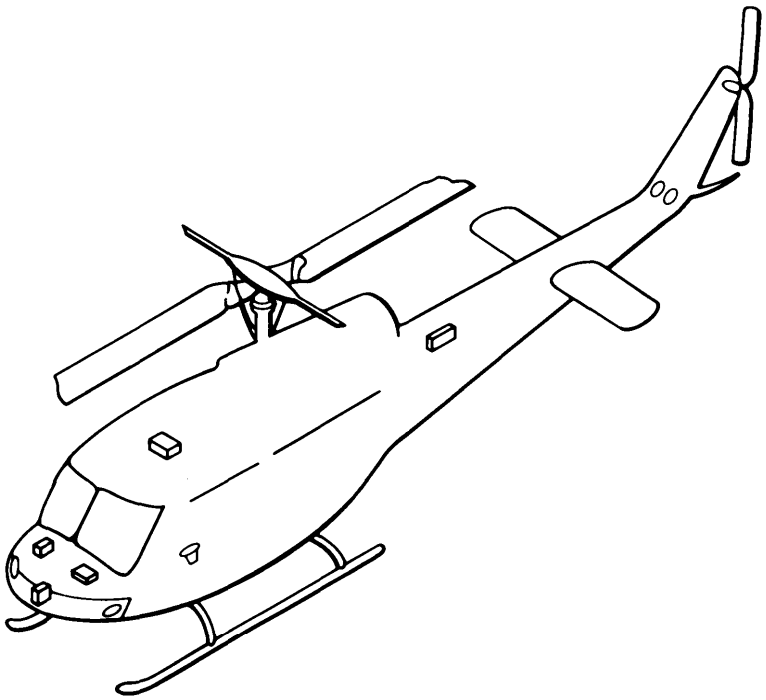
TM 11-5841-283-12
NAVAIR 16-30APR39-1

AVIATION UNIT
MAINTENANCE MANUAL



RADAR SIGNAL DETECTING SET AN/APR-39(V)1

(NSN 5841-01-023-7112)

DEPARTMENTS OF THE ARMY AND THE NAVY

9 AUGUST 1983

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 WOODEN POLE OR A 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

High voltage is used in the operation of this equipment.

DEATH ON CONTACT

may result if personnel fail to observe safety precautions. Learn the areas containing high voltage in each piece of equipment. Be careful not to contact high-voltage connections when installing or operating this equipment. Before working inside the equipment, turn power off and ground points of high potential before touching them.

WARNING

Handle CRT (indicator screen) with extreme caution; implosion may result from careless handling.

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 skin should be avoided. When necessary, use gloves which the solvent cannot penetrate. If the solvent is taken internally, consult a physician immediately.

Aircraft with AN/APR-39(V)1 installed must not be located within 60 yards of active groundbased radar antennas or 6 yards from active airborne radar antennas. Radar signals within these distances will cause damage to the receivers and comparator of AN/APR-39(V)1 .

Set 28 VDC circuit breaker OFF before removing or installing any subsystem of AN/APR-39(V)1 (see aircraft manual). If power is on, removal or installation of any subsystem may cause sparking which could ignite fuel vapors.

Technical Manual
No. 11-5841-283-12
Technical Manual
NAVAIR 16-30APR39-1

DEPARTMENTS OF THE ARMY,
AND THE NAVY
Washington, DC, 9 *August 1983*

Aviation Unit Maintenance Manual

RADAR SIGNAL DETECTING SET AN/APR-39(V)1 (NSN 5841-01-023-7112)

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-Electronics Command and Fort Monmouth, ATTN: DRSEL-ME-MP, Fort Monmouth, New Jersey 07703. For Navy, mail comments to the Commander, Naval Electronic Systems Command; ATTN: ELEX 8122, Washington, DC 20360. In either case a reply will be furnished direct to you.

* This manual supersedes TM 11-5841-283-20, 1 June 1977, including all changes.

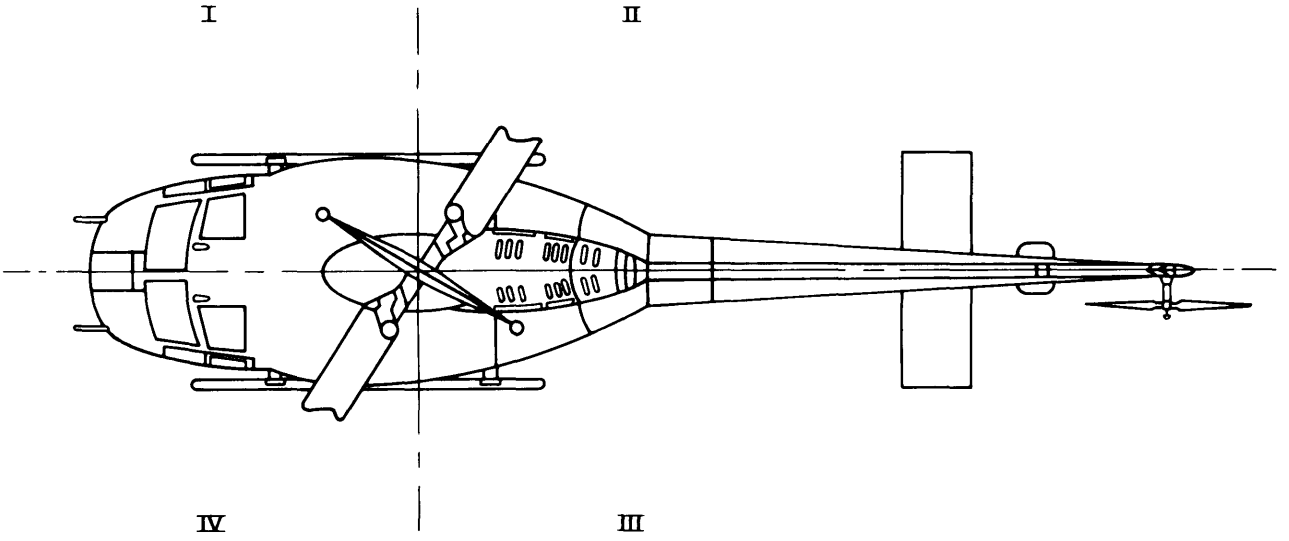
HOW TO USE THIS MANUAL

This manual is designed to help you operate and maintain the radar signal detecting set. The front cover table of contents is provided for quick reference to important information. There is also an index located in the final pages for use in locating specific items of information.

Read all preliminary information found at the beginning of each task. It has important information and safety instructions you must follow before beginning the task.

Warning pages are located in the front of this manual. You should learn the warnings before doing maintenance on the equipment.

Paragraphs in this manual are numbered by chapter and order of appearance within a chapter. A subject index appears at the beginning of each chapter listing sections that are included in that chapter. A more specific subject index is located at the beginning of each section to help you find the exact paragraph you're looking for.



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NOTE

Radar Signal Detecting Set AN/APR-39(V)1 equipment location varies from aircraft to aircraft. In this manual, a typical installation pattern for rotary wing aircraft is shown. Always check the aircraft manual for correct layout.

The above illustration is divided into four sections (quadrants I, II, Ill, and IV) to make equipment location easier.

CHAPTER 1

INTRODUCTION

Section I GENERAL INFORMATION

1-1. SCOPE.

Type of Manual: This manual covers Aviation Unit (organizational) level maintenance. Related maintenance manuals TM 11-5841-283-34-1 and -2 classified supplement this manual and contain instructions for AVIM, (direct support) maintenance.

Equipment Name and Model Number: Radar Signal Detecting Set AN/APR-39(V)1, NSN 5841-01-023-7112.

Purpose of Equipment: The primary purpose of the Radar Signal Detecting Set AN/APR-39(V)1 is to receive and display to the aircraft pilot, or other observer, information concerning radar and tracking signals which may be a potential threat. The radar signal detecting set can be installed in either rotary or fixed wing aircraft.

1-2. MAINTENANCE FORMS, RECORDS, AND REPORTS.

REPORTS OF MAINTENANCE AND UNSATISFACTORY EQUIPMENT

Department of the Army forms and procedures used for equipment maintenance will be those prescribed by TM 38-750, The Army Maintenance Management System (TAMMS). Navy personnel will report maintenance performed utilizing the Maintenance Data Collection Subsystem (MDCS) IAW OPNAVINST 4790.2, vol. 3 and Unsatisfactory Material/Conditions (UR submissions) IAW OPNAVINST 4790.2, vol. 2, chapter 17.

REPORT OF PACKAGING AND HANDLING DEFICIENCIES

Fill out and forward SF-364, Report of Discrepancy (ROD), as prescribed in AR 735-11-2/DLAR 4140.55/NAVMATINST 4355.73/AFR 400-54/MCO 4430.3E.

DISCREPANCY IN SHIPMENT REPORT (DISREP) (SF 361)

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

1-3. DESTRUCTION OF ARMY ELECTRONICS MATERIEL.

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

1-4. PREPARATION FOR STORAGE OR SHIPMENT.

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. Disassembly and repacking of equipment for shipment or limited storage are covered in chapter 4, section VI.

1-5. REPORTING EQUIPMENT IMPROVEMENT RECOMMENDATIONS.

If your radar signal detecting set 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. Put in on an SF 368 (Quality Deficiency Report). Mail it to Commander, U.S. Army Communications-Electronics Command and Fort Monmouth, ATTN: DRSEL-ME-MP, Fort Monmouth, New Jersey 07703. A reply will be sent to you. Navy personnel are encouraged to submit ElR's through their local Beneficial Suggestion Program.

1-6. NOMENCLATURE CROSS-REFERENCE LIST.

This list contains the common names used throughout this manual in place of official nomenclature.

Common Name	Official Nomenclature
control unit	Detecting Set Control C-9326/APR-39(V)
radar signal indicator	Radar Signal Indicator IP-1150/APR-39(V)
comparator	Comparator CM-440/APR-39(V)
receiver	Radar Receiver R-1838/APR-39(V)
right forward antenna	Left Spiral Antenna AS-2892/APR-39(V)
right aft antenna	Right Spiral Antenna AS-2891/APR-39(V)
left aft antenna	Left Spiral Antenna AS-2892/APR-39(V)
left forward antenna	Right Spiral Antenna AS-2891/APR-39(V)
blade antenna	Blade Antenna AS-2890/APR-39(V)
radar signal detecting set	Radar Signal Detecting Set AN/APR-39(V)1

NOTE

Do not confuse left and right spiraling of antennas for left or right antenna positions.

1-7. LIST OF ABBREVIATIONS.

The following abbreviations are used in this manual. For definitions of terms not listed here, refer to the glossary in the back of this manual.

Abbreviation	Word or Term
ac	alternating current
aft	to the rear
crt	cathode ray tube
dc	direct current
fwd	forward
Hz	Hertz (cycles per second)
MAC	maintenance allocation chart
MWO	modification work order
NSN	national stock number
prf	pulse repetition frequency
pri	pulse repetition interval
RPSTL	Repair Parts and Special Tools List
SAM	Surface-to-Air Missile
rf	radio frequency
TAMMS	The Army Maintenance Management System
TMDE	test, measurement, and diagnostic equipment

Section II EQUIPMENT DESCRIPTION

1-8. EQUIPMENT CHARACTERISTICS.

The radar signal detecting set consists of ten individually packaged components:

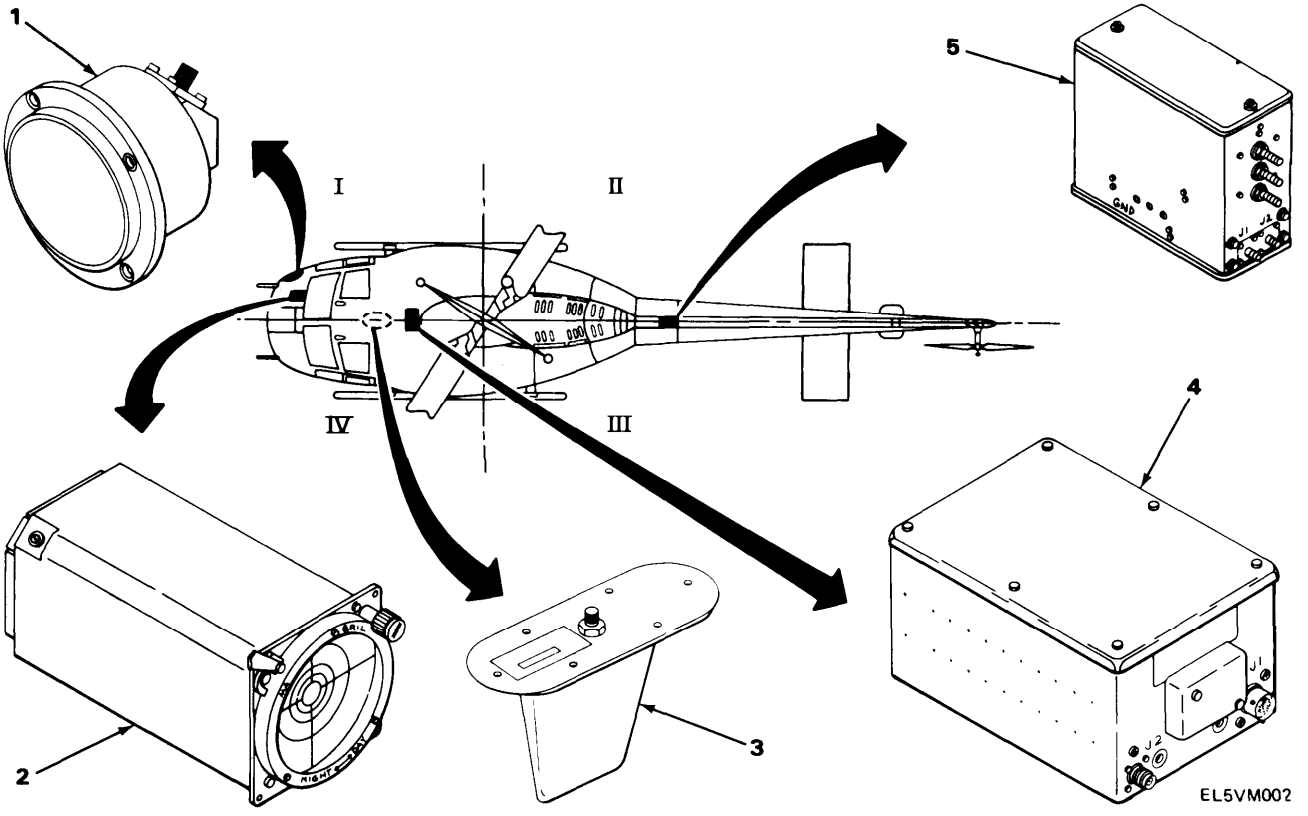
control unit
radar signal indicator
comparator
two radar receivers
four spiral antennas
blade antenna

1-9. CAPABILITIES AND FEATURES.

The radar signal detecting set provides the following capabilities and features:

Can be operated in all weather and climate conditions
Lightweight and compact
Can reinstalled in rotary wing or fixed wing aircraft
Responds to radars associated with hostile fire control systems
Generally excludes nonthreat radars in the discriminator-on mode
Accepts low band missile guidance radar signals
When a low band signal is time-coincident (correlated) with attacking radar signal, the equipment identifies the combination as an activated SAM (surface to air missile) radar complex
Offers both visual and aural warning displays

1-10. LOCATION AND DESCRIPTION OF MAJOR COMPONENTS.



1. FORWARD LEFT SPIRAL ANTENNA. Quadrant I; Unit 6. Mounted on outside airframe. Picks up high band signals and relays them to the forward radar receiver.

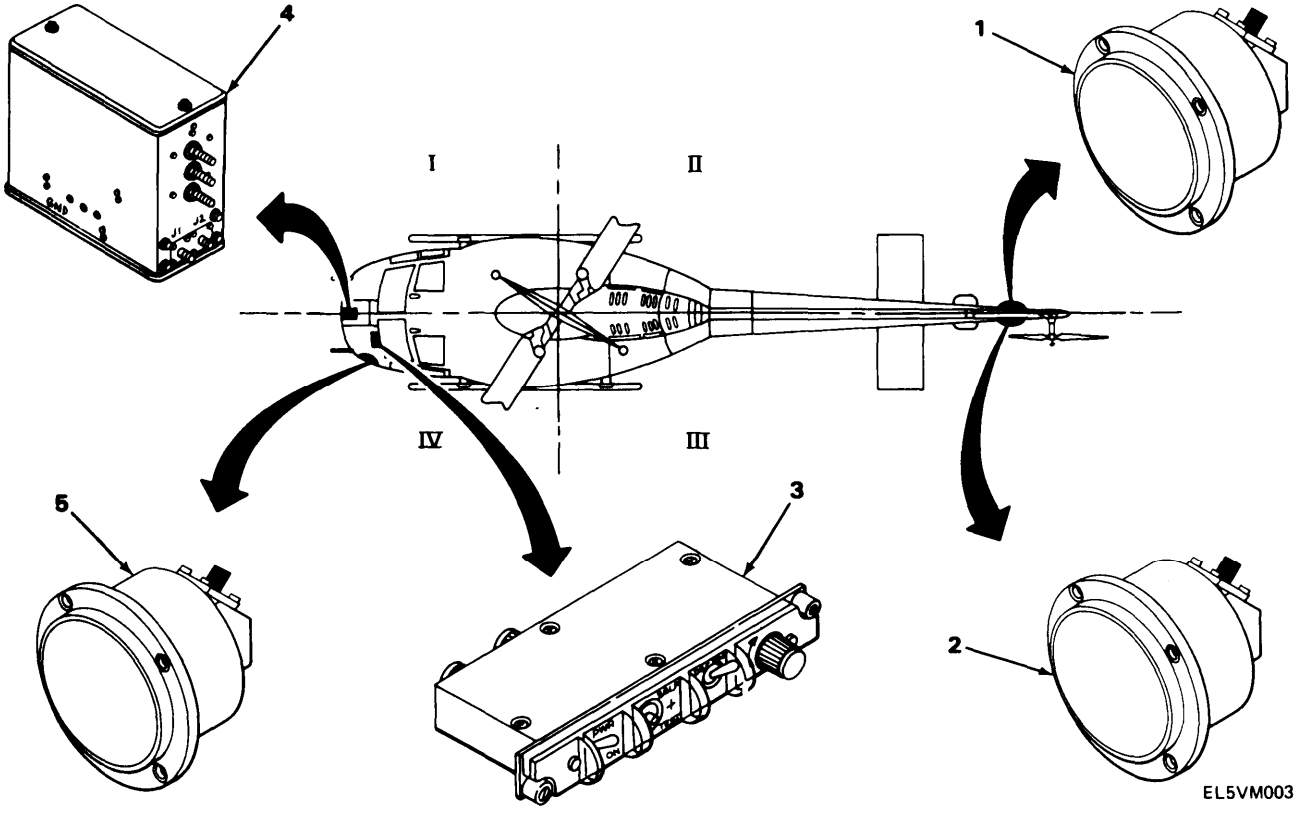
2. RADAR SIGNAL INDICATOR. Quadrant I; Unit 2. Mounted on instrument panel. Alerts the aircraft operator, or other observer, to the presence of a signal. Warning light, located on upper left corner of indicator, flashes when an activated SAM site is detected.

3. BLADE ANTENNA. Middle of Quadrant I and IV; Unit 10. Mounted on underside of aircraft. Picks up low band signals and relays them to the comparator.

4. COMPARATOR. Middle of Quadrant I and IV; Unit 3. Mounted on inside airframe. Electronically decides whether an incoming signal is a threat or a nonthreat.

5. AFT RADAR RECEIVER. Middle of Quadrant II and Ill; Unit 5. Mounted on inside aircraft in tail boom. Filters, detects, and amplifies the signals received by the spiral antennas.

1-10. LOCATION AND DESCRIPTION OF MAJOR COMPONENTS. (CONT)



1. AFT RIGHT SPIRAL ANTENNA. Quadrant II; Unit 7. Mounted on outside airframe. Picks up high band signals and relays them to the aft radar receiver.

2. AFT LEFT SPIRAL ANTENNA. Quadrant Ill; Unit 8. Mounted on outside airframe. Picks up high band signals and relays them to the aft radar receiver.

3. CONTROL UNIT. Quadrant IV; Unit 1. Mounted on instrument panel. Contains switching functions for self-tests and select mode of operation. Turns radar set on and off, and regulates audio alarm level.

4. FORWARD RADAR RECEIVER Middle of Quadrant I and IV; Unit 4. Mounted on inside airframe. Filters, detects, and amplifies the signals received by the spiral antennas.

5. FORWARD RIGHT SPIRAL ANTENNA. Quadrant IV; Unit 9. Mounted on outside airframe. Picks up high band signals and relays them to the forward radar receiver.

1-11. EQUIPMENT DATA.

For classified data, see TM 11-5841-283-34-2, NAVAIR 16-30APR39-2A.

WEIGHTS AND DIMENSIONS

Detecting Set Control C-9326/APR-39A(V)

Quantity	1
Length	3.38 in.
Width	5.75 in.
Height	0.75 in.
Volume	14.58 cu in.
Weight	0.40 lbs

Radar Signal indicator lP-1150/APR-39(V)

Quantity	1
Length	7.80 in.
Width	3.20 in.
Height	3.20 in.
Volume	79.87 cu in.
Weight	2.40 lbs

Comparator CM-440/APR-39(V)

Quantity	1
Length	6.50 in.
Width	4.18 in.
Height	3.10 in.
Volume	84.23 cu in.
Weight	2.00 lbs

Radar Receiver R-1838/APR-39(V)

Quantity	2
Length	4.56 in.
Width	1.76 in.
Height	3.76 in.
Volume	30.18 cu in.
Weight	0.90 lbs

Spiral Antennas
(left) AS-2892/APR-39(V)
(right) AS-2891/APR-39(V)

Quantity	4
Diameter	3.03 in.
Length	2.18 in.

1-11. EQUIPMENT DATA. (CONT)

WEIGHTS AND DIMENSIONS (CONT)

Spiral Antennas (Cont)

Volume	15.71 cu in.
Weight	0.30 lbs

Blade Antenna AS-2890/APR-39(V)

Quantity	1
Length	5.25 in.
Width	1.75 in.
Height	3.68 in.
Volume	33.81 cu in.
Weight	0.40 lbs
Total weight	8.20 lbs

FREQUENCY COVERAGE

Classified information.

RECEPTION COVERAGE

Classified information.

DIRECTION FINDING TECHNIQUE

Four Spiral Antenna Pattern. Each spiral antenna is oriented to one intercardinal axis, and is associated to each of the radar signal indicator quadrants as follows:

Forward left spiral antenna- Upper left indicator quadrant
Forward right spiral antenna- Upper right indicator quadrant
Aft right spiral antenna- Lower right indicator quadrant
Aft left spiral antenna- Lower left indicator quadrant

ANTENNA CHARACTERISTICS

Classified information.

OPERATIONAL SENSITIVITY

Classified information.

THREAT IDENTIFICATION CRITERIA

Classified information.

1-11. EQUIPMENT DATA. (CONT)

VISUAL DISPLAY

Direction Type: Strobes appear on indicator screen showing from which direction a possible threat has been identified.

Direction Accuracy: Classified information.

Threat (Missile): Associated strobe and missile alert (MA) lamp flash alternately.

AUDIO OUTPUT

PRF audio and alarm audio superimposed when missile threat is identified.

SELF-TEST

Built-in capability activated by control unit pushbutton. Checks most radar signal detecting set circuits, except RF.

EXTERNAL POWER REQUIREMENTS

Aircraft Power: 28 vdc at 1.1 amp maximum average.
Aircraft Instrument Panel Dimmer: 0-28 vdc at 0.08 amp maximum.

ENVIRONMENTAL LIMITS

Operating Temperature: -54°C (-65.2°F) to 71°C (159.8°F) for all components except control unit and indicator which are limited to 55°C (131°F).

Storage Temperature: -62°C (-79.6°F) to 71°C (159.8°F).

Altitude: 30,000 feet maximum.

Humidity: 0-100%.

BLANKING INPUT (OPERATIONAL)

Pulse Width: Must bracket transmitted pulse.
Polarity: Positive.
Amplitude: Between 2 and 30 volts, baseline 0 ± 0.05 volts.
Duty Cycle: Classified information.
Impedance, Input: 330 ohms ± 10%.

1-12. SAFETY, CARE, AND HANDLING.

Be sure to obey all Warnings and Cautions given in this manual. Serious injury to personnel or damage to equipment may result if Warnings and Cautions are not followed exactly.

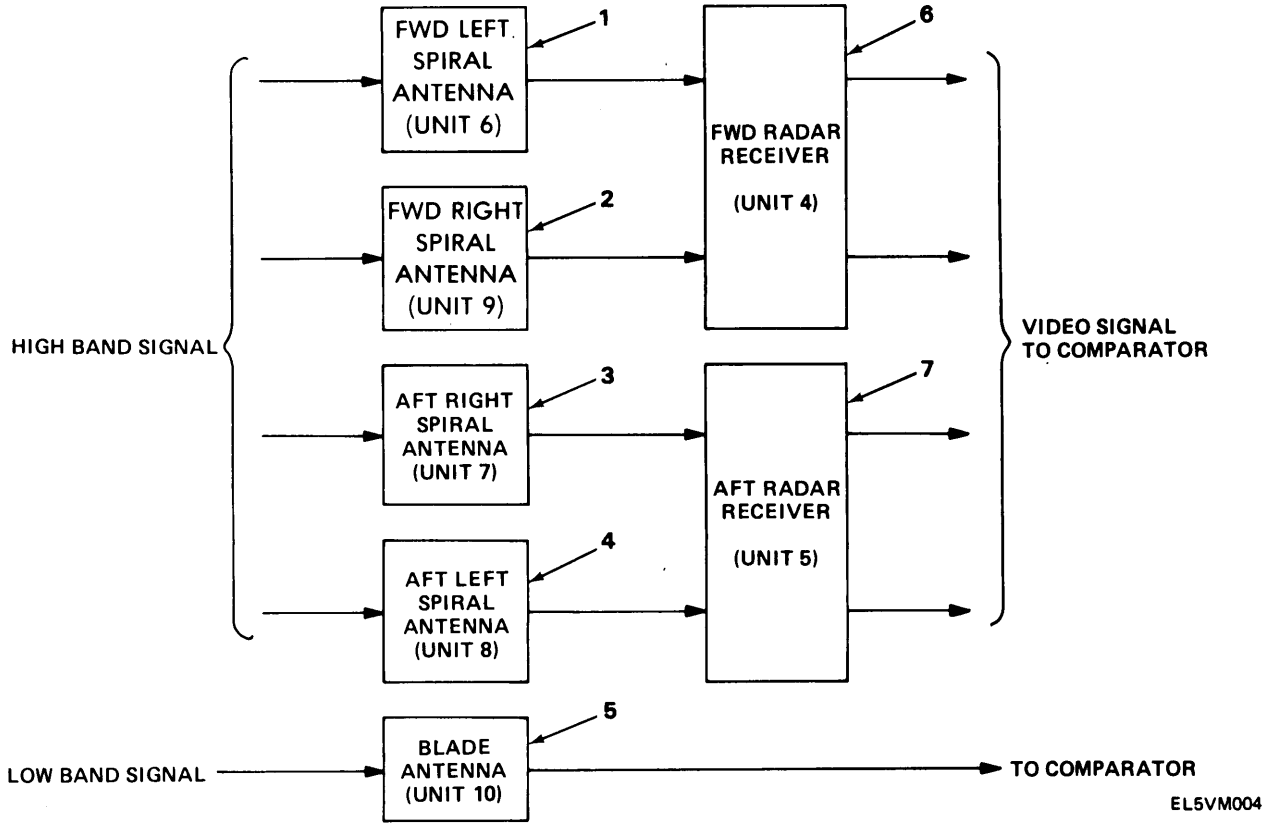
Section III PRINCIPLES OF OPERATION

1-13. BLOCK DIAGRAM PRESENTATION.

The radar signal detecting set is a fully integrated unit for receiving and displaying information concerning radar and tracking signals which may be a potential threat. The following diagrams show how each component of the radar signal detecting set is interconnected for each kind of operation.

1-13. BLOCK DIAGRAM PRESENTATION. (CONT)

SIGNAL INPUT AND AMPLIFICATION



1. FORWARD LEFT SPIRAL ANTENNA (Unit 6). Picks up high band signals between 0° - 90° relative to aircraft heading and transmits them to the forward radar receiver.

2. FORWARD RIGHT SPIRAL ANTENNA (Unit 9). Picks up high band signals between 270° - 360° relative to aircraft heading and transmits them to the forward radar receiver.

3. AFT RIGHT SPIRAL ANTENNA (Unit 7). Picks up high band signals between 90° - 180° relative to aircraft heading and transmits them to the aft radar receiver.

4. AFT LEFT SPIRAL ANTENNA (Unit 8). Picks up high band signals between 180° - 270° relative to aircraft heading and transmits them to the aft radar receiver.

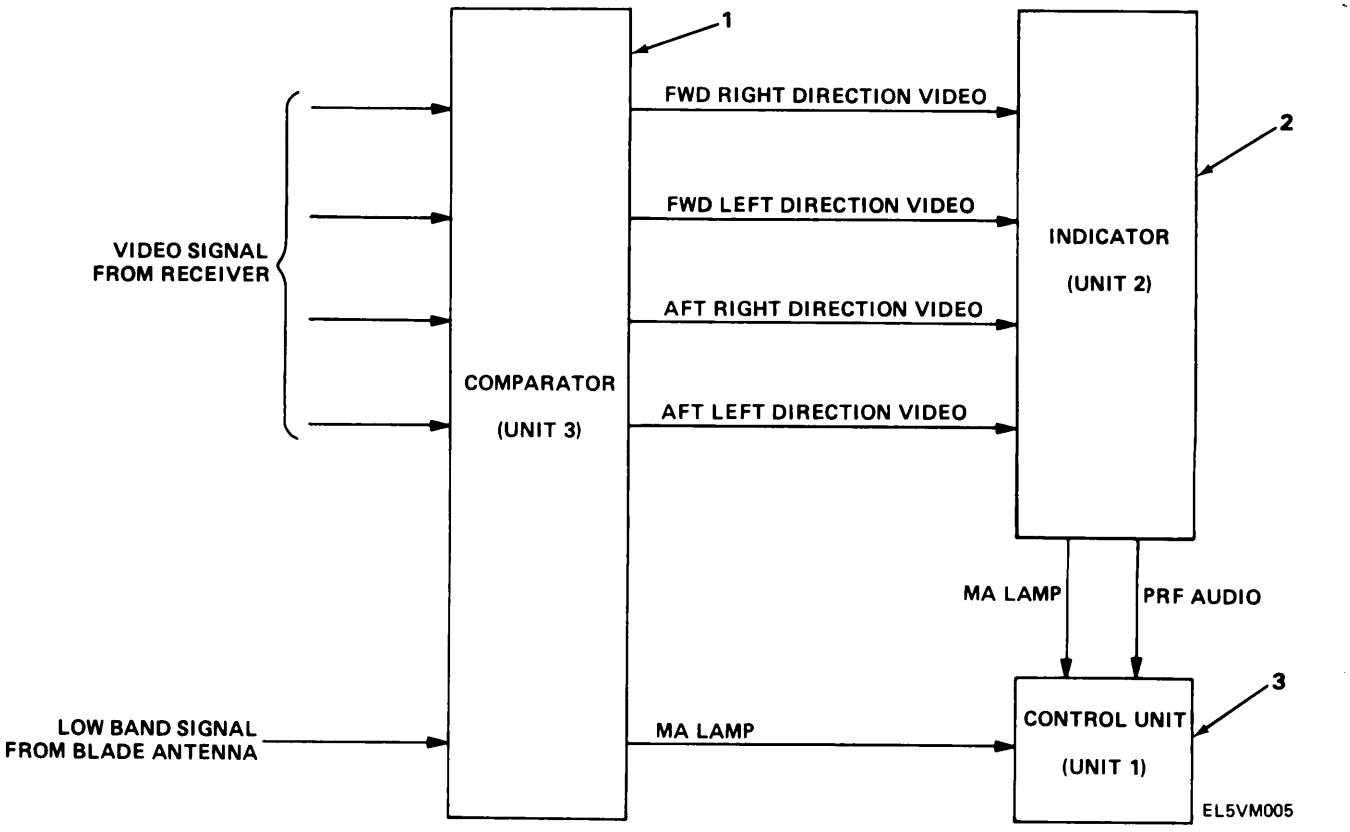
5. BLADE ANTENNA (Unit 10). Picks up low band signals and transmits them to the comparator. The blade antenna is omnidirectional.

6. FORWARD RADAR RECEIVER (Unit 4). Filters, detects, and amplifies the high band signals from the forward right and forward left spiral antennas. The radar receiver converts high band signals to video signals.

7. AFT RADAR RECEIVER (Unit 5). Filters, detects, and amplifies the high band signals from the aft right and aft left spiral antennas. The radar receiver converts high band signals to video signals.

1-13. BLOCK DIAGRAM PRESENTATION. (CONT)

THREAT/NONTHREAT DETERMINATION



1. COMPARATOR (Unit 3). Electronically decides whether received signals meet necessary conditions to indicate either a threat or a nonthreat. The comparator receives high band signals from the spiral antennas and low band signals from the blade antenna. If video signals (high band) are correlated with low band signals, the comparator will activate the MA lamp and audio alarm system, indicating the presence of an activated SAM radar complex.

2. RADAR SIGNAL INDICATOR (Unit 2). Provides visual display warning of a possible threat. The indicator is divided into four quadrants, each quadrant representing the area scanned by one of the four spiral antennas located around the aircraft. The indicator receives direction video signals from the comparator, which are displayed on the indicator screen as a strobe in the direction of the radar emitter.

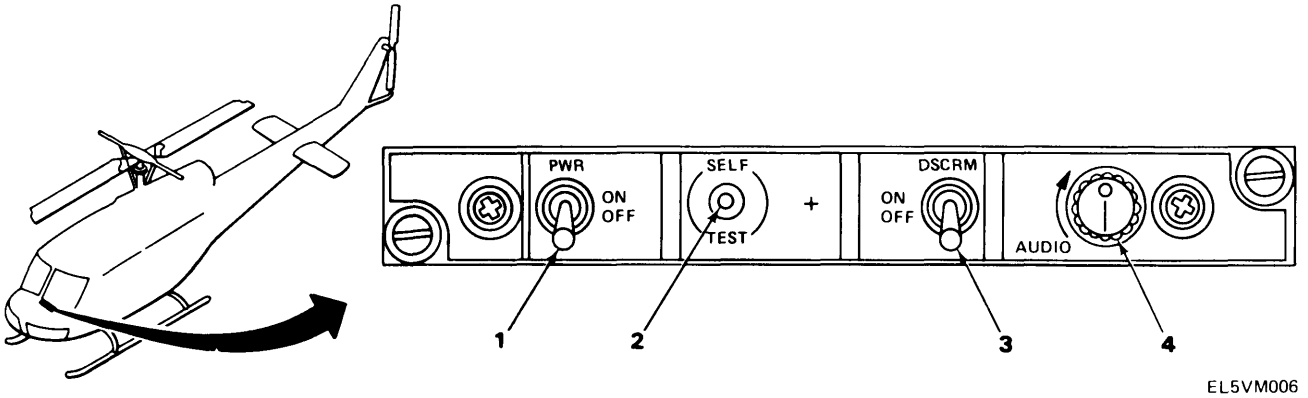
3. CONTROL UNIT (Unit 1). Contains all switching functions necessary to perform self-tests and select mode of operation.

CHAPTER 2

OPERATING INSTRUCTIONS

Section I DESCRIPTION AND USE OF OPERATOR'S CONTROLS AND INDICATORS

2-1. CONTROL UNIT.



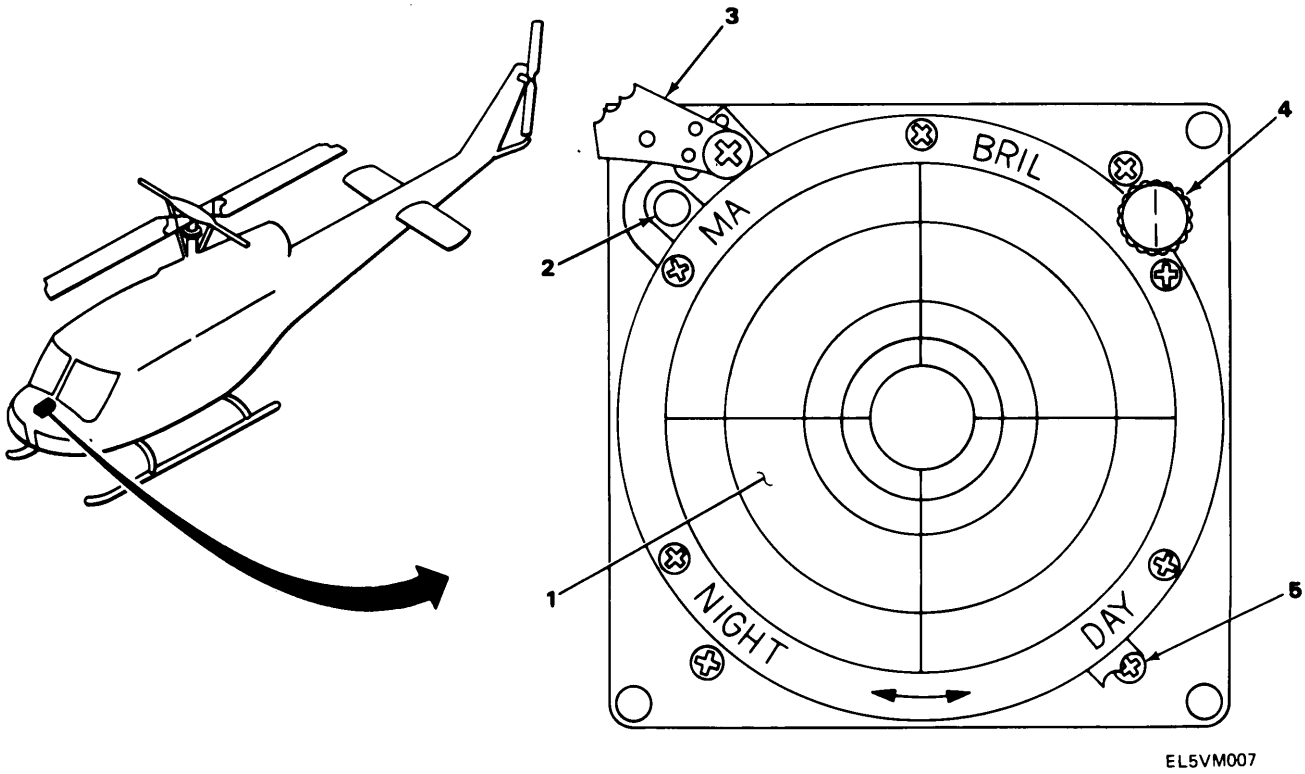
1. PWR-ON-OFF: Switch. Supplies 28 volts dc power to the radar signal detecting set system. System is operational one minute after switch is set to ON.

2. SELF-TEST: Push-button switch (spring-loaded). Push in and hold for system self-test. Release for return to normal operation.

3. DSCRM-ON-OFF: Switch. Selects mode of operation. When switch is set to ON, discriminator circuit is activated. When switch is set to OFF, discriminator circuit is deactivated.

4. AUDIO: Potentiometer. Controls the level of audio output to the aircraft interphone control system. Turn to the right for audio volume increase. Turn to the left for audio volume decrease.

2-2. RADAR SIGNAL INDICATOR.



1. INDICATOR SCREEN: CRT. Shows a line-of-bearing radial strobe for each processed signal received by the spiral antennas.

2. MA: Missle alert lamp. In the discriminator-on mode, flashes on and off to indicate an immediate threat. Lamp flashes when low band signals associated with missile guidance systems are correlated with high band signals associated with radar tracking systems (SAM radar complex). In the discriminator-off mode, flashes when processed low band signals are intercepted.

3. MA LAMP SHIELD: Missile alert lamp shield. Reduces MA lamp brightness when aircraft pilot is wearing right vision glasses.

4. BRIL: Potentiometer. Varies the brilliance of the indicator strobe. Used together with the filter control to produce a highly visible and clear display under most lighting conditions.

5. NIGHT-DAY: Filter. Varies the density of the red polarizing face plate filter for day or night operation. Used together with the BRIL control to produce a highly visible and clear display under most lighting conditions.

Section II OPERATION UNDER USUAL CONDITIONS

2-3. TURN-ON PROCEDURES.

This task covers:

Turning on power

INITIAL SETUP

Materials/Parts

Headset

Personnel Required

One avionics mechanic

Equipment Condition

Radar signal detecting set installed and ready for operation.

LOCATION	ITEM	ACTION	REMARKS

CAUTION

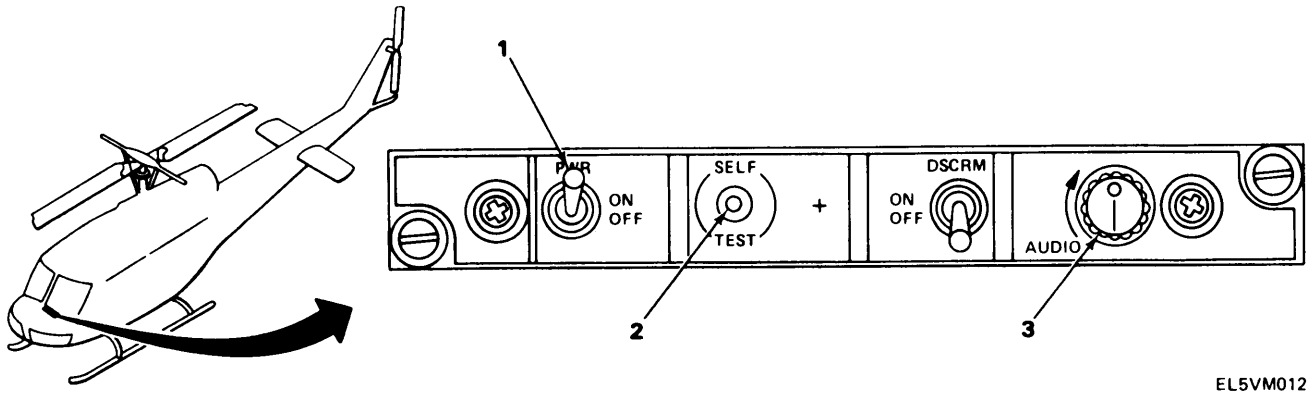
To prevent damage to the receiver detector crystals, be sure that the radar signal detecting set antennas are at least 60 yards from active ground based radar antennas or 6 yards from active airborne radar antennas. Allow an extra margin for new, unusual or high-powered emitters.

NOTE

Check that aircraft 28 vdc circuit breaker for the radar signal detecting set equipment in the aircraft is set on. See aircraft manual.

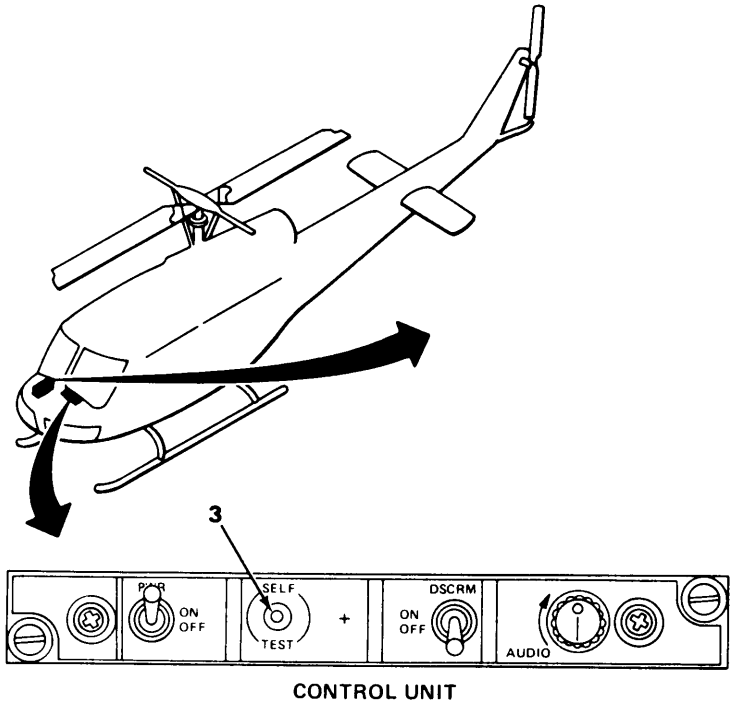
2-3. TURN-ON PROCEDURES. (CONT)

LOCATION	ITEM	ACTION **REMARKS**
1. Control unit	PWR-ON-OFF switch (1)	Set switch to ON. **Allow a minimum of 30 seconds for warmup.**
2.	SELF TEST button (2)	Push in and hold.
3.	Audio control (3)	Adjust to desired output level. **Audio alarm will be heard in the headset.**

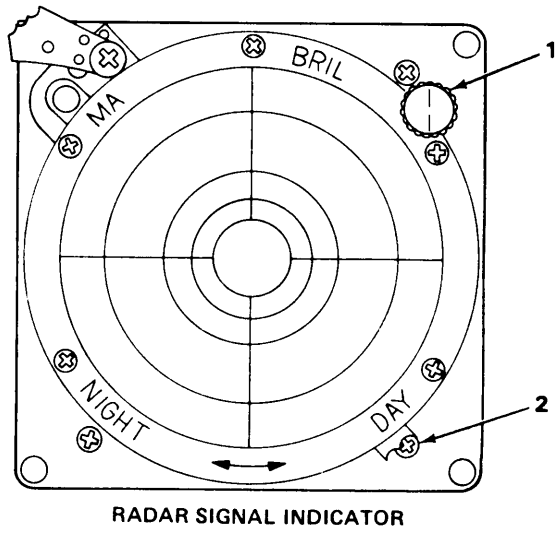


2-3. TURN-ON PROCEDURES. (CONT)

LOCATION	ITEM	ACTION **REMARKS**
4. Radar signal	BRIL control (1)	Adjust for brightness of strobe on indicator screen.
5.	NIGHT/DAY filter (2)	Adjust for night or day operation. **Maximum red for night.**
6. Control unit	SELF TEST button (3)	Release SELF TEST button.



CONTROL UNIT



RADAR SIGNAL INDICATOR

EL5VM013

2-4. SELF-TEST.

This task covers:

Testing the radar signal detecting set circuits

INITIAL SETUP

Materials/Parts

Headset

Personnel Required

One avionics mechanic

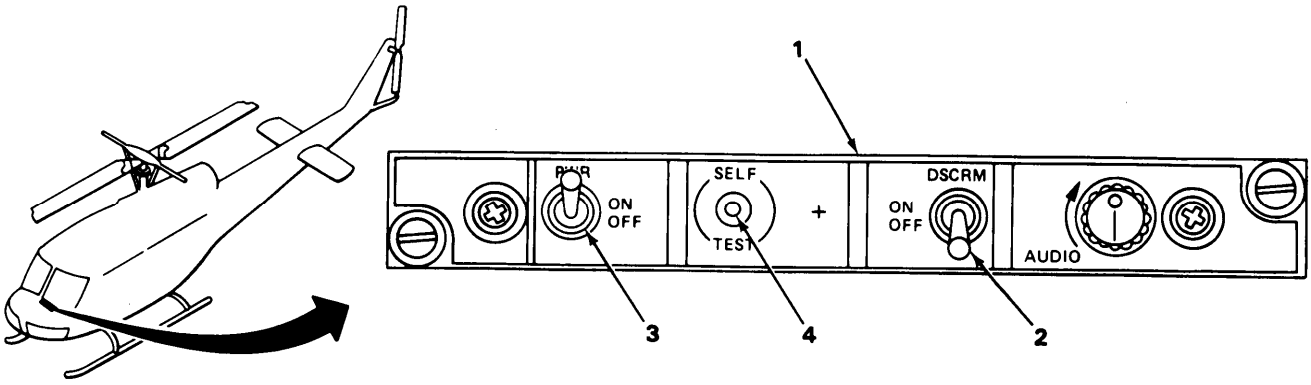
Equipment Condition

Radar signal detecting set installed and ready for operation.

LOCATION	ITEM	ACTION	**REMARKS**
		NOTE Check that 28 vdc circuit breaker for the radar signal detecting set equipment in the aircraft is set on. See aircraft manual. Turn aircraft panel light dimmer control to bright. See aircraft manual.	
1. Control unit	Lighting panel (1)	Check that panel lights.	
		NOTE In well lighted areas, it may be necessary to shade the panel to see if it is lighted.	
2.	DSCRM-ON-OFF switch (2)	Set to OFF.	

2-4. SELF-TEST. (CONT)

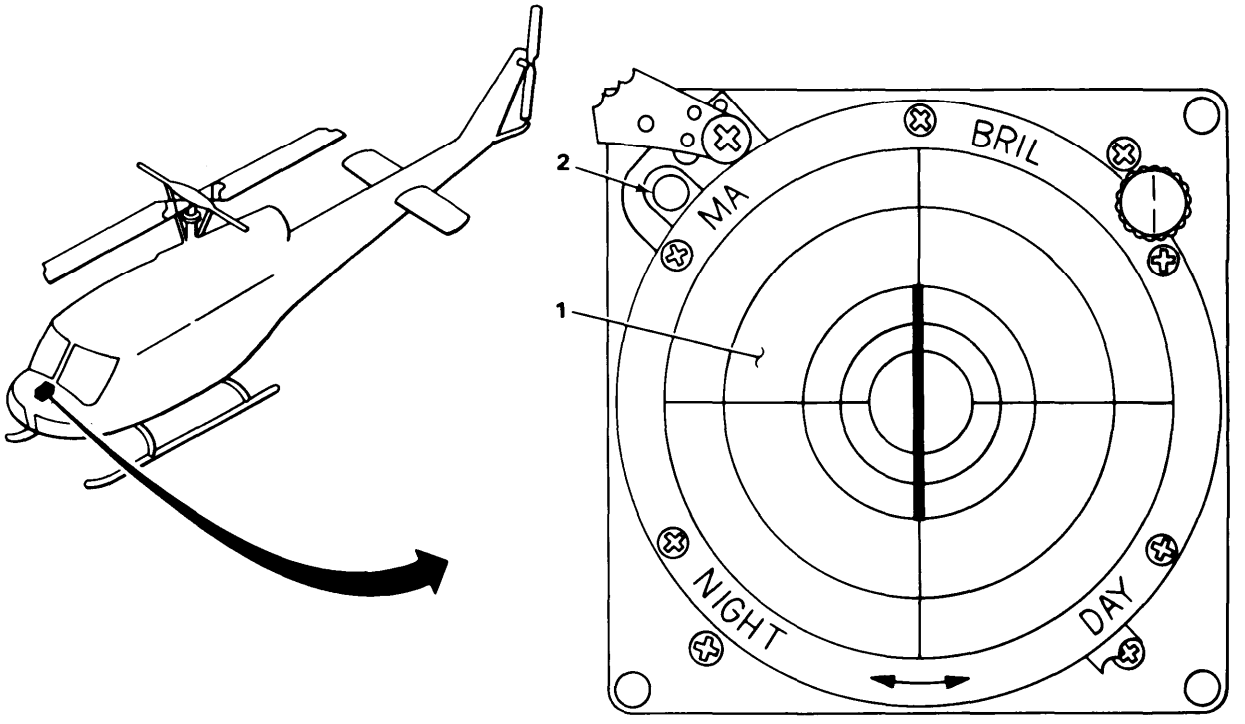
LOCATION	ITEM	ACTION **REMARKS**
3. Control unit	PWR-ON-OFF switch (3)	Set to ON. **Allow 1 minute for system to warm up.**
4.	SELF TEST button (4)	Press in and hold. **Normal PRF audio is heard immediately. After 6 seconds, whooping missile alert audio is added.**



EL5VM016

2-4. SELF-TEST. (CONT)

LOCATION	ITEM	ACTION **REMARKS**
5. Radar signal	Indicator screen (1)	Observe. **Immediately, forward and aft strobes appear, extending to about the third circle on the indicator screen.**
6.	MA lamp (2)	Observe. **After 6 seconds, MA lamp starts flashing.**



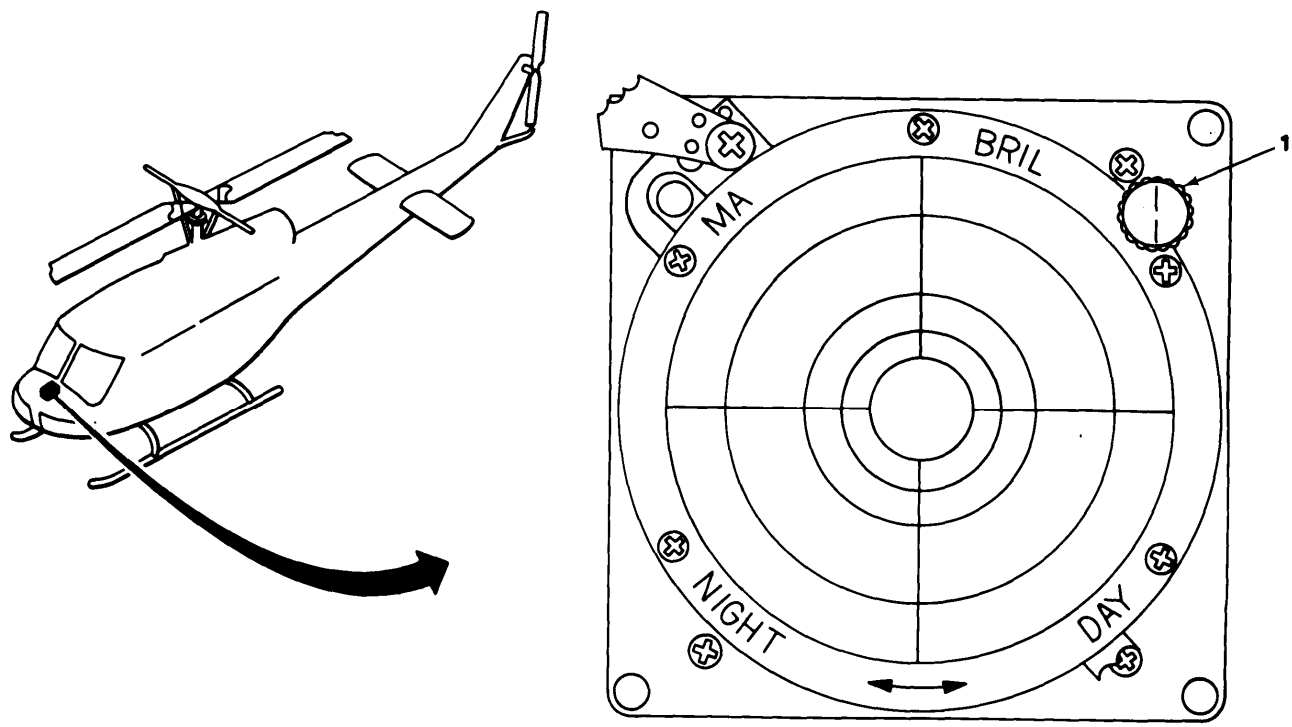
EL5VM017

2-4. SELF-TEST. (CONT)

LOCATION	ITEM	ACTION **REMARKS**
7. Radar signal indicator	BRIL control (1)	Turn left or right. **Strobes on indicator screen will brighten or dim as control is turned.**

NOTE

Strobes will brighten if control is turned clockwise.
Strobes will dim if control is turned counterclockwise.



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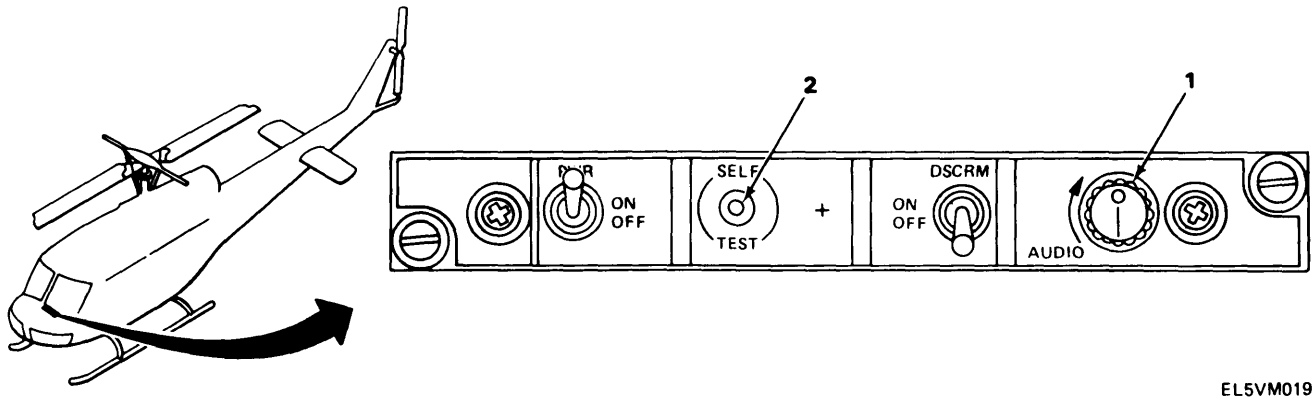
2-4. SELF-TEST. (CONT)

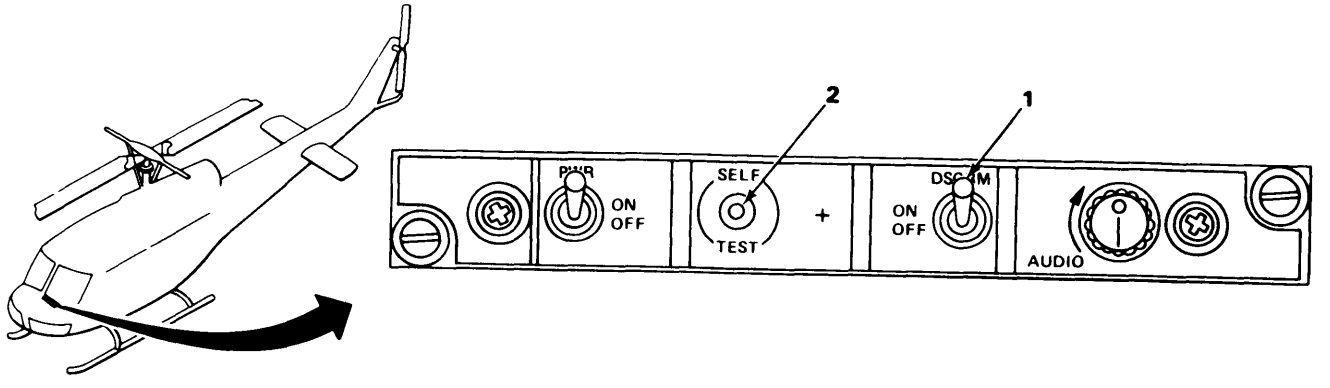
LOCATION	ITEM	ACTION **REMARKS**
8. Control unit	Audio control (1)	Adjust volume. **Audio increases if control is turned clockwise. Audio decreases if control is turned counterclockwise.**
9.	SELF TEST button (2)	Release. **All indications stop.**



EL5VM019

2-4. SELF-TEST. (CONT)

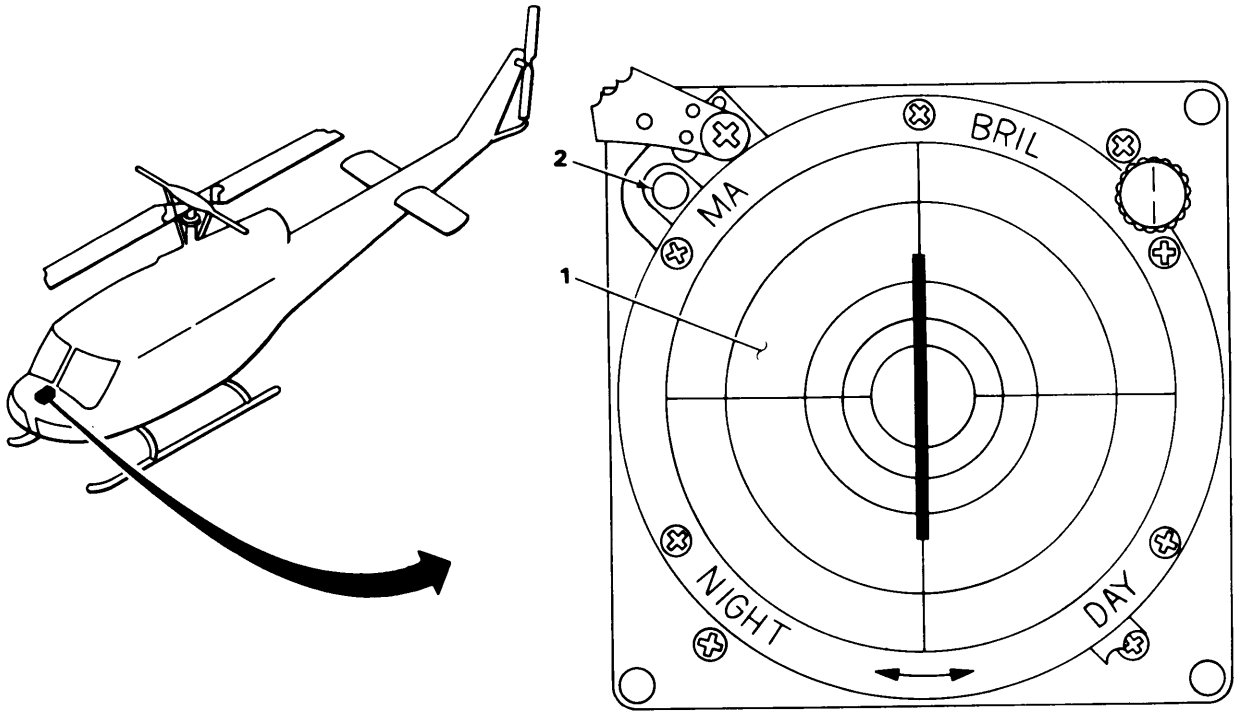
LOCATION	ITEM	ACTION **REMARKS**
10. Control unit	DSCRM-ON-OFF switch (1)	Set to ON.
11.	SELF TEST button (2)	Press in and hold. **PRF audio is heard after 4 seconds. After a few more seconds, PRF audio will double. Within another few seconds, alarm audio will be heard.**



EL5VM020

2-4. SELF-TEST. (CONT)

LOCATION	ITEM	ACTION **REMARKS**
12. Radar signal indicator	Indicator screen (1)	Observe. **Within about 4 seconds, forward or aft strobe appears. Opposite strobe will appear within the next few seconds.**
		NOTE Sometimes, after pushing in the SELF TEST button and before the appearance of the first strobe, a distorted dot on the indicator and off-and-on audio will be present. This is not a fault indication. Hold SELF TEST button in long enough for strobes to appear.
13.	MA lamp (2)	Observe. **Six seconds after pressing SELF TEST, MA lamp starts flashing.**



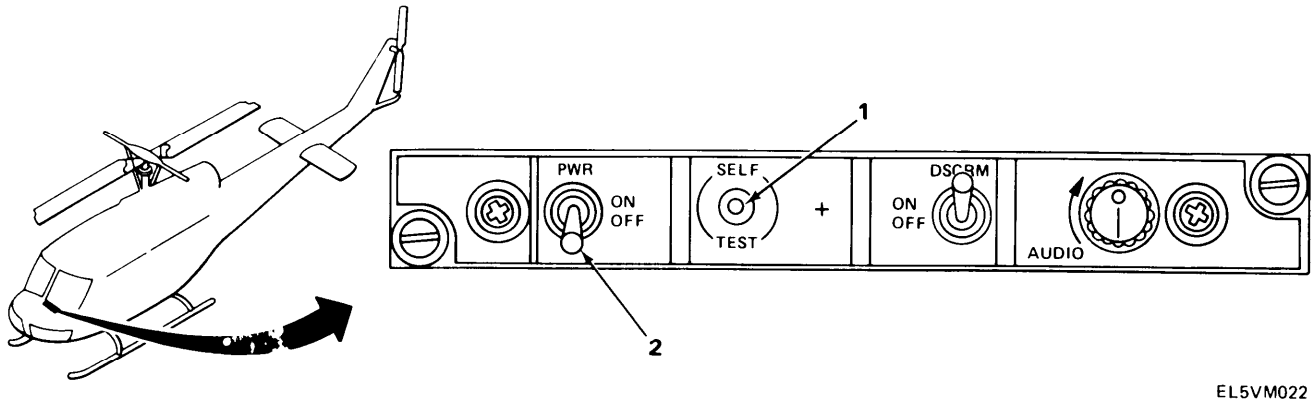
EL5VM021

2-4. SELF-TEST. (CONT)

LOCATION	ITEM	ACTION **REMARKS**
14. Control unit	SELF TEST button (1)	Release. **All indications cease.**
15.	PWR-ON-OFF switch (2)	Set to OFF.

NOTE

If no other aircraft operations are being performed, set 28 vdc circuit breaker for the radar signal detecting set to OFF. See aircraft manual.



EL5VM022

2-5. SHUTDOWN PROCEDURES.

This task covers:

Shutting down the radar signal detecting set

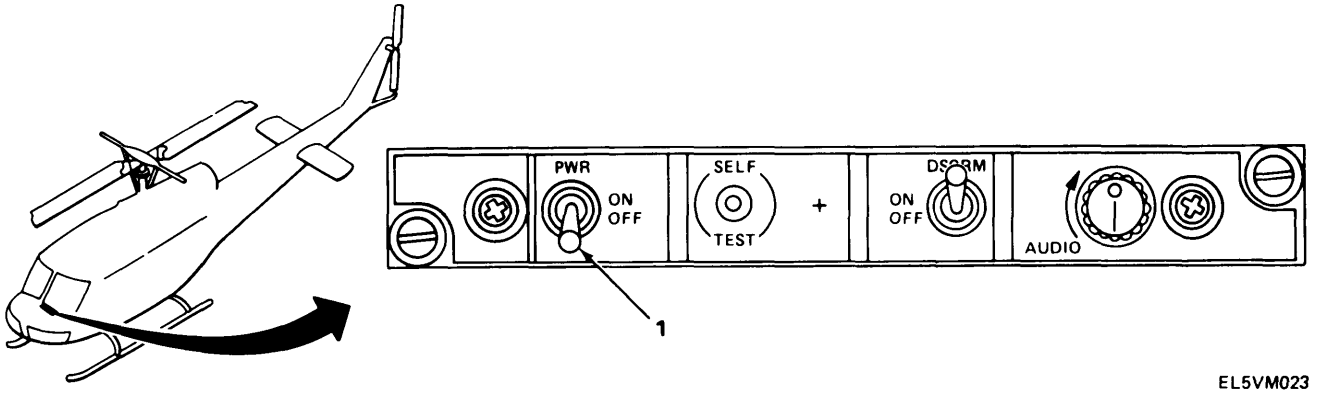
INITIAL SETUP

Personnel Required	Equipment Condition
One operator	Radar signal detecting set is on.

LOCATION	ITEM	ACTION	REMARKS
1. Control unit	PWR-ON-OFF switch (1)	Set to OFF.	

NOTE

Check that 28 vdc circuit breaker for the radar signal detecting set equipment in the aircraft is set off. See aircraft manual.



EL5VM023

CHAPTER 3

MAINTENANCE OF AUXILIARY EQUIPMENT

There is no auxiliary equipment requiring maintenance for the Radar Signal Detecting Set AN/APR-39(V)1 .

CHAPTER 4

AVIATION UNIT MAINTENANCE

OVERVIEW

This chapter covers instructions for performing aviation unit (organizational) maintenance of the radar signal detecting set from initial receipt of equipment.

Section I REPAIR PARTS, SPECIAL TOOLS, TMDE, AND SUPPORT EQUIPMENT

4-1. COMMON TOOLS AND EQUIPMENT.

The common tools and equipment needed for each maintenance function are listed in the Initial Setup section before each maintenance task, and a complete listing is shown in the Maintenance Allocation Chart listed in appendix B.

4-2. SPECIAL TOOLS, TMDE, AND SUPPORT EQUIPMENT.

Special tools, TMDE, and support equipment needed for each maintenance function are shown in the Maintenance Allocation Chart listed in appendix B.

4-3. REPAIR PARTS.

The repair parts for AVUM maintenance are listed and shown in the Repair Parts and Special Tools List, TM 11-5341-233-24P, which covers AVUM and AVIM maintenance for the Radar Signal Detecting Set AN/APR-39(V)-1.

Section II SERVICE UPON RECEIPT

4-4. UNPACKING.

This task covers:

Unpacking

INITIAL SETUP

Tools

Pocketknife

Personnel Required

One technician

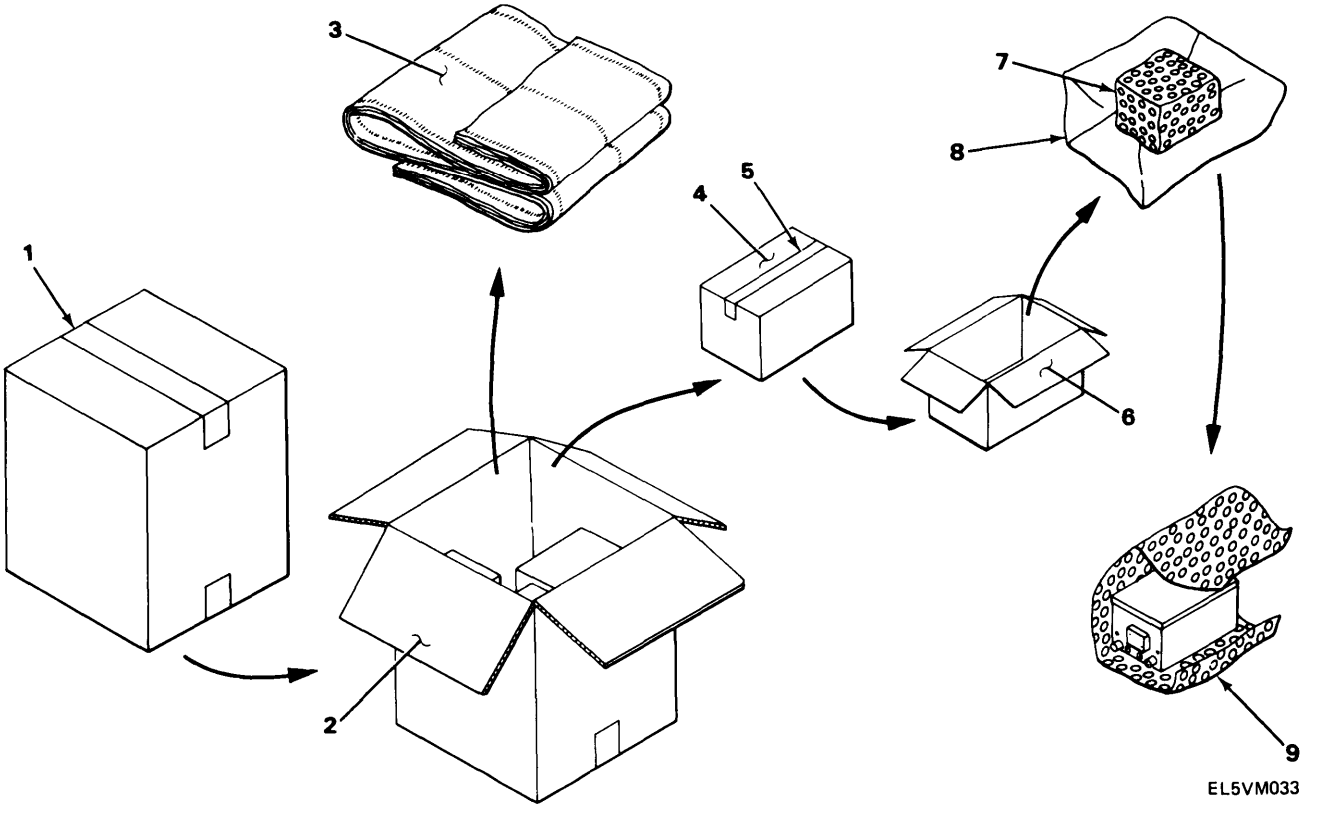
Equipment Condition

Packed and sealed in a corrugated shipping container.

LOCATION	ITEM	ACTION / REMARKS
1. Corrugated shipping container	Sealing tape (1)	Using knife, cut along seam.
2.	Cover flaps (2)	Fold back.
3.	Cushion material (3)	Remove. **Throw away.**

4-4. UNPACKING. (CONT)

LOCATION	ITEM	ACTION **REMARKS**
4. Corrugated shipping container	Unit containers (4)	Remove. **There are 10 containers, one for each radar set component.**
5. Unit containers	Sealing tape (5) and cover flaps (5)	Cut along seam and fold back flaps.
6.	Component (7)	Remove. **Save container.**
7.	Waterproof wrapping (8)	Open and remove. **Throw away.**
8.	Cushion material (9)	Remove. **Throw away.**



4-5. CHECKING UNPACKED MATERIAL.

Inspect all 10 components of the radar signal detecting set for any damage that may have resulted from shipment. Make sure the shipment is complete and that all components listed on the packing slip are accounted for. If any damage or discrepancies are found, report them immediately. For proper forms and records, see paragraph 1-2.

Check the equipment for modifications. Modified equipment will have the MWO number on the front panel, near the nomenclature plate. Check that all currently applicable MWO's have been applied. Current MWO's applicable to the equipment are listed in DA Pam 310-1.

4-6. INITIAL INSTALLATION OF EQUIPMENT.

For the best possible performance of the radar signal detecting set, certain installation requirements must be met The following information is to be used as a general guide.

NOTE

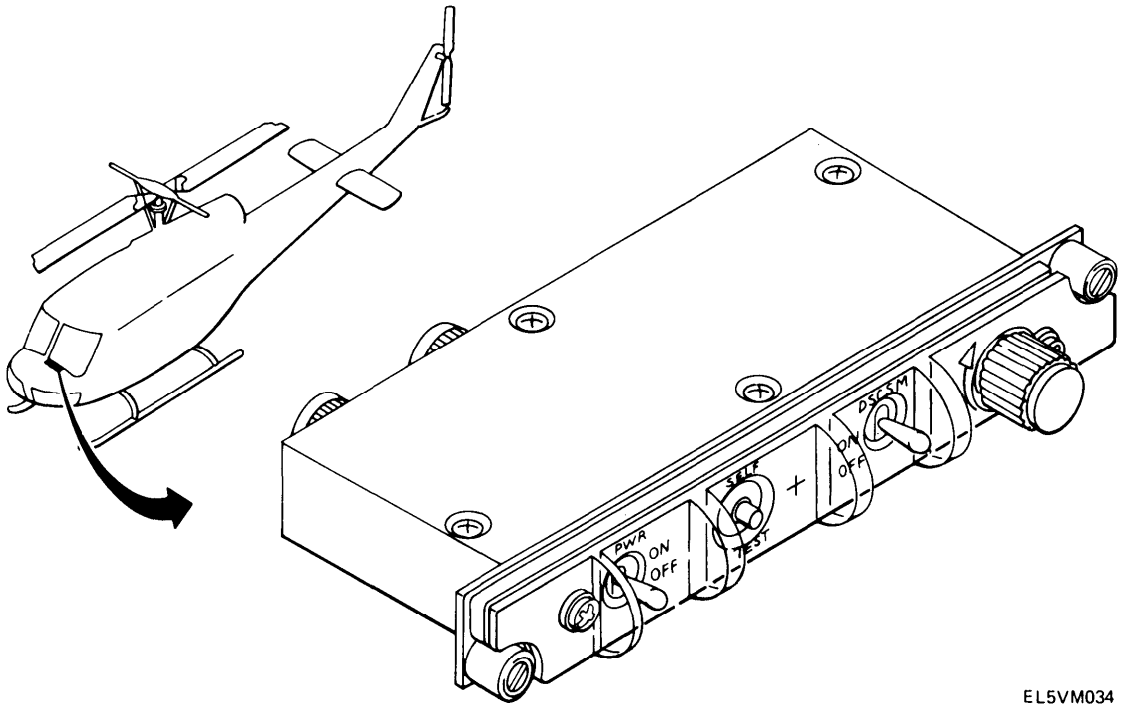
Wiring harnesses for the radar signal detecting set have been preinstalled on all aircraft manufactured after fiscal year 1977. Therefore, installation locations for the radar set components have been predetermined.

INTERCONNECTIONS

Wiring between radar signal detecting set components should not be run in a bundle with wiring for other types of equipment. See paragraph 4-8 for required connections. For exact location of system components, refer to aircraft TM.

4-6. INITIAL INSTALLATION OF EQUIPMENT. (CONT)

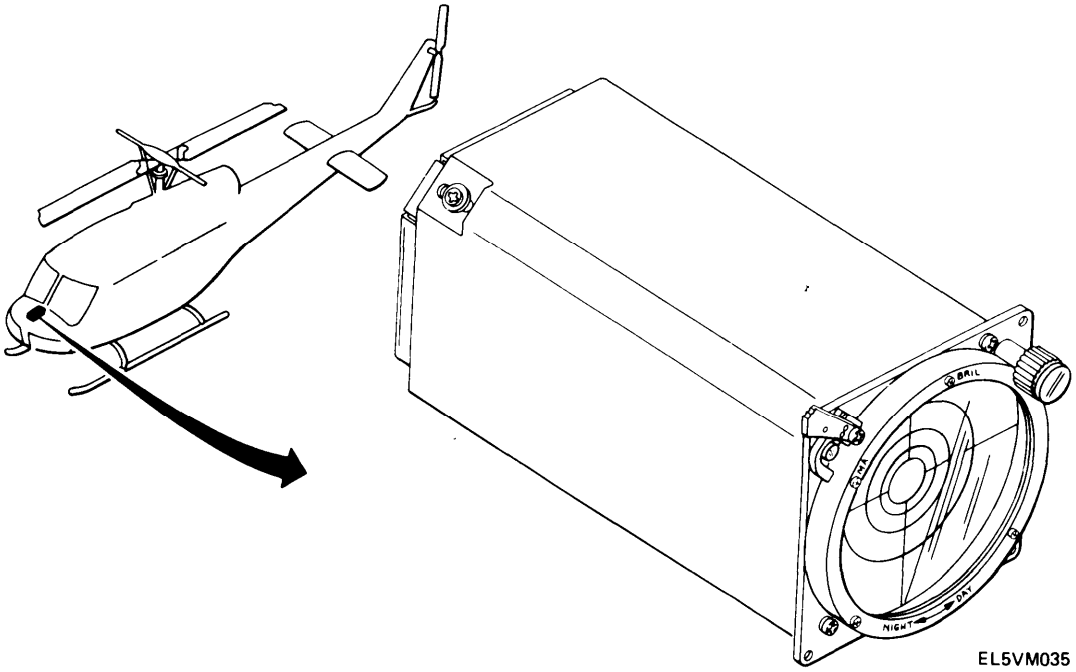
CONTROL UNIT



EL5VM034

The location of the control unit is not critical. However, it must be mounted where it is easy for the pilot, or other observer, to operate.

RADAR SIGNAL INDICATOR

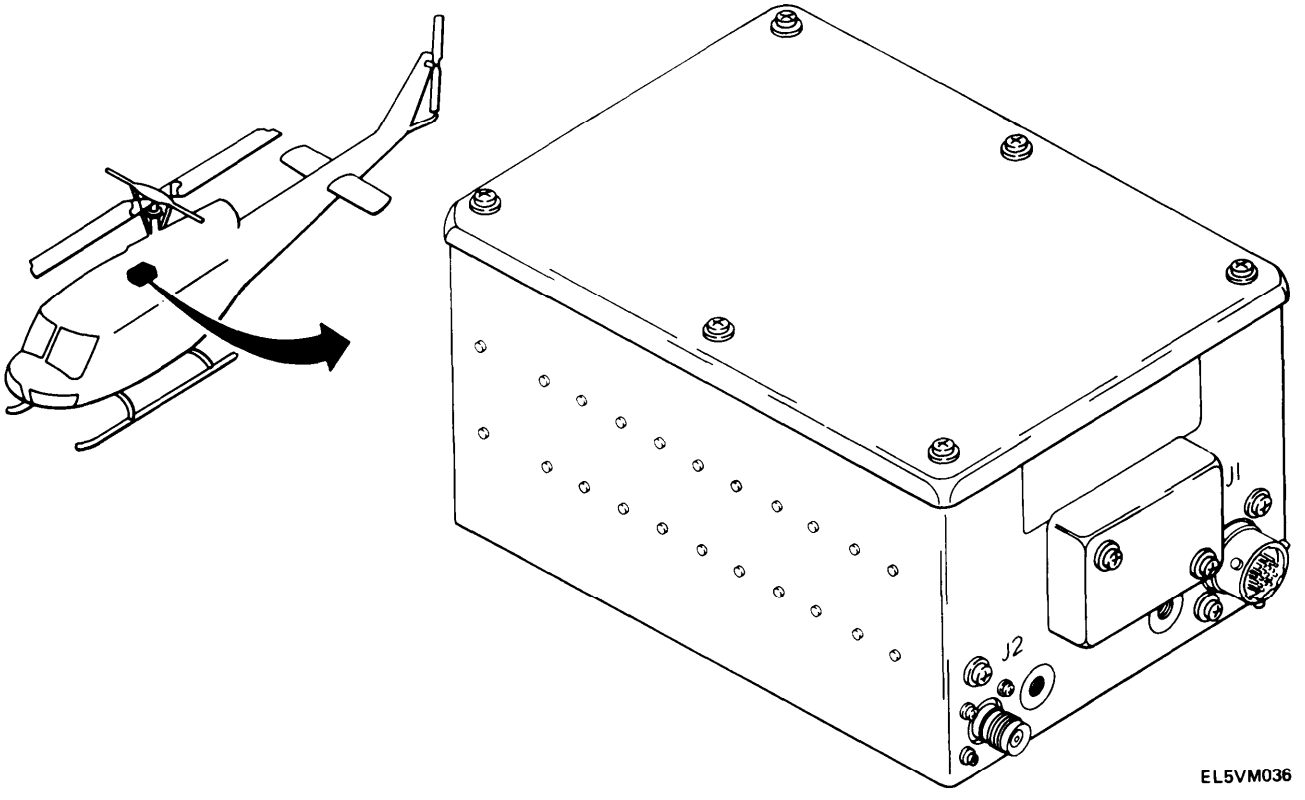


EL5VM035

The location of the indicator is not critical. However, it must be mounted in a position that permits observation by the pilot or other observer.

4-6. INITIAL INSTALLATION OF EQUIPMENT. (CONT)

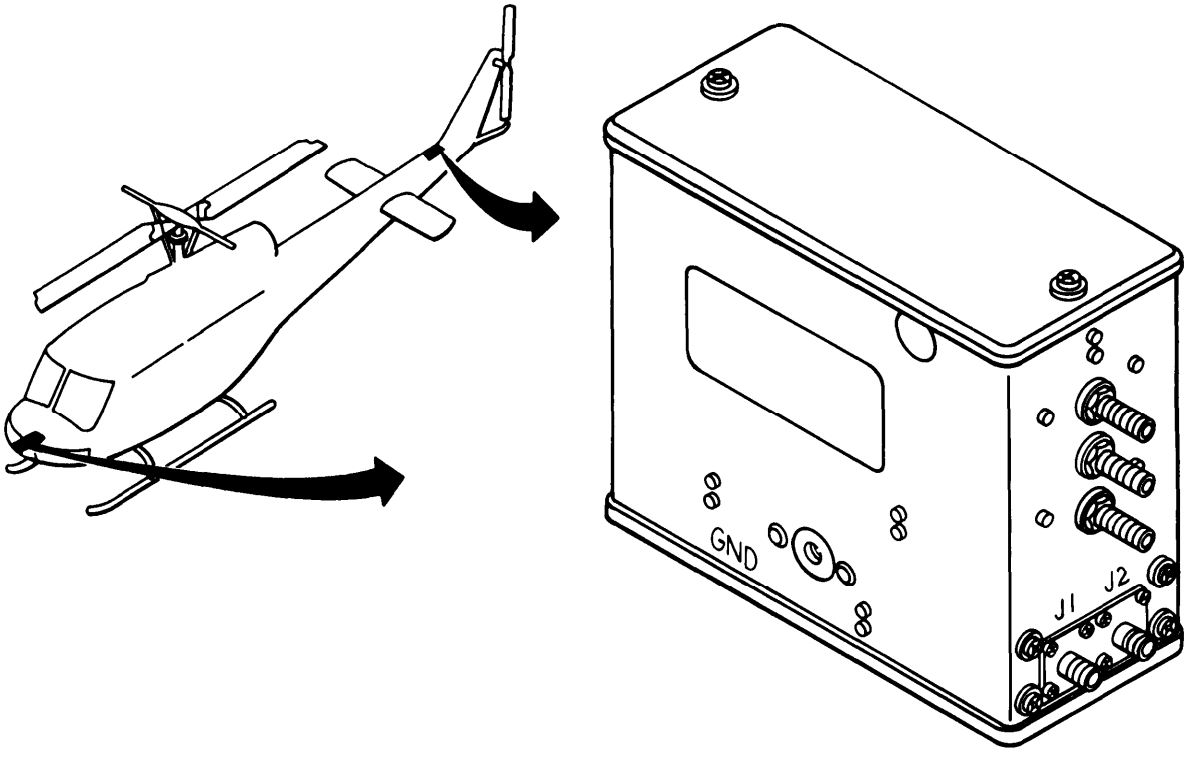
COMPARATOR



The location of the comparator is not critical. However, it should be mounted in a position where it can be easily removed.

4-6. INITIAL INSTALLATION OF EQUIPMENT. (CONT)

RADAR RECEIVERS



EL5VM037

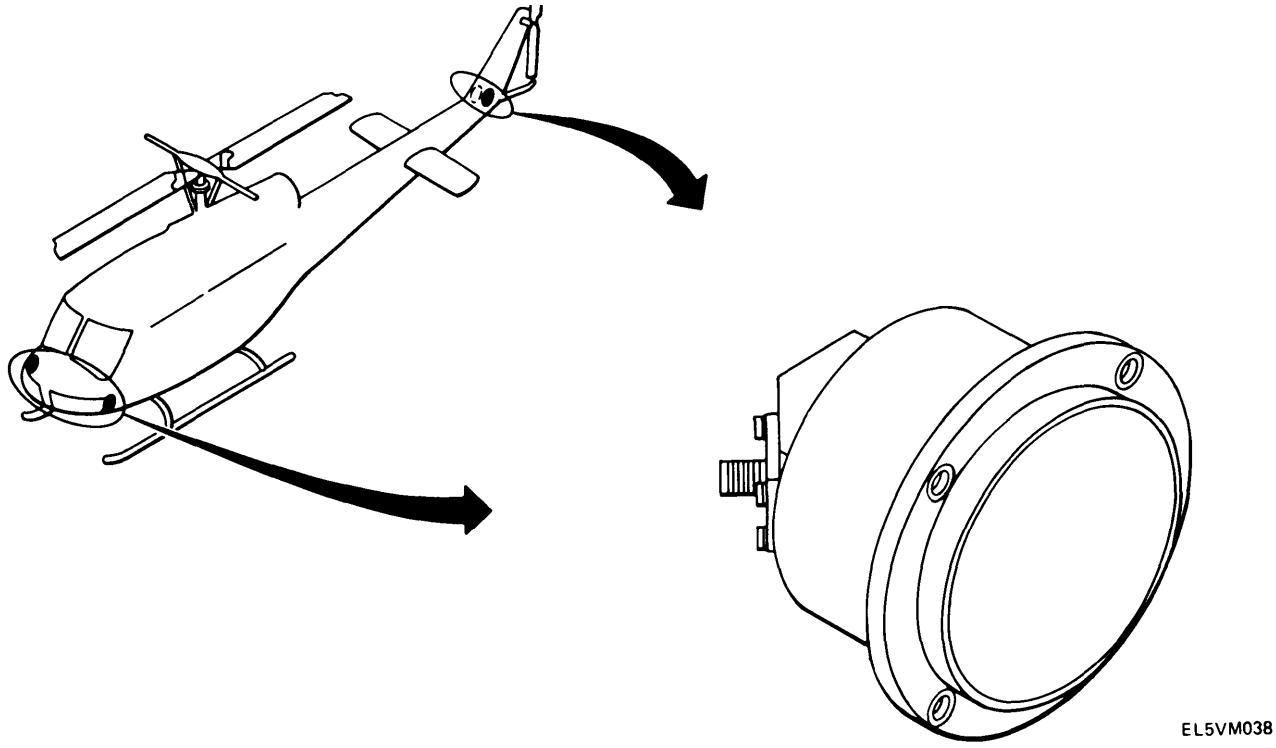
The radar receivers should be located in the aircraft so that the cables between the spiral antennas and the receivers are as short as possible.

The lengths of cable between the forward receiver and the forward left and forward right antennas, and the lengths of cable between the aft receiver and the aft left and aft right antennas must be as near the same length as possible. This will keep the signal strength between the receivers and antennas the same.

The forward receiver should be located toward the front of the aircraft midway between the two forward spiral antennas, and the aft receiver should be located toward the aft of the aircraft midway between the two aft spiral antennas.

4-6. INITIAL INSTALLATION OF EQUIPMENT. (CONT)

SPIRAL ANTENNAS



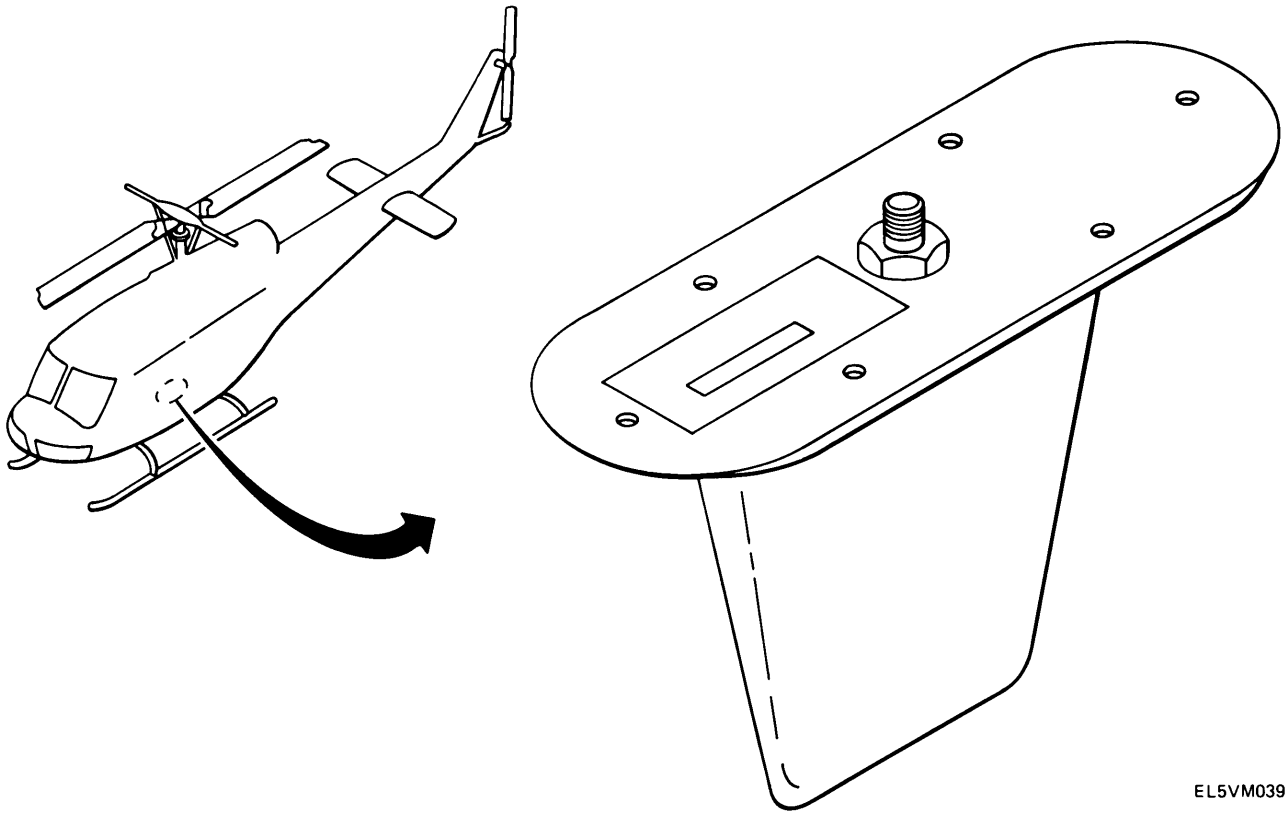
The placement of the spiral antennas is critical for maximum performance of the radar signal detecting set.

One antenna should be mounted at each of the four intercardinal axes as follows:
Forward right (unit 6) at 45° (AS2892 left spiral)
Aft right (unit 7) at 185° (AS2891 right spiral)
Aft left (unit 8) at 225° (AS2892 left spiral)
Forward left (unit 9) at 315° (AS2891 right spiral)

The antennas should also be mounted with a depression angle of 0° to 20° and all antennas should be mounted at the same angle.

4-6. INITIAL INSTALLATION OF EQUIPMENT. (CONT)

BLADE ANTENNA



The blade antenna should be mounted on the bottom (horizontal surface) of the aircraft so that it is in a vertical position when the aircraft is in flight.

4-7. TOOLS, TEST EQUIPMENT, AND MATERIALS REQUIRED FOR INITIAL INSTALLATION.

The tools, test equipment, and materials required for the initial installation of the radar signal detecting set are shown in the Maintenance Allocation Chart listed in appendix B.

4-8. CABLE CONNECTIONS.

Cable connections between radar signal detecting set components are listed below. For a detailed cable diagram, see figure FO-1 in the back of this manual.

CABLE FROM			CABLE TO		
COMPONENT	JACK	PLUG	COMPONENT	JACK	PLUG
Comparator (unit 3)	J1	3P1-1	Indicator (Unit 2)	J1	2P1-1
	J1	3P1-2		J1	2P1-2
	J1	3P1-3		J1	2P1-3
	J1	3P1-4		J1	2P1-4
	J1	3P1-5		J1	2P1-5
	J1	3P1-7	Receiver (unit 4)	J5	4P5
	J1	3P1-8		J3	4P3
	J1	3P1-9		J4	4P4
	J1	3P1-12	Control unit (unit 1)	J1	1P1-2
	J1	3P1-13		J1	1P1-3
	J1	3P1-14		J1	1P1-4
	J1	3P1-15		J1	1P1-5
	J1	3P1-17	Receiver (unit 5)	J5	5P5
	J1	3P1-18		J3	5P3
	J1	3P1-19		J4	5P4
	J1	3P1-21,22	See Note	—	—
	J2	3P2	Blade antenna (unit 10)	J1	10P1
Indicator (unit 2)	J1	2P1-7	Control unit (unit 1)	J1	1P1-7
	J1	2P1-8		J1	1P1-8
	J1	2P1-9		J1	1P1-9
Control unit (unit 1)	J1	1P1-12, 13,14 1P1-21, 22,23	See note See note		
Receiver (unit 4)	J1	4P1	Antenna (unit 6)	J1	6P1
	J2	4P2	Antenna (unit 9)	J1	9P1
Receiver (unit 5)	J1	5P1	Antenna (unit 7)	J1	5P1
	J2	5P2		J1	8P1

NOTE

Comparator and control unit aircraft connections are to be determined at initial installation.

4-9. INSTALLATION OF PLUG-IN ITEMS.

Plug-in cards are contained in the comparator and receivers. No installation procedures are authorized at the AVUM level.

4-10. PRELIMINARY SERVICING AND ADJUSTMENT OF EQUIPMENT.

Preliminary servicing and adjustment of the radar signal detecting set consists of a self-test and system function test.

SELF-TEST

Perform a self-test to make sure the radar signal detecting set equipment is working properly. See paragraph 2-4.

SYSTEM FUNCTION TEST

Perform the system function test to ensure system capability and circuit alinement. If you do not get the indication required for any step, see Troubleshooting, chapter 4, section IV.

This task covers:

System function test of the radar signal detecting set.

INITIAL SETUP

Materials/Parts

Headset

Personnel Required

Two technicians

Equipment Condition

Self-test completed and equipment fully operational.

Test Equipment

Radar Signal Simulator SM-674/UPM
NSN 694-01-031-5887

NOTE

See TM 11-6940-211-12 for operation instructions for the radar signal simulator.

4-10. PRELIMINARY SERVICING AND ADJUSTMENT OF EQUIPMENT. (CONT)

LOCATION	ITEM	ACTION **REMARKS**

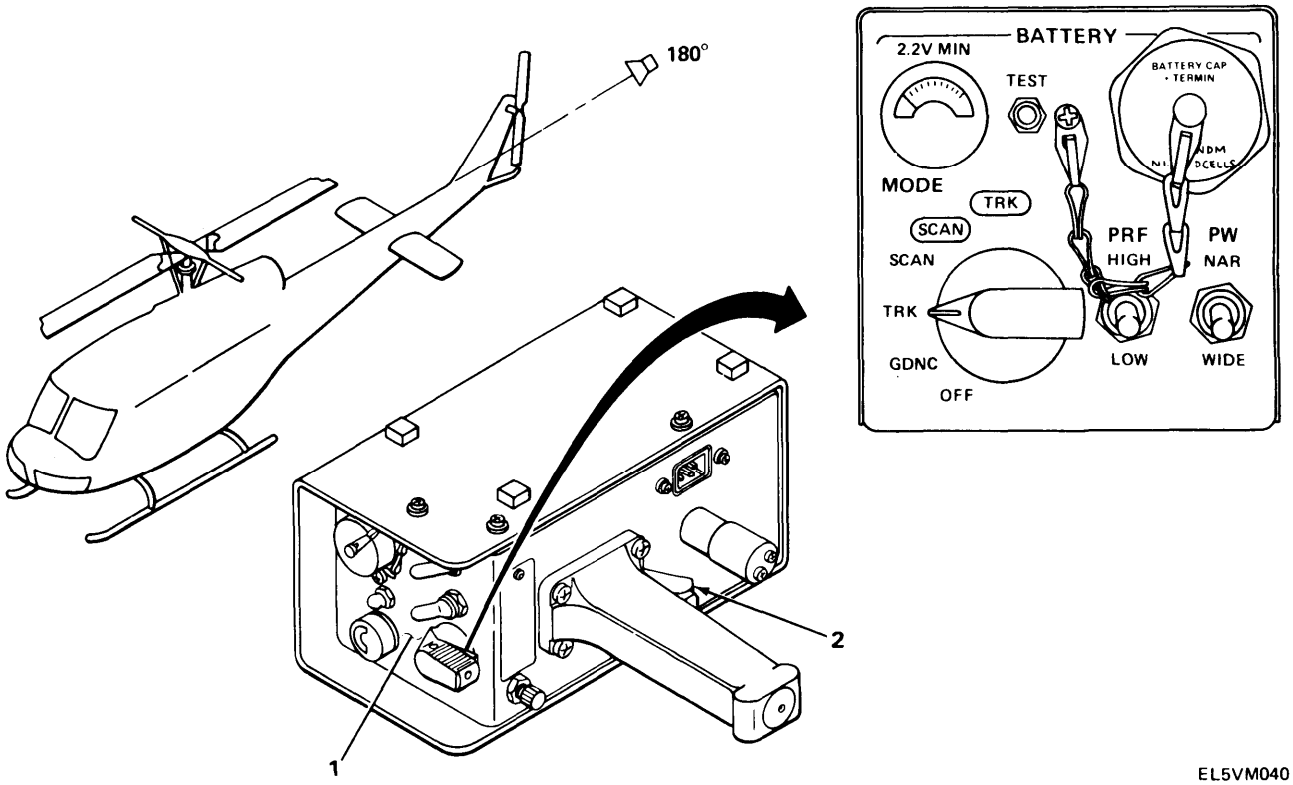
SYSTEM FUNCTION TEST

NOTE

Two technicians are required for this test. The technician on the ground (operating the radar signal simulator) will be called T1. The technician in the cockpit will be called T2.

Set 28 vdc circuit breaker to ON. Set aircraft panel light dimmer control to full bright. See aircraft manual. Control unit panel lights come on.

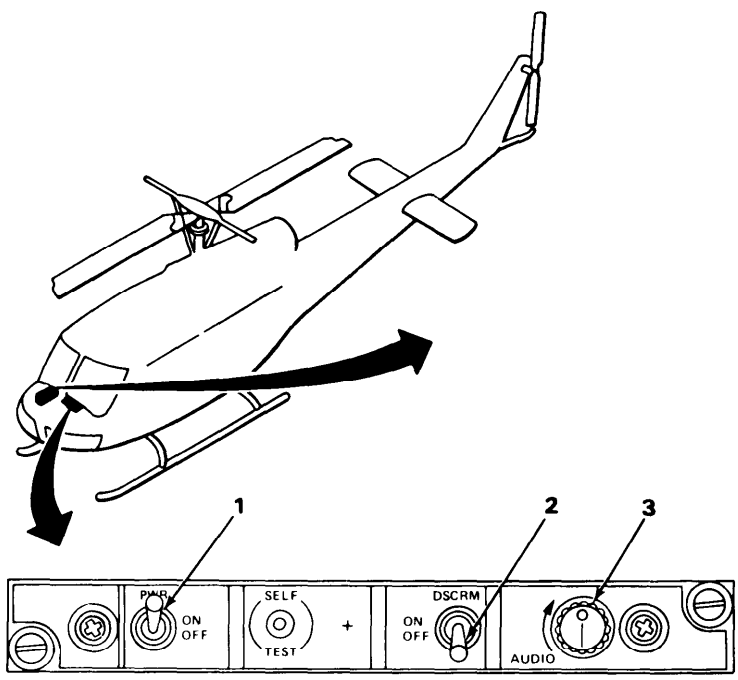
1. Simulator	Simulator controls (1)	T1: Set MODE to TRK. Set PW to WIDE. Set PRF to LOW. **Point simulator into rear antennas from a relative bearing of 180°.**
2.	Trigger switch (2)	T1: Press and hold.



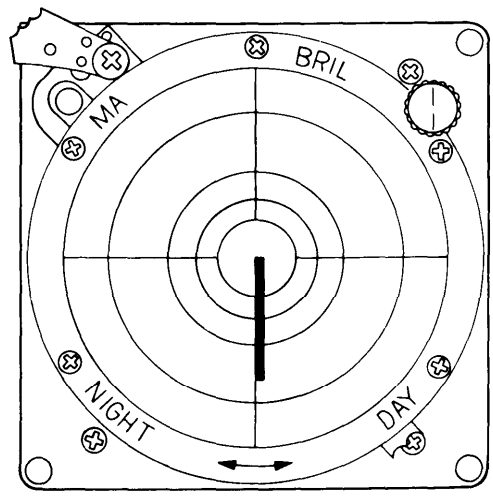
EL5VM040

4-10. PRELIMINARY SERVICING AND ADJUSTMENT OF EQUIPMENT. (CONT)

LOCATION	ITEM	ACTION **REMARKS**
SYSTEM FUNCTION TEST (CONT)		
3. Control unit	PWR-ON-OFF switch (1)	T2: Set ON. **Allow 1 minute for warmup.**
4.	DSCRM-ON-OFF switch (2)	T2: Set OFF. **Observe strobe on indicator at about 180°. MA lamp does not flash.**
5.	AUDIO control (3)	T2: Adjust audio level. **PRF audio present. Alarm audio absent.**



CONTROL UNIT

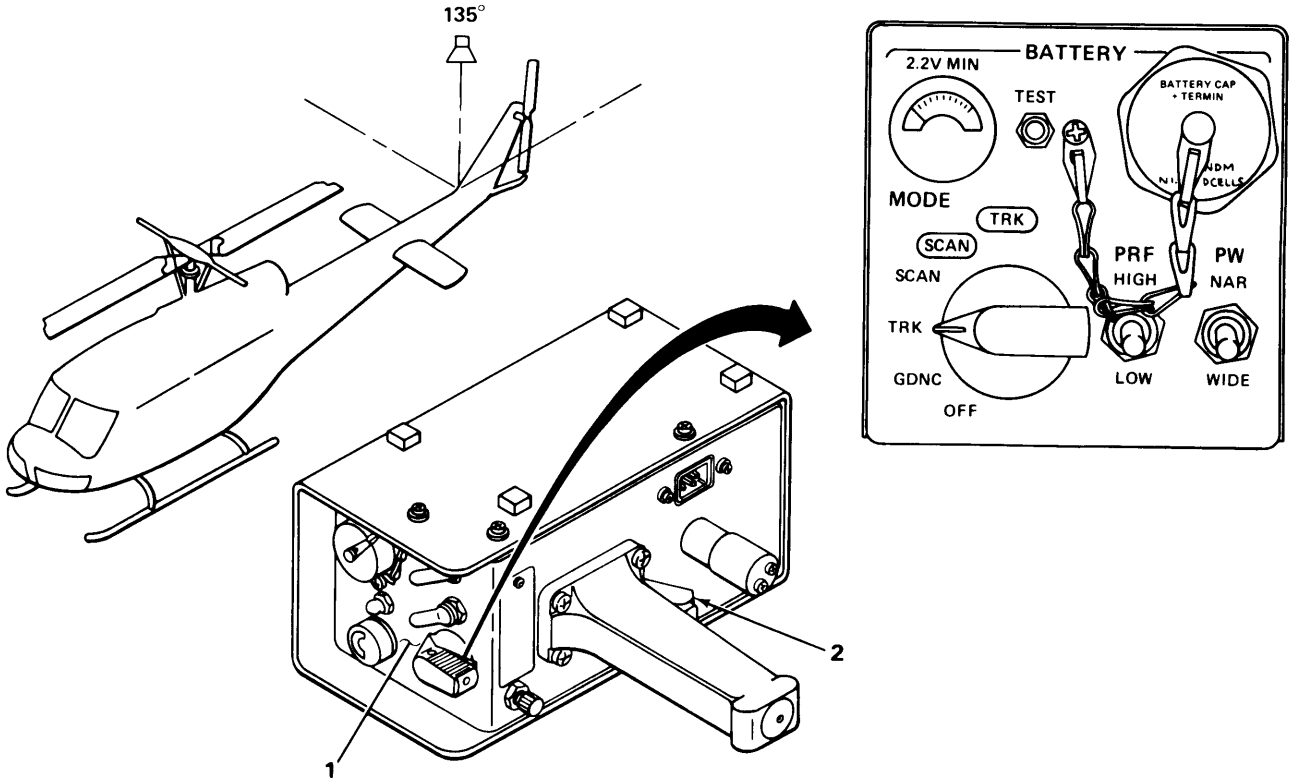


RADAR SIGNAL INDICATOR

EL5VM041

4-10. PRELIMINARY SERVICING AND ADJUSTMENT OF EQUIPMENT. (CONT)

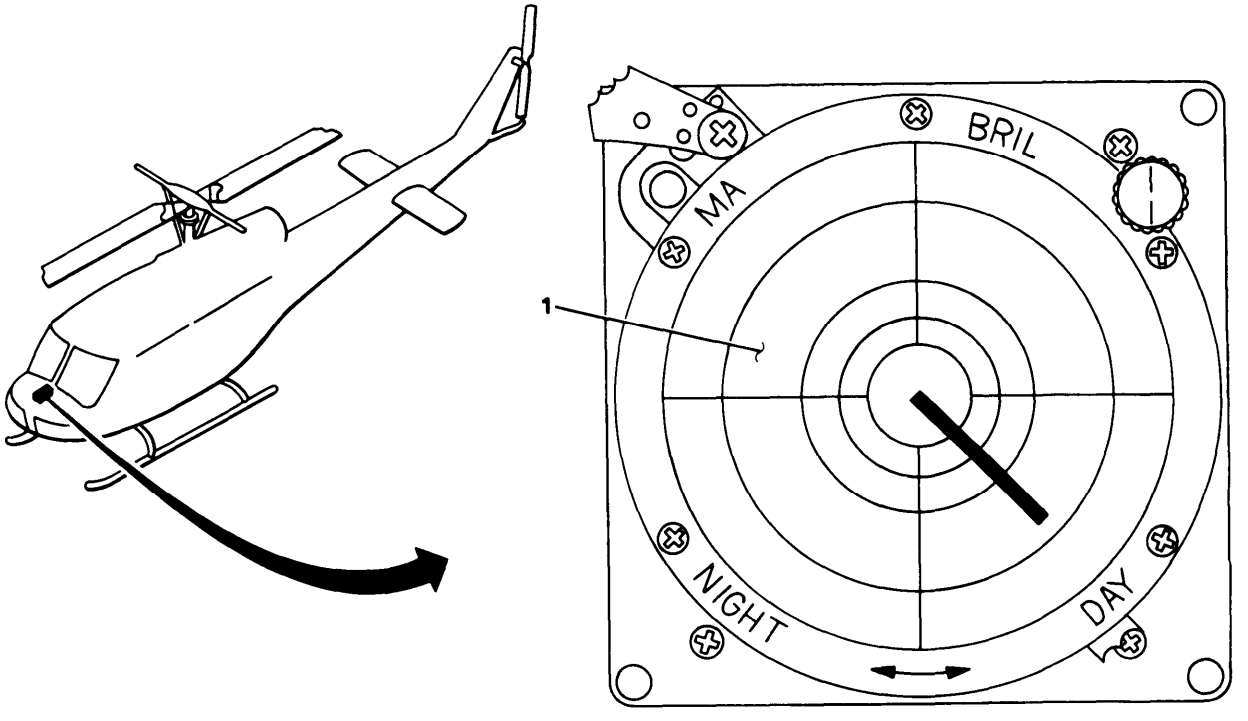
LOCATION	ITEM	ACTION **REMARKS**
SYSTEM FUNCTION TEST (CONT)		
6. Simulator	Simulator controls (1)	T1: Set MODE to TRK. Set PW to WIDE. Set PRF to LOW. **Point simulator into aft right antenna from a relative bearing 135°.**
7.	Trigger switch (2)	T1: Press and hold.



EL5VM042

4-10. PRELIMINARY SERVICING AND ADJUSTMENT OF EQUIPMENT. (CONT)

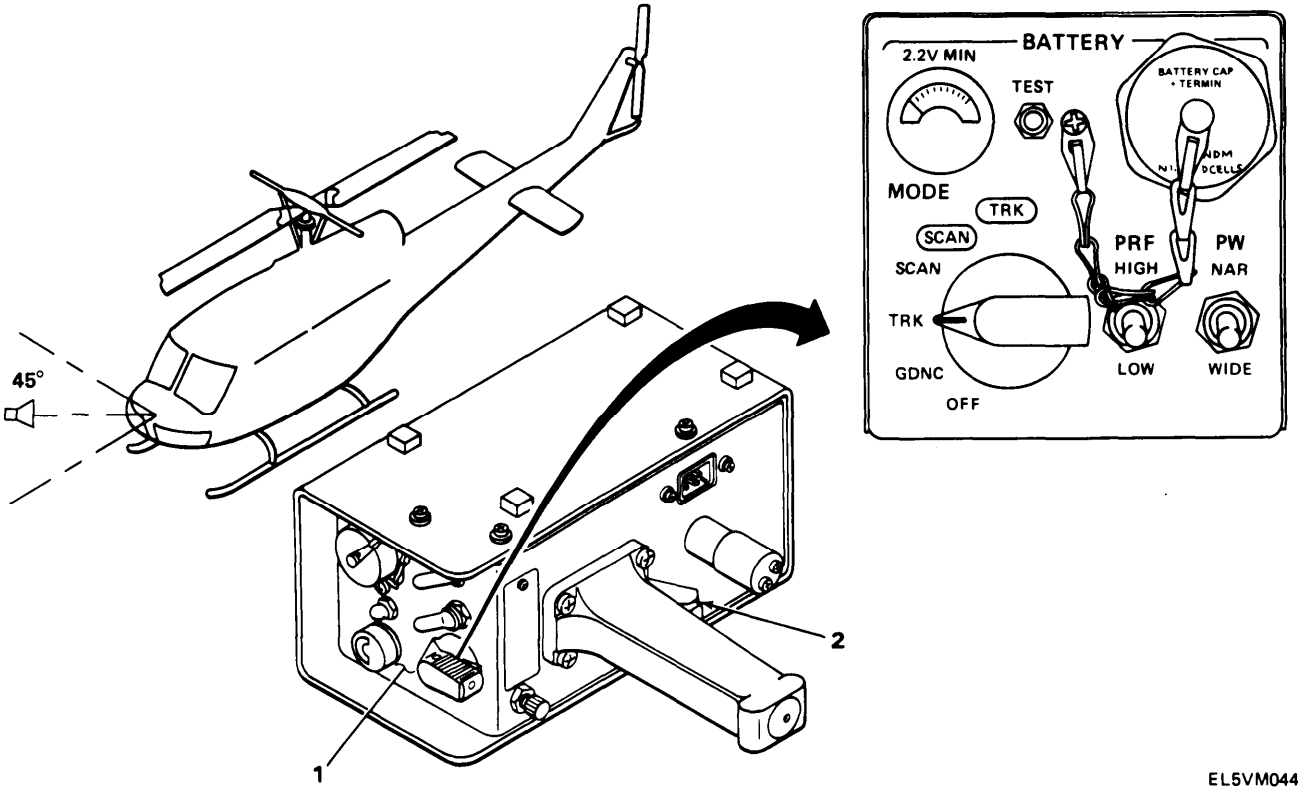
LOCATION	ITEM	ACTION **REMARKS**
SYSTEM FUNCTION TEST (CONT)		
8. Radar signal indicator	Indicator screen (1)	T2: Observe. **Strobe appears on indicator at about 135°. PRF audio is heard. Alarm tone is absent. MA lamp does not flash.**



EL5VM043

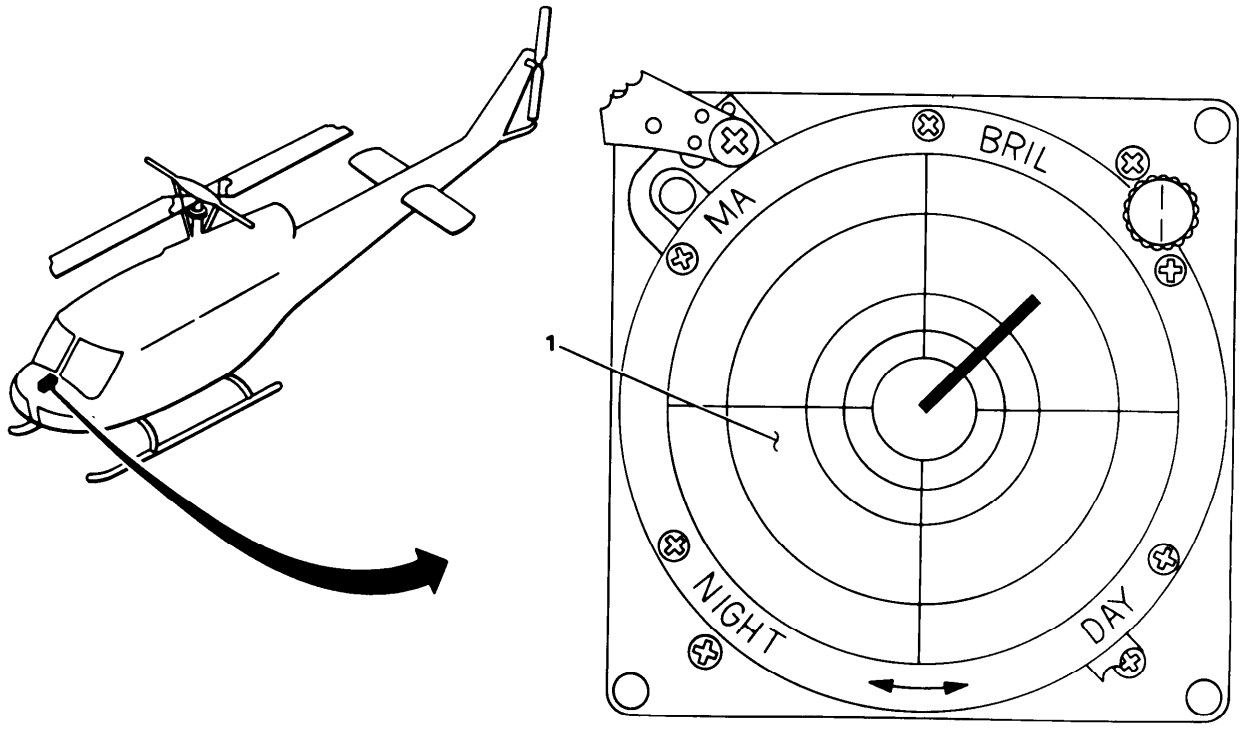
4-10. PRELIMINARY SERVICING AND ADJUSTMENT OF EQUIPMENT. (CONT)

LOCATION	ITEM	ACTION **REMARKS**
SYSTEM FUNCTION TEST (CONT)		
9. Simulator	Simulator controls (1)	T1: Set MODE to TRK. Set PW to WIDE. Set PRF to LOW. **Point simulator into forward right antenna from a relative bearing of 45°.**
10.	Trigger switch (2)	T1: Press and hold.



4-10. PRELIMINARY SERVICING AND ADJUSTMENT OF EQUIPMENT. (CONT)

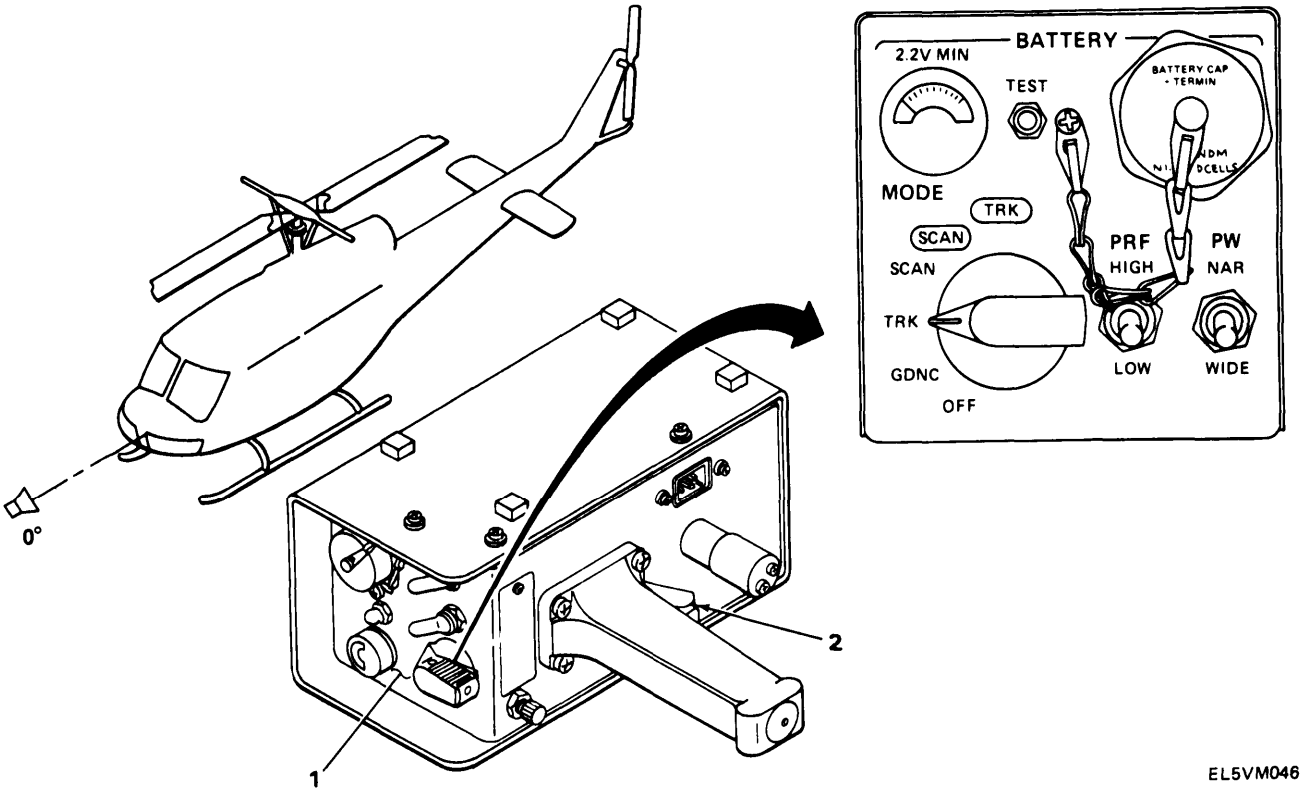
LOCATION	ITEM	ACTION **REMARKS**
SYSTEM FUNCTION TEST (CONT)		
11. Radar signal indicator	Indicator screen (1)	T2: Observe. **Strobe appears on indicator at about 45°. PRF is heard. Alarm tone is absent. MA lamp does not flash.**



EL5VM045

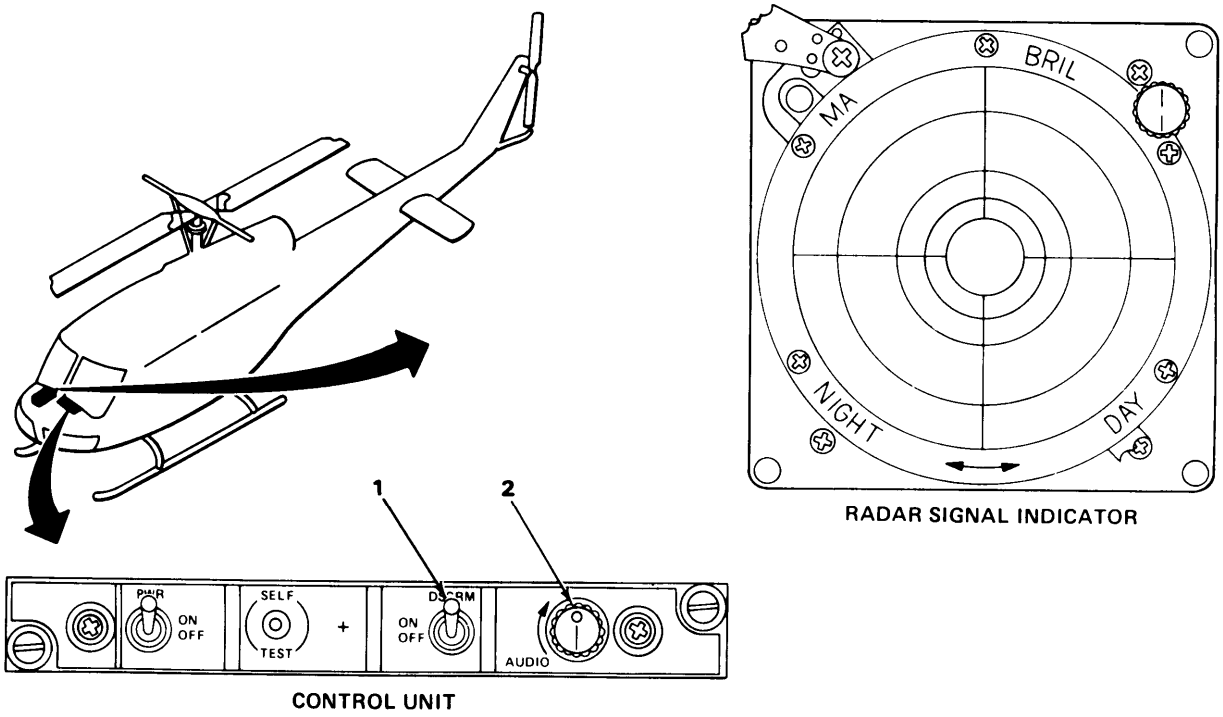
4-10. PRELIMINARY SERVICING AND ADJUSTMENT OF EQUIPMENT. (CONT)

LOCATION	ITEM	ACTION **REMARKS**
SYSTEM FUNCTION TEST (CONT)		
12. Simulator	Simulator controls (1)	T1: Set MODE to TRK. Set PW to WIDE. Set PRF to LOW. **Point simulator into forward antennas from a relative bearing of 0°.**
13.	Trigger switch (2)	T1: Press and hold.



4-10. PRELIMINARY SERVICING AND ADJUSTMENT OF EQUIPMENT. (CONT)

LOCATION	ITEM	ACTION **REMARKS**
SYSTEM FUNCTION TEST (CONT)		
14. Control unit	DSCRM-ON-OFF switch (1)	T2: Set to ON. **No strobe appears on indicator. MA lamp remains off.**
15.	AUDIO control (2)	T2: Adjust to maximum audio level. **No audio present.**



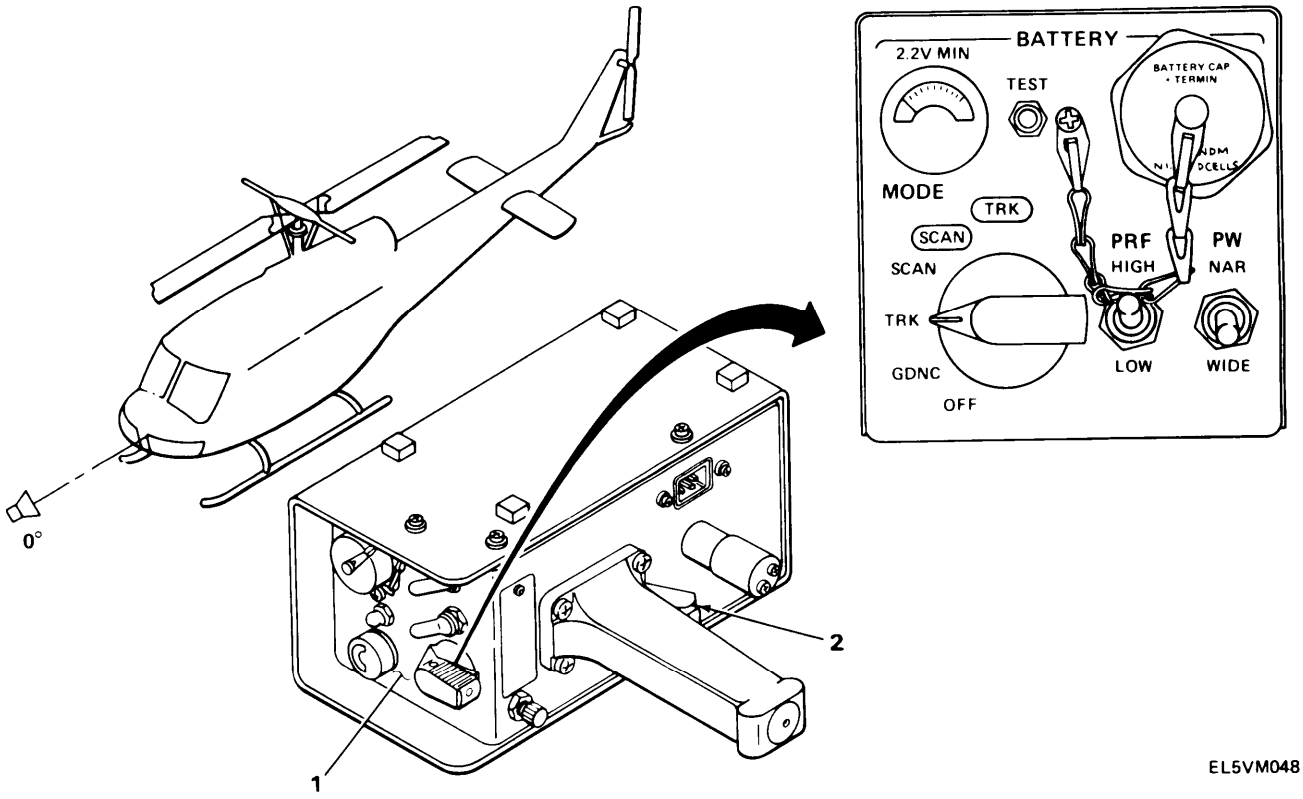
CONTROL UNIT

RADAR SIGNAL INDICATOR

EL5VM047

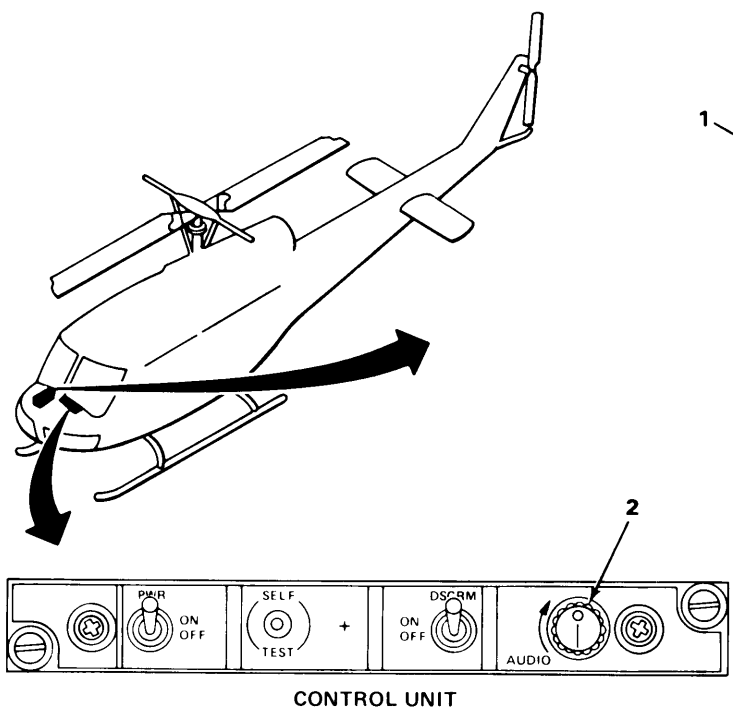
4-10. PRELIMINARY SERVICING AND ADJUSTMENT OF EQUIPMENT. (CONT)

LOCATION	ITEM	ACTION **REMARKS**
SYSTEM FUNCTION TEST (CONT)		
16. Simulator	Simulator controls (1)	T1: Set MODE to TRK. Set PW to WIDE. Set PRF to HIGH. **Point simulator into forward antennas from a relative bearing 0°.**
17.	Trigger switch (2)	T1: Press and hold.

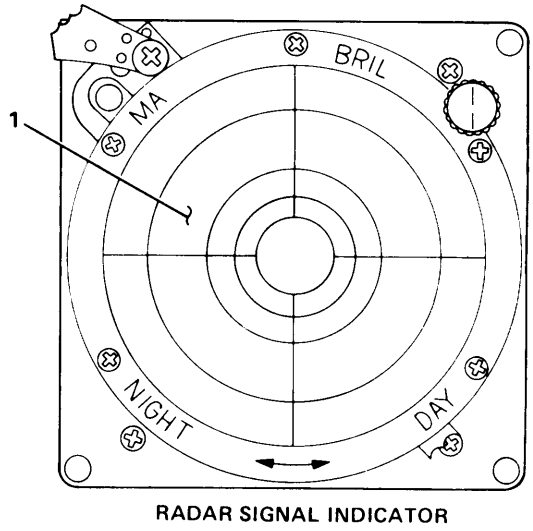


4-10. PRELIMINARY SERVICING AND ADJUSTMENT OF EQUIPMENT. (CONT)

LOCATION	ITEM	ACTION **REMARKS**
SYSTEM FUNCTION TEST (CONT)		
18. Radar signal indicator	Indicator screen (1)	T2: Observe. **No strobe appears. MA lamp remains off.**
19. Control unit	AUDIO control (1)	T2: Adjust to maximum audio level. **No audio present.**



CONTROL UNIT

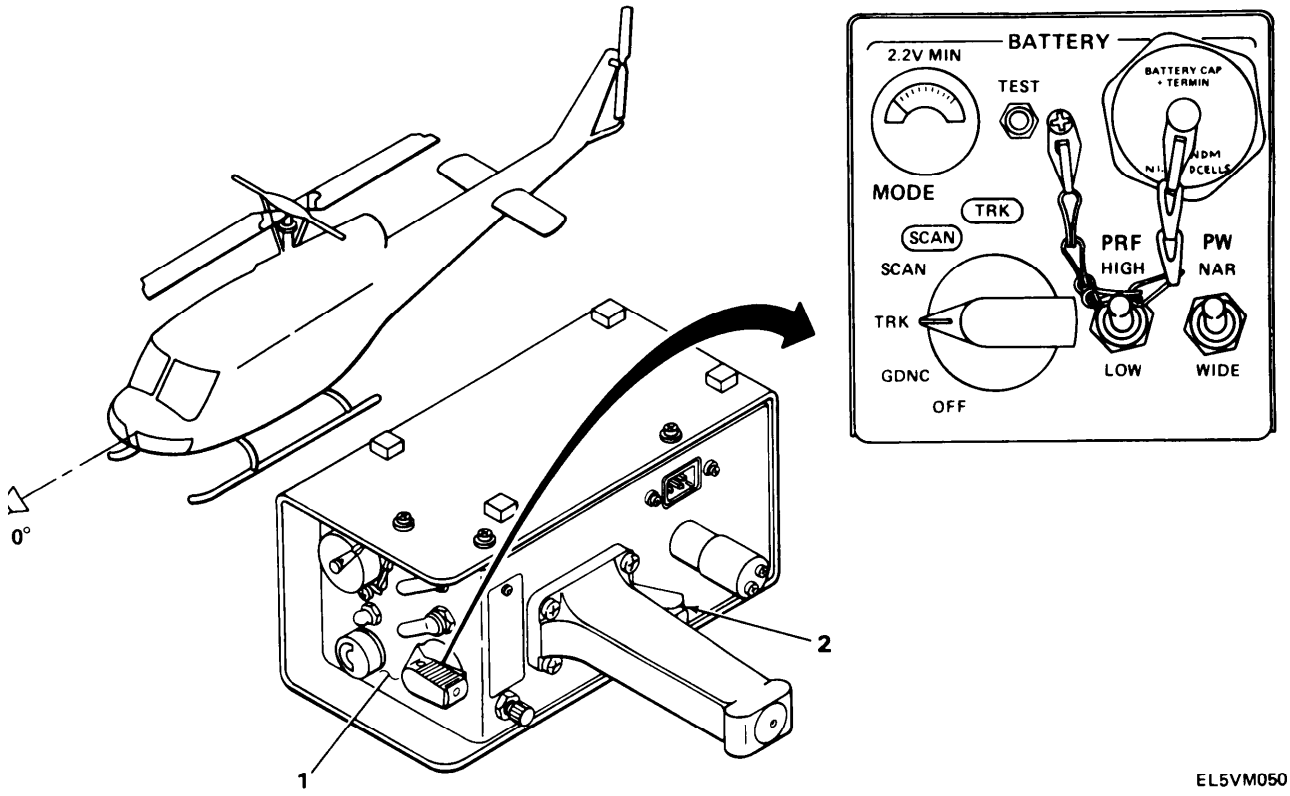


RADAR SIGNAL INDICATOR

EL5VM049

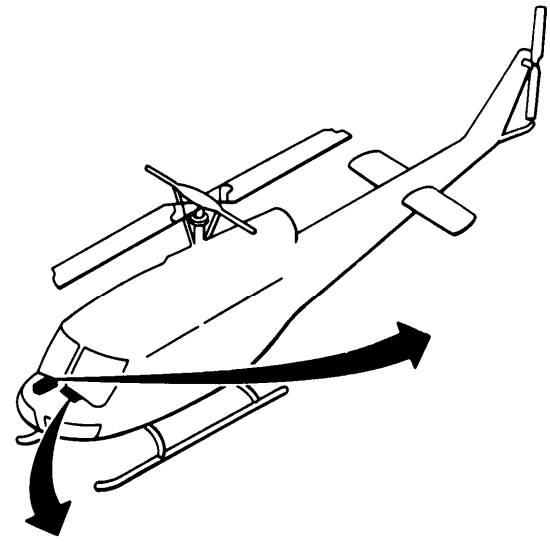
4-10. PRELIMINARY SERVICING AND ADJUSTMENT OF EQUIPMENT. (CONT)

LOCATION	ITEM	ACTION **REMARKS**
SYSTEM FUNCTION TEST (CONT)		
20. Simulator	Simulator controls (1)	T1: Set MODE to TRK. Set PW to NAR. Set PRF to HIGH. **Point simulator into forward antennas from a relative bearing of 0°.**
21.	Trigger switch (2)	T1: Press and hold.

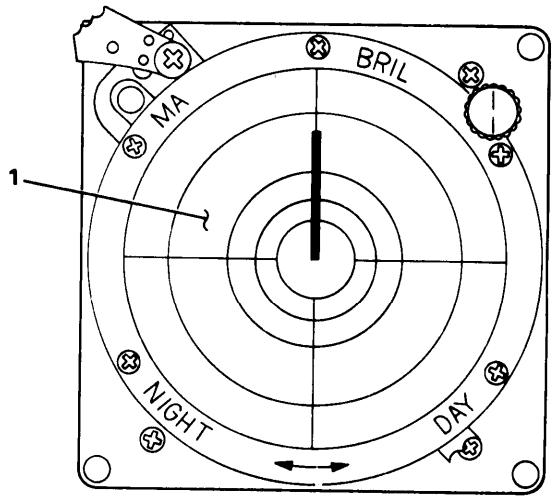


4-10. PRELIMINARY SERVICING AND ADJUSTMENT OF EQUIPMENT. (CONT)

LOCATION	ITEM	ACTION **REMARKS**
SYSTEM FUNCTION TEST (CONT)		
22. Radar signal indicator	Indicator screen (1)	T2: Observe. **After a few seconds, a steady strobe will appear at about 0°. MA lamp remains off.**
23. Control unit	AUDIO control (2)	T2: Adjust audio level. **PRF audio present. Audio alarm is absent.**



CONTROL UNIT

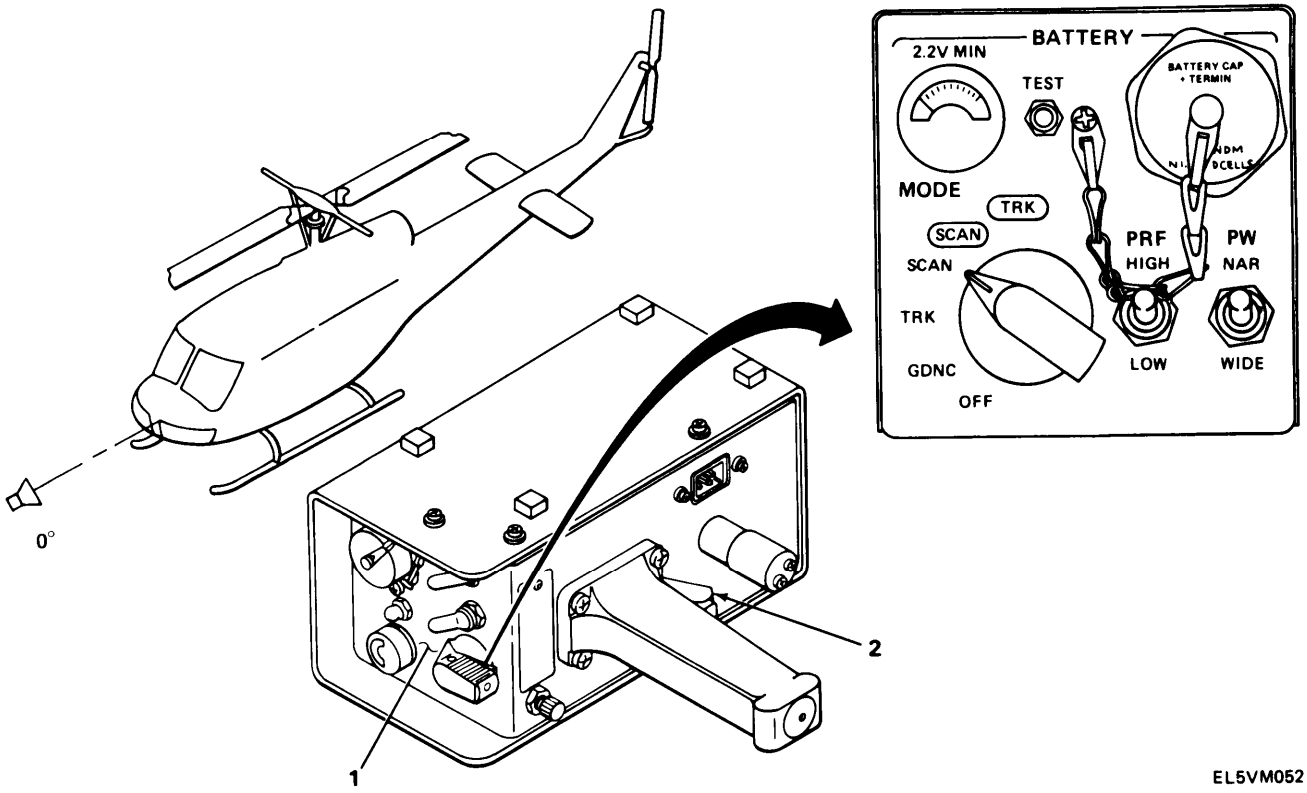


RADAR SIGNAL INDICATOR

EL5VM051

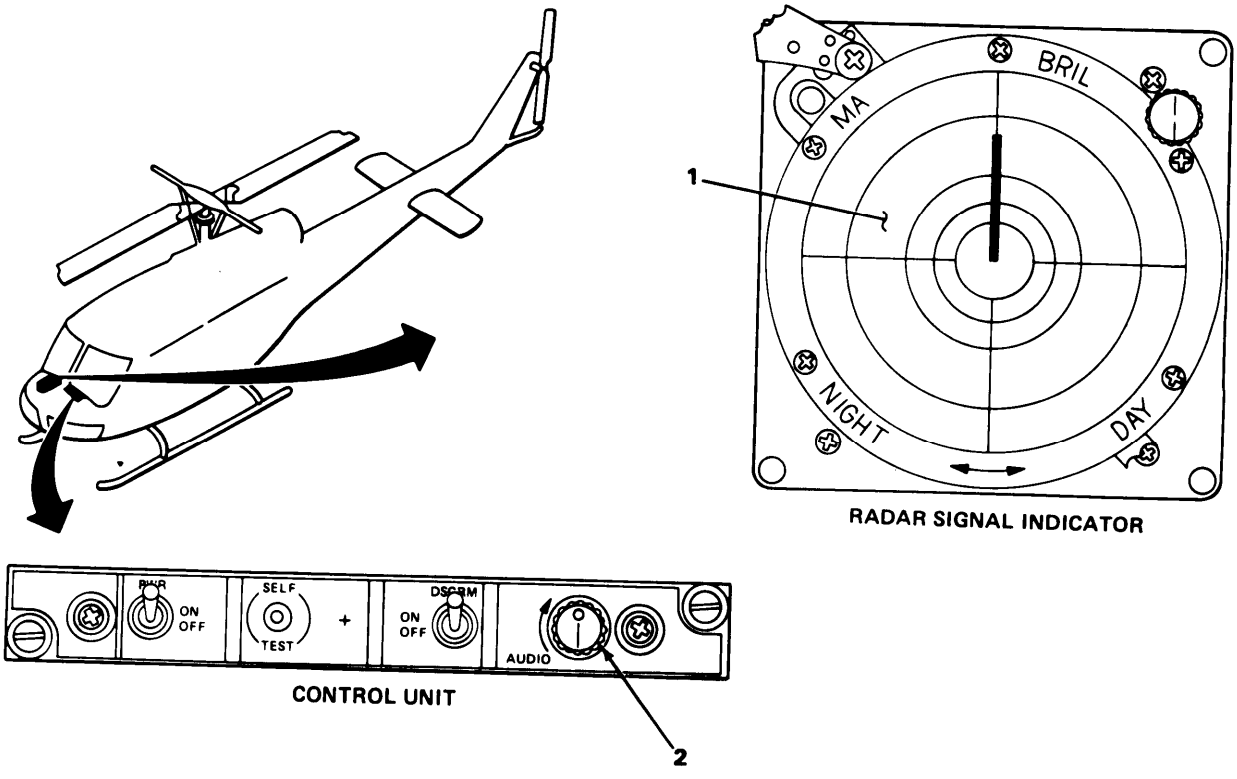
4-10. PRELIMINARY SERVICING AND ADJUSTMENT OR EQUIPMENT. (CONT)

LOCATION	ITEM	ACTION **REMARKS**
SYSTEM FUNCTION TEST (CONT)		
24. Simulator	Simulator controls (1)	T1: Set MODE to SCAN Set PW to NAR. Set PRF to HIGH. **Point simulator into forward antennas from relative bearing of 0°.**
25.	Trigger switch (2)	T1: Press and hold.



4-10. PRELIMINARY SERVICING AND ADJUSTMENT OF EQUIPMENT. (CONT)

LOCATION	ITEM	ACTION REMARKS
SYSTEM FUNCTION TEST (CONT)		
26. Radar signal indicator	Indicator screen (1)	T2: Observe. **After a few seconds, a flickering strobe will appear at about 0°. MA lamp remains off.**
		NOTE Strobe will flicker on and off at about 15 Hz rate.
27. Control unit	AUDIO control (2)	T2: Adjust audio level. **Intermittent PRF audio is present. Alarm audio is absent.**



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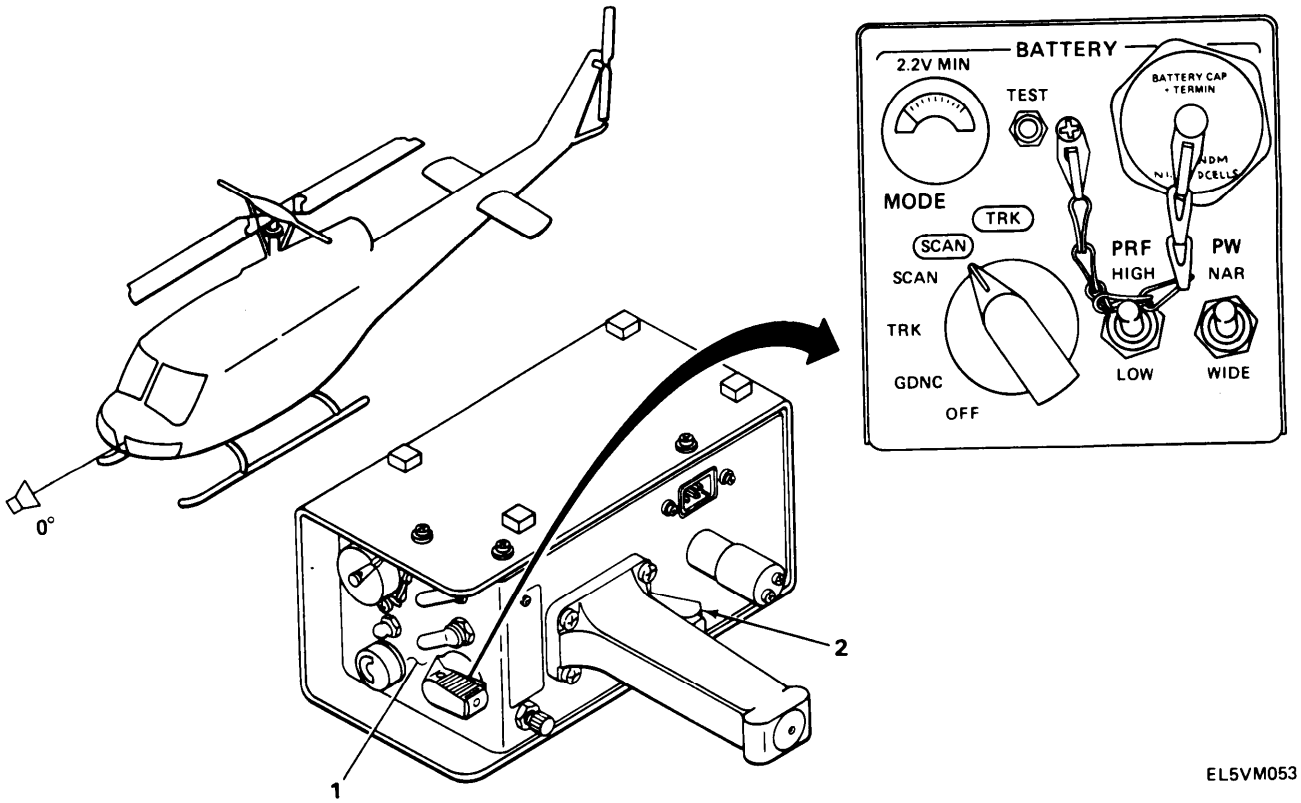
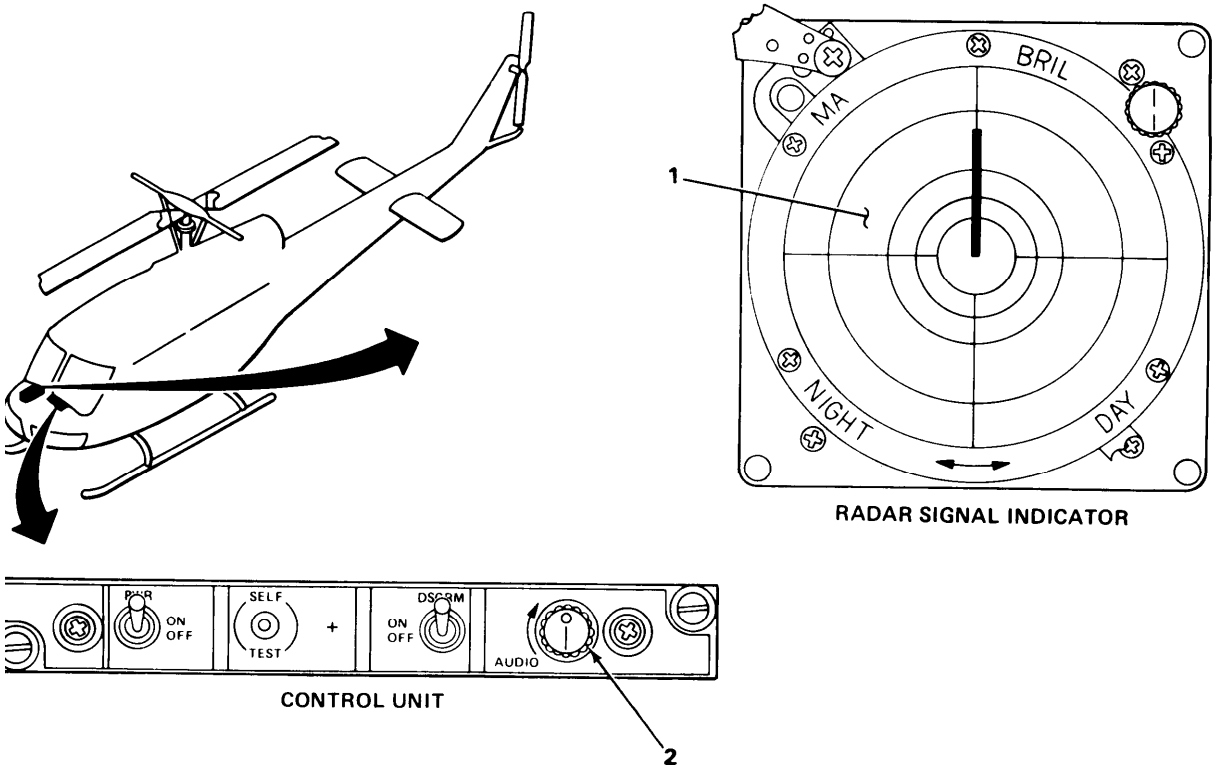
4-10. PRELIMINARY SERVICING AND ADJUSTMENT OF EQUIPMENT. (CONT)

LOCATION	ITEM	ACTION **REMARKS**
SYSTEM FUNCTION TEST (CONT)		
28. Simulator	Simulator controls (1)	T1: Set MODE to SCAN. Set PW to NAR. Set PRF to HIGH. **Point simulator into forward antennas from relative bearing of 0°.**
29.	Trigger switch (2)	T1: Press and hold.



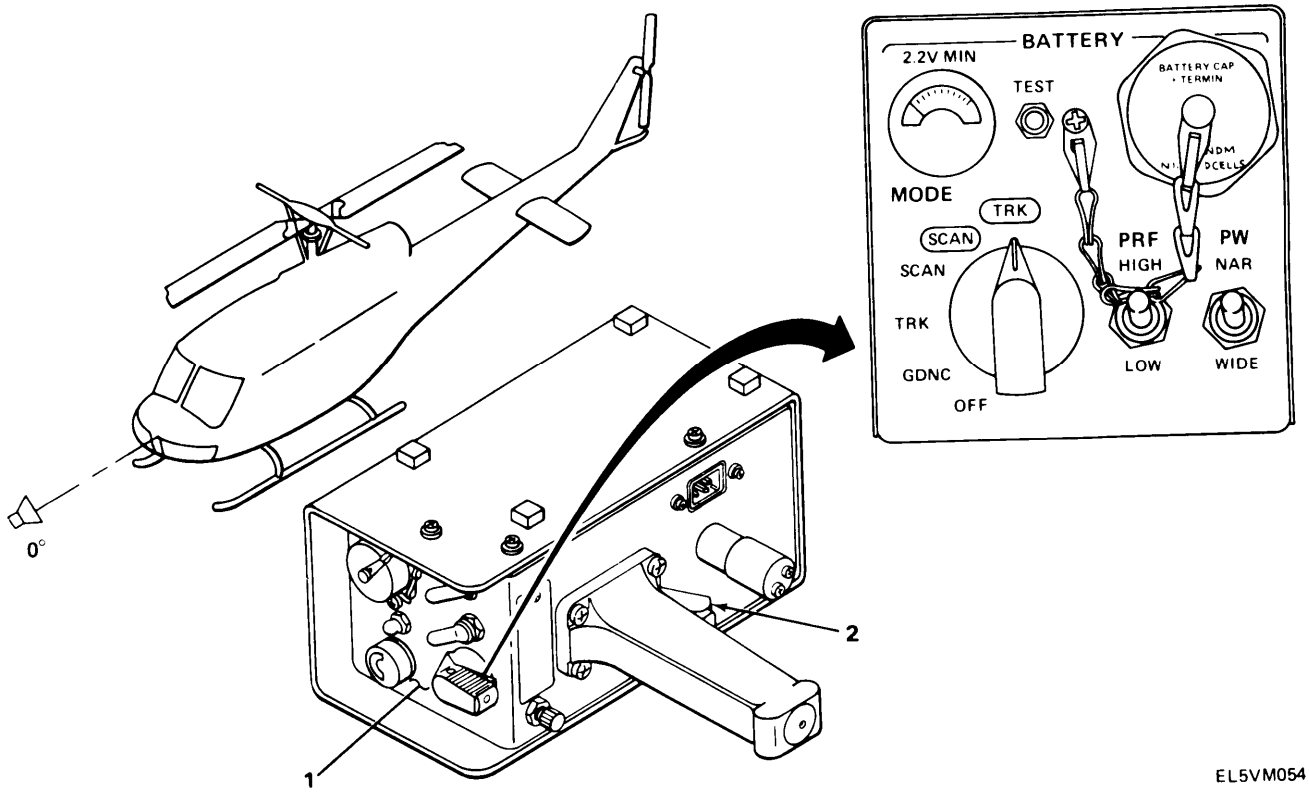
4-10. PRELIMINARY SERVICING AND ADJUSTMENT OF EQUIPMENT. (CONT)

LOCATION	ITEM	ACTION **REMARKS**
SYSTEM FUNCTION TEST (CONT)		
30. Radar signal indicator	Indicator screen (1)	T2: Observe. **After a few seconds, a flashing strobe appears, flickering while on, at about 0°. MA lamp flashes at about 2.5 Hz rate.**
		NOTE Strobe will flash on and off at about 2.5 Hz rate.
31. Control unit	AUDIO control (2)	T2: Adjust audio level. **Intermittent PRF audio is present. Alarm audio is present.**



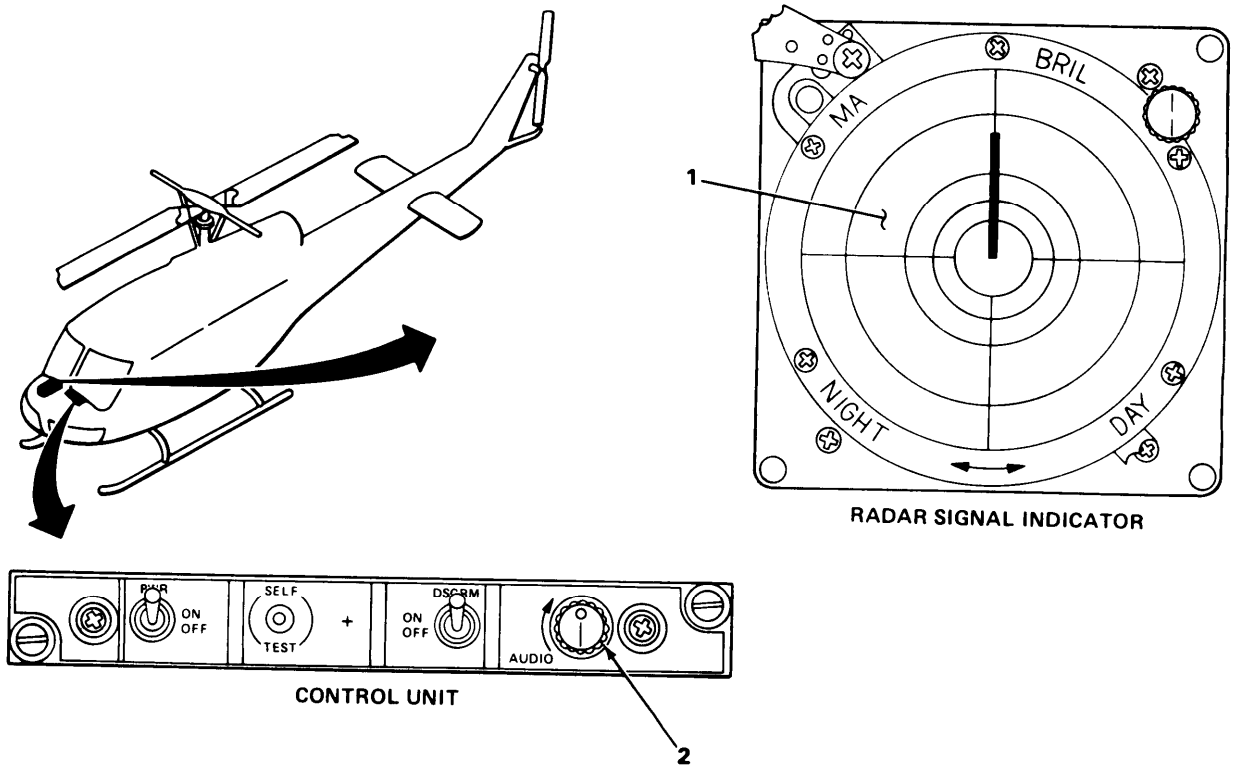
4-10. PRELIMINARY SERVICING AND ADJUSTMENT OF EQUIPMENT. (CONT)

LOCATION	ITEM	ACTION **REMARKS**
SYSTEM FUNCTION TEST (CONT)		
32. Simulator	Simulator controls (1)	T1: Set MODE to TRK. Set PW to NAR. Set PRF to HIGH. **Point simulator into forward antennas from a relative bearing of 0°.**
33.	Trigger switch (2)	T1: Press and hold.



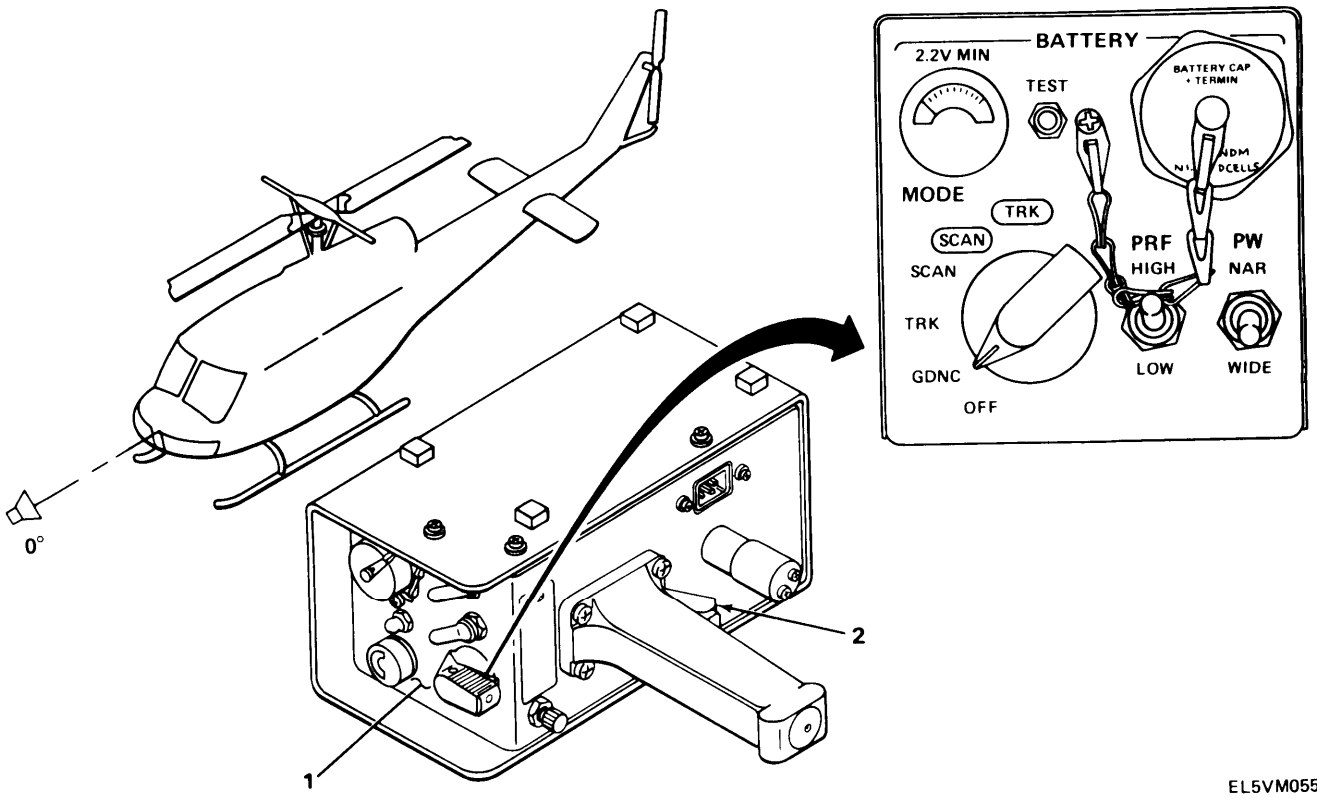
4-10. PRELIMINARY SERVICING AND ADJUSTMENT OF EQUIPMENT. (CONT)

LOCATION	ITEM	ACTION **REMARKS**
SYSTEM FUNCTION TEST (CONT)		
34. Radar signal indicator	Indicator screen (1)	T2: Observe. **After a few seconds, a flashing strobe will appear at about 0°. MA lamp flashes.**
35. Control unit	AUDIO control (2)	T2: Adjust audio level. **PRF audio is present. Alarm audio is present.**



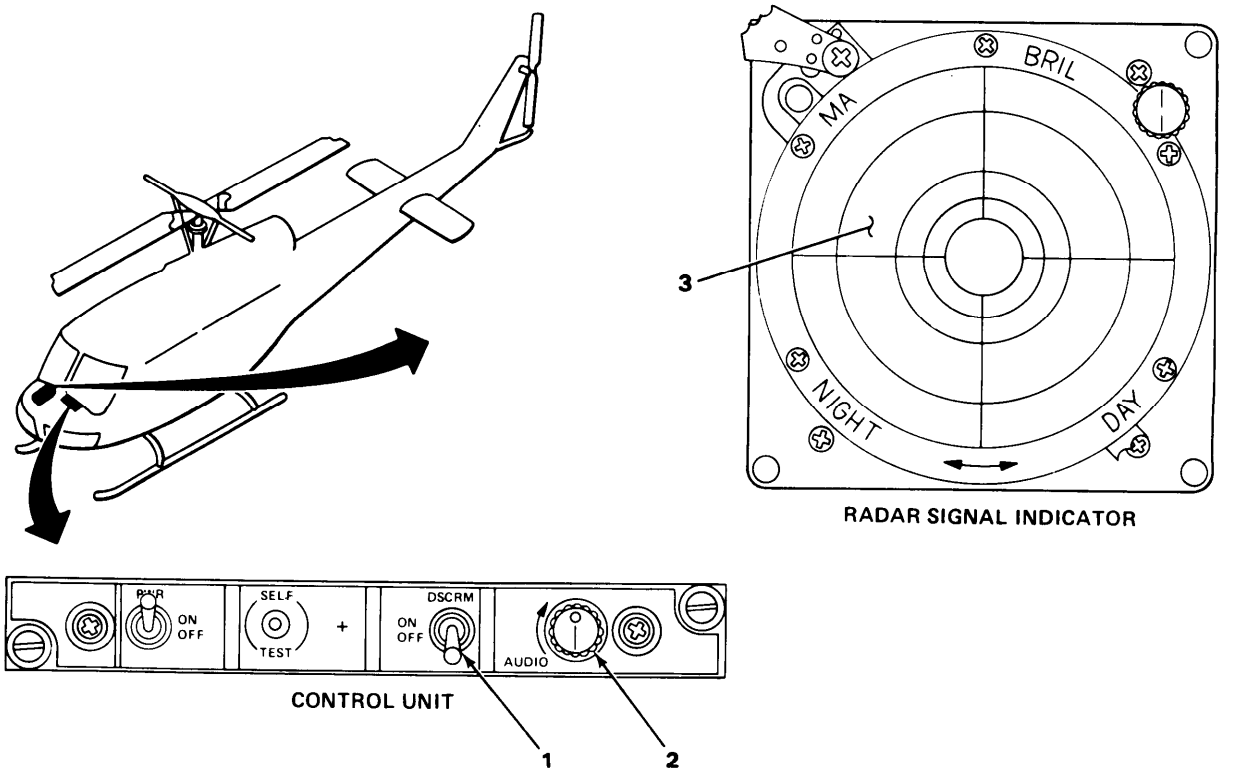
4-10. PRELIMINARY SERVICING AND ADJUSTMENT OF EQUIPMENT. (CONT)

LOCATION	ITEM	ACTION **REMARKS**
SYSTEM FUNCTION TEST (CONT)		
36. Simulator	Simulator controls (1)	T1: Set MODE to GDNC. Set PW to any setting. Set PRF to HIGH. **Point simulator into forward antennas from a relative bearing of 0°.**
37.	Trigger switch (2)	T1: Press and hold.



4-10. PRELIMINARY SERVICING AND ADJUSTMENT OF EQUIPMENT. (CONT)

LOCATION	ITEM	ACTION **REMARKS**
SYSTEM FUNCTION TEST (CONT)		
38. Control unit	DSCRM-ON-OFF switch (1)	T2: Set to OFF.
39.	AUDIO control (2)	T2: Adjust audio level. **PRF audio is absent. Alarm audio is present.**
40. Radar signal indicator	Indicator screen (3)	T2: Observe. **No strobe appears. MA lamp flashes.**



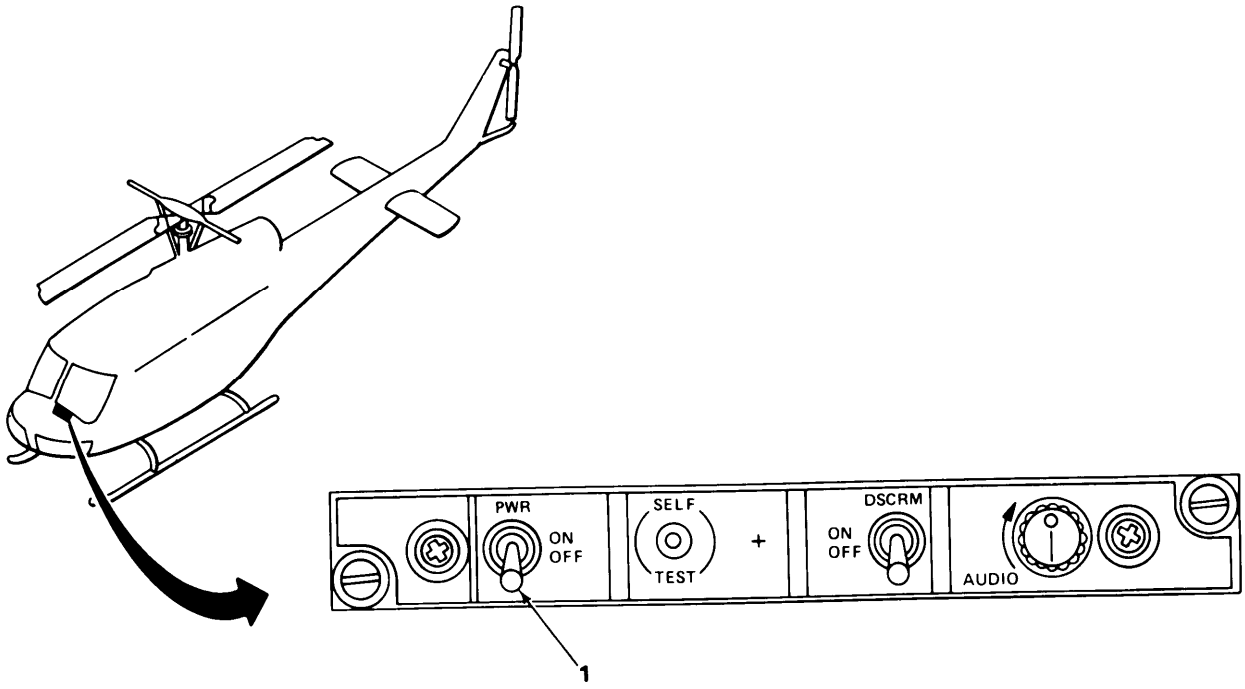
4-10. PRELIMINARY SERVICING AND ADJUSTMENT OF EQUIPMENT. (CONT)

LOCATION	ITEM	ACTION **REMARKS**
SYSTEM FUNCTION (CONT)		
41. Control unit	PWR-ON-OFF switch (1)	T2: Set to OFF.

NOTE

Before leaving aircraft, set 28 vdc circuit breaker to OFF. See aircraft manual. Control unit panel light goes off.

Set simulator MODE switch to OFF and secure equipment.



EL5VM057

Section III AVIATION UNIT PREVENTIVE MAINTENANCE CHECKS AND SERVICES

OVERVIEW

To be sure that the radar signal detecting set is always ready, aviation unit maintenance must perform Preventive Maintenance Checks and Services (PMCS).

Perform aviation unit level PMCS on a monthly (M) basis. A month is 30 calendar days for an 8 hour per day operation. If the equipment is operated 24 hours per day, the M PMCS should be performed every 10 days.

PMCS TABLE

The item No. column is used as a source for the TM number on DA Form 2404.

The Item to be Inspected column describes the equipment or parts of the radar signal detecting set that must be inspected. Inspect all items listed.

The Procedures column describes how to perform the needed checks and services. Follow instructions carefully.

If any problems arise during PMCS, or if you find any damage, refer to the aviation unit troubleshooting section in this manual for instructions to correct it. A higher level of maintenance may be required.

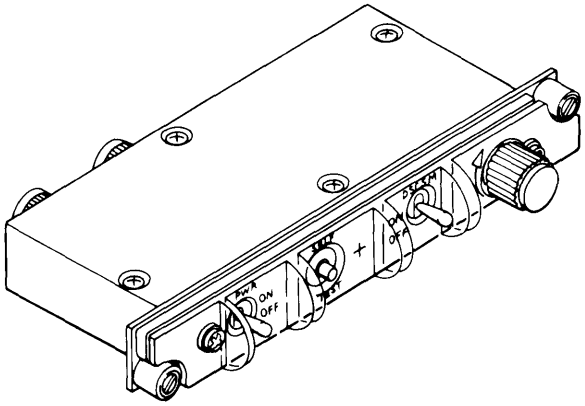
NOTE

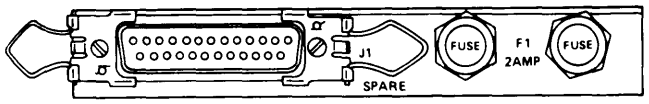
Always keep in mind the Cautions and Warnings.

AVIATION UNIT PREVENTIVE MAINTENANCE CHECKS AND SERVICES

M - MONTHLY

ITEM NO.	INTERVAL M	ITEM TO BE INSPECTED	PROCEDURE
			CAUTION Before performing PMCS, set 28 vdc circuit breaker to OFF.
1	•	Control Unit	Remove control unit from instrument panel. See paragraph 4-15. Clean exterior surfaces of control unit and cable connections. Check for rust or corrosion. See paragraph 4-11. Repair any frayed or bare wires. Repair damaged connector pins. Replace fasteners that are broken, stripped, or corroded. Replace spare fuse, if missing. Install control unit in instrument panel. See paragraph 4-15.





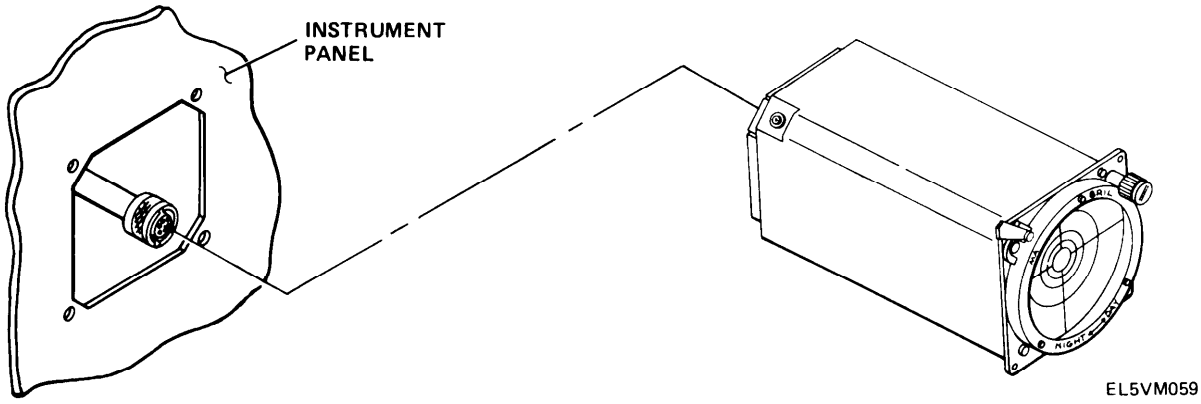
REAR VIEW

EL5VM058

AVIATION UNIT PREVENTIVE MAINTENANCE CHECKS AND SERVICES (CONT)

M - MONTHLY

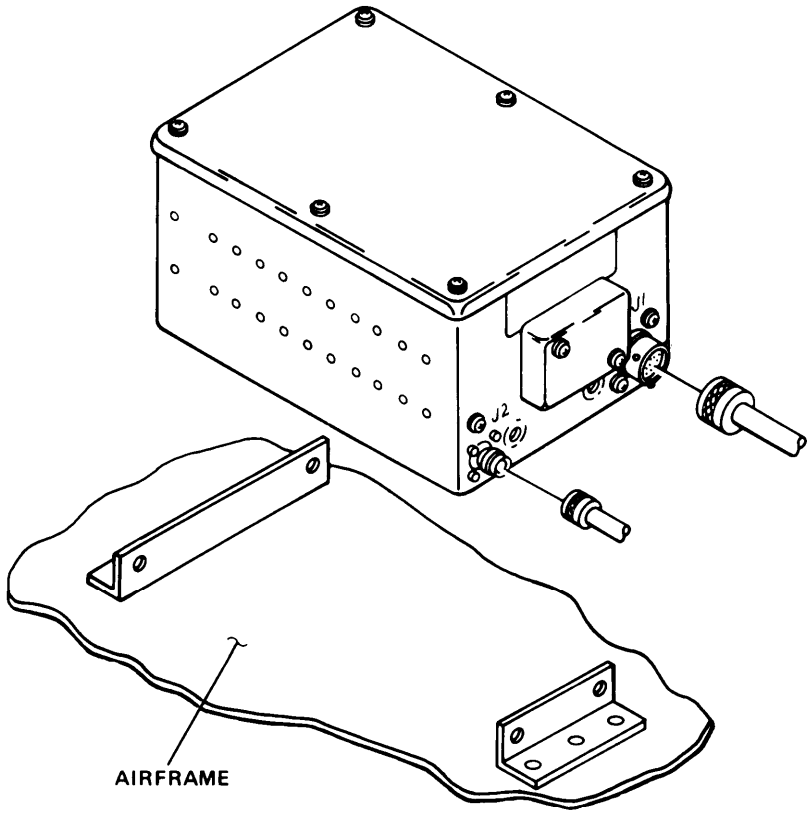
ITEM NO.	INTERVAL M	ITEM TO BE INSPECTED	PROCEDURE
2	•	Radar Signal Indicator	Remove radar signal indicator from instrument panel. See paragraph 4-17. Clean exterior surfaces of indicator and cable connections. Check for rust or corrosion. See paragraph 4-11. Repair any frayed or bare wires. Repair damaged connector pins. Replace mounting screws that are broken, stripped, or corroded. Check instrument panel for signs of cracking around mounting screw holes, Repair if necessary. Install radar signal indicator in instrument panel. See paragraph 4-17.



AVIATION UNIT PREVENTIVE MAINTENANCE CHECKS AND SERVICES (CONT)

M - MONTHLY

ITEM NO.	INTERVAL M	ITEM TO BE INSPECTED	PROCEDURE
3	•	Comparator	Remove comparator from mounting brackets. See paragraph 4-14. Clean exterior surfaces of comparator and all cable connections. Check for rust or corrosion. See paragraph 4-11. Repair any frayed or bare wire. Repair damaged connector pins. Replace any mounting hardware that is broken, stripped, corroded, or missing. Check mounting brackets for signs of cracking or fatigue. Replace, if necessary. Install comparator onto mounting brackets. See paragraph 4-14.



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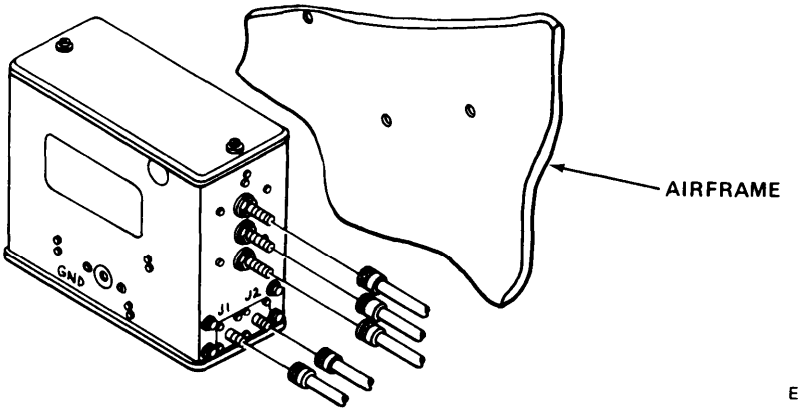
AVIATION UNIT PREVENTIVE MAINTENANCE CHECKS AND SERVICES (CONT)

M - MONTHLY

ITEM NO.	INTERVAL M	ITEM TO BE INSPECTED	PROCEDURE
4	•	Radar Receivers	Remove the forward and aft radar receivers from the aircraft airframe. See paragraph 4-16. Clean exterior surfaces of each receiver and all cable connections. Check for rust or corrosion. See paragraph 4-11. Repair any frayed or bare wire. Repair damaged connector pins, Replace any mounting hardware that is broken, stripped, corroded, or missing. Check airframe around mounting screw holes for signs of cracking. Repair, if necessary. Install the forward and aft radar receivers onto the aircraft airframe. See paragraph 4-16.



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AVIATION UNIT PREVENTIVE MAINTENANCE CHECKS AND SERVICES (CONT)

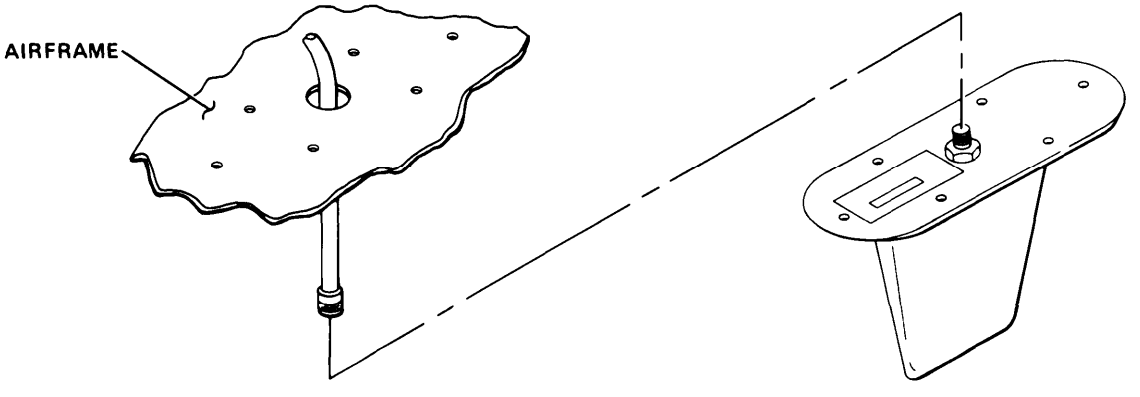
M - MONTHLY

ITEM NO.	INTERVAL M	ITEM TO BE INSPECTED	PROCEDURE
5	•	Spiral Antennas	Remove all four spiral antennas. See paragraph 4-18. Clean radome of each antenna and cable connectors. Check for rust or corrosion. See paragraph 4-11. Check radome for cracks or signs of deterioration. Replace antenna if necessary. Replace gasket if damaged. **NOTE** Some aircraft may not use a gasket. Repair any frayed or bare wire. Repair damaged connector pins. Replace any screws that are broken, stripped, corroded, or missing. Check airframe around mounting screw holes for signs of cracking. Repair, if necessary. **NOTE** Use clear sealant around antenna contact surface to prevent water leakage. Install all four spiral antennas. See paragraph 4-18.

AVIATION UNIT PREVENTIVE MAINTENANCE CHECKS AND SERVICES (CONT)

M - MONTHLY

ITEM NO.	INTERVAL M	ITEM TO BE INSPECTED	PROCEDURE
6	•	Blade Antenna	Remove blade antenna from airframe, See paragraph 4-13. Clean exterior surfaces and all cable connections. Check for rust or corrosion. See paragraph 4-11. Repair any frayed or bare wire. Repair damaged connector pins. Replace any screws that are broken, stripped, corroded, or missing. Check airframe around mounting screw holes for signs of cracking. Repair, if necessary. **NOTE** Use clear sealant around antenna contact surface to prevent water leakage. Install blade antenna onto airframe. See paragraph 4-13.



AVIATION UNIT PREVENTIVE MAINTENANCE CHECKS AND SERVICES (CONT)

M - MONTHLY

ITEM NO.	INTERVAL M	ITEM TO BE INSPECTED	PROCEDURE
7	•	Radar Signal Detecting Set	Perform a system function test. See paragraph 4-10.
8	•	End Item List	Check that all equipment on the End Item List has all parts and spares. Check that all equipment is mounted or stored in proper place.
9	•	Modification Work Orders (MWO's)	Check that all MWO's are done and MWO's are stamped. All urgent MWO's must be done at once, and all normal MWO's scheduled.

Section IV AVIATION UNIT TROUBLESHOOTING

OVERVIEW

The troubleshooting table lists problems that you may find when operating the radar signal detecting set equipment or when doing the PMCS.

The troubleshooting table does not list all of the problems which you may find. If your problem is not listed, report it to your supervisor. If the troubleshooting steps do not solve your problem, report it to your supervisor. When working on any problem, be sure to report your work on the forms shown in TM 38-750.

To use the troubleshooting table, first find your problem in the symptom index. The symptom index is organized by component and problems for each component. The index will give you a page number on which you will find your problem and the possible corrections. Turn to that page, find your problem, and use the procedures shown to correct it.

SYMPTOM INDEX

The symptom index lists problems that may be found while performing the system function test.

TROUBLESHOOTING.

MALFUNCTION
TEST OR INSPECTION
CORRECTIVE ACTION

1. No indicator strobe appears on radar signal indicator screen and no audio is present.

Step 1. Check that PWR-ON-OFF switch on control unit is set to ON.

If PWR-ON-off switch on control unit is off, set to ON.

Step 2. Check that 28 vdc circuit breaker is set to ON. See aircraft manual.

If 28 vdc circuit breaker is off, set to ON.

Step 3. Check for bad control unit. See troubleshooting flowcharts at back of manual.

If control unit is bad, replace unit with a new one. Turn bad unit in for repair. See paragraph 4-15.

Step 4. Check for bad comparator. See troubleshooting flowcharts at back of manual.

If comparator is bad, replace unit with a new one. Turn bad unit in for repair. See paragraph 4-14.

Step 5. Check for bad indicator unit. See troubleshooting flowcharts at back of manual.

If indicator is bad, replace unit with a new one. Turn bad unit in for repair. See paragraph 4-17.

2. No indicator strobe appears on radar signal indicator screen and only MA audio is present.

Check for bad radar signal indicator. See troubleshooting flowcharts at back of manual.

If radar signal indicator is bad, replace unit with a new one. Turn in bad unit for repair. See paragraph 4-17.

3. No indicator strobe appears on radar signal indicator screen, and all audio is present.

Check for bad radar signal indicator. See troubleshooting flowcharts at back of manual.

If radar signal indicator is bad, replace unit with a new one. Turn in bad unit for repair. See paragraph 4-17.

TROUBLESHOOTING.

MALFUNCTION
TEST OR INSPECTION
CORRECTIVE ACTION

4. MA lamp on radar signal indicator does not flash and no MA audio is present.

Check for bad comparator. See troubleshooting flowcharts at back of manual.

If comparator is bad, replace unit with a new one. Turn in bad unit for repair. See paragraph 4-14.

5. MA lamp on radar signal indicator flashes only when SELF TEST button is released.

Check for bad comparator. See troubleshooting flowcharts at back of manual.

If comparator is bad, replace unit with a new one. Turn in bad unit for repair. See paragraph 4-14.

6. Upper half of indicator strobe on radar signal indicator screen is missing or shorter and bends to the right or left.

Check for bad forward radar receiver. See troubleshooting flowcharts at back of manual.

If forward radar receiver is bad, replace unit with a new one. Turn in bad unit for repair. See paragraph 4-16.

7. Lower half of indicator strobe on radar signal indicator screen is missing or shorter and bends to right or left.

Check for bad aft radar receiver. See troubleshooting flowcharts at back of manual.

If aft radar receiver is bad, replace unit with a new one. Turn in bad unit for repair. See paragraph 4-16.

8. MA lamp does not flash, but MA audio is heard.

MA lamp is not replaceable at AVUM level. Go to corrective action.

Replace indicator. See paragraph 4-17. Turn in bad unit for repair.

TROUBLESHOOTING.

MALFUNCTION
TEST OR INSPECTION
CORRECTIVE ACTION

9. Spiral Antennas do not transmit signal or signal is weak.

Step 1. Check for bad spiral antennas. See troubleshooting flowcharts at back of manual.

If antenna is bad, replace unit with a new one. Turn in bad unit for repair. See paragraph 4-18.

Step 2. Check for bad interconnecting transmission line assembly. See troubleshooting flowcharts at back of manual.

If interconnecting transmission line assembly is bad, replace assembly with a new one. Turn in bad assembly for repair, Refer to a higher level of maintenance.

Step 3. Check for bad radar receiver. See troubleshooting flowcharts at back of manual.

If radar receiver is bad, replace unit with a new one. Turn in bad unit for repair. See paragraph 4-16.

Section V. AVIATION UNIT MAINTENANCE PROCEDURES

OVERVIEW

This section provides instructions for the removal, installation, cleaning, and painting of radar signal detecting set equipment maintained at the AVUM level.

4-11. CLEANING.

1. Remove moisture and loose dirt from radar signal detecting set equipment with a clean cloth.

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 skin should be avoided. When necessary, use gloves which the solvent cannot penetrate. If the solvent is taken internally, consult a physician immediately.

2. Remove grease, corrosion, and ground-in dirt with a cloth dampened (not wet) with trichlorotrifluoroethane. Wipe dry with a clean, dry, lint-free cloth.

3. Remove dirt from connectors with a brush. Remove moisture with a dry cloth.

4. Remove rust from metal surfaces by lightly sanding with fine sandpaper. See paragraph 4-23 for painting instructions.

4-12. REPLACEMENT.

Replacement instructions include removal and installation procedures for the following equipment:

Blade antenna	Spiral antennas
Comparator	Audio control knob
Control unit	Control unit fuse
Radar signal indicator	Lighting panel
Receivers	Switch guard plate

After installing any repaired or new unit of the radar signal detecting set covered in paragraphs 4-13 thru 4-22, perform a self-test and a system function test.

4-13. BLADE ANTENNA REPLACEMENT.

This task covers:

1. Removal
2. Installation

INITIAL SETUP

Tools	Personnel Required
Tool, Kit, Electronic Equipment TK-101/G	One technician
Materials/Parts	**Equipment Condition**
Blade antenna NSN 5985-01-026-3927	28 vdc circuit breaker set OFF. See aircraft manual.

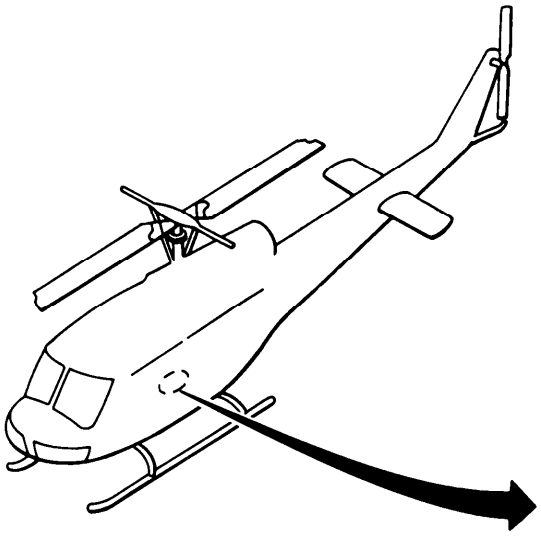
LOCATION	ITEM	ACTION	**REMARKS**
REMOVAL			
1. Underside of aircraft	Mounting screw (1)	Using cross-tip screwdriver, remove.	**There are six mounting screws. Step 1 is typical for all six screws. Only one screw is shown.**
2.	Cable connector (2)	Disconnect.	
3.	Antenna (3)	Remove.	

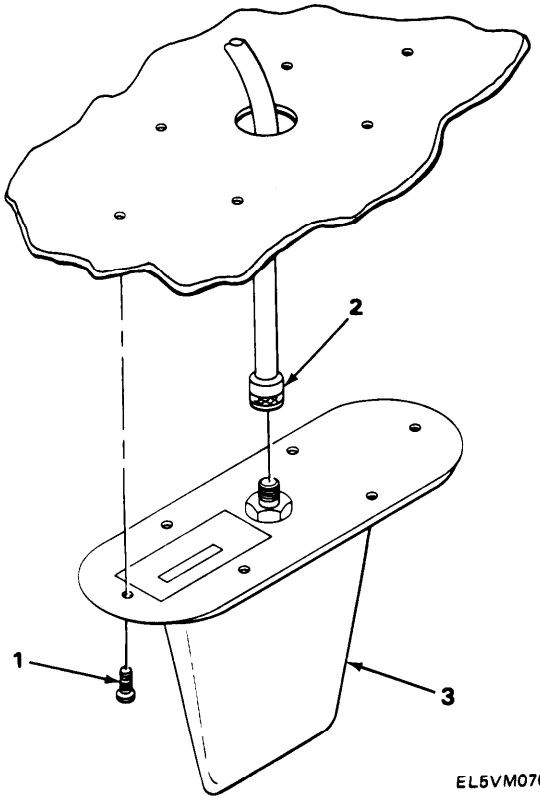
4-13. BLADE ANTENNA REPLACEMENT. (CONT)

LOCATION	ITEM	ACTION **REMARKS**
INSTALLATION		
1. Underside of aircraft	Antenna (3) and cable connector (2)	Reconnect. **Using torque wrench, tighten to 7-10 inch-pounds.**
2.	Mounting screw (1)	Using cross-tip screwdriver, install. **There are six mounting screws. Step 2 is typical for all six screws. Only one screw is shown.**

NOTE

Be sure blade antenna is properly grounded. Tighten antenna screws firmly in place. Perform a self-test (see para 2-4) and a system function test (see para 4-10).





4-14. COMPARATOR REPLACEMENT.

This task covers:

1. Removal
2. Installation

INITIAL SETUP

Tools	Personnel Required
Tool Kit, Electronic Equipment TK-101/G	One technician
Materials/Parts	**Equipment Condition**
Comparator NSN 5841-01-024-7739	28 vdc circuit breaker set OFF. See aircraft manual.

LOCATION	ITEM	ACTION **REMARKS**

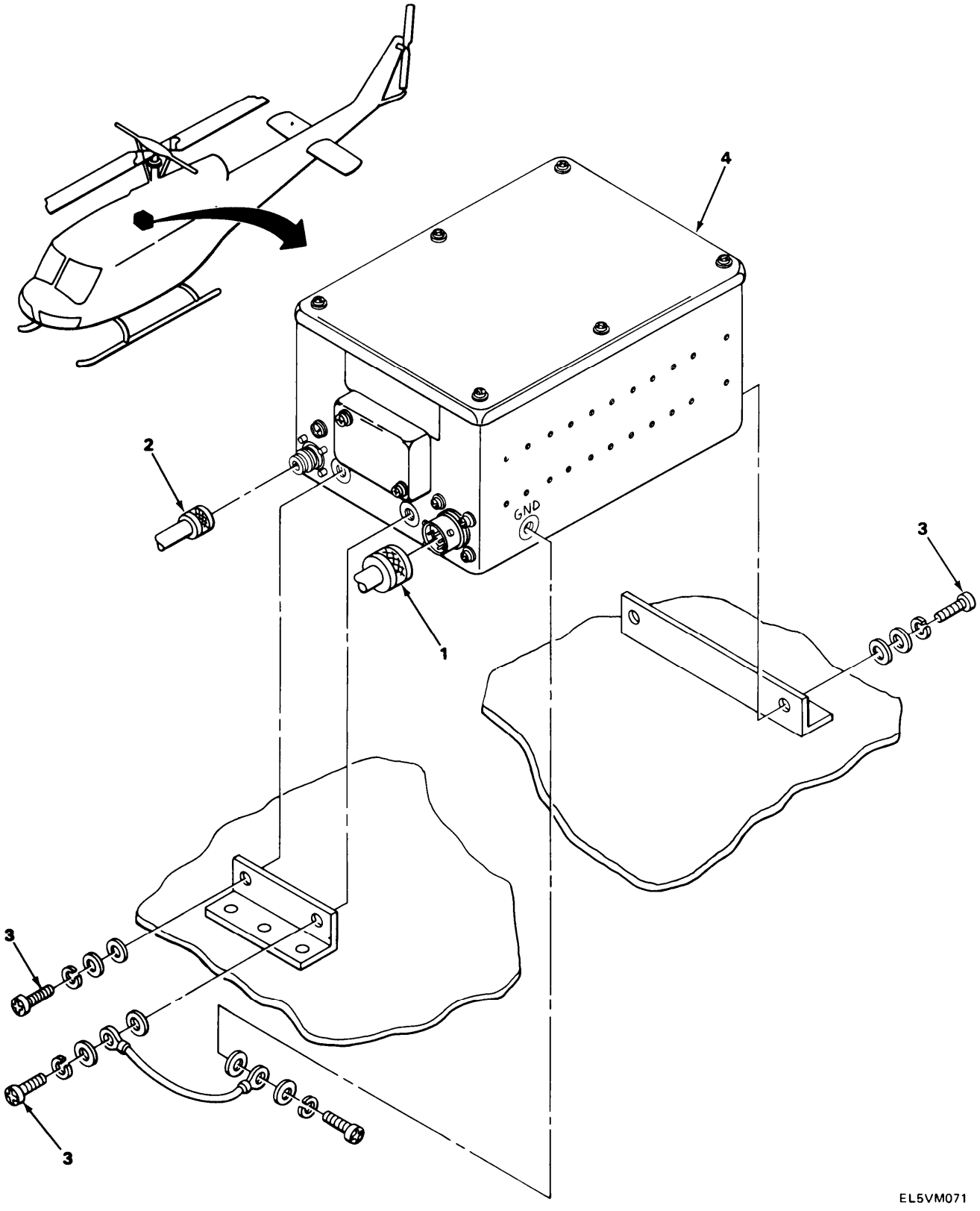
REMOVAL

1. Middle of quadrants I and IV	Connector P1 (1) and connector P2 (2)	Disconnect.
2.	Mounting screw (3)	Using cross-tip screwdriver, remove. **There are four mounting screws. Step 2 is typical for all four screws. Only three screws are shown. Retain associated hardware.**
3.	Comparator (4)	Remove.

NOTE

Do not remove mounting bracket from airframe. Grounding strap does not have to be removed unless replacement is required.

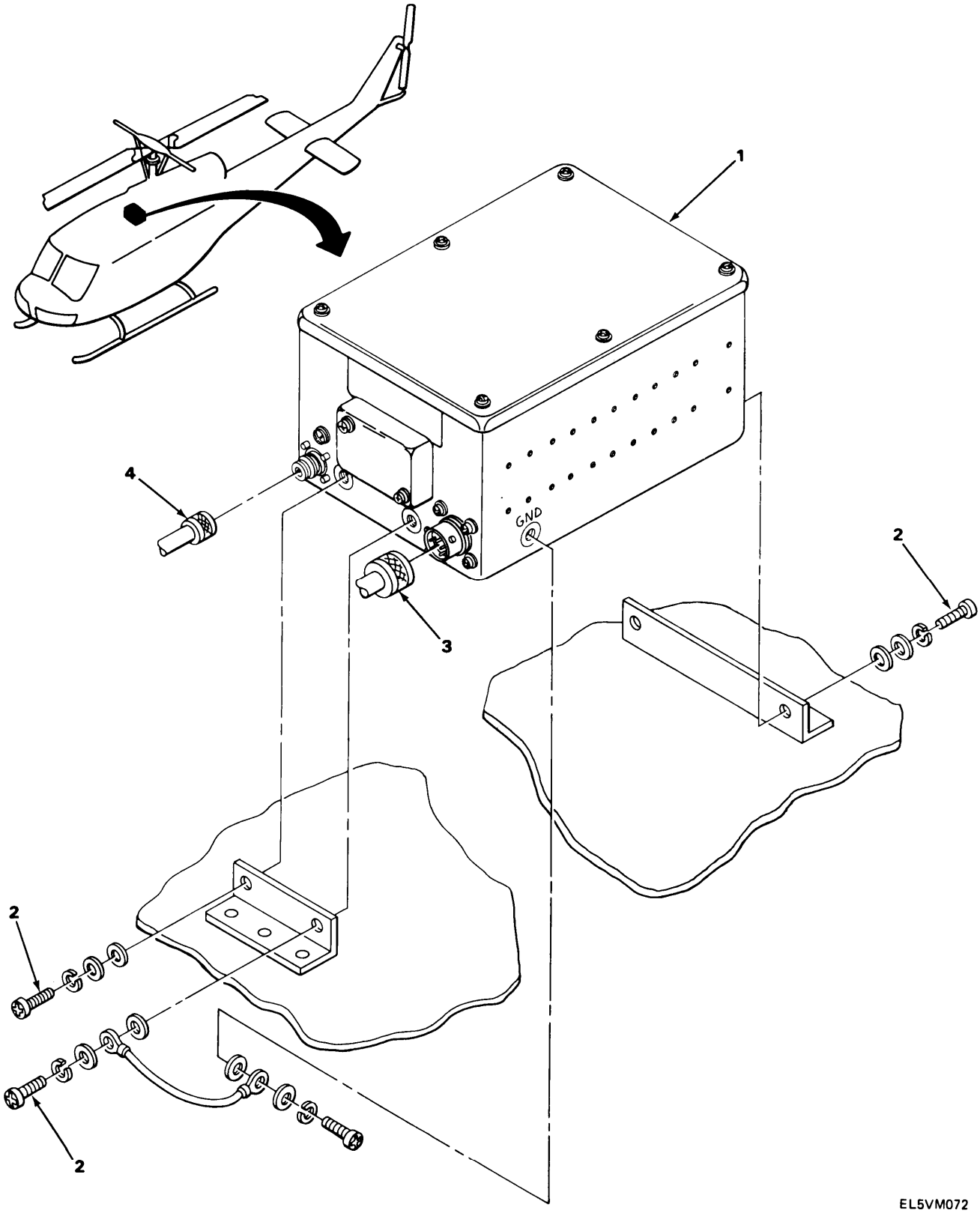
4-14. COMPARATOR REPLACEMENT. (CONT)



4-14. COMPARATOR REPLACEMENT. (CONT)

LOCATION	ITEM	ACTION **REMARKS**
INSTALLATION		
1. Middle of quadrants I and IV	Comparator (1)	Install between mounting brackets.
2.	Mounting screw (2)	Using cross-tip screwdriver, install. **There are four mounting screws.** **Step 2 is typical for all four screws.** **Only three screws are shown.**
		NOTE Be sure to attach grounding strap to the mounting bracket when installing screws. Install associated hardware retained during removal.
3.	Connector P1 (3) and connector P2 (4)	Reconnect. **Handtighten.**
		NOTE Be sure that plug connector P1 is connected to jack connector J1, and plug connector P2 is connected to jack connector J2. Perform a self-test (see para 2-4) and a system function test (see para 4-10).

4-14. COMPARATOR REPLACEMENT. (CONT)



4-15. CONTROL UNIT REPLACEMENT.

This task covers:

1. Removal
2. Installation

INITIAL SETUP

Tools

Tool Kit, Electronic Equipment TK-101/G

Materials/Parts

Control unit
NSN 5941-01-025-0378

Personnel Required

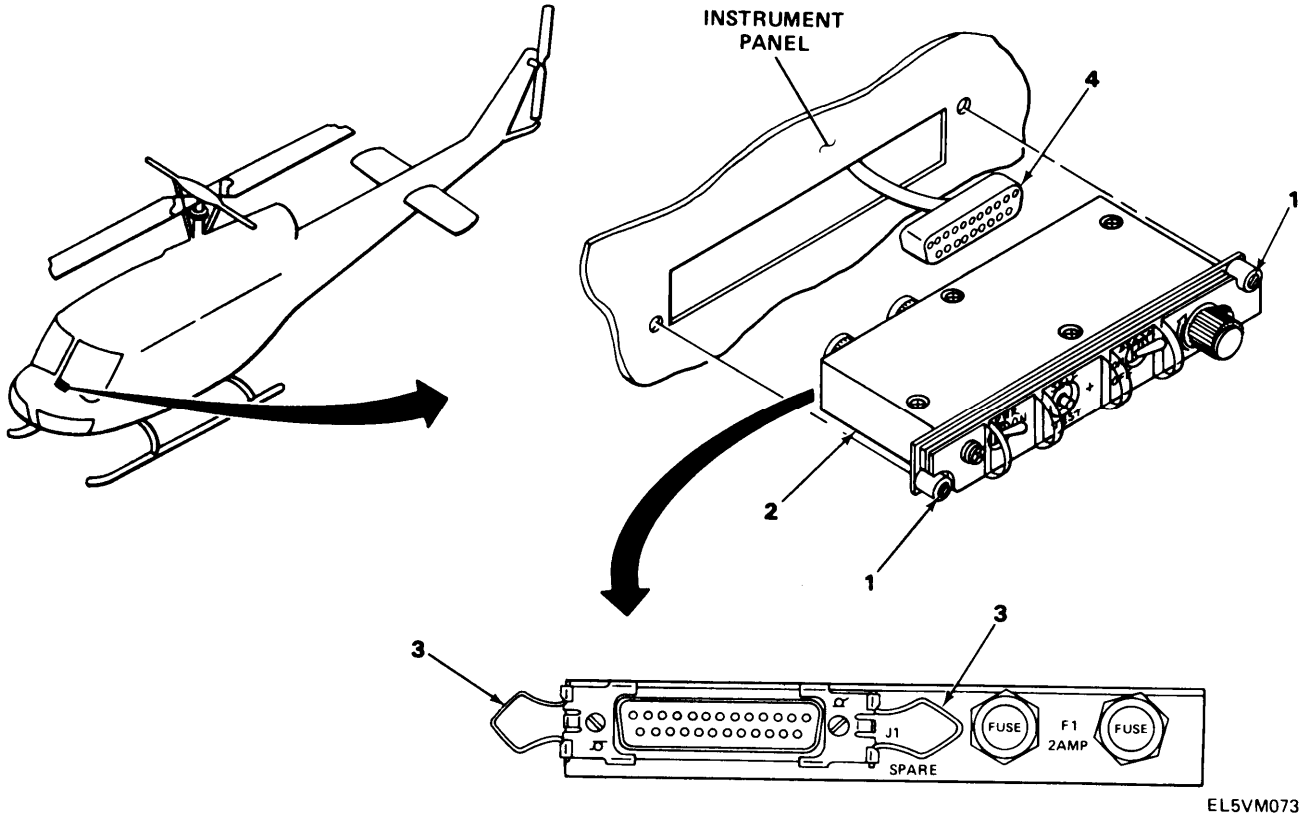
One technician

Equipment Condition

28 vdc circuit breaker set OFF.
See aircraft manual.

LOCATION	ITEM	ACTION / REMARKS
REMOVAL		
1. Instrument panel; quadrant IV	Stud fasteners (1)	Using flat-tip screwdriver, turn 90° counterclockwise.
2.	Control unit (2)	Slide out. **Do not pull with force as wiring may be pulled from connector.**
3.	Connector clips (3)	Release.
4.	Cable connector (4)	Disconnect.

4-15. CONTROL UNIT REPLACEMENT. (CONT)

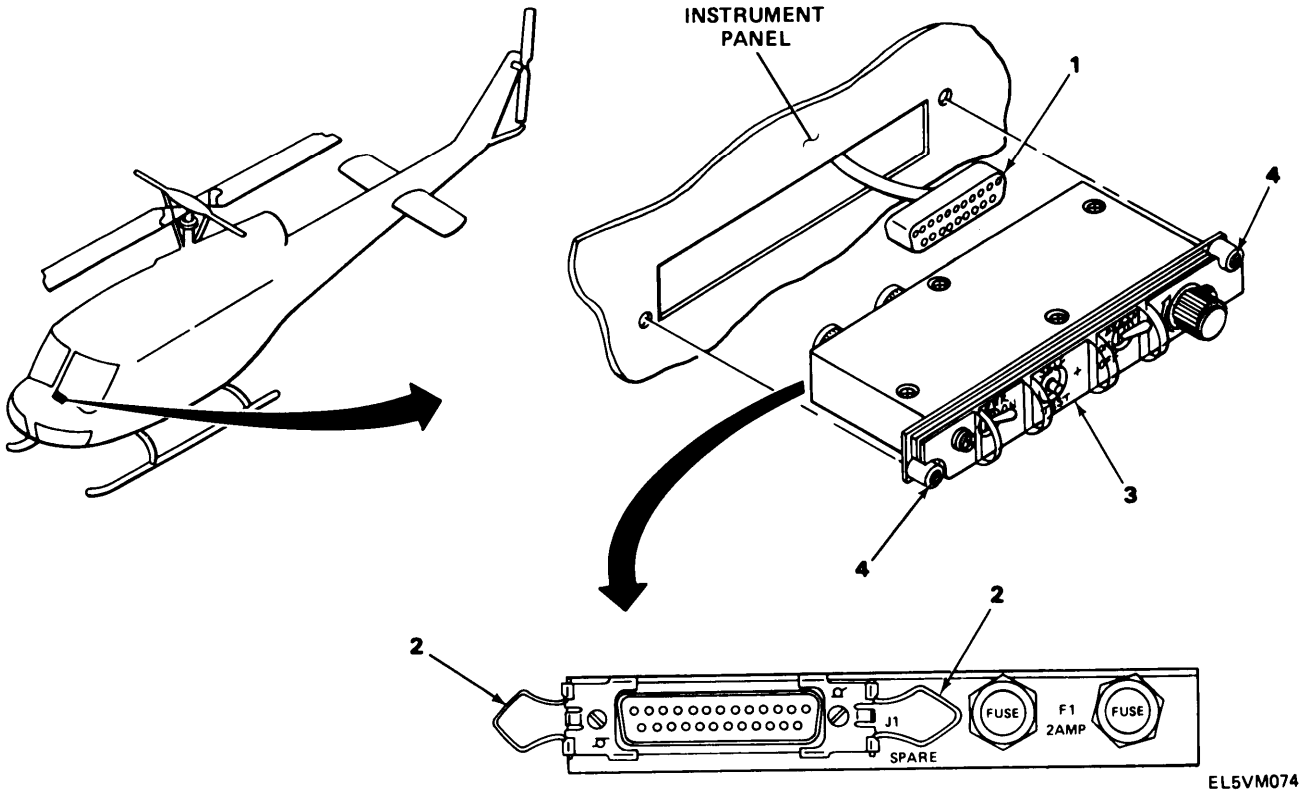


4-15. CONTROL UNIT REPLACEMENT (CONT)

LOCATION	ITEM	ACTION **REMARKS**
INSTALLATION		
1. Instrument panel; quadrant IV	Cable connector (1)	Reconnect.
2.	Connector clips (2)	Snap into place.
3.	Control unit (3)	Slide into panel.
4.	Stud fasteners (4)	Using flat-tip screwdriver, turn 90° clockwise. **Be sure stud fasteners lock in place and unit is secure.**

NOTE

Perform a self-test (see para 2-4) and a system function (see para 4-10).



4-16. RADAR RECEIVER REPLACEMENT.

This task covers:

1. Removal
2. Installation

INITIAL SETUP

Tools	Personnel Required
Tool Kit, Electronic Equipment TK-101/G	One technician
Materials/Parts	**Equipment Condition**
Receiver NSN 4851-01-031-5890	28 vdc circuit breaker set OFF. See aircraft manual.

LOCATION	ITEM	ACTION **REMARKS**

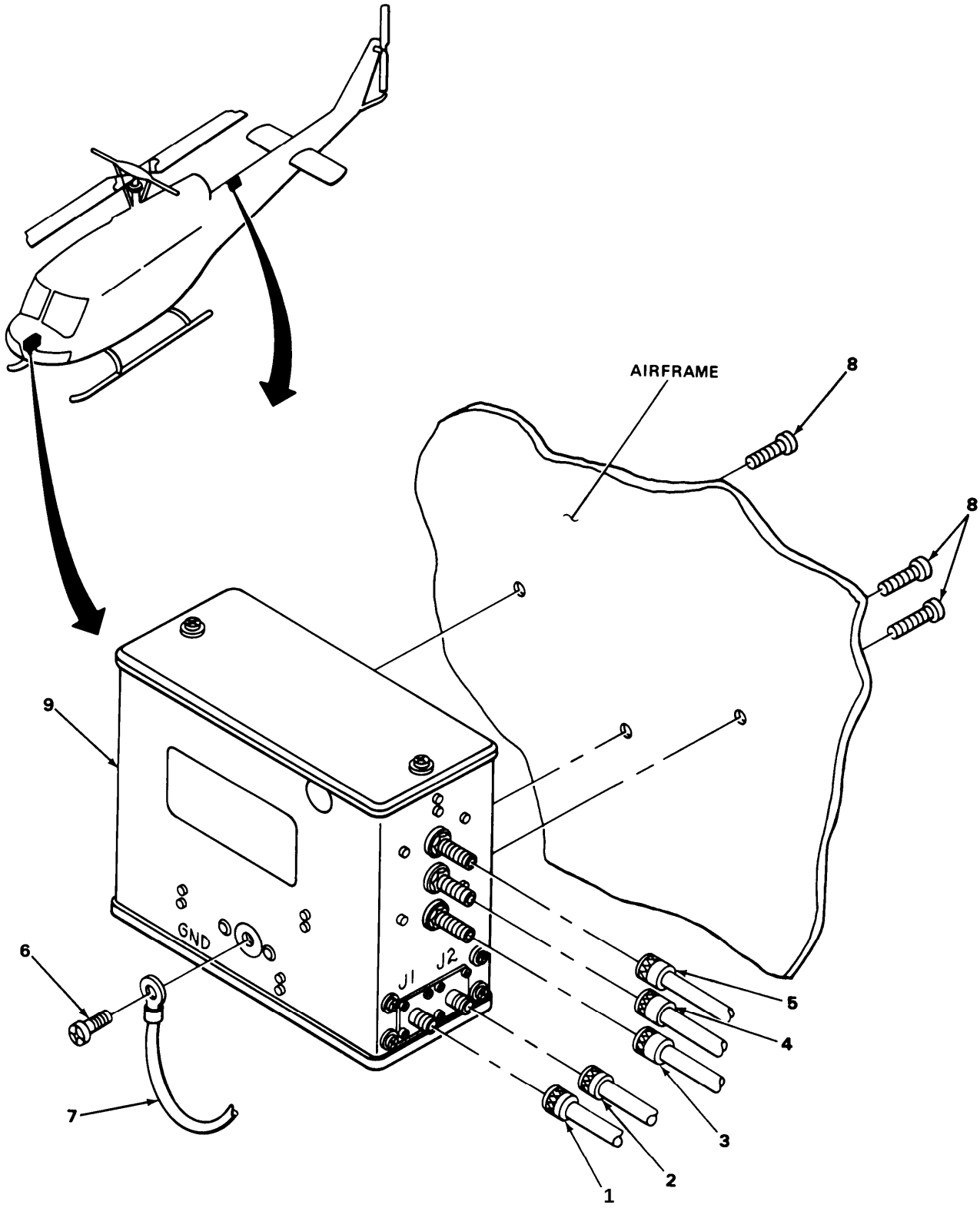
REMOVAL

NOTE

There are two receivers in the radar signal detecting set. Removal procedures are identical for both. The forward receiver is located middle of quadrants I and IV. The aft receiver is located middle of quadrants II and Ill.

1. Middle of quadrants I and IV or quadrants II and Ill	Cable connector P1 (1), cable connector P2 (2), cable connector P3 (3), cable connector P4 (4), and cable connector P5 (5)	Disconnect.
2.	Grounding strap screw (6)	Using cross-tip screwdriver, remove.
3.	Grounding strap (7)	Remove.
4.	Mounting screws (8)	Using cross-tip screwdriver, remove.
5.	Receiver (9)	Remove.

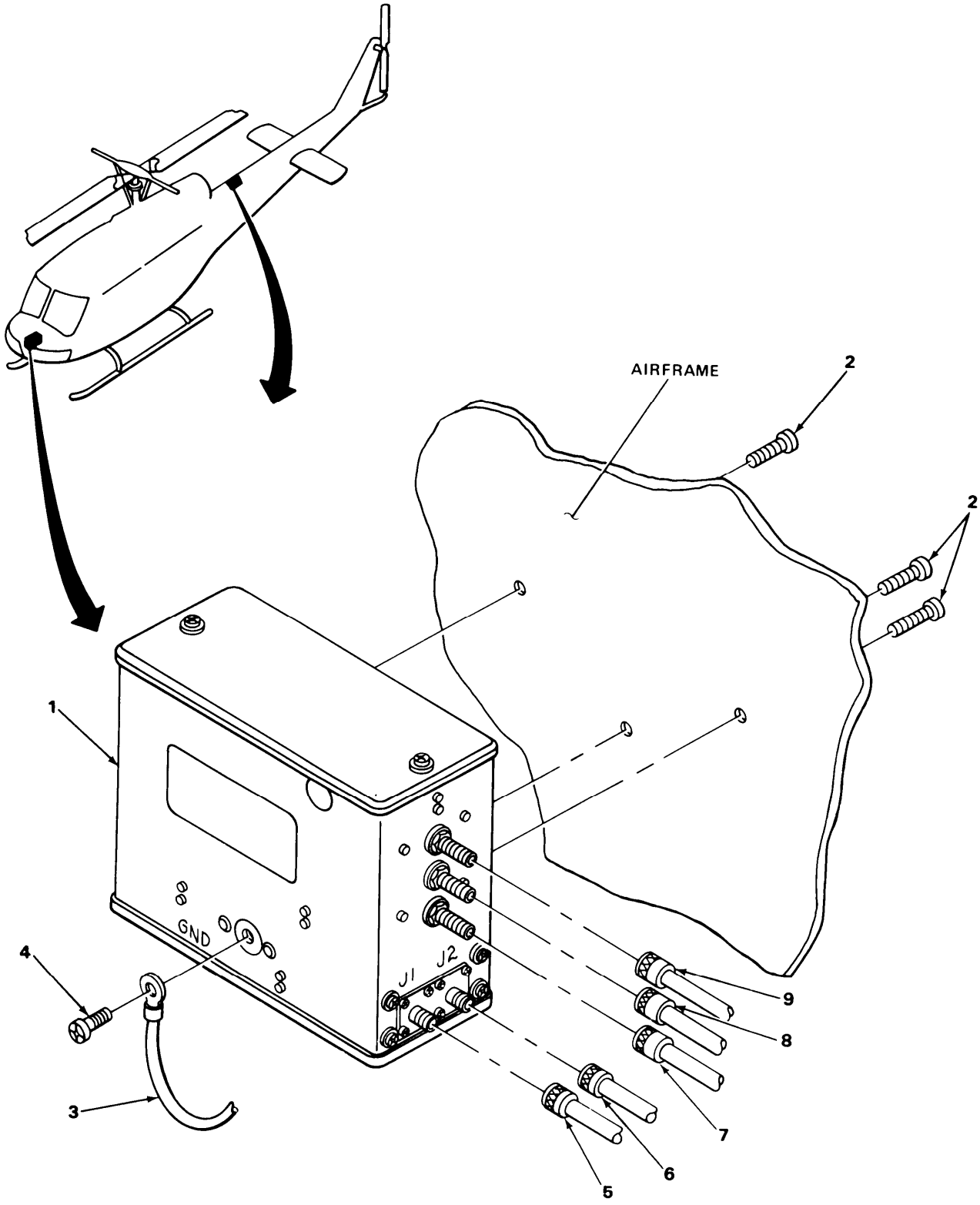
4-16. RADAR RECEIVER REPLACEMENT. (CONT)



4-16. RADAR RECEIVER REPLACEMENT. (CONT)

LOCATION	ITEM	ACTION **REMARKS**
INSTALLATION		
		NOTE There are two receivers in the radar signal detecting set. Installation procedures are identical for both. The forward receiver is located middle of quadrants I and IV. The aft receiver is located middle of quadrants II and Ill.
1. Middle of quadrants I and IV or quadrants II and Ill	Receiver (1) and mounting screws (2)	Using cross-tip screwdriver, install.
2.	Grounding strap (3) and grounding strap screw (4)	Using cross-tip screwdriver, install.
3.	Cable connector P1 (5), cable connector P2 (6), cable connector P3 (7), cable connector P4 (8) and cable connector P5 (9)	Reconnect.
		NOTE Be sure that plug connectors P1, P2, P3, P4, and P5 are connected to jack connectors J1, J2, J3, J4, and J5, respectively.
		Perform a self-test (see para 2-4) and a system function test (see para 4-10).

4-16. RADAR RECEIVER REPLACEMENT. (CONT)



EL5VM078

4-17. RADAR SIGNAL INDICATOR REPLACEMENT.

This task covers:

1. Removal
2. Installation

INITIAL SETUP

Tools	Personnel Required
Tool Kit, Electronic Equipment TK-101/G	One technician
Materials/Parts	**Equipment Condition**
Radar signal indicator NSN 5841-01-037-8716	28 vdc circuit breaker set OFF. See aircraft manual.

LOCATION	ITEM	ACTION **REMARKS**

REMOVAL

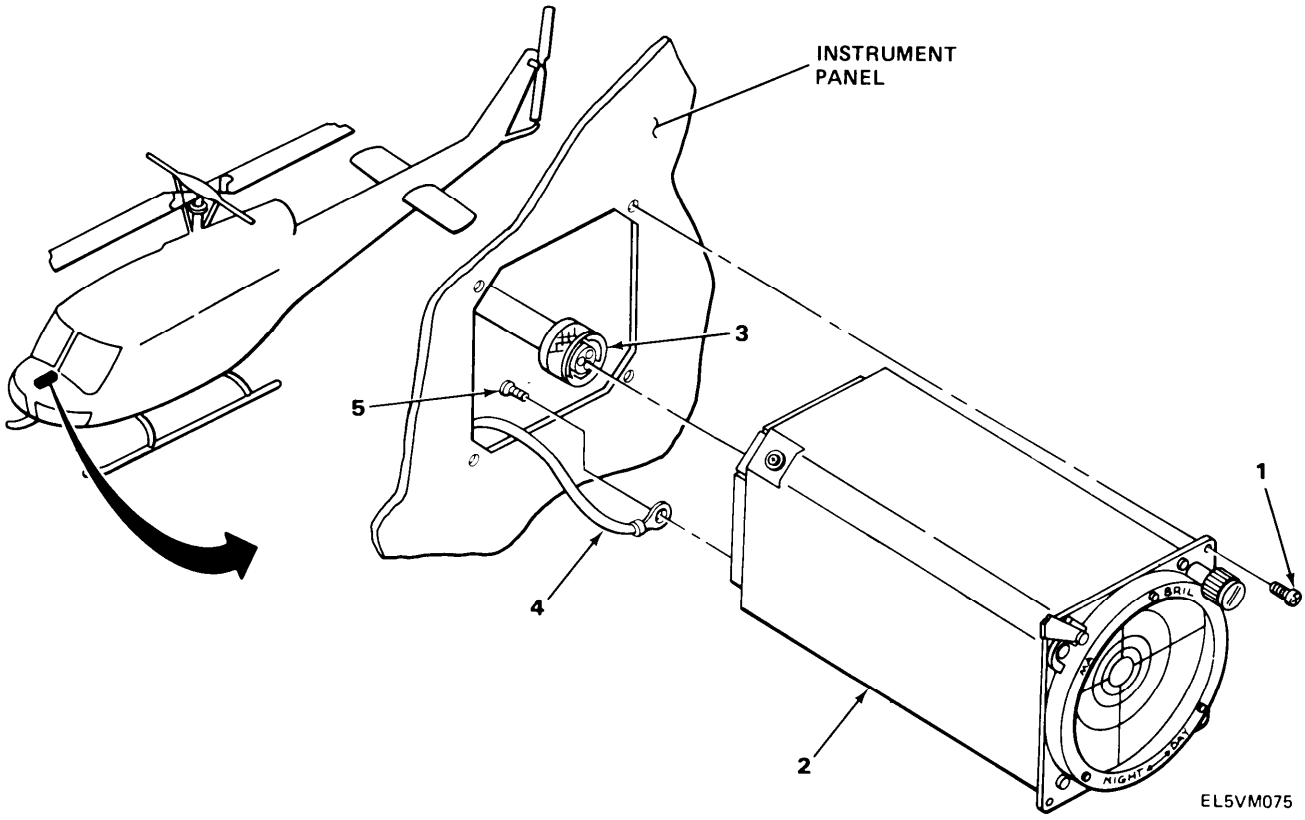
1. Instrument panel; quadrant I	Mounting screw (1)	Using cross-tip screwdriver, remove. **There are four mounting screws.** **Step 1 is typical for all four screws.** **Only one screw is shown.**

CAUTION

Do not pull indicator from panel with force as wiring may be pulled from connector.

2.	Indicator (2)	Slide out.
3.	Cable connector (3)	Disconnect.
4.	Grounding strap (4) and strap screw (5)	Using cross-tip screwdriver, remove.

4-17. RADAR SIGNAL INDICATOR REPLACEMENT. (CONT)

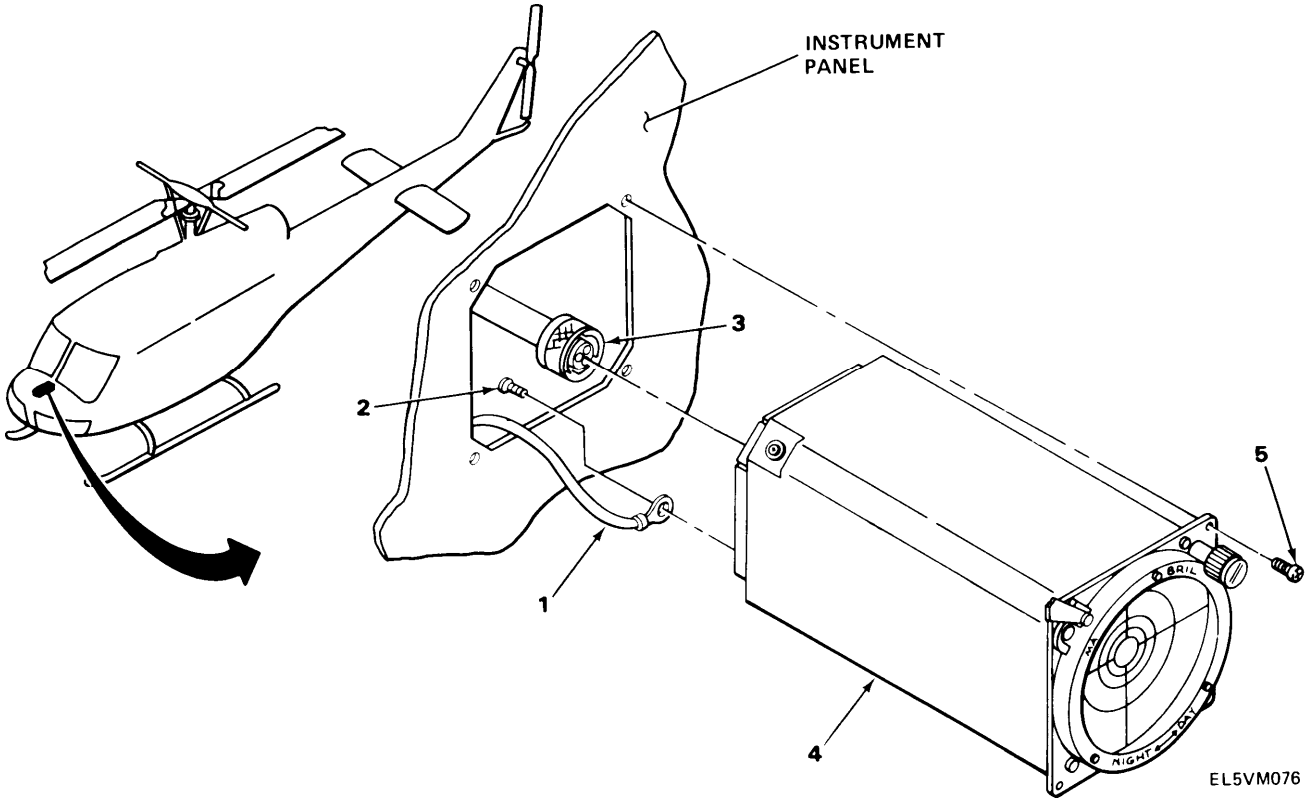


4-17. RADAR SIGNAL INDICATOR REPLACEMENT. (CONT)

LOCATION	ITEM	ACTION **REMARKS**
INSTALLATION		
1. Instrument panel; quadrant I	Grounding strap (1) and strap screw (2)	Using cross-tip screwdriver, install.
2.	Cable connector (3)	Reconnect. **Handtighten.**
3.	Indicator (4)	Slide into panel.
4.	Mounting screws (5)	Using cross-tip screwdriver, install. **There are four mounting screws. Step 4 is typical for all four screws. Only one screw is shown.**

NOTE

Perform a self-test (see para 2-4) and a system function test (see para 4-10).



4-18. SPIRAL ANTENNA REPLACEMENT.

This task covers:

1. Removal
2. Installation

INITIAL SETUP

Tools

Tool Kit, Electronic Equipment TK-101/G

Materials/Parts

Left Spiral Antenna
NSN 5895-01-035-5970
Right Spiral Antenna
NSN 5985-01-026-3926

Personnel Required

One technician

Equipment Condition

28 vdc circuit breaker set OFF.
See aircraft manual.

LOCATION	ITEM	ACTION	REMARKS

REMOVAL

NOTE

There are four spiral antennas: two left spiral and two right spiral. The term spiral refers to the winding direction of the antenna, not left or right side of aircraft.

Always replace antenna with same type removed (left or right spiral).

One antenna is located in each of the four quadrants of the aircraft (I, II, Ill, and IV).

CAUTION

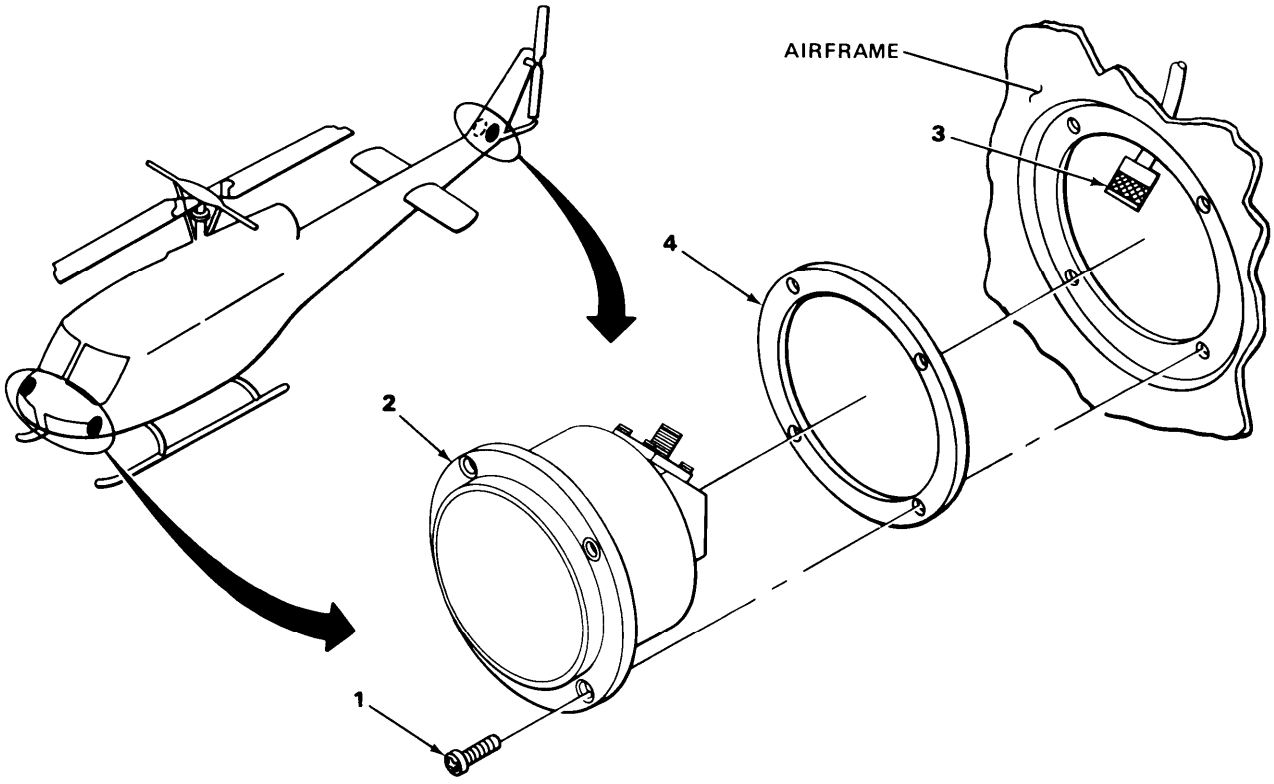
All antennas must be mounted in the same way. The radar set will not work properly if they are not. Each antenna has a white dot on the rear face. The white dot must be in the same position for all antennas (up, down, left, or right).

4-18. SPIRAL ANTENNA REPLACEMENT. (CONT)

LOCATION	ITEM	ACTION **REMARKS**
REMOVAL (CONT)		
1. Quadrants I, II, Ill, or IV	Mounting screws (1)	Using cross-tip screwdriver, remove. **There are four mounting screws. Step 1 is typical for all four screws. Only one screw is shown.**
2.	Antenna (2)	Pull away from airframe. **Do not pull with force as wiring may be pulled from connector.**
3.	Cable connector (3)	Disconnect.
4.	Antenna (2)	Remove.
5.	Gasket (4)	Remove.

NOTE

Some aircraft may not use a gasket. On aircraft that do, check gasket for damage. Use a new gasket whenever necessary. If no gasket is used, apply clear sealant.

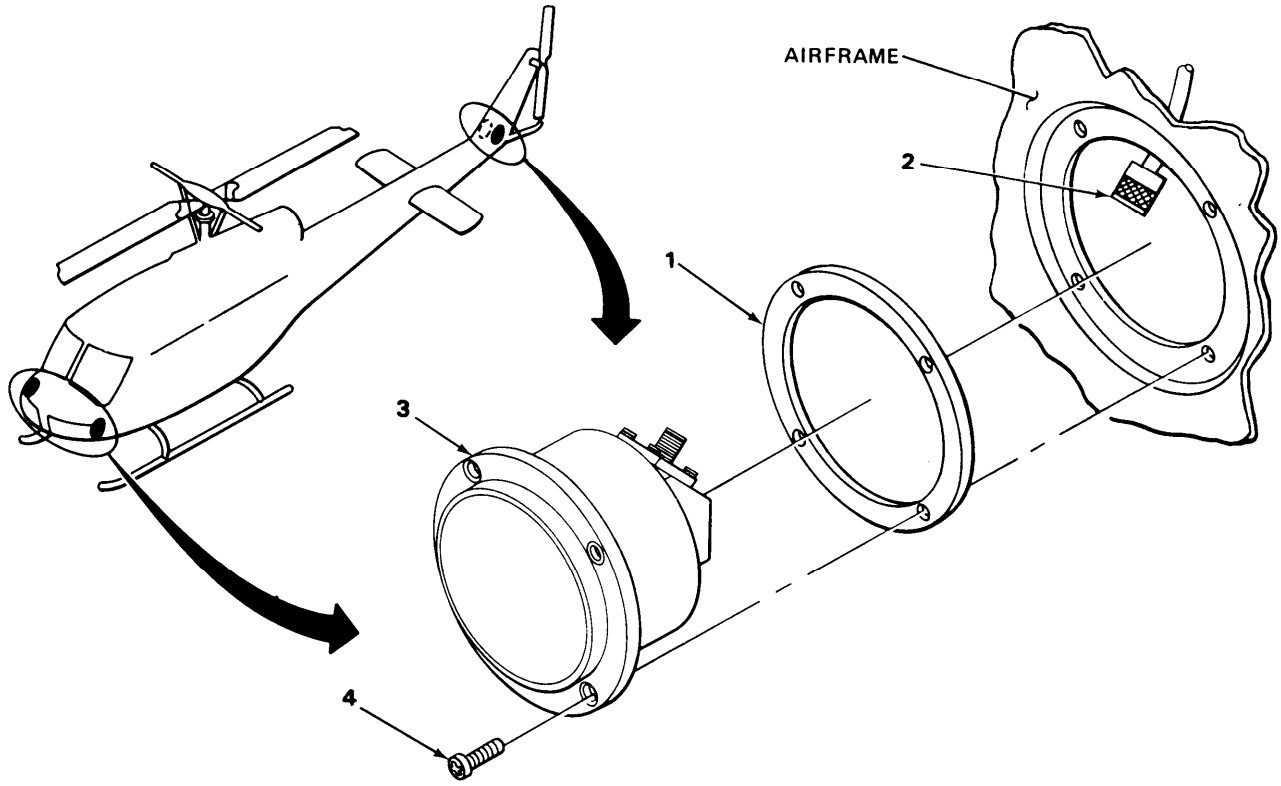


EL5VM079

4-18. SPIRAL ANTENNA REPLACEMENT. (CONT)

LOCATION	ITEM	ACTION / **REMARKS**
INSTALLATION		
1. Quadrants II, Ill, or IV	Gasket (1)	Install on antenna. **Aline gasket holes with antenna mounting screw holes.**
		NOTE Some aircraft may not use a gasket. On aircraft that do, check gasket for damage before installation. Use a new gasket whenever necessary. If no gasket is used, apply clear sealant.
2.	Cable connector (2) and antenna (3)	Reconnect. **Using torque wrench, tighten to 7-10 inch-pounds.**
		CAUTION Before installing antenna, be absolutely certain that the white dots on all antennas are in same position.
		NOTE On some aircraft, you may not be able to install new antenna in same position. Check aircraft manual for information covering installation with dot in different position.
3.	Antenna (3)	Position in airframe mount.
4.	Mounting screws (4)	Using cross-tip screwdriver, install. **There are four mounting screws.** **Step 4 is typical of all four screws.** **Only one screw is shown.**
		CAUTION Perform a self-test (see para 2-4) and a system function test (see para 4-10).

4-18. SPIRAL ANTENNA REPLACEMENT. (CONT)



4-19. REPLACEMENT OF AUDIO CONTROL KNOB.

This task covers:

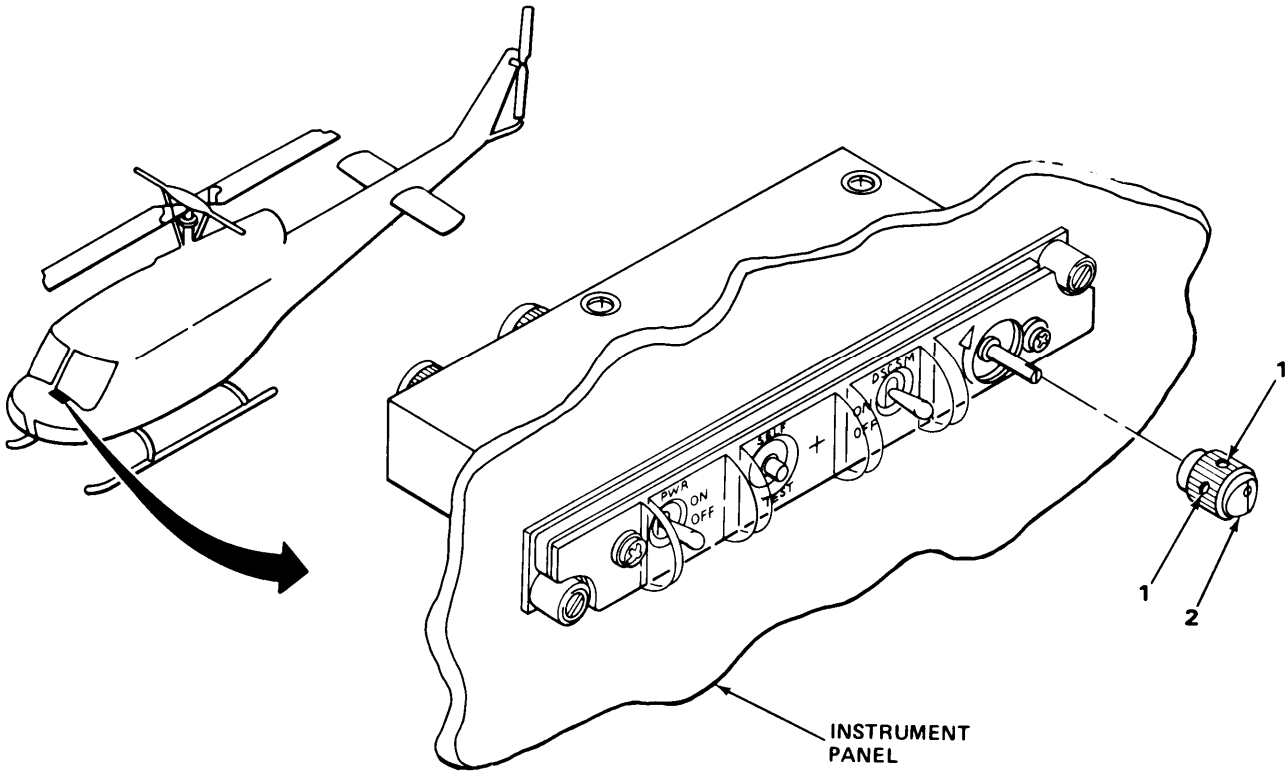
1. Removal
2. Installation

INITIAL SETUP

Tools	Personnel Required
Tool Kit, Electronic Equipment TK-101/G	One operator
Materials/Parts	**Equipment Condition**
Control Knob NSN 5355-00-762-1489	28 vdc circuit breaker set OFF. See aircraft manual.

LOCATION	ITEM	ACTION **REMARKS**
REMOVAL		
1. Control unit	Setscrews (1)	Using Allen wrench, loosen.
2.	Control knob (2)	Remove. **Throw away.**
INSTALLATION		
1. Control unit	Control knob (2)	Install. **Aline pointer 180° from flat side of shaft.**
2.	Setscrews (1)	Using Allen wrench, tighten.

4-19. REPLACEMENT OF AUDIO CONTROL KNOB. (CONT)



EL5VM027

4-20. REPLACEMENT OF CONTROL UNIT FUSE.

This task covers:

1. Removal
2. Installation

INITIAL SETUP

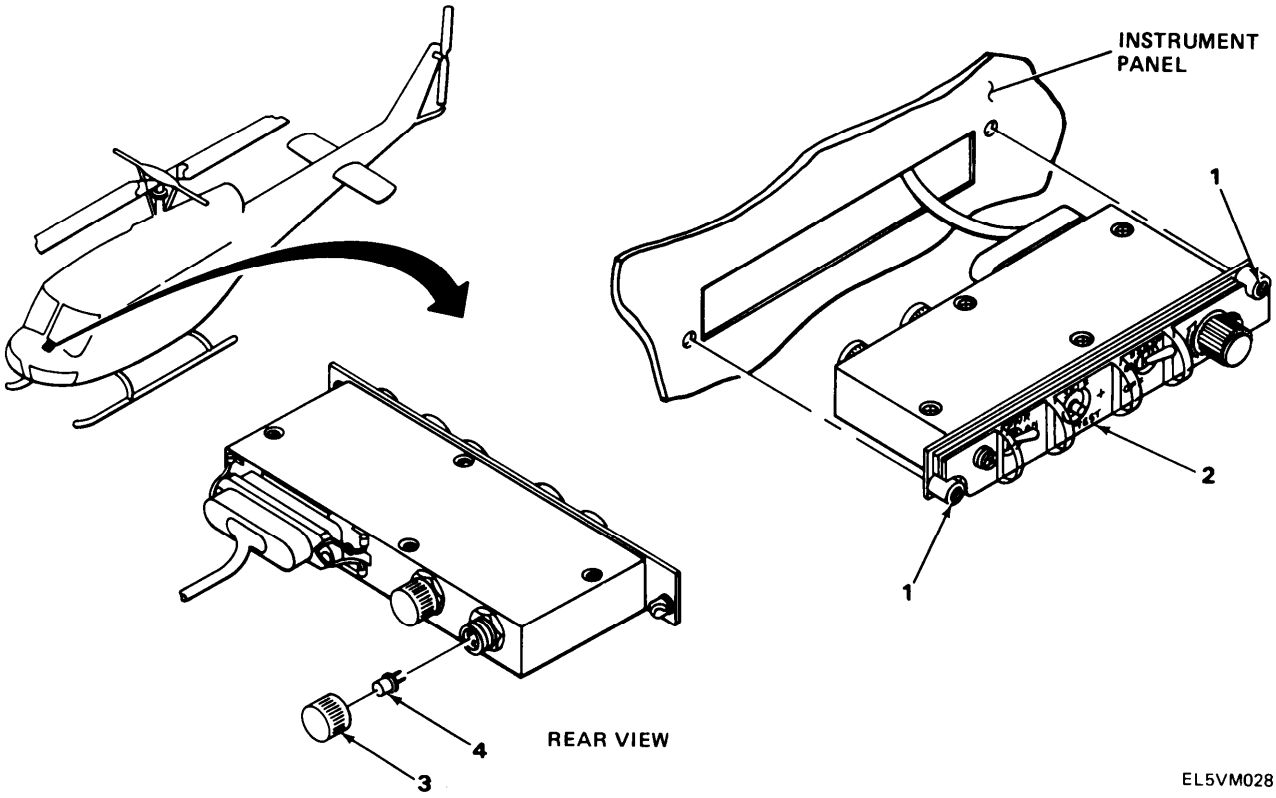
Tools	Personnel Required
Tool Kit, Electronic Equipment TK-101/G	One avionics mechanic
Materials/Parts	**Equipment Condition**
Fuse, NSN 5920-01-411-6196	28 vdc circuit breaker set OFF. See aircraft manual.

LOCATION	ITEM	ACTION / **REMARKS**

REMOVAL

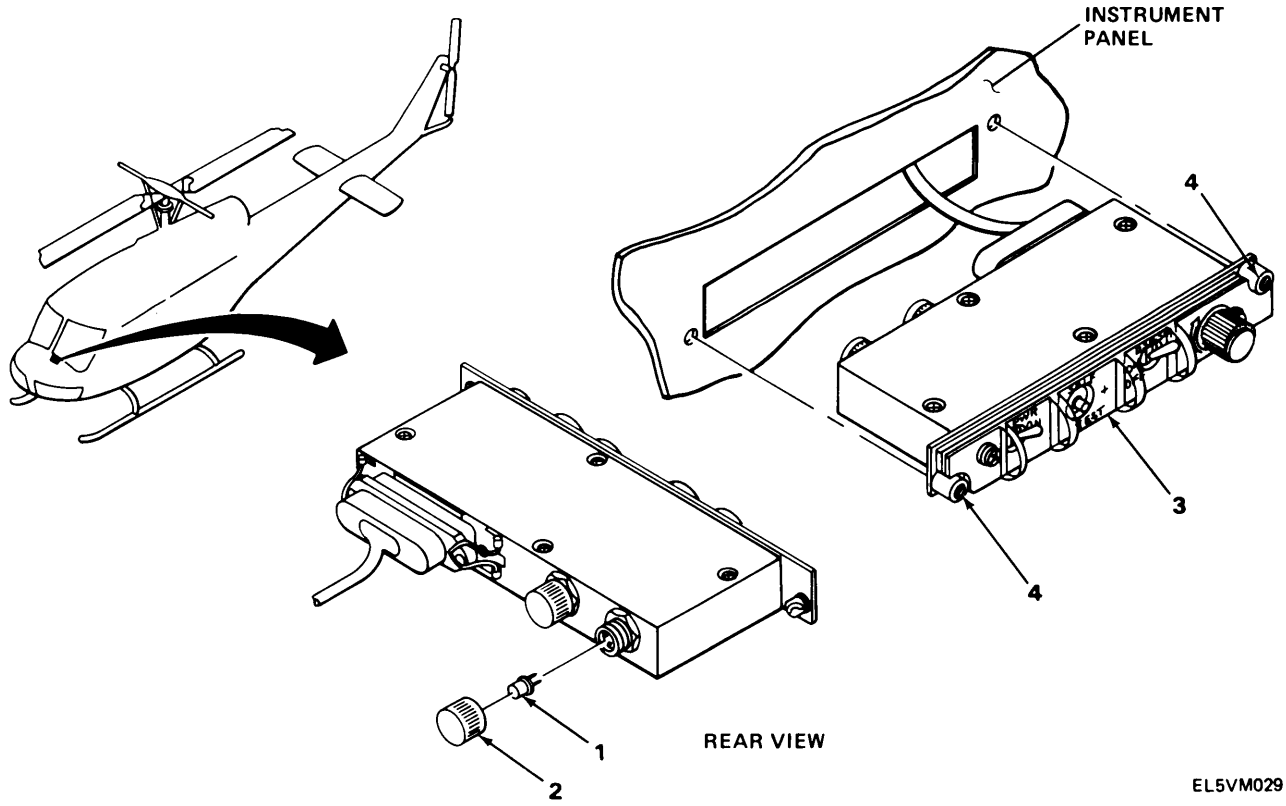
1. Control unit	Stud fasteners (1)	Using flat-tip screwdriver, turn counter-clockwise one turn.
		CAUTION Do not pull hard on cable harness. Wiring may come out of connector.
2.	Control unit (2)	Remove.
3.	Fuse cover (3)	Unscrew.
4.	Fuse (4)	Remove. **Throw away.**

4-20. REPLACEMENT OF CONTROL UNIT FUSE. (CONT)



4-20. REPLACEMENT OF CONTROL UNIT FUSE. (CONT)

LOCATION	ITEM	ACTION **REMARKS**
INSTALLATION		
1. Control unit	Fuse (1)	Install. **Use spare fuse stored in back of control unit.**
		NOTE Replace spare fuse as soon as possible.
2.	Fuse cover (2)	Screw in place.
3.	Control unit (3)	Install.
4.	Stud fasteners (4)	Using flat-tip screwdriver, turn clockwise one-quarter turn to lock.



4-21. REPLACEMENT OF LIGHTING PANEL.

This task covers:

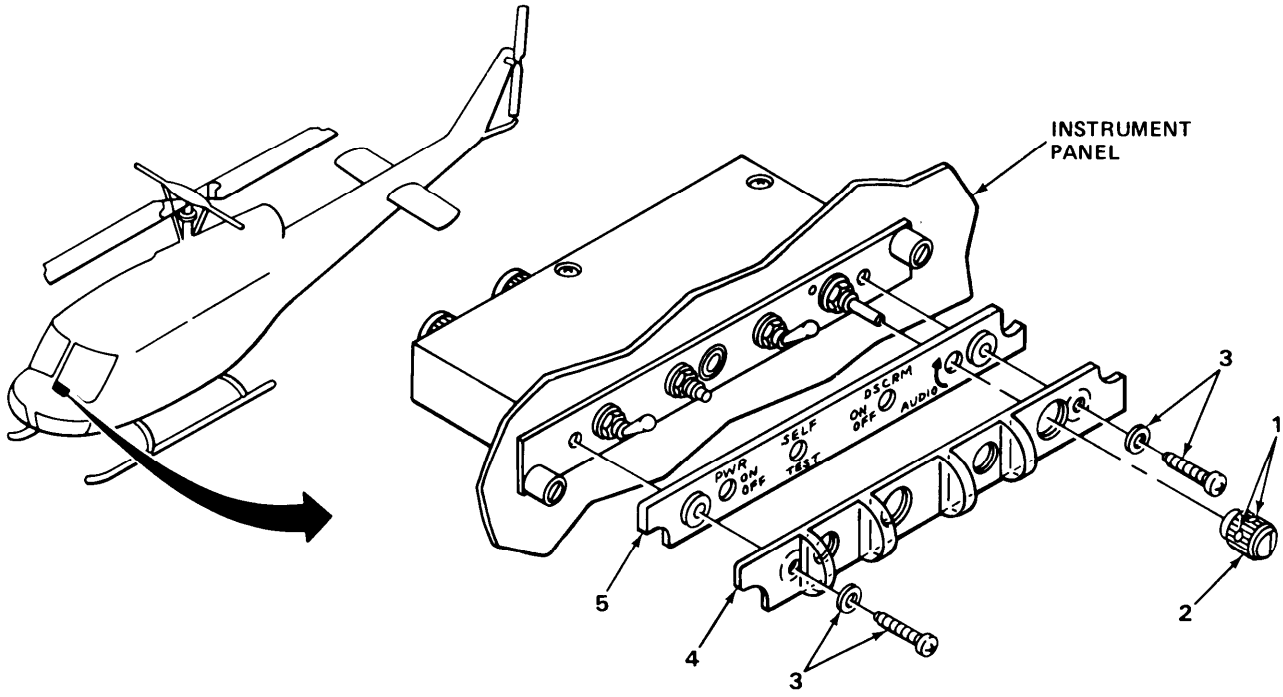
1. Removal
2. Installation

INITIAL SETUP

Tools	Personnel Required
Tool Kit, Electronic Equipment TK-101/G	One avionics mechanic
Materials/Parts	**Equipment Condition**
Lighting panel	28 vdc circuit breaker set OFF. See aircraft manual.

LOCATION	ITEM	ACTION **REMARKS**
REMOVAL		
1. Control unit	Setscrews (1)	Using Allen wrench, loosen.
2.	Control knob (2)	Remove.
3.	Cross-slotted screws and washers (3)	Using cross-tip screwdriver, remove.
4.	Switch guard plate (4)	Remove.
5.	Lighting panel (5)	Remove. **Throw away.**

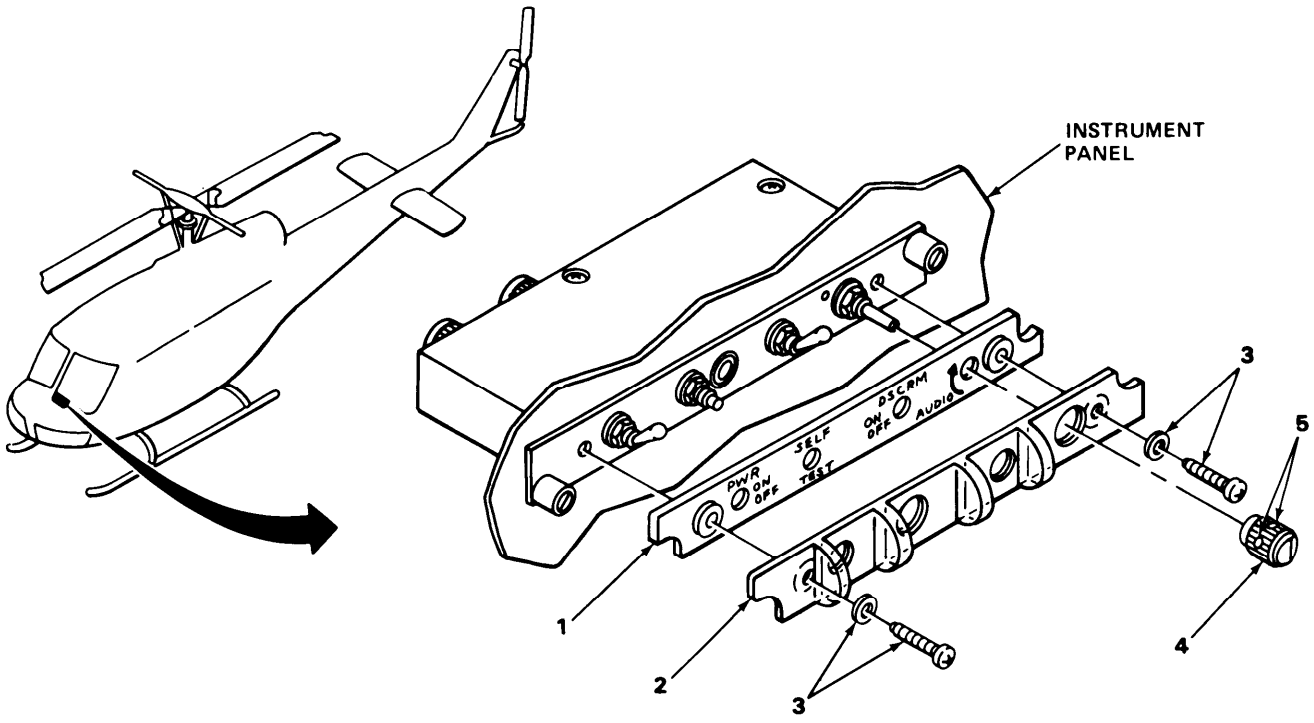
4-21. REPLACEMENT OF LIGHTING PANEL. (CONT)



EL5VM030

4-21. REPLACEMENT OF LIGHTING PANEL. (CONT)

LOCATION	ITEM	ACTION **REMARKS**
INSTALLATION		
1. Control unit	Lighting panel (1) and switch guard plate (2)	Install.
2.	Cross-slotted screws and washers (3)	Using cross-tip screwdriver, install.
3.	Control knob (4)	Install. **Pointer must be opposite flat part of shaft.**
4.	Setscrews (5)	Using Allen wrench, tighten.



EL5VM031

4-22. REPLACEMENT OF SWITCH GUARD PLATE.

This task covers:

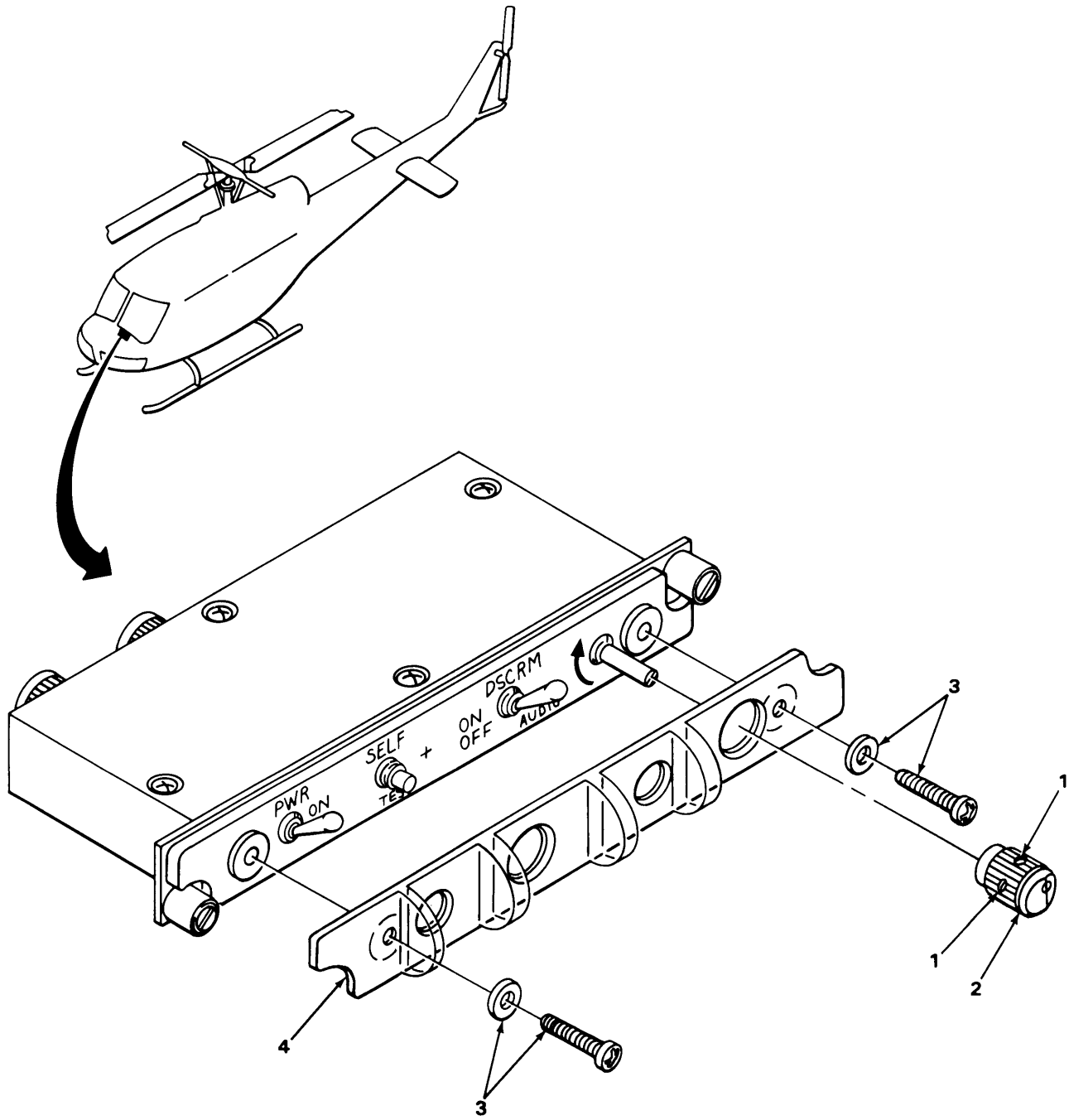
1. Removal
2. Installation

INITIAL SETUP

Tools	Personnel Required
Tool Kit, Electronic Equipment TK-101/G	One avionics mechanic
Materials/Parts	**Equipment Condition**
Switch guard plate	28 vdc circuit breaker set OFF. See aircraft manual.

LOCATION	ITEM	ACTION **REMARKS**
REMOVAL		
1. Control unit	Setscrews (1)	Using Allen wrench, loosen.
2.	Control knob (2)	Remove.
3.	Cross-slotted screws and washers (3)	Using cross-tip screwdriver, remove.
4.	Switch guard plate (4)	Remove. **Throw away.**
INSTALLATION		
1. Control unit	Switch guard plate (4)	Install.
2.	Cross-slotted screws and washers (3)	Using cross-tip screwdriver, install.
3.	Control knob (2)	Install. **Pointer must be opposite flat part of shaft.**
4.	Setscrews (1)	Using Allen wrench, tighten.

4-22. REPLACEMENT OF SWITCH GUARD PLATE. (CONT)



EL5VM032

4-23. PAINTING.

Procedure for repainting or touching up the painted surfaces of the units and supplies available will be those given in TB 43-0118 and SB 11-573.

4-24. PAINTING BLADE ANTENNA.

This task covers:

Painting the blade antenna

INITIAL SETUP

Tools

None

Materials/Parts

Primer, color Y, composition L, per 11-P-1757
Enamel, semi-gloss, black, type N, color number 27038, per FED-STD-595

Personnel Required

One technician

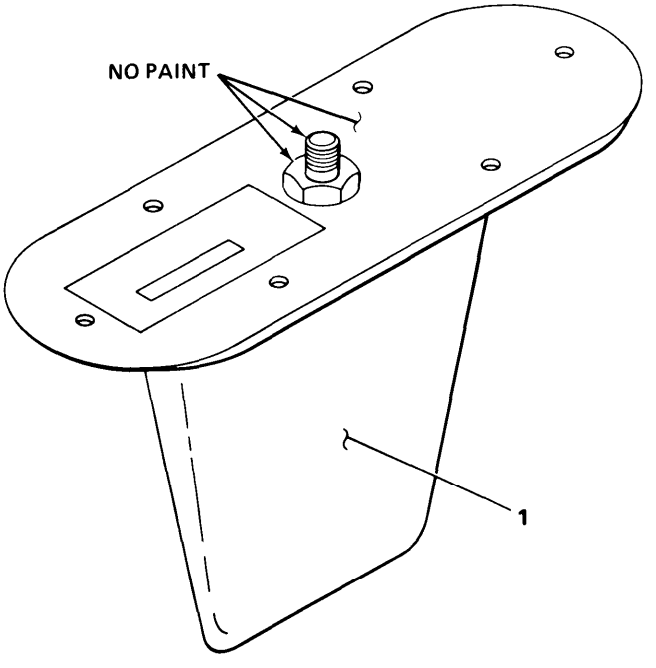
Equipment Condition

28 vdc circuit breaker set OFF. See aircraft manual.

LOCATION	ITEM	ACTION / REMARKS
		CAUTION Do not use any paint containing lead.
1. Middle of quadrants I and IV	Blade antenna (1)	Remove. **See paragraph 4-13.**
2.		Clean. **See paragraph 4-11.**
3.		Paint exposed metal parts with primer.
4.		Paint antenna surfaces with enamel.

4-24. PAINTING BLADE ANTENNA. (CONT)

LOCATION	ITEM	ACTION	REMARKS
		NOTE	
		Do not paint connector jack or mechanical or electrical ground connections marked NO PAINT.	
5. Middle of quadrants I and IV	Blade antenna (1)	Install.	**See paragraph 4-13.**



EL5VM081

4-25. PAINTING COMPARATOR.

This task covers:

Painting the comparator

INITIAL SETUP

Tools

None

Materials/Parts

Primer, color Y, composition L, per TT-P-1757
Lusterless grey enamel per TT-E-527, color number 36231 per FED-STD-595

Personnel Required

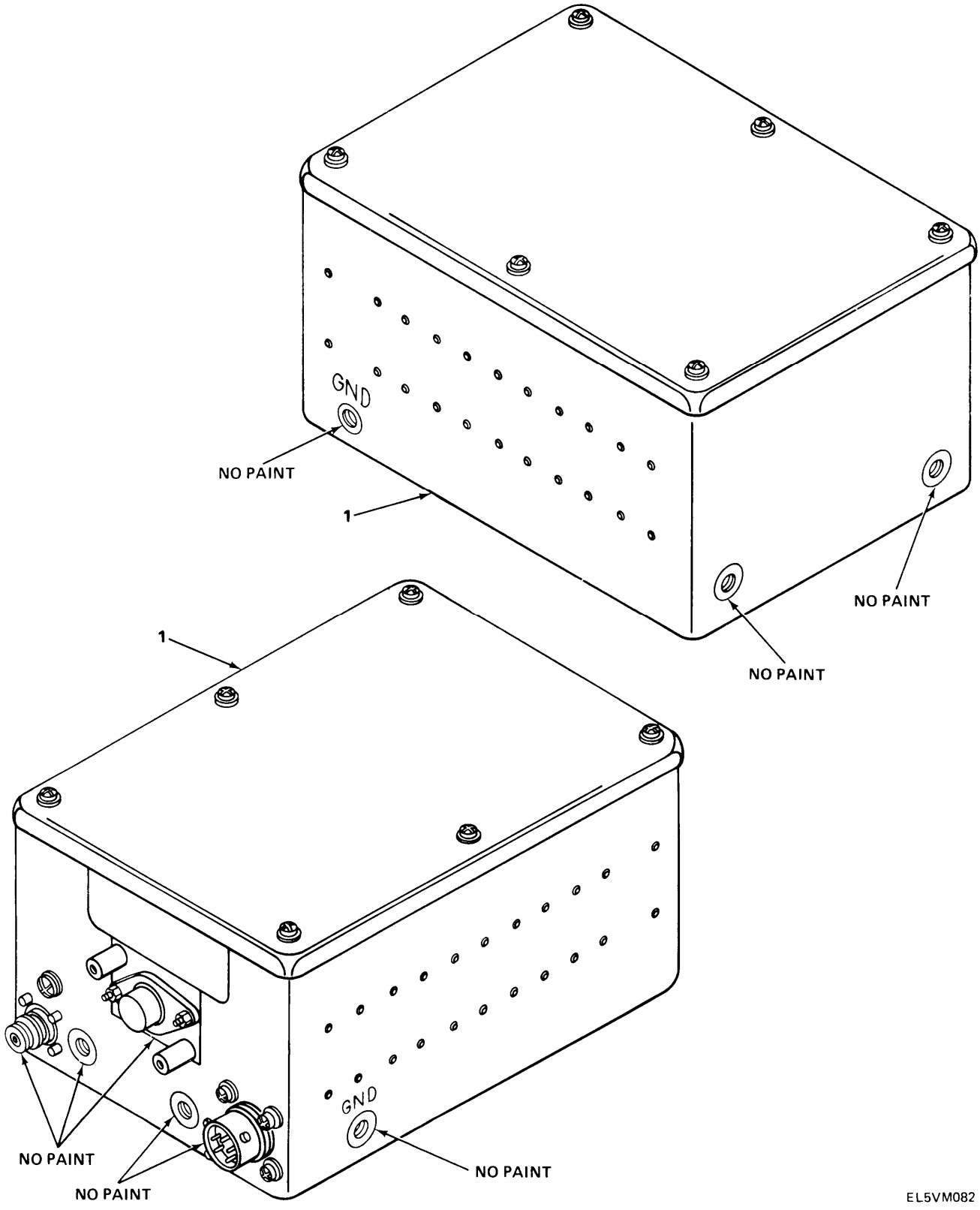
One technician

Equipment Condition

28 vdc circuit breaker set OFF. See aircraft manual.

LOCATION	ITEM	ACTION / REMARKS
1. Middle of quadrants I and IV	Comparator (1)	Remove. **See paragraph 4-14.**
2.		Clean. **See paragraph 4-11.**
3.		Paint exposed metal parts with primer.
		CAUTION Do not apply paint to areas marked NO PAINT.
4.		Paint comparator surfaces with enamel.
		NOTE Do not paint the inside or top edge of case. Do not paint top cover plate on the inside.
5.		Install. **See paragraph 4-14.**

4-25. PAINTING COMPARATOR (CONT)



4-25. PAINTING CONTROL UNIT.

This task covers:

Painting the control unit

INITIAL SETUP

Tools

None

Materials/Parts

Primer, color Y, composition L, per TT-P-1757
Lusterless black enamel per TT-E-527, color number 37938 per FED-STD-595

Personnel Required

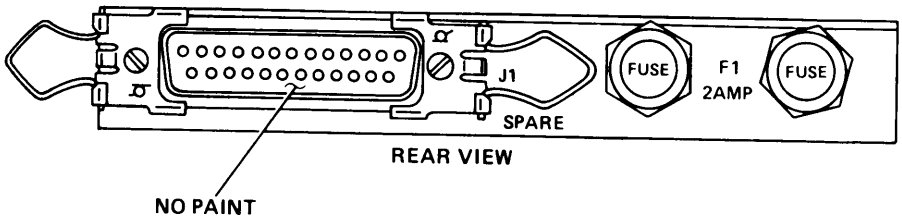
One technician

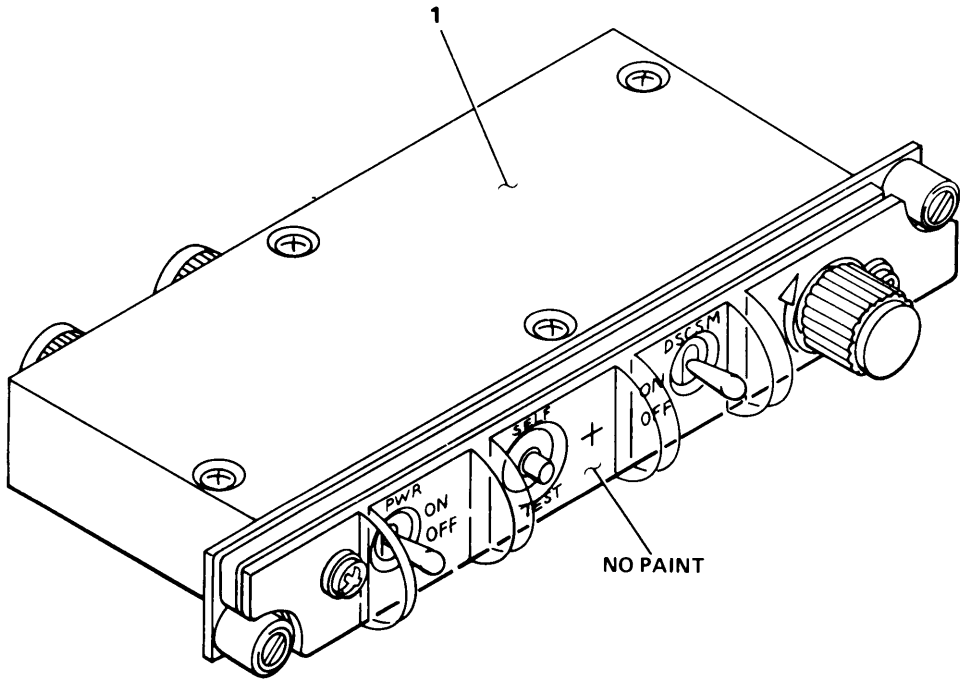
Equipment Condition

28 vdc circuit breaker set OFF.
See aircraft manual.

LOCATION	ITEM	ACTION / REMARKS
PAINTING		
1. Instrument panel; quadrant IV	Control unit (1)	Remove. **See paragraph 4-15.**
2.		Clean. **See paragraph 4-11.**
3.		Paint exposed metal parts with primer.
4.		Paint control unit surfaces with enamel.
		NOTE Do not paint the lighting panel. Do not paint areas marked NO PAINT.
5.		Install. **See paragraph 4-15.**

4-26. PAINTING CONTROL UNIT. (CONT)





EL5VM083

4-27. PAINTING RADAR RECEIVERS.

This task covers:

Painting the radar receivers

INITIAL SETUP

Tools

None

Materials/Parts

Primer, color Y, composition L, per TT-P-1757
Lusterless grey enamel per TT-E-527, color number 36231 per FED-STD-595

Personnel Required

One technician

Equipment Condition

28 vdc circuit breaker set OFF. See aircraft manual.

LOCATION	ITEM	ACTION / REMARKS
		NOTE There are two radar receivers. One is located middle of quadrant I and IV, the other is located middle of quadrant II and III.
1. Middle of quadrants I and IV or II and III	Radar receiver (1)	Remove. **See paragraph 4-16.**
2.		Clean. **See paragraph 4-11.**
3.		Paint exposed metal parts with primer.
		CAUTION Do not apply paint to areas marked NO PAINT.

4-27. PAINTING RADAR RECEIVERS. (CONT)

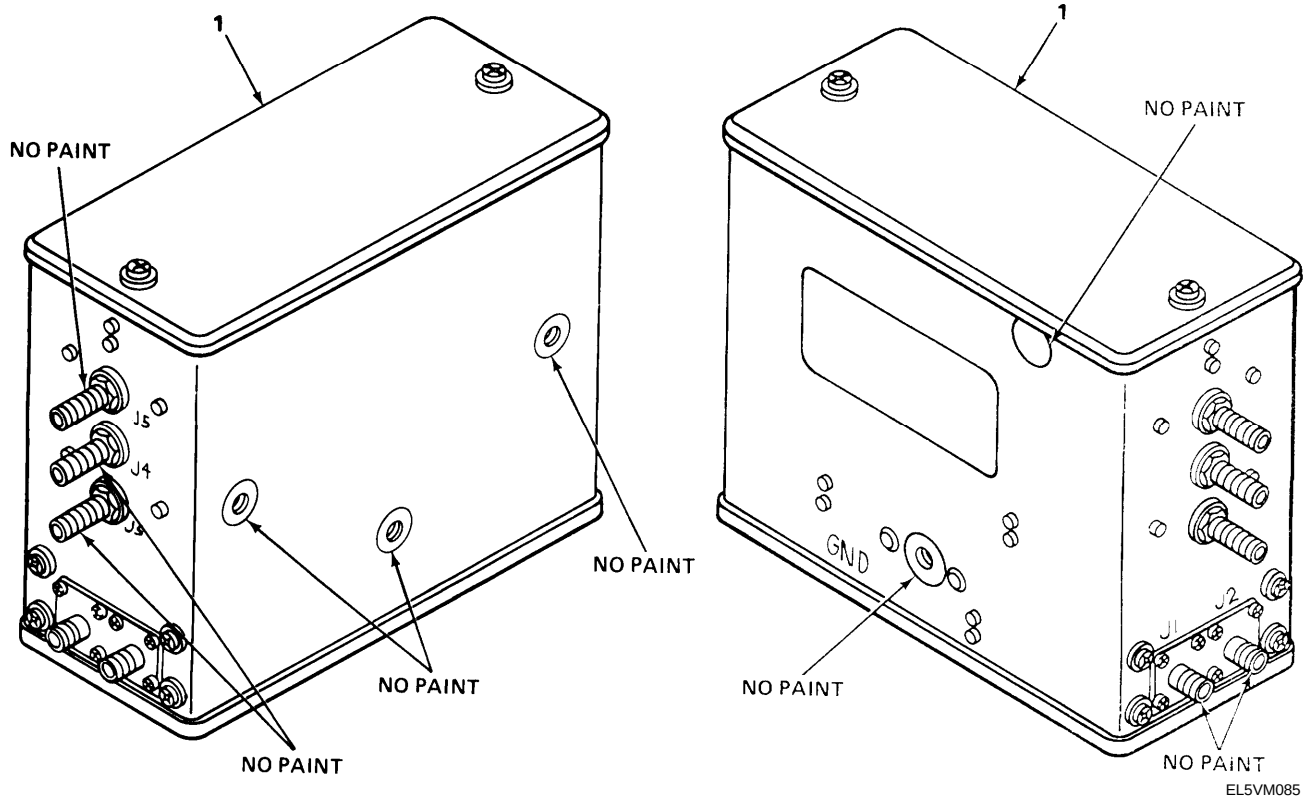
LOCATION	ITEM	ACTION **REMARKS**
4. Middle of quadrants I and IV or II and III	Radar receiver (1)	Paint radar receiver surfaces with enamel.

NOTE

Do not paint top cover plate or bottom cover plate on the inside. Do not paint inside or top edges of the case.

5. Install.

See paragraph 4-16.



4-28. PAINTING RADAR SIGNAL INDICATOR.

This task covers:

Painting the radar signal indicator

INITIAL SETUP

Tools

None

Materials/Parts

Primer, color Y, composition L, per TT-P-1757
Lusterless black enamel per TT-E-527, color number 37938 per FED-STD-595

Personnel Required

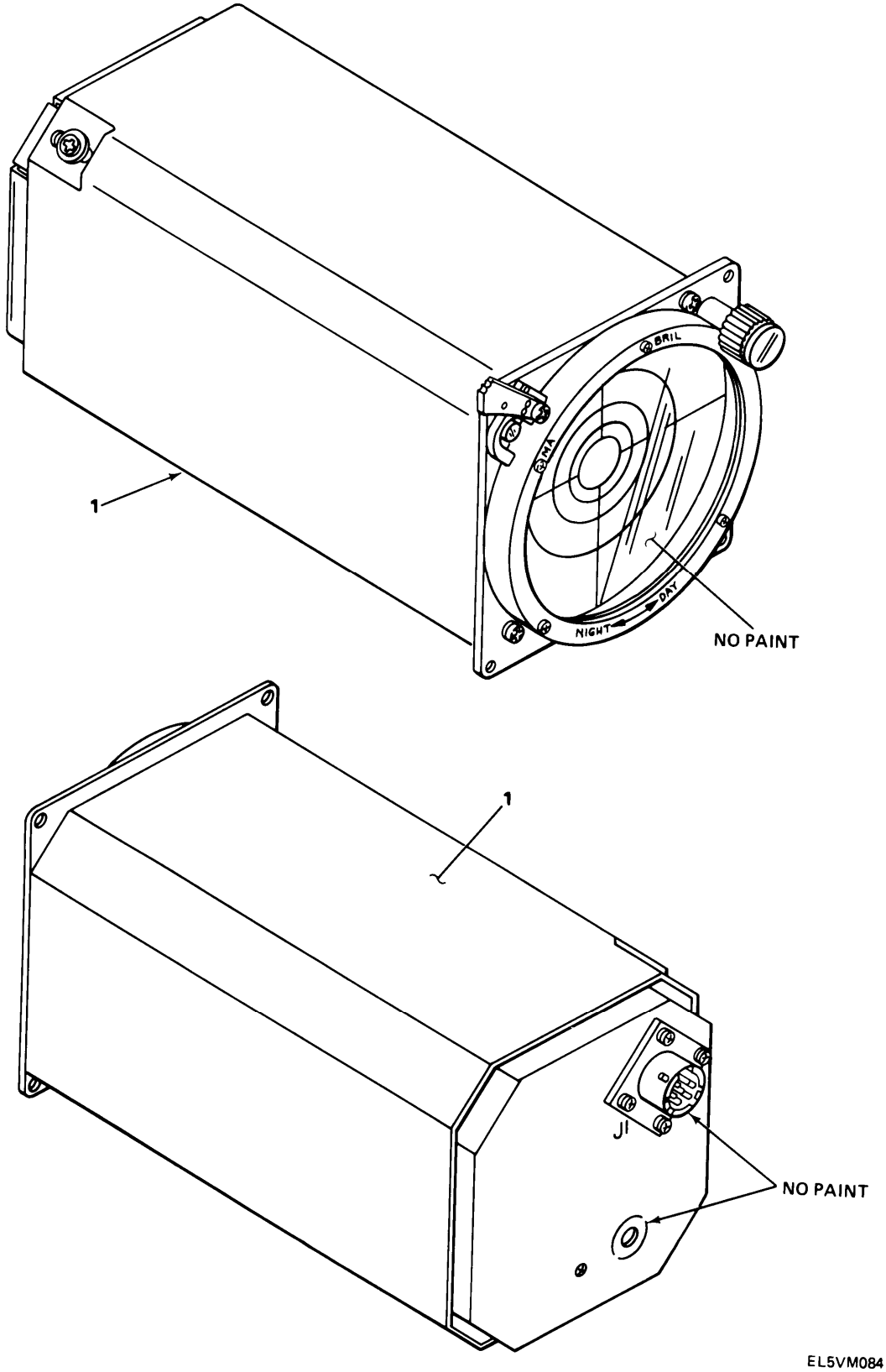
One technician

Equipment Condition

28 vdc circuit breaker set OFF.
See aircraft manual.

LOCATION	ITEM	ACTION / REMARKS
1. Instrument panel; quadrant I	Indicator (1)	Remove. **See paragraph 4-17.**
2.		Clean. **See paragraph 4-11.**
3.		Paint exposed metal parts with primer.
		CAUTION
		Do not apply paint to areas marked NO PAINT.
4.		Paint indicator surfaces with enamel.
		NOTE
		Do not paint indicator front panel.
5.		Install. **See paragraph 4-17.**

4-28. PAINTING RADAR SIGNAL INDICATCOR. (CONT)



4-29. PAINTING SPIRAL ANTENNAS.

This task covers:

Painting the spiral antennas

INITIAL SETUP

Tools	Personnel Required
None	One technician
Materials/Parts	**Equipment Condition**
Primer, color Y, composition L, per 11-P-1757 Enamel, semi-gloss, black, type N, color number 27038, per FED-STD-595	28 vdc circuit breaker set OFF. See aircraft manual.

LOCATION	ITEM	ACTION / REMARKS

PAINTING

CAUTION

Do not paint the antenna radome. Do not use paint containing lead.

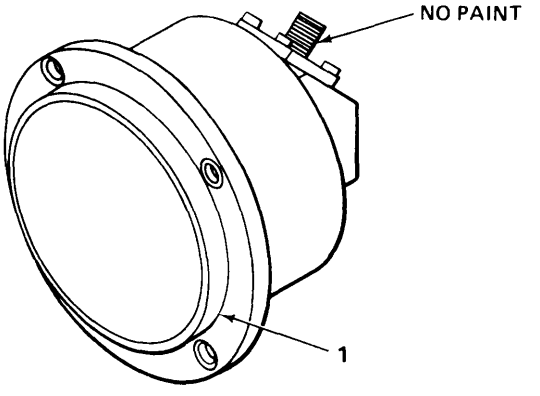
1. Quadrants I, II Ill, and IV	Spiral antenna (1)	Remove. **See paragraph 4-18.**
2.		Clean. **See paragraph 4-11.**
3.		Paint exposed metal parts with primer.
4.		Paint antenna surfaces with enamel.

NOTE

Do not paint connector jack or mechanical or electrical ground connections.

5.		Install. **See paragraph 4-18.**

4-29. PAINTING SPIRAL ANTENNAS. (CONT)



EL5VM086

Section VI PREPARATION FOR STORAGE OR SHIPMENT

4-30. PACKING.

This task covers:

Packing procedures for the radar signal detecting set equipment

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INITIAL SETUP

Materials/Parts

Sealing tape
Shipping containers
Cushion material
Waterproof wrapping

Personnel Required

One technician

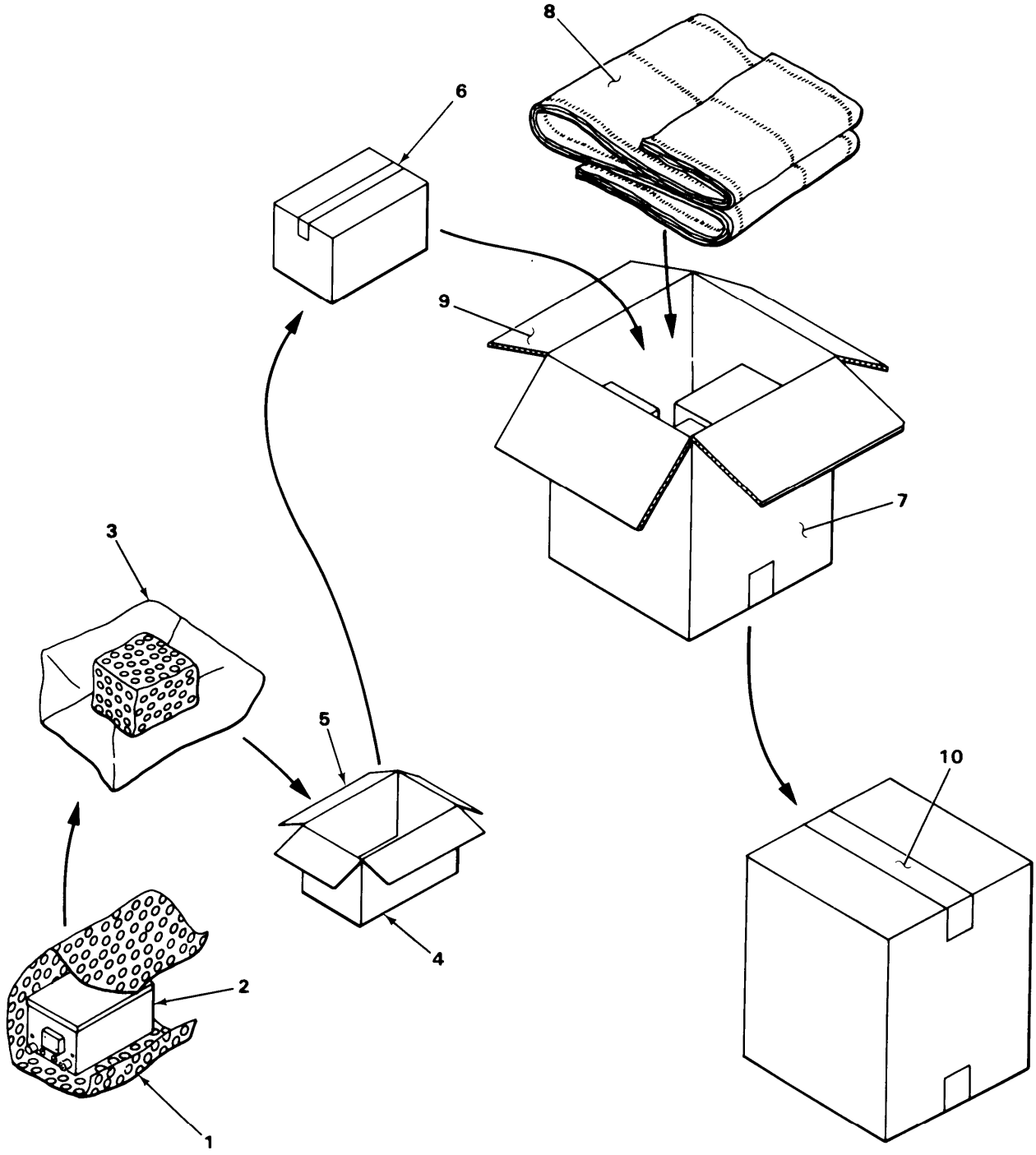
Equipment Condition

Radar signal detecting set components removed from aircraft.

4-30. PACKING. (CONT)

LOCATION	ITEM	ACTION **REMARKS**
1.	Cushion and component (2)	Wrap cushion material around component. **Do this for all 10 components.**
2.	Waterproof wrapping (3)	Put around component and seal. **Do this for all 10 components.**
3.	Unit container (4), flaps (5) and sealing tape (6)	Place wrapped component inside and seal flaps.
4.	Corrugated shipping container (7)	Place unit containers inside.
5.	Cushion material (8)	Insert between unit containers and inside walls of shipping container. **Pack cushion material tightly.**
6.	Cover flaps (9) and sealing tape (10)	Close and seal.

4-30. PACKING. (CONT)



EL5VM087

APPENDIX A

REFERENCES

A-1. SCOPE.

The following is a list of all forms, technical bulletins, and technical manuals referenced in this manual.

A-2. PAMPHLETS.

Consolidated Index of Army Publications and Blank Forms . . . . . DA PAM 310-1

A-3. FORMS.

Discrepancy in Shipment Report (DISREP) SF-361
Report of Discrepancy (ROD) SF-364
Quality Deficiency Report SF-368
Recommended Changes to Publications and Blank Forms. . . . . DA FORM 2028
Recommended Changes to Equipment Technical Manuals . . . . . DA FORM 2028-2
Equipment Inspection and Maintenance Worksheet . . . . . DA FORM 2404

A-4. SUPPLY BULLETINS.

Painting and Preservation Supplies Available for Field Use for Electronics Command Equipment S611-573
Preservation, Packaging, Packing and Marking Materials, Supplies, and Equipment Used by Army SB38-100

A-5. TECHNICAL BULLETINS.

Field Instructions for Painting and Preserving Electronics Command Equipment Including Camouflage Pattern Painting of Electrical Equipment Shelters . . . . . TB 43-0118

A-6. TECHNICAL MANUALS.

Organizational, Direct Support, and General Support Maintenance, Repair Parts and Special Tools List for Radar Signal Detecting Set AN/APR-39(V)1 . . . . . TM 11-5841-283-24P
Operator and Organizational Maintenance Manual: Simulator, Radar Signal SM-674/UPM (NSN 6940-01-031-5887) and Test Adapter, Radar Signal MX-9843/APR-39(V) (NSN 5841-01-025-0379) . . . . . TM 11-8940-211-12
The Army Maintenance Management System (TAMMS) . . . . . TM 38-750
Administrative Storage of Equipment . . . . . TM 740-90-1
Procedures for Destruction of Electronic Material to Prevent Enemy Use (Electronics Command) . . . . . TM 750-244-2

APPENDIX B

MAINTENANCE ALLOCATION

Section I INTRODUCTION

B-1. GENERAL.

This appendix provides a summary of maintenance operations for the radar signal detecting set. It authorizes categories of maintenance for specific maintenance functions on repairable items and components and the tools and equipment required to perform each function. This appendix may be used as an aid in planning maintenance operations.

B-2. MAINTENANCE FUNCTIONS.

Maintenance functions will be limited to and defined as follows:

a. Inspect. To determine 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 (decontaminate), to preserve, to drain, to paint, or to replenish fuel, lubricants, chemical fluids, or compressed air supplies.

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

e. Aline. To adjust specified variable elements of an item to bring 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 comparisons 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, or module (component or assembly) in a manner to allow the proper functioning of the equipment or system.

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

i. Repair. The application of maintenance services (inspect, test, service, adjust, aline, 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 or assembly), end item, or system.

B-2. MAINTENANCE FUNCTIONS. (CONT)

j. Overhaul. That maintenance effort (service/action) necessary to restore an item to a completely serviceable/operational condition as prescribed by maintenance standards (i.e., 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 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 Function. Column 3 lists the functions to be performed on the item listed in column 2. When items are listed without maintenance functions, it is solely for purpose of having the group numbers in the MAC and RPSTL coincide.

d. Column 4, Maintenance Category. Column 4 specifies, by the listing of a “work time” 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 varies at different maintenance categories, appropriate “work time” figures will be shown for each category. The number of task-hours specified by the “work time” 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 addition 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
L - Special Repair Activity (SRA)
D - Depot
AVIM - Aviation Intermediate Maintenance
AVUM - Aviation Unit Maintenance

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 contains an alphabetic code which leads to the remark in section IV, Remarks, which is pertinent to the item opposite the particular code.

B-4. TOOL AND TEST EQUIPMENT REQUIREMENTS.

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 to 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.

a. Reference Code. This code refers to the appropriate item in section II, column 6.

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

Section II MAINTENANCE ALLOCATION CHART FOR AN/APR-39(V)1

(1) GROUP NUMBER	(2) COMPONENT/ ASSEMBLY	(3) MAINTENANCE FUNCTION	(4) MAINATENANCE CATEGORY Y	O AVUM	F	H AVIM	D	(5) TOOLS AND EQPT	(6) REMARKS
00	Detecting Set, Radar Signal AN/ APR-39(V)1 (SM-C-877047)	Inspect		0.2				2	A
		Test		0.3				1,7	
		Test				0.5L		1,3-7	
		Repair		0.2				2-9	B
		Repair				0.5L		5	
		Rebuild					19.0	5	
01	Control, Detecting Set C-9326/ APR-39(V) (SM-D-877044)	Replace		0.3				2,9	
		Test				0.3L		1,3-7	
		Repair				0.5L		5	C
		Rebuild					2.0	5	
02	Indicator, Radar Signal 12-1 150/APR-39(V) (SM-D-877076)	Replace		0.3				2,9	
		Test				0.5L		2,9	
		Repair				0.5L		5	C,D
		Rebuild					3.0	5	
03	Comparator CM-440/ APR-39(V) (SM-D-877077)	Replace		0.3				2,9	
		Test				0.6L		1-8 (2 ea) 9-12, 14-16	
		Repair				0.4L		5	C
		Rebuild					10.0	5	
04	Receiver, Radar R-1838/ APR-39(V) (SM-C-877043)	Replace		0.3				2,9	
		Test				0.4L		3-8 (2 ea) 9-16	
		Repair				0.6L		5	C
		Rebuild					2.0		
05	Receiver, Radar R-1838/ APR-39(V) (SM-C-877043)	Replace		0.3					
		Test				0.4L		3-6 (2 ea) 9-16	
		Repair				0.6L		5	C
		Rebuild					2.0	5	

Section Ill TOOL AND TEST EQUIPMENT REQUIREMENTS FOR AN/APR-39(V)1

TOOLS OR TEST EQUIPMENT REF CODE	MAINTENANCE CATEGORY	NOMENCLATURE	NATIONAL / NATO STOCK NUMBER	TOOL NUMBER
1	O,L	Simulator, Radar Signal SM-674/UPM	6940-01-031-5887	Z73744
2	O,L	Tool Kit, Electronic Equipment TK-101/G	3180-00-064-5178	W37483
3	L	Test Adapter, Radar Signal MS-9848/APR-39(V)	5841-01-025-0379	Z80967
4	L	Detecting Set, Radar Signals AN/APR-39(V)1	5841-01-023-7112	Z21488
5	L	Tool Kit, Electronic Equipment TK-105/G	5180-00-610-8177	W37388
6	L	Oscilloscope AN/USM-281C	6625-00-106-9622	N30572
7	O,L	Multi meter AN/USM-223 TS-352B/U	6625-00-999-7465 6625-00-242-5023	M80242
8	L	Generator, Pulse SG-1 1105U (HP 8013B)(2 Required)	6625-01-010-3524	Z50572
9	O,L	Wrench, Torque TB438	5120-00-169-5776	STOCK FUND
10	L	Generator, Signal AN/USM-213 (H P8614A)	6625-00-872-3215	J53731
11	L	Generator, Signal SG-944 (HP620B)	6625-00-107-8173	J56371
12	L	Test Set, RF Power AN/USM-260	6625-00-917-3099	816
13	L	Attenuator, HP8491B (option 10)		STOCK FUND
14	L	Drive, Modulator HP8403A	6625-00-089-3146	B16
15	L	Modulator, Pin HP8731B	6625-00-932-1852	Z48828
16	L	Modulator, Pin HP8734B	6625-00-113-6300	Z48830

TOOL AND TEST EQUIPMENT REQUIREMENTS FOR AN/APR-39(V)1 (CONT)

TOOLS OR TEST EQUIPMENT REF CODE	MAINTENANCE CATEGORY	NOMENCLATURE	NATIONAL / NATO STOCK NUMBER	TOOL NUMBER
		Additional Items Required		
		RF connector EMA Male to UNC Female (2 required)	5935-00-024-0612	
		RF connector EMA Male to N Female (1 required)	3925-00-869-2405	
		RF connector BNC Male to TNC Plug	5935-00-701-2215	
		Thermistor Mount HP-478A	6625-00-886-1955	

Section IV REMARKS

REFERENCE CODE	REMARKS
A	Test to isolate defective major components.
B	Repair by replacing defective repairable major assemblies, and defective throw-away lamps, fuses and knobs. It should be noted that a missile alert lamp in indicator, radar signal (Q2) is replaced at AVIM only.
C	Defective printed circuit boards, have been determined to be throw-away and are to be sent back to depot for final disposition.
D	Defective power supply is not repairable.

APPENDIX C

COMPONENTS OF END ITEM AND BASIC ISSUE ITEMS LIST

Section I INTRODUCTION

C-1. SCOPE.

This appendix lists components of end item and basic issue items for the radar signal detecting set to help you inventory items required for safe and efficient operation.

C-2. GENERAL.

The components of end item and basic issue item lists are divided into the following sections:

a. Section II Components of End Item. This listing is for informational purposes only, and is not authority to requisition replacements. These items are part of the end item, but are removed and separately packaged for transportation or shipment. As part of the end item, these items must be with the end item whenever it is issued or transferred between property accounts.

b. Section Ill Basic Issue Items. These are the minimum essential items required to place the radar signal detecting set in operation, to operate it, and to perform emergency repairs. Although shipped separately packaged, Bll must be with the radar signal detecting set during operation and whenever it is transferred between property accounts. This manual is your authority to request/requisition replacement BII, based on TOE/MTOE authorization of the end item.

C-3. EXPLANATION OF COLUMNS.

The following provides an explanation of columns found in the tabular listings:

a. Column 1, Illustration Number (Illus No.). This column does not apply.

b. Column 2, National Stock Number. Indicates the national stock number assigned to the item and will be used for requisitioning purposes.

c. Column 3, Description. Indicates the federal item name and, if required, a minimum description to identify and locate the item. The last line for each item indicates the FSCM (in parentheses) followed by the part number.

d. Column 4, Unit of Measure (U/M). Indicates the measure used in performing the actual operational/maintenance function. This measure is expressed by a two-character abbreviation (e.g., ea, in., pr).

e. Column 5, Quantity Required (Qty Req'd). Indicates the quantity of the item authorized to be used with/on the equipment,

Section II COMPONENTS OF END ITEM LIST

(1) ILLUS NO.	(2) NATIONAL STOCK NUMBER	(3) DESCRIPTION (FSCM)	USABLE ON CODE	(4) U/M	(5) QTY REQ'D
	5841-01-025-0378	Control Unit, Detecting Set; C-9326/APR-39(V) Unit 1 (80063)		ea	1
	5841-01-037-8716	Indicator, Radar Signal; IP-1 150/APR-39(V) Unit 2 (80063)		ea	1
	5841-01-024-7739	Comparator; CM-440/APR-39(V) Unit 3 (80063)		ea	1
	5841-01-031-5890	Receiver, Radar; R-1838/APR-39(V) Unit 4, Unit 5 (80063)		ea	2
	5985-01-035-5970	Antenna, Left Spiral; AS-2892/APR-39(V) Unit 6, Unit 8 (93346)		ea	2
	5985-01-026-3926	Antenna, Right Spiral; AS-2891/APR-39(V) Unit 7, Unit 9 (93346)		ea	2
	5985-01-026-3927	Antenna, Blade; AS-2890/APR-39(V) Unit 10 (82152)		ea	1

APPENDIX D

ADDITIONAL AUTHORIZATION LIST

Section I INTRODUCTION

D-1. SCOPE.

This appendix lists additional items you are authorized for the support of the Radar Signal Detecting Set AN/APR-39(V)1.

D-2. GENERAL.

This list identifies items that do not have to accompany the radar signal detecting set and that do not have to be turned in with it. These items are all authorized to you by CTA, MTOE, TDA, or JTA.

D-3. EXPLANATION OF LISTING.

National stock numbers, descriptions, and quantities are provided to help you identify and request the additional items you require to support this equipment. The items are listed in alphabetical sequence by item name under the type document (i.e., CTA, MTOE, TDA, or JTA) which authorizes the item(s) to you.

Section II ADDITIONAL AUTHORIZATION LIST

(1) NATIONAL STOCK NUMBER	(2) DESCRIPTION FSCM & PART NUMBER	(3) U/M	(4) QTY AUTH
	MTOE AUTHORIZED ITEMS		
6940-00-031-5887	Simulator, Radar Signal SM-674/UPM (80063)	ea	1
5841-01-025-0379	Test Adapter, Radar Signal MX-9848/APR-39(V)	ea	1

APPENDIX E

EXPENDABLE SUPPLIES AND MATERIALS LIST

Section I INTRODUCTION

E-1. SCOPE.

This appendix lists expendable supplies and materials you will need to operate and maintain the Radar Signal Detecting Set AN/APR-39(V)1. These items are authorized to you by CTA 50-970, Expendable items (except medical, class V, repair parts, and heraldic items).

E-2. EXPLANATION OF COLUMNS.

a. Column 1, Item Number. This number is assigned to the entry in the listing and is referenced in the narrative instructions to identify the material (e.g., use cleaning compound, item 1, appendix E).

b. Column 2, Level. This column identifies the lowest level of maintenance that requires the listed item.

C - Operator/Crew
O - Organizational
F - Direct Support
H - General Support

c. Column 3, National Stock Number. This is the national stock number assigned to the item; use it to request or requisition the item.

d. Column 4, Description. Indicates the federal item name and, if required, a description to identify the item. The last line for each item indicates the Federal Supply Code for Manufacturer (FSCM) in parentheses, if applicable.

e. Column 5, Unit of Measurement (U/M). Indicates the measure used in performing the actual maintenance function. This measure is expressed by a two-character abbreviation (e.g., ea, in., pr). If the unit of measure differs from the unit of issue, requisition the lowest unit of issue that will satisfy your requirements.

Section II EXPENDABLE SUPPLIES AND MATERIALS LIST

(1) ITEM NUMBER	(2) NATIONAL STOCK LEVEL	(3) NUMBER	(4) DESCRIPTION, FSCM	(5) U/M
1	O	5180-00-105-3084	Trichlorotrifluoroethane, (80244)	qt
2	C	8305-00-170-5062	Lint-free Cloth	ea
3	O	5350-00-264-3485	Fine Sandpaper	sh
4	O	8020-00-205-6512	Brush	ea
5	O		Primer	pt
6	O		Enamel, Black Semigloss	pt
7	O		Enamel, Black Lusterless	pt
8	O		Enamel, Gray Lusterless	pt
9	C	5920-01-411-6196	Fuse, Plug-in, (75915)	ea
10	C	5355-00-762-1489	Knob, Control, (96906)	ea
11	C	5355-00-850-9799	Knob, Control, (96906)	ea

GLOSSARY

The following special words and terms are used in this manual.

ALARM AUDIO. A varying high-low warning tone sounded at a 2.5 Hz rate. Alarm sounds with a frequency of 1100 Hz and stops with a frequency of 700 Hz.

CRT (cathode ray tube). Radar signal indicator screen. Shows aircraft operator the presence of a signal.

LINE-OF-BEARING. A direction to an emitter or tracking device with respect to aircraft heading. Direction is displayed by a radial strobe on the indicator CRT.

PERSISTENCE. The number of pulses present in a pulse train in a specified period of time. Persistence is expressed as a percentage.

PULSE. An abrupt change in voltage (either positive or negative), which conveys information to a circuit.

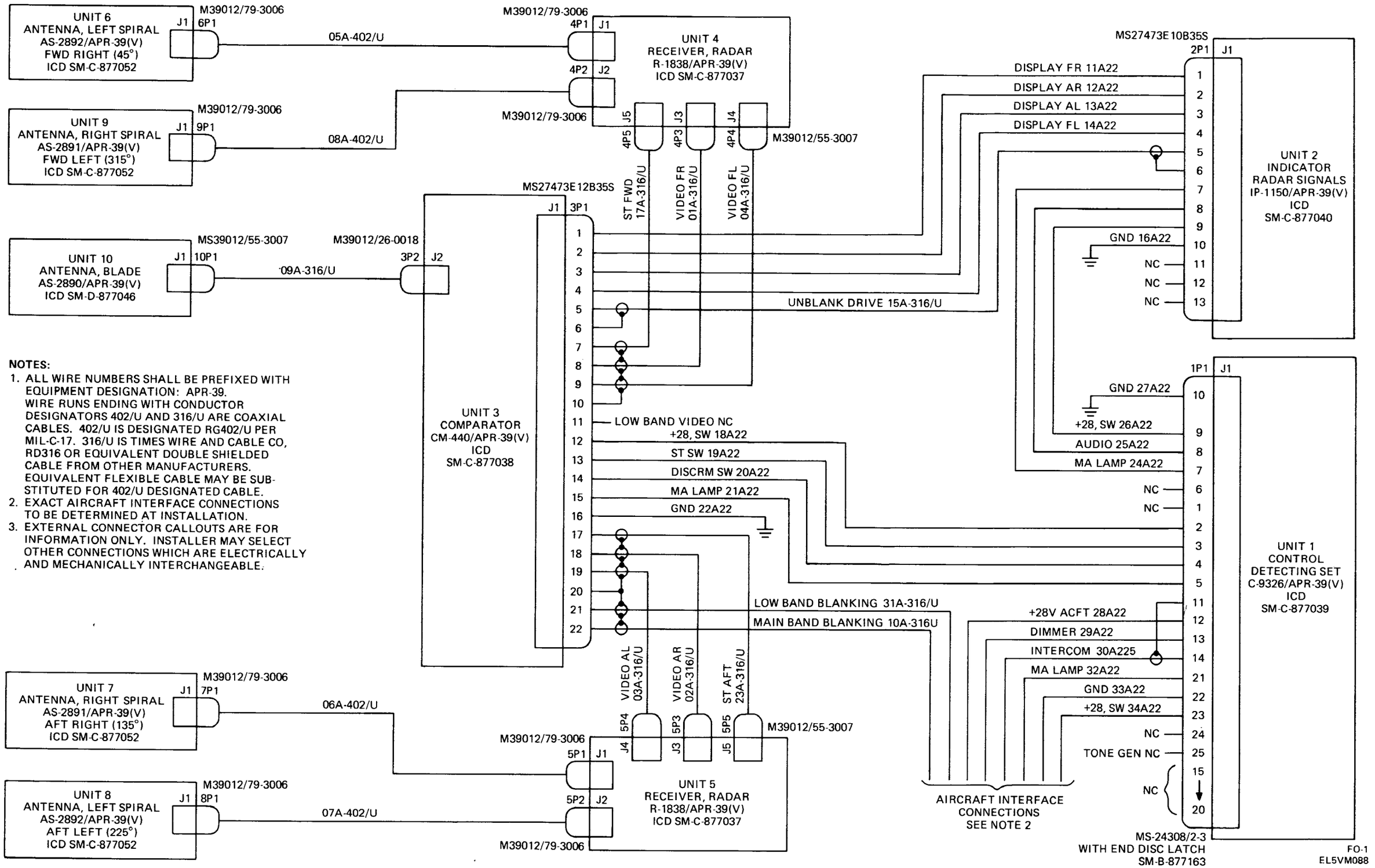
PULSE CORRELATION. The time relationship between pulses of high band and low band intercepts. Pulses are correlated when the low band trailing edge leads the high band leading edge by a specified time.

PULSE REPETITION FREQUENCY (PRF). The audio tone generated by mixing the high band videos.

PULSE REPETITION INTERVAL (PRI). Also known as pulse repetition period (PRP). The interval or period expressed as a unit of time, between the leading edges of sequential pulses in a train.

PRI=1/PRF

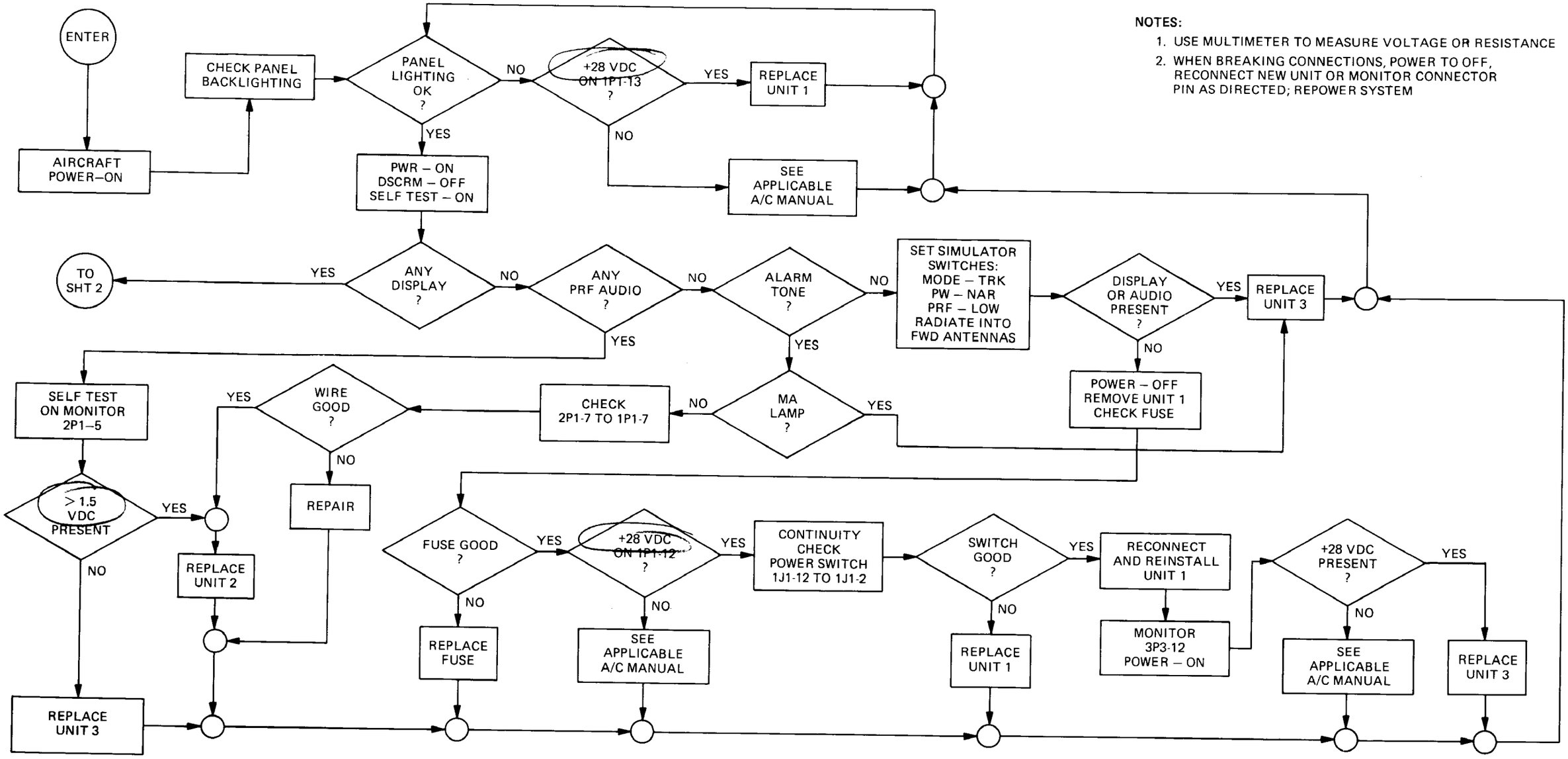
PULSE TRAIN. A repetition of pulses.



NOTES:

1. ALL WIRE NUMBERS SHALL BE PREFIXED WITH EQUIPMENT DESIGNATION: APR-39. WIRE RUNS ENDING WITH CONDUCTOR DESIGNATORS 402/U AND 316/U ARE COAXIAL CABLES. 402/U IS DESIGNATED RG402/U PER MIL-C-17. 316/U IS TIMES WIRE AND CABLE CO, RD316 OR EQUIVALENT DOUBLE SHIELDED CABLE FROM OTHER MANUFACTURERS. EQUIVALENT FLEXIBLE CABLE MAY BE SUBSTITUTED FOR 402/U DESIGNATED CABLE.
2. EXACT AIRCRAFT INTERFACE CONNECTIONS TO BE DETERMINED AT INSTALLATION.
3. EXTERNAL CONNECTOR CALLOUTS ARE FOR INFORMATION ONLY. INSTALLER MAY SELECT OTHER CONNECTIONS WHICH ARE ELECTRICALLY AND MECHANICALLY INTERCHANGEABLE.

Figure FO-1. Interconnection Diagram, AN/APR-39(V)1.



NOTES:

1. USE MULTIMETER TO MEASURE VOLTAGE OR RESISTANCE
2. WHEN BREAKING CONNECTIONS, POWER TO OFF, RECONNECT NEW UNIT OR MONITOR CONNECTOR PIN AS DIRECTED; REPOWER SYSTEM

FO-2
EL5VM089

Figure FO-2. Organizational Troubleshooting Flow Chart (Sheet 1 of 4).

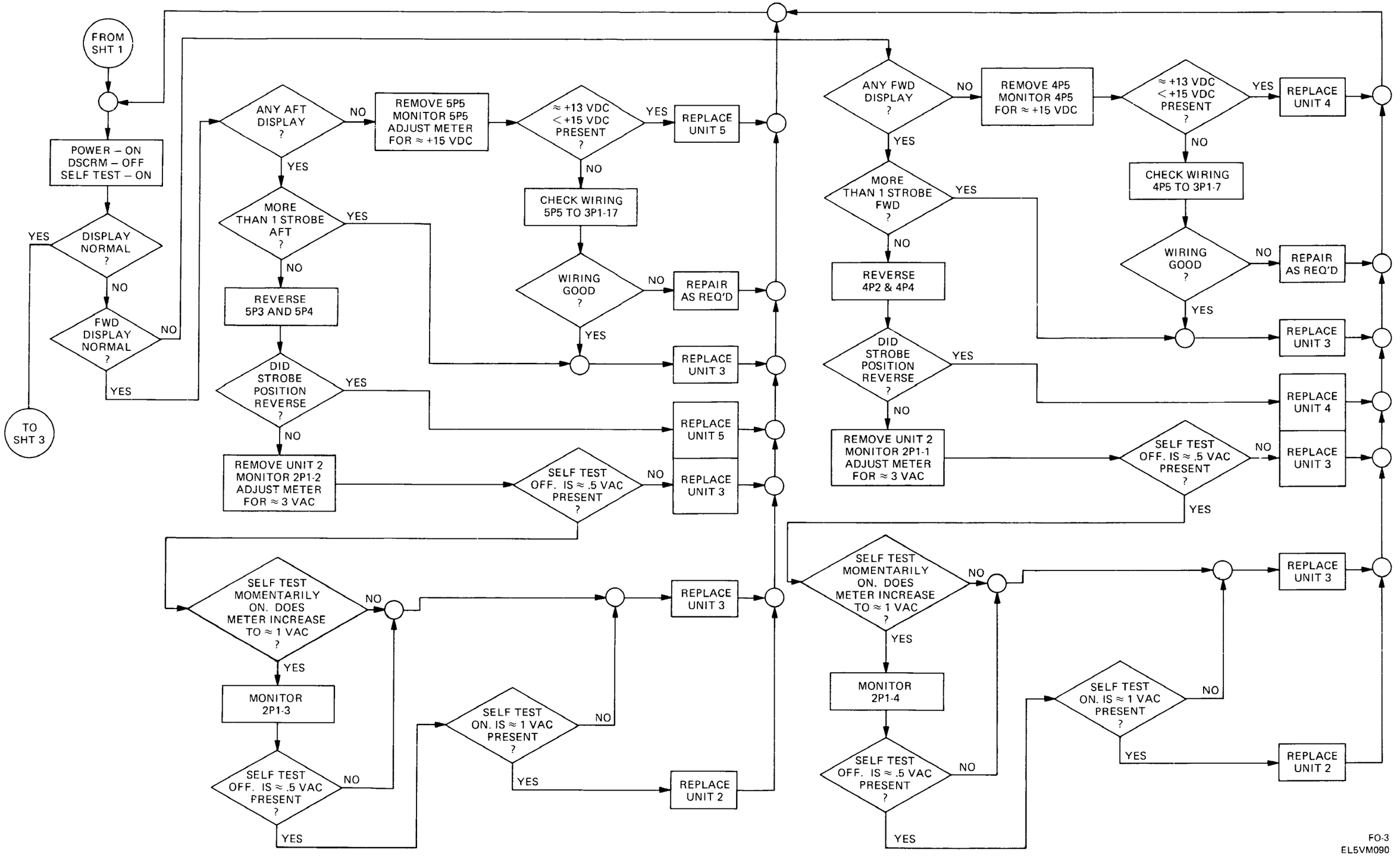
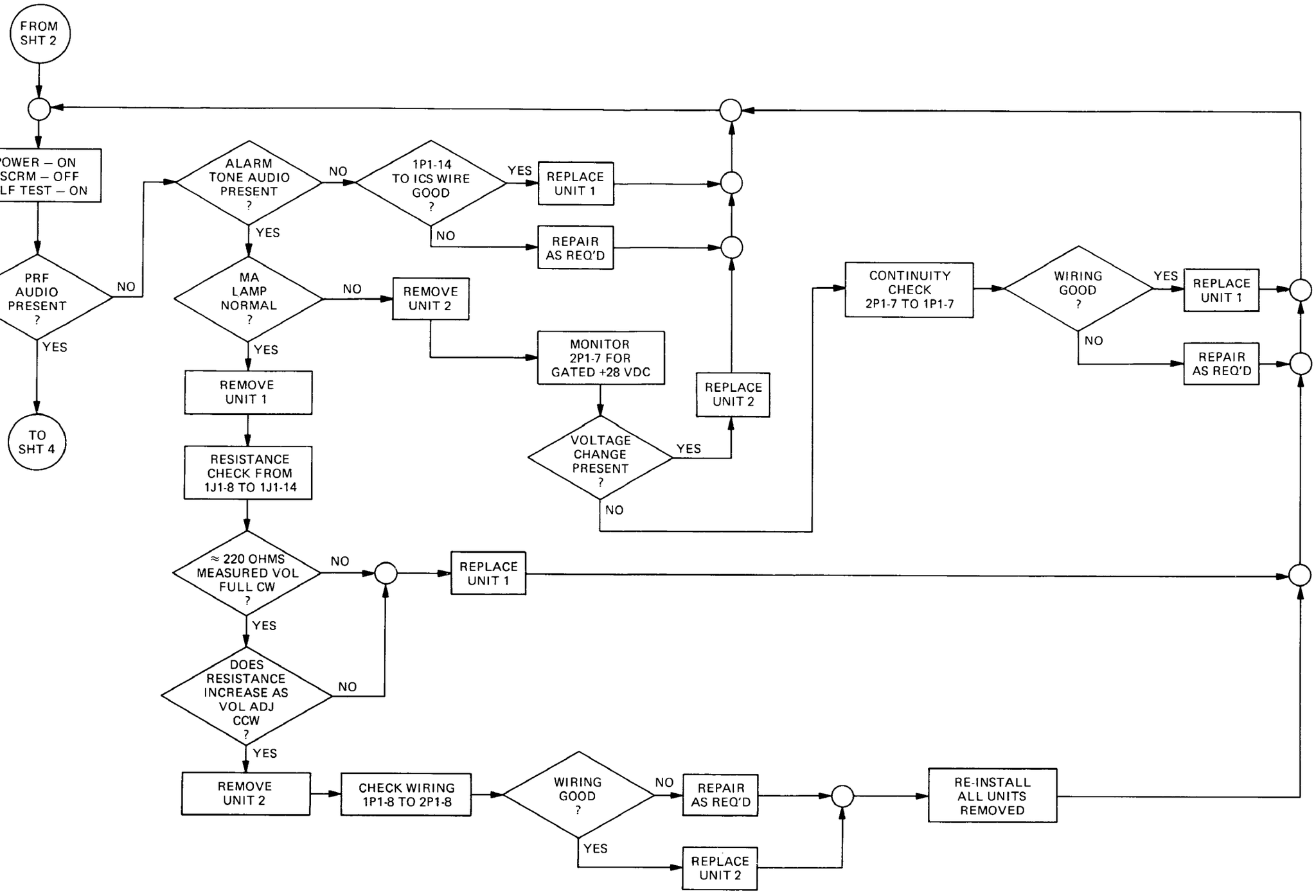
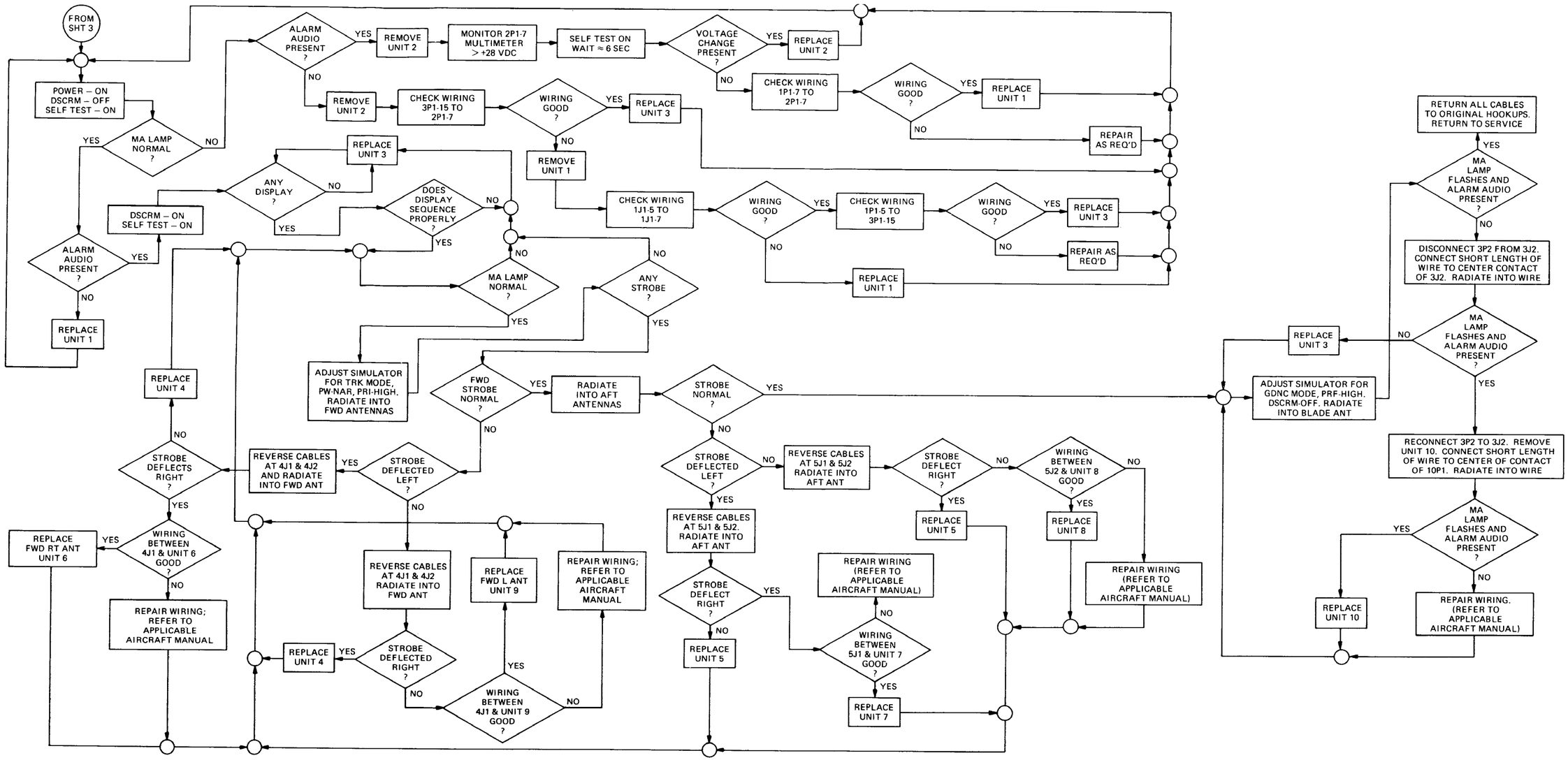


Figure FO-3. Organizational Troubleshooting Flow Chart (Sheet 2 of 4).



FO-4
EL5VM091

Figure FO-4. Organizational Troubleshooting Flow Chart (Sheet 3 of 4).



FO-5
EL5VM092

Figure FO-5. Organizational Troubleshooting Flow Chart (Sheet 4 of 4).

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THE METRIC SYSTEM AND EQUIVALENTS

LINEAR MEASURE

1 Centimeter = 10 Millimeters= 0.01 Meters = 0.3937 Inches
1 Meter = 100 Centimeters= 1000 Millmeters = 39.37 Inches
1 Kilometer = 1000 Meters = 0.621 Miles

WEIGHTS

1 Gram = 0.001 Kilograms = 1000 Milligrams = 0.035 Ounces
1 Kilogram = 1000 Grams = 2.2 Lb
1 Metric Ton =1000 Kilograms= 1 Megagram =1.1 Short Tons

LIQUID MEASURE

1 Milliliter =0.001 Liters = 0.0338 Fluid Ounces
1 Liter = 1000 Millliters = 33.82 Fluid Ounces

SQUARE MEASURE

1 Sq Centimeter= 100 Sq Millimeters= 0.155 Sq Inches
1 Sq Meters 10,000 Sq Centimeters= 10.76 Sq Feet
1 Sq Kilometer = 1,000,000 Sq Meters= 0.386 Sq Miles

CUBIC MEASURE

1 Cu Centimeter =1000 Cu Millimeters
1 Cu Meter = 1,000,000 Cu Centimeters

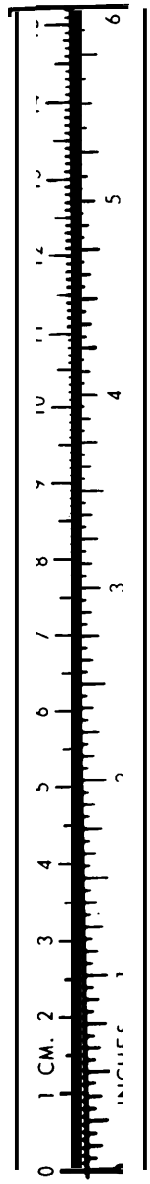
TEMPERATURE

5/9(°F - 32) = °C
212° Fahrenheit is equivalent to 100° Celsius
90° Fahrenhelt is equivalent to 32.2° Celsius
32° Fahrenhelt IS equivalent to 0° Celsius
9/ 3 C°+ 32 = F°

APPROXIMATE CONVERSION FACTORS

TO CHANGE	TO	MULTIPLY BY
Inches	Centimeters	2.540
Feet	Meters	0.305
Yards	Meters	0.914
Miles	Kilometers	1.609
Square Inches	Square Centimeters	6.451
Square Feet	Square Meters	0.093
Square Yards	Square Meters	0.836
Square Miles	Square Kilometers	2.590
Acres	Square Hectometers	0.405
Cubic Feet	Cubic Meters	0.028
Cubic Yards	Cubic Meters	.0.765
Fluid Ounces	Milliliters	29.573
Pints	Liters	0.473
Quarts	Liters	0.946
Gal ions	Liters	3.785
Ounces	Grams	28.349
Pounds	Kilograms	.0.454
Short Tons	Metric Tons	0.907
Pound-Feet	Newton-Meters	1.356
Pounds per Square Inch	Kilopascals	6.895
Miles per Gallon	Kilometers per Liter	0.425
Miles per Hour	Kilometers per Hour	1.609

TO CHANGE	TO	MULTIPLY BY
Centimeters	Inches	0.394
Meters	Feet	3.280
Meters	Yards	1.094
Kilometers	Miles	0.621
Square Centimeters	Square Inches	0.155
Square Meters	Square Feet	10.764
Square Meters	Square Yards	1.196
Square Kilometers	Square Miles	0.386
Square Hectometers	Acres	2.471
Cubic Meters	Cubic Feet	35.315
Cubic Meters	Cubic Yards	1.308
Milliliters	Fluid Ounces	0.034
Liters	Pints	2.113
Liters	Quarts	1.057
Liters	Gallons	0.264
Grams	Ounces	0.035
Kilograms	Pounds	2.205
Metric Tons	Short Tons	1.102
Newton-Meters	Pound-Feet	0.738
Kilopascals	Pounds per Square Inch	0.145
Kilometers per Liter	Miles per Gallon	2.354
Kilometers per Hour	Miles per Hour	0.621



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