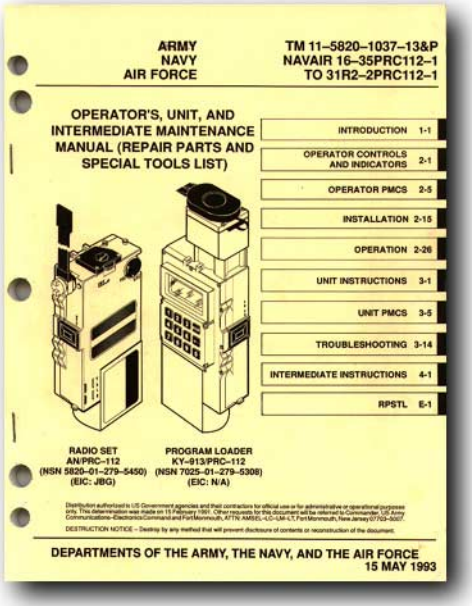
Radio Set, AN/PRC-112



Title of the current program

Sub-section listing

Main sections with current section highlighted

Button goes to beginning of current sub-section

Button goes to beginning of next sub-section when available

Home

Clicking on “Home” goes to title page of program, from there “Menu” will go to main menu for all programs

Help

Clicking on “Help” goes to this page

Operating Instructions

Certain elements within these programs are navigational aids to assist you, the viewer, in completing the required course of instruction. The main navigation elements are the tabs on the right, along with the red text actions. The text on the left and above describe the functions of all elements.

Denotes the end of a sub-section

End of Operating Instruction Text

Red text when clicked will execute described action, this is how to leave the help page now

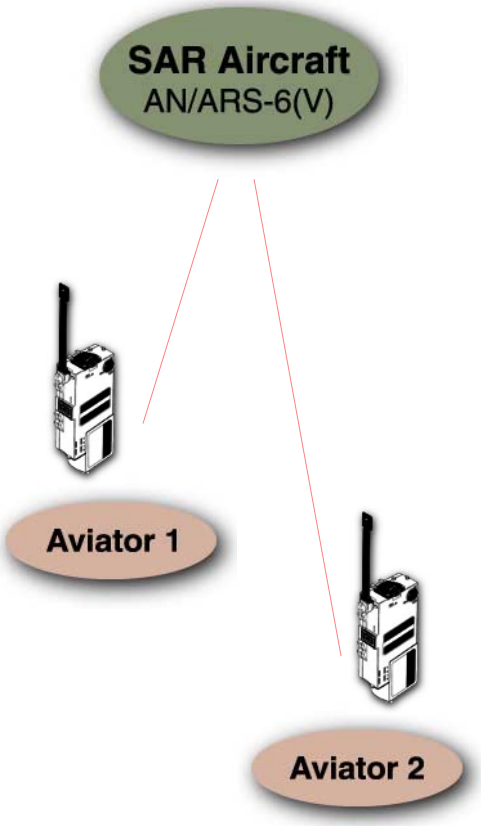
Return to Previous Page

System Description

Equipment Description

Begin System Description

Begin Equipment Description

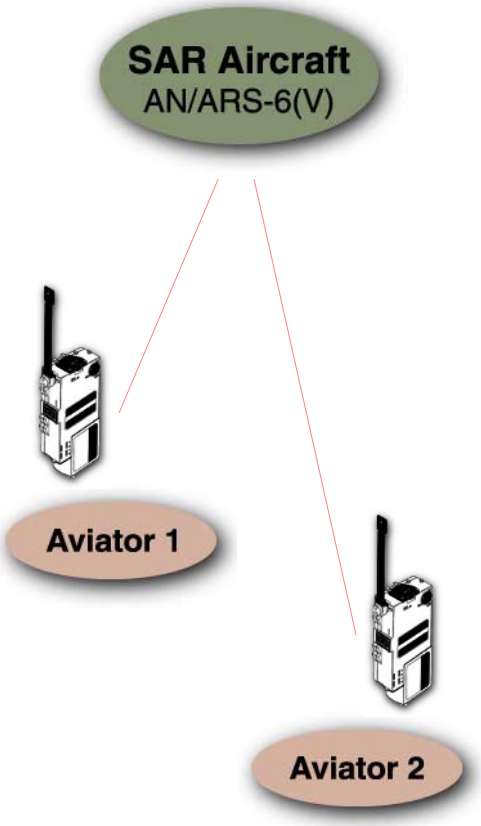


System Description

The Personnel Locator System AN/AYD-1 (PLS) consists of the airborne Radio-Set Personnel Locator AN/ARS-6(V) (hereinafter referred to as the AN/ARS-6(V) and the ground-based Radio Set AN/PRC-112. Using a predetermined Survivor ID Code, the AN/ARS-6(V) is designed to selectively locate and home-on a particular Radio Set. The Radio Set is capable of being located with minimum action required from the operator. The Radio Set is also capable of normal two-way communications. A Program Loader is used for pre-flight programming (consisting of the Survivor ID Code and two predetermined frequencies) of the Radio Set.

The AN/PRC-112 Radio Set functions as a survival radio/transponder which receives an interrogation on an assigned UHF frequency (225.00 to 299.975 MHz), and transmits a return message on the same frequency. The Radio Set also functions as a two-way radio for voice

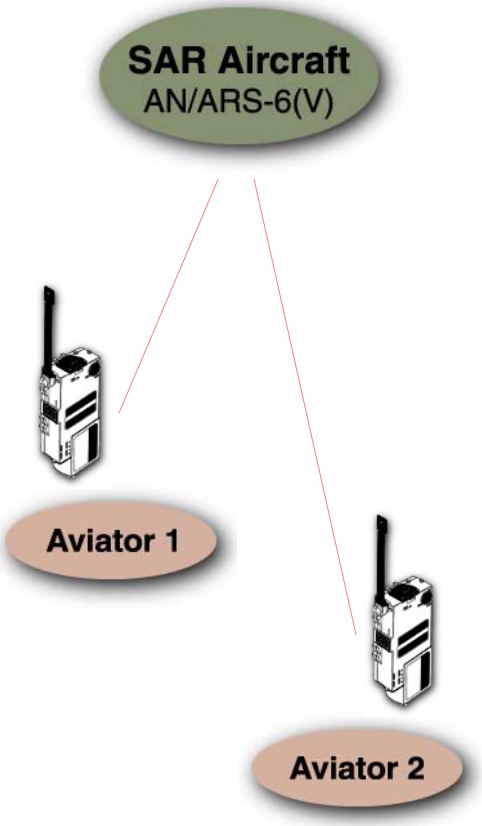
More



transmissions over Line-of-Sight paths. The Radio Set transmits amplitude modulated (AM) voice on 121.5 MHz, 243.0 MHz, 282.8 MHz, Channel A (predetermined programmed frequency), or Channel B (predetermined programmed frequency) as selected by the Radio Set Channel/Mode selector.

Mission success is dependent only upon the proper functioning of the operator's equipment and the equipment on the rescue aircraft. During most of the mission, the avionics equipment functions as a transponder in response to interrogation requests. This concept enhances the system's covertness and maximizes the operator's Radio Set battery life. The avionics system interrogates the operator's Radio Set, thereby obtaining the range and direction to the operator. The pilot/copilot updates the avionics system by using interrogations as the approach to the operator is made. When the Search and Rescue (SAR) aircraft is within 1-3 nautical miles of the operator, the pilot/copilot may put the avionics system in the continuous interrogation mode. The

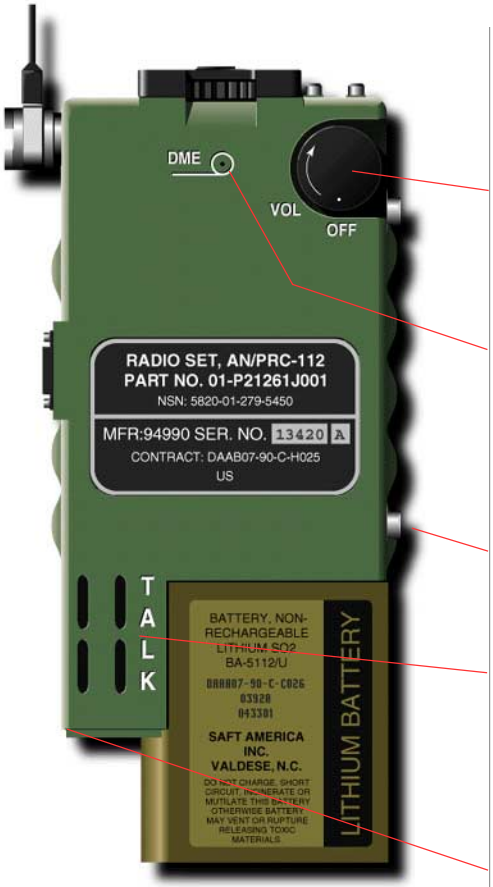
More



operator(s) can then communicate with the rescue aircraft providing they are not in a high threat environment. If the operator is in a high threat environment, silence should be maintained until absolutely necessary.

End System Description

Begin Equipment Description



Equipment Description

ON/OFF/VOL Control

Clockwise rotation of control turns the radio set on and increases volume.

DME Indicator

Used to indicate when receiver ID being successfully interogated by a PLS avionics system.

Antenna Retaining Snaps

Used to secure antenna when not in use.

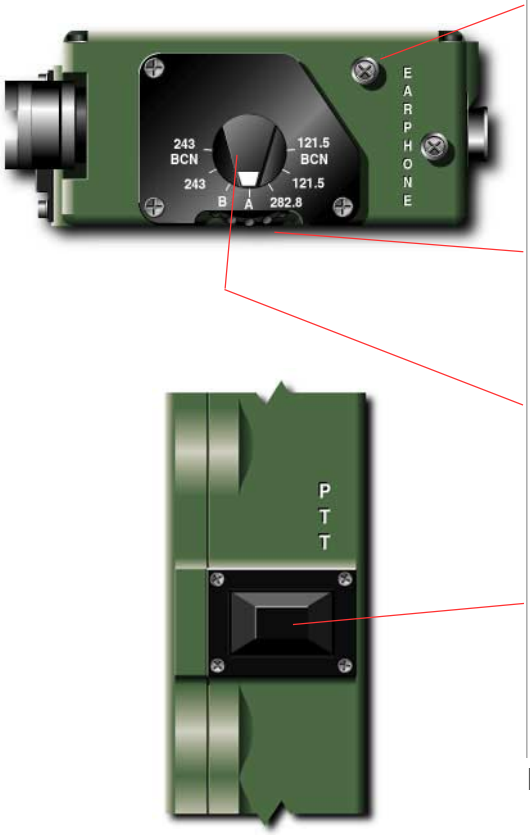
Speaker/Microphone

Used as a microphone while transmitting, and as a speaker while receiving in voice mode. In beacon mode (BCN) it is a speaker only.

Battery Latch

Used to secure battery to radio set.

More



Earphone Connectors

Provides connector for earphone quiet operation in voice/beacon mode by disabling speaker when earphone is connected. Microphone interface is unchanged.

Channel/Mode Selector

Permits the operator to select the desired frequency/channel mode indicated on the channel/mode selector.

Note

The control on the top of radio with indicator arrow must be depressed when rotating channel/mode selector to beacon mode.

Push to Talk Switch

When pressed and held, permits operator to talk on frequency selected. Cannot be used in beacon mode.

End Equipment Description

Back to System Description

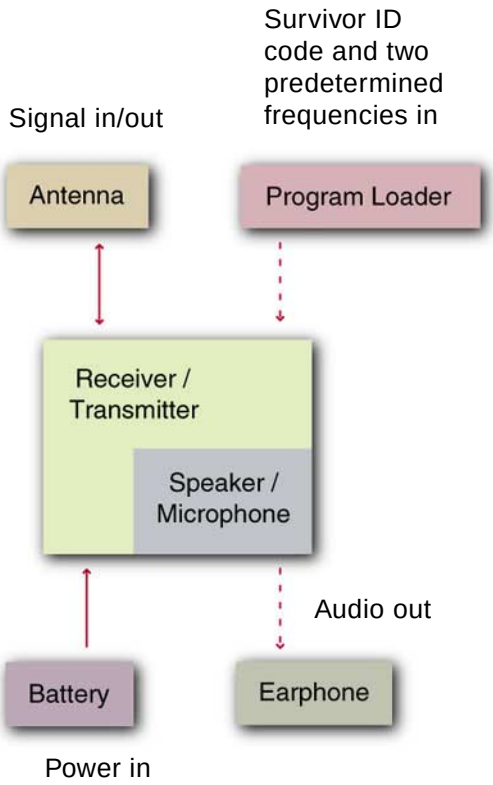
System Overview
Functional Data
PMCS
Radio Operation

Functional Description

Modes of Operation

Begin Functional Description

Begin Modes Description

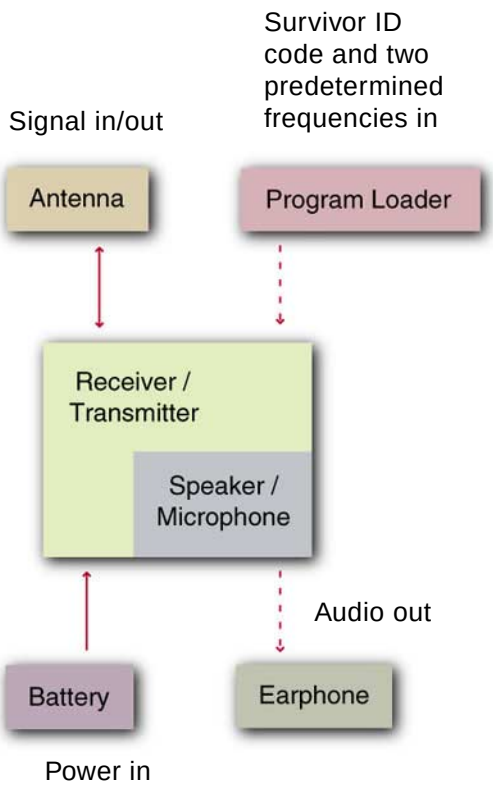


Functional Description

The Radio Set functions as a survival radio/ transponder which receives an interrogation on a predetermined UHF frequency (225.000 to 299.975 MHz in 25 kHz steps), and transmits a response message on the same frequency. The interrogation and response data are of a similar modulation format. Data is transmitted using both amplitude and phase modulation.

A functional block diagram of the Radio Set is provided in the figure on the left. During operation a modulated signal is received/transmitted through the antenna to/from the receiver/ transmitter. Signal processing occurs within the receiver/transmitter. Audio is output either through the speaker/microphone, or through the earphone if attached. Audio input is always through the speaker/microphone. A replaceable battery pack (not supplied) provides power to the receiver/transmitter. The detachable Program Loader programs the receiver/transmitter with

More



two predetermined frequencies and Survivor ID Code prior to Radio Set deployment.

Battery life for voice communications is approximately 15 hours at 25° C (77° F) with 90% of radio usage spent receivingand 10% transmitting. While in beacon mode the battery will provide approximately 5 hours of radio usage at the same temperatures listed for voice communications.

End Functional Description

Begin Modes of Operation

Modes of Operation

Transponder Mode

The Radio Set functions as a transponder, detecting the interrogated ID code. If the ID code is identical to that programmed into the Radio Set memory (Survivor ID Code), the Radio Set responds by keying the Radio Set transmitter and transmitting ranging modulation. The DME indicator indicates the presence of a properly decoded interrogation/response.

Emergency Beacon Mode

The Radio Set functions as a survival location transmitter by transmitting an emergency beacon compatible with conventional UHF Automatic Direction Finding (ADF) equipment and the AN/ARS-6(V).

Voice Communications Mode

The Radio Set functions as a conventional two-way radio by providing for voice transmis-

More

sions over Line-Of-Sight paths. The operator can transmit/receive voice on 121.5, 243.0 and 282.8 MHz, or one of two predetermined frequencies in the 225.000 to 299.975 MHz range.

End Modes of Operation

Back to Functional Description

General Information

PMCS Procedures

Begin PMCS General Information

Begin PMCS Procedures

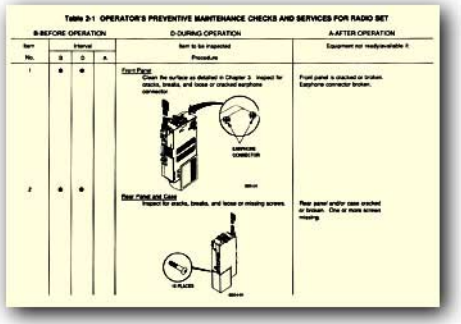


Table 2-1 OPERATOR'S PREVENTIVE MAINTENANCE CHECKS AND SERVICES FOR RADIO SET

Item No.	Interval B	Interval D	Interval A	Item to be inspected / Procedure	Equipment not ready/available if:
1	•	•		Front Panel Clean the surface as detailed in Chapter 3. Inspect for cracks, breaks, and loose or cracked earphone connector	Front panel is cracked or broken. Earphone connector broken.
2	•	•		Rear Panel and Case Inspect for cracks, breaks, and loose or missing screws.	Rear panel and/or case cracked or broken. One or more screws missing

General Information

Operator's Preventive Maintenance Checks and Services (PMCS) are the scheduled inspections and care required to keep the Radio Set in good operating condition.

Except as noted, routine checks like equipment inventory, dusting, washing, checking for frayed, cracked or broken cables, loose connectors, proper operation of control knobs and indicators are not listed as PMCS. These are things that you should do anytime you see that they must be done.

All PMCS must be done as scheduled. If your equipment must be in use all the time, check and service those items you can without stopping operation. Perform complete PMCS when the Radio Set is off.

End General Information

Begin PMCS Procedure

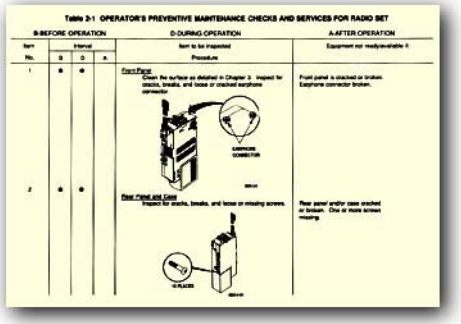


Table 2-1 OPERATOR'S PREVENTIVE MAINTENANCE CHECKS AND SERVICES FOR RADIO SET

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2	•	•		Rear Panel and Case Inspect for cracks, breaks, and loose or missing screws.	Rear panel and/or case cracked or broken. One or more screws missing

Procedures

Interval

Before operation (B)—Do your B PMCS to be sure the equipment is ready.

During operation (D)—Do your D PMCS while you operate to help spot small problems before they become big problems.

After operation (A)—Do your A PMCS to help keep the Radio Set and Program Loader in top shape.

Procedures

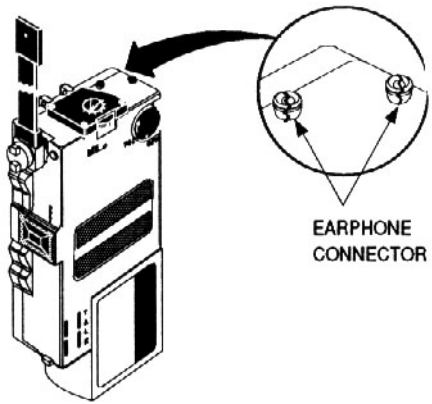
Theprocedures column in the PMCS chart tells how to do the PMCS. Follow these instructions.

Equipment is not ready if:

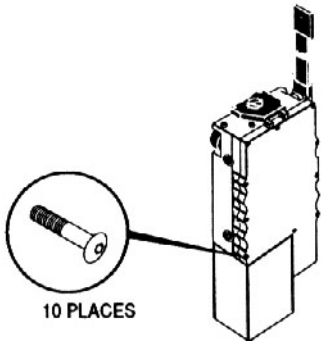
Equipment is not ready if: column tells why the Radio Set cannot be used to perform its assigned mission.

More

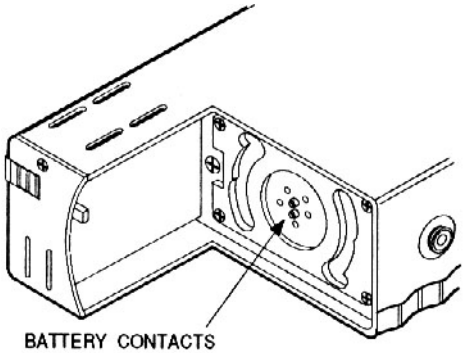
Item	Interval B	Interval D	Interval A	Item to be inspected procedure:	Not ready if:
1	•	•		**Front Pannel** Clean the surface. Inspect for cracks, breaks, and loose or cracked earphone connectors.	Front panel is cracked or broken. Earphone connector broken



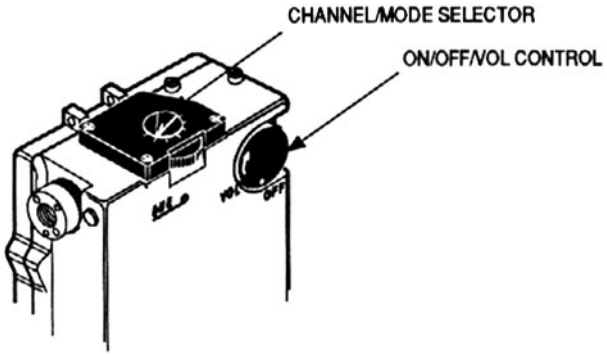
Continue PMCS

Item	Interval B	Interval D	Interval A	Item to be inspected procedure:	Not ready if:
2	•	•		**Rear Panel and Case** Inspect for cracks, breaks, and loose or missing screws.  	Rear panel and.or case cracked or broken. One or more screws missing.

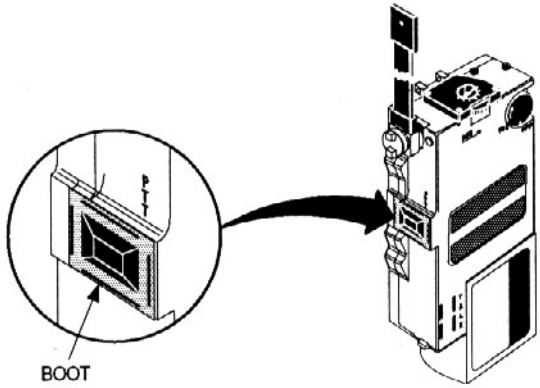
Continue PMCS

Item	Interval B	Interval D	Interval A	Item to be inspected procedure:	Not ready if:
3	•	•		**Battery Connector** Inspect for worn or cracked contact.  	Contacts worn or cracked.

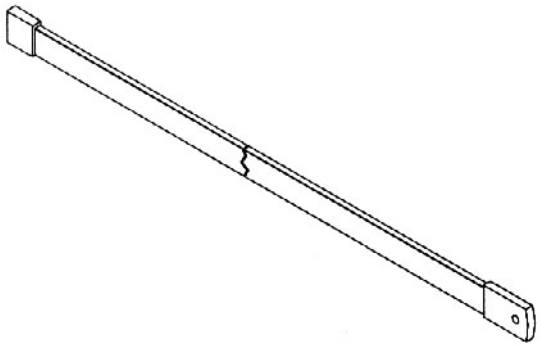
Continue PMCS

Item	Interval B	Interval D	Interval A	Item to be inspected procedure:	Not ready if:
4	•	•		**Controls** Check tightness of controls on shaft. Rotate and check for free operation, and proper detenting.  	Any controls that are missing, control shafts that bind, do not detent, or do not operate smoothly.

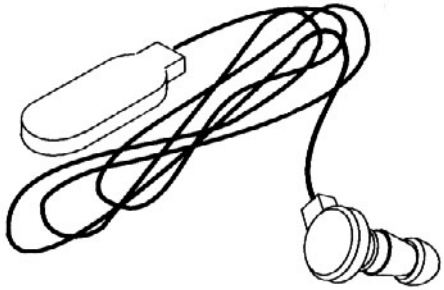
Continue PMCS

Item	Interval B	Interval D	Interval A	Item to be inspected procedure:	Not ready if:
5	•	•		**PTT Switch** Check Push to talk operation.  	PTT switch cracked or broken. Boot (PTT switch protective cover) is missing or damaged.

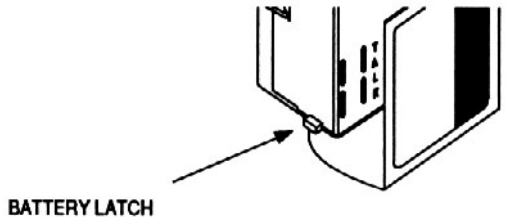
Continue PMCS

Item	Interval B	Interval D	Interval A	Item to be inspected procedure:	Not ready if:
6	•	•		**Antenna** Check th antenna for cracks or breaks. 	Antenna is cracked or broken.

Continue PMCS

Item	Interval B	Interval D	Interval A	Item to be inspected procedure:	Not ready if:
7	•	•		**Earphone** Check the earphone for cracks or broken 	Earphone connectors are cracked or broken. The connector is loose or torn.

Continue PMCS

Item	Interval B	Interval D	Interval A	Item to be inspected procedure:	Not ready if:
8	•	•		**Battery Latch** Check the battery latch for damage.  	Battery latch has visable damage or does not function properly.

End of PMCS Procedure

Back to PMCS General Information

Operational Notes

Operation Procedures

Begin Operational Notes

Begin Operational Procedures

Operational Notes

The effective range of the PLS equipment can be severely limited if the Radio Set is not in a line-of-sight path to the rescue aircraft. In conjunction with escape and evasion requirements, the operator should avoid positioning in a depression and should position the Radio Set at the highest point possible in order to obtain maximum effective range.

When operating the Radio Set, keep the antenna in a vertical position. Do not point the antenna toward the expected location of the rescue aircraft.

Pressing PTT switch while the Radio Set is activly responding to interrogation (DME indicator blinking), will disrupt the ranging process.

End Operational Notes

Begin Operational Procedures

Operation Procedures

Radio Set Operations

Set the antenna to its proper position for reception and transmission of radio signals. Set the Radio Set ON/OFF/VOL switch to ON. Adjust the ON/OFF/VOL switch to a comfortable audible level, or mute the Radio Set speaker by connecting the earphone.

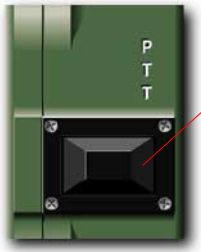
Transmit a 121.5 MHz Beacon

Press down on the Channel/Mode Indicator switch to release the lock, and rotate selector to 121.5 BCN.

Transmit a 243.0 MHz Beacon

Press down on the Channel/Mode Indicator to release the lock, and rotate selector to 243 BCN.

More



Transmit Voice

a. Position Channel/Mode Selector to the desired channel and mode as listed below:

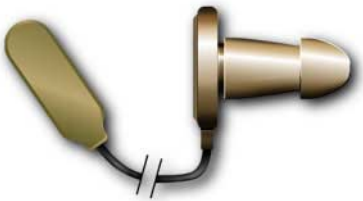
121.5 International Distress Frequency
243.0 International Distress Frequency
282.8 Search and Rescue (SAR)
A Predetermined programmed frequency
B Predetermined programmed frequency

b. Press and hold PTT switch.

c. Speak into speaker/microphone.

d. When message is completed, release PTT switch.

More



Receive Voice or Interrogation

Rotate Channel/Mode Selector to desired channel and mode. If the Radio Set is receiving correct interrogation signal, DME indicator will blink for approximately eight seconds.

Caution

Pressing PTT switch while the Radio Set is active (DME indicator blinking), will disrupt the ranging process.

Quiet Operation of the Radio Set

a. Remove earphone from bag,textile.
b. Attach earphone to earphone connector , and place earphone in your ear.
c. Transmit or receive as described. The speaker is muted while the earphone is connected to the Radio Set, but the microphone is unchanged.

More

To Turn the Radio Set Off

Set ON/OFF/VOL control to OFF.

Secure Antenna

a. Rotate antenna 180°.

b. Fold the antenna around the case.

c. Snap the antenna to the antenna retaining snaps

Caution

Do not use secured antenna as a Radio Set handle.

End Operational Procedures

Back to Operational Notes