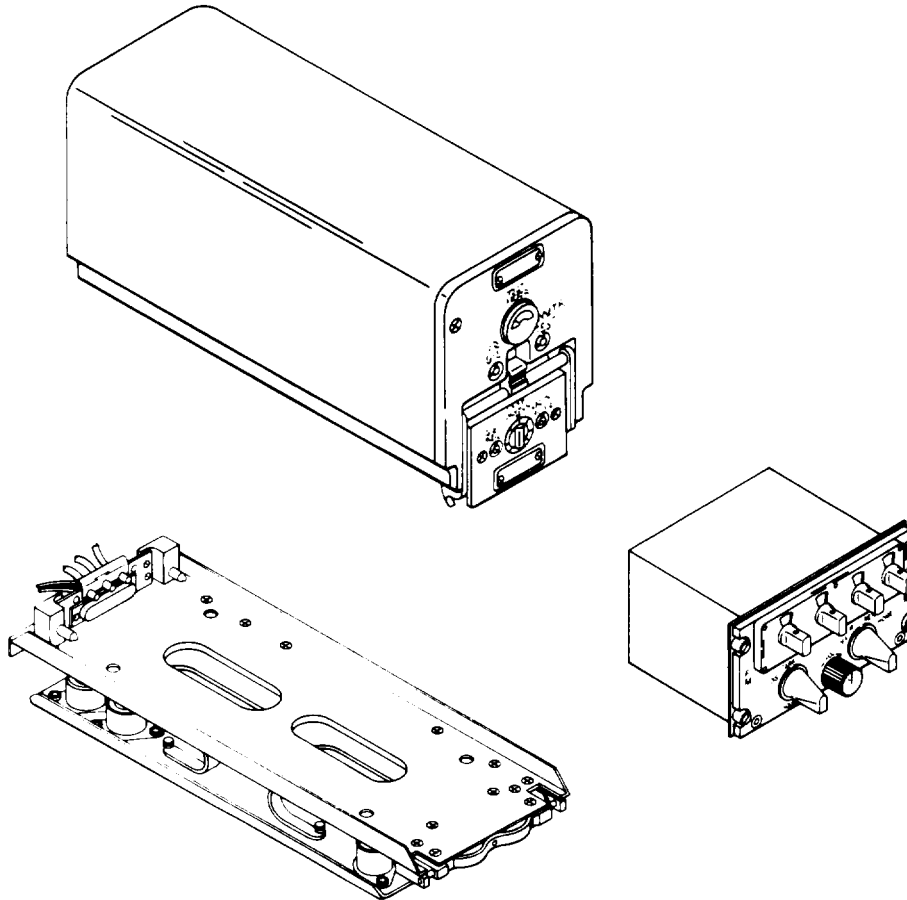


TECHNICAL MANUAL

**OPERATOR'S AND ORGANIZATIONAL
MAINTENANCE MANUAL**



TECHNICAL PRINCIPLES
OF OPERATION
PAGE 1-8

CONTROLS AND INDICATORS
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PREVENTIVE MAINTENANCE
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MAINTENANCE ALLOCATION
CHART (MAC)
PAGE B-1

**RADIO SET
AN/ARC-131
(NSN 5821-00-937-4686)**



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.

Never work on electronic equipment unless there is another person nearby competent in administering first aid. When the technician is aided by operators, he must warn them about dangerous areas.

Whenever possible, the power supply to the equipment must be shut off before beginning work on the equipment. Take particular care to ground every capacitor likely to hold a dangerous potential. When working inside the equipment, after the power has been turned off, always ground every part before touching it.

Be careful not to contact high-voltage connections or 115 vac input connections when installing or operating this equipment.

Whenever the nature of the operation permits, keep one hand away from the equipment to reduce the hazard of current flowing through vital organs of the body.

WARNING

Do not be misled by the term "low voltage". Potentials as low as 50 volts may cause death under adverse conditions.

WARNING

Dangerous potentials, which could cause severe electrical shock, exists at several points throughout this equipment. When equipment is operated with the covers removed, do-not touch exposed connections, components, or dc input connections. Some transistors have voltages present on their cases.

WARNING

Do not operate radio set if any cables are frayed or other physical damage is evident. Electrical shock to personnel could result.

WARNING

Exercise care when lifting the radio set to avoid personal injury. The receiver-transmitter weighs 25 pounds.

WARNING

Fumes of TRICHLOROTRIFLUOROETHANE are poisonous. Provide adequate ventilation whenever you use TRICHLOROTRIFLUOROETHANE. Do not use solvent near heat or open flame. TRICHLOROTRIFLUOROETHANE will not burn, but heat exchanges the gas into poisonous, irritating fumes. DO NOT breathe the fumes or vapors. TRICHLOROTRIFLUOROETHANE dissolves natural skin oils. DO NOT get the solvent on your skin. Use gloves, sleeves, and an apron which the solvent cannot penetrate. If the solvent is taken internally, consult a physician immediately.

For Artificial Respiration, refer to FM 21-11.

Technical Manual
 No. 11-5820-670-12

HEADQUARTERS
 DEPARTMENT OF THE ARMY
 Washington, DC, 28 May 1985

**Operator's and Organizational
 Maintenance Manual**

**RADIO SET AN/ARC-131
 (NSN 5821-00-937-4686)**

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 the back of this manual direct to: Commander, US Army Communications-Electronics Command and Fort Monmouth, ATTN: AMSEL-ME-MP, Fort Monmouth, New Jersey 07703-5007. A reply will be furnished direct to you.

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III	Technical Principles of Operation	1-8
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*This manual supersedes TM 11-5820-670-12, 5 July 1974, including all changes.

HOW TO USE THIS MANUAL

This manual is designed to help you operate as well as maintain (both at the operator and organizational level) Radio Set AN/ARC-131.

A front cover index is provided for quick reference to important information contained in this manual. Each item appearing on the front cover is boxed and identified by topic, with the page number where the information is located.

Paragraphs in this manual are numbered by chapter and order of appearance within a chapter. A subject index appears at the beginning of each section to help you find the exact paragraph you are looking for.

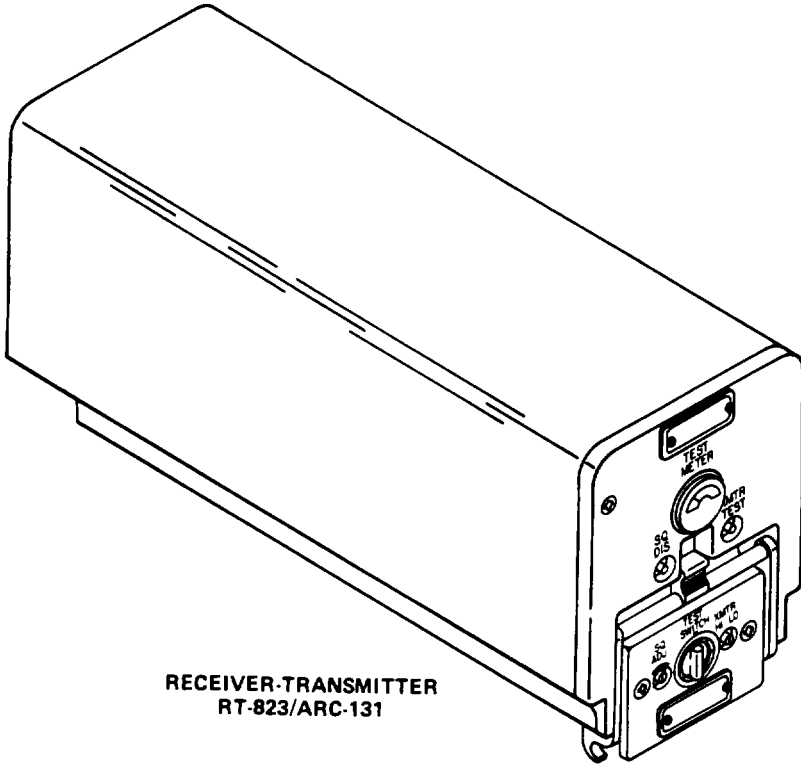
Measurements in this manual are given in both US standard and metric units.

There are warnings located at the beginning of this manual. Before doing maintenance on the equipment, learn the warnings and always follow safety procedures and precautions.

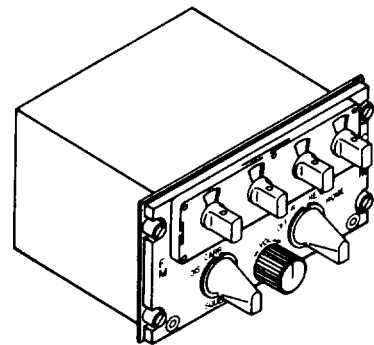
Step by step procedures with illustrations will give you all the necessary information needed to maintain the equipment. The steps must be followed in exact sequence. Do not attempt any shortcuts.

Instructions for performing PMCS tasks are located in paragraphs 3-5, 3-6, and 3-7.

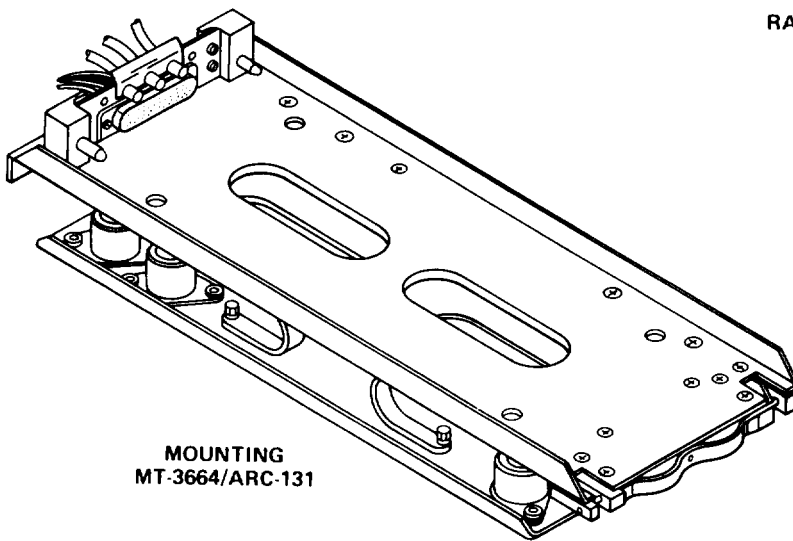
A list of abbreviations and definitions of unusual terms can be found for quick reference in the glossary at the rear of this manual.



RECEIVER-TRANSMITTER
RT-823/ARC-131



RADIO SET CONTROL
C-7088/ARC-131



MOUNTING
MT-3664/ARC-131

RADIO SET AN/ARC-131

EL7RM001

CHAPTER 1

INTRODUCTION

Subject	Section	Page
General Information	I	1-1
Equipment Description	II	1-3
Technical Principles of Operation	III	1-8

OVERVIEW

This chapter supplies both general and specific information about Radio Set AN/ARC-131 and acquaints the user with the equipment's purpose, basic principles of operation, and characteristics. Also furnished is information regarding proper forms used to document equipment maintenance and status, packaging and handling deficiencies, and discrepancies in shipment.

Section I GENERAL INFORMATION

Subject	Para	Page
Scope	1-1	1-1
Maintenance Forms, Records, and Reports	1-2	1-1
Reporting Equipment Improvement Recommendations (EAR)	1-3	1-2
Consolidated Index of Army Publications and Blank Forms	1-4	1-2
Destruction of Army Electronics Materiel to Prevent Enemy Use	1-5	1-2
Administrative Storage	1-6	1-2
Nomenclature Cross-Reference List	1-7	1-2
Safety, Care, and Handling	1-8	1-3

1-1. SCOPE.

Type of Manual: Operator's and Organizational Maintenance.

Equipment Name and Model Number: Radio Set AN/ARC-131.

Purpose of Equipment: The AN/ARC-131 is a lightweight, airborne radio set that provides two-way communications between air-to air and air-to-ground stations within the tactical frequency-modulation (fro) band of 30 to 75.95 mega Hertz (MHz). The radio set also provides the pilot with retransmission capability as well as fm and continuous wave (cw) homing.

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

REPORT OF MAINTENANCE AND UNSATISFACTORY EQUIPMENT

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

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 4355.73A/AFR 400-54/MCO 4430. 3F.

1-2. MAINTENANCE FORMS, RECORDS, AND REPORTS. (CONT)

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 4610.33C/AFR 75-18/MCO P4610.19D/DLAR 4500.15.

1-3. REPORTING EQUIPMENT IMPROVEMENT RECOMMENDATIONS (EIR).

If your Radio Set AN/ARC-131 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 it on an SF 368 (Quality Deficiency Report). Mail it to: Commander, US Army Communications-Electronics Command and Fort Monmouth, ATTN: AMSEL-ME-MP, Fort Monmouth, New Jersey 07703-5007. A reply will be sent to you.

1.4. CONSOLIDATED INDEX OF ARMY PUBLICATIONS AND BLANK FORMS.

Refer to the latest issue of DA Pam 310-1 to determine whether there are new editions, changes or additional publications pertaining to the equipment.

1-5. DESTRUCTION OF ARMY ELECTRONICS MATERIEL TO PREVENT ENEMY USE.

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

1-6. ADMINISTRATIVE STORAGE.

Administrative storage of equipment issued to and used by Army activities will have preventive maintenance performed in accordance with the PMCS charts before storing. When removing the equipment from administrative storage, the PMCS shall be performed to ensure operational readiness. See chapter 3, section III for PMCS.

Administrative storage of equipment shall be done in accordance with TM 740-90-1, Administrative Storage of Equipment. Disassembly and repacking of equipment for shipment or limited storage are covered in chapter 3, section VI.

1-7. NOMENCLATURE CROSS-REFERENCE LIST.

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

COMMON NAME	OFFICIAL NOMENCLATURE
control unit mounting radio set receiver-transmitter	Control, Radio Set C-7088/ARC-131 Mounting MT-3664/ARC-131 Radio Set AN/ARC-131 Receiver-Transmitter RT-823/ARC-131

1-8. SAFETY, CARE, AND HANDLING.

Observe all warning, cautions and notes in this manual. This equipment can be extremely dangerous if these instructions are not followed. Make sure the following caution is observed as well.

CAUTION

The receiver-transmitter of the radio set is compact and heavy. Use caution when handling it. Serious damage could result if mishandled and dropped.

Section II EQUIPMENT DESCRIPTION

Subject	Para	Page
Equipment Characteristics, Capabilities, and Features	1-9	1-3
Location and Description of Major Components	1-10	1-4
Equipment Data	1-11	1-6
Additional Equipment Required	1-12	1-7

1-9. EQUIPMENT CHARACTERISTICS, CAPABILITIES, AND FEATURES.

CHARACTERISTICS AND FEATURES

The Radio Set AN/ARC-131 is made up of three major subassemblies; characteristics and features of each are as follows:

Receiver-Transmitter RT-823/ARC-131

- Separately mounted unit containing the receive and transmit circuits
- Blower fan at rear of unit
- Built-in test meter
- Squelch disable switch
- Transmitter power output switch
- Locking handle to secure receiver-transmitter to mounting
- Three coaxial connectors at rear of unit
- Multiple-pin connector at rear of unit
- Two guide-pin receptacles

Control, Radio Set C-7088/ARC-131

- Separately mounting unit containing operator's controls and indicators
- Illuminated front panel
- Squelch switch
- Volume control
- Mode switch
- Four frequency selector controls
- Secured to aircraft console by four turn lock fasteners
- Multiple-pin connector at rear of unit

Mounting MT-3664/ARC-131

- Two holddown bars to mate with locking handle of receiver-transmitter
- Six shock isolators
- Four ground strap assemblies
- Two guide pins to mate with receptacles in rear of receiver-transmitter.

1-9. EQUIPMENT CHARACTERISTICS, CAPABILITIES, AND FEATURES. (CONT)

CHARACTERISTICS AND FEATURES (CONT)

Connector Plate

Secured to mounting with mounting hardware and four spacers

Multiple-pin connector

Three coaxial connectors

Electrical connections, except radiofrequency (rf) signals, through multiple-pin connector

CAPABILITIES

The Radio Set AN/ARC-131 has the following capabilities:

Voice and homing capabilities at 30 to 75.95 MHz

Frequency, volume, squelch, and mode control

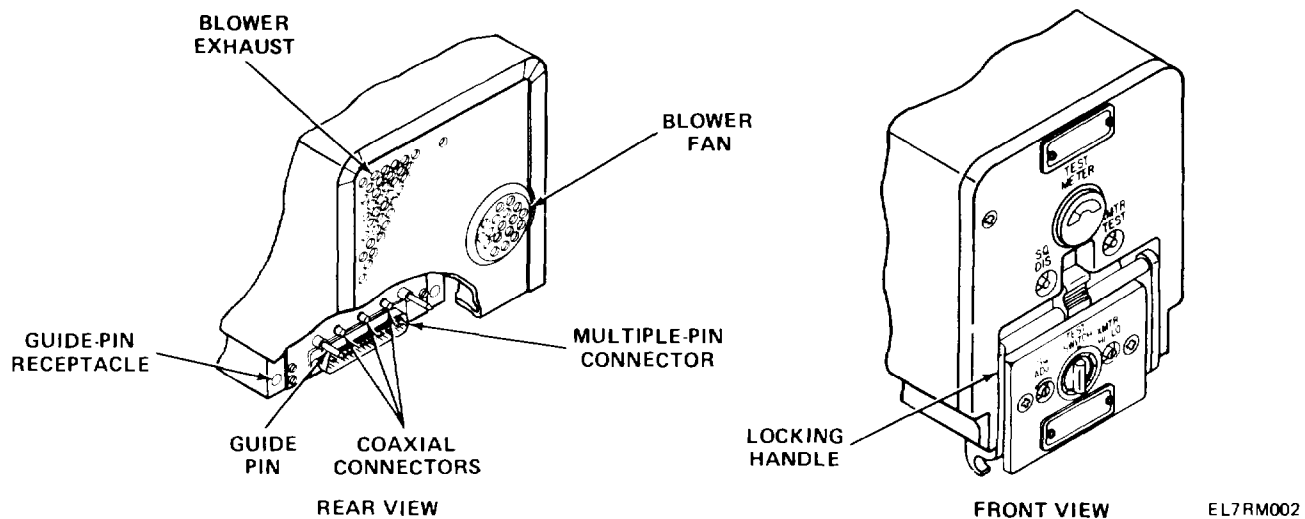
Retransmission capability (two radio sets required)

Secure communication capability

Built-in self-test (on receiver-transmitter)

1-10. LOCATION AND DESCRIPTION OF MAJOR COMPONENTS.

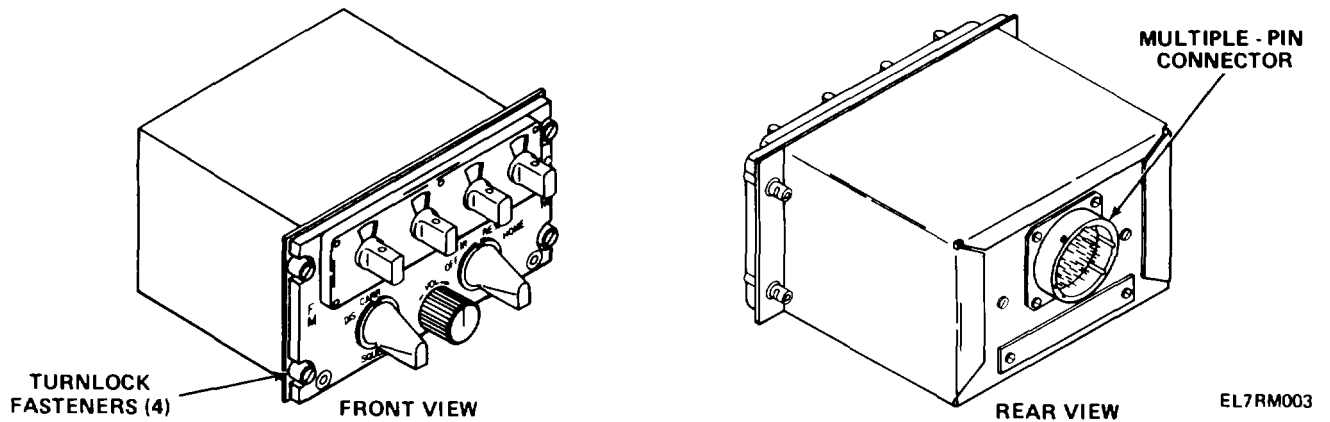
RECEIVER-TRANSMITTER RT-823/ARC-131



The receiver-transmitter is a separate unit secured by the mounting in the airframe structure. It contains the transmit and receive circuits of the radio set. All maintenance controls and indicators are located on the front panel. A locking handle also at the front of the unit, is used to secure the receiver-transmitter to the mounting. At the rear of the receiver-transmitter, a blower fan and exhaust arrangement cools the unit during transmitting. All electrical connections are made through a multiple-pin connector and three coaxial connectors, also at the rear of the unit. Two guide pins and two guide-pin receptacles facilitate proper mating of coaxial and multiple pin connectors.

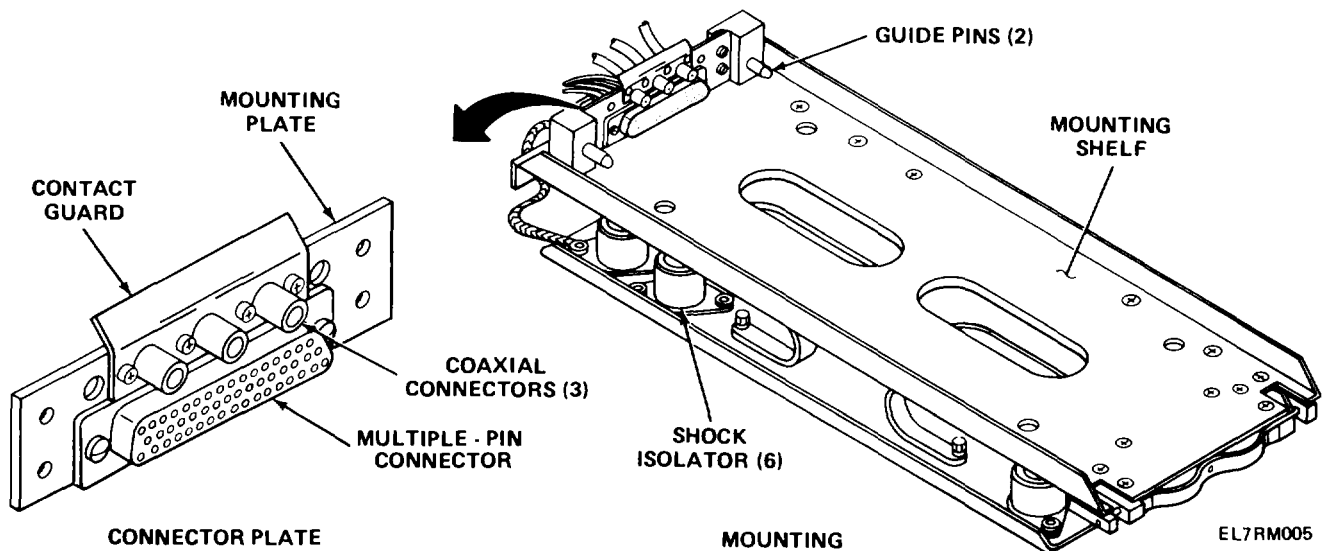
1-10. LOCATION AND DESCRIPTION OF MAJOR COMPONENTS. (CONT)

CONTROL, RADIO SET C-7088/ARC-131



The control unit is a separate unit containing all the operator's controls and indicators on the front panel. It is mounted to the aircraft equipment rack by four turnlock fasteners. A multiple-pin connector, at the rear of the control unit, permits all electrical connections made between the control unit and other components of the radio set and aircraft interphone system.

MOUNTING MT-3664/ARC-131 AND CONNECTOR PLATE SM-B-620336



The mounting is used to secure the receiver-transmitter to the aircraft airframe structure. The mounting shelf, where the receiver-transmitter sits, is supported by six shock isolators. Two guide pins at the rear of the mounting facilitate proper mating of the receiver-transmitter with the connector plate.

All electrical connections are made through the three coaxial connectors and the multiple-pin connector of the connector plate. A contact guard, secured to the mounting plate of the connector plate, provides protection to the wired contacts when receiver-transmitter is installed. The connector plate is initially an aircraft installed item as part of the wiring harness.

1-11. EQUIPMENT DATA.

GENERAL

Frequency range	30.00 to 75.95 MHz
Number of channels and spacing	920 channels, spaced 50 kHz
Number of crystals in crystal reference system	14 crystals
Channel change time	7 second maximum at - 40°F(-40°C)
Frequency stability	Within 3.5 kHz of selected channel center frequency in less than 20 seconds
Modes of operation	Fm voice, homing, retransmission, or X-mode
Input voltage and current requirements	24 to 29 vdc, transmit, 4.0 amperes maximum; receive 1.0 ampere
Audio response, narrow band	500 to 3,000 Hz
Audio response, wide band	500 to 20,000 Hz
Security adapter	KY-28 or KY-8

TRANSMITTER

Power output, high	10 watts minimum
Power output, low	1 watt nominal
Frequency control	Crystal, indirect synthesis
Duty cycle	Continuous transmission to 15,000 feet at 150°F (65°C) or 35,000 feet at 85°F (29°C)
Rf output impedance	50 ohms
Overall system distortion	Narrow band 10%, wide band 7%
Signal plus noise-to-noise ratio	50 db
Deviation.	Narrow band 8 kHz, wide band 20 kHz; 150 Hz tone 3 kHz

Receiver

Receiver type	Single conversion superheterodyne
Intermediate frequency	11.5 MHz
Signals received	Fm voice or tone
If selectivity	32 kHz minimum at 6 db points; 80 kHz maximum at 60 db points; 100 kHz maximum at 85 db points
Sensitivity	Rf input of 0.5 microvolt modulated at 1,000 Hz with ±8 kHz deviation produces a signal-plus-noise-plus deviation to noise plus deviation ratio of 10 db (tp milliwatts) into a 150-ohm load.
Audio output characteristics	50 milliwatts into a 150-ohm load, frequency response 500 - 3000 Hz
Audio distortion	Narrow band 8%, wide band 5%
Types of squelch	Carrier (noise) or tone (150 Hz)

1-11. EQUIPMENT DATA. (CONT)

COMPONENT WEIGHT AND DIMENSIONS

Receiver – Transmitter RT-823/ARC-131

Weight	25.2 lb (11.4 kg)
Length	15.25 in. (38.7 cm)
Width	6.0 in. (15.2 cm)
Height	7.94 in. (20.2 cm)

Control Radio Set C-7088/ARC-131

Weight	2.3 lb (1.1 kg)
Length	6.44 in. (16.4 cm)
Width	5.75 in. (14.6 cm)
Height	3.0 in. (7.6 cm)

Mounting MT-3664/ARC-131

Weight	1.7 lb (0.8 kg)
Length	14.25 in. (36.2 cm)
Width	5.75 in. (14.6 cm)
Height	2.125 in. (5.4 cm)

1-12. ADDITIONAL EQUIPMENT REQUIRED.

The following equipment is not supplied as part of the radio set but is required for operation, and normally, aircraft installed.

POWER SOURCE

Direct current (dc) power source, capable of supplying 27.5 vdc nominal at 4 amperes, is required.

COMMUNICATIONS ANTENNA

Antenna (AS-1703/AR or equivalent) is required,

HOMING INDICATOR

Homing indicator (ID-1347/ARN-82 or equivalent), capable of providing left-right and over-the-station information, is required for homing capabilities.

HEADSET-MICROPHONE

Headset-microphone (H-101/U or equivalent) is required for voice communication. If the headset-microphone does not include a push-to-talk button, some provision to key transmitter is required.

ANTENNA COUPLER

Antenna coupler (CU-942/ARC, CU-943/ARC, or equivalent, depending on aircraft type) is required to match impedance of receive-transmitter to communications antenna.

1-12. ADDITIONAL EQUIPMENT REQUIRED. (CONT)

HOMING ANTENNA SYSTEM

Homing antenna system (AS-1922/ARC or equivalent) is required to perform homing operations.

INTERCOMMUNICATIONS CONTROL SET

Intercommunications control set (C-1611D/AIC or equivalent) is required to perform all modes of operation.

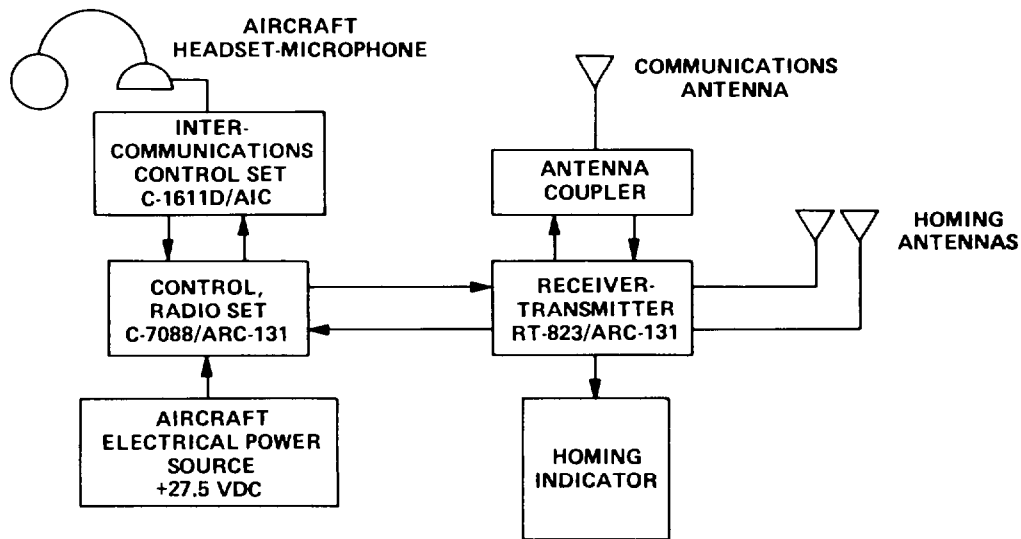
INTERCONNECTING CABLES

Electrical harness and coaxial cabling to interconnect the major computer of the radio set and aircraft interphone system are required.

Section III TECHNICAL PRINCIPLES OF OPERATION

Subject	Para	Page
General	1-13	1-8
Transmit Operation	1-14	1-9
Receive Operation	1-15	1-9
Homing Operation	1-16	1-9
Retransmit Operation	1-17	1-10

1-13. GENERAL.



EL7RM006

Radio Set AN/ARC-131, when installed with additional equipment (para 1-12), provides two-way voice communications between aircraft in flight and between aircraft and ground stations. The radio set is an fm receiver-transmitter with 920 channels in the frequency range of 30.00 to 75.95 MHz. It can be used as a standard fm receiver-transmitter operating with carrier or tone squelch, and can also be used as a homing signal receiver or as part of an airborne, radio-relay system. The radio set is normally set to provide an output power of 10 watts but can be set to produce a 1 watt output for limited range operations or retransmit operations.

1-13. GENERAL. (CONT)

Operation of the radio set is entirely remote controlled. Manual selection of any of the 920 channels is accomplished by rotation of four frequency selector switches on the control unit. Motors in the receiver-transmitter automatically tune the radio set to the frequency setting on the control unit.

NOTE

The following frequencies cause transmitter quieting of the receiver and must not be used during testing, alignment, or operation; 33.90 MHz, 45.20 MHz, 56.50 MHz, and 67.80 MHz.

When configured properly, the radio set is capable of the following operations; transmit, receive, homing, and retransmit.

1-14. TRANSMIT OPERATION.

During transmit operations, audio signals generated by the microphone are routed to the receiver-transmitter through the aircraft interphone amplifier (intercommunications control set) and control unit. In the receiver-transmitter, the audio signal is converted to a rf signal. The rf signal is then routed to the communications antenna which radiates the signal.

1-15. RECEIVE OPERATION.

During receive operations, an fm communications signal is intercepted by the communications or homing antenna and routed to the receiver-transmitter. In the receiver-transmitter, the fm signal is amplified and converted to an audio signal. The audio signal is fed through an audio preamplifier and a power amplifier in the intercommunication control set to the control unit. From the control unit, the audio signal is fed through the aircraft interphone amplifier to the headset-microphone.

1-16. HOMING OPERATION.

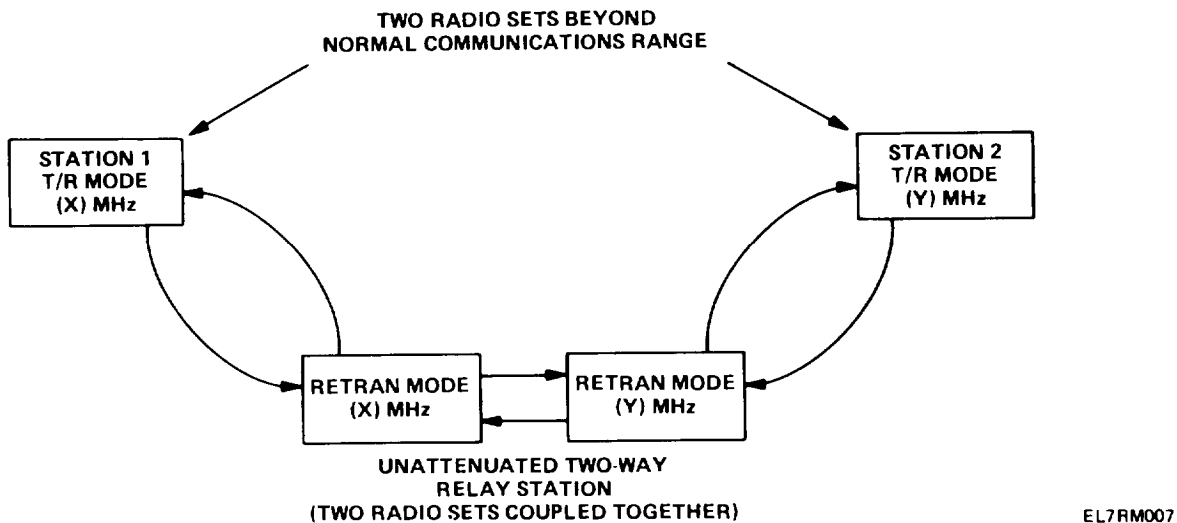
During homing operations, homing signals, which can be fm or unmodulated, are intercepted by a controlled-pattern antenna system and coupled to the receiver-transmitter. The homing circuit in the receiver-transmitter alternately samples the signal from one then the other antenna at a 100 Hz rate, giving the resultant signal two components. When aircraft heading is aligned with the transmitting station, the signal components have the same signal strength. However, when the aircraft heading is to either side of the transmitting station, the signal strength of one component is stronger or weaker than the other. This information is sent to the aircraft homing indicator vertical pointer which provides a visual indication of aircraft heading, with respect to the transmitting station. Over-the-station homing is indicated by the homing indicator horizontal pointer which rises as signal strength increases. Maximum signal strength is indicated when horizontal pointer is center scale (horizontal).

NOTE

A flag alarm system is provided on the homing indicator to indicate that the homing signal is of sufficient strength. When the flags are not visible, there is sufficient signal strength; when the flags are visible, the homing signal is too weak to provide proper homing information.

The radio set is still capable of two-way communications operation while the control unit mode selector switch is set to HOME, and homing operations are being performed. However, homing is temporarily interrupted during a transmit operation.

1-17. RETRANSMIT OPERATION.



During retransmit operations, two radio sets (stations 1 and 2) beyond normal communications range perform transmit/receive (T/R) operations using an unattended two-way relay station. The relay station is made up of two radio sets in retransmit (RETRAN) mode coupled together. The radio sets coupled together for the relay station must be set at different frequencies, but each matching the related station 1 and 2 radio set frequencies. The first radio set of the relay station receiving a signal from either station 1 or 2, automatically sends the signal to the second radio set which relays the signal to the opposite station.

NOTE

To operate satisfactorily, the two radio sets of the two-way relay station must be tuned to frequencies at least 3 MHz apart. When they are spaced greater than 8 feet apart, the frequency spacing may be decreased.

Transmitter power output should be selected, 1 watt or 10 watts, depending upon distance between relay station radio sets.

CHAPTER 2
OPERATING INSTRUCTIONS

Subject	Section	Page
Description and Use of Operator's Controls and indicators	I	2-1
Operation Under Usual Conditions	II	2-3

OVERVIEW

This chapter contains a detailed description of all operator's controls and indicators on Radio Set AN/ARC-131 and instructions for operating the radio set under usual conditions in all modes of operation.

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

Subject	Para	Page
General	2-1	2-1
Controls and indicators	2-2	2-1

2-1. GENERAL.

The radio set is operated from a position convenient to both pilot and copilot of the aircraft. Except for certain controls unique to aircraft such as power on, interphone, panel lamps, microphone, and headset, all radio set operator's controls and indicators are on the control unit front panel.

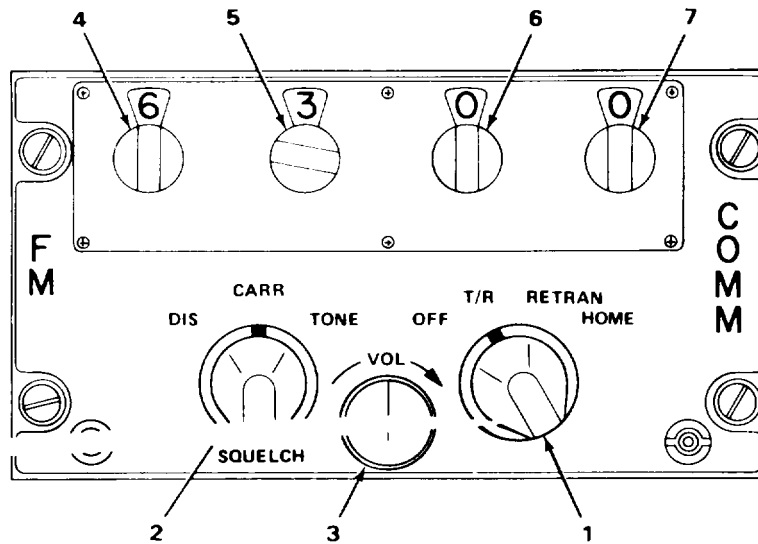
NOTE

Maintenance controls and indicators located on the receiver-transmitter are covered in paragraph 3-12, Operational Check.

2-2. CONTROLS AND INDICATORS.

There are four controls on the front panel of the control unit; a mode control switch, four frequency selector switches, a squelch mode selector switch, and a volume control. The frequency selector switches also indicate the setting to which they are set.

2-2. CONTROLS AND INDICATORS. (CONT)



KEY	CONTROL OR INDICATOR	FUNCTION
1	Mode control switch	Four-position switch. OFF position turns off primary power to radio set. T/R position applies power and allows normal two-way voice communication. RETRAN position applies power and allows radio set to operate as part of a two-way relay station. HOME position applies power and allows radio set to operate as a homing signal receiver.
2	SQUELCH mode selector switch	Three position switch. DIS position disables all squelch circuits. CARR position sets squelch circuit to operate normally in presence of any carrier. TONE position opens (unsquelches) only at selected signals (signals containing a 150 Hz tone modulation).
3	VOL (volume control)	Adjusts audio output level of the radio set.
4	Tens MHz frequency selector	Selects and displays the tens MHz digit from 3 to 7 of the operating frequency range.
5	Units MHz frequency selector	Selects and displays the units MHz digit from 0 to 9 of the operating frequency range. (When tens MHz frequency selector is set to 7, this units selector only has a range of 0 to 5.)
6	Tenths MHz frequency selector	Selects and displays the tenths MHz digit from 0 to 9 of the operating frequency range.
7	Hundreds MHz frequency selector	Selects and displays the hundreds MHz digit, either 0 or 5, of the operating frequency range.

Section II OPERATING UNDER USUAL CONDITIONS

Subject	Para	Page
Preflight Operational Check	2-3	2-3
Operating Procedures	2-4	2-3

2-3. PREFLIGHT OPERATIONAL CHECK.

NOTE

An operational check of the radio set is performed prior to each flight. All malfunctions, failures, or other discrepancies noted in flight or during a preflight check shall be reported (para 1-2).

Perform the preflight operational check in accordance with the applicable aircraft flight manual.

2-4. OPERATING PROCEDURES.

All operating procedures of the radio set are accomplished using the control unit which is conveniently placed in the cockpit of the aircraft for use by the pilot and/or copilot. Depending on type of operation necessary, the radio set can be operated in the two-way voice communications, retransmission, or homing mode.

NOTE

Do not use frequencies of 33.90 MHz, 45.20 MHz, 56.50 MHz, or 67.80 MHz for any radio set operations. These frequencies cause transmitter quieting of receiver and therefore prevent normal operation.

STARTING PROCEDURES

NOTE

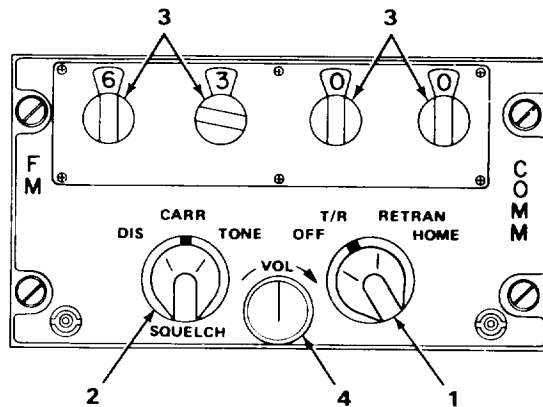
Before operating the radio set, operator should have a thorough knowledge of the communications equipment of the aircraft in which the radio set is installed.

For proper operation and settings of the aircraft-installed communications equipment, refer to the applicable aircraft flight manual. The following procedures are standard in most aircraft.

1. Turn on aircraft primary power.
2. Turn on power to radio set, which may be accomplished with one of the following: radio or communications power switch, push-to-reset circuit breaker, or an intercommunications power switch.
3. Turn on aircraft intercommunications system.

2-4. OPERATING PROCEDURES. (CONT)

TWO-WAY VOICE COMMUNICATION



EL7RM010

1. Turn on aircraft communications equipment in accordance with starting procedures.
2. Set control unit mode control switch (1) to T/R.

NOTE

Some older control units may contain a mask which covers the TONE squelch mode on the SQUELCH mode selector switch. If this is the case, it could be possible that the radio set is not capable of tone squelch operations. At a time not to interfere with the mission or aircraft, have radio set checked and updated as required.

3. Set SQUELCH mode selector switch (2) to desired squelch mode.
4. Set frequency selector switches (3) to desired communications frequency.

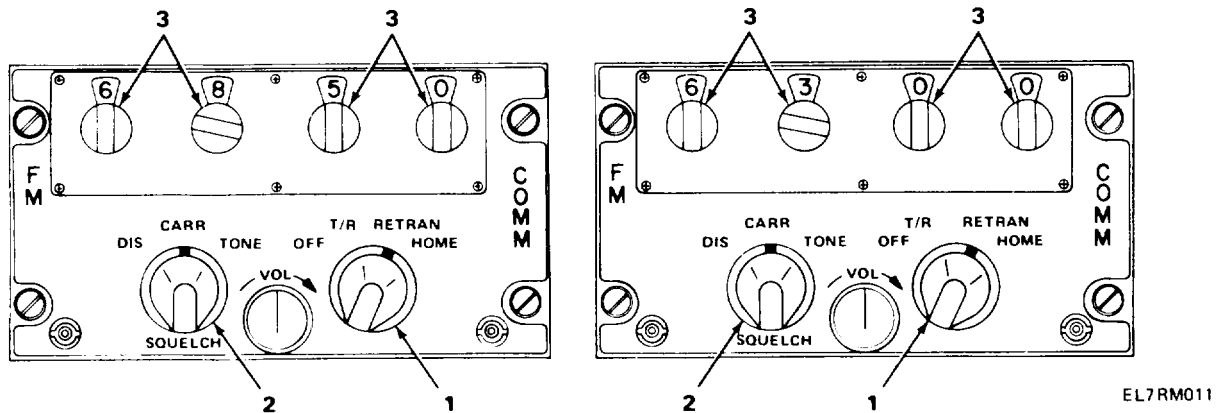
NOTE

A channel-changing tone should be heard in the headset while the radio set is tuning. When tone stops, radio set is tuned.

5. After a 20-second warmup, depress aircraft push-to-talk button (location varies according to aircraft type and crew position) and talk into microphone. Note that side tones are heard in headset.
6. Adjust VOL control (4) for comfortable volume.

2-4. OPERATING PROCEDURES. (CONT)

RETRANSMIT OPERATION



NOTE

Retransmit operations are accomplished using two complete radio sets coupled together as a two-way relay station.

1. Turn on master power to the two radio sets to be used as a relay station.
2. Set mode control switch (1) on both control units to RETRAN.

NOTE

Do not attempt retransmit operation with the SQUELCH controls set to DIS. Both controls must be set to CARR or TONE.

3. Set SQUELCH mode selector switch (2) on both control units to either CARR or TONE.

NOTE

To operate satisfactorily, the two radio sets must be tuned to frequencies at least 3 MHz apart. When they are spaced greater than 8 feet apart, frequency spacing may be decreased.

4. Set frequency selector switches (3) on both control units to the respective frequencies of the radio sets doing the communicating. These frequencies should be predetermined before flight operation takes place.
5. If radio sets making up relay station are complete systems, check for proper operation by monitoring relayed signals in headsets.

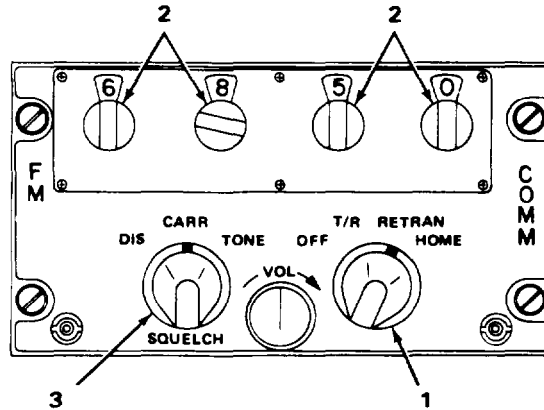
NOTE

If radio sets making up relay station are complete systems, either radio set can be used for two-way voice communication if provisions have been made for keying transmitter.

Transmitter power output should be selected, 1 watt or 10 watts, depending upon distance between relay station radio sets. This is a maintenance function which is accomplished by setting a switch on the front panel of receiver-transmitter.

2-4. OPERATING PROCEDURES. (CONT)

HOMING OPERATION



EL7RM012

NOTE

A homing indicator (ID-1347/ARN-82 or equivalent) and a homing antenna system (AS-1922/ARC or equivalent) are required to perform homing operations.

1. Ensure that all communications equipment is turned on in accordance with starting procedures.
2. Set mode control switch (1) to HOME.

NOTE

Any signal within the frequency range of the radio set can be used for homing if the signal is strong enough as indicated by the disappearance of warning flags on the homing indicator.

3. Set frequency selector switches (2) to frequency of desired homing station.

NOTE

Carrier squelch is automatically selected by an internal contact arrangement when mode control switch is set to HOME. Operation is possible when SQUELCH mode selector switch (3) is set to DIS, however, homing signal warning flags will be inoperative.

4. Set SQUELCH mode selector switch (3) to CARR.
5. Observe homing indicator on aircraft console. If there is sufficient homing signal, homing signal warning flags will not be visible. Note relative position of right-left (vertical) pointer and signal-strength (horizontal) pointer.
6. Fly aircraft toward homing station by taking a heading that causes homing indicator right-left (vertical) pointer to be centered in the indicator.

2-4. OPERATING PROCEDURES. (CONT)**NOTE**

To ensure that the aircraft is not heading away from the homing station, the aircraft heading can be checked by slightly turning right or left. If aircraft heading is toward the homing station, the right-left (vertical) pointer should deflect off center opposite that of the turn.

7. Observe homing indicator signal-strength (horizontal) pointer. Over-the-station position is indicated by signal strength. As aircraft approaches the homing station, the homing signal gets stronger and the horizontal pointer rises. Maximum signal strength is being obtained when the pointer is center scale (horizontal).

STOPPING PROCEDURES

1. Set mode control switch on control unit to OFF.
2. Turn off aircraft intercommunications system.
3. Release push-to-reset circuit breaker button to open power circuit.
4. Set aircraft master power switch to off.

CHAPTER 3

ORGANIZATIONAL MAINTENANCE

Subject	Section	Page
Repair Parts, Special Tools, TM DE, and Support Equipment	I	3-1
Service Upon Receipt	II	3-1
Organizational Preventive Maintenance Checks and Services (PMCS)	III	3-9
Troubleshooting	IV	3-16
Maintenance	V	3-22
Preparation for Storage or Shipment	VI	3-32

OVERVIEW

This chapter contains all information and instructions for organizational maintenance necessary to keep Radio Set AN/ARC-131 in good operating order.

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

Subject	Para	Page
Special Tools	3-1	3-1
Repair Parts	3-2	3-1

3-1. SPECIAL TOOLS.

See appendix B, Maintenance Allocation Chart (MAC), in back of manual. Also refer to the repair parts and special tools list, TM 11-5820-670-20P, covering organizational maintenance for this equipment.

3-2. REPAIR PARTS.

Repair parts are listed in the repair parts and special tools list, TM 11-5820-670-20P, covering organizational maintenance for this equipment.

Section II SERVICE UPON RECEIPT

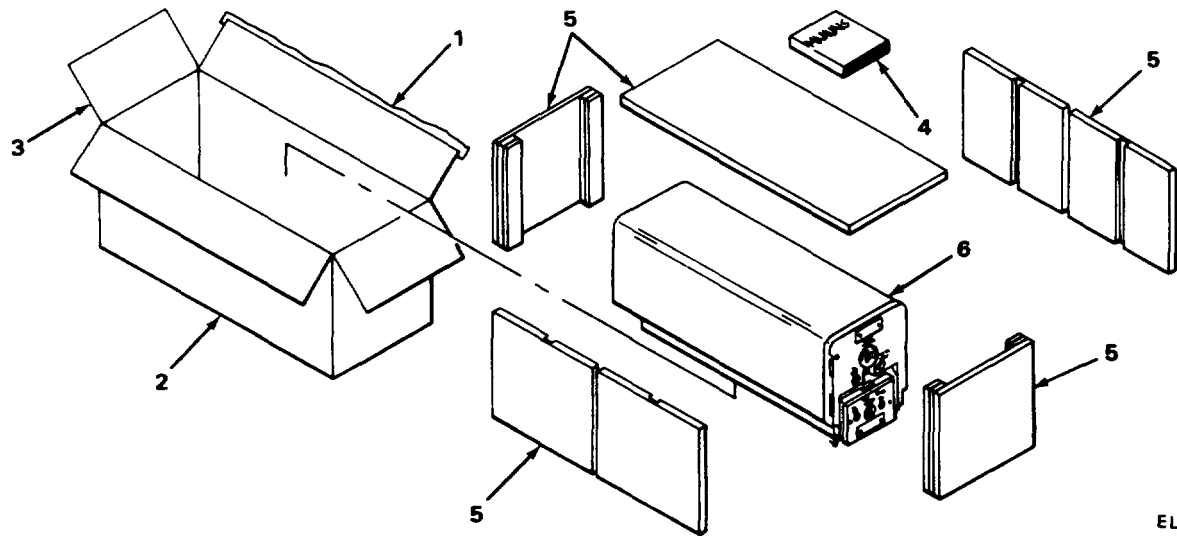
Subject	Para	Page
Unpacking and inspection	3-3	3-1
Installation Instructions	3-4	3-3

3-3. UNPACKING AND INSPECTION.

The radio set is normally received as aircraft-installed equipment. This paragraph covers the unpacking and inspection of radio set components received by the using unit on a direct exchange basis from the responsible AVIM unit.

3-3. UNPACKING AND INSPECTION. (CONT)

TOOLS: Tool Kit, Electronic Equipment TK-101/G



EL7RM013

WARNING

Radio set receiver-transmitter is compact and heavy. Be very careful when handling it. Serious personal injury, as well as damage to equipment, could occur. Observe proper handling procedures.

NOTE

If unit is packed in a wooden crate, remove wooden crate. When cutting cardboard with knife, do not allow knife to enter carton. Save all packing material for storage purposes.

1. Using knife, cut tape (1) on box (2).
2. Open flaps (3) and fold back.
3. Remove manuals (4).
4. Remove fiberboard pads (5).
5. Lift out radio set component (6) (receiver-transmitter shown).

Inspect for damage sustained during shipment. If there is any, report the damage on SF 364, Report of Discrepancy.

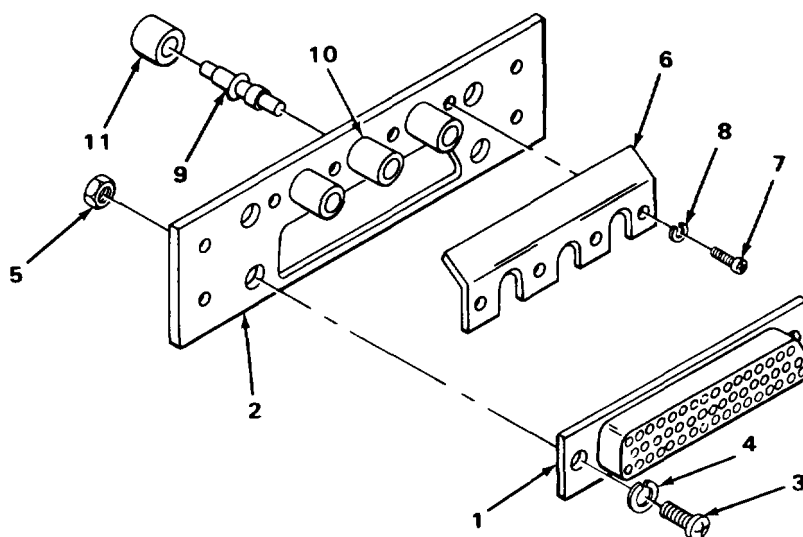
Check to see whether the equipment has been modified. Equipment which has been modified will have the MWO number near the nomenclature plate. Also check to see whether all current MWO'S have been applied. Current MWO'S applicable to equipment are listed in DA Pam 310-1, section V.

3-4. INSTALLATION INSTRUCTIONS.

The procedures in this paragraph provide the instructions for installing the radio set components into the aircraft as received from the AVIM unit. All electrical connections to the components of the radio set are made through the communications wiring harness which is aircraft installed. After installation of any component, insure that receiver-transmitter squelch adjustment and a complete operational check is performed.

Electronic Equipment Tool Kit TK-101/G is needed for all procedures. Tools will not be listed unless they are not contained in the kit.

ASSEMBLY OF CONNECTOR PLATE SM-B-620336



EL7RM031

NOTE

Front side of mounting plate is indicated by longer coaxial contact mounts and beveled guide-pin receptacle holes.

1. Position multiple-pin connector (1) onto front side of mounting plate (2).

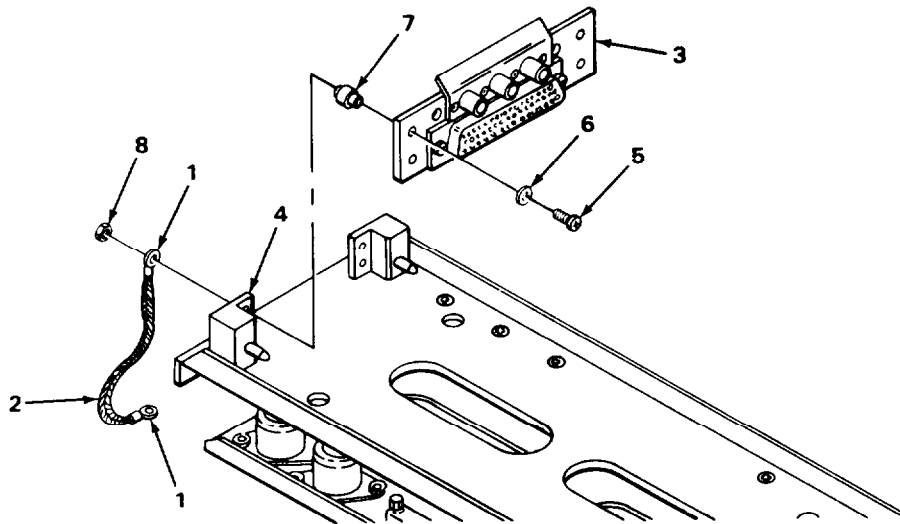
NOTE

Multiple-pin connector will seem loose when secured; this free play is necessary for alignment reasons.

2. Secure multiple-pin connector (1) to mounting plate (2) with two screws (3), lockwashers (4), and nuts (5).
3. Secure contact guard (6) to mounting plate (2) with four screws (7) and lockwashers (8).
4. Insert three coaxial contacts (9) into coaxial contact mounts (10) from rear. Coaxial cable sleeves (11) slide over coaxial cable jacket and solder to contact later.

3-4. INSTALLATION INSTRUCTIONS. (CONT)

INSTALLATION OF CONNECTOR PLATE SM-B-620336



EL7RM032

1. Crimp and solder two terminal lugs (1) to ends of ground strap braid (2).

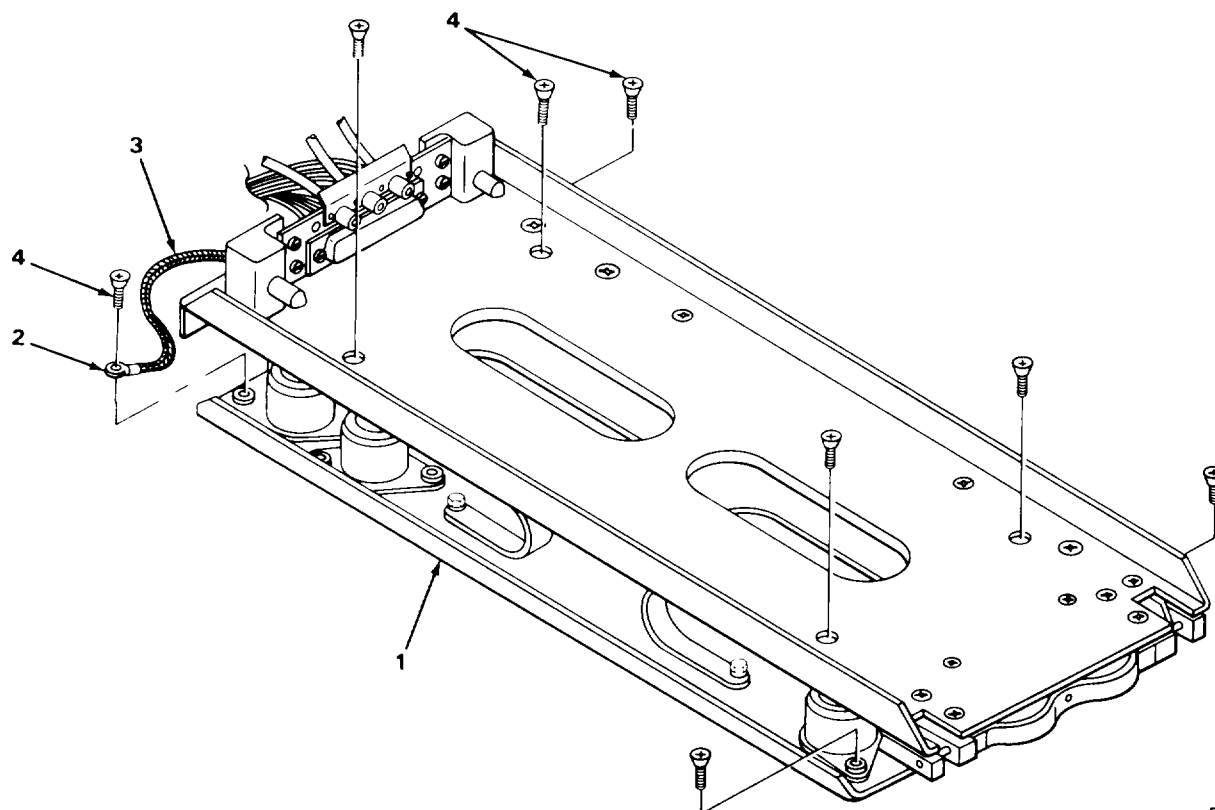
NOTE

Ensure that one lug of ground strap is placed on mounting screw before nut is installed and tightened.

2. Secure assembled connector plate (3) to mounting (4) using four screws (5), washers (6), spacers (7), and locknuts (8). Ensure that spacers (7) are positioned between connector plate (3) and mounting (4) and that ground strap lug (1) is secured in place.
3. Place mounting (4) with installed connector plate (3) into aircraft and using applicable aircraft electronic maintenance manual, solder wiring harness leads and coaxial cable leads to terminals on connector plate (3).

3-4. INSTALLATION INSTRUCTIONS. (CONT)

INSTALLATION OF MOUNTING MT-3664/ARC-131

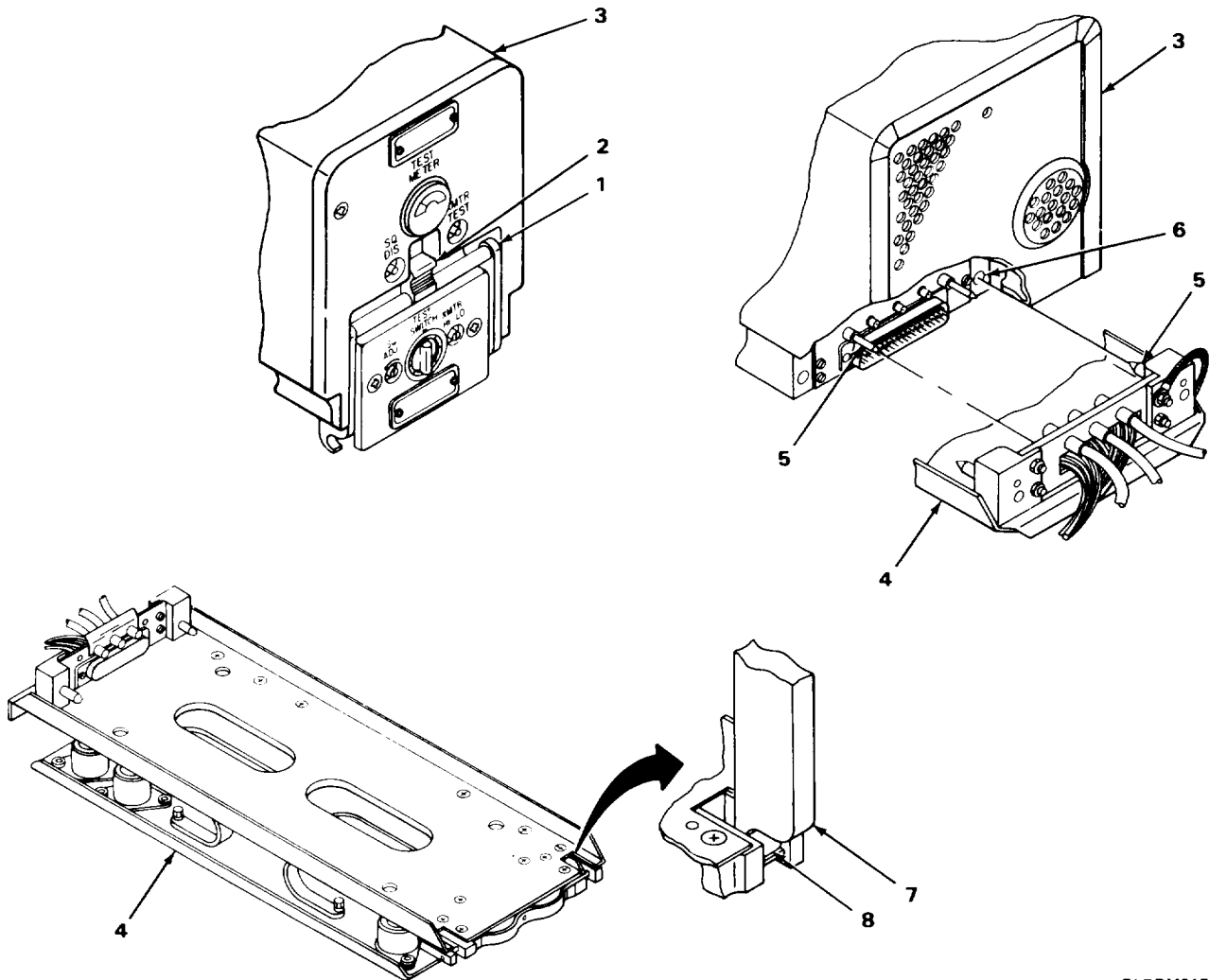


EL7RM014

1. Place fully assembled mounting (1) in position over appropriate screw holes in aircraft equipment rack or airframe structure.
2. Position lug (2) at free end of ground strap (3) on mounting screw (4) before screw is installed and tightened.
3. Aline mounting (1) with screw holes in rack or airframe and secure with eight 6-32 mounting screws (4).

3-4. INSTALLATION INSTRUCTIONS. (CONT)

INSTALLATION OF RECEIVER-TRANSMITTER RT-823/ARC-131

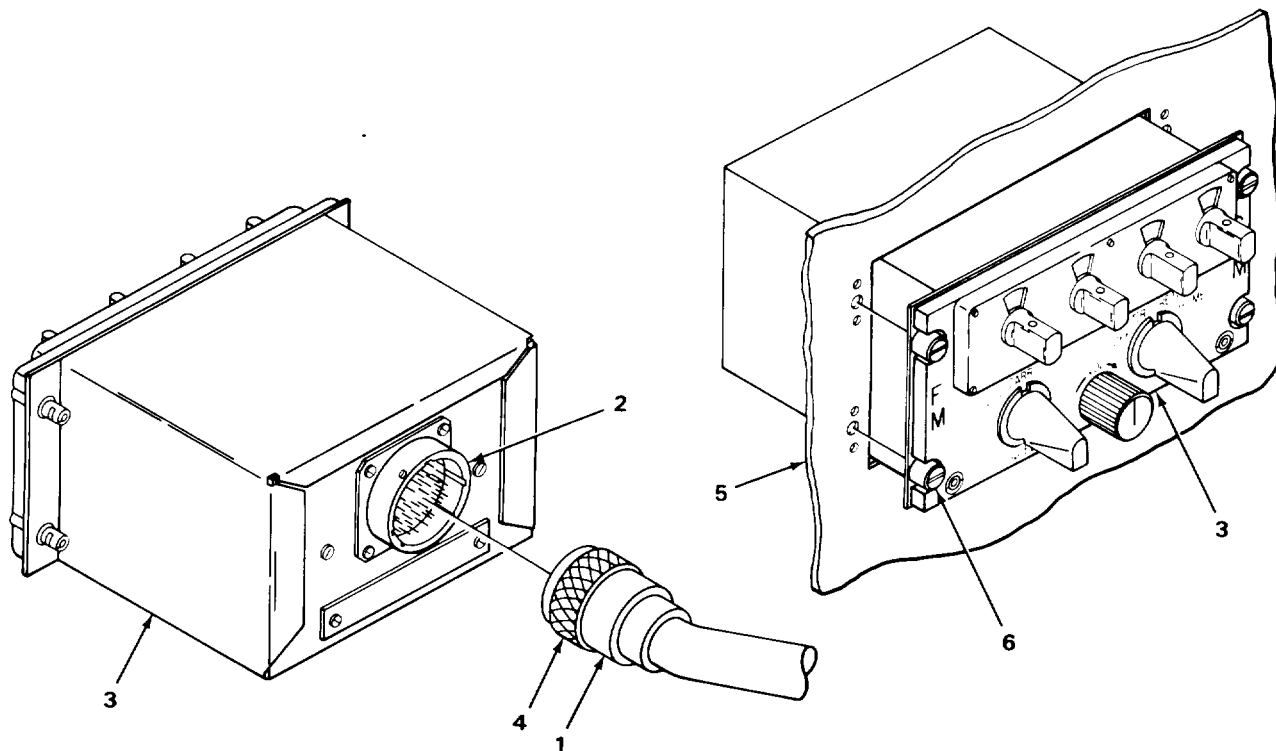


EL7RM015

1. Release locking handle (1) by pushing upon locking handle catch (2); pull locking handle outward and downward.
2. Set receiver-transmitter (3) on mounting (4). Ensure receiver-transmitter is setting flat on mounting and slide it back carefully. Be sure that guide pins (5), at rear of receiver-transmitter and on mounting, engage in respective guide pin receptacles (6).
3. Lift upon locking handle (1) to engage locking handle hooks (7) around holddown bars (8) on mounting (4). Secure locking handle in place with locking handle catch.

3-4. INSTALLATION INSTRUCTIONS. (CONT)

INSTALLATION OF RADIO SET CONTROL C-7088/ARC-131

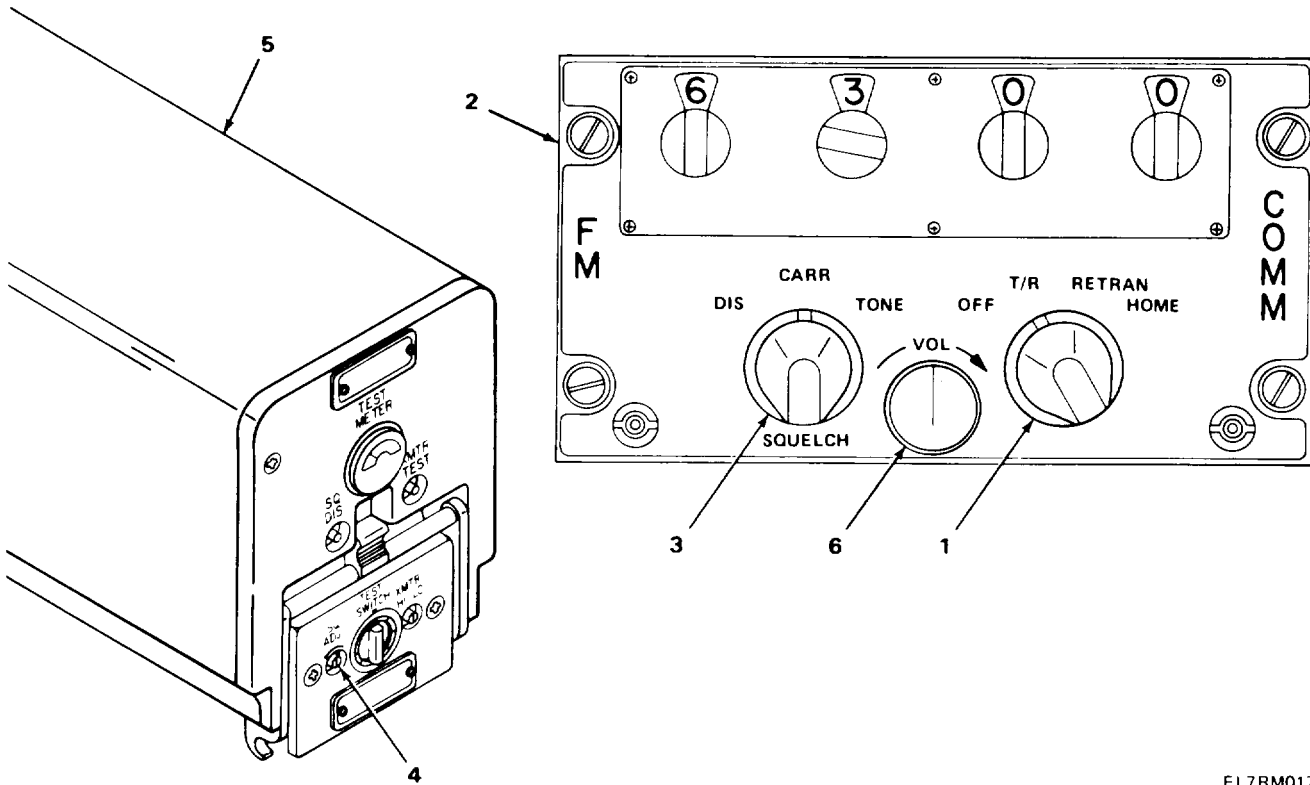


EL7RM016

1. Aline guides in twist-lock connector (1) with the notches in multiple-pin connector (2) on rear of control unit (3).
2. Push twist-lock connector (1) onto multiple-pin connector (2) and secure it by twisting knurled collar (4) clockwise until it locks.
3. Place control unit (3) in position and secure it to aircraft console (5) with four turnlock fasteners (6).

3-4. INSTALLATION INSTRUCTIONS. (CONT)

ADJUSTMENT OF RECEIVER-TRANSMITTER SQUELCH



EL7RM017

Squelch adjustment control (SQ ADJ) is located on receiver-transmitter front panel. After installing any components of radio set, adjust squelch as follows:

1. Disconnect coaxial cable at communication antenna or where easily accessible. (Refer to applicable aircraft manuals for location and access.)
2. Turn on communications equipment in accordance with starting procedures (para 2-4).
3. Set mode control switch (1) on control unit (2) to T/R.
4. Set SQUELCH mode selector switch (3) to CARR.

NOTE

The receiver-transmitter squelch adjustment must begin with squelch adjustment control (SQ ADJ) turned fully counterclockwise.

3-4. INSTALLATION INSTRUCTIONS. (CONT)

5. Turn SQ ADJ control (4) on receiver-transmitter (5) fully counterclockwise.
6. Set VOL control (6) on control unit (2) so that the background noise can be heard at a comfortable level in the headset.
7. Slowly rotate receiver-transmitter SQ ADJ control (4) clockwise until background noise just cuts out. Do not rotate SQ ADJ control beyond this cut out point.
8. Check squelch setting at high, midrange, and low frequencies. If any of the frequencies are not fully squelched, rotate SQ ADJ control (4) slightly clockwise.
9. Turn off all communications equipment in accordance with stopping procedures (para 2-4).
10. Reconnect communications antenna coaxial cable disconnected in step 1.
11. Perform complete preflight operational check (para 2-3).

Section III ORGANIZATIONAL PREVENTIVE MAINTENANCE CHECKS AND SERVICES (PMCS)

Subject	Para	Page
General	3-5	3-9
Organizational Preventive Maintenance Checks and Services	3-6	3-10
Cleaning and Touchup Painting	3-7	3-15

3-5. GENERAL.

To ensure that Radio Set AN/ARC-131 is in proper operating condition at all times, it must be inspected and checked systematically so that any defect or damage which may have occurred can be found and corrected to prevent any permanent damage or radio set failure. These inspections and checks are termed preventive maintenance checks and services (PMCS). Defects discovered during operation of the radio set shall be noted and corrected as soon as operation has ceased. Stop operation immediately if a deficiency is noted during operation which can damage equipment.

NOTE

Record all deficiencies together with corrective action in accordance with procedures outlined in DA Pam 738-750.

Organizational PMCS consist of intermediate PMCS and periodic PMCS.

3-6. ORGANIZATIONAL PREVENTIVE MAINTENANCE CHECKS AND SERVICES.

Some PMCS are considered to be routine and should be done anytime you see that they need to be done. For some items of equipment, routine PMCS are not listed in the PMCS table. Routine PMCS that are listed in the PMCS table are there because others have reported unusual or significant problems with a particular item.

Routine PMCS include the following:

1. Check to see that the aircraft's intercommunications system is complete.

CAUTION

Use only clear water and a rag to clean plastic surfaces. Do not paint a plastic surface. Damage to plastic will result if cleaned with solvents or painted.

2. Check equipment surfaces for corrosion, rust, and fungus. Clean and touchup paint as needed. General procedures for cleaning and touchup painting are contained in paragraph 3-7.
3. Check component controls to ensure that knobs are not missing, broken or loose; and working properly. Detailed instructions for replacing control knobs are contained in chapter 3, section V.
4. Check for loose connectors and jacks. Procedures for tightening and securing connectors are contained in chapter 3, section II.
5. Check for loose mountings, hardware, brackets, etc. Tighten as needed. Replacement procedures are contained in chapter 3, section V.

WARNING

Ensure that the correct types of bolts or screws, star washers and nuts are used and properly assembled. Severe electrical hazards exist when items of equipment are not properly installed and grounded.

6. Check for bent or missing mounting guides and connector pins.
7. Check cables for fraying, cuts, cracks, dry rot, or other damage. Fix or replace as needed. Check for improperly routed cables. Refer to the appropriate aircraft electronic maintenance manual for cable routing instructions.
8. Check the aircraft primary electrical power system and antenna system in accordance with the appropriate aircraft electronic maintenance manual.

NOTE

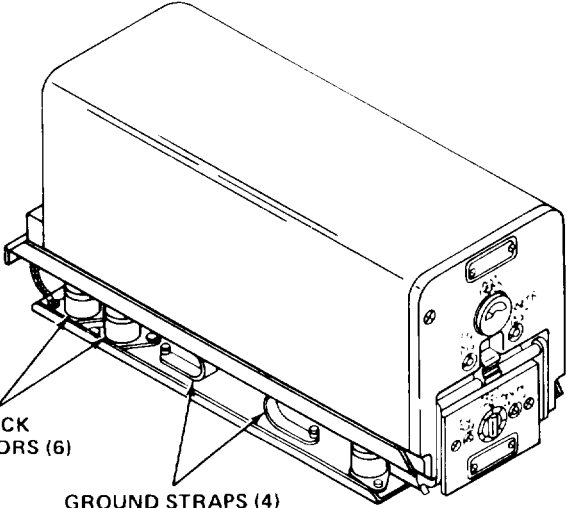
Refer to DA PAM 310-1 for the latest listing of applicable publications and to determine whether new applicable MWO'S have been published. All URGENT MWO'S must be applied immediately. All NORMAL MWO'S can be scheduled.

Perform routine preventive maintenance as required.

3-6. ORGANIZATIONAL PREVENTIVE MAINTENANCE CHECKS AND SERVICES. (CONT)

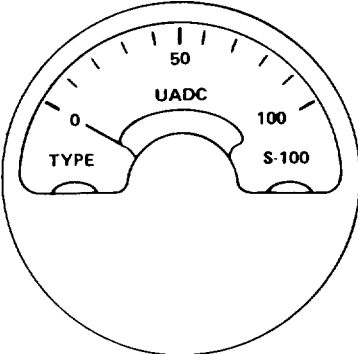
INTERMEDIATE PREVENTIVE MAINTENANCE CHECKS AND SERVICES

Intermediate PMCS shall be performed once every intermediate interval. An intermediate interval is defined as approximately 25 flight-hours. The intermediate PMCS performed on the radio set shall be performed concurrently with the aircraft intermediate PMCS. Intermediate intervals can be adjusted to compensate for unusual operating conditions. Equipment maintained in a standby (ready for immediate operation) condition must have intermediate maintenance performed at least once every 30 days. Equipment in limited storage (requires service before operation) does not require maintenance.

ITEM NO.	ITEM TO BE INSPECTED	PROCEDURE
1	Mounting	<p>Check ground straps and shock isolators for security of attachment and check shock isolators for smooth operation.</p> <div style="text-align: center;">  <p>The diagram shows a perspective view of a rectangular radio set. At the bottom, there are four ground straps and six shock isolators. Labels with leader lines point to these components: 'SHOCK ISOLATORS (6)' and 'GROUND STRAPS (4)'. The radio set has a control panel on the right side with various knobs and switches.</p> <p>EL7RM019</p> </div>
2	Control Unit	<p style="text-align: center;">NOTE</p> <p>If aircraft engines are operated during operational check, an authorized crewmember will start and operate engines. If aircraft engines are not operated, use an auxiliary power source to prevent excessive drain on aircraft battery. Refer to the applicable aircraft manuals for connections and power requirements.</p> <p>Perform operational check step a (para 3-12) and check for proper operation. If control unit does not work properly, refer to troubleshooting (para 3-9) items 1 and 2.</p>

3-6. ORGANIZATIONAL PREVENTIVE MAINTENANCE CHECKS AND SERVICES. (CONT)

INTERMEDIATE PREVENTIVE MAINTENANCE CHECKS AND SERVICES (CONT)

ITEM NO.	ITEM TO BE INSPECTED	PROCEDURE
3	Receiver-Transmitter	<p>Perform operational check (para 3-12) and check TEST METER for proper operation and damage. If broken, forward to next higher level of maintenance for replacement.</p> <div style="text-align: center;"> <p>TEST METER</p>  <p>EL7RM018</p> </div>
4	Tuning	<p>Tune radio set to the frequency of a local fm station. A channel-changing tone should be heard in the headset while radio set is tuning. When the tone stops, radio set is tuned. If radio set does not tune, refer to troubleshooting procedures (para 3-9) item 5.</p>
5	Two-Way Communications	<p>Establish two-way voice communications (para 2-4). if communications cannot be established, refer to troubleshooting procedures (para 3-9) items 11 through 15.</p> <p style="text-align: center;">NOTE</p> <p style="text-align: center;">Perform the following procedure only when two radio sets are installed in the aircraft.</p>
6	Retransmission	<p>Operate two radio sets for retransmit operation (para 2-4). If retransmission cannot be accomplished, refer to troubleshooting procedures (para 3-9) items 16 and 17.</p> <p style="text-align: center;">NOTE</p> <p style="text-align: center;">Perform the following procedure only when aircraft is equipped for homing operations.</p>
7	Homing	<p>Operate radio set for homing operation (para 2-4). If homing cannot be accomplished, refer to troubleshooting procedures (para 3-9) item 18.</p>

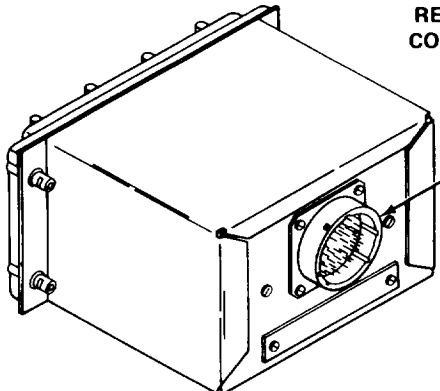
3-6. ORGANIZATIONAL PREVENTIVE MAINTENANCE CHECKS AND SERVICES. (CONT)

PERIODIC PREVENTIVE MAINTENANCE CHECKS AND SERVICES

Periodic PMCS shall be performed once every periodic interval in addition to intermediate PMCS. The periodic interval will be in accordance with the requirements of DA Pam 738-750. The periodic PMCS of the radio set shall be scheduled concurrently with the periodic PMCS of the aircraft in which it is installed to reduce out-of-service time. Refer to applicable aircraft technical manuals for hours between service periods.

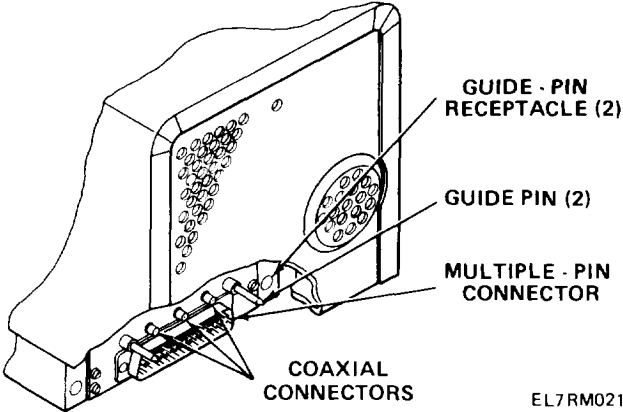
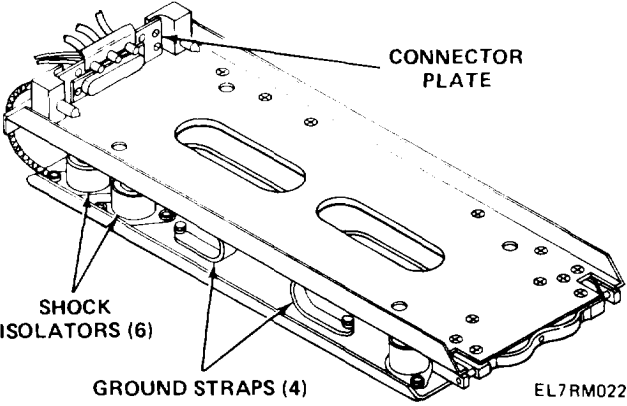
NOTE

Equipment with a deficiency that cannot be remedied at the organizational level should be forwarded to next higher level of maintenance.

ITEM NO.	ITEM TO BE INSPECTED	PROCEDURE
1	Control Unit	<p style="text-align: center;">NOTE</p> <p>Refer to DA Pam 310-1 for latest listing of applicable publications and to determine whether new applicable MWO's have been published. All URGENT MWO's must be applied immediately. All NORMAL MWO's can be scheduled.</p> <p>Remove control unit (para 3-11).</p> <p>Check multiple-pin connector for bent or distorted pins or any damage or foreign material that would hinder proper mating.</p> <div style="text-align: center;">  <p>REAR VIEW OF CONTROL UNIT</p> <p>MULTIPLE - PIN CONNECTOR</p> <p>EL7RM020</p> </div> <p>Reinstall control unit (para 3-11).</p>

3-6. ORGANIZATIONAL PREVENTIVE MAINTENANCE CHECKS AND SERVICES. (CONT)

PERIODIC PREVENTIVE MAINTENANCE CHECKS AND SERVICES (CONT)

ITEM NO.	ITEM TO BE INSPECTED	PROCEDURE
2	Receiver-Transmitter	<p>Remove receiver-transmitter from mounting (para 3-11).</p> <p>Check multiple-pin connector, coaxial connectors, and guide pins for distortion, bends, or other evidence of improper mating.</p>  <p>The diagram shows a perspective view of the rear of a receiver-transmitter unit. It highlights several connection points: two circular 'GUIDE PIN RECEPTACLES', two individual 'GUIDE PINS', a 'MULTIPLE-PIN CONNECTOR' with many small pins, and two 'COAXIAL CONNECTORS'. The diagram is labeled 'EL7RM021'.</p>
3	Mounting	<p>With receiver-transmitter removed, check mounting plate multiple-pin connector, coaxial connectors, and guide pins for distortion, bends, or other evidence of improper mating.</p>  <p>The diagram shows a perspective view of a rectangular mounting plate. It features a 'CONNECTOR PLATE' at one end, 'SHOCK ISOLATORS (6)' along the bottom edge, and 'GROUND STRAPS (4)' attached to the bottom. The diagram is labeled 'EL7RM022'.</p> <p>Check shock isolators for smooth action and security.</p> <p>Check ground straps for security of attachment.</p> <p>Reinstall receiver-transmitter (para 3-11).</p>
4	Antenna System	<p>Check antenna system in accordance with applicable aircraft maintenance manual.</p>
5	Radio Set Operation	<p>Perform operational check (para 3-12).</p>

3-6. ORGANIZATIONAL PREVENTIVE MAINTENANCE CHECKS AND SERVICES. (CONT)**PULLOUT INTERVAL**

Radio Set AN/ARC-131 will be removed from aircraft every 300 flight-hours and checked by direct support (aviation intermediate) maintenance personnel. Instructions for performing required checks are identified as pullout checks in direct support (aviation intermediate) maintenance manuals.

3-7. CLEANING AND TOUCHUP PAINTING.

This paragraph provides procedures for cleaning exterior surfaces of the radio set and instructions for touchup, refinishing, or repainting as required.

CLEANING**WARNING**

Fumes of TRICHLOROTRIFLUOROETHANE are poisonous. Provide adequate ventilation whenever you use TRICHLOROTRIFLUOROETHANE. Do not use solvent near heat or open flame. TRICHLOROTRIFLUOROETHANE will not burn, but heat exchanges the gas into poisonous, irritating fumes. DO NOT breathe the fumes or vapors. TRICHLOROTRIFLUOROETHANE dissolves natural skin oils. DO NOT get the solvent on your skin. Use gloves, sleeves, and an apron which the solvent cannot penetrate. If the solvent is taken internally, consult a physician immediately.

CAUTION

Use only clear water and a rag to clean plastic surfaces. Do not paint a plastic surface. Damage to plastic will result if cleaned with solvents or painted. Do not press on meter face when cleaning, meter face may become damaged.

Remove moisture and loose dirt with a clean, dry, soft cloth. If dirt is difficult to remove, dampen cloth with water; if necessary, use mild soap. Oil and greases can be removed by dampening cloth with cleaning solvent.

Excessively dirty intake and exhaust grills on the exterior of the receiver-transmitter can be cleaned by brushing off loose dirt with a dry brush, or vacuuming if a vacuum cleaner is available.

TOUCHUP PAINTING**CAUTION**

Do not paint plastic surfaces. If plastic is accidentally painted, do not try to remove paint as damage to plastic will occur.

When the radio set requires repainting, refinishing, or touchup painting, use a lusterless aviation black paint, color no. 37038 as listed in Federal Standard No. 595a, or equivalent. Refer to applicable painting and refinishing instructions given in SB 11-573 and TB 43-0118.

Remove rust and corrosion from metal surfaces by lightly sanding with fine sandpaper. Brush two thin coats of paint on bare metal to protect it from further corrosion.

A perfect match with exact shade of original paint may not be possible. The prevention of corrosion and deterioration is the most important consideration. This, however, should not be taken to mean appearance is not important. Touchup paint should be accomplished neatly and in a good workman-ship-like manner.

Section IV TROUBLESHOOTING

Subject	Para	Page
General	3-8	3-16
Troubleshooting Procedures	3-9	3-16

3-8. GENERAL.

Troubleshooting at the organizational maintenance level is confined to localizing trouble to a defective major unit or items such as knobs, improper mating of connectors, or defective cables or connectors. When performing organizational preventive maintenance checks and services (PMCS), Section III and the operational check (para 3-12) direct references to the troubleshooting chart are made. References from the operation check are directed to specific numbered procedures. The chart does not list all problems that can exist. If a problem is not listed and or the steps given do not solve it, report the problem to the next higher level of maintenance. When working on any problem, be sure to report work on applicable forms shown in DA Pam 738-750.

3-9. TROUBLESHOOTING PROCEDURES.

The troubleshooting chart presented lists the most probable malfunctions that may be found while performing organizational PMCS and/or operational check. The appropriate test(s) and/or inspection(s) are given with actions to correct the malfunction. After correction, an operational check (para 3-12) must be performed to ensure correct operation. If check fails, refer to next higher level of maintenance.

MALFUNCTION	TEST OR INSPECTION	CORRECTIVE ACTION
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1. Control unit panel lamps do not light when aircraft primary power is on.
 - Step 1. Check aircraft panel light control.

Adjust brilliancy of lamp until control unit illuminates.
 - Step 2. Repeat aircraft primary power-on sequence. If control unit panel lamp does not light, lamp assembly in control unit is defective.

Remove and replace control unit (para 3-11).

2. Aircraft 27.5-volt circuit breaker opens when radio set is turned on.
 - Step 1. Turn radio set off, reset circuit breaker, and turn radio set back on. If circuit breaker trips open again, primary power is shorted in receiver-transmitter or control unit.

Remove and replace receiver-transmitter (para 3-11).
 - Step 2. After replacing receiver-transmitter, reset circuit breaker and turn radio set on. If circuit breaker opens, control unit is shorting primary power.

Remove and replace control unit (para 3-11).

3-9. TROUBLESHOOTING PROCEDURES. (CONT)**MALFUNCTION****TEST OR INSPECTION****CORRECTIVE ACTION**

-
3. Blower fan at rear of receiver-transmitter does not operate when radio set is turned on and receiver-transmitter is keyed to transmit.

Turn radio set off, check/reset circuit breaker, and turn radio set back on and key transmitter. If blower fan does not operate, blower motor is defective.

Remove and replace receiver-transmitter (para 3-11).

4. Receiver-transmitter TEST METER reading is not within tolerances as specified in operational check (para 3-10).

Turn radio set on, rotate TEST SWITCH to six positions, and determine out of tolerance readings. If readings are not as specified, receiver-transmitter is defective.

Remove and replace receiver-transmitter (para 3-11).

5. Frequency selector switches do not work properly.

Manually turn frequency selector switches on control unit, checking for smooth operation. If switches do not work smoothly and do not properly set frequency, control unit is defective or frequency selector switch knobs are loose.

Check knobs for security of attachment. Tighten or replace knobs as necessary. If necessary, remove and replace control unit.

6. With frequency selector switches on control unit working properly, radio set does not tune to desired frequency.

Step 1. Set frequency selector switches to desired frequency and check that desired frequency has been selected. If frequency set is not achieved, receiver-transmitter or control unit is defective.

Remove and replace receiver-transmitter (para 3-11).

Step 2. After replacing receiver-transmitter, check frequency selected with frequency obtained. If frequencies do not agree, control unit is defective.

Remove and replace control unit (para 3-11).

3-9. TROUBLESHOOTING PROCEDURES. (CONT)

MALFUNCTION

TEST OR INSPECTION

CORRECTIVE ACTION

7. Radio set continues to tune after frequency is set (channel tone in headset does not stop).

Step 1. Reset frequency on control unit. If radio set continues to tune, receiver-transmitter, control unit, or wiring is defective.

Check wiring for improper installation or damage. If no apparent discrepancies are noted, remove and replace receiver-transmitter (para 3-11).

Step 2. Reset frequency. If radio set continues to tune, control unit is defective.

Remove and replace control unit (para 3-11).

8. Radio set inoperative (no sidetone or signals heard).

Step 1. Check primary power circuit breaker for tripped open condition.

Reset circuit breaker.

Step 2. Check all electrical connectors for proper mating.

Reconnect all electrical connectors properly.

Step 3. Check control unit for proper settings. If radio set is still inoperative, control unit or receiver-transmitter is defective.

Remove and replace receiver-transmitter (para 3-11).

Step 4. If radio set is still inoperative, control unit is defective.

Remove and replace control unit (para 3-11).

9. Excess hum heard in headset.

Step 1. Check audio-cable shield for improper grounding.

Refer to applicable aircraft electronic maintenance manual for checks and corrective action.

Step 2. Check aircraft intercommunications system for discrepancies.

Refer to applicable aircraft electronic maintenance manual for checks and corrective action.

3-9. TROUBLESHOOTING PROCEDURES. (CONT)**MALFUNCTION****TEST OR INSPECTION****CORRECTIVE ACTION**

Step 3. If grounding and aircraft intercommunications system is checked and found operating, receiver-transmitter is defective.

Remove and replace receiver-transmitter (para 3-11).

10. Squelch does not operate properly.

Step 1. Check SQ ADJ on receiver-transmitter for proper setting,

Adjust SQ ADJ (para 3-4).

Step 2. If adjusting SQ ADJ on receiver-transmitter does not correct malfunction, receiver-transmitter or control unit is defective.

Remove and replace receiver-transmitter (para 3-11).

Step 3. If squelch does not operate after replacement of receiver-transmitter, control unit is defective.

Remove and replace control unit (para 3-11).

11. Radio set will receive but will not transmit.

Check settings on control unit for correct transmit/receive operation. If all settings are correct, receiver-transmitter is defective.

Remove and replace receiver-transmitter (para 3-11).

12. Radio set will transmit but will not receive.

Step 1. If signal can be heard with control unit SQUELCH control set at DIS but not at CARR, check squelch adjustments (SQ ADJ) on receiver-transmitter.

Adjust SQ ADJ (para 3-4).

Step 2. Check aircraft intercommunications system for discrepancies.

Refer to applicable aircraft electronic maintenance manual for checks and corrective action.

Step 3. Reset all controls on control unit for transmit/receive operation. If radio set still does not receive, receiver-transmitter is defective.

Remove and replace receiver-transmitter (para 3-11).

3-9. TROUBLESHOOTING PROCEDURES. (CONT)

MALFUNCTION	TEST OR INSPECTION	CORRECTIVE ACTION
-------------	--------------------	-------------------

13. Radio set works on some frequencies but not on others.

NOTE

Frequencies 33.90 MHz, 45.20 MHz, 56.50 MHz, and 67.80 MHz are noncompatible frequencies which cause transmitter quieting.

Reset all controls on control unit. If radio set still works intermittently, control unit or receiver-transmitter is defective.

Replace control unit or receiver-transmitter (para 3-11).

14. Audio is distorted.

Step 1. Check all electrical connectors for proper mating.

Reconnect all electrical connections properly.

Step 2. Check aircraft intercommunications system for discrepancies.

Refer to applicable aircraft electronic maintenance manual for checks and corrective action.

Step 3. Reset all controls on control unit for transmit/receiver operation. If audio is still distorted, receiver-transmitter is defective.

Remove and replace receiver-transmitter (para 3-11),

15. Reception and transmission are very weak,

Step 1. Check rf cables and connectors at rear of receiver-transmitter and at antenna and antenna couplers.

Reconnect all connectors as required. Replace any defective cables.

Step 2. If all cables and connectors are in proper condition, reset all controls on control unit. If reception and transmission are still weak, receiver-transmitter is defective.

Remove and replace receiver-transmitter (para 3-11).

16. Radio set does not operate in RETRAN mode.

Step 1. Check squelch adjustment (SQ ADJ) on both receiver-transmitters.

Adjust SQ ADJ on both receiver-transmitters (para 3-4).

3-9. TROUBLESHOOTING PROCEDURES. (CONT)**MALFUNCTION****TEST OR INSPECTION****CORRECTIVE ACTION**

Step 2.	Check cables and connectors for proper mating and connections.	Reconnect all connectors as required.
Step 3.	If radio still does not retransmit after squelch adjustment and proper connecting, receiver-transmitter or control unit on one or both radio sets is defective.	Remove and replace receiver-transmitters one at a time (para 3-11).
Step 4.	If retransmission is still not possible after replacement of both receiver-transmitters, control unit on one or both radio sets is defective.	Remove and replace control units one at a time (para 3-11).
Step 5.	Check aircraft intercommunications system and antenna system.	Refer to applicable aircraft electronic maintenance manual for checks and corrective action.
17. Radio sets oscillate (rapid fluctuations of noise and sidetone) in RETRAN mode.		
	Check squelch adjustment (SQ ADJ) on both receiver-transmitters.	Adjust SQ ADJ on both receiver-transmitters (para 3-4).
18. Radio set does not operate with mode control switch set to HOME.		
Step 1.	Check warning flags on homing indicator. If showing, there is insufficient signal strength.	Change frequency to a local FM station with a closer range.
Step 2.	Reset all controls on control unit. If homing still does not work, receiver-transmitter is defective.	Remove and replace receiver-transmitter (para 3-11).
Step 3.	If replacement does not correct malfunction, control unit is defective.	Remove and replace control unit (para 3-11).
Step 4.	Check proper operation of homing indicator.	Refer to applicable aircraft electronic maintenance manual for checks and corrective action.

Section V MAINTENANCE

Subject	Para	Page
General	3-10	3-22
Maintenance Controls and indicators	3-11	3-22
Operational Check	3-12	3-23
Repair or Replacement	3-13	3-25
Receiver – Transmitter RT 823/ARC-131 Replacement	3-14	3-26
Radio Set Control C-7088/ARC-131 Replacement	3-15	3-27
Control Unit Knob Replacement	3-16	3-28
Control Unit Dial Mask Replacement	3-17	3-29
Mounting MT-3664/ARC-131 Replacement	3-18	3-30
Connector Plate Replacement	3-19	3-31
Adjustment	3-20	3-32

3-10. GENERAL.

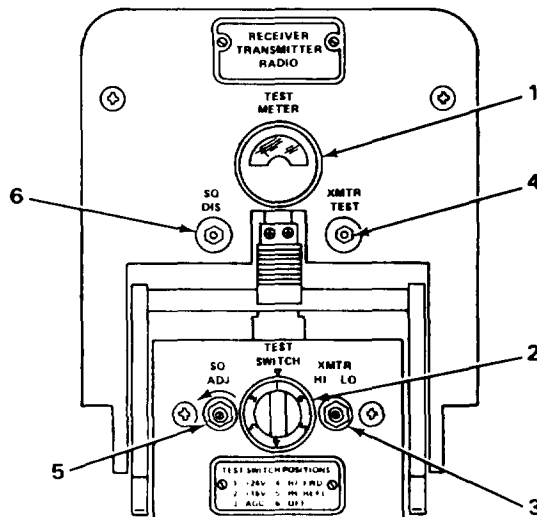
The performance of the radio set is checked and tested during the operational check in this section. If a malfunction is found during a step in the operational check, refer to the appropriate troubleshooting item number in the troubleshooting chart. The faulty part can then be inspected and tested and corrective action taken. Once corrective action has been taken the operational check is then performed again.

If the appropriate corrective action was taken but the radio set failed the repeat of the operational check, the radio set is referred to the next higher level of maintenance.

Maintenance procedures are provided for replacing and adjusting the equipment at the organizational level using authorized tools and replacement parts. Refer to appendix B, Maintenance Allocation Chart.

3-11. MAINTENANCE CONTROLS AND INDICATORS.

In addition to operator's controls and indicators on the control unit and the homing indicator, the controls and indicators on the receiver-transmitter are used by organizational maintenance to perform the operational check, determining the operational status of the radio set, and to make adjustments to squelch and also to set transmitter power output level.



EL7RM023

3-11. MAINTENANCE CONTROLS AND INDICATORS. (CONT)

KEY	CONTROL OR INDICATOR	FUNCTION OR USE
1	TEST METER	Permits monitoring of voltage, automatic gain control (age), and power functions of radio set. Scale is 0 to 100 in 10 equal divisions.
2	TEST SWITCH	Six position rotary switch, used to connect TEST METER to various circuits of radio set to be checked. Position 1 – Connects 24-volt dc supply to TEST METER. Position 2 – Connects regulated 16-volt dc supply to TEST METER. Position 3 – Connects agc circuits to TEST METER. Position 4 – Connects rf output circuit (RF FWD) to TEST METER. Position 5 – Connects antenna circuit (RF REFL) to TEST METER. Position 6 – Disconnects meter from all circuits.
3	XMTR HI-LO (transmitter power output switch)	Selects nominal transmitter power output. In HI position, power output level is 10 watts. In LO position, power output level is 1 watt.
4	XMTR TEST (transmitter test pushbutton)	Keys transmitter without depressing microphone button or press-to-talk button. When TEST SWITCH is set to position 3 and XMTR TEST is depressed, agc is measured on TEST METER. When TEST SWITCH is set to position 4 and XMTR TEST is depressed, forward or rf output power is measured. When TEST SWITCH is set to position 5 and XMTR TEST is depressed, rf reflected by antenna circuit is measured.
5	SQ ADJ (squelch adjustment)	Permits adjustment of carrier squelch.
6	SQ DIS (squelch disable pushbutton)	Disables squelch circuits to allow hearing of background noise to adjust control unit VOL control setting.

3-12. OPERATIONAL CHECK.

The operational check provides a step by step procedure for evaluating the operational readiness of the Radio Set AN/ARC-131. It specifies tests and checks for the receiver- transmitter, mounting, and control unit.

The operational check is normally performed with the radio set installed in aircraft. At a minimum, the operational check is done as part of PMCS. At the discretion of the maintenance supervisor, the operational check could be done more often than the scheduled PMCS. After replacement or adjustment of any component, the portion of the operational check that applies shall be repeated to ensure that the malfunction has been corrected and that no others exist.

3-12. OPERATIONAL CHECK. (CONT)

NOTE

If aircraft engines are operated during operational check, an authorized crewmember will start and operate engines. If aircraft engines are not operated, use an auxiliary power source to prevent excessive drain on aircraft battery. Refer to the applicable aircraft manuals for connections and power requirements.

ACTION	RESULT
<p>a. Perform starting procedures and two-way voice communication in accordance with paragraph 2-4.</p>	<p>a. Control unit panel should light. If panel does not light, see troubleshooting (para 3-9) items 1 and 2.</p>
<p>b. Depress XMTR TEST pushbutton and key receiver-transmitter for a transmit operation.</p>	<p>b. Blower fan at rear of receiver-transmitter should run. If blower motor does not run, see troubleshooting (para 3-9) item 3.</p>
<p>c. Set TEST SWITCH to position 1 and observe TEST METER.</p>	<p>c. TEST METER should indicate regulated 24-volt dc supply to radio set (TEST METER indicates this by needle at center scale, 50 ± 30). If not, see troubleshooting (para 3-9) item 4.</p>
<p>d. Set TEST SWITCH to position 2 and observe TEST METER.</p>	<p>d. TEST METER should indicate 16-volt dc supply to low-voltage transistor circuit (TEST METER indicates this by needle at center scale, 50 ± 30). If not, see troubleshooting (para 3-9) item 4.</p>
<p>e. Set TEST SWITCH to position 3. Observe TEST METER. Depress SQ DIS pushbutton and monitor headset to determine if another station is transmitting on that frequency. (Two people may be required for this check.)</p>	<p>e. TEST METER should indicate low on scale (20 ± 10) unless a signal is being received on the tuned channel. If not, see troubleshooting (para 3-9) item 4.</p>
<p>f. Depress XMTR TEST pushbutton and observe TEST METER. (Radio set must be receiving an fm signal to perform this check.)</p>	<p>f. TEST METER should indicate 80 ± 10 on scale indicating that transmitter oscillator and afc systems are normal. If not, see troubleshooting (para 3-9) item 4.</p>
<p>g. Set mode control switch on control unit to HOME and observe TEST METER.</p>	<p>g. TEST METER should indicate center scale (50 ± 10) if sufficient signal strength is being received. If not, see troubleshooting (para 3-9) item 4.</p>

3-12. OPERATIONAL CHECK. (CONT)

ACTION	RESULT
<p>h. Set mode control switch on control unit to T/R, set TEST SWITCH to position 4, depress XMTR TEST push-button, and observe TEST METER.</p>	<p>h. TEST METER should indicate 50 ± 10 on scale indicating 10 watts forward power. If not, see troubleshooting (para 3-9) item 4.</p>
<p>i. Set TEST SWITCH to position 5, depress XMTR TEST push-button, and observe TEST METER.</p>	<p>i. TEST METER should not indicate more than 25. An indication greater than 25 indicates high reflected power. If this is the case, see troubleshooting (para 3-9) items 4 and 15.</p>
<p>j. Set TEST SWITCH to position 6 and observe TEST METER.</p>	<p>j. TEST METER should indicate 0, position 6 disconnects meter from all circuits. If any indication on TEST METER, see troubleshooting (para 3-9) item 4.</p>
<p>k. Set SQUELCH mode selector switch to DIS.</p>	<p>k. All frequencies shall be squelch disabled. If not, see troubleshooting (para 3-9) item 10.</p>
<p>l. Perform two-way voice communications in accordance with paragraph 2-4.</p>	<p>l. Trouble-free two-way voice communication should be made. If there are any discrepancies, see troubleshooting (para 3-9) items 5 through 15.</p>
<p>m. Perform retransmission in accordance with paragraph 2-4. (Can only be performed if two radio sets have been set up as a relay station.)</p>	<p>m. Trouble-free retransmission should be made. If radio set does not operate, see troubleshooting (para 3-9) item 16. If radio set oscillates, see troubleshooting (para 3-9) item 17.</p>
<p>n. Perform homing in accordance with paragraph 2-4.</p>	<p>n. Aircraft homing indicator should indicate aircraft heading in relationship with homing signal transmitter. If radio set does not home, see troubleshooting (para 3-9) item 18.</p>

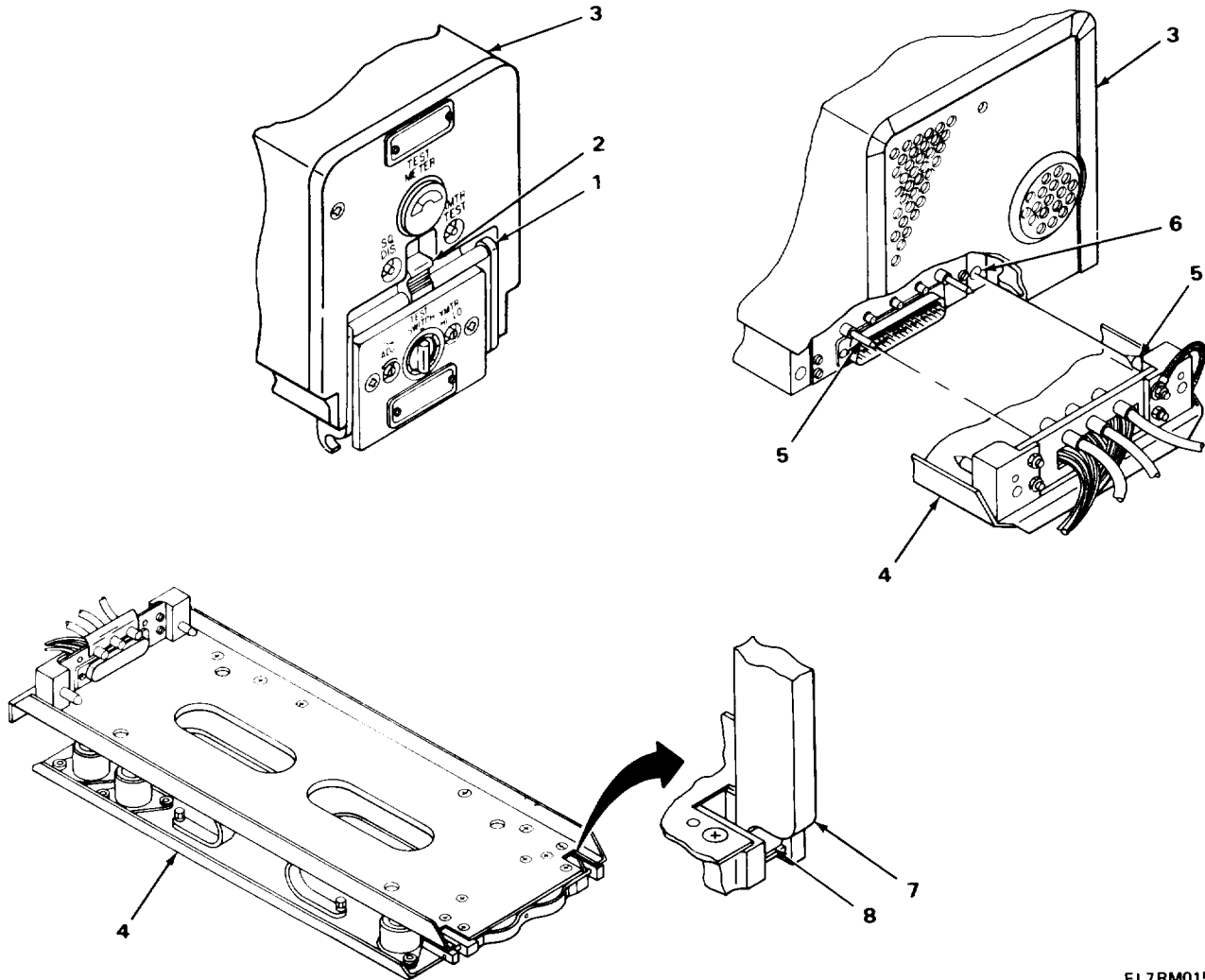
3-13. REPAIR OR REPLACEMENT.

Repair of the radio set, at organizational maintenance, is limited to replacement of faulty components or piece parts as follows: Receiver-Transmitter RT/ARC-131, Radio Set Control C-7088/ARC-131, control unit knobs, control unit dial mask, Mounting MT-3664/ARC-131, and connector plate.

Resources required are not listed unless they apply to the procedure. Tool Kit, Electronic Equipment TK-101/G is needed for all procedures, and tools will not be listed unless they are not contained in the kit. Personnel are listed only if the task requires more than one technician. If Personnel Required is not listed, one technician can do the task. The normal standard equipment condition to start a maintenance task is power off. Equipment Condition is not listed unless some other condition is required.

3-14. RECEIVER-TRANSMITTER RT-823/ARC-131 REPLACEMENT.

MATERIALS/PARTS: Receiver, Transmitter RT-823/ARC-131



EL7RM015

REMOVAL

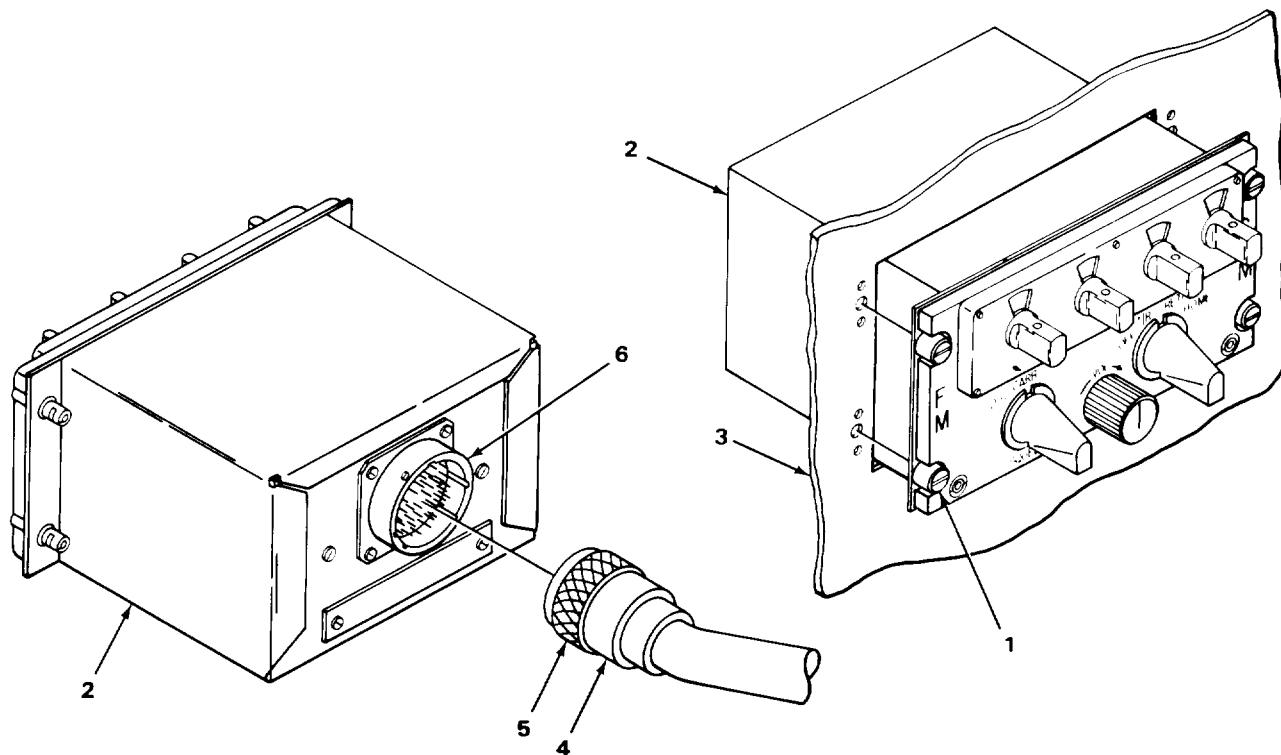
1. Release locking handle (1) by pushing upon locking handle catch (2).
2. Using locking handle (1), pull receiver-transmitter (3) out and off mounting (4).

INSTALLATION

1. Set receiver-transmitter (3) on mounting (4). Ensure that receiver-transmitter is sitting flat on mounting and slide it back carefully. Be sure that guide pins (5) at rear of receiver-transmitter and on mounting engage in respective guide pin receptacles (6).
2. Lift upon locking handle (1) to engage locking handle hooks (7) around hold-down bars (8) on mounting (4). Secure locking handle (1) in place with locking handle catch (2).

3-15. RADIO SET CONTROL C-7088/ARC-131 REPLACEMENT.

MATERIALS/PARTS: Control, Radio Set C-7088/ARC-131



EL7RM024

REMOVAL

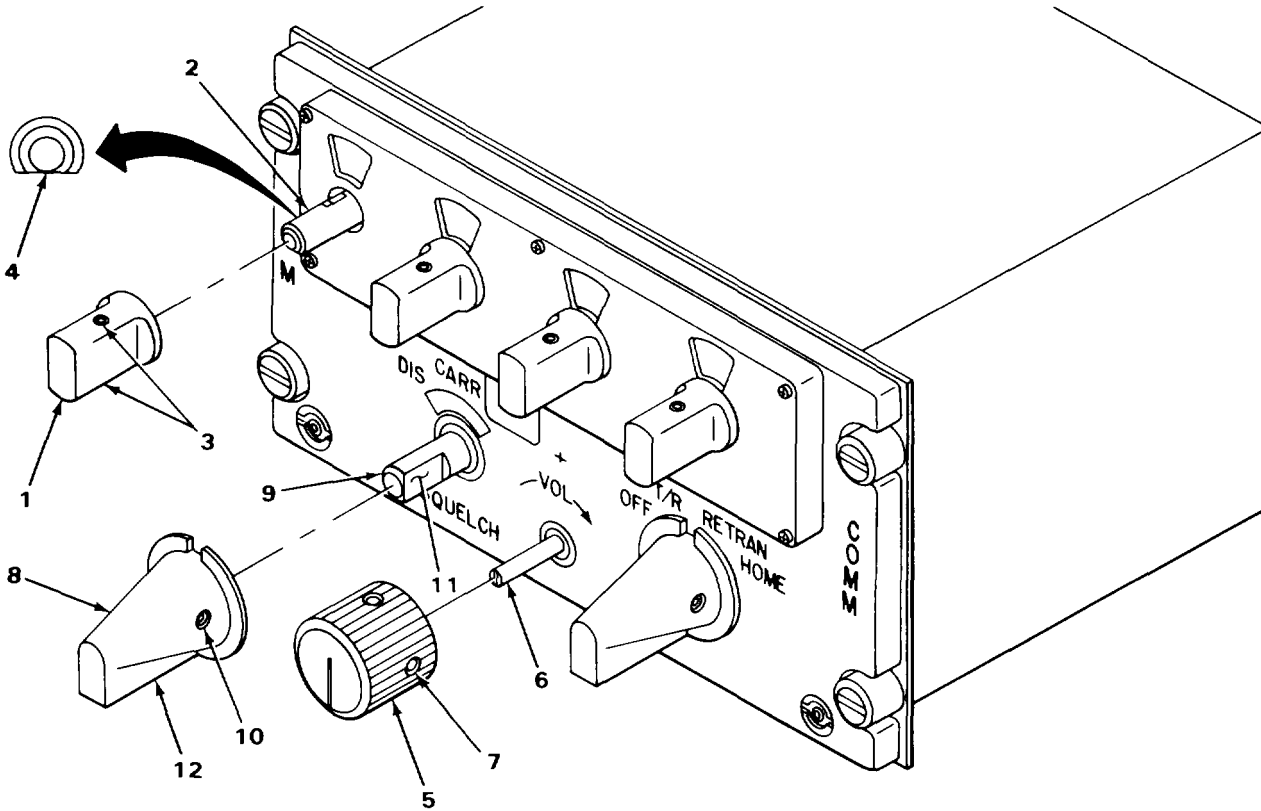
1. Loosen four turnlock fasteners (1) and pull control unit (2) out of equipment rack (3) far enough to reach cable twist-lock connector (4).
2. Disconnect cable connector (4) by twisting knurled collar (5) counterclockwise and pulling cable twist-lock connector (4) from multiple-pin connector (6).
3. Remove control unit (2).

INSTALLATION

1. Aline guides in cable twist-lock connector (4) with the notches in multiple-pin connector (6) on rear of control unit (2).
2. Push cable twist-lock connector (4) onto multiple-pin connector (6) and secure it by twisting knurled collar (5) clockwise until it locks.
3. Place control unit (2) in position and secure it to aircraft console (3) with four turnlock fasteners (1).

3-16. CONTROL UNIT KNOB REPLACEMENT.

MATERIALS/PARTS: Knob (frequency selector) PN SMB620191
Knob (squelch and control mode) PN SMC620189
Knob (volume control) PN FNA1836-126-440



EL7RM025

REMOVAL

NOTE

Step given is typical for removal of all knobs.

Loosen two setscrews and remove knob.

INSTALLATION

NOTE

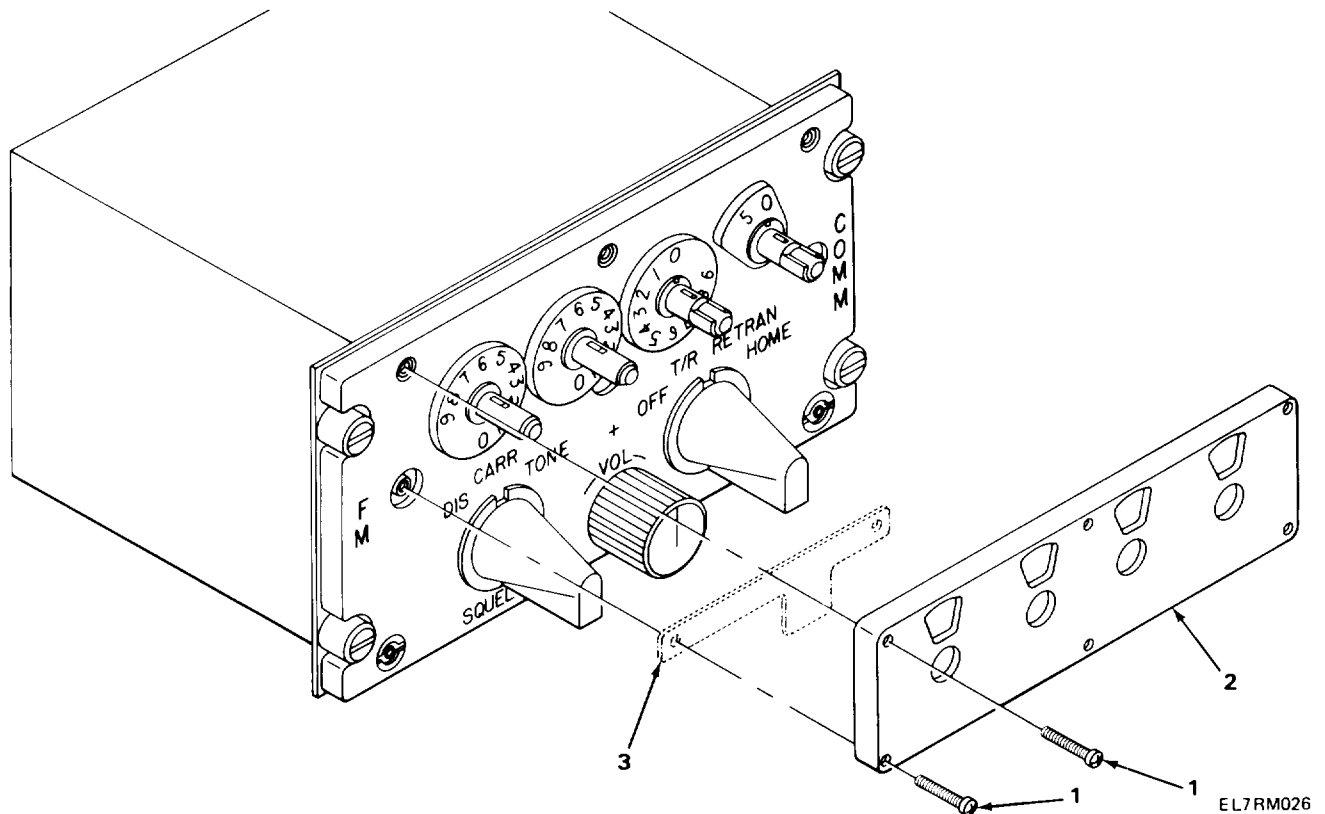
Steps 1 and 2 apply to frequency selector knobs, step 3 applies to VOL control knob, and steps 4 and 5 apply to squelch and mode control knobs.

1. Position knob (1) on shaft (2) and align one of two setscrews (3) with flat (4) on switch shaft.
2. Tighten two setscrews (3).
3. Position knob (5) on switch shaft (6) and tighten two setscrews (7).
4. Position knob (8) on switch shaft (9) and align side setscrew (10) with flat (11) on switch shaft.
5. Tighten side setscrew (10) and bottom setscrew (12).

3-17. CONTROL UNIT DIAL MASK REPLACEMENT.

MATERIALS/PARTS: Mask, dial PN SMC620195

PRELIMINARY PROCEDURE: Remove frequency selector knobs.

**REMOVAL**

Remove six screws (1) and remove dial mask (2).

NOTE

Some older control units may contain a masking plate (3) which covers the SQUELCH mode selector switch TONE display. If this is the case, it could be possible that the radio set is not capable of tone squelch operations. Remove masking plate (3) and update receiver-transmitter as required.

INSTALLATION

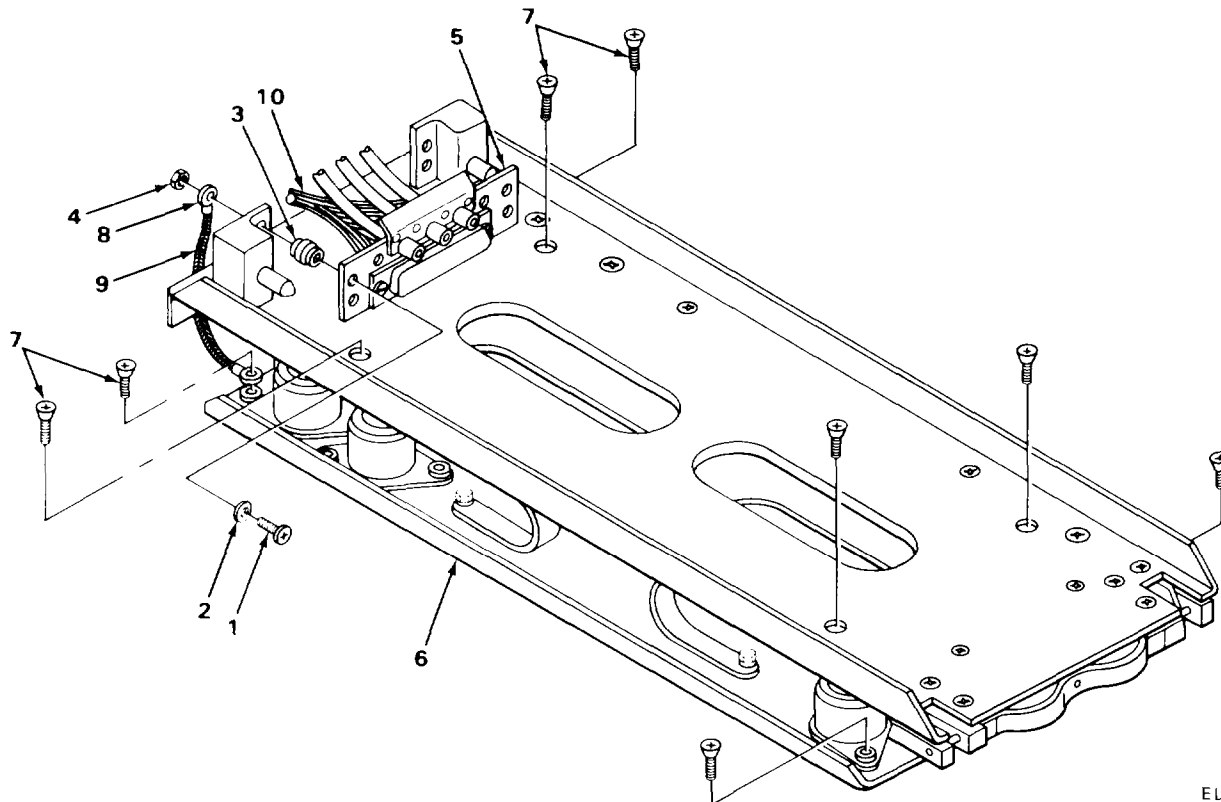
Position dial mask (2) on control unit and install six screws (1).

FOLLOW-ON MAINTENANCE: Install frequency selector knobs.

3-18. MOUNTING MT-3664/ARC-131 REPLACEMENT.

MATERIALS/PARTS: Mounting, MT-3664/ARC-131

PRELIMINARY PROCEDURES: Remove receiver-transmitter.



EL7RM027

REMOVAL

1. Remove four screws (1) washers (2), spacers (3), and locknuts (4) securing connector plate (5) to mounting (6).
2. Remove eight mounting screws (7) and remove mounting (6).

INSTALLATION

1. Place mounting (6) in position in equipment rack or airframe structure.

NOTE

Ensure that lug (8) of ground strap (9) is positioned on screw (1) before locknut (4) is installed and tightened.

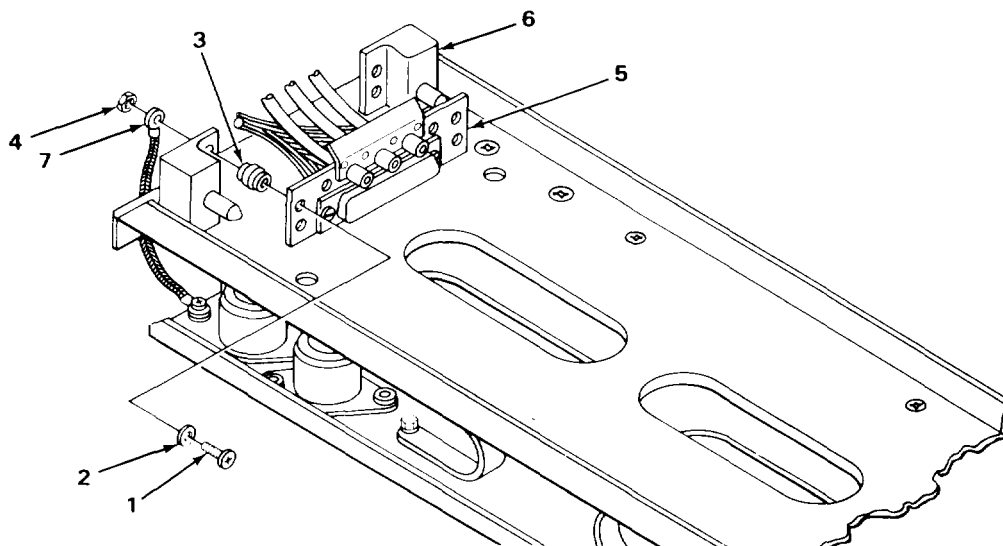
2. Place connector plate (5), with attached wiring harness (10), in position and secure with four mounting screws (1), washers (2), spacers (3), and locknuts (4).
3. Aline mounting (6) with screw holes in rack or airframe and install eight mounting screws (7). Ensure lug (8) at free end of ground strap (9) is placed on mounting screw (7) before it is installed and tightened.

FOLLOW-ON MAINTENANCE: Install receiver-transmitter.

3-19. CONNECTOR PLATE REPLACEMENT.

MATERIALS/PARTS: Connector Kit PN SM-B-620336

PRELIMINARY PROCEDURES: Remove receiver-transmitter.



EL7RM033

REMOVAL**NOTE**

Do not remove any wires or coaxial cables until new connector plate is in place and ready to be wired.

Remove four screws (1), washers (2), spacers (3), and locknuts (4).

INSTALLATION

1. Assemble new connector plate (5) in accordance with assembly instructions in installation instructions (para 3-4).
2. Secure assembled connector plate (5) to mounting (6) using four screws (1), washers (2), spacers (3), and locknuts (4). Ensure that spacers (3) are positioned between connector plate (5) and mounting (6) and that lug (7) is positioned on screw (1) before locknut (4) is installed and tightened.
3. Using a soldering iron, remove one wire at a time from old connector plate and solder it to new connector plate.

FOLLOW-ON MAINTENANCE: Install receiver-transmitter.

3-20. ADJUSTMENTS.

After replacement of any radio set component, adjustment of receiver-transmitter squelch (SQ ADJ) must be performed before radio set is operational ready. Adjust receiver-transmitter squelch in accordance with installation instructions (para 3-4).

Section VI PREPARATION FOR STORAGE OR SHIPMENT

Subject	Para	Page
General	3-21	3-32
Administrative Storage	3-22	3-32
Intermediate Storage	3-23	3-33

3-21. GENERAL.

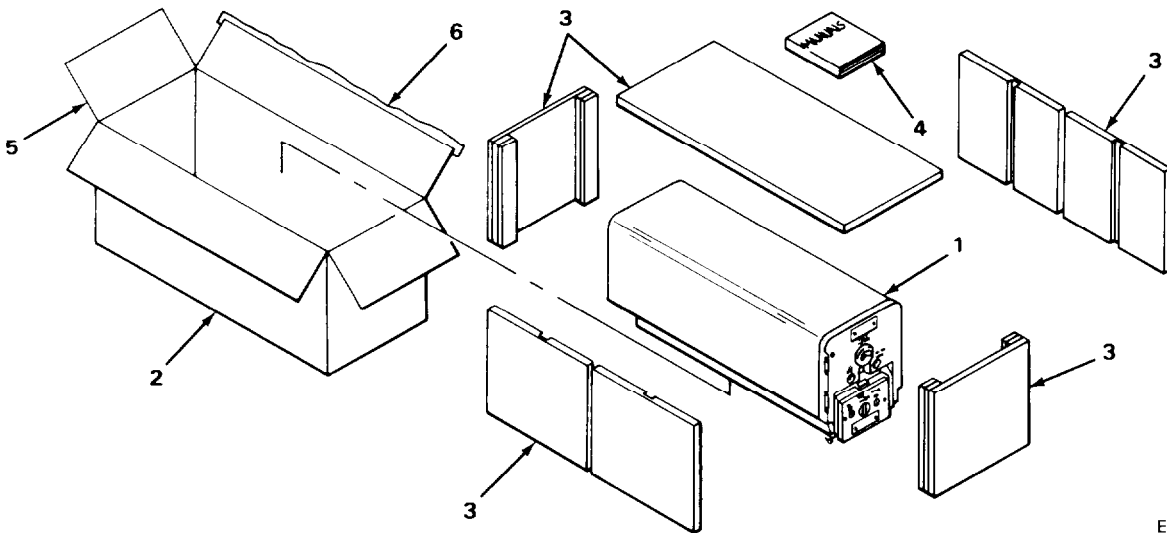
This section provides procedures for repacking components of the radio set. Before repacking, the next scheduled PMCS should be performed. All known problems should be corrected and all current Modification Work Orders (MCO's) applied.

3-22. ADMINISTRATIVE STORAGE.

Administrative storage refers to storage from 1 to 45 days.

TOOLS: Tool Kit, Electronic Equipment TK-101/G

MATERIALS/PARTS: Shipping cartons



EL7RM028

PACKING

1. Place radio set component (1) (receiver-transmitter shown) into carton (2).
2. Arrange fiberboard pads (3) as shown.
3. Replace equipment manuals (4).
4. Close flaps (5) and seal carton with tape (6).
5. Mark carton with nomenclature model identification and serial number of component.
6. Place carton in secure storage area.

3-23. INTERMEDIATE STORAGE.

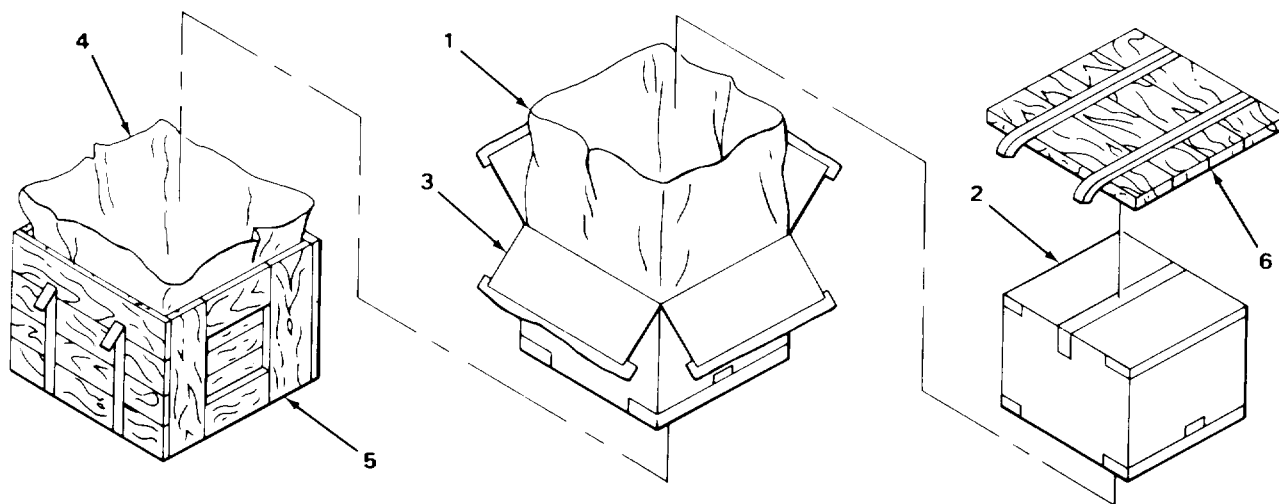
Intermediate storage refers to storage between 46 and 180 days or packing for shipment by air (flyable storage).

TOOLS: Hammer

MATERIALS/PARTS: Shipping cartons and box

Waterproof barrier wrap

PRELIMINARY PROCEDURE: Pack equipment for administrative storage (para 3-16).



EL7RM029

PACKING

1. Place waterproof barrier wrap (1) around equipment carton (2) and seal.
2. Place equipment carton in outer carton (3).
3. Place waterproof barrier wrap (4) around outer carton and seal.
4. Place outer carton in box (5) and nail box cover (6) to top of box.

NOTE

Box must be marked with nomenclature, model identification, and serial number of radio component.

Place box in secure storage area, or secure in aircraft for shipment.

APPENDIX A

REFERENCES

A-1. SCOPE.

The following is a list of all pamphlets, forms, service bulletins, and technical manuals referenced in or related to this manual.

A-2. PAMPHLETS.

Consolidated Index of Army Publications and Blank Forms DA PAM 310-1
 The Army Maintenance Management System (TAM MS) DA PAM 738-750

A-3. FORMS.

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
 Discrepancy in Shipment Report (DISREP) SF-361
 Report of Discrepancy (ROD) SF-364
 Quality Deficiency Report SF-368

A-4. SERVICE AND TECHNICAL BULLETINS.

Safety and Breakaway Wire for Electronic Equipment Installed
 in Aircraft SB 11-543
 Painting and Preservation Supplies Available for Field Use for
 Electronics Command Equipment SB 11-573
 Preservation, Packaging and Packing Materials, Supplies, and
 Equipment Used by the Army SB 38-100
 Field Instructions for Painting and Preserving Electronics Command
 Equipment Including Camouflage Pattern Painting of Electrical Equip-
 ment Shelters..... TB 43-0118

A-5. TECHNICAL MANUALS.

Organizational Maintenance Repair Parts and Special Tools List for
 Radio Set AN/ARC-131 (NSN 5821-00-937-4686) TM 11-5820-670-20P
 Organizational Maintenance Manual: Control, Intercommunications Set
 C-1611/A1C (NSN 5831-00-933-9822) and Discriminator, Discrete
 Signal MD-736/A TM 11-5831-201-20
 Organizational Maintenance Repair Parts and Special Tools List for
 Control, Intercommunication Set C-1611/A1C and Discriminator,
 Discrete Signal MD-736/A TM 11-5831-201-20P
 Operator and Organizational Maintenance: Multi meter AN/URM-105 and
 AN/URM-105C, Including Multimeter ME-77/U and ME-77 C/U...., TM 11-6625-203-12
 Organizational, DS, GS, and Depot Maintenance Manual: Installation
 Practices for Aircraft Electric and Electronic Wiring TM 55-1500-323-25
 Procedures for Destruction of Electronics Materiel to Prevent Enemy
 Use(Electronics Command) TM 750-244-2

APPENDIX B

MAINTENANCE ALLOCATION

Section I INTRODUCTION

B-1. MAINTENANCE ALLOCATION CHART.

a. This Maintenance Allocation Chart (MAC) assigns maintenance functions in accordance with the Three Levels of Maintenance concept for Army Aviation. These maintenance levels (categories) - Aviation Unit Maintenance (AVUM), Aviation Intermediate Maintenance (AVIM), and Depot Maintenance - are depicted on the MAC as:

AVUM, which corresponds to an O Code in the Repair Parts and Special Tools List (RPSTL); AVIM, which corresponds to an F Code in the Repair Parts and Special Tools List (RPSTL); DEPOT, which corresponds to a D Code in the Repair Parts and Special Tools List (RPSTL).

b. The maintenance to be performed below depot and in the field is described as follows:

(1) Aviation Unit Maintenance (AVUM) activities will be staffed and equipped to perform high frequency on-aircraft maintenance tasks required to retain or return aircraft systems to a serviceable condition. The maintenance capability of the AVUM will be governed by the Maintenance Allocation Chart (MAC) and limited by the amount and complexity of ground support equipment (GSE), facilities required, authorized manning strength, and critical skills available. The range and quantity of authorized spare modules/components will be consistent with the mobility requirements dictated by the air mobility concept. (Assignments of maintenance tasks to divisional company size aviation units will consider the overall maintenance capability of the division, the requirement to conserve personnel and equipment resources, and air mobility requirements.)

(a) Company Size Aviation Units: Perform those tasks which consist primarily of preventive maintenance and maintenance repair and replacement functions associated with sustaining a high level of aircraft operational readiness. Perform maintenance inspections and servicing to include preflight, daily, intermediate, periodic (or phased), and special inspections as authorized by the MAC or higher headquarters. Identify the cause of equipment/system malfunctions using applicable technical manual troubleshooting instructions, built-in-test equipment (BITE), installed aircraft instruments, or test, measurement, and diagnostic equipment (TM DE). Replace worn or damaged modules/components that do not require complex adjustments or system alignment and which can be removed/installed with available skills, tools, and ground support equipment. Perform operational and continuity checks and make minor repairs to the electrical system. Inspect, service and make operational, capacity, and pressure checks to hydraulic systems. Perform servicing, functional adjustments, and minor repair/replacement to the flight control, propulsion, power train, and fuel systems. Accomplish air frame repair that does not require extensive disassembly, jiggling, or alignment. The manufacture of air frame parts will be limited to those items which can be fabricated with tools and equipment found in current air mobile tool and shop sets. Evacuate unserviceable modules/components and end items beyond the repair capability of AVUM to the supporting AVIM.

(b) Less than Company Size Aviation Units. Aviation elements organic to brigade, group, battalion headquarters, and detachment size units are normally small and have less than 10 aircraft assigned. Maintenance tasks performed by these units will be those which can be accomplished by the aircraft crew chief or assigned aircraft repair person and will normally be limited to preventive maintenance, inspections, servicing, spot painting, stop drilling, application of nonstress patches, minor adjustments, module/component fault diagnosis, and replacement of selected modules/components. Repair functions will normally be accomplished by the supporting AVIM unit.

B-1. MAINTENANCE ALLOCATION CHART. (CONT)

(2) Aviation Intermediate Maintenance (AVIM) provides mobile, responsive one-stop maintenance support. (Maintenance functions which are not conducive to sustaining air mobility will be assigned to depot maintenance.) AVIM may perform all maintenance functions authorized to be done at AVUM. Repair of equipment for return to user will emphasize support or operational readiness requirements. Authorized maintenance includes replacement and repair of modules/components and end items which can be accomplished efficiently with available skills, tools, and equipment. AVIM establishes the Direct Exchange (DX) program for AVUM units by repairing selected items for return to stock when such repairs cannot be accomplished at the AVUM level. The AVIM level inspects, troubleshoots, performs diagnostic tests, repairs, adjusts, calibrates, and aligns aircraft system modules/components. AVIM units will have capability to determine the serviceability of specified modules/components removed prior to the expiration of the Time Between Overhaul (TBO) or finite life. Module/component disassembly and repair will support the DX program and will normally be limited to tasks requiring cleaning and the replacement of seals, fittings, and items of common hardware. Airframe repair and fabrication of parts will be limited to those maintenance tasks which can be performed with available tools and test equipment. Unserviceable reparable modules/components and end items which are beyond the capability of AVIM to repair will be evacuated to Depot Maintenance. AVIM will perform aircraft weight and balance inspections and other special inspections which exceed AVUM capability, AVIM provides quick response maintenance support, including aircraft recovery and air evacuation, on-the-job training, and technical assistance through the use of mobile maintenance contact teams. AVIM maintains authorized operational readiness float aircraft and provides collection and classification services for serviceable/unserviceable material. (The aircraft maintenance company within the maintenance battalion of a division will perform AVIM functions consistent with air mobility requirements and conservation of personnel and equipment resources. Additional intermediate maintenance support will be provided by the supporting nondivisional AVIM unit.)

B-2. USE OF MAINTENANCE ALLOCATION CHART (SEC II).

a. The Maintenance Allocation Chart assigns maintenance functions to the lowest category of maintenance based on past experience and the following considerations:

- (1) Skills available,
- (2) Worktime required.
- (3) Tools and test equipment required and/or available.

b. Only the lowest category of maintenance authorized to perform a maintenance function is indicated. If the lowest maintenance category cannot perform all tasks of any single maintenance function (eg, test, repair), then the higher maintenance level(s) that can accomplish additional tasks will also be indicated.

c. A maintenance function assigned to a maintenance category will automatically be authorized to be performed at any higher maintenance category.

d. A maintenance function that cannot be performed at the assigned category of maintenance for any reason may be evacuated to the next higher maintenance category. Higher maintenance categories will perform the maintenance functions of lower maintenance categories when required or directed by the commander that has the authority to direct such tasking.

e. The assignment of a maintenance function will not be construed as authorization to carry the related repair parts or spares in stock. Information to requisition or otherwise secure the necessary repair parts will be as specified in the associated Repair Parts and Special Tools List (RPSTL).

B-2. USE OF MAINTENANCE ALLOCATION CHART (SEC II). (CONT)

f. Normally there will be no deviation from the assigned level of maintenance. In cases of operational necessity, maintenance functions assigned to a maintenance level may, on a one-time basis and at the request of the lower maintenance level, be specifically authorized by the maintenance officer of the level of maintenance to which the function is assigned. The special tools, equipment, etc. required by the lower level of maintenance to perform this function will be furnished by the maintenance level to which the function is assigned. This transfer of a maintenance function to a lower maintenance level does not relieve the higher maintenance level of the responsibility for the function. The higher level of maintenance will provide technical supervision and inspection of the function being performed at the lower level.

g. Changes to the Maintenance Allocation Chart will be based on continuing evaluation and analysis by responsible technical personnel and on reports received from field activities.

B-3. 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 (eg. by sight, sound, or feel).

b. Test. To verify serviceability 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, ie, to clean (includes decontaminate, when required), to preserve, to drain, to paint, or to replenish fuel, lubricants, chemical fluids, or gases.

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. Replace. To remove an unserviceable item and install a serviceable counterpart in its place. Replacement is authorized by the MAC and is shown as the third position code of the SMR code.

g. Repair. The application of maintenance services¹, including fault location/troubleshooting², removal/installation, and disassembly/assembly³ procedures, and maintenance actions⁴ to identify troubles and 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.

¹Services – inspect, test, service, adjust, aline, calibrate, or replace.

²Actions – welding, grinding, riveting, straightening, facing, remachining, or resurfacing.

³Disassembly/assembly – encompasses the step-by-step taking apart (or breakdown) of a spare/functional group code item to the level of its least component identified as maintenance significant (ie, assigned an SMR code) for the category of maintenance under consideration.

⁴Actions – welding, grinding, riveting, straightening, facing, remachining and/or resurfacing.

B-4. GROUP NUMBER AND COMPONENT/ASSEMBLY (COLUMNS 1 AND 2, RESPECTIVELY).

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.

B-5. MAINTENANCE FUNCTION (COLUMN 3).

Column 3 lists the functions to be performed on the items listed in column 2.

B-6. MAINTENANCE CATEGORIES AND WORK TIMES (COLUMN 4).

The maintenance categories (levels) AVUM, AVIM, and DEPOT are listed on the Maintenance Allocation Chart with individual columns that include the worktimes for maintenance functions at each maintenance level. Worktime presentations such as 0.1 indicate the average time it requires a maintenance level to perform a specified maintenance function. If a worktime has not been established, the columnar presentation shall indicate " — — .— ." Maintenance levels higher than the level of maintenance indicated are authorized to perform the indicated function.

B-7. TOOLS AND TEST EQUIPMENT (COLUMN 5 AND SEC III).

Common tool sets (not individual tools), special tools, test, and support equipment required to perform maintenance functions are listed alphabetically in Section III with a reference number to permit cross-referencing to column 5 in the MAC. In addition, the maintenance category authorized to use the device is listed along with the item National Stock Number (NSN) and, if applicable, the tool number to aid in identifying the tool/device.

B-8. REMARKS (COLUMN 6 AND SEC IV).

Remarks (identified by an alphabetic code in column 6) and other notes (identified by a number in parentheses in the applicable column) are listed in Section IV to provide a ready reference to the definition of the remark/note.

**Section II MAINTENANCE ALLOCATION CHART
FOR
RADIO SET AN/ARC-131**

(1) GROUP NUMBER	(2) COMPONENT/ ASSEMBLY	(3) MAINTENANCE FUNCTION	(4) MAINTENANCE CATEGORY			(5) TOOLS AND EQPT	(6) REMARKS
			AVUM	AVIM	DEPOT ARMY		
00	RADIO SET AN/ARC-131	Inspect	0.5				A
		Test	0.2				
		Test		1.0		16,26	
		Service	0.5				
		Replace	1.0			1,2	
		Repair	2.5			1,2	
01	CONTROL, RADIO SET C-7088/ ARC-131	Repair		3.0		3 thru 31	B C
		Inspect	0.5				
		Test		1.0		16,26,28	
		Service	0.5				
		Replace	1.0			1,2	
0101	CONTROL SWITCH ASSEMBLY	Repair		5.0		1,2	B
		Repair		3.0		3,4,6,8,16	
		Replace		1.0		3,4,6,8,16	
02	MOUNTING MT-3644/ ARC-131	Inspect	0.5				
		Service	0.5				
		Replace	1.0			1,2	
		Repair		2.0		3,4,6	
03	RECEIVER-TRANS- MITTER RT-823/ ARC-131	Inspect	0.5				C
		Service	0.5				
		Test	1.0			16,26	
		Adjust		2.5		8,10,11, 14,16,17, 22,23,26, 27,28	
		Aline			2.5	3 thru 31	
		Replace	1.0			1,2	
		Test		1.0			
		Repair		2.0		3 thru 31	
		Repair			5.0	3 thru 68	
Overhaul			20.0	3 thru 68			

**MAINTENANCE ALLOCATION CHART
FOR
RADIO SET AN/ARC-131**

(1) GROUP NUMBER	(2) COMPONENT/ ASSEMBLY	(3) MAINTENANCE FUNCTION	(4) MAINTENANCE CATEGORY			(5) TOOLS AND EQPT	(6) REMARKS
			AVUM	AVIM	DEPOT ARMY		
0301	RF AMPLIFIER A6500	Test		1.0		1,5,10,11, 14,17,22, 23,26,27, 29,30	C
		Aline		0.7		1	
		Replace		1.0		1,2	
030101	DC AMPLIFIER	Repair		2.0		3 thru 31	C
		Repair			5.0	3 thru 68	
		Test		1.0		3 thru 31	
030102	RF DETECTOR	Replace		1.0		3 thru 31	C
		Repair			1.0	3 thru 68	
		Test		1.0		3 thru 31	
030103	RF TUNER	Replace		1.0		3 thru 31	C
		Repair			1.0	3 thru 68	
		Test		1.0		3 thru 31	
0302	IF AMPLIFIER A4000	Adjust		0.2		8,10,11, 14,16,17, 22,23,26, 27,28	C
		Replace		1.0		1,2	
		Repair		1.0		3 thru 68	
030201	AMPLIFIER DIS- CRIMINATOR A4200	Repair			7.0	3 thru 68	C
		Test		1.0		1,5,10,11, 14,17,22, 23,26,27, 29,30	
		Replace		1.0		1,2	
0303	AUDIO FREQUENCY AMPLIFIER A5500	Repair			5.0	3 thru 68	C
		Test		1.0		1,5,10,11, 14,17,22, 23,26,27, 29,30	
		Replace		1.0		1,2	
		Repair		1.0			

**MAINTENANCE ALLOCATION CHART
FOR
RADIO SET AN/ARC-131**

(1) GROUP NUMBER	(2) COMPONENT/ ASSEMBLY	(3) MAINTENANCE FUNCTION	(4) MAINTENANCE CATEGORY			(5) TOOLS AND EQPT	(6) REMARKS
			AVUM	AVIM	DEPOT ARMY		
030301	AMPLIFIER AF A5400	Test		1.0		1,5,10,11, 14,17,22, 23,26,27, 29,30	
		Adjust		0.25		8,10,11, 14,16,17, 22,23,26, 27,28	
		Replace Repair		1.0	5.0	1,2 3 thru 68	
030302	SQUELCH AMPLI- FIER ASSY A5200	Test		1.0		1,5,10,11, 14,17,22, 23,26,27, 29,30	
		Adjust		0.25		8,10,11, 14,16,17, 22,23,26, 27,28	
		Replace Repair		1.0	5.0	1,2 3 thru 68	
030303	SQUELCH FILTER A5300	Test		1.0		1,5,10,11, 14,17,22, 23,26,27, 29,30	
		Replace Repair		1.0	5.0	1,2 3 thru 68	
0304	ISOLATION AMPLI- FIER ASSY A6600	Test		1.0		1,5,10,11, 14,17,22, 23,26,27, 29,30	
		Replace Repair		1.0	5.0	1,2 3 thru 68	D F
0305	AMPLIFIER MODU- LATOR A8700	Test		1.0		1,5,10,11, 14,17,22, 23,26,27, 29,30	
		Replace Repair		1.0 1.0		1,2	C

**MAINTENANCE ALLOCATION CHART
FOR
RADIO SET AN/ARC-131**

(1) GROUP NUMBER	(2) COMPONENT/ ASSEMBLY	(3) MAINTENANCE FUNCTION	(4) MAINTENANCE CATEGORY			(5) TOOLS AND EQPT	(6) REMARKS
			AVUM	AVIM	DEPOT ARMY		
030501	MIXER AF A8600	Test		1.0		1,5,10,11, 14,17,22, 23,26,27, 29,30	
		Replace Repair		1.0	5.0	1,2 3 thru 68	
0306	IF ATTENUATOR A4900	Test		1.0		1,5,10,11, 14,17,22, 23,26,27, 29,30	
		Replace Repair		1.0	5.0	1,2 3 thru 68	
0307	CASE ASSY, RECEIVER-TRANS- MITTER RT-823/ ARC-131	Replace Repair		0.5	1.0	1,2 3 thru 68	
0308	RF CONTROL A4500	Test		1.0		1,5,10,11, 14,17,22, 23,26,27, 29,30	
		Replace Repair		1.0 1.0	2.0	1,2 3 thru 68	C
030801	ATTENUATOR AND SWITCH ASSY	Replace Repair		1.0	3.0	3 thru 68	
030802	REFLECTOR AND SIDETONE DETECTOR	Replace Repair		1.0	3.0	3 thru 68	
0309	CRYSTAL REFER- ENCE SYSTEM ASSY AND FRONT PANEL	Replace		2.0		1,2	
		Repair		1.0			C

**MAINTENANCE ALLOCATION CHART
FOR
RADIO SET AN/ARC-131**

(1) GROUP NUMBER	(2) COMPONENT/ ASSEMBLY	(3) MAINTENANCE FUNCTION	(4) MAINTENANCE CATEGORY			(5) TOOLS AND EQPT	(6) REMARKS
			AVUM	AVIM	DEPOT ARMY		
0310	GEAR BOX A9700	Test		2.0		1,5,10,11, 14,17,22, 23,26,27, 29,30	
		Aline		1.0		1,16,30	
		Replace Repair		2.0	7.0	1,2 3 thru 68	
0311	HOMER DETECTOR AMPLIFIER A4800	Test		1.0		1,5,10,11, 14,17,22, 23,26,27, 29,30	
		Replace Repair		1.0	5.5	1,2 3 thru 68	
0312	RF OSCILLATOR ASSEMBLY A2000	Test		1.0		1,5,10,11, 14,17,22, 23,26,27, 29,30	
		Aline		1.0		1	
		Replace Repair		1.0	2.0	1,2 3 thru 68	
031201	INTERPOLATION OSCILLATOR ASSY	Test			1.0	2,22,28, 29,31,32	
		Aline			0.3	2,22,28, 29,31,32	
		Replace Repair			1.0 3.0	1,2 3 thru 68	
031202	OSCILLATOR REFERENCE	Test			1.0	2,22,28, 29,31,32	E F
		Aline			0.3	2,22,28, 29,31,32	
		Replace Repair			1.0 3.0	1,2 3 thru 68	

**MAINTENANCE ALLOCATION CHART
FOR
RADIO SET AN/ARC-131**

(1) GROUP NUMBER	(2) COMPONENT/ ASSEMBLY	(3) MAINTENANCE FUNCTION	(4) MAINTENANCE CATEGORY			(5) TOOLS AND EQPT	(6) REMARKS
			AVUM	AVIM	DEPOT ARMY		
0313	OSCILLATOR BUFFER A6000	Test		1.0		1,5,10,11, 14,17,22, 23,26,27, 29,30	C
		Aline		1.0		1	
		Replace		1.0		1,2	
0314	POWER SUPPLY ASSEMBLY A9500	Repair		1.0		3 thru 31	
		Repair			7.0	3 thru 68	
031401	CIRCUIT CARD ASSEMBLY POWER SUPPLY	Test		1.0		1,5,10,11, 14,17,22, 23,26,27, 29,30	
		Replace		1.0		1,2	
		Repair			7.0	3 thru 68	
0315	CHASSIS ELECTRONIC	Test		1.0		1,5,10,11, 14,17,22, 23,26,27, 29,30	
		Repair			2.0	3 thru 68	
0316	VHF TUNER A1000	Test		1.0			
		Aline		1.0		1	
		Replace		1.0		1,2	
		Repair		1.0		3 thru 31	
		Repair			3.0	3 thru 68	

**Section III TOOL AND TEST EQUIPMENT REQUIREMENTS
FOR
RADIO SET AN/ARC-131**

TOOLS OR TEST EQUIPMENT REF CODE	MAINTENANCE CATEGORY	NOMENCLATURE	NATIONAL/NATO STOCK NUMBER	TOOL NUMBER
1	AVUM	Tool Kit, Electronic Equipment TK-101/G	5180-00-064-5178	
2	AVUM	Multimeter TS-352 B/U	6625-00-553-0142	
3	AVIM	Tool Kit, Electronic Equipment TK-105/G	5180-00-610-8177	
4	AVIM	Tool Kit, Electronic Equipment TK-100/G	5180-00-605-0079	
5	AVIM	AN/PRM-34	6625-00-892-5542	
6	AVIM	Multimeter AN/USM-223	6625-00-999-7465	
7	AVIM	Multimeter ME-16B/U	6625-00-646-9409	
8	AVIM	Voltmeter, Meter ME-30(*)/U	6625-00-643-1670	
9	AVIM	Wattmeter AN/URM-120	6625-00-813-8430	
10	AVIM	Distortion Analyzer HP-334-A	6625-00-668-9418	
11	AVIM	Modulation Meter ME-57/U	6625-00-647-3737	
12	AVIM	Signal Generator AN/USM-44(*)	6625-00-669-4031	
13	AVIM	Voltmeter AN/URM-145	6625-00-973-3986	
14	AVIM	Signal Generator AN/URM-127	6625-00-783-5965	
15	AVIM	Test Set, Radio Frequency Power TS-2609/U	6625-00-933-8766	
16	AVIM	Maintenance Kit MK-1035/ARC-131	5821-00-935-0058	
17	AVIM	Oscilloscope AN/USM-281	6625-00-053-3112	

**TOOL AND TEST EQUIPMENT REQUIREMENTS
FOIR
RADIO SET AN/ARC-131**

TOOLS OR TEST EQUIPMENT REF CODE	MAINTENANCE CATEGORY	NOMENCLATURE	NATIONAL/NATO STOCK NUMBER	TOOL NUMBER
18	AVIM	Tester, Torque Dial	6625-00-805-3652	
19	AVIM	Dummy Load DA-75/U	5985-00-280-3480	
20	AVIM	Headset H-78/AIC	5965-00-636-3145	
21	AVIM	Stopwatch	6645-00-719-8670	
22	AVIM	Electrical Counter, Digital Readout AN/USM-207A	6625-00-044-3228	
23	AVIM	Signal Generator AN/URM-103	6625-00-868-8352	
24	AVIM	Coupler Alignment Tool TL-758/ARC-131		
25	AVIM	Variable Attenuator SM-C-62029		
26	AVIM	Power Supply PP-2953/U		
27	AVIM	Fuseholder MX-1730/U	5920-00-948-7088	
28	AVIM	Multimeter ME-26(D)/U	6625-00-913-9781	
29	AVIM	Test Set, Radio TS-2575/ARC-131		
30	AVIM	Antenna Coupler Simulator SM-499/ARC-131	6625-00-832-6023	
31	AVIM	Voltmeter, Electronic ME-30(*)/U Duplicate of Item 8		
32	D	Oscilloscope Tektronix T922		
33	D	Sorenson DER60-30B Power Supply		
34	D	RF Power Divider		
35	D	RF Signal Generator Set Boonton 102		

**TOOL AND TEST EQUIPMENT REQUIREMENTS
FOR
RADIO SET AN/ARC-131**

TOOLS OR TEST EQUIPMENT REF CODE	MAINTENANCE CATEGORY	NOMENCLATURE	NATIONAL/NATO STOCK NUMBER	TOOL NUMBER
36	D	Audio Oscillator HP-200/C-D		
37	D	Adapter UG-274 B/U	5935-00-683-7892	
38	D	Frequency Counter FLUKE 1928		
39	D	Test Set, TS-2609/U		
40	D	Wattmeter Bird 43		
41	D	Test Cable No. 2 (10 Required) (Fabricate per DMWR 11-5820-670)		
42	D	Test Cable No. 3 (Fabricate per DMWR 11-5820-670)		
43	D	Test Cable No. 4 (Fabricate per DMWR 11-5820-670)		
44	D	Test Cable No. 6 (Fabricate per DMWR 11-5820-670)		
45	D	Test Cable No. 7 (Fabricate per DMWR 11-5820-670)		
46	D	Test Cable No. 8 (Fabricate per DMWR 11-5820-670)		
47	D	Test Cable No. 9 (Fabricate per DMWR 11-5820-670)		
48	D	Resistor, 47-Ohm, 1-Watt		
49	D	Resistor, 27-Ohm, 1-Watt		
50	D	Resistor, 68K-Ohm, 1-Watt		

**TOOL AND TEST EQUIPMENT REQUIREMENTS
FOR
RADIO SET AN/ARC-I 31**

TOOLS OR TEST EQUIPMENT REF CODE	MAINTENANCE CATEGORY	NOMENCLATURE	NATIONAL/NATO STOCK NUMBER	TOOL NUMBER
51	D	Resistor, 1000-Ohm, 1-Watt		
52	D	Resistor, 680-Ohm, 1-Watt, ± 5 Percent		
53	D	Resistor, 50-Ohm, 1-Watt (Two Required)		
54	D	Resistor, 150-Ohm, 2-Watt, ± 5 Percent		
55	D	Resistor, 50K-Ohm, 2-Watt, ± 5 Percent		
56	D	Resistor, 460K-Ohm, 2-Watt, ± 5 Percent		
57	D	Resistor, 1200-Ohm, 1-Watt, ± 5 Percent		
58	D	Resistor, 4700-Ohm, 1-Watt		
59	D	Resistor, 50-Ohm, 2-Watt (Two required)		
60	D	Capacitor, 0.001 μ F, 60 vdc		
61	D	Capacitor, 0.01 μ F, 600 vdc		
62	D	A4100 Alignment Cover (Fabricate per DMWR 11-5820-670)		
63	D	A4200 Alignment Cover (Fabricate per DMWR 11-5820-670)		
64	D	A6000 Alignment Cover (Fabricate per DMWR 11-5820-670)		
65	D	Test Set, TS-1708/GSM-72 Robotester		

**TOOL AND TEST EQUIPMENT REQUIREMENTS
FOR
RADIO SET AN/ARC-131**

TOOLS OR TEST EQUIPMENT REF CODE	MAINTENANCE CATEGORY	NOMENCLATURE	NATIONAL/NATO STOCK NUMBER	TOOL NUMBER
66	D	Short Clip Lead		
67	D	50-Ohm, 6dB PAD (two required) Fabricate per DMWR 11-5820-670)		
68	D	Stroboscope TS-650C/U	6625-00-223-5150	

Section IV REMARKS

REFERENCE CODE	REMARKS
A	Operational.
B	Repair by replacement of missing or broken knobs, dial mask, and defective major components, including adjustments and alinement as required.
C	Repair by replacement of defective subassemblies, including adjustments and alinement as required.
D	PLAIN and A model assemblies are physically and electrically interchangeable but require differing adjustments.
E	PLAIN and A model assemblies are interchangeable.
F	Repair procedures for PLAIN (germanium) model assemblies or A (silicon) model assemblies may differ.

APPENDIX C

COMPONENTS OF END ITEM AND BASIC ISSUE ITEMS LISTS

Section I INTRODUCTION

C-1. SCOPE.

This appendix lists components of end item and basic issue items for the electronic equipment maintenance and storage shelters to help you inventory items required for safe and efficient operation.

C-2. GENERAL.

The Components of End Item and Basic Issue Items lists are divided into the following sections:

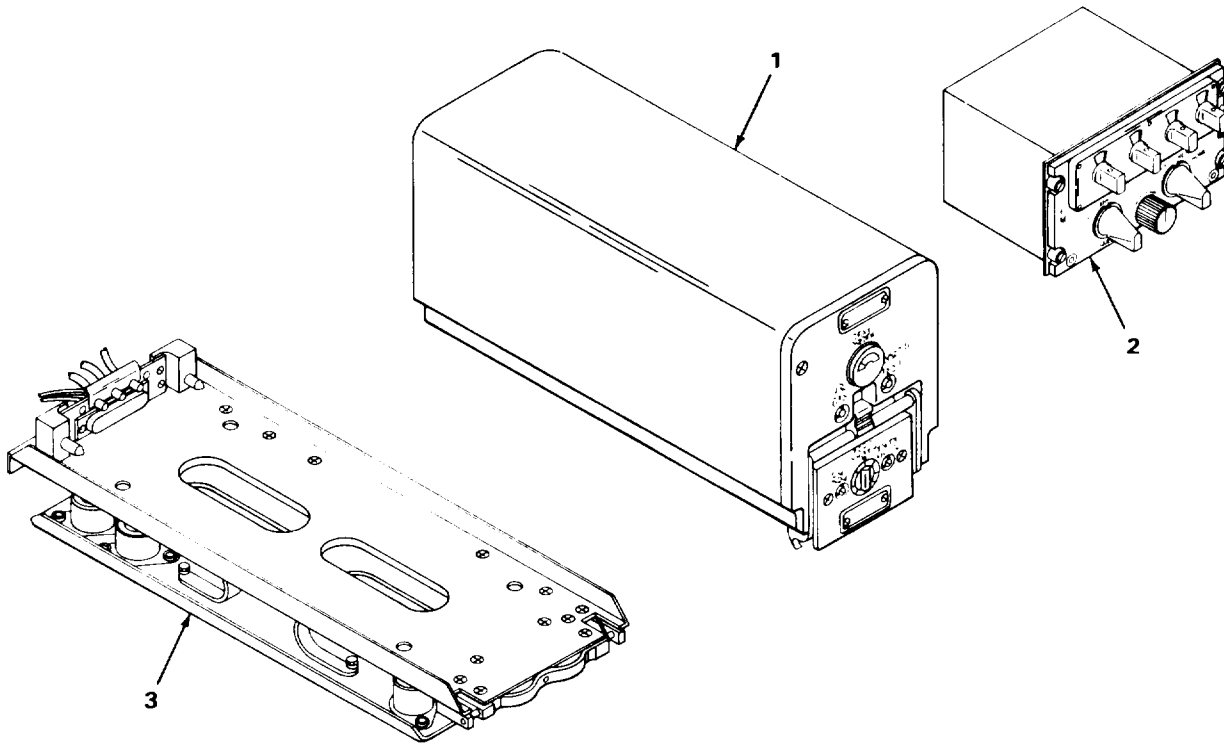
- a. Section II. Components of End Item. This listing is for informational purposes only, and is not authority to requisition replacements. These items are part of the end item, but are removed and separately packaged for transportation or shipment. As part of the end item, these items must be with the end item whenever it is issued or transferred between property accounts.
- b. Section III. Basic Issue Items. These are the minimum essential items required to place the maintenance facility in operation and to perform emergency repairs. Although packed and shipped separately, Basic Issue Items must be with the maintenance facility during operation and whenever it is transferred between property accounts. This manual is your authority to request/requisition replacement Basic Issue Items, 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, Illus No. (Illustration Number). This column indicates the number of the illustration in which the item is shown.
- 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, U/M (Unit of Measure). Indicates the measure used in performing the actual operational/maintenance function. This measure is expressed by a two-character alphabetical abbreviation (es, in., pr).
- e. Column 5, Qty Req'd (Quantity Required). Indicates the quantity of the item authorized to be used with/on the equipment. The quantities listed for items useable on code PAC are on a per shelter basis.

Section II COMPONENT OF END ITEM



EL7RM030

(1) ILLUS NO.	(2) NATIONAL STOCK NUMBER	(3) DESCRIPTION FSCM	USABLE ON CODE	(4) U/M	(5) QTY REQ'D
1	5821-00-851-1096	RECEIVER TRANSMITTER (80058) RT823ARC131		ea	1
2	5821-00-937-9614	CONTROL, RADIO SET (80058) C7088ARC131		ea	1
3	5821-00-937-4688	MOUNTING (80058) MT3664ARC13)		ea	1

Section III BASIC ISSUE ITEMS

There are no basic issue items authorized for the AN/ARC-131 Radio Set.

**APPENDIX D
ADDITIONAL AUTHORIZATION LIST**

Section I INTRODUCTION

D-1. SCOPE.

This appendix lists additional items you are authorized for the support of the radio set.

D-2. GENERAL.

This list identifies items that do not have to accompany the radio 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 (ie, 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) USABLE ON CODE U/M	(4) QTY AUTH
5985-00-082-3991	Antenna, Communications AS-1703/AR (80058)		1
5985-00-248-2353	Coupler, Antenna CU-942/ARC-54 (80058)		1
	or		
5985-00-082-3990	CU-943/ARC-54 (80058)		1
5826-00-402-5317	Indicator, Homing ID-1347/ARN-82 (80058)		1
5965-00-627-8382	Headset-Microphone H-101/U (80058)		1
5985-00-930-5931	Antenna, Homing AS-1922/ARC (80058)		1
5831-00-933-9822	Control Set, Intercommunications C-1611D/AIC (80058)		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 radio set. 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 (eg, 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

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 Measure (U/M). Indicates the measure used in performing the actual maintenance function. This measure is expressed by a two-character abbreviation (eg, 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) LEVEL	(3) NATIONAL STOCK NUMBER	(4) DESCRIPTION (FSCM)	(5) U/M
1	O	6850-00-105-3084	Cleaning Compound, Freon TF (Trichlorotrifluoroethane)	oz (16)
2	O	6850-00-984-5853	Cleaning Compound, Freon PCA (Trichlorotrifluoroethane)	gal (5)

GLOSSARY

Section I ABBREVIATIONS

ADJ – adjust	REFL – reflected
CARR – carrier	RETRAN – retransmit
DIS – disable (squelch)	SQ – squelch
fm – frequency modulated	tp – test point
FWD – forward	T/R – transmit/receive
HI – high	VOL – volume
LO – IOW	XMTR – transmitter

Section II DEFINITION OF UNUSUAL TERMS

CONTROL UNIT. A component of the radio set, located remotely from the receiver-transmitter, to control the modes of operation, set frequencies, and control squelch modes.

FORWARD POWER. The strength of an rf signal from a transmitter radiated by its antenna.

FREQUENCY MODULATION. A type of radio transmission in which the frequency of an rf carrier wave is varied in accordance with a modulating signal while the amplitude of the carrier wave remains constant.

IMPEDANCE. The opposition of a circuit to the flow of alternating current, measured in ohms.

INTERCOMMUNICATIONS SYSTEM. A configuration of components installed in a aircraft which permits communications with distant stations and also between crewmembers within aircraft.

OPERATIONAL CHECK. A test or series of tests of a communication system which checks the performance of the communication system and its components under controlled operating conditions to determine combat readiness of the system.

REFLECTED POWER. The strength of an incoming rf signal passed by a receiver antenna to the receiver.

REMOTE CONTROL. The operation of the communication system by remotely located components of the system.

RETRANSMISSION. The arrangement of two radio sets connected together to provide automatic retransmission of signals between two radios that are too far apart to communicate directly with each other.

ROUTING. Path taken by cables to interconnect a communications system within a vehicle.

SIDETONE. The sound of user's own voice heard in earphone or loudspeaker while speaking into microphone.

SQUELCH. A receiver circuit which automatically turns the sound off when no received signal is present and turns it on when a received signal is present.

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F03

IN THIS SPACE TELL WHAT IS WRONG AND WHAT SHOULD BE DONE ABOUT IT:

Recommend that the installation antenna alignment procedure be changed throughout to specify a 2° IFF antenna lag rather than 1°.

REASON: Experience has shown that with only a 1° lag, the antenna servo system is too sensitive to wind gusting in excess of 25 knots, and has a tendency to rapidly accelerate and decelerate as it hunts, causing strain to the drive train. Hunting is minimized by adjusting the lag to 2° without degradation of operation.

Item 5, Function column. Change "2 db" to "3db."

REASON: The adjustment procedure for the TRANS POWER FAULT indicator calls for a 3 db (500 watts) adjustment to light the TRANS POWER FAULT indicator.

Add new step f.1 to read, "Replace cover plate removed in step e.1, above."

REASON: To replace the cover plate.

Zone C 3. On J1-2, change "+24 VDC to "+5 VDC."

REASON: This is the output line of the 5 VDC power supply. +24 VDC is the input voltage.

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