TECHNICAL MANUAL

OPERATOR'S AND ORGANIZATIONAL

MAINTENANCE MANUAL

NAVIGATION SET, POSITION

FIXING LORAN AN/PSN-6

(NSN 5825-01-072-7989)

AND

VEHICLE MOUNT ADAPTER

GROUP OF-34/PSN-6

(NSN 5825-01-069-6872)

HEADQUARTERS, DEPARTMENT OF THE ARMY

JUNE 1979

WARNING

Do not permit manpack or vehicular whip antennas to touch high power linens or other sources of electricity; injury or death could result. Observe the requirements of TB TIG 291 which illustrate the dangers of permitting an antenna to contact other sources of power.

WARNING

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

CAUTION

Manpack equipment uses C/MOS integrated circuitry that is susceptible to damage when exposed to high static electrical charges.

CHANGE 1

No. 1.

HEADQUARTERS
DEPARTMENT OF THE ARMY
WASHINGTON, DC, 27 May 1983

Operator's and Organizational Maintenance Manual

NAVIGATION SET, POSITION

FIXING LORAN AN/PSN-6

(NSN 5825-01-072-7989)

AND

VEHICLE MOUNT ADAPTER GROUP

OF-34/ PSN-6

(NSN 5825-01-069-6872

TM 11-5826-251-12, 30 June 1979, is changed as follows:

1. Remove old pages and insert new pages as indicated below. New or changed material is indicated by a vertical bar in the margin of the page. Added or revised illustrations are indicated by a vertical bar adjacent to the identification number.

Remove pages	Insert pages
None	A and B
i, ii and iii	i, ii and iii
1-1 and 1-2	1-1 and 1-2
1-7, 1-8 and 1-9	1-7, 1-8 and 1-9
2-3 through 2-8	2-3 through 2-8.3
3-3 through 3-8	3-3 through 3-9
4-1 and 4-2	4-1 and 4-2
A-1 and A-2	A-1
D-3 and D-4	D-3, D-4 and D-5/(D-6 blank)

2. File this change sheet in front of the publication.

By Order of the Secretary of the Army:

E. C. MEYER
General, United States Army
Chief of Staff

Official:

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

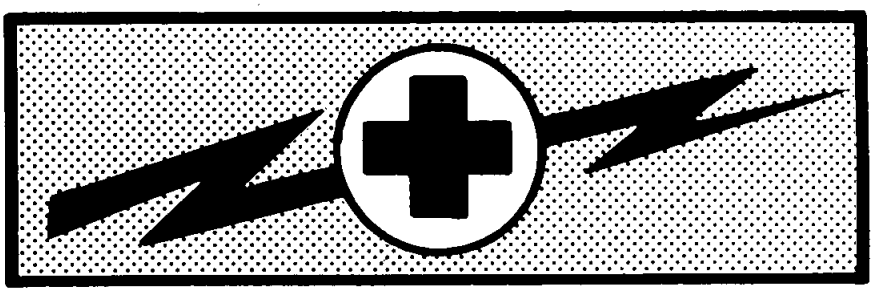
Distribution:
To be distributed in accordance with Special List.

* US GOVERNMENT PRINTING OFFICE 1983-605-040’208

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

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

WARNING



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 who is familiar with the operation and hazards of the equipment and who is 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 volt ac 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 the body.

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

For Artificial Respiration, refer to FM 21-11.

Change 1 B

TECHNICAL MANUAL

No. 11-5826-251-12

HEADQUARTERS
DEPARTMENT OF THE ARMY
WASHINGTON, DC, 30 June 1979

OP E RATOR'S AN D ORGAN IZATIONAL MAI NTE NANC E MANUAL
NAVIGATION SET, POSITION FIXING LORAN AN/PSN-6
(NSN 5825-01-072-7989)
AND
VEHICLE MOUNT ADAPTER GROUP OF-34/PSN-6

(NSN 5825-01-069-6872

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: DR-SEL-ME-MP, Fort Monmouth, NJ 07703.

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

LIST OF ILLUSTRATIONS

LIST OF TABLES

CHAPTER 1

INTRODUCTION

Section I. GENERAL

1-1. Scope.

This manual provides installation, operation and organizational maintenance instructions for Navigation Set, Position Fixing, Loran AN/PSN-6 (hereinafter referred to as the loran navigation set) and Vehicle Mount Adapter Group OF-34/PSN-6 (hereinafter referred to as the vehicle mount). Also, this manual includes a list of references (app A) and a maintenance allocation chart (app D).

1-2. 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.

1-3. Maintenance Forms, Records and Reports

a. *Reports of Maintenance and Unsatisfactorily Equipment*. Department of the Army Forms and procedures used for equipment maintenance will be those prescribed by TM 38-750, The Army Maintenance Management System (TAMMS).

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

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

1-4. Destruction of Army Electronics Materiel

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

1-5. Administrative Storage

a. *General*. Electronics equipment that is placed in administrative storage should be capable of being ready for use within a 24-hour period. Select the best available site for storage. Separate stored equipment from equipment in use. Conspicuously mark the area "Administrative Storage."

b. *Maintenance Services*. Before Navigation Set, Position Fixing Loran AN!PSN-6 is placed in administrative storage, perform the test procedure in paragraph 4-5. Faulty equipment should not be placed in storage. If equipment fails test, troubleshoot using the procedures in paragraph 4-6. Further, clean the equipment so that it is free of dirt, grease, and other contaminants using the procedures in paragraph 4-7. Remove dirt and damaged paint by scraping, wire brushing, sanding or buffing. Sand to a smooth finish and spot paint using the procedures in paragraph 4-2.

c. *Removal From Storage*. When Navigation Set, Position Fixing Loran AN/PSN-6 is removed from storage, it must be tested to ensure that it is operating satisfactorily for use in the field. Test it by using the procedures in paragraph 4-5.

1-6. Calibration

All required calibration is performed on component boards and modules during depot (factory) maintenance.

1-6.1. Hand Receipt (-HR) Manuals

This manual has a companion document with a TM number followed by "--HR" (which stands for Hand Receipt). The TM 11-5826-251-12-IIR consists of preprinted hand receipts (DA Form 2062) that list end item related equipment (i.e., COEI, BTI, and AAL) you must account for. As an aid to property accountability, additional -HR manuals may be requisitioned from the US Army Adjutant General Publications Center in Baltimore, MD, in accordance with the procedures in Chapter 3, AR 310-2, and DA Pam 310-10-2.

1-7. Reporting Equipment Improvement

Recommendations (EIR) If your equipment needs improvement, let us know. Send us an EIR. You, the user, are the only one who can tell us what you don't like about your equipment. Le us know why you don't like the design. Put if on an SF 36S (Quality Deficiency Report). Mail it to Commander, US Army Communications-Electronics Command and Fort Monmouth, ATTN: DR-SEL-ME-MP, Fort Monmoulh, NJ 07703. We'll send you a reply.

Section II. DESCRIPTION AND DATA

1-8. Purpose and Use

a *Loran Navigation Set*. The loran navigation set is a position-fixing loran receiver that provides position information to field units. The received signal originates at loran C and loran D transmitter stations. Present position information can be determined by using loran time difference coordinates in conjunction with special maps that have grid lines layed out to reflect loran time differences. The navigation set uses the loran signals to display the operators location (present position using universal transverse mercator (UTM) coordinates) provided that programmable read only memories (PROM) have been installed in the set. As a further aid in the determination of user positions, the loran navigation set has a memory which can be used to store a total of ten preselected reference points (waypoints). These can be used to determine range and bearing from the user's present position. The first five waypoints must be loaded into the memory by the operator using UTM grid coordinates normally prior to commencing operations. The second five waypoints are UTM coordinates that are displayed during operations. They are selected at that time, by the operator, for storage in the memory. The operator can, at his option, obtain range in kilometers and magnetic bearing in degrees to any of these 10 waypoints in relation to his present position. Range and bearing information is automatically upgraded when the loran navigation set is moved. The loran navigation set can be operated in a manpack configuration (fig. 1-1) or in a vehicle mounted configuration (fig.1-2) when used in conjunction with Vehicle Mount Adapter Group OF-34/PSN-6. In a manpack configuration, the loran navigation set may be used independently or may be mechanically attached to Radio Sets An/ PRC-25 or AN/PRC-77.

NOTE

The AN/PRC-25 or AN/PRC-77 used with the loran navigation set in a vehicle configuration, must be mounted in an MT-1029/VRC Mounting equipped with Amplifier-Power Supply AM-2060A/GRC.

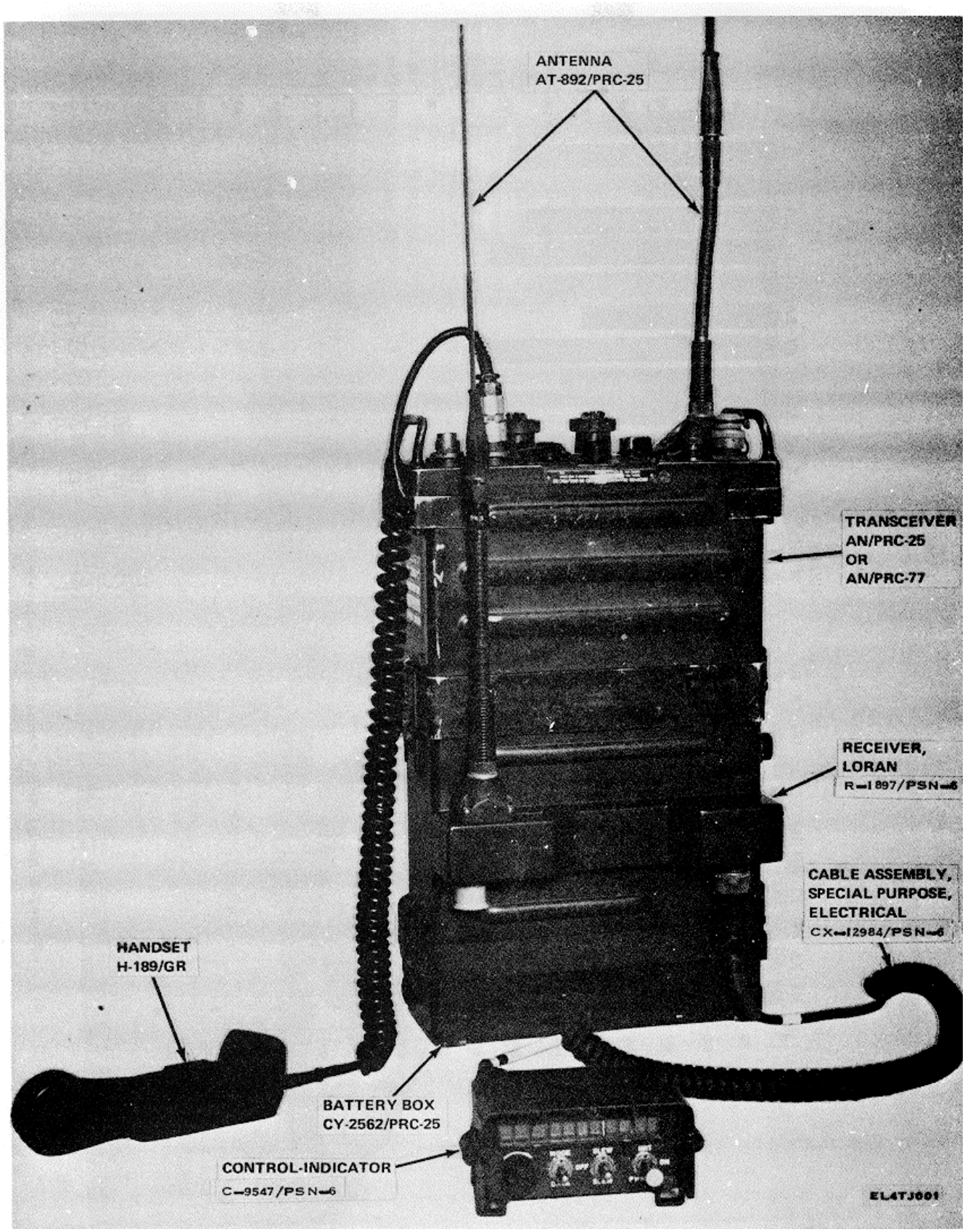


Figure 1-1. Navigation Set, Position Fixing Loran AN/PSN-6, manpack configuration.

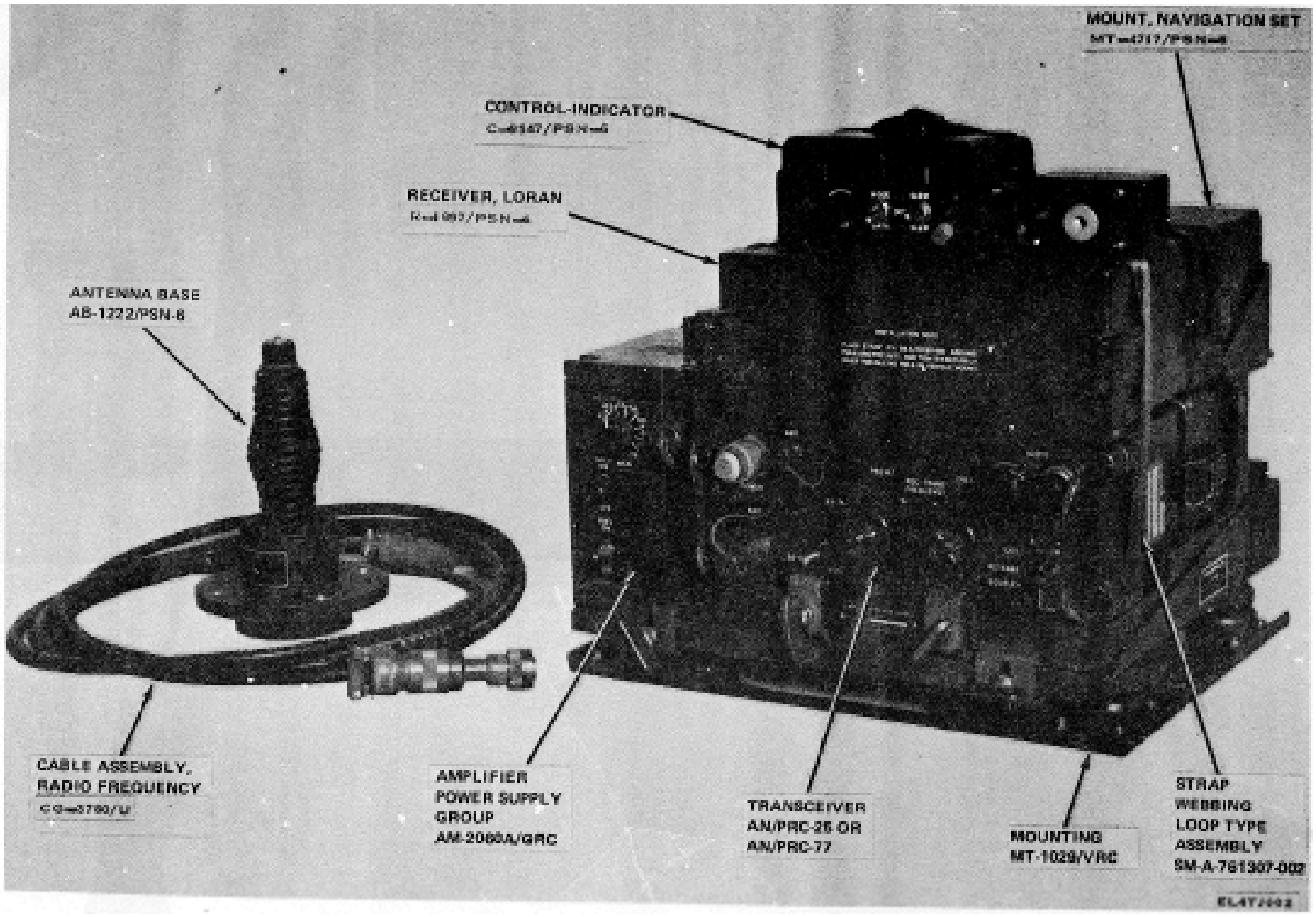


Figure 1-2. Navigation Set, Position Fixing Loran AN/PSN-6. vehicle mount configuration.

b. *Vehicle Mount Adapter Group OF-34/PSN-6.* ’he vehicle mount (fig.1-3) converts the dc potential of the vehicle battery to the dc potential required for operation of the loran navigation set and provides an antenna base and rf cable for use with an Antenna AS- 1729/VRC (whip antenna).

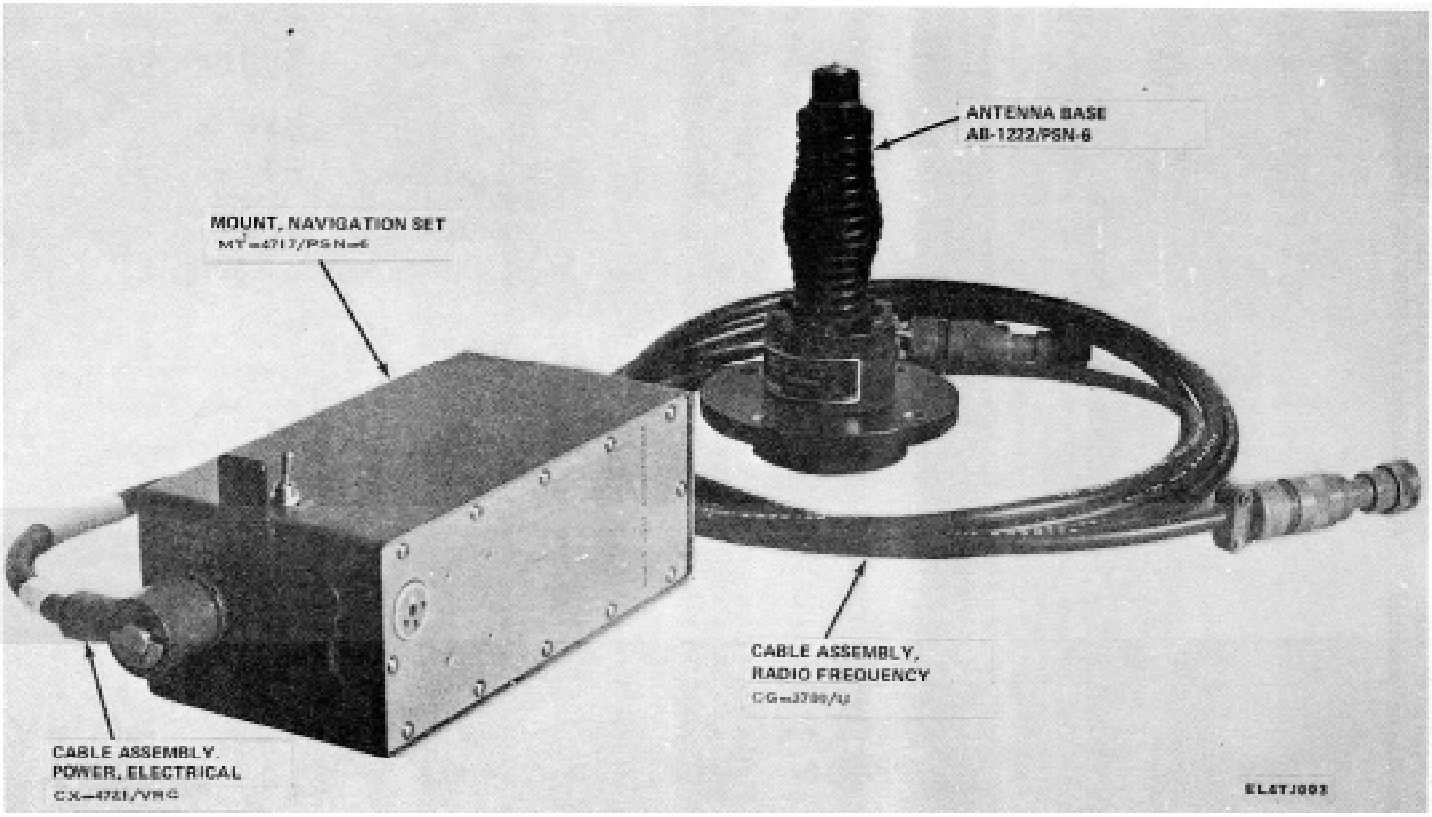


Figure 1-3. Vehicle Mount Adapter Group OF-34/PSN-6.

1-9. Description

a. Loran Navigation Set (fig. 1-1 and 1-2). The principal components of the loran navigation set are Loran Receiver R-1897/PSN-6 (loran receiver); Control-Indicator C-9547/PSN-6 (control-indicator); Antenna AT-892/PRC-25 (antenna); Battery Box CY-2562/PRC-25; and one Electrical Special Purpose Cable CX-12984/PSN-6 (control-indicator interconnect cable).

(1) *Loran receiver*. The loran receiver contains rf and digital circuitry that processes the loran C and loran D signals. Receiver power is provided by Battery BA-43861PRC-25 housed in a battery box that clips onto the bottom of the loran receiver. The loran receiver may be mechanically secured to the bottom of Radio Set AN/PRC-25 or AN/PRC-77 through two side clips. The reception area for the loran receiver is established by the program contained in the plug-in programmable read only memories (PROM) within the loran receiver.

(2) *Control-indicator*. The control-indicator is a visual readout and control unit that attaches to the user's belt in the manpack configuration or to the navigation set mount cover in the vehicle mounted configuration. The control-indicator provides the controls and displays for the loran navigation set. The controls and displays work in conjunction with a computed in the loran receiver.

(3) *Antenna*. The whip antenna is used for reception of rf signals for input to the loran receiver. The antenna can be folded for storage.

(4) *Battery box.* The battery box clips onto the bottom of the loran receiver and supplies electrical power through a four-prong connector.

(5) *Control-indicator interconnect cable*. The control-indicator interconnect cable connects the loran receiver to the control-indicator.

b. Vehicle Mount Adapter Group The vehicle mount adapter group consists of a Navigation Set Mount MT-4717/PSN-6 (vehicle adapter mount); an Antenna Base AB-1222iPSN-6 (vehicle base assembly); two cable assemblies, a Radio Frequency Cable Assembly CG-3780/U, and an Electrical Power Cable Assembly CX-13095/PSN-6; and two loop-type webbing strap assemblies, SM-A-761307-002.

(1) *Vehicle adapter mount*. The vehicle adapter mount secures the loran navigation set to the vehicle and converts the 28 vdc vehicle power to 12.5 vdc operating power for the set.

(2) *Vehicle base assembly*. The vehicle base assembly together with antenna elements AS-1730/ VRC and AT-1095/VRC form the vehicle antenna used for reception of loran signals.

(3) *Radio frequency cable assembly*. This cable connects the vehicle base assembly to the loran navigation set.

(4) *Electrical power cable assembly*. This cable provides 28 vdc from the vehicle power of the vehicle adapter mount.

(5) *Loop-type strap assemblies*. These two strap assemblies secure the control-indicator to the loran receiver and loran receiver to the AN/PRC-25 or AN/ PRC-77.

1-10. System Application

The loran navigation set can be configured in either a manpack or vehicle mount configuration. Refer to chapter 2 for a description and illustration of the system applications.

1-11. Tabulated Data

Table 1-1 lists the items comprising the loran navigation set. Table 1-2 lists the operating characteristics. Table 1-3 lists the common names assigned to the modules and circuit cards described in this manual.

1-12. Additional Equipment Required

The following equipment is not supplied as part of the loran navigation set or vehicle mount, but is required for use with the sets.

a. *Manpack Operation.* For manpack operation, the following equipment is required:

(1) One Battery BA-4386/PRC-25 or BA-398/PRC-25 (arctic operation)

(2) Cable Assembly, Electrical Power CX-12985/PSN-6 (arctic power cable).

b. *Vehicle Operation.* For vehicular operation, the following equipment is required in addition to the loran navigation set and the vehicle mount:

(1) Amplifier-Power Supply AM-2060A/GRC.

(2) Mounting MT-1029/VRC.

(3) Antenna AS-1729/VRC.

Table 1-1. Items Comprising Navigation Set, Position Fixing, Loran AN/PSN-6 and Vehicle Mount Adapter Group OF-34/PSN-6

Item	Quantity	Dimensions (in.) Height	Depth	Width	Weight (lb)
Navigation Set, Position Fixing, Loran AN/PSN-6					
Receiver, Loran R-1897/PSN-61	1	6.81	3.842	9.919	6 lb 13 oz.
Control-Indicator C-95471PSN-6	1	2.91	4.577	5.68	1 lb 4 1/2 oz.
Cable Assembly. Special Purpose, Electrical CX- 129841PSN-6	1	8.0 ft long (fully extended)			8 oz.
Antenna AT-892/PRC-25	1	36			8 1/2 oz.
Vehicle Mount Assembly Group OF-34IPSN-6					
Mount, Navigation Set MT-4717/PSN-6	1	3.80	4.66	10.10	9.5
Antenna Base AB-1222/PSN-6	1	8.28		5.50 (dia)	4 5
Cable Assembly, Power, Electrical CX- 13095/PSN-6	1	1 5 ft long			1.8
Cable Assembly, Radio Frequency CG-3780/U	1	17 ft long			2 5
Strap Assemblies, Webbing SM-A-761307-002	2				

Table 1-2. Equipment Tabulated Data

Power input requirements:	
Loran receiver	12.5 ±2.5vdc, 16 watts
Vehicle adapter mount	28 vdc nominal, 60 watts
Power output, vehicle adapter mount	12.5+ 0.5 vdc, 25 watts
Rf input	loran C or loran D
Frequency	100 kHz
Input signal range (dynamic)	80 db
Sensitivity	5.0 microvolts
Automatic signal locking time (with a 5.0 microvolt loran CID signal at the space coupling node and standard reference sampling point for loran C/D signals	No external noise) 12 minutes maximum
Time difference accuracy (with a 5.0 microvolt loran C/D signal at the space coupling node and standard reference sampling point for loran C&D signals	No external (noise):
Upper confidence limit IUCL) of mean time difference error	80 nanoseconds maximum
Upper confidence limit standard deviation	170 nanoseconds maximum
Resolution	10 meters, easting and northing
Environmental capabilities:	
Temperature:	
Operating	50 to + 125 degrees F
Nonoperating	- 70 to + 160 degrees F
Altitude:	
Operating	10,000 feet
Nonoperating	50,000 feet
Humidity:	
Ambient air to 80 degrees F	100 percent (relative)
Ambient air of 100 degrees F	High absolute humidity corresponding to a dew point of 86 degrees F
Ambient air of 125 degrees F	5 percent (relative)
Immersion (field transport model	3 feet of water for a period of 2 hours

Table 1-3. Common Names Assigned to Equipment

Nomenclature: Item name	Nomenclature: Type or ref designation	Common name
Navigation Set, Position Fixing, Loran	AN/PSN-6	Loran navigation set
Receiver, Loran	R-1897/PSN-6 (unit 1)	Loran receiver
Circuit Card, Preamplifier	1A1	Preamplifier circuit card
Rf Assembly	1A2	Rf assembly
Circuit Card, Notch Filter	1A2A1	Notch filter circuit card
Circuit Card, Analog Rf	1A2A2	Analog rf circuit card

Table 1-3. Common Names Assigned to Equipment

Nomenclature		
Item name	Type or ref designation	Common name
Circuit Card, Input/Output	1A3	Input/output circuit card
Timing Circuit Card, Sensor Timing	1A4	Sensor timing circuit card
Oscillator	lA4Yl	Oscillator
Circuit Card, Computer Board #2	1A5	Computer Board #2
Circuit Card, Computer Board #1	1A6	Computer Board #1
Power Supply Assembly, Dc-Dc	1A7	Dc-dc power supply
Board Assembly, Interconnect, Printed Wiring	1A8	Interconnect circuit card
Antenna Mount Assembly	lMP61	Antenna mount
Control-Indicator	C-9547/PSN-6 (unit 2)	Control-indicator
Module Assembly, Control Logic	2A1	Control logic module
Circuit Card, Diode Matrix	2AlAl	Diode Matrix circuit card
Circuit Card, Decoder and Driver	2A1A2	Decoder/driver circuit card
Circuit Card, Decoder and Input	2A1A3	Decoder/input circuit card
Circuit Card, Control and Output	2A1A4	Control/output circuit card
Cable Assembly, Special Purpose, Electrical	CX-12984/PSN-6	Control indicator or interconnect cable
Antenna	AT-892/PRC-25	Antenna
Vehicle Mount Adapter Group	OF-34/PSN-6	Vehicle mount
Mount, Navigation Set	MT-4717/PSN-6 (unit 1)	Navigation set mount
Circuit Card, Over-voltage Protection (12V)	3A1	Overvoltage protection circuit card
Circuit Breaker	3CB1	Circuit breaker
Power Supply Assembly	3PS1	Power supply
Filter, Radio Frequency Interference	3FL1	Rfi filter
Filter, Radio Frequency Interference	3FL2	Rfi filter
Base, Antenna	AB-1222/PSN-6 (unit 2)	Antenna base
Cable Assembly, Power, Electrical	CX- 13095/PSN-6	Dc power cable
Cable Assembly, Radio Frequency	CG-3780;U	Rf Cable

CHAPTER 2

SERVICE UPON RECEIPT AND INSTALLATION

Section I. INTRODUCTION

2-1. General

This chapter contains instructions for system planning, service upon receipt of equipment, installation, interconnections, preliminary checks, and installation checkout.

2-2. Planning

The loran navigation set is used in two basic applications; as a field pack (manpack), transported on a man's back, and as a vehicle mounted unit (vehicle-mount) In both applications the loran navigation set operates as a field unit Figure 2-1 illustrates these applications. The figure also illustrates the ancillary equipment which may be used in conjunction with the loran navigation set.

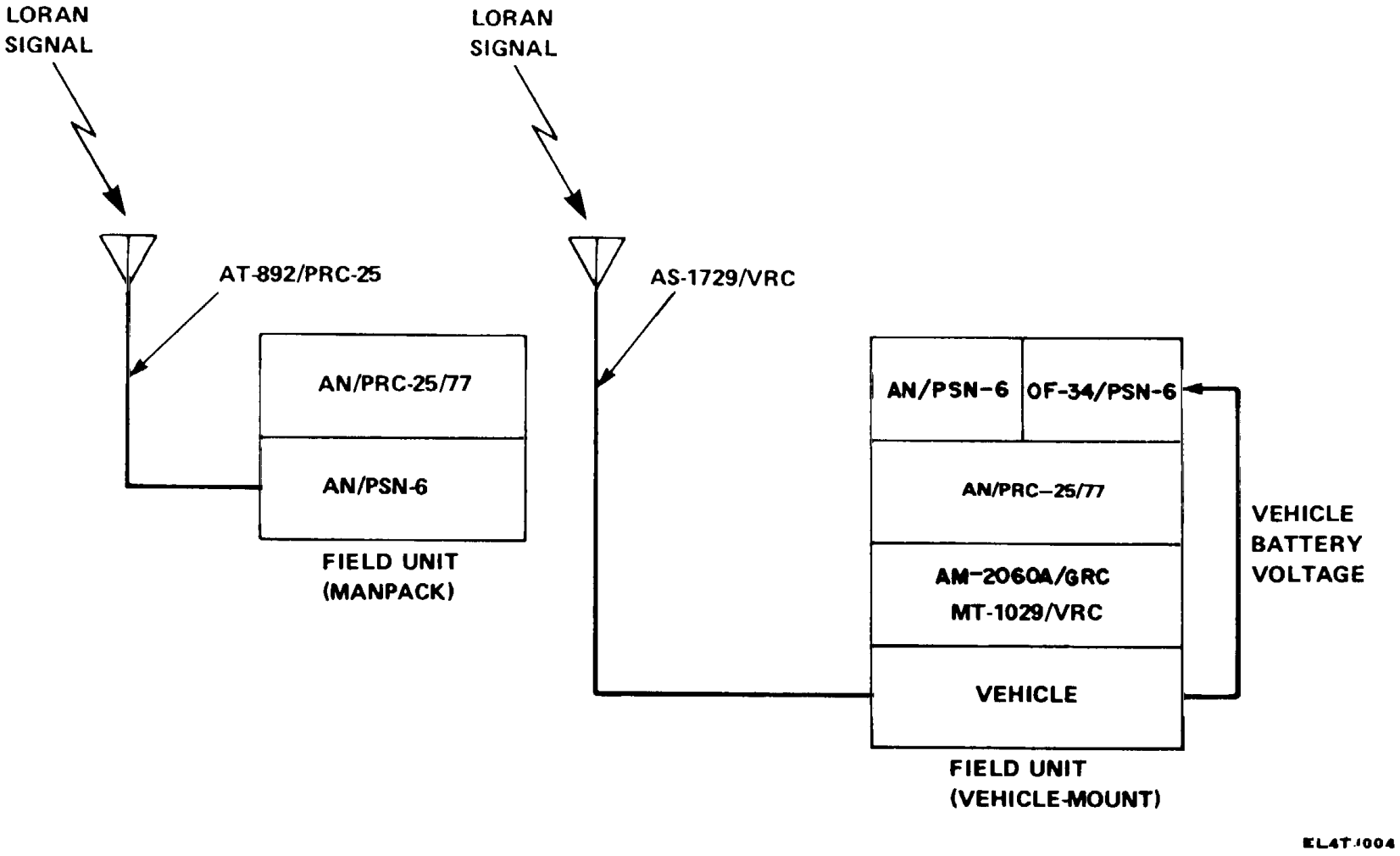


Figure 2-1. Types of operation, block diagram.

Section II. SITE AND SHELTER REQUIREMENTS

2-3. General

In all applications the loran navigation set is operated as a mobile unit.

2-4. Limitations

The loran navigation set has the following limitations.

a, The reception area for the loran navigation set is established by the program contained in two plug-in programmable read only memories (PROM's) within the loran receiver. These PROM's are programmed in a MX-9643/PSN-6 Programmer. Programming is performed at the general level of maintenance using standard PROM's that contain the program for the desired reception area. Reprogramming must be performed when the loran navigation set is moved to another area. Each operating area encompasses approximately sixteen 100,000 meter square grids on a universal transverse mercator (UTM) map.

b. The loran navigation set is an independent field unit. It may be used in conjunction with an AN/PRC-25 or ANIPRC-77 transceiver to provide an oral communications link to other units.

c. The loran navigation set can be operated using the BA-4386/PRC-25 in temperatures down to 30° F. Below this temperature, the arctic configuration must be used (chap. 5).

Section III. SERVICE UPON RECEIPT OF MATERIAL

2-5. Checking Unpacked Equipment

a. Inspect the equipment for damage incurred during shipment. If the equipment has been damaged, report the damage on SF 364 prescribed in AR 700-58.

b. Check the equipment against the component listing in chapter 1 and the packing slip to see if the shipment is complete Report all discrepancies in accordance with the instructions in TM 38-750. The equipment should be placed in service even though a minor assembly or part that does not affect proper functioning is missing.

c. Check to see whether the equipment has been modified (Equipment which has been modified will have the MWO number on the front panel, near the nomenclature plate.) Check also to see whether all currently applicable MWO's have been applied. (Current MWO's applicable to the equipment are listed in DA Pam 310-1.)

2-6. Dimensions

For dimensions, weights, and volume of package items, see SB 700-20.

Section IV. INSTALLATION INSTRUCTIONS

2-7. General

This section contains assembly and installation instructions for two equipment configurations; normal manpack and vehicle mount. The loran navigation set does not require lubrication or adjustment.

2-8. Tools Required for Installation

The vehicle mount configuration is the only loran navigation set installation that requires the use of tools. These tools, listed below, are contained in the technician's tool kits listed in the maintenance allocation chart (app B).

Quantity	*Item*	*Use*
1	Screwdriver Phillips head, medium	Replacement of mounting plate with base plate and support bracket.
1	Wrench, open end or box	Attaching the navigation set mount to the support bracket.

2-9. Equipment Installation

Equipment installation consists of attaching the loran navigation set to the transceiver, subparagraphs a and b below describe the procedure.

a. Manpack Configuration In this configuration the loran navigation set may be used independently but is normally used in conjunction with an AN/PRC-25 or ANiPRC-77 Refer to figure 2-2 and proceed as follows:

(1) Install dry Battery BA-4386!PRC-25 into the loran receiver battery box.

(2) Use the slide spring latches to attach the battery box and battery to the bottom of the loran receiver.

(3) Use the slide spring latches to attach the loran receiver to the transceiver. The transceiver battery box fits into a well in the top of the loran receiver.

(4) Connect the control cable from the CONT IND jack on the loran receiver to jack J1 on the control-indicator.

(5) Connect the antenna to the ANTENNA fitting on the loran receiver.

(6) Install the transceiver-loran receiver combination onto the rucksack.

(7) Use two standard utility clips to attach the control-indicator to the front of a web pistol belt.

(8) Use two standard utility clips to attach the control-indicator to the front of a web pistol belt. Refer to figure 2-2.1.

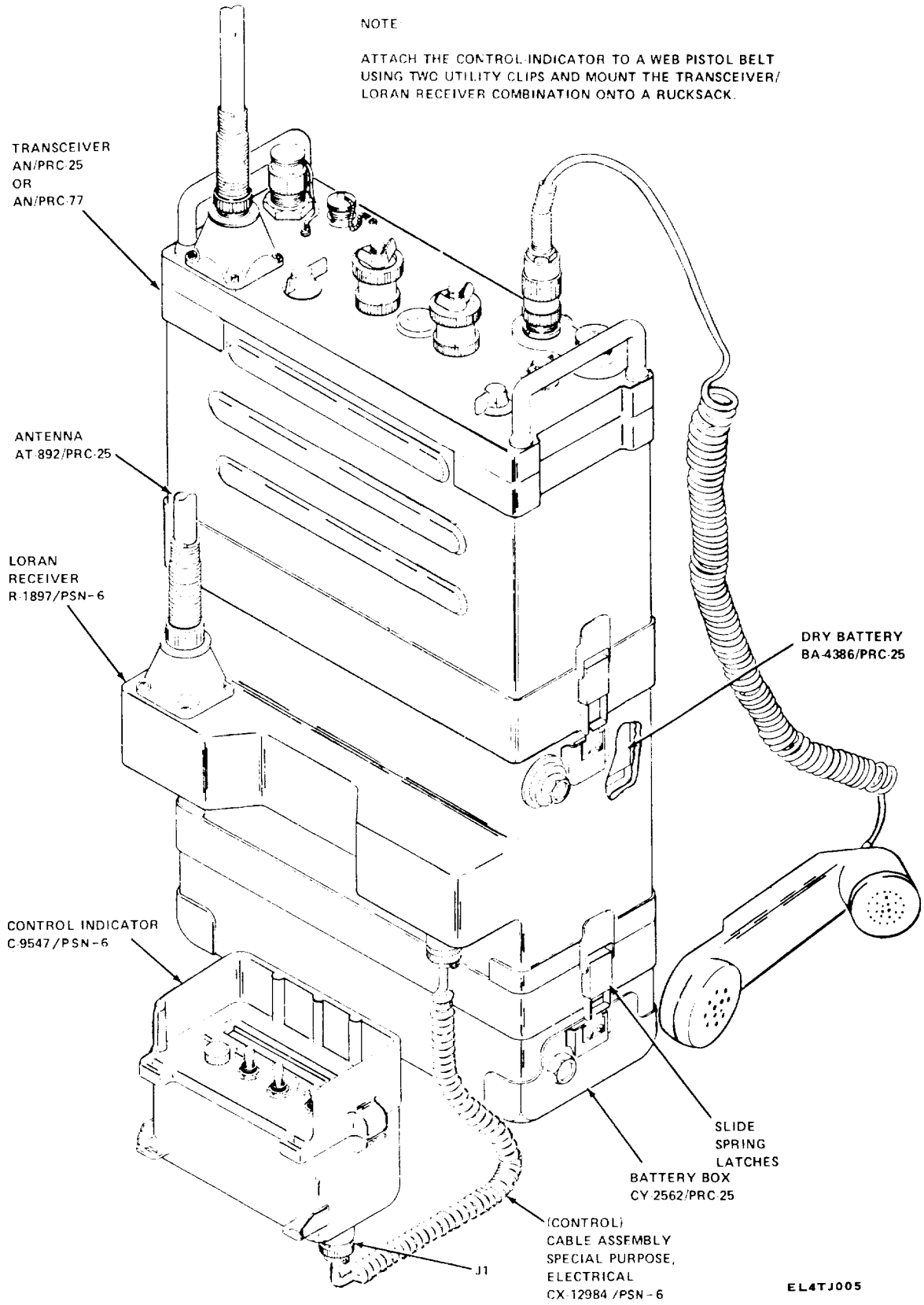


Figure 2-2. Assembly and cable diagram for manpack operation

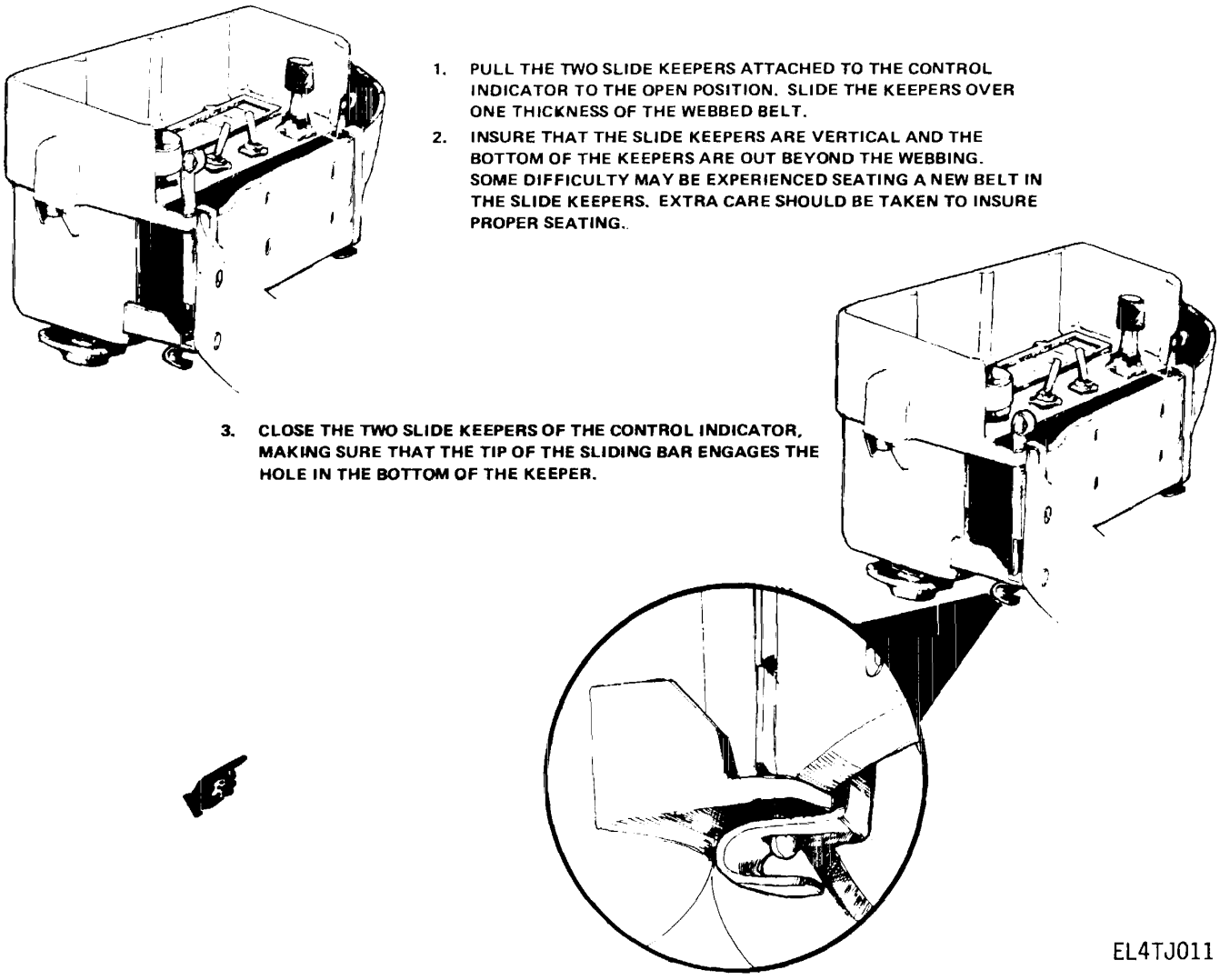


Figure 2-2.1 Control Indicator Belt Assembly.

b. *Vehicle Mount Configuration.* Installation in armored vehicles requires that the radio mounting rack be lowered to leave room for the AN/PSN-6. In this configuration, the loran navigation set is used in conjunction with an Amplifier Power Supply AM-2060A/GRC and Mounting MT- 1029.'VRC. Refer to TM 11-5820-498-12 for the installation instructions for these two equipments Other items 0used in conjunction with the loran navigation set in the vehicle mount configuration include: Antenna Base AB-1222/PSN-6; Antenna AS-1729/VRC; Mount, Navigation Set MT-4717/PSN-6 and Transceiver ANiPRC-25i77. Installation of these items is described below. Refer to figure 2-3 for installation information for these items Procedures required to install the baseplate provided as part of the navigation set mount are provided in (4) below.

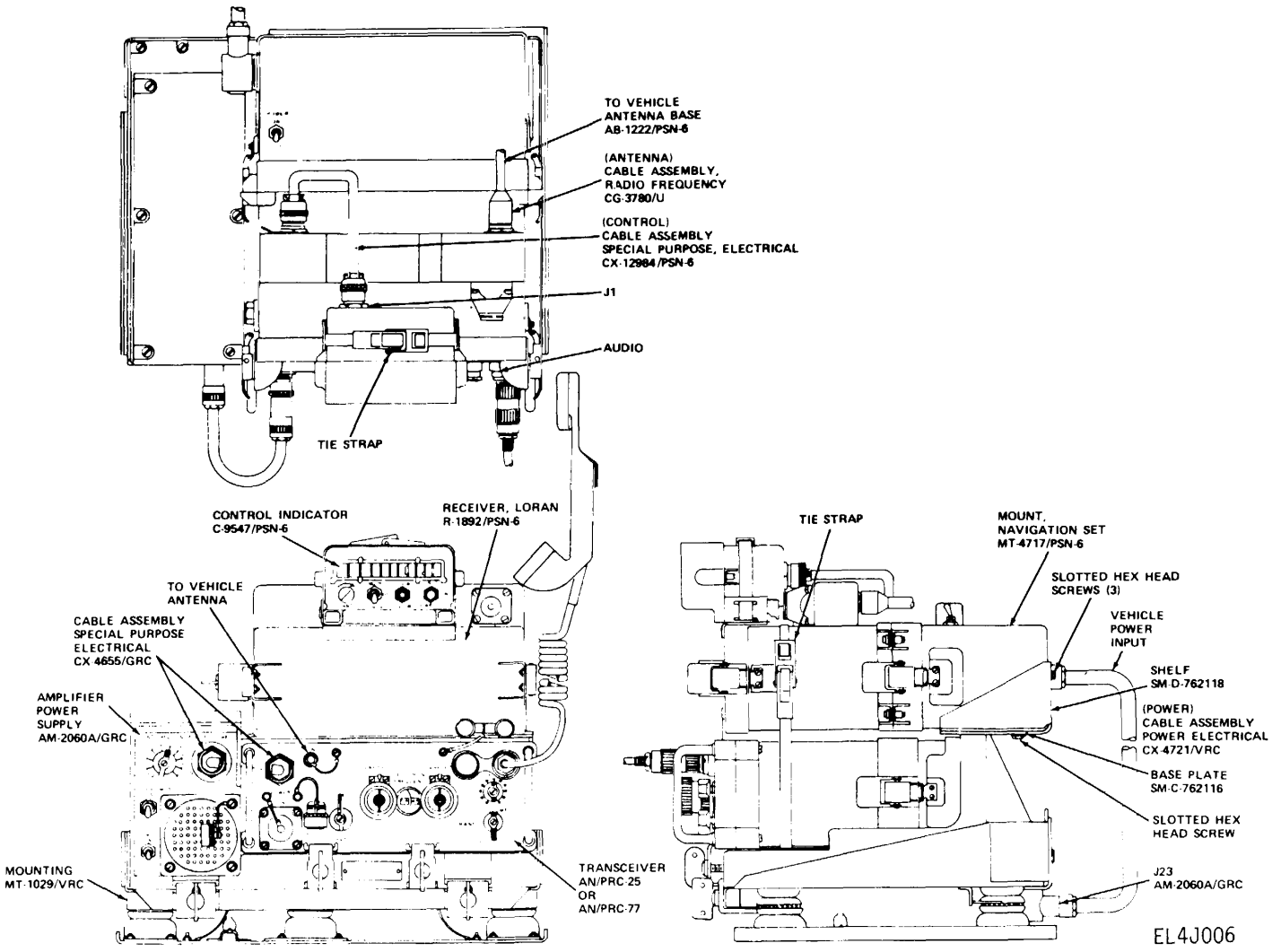


Figure 2-3. Assembly and Cable Diagram For Vehicle Mount Operation.

(1) Install the vehicle antenna as follows:

NOTE

Mounting instructions will differ for the various vehicles on which the AS-1729/ VRC is installed Refer to SB 11-131 for the list of authorized vehicular radio sets and installation kits.

(a) Mount the AB-1222iPSN-6 as described in the installation kit Use the hardware and gasket supplies.

(b) Apply a small quantity of silicone com- pound (NSN 5970-00-159-1598) to the threads of the spring mount assembly and position the performed packing on the threads.

(c) Screw and tighten Antenna AS-1730/VRC onto the spring mount assembly.

(d) Obtain a 5-inch length of safety wire; thread the safety wire through the two small holes in the hexagonal portion of the AS-1 730/VRC and then through a pair of safety holes in the spring mount on the antenna base.

NOTE

There are three pairs of safety wire holes in the spring mount; select the particular pair for which the safety wire will be held in tension if the AS-1730'VRC tends to loosen.

(e) Install a safety wire.

(f) Apply a small quantity of the silicone compound to the threads of the AT-1095/VRC.

(g) Screw the AT- 1095iVRC into the top of the AS-1730/VRC.

NOTE

Ensure that the dc power cable are connected to the bottom of the mounting before installation.

(2) Install the mounting and the amplifier-power supply group in accordance with the procedures in TM 11-5820-498-12.

(3) Remove the mounting plate from the top of the bumper plate on the mounting by removing the three Phillips head screws.

NOTE

The baseplate and support bracket are attached to the navigation set mount and must be removed before performing (4) below.

(4) Install the baseplate to Amplifier Power Sup- ply AM-2060A,GRC (fig 2-3.1) as follows:

NOTE

Amplifier Power Supply AM-2060A/ GRC must be modified before the baseplate can be installed.

(a) Remove the mount ing plate from Amplifier Power Supply AM-2060A,'GlRC

NOTE

The baseplate and support bracket are attached to the navigation set mount and must be removed prior to, performing (b) below.

(b) Secure the baseplate to Amplifier Power Supply AM-2060A :GRC using the four flathead bolts and self-locking nuts provided with the vehicle mount.

(c) Install the support, bracket to Amplifier Power Supply AMNI-2060A'CGRC by inserting the three flathead screws provided through the three countersunk holes in the support bracket, through the three holes in the baseplate, and into the threaded holes in Amplifier Power Supply AM-2060A,GRC.,

(5) Install the navigation set mount as follows:

(a) Place the navigation set mount in the support bracket.

(b) Fasten the navigation set mount to the support bracket with the five slotted head screws provided. Refer to figure 2-3 for the mounting position and screw location.

(6) Install the radio set on the mount and amplifier power supply group as follows:

(a) Loosen the screw-type mounting clamps on the front of the amplifier-power supply, they will drop slightly.

(b) Slide the AN/PRC-25 or AN/PRC-77 into the amplifier-power supply rack. Position the web strap (SM-A--761307 007) under the transceiver, AN/PRC-25 or AN/PRC-77.

(c) Raise the screw-type mounting clamps until they engage the lips on the panel of the transceiver set; tighten the screw-type mounting clamps.

(d) Remove the protective cap from the POWER connector oil the panel of the transceiver.

(e) Connect Special Purpose Electrical Cable Assembly CX-4655/GRC (part (of AM-2060A/GRC) between the amplifier-power supply SET POWER connector and the transceiver POWER connector.

(f) Connect a radio-frequency cable between the transceiver ANT connector (BNC) and the AN/PRC-25/GRC antenna (7) Install the loran navigation set as follows:

(a) Open two slide spring latches on the navigation set mount and remove the cover.

(b) Remove battery box from bottom of loran receiver.

(c) Slide the loran receiver in place on the end of the navigation set, mount and fasten in place with the loran receiver slide spring latches,

(d) Stow the battery box.

and secure the strap to hole it in place. Secure the loran receiver to the transceiver using the web strap provided See figure 2-4.

(Dl Install the power cable from J23 on Mounting MT-1029/VRC to the VEHICLE POWER INPUT on the navigation set mount.

(g) Install the 17-foot antenna cable between the loran receiver REMOTE antenna input and the antenna base The cable has identical connectors at each end.

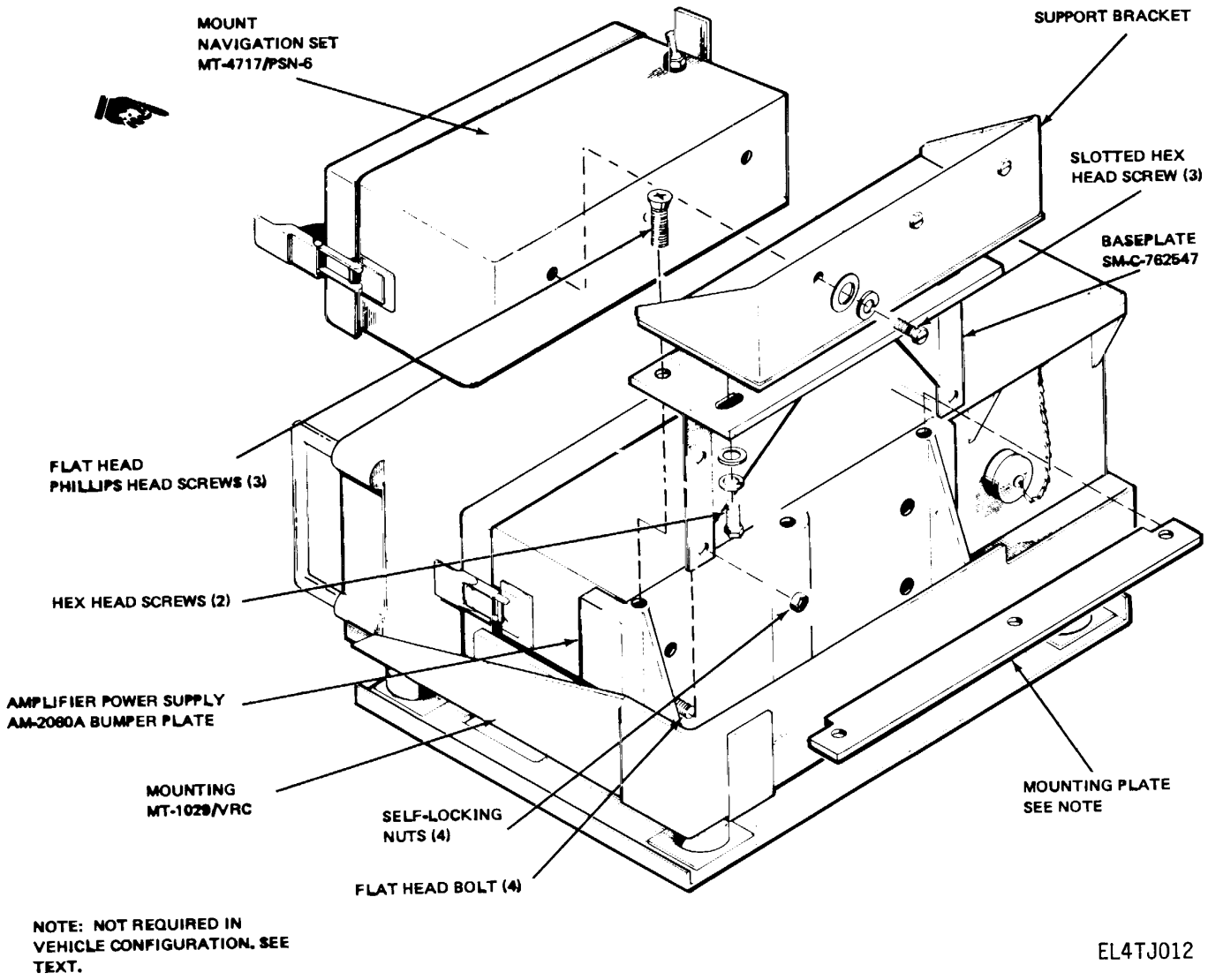
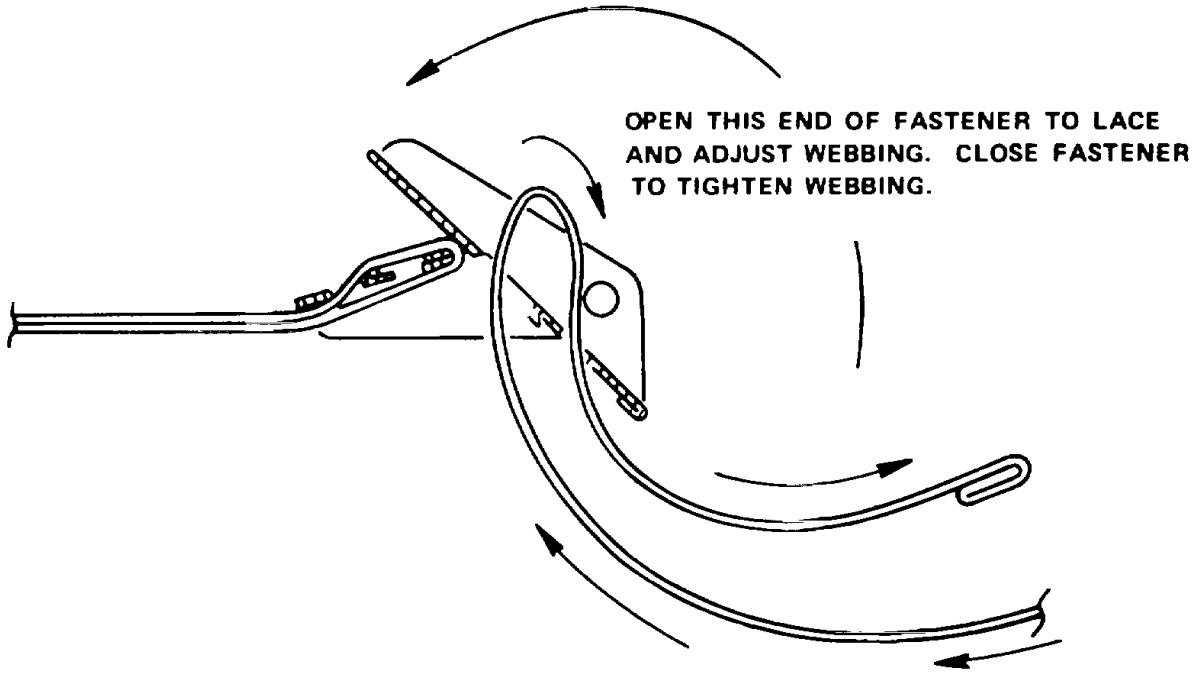


Figure 2-3.1. Vehicle Adapter Base Assembly.



NOTES:

1. THREADING - WITH FASTENER IN OPEN POSITION, THE END OF THE WEBBING (PULL TAB) IS INSERTED THROUGH SLOT IN CENTER OF LEVER ARM OF FASTENER. THE END OF WEBBING IS PUSHED DOWN THROUGH THE OTHER SLOT IN LEVER ARM. THE END OF WEBBING IS PULLED TO TAKE UP SLACK..

2. TIGHTENING - THE LEVER ARM IS PULLED FORWARD AND PRESSED TO A FLAT POSITION. IF TOO MUCH FORCE IS REQUIRED TO CLOSE THE LEVER ARM, THE WEBBING SHOULD BE SLACKENED SLIGHTLY.

   RELEASING - PULLING UP ON THE END OF THE WEBBING (PULL TAB) LIFTS THE LEVER ARM OF THE FASTENER AND SNAPS IT OPEN.

EL4TJ007

Figure 2-4 Tie strap operation

2-10. Interconnections
The interconnections for the two installation configurations are illustrated in figures 2-2 and 2-3.

Section V. PRELIMINARY ADJUSTMENT, INSTALLATION AND CIRCUIT LINEUP

2-11. Preliminary Checks
Preliminary checks consist of performing the inspection procedure described in table 4-1.

2-12. Installation Checkout Procedure
Installation checkout is accomplished by conducting the performance tests described in chapter 4.

CHAPTER 3

OPERATING INSTRUCTIONS

Section I. CONTROLS AND INSTRUMENTS

3-1. Damage from Improper Settings

There are no improper control settings that could cause damage to the loran navigation set or to the vehicle mount adapter.

3-2. Operator's Controls

Controls for the loran navigation set and the navigation set mount are described in table 3-1 and illustrated in figures 3-1 and 3-2, respectively.

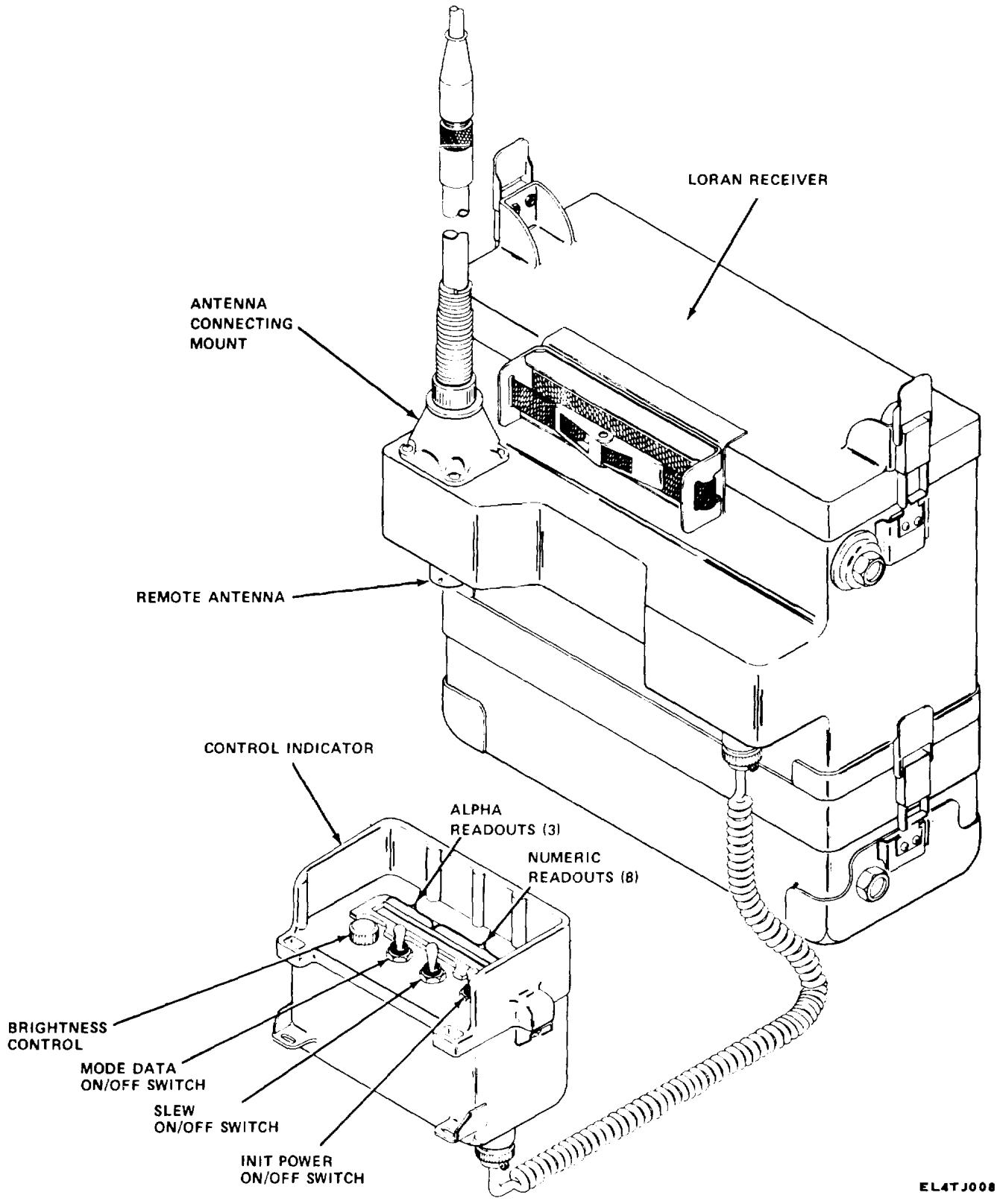


Figure 3-1. Loran navigation set controls, indicators, and connectors

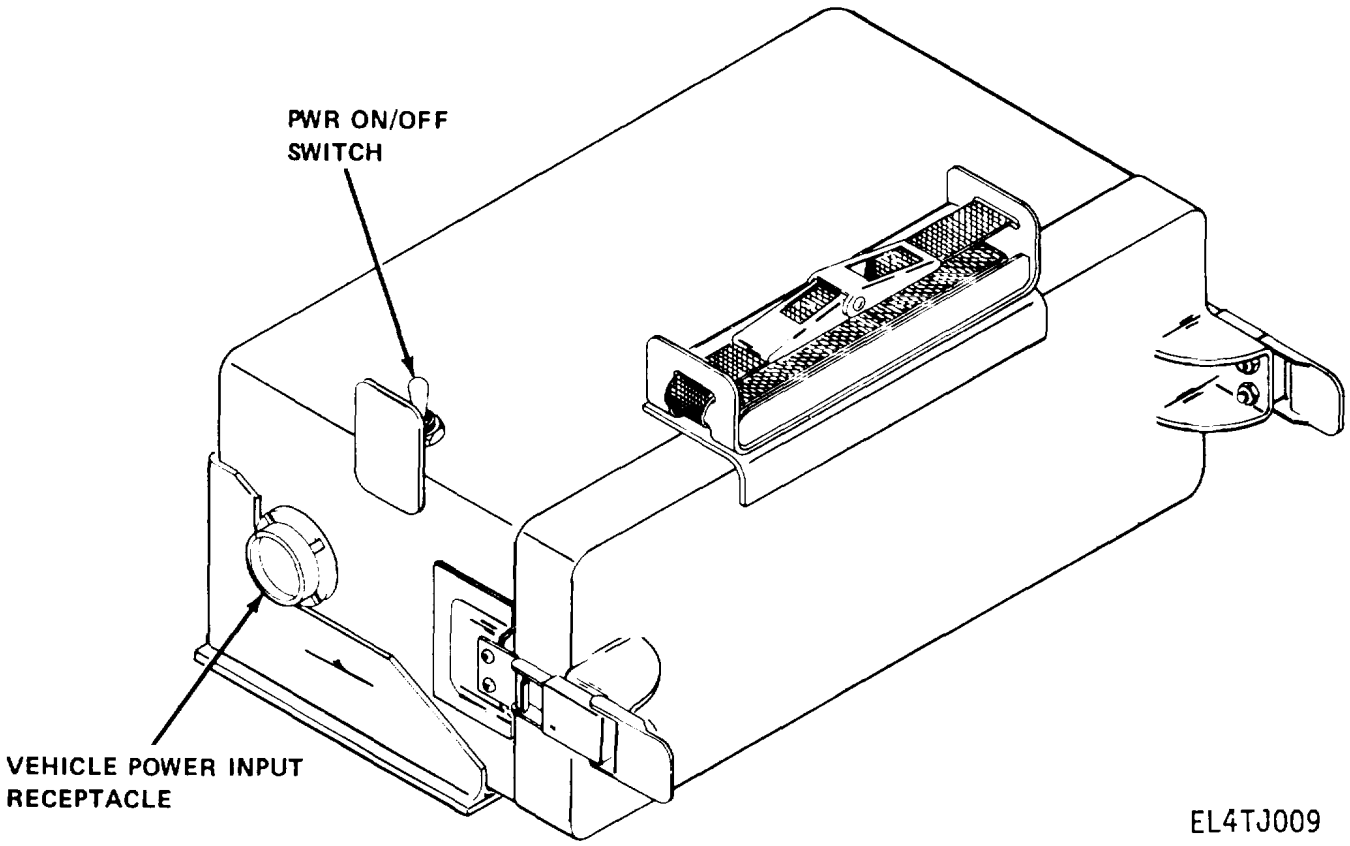


Figure 3-2. Navigation Set Mount Control and Connector.

Table 3-1. Operator's Controls

NOTE
This table covers only items used by the operator.

Control, indicator, or connector	Reference designation	Function
		CONTROL INDICATOR
BRT control	R1	Dimmer control for alpha and numeric readouts.
MODE/OFF/DATA switch	S3	Controls operational mode of loran receiver.
MODE position		Enables mode change (displayed by alpha readout) by operation of SLEW/SLEW switch.
OFF position		Disables mode change.
DATA position		Controls display of data.
SLEW/SLEW switch	S2	Controls selection of mode and data change. This switch activates changes in the alpha readout at a rate of one per second. MODE/OFF/DATA switch must be in MODE position for changing alpha readout. The upper SLEW position changes the readouts in as cending order. The lower SLEW position changes the readouts in descending order. Automatically returns to midposition when released.
INIT/ON/PWR OFF switch	S1	Controls application of power.
INIT position		Initiates self-test. Automatically returns to ON position when released.
INIT/ON/PWR OFF	S1	Controls application of power, and selection of time constant.

Table 3-1. Operator's Controls - Continued

Control, indicator, or connector	Reference designation	Function
INIT position	S1	Loads waypoint data. Selects AIR time constant Automatically returns to ON position when released.
ON position		Applies power to the unit. has mechanical interlock to prevent accidental switch to PWR OFF position This ensures that data is not inadvertently cleared or reset
PWR OFF position		Removes power from unit.
		LORAN RECEIVER
ANTENNA:REMOTE antenna	IMP61	Contains connections for two antenna systems. Top connector is used for whip antenna on manpack configuration. Bottom connection is used when unit is in vehicular mount and using vehicular antenna.
CONT IND jack	J1	Provides means to electrically connect control-indicator to loran receiver.
		NAVIGATION SET MOUNT
PWR ON,OFF switch	CB1	Controls application of vehicle power to vehicle mount adapter.
ON position		Connects vehicle battery to adapter for use by loran receiver.
OFF position		Disconnects vehicle battery from adapter
VEHICLE POWER INPUT receptacle	J1	Provides for power connection between adapter and vehicle battery

Section II. OPERATION UNDER USUSAL CONDITIONS

3-3. General

This section contains the operating procedures for the loran navigation set. The procedures describe field operation for manpack and vehicular configurations.

NOTE

To ensure optimum performance do not operate the loran navigation set with the receiver on the ground or with the antenna in some position other than vertical.

3-4. Preliminary Starting Procedure

Prior to turn on, position the switches on the control indicator as follows:

Control Switch	Position
BRT	Mid-range
MODE/OFF/DATA	OFF
INIT/ON/PWR OFF	OFF

NOTE

The receiver power supply automatically shuts off if the battery voltage falls below 10 volts. This may cause the display to go blank shortly after turn-on. Replacement of the battery will restore normal operation.

3-5. Initial Adjustments

No initial adjustments are required before operating the loran navigation set.

3-6. Operating Procedures

a. Operation of the navigation set is usually done in two steps. First it is initialized. The procedures are performed to cause it to provide one of four primary display functions. These include (1) present position UTM; (2) present position UTM storage; (3) display stored present position UTM and (4) range/bearing. Table 3-2 provides a tabular listing of the operating procedures.

NOTE

Table 3-2 assumes that a Ft. Bragg PROM set is installed in the loran navigation set. Therefore, the control-indicator readouts are typical of that PROM set and would differ according to the PROM contents for other locations. For example, during the PROM identification mode, the PROM identification number for Key West Florida would appear on the control indicator readout listed in table 3-2 as USA22.

Table 3-2. Loran Navigation Set Operational Modes

Procedure	Switch positions MODE/DATA	SLEW	POWER INIT	Typical display	Notes
Acquisition	OFF	OFF	ON	SCH -- ------	Search mode in process.
				STL--------	After 20 seconds of delay settle mode in process.
				TRK--------	After 3 to 12 minutes delay track mode in process.
				----------	The TRK indication will disappear after 5 seconds and all readouts will be blank.
Display Test	MODE	SLEW	ON	TST- - - - - -	Do this test during the 3 to 12 minute delay required to achieve the track mode.
	MODE	OFF	ON	* * * 88888888	
PROM	DATA	SLEW	ON	ID--------	Do this test during the 3 to 12 minute delay required to achieve the track mode.
Identification	DATA	OFF	ON	USA 19----------	Identifies PROM coverage area.
	DATA	OFF	INIT	APR-27-1977	Revision date of PROM set.
	DATA	OFF	INIT	PM, QM, TS, US, PL, QL, TR, UR, PK, QK, TQ, UQ, PJ, QJ, TP, UP	Displays 16 grid squares for PROM coverage area. Display starts with upper left grid square and proceed left to right, top to bottom.
Time Constant Selection	DATA	SLEW	ON	USE--------	Indicates time constant selection.
	DATA	OFF	ON	GND -------	GND time constant automatically selected whenever POWER/INIT changed from OFF to ON.
	DATA	OFF	INIT	AIR--------	AIR time constant selected. Do this procedure during the 3 to 12 minute delay required to achieve the track mode.
Standby	MODE	SLEW	ON	SBY--------	
	MODE	OFF	ON	SBY--------	SLEW switch released. Display indicates standby mode.
Reacquisition	MODE	OFF	INIT	SCH--------	Search mode in process.
	MODE	OFF	ON	STL --------	After 20 seconds delay settle mode in process.
				25314---183	After 3 to 12 minutes delay track mode in process. Display indicates 253.14km range to selected waypoint at magnetic bearing of 1830.
Present Position	TDA or TDB MODE	SLEW	ON	TDA or TB	
Time Difference	MODE	OFF	ON	--A-5284378	Time difference is read as 52,843.78 microseconds
				--B-6983765	
Range Bearing	MODE	SLEW	ON	RB---------	
	MODE	OFF	ON	25314---183	Slew switch released. Display indicates 253.14km. Range, 1830 bearing.
Waypoint Selection	MODE	SLEW	ON	WPT--------	
	MODE	OFF	ON	0TS73164325	
	MODE	SLEW	ON	5PJ77118643	SLEW switch released. Display indicates WPT. Coordinates stored in position number 5.

Table 3-2. Loran Navigation Set Operational Modes

Procedure	Switch positions MODE/DATA	SLEW	POWER INIT	Typical display	Notes
Present Position					
UTM	MODE	OFF	INIT	-7J77118643 or	POWER INIT switch set to INIT
Storage				2:314---183	
Display Stored UTM DATA	MODE	SLEW	ON	WPT--------	
	MODE	OFF	ON	4PJ77118643	Waypoint number 4 used for range bearing
	MODE	OFF	INIT	5PK38217614 6PK23173594 7PJ97314762 8QJ86432571 9QJ172165814	Waypoint number is incremented by one each time POWER, INIT switch is set to INIT
Present Position	MODE	SL.EW	ON	-TM-- - - - -	
	MODE	OFF	ON	P'.177118643	SLEW switch released Display indicates grid zone P,J, 77, 110 meters Easting and 86, 430 meters Northing. Display will appear within 1 second.
Load Waypoint Data	DATA	OFF	ON	0 3.0000000	
	DATA	OFF	INIT	0 00000000	PWNR to INIT loads WPT number O
	DATA	SL,EW	ON	OTS00000000	
	DATA	OFF	INIT	0roo00000000	PWR to INIT loads grid square TS.
	DATA	SL.EW	ON	OTS00000000	
	DATA	OFF	INIT	OTS70000000	PW'R to INIT loads first numeric coordinate
				0TS73164325	Repeat SLEW, INIT sequence until all coordinates are loaded Do this procedure during the 3 to 12 minute delay required to achieve the track mode.

*or - equals blank or no display

(1) After a delay of 3 to 12 minutes, if a signal is present, the alpha readouts transfer from STI, to TRK, indicating that the track mode is in process. The TRK indication will disappear after 5 seconds and all readouts will go blank.

(2) *Display test.*

(a) Set the MODE/DATA switch to MODE.

(b) Hold the SLEW switch in the SILEW position until alpha readouts display TST (test).

(c) Release the SLEW switch to the OFF position. All segments of all displays should illuminate as shown in the display test procedure (table 3-2).

(3) *PROM identification*.

(a) Set the MODE/DATA switch to the DATA position.

(b) Hold the SLEW switch in the SLEW position until alpha readouts display ID.

(c) Release the SLEW switch to the OFF position. The alpha/numeric readout will display the PROM coverage area as shown in the PROM identification procedure (table 3-2).

(d) Hold the POWER/INIT switch in the INIT position for approximately 2 seconds and then release. The alpha/numeric readout will display the revision date of the PROM set as shown in the PROM identification procedure (table 3-2).

(e) Hold the POWER/INIT switch in the INIT position for approximately 2 seconds and then release. The alpha/numeric readout will display the upper left grid square covered in the PROM set as shown in the PRONM identification procedure (table 3 -12).

(f) Each time the POWER:INIT switch is momentarily held in the INIT position, the alpha readout, will display the next grid square proceeding left to right, top to bottom until all grid squares have been displayed.

NOTE

The loran navigation set will only display UTNI present position readouts for the grid square indicated by the specific PRTOM coverage. If operation outside the specific PRONM coverage is attempted, a U

will be displayed in the far left alpha display.

(4) Air time constant selection.

NOTE

The procedure is not required if operating in either manpack or vehicle ground use.

(a) Set the MODE/DATA switch to DATA.

(b) Hold the SLEW switch in the SLEW position and release SLEW switch when alpha readout displays USE. Display will change from USE to GND when the SLEW switch is released.

(*c)* Move the PWR/INIT switch to the INIT position, hold for approximately 2 seconds, and release to the ON position. The alpha readouts will display AIR.

NOTE

The time constant selection function is described in tabular form (table 3-2). If the AIR time constant has been selected, it will automatically be changed to GND if the POWER/INIT switch is turned OFF.

(5) Loading waypoint coordinates.

NOTE

Five waypoint coordinates can be preloaded for use during operations as reference points. The range/bearing display function is used to provide the user with data to the waypoint coordinates. Refer to the load waypoint data procedure described in table 3-2 for typical alphanumeric displays mentioned in steps (a), through (f) below.

(a) Set the MODE/DATA switch to the DATA position. The readout will display 0-00000000 indicating waypoint number 0 with no coordinates entered.

(b) To load waypoint number 0, set the POWER/INIT switch to INIT, hold for approximately 2 seconds, and release to the ON position.

(c) Hold the SLEW switch in the SLEW position until the desired UTM grid square is displayed then release the SLEW switch to the OFF position.

(d) Set the POWER/INIT switch to INIT, hold for approximately 2 seconds, and release to the ON position. This will load the two-letter grid square identifier.

(e) The eight numerics are loaded in a similar manner, one at a time proceeding left to right after the grid square identification letters.

1. Hold the SLEW switch in the SLEW position until the first desired numeric is displayed in the left-most numeric position and then release the SI,EW switch to the OFF position.

2. To load the numeric, hold the PWRIINIT switch to the INIT position for approximately 2 seconds and then release it to the ON position.

3. Repeat this procedure for the remaining numerics. All eight numeric coordinates must be loaded.

(f) Waypoints 1 through 4 are loaded in the same way as described for waypoint number 0.

b. Present Position UTM.

(1) Initialize the navigation set (para 3-6a).

(2) Set the MODE'DATA switch to the MODE position.

(3) Hold the SI,EW switch in the SI,EW position until the alpha-readouts display UTM, then release the SLEW switch to the OFF position. If the loran navigation set is in track (para 3-6a(1)(c), the alpha/numeric display will readout the present position UTM coordinates, for example PJ77118643. (See the present position UTM procedure (table 3-2).) If the loran navigation set is in SCII or STIL, the UTM display will be zero.

NOTE

In the present position UTM, range/bearing and present position time difference display functions, there may be conditions existing which make the numeric readout invalid. The appearance of an alpha readout, either a U, an S, or a B, in the far left alpha display indicates the following conditions:

U - The receiver location is outside the PROM coverage area.

S - The received signal strength is weak or lost.

B - The loran transmission equipment is malfunctioning and received signals are not reliable.

These displays appear only during track.

c. Present Position UTM Storage. If the readout is displaying present position UTM or range/bearing, present position UTM coordinates can be stored in memory for display at a later time or for use as a waypoint. A total of five UTM coordinates can be stored, normally in positions 5 through 9.

(1) Determine present position UTM coordinates (b above).

(2) Set the POWER/INIT switch to the INIT position and hold for 2 seconds. When the POWER/INIT switch is released to the ON position, the present UTM position will be placed in storage position number 5.

(3) Each time that the POWER/INIT switch is momentarily set to the INIT position, when displaying present position UTM or range, bearing, the current present position coordinates will be placed sequentially

in memory location numbers 6 through 9. If a sixth storage command is given, the present position will be stored in position number 5 after erasing the previously stored data.

d. Display Stored Present Position UTM.

(1) Set the MODE/DATA switch to the MODE position.

(2) Hold the SI,EW switch in the SLEW position until the alpha readouts display shows WPT, and release the SLEW switch to the OFF position.

(3) The readout will display the current waypoint being used for range/bearing as shown in the display stored UTM data procedure (table 3-2).

(4) Set the POWT R/INIT switch to the INIT position, hold for approximately two seconds and release to the ON position, to change the waypoint number until the desired storage location (5 through 9) is displayed.

(5) After displaying the desired stored UTM position, set the display to the desired waypoint for range/bearing as described in paragraph 3-6e below.

e. Range/Bearing. Range and bearing to five-loaded waypoint coordinates (positions 9 through 4) for any one of five stored present positions (position 5 thru 9) can be displayed by performing the following procedures:

(1) Insure that either waypoint coordinates (para 3-6a(5)) have been loaded or present position UTM coordinates have been stored (para 3-6c).

(2) Set the MODE/DATA switch to the MODE position.

(3) Hold the SI,EW switch in the SLEW position until the alpha readout displays RB, then release the SLEW switch to the OFF position.

(4) If no prior waypoint selection has been made, the readout will display the range and magnetic bearing from your present position to waypoint number 0 as shown in the range/bearing procedure (table 3-2).

(5) To display range/bearing to any of the other four loaded UTM positions, waypoint (WPT) 1 through 4, or any one of the five stored UTM positions, WPT 5 through 9, it will be necessary to select another waypoint.

(a) Hold the SLEW switch in the SLEW position until the alpha readout displays WPT, then release the SLEW switch to the OFF position.

(b) Momentarily set the PWR/INIT switch to the INIT position, hold for approximately 2 seconds and release to the ON position. Repeat the INIT sequence until the desired waypoint number is displayed on the readout and then release the PWR/INIT switch to the ON position as shown in the waypoint selection procedure (table 3-2).

(c) Hold the SLEW switch in the SLEW position until the alpha readout displays RB, then release the SILEW switch to the OFF position. The range and bearing from your present position to the new selected waypoint will be selected.

3-7. Procedures for Shutdown

Shutdown the loran navigation set as follows:

a. Manpack Configuration. Set the control-indicator INIT/ON/PWR OFF switch to the OFF position.

b Vehicular Configuration.

(1) Set the control-indicator INIT/ON/PWR OFF switch to the OFF position.

(2) Set the vehicle mount adapter POWER/ON/OFF switch to the OFF position.

Section III. OPERATION UNDER UNUSUAL CONDITIONS

3-8. Present Position Time Difference

Present position can be determined by TDA and TDB time difference readings using a special map with loran time difference grid lines. The TDA and TDB readings are used in a manner similar to the easting and northing readings of the UTM readout.

a. Perform the initialization procedure (para 3-6a).

b. Set the NMODE,/DATA switch to the OFF position,

NOTE

TDA and TDB readings should not be used until the readout displays TRK.

c. After TRK is displayed, set the MODE,DATA switch to the NIODE position. Hold the SLEW switch in the SLEW position until the alpha readout displays TDA. Release the SINEW switch to the OFF position. The alpha/numeric will display a time difference in microseconds as shown in the present position time difference procedure (table 3-2).

d. Repeat c above, to obtain a TDB display.

e Use the TDA and TDB readings determined from c and d above to locate present position on the map supplied with loran time difference grid lines.

3-9. Standby

The standby mode provides a means of starting the search (SCH) for loran signals without turning the power switch off so that previously stored waypoint data can be retained. This condition may arise if waypoint data is loaded in a building or aircraft where there is no reception of loran signals. After the waypoint data is loaded and the desired waypoint selected, the standby mode is used in the following manner:

a. Perform the initialization procedure (para 3-6a).

b. Hold SLEW switch in the SLEW position until the alpha readout displays SBY, then release the SLEW switch to the OFF position. The alpha display will continue to display SBY.

c. When loran signals are available, reacquisition is started by moving the POWE R/INIT switch to the INIT position and then releasing the switch to the ON position. The alpha display will change from SBY to SCH and then to STL.

d. When in the track mode, the display will show the range and magnetic bearing from your present position to the selected waypoint as shown in the reacquisition procedure (table 3-2).

3-10. Arctic Conditions

Operation in an arctic environment does not differ from operation under normal conditions (para 3-4). However, for arctic operation, installation procedures differ and additional equipment which is not part of the loran navigation set is required (chap 5).

3-11. Emergency Operation

There are no emergency operation procedures for the navigation set.

Section IV. PREPARATION FOR MOVEMENT

3-12. Manpack Configuration

The loran navigation set is a mobile unit. No special preparation is required for movement. In the manpack configuration, the antenna can be removed, folded in half and secured. Install protective covers on all unused receptacles.

CAUTION

Disconnect the interconnecting cable from the control indicator and receiver to prevent breakage of the cable.

3-13. Vehicular Configuration

In the vehicular configuration, ensure that all units are properly secured to the vehicle mount. In both manpack and vehicular configurations, set the INIT/ON/PWR OFF switch to the PWR OFF position to conserve power.

CHAPTER 4

ORGANIZATIONAL MAINTENANCE INSTRUCTIONS

Section I. TOOLS AND EQUIPMENT

4-1. Special Tools and Test Equipment
Standard test equipment required for maintenance purposes is listed in the performance test procedure (para 5-5). No special tools are required for organizational maintenance of the loran navigation set.

4-2. Repainting and Refinishing
To preserve the appearance of the equipment and prevent rust and corrosion, retouch painted surfaces where paint has been gouged or scraped off. Before repainting a defective area, use trichlorotrifluoroethane to remove dirt, dust, grease or other foreign matter. Use fine sandpaper (NSN 5350-00-271-7939) and cleaning compound to clean the surface down to the bare metal. Use a clean soft cloth to remove loose dust and metal particles. Apply one coat of zinc chromate primer, color Y, as per M IL-P-8585 to bare metal and allow to air dry for 1 hour. Then apply two coats of semigloss alkyd enamel, per Spec TT-E-529, Class A, matching color no. 24087, olive drab, per FED-TD-595 and allow to air dry for at least 24 hours.

4-3. lubrication
The loran navigation set does not require lubrication.

Section ll. PREVENTIVE MAINTENANCE CHECKS AND SERVICES

4-4. General
Preventive maintenance when properly performed at the prescribed intervals, helps to 6nsure that the loran navigation set will operate correctly. It must be inspected periodically so that defects can be corrected before they result in degradation or failure of the equipment. Preventive maintenance checks and services to be performed are listed and described in table 4-1. The item numbers indicate the sequence of and minimum inspection required. Defects discovered during operation of the unit will be noted and corrected as soon as operation of the unit has ceased. Stop the operation immediately if a deficiency is discovered that could damage the equipment. Record all deficiencies along with the corrective action taken.

Table 4-1. Organizational Preventive Maintenance Checks and Services
M--Monthly Q-Quarterly

Item No	Interval M	Interval Q	Item to be inspected	Procedures	Equipment will be reported not ready (red) if:
1	*		Connectors and Cable Assem-blies	Check for bent pins, damaged shells worn or frayed insulation, fungus and mold. Replace damaged cable assem-blies.	Connectors on the loran receiver, control-indicator. or vehicle mount are damaged.
2	*		Control-Indicator Window	Check window glass	Window glass is broken
3	*		Antenna	Inspect for physical damage	Damage is evident.
4		*	Switches and Controls	Check the control-indicator and vehicle mount for loose retaining nuts on the toggle switches and dimmer potentiometer Tighten if loose	Switch or control is damaged.
5		*	Cases and Control-Indicator Front Panel	Restore and clean all painted surfaces. See paragraphs 4-2 and 4-7	
6	*		Performance	Check the performance of the loran receiver, control-indicator, and vehicle adapter mount. See paragraph 4-5	

4-5. Performance Tests

a. General Information. The performance test outlined in this paragraph constitutes a complete check-list of the loran navigation set. This test should be performed after completion of a unit replacement, before use after a long shelf period, and after reinstallation. The procedures are also used for troubleshooting. The troubleshooting procedure outlined in paragraph 4-6 is keyed to the performance test.

b. Test Equipment Required. An AN/USM-223 is required to perform the tests listed in the performance test procedures.

c. Performance Test Procedures, Manpack Configuration.

NOTE

Before proceeding with the performance test, ascertain the correct time difference and/or UTM readings for the test location. Ensure that the manpack antenna is in a vertical position. Avoid operation under powerlines or near high power transmitters or tall buildings.

(1) Set the three-control indicator toggle switches to the OFF position.

(2) Turn the BRT control potentiometer fully clockwise.

NOTE

The time required to progress from power on to track (TRK) will be 3 to 12 minutes ((3) below).

(3) Set the INIT/ON/PWR/OFF switch to the ON Position. The display should show SCH (search), and then STL (settle), indicating progress of signal acquisition process. If there is a loran signal present, the display will indicate TRK (track) for 5 seconds and all readouts will go blank.

(4) Set the MODE/OFF/DATA switch to MODE. The display should show TST (test).

(5) Hold SLEW switch until alpha readouts display TST. When SLEW switch is released to OFF, all segments should illuminate.

NOTE

If the control-indicator display went to TRK in (3) above continue with the following tests.

(6) Activate the SLEW/SLEW switch (up or down) until UTM is displayed on the control-indicator.

(7) Release the slew switch and note the displayed data. Refer to table 3-2 for display samples.

(8) Activate the SLEW/SLEW switch downward until RB is displayed on the control-indicator.

(9) Release the slew switch and note the displayed data. Refer to table 3-2 for display samples.

(10) Repeat (8) and (9) above for the WPT, SBY, TDA, TDB, and TST positions.

Section III. TROUBLESHOOTING AND MAINTENANCE

4-6. General

Troubleshooting is accomplished by using the performance test in paragraph 4-5 and troubleshooting tables 4-2 (manpack configuration) and 4-3 (vehicle-mount configuration). When the navigation set is suspected of malfunctioning, refer to the performance test described in paragraph 4-5, and perform each step until a test requirement is not met, or an abnormal condition is observed. Adequate coverage is provided in troubleshooting tables 4-2 and 4-3 to isolate the malfunction to a defective item that can be replaced at organizational maintenance. After replacement the entire performance test should be reaccomplished to ensure operational readiness of the navigation set. Return defective items to direct support maintenance for repair.

Table 4-2. Troubleshooting (Manpack Configuration)

Item No	Test step	Trouble	Probable cause	Remedy
1	(3)	All lamps on the display are extinguished or display is incorrect	a No battery voltage if display is totally blank}	a Substitute the battery from the AN/PRC 25 or AN/PRC-77
			b Loran receiver defective	b Replace the loran receiver.
			c. Control-indicator interconnect cable defective	c Replace the control-indicator interconnect cable.
2	(3)	No STL display	a Loran receiver defective	a Replace loran receiver.
	(3)	No TRK display	b No signal present	b Verify that operation is being conducted in an environment that contains workable loran signals.
3	i3)	No TRK display	a Antenna defective	a Substitute the antenna from the AN PRC-25 or AN/'PRC-77. If loran receiver will now go to TRK replace the defective antenna
			b. Loran receiver defective	h Replace loran receiver
4	(4), (5), (6)	Control-indicator display indications are incorrect	a Control-indicator defective	a Replace control-indicator.
			b Control-indicator interconnect cable defective	b Replace control-indicator interconnect cable.
			c Loran receiver defective e	c Replace the loran receiver.
5	(7)	Incorrect data displayed	c. Loran receiver defective	Replace the loran receiver

Table 4-3. Troubleshooting (Vehicle-Mount Configuration)

Item No	Test step	Trouble	Probable cause	Remedy
1	(3)	All lamps on the display are extinguished or incorrect display	a No input voltage from vehicle	a Verify presence of input voltage.
			b Vehicle adapter defective	b Check vehicle adapter voltage by using a multimeter. Multimeter should indicate + 12.5+0.5 volts. If indication is incorrect, replace vehicle adapter
			c Loran receiver is defective	c Replace loran receiver.
			d Control-indicator interconnect cable is defective	d Replace the control-indicator interconnect cable.
			e. Control-indicator is defective	e Replace control-indicator.
2	(3)	No STL display	a Loran receiver is defective	a Replace loran receiver.
3	(3)	No TRK display	a No signal present	a Verify that operation is being conducted in an environment that contains workable loran signals
			b Loran receiver is defective	b Replace loran receiver.
			c. Antenna is defective	c Substitute the antenna from the AN PRC 25 or AN'PRC-77. If the loran receiver will not go to TRK replace the defective antenna
			d Cable, CG-3780,'U, is defective	d Replace the cable.
4	(5)	Control-indicator display indications are incorrect.	Control-indicator defective	Replace control-indicator.
5	(6)	Display does not change	Control-indicator is defective	Replace control-indicator.
6	(7)	Incorrect data displayed	Loran receiver is defective	Replace loran receiver.

4-7. Cleaning

All exterior surfaces of the loran navigational set should be free from dirt, grease, and fungus. Perform the following general procedure to clean the loran navigational set.

a. With a clean, dry, lint-free cloth or brush, remove dust and loose dirt.

WARNING

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

b. Clean surface with a dampened cloth, containing TRICHLOROTRIFLUOROETHANE. Dry with a clean, dry, lint-free cloth.

c. Clean the front panel, switches, and indicator window using a soft, clean cloth. If dirt is difficult to remove, dampen the cloth with water; mild soap may be used for more efficient cleaning.

CHAPTER 5

MATERIEL USED IN CONJUNCTION WITH MAJOR ITEM

5--1. General

This chapter contains instructions for installation of the loran navigation set in the arctic configuration. This configuration requires additional equipment listed below.

a. Arctic Power Cable Assembly, CX-12985/PSN-6. This cable connects Dry Battery BA-398/PRC-25 to the loran receiver during operation in extremely cold climates.

b. Dry Battery BA-398/PRC-25. This battery is contained in a vest worn next to the user's body. It replaces the magnesium battery that normally powers the loran receiver.

5-2. Installation

In the arctic configuration the loran receiver may be used in conjunction with an AN/PRC-25 or AN/PRC-77. There is, however, no electrical connection. To install the loran navigation set, refer to figure 5-1 and proceed as follows:

a. Remove the battery box from the bottom of the loran receiver by opening the slide spring latches. Refer to figure 2-2 for location of battery box.

b. Use the slide spring latches to attach the loran receiver to the transceiver.

c. Use the slide spring latches to attach the arctic power case assembly to the loran receiver.

d. Connect the control cable from the CONT IND jack on the loran receiver to jack J1 on the control indicator.

e. Connect the antenna to the ANTENNA fitting on the loran receiver.

f. Wear the two dry battery vests next to the body so that body heat will keep them at the correct operating temperature.

g. Connect one dry battery vest to the arctic power case assembly and use the arctic cable to connect the other dry battery vest to the POWER jack on the transceiver.

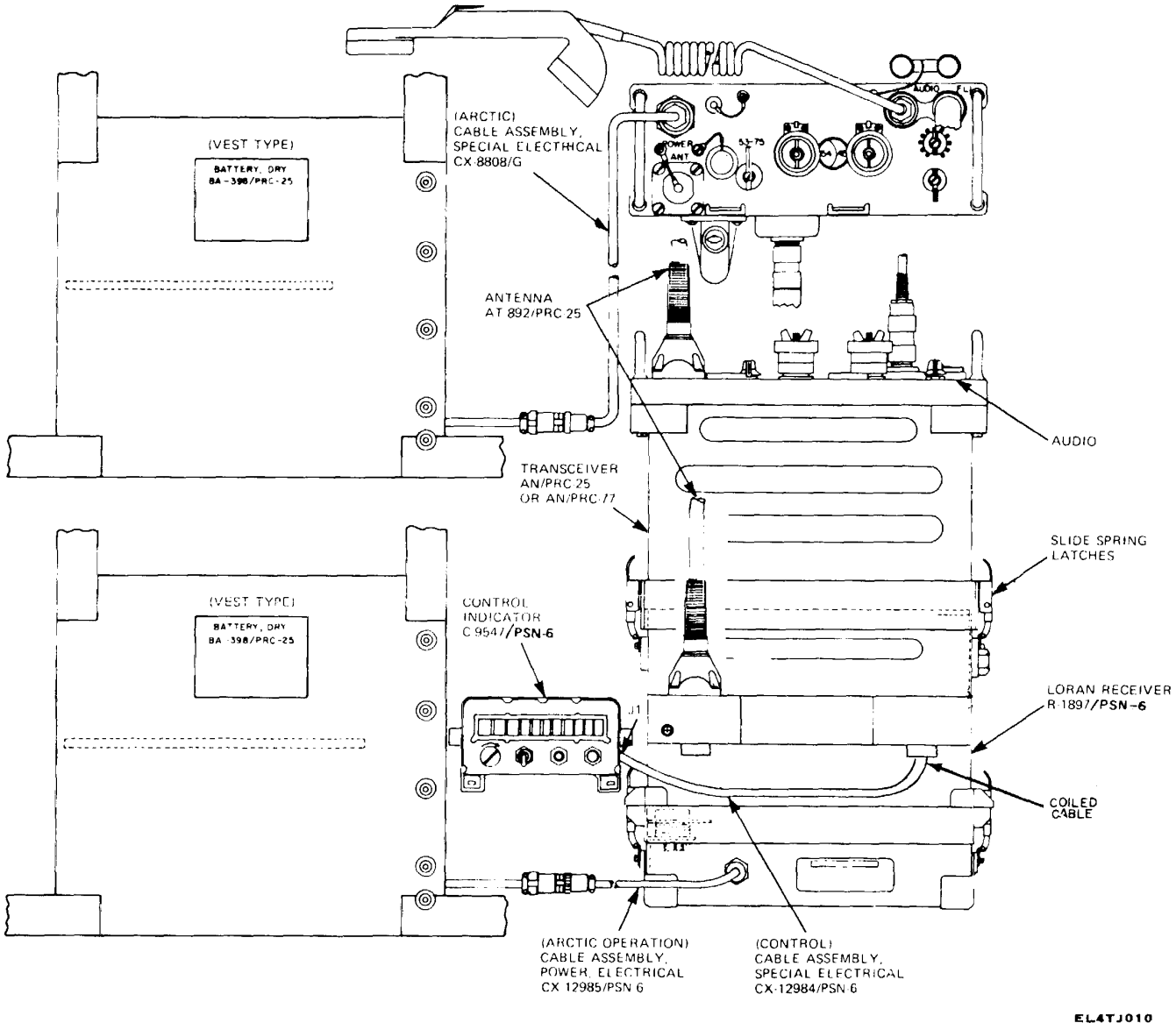


Figure 5-1. Assembly and cabling diagram for arctic operation.

APPENDIX A

REFERENCES

DA Pam 310-1	Consolidated Index of Army Publications and Blank Forms.
SB 11-131	Vehicular Radio Set and Authorized Installations.
SB 38-100	Preservation, Packaging, Packing and Marking Materials, Supplies, and Equipment Used by the Army.
TB 43-0118	Field Instructions for Painting and Preserving Electronics Command Equipment Including Camouflage Pattern Painting of Electrical Equipment Shelters.
TM 11-5820-398-12	Operator's and Organizational Maintenance Manual (Including Repair Parts and Special Tool Lists): Radio Set AN/PRC-25 (NSN 5820-00-857-0759) (Including Receiver-Transmitter, Radio RT-505/PRC-25 (5820-00-857-0934).
TM 11-5820-498-12	Operator's and Organizational Maintenance Manual Radio Sets AN/VRC-53 (NSN 5820-00-223-7467), AN/VRC-64 (NSN 5820-00-223-7475), AN/GRC-125 (NSN 5820-00-223-7411) and AN/GRC-160 (NSN 5820-00-223-7473) and Amplifier-Power Supply Groups OA 3633A/GRC (NSN 5820-00-973-3383).
TM 11-5820-667-12	Operator's and Organizational Maintenance Manual: Radio Set AN/PRC-77 (NSN 5820-00-930-3724) (Including Receiver-Transmitter Radio RT-841/PRC-77 (NSN 5820-00-930-3725).
TM 11-6625-320-12	Operator's and Organizational Maintenance Manual: Voltmeter, Meter ME-30/A/U and Voltmeters, Electronic ME-30B/U, ME-30C/U, and ME-30E/U.
TM 11-6625-537-14-1	Operator's Organizational, Direct Support and General Support Maintenance Manual: Voltmeter Electronic ME-202A/U (NSN 6625-00-709-0288) ME-202B/U (NSN 6625-00-972-4046).
TM 11-6625-654-14	Operator's, Organizational, Direct Support and General Support Maintenance Manual: Repair Parts and Special Tools Lists (Including Depot Maintenance Repair Parts and Special Tools List) for Multimeter, ME-223.
TM 11-6625-2619-12	Operator's and Organizational Maintenance Manual: Programmer, MX-9643/PSN-6 (NSN 5825-01-070-3847).
TM 11-6625-2619-24P	Organizational, Direct Support and General Support Repair Parts and Special Tools Lists (Including Depot Maintenance Repair Parts and Special Tools) for Programmer Test Set, MX-9643/PSN-6 (NSN 5825-01-070-3847).
TM 11-6625-2706-12	Operator and Organizational Maintenance Manual: Simulator, Loran SM-708/PSN-6 (NSN 5825-01-069-6871).
TM 11-6625-2706-24P	Organizational, Direct Support and General Support Maintenance Repair Parts and Special Tools Lists (Including Depot Maintenance Repair Parts and Special Tools) for Simulator, Loran SM-708/PSN-6 (NSN 5825-01-069-6871).
TM 11-6625-2707-12	Operator's and Organizational Maintenance Manual: Test Set, Navigation Set TS-3506/PSN-6 (NSN 5825-01-076-1777).
TM 11-6625-2707-24P	Organizational, Direct Support and General Support Maintenance Repair Parts and Special Tools Lists (Including Depot Maintenance Repair Parts and Special Tools) for Test Set, Navigation Set, TS-3506/PSN-6 (NSN 5825-01-076-1777).
TM 38-750	The Army Maintenance Management System (TAMMS).
TM 750-244-2	Procedures for Destruction of Electronics Materiel to Prevent Enemy Use (Electronics Command).

APPENDIX D

MAINTENANCE ALLOCATION

Section I. INTRODUCTION

D-1. General.

This appendix provides a summary of the maintenance operations for AN/PSN-6. It authorizes categories of maintenance for specific maintenance functions on repairable items and components and the tools and equipment required to perform each function. This appendix may be used as an aid in planning maintenance operations.

D-2. Maintenance Function.

Maintenance functions will be limited to and defined as follows:

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

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

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

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

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

f. Calibrate. To determine and cause corrections to be made or to be adjusted on instrument s or test measuring and diagnostic equipments used in precision measurement. Consists of comparisons of two instruments, one of which is a certified standard of known accuracy, to detect and adjust any discrepancy in the accuracy of the instrument being compared.

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

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

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

j. Overhaul. That maintenance effort (service/action) necessary to restore an item to a completely serviceable/operational condition as prescribed by maintenance standards (i.e., DMWR) in appropriate technical publications. Overhaul is normally the highest degree of maintenance performed by the Army. Overhaul does not normally return an item to like new condition.

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

D-3. Column Entries.

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

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

c.. Column 3, Maintenance Functions. Column 3 lists the functions to be performed on the item listed in column 2. When items are listed without maintenance functions, it is solely for purpose of having the group numbers in the MAC and RPSTL coincide.

d. Column 4, Maintenance Category. Column 4 specifies, by the listing of "worktime" figure in the appropriate subcolumn(s), the lowest level of maintenance authorized to perform the function listed in column 3. This figure represents the active time required to perform that maintenance function at

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

C-Operator/,Crew
O-Organizational
F-Direct Support
I1-General Support
D-Depot

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

f Column 6, Remarks. Column 6 contains an alphabetic code which leads to the remark in section IV, Remarks, which is pertinent to the item opposite the particular code.

D-4. Tool and Test Equipment Requirements (Sec. III).

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

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

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

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

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

D-5. Remarks (Sect. IV). Not Applicable.

(Next printed page is D-3)

SECTION II MAINTENANCE ALLOCATION CHART

FOR

NAVIGATION SET, POSITION FIXING, LORAN AN/PSI-6

(1) GROUP NUMBER	(2) COMPONENT ASSEMBLY	(3) MAINTENANCE FUNCTION	(4) MAINTENANCE CATEGORY C	O	F	H	D	(5) TOOLS AND EQUIPMENT	(6) REMARKS
00	NAVIGATION SET, LORAN AN/PSN-6	Inspect	0.1						
		Test		0.2				7	
		Install		0.3				2	
		Replace		0.1					
		Repair		0.1					
		Repair				0.3			
		Repair					2.0		
01	RECEIVER	Inspect	0.1						
		Test		0.2					
		Replace		0.1				2	
		Repair				0.2		1, 3 thru 9	
0101	RF ANALOG ASSEMBLY 1A2	Test				0.3		8	
		Replace				0.3		1,3	
		Repair					1.0		
0102	SENSOR TIMING PCB 1A4	Test				0.3		8	
		Replace				0.1		1,3	
		Repair					1.0		
0103	INPUT/OUTPUT PCB 1A3	Test				0.3		8	
		Replace				0.1		1,3	
		Repair					1.0		
0104	COMPUTER BOARD #1 lA6	Test				0.3		6,8	
		Replace				0.1		1,3	
		Repair					1.0		
0105	COMPUTER BOARD #2 lA5	Test				0.3		6,8	
		Replace				0.1		1,3	
		Repair					1.0		
0106	PREAMPLIFIER PCB 1AI	Test				0.3		8	
		Replace				0.1		1,3	
		Repair				1.0			
0107	INTERCONNECT CKT 1A8	Test				0.2		7	
		Replace				0.1		1,3	
		Repair				1.0		1,3	
0108	POWER SUPPLY ASSEMBLY IA7	Test				0.2		4,5,9	
		Replace				0.1		1,3	
		Repair					1.0		
0109	LINE FILTERS FL1, FL2, FL3	Test				0.1		8	
		Replace				0.1		1,3	
0110	ANTENNA MOUNT ASSEMBLY	Replace				0.1		1,3	
		Inspect				0.1			
02	CONTROL INDICATOR C-9547/PSN-6	Test	0.1						
		Test				0.3		5,7,8	
		Replace		0.1					
		Repair				0.2		1,3	
0201	CONTROL LOGIC MODULE 2AI	Test				0.3		5	
		Replace				0.1		1,3	
		Repair					1.0		
0202	DISPLAYS	Inspect				0.1			
		Replace				0.1		1,3	
0203	CABLE ASSEMBLY	Inspect				0.1			
		Replace				0.1		1,3	
03	VEHICLE MOUNT ADAPTER	Test		0.2				7	
		Replace		0.2				2	
		Repair				0.3		1,3,8	
0301	POWER SUPPLY 3PS1	Test				0.2		8	
		Adjust				0.2		1,3,8	
		Replace				0.1		i 1,3	
		Repair					1.0		

SECTION II MAINTENANCE ALLOCATION CHART

FOR

NAVIGATION SET, POSITION FIXING, LORAN AN/PSII-6

(1) GROUP NUMBER	(2) COMPONENT ASSEMBLY	(3) MAINTENANCE FUNCTION	(4) MAINTENANCE CATEGORY					(5) TOOLS AND EQUIPMENT	(6) REMARKS
			C	O	F	H	D		
0302	OVERVOLTAGE PROTECTION	Test Replace Repair				0.2 0.1	 1.0	a 1,3	

SECTION III TOOL AND TEST EQUIPMENT REQUIREMENTS FOR NAVIGATION SET, POSITION FIXING, LORAN AN/PSN-6

TOOL OR TEST EQUIPMENT REF CODE	MAINTENANCE CATEGORY	NOMENCLATURE	NATIONAL/NATO STOCK NUMBER	TOOL NUMBER
1	H,D	TOOL KIT, ELECTRONIC EQUIPMENT TK-100/G	5180-00-605-0079	
2	0	TOOL KIT, ELECTRONIC EQUIPMENT TK-101/G	5180--00-064-5178	
3	H,D	TOOL KIT, ELECTRONIC EQUIPMENT TK-105/G	5180-00-610-8177	
4	H,D	LORAN SIMULATOR SM-708/PSN-6		
5	H,D	NAVIGATION SET, TEST- SET TS-3506/PSN-6		
6	H,D	PROGRAMMER MX-964/PSN-6		
7	O.H,D	MULTIMETER AN/USM-223	6625-00-999-7465	
8	H,3	OSCILLOSCOPE AN/USM-281	6625-00-228-2201	
9	H,7,	VOLTMETER, ELECTRONIC ME-202B/U	6625-00-972-4046	

By Order of the Secretary of the Army'

BERNARD W. ROGERS
General, United States Army
Chief of Staff

Official:

J. C. PENNINGTON
Major General, United States Army
The Adjutant General

DISTRIBUTION:

Active Army
- TSG(1)
- USAARENBD(1)
- USAINSCOM(2)
- TRADOC(2)
- DARCOM(1)
- TECOM(2)
- OS Maj Comd(2)
- USACC(2)
- Armies(1)
- USASIGS(10)
- Svc Colleges(1)
- Fort Huachuca(5)
- Fort Carson(5)
- Fort Gillem
- Ft Monmouth (HISA)(2)
- Ft Richardson (CERCOM)(1)
- WSMR(1)
- USAERDAA(1)
- USAERDAW(1)
- Army Dep (1) except
  - LBAD(10)
  - SAAD(30)
  - TOAD(14)
  - SHAD(3)
- USA Dep(1)
- Sig Sec USA Dep(1)
- Unit org under fol TOE:
  - 29-134(1)
  - 29-136(1)
  - 29-207(2)
  - 29-610(2)

ANG & USAR: None

For explanation of abbreviations used see AR 310-50.

* U.S. GOVERNMENT PRINTING OFFICE : 1983 0 - 381-302 (774)

TEAR ALONG PERFORATED LINE

RECOMMENDED CHANGES TO EQUIPMENT TECHNICAL PUBLICATIONS

THEN. . JOT DOWN THE DOPE ABOUT IT ON THIS FORM, CAREFULLY TEAR IT OUT, FOLD IT AND DROP IT IN THE MAIL!

SOMETHING WRONG WITH THIS PUBLICATION?

FROM: (PRINT YOUR UNIT'S COMPLETE ADDRESS)

DATE SENT

PUBLICATION NUMBER	PUBLICATION DATE	PUBLICATION TITLE

BE EXACT. . .PIN-POINT WHERE IT IS

PAGE NO.	PARA-GRAPH	FIGURE NO	TABLE NO.

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

PRINTED NAME, GRADE OR TITLE, AND TELEPHONE NUMBER

SIGN HERE:

DA FORM 1 JUL 79 2028-2

PREVIOUS EDITIONS ARE OBSOLETE.

P.S.—IF YOUR OUTFIT WANTS TO KNOW ABOUT YOUR RECOMMENDATION MAKE A CARBON COPY OF THIS AND GIVE IT TO YOUR HEADQUARTERS.

PIN: 042180-000