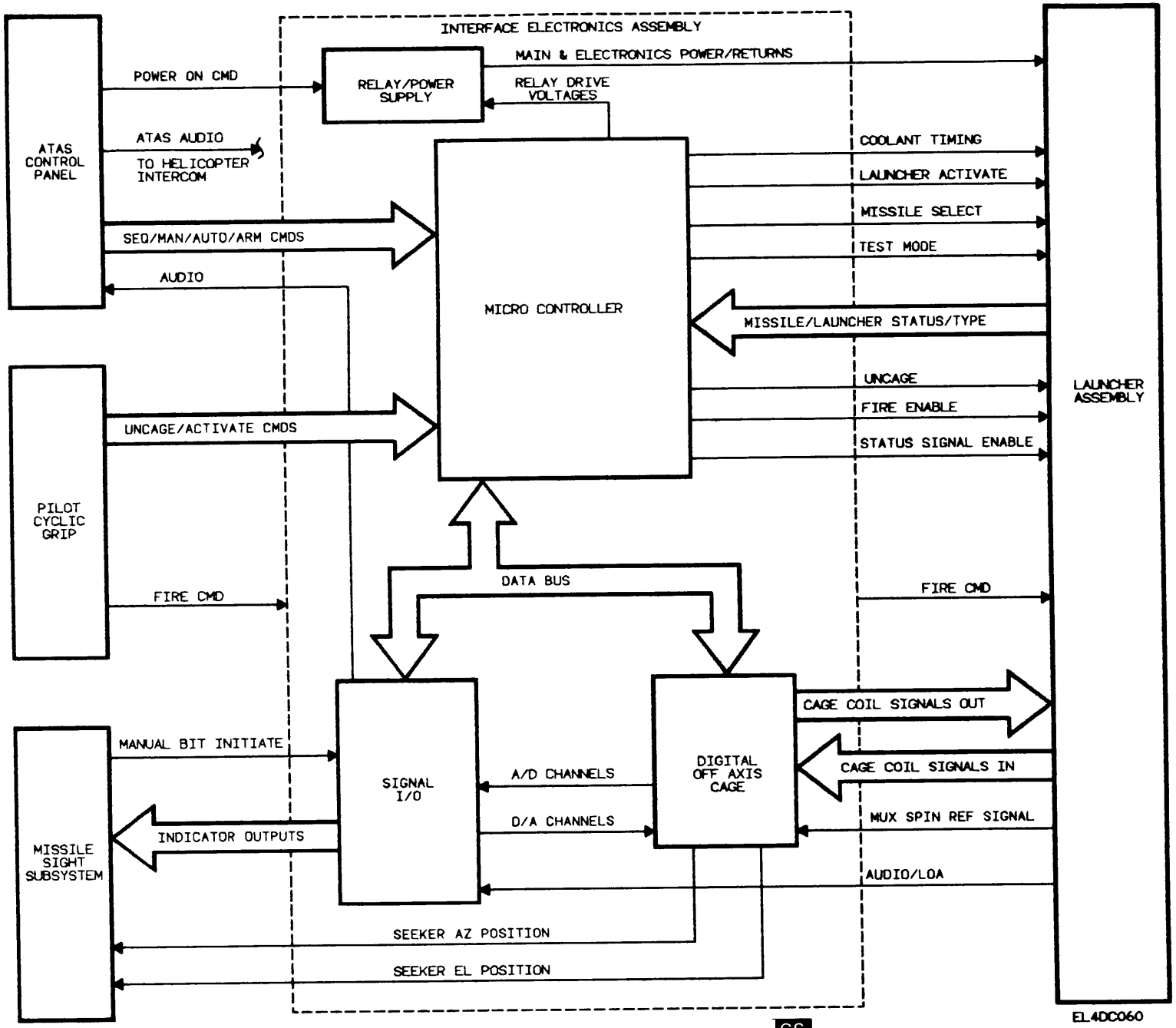

Figure 3-15. Armament facility, block diagram CS

APPENDIX A
REFERENCES

The following applicable publications are available to the organizational repair technician of the electronic configuration in the OH-58C. They cover equipment, practices, and regulations directly related to this manual.

DA Pam 25-30	Consolidated Index of Army Publications and Blank Forms.
SB 11-573	Painting and Preservation of Supplies Available for Field Use for Electronics Command Equipment.
TB 43-0118	Field Instructions for Painting and Preserving Electronics Command Equipment, Including Camouflage Pattern Painting of Electrical Equipment Shelters.
TM 9-1440431-23	Aviation Unit and Aviation Intermediate Maintenance: Air-To-Air Stinger (ATAS) Weapon System CS.
TM 11-1520-228-23P-1	Organizational Maintenance Repair Parts and Special Tool Lists: Electronic Equipment Configuration, Army Model OH-58C Helicopter.
TM 11-6821-259-20	Organizational Maintenance Manual: Radio Sets AN/ARC-114 and AN/ARC-114A; Network Impedance Matching CU-1794/ARC-114; Network Impedance Matching-Quadrature, Hybrid CU-1796/ARC-114.
TM 11-5821-260-20	Organizational Maintenance Manual: Radio Set AN/ARC-115.
TM 11-5821-261-20	Organizational Maintenance Manual: Radio Set AN/ARC-116.
TM 11-5821-262-20	Organizational Maintenance Manual: Control, Communications System C-6533/ARC.
TM 11-5821-311-12	Operator's and Organizational Maintenance Manual for Receiver-Transmitter Radio RT-1167/ARC-164(V) (NSN 5821-00-138-7990).
TM 11-5821-331-13	Operator's Aviation Unit and Intermediate Maintenance Manual, IFM Amplifier AM-7189A/ARC.
TM 11-5821-333-20	Aviation Unit Maintenance Manual, Radio Set AN/ARC-201.
TM 11-5826-227-20	Organizational Maintenance Manual: Direction Finder Set AN/ARN-89 (NSN 5826-00-790-6453), AN/ARN-89A (5826-00-151-2885) and AN/ARN-89B (5826-00-021-3289).
TM 11-5826-258-24	Organizational, Direct Support, and General Support Maintenance Manual: Radio Receiving Sets AN/ARN-123(V), (NSN 5826-01-016-2762), AN/ARN-123(V)2 (5826-01-016-2761), AN/ARN-123(V)3 (5826-01-058-6800) and AN/ARN-123(V)4 (5826-01-070-4067).
TM 11-5841-283-20	Organizational Maintenance Manual: Detecting Set, Radar Signal AN/APR-39(V)1 (NSN 5841-01-023-7112).
TM 11-5841-292-13&P	Operator's, Aviation Unit, Aviation Intermediate Maintenance Manual (Including Repair Parts and Special Tools List) for Altimeter Set, Electronic AN/APN-209A(V)l (NSN 5841-01-098-4339), AN/APN-209(V)2 (NSN 5841-01-099-1796) and AN/APN-209(V)3.
TM 11-5841-294-12	Operator's and Aviation Unit Maintenance Manual, Radar Signal Detecting Set, AN/APR-39A(V)l.
TM 11-5895-555-24	Organizational, Direct Support and General Support Maintenance Manual: Control Indicator C-8157/ARC and Mounting MT-3802/ARC.
TM 11-5895-1037-12	Operator's and Organizational Maintenance Manual: Transponder Set, AN/APX-100(V).
TM 11-5965-215-15	Operator's Organizational, Field and Depot Maintenance Manual: Headset-Microphone H-101A/U.
TM 1l-5965-240-15	Operator's, Organizational, Field and Depot Maintenance Manual: Headset-Microphone Adapter MX-1646/AIC.

TM 11-6140-203-14-1	Operator's, Organizational, Direct Support and, General Support Maintenance Manual: Aircraft and Nonaircraft Nickel-cadmium Batteries (General).
TM 11-6140-203-14-2	Operator's Organizational, Direct Support, and General Support Maintenance Manual: Aircraft Nickel-cadmium Batteries.
TM 11-6140-203-14-3	Operator's, Organizational, Direct Support and General Support Maintenance Manual: Nonaircraft Nickel-cadmium Batteries.
TM 11-6605-202-12	Operator's and Organizational Maintenance Manual: Gyromagnetic Compass Set AN/ASN-43.
TM 11-6625-32-12	Operator's and Organizational Maintenance Manual: Voltmeter, Meter ME-30A/U and Voltmeters, Electronic ME-38B/U, and ME-30E/U.
TM 11-6625-399-12	Operator and Organizational Maintenance Manual: Generator, Signal SG-298/U.
TM 1l-6625-667-12	Operator and Organizational Maintenance Manual: Teat Sets Transponder AN/APM-123(V)1 (FSN 6625-948-0071), AN/APM-123(V)2 (6625-948-0077) and AN/APM-123(V)3 (6625-948-0076).
DA Pam 738-750	The Army Maintenance Management System (TAMMS).
TM 55-1500-204-25/l	General Aircraft Maintenance Manual.
TM 55-1500-323-24	Organizational, DS, GS, and Depot Maintenance Manual: Installation Practices for Aircraft Electric and Electronic Wiring.
TM 55-1520-228-10	Operator's Manual: Army Model OH-58A/C Helicopter.
TM 55-1520-228-23-1	Aviation Unit and Intermediate Maintenance Manual: Army Model OH-58A and OH-58C Helocopters.
TM 750-244-2	Procedures for Destruction of Electronics Materiel to Prevent Enemy Use (Electronics Command).
YG1054C01	Operation and Service Instructions for Proximity Warning System (Honeywell Aerospace Division).

APPENDIX B

MAINTENANCE ALLOCATION

Section I. INTRODUCTION

B-1. General.

a. This appendix provides a summary of the maintenance operations for OH-58C and OH-58CS helicopters. 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. Maintenance of Army aircraft is changing to three levels of maintenance. These maintenance levels are Aviation Unit Maintenance (AVUM); Aviation Intermediate Maintenance (AVIM); and Depot Maintenance. AVUM and AVIM maintenance will replace organizational, direct support, and general support maintenance. a complete description of AVUM and AVIM applied to avionics systems and equipment is contained in Appendix B, AR750-1, which also contains descriptions of the concept using four levels (organizational, direct support, general support, and depot). Until Maintenance Allocation Charts (MAC) are revised to reflect the three-level concept, units organized as three-level organizations may be used in four-level publications. Under these conditions, three-level units will sometimes be required to consolidate direct and general support activities, tools, test equipment, and repair parts into AVIM. In those cases where organizations are required to use a MAC which is configured to the three-level concept, the code O represents AVUM, the code F represents AVIM, and D represents depot maintenance.

B-2. Maintenance Function. Maintenance functions will be limited to and defined as follows:

a. Inspect. To determine the serviceability of an item by comparing its physical, mechanical, and/or electrical characteristics with established standards through examination.

b. Test. To verify serviceability and to detect incipient failure by measuring the mechanical or electrical characteristics of an item and comparing those characteristics with prescribed standards.

c. Service. Operations required periodically to keep an item in proper operating condition, i.e., to clean, preserve, drain, paint, or to replenish fuel/lubricants/hydraulic fluids or compressed air supplies.

d. Adjust. Maintain within prescribed limits by bringing into proper or exact position, or by setting the operating characteristics to the specified parameters.

e. Align. To adjust specified variable elements of an item to about optimum or desired performance.

f. Calibrate. To determine and cause corrections to be made or to be adjusted on instruments or test measuring and diagnostic equipment used in precision 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.

g. Install. The act of emplacing, seating, or fixing into position an item, part, module (component or assembly) in a manner to allow the proper functioning of the equipment/system.

h. Replace. The act of substituting a serviceable like-type part, subassembly, model (component or assembly) for an unserviceable counterpart.

i. Repair. The application of maintenance services (inspect, test, service, adjust, align, calibrate, replace) or other maintenance actions (welding, grinding, riveting, straightening, facing, remachining, or resurfacing) to restore serviceability to an item by correcting specific damage, fault, malfunction, or failure in a part, subassembly, module/component/assembly, end item or system.

j. Overhaul. That periodic maintenance effort (service/action) necessary to restore an item to a completely serviceable/operational condition as prescribed by maintenance standards (e.g., DMWR)

in appropriate technical publications. Overhaul is normally the highest degree of maintenance performed by the Army. Overhaul does not normally return an item to like-new condition.

k. Rebuild. Consists of those services/actions necessary for the restoration of unserviceable equipment to a like-new condition in accordance with original manufacturing standards. Rebuild is the highest degree of materiel maintenance applied to Army equipment. The rebuild operation includes the act of returning to zero those age measurements (hours, miles, etc.) considered in classifying Army equipment/components.

B-3. Column Entries.

a. Column 1, Group Number. Column 1 lists group numbers, the purpose of which is to identify components, assemblies, subassemblies and modules with the next higher assembly.

b. Column 2, Component/Assembly. Column 2 contains the noun names of components, assemblies, subassemblies, and modules for which maintenance is authorized.

c. Column 3, Maintenance Functions. Column 3 lists the functions to be performed on the item listed in column 2.

d. Column 4, Maintenance Category. Column 4 specifies, by the listing of a "worktime" figure in the appropriate subcolumn(s), the lowest level of maintenance authorized to perform the function listed in column 3. This figure represents the active time required to perform that maintenance function at the indicated category of maintenance. If the number or complexity of the tasks within the listed maintenance function vary at different maintenance categories, appropriate "worktime" figures will be shown for each category. The number of man-hours specified by the "worktime" figure represents the average time required to restore an item (assembly, subassembly, component, module, end item or system) to a serviceable condition under typical field operating conditions. This time includes preparation time, troubleshooting time and quality assurance/quality control time in additional to the time required to perform the specific tasks identified for the maintenance functions authorized in the maintenance allocation chart. Subcolumns of column 4 are as follows:

C. . . Operator/crew
O. . . Organizational
F. . . Direct support
H. . . General support
D. . . Depot

e. Column 5, Tools and Equipment. Column 5 specifies by code, those common tool sets (not individual tools) and special tools, test, and support equipment required to perform the designated function.

f. Column 6, *Remarks.* Column 6 provides the explanatory information as required.

B-4. Tool and Test Equipment Requirements (Section III).

a. Tool or Test Equipment Reference Code. The numbers in this column coincide with the numbers used in the tools and equipment column of the MAC. The numbers indicate the applicable tool or test equipment for the maintenance functions.

b. Maintenance Category. The codes in this column indicate the maintenance category allocated the tool or test equipment.

c. *Nomenclature.* This column lists the noun name and nomenclature of the tools and test equipment required to perform the maintenance functions.

d. National/NATO Stock Number. This column lists the National/NATO stock number of the specific tool or test equipment.

e. Tool Number. This column lists the manufacturer's part number of the tool followed by the Federal Supply Code for manufacturers (5-digit) in parentheses.

B-5. Remarks (Sect IV).

a. Reference Code. This code refers to the appropriate item in Section H, column 6.

b. Remarks. This column provides the required explanatory information necessary to clarify items appearing in section II.

SECTION II. MAINTENANCE ALLOCATION CHART

FOR

OH-58A/C ELECTRONIC CONFIGURATION

(1) GROUP	(2) COMPONENT/ASSEMBLY	(3) MAINTENANCE FUNCTION	(4) MAINTENANCE LEVEL			(5) TOOLS AND EQPT.	(6) REMARKS
			AVUM	AVIM	DEPOT		
00	OH-58A/C Electronics Configuration	Inspect	0.5			4,5,6,7,8	A
		Test	1.0				
		Adjust	0.5				AA
		Align	1.0				
		Repair	1.0			2,4	B
	5790024-501 VHF-FM Comm System with SINCGARS						II,JJ
	5790024 Cable Routing FM No 1 & 2						KK
	206-078-160-1 VHF-FM Comm System						LL
01	Intercom System	Inspect	0.3				
		Test	0.3				A
		Repair	0.5			2,4	B, D
		Repair		1.0			
0101	Control Panel C-6533/ARC	Test	0.2				
		Replace	0.2			2	
		Repair					C
0102	Impedance Matching 206-075-483-1	Test	0.2				
		Test		0.3			
		Replace	0.5			2	
		Repair		1.0		1,3	F
0103	Audio Threshold Device MD-1101/A 206-075-5971	Test	0.2				
		Test		0.3		10,11	
		Replace	0.3			2	
		Repair		1.0		1,3,4, 10,11	
	or						
	Signal Discriminator MD-1219/A DSK-9-03570-501	Test	0.2				EE,II
		Replace	0.3			2	

SECTION II. MAINTENANCE ALLOCATION CHART

FOR

OH-58A/C ELECTRONIC CONFIGURATION

(1) GROUP NUMBER	(2) COMPONENT/ASSEMBLY	(3) MAINTENANCE FUNCTION	(4) MAINTENANCE LEVEL			(5) TOOLS AND EQPT.	(6) REMARKS
			AVUM	AVIM	DEPOT		
	Cable Assemblies (MD-1101/A)	Test Replace Repair	0.3 0.2 0.5			10,11 2 2, 4, 5	D
0104	206-075-455-1 A Model Only						E,JJ
0105	206-075-455-5						AA
0106	206-075-455-7						E,JJ
0107	206-075-455-9						E
0108	206-075-479-1 A Model Only						AA
0109	206-075-479-3 A Model Only						AA
0110	206-075-479-5						AA
0111	206-075-479-7						AA
0112	206-075-479-9						AA
0113	206-075-532-1 A Model Only						E
0114	206-075-532-3						E
0115	206-075-532-5 A Model Only						E
0116	06-075-532-7						E
0117	06-075-532-13 C Model Only						E

SECTION II. MAINTENANCE ALLOCATION CHART

FOR

OH-58A/C ELECTRONIC CONFIGURATION

(1) GROUP NUMBER	(2) COMPONENT/ASSEMBLY	(3) MAINTENANCE FUNCTION	(4) MAINTENANCE LEVEL			(5) TOOLS AND EQPT.	(6) REMARKS
			AVUM	AVIM	DEPOT		
	MD-1219 Installation						II
	Cable Assemblies (MD-1219/A)	Test Repair Replace	0.3 0.5 1.0			2,4,5	EE, II
118	2290070-501						E
119	2290070-502						E
120	2290070-503						E

SECTION II. MAINTENANCE ALLOCATION CHART

FOR

OH-58A/C ELECTRONIC CONFIGURATION

(1) GROUP NUMBER	(2) COMPONENT/ASSEMBLY	(3) MAINTENANCE FUNCTION	(4) MAINTENANCE LEVEL			(5) TOOLS AND EQPT.	(6) REMARKS
			AVUM	AVIM	DEPOT		
02	VHF-FM Communications System	Inspect Test Repair	0.3 0.3 0.5			 2,4	 A B,D,II
0201	Receiver-Transmitter AN/ARC-114 or AN/ARC-114A or VHF-FM Communications System for SINCGARS	Test Replace Repair	0.3 0.3			2	G
	Receiver-Transmitter RT-1476/ARC-201	Test Replace	0.3 0.3			2,4,7	
0202	Voice Security TSEC/KY-58	Test Replace Repair	0.3 0.2			2	H
0203	Control, Voice Security Z-AHP/KY-58	Test Replace Repair	0.2 0.3			2	I
	Cable Assemblies (AN/ARC-114)	Test Replace Repair	0.3 1.0 1.0			2,4,5	D
0204	206-075-451-3 A Model Only						AA
0205	206-075-451-15 A Model Only						E
0206	206-075-451-17						E
0207	206-075-451-27 A Model Only						E
0208	206-075-451-29 A Model Only						AA
0209	206-075-451-31 A Model Only						AA

SECTION II. MAINTENANCE ALLOCATION CHART

FOR

OH-58A/C ELECTRONIC CONFIGURATION

(1) GROUP NUMBER	(2) COMPONENT/ASSEMBLY	(3) MAINTENANCE FUNCTION	(4) MAINTENANCE LEVEL			(5) TOOLS AND EQPT.	(6) REMARKS
			AVUM	AVIM	DEPOT		
0210	206-075-451-33 A Model Only						AA
0211	206-075-451-35						AA
0212	206-075-451-37 A Model Only						AA
0213	206-075-451-39						AA
0214	206-075-451-41 C Model Only						E
0215	206-075-451-49 C Model Only						AA
0216	206-075-451-51 C Model Only						AA
0217	206-075-451-53 C Model Only						AA
0218	206-075-451-55 C Model Only						AA
0219	206-075-451-57 C Model Only						E
0220	206-075-453-23						AA
0221	206-075-531-1 A Model Only						E
0222	206-075-531-5 A Model Only						E
0223	206-075-531-9 A Model Only						E
	Fin Antenna 206-075-518-1 or 8B676ASSY5790032-501						Q Q, II

SECTION II. MAINTENANCE ALLOCATION CHART

FOR

OH-58A/C ELECTRONIC CONFIGURATION

(1) GROUP NUMBER	(2) COMPONENT/ASSEMBLY	(3) MAINTENANCE FUNCTION	(4) MAINTENANCE LEVEL			(5) TOOLS AND EQPT.	(6) REMARK
			AVUM	AVIM	DEPOT		
0224	IFM Amplifier AM-7189A/ARC	Test Replace Repair	0.3 0.3				II
0225	Cable Assembly. IFM 4290165-501	Test Repair	0.3 1.0			2,4,5	A, II
	Cable Assemblies (AN/ARC-201)	Test Repair Replace	0.3 1.0 1.0			2,4,5	II
0226	4290166-501 (Adapter FM 1)						E
0227	4290174-501 (Adapter FM 2)						E
0228	4290162-501 (Coaxial)						AA
0229	4290162-502 (Coaxial)						AA
0230	4290162-503 (Coaxial)						AA
0231	4290162-504 (Coaxial)						AA
0232	490162-505 (Coaxial)						AA
0233	4290162-506 (Coaxial)						AA
0234	2290067-501						E
0235	2290067-502						E
0236	2290067-504						E

SECTION II. MAINTENANCE ALLOCATION CHART

FOR

OH-58A/C ELECTRONIC CONFIGURATION

(1) GROUP NUMBER	(2) COMPONENT/ASSEMBLY	(3) MAINTENANCE FUNCTION	(4) MAINTENANCE LEVEL			(5) TOOLS AND EQPT.	(6) REMARKS
			AVUM	AVIM	DEPOT		
03	VHF-AM Communications System	Inspect	0.3				A
		Test	0.3				
		Repair	0.5			2,4	B,D
0301	Receiver-Transmitter AN/ARC-115 or AN/ARC-115A	Test	0.3			2	
		Replace	0.3				J
		Repair					
	Cable Assemblies	Test	0.3				
		Replace	1.0				D
		Repair	1.0			2,4,5	
0302	206-075-452-1 A Model Only						AA
0303	206-075-452-9 A Model Only						AA
0304	206-075-452-11 A Model Only						AA
0305	205-075-452-13						AA
0306	206-075-452-17 C Model Only						E
0307	206-075-452-19 C Model Only						AA
0308	206-075-453-21						Q
	Fin Antenna 206-075-518-1 or 8B676ASSY5790032-501						Q, II

SECTION II. MAINTENANCE ALLOCATION CHART

FOR

OH-58A/C ELECTRONIC CONFIGURATION

(1) GROUP NUMBER	(2) COMPONENT/ASSEMBLY	(3) MAINTENANCE FUNCTION	(4) MAINTENANCE LEVEL			(5) TOOLS AND EQPT.	(6) REMARKS
			AVUM	AVIM	DEPOT		
04	UHF-AM Communications System	Inspect Test Repair	0.3 0.2 0.3			 2	 A B, D
0401	Receiver-Transmitter AN/ARC-116 or AN/ARC-116A or RT-1167A/ARC-164	Replace Repair	0.3			2	 K
	Cable Assemblies	Inspect Replace Repair	0.3 0.2 0.3			 2,4,5	 D
0402	206-075-453-1 A Model Only						E
0403	206-075-453-19 A Model Only						E
0404	206-075-453-25						AA
0405	205-075-453-27						AA
0406	206-075-453-33 C Model Only						E

SECTION II. MAINTENANCE ALLOCATION CHART

FOR

OH-58A/C ELECTRONIC CONFIGURATION

(1) GROUP NUMBER	(2) COMPONENT/ASSEMBLY	(3) MAINTENANCE FUNCTION	(4) MAINTENANCE LEVEL			(5) TOOLS AND EQPT.	(6) REMARKS
			AVUM	AVIM	DEPOT		
05	Direction Finder Set AN/ARN-89	Inspect Test Repair	0.2 0.2 0.5				A B, D
0501	Receiver R-1496/ARN-89	Replace Repair	0.2			2	L
0502	Amplifier AM-4859/ARN-89	Replace Repair	0.2			2	L
0503	Control, ADF C-7392/ARN-89	Replace Repair	0.2			2	L
	Cable Assemblies	Test Replace Repair	0.2 0.3 0.5			2,4,5	D
0504	CG-3492/U A Model Only						AA
0505	CG-3493/U A Model Only						AA
0506	CG-3494/U A Model Only						AA
0507	CG-3495/U A Model Only						AA
0508	CX-10960/U A Model Only						AA
0509	206-075-450-1 A Model Only						E
0510	206-075-450-3 A Model Only						AA
0511	206-077-205-3 C Model Only						E
0512	206-077-205-5 C Model Only						E

SECTION II. MAINTENANCE ALLOCATION CHART

FOR

OH-58A/C ELECTRONIC CONFIGURATION

(1) GROUP NUMBER	(2) COMPONENT/ASSEMBLY	(3) MAINTENANCE FUNCTION	(4) MAINTENANCE LEVEL			(5) TOOLS AND EQPT.	(6) REMARKS
			AVUM	AVIM	DEPOT		
0513	206-077-205-7 C Model Only						AA
0514	296-077-205-9 C Model Only						AA
0515	206-077-205-11 C Model Only						AA
0516	206-077-205-13 C Model Only						AA
0517	206-077-205-15 C Model Only						AA
	Antenna, Sense 206-032-310-55	Replace Repair	1.0				CC CC

SECTION II. MAINTENANCE ALLOCATION CHART

FOR

OH-58A/C ELECTRONIC CONFIGURATION

(1) GROUP NUMBER	(2) COMPONENT/ASSEMBLY	(3) MAINTENANCE FUNCTION	(4) MAINTENANCE LEVEL			(5) TOOLS AND EQPT.	(6) REMARKS
			AVUM	AVIM	DEPOT		
06	Gyromagnetic Compass System AN/ASN-43	Inspect Test Repair	0.2 0.3 0.5			2,4,5	A B, D
0601	Gyro, Directional CN-998(B)/ASN-43	Replace Repair	0.2			2	M
0602	Transmitter, Induction Compass T-611(A)/ASN	Replace Repair	0.3			2	M
0603	Compensator, Magnetic Flux CN-405/ASN	Replace Repair	0.3			2	M
0604	Radio Heading & Bearing Indicator ID-1351/A ID-1351A/A ID-1351B/A A Model Only	Replace Repair	0.2			2	DD
0605	Radio Heading & Bearing Indicator ID-1351C/A ID-1351D/A ID-1351E/A C Model Only	Replace Repair	0.2			2	DD
	Cable Assemblies	Test Replace Repair	0.3 1.0 0.5			2,4,5	D
0606	206-075-449-1 A Model Only						E
0607	206-075-449-5 C Model Only						E

SECTION II. MAINTENANCE ALLOCATION CHART

FOR

OH-58A/C ELECTRONIC CONFIGURATION

(1) GROUP NUMBER	(2) COMPONENT/ASSEMBLY	(3) MAINTENANCE FUNCTION	(4) MAINTENANCE LEVEL			(5) TOOLS AND EQPT.	(6) REMARKS
			AVUM	AVIM	DEPOT		
07	Transponder (IFF) System AN/APX-72 A Model Only	Inspect Test Repair	0.2 0.2 0.3			2,4,6	A B, D
0701	Receiver-Transmitter RT-859/APX-72	Replace Repair	0.3			2	N
0702	Control C-6280(P)/APX	Replace Repair	0.3			2	N
0703	Test Set, APX TS-1843/APX	Replace Repair	0.2			2	O
0704	Computer, Transponder KIT-1A/TSEC	Inspect Replace	0.2 0.3			2	I
0705	Altitude/Encoder AAU-31/A	Replace Repair	0.3				Q
	Cable Assemblies	Test Replace Repair	0.2 1.0 0.5			2,4,5	D
0706	DSK-9-02058						E, Z
0707	206-075-454-1						E
0708	206-075-454-7						AA
0709	206-075-454-9						AA
0710	2290064-501						E, II

SECTION II. MAINTENANCE ALLOCATION CHART

FOR

OH-58A/C ELECTRONIC CONFIGURATION

(1) GROUP NUMBER	(2) COMPONENT/ASSEMBLY	(3) MAINTENANCE FUNCTION	(4) MAINTENANCE LEVEL			(5) TOOLS AND EQPT.	(6) REMARKS
			AVUM	AVIM	DEPOT		
08	Transponder (IFF) System AN/APX-100 C Model Only	Inspect Test Repair	0.2 0.2 0.3			2,4,6	A B, D
0801	Receiver-Transmitter RT-1285/APX-100(V)	Replace Repair	0.2			2	P
0802	Altitude/Encoder AAU-31/A	Replace Repair	0.3			2	Q
	Cable Assemblies	Test Replace Repair	0.2 1.0 0.5			2,4,5	
0803	Computer, Transponder KIT-1A/TSEC	Inspect Replace	0.2 0.3			2	I
0804	15600H-58-128-1						AA, Z
0805	15600H-58-129-1						AA, Z
0806	206-077-204-7						AA
0807	206-077-204-9						E

SECTION II. MAINTENANCE ALLOCATION CHART

FOR

OH-58A/C ELECTRONIC CONFIGURATION

(1) GROUP NUMBER	(2) COMPONENT/ASSEMBLY	(3) MAINTENANCE FUNCTION	(4) MAINTENANCE LEVEL			(5) TOOLS AND EQPT.	(6) REMARKS
			AVUM	AVIM	DEPOT		
09	Radar Altimeter Set AN/APN-209 C Model Only	Inspect Test Repair	0.3 0.2 0.3			2	A B, D
0901	Receiver-Transmitter Indicator RT-1115/APN-209	Replace Repair	0.2			2	R
	Cable Assemblies	Test Replace Repair	0.2 1.0 0.5			2,4,5	D
0902	206-077-051-3						E
0903	1560-OH-58-127-1						AA
0904	1560-OH-58-127-2						AA

SECTION II. MAINTENANCE ALLOCATION CHART

FOR

OH-58A/C ELECTRONIC CONFIGURATION

(1) GROUP NUMBER	(2) COMPONENT/ASSEMBLY	(3) MAINTENANCE FUNCTION	(4) MAINTENANCE LEVEL			(5) TOOLS AND EQPT.	(6) REMARKS
			AVUM	AVIM	DEPOT		
10	Detecting Set, Radar Signal AN/APR-39(V)1	Inspect Test Repair	0.2 0.3 0.5			8 2,4,8,9	A B, D, S
1001	Control C-9326/APR-39(V)	Replace Repair	0.2			2	T
1002	Comparator, Radar Warning CM-440/APR-39(V)	Replace Repair	0.2			2	T
1003	Indicator IP-1150/APR-39(V)	Replace Repair	0.2			2	T
1004	Receiver, Dual R-1838/APR-39(V)	Replace Repair	0.2			2	T
	Cable Assemblies	Test Replace Repair	0.2 1.0 0.5			2,4,5	D
1005	206-077-202-3						E
1006	206-077-202-5						AA
	209-077-100-1						BB
	209-077-100-3						BB
	209-077-100-5						BB
	209-077-100-7						BB
1007	ASK-9-03074-3						BB,FF
1008	ASK-9-03074-8						BB,FF

SECTION II. MAINTENANCE ALLOCATION CHART

FOR

OH-58A/C ELECTRONIC CONFIGURATION

(1) GROUP NUMBER	(2) COMPONENT/ASSEMBLY	(3) MAINTENANCE FUNCTION	(4) MAINTENANCE LEVEL			(5) TOOLS AND EQPT.	(6) REMARKS
			AVUM	AVIM	DEPOT		
11	Civil Navigation System AN/ARN-123(V)1 C Model Only	Inspect Test Repair	0.2 0.2 0.3				A B, D
1101	Control C-10048/ARN-123(V)	Replace Repair	0.2			2	U
1102	Receiver, Navigation R-2023/ARN-123(V)	Replace Repair	0.2			2	U
1103	Indicator, Course Deviation ID-1347/ARN-82 206-075-716-1	Replace Repair	0.2		4.0	2	V
	Cable Assemblies	Test Replace Repair	0.2 1.0 0.5			2,4,5	D
1104	206-077-052-3						E
1105	206-077-052-5						AA
1106	206-077-052-7						AA
1107	206-077-052-9						AA
1108	206-077-052-11						AA
1109	206-077-052-13						AA

SECTION II. MAINTENANCE ALLOCATION CHART

FOR

OH-58A/C ELECTRONIC CONFIGURATION

(1) GROUP NUMBER	(2) COMPONENT/ASSEMBLY	(3) MAINTENANCE FUNCTION	(4) MAINTENANCE LEVEL			(5) TOOLS AND EQPT.	(6) REMARKS
			AVUM	AVIM	DEPOT		
12	Proximity Warning System YG-1054DL See Remark Z	Inspect Test Repair	0.2 0.2 0.3			 2	 A B, D, W
1201	Receiver-Transponder Unit HG1001D01	Replace Repair	0.2			2	
	Cable Assemblies	Test Replace Repair	0.2 1.0 0.5			 2,4,5	 D, W
1202	SK6728						E, W
1203	SK6729						A
1204	SK6730						A

SECTION II. MAINTENANCE ALLOCATION CHART

FOR

OH-58A/C ELECTRONIC CONFIGURATION

(1) GROUP NUMBER	(2) COMPONENT/ASSEMBLY	(3) MAINTENANCE FUNCTION	(4) MAINTENANCE LEVEL			(5) TOOLS AND EQPT.	(6) REMARKS
			AVUM	AVIM	DEPOT		
13	Avionics Electrical Equipment Installation	Inspect Repair	0.2 0.3				B
1301	Inverter, Static PP-6376A/A 206-075-364-5	Test Replace Repair	0.2 0.3			4 2,4	X
1302	Battery, Storage BB-676/A 206-075-363-1	Test Replace Repair	0.2 0.3			2,4 2,4	Y

SECTION III. TOOLS AND TEST EQUIPMENT REQUIREMENTS

FOR

OH-58A/C ELECTRONIC CONFIGURATION

TOOL/TEST EQPT. CODE	MAINT. CAT.	NOMENCLATURE	NATIONAL/NATO STOCK NUMBER	TOOL NO.
1	F	Tool Kit, Electronic Equipment TK-100/G	5180-00-605-0079	
2	O	Tool Kit, Electronic Equipment, TK-101/G	5160-00-064-5178	
3	F	Tool Kit, Electronic Equipment, TK-105/G	5160-00-610-8177	
4	O, F	Multimeter, Digital, AN/PSM-45	6625-01-139-2512	
5	O	Maintenance Kit, Electronic Equipment, MK-693/A	5821-00-045-9695	
6	O	Test Set, Transponder, AN/APM-378*	4920-00-134-1533	
7	F	Wattmeter, ME-162/U	6625-00-868-8334	
8	O	Simulator, Radar Signal, SM-736/UPM	6940-01-031-5886	
9	O	Torque Wrench, T-8438	5120-00-169-5776	
10	O	Insertion Tool, CIT-C2 (71468)	5120-00-947-9965	
11	O	Extraction Tool, CET-C1 (71468)	5120-00-869-0728	
12	O	Test, Receiver, AN/ARM-186	6625-01-557-1168	
13	F	Oscilloscope, AN/USM-488	6625-01-187-7847	
14	F	Test Set, TS-4321/AVR-2	4931-01-280-9754	
		*Use until Test Set, Transponder AN/APM-424 becomes available. NSN6625-01-152-6705		

SECTION IV. REMARKS
OH-58A/C ELECTRONIC CONFIGURATION

REFERENCE CODE	REMARKS
A	Operational Test.
B	Repair by LRU replacement.
C	Refer to TM 11-5895-1174-24P & TM 11-5821-262 Series.
D	Non-repairable items replaced at Organizational Maintenance Level.

Group No.	Model	Part Number	Nomenclature
01		MS25039-1	Switch, Copilot Foot
01		206-075-533-1	Support-Intercom Panel
02		MT-3801/ARC	Mount, Voice Security
02		206-075-380-1	Filter
02		206-075-523-1	Antenna, Homing, L.H.
02		206-075-523-2	Antenna, Homing, R.H.
02		206-075-543-1	Antenna, Comm, VHF-FM
02		204-075-850-9	Board, Capacitor, A3
02		MS25237-327	Lamp
02		CY-8515/ARC	Battery Box (P/O ARC-201)
03		206-075-381-101	Filter, FL2
04		206-075-381-1	Filter, FL3
04		206-075-551-1	Antenna, UHF
05		AS-2108()/ARN-89	Antenna, Loop
06		MS35058-22	Switch, Slaving
07		AT-884/APX	Antenna
07	A	MT3809/APX-72	Mount
07	A	MT3513/APX	Mount
07	A	MS24659-23F	Switch, IFF Code Hold
07	A	MS25041-4-327	Mode 4 Indicator

SECTION IV. REMARKS
OH-58A/C ELECTRONIC CONFIGURATION

REFERENCE CODE	REMARKS
	Group No. / Model / Part Number / Nomenclature
	08 / C / 206-077-109-1 / Antenna (AT-741A/B)
	08 / C / MS24659-23F / Swithc, IFF Code Hold
	08 / C / MS25041-4-327 / Mode 4 Indicator
	09 / C / AS2595()/APN-19(V) / Antenna
	09 / C / M39002/01-0072 / Resistor
	10 / C / AS-2890()/APR-39 / Antenna, Blade
	10 / C / AS-2891()/APR-39 / Antenna, Spiral
	10 / C / AS-2892()/APR-39 / Antenna, Spiral
	11 / C / AS-1304/ASN / Antenna, VOR
	11 / C / 206-077-092 / Antenna, Glide Slope
	11 / C / AT-640/ARN / Antenna, Marker Beacon
	11 / C / MS-27786-23 / Switch, VOR/ADF Selector
	11 / C / 209-075-323-3 / Dimmer, Light
	11 / C / MT-4834/ARN-123 / Mount
	12 / A / 10027834-101 / Antenna
	14 / AS-3841/ARC / Antenna, Bent Whip
	14 / AS-4166/ARC / Antenna, Left Homing
	14 / AS-4167/ARC / Antenna, Right Homing
	14 / CY-8515/ARC-201 / Battery Box
E	Repair limited to terminal ends, pins, or single wire replacement.
F	Refer to TM 11-1520-2228-34/1.
G	Refer to TM 11-5821-259.
H	Refer to TM 11-5810-262.

SECTION IV. REMARKS
0H-58A/C ELECTRONIC CONFIGURATION

REFERENCE CODE	REMARKS
I	Logistics responsibility - U.S.A. Intelligence and Security Command.
J	Refer to TM 11-5821-260.
K	Refer to TM 11-5821-261 for AN/ARC-116. Refer to TM 11-5821-311 or TM 11-5841-284 for RT-1167C/ARC-164.
L	Refer to TM 11-5826-277.
M	Refer to TM 11-6605-202.
N	Refer to TM 11-5895-490.
0	Refer to TM 11-6625-1646.
P	Repairs will be accomplished under an initial 2-year warranty. Refer to TM 11-5895-1037-12.
Q	Logistics responsibility - AVSCOM.
R	Repairs will be accomplished under an initial 4-year warranty contract. Refer to TM 11-5841-284-23.
S	System Test only for repair by component replacement - requires simulator, radar signal SM-736/UPM, part of SM-674/UPM. Refer to TM 11-5841-283.
T	Refer to TM 11-5895-957-14.
U	Repairs will be accomplished under an initial 4-year warranty contract. Refer to TM 11-5826-258-24
V	Refer to TM 11-5826-226.
W	Locally supported item. No TM 11 available, commercial manual only. Logistics responsibility - TRADOC. This item to be installed only at CONUS TRAINING SITES.
X	Refer to DMWR 11-6130-375.
Y	Refer to TM 11-6140-203.
Z	Separately developed by Government modification. Not approved by BHTI.
AA	Antenna cable may be repaired by replacing terminal ends or removing and replacing cable assembly as required.
BB	Field repair to cable not authorized due to high frequency matching. Repair only by replacing cable.

SECTION IV. REMARKS
OH-58A/C ELECTRONIC CONFIGURATION

REFERENCE CODE	REMARKS
CC	206-032-310-7 fairing with foil antenna is AVSCOM responsibility. Foil antenna, 206-032-310-55, is replaceable at AVUM.
DD	A Model (unlighted indicator) ID 1351/A TM 11-5895-537-50, DMWR 11-5895-537 ID 1351A/A TM 11-5895-537-50, DMWR 11-5895-537 ID 1351B/A TM 11-5895-537-50, DMWR 11-5895-537 C Model (lighted indicator) ID 1351C/A TM 11-5895-537-50, DMWR 11-5895-537 ID 1351D/A DMWR 11-5826-304 ID 1351E/A DMWR 11-5826-303
EE	Item replaces MD-1101/A. Repair to be performed by Contractor Depot.
FF	Cables 209-077-100-1,3,5,7 are replaced by ASK-9-03074-3/8.
GG	Refer to TM 11-5841-301-12
HH	Refer to TM 11-5821-33-20 for repairs.
II	Install per AN/ARC-201 SINCGARS MWO 55-1520-228-50-27 (OH-58A) MWO 55-1520-228-50-37 (OH-58C)
JJ	Reference Only. Drawing reflects complete VHF-FM SINCGARS Installation.
KK	Reference Only. Drawing reflects VHF-FM SINCGARS Installation only.
LL	Reference only. Drawing reflects VHF-FM Installation without SINCGARS.

APPENDIX C

WIRING DIAGRAMS

C-1. General. The wiring diagrams are detailed interconnecting diagrams for the electronic equipment. Cables are identified by the part number by which they are procured. Individual wires within a cable are identified by a number letter code which describes their types and destination; for example: ARC115-2A22. In this code, ARC115 indicates that the wire goes to the Vhf command facility (AN/ARC-l15); that this is wire 2 of the cable; that it is segment A of wire 2, and that it is made of 22-gauge wire. Other codes may appear in a variation of that form; for example: SC841A22. In this code, SC is an arbitrary symbol which stands for the identification facility; as before, the code designates 22-gauge wire for segment A of wire number 841. An N at the end of any code indicates that, that wire is providing a group connection. Arbitrary symbols and their meanings are as follows:

Code	*Meaning*
A	Armament
C	Control surfaces
D	Instruments (not flight or engine)
E	Engine instruments
F	Flight instruments
H	Heating, ventilating, and deicing
J	Ignition
K	Engine control
L	Lighting
M	Misce11aneous electric
N	Ground
P	Dc power
PWD	Proximity warning
Q	Fuel and oil
R	Radio (navigation and communication)
RC	Command
RF	Vhf liaison
RL	Liaison
RM	Marker beacon
RN	Navigation
RU	Uhf command
RV	Vhf command
RZ	Interphone and headphone
S	Radar
SX	Recognition (Transponder, IFF) Radar (Radio)
TN	Tracking navigation radar
V	Dc power and dc control cables for ac system
W	Warning and emergency
X	Ac power

C-2. List of Wiring Diagrams. The list below lists the figure number and subject of the wiring diagrams.

Figure No.	*Subject*
FO-l	Configuration block diagram.
FO-2	Avionics wiring diagram.
FO-2.1	Deleted.
FO-3	ATAS missile system wiring diagram [illegible].
FO-4	MD-1219/A ATS wiring diagram.
FO-5	AN/ARC-201 FM wiring diagram.

ALPHABETICAL INDEX

ALPHABETICAL INDEX (Cont.)

ALPHABETICAL INDEX

ALPHABETICAL INDEX (Cont.)

R (Cont.)

ALPHABETICAL INDEX (Cont.)

By Order of the Secretary of the Army:

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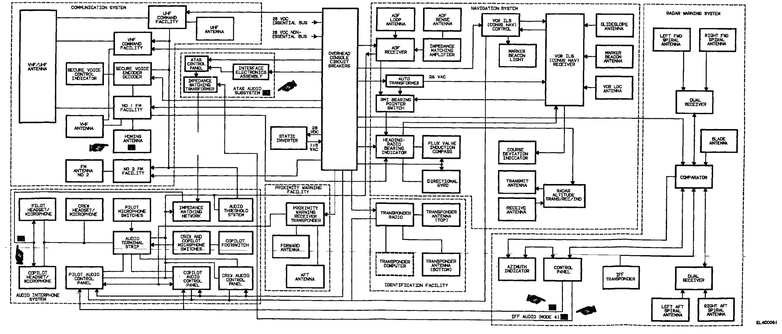
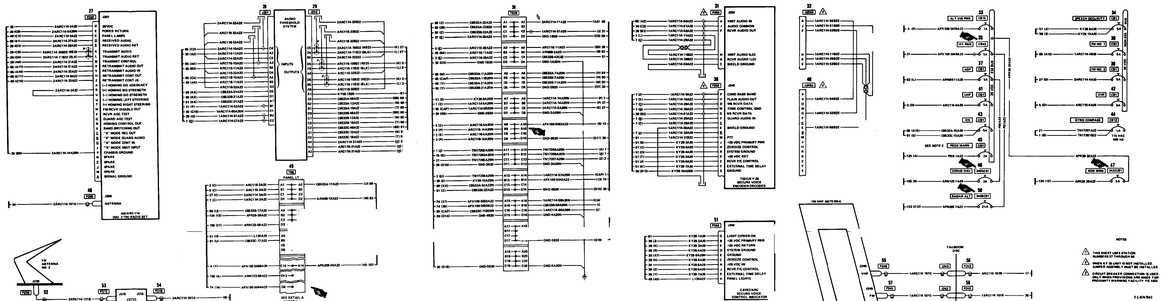
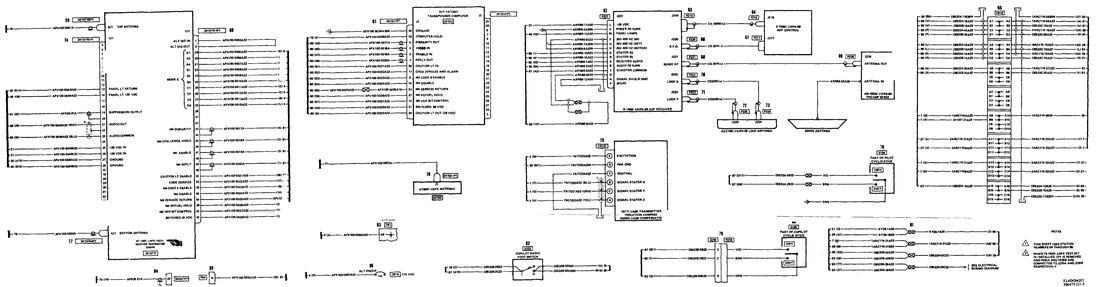


FO 1. Configuration block diagram

FO 2Ⓞ. Avionics wiring diagram (Sheet 1 of 6)



FO 2-0. Avionics wiring diagram (Sheet 2 of 6) Change 2



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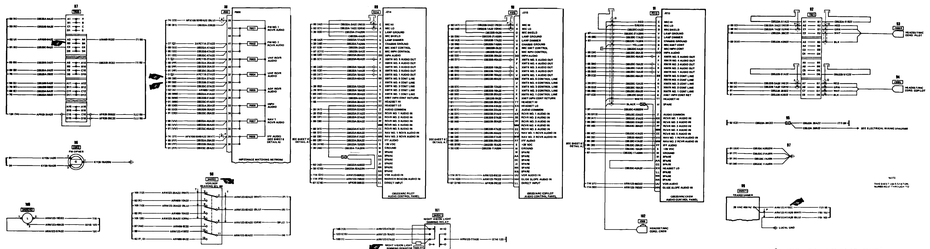
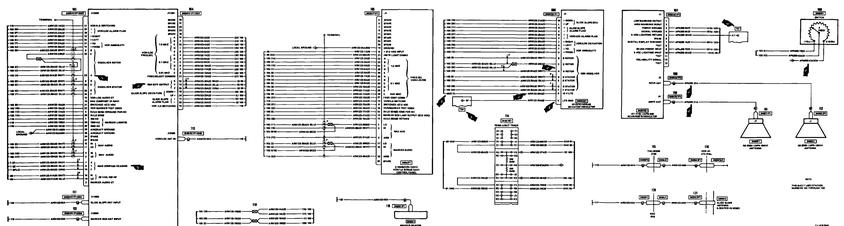
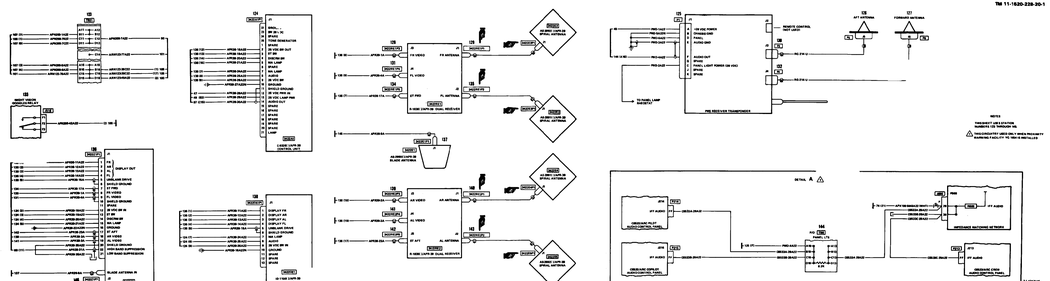


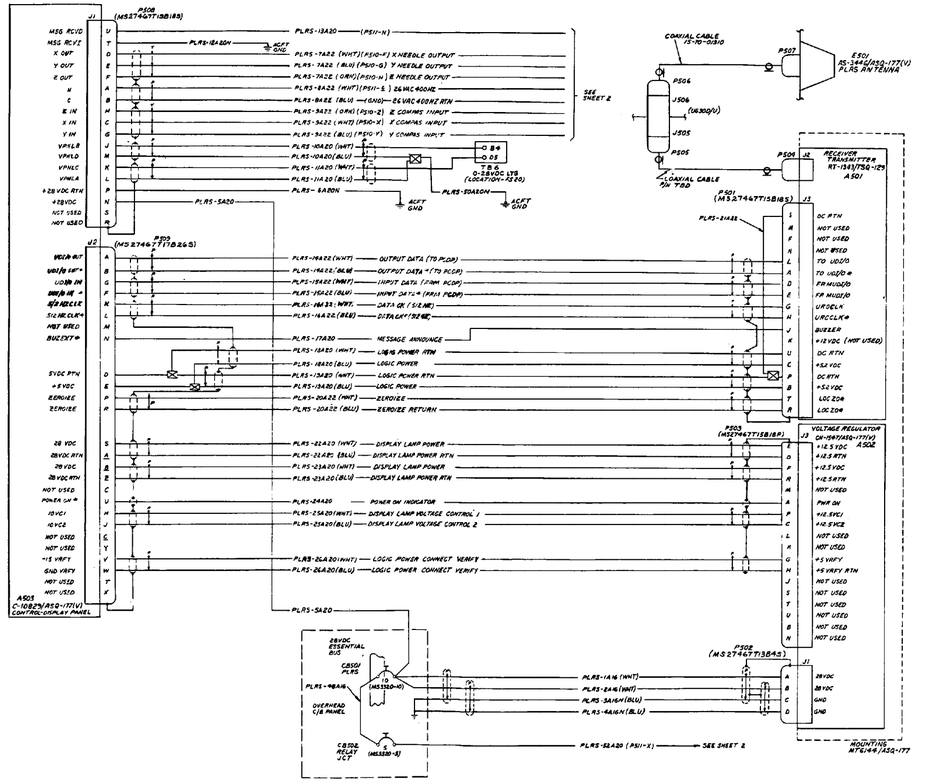
FO 2D Avionics wiring diagram (Sheet 4 of 6) Change 2



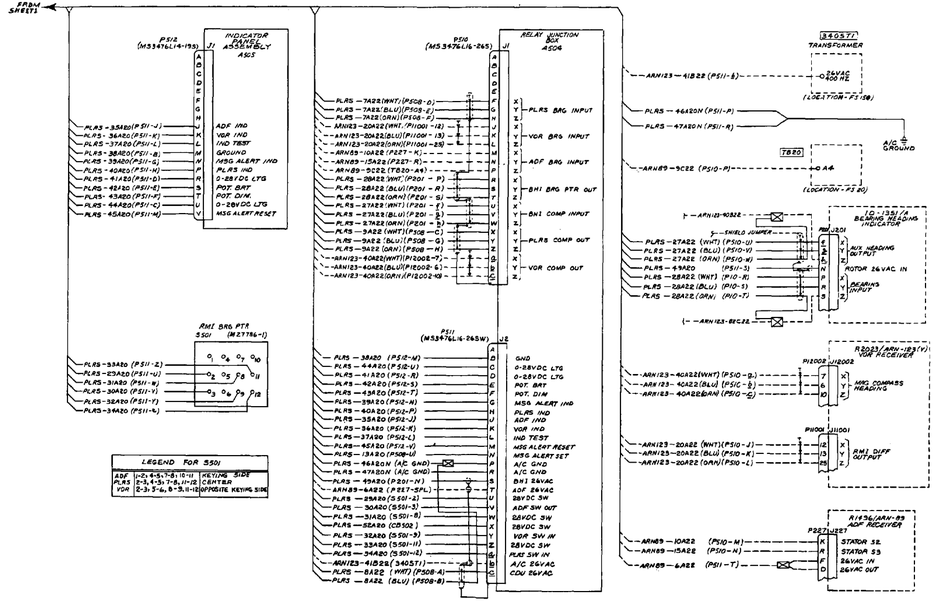
FO #20. Antenna wiring diagram (Sheet 5 of 6). Change 2



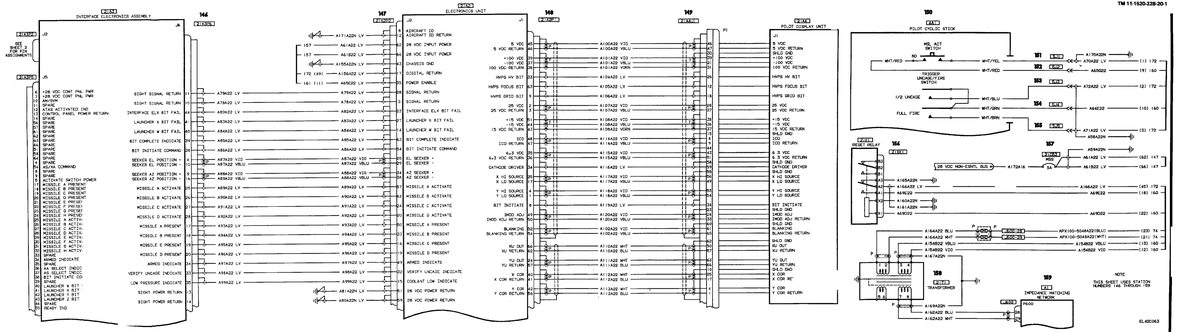
FO 2-0 Antenna wiring diagram (Sheet 6 of 6) Change 2



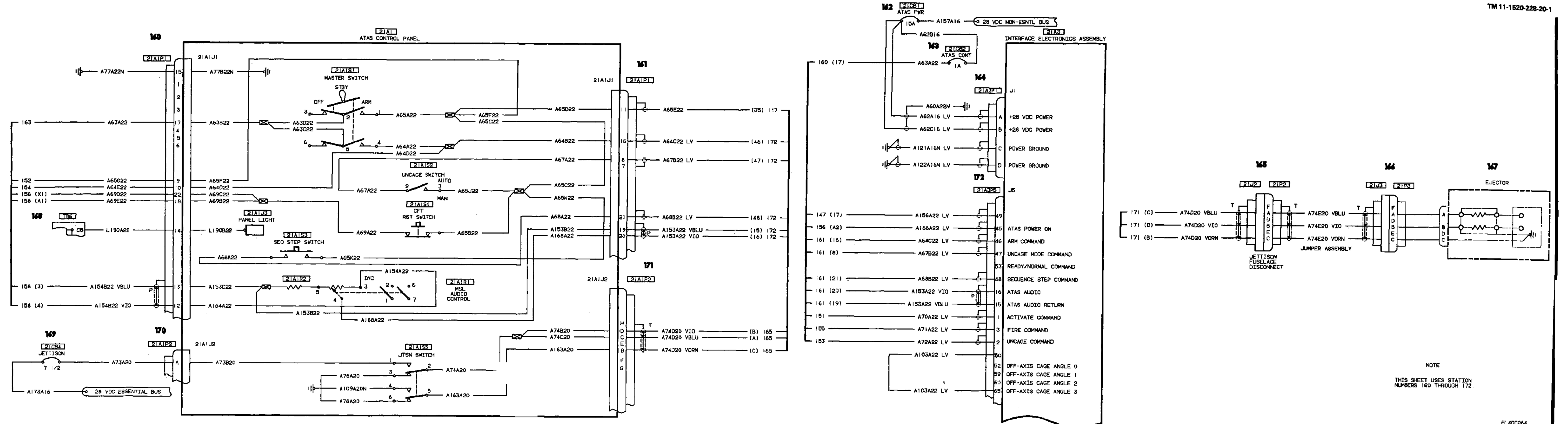
FO-2.1. Avionics Wiring Diagram with PLRS (Sheet 1 of 2)



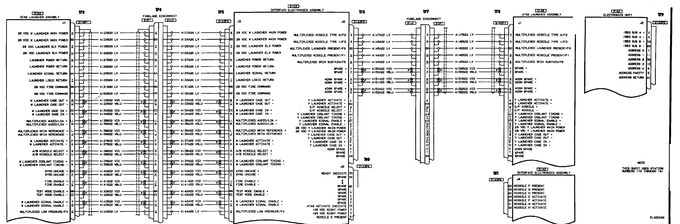
FO-2.1. Avionics Wiring Diagram with PLRS (Sheet 2 of 2)



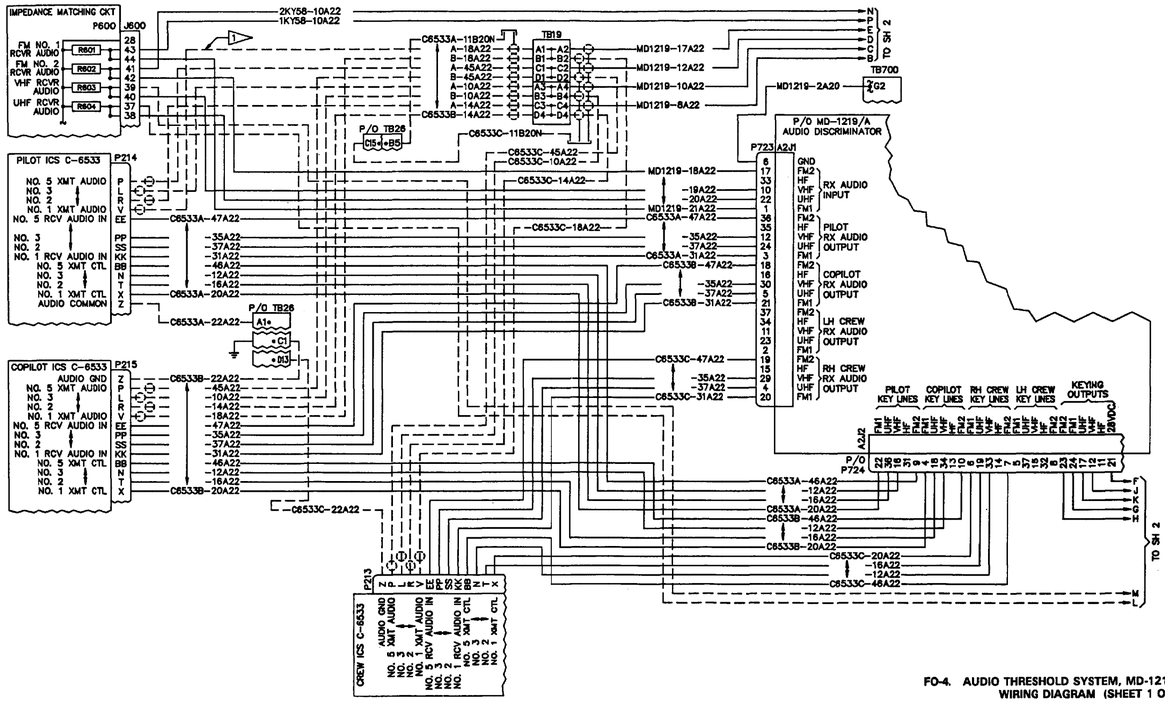
FO 3-7. ATAS missile system wiring diagram (Sheet 1 of 2)



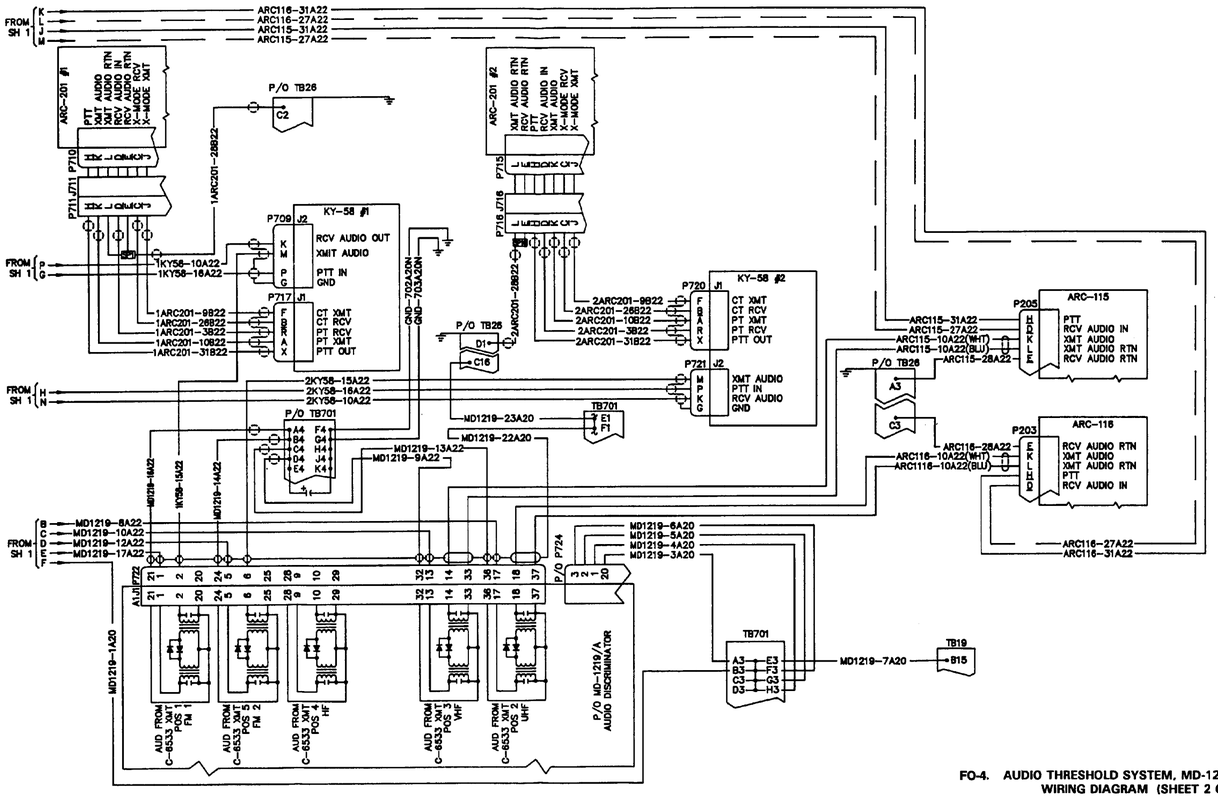
FO 3②. ATAS missile system wiring diagram CS (Sheet 2 of 3)



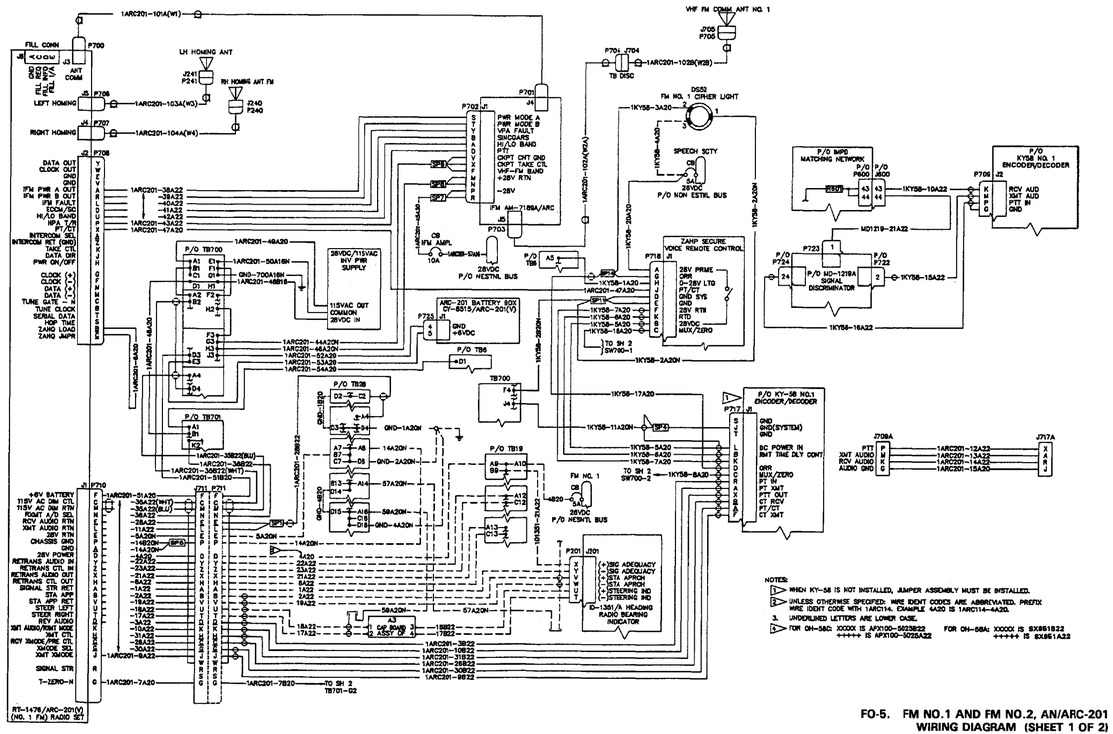
FO 33. ADAS missile system wiring diagram (Sheet 2 of 3)



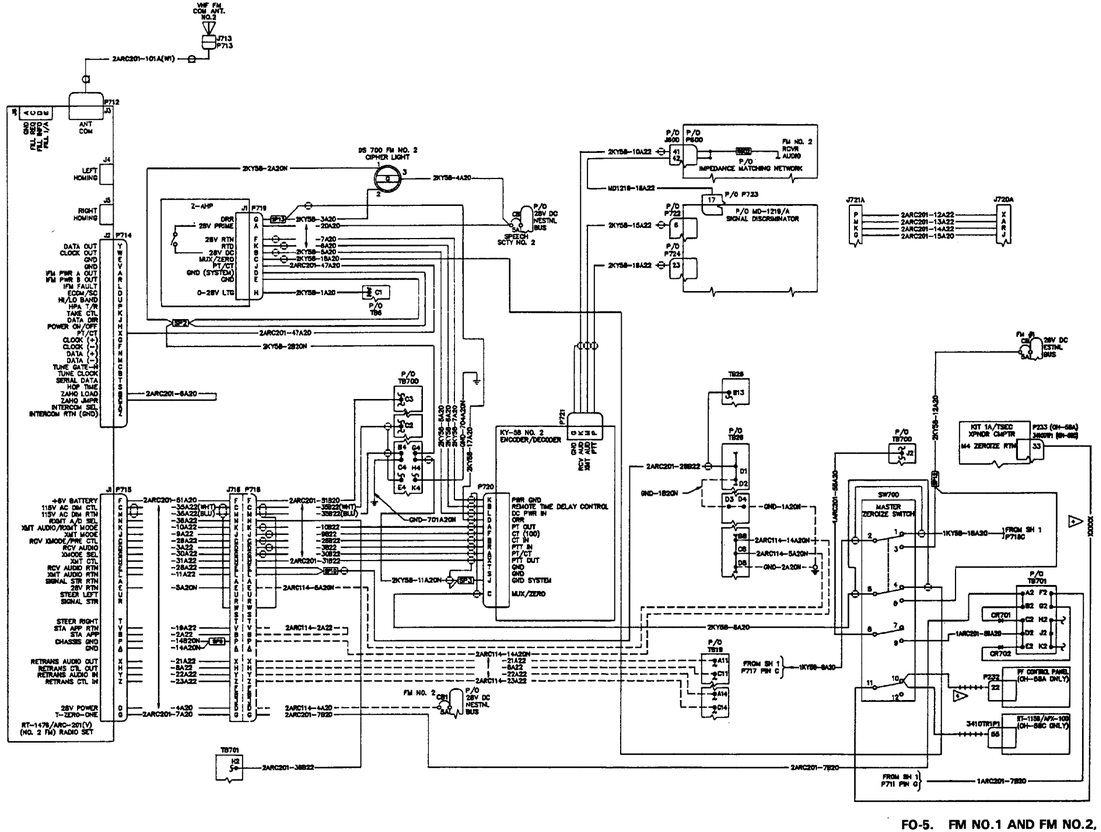
FO-4. AUDIO THRESHOLD SYSTEM, MD-1219/A WIRING DIAGRAM (SHEET 1 OF 2)



FO-4. AUDIO THRESHOLD SYSTEM, MD-1219/A WIRING DIAGRAM (SHEET 2 OF 2)



FO-5. FM NO.1 AND FM NO.2, AN/ARC-201 WIRING DIAGRAM (SHEET 1 OF 2)



FO-5. FM NO.1 AND FM NO.2, AN/ARC-201
WIRING DIAGRAM (SHEET 2 OF 2)