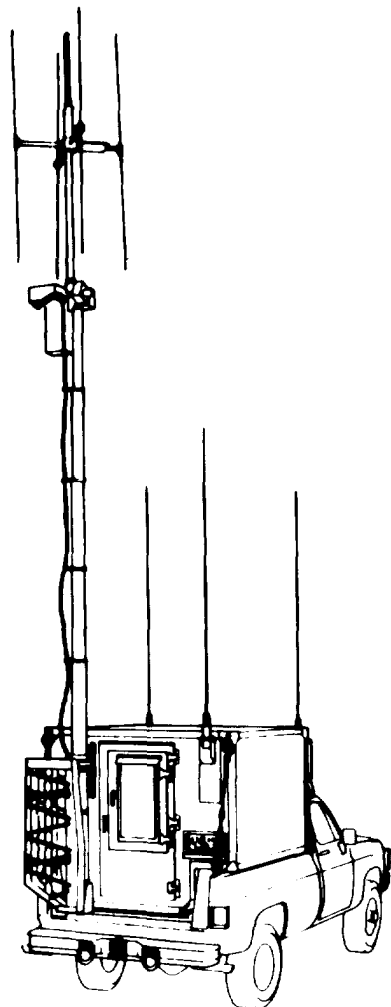


OPERATOR'S MANUAL

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RADIO RECEIVING SET AN/TRQ-32(V)

INCLUDING

AN/TRQ-32(V)1 (NSN 5895-01-167-7655)

AN/TRQ-32(V)2 (NSN 5895-01-167-7656)

HEADQUARTERS, DEPARTMENT OF THE ARMY

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**TABLE OF
CONTENTS** v

**EQUIPMENT
DESCRIPTION** 1-7

**OPERATING
INSTRUCTIONS** 2-1

PMCS 2-59

MENUS 2-146

**TROUBLESHOOTING
PROCEDURES** 3-1

**MAINTENANCE
PROCEDURES** 3-9

**SUBJECT
INDEX** I-1

13 NOVEMBER 1987

CHANGE
No. 1

HEADQUARTERS
DEPARTMENT OF THE ARMY
WASHINGTON, D.C. 3 MARCH 1989

OPERATOR'S MANUAL

RADIO RECEIVING SET
AN/TRQ-32(V)

INCLUDING

AN/TRQ-32(V)1 (NSN 5895-01-167-7655)
AN/TRQ-32(V)2 (NSN 5895-01-167-7656)

TM 32-5895-070-10, 13 Nov 1987, is changed as follows:

1. Remove old pages and Insert new pages as indicated below.
2. New or changed material is indicated by a vertical bar in the margin of the page.
3. Added or revised illustrations are indicated by a vertical bar in the margin of the page or a pointing hand in the illustration.

REMOVE PAGES	INSERT PAGES	REMOVE PAGES	INSERT PAGES
1-7 and 1-8	1-7 and 1-8	2-191 and 2-192	2-191 and 2-192
1-19 and 1-20	1-19 and 1-20	2-197 and 2-198	2-197 and 2-198
1-23 through 1-26	1-23 through 1-26	2-201 and 2-202	2-201 and 2-202
2-23 and 2-24	2-23 and 2-24	3-3 through 3-6	3-3 through 3-6
2-33 and 2-34	2-33 and 2-34	3-21 and 3-22	3-21 and 3-22
2-57 and 2-58	2-57 and 2-58	B-1 through B-10	B-1 through B-10
2-63 and 2-64	2-63 and 2-64	B-19 through B-22	B-19 through B-22
2-67 and 2-68	2-67 and 2-68	B-27 and B-28	B-27 and B-28
2-79 through 2-82	2-79 through 2-82	D-1 and D-2	D-1 and D-2
2-99 and 2-100	2-99 and 2-100		
2-145 and 2-146	2-145 and 2-146		
2-173 and 2-174	2-173 and 2-174		

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

By Order of the Secretary of the Army:

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

Official:

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

LIST OF EFFECTIVE PAGES

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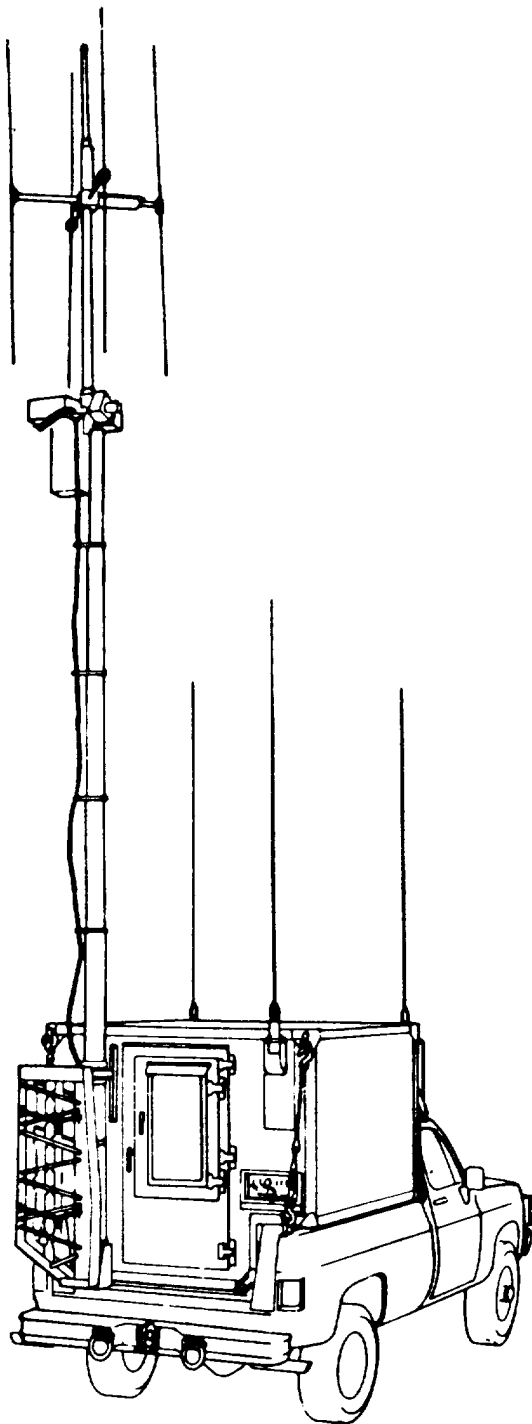
Original ..0..13 Nov 87
 Change ..1..3 Mar 89

Page No.	* Change No.	Page NO.	I Change No.
Cover.	0	2-192	1
A	1	2-193 -2-196	0
i-1-6	0	2-197	1
1-7	1	2-198-2-201	0
1-8-1-18	0	2-202	1
1-19-1-20	1	2-203 -3-3	0
1-21-1-22	0	3-4-3-5	1
1-23	1	3-6-3-21.	0
1-24	0	3-22	1
1-25	1	3-23-B-1	0
1-26-2-22	0	B-2	1
2-23	1	B-3	0
2-24-2-33.....	0	B-4	1
2-34	1	B-5	0
2-35-2-57	0	B-6	1
2-58	1	B-7	0
2-59-2-63	0	B-8	1
2-64	1	B-9	0
2-65-2-66	0	B-10.	1
2-67-2-68	1	B-11-B-19.	0
2-69-2-79	0	B-20	1
2-80-2-82	1	B-21	0
2-83-2-98.	0	B-22.....	1
2-99	1	B-23-B-27.....	0
2-100 -2-144	0	B-28.	1
2-145	1	B-29-D-1.	0
2-146-2-172.....	0	D-2.	1
2-173	1	I-1-I-6.	0
2-174-2-191.	0		

* Zero in this column indicates an original page.

DEPLOYED OPERATION WITH LONG RANGE ANTENNAS

WARNING

**NEVER ERECT THESE LONG RANGE ANTENNAS DIRECTLY UNDER POWERLINES**

If you must erect these long range antennas near powerlines, powerline poles or towers, or buildings with overhead powerline connections, never put the antenna closer than two times the antenna height from the base of the powerline, pole, tower or buildings.

NEVER ATTEMPT TO ERECT ANY LONG RANGE ANTENNA WITHOUT A FULL TEAM

Before erecting any long range antenna, inspect all the parts making up the antenna kit. Do not erect the antenna if any parts are missing or damaged.

Do as much of the assembly work as possible on the ground.

When erecting the antenna, allow only team personnel in the erection area.

If you suspect that powerlines have made accidental contact with your antenna, stop operating, rope off the antenna area, and notify your superiors.

If the weather in your area can cause ice to form on your long range antenna, rope off the area and post it with warning signs like "BEWARE OF FALLING ICE".

Do not try to erect any antenna during an electrical storm.

CARBON MONOXIDE (EXHAUST GAS) CAN KILL YOU

WARNING

VENTILATION IS ESSENTIAL

The shelter must be properly ventilated at all time when occupied by personnel.



Carbon monoxide is without color or smell, but can kill you. Breathing air with carbon monoxide produces symptoms of headache, dizziness, loss of muscular control, a sleepy feeling, and coma. Brain damage or death can result from heavy exposure. Carbon monoxide occurs in the exhaust fumes or fuel-burning heaters and internal combustion engines. Carbon monoxide can become dangerously concentrated under conditions of no air movement. Precautions must be followed to insure crew safety when the personnel heater, main or auxiliary engine or any vehicle is operated for any purpose.

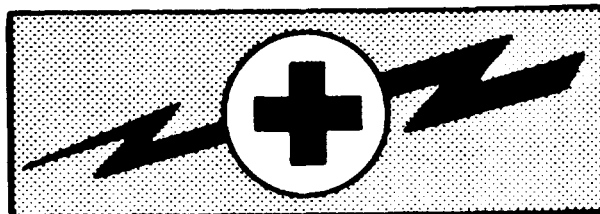
1. DO NOT operate personnel heater or engine of vehicle in a closed place unless the place has a lot of moving air.
2. DO NOT idle engine for long periods without ventilator blower operating. If tactical situation permits, open hatches.
3. DO NOT drive any vehicle with inspection plates, cover plates, or engine compartment doors removed unless necessary for maintenance purposes.
4. BE ALERT at all times during vehicle operation for exhaust odors and exposure symptoms. If either is present IMMEDIATELY VENTILATE personnel compartments. If symptoms persist, remove affected crew to fresh air; keep warm. DO NOT PERMIT PHYSICAL EXERCISE; if necessary, give artificial respiration.

FOR ARTIFICIAL RESPIRATION, REFER TO FM 21-11:

5. BE AWARE; the field protective mask for chemical-biological-radiological (CBR) protection will not protect you from carbon monoxide poisoning.

THE BEST DEFENSE AGAINST CARBON MONOXIDE POISONING IS GOOD VENTILATION.

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 120 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.



5

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

1

DO NOT TRY TO PULL OR GRAB THE INDIVIDUAL

2

IF POSSIBLE, TURN OFF THE ELECTRICAL POWER

3

**IF YOU CANNOT TURN OFF THE ELECTRICAL
POWER, PULL, PUSH, OR LIFT THE PERSON TO
SAFETY USING A WOODEN POLE OR A ROPE OR
SOME OTHER INSULATING MATERIAL**

4

SEND FOR HELP AS SOON AS POSSIBLE

5

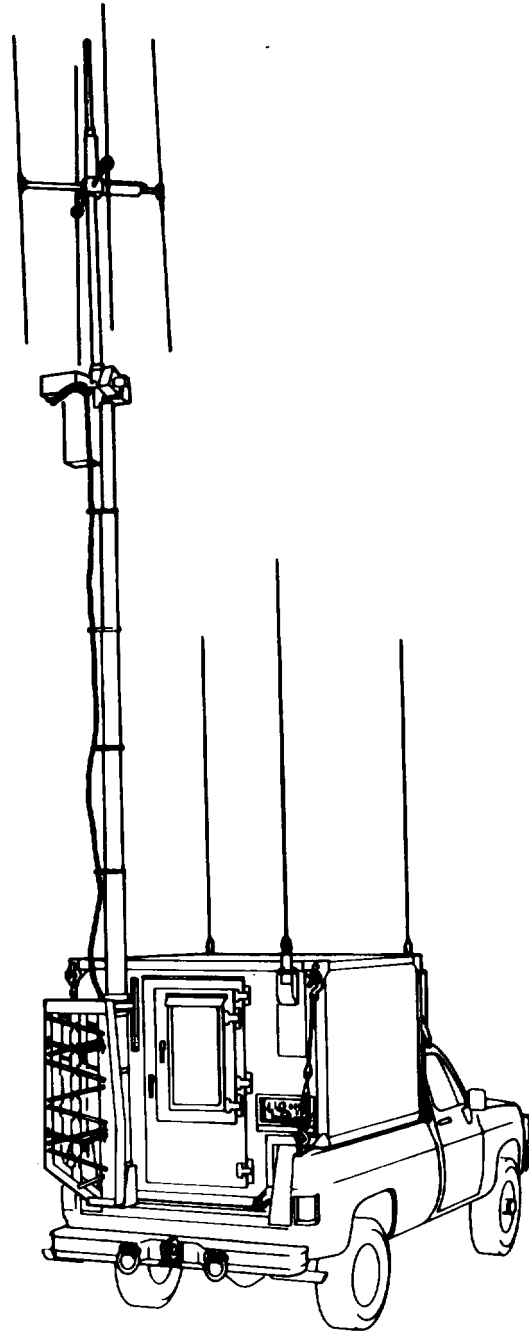
**AFTER THE INJURED PERSON IS FREE OF CONTACT
WITH THE SOURCE OF ELECTRICAL SHOCK,
MOVE THE PERSON A SHORT DISTANCE AWAY
AND IMMEDIATELY START ARTIFICIAL RESUSCITATION**

**OPERATOR'S MANUAL
RADIO RECEIVING SET AN/TRQ-32(V)**

**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 Form DA 2028-2 located in back of this manual direct to: Commander, US Army Electronics Materiel Readiness Activity, ATTN: SELEM-MR-E-P, Vint Hill Farms Station, Warrenton, VA 22186-5141. In either case, a reply will be furnished direct to you.

		Page
CHAPTER 1.	INTRODUCTION	1-1
Section I.	<u>General Information</u>	1-1
II.	<u>Equipment Description</u>	1-7
III.	Technical Principles of Operation	1-20
CHAPTER 2.	<u>OPERATING Instructions]</u>	2-1
Section I.	<u>Description and Use of Operator's Controls, Indicators, and Connectors</u>	2-2
II.	<u>Preventive Maintenance Checks and Services</u>	2-59
III.	Operation Under Usual Conditions	2-65
IV.	Operation Under Unusual Conditions	2-198
CHAPTER 3.	MAINTENANCE INSTRUCTIONS	3-1
Section I.	Lubrication Instructions.	3-1
II.	<u>Troubleshooting Procedures</u>	3-1
III.	<u>Maintenance Procedures</u>	3-9
APPENDIX A.	REFERENCES	A-1
B.	COMPONENTS OF END ITEM AND BASIC ISSUE ITEMS	B-1
C.	ADDITIONAL AUTHORIZATION LIST.	C-1
D.	EXPENDABLE SUPPLIES AND MATERIALS LIST	D-1
SUBJECT INDEX		I-1



INTRODUCTION

Page	Page		
Capabilities and Features	1-7	Maintenance Forms, Records, and Reports	1-1
Differences Between Models	1-16	Nomenclature Cross Reference List	1-2
Equipment Data	1-17	Principles of Operation	1-20
Equipment Description	1-7	Reporting Equipment Improvement Recommendations	1-2
General Information	1-1	Scope	1-1
Glossary	1-7	Technical Principles of Operation	1-20
Hand Receipt	1-2		
List of Abbreviations and Acronyms	1-6		
Location and Description of Major Components	1-8		

Section I.

GENERAL INFORMATION

1-1. SCOPE

This manual is for your use in operating Radio Receiving Sets AN/TRQ-32(V)1 and AN/TRQ-32(V)2. In addition to detailed operating instructions, the manual will assist you in site selection and installation, operation under usual and unusual conditions, cleaning and inspecting, and operator level maintenance.

1-2. MAINTENANCE FORMS, RECORDS, AND REPORTS

a. Reports of Maintenance and Unsatisfactory Equipment. Department of the Army forms and procedures used for equipment maintenance will be those described by DA PAM 738-750, The Army Maintenance Management System (TAMMS).

b. Reporting of Packaging and Handling Deficiencies. Fill out and forward DD Form 6 (Packaging Improvement Report).

Discrepancy in Shipment Report (DISREP) (SF 361). Fill out and forward Discrepancy in Shipment Report (DISREP) (SF 361) as prescribed in AR 55-38.

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

e. Refer to DA PAM 310-1 to determine if there are Modification Work Orders (MWO) pertaining to the equipment.

1-3. HAND RECEIPT

Hand receipts for Components of End Item (COEI), Basic Issue Items (BII), and , Additional Authorization List (AAL) items are published in a Hand Receipt manual, TM 32-5895-070-10-HR. This manual is published to aid in property accountability and is available through: Commander, US Army Electronics Materiel Readiness Activity, ATTN: SELEM-MR-E-P, Vint Hill Farms Station, Warrenton, VA 22186-5141.

1-4. REPORTING EQUIPMENT IMPROVEMENT RECOMMENDATIONS (EIR).

If your Receiving Set AN/TRQ-32(V)1 or AN/TRQ-32(V)2 needs improvement, let us know. Send us an EIR. You, the user, are the only one who can tell us what you don't like about your equipment. Let us know why you don't like the design. Tell us why a procedure is hard to perform. Put it on an SF 368 (Quality Deficiency Report). Mail it to us at: Commander, CECOM, ATTN: AMSEL-PA-MA-D, Ft. Mommouth, N.J. 07703. We'll send you a reply.

1-5. NOMENCLATURE CROSS REFERENCE LIST.

The following list will help in locating the official nomenclature of major equipment in Radio Receiving Sets AN/TRQ-32(V)1 and AN/TRQ-32(V)2. Official nomenclature must be used when completing forms or when looking up technical manuals.

<u>COMMON NAME</u>	<u>OFFICIAL NOMENCLATURE</u>
Antenna	Antenna, AS-1729/VRC
Antenna Element	Antenna Element, MS-116A
Antenna Element	Antenna Element, MS-117A
Antenna Element	Antenna Element, MS-118A
Antenna Group	Antenna Group, OE-356/TRQ-32(V)
Antenna Mast Base	Mast Base, AB-15/GR
Audio Frequency Switch	Switch, Audio Frequency SA-2171/VRC

<u>COMMON NAME</u>	<u>OFFICIAL NOMENCLATURE</u>
Caution Panel	Panel, Fault Function 4408-100-29
Compressor	Compressor Assembly, C5110592-1
Data Link Processor	Control, Processor, Data Link C-11844/TRQ-32(V)
Disk Drive Control	Control, Disk Drive C-11843/TRQ-32(V)
DF Array Element	Antenna, AS-3660/TRQ-32(V)
DFCU	Control, Direction Finder C-11002/USQ
Field Telephone	Set, Telephone TA-312/PT
Guard Receiver	Receiver, Radio R-442A/VRC
Hard Disk Drive	Recorder, Reproducer, Magnetic Disk RD-583/TRQ-32(V)
HF Receiver	Receiver, Radio R-2143/URR
HG/AC	Shelter Mounted Unit Assembly, C5118900-1
HG/AC Control Panel	Panel, Hydraulic Generator/Air Conditioner Control C5110892-1
Hydraulic Generator/Air Conditioner Croup	Generator, Hydraulic-Air Conditioner PU-784/TRQ-32(V)
Intercom Control Panel	Control, Intercommunication Set C-1611D/AIC
J-Box	Junction Boxes, J-3513/VRC and J-3514/VRC
Junction Box	Interconnecting Box J-4099/TSQ-138
KY-57	Speech Security Equipment TSEC/KY-57
KG-84	Digital Security Equipment TSEC/KG-84 or TSEC/KG-84A

TM 32-5895-070-10COMMON NAMEOFFICIAL NOMENCLATURE

Level Indicator	Inclinometer, 5054585-1
Magnetic Field Converter	Converter, Magnetic Field CV-3579/TSQ
Operator Control Panel (OCP)	Panel, Operator Control MX-10570/TRQ-32(V)
Operator Terminal	Computer, Operator Terminal, Modified CP-1824/TRQ-32(V)
Pneumatic Mast	Pneumatic Mast C5110591-1
Power Entry Panel	Power Entrance Box C5110911-1
Power Switch	Switch, Power SA-2559/TRQ-32(V)
Power Take Off (PTO) Unit	Power Take Off Unit, C5118905-1
Printer	Printer, Thermal RP-272/G
Pump Assembly	Pump Assembly, C5122498-1
Receiver Control Unit (RCU)	Indicator, Receiver Control C-11383/TRR-35(V)
Receiver-Enclosure Unit (REU)	Cabinet, Electronics, Quad Receiver CY-8324/TRR-35(V)
Receiver Power Supply	Power Supply, Receiver PP-7817/URR
Receiver Subsystem	Receiver Subsystem, AN/TRR-35(V)3
RT-524A	Receiver-Transmitter, Radio RT-524A/VRC
Recorder	Recorder-Reproducer Sound Set AN/UNH-17A

<u>COMMON NAME</u>	<u>OFFICIAL NOMENCLATURE</u>
Remote Radio Control	Control, Intercommunication Set C-2298/VRC
Reservoir Assembly	Reservoir Assembly, C5122481-1
RFDU	Unit, R.F. Distribution SA-2444/TRQ-32(V)
RFP	Processor, Radio Frequency MX-10526/TRQ-32(V)
RIU	Unit, Receiver Interface J-4144/TRR-35(v)
Signal Display Unit	Unit, Signal Display ID-2349/TRR-35(V)
Shelter	Shelter, Electrical Equipment S-457B/G
Speed Control Group	Speed Control Group, C5118904-1
System Controller	Controller, System C-11845/TRQ-32(V)
System Power Supply	Power Supply PP-8179/TRQ-32(V)
UHF/Datalink Antenna	Antenna AS-3661/TRQ-32(V)
UHF Bandpass Filter	UHF Tunable Bandpass Filter, C5110526-1
UHF Radio Control	Control, Set, Radio C-10547/ARC-164(V)
UHF Radio Mount	Mounting Base, Electrical Equipment MT-6017A/TRQ-32(V)
UHF Receiver-Transmitter	Receiver-Transmitter, Radio RT-1288A/ARC-164(V)
VHF Bandpass Filter	VHF Tunable Bandpass Filter, C5110525-1
VHF/UHF Receiver	Receiver, Radio R-2144A/URR

1-6. LIST OF ABBREVIATIONS AND ACRONYMS.

A complete list of all abbreviations used in this manual is given below as an additional aid. Acronyms and unusual terms are also included.

<u>TERM OR ABBREVIATION</u>	<u>DEFINITION OR DESCRIPTION</u>
AAL	Additional Authorization List
ASAS	All Source Analysis System
BII	Basic Issue Item
BIT	Built In Test
CBS	Common Battery Signaling
CDEI	Components of End Item
CPD	Carrier Presence Detect
CUCV	Commercial Utility Cargo Vehicle
DISREP	Discrepancy Shipment Report
DS	Direct Support
EIR	Equipment Improvement Recommendations
GPIB	General Purpose Interface Bus
GS	General Support
HG/AC CONT	Hydraulic Generator/Air Conditioner Control
IC	Intercom
LOB	Line of Bearing
MAC	Maintenance Allocation Chart
NCS	Net Control Station
NRP	Net Radio Protocol
PKD	Parked
PMCS	Preventive Maintenance Checks and Services
S/N	Signal-to-Noise Ratio
TOO	Time of Day
UTM	Universal Transverse Mercator

1-7. GLOSSARY.

<u>TERM</u>	<u>DEFINITION</u>
Fluxgate	A magnetic element of the compass system activated by the earth's magnetic field.
NATO Tone	150 Hz modulating signal on a transmitted signal identifying it as from a friendly source. Signal can be detected by the system.
Net	An interconnection of communication facilities.
Platform (system)	An operating AN/TRQ-32(V) system.
Squelch	Automatic quieting of receiver.
Unsquelch	Turn off squelch function.
Zeroize	A capability provided to the operators allowing emergency purging of all memory or data storage locations within the AN/TRQ-32(V) system.

Section II.**EQUIPMENT DESCRIPTION****1-8. CAPABILITIES AND FEATURES.**

The AN/TRQ-32(V)1 and AN/TRQ-32(V)2 are mobile, multistation, round based communication intercept and direction finding systems for support of the Army in the tactical environment, with the addition of data link capability provided only in the AN/TRQ-32(V)2. Both systems provide High Frequency (HF), Very High Frequency (VHF), and Ultra High Frequency (UHF) communications intercept. Both systems also provide Very High Frequency (VHF) Direction Finding Line-of-Bearing (DF LOB) and ancillary functions.

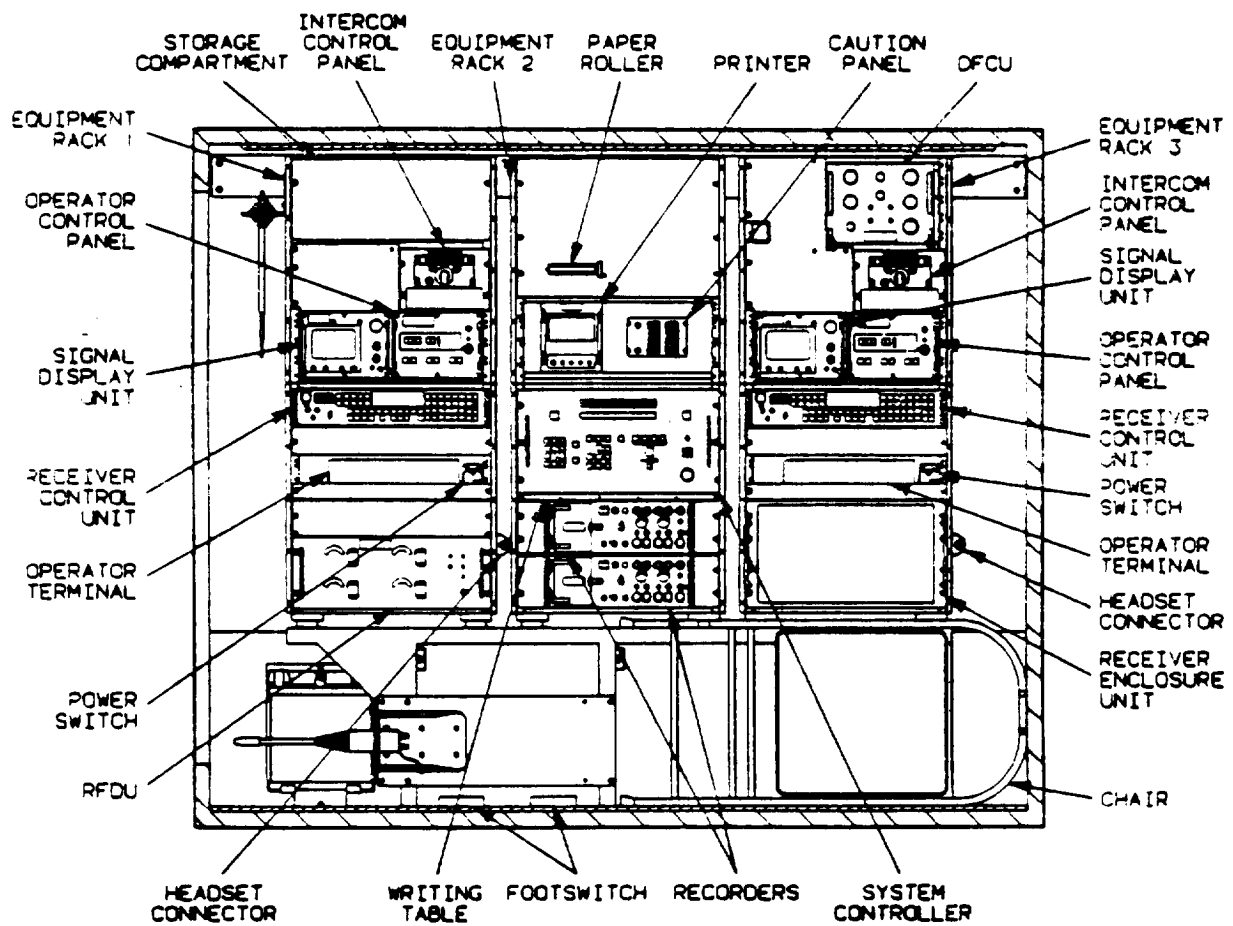
The AN/TRQ-32(V)2 incorporates a narrow-band datalink subsystem for automatic tasking, reporting, and control functions. It implements the Net Station (NS) subset of the ASAS Net Radio Protocol (NRP). Both systems provide two operator positions to perform all necessary functions.

The electronic equipment is installed in an S-457B/G shelter designed for installation on the M-1028A1 shelter carrier. The pneumatic mast and hydraulic generator/air conditioner (HG/AC) are mounted on the exterior of the shelter. The hydraulic pump, hydraulic reservoir, and power takeoff (PTO) are mounted on the vehicle. The AN/TRQ-32(V)1 and AN/TRQ-32(V)2 are air transportable by C-130 or equivalent aircraft. Organizational maintenance must remove the front and rear whip antennas and bases when being transported by air. The AN/TRQ-32(V)1 and AN/TRQ-32(V)2 may be transport by rail if the shelter carrier and shelter are separated.

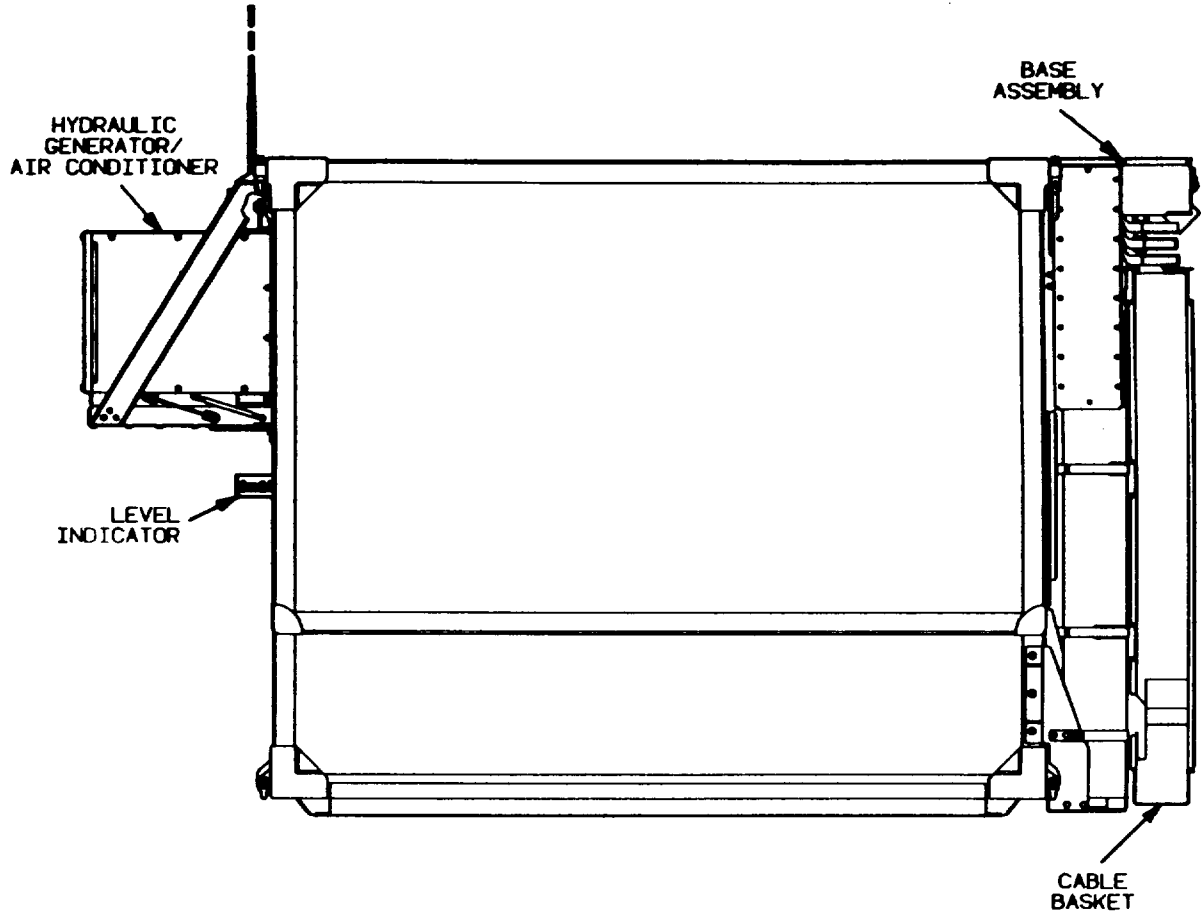
1-9. LOCATION AND DESCRIPTION OF MAJOR COMPONENTS.

The major components of the AN/TRQ-32(V)1 and AN/TRQ-32(V)2 are shown in roadside and curbside elevations.

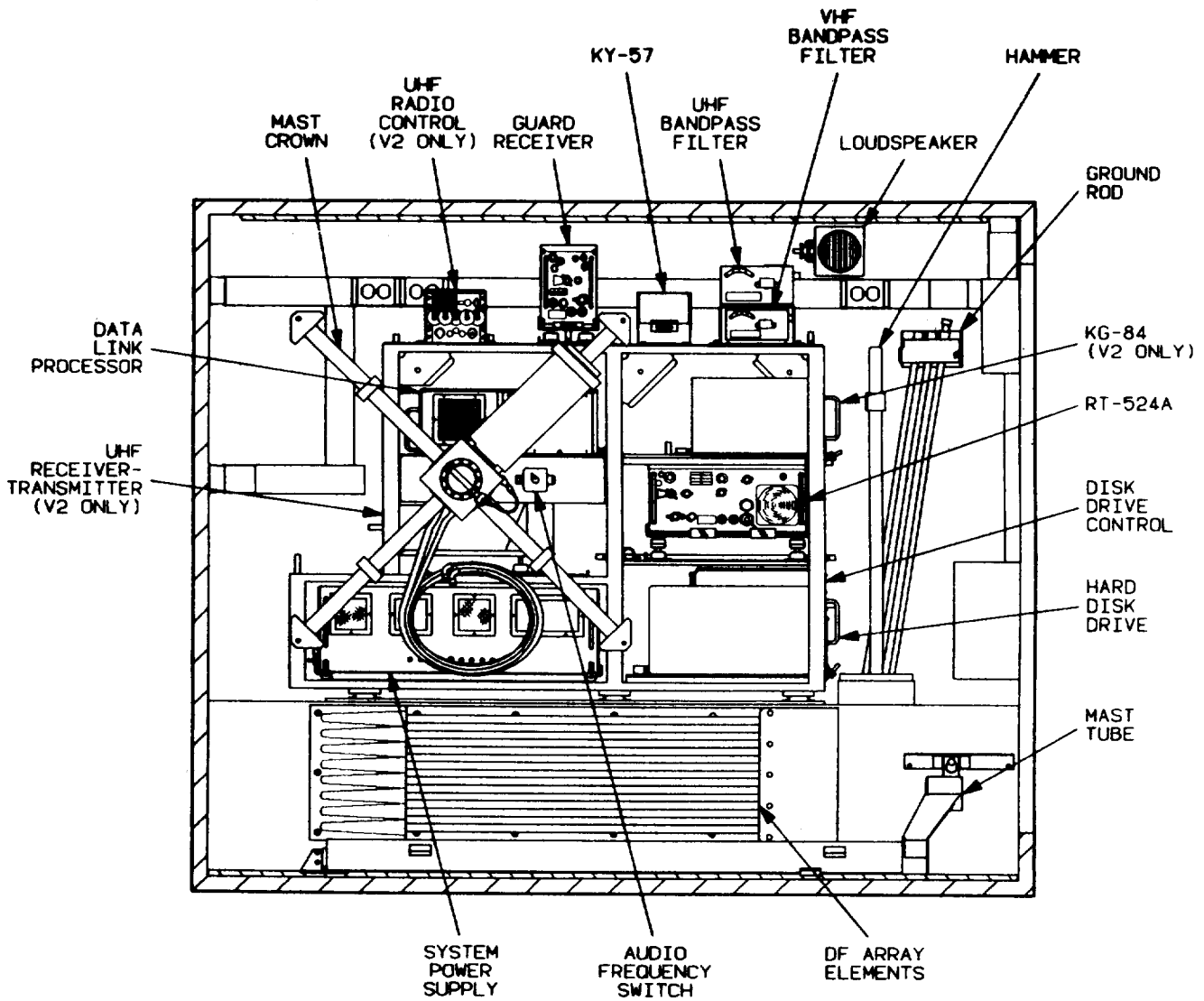
INTERIOR ROADSIDE ELEVATION



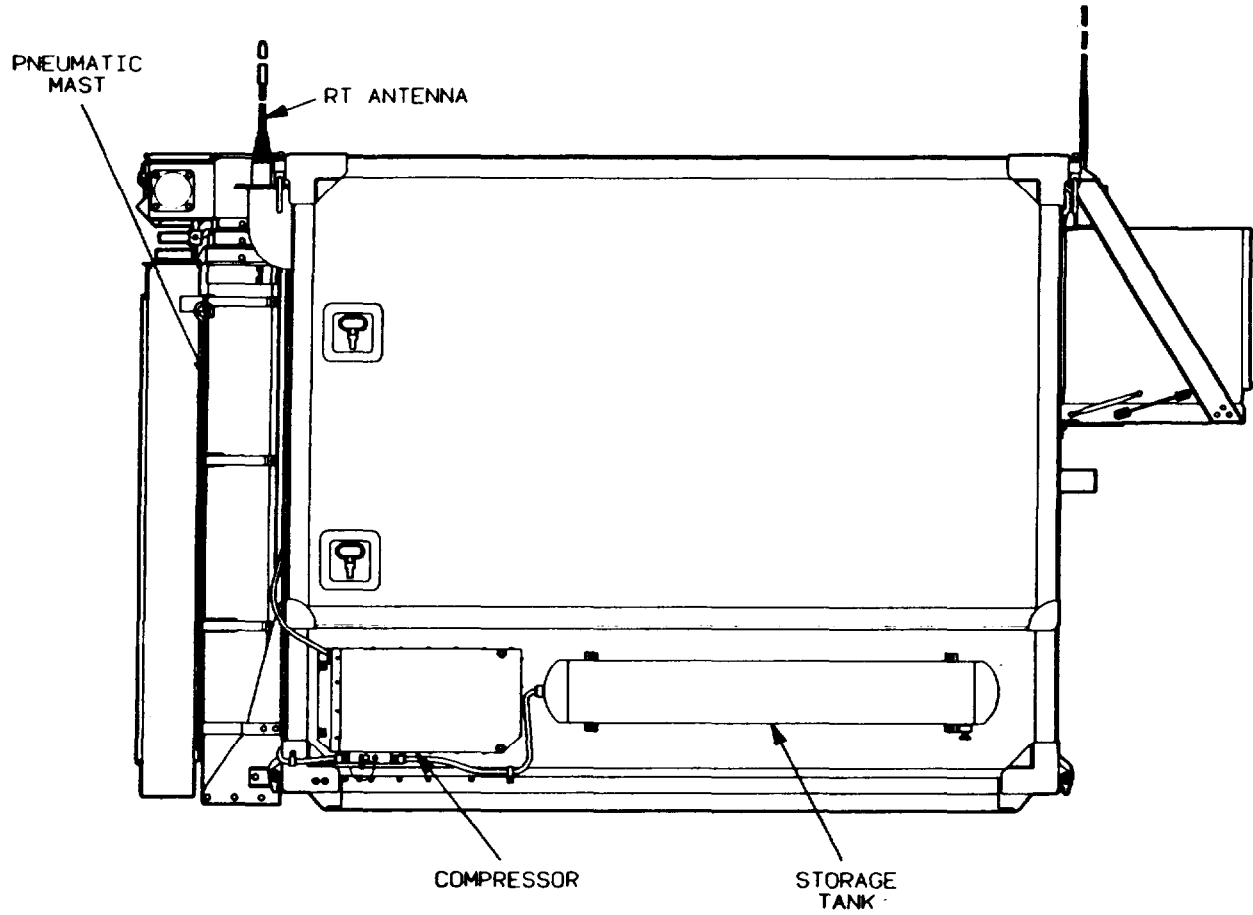
EXTERIOR ROADSIDE ELEVATION



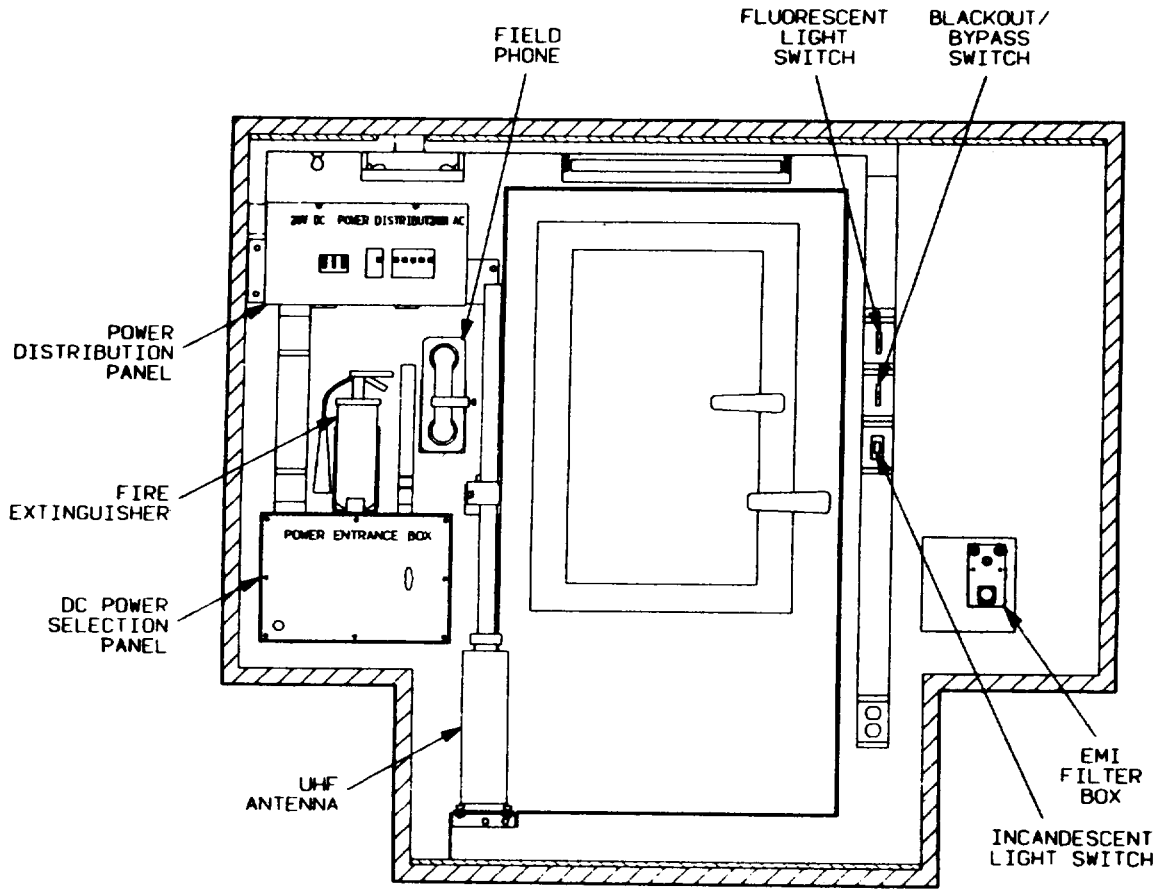
INTERIOR CURBSIDE ELEVATION



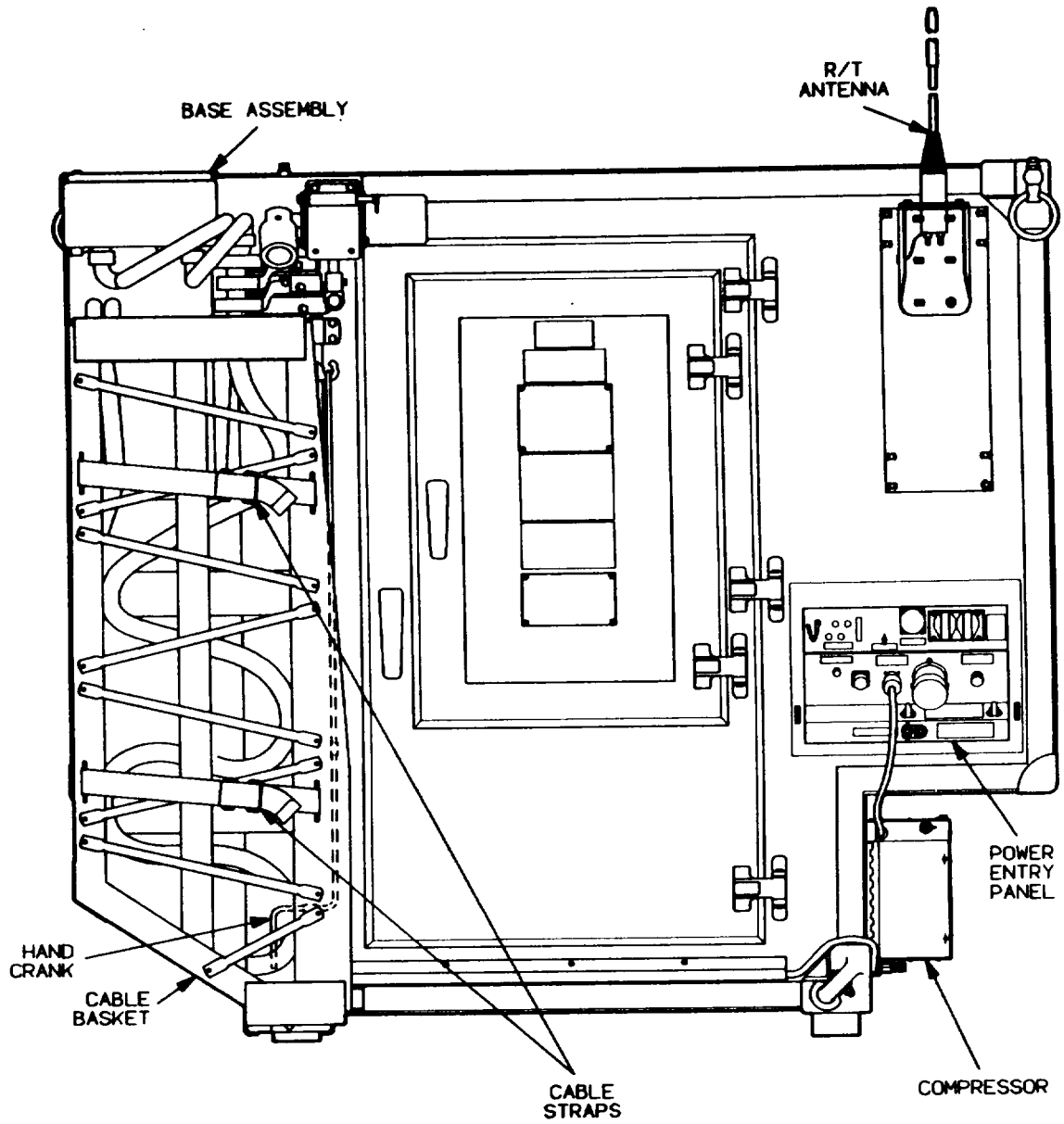
EXTERIOR CURBSIDE ELEVATION



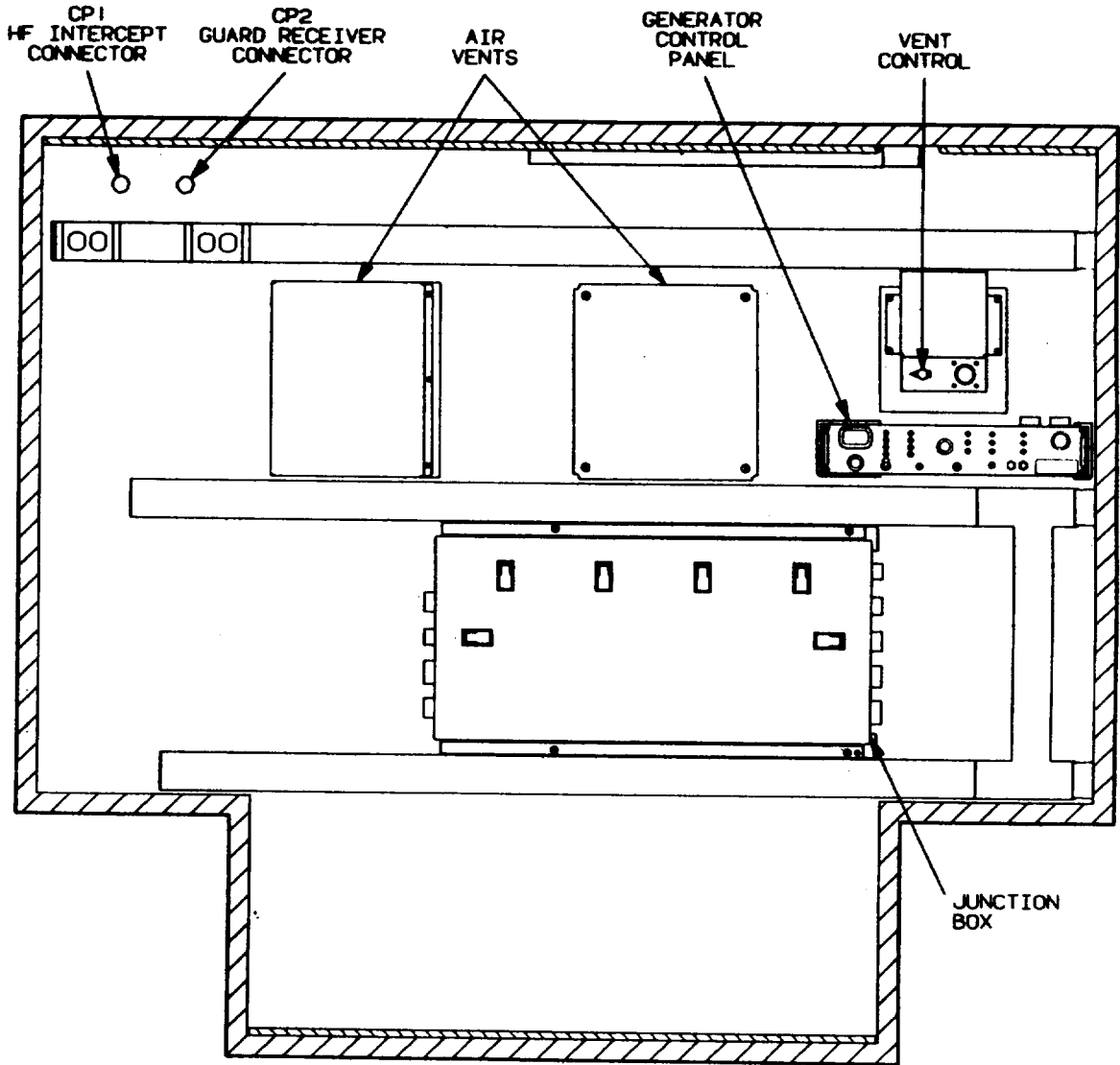
INTERIOR REAR ELEVATION



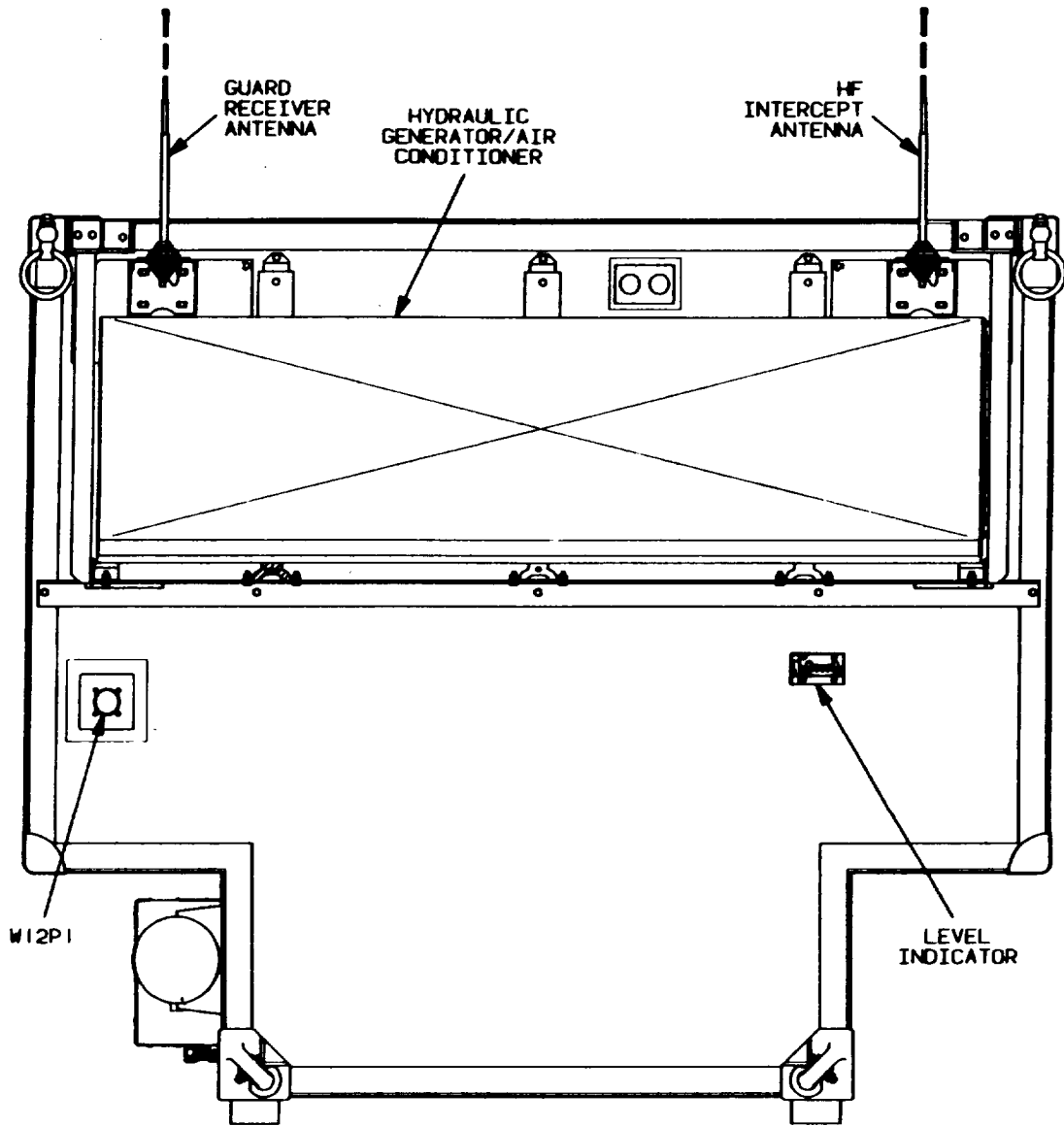
EXTERIOR REAR ELEVATION



INTERIOR FORWARD ELEVATION



EXTERIOR FORWARD ELEVATION



1-10. DIFFERENCES BETWEEN MODELS.

The AN/TRQ-32(V)1 is modified to a AN/TRQ-32(V)2 by the addition of three LRU's which provide UHF Data Link capability.

QTY	L.R.U.	(V) 1	(V)2
1	ANTENNA, AS-1729	X	X
1	ANTENNA GROUP	X	X
1	ANTENNA POWER SUPPLY, TL-3129	X	X
1	AUDIO FREQUENCY SWITCH, SA-2171/VRC	X	X
1	CABLE ASSY, W22	X	X
1	COMPRESSOR ASSEMBLY	X	X
1	DATA LINK PROCESSOR ASSEMBLY	X	X
1	DF ARRAY ANTENNA, AS-3660/TRQ-32 (V)	X	X
1	DIRECTION FIND CONTROL, C-11002/USQ	X	X
1	DISK DRIVE CONTROL ASSEMBLY, C-11843/TRQ-32(V)	X	X
1	ELECTRICAL EQUIPMENT SHELTER, S-457B/G	X	X
1	ELECTRONIC QUAD RECEIVER CABINET, CY-8324/TRR-35(V)	X	X
1	FAULT FUNCTION PANEL, 4408-100-29	X	X
1	GEN/AIR COND CONTROL ASSEMBLY	X	X
1	INTERCOM SET, C1611D/A1C	X	X
2	INTERCOMMUNICATION CONTROL	X	X
2	INTERCONNECTION BOX, J-4099/TSQ-138	X	X
1	J-BOX, J-3513	X	X
1	J-BOX, J-3514	X	X
1	LOUDSPEAKER, LS-454/U	X	X
1	MAGNETIC DISK RECORDER-REPRODUCER, RD-583/TRQ-32(V)	X	X
1	MAGNETIC FIELD CONVERTER, CV-3579/TSQ	X	X
1	MOUNTING BASE, MT-1029	X	X
1	MOUNTING BASE, MT-1898	X	X
1	MOUNTING BASE, MT-6017A/ARC-164	X	X
2	OPERATOR CONTROL PANEL, MX-10570/TRQ-32(V)	X	X
2	OPERATOR TERMINAL, CP-1824/TRQ-32(V)	X	X
1	PNEUMATIC MAST	X	X
1	POWER SUPPLY, PP-7817/URR	X	X
2	POWER SWITCH ASSEMBLY, SA-2559/TRQ-32(V)	X	X
1	PUMP ASSEMBLY	X	X
1	RADIO FREQUENCY PROCESSOR, MX-10526/TRQ-32(V)	X	X
1	RECEIVER, RADIO, R-442A/VRC	X	X
1	RECEIVER, TRANSMITTER, RT-254A/VRC	X	X
2	RECEIVER, R-2143/URR	X	X
2	RECEIVER, R-2144A/URR	X	X
2	RECEIVER CONTROL INDICATOR, C-11383/TRR-35(V)	X	X
1	RECEIVER INTERFACE UNIT, J-4144/TRR-35(V)	X	X
1	RESERVOIR ASSEMBLY	X	X
1	RF DISTRIBUTION UNIT, SA-2444/TRQ-32(V)	X	X
1	SHELTER MOUNTED UNIT ASSEMBLY	X	X
1	SIGNAL DISPLAY UNIT, ID-2349/TRR-35(V)	X	X
2	SOUND RECORDER-REPRODUCER SET, UNH-17A	X	X
1	SPEECH SECURITY EQUIPMENT, TSEC/KY-57	X	X

1-10. DIFFERENCES BETWEEN MODELS (CONT).

QTY	L. R. U.	(V) 1	(V)2
1	SYSTEM CONTROLLER, C-11845/TRQ-32(V)	X	X
1	SYSTEM POWER SUPPLY, PP-8179/TRQ-32 (V)	X	X
1	TELEPHONE SET, TA-312/PT	X	X
1	THERMAL PRINTER, RP-272/G	X	X
1	UHF BANDPASS FILTER	X	X
1	UHF INTERCEPT & DATALINK ANTENNA, AS-3661/TRQ-32(V)	X	X
1	VHF BANDPASS FILTER	X	X
1	DEDICATED LOOP ENCRYPTION DEVICE, TSEC/KG-84 OR TSEC/KG-84A		X
1	RADIO RECEIVER-TRANSMITTER, RT-1288A/ARC-164(V)		X
1	RADIO SET CONTROL, C10547/ARC-164(V)		X

1-11. EQUIPMENT DATA.

WEIGHTS AND DIMENSIONS

S-457B/G SHELTER

Length 129.0 inches (3.277 meters)
 Width 79.4 inches (2.016 meters)
 Height 70.5 inches (1.790 meters)
 Volume 356 cu. ft. (10.065 steres)
 Weight 2966 pounds (1347 kg)
 Weight 3010 pounds (1367 kg)

M-1028A1

Length 220.7 inches (560.6 cm)
 Width 81.2 inches (206.2 cm)
 Height 76.2 inches (193.6cm)
 Weight (with installation kit) 5970 pounds (2710 kg)
 GVWR 9400 pounds (4264 kg)

Ground Clearance

Front 8.3 inches (211 mm)
 Rear 7.7 inches (196 nun)

Electrical System 28 Vdc, 100A; 12 vdc lighting and control system.

Fording Capability 20 inches (508 mm)

WEIGHTS AND DIMENSIONS (CONT)

M-1028A1 (Cont)

Capacities

Load Capacity 3600 pounds (1633 kg)
Fuel Capacity 20 gallon (75.71)
Oil Capacity 7 quart(6.61)w/filter
Transmission Fluid Capacity 10 quart (9.5 l)
Radiator Capacity 24.8 quart (23.5 l)

RESERVOIR ASSEMBLY

Capacities

Hydraulic Fluid Capacity 6 gallons (22.7 l)

POWER REQUIREMENTS

External Power Not Authorized
Vehicle Power 28 Vdc, 5 Amp continuous,
25 Amp peak.

TECHNICAL DATA

System Frequency Coverage

Intercept HF, VHF, and UHF
Direction Finding VHF
Data Link UHF

Antenna Group

Line of Bearing Coverage. 360 Degrees
VHF/UHF Intercept Omnidirectional

Mast

Pneumatic Mast Elevation Time less than 120 Seconds
Pneumatic Mast Retraction Time less than 3 Minutes
(Rate of descent
should not exceed 1
foot per second)

TECHNICAL DATA

Air Compressor

Air Tank	100 PSI +/-5PSI
Mast Tube	25 PSI +/-1PSI

Hydraulic Generator/Air Conditioner (HG/AC)

Rated Generator Output

Power	5 Kilowatts
Voltage	120/240 Vac, 3wire (+10%)
Frequency	55 to 65 Hertz
Phase	Single

Rated Air Conditioner Output

Cooling	18,000 BTU/Hour in external ambient temperatures +50F (+10C) to +125F (+52C).
---------------	---

Heating	3000 BTU/Hour in external ambient temperatures of -50F (-45.5C) to + 70F (21 C).
---------------	--

Fresh Air Volume	0 to 40 cubic feet per minute, adjustable.
------------------------	--

Typical System Set Up Time	8 Minutes after AC power is applied (with 2 operators).
----------------------------------	---

Section III.

TECHNICAL PRINCIPLES OF OPERATION

1-12. PRINCIPLES OF OPERATION.

The AN/TRQ-32(V) systems (V1 and V2) allow the operators to perform most of their functions from the Operator Terminals. The Operator Terminals provide display of incoming messages, editing and transmission of messages, and automatic posting of incoming tasks to a task log. Three on-line databases are provided by a shared 15 mega-byte hard disk: past ASAS message traffic, worksheet database and current tasks (in a task log).

The AN/TRQ-32(V)1 is divided into six subsystems consisting of an Antenna subsystem, Receiving subsystem, DF subsystem, Communications subsystem, Audio/Record subsystem, and a Hydraulic Generator/Air Conditioning subsystem.

The AN/TRQ-32(V)2 is divided into seven subsystems consisting of the same subsystems as AN/TRQ-32(V)1, with the addition of the Data Link subsystem.

The antenna subsystem consists of a mixture of arrays and elements capable of implementing the receiving and transmitting features of the system. The antenna subsystem provides frequency coverage for intercept in the HF, VHF, and UHF ranges, direction finding in the VHF range, and for voice communications in the VHF range. A pneumatic mast group elevates the VHF intercept array and the UHF intercept antenna to an operational height of 33 feet.

The main part of the receiving subsystem is the AN/TRR-35(V)3 system. The subsystem is capable of scanning an operator selectable, predetermined portion of HF, VHF, or UHF bands, detecting active signals, and provides audio outputs. It also provides data for direction finding processing. The subsystem is capable of providing a visual CRT display of frequencies being monitored by VHF/UHF receiver.

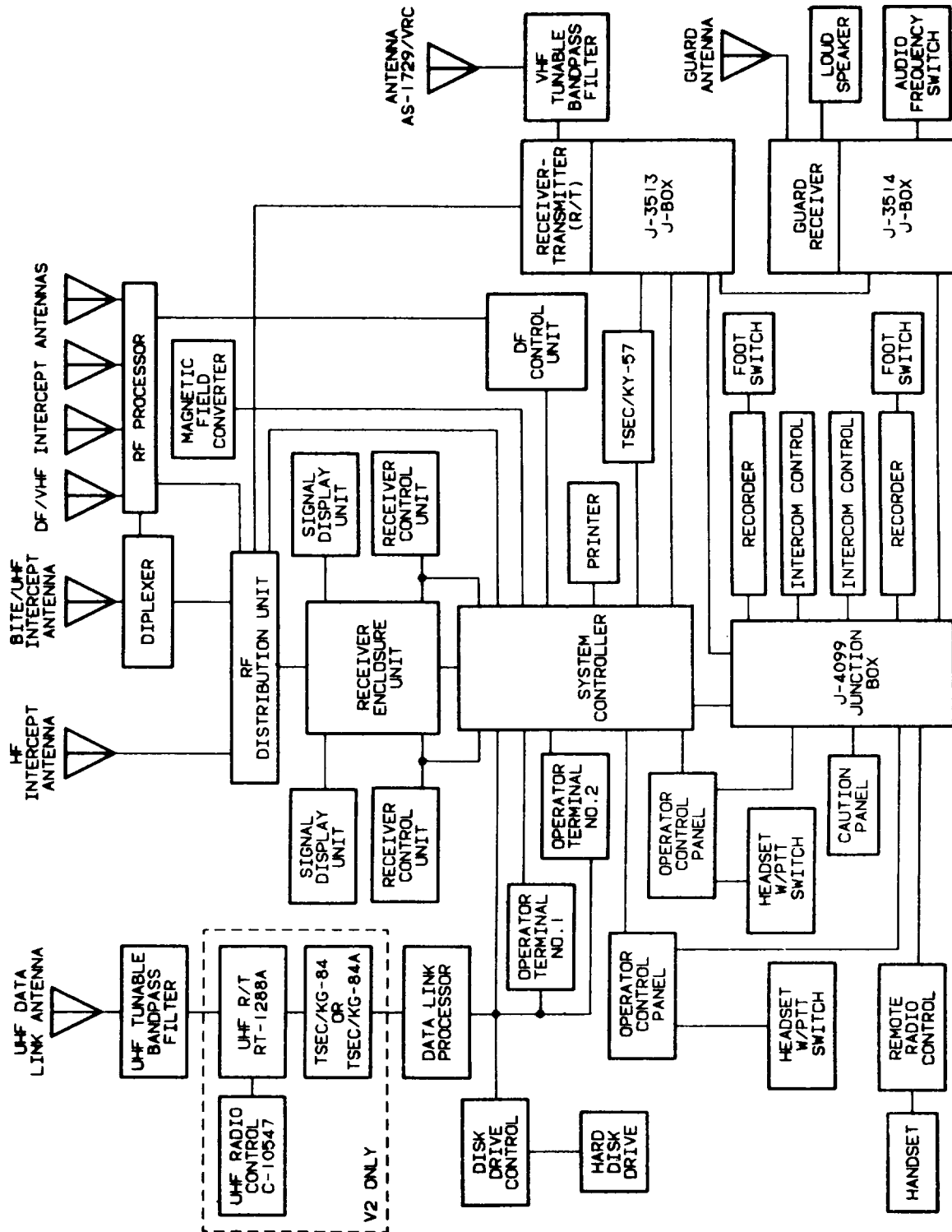
The DF subsystem provides each operator with an independent capability to determine a Line-Of-Bearing (LOB) on any signal of interest in the VHF frequency range. Each operator has a control panel and display.

The communications subsystem provides FM voice radio. Call lights notify the operators of incoming signals. Communications can be in clear voice or secure voice. Secure voice is accomplished using the TSEC/KY-57. The C-2298/VRC provides a voice link to truck cab. The communications subsystem also provides a field telephone.

The audio/record subsystem provides interface and control of all audio sources within the system. It provides the capability for the operator to listen and record intercepted signals and operator comments. An intercom system allows the operators to talk to each other.

The hydraulic generator/air conditioning subsystem includes the hydraulic system from the tandem hydraulic pump on the vehicle to the hydraulic drives of the generator and the air conditioner. The subsystem is capable of supplying all electrical power for equipment operation and for environmental control (heating and cooling) inside the shelter.

The datalink subsystem provides all processing and control functions associated with implementation of the Net Radio Protocol. It manages ASAS datalink and passes ASAS messages between Operator Terminal and all other Datalink subsystem equipment.



AN/TRQ-32(V) BASIC BLOCK DIAGRAM

Functions of components shown in the AN/TRQ-32(V) BASIC BLOCK DIAGRAM are as follows:

1. ANTENNA AS-1729/VRC

This antenna is used for both receive and transmit by the R/T. The antenna is located on the rear curbside of the shelter.

2. AUDIO FREQUENCY SWITCH

The audio frequency switch is used to switch the KY-57 between the R/T and the guard receiver.

3. CAUTION PANEL

The caution panel contains 20 indicator lights. These are controlled by fault signals from various equipment to alert the operator when a fault occurs.

4. DATA LINK PROCESSOR

The data link processor provides the capability to perform all necessary ASAS data link protocol. It receives and transmits messages through the KG-84 OR KG-84A. It provides message validation and automatic relay of messages to relay stations.

5. DF CONTROL UNIT

The DF control unit accepts DF requests from the system controller and outputs signals to the RF processor for controlling DF related functions. This unit computes and reports the line-of-bearing to the system controller.

6. DF/VHF AND BITE/UHF INTERCEPT ANTENNA

The DF/VHF and BITE/UHF antenna elements are mounted on the pneumatic mast. The DF/VHF elements are the elements used in direction finding and VHF intercept. The BITE/UHF element is used for UHF intercept and to provide a BITE signal. The BITE/UHF element is also used to receive and transmit by the RT-1288A for Data Link capability.

7. DIPLEXER

The diplexer combines the outputs of the UHF antenna and the VHF antenna elements on to a single coaxial transmission line.

8. DISK DRIVE CONTROL

Provides the necessary conversion to allow connection of the Disk Drive to the data bus. This LRU contains its own power supply.

9. FOOT SWITCH
The foot switch provides remote operation of recorder AN/UNH-17A.
10. GUARD ANTENNA
The AB-15/GR, MS-116A, MS-117A, and MS-118A make up the antenna for the guard receiver. The antenna is located in the front curbside of the shelter. (It is identical to the HF intercept antenna.)
11. GUARD RECEIVER
This is operated in the VHF band as a receiver for command and control communications. Its output is heard on the loudspeaker only.
12. HANDSET
The handset provides remote operation to the RT-524/VC.
13. HARD DISK DRIVE
Provides the system with mass storage which will be used to hold the operator terminal control program as well as the system database storage.
14. HEADSET
Provides operator capability to listen to intercepted audio signals and other incoming messages.
15. HF INTERCEPT ANTENNA
The HF intercept antenna is a whip antenna mounted on the shelter that is used in conjunction with the R-2143/URR Receiver to intercept HF signals. The antenna is located on the front roadside of the shelter.
16. INTERCOM CONTROL PANEL
The intercom control panel provides the operator with the capability to listen to radio communications, except, guard receiver, or intercepted audio signals/operator comments, and to communicate with the other operators. An intercom control panel is provided for each operator,
17. J-BOXES
The J-3513 and J-3514 J-boxes interface the guard receiver and the R/T with the KY-57.
18. JUNCTION BOX, J-4099/TSQ-138
The junction box provides a central point for control and distribution of the audio and fault indicating signals.

19. LOUDSPEAKER

The loudspeaker is used with the guard receiver.

20. MAGNETIC FIELD CONVERTER

The magnetic field converter contains two sensing units which report to the system controller, The sensing units detect the orientation of the antenna and whether the antenna is tilted.

21. OPERATOR CONTROL PANEL (OCP)

There are two OCP's, one at each operator station. This provides the operator with the capability to control the DF subsystem and display DF and auto-DF line-of-bearing. It also selects HF or VHF/UHF audio for recording.

22. OPERATOR TERMINAL

Enables operator capabilities such as menu-driven system control graphic display and analyzing of Fix results, construction and editing of Task Log Worksheets, generation of reports, access to memo scratched areas, and search capability on selected database items.

23. RADIO RECEIVER SET, AN/TRR-35(Y)3

The AN/TRR-35(V)3 contains:

a. RECEIVER ENCLOSURE UNIT (REU)

The REU contains a power supply, four receivers, an interface unit to interface the receivers to two Receiver Control Units (RCU). signals from the intercept antennas are routed to the four receivers. Two receivers (R-2143/URR) operate in the HF band and two receivers (R 2144A/URR) in the VHF/UHF band. The receivers are controlled from the RCU's. Each RCU controls one HF and one YHF/UHF receiver. The REU outputs a signal (BITE output) to the caution panel to indicate trouble within the AN/TRR-35(V)3.

b. RECEIVER CONTROL UNIT (RCU)

There are two RCU's one at each operator station. This provides control of the receivers. Each RCU contains a readout display, a headset jack, and 70 switches and indicators used by the operator to control and monitor all receiver operations.

c. SIGNAL DISPLAY UNIT (SDU)

The SDU provides a visual display of frequencies monitored by the VHF/UHF receiver. There is an SDU for each operator.

24. RECEIVER-TRANSMITTER (R/T)

The R/T provides two-way FM communications in the VHF band and is used in the netting of the AN/TRQ-32(V) system.

25. RECORDER

The recorder is a two-channel, four-track magnetic audio tape recorder for cassette tapes. Recording is controlled by the operator through the front panel controls and a foot switch. It is used to record intercept signals and operator comments. Two recording speeds are available for recording and for playback. There is a recorder for each operator position.

26. REMOTE RADIO CONTROL

The C-2298/VRC provides the operator with the capability of receiving and transmitting on the RT-524A from the cab of the truck during the mobile mode of operation only.

27. RF DISTRIBUTION UNIT (RFDU)

The RFDU selects the RF path for either VHF/UHF intercept or VHF direction finding. The RFDU also switches the notch filters in to notch out transmitted RF signals from the intercepted path.

28. RF PROCESSOR

The RF Processor is used to process commands from the DF control unit to determine the direction of detected unknown radio emitters.

29. SYSTEM CONTROLLER (SC)

The main function of the system controller is to integrate the Direction Finding (DF) subsystem with the other subsystems. It can be remotely operated from the operator terminals. It also provides the fine-of-bearing processing ability; controls the automatic netting function; enables operator inputs for Time Of Day (TOD) and for Universal Transverse Mercator (UTM) coordinates Grid to Magnetic (G-M) angle, Heading (HDG) angle; provides the operator with the ability to request DF line-of-bearings or fixes when netted.

30. THERMAL PRINTER

The thermal printer provides the operator with a hardcopy of BITE results, LOB's, fluxgate readings, fixes, and messages. The printer is controlled locally by the system controller or remotely by the operator terminals.

31. TSEC/KY-57

The TSEC/KY-57 provides speech security (encryption and decryption) for the R/T and the guard receiver.

32. TSEC/KG-84 OR KG-84A

The TSEC/KG-84 or KG-84A provides digital security (encryption and decryption) for the RT-1288A.

33. UHF/DATALINK ANTENNA

The data link antenna is used for both receive and transmit by the R/T-1288A. The antenna is mounted on the pneumatic mast.

34. UHF TUNABLE BANDPASS FILTER

The UHF Bandpass Filter Assembly provides for electromagnetic compatibility between the RT-1288/ARC-164(V) and the AN/TRR-35(V)3 Receiving Set.

35. UHF RECEIVER-TRANSMITTER, RT-1288A/ARC-164(V)

The RT-1288A provides two-way UHF communications and is used in the transmission/reception of data for Data Link operation.

36. UHF RADIO CONTROL, C-10547/ARC-164(V)

The C-10547/ARC-164(V) Radio Set Control provides remote operation for control of RT-1288A.

37. VHF TUNABLE BANDPASS FILTER

The VHF Bandpass Filter provides electromagnetic compatibility between the RT-524/VRC and the AN/TRR-35(V)3 Receiving Set.

OPERATING INSTRUCTIONS

Page	Page		
Audio Frequency Switch	2-56	Operator Terminal Menu	
Caution Panel	2-34	Description	2-146
Description and Use of		Perform Built-In Tests	2-162
Controls and Indicators	2-2	PMCS Table	2-59
Data Link Processor	2-57	Power Distribution Controls,	
DC Power Selection Panel	2-6	Indicators, and Connectors	2-3
Deployed Operation	2-140	Power Distribution Panel	2-7
Disk Drive Control	2-52	Power Entry Panel	2-5
Emergency Procedures	2-207	Power Switch	2-28
Equipment Checkout	2-108	Preparation for Movement	2-164
Equipment Controls,		Preventive Maintenance	
Indicators, and Connectors	2-11	Checks and Services	2-59
Equipment Initialization	2-66	Printer	2-33
Equipment Rack 1	2-12	Receiver Control Unit	2-18
Equipment Rack 2	2-32	Receiver Control Unit	
Equipment Rack 3	2-13	Operation (Programming)	2-140
Equipment Rack 4	2-42	RT-524A	2-50
Guard Receiver	2-46	Recorder	2-40
Hard Disk Drive	2-53	Remote Radio Control	2-58
HG/AC Control Panel	2-8	Reset System Parameters	
How To Locate Your		Menu Selections	2-159
Equipment	2-4	RFDU	2-29
Intercom Control Panel	2-14	Shelter Environmental	
KY-57		Controls and Indicators	2-8
(See TM 11-5810-256-12)		Signal Display Unit	2-30
KG-84 or KG-84A		Signal Entry Panel	2-11
(See TM 11-5810-308-12&P)		Site Selection	2-2
Local Datum List	2-122	Stationary Operation	2-65
	2-205	System Controller	2-36
Main Menu Selections	2-153	System Controller	
Manual Mode Operation	2-144	Initialization	2-203
Mobile Operation	2-65	System Controller Operation	2-199
Netted Mode Operation	2-144	System Operational	
Operation Under Unusual		Configuration	2-65
Conditions	2-198	System Power Supply	2-54
Operation Under Usual		UHF Bandpass Filter	2-48
Conditions	2-65	UHF Radio Control	2-44
Operator Control Panel	2-16	UTM Coordinates	2-3
Operator Terminal	2-26	VHF Bandpass Filter	2-49

Section I.

**DESCRIPTION AND USE OF
OPERATOR'S CONTROLS, INDICATORS. AND CONNECTORS**

2-1. GENERAL

a. Controls, indicators, and connectors used by the operator AN/TRQ-32(V) are discussed in two groups:

1. Power distribution and environmental control equipment.
2. DataLink, direction finding and communication equipment.

b. This section presents the general information about controls, indicators, and connectors, their location, function, and operator action. Section II contains preventive maintenance checks and services. Section III and Section IV present specific instructions for operator use of Controls, Indicators, and Connectors during Usual Operating Conditions and Unusual Operating Conditions.

2-2. SITE SELECTION

Successful deployment of the system requires Line-Of-Sight (LOS) to the target area and between AN/TRQ-32(V) Radio Receiving Sets "operating in the same radio direction finding net. In addition, sets operating in the same net should be located a reasonable distance apart. Sample platform separations are shown in the following table.

<u>DISTANCE TO EMITTER</u>	<u>PLATFORM SEPARATION</u>
Less than 5 km (3 miles)	1 km (0.6 miles) minimum
5 km (3 miles)	3 km (1.8 miles) minimum
Greater than 5 km (3 miles)	3 km (1.8 miles) minimum to 10 km (6 miles) maximum

When selecting a site, the following requirements must be considered:

- a. The site should be flat to accommodate leveling the system.
- b. The site should be located on the highest possible terrain to provide extended line-of-sight.
- c. The site should be as far as possible from all obstacles between the site and the target area. This is a critical consideration as it affects the accuracy of the system. The following list gives the recommended minimum distances from obstructions.

<u>OBSTRUCTION</u>	<u>MINIMUM DISTANCE</u>
Small buildings	200 Yards (182.88 meters)
Wire fences and buried metallic conductors	300 Yards (274.32 meters)
Water towers, power telephone lines, and railroad tracks	500 Yards (457.20 meters)
Metallic structures	500 Yards (457.20 meters)
High cliffs and deep ravines	1 or more miles (1.6 or more kilometers)

2-3. UTM COORDINATES.

The AN/TRQ-32(V) uses Universal Transverse Mercator (UTM) coordinates for all location entries. UTM coordinates consist of datum, grid zone designation, easting, and northing.

22.36T059600492900

Datum	Grid Zone Designation	Easting	Northing
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The datum is found in the index of grids, datums, and spheroids. The grid zone designation, easting, and northing are found on the map legend that you are using.

The easting entry will always start with a zero (0) and be followed by the first five digits read from the map.

The northing entry will always be the first six digits read from the map.

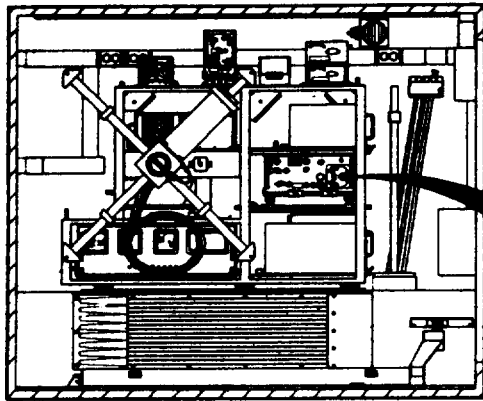
2-4. POWER DISTRIBUTION CONTROLS, INDICATORS, AND CONNECTORS.

The AN/TRQ-32(V) equipment is housed in the S-457B/G shelter. The AC power for each equipment rack is supplied through the power distribution panel from the hydraulic driven generator.

When the AN/TRQ-32(V) is in the mobile mode of operation, 28 Vdc is supplied to the AN/VRC-47 radio set mount, RCU, and pneumatic mast compressor from the vehicle power system.

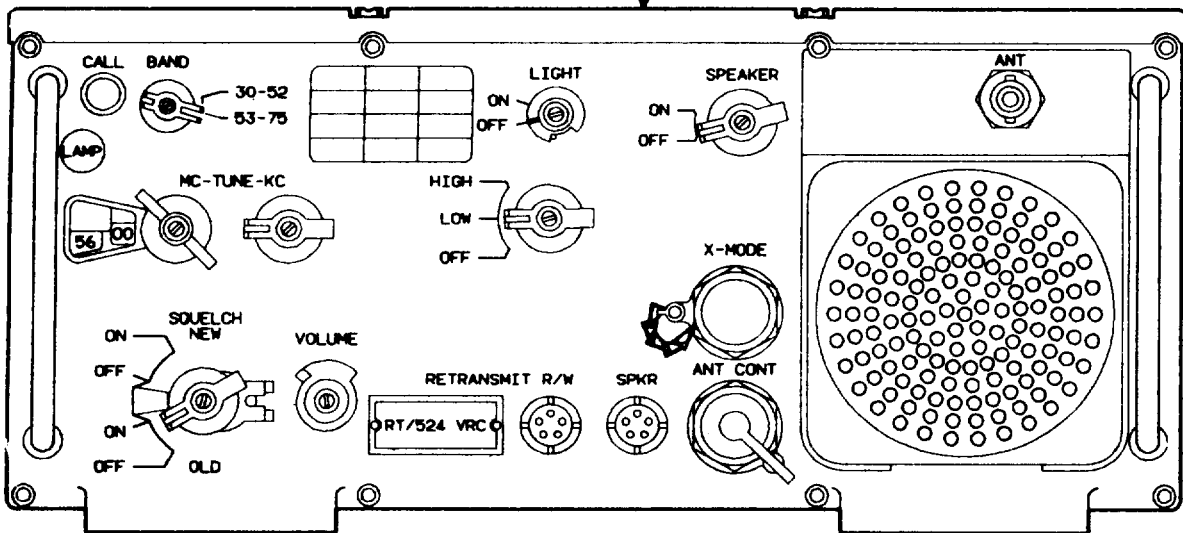
The power distribution equipment consists of three major components:

1. POWER ENTRY PANEL
2. DC POWER SELECTION PANEL
3. POWER DISTRIBUTION PANEL



RACK 4

HOW
TO LOCATE
YOUR
EQUIPMENT

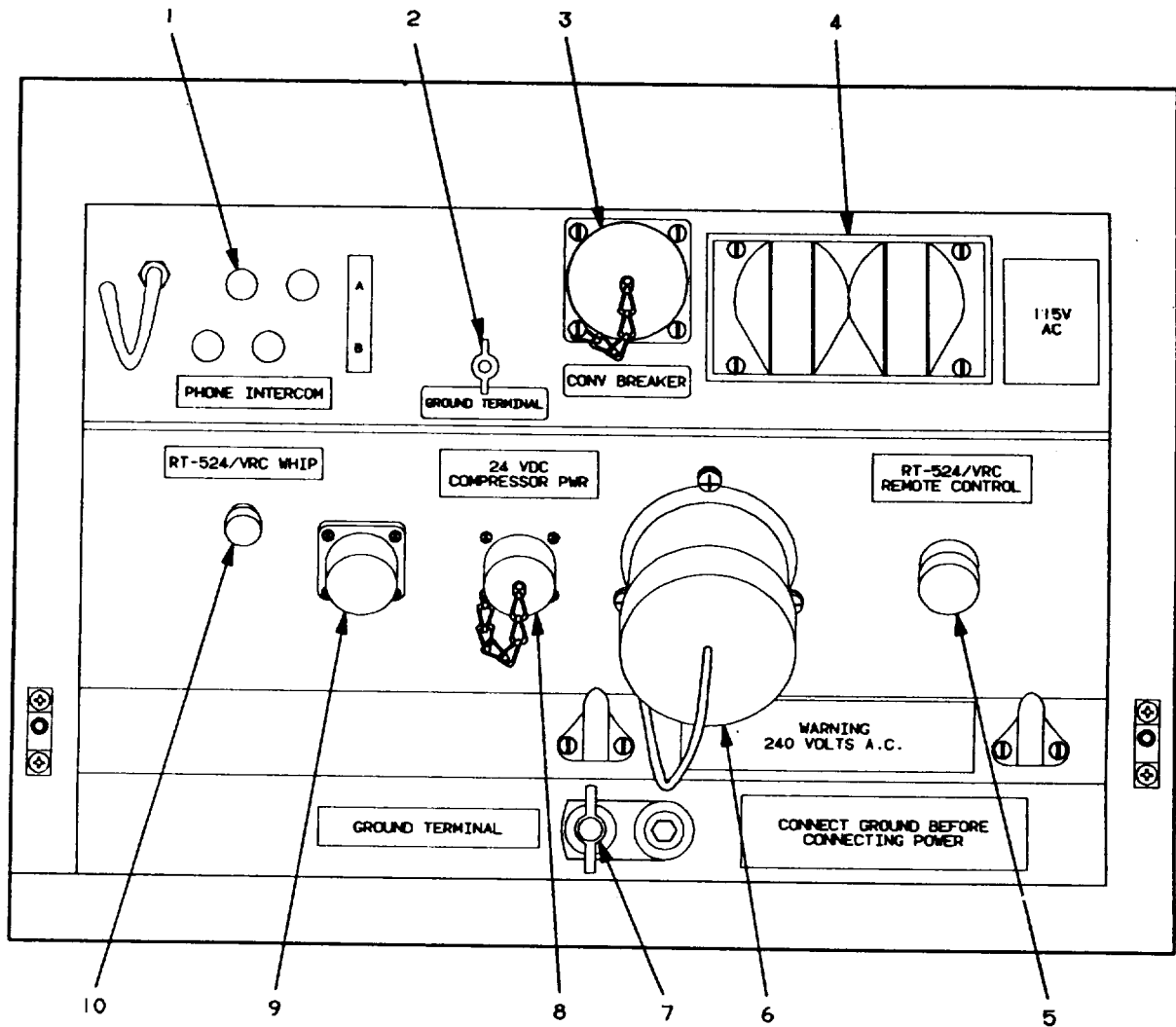


POWER ENTRY PANEL

The power entry panel provides power input interface for AN/TRQ-32(V) Radio Receiving Set. The power entry panel is located on the right rear curbside of the shelter.

WARNING

External power is not authorized on the AN/TRQ-32(V). Use of external power may damage the system as the air conditioner will not be operational.

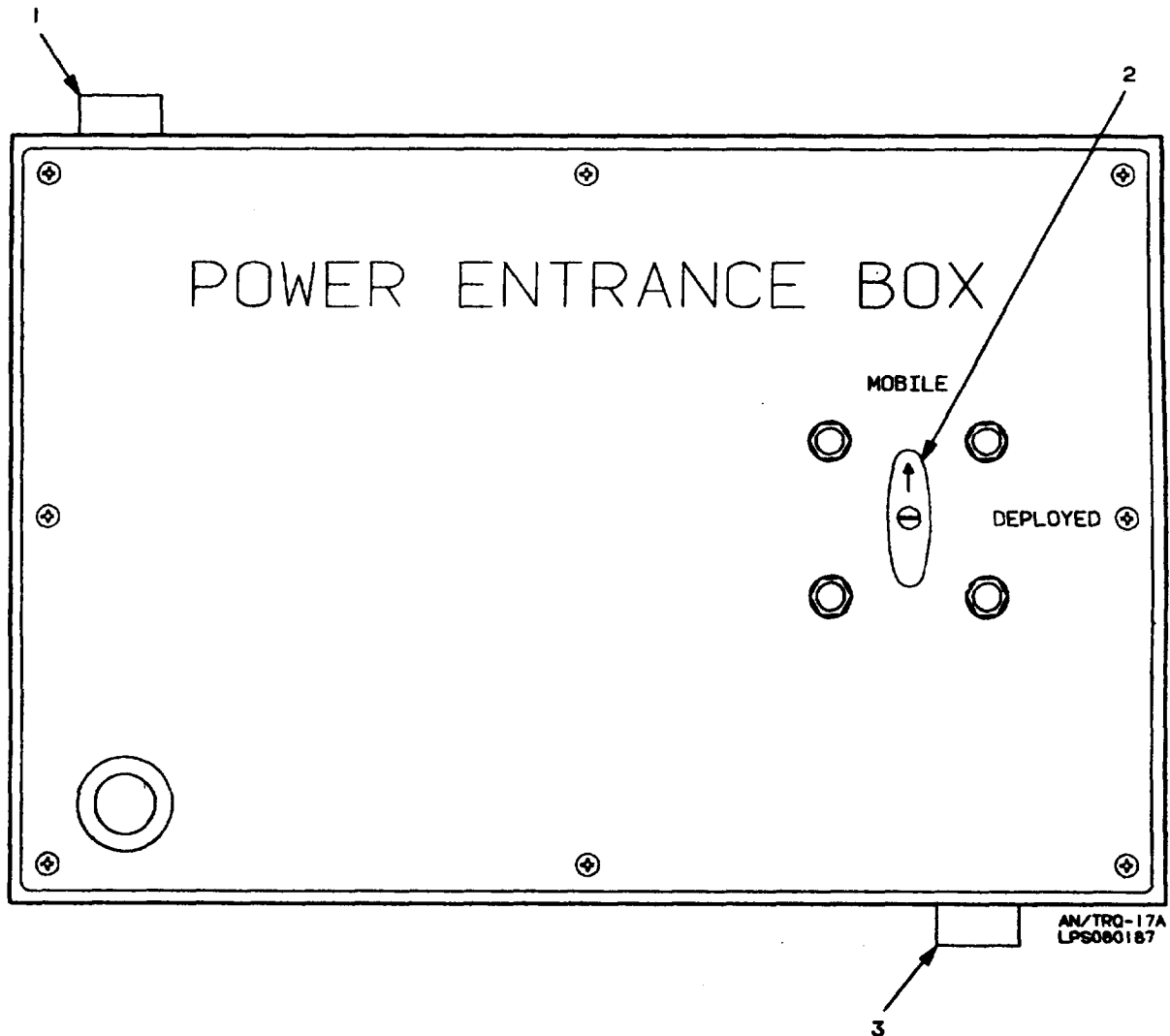


- | | |
|------------------------------|------------------------------|
| 1. PHONE INTERCOM | 6. EXTERNAL POWER RECEPTACLE |
| 2. GROUND TERMINAL | 7. GROUND TERMINAL |
| 3. CONV BREAKER | 8. 24 VDC COMPRESSOR POWER |
| 4. 115 VAC CONV OUTLET | 9. DUST CAP RETAINER |
| 5. RT-524/VRC REMOTE CONTROL | 10. RT-524/VRC WHIP |

DC POWER SELECTION PANEL

The DC power selection panel enables the operator to select the source of DC power to the VRC-47. The source may be either the output of the vehicle 28 Vdc system or the output of the system power supply.

The DC power selection panel is located inside the shelter on the rear curbside wall.



1. RT-524A/VRC REMOTE CONTROL CONNECTOR
2. DC POWER SELECTION SWITCH

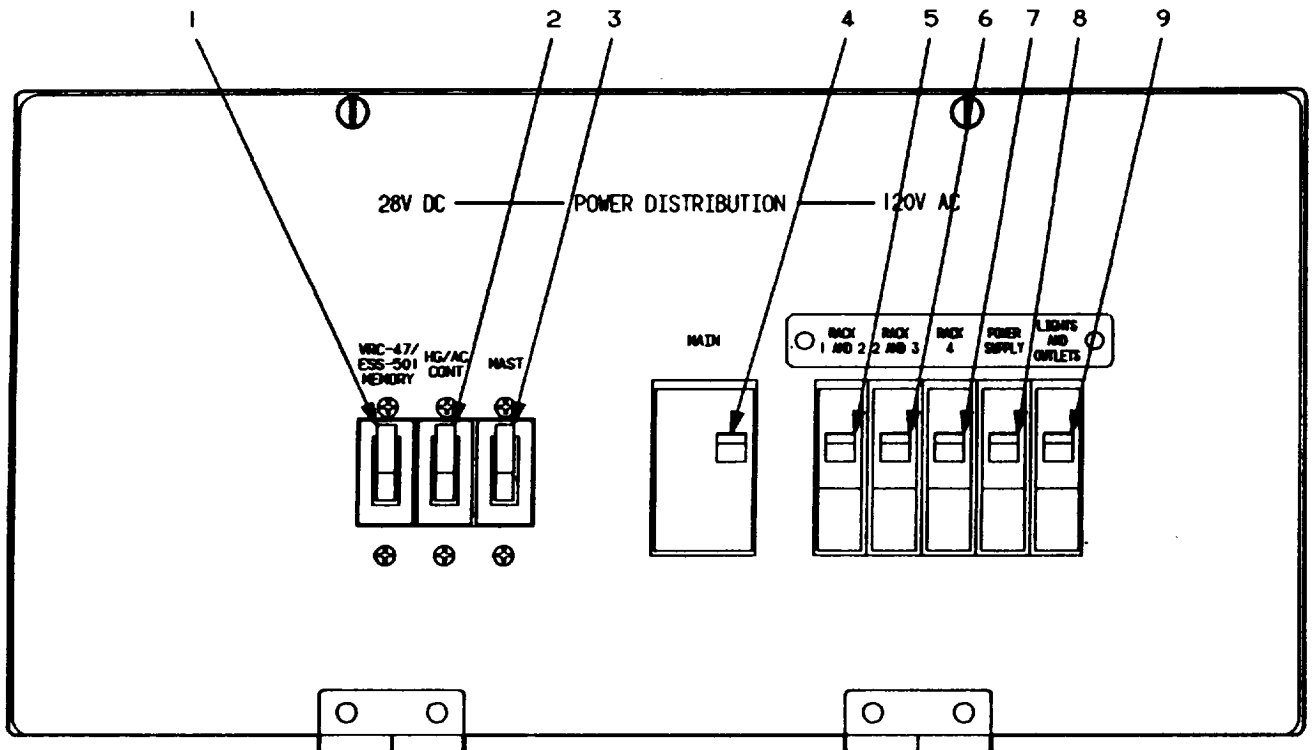
DEPLOYED - Selects the output of the system power supply.

MOBILE - Selects the output of the vehicle 28 Vdc system.

3. RT-524A/VRC RF CONNECTOR

POWER DISTRIBUTION PANEL

Power distribution panel provides circuit overload protection for the equipment. The power distribution panel is located on the rear curbside wall of the shelter.



- 1. VRC-47/ESS-501 MEMORY
- 2. HG/AC CONT
- 3. MAST
- 4. MAIN
- 5. RACK 1 AND 2

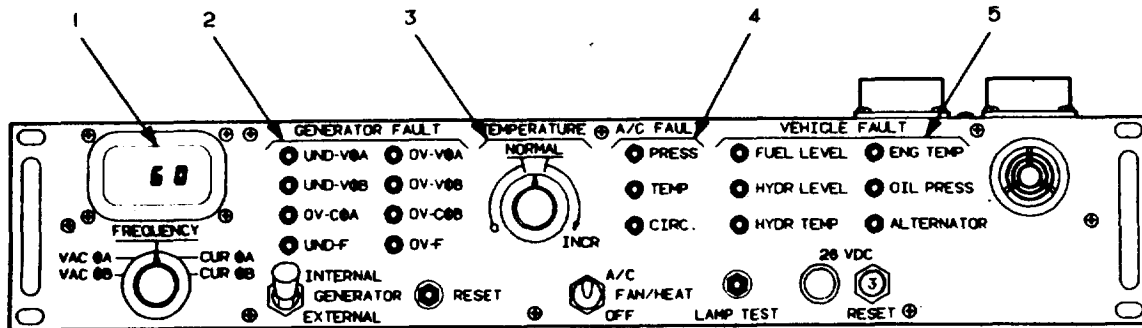
- 6. RACK 2 AND 3
- 7. RACK 4
- 8. POWER SUPPLY
- 9. LIGHTS AND OUTLETS

2-5. SHELTER ENVIRONMENTAL CONTROLS AND INDICATORS.

Shelter environment controls and indicators are located on the HG/AC control panel.

HG/AC CONTROL PANEL

The HG/AC control panel controls the generator and environmental system in the AN/TRQ-32(V). It also provides a central location for monitoring the generator, air conditioner, and vehicle fault indicators. The HG/AC control panel is located on the forward wall of the shelter.



NOTE

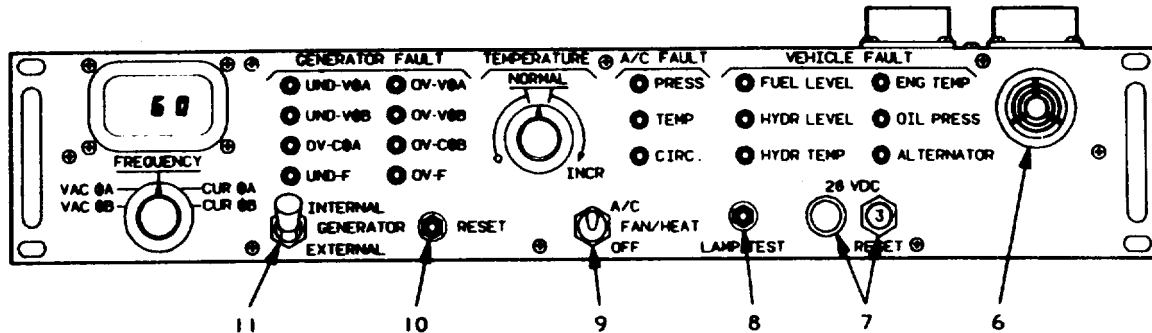
If all fault lamps lite, a failure is indicated in the hydraulic driven generator/air conditioner oil filter.

1. DISPLAY - Enables operator to observe current, voltage, or frequency of hydraulic generator.
 - SWITCH - Enables operator to select current, voltage, or frequency to be displayed.
 - VAC øA - Phase A Voltage.
 - VAC øB - Phase B Voltage.
 - FREQUENCY - Frequency of generator output.
 - CUR øA - Phase A current.
 - CUR øB - Phase B current.

HC/AC CONTROL PANEL (CONT)

2. GENERATOR FAULT Lamps - When lit, indicates a failure in the hydraulic generator system. If any of the below conditions exist, the hydraulic generator power will be automatically cut off
 - UND-VØA - Phase A voltage is low (<96 Volts).
 - UND-VØB - Phase B voltage is low (<96 Volts).
 - OV-CØA - Phase A current is high (>32 Amps).
 - UND-F - Generator frequency is low (<55 Hertz).
 - OV-VØA - Phase A voltage is high (>132 Volts).
 - OV-VØB - Phase B voltage is high (>132 Volts).
 - OV-CØB - Phase B current is high (>32 Amps).
 - OV-F - Generator frequency is high (>65 Hertz).
3. TEMPERATURE Control - Enables operator to control the shelter air flow and temperature.
4. A/C FAULT Lamps - When lit, indicates a failure in the air conditioner system.
 - PRESS - Indicates high freon pressure.
 - TEMP - Indicates evaporator over-temperature.
 - CIRC - Indicates evaporator freeze-up.
5. VEHICLE FAULT Lamps - When lit, indicates a failure in one or more of the vehicle systems.
 - FUEL LEVEL - Indicates vehicle fuel level is low. (<5 gallons)
 - HYDR LEVEL - Indicates the hydraulic generator/air conditioner system hydraulic fluid is low. (<5 gallons)
 - HYDR TEMP - Indicates the hydraulic generator/air conditioner system hydraulic fluid is over-temperature.
 - ENG TEMP - Indicates vehicle engine is over-temperature.
 - OIL PRESS - Indicates vehicle oil pressure is low.
 - ALTERNATOR - Indicates one (or both) of the vehicle alternator outputs are inadequate.

HG/AC CONTROL PANEL (CONT)



6. AUDIBLE ALARM - Sounds when any fault lamp is lit. This does not sound for CIRC lamp.

7. 28 VDC - Provides circuit protection for control panel 28 Vdc system.

28 Vdc Indicator - Indicates 28 Vdc is applied to HG/AC control panel.

RESET Pushbutton - Enables operator to reset the control panel 28 Vdc input after an over-current condition.

8. LAMP TEST Switch - Lights all control panel fault lamps when depressed.

9. A/C Control - Enables operator to select air conditioning, heating or turn both OFF.

A/C - Enables the air conditioner control system.

FAN/HEAT - Enables the heater control system.

OFF - Disables the air conditioner and heater control systems.

10. RESET Pushbutton - Enables operator to reset hydraulic generator output after a current overload condition.

11. GENERATOR Switch - Enables operator to select hydraulic driven generator or external source of power.

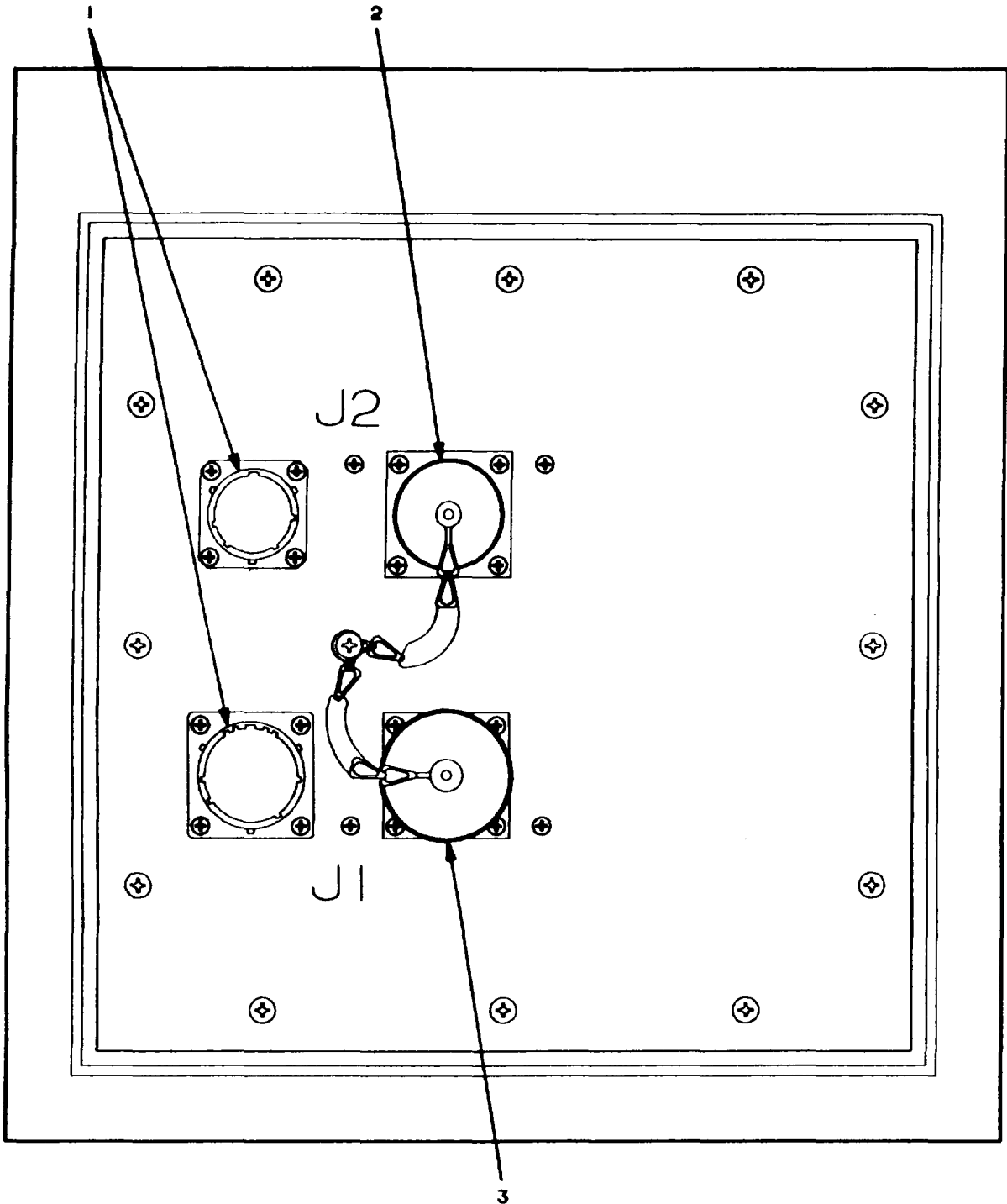
INTERNAL - Selects hydraulic driven generator system.

EXTERNAL - Selects external power source (This is not authorized on AN/TRQ-32(V))

2-6. EQUIPMENT CONTROLS, INDICATORS, AND CONNECTORS.

SIGNAL ENTRY PANEL

The signal entry panel is located behind the mast on the rear of the shelter.

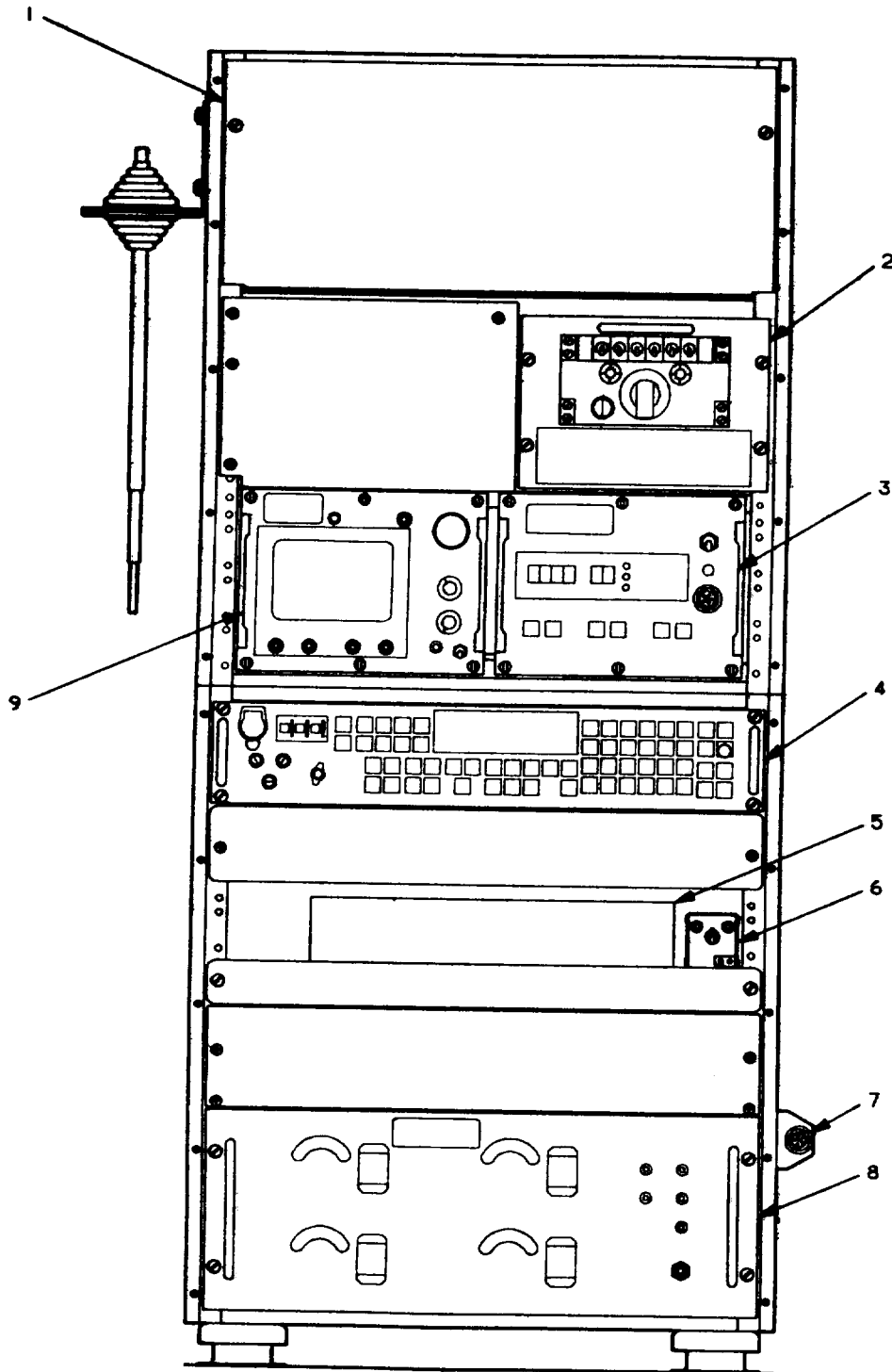


- 1. DUST CAP RETAINERS
- 2. DF ANTENNA CONNECTOR

- 3. RF PROCESSOR CONNECTOR

EQUIPMENT RACK 1

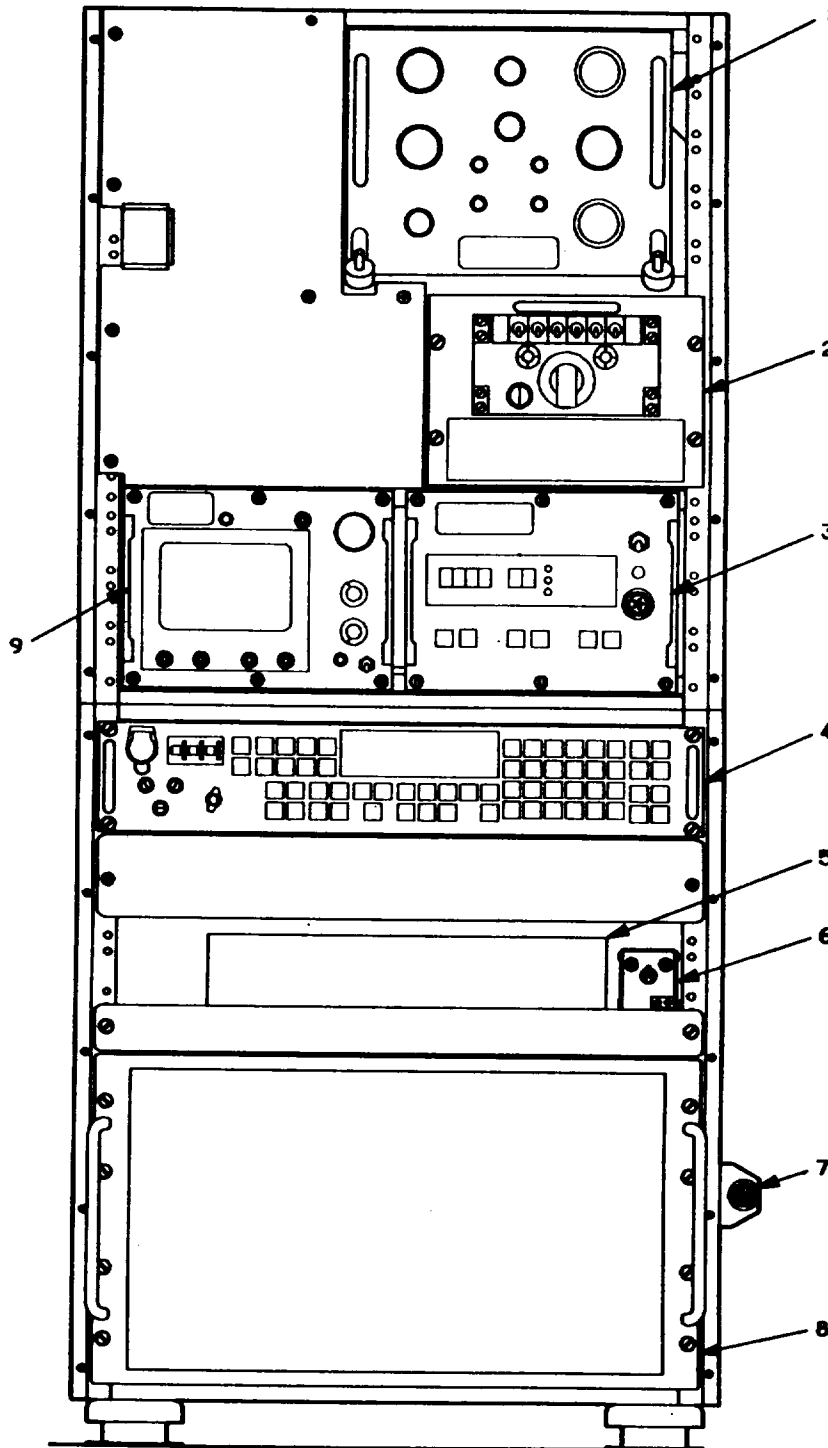
Equipment rack 1 contains seven electronic assemblies.



- | | | | |
|----|------------------------------|----|--|
| 1. | STORAGE COMPARTMENT | 6. | POWER SWITCH |
| 2. | INTERCOM CONTROL PANEL (ICP) | 7. | HEADSET CONNECTOR |
| 3. | OPERATOR CONTROL PANEL (OCP) | 8. | RADIO FREQUENCY DISTRIBUTION UNIT (RFDU) |
| 4. | RECEIVER CONTROL UNIT (RCU) | 9. | SIGNAL DISPLAY UNIT (SDU) |
| 5. | OPERATOR TERMINAL | | |

FQUIPMENT RACK 3

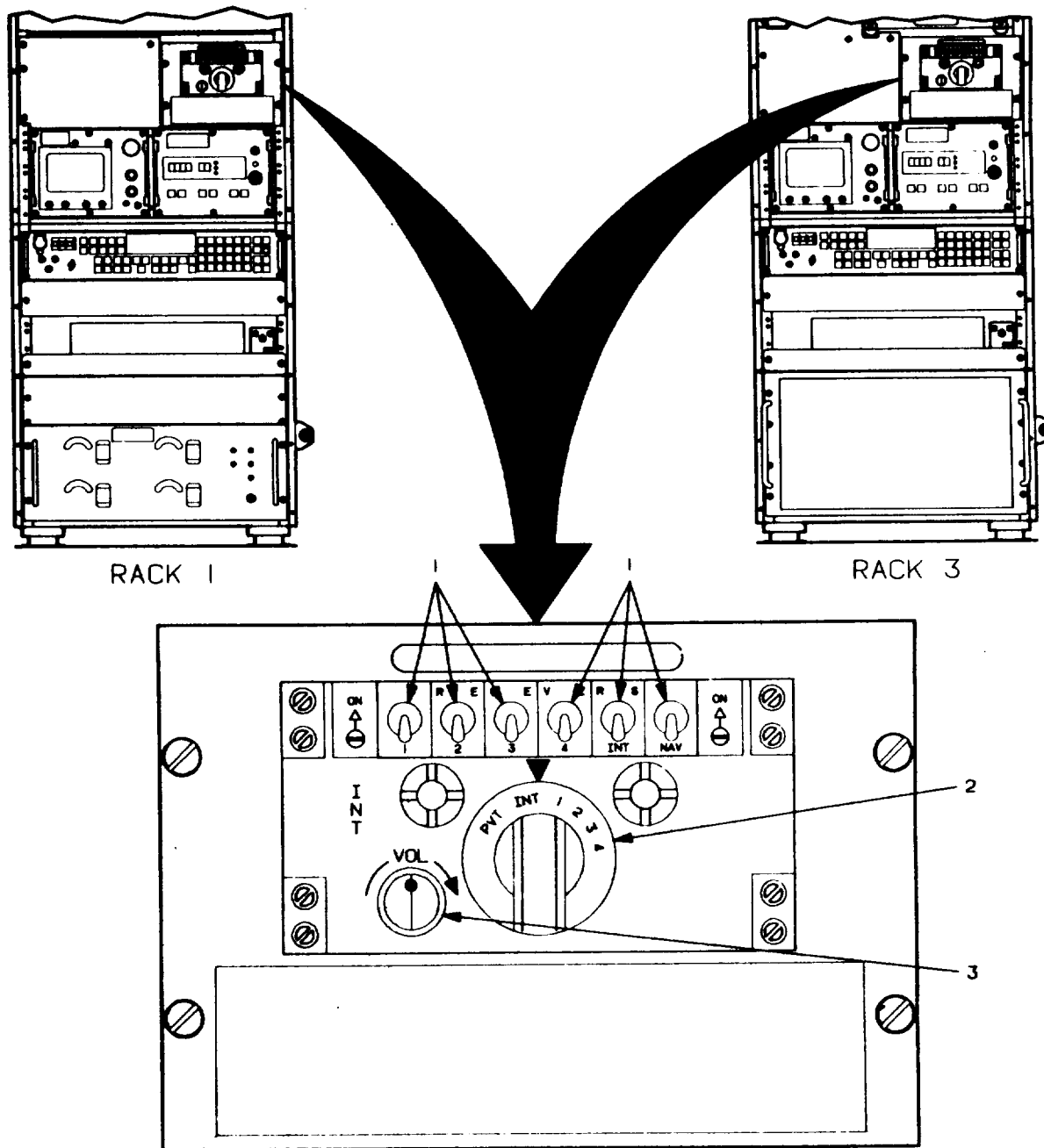
Equipment rack 3 contains eight electronic assemblies.



DIRECTION FIND CONTROL UNIT
(DFCU)
INTERCOM CONTROL PANEL (ICP)
OPERATOR CONTROL PANEL (OCP)
RECEIVER CONTROL UNIT (RCU)

5. OPERATOR TERMINAL
6. POWER SWITCH
7. HEADSET CONNECTOR
8. RECEIVER-ENCLOSURE UNIT (REU)
9. SIGNAL DISPLAY UNIT (SDU)

INTERCOM CONTROL PANEL



INTERCOM CONTROL PANEL (CONT)

1. RECEIVER SWITCHES (LISTEN) - When placed in ON (up) position, selects input to headset.
 - 1 - Enables headset to monitor R/T .
 - 2 - Enables headset to monitor voice recorder.
 - 3 - Enables headset to monitor VHF/UHF intercept.
 - 4 - Enables headset to monitor HF intercept.

INT - Enables headset to monitor intercom.

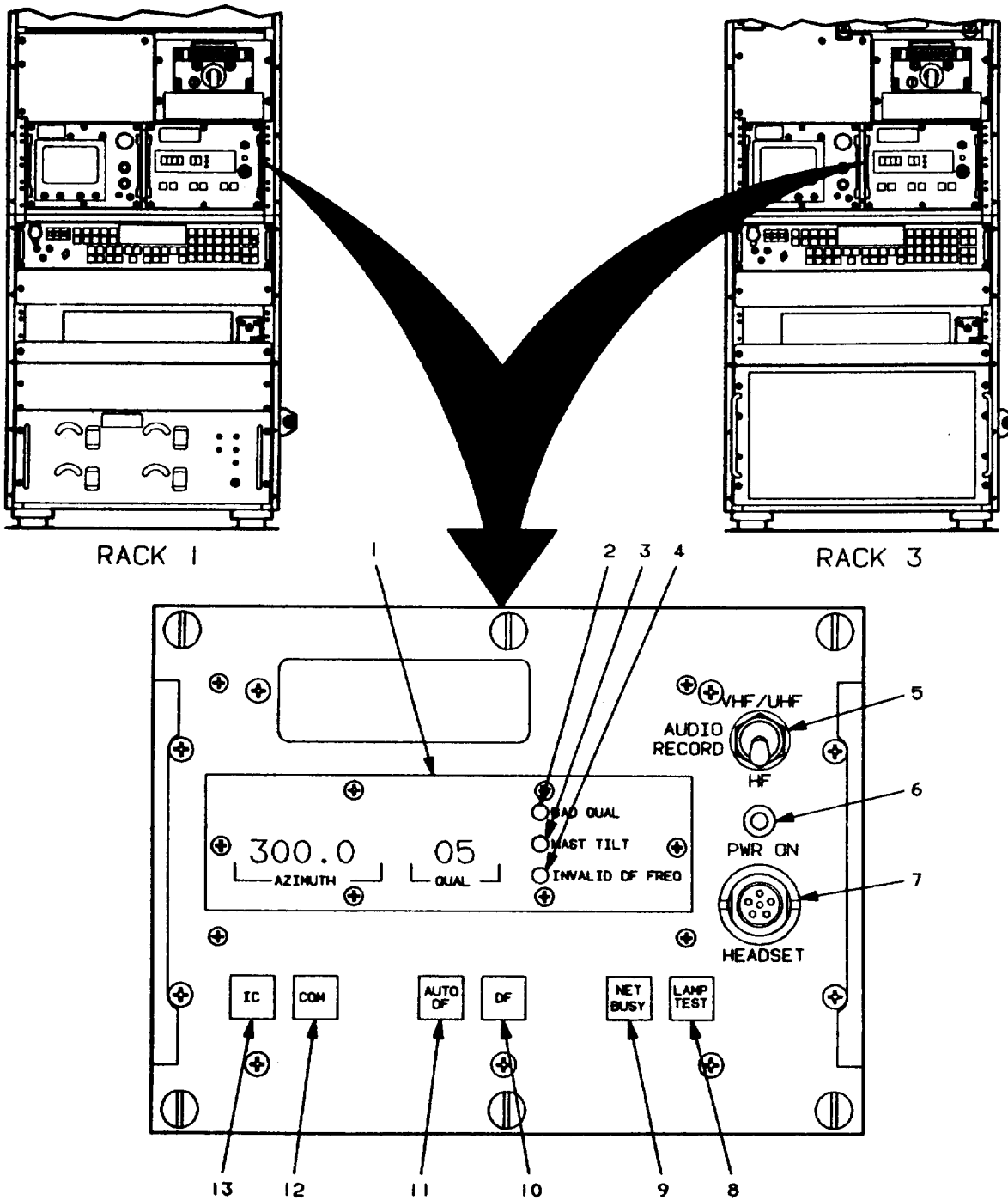
NAV - Enables headset to monitor other operator position audio.
2. ROTARY SWITCH (TALK) - Selects operator microphone and headset input.

PVT - Disables all inputs to operator headset except what has been selected by the receiver switch.

INT - Enables operator to talk to the other operator using intercom.

 - 1 - Applies microphone and headset to R/T for transmission.
 - 2 - Applies microphone to channel 2 of voice recorder for voice annotation. The headset audio will be as selected on the voice recorder.
 - 3 - Allows operator to monitor the VHF/UHF audio.
 - 4 - Allows operator to monitor the HF audio.
3. VOL (control knob) - Adjusts headset volume.

OPERATOR CONTROL PANEL



OPERATOR CONTROL PANEL (CONT)

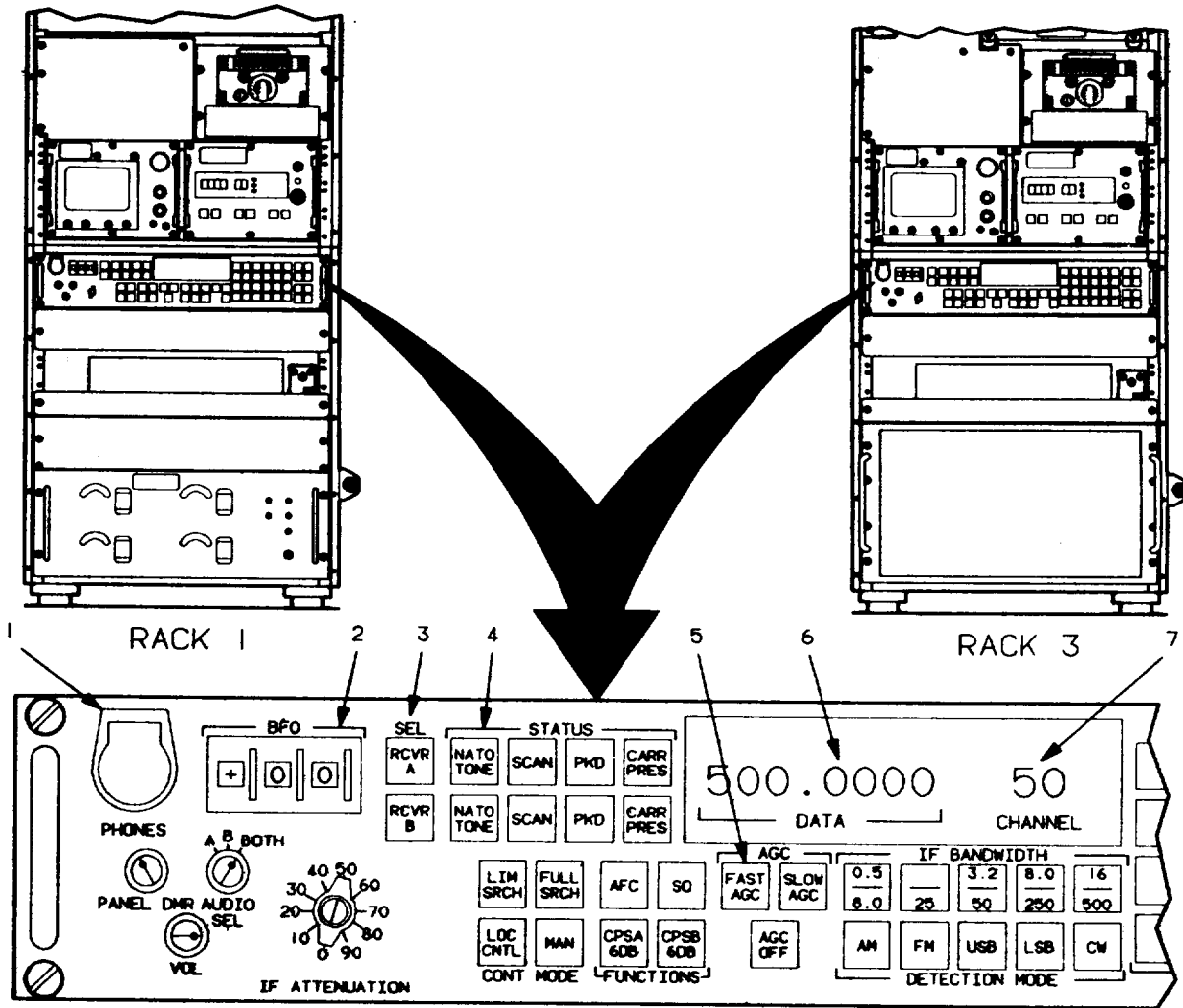
1. DISPLAY

AZIMUTH - Displays the Line-Of-Bearing angle measured from grid north to the target emitter.

QUAL - Displays quality factor of Line-Of-Bearing.

2. BAD QUAL - When lit, indicates that the quality factor of the DF LOB is unacceptable e.
3. MAST TILT - When lit, indicates that the mast is tilted in excess of 5 °.
4. INVALID DF FREQ - When lit, indicates that the selected frequency was out of DF range for the last DF LOB requested.
5. AUDIO RECORD Switch - VHF/UHF position routes audio from the VHF/UHF receiver to the recorder-reproducer . HF position routes audio from the HF receiver to the recorder-reproducer.
6. PWR ON Indicator - When lit, indicates power is applied to Operator Control Panel .
7. HEADSET Connector - Enables operator to connect headset.
8. LAMP TEST Pushbutton - When pressed, all pushbutton lamps and indicators shall be brightly lit.
9. NET BUSY - When brightly lit, indicates that the NCS has tasked the slave stations with a request for a DF LOB. Also lights at NCS during a fix.
10. DF Pushbutton - Executes OF request of selected frequency.
11. AUTO DF Pushbutton - Enables operator to automatically request that any signal intercepted will cause a DF LOB to be taken.
12. COM Indicator - When brightly lit, indicates incoming call on voice link. Either R/T or GUARD RECEIVER activation will light indicator. If NET BUSY is also lit, indicates data transmission between AN/TRQ-32(V) systems.
13. IC Pushbutton/Indicator - When brightly lit, indicates call on intercom. Remains lit only while either operator's IC pushbutton is depressed.

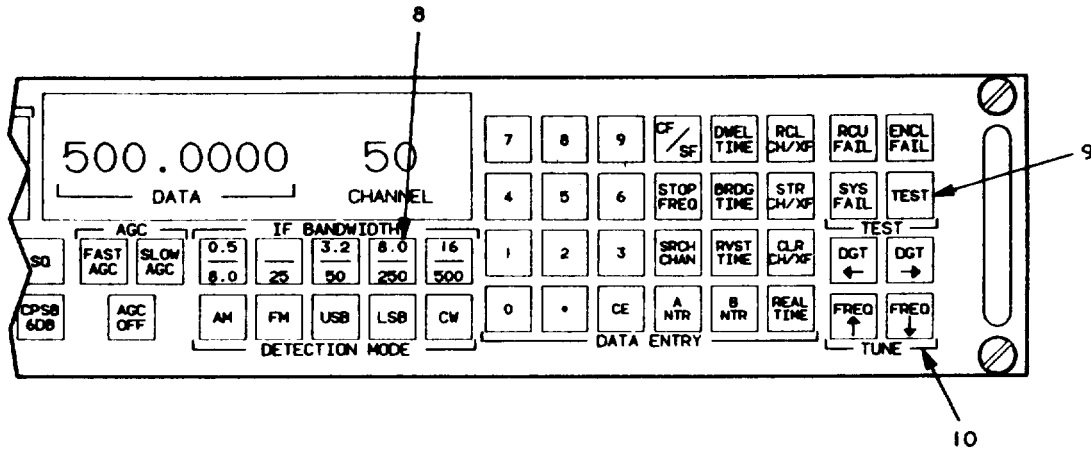
RECEIVER CONTROL UNIT



RECEIVER CONTROL UNIT (CONT)

1. PHONES jack - Provides receiver audio when a headset is plugged in. (Not normally used as headset is not provided.)
2. BFO Control Switches - Adjusts the frequency of the variable BFO in the HF receiver, when in the CW mode.
3. SEL Keys (Receiver Select) - Two keys used to select and display the active receiver.
 - RCVR A Key (Receiver A) - Transfers panel controls and displays to receiver A, while receiver B continues operating according to its programming.
 - RCVR B Key (Receiver B) - Transfers panel controls and displays to receiver B, while receiver A continues operating according to its programming.
4. STATUS Indicators - Four indicators for each receiver, which indicate the status of the receivers.
 - NATO TONE - When lit, indicates NATO tone has been detected.
 - SCAN (Scanning) - when lit, indicates that the respective receiver is in a scanning mode.
 - PKD (Parked) - When lit, indicates that the respective receiver is parked on a frequency.
 - CARR PRES (Carrier Presence) - When lit, indicates that the respective receiver has detected a carrier.
5. AGC Keys - Selects the Automatic Gain Control characteristics for the operating receiver.
 - FAST AGC Key - Selects Automatic Gain Control operation having a 0.2 second delay time.
 - SLOW AGC KEY - Selects Automatic Gain Control operation having a 4.0 second delay time.
 - AGC OFF Key - Disables automatic gain control. Receiver gain is controlled only by the IF ATTENUATION control. For normal operation, FAST or SLOW AGC should be used.
6. DATA (Digital Readout) - Displays data entered through the Data Entry keyboard during Manual operation. During the Search modes the receiver tuned frequency is continuously displayed.
7. CHANNEL (Digital Readout) - Displays the channel number assigned to the frequency being tuned by the receiver being monitored.

RECEIVER CONTROL UNIT (CONT)



8. IF BANDWIDTH Keys - Selects various operating bandwidths for either type of receiver. The IF BANDWIDTH keys are labeled with one number over another number. The top number applies to receiver A. The bottom number applies to receiver B.

0.5/8.0 Key - Selects a 0.5 kHz IF bandwidth for the HF receiver, and an 8.0 kHz IF bandwidth for the VHF/UHF receiver.

BLANK/25 Key - Selects a 25 kHz IF bandwidth for the VHF/UHF receiver.

3.2/50 Key - Selects a 3.2 kHz IF bandwidth for the HF receiver, and a 50 kHz IF bandwidth for the VHF/UHF receiver.

8/250 Key - Selects an 8 kHz IF bandwidth for the HF receiver, and a 250 kHz IF bandwidth for the VHF/UHF receiver.

16/500 Key - Selects an 16 kHz IF bandwidth for the HF receiver, and a 500 kHz IF bandwidth for the VHF/UHF receiver.

RECEIVER CONTROL UNIT (CONT)

9. TEST Keys and Indicators

RCU FAIL Indicator - When brightly lit, indicates failure of the Receiver Control Unit.

SYS FAIL Indicator - When brightly lit indicates a failure of one or more of the following:

Receiver Enclosure Unit

Receiver (or Receiver is removed)

Receiver Control Unit

Receiver Power Supply

Receiver Interface Unit

ENCL FAIL Indicator - When brightly lit indicates a failure of one or more of the following units:

Receiver (or Receiver is removed)

Receiver Power Supply

Receiver Interface Unit

Receiver Enclosure Unit

TEST Key - Executes the Built-In-Test (BIT) routine which includes the following:

Lamp Test - Lights (brightly) front panel lamps.

Digital Readout Test - Turns on the data and channel display digit segments, decimal points, and cursor LED'S.

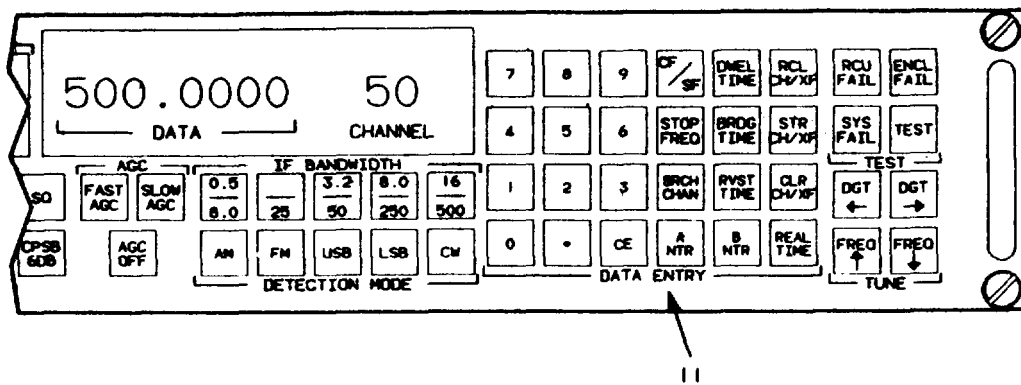
Also runs memory and interface tests.

10. TUNE Keys - Adjusts the receiver tuned frequency when it is displayed on the digital readout.

DGT Keys - Moves the cursor (dot located above a digit in the DATA display) to the left or right to indicate which digit is to be changed.

FREQ Keys - Steps the digit indicated by the cursor up or down one increment for each momentary depression. If either key is depressed for longer than one-half second the digit is stepped at a six increment/second rate.

RECEIVER CONTROL UNIT (CONT)



11. DATA ENTRY Keyboard - Used for entering, changing, and recalling data while in the manual mode.

Numeric Keys - Used to enter numeric digits.

Decimal Point Key - Used to enter decimal point, where necessary.

CE Key (Clear Entry) - Clears the data display.

CF/SF Key (Center/Start Frequency) - Used to enter a center frequency and tune the receiver to the frequency entered. Also used to designate the start frequency for a general search channel. When a new frequency is not entered the CF/SF key is used to recall the current receiver tuned frequency to the data display.

STOP FREQ Key (Stop Frequency) - Used to enter the stop frequency for a general search channel. This key is brightly lit whenever a stop frequency has been entered. When a new frequency is not entered the STOP FREQ key is used to recall the current stop frequency.

SRCH CHAN Key (Search Channel) - Used to designate which general search channel is to be used in the limited search mode. When a channel number is not entered the SRCH CHAN key is used to recall the previously programmed search channel.

RECEIVER CONTROL UNIT (CONT)

DWEL TIME Key (Dwell Time) - Used to enter the dwell time. When no dwell time is entered the DWEL TIME Key is used to recall the previously programmed dwell time.

BRDG TIME Key (Bridge Time) - Used to enter the bridge time. When no bridge time is entered the BRDG TIME Key is used to recall the previously programmed bridge time.

RVSTTIME Key (Revisit Time) - Used to enter the revisit time. When no revisit time is entered the RVST TIME Key is used to recall the previously programmed revisit time.

RCL CH/XF Key (Recall Channel/Excluded Frequency) - Used to recall channel parameters. When a channel number, with no decimal point, is entered and recalled the programmed parameters of that channel will be indicated by the appropriate lighted keys and the digital readout. The recalled parameters will also be immediately outputted to the receiver. Once a specific channel has been recalled, each successive depression of the RCL CH/XF key will recall the next memory channel in ascending numerical order, (channel 1 follows channel 50). When a channel number with a decimal point is entered and recalled, the exclude frequency information for that channel is recalled.

STR CH/XF Key (Store Channel/Exclude Frequency) - Used in Manual mode to program the receiver parameters indicated by the front panel into a specific memory channel, when no decimal point is used with the channel number. When the channel number is followed by a decimal point, the frequency information is entered as an exclude frequency. While in a Search mode and dwelling on a signal, a depression of the STR CH/XF key will store that frequency in the exclude frequency file of the general search channel currently being scanned. Up to four exclude frequencies can be stored in this manner for each search channel. After that any additional exclude frequencies will cause the oldest exclude frequency to be deleted from memory.

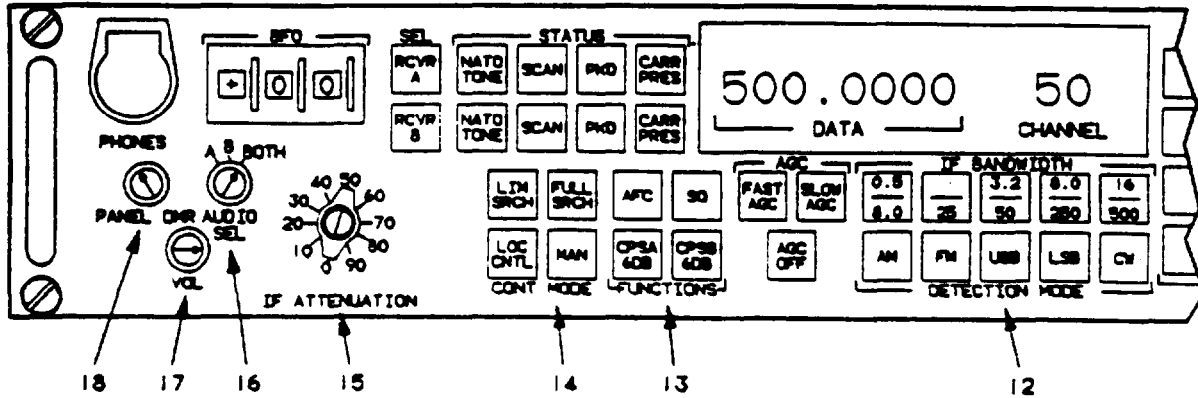
CLR CH/XF Key (Clear Channel/Excluded Frequency) - Used in the manual mode to clear the receiver parameters and excluded frequencies programmed under a designated channel number. When a channel number is not designated the CLR CH/XF Key is used to clear the information stored in the front panel registers.

A NTR Key - Enables NATO Tone Reject for receiver A.

B NTR Key - Enables NATO Tone Reject for receiver B.

REAL TIME Key - Used to set the RCU built-in real time clock. When no time is entered the REAL TIME key is used to recall the real time to the data display. Real time must be entered in the form of hours, minutes, decimal point, and then seconds using the 24 hour system.

RECEIVER CONTROL UNIT (CONT)



12. DETECTION MODE Keys - Selects the detection mode used by the operating receiver.

AM Key - Selects the AM mode.

FM Key - Selects the FM mode in the VHF/UHF Receiver, Disabled for the HF Receiver.

USB Key - Selects the Upper Sideband (USB) filters and the Single Sideband (SSB) demodulator when using the HF receiver. Enables the CW/SB demodulator when using the VHF/UHF receiver. (Both sidebands will be received in the VHF/UHF receiver, if present.)

LS8 Key - Selects the Lower Sideband (LSB) filters and the Single Sideband (SSB) demodulator when using the HF receiver. Enables the CW/SB demodulator when using the VHF/UHF receiver. (Both sidebands will be received in the VHF/UHF receiver, if present). -

CW Key - Selects the CW detection mode. The BFO frequency is fixed at the center of the IF when using the VHF/UHF receiver. When using the HF receiver, the BFO frequency is manually set via the BFO thumbwheel switches when in the CW mode, but is fixed at the center of the IF when in the USB or LSB mode.

RECEIVER CONTROL UNIT (CONT)

13. **FUNCTIONS Keys** - Provides a means for activating specific functional circuits.

AFC Key - Enables digital Automatic Frequency Control of detected AM or FM signals for VHF/UHF Receivers.

SQ Key (Squelch) - Enables the Squelch function causing the receiver audio at the RCU headphone jack and the audio output of the receiver enclosure to be blanked whenever a carrier is not present.

CPSA 6DB Key - Changes channel A carrier presence detection from 12 dB to 6 dB signal-to-noise ratio (S/N).

CPSB 6DB Key - Changes channel B carrier presence detection from 12 dB to 6 dB signal-to-noise ratio (S/N).

14. **CONT MODE Keys (Control Mode)** - Selects the mode of system control.

LOC CNTL Key (Local Control) - Shall be enabled for each operating mode.

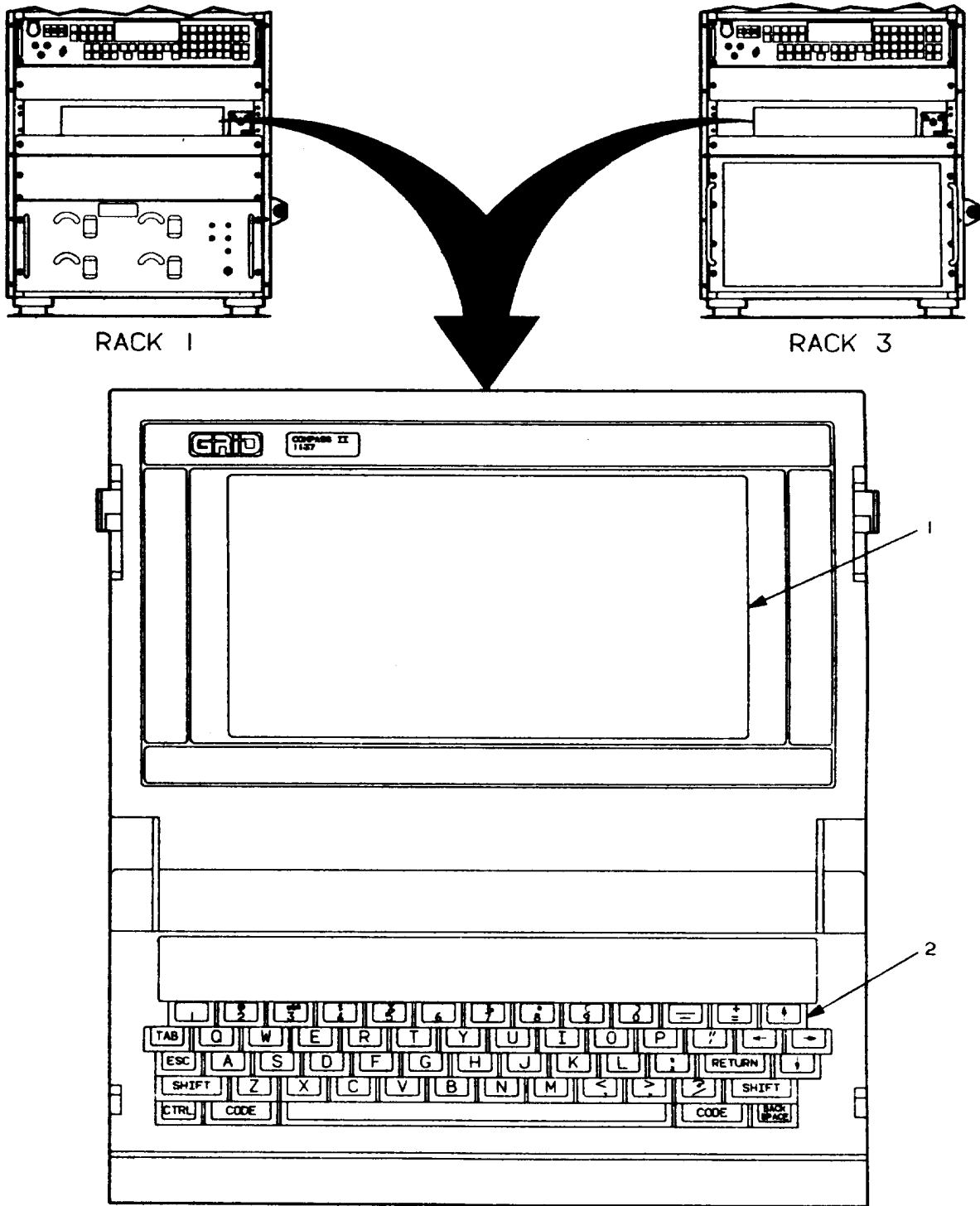
MAN Key (Manual) - Places the RCU in the manual operating mode. While in this mode, all receiver parameters must be established via the RCU front panel controls.

LIM SRCH Key (Limited Search) - Starts a limited search mode, or resumes a limited search mode scan.

FULL SRCH Key (Full Search) - Starts a full search mode, or resumes a full search mode scan.

15. **IF ATTENUATION Control** - Adjusts the IF gain of the active receiver. When FAST or SLOW AGC is selected the IF ATTENUATION switch sets the AGC threshold. When AGC is disabled, the IF gain is totally controlled by the IF ATTENUATION Control. Coarse Tune is in 10 dB increments. Fine Tune is in 1 dB increments.
16. **AUDIO SEL Control (Audio Selector)** - Selects the audio from either receiver A, receiver B, or BOTH to be monitored at the PHONES jack. When BOTH is selected receiver A audio will be heard in the left ear piece and receiver B audio will be heard in the right ear piece. (Not used)
17. **VOL Control (Volume)** - Adjusts the audio level of the phone jack output (Not normally used).
18. **PANEL DMR Control (Panel Dimmer)** - Adjusts brightness of all switch keys and indicators.

OPERATOR TERMINAL



OPERATOR TERMINAL (CONT)

1. SCREEN - Provides operator with visual display of operator input, results of system operation and incoming/outgoing messages.
2. KEYBOARD - Allows operator to input data to the system.

Within a screen, use the following keys:

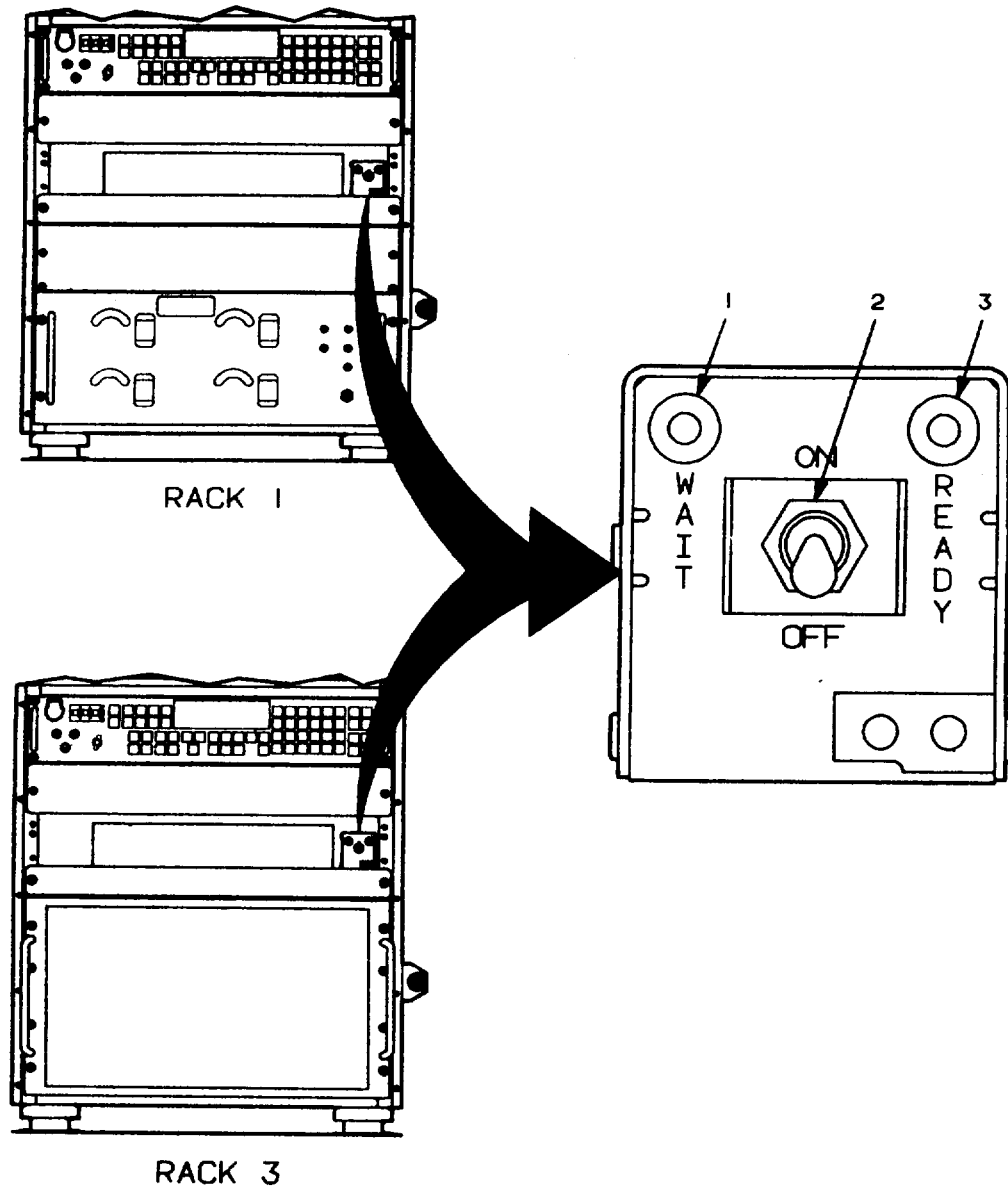
- RETURN - Move to next line
- ARROW KEY - Move one space letter
- CODE-BACKSPACE - Erase preceding word
- BACKSPACE - Erase preceding letter
- Combinations of CODE, SHIFT and ARROW KEYS - Move Several spaces

CAPS-LOCK is accomplished by using the SHIFT and ESC keys.

To move around among various screens, the following key definitions are available:

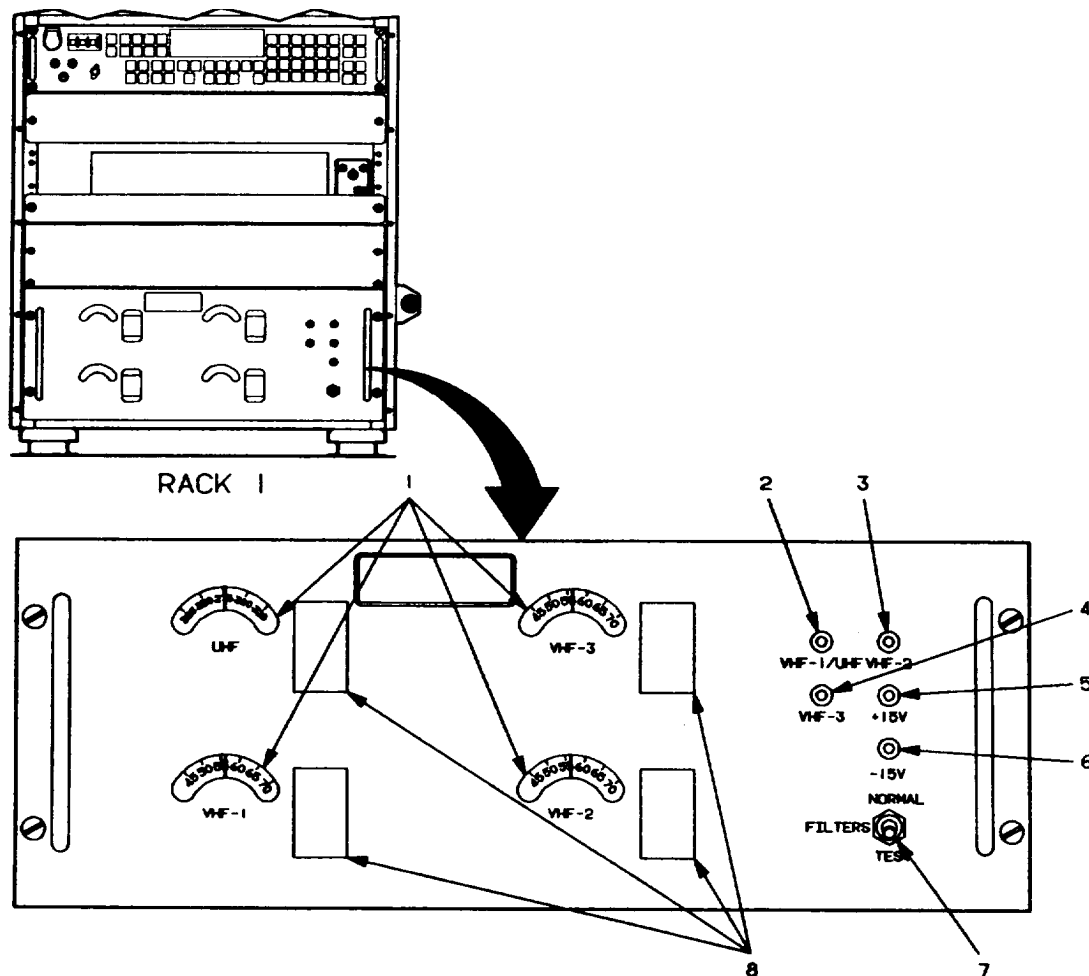
- CODE-RETURN - Enter data into computer
- CODE-? - Help information for the screen
- CODE-ESC - Return to main menu
- ESC - Return to previous screen
- CODE-S - Review Private Scratch Pad
- CODE-U - Show memory and media storage

POWER SWITCH



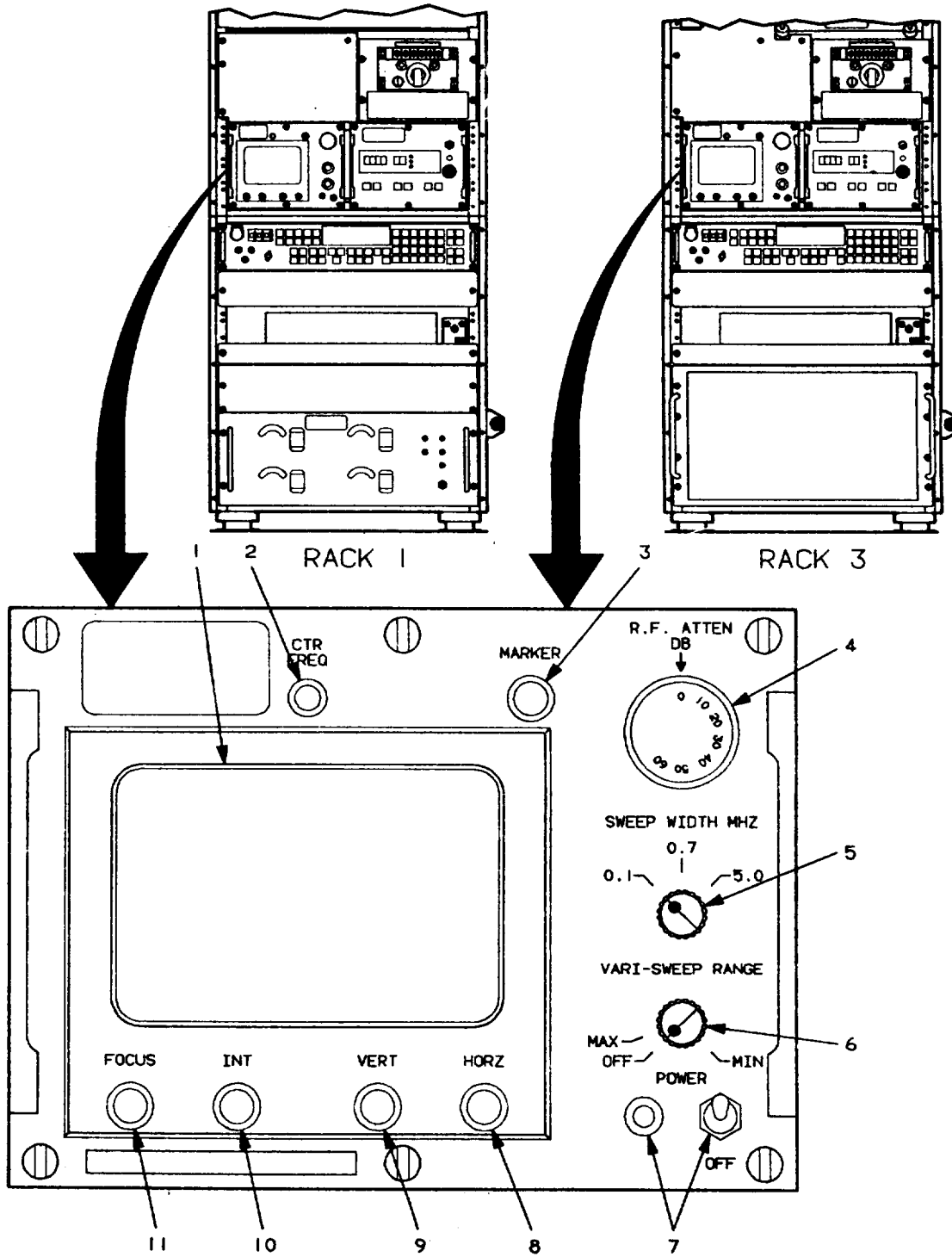
1. WAIT indicator - When lit, indicates operator terminal is not at operating temperature and is not ready for use.
2. ON/OFF Switch - Provides power to operator terminal.
3. READY indicator - When lit, indicates operator terminal is ready for use.

RFDU



1. FREQUENCY displays - Enables operator to visually identify appropriate frequency to which filter is tuned. The filters labeled VHF-1, VHF-2, and VHF-3 should be tuned to frequency of the RT-524A. The UHF should be tuned to frequency of UHF receiver-transmitter.
2. VHF-1/UHF Indicator Indicates high power (-7 dBm) active signal on VHF-1/UHF.
3. VHF -2 Indicator Indicates high power (-7 dBm) active signal on VHF-2.
4. VHF-3 Indicator - Indicates high power (-7 dBm) active signal on VHF-3.
5. +15V Indicator - When lit, indicates +15 Vdc is applied to RFDU.
6. -15V Indicator - When lit, indicates -15 Vdc is applied to RFDU.
7. FILTERS Switch - Allows operator to switch in the notch filters when placed in the TEST position. In the NORMAL position, the filters are switched in automatically whenever the transmitter is keyed.
8. TUNING Control - Enables tuning of the notch filters.

SIGNAL DISPLAY UNIT

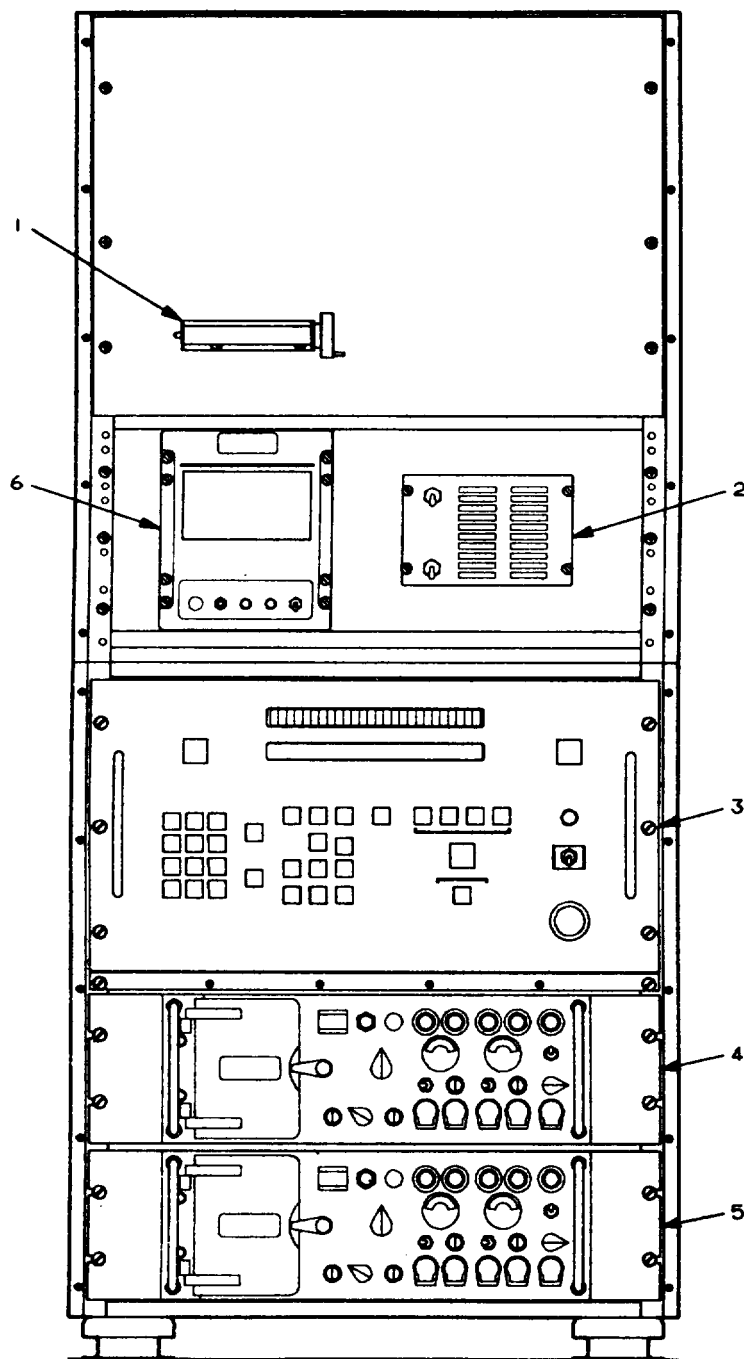


SIGNAL DISPLAY UNIT (CONT)

1. DISPLAY - Allows operator to view selected spectrum.
2. CTR FREQ - Allows operator to center display.
3. MARKER - Generates internal signal to allow the operator to calibrate and test the display.
4. R.F. ATTEN DB - Allows operator to attenuate displayed signal level down to -40 dBm or desired level. The attenuator has a 60 dB range and is adjustable in 10 dB increments.
5. SWEEP WIDTH MHZ - Selects the sweep width of the display from one of three fixed screen widths (0.1, 0.7, or 5.0 MHz)
6. VARI-SWEEP RANGE - Allows operator to decrease the sweep width that was selected by the Sweep Width control.
7. POWER
 - Switch - Applies power to the Signal Display Unit.
 - Indicator - When lit, indicates power is applied.
8. HORZ - Controls horizontal position of display.
9. VERT - Controls vertical position of display.
10. INT - Controls level of intensity of display.
11. FOCUS - Allows operator to adjust display for a crisp, clear display.

EQUIPMENT RACK 2

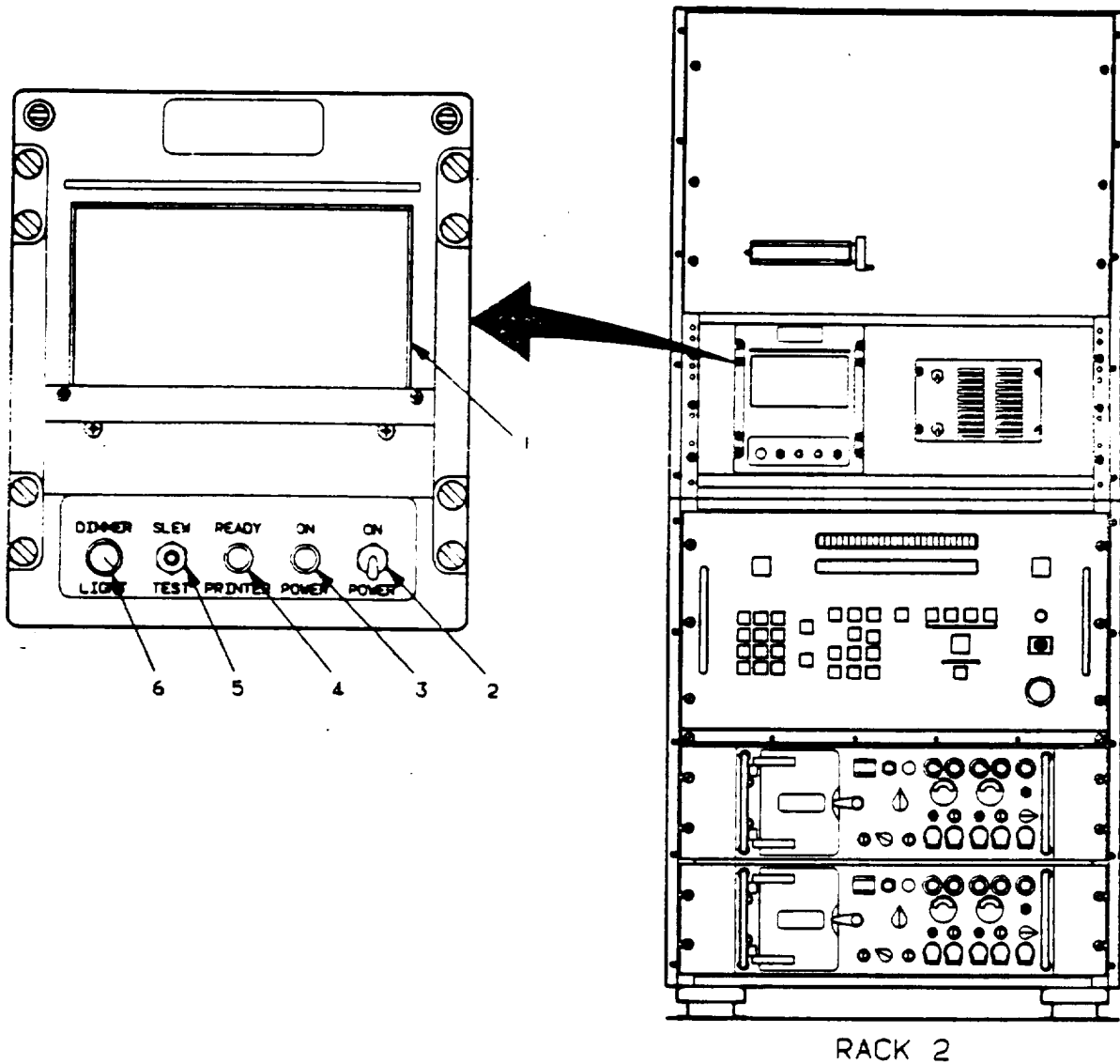
Equipment Rack 2 contains five electronic assemblies.



- 1. PAPER ROLLER
- 2. CAUTION PANEL
- 3. SYSTEM CONTROLLER

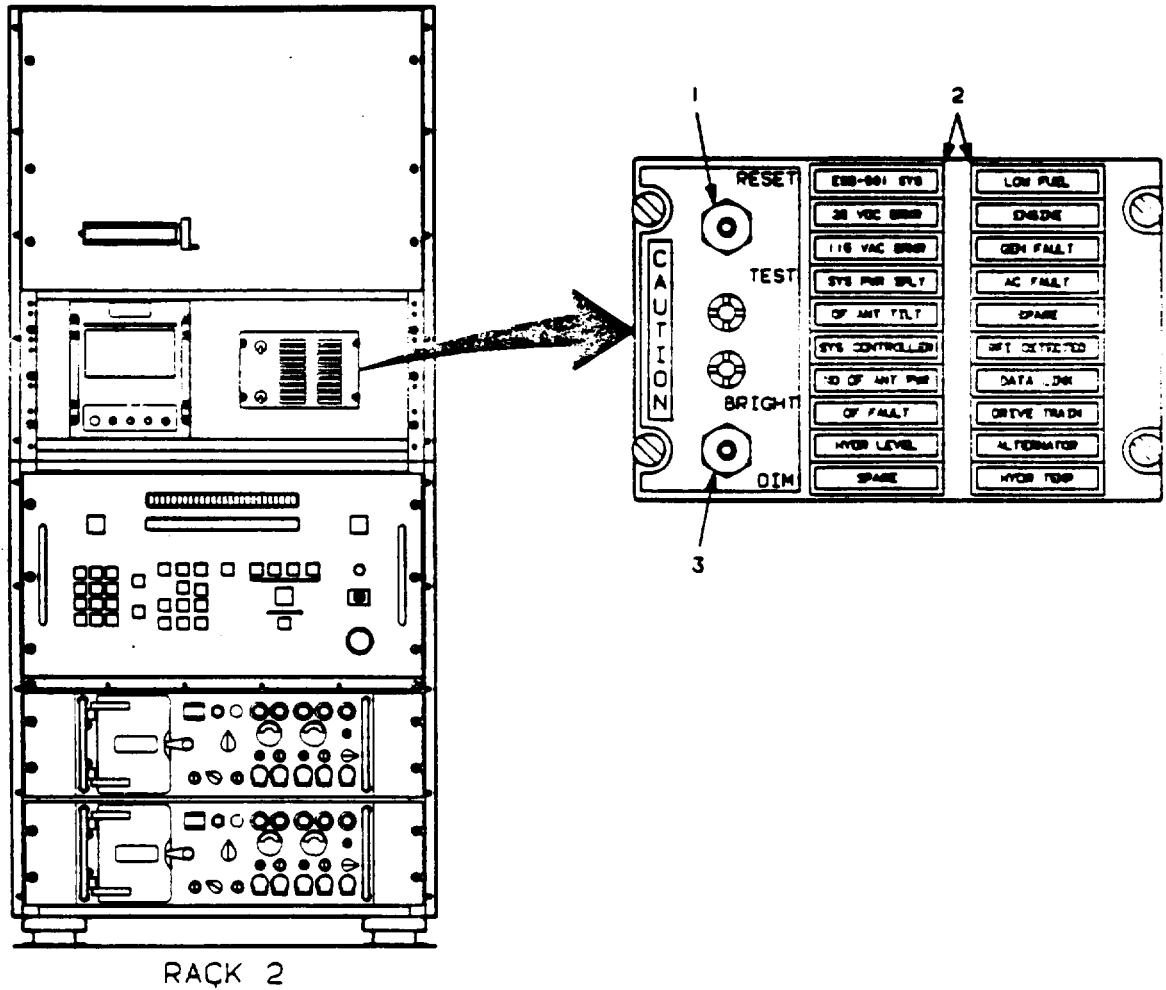
- 4. RECORDER (OP #1)
- 5. RECORDER (OP #2)
- 6. PRINTER

PRINTER



1. DISPLAY WINDOW - Allows operator to view information printed on paper.
2. POWER Switch - Applies power to the printer when placed in the ON position.
3. POWER Indicator - Lights when power is applied to the printer.
4. PRINTER READY Indicator - Lights when printer is ready to print incoming data.
5. TEST/SLEW Switch - Three-position switch; SLEW position advances paper without printing. TEST position causes printer to print out a test message containing the entire printable character set, and center position is normal operation.
6. LIGHT DIMMER Control - Adjusts lighting intensity.

CAUTION PANEL



1. RESET/TEST switch - In the TEST position, all lamps should light.
2. Caution lamps - Each lamp is dedicated to a given alarm condition and lights when alarm condition exists as described below.

ESS-501 - Indicates a fault in the AN/TRR-35(V)3.

DATA LINK - Indicates a fault in data link processor or KG-84/KG-84A (AN/TRQ-32(V)2 only).

CAUTION PANEL (CONT)

SYS PWR SPLY - Indicates a fault in the system power supply.

28 VDC BRKR - Indicates 28 Vdc breaker tripped or open. (Any 28 volt breaker on power distribution panel.)

DF ANT TILT - Indicates vehicle/DF antenna is tilted in excess of 5°.

SYS CONTROLLER - Indicates a fault in the system controller.

NO DF ANT PWR - Indicates no power out of antenna power supply.

DF FAULT - Indicates overtemperature in DF control unit.

HYDR LEVEL - Indicates hydraulic fluid level is low.

SPARE

LOW FUEL - Indicates vehicle is low on fuel.

ENGINE - Indicates a loss of oil pressure and/or vehicle over-temperature.

GEN FAULT - Indicates fault in the hydraulic driven generator system.

AC FAULT - Indicates fault in the hydraulic driven air conditioning system .

SPARE

RFI DETECTED - Indicates high power signal level at the input to the RFDU.

115 VAC BRKR - Indicates one or more of the 115 Vac breakers are tripped or open. (Any 115-volt breaker on the power distribution panel .)

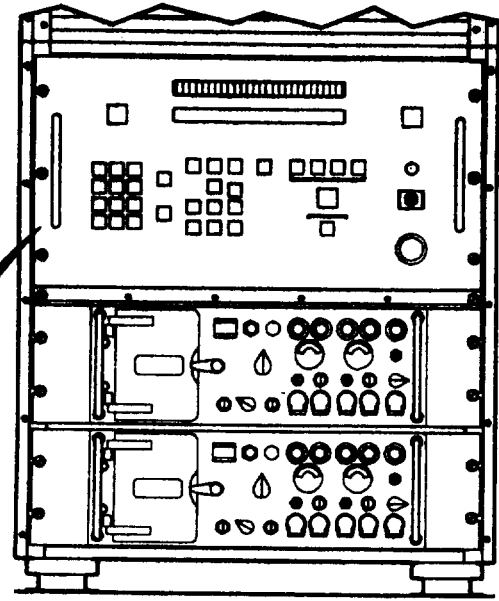
DRIVE TRAIN - Indicates a vehicle transfer case over-temperature.

ALTERNATOR - Indicates a fault in one or both of the vehicle alternators.

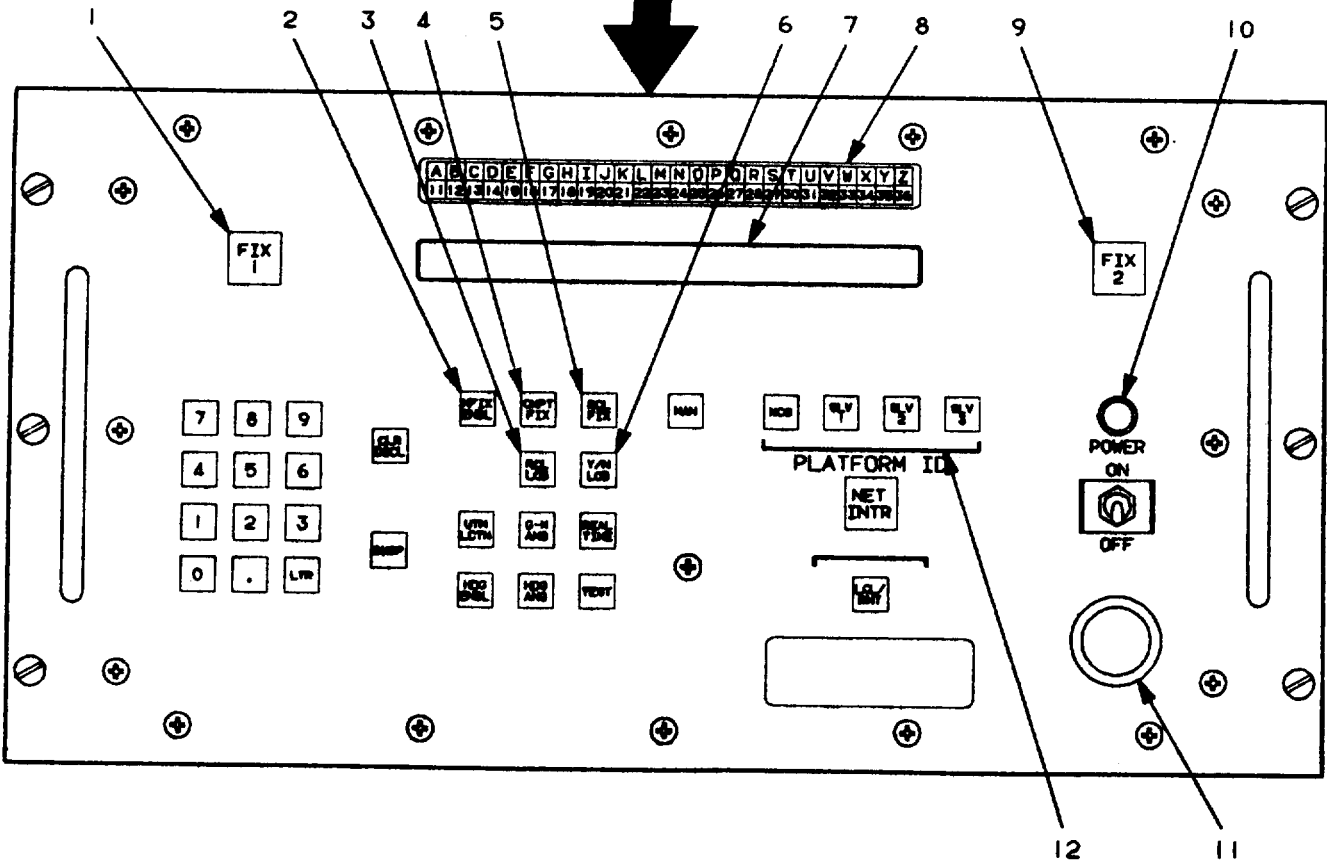
HDR TEMP - Indicates an over-temperature condition in the hydraulic fluid.

3. BRIGHT/DIM switch - Controls intensity of caution lamps.

SYSTEM CONTROLLER



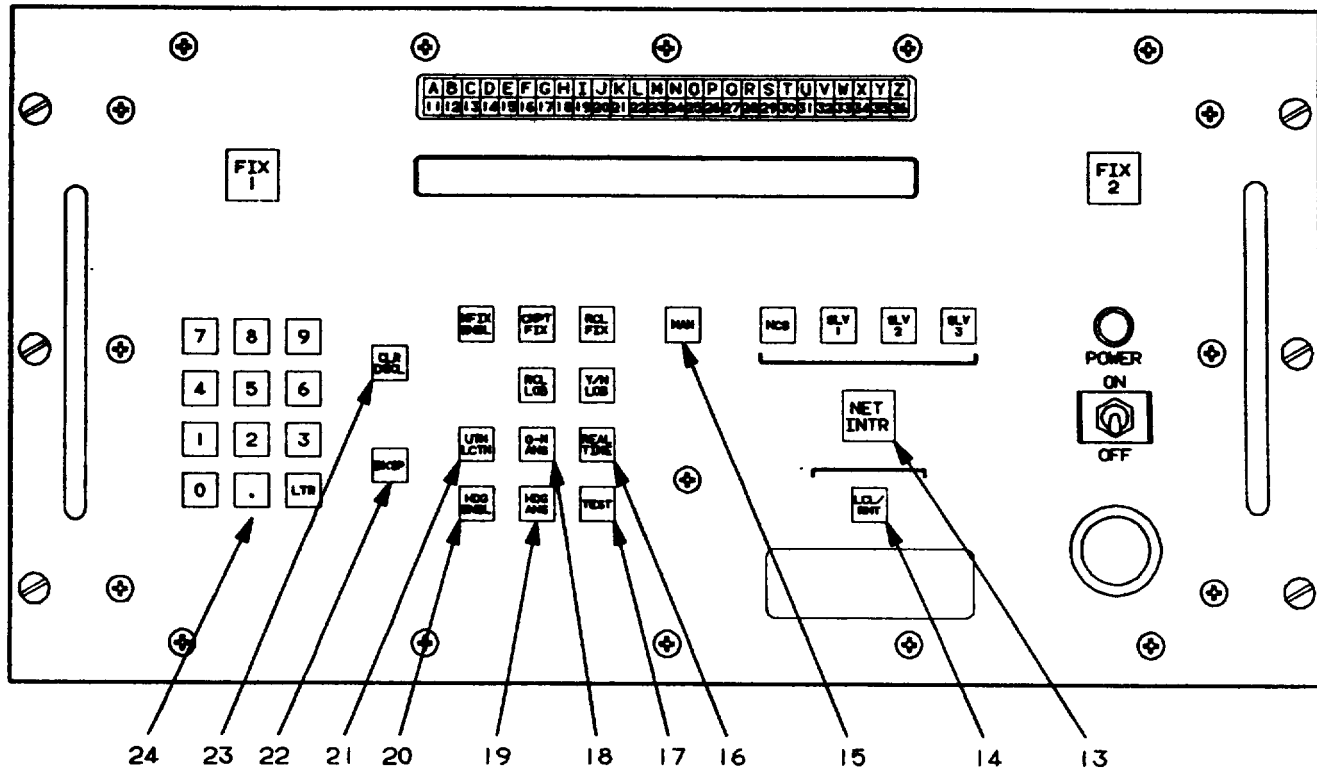
RACK 2



SYSTEM CONTROLLER (CONT)

1. FIX 1 Key - Provides the NCS operator no. 1 with fix capability in the automatic netted mode.
2. MFIX ENBL (Manual Fix Enable) Key - Provides operator with manual fix computation capability in manual mode.
3. RCL LOB (Recall LOB) Key - Provides for manual entry or review of (UTM locations and LOBS for each platform when manually computing fix. May be used by the NCS operator to view slave data.
4. CMPT FIX (Compute Fix) Key - Enables fix computations after manual entries or obtaining data from the net.
5. RCL FIX (Recall Fix) Key - Recalls the result of the last fix calculation.
6. Y/N LOB (Yes/No LOB) Key - Provides the operator with the capability of enabling/disabling any displayed LOB from the data base.
7. DISPLAY - Provides operator the capability of viewing data entered in the system controller, BITE error messages, fixes, prompts, and recalled information.
8. ALPHABETICAL CODE - Provides conversion codes for making alphabetical entries.
9. FIX 2 Key - Provides the NCS operator no. 2 with fix capability in the automatic netted mode.
10. POWER
 - INDICATOR - When lit, indicates power is applied to the system controller.
 - SWITCH - Applies power to system controller.
11. SONALERT - Provides the operator with an audible alert when net interrupt has been initiated, power up tests are being run, or when tested in operator initiated BITE.
12. PLATFORM ID - Establishes system as net control or slave on automatic network.
 - NCS Key - Establishes the system as the net control station in an automatic network.
 - SLV 1-3 Keys - Establishes the system as a slave in an automatic network.

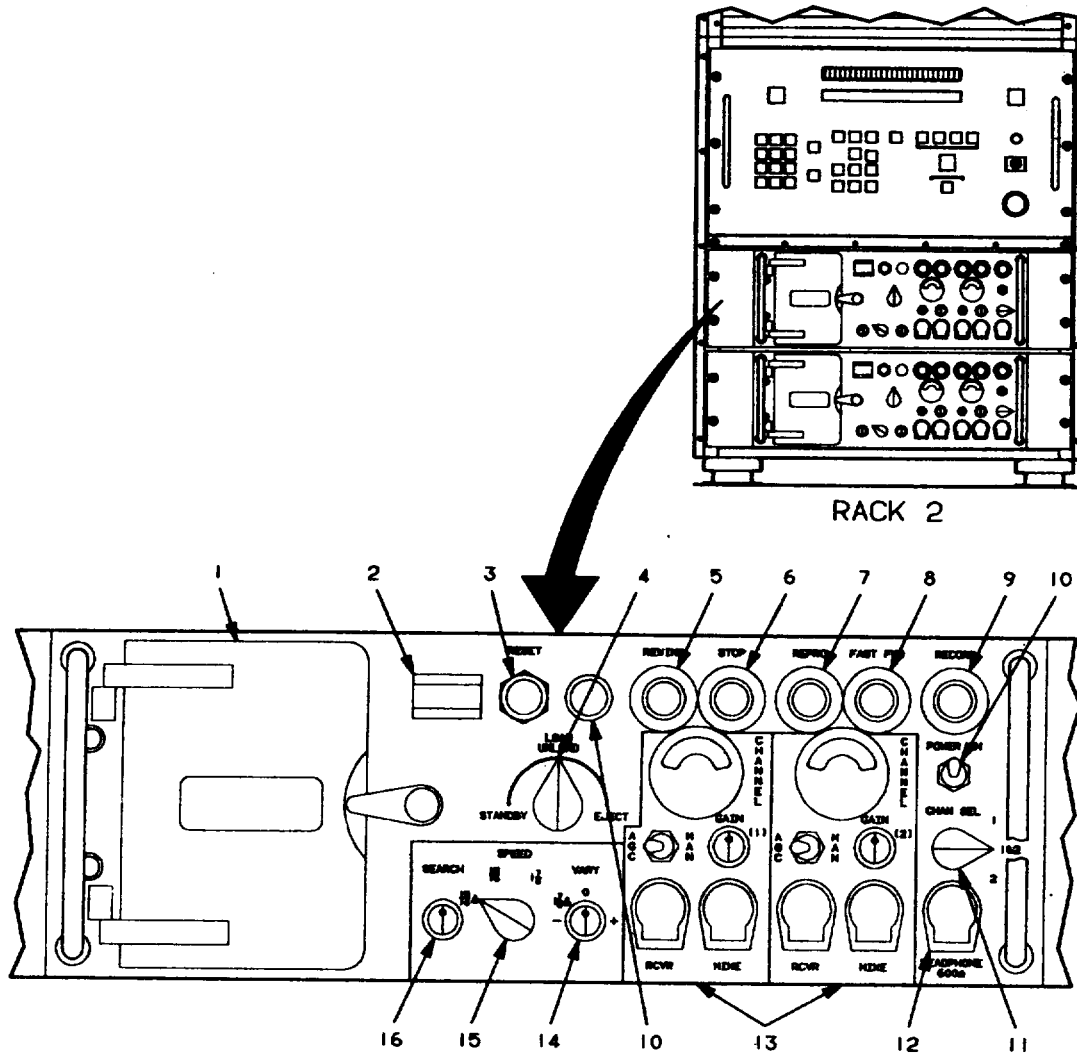
SYSTEM CONTROLLER (CONT)



SYSTEM CONTROLLER (CONT)

13. NET INTR (Interrupt) Key - Provides the operator the capability of notifying the net of the desire to break the net. (Automatic netting mode only) .
14. LCL/RMT (Local/Remote) key - When pressed allows the operator terminals to load the operating program and take control. (RMT) Can not be returned to LOCAL mode.
15. MAN (Manual) Key - Enables the manual mode and provides facilities for the operator to set up the net, verify parameters, check net problems, pass LOB information and pass fix information via voice link.
16. REAL TIME Key - Used for entering or recalling Time Of Day by day, month, year, hour, and minute.
17. TEST Key - Used to perform operator initiated BITE by entering the test number and pressing the TEST key in manual mode.
18. G-M ANG (Grid to Magnetic Angle) Key - Provides for entry or recall of the difference between grid north and magnetic north. This is a mandatory entry that is read from the map legend.
19. HDG ANG (Heading Angle) Key - Provides manual entry of magnetic heading when the operator suspects a failure in the fluxgate. Also used to recall last heading angle entered.
20. HDG ENBL (Heading Enable) Key - Enables manually entered Heading Angle to be used instead of fluxgate output for any computation.
21. UTM LCTN (Universal Transverse Mercator Location) Key - Provides for entry or recall of platform location data.
22. BKSP (Backspace) Key - Causes display to be shifted right one space.
23. CLR DSPL (Clear Display) - Clears display.
24. NUMERIC KEYPAD - Used for entering data.
 - 0-9 Keys - Allows numeric entry.
 - Key (Period Key) - Provides for decimal entry and used to terminate the UTM location entry.
 - LTR (Letter) Key - Enables letter entries from the numeric keypad by converting two number codes to letters.

RECORDER



1. CASSETTE DOOR
2. COUNTER - Three-digit counter that permits operator to index a specific point on the tape.
3. RESET - Resets tape index counter to zero (000).
4. STANDBY LOAD/UNLOAD EJECT

STANDBY - Unit is ready for recording/reproducing.

LOAD/UNLOAD - Used for loading or unloading cassette in magazine.

EJECT - Disengages tape cartridge from transport drive for easy removal . Cassette door must be open.

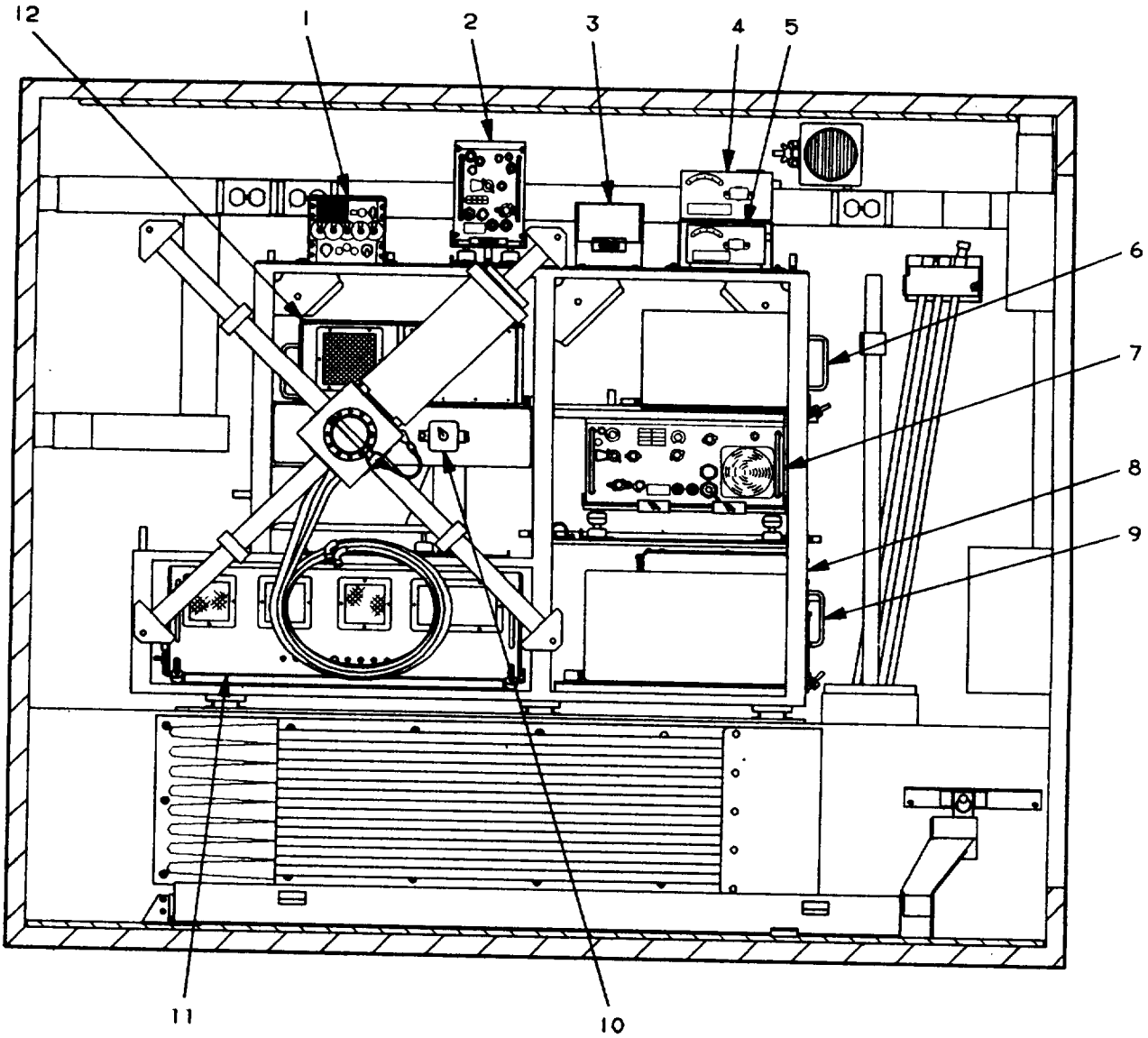
5. REWIND - Selects rewind mode.
6. STOP - Stops tape motion.

RECORDER (CONT)

7. * REPRO - Selects playback mode.
8. FAST FWD - Selects fast forward mode.
9. * RECORD - Selects record mode.
10. POWER ON - Applies power to unit. Lamp will light when toggle switch is in POWER ON position.
11. CHAN SEL - Monitors (with headphones) desired channel(s) during record or playback mode.
12. HEADPHONE 600 Ω - Output for headphones. (Not used)
13. CHANNEL (1) and CHANNEL (2)
 - AGC/MAN - Selects AGC or manual for recording. Selects automatic control of the record/reproduce amplifiers gain (AGC) to provide constant output with varying input, or manual (MAN) control of signal level by use of GAIN potentiometers that permit adjusting record/reproduce amplifier output signal levels when AGC/MAN switches are in MAN (manual) position.
 - CHANNEL 1 VU METER - Indicates record signal level; red scale indicates proper signal level.
 - CHANNEL 2 VU METER - Indicates record signal level; red scale indicates proper signal level.
 - GAIN - Adjusts signal levels when AGC/MAN switches are in MAN position.
 - RCVR - Input for receiver cable.
 - MIKE - Input for microphone signal cable. (Not used)
14. VARY - Permits speed adjustment up to \pm 30 percent of base speeds. Control does not operate in record mode.
15. SPEED - To select proper tape speed for recording/reproduction, rotate SPEED switch to either 15/16 or 1-7/8 position. In these positions, speed is constant within \pm 2 percent. When SPEED rotary switch is placed in the variable 15/16 A or 1-7/8 A control, the VARY control is used to adjust the base speed.
16. SEARCH - Controls tape speed during FAST FWD or REWIND modes.
 - * May also be used with foot switch.

EQUIPMENT RACK 4

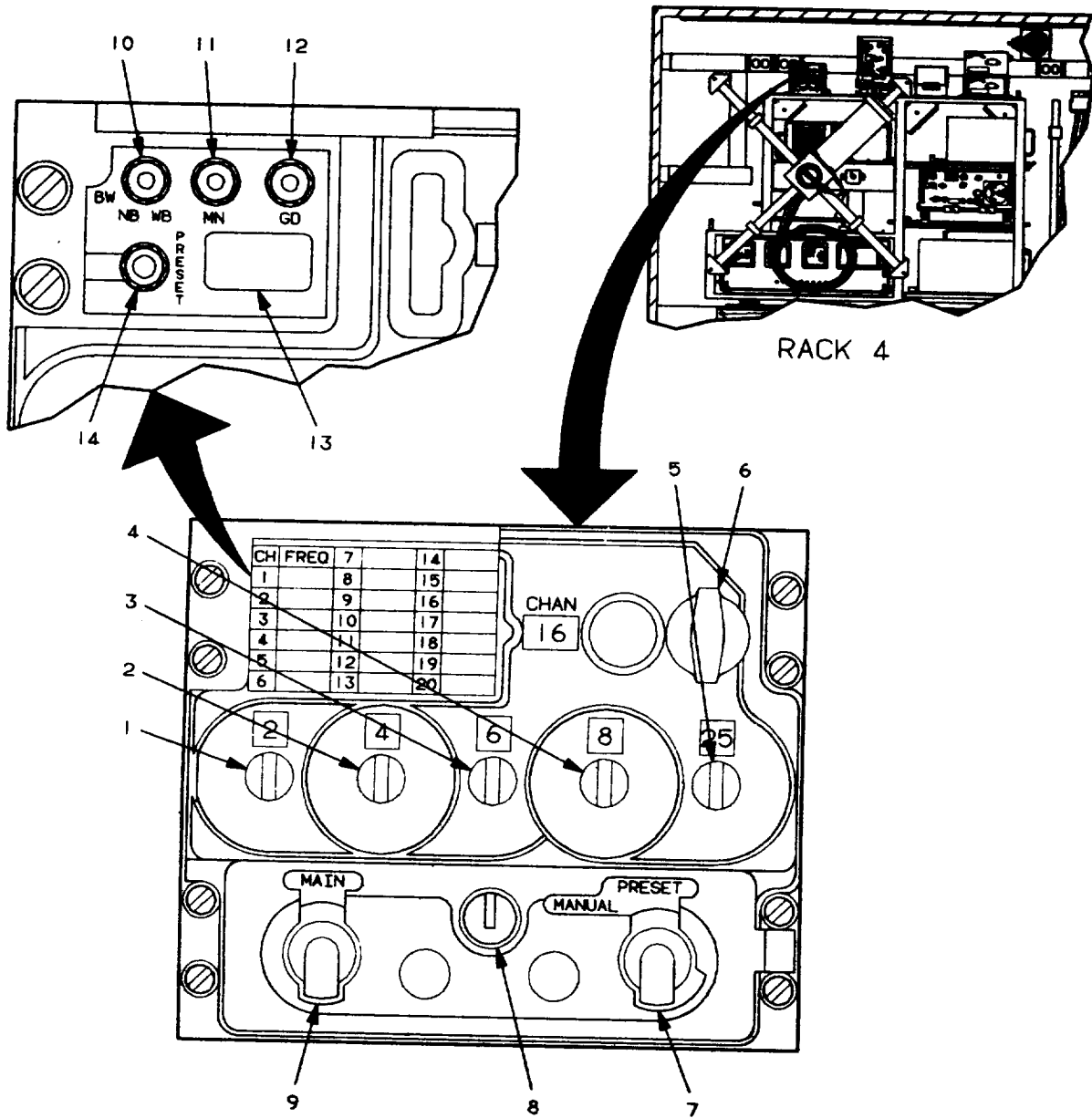
Equipment Rack 4 contains ten electronic assemblies.



EQUIPMENT RACK 4 (CONT)

1. UHF RADIO CONTROL - (V)2 ONLY
2. GUARD RECEIVER, R-442/VRC
3. KY-57
4. UHF BANDPASS FILTER
5. VHF BANDPASS FILTER
6. KG-84 or KG-84A - (V)2 ONLY
7. RT-524A
8. DISK DRIVE CONTROL
9. HARD DISK DRIVE
10. AUDIO FREQUENCY SWITCH
11. SYSTEM POWER SUPPLY
12. DATA LINK PROCESSOR

UHF RADIO CONTROL



1. Manual selector switch - Used to select 100's digits of frequency (either 2 or 3) in MHz.
2. Manual selector switch - Used to select 10's digits of frequency (0 through 9) in MHz.
3. Manual selector switch - Used to select units digit of frequency (0 through 9) in MHz.

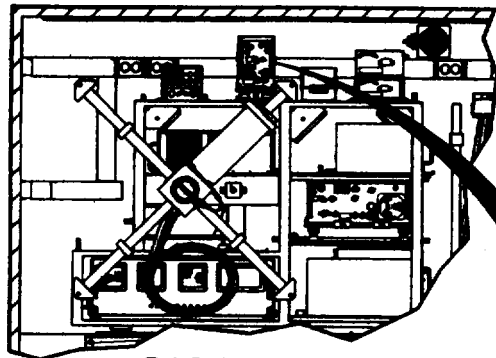
UHF RADIO CONTROL (CONT)

4. Manual selector switch - Used to select tenths digit of frequency (0 through 9) in MHz.
5. Manual selector switch - Used to select hundredths and thousandths digits of frequency (00, 25, 50, or 75) in MHz.
6. Preset channel selector switch - Selects one of 20 preset channels.
7. MANUAL-PRESET switch -

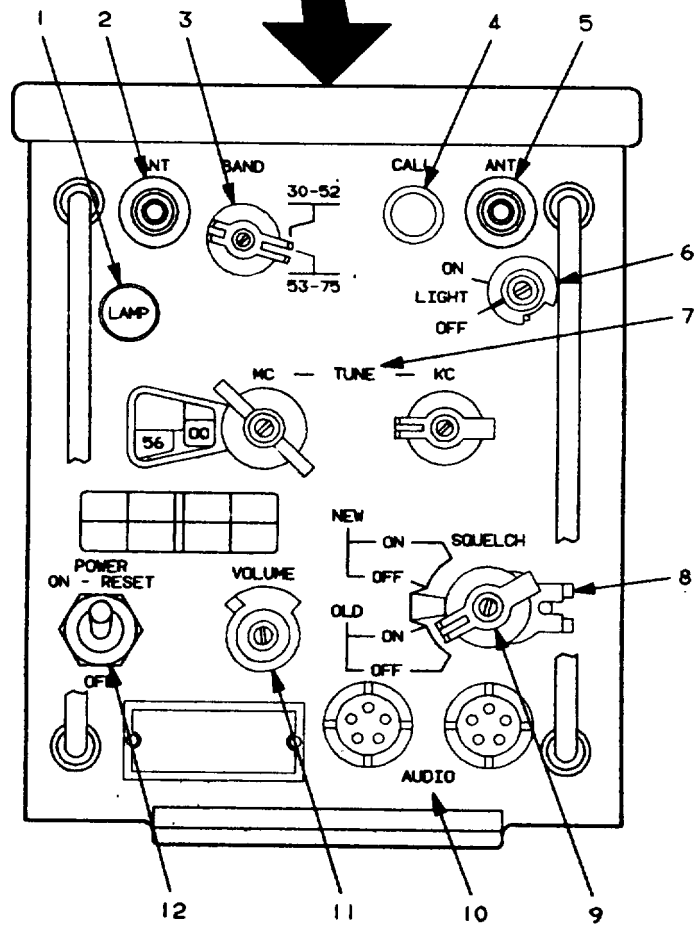
MANUAL - Provides frequency selection of any one of 7,000 frequencies using the five manual frequency selector switches.

PRESET - Operates in conjunction with spring loaded PRESET switch and manual frequency selector switches to store selected frequencies into memory on any selected channel. Also used with preset channel selector switch to recall any frequency stored on a selected channel.
8. Volume control - Not used.
9. Function selector switch - All positions locked out except MAIN, which enables main receiver and transmitter.
10. BW switch (NB-WB) - Must be in WB position for operation.
11. SQ-MN control - Not used.
12. SQ-GD control - Not used.
13. LED frequency display - Displays first five significant digits of selected frequency. Fifth digit determines what sixth digit is. If fifth digit is 0, sixth digit is 0; if fifth digit is 2, sixth digit is 5; if fifth digit is 5, sixth digit is 0; if fifth digit is 7, sixth digit is 5 .
14. PRESET switch - Stores selected preset frequency in memory for selected preset channel.

(GUARD RECEIVER)



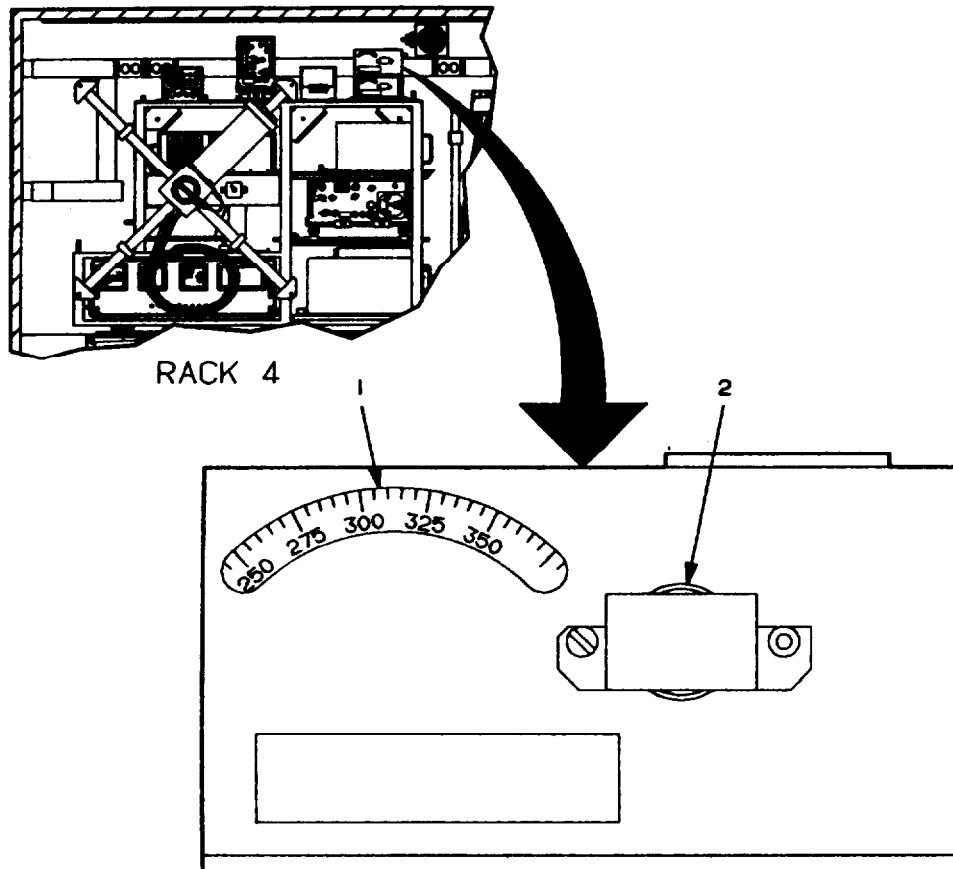
RACK 4



GUARD RECEIVER (CONT)

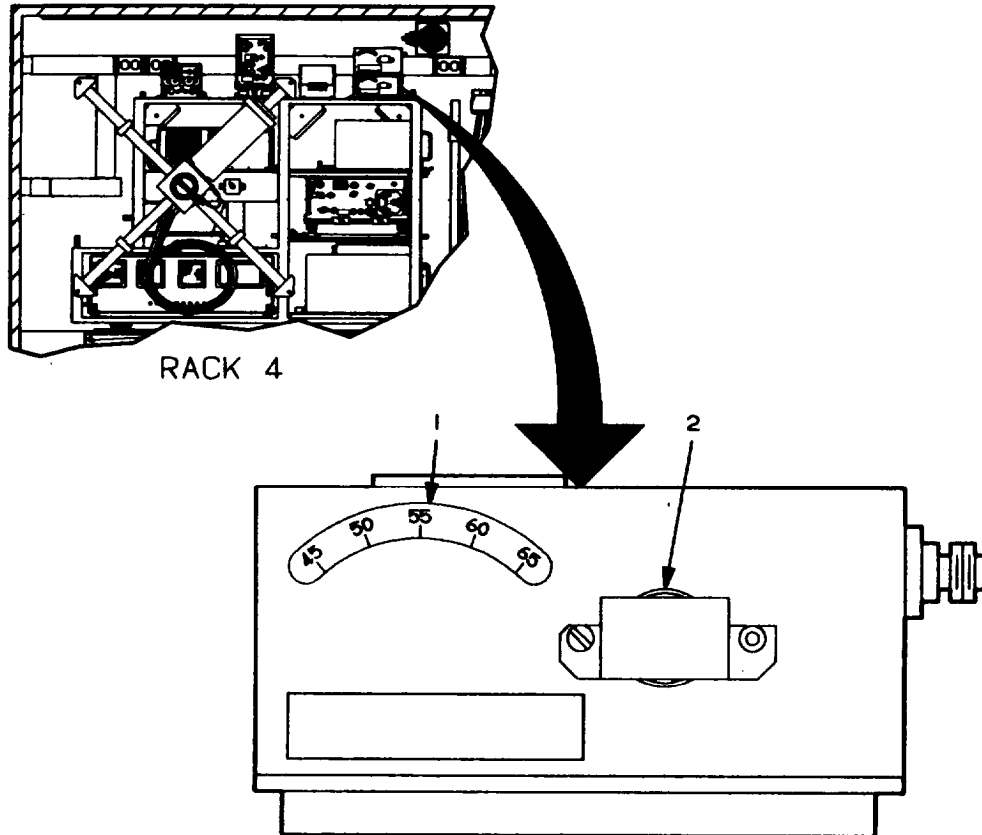
1. LAMP - Dial lamp holder.
2. ANT - 50 Ω impedance antenna connector.
3. BAND - Selects tuning of frequency band A (30 to 52.95 MHz) or B (53 to 75.95 MHz).
4. CALL - During squelch operation, lights to indicate signal is received, when SQUELCH switch is in NEW ON or OLD ON position and LIGHT switch is on.
5. ANT - 50 Ω impedance antenna connector.
6. LIGHT ON/OFF - Controls to dial window lamp and squelch call indicator.
7. TUNE
 - MC - Provides manual tuning of radio in 1-MHz steps.
 - KC - Provides manual tuning of radio in 0.05-MHz steps.
8. SQUELCH (latch) - Confines SQUELCH switch to two NEW positions, or to two OLD (lower) positions when pushed to right.
9. SQUELCH (rotary switch) - Selects type of squelch function to be used.
 - NEW ON/OLD ON - Prevents rushing noise from being heard until squelch signal is received. In NEW ON, 150-Hz tone unsquelches the receiver. In OLD ON the transmitter carrier frequency unsquelches the receiver.
 - NEW OFF/OLD OFF - Unsquelches receiver. (On-standby noise is heard.)
10. AUDIO - Provides for audio output.
11. VOLUME - Controls audio output of received signal.
12. POWER
 - ON-RESET - Turns power on or resets power after an overload condition.
 - OFF - Turns off power.

UHF BANDPASS FILTER



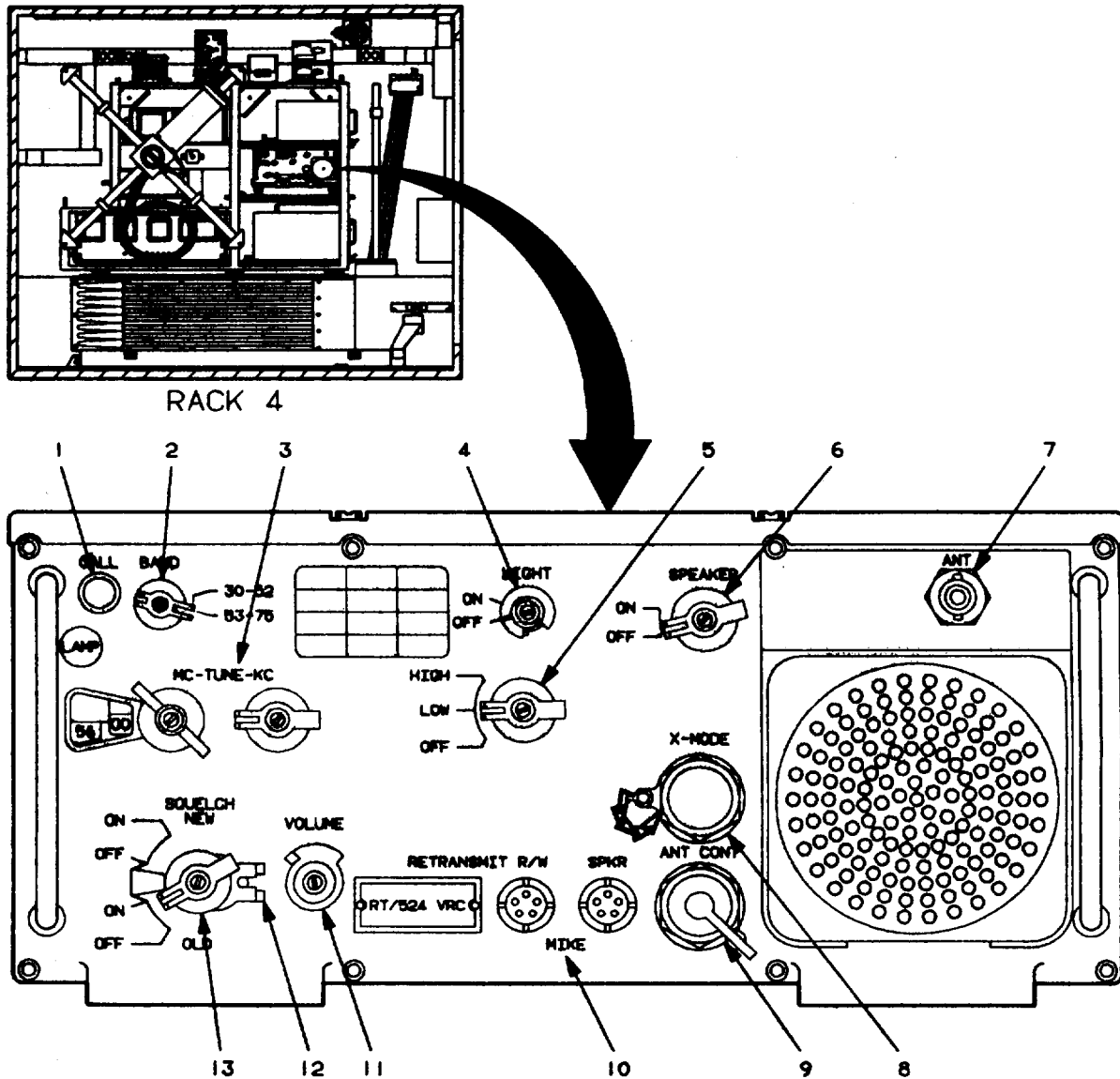
1. TUNING display (250 -400 MHz) - Displays frequency that filter is tuned to.
2. TUNING Control - Enables operator to tune filter to desired frequency.

VHF BANDPASS FILTER



1. TUNING Indicator - Displays frequency that filter is tuned to.
2. TUNING Control - Enables operator to tune filter to desired frequency.

RT-524A



1. CALL - During squelch operation, indicates signal is received when LIGHT switch is ON and SQUELCH switch is in NEW ON or OLD ON.
2. BAND - Selects tuning of frequency band A (30 to 52.95 MHz) or B (53 to 75.95 MHz).

RT-524A (CONT)

3. TUNE

MC - Provides manual tuning of radio in 1-MHz steps.

KC - Provides manual tuning of radio in 0.05-MHz steps.

4. LIGHT ON/OFF - Controls dial window lamp and squelch call indicator.

5. POWER (breaker reset)

OFF - Turns off power to radio and resets circuit breaker when it is tripped.

LOW - Applies power and selects low RF power transmission (0.5 to 8 W).

HIGH - Applies power and selects high RF power transmission (35 W, Min.).

6. SPEAKER ON/OFF - Controls received audio signal to loudspeaker.

7. ANT connector - 50 Ω impedance antenna connector.

8. X-MODE - Provides input and output when used in cipher mode.

9. ANT CONT - Output connection for automatic antenna tuning.

10. MIKE:

RETRANSMIT R/W - Connector

SPKR - Connector

11. VOLUME - Adjusts receiver audio output level.

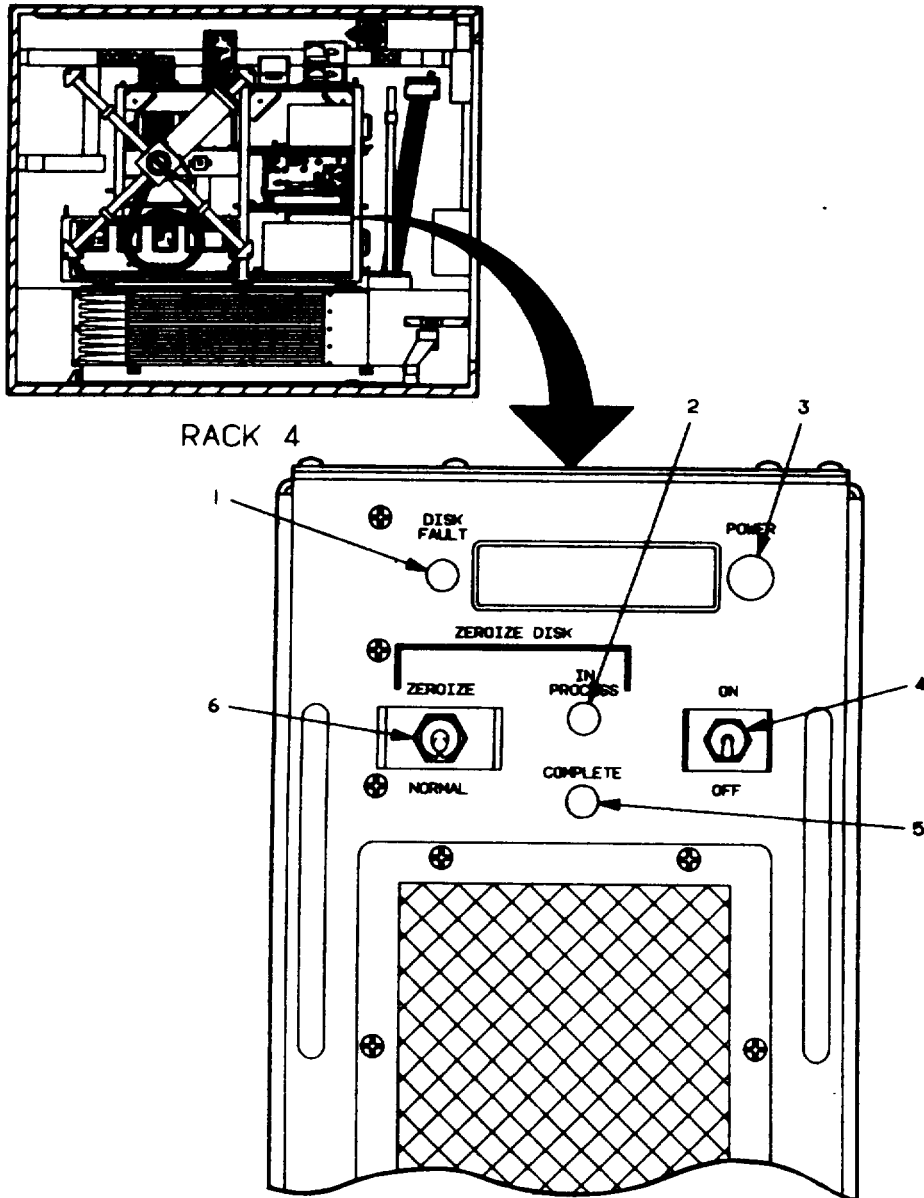
12. SQUELCH (latch) - Confines SQUELCH switch to two NEW positions, or to two OLD (lower) positions when pushed to right.

13. SQUELCH (rotary switch) - Selects type of squelch function to be used. During transmission, 150-Hz squelch tone is transmitted on all positions of switch except OLD ON.

NEW ON/OLD ON - Prevents rushing noise from being heard until squelch signal is received. In NEW ON, 150-Hz squelch tone unsquelches receiver. In OLD ON, receiving a carrier signal unsquelches the receiver.

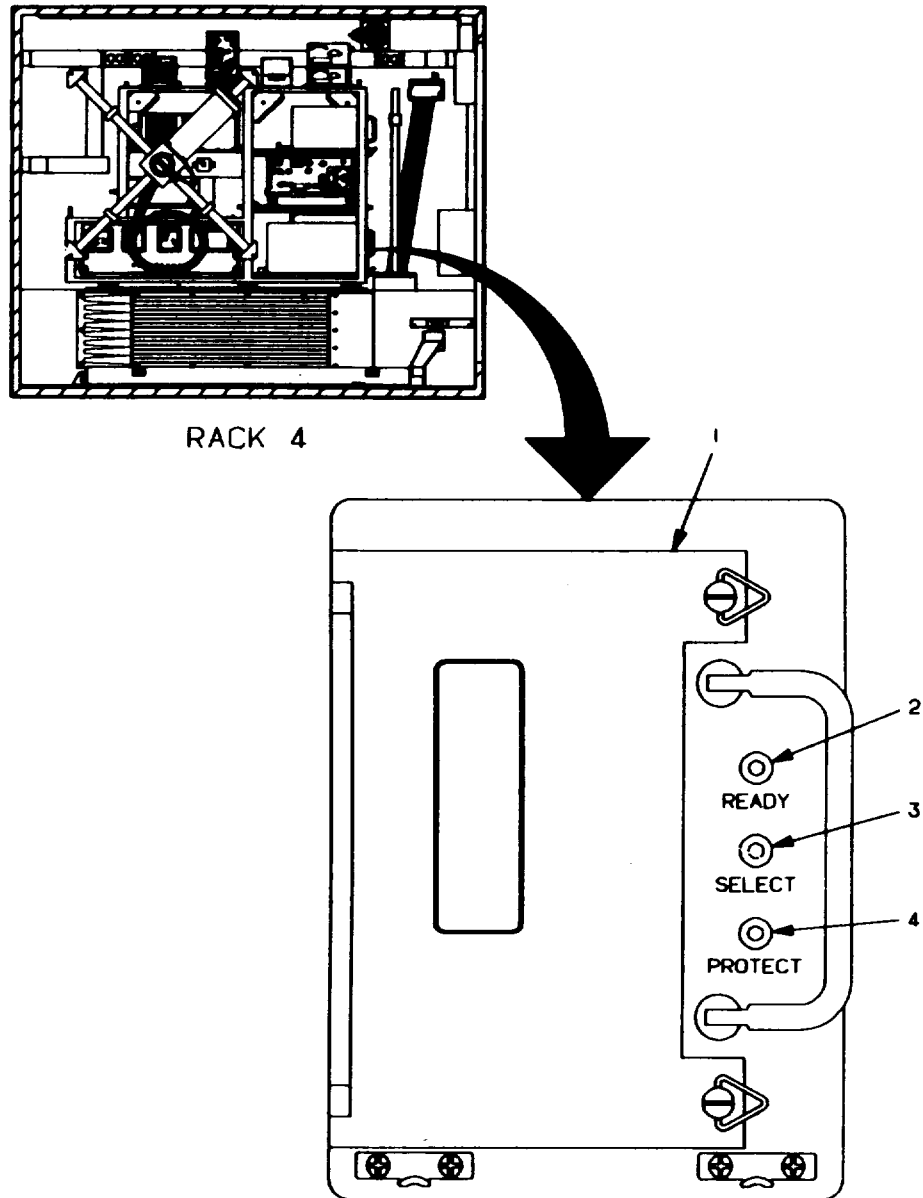
NEW OFF/OLD OFF - Unsquelches receiver. (On-standby noise is heard).

DISK DRIVE CONTROL



1. DISK FAULT indicator - When lit, indicates fault in the Disk Drive Control.
2. IN PROCESS indicator - When lit, indicates zeroize is in process.
3. POWER indicator - When lit, indicates power is supplied to the Disk Drive Control.
4. ON/OFF switch - Provides power for Disk Drive Control.
5. COMPLETE indicator - When lit, indicates zeroize is complete.
6. ZEROIZE/NORMAL switch - Provides ability to zeroize disk.

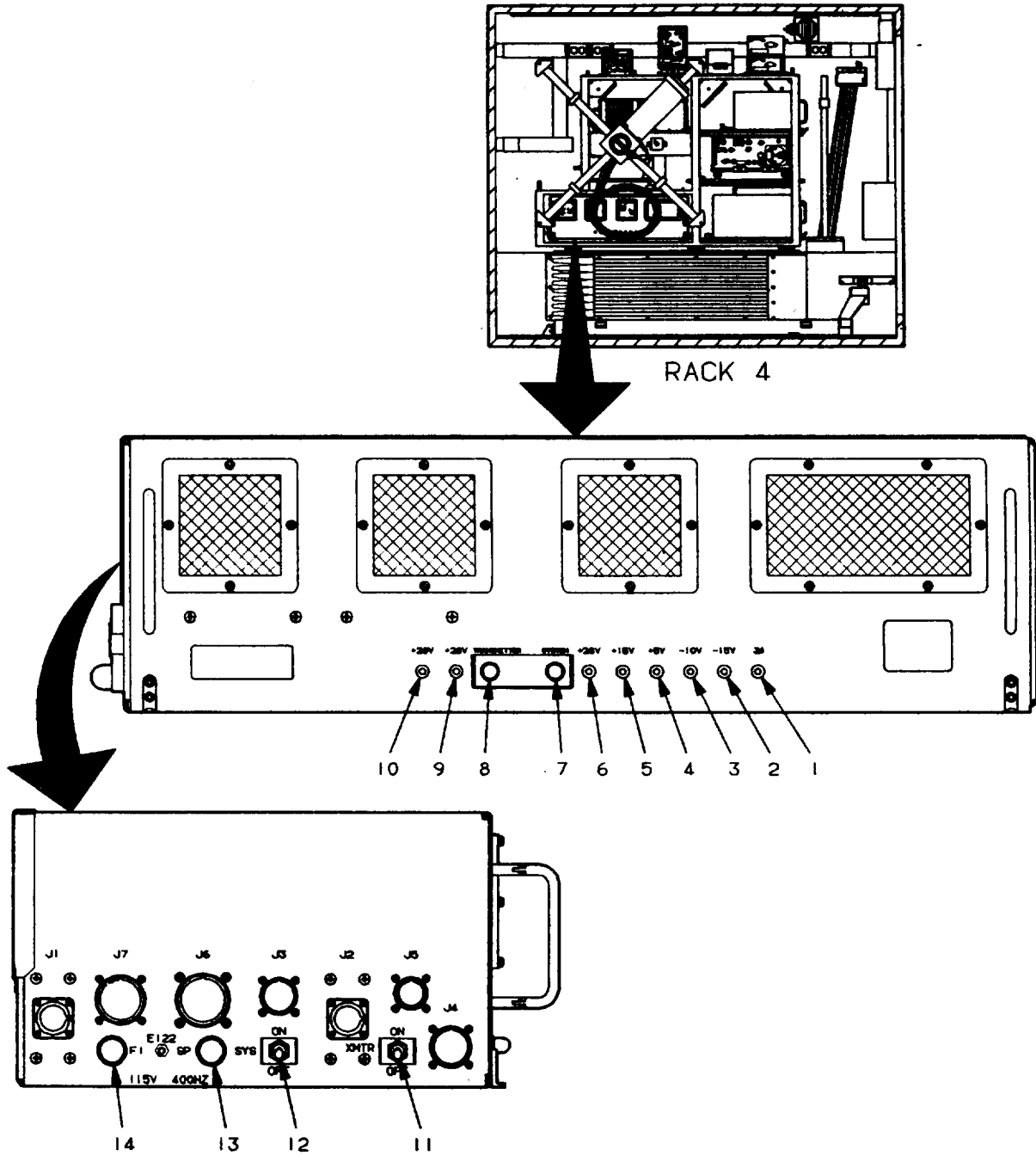
HARD DISK DRIVE



1. DISK CARTRIDGE ACCESS DOOR - Allows access to disk cartridge.
2. READY indicator - Should light within 30- 40 seconds from disk drive power-up.
3. SELECT indicator - When lit, indicates disk is presently being accessed.
4. PROTECT indicator - When lit, indicates WRITE protect is active on the disk drive.

SYSTEM POWER SUPPLY

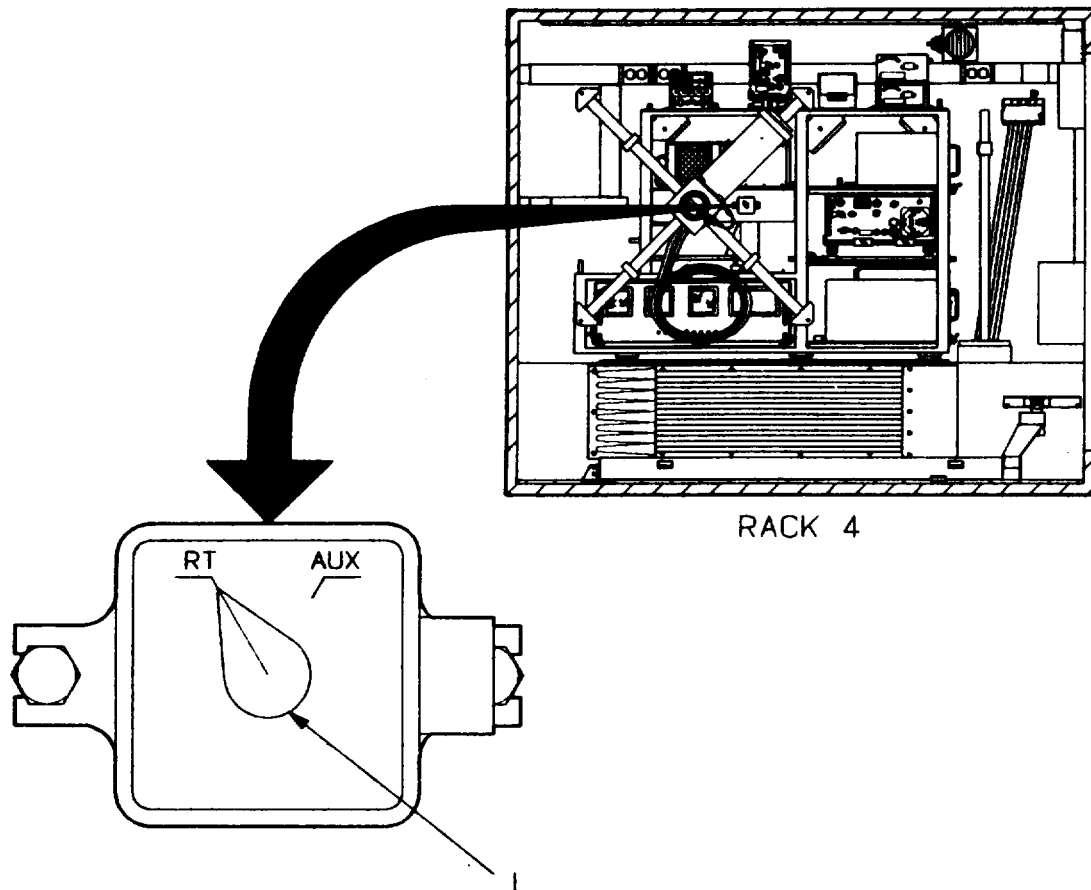
The SYSTEM POWER SUPPLY provides power to equipment racks and shelter.



SYSTEM POWER SUPPLY (CONT)

1. 3 \emptyset - When lit, indicates 115 Vat, three phase, 400 Hz power is applied to system. (DFCU fans)
2. -15V - When lit, indicates -15 Vdc is supplied to DFCU and RFDU.
3. -10V - When lit, indicates -10 Vdc is supplied to DFCU and RFDU.
4. +5V - When lit, indicates +5 Vdc is supplied to DFCU and RFDU.
5. +15V - When lit, indicates +15 Vdc is supplied to DFCU and RFDU.
6. +28V - When lit, indicates +28 Vdc is supplied to printer, caution panel, j-box, and intercom control panel.
7. SYSTEM Indicator - When lit, indicates 115 Vac power is applied to system power supplies.
8. TRANSMITTER Indicator - When lit, indicates 115 Vac power is applied to transmitter power supplies.
9. +28V - When lit, indicates +28 Vdc is supplied to RT-1288A and datalink processor.
10. +28V - When lit, indicates +28 Vdc is supplied to VRC-47, KY-57, C-2298 in deployed mode.
11. TRANSMITTER ON/OFF Switch - Applies power to the transmitter in the ON position.
12. SYSTEM ON/OFF Switch - Applies power to the system in the ON position.
13. SP - Spare fuse holder.
14. F1 - 115V, 2A fuse.

AUDIO FREQUENCY SWITCH

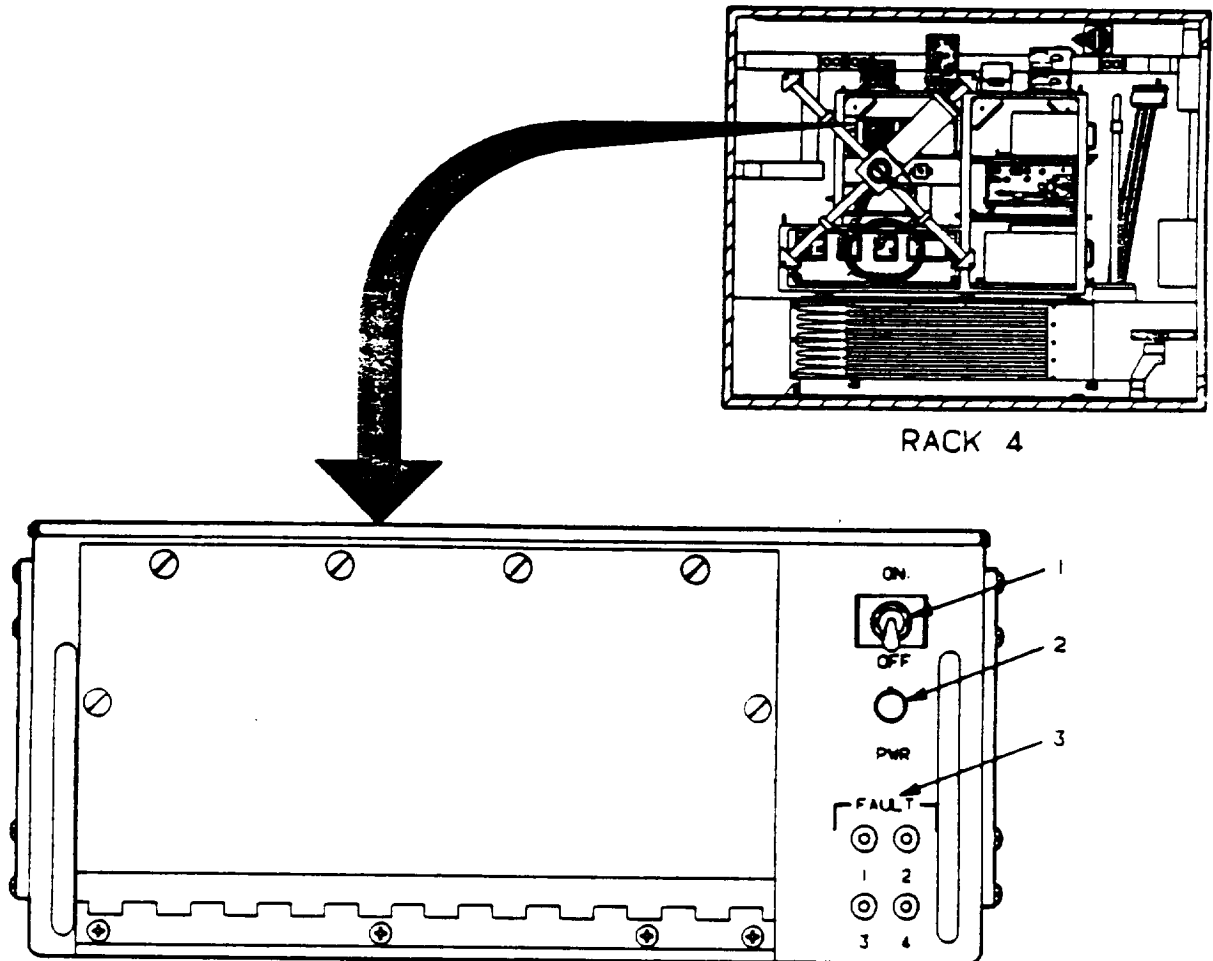


1. SWITCH

RT - When in the RT position, the KY-57 is connected to the RT-524A.

AUX - When in the AUX position, the KY-57 is connected to the guard receiver.

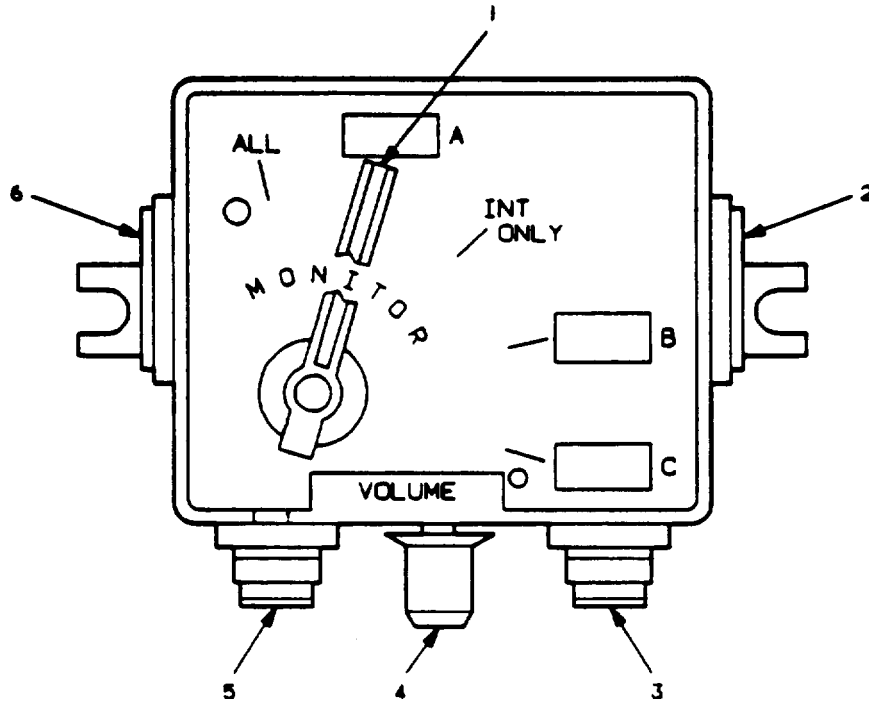
 DATA LINK PROCESSOR



1. ON/OFF Switch - Provides power to data link processor.
2. POWER indicator lamp - Indicates power is supplied to data link processor.
3. FAULT indicator lamps -
 - 1 - When lit, indicates BITE test failure on board 1.
 - 2 - When lit, indicates BITE test failure on board 2.
 - 3 - When lit, indicates BITE test failure on board 3.
 - 4 - When lit, indicates BITE test failure on board 4.

REMOTE RADIO CONTROL

The C-2298/VRC remote radio control is used for remote radio operation and is mounted in the truck cab.



1. MONITOR Switch - Provides radio selection.
 - ALL - Not used.
 - A - Enables operator to receive and transmit from R/T ONLY.
 - INT ONLY - Not used.
 - B - Not used.
 - C - Not used.
2. J-804 - Connects to system cabling.
3. J-802- Connects to handset.
4. VOLUME Control - Controls audio level of received radio signals.
5. J-803 - Not used.
6. J-801- Not used.

Section II.**PREVENTIVE MAINTENANCE CHECKS AND SERVICES****2-7. GENERAL.**

To insure equipment is ready for mission, you must perform scheduled Preventive Maintenance Checks and Services (PMCS). When you are performing any PMCS or routine checks, observe all 1 WARNINGS and CAUTIONS about electrical shock and bodily harm. Report any deficiencies on DA Form 2404.

2-8. PMCS TABLE.

A PMCS TABLE for Radio Receiving Sets AN/TRQ-32 (V)1 and AN/TRQ-32(V)2 appears at the end of this section. There are five categories of PMCS: B, D, A, W, and M. They head the INTERVAL columns of the PMCS TABLE. A check mark in one or more of the INTERVAL columns indicates the check and/or service that should be performed by the operator at a particular time.

- a. B-PMCS should be performed BEFORE operation to make sure your equipment is ready to operate.
- b. D-PMCS is performed DURING operation to help you spot any troubles before they become problems.
- c. A-PMCS should be performed AFTER operation to insure equipment is still able to function properly.
- d. W-PMCS are important preventive maintenance checks and services performed WEEKLY to prevent serious problems from occurring.
- e. M-PMCS are important preventive maintenance checks and services performed MONTHLY to prevent serious problems from occurring.
- f. Operator should perform W-PMCS and M-PMCS as well as B-PMCS if:
 - * Assigned operator has not operated the item since last W-PMCS or M-PMCS.
 - * Assigned operator is operating item for the first time.

NOTE

If equipment must be in operation all the time, check and service those items that can be checked and serviced without disturbing operation of system. Make complete checks and services when equipment can be shut down.

g. When an equipment item is reinstalled after removal for any reason, perform all necessary B-PMCS to be sure the item meets the readiness reporting criteria.

h. Routine checks are not listed as PMCS checks. These checks include following:

Cleaning

Dusting

Washing

Checking for frayed cables

Storing items when not in use

Covering unused receptacles

Checking for loose nuts, bolts, and screws

Checking for shelter skin punctures, cracks or open seams

i. Routine checks are things that should be performed anytime you see they must be done. If you find a routine check like one of those listed in your PMCS TABLE, it was listed because other personnel reported problems with this item.

PMCS TABLE

B = Before		D = During		A = After		w = Weekly		M = Monthly	
ITEM NO.	INTERVAL					ITEM TO BE INSPECTED	PROCEDURES CHECK AND HAVE REPAIRED OR ADJUSTED AS NECESSARY	EQUIPMENT IS NOT READY/AVAILABLE IF:	
	B	D	A	w	M				
SHELTER CARRIER									
1	x					Engine Compartment	Check Speed Control in Engine Compartment for loose screws, connectors, and frayed wires.	Loose or missing screws, cables, or frayed wires.	
NOTE									
Refer to TM 9-2320-289-10, Operator's Manual for Truck, Shelter Carrier, Tactical, 1-1/4 Ton, 4X4, M1028 (2320-01-127-5077) for complete vehicle PMCS.									
2	x	x				Grounding equipment (deployed configuration only)	Check grounding to see that it is properly installed. Tighten loose ground connections.	Ground system not properly installed or connections cannot be tightened properly.	
SHELTER EXTERIOR									
3	x				x	Shelter tiedown cables	Check each tiedown cable to see that they are snug. Hooks should be turned outward.	Tiedown cables are broken or loose which could prevent safe operation. Hooks turned in can damage shelter.	
4	x		x	x		VHF/UHF antenna assembly	<p>Check that all fasteners, seals, and ball lock pins are serviceable.</p> <p>Check that antenna element slip rings are clean and lubricated. Use silicone lubricant (Appendix D, Item 8).</p> <p>Check all antenna cable connectors for damage.</p>	<p>Any securing device missing.</p> <p>Antenna elements bent, broken, or missing.</p> <p>Connectors missing or damaged.</p>	

PMCS TABLE

		B = Before		D = During		A = After		W = Weekly		M = Monthly	
ITEM NO.	INTERVAL					ITEM TO BE INSPECTED	PROCEDURES CHECK AND HAVE REPAIRED OR ADJUSTED AS NECESSARY	EQUIPMENT IS NOT READY/AVAILABLE IF:			
	B	D	A	W	M						
5	x		x	x		HF antenna	<p>Check antenna elements are clean and lubricated. Use silicone lubricant (Appendix D, Item 8).</p> <p>Check antenna mounts for cracks or damage.</p> <p>Check that tiedowns are installed and operational.</p>	<p>Elements are damaged or missing.</p> <p>Mounts damaged or cables missing.</p>			
6	x					PTO assembly	Inspect PTO and hydraulic lines for leaks and abrasion.	Deteriorated or hydraulic lines.			
7	x		x			HG/AC compressor assembly	Check hydraulic fluid level at operating temperature. Fluid must register on dipstick (between bottom and full).	Fluid level low.			
8	x		x			Pneumatic mast	Purge moisture from pneumatic mast. Raise 1 section. (IAW Chapter 3 of this manual).	Pneumatic mast cannot be purged.			
9	x					Air compressor assembly	Check air lines for abrasion and loose fittings.	Air lines damaged or disconnected.			
	x						Check for water accumulation in water separator and storage tank.	Water separator is full or water can not be drained.			

PMCS TABLE

B = Before D = During A = After W = Weekly M = Monthly								
ITEM NO.	INTERVAL					ITEM TO BE INSPECTED	PROCEDURES CHECK AND HAVE REPAIRED OR ADJUSTED AS NECESSARY	EQUIPMENT IS NOT READY/AVAILABLE IF:
	B	D	A	W	M			
9 (cont)	X					Antenna mast assembly	Check oil level in Mast lubricator. Level must be between empty and full marks.	Oil level is low or can not be serviced.
	X						Check compressor air filters for excessive dust and dirt.	Air filters are missing, damaged, or dirty.
	X		X				Purge moisture from storage tank IAW Chapter 3 of this manual.	Storage tank cannot be purged.
10	X					Antenna mast assembly	Check air line for abrasion and loose connection.	Air line damaged or disconnected.
	X	X					Check cables for abrasion and loose connection.	Cables damaged or disconnected.
SHELTER INTERIOR								
11	X	X	X	X		Interior	Check all lights for proper operation.	Lights not operational.
							Check all fasteners and storage devices.	Fasteners missing; storage devices not operational.
12	X					PP-272/G printer	Check printer paper supply.	Paper is missing or red line is showing on paper edge.
13	X					AN/VRC-47	Perform PMCS IAW TM 11-5820-401-10-1	
14	X					AN/UNH-17 recorder	Perform PMCS IAW TM 32-5835-005-14&P	

PMCS TABLE

B = Before D = During A = After W = Weekly M = Monthly								
ITEM NO.	INTERVAL					ITEM TO BE INSPECTED	PROCEDURES: CHECK AND HAVE REPAIRED OR ADJUSTED AS NECESSARY	EQUIPMENT IS NOT READY) AVAILABLE IF:
	B	D	A	W	M			
15	x					Intercom control	Perform PMCS IAW TM 11-5830-340-12	
16	x					Field phone	Perform PMCS IAW TM 11-5805-201-12	
17	x				x	Fire extinguisher	Check for valid inspection tag, unbroken seal, safety pin in place.	Inspection tag missing, seal broken or missing, safety pin missing, fire extinguisher missing.
18	x		x			Ground rods (mobile configuration)	Inspect for completeness and serviceability.	Not operational ready if parts missing and broken.
19		x		x		<u>Electronic Equipment</u>		
						Exposed	Inspect external surfaces of the racks and front panel of units mounted in the racks for: damage, dust, dirt, grease, and fungus. Remove dust and loose dirt with a soft clean cloth.	Damage affects performance.
<div style="border: 1px solid black; padding: 5px; display: inline-block; background-color: #f0f0f0;"> Warning </div> <p>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 TRICHLOROTRIFLUORETHANE 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.</p>								
20		x		x		Control and Indicators	Check for proper operation.	Abnormal operation is observed.

Section III.**OPERATION UNDER USUAL CONDITIONS****2-9. SYSTEM OPERATIONAL CONFIGURATION**

Radio Receiving Sets AN/TRQ-32(V)1 and AN/TRQ-32(V)2 shall be stationary to perform intercept and direction finding functions. Voice communications can either be used while mobile or stationary. The following operating procedures include instructions for both mobile and stationary situations. Operating instructions are divided into four parts: equipment initialization, equipment checkout, deployed operation, and preparation for movement.

2-10. MOBILE OPERATION

When the AN/TRQ-32(V)1 or AN/TRQ-32(V)2 is mobile, only the AN/VRC-47 RADIO SET is operational through the VHF radio control (C-2298) mounted in the vehicle cab. Refer to TM 11-5820-401-12 for operating instructions.

The AN/TRR-35(V)3 is provided with 28 Vdc supplied from the vehicle to prevent the memory from being lost.

2-11. STATIONARY OPERATION

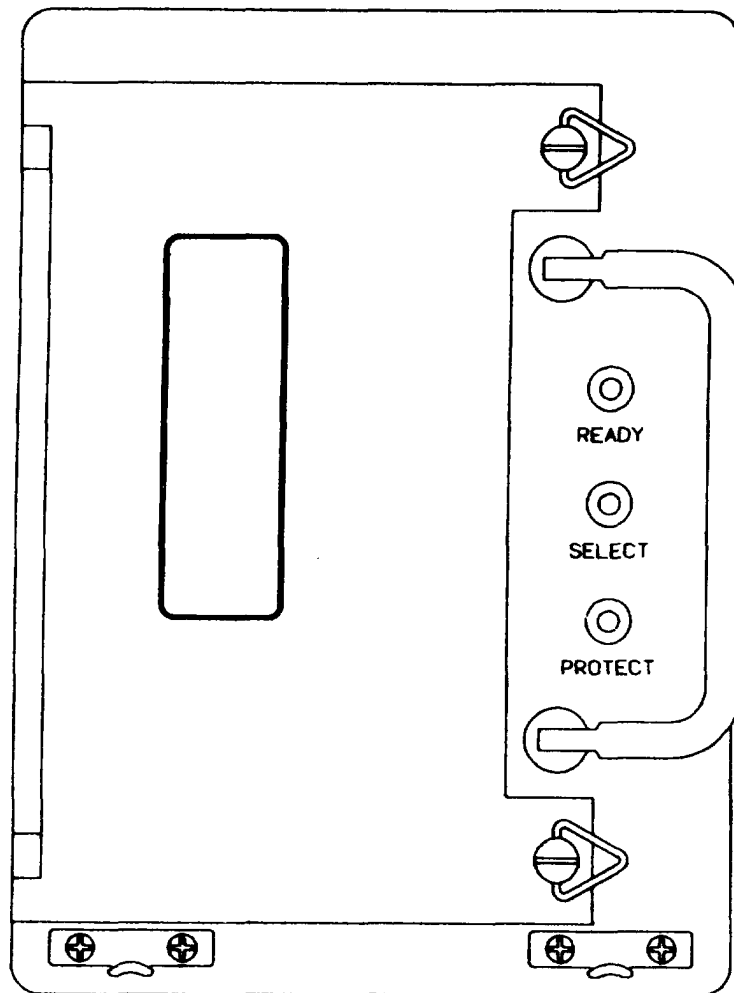
When the AN/TRQ-32(V)1 or AN/TRQ-32(V)2 is stationary, it is powered by 120/240 Vat, 60 Hz from the hydraulic generator. The vehicle must be leveled within 2° of vertical using the indicators located on the shelter exterior behind the vehicle operator.

NOTE

When the AN/TRQ-32(V) system will not be in use for long periods of time, such as overnite or extended storage, ensure that ALL circuit breakers are turned off to prevent the vehicle battery from going dead. Also during extended storage, rotate mast stub to the vertical position to relieve the tension on the spring in the reductor.

EQUIPMENT INITIALIZATION

Prior to performing the Equipment Initialization procedures, inspect the vehicle, shelter, and associated equipment according to the PMCS procedure in Chapter 2, Section II, of this manual.



1. Inside shelter on RACK 4, open DISK DRIVE cartridge door, install disk drive cartridge, and close cartridge door (IAW Chapter 3).

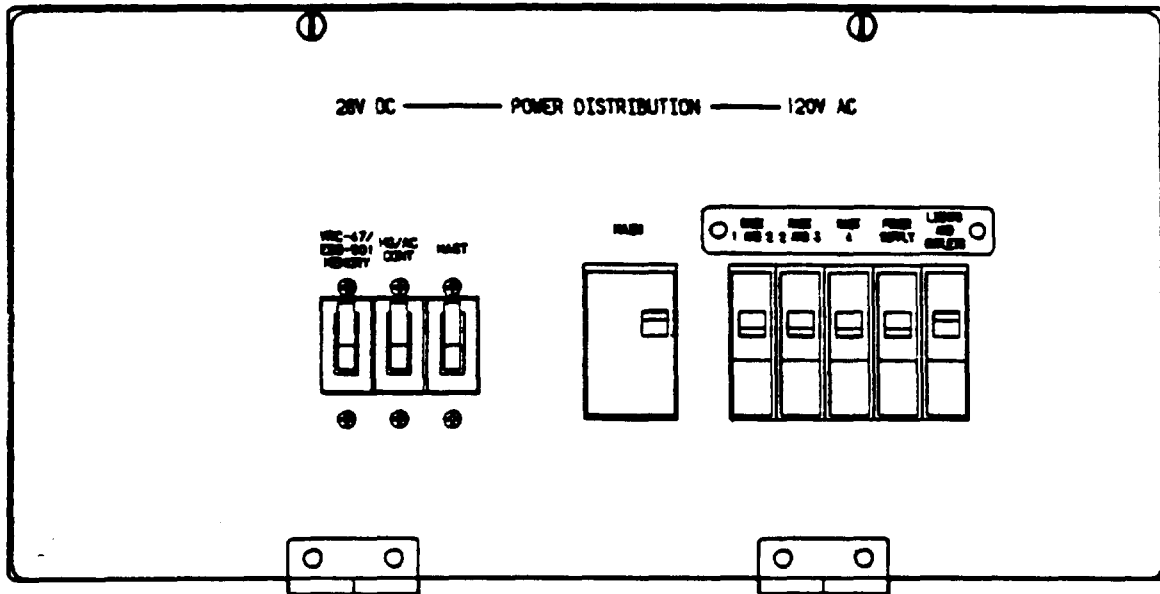
EQUIPMENT INITIALIZATION (CONT)

2. insure the power switches for the assemblies listed below are in the following positions:

<u>LOCATION</u>	<u>ASSEMBLY</u>	<u>POSITION</u>
RACKS 1 & 3	SIGNAL DISPLAY UNITS	OFF
RACKS 1 & 3	POWER SWITCH ASSEMBLIES	OFF
RACK 2	THERMAL PRINTER	OFF
RACK 2	SYSTEM CONTROLLER	OFF
RACK 2	RECORDER-REPRODUCER (2 RECORDERS)	OFF
RACK 4	GUARD RECEIVER	OFF
RACK 4	DATALINK PROCESSOR	OFF
RACKS 1 & 3	SYSTEM POWER SUPPLY (2 SWITCHES)	OFF
RACK 4	TSEC/KG-84 or TSEC/KG-84A	OFF
RACK 4	TSEC/KY-57	ON
RACK 4	RT-524A/VRC	ON
RACK 4	DISK DRIVE CONTROL ASSEMBLY	OFF
EXTERIOR REAR	POWER ENTRANCE BOX	MOBILE
EXTERIOR REAR	PNEUMATIC MAST CONTROL VALVE	DOWN

3. Start vehicle. For operating instructions, refer to TM 9-2320-289-10.

EQUIPMENT INITIALIZATION (CONT)



NOTE

Ensure compressor control valve is in the DOWN position BEFORE setting the MAST circuit breaker in ON position.

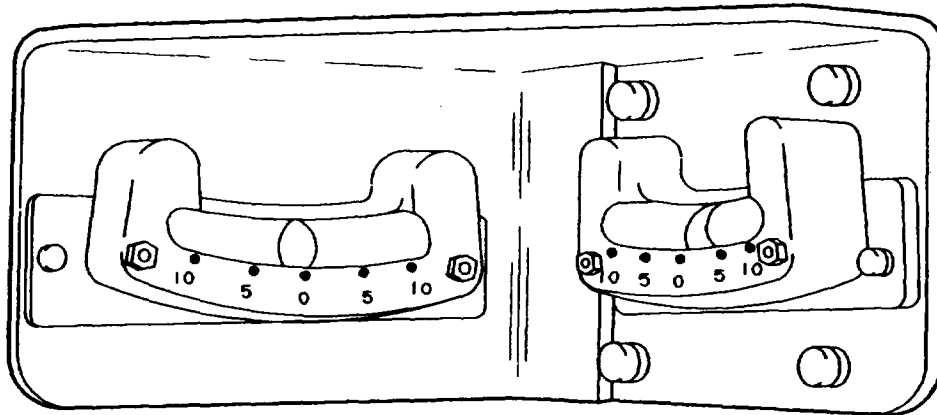
NOTE

Ensure HG/AC control panel generator switch is in the EXTERNAL position and A/C control switch is in the OFF position before setting HG/AC circuit breaker on POWER DISTRIBUTION PANEL to the ON position.

- On POWER DISTRIBUTION PANEL, ensure the circuit breakers listed are in the following positions:

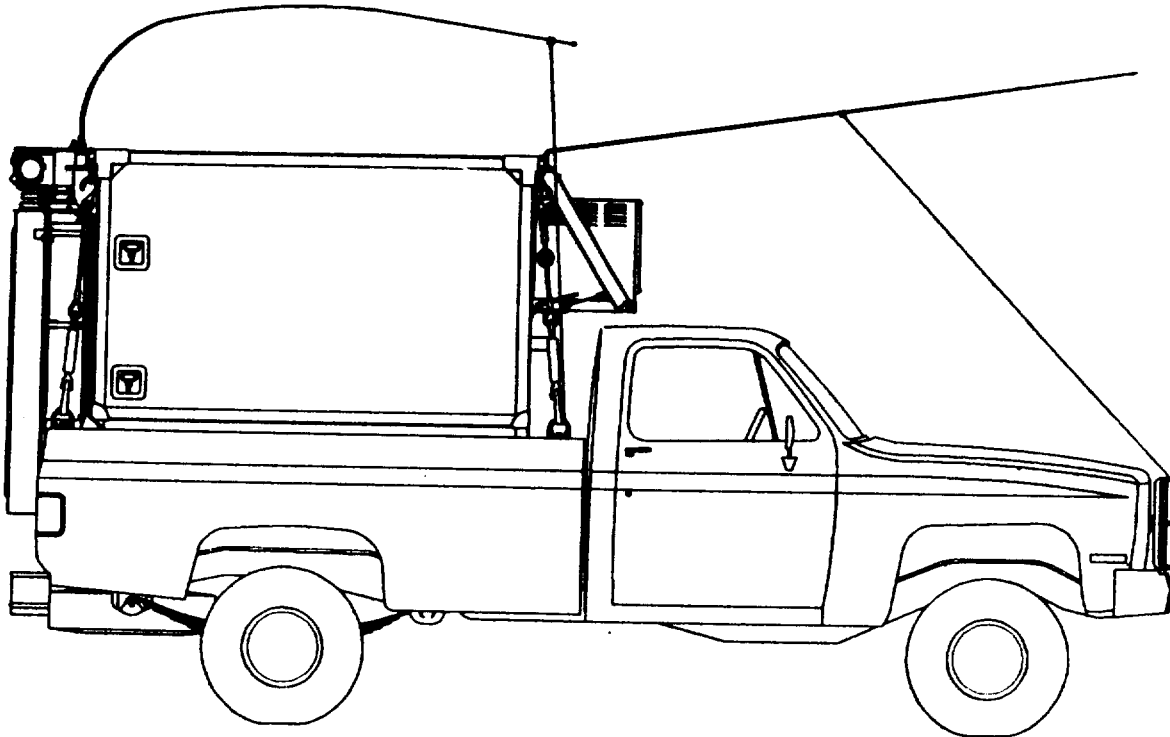
CIRCUIT BREAKER	POSITION
VRC-47/ESS-501 MEMORY	ON
HG/ACCONT	ON
MAST	ON
MAIN	OFF
RACK 1 AND 2	OFF
RACK 2 AND 3	OFF
RACK 4	OFF
POWER SUPPLY	OFF
LIGHTS AND OUTLETS	OFF

EQUIPMENT INITIALIZATION (CONT)



5. Level vehicle using the LEVEL INDICATOR located behind the driver, on forward exterior wall of shelter. The vehicle must be leveled within 2° of vertical.
6. In vehicle cab, place transmission gear shift lever in PARK (P) position.
7. In vehicle cab, place transfer case control lever in 2 HI position.

EQUIPMENT INITIALIZATION (CONT)

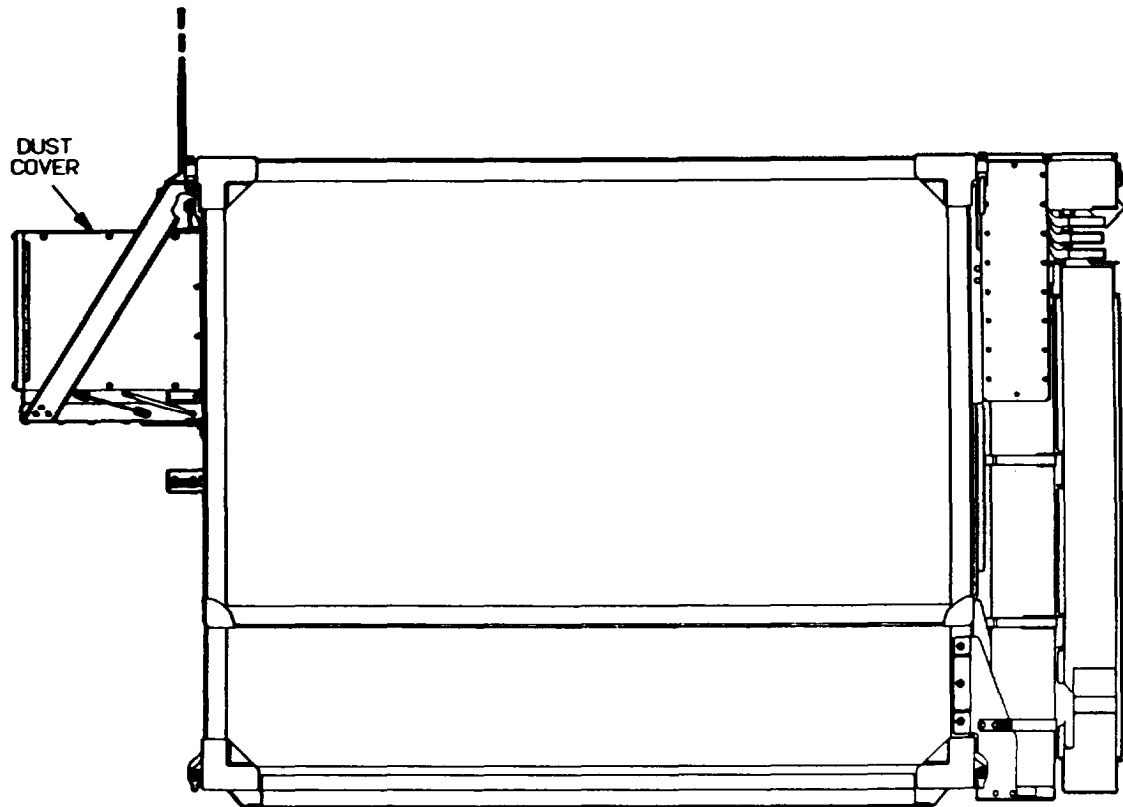


WARNING

DO NOT transmit on RT-524A/VRC when releasing rear whip antenna. Personal injury may result from R.F. radiation.

8. Release the three whip antennas from their tiedown clips,

EQUIPMENT INITIALIZATION (CONT)

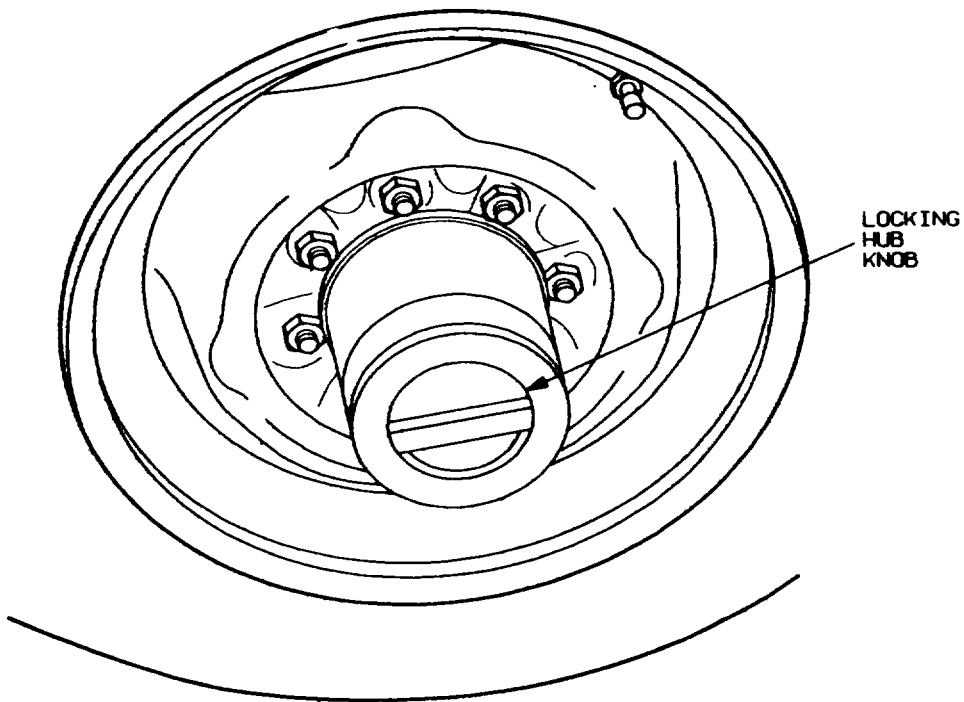


9. On roadside corner of HG/AC, unsnap dust cover. Resnap to front of HG/AC.

EQUIPMENT INITIALIZATION (CONT)

WARNING

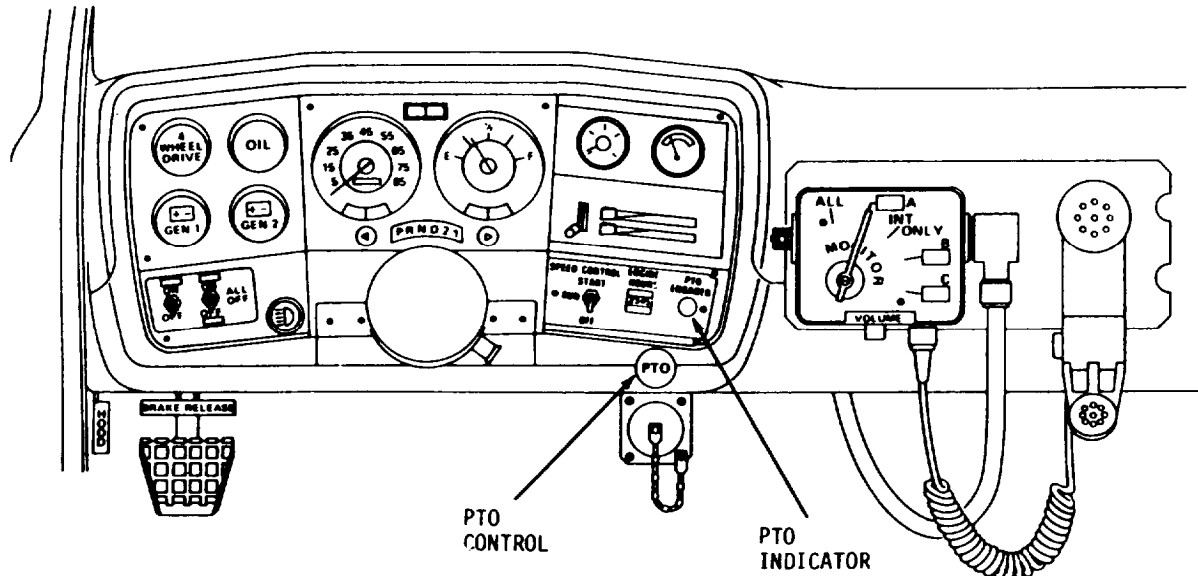
If front wheel hubs are not in the FREE position, vehicle may attempt to move forward



10. On front wheels, turn locking hub knob to FREE position to unlock front hubs.

EQUIPMENT INITIALIZATION (CONT)

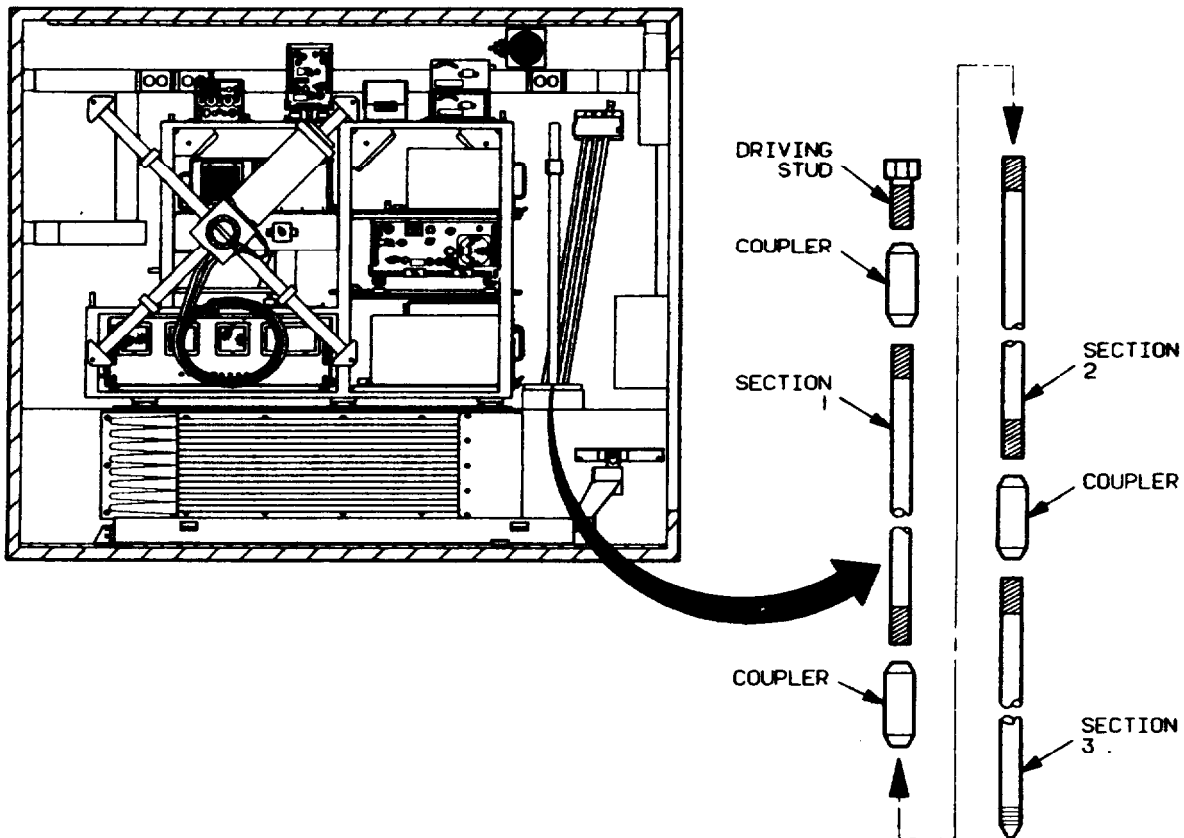
11. In vehicle cab, engage foot brake. Place transmission gear shift lever in DRIVE (D) position.

**NOTE**

Vehicle may have to be eased forward slightly by releasing foot brake to a low PTO to engage.

12. In vehicle cab, pull PTO control knob out until PTO indicator REGULATOR.
13. In vehicle cab, place transmission gear shift lever in PARK (P) position. Set EMERGENCY BRAKE and release foot brake.
14. Chock rear wheels of vehicle.

EQUIPMENT INITIALIZATION (CONT)

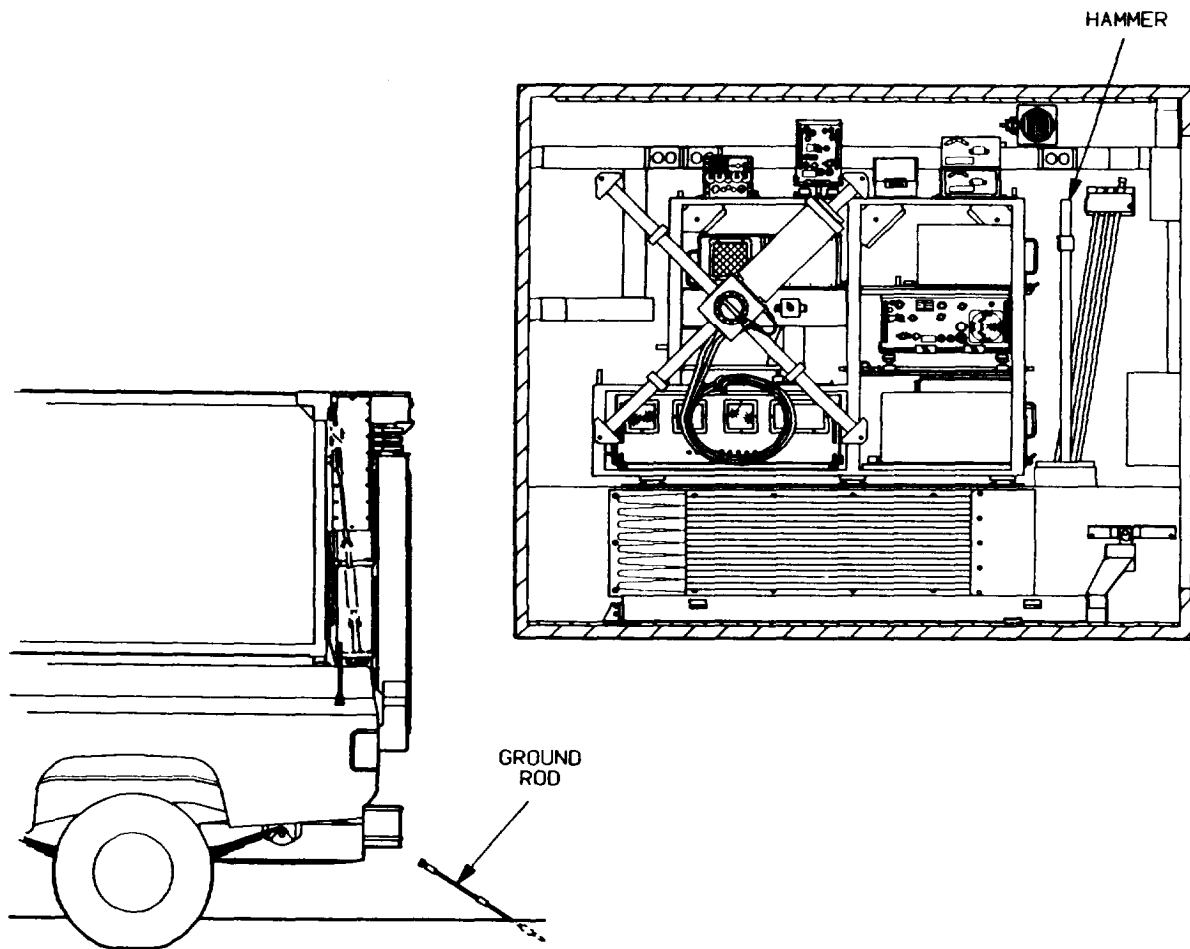


WARNING

The vent on shelter door must remain closed while operating the system to prevent carbon monoxide from entering shelter.

15. Inside shelter, remove GROUND RODS (three 3-foot sections) from mounting brackets located on curbside wall.
16. Screw driving stud into coupler on SECTION 3 (with pointed end) of GROUND ROD using adjustable wrench.

EQUIPMENT INITIALIZATION (CONT)



17. Inside shelter, remove hammer from RACK 4.

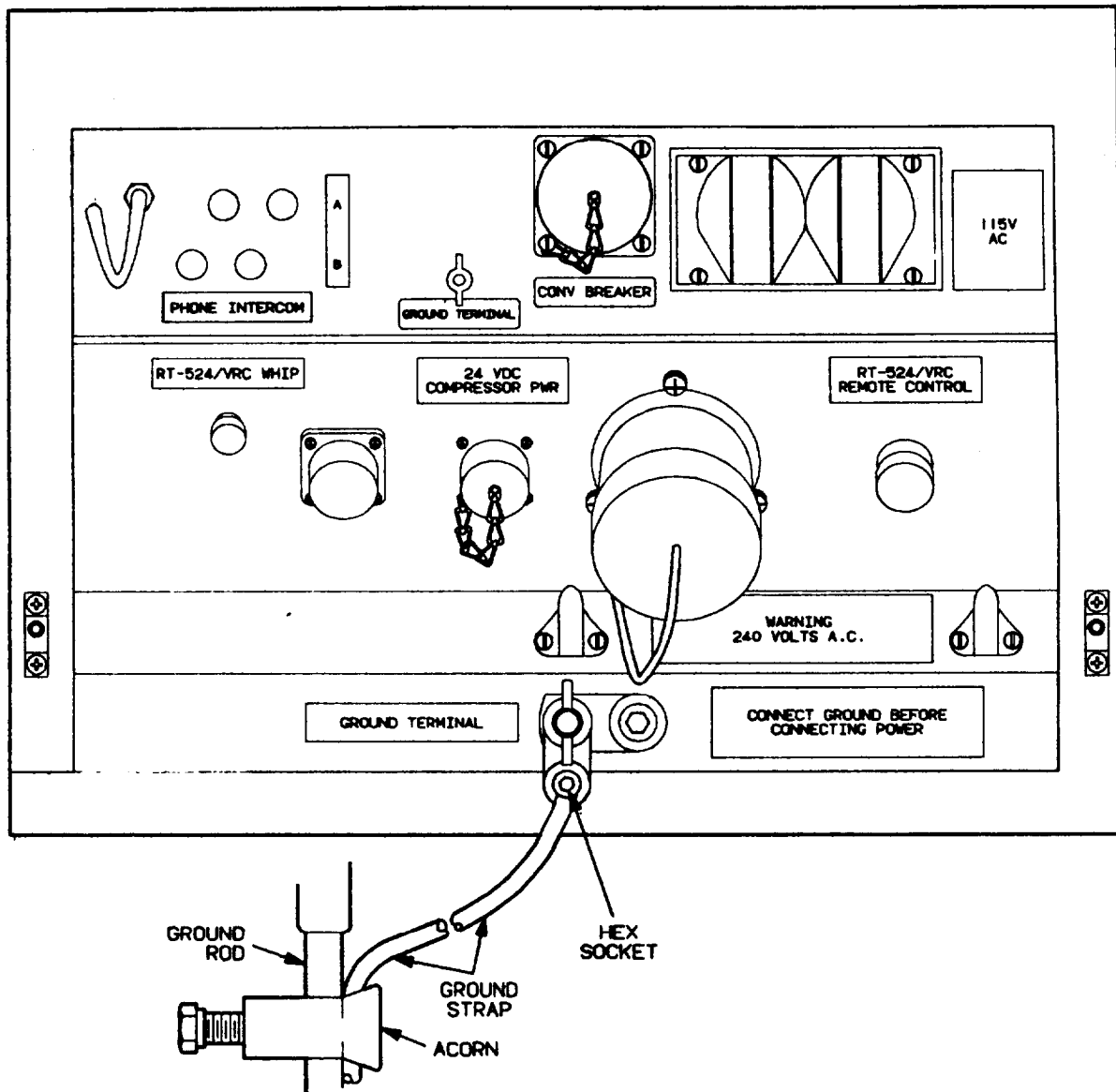
NOTE

Only drive one section of GROUND ROD into ground at a time, leaving approximately 6 inches of GROUND ROD exposed above ground.

18. Using hammer, drive section 3 of ground rod into ground with driving stud pointing towards rear of vehicle (approximately 30°).
19. Remove driving stud from coupler.
20. Screw driving stud into coupler on section 2 of ground rod using adjustable wrench. Attach section 2 to section 3.
21. Using hammer, drive section 2 of ground rod into ground.
22. Remove driving stud from coupler.

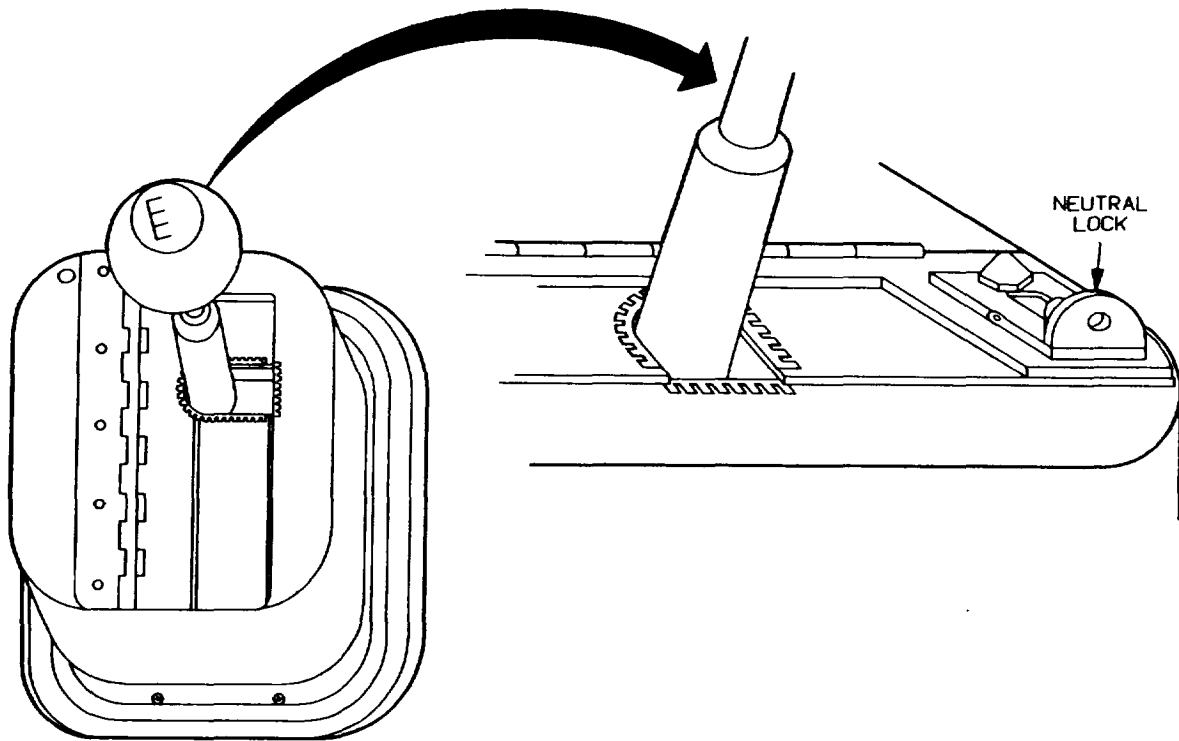
EQUIPMENT INITIALIZATION (CONT)

23. Screw driving stud into coupler on section 1 of ground rod using adjustable wrench. Attach section 1 to section 2.
24. Using hammer, drive section 1 of ground rod into ground leaving acorn fastener exposed.
25. Inside shelter, secure hammer in mounting brackets on curbside wall.



26. On POWER ENTRY PANEL, connect ground strap to large ground terminal and hand tighten. Place other end of ground strap in acorn on ground rod (Section 1) and tighten using adjustable wrench.

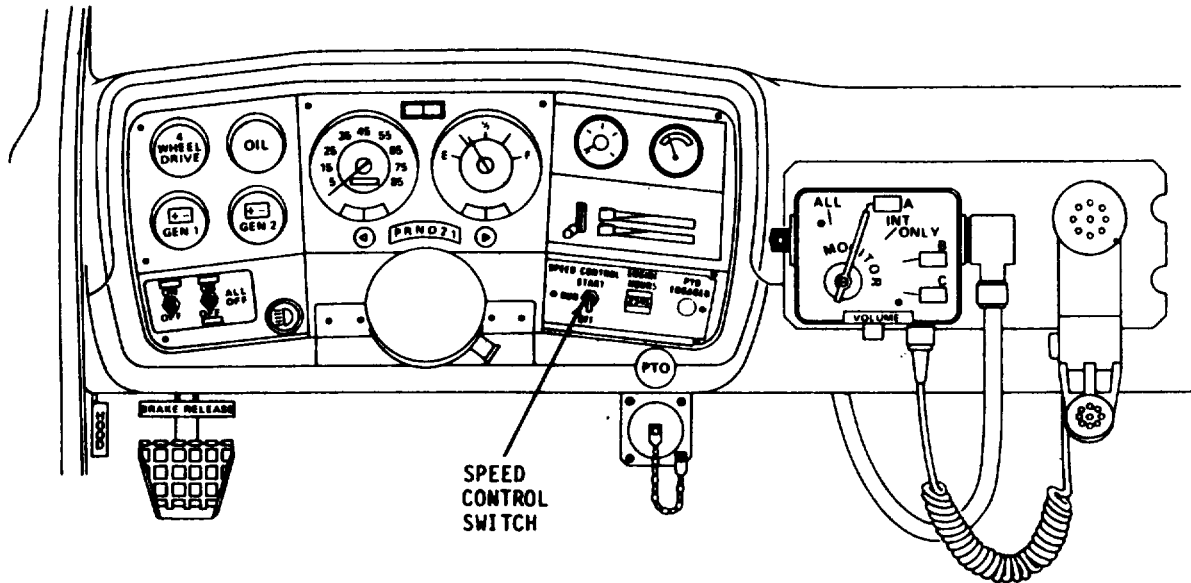
EQUIPMENT INITIALIZATION (CONT)

**WARNING**

If transfer case is not in neutral (N) position, the vehicle will attempt to move forward.

27. In vehicle cab, set transmission gear shift lever to neutral (N) position.
28. In vehicle cab, set transfer case control lever to neutral (N) and engage neutral lock.
29. In vehicle cab, set transmission gear shift lever to drive (D) position.

EQUIPMENT INITIALIZATION (CONT)



NOTE

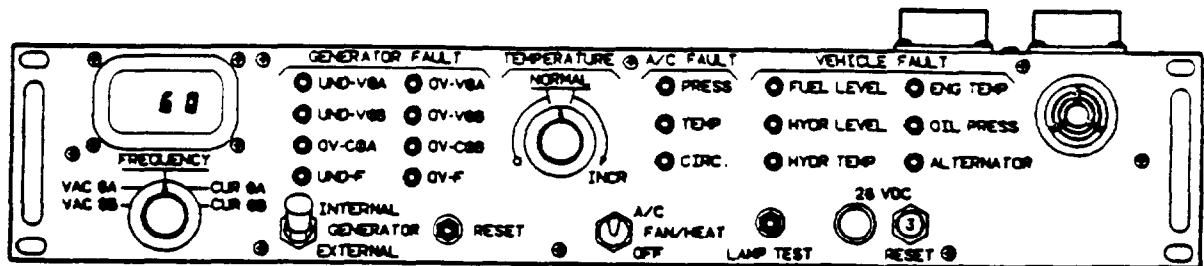
Holding the speed control switch in START position for 2 seconds ensures that the transmission has shifted to 3rd gear.

30. On RPM REGULATOR, place SPEED CONTROL switch in RUN position for 1 second. Then place SPEED CONTROL switch in START position for approximately 2 seconds then release. Verify TACHOMETER reaches 2000 RPM with switch in START position then decreases to 1350/1400 RPM when switch is released.

EQUIPMENT INITIALIZATION (CONT)

NOTE

Until SYSTEM POWER SUPPLY is initialized, the FUEL LEVEL, HYDR LEVEL, HYDR TEMP and ALTERNATOR fault lights will be lit but audible alarm will not sound.



31. Inside shelter on HC/AC CONTROL PANEL, set controls as follows and verify the following conditions:

CONTROLS/indicators	POSITION/CONDITION
28 VDC LAMP GENERATOR	LIT
A/C SWITCH	INTERNAL
TEMPERATURE CONTROL	A/C or FAN/HEAT
GENERATOR FAULT	NORMAL
A/C FAULT	NO INDICATORS LIT
VEHICLE FAULT	NO INDICATORS LIT
	FUEL LEVEL , HYDR LEVEL, HYDR TEMP, and ALTERNATOR indicators lit

EQUIPMENT INITIALIZATION (CONT)

NOTE

Wait ten seconds for hydraulic generator to stabilize.

32. On power distribution panel set circuit breakers in the following positions:

<u>CIRCUIT BREAKER</u>	<u>POSITION</u>
MAIN	ON
POWER SUPPLY	ON
LIGHTS AND OUTLETS	ON

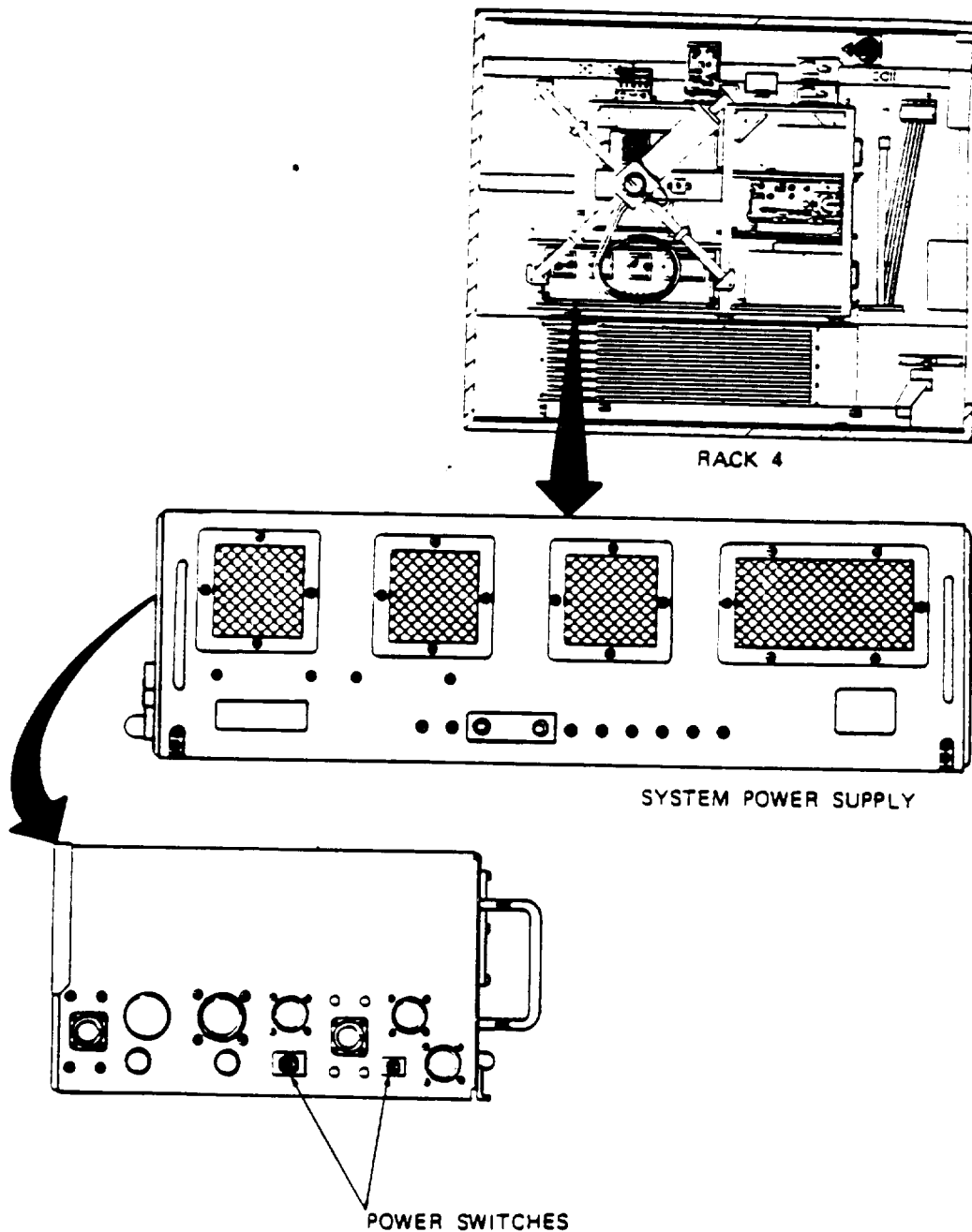
NOTE

Racks 2 and 3 circuit breaker must be turned on before racks 1 and 2 circuit breaker. If this does not occur, the TRR-35 faults will not be able to be cleared.

RACK 4	ON
RACKS 2 AND 3	ON
RACKS 1 AND 2	ON

EQUIPMENT INITIALIZATION (CONT)

33. In rack 4, on system power supply (2 switches), set power switches to ON position. Verify no vehicle fault indicators are lit on HG/AC control panel.

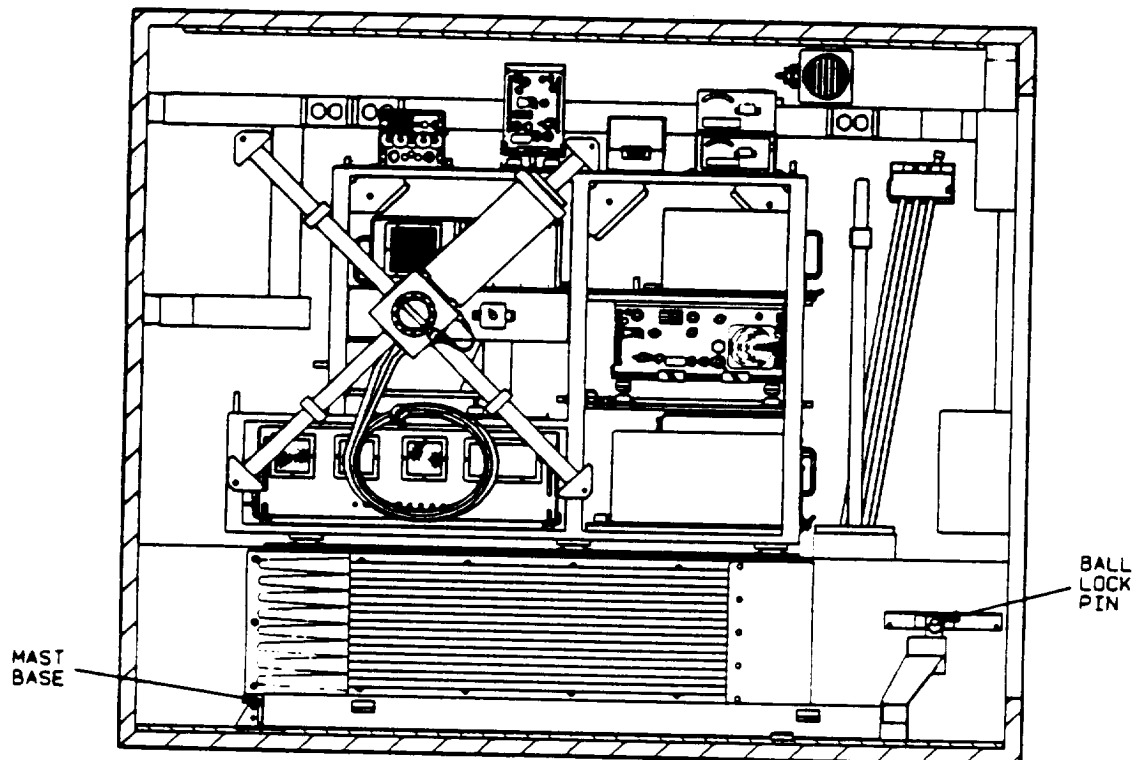


EQUIPMENT INITIALIZATION (CONT)

34. inside shelter on door jam, turn fluorescent lights switch ON.

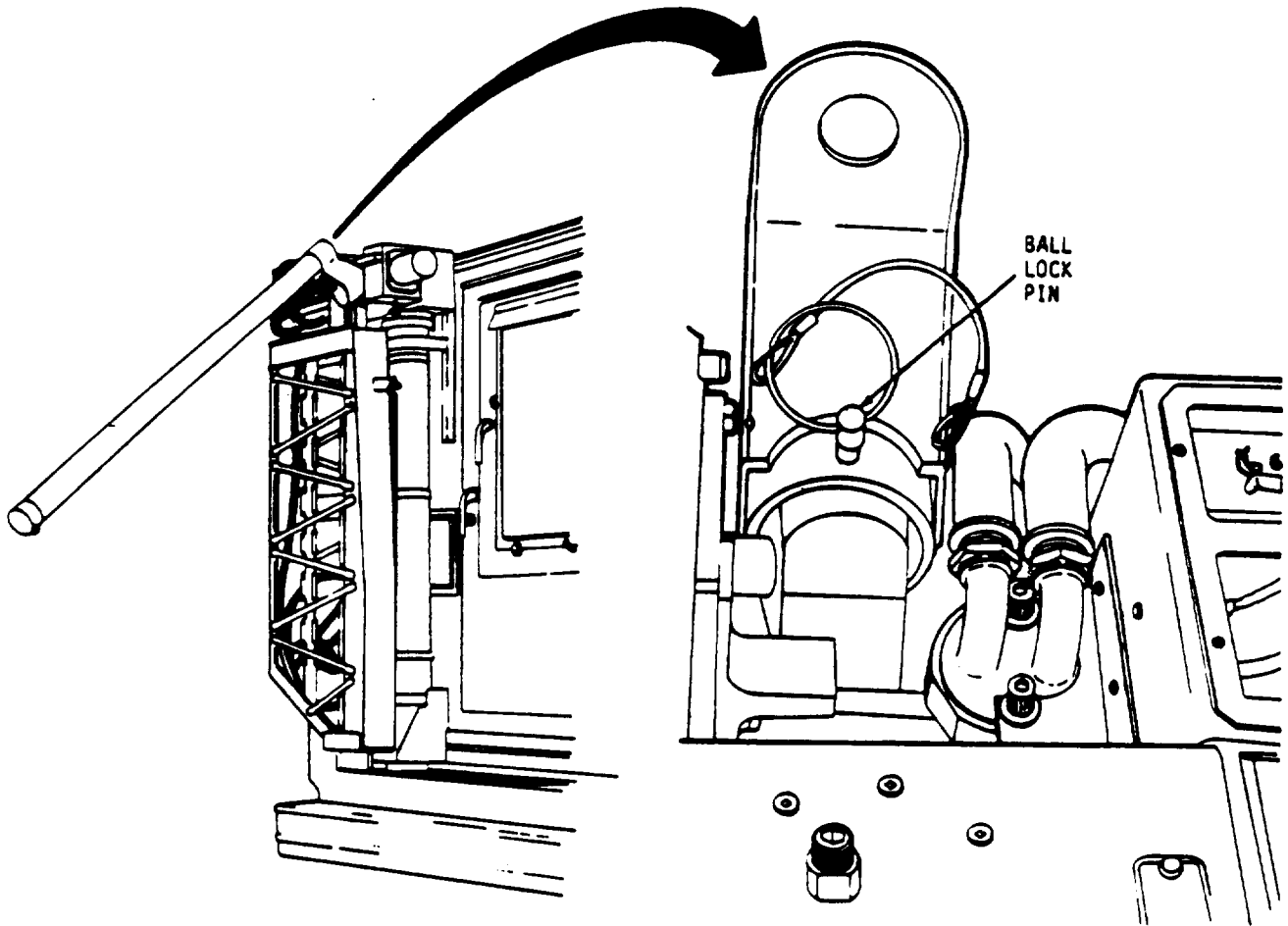
NOTE

The air conditioner will not operate until air temperature is above 28° F. The CIRC fault light will be lit if air conditioner return temperature is below 28° F and A/C switch is not in OFF position (no alarm will sound).



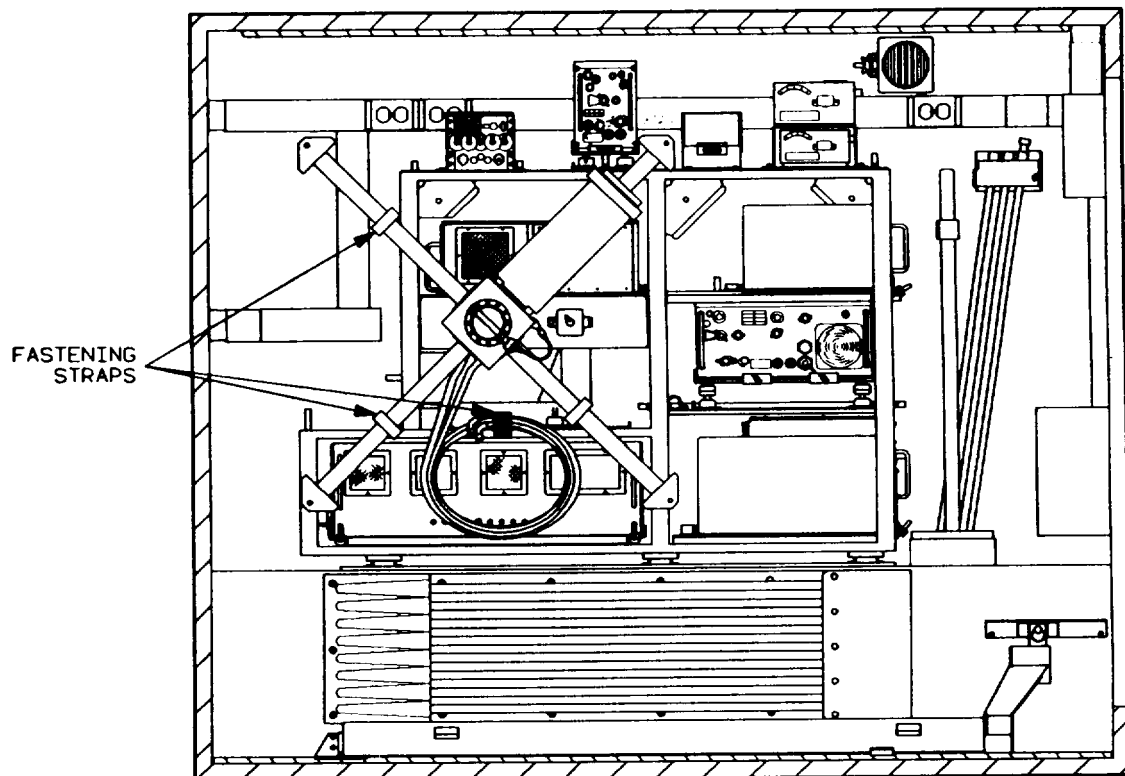
35. On curbside, remove ball lock pin securing Mast Tube to bracket.
36. Remove Mast Tube and hand to operator outside of shelter.

EQUIPMENT INITIALIZATION (CONT)



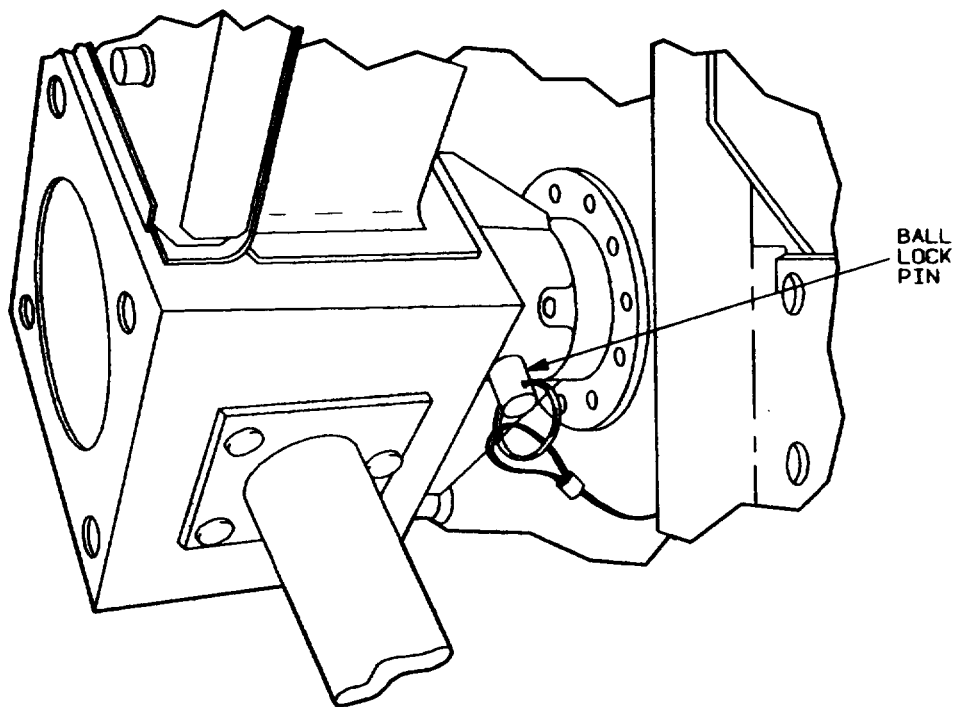
37. Place Mast Tube in antenna mounting socket and insert ball lock pin.

EQUIPMENT INITIALIZATION (CONT)



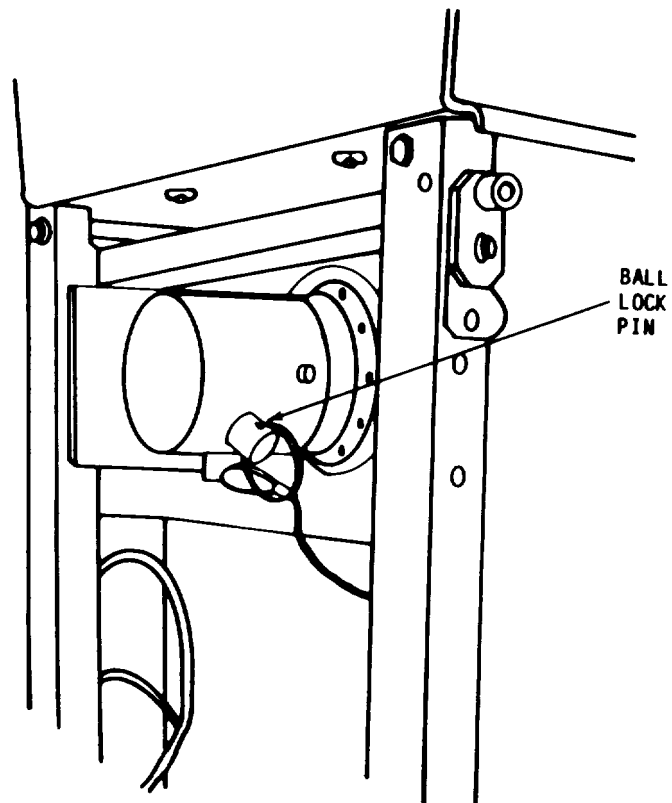
38. On RACK 4, release strap securing Mast Crown cabling.
39. On RACK 4, release 4 straps securing Mast Crown.

EQUIPMENT INITIALIZATION (CONT)



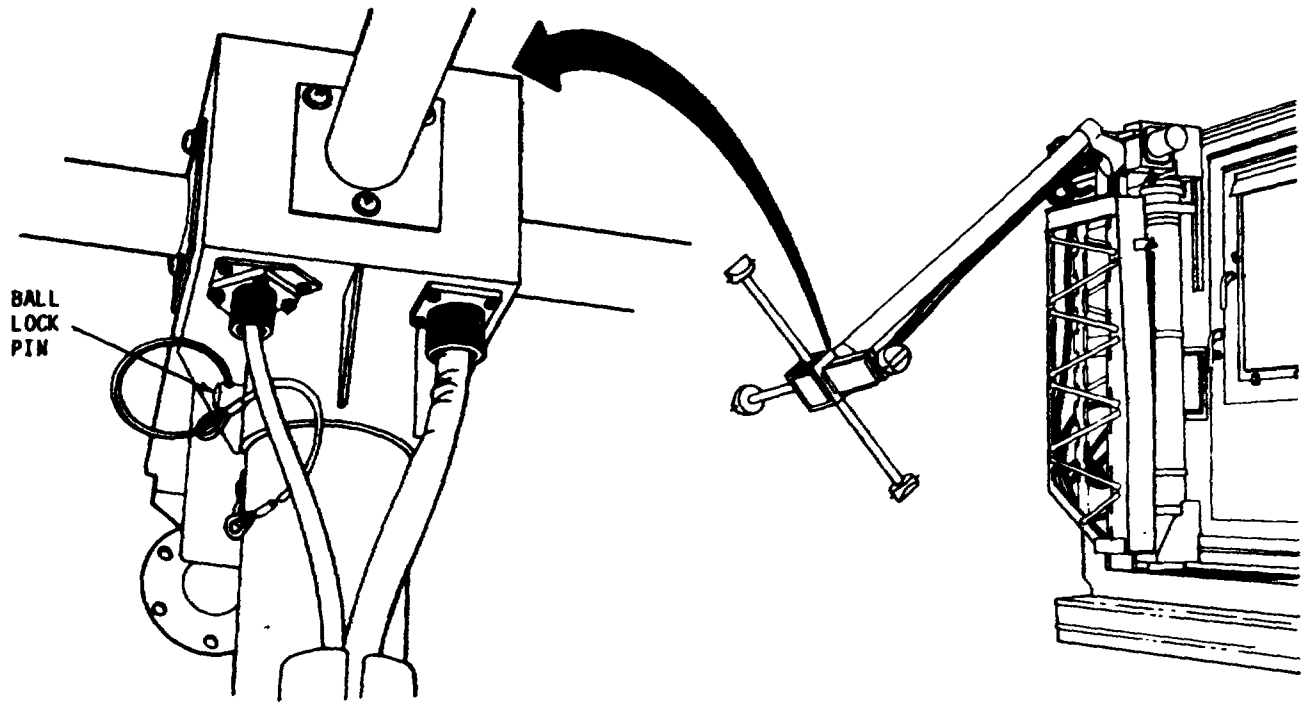
40. On RACK 4, remove ball lock pin securing Mast Crown assembly to storage hub of RACK 4. Remove Mast Crown and cabling.

EQUIPMENT INITIALIZATION (CONT)



41. Hand Mast Crown and cabling to operator outside shelter. Replace ball lock pin in hole on storage hub.

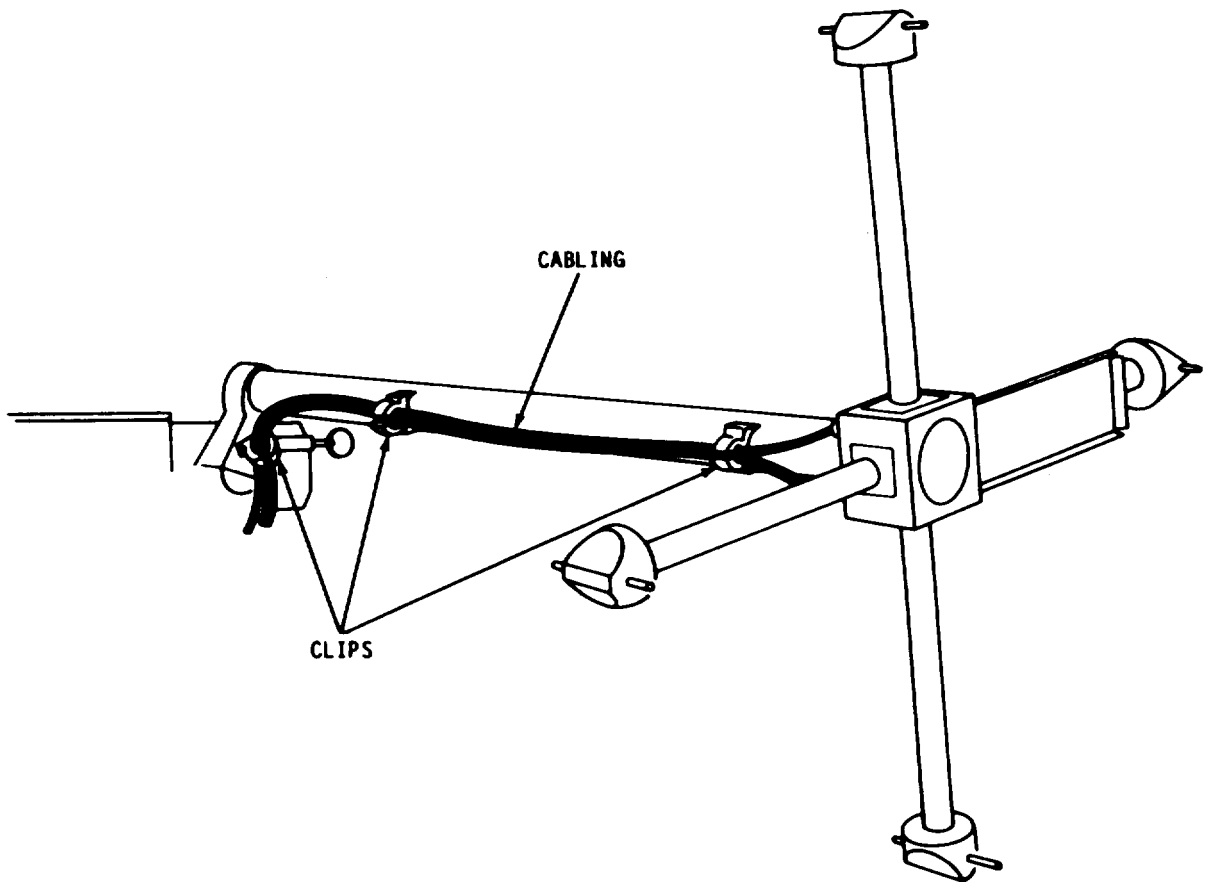
EQUIPMENT INITIALIZATION (CONT)



42. Place Mast Crown assembly on Mast Tube, align holes and guide pin. Secure with ball lock pin.

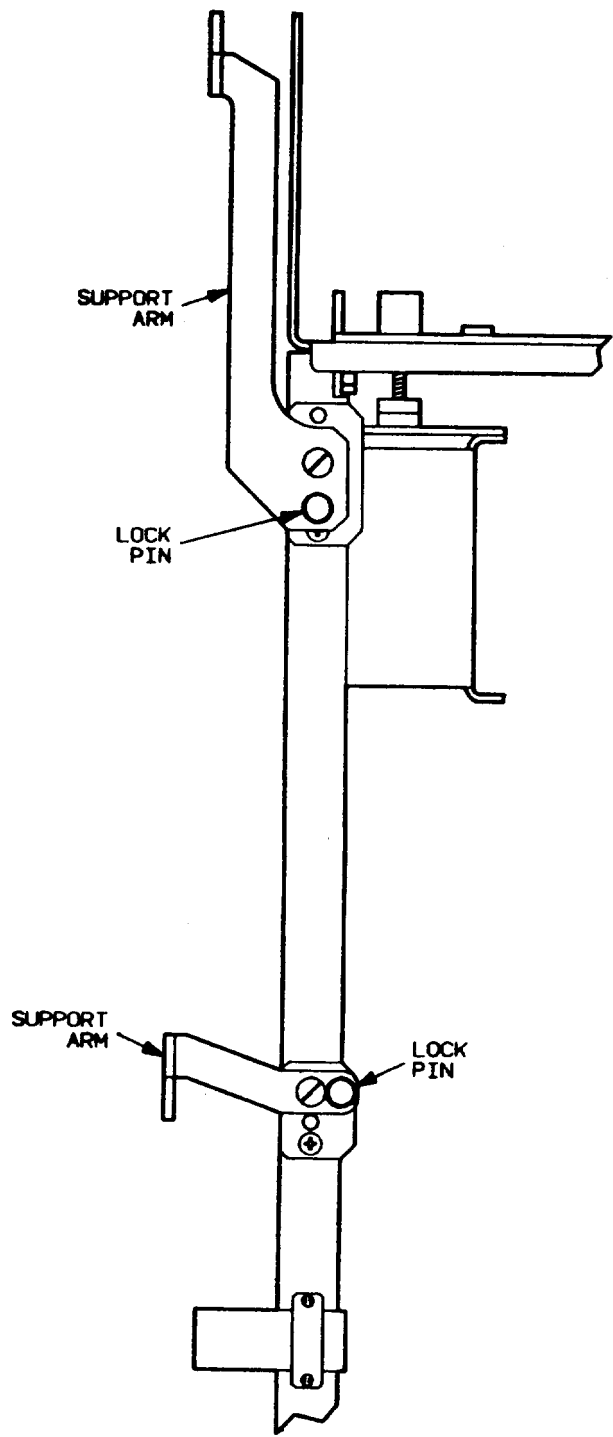
43. On Mast Crown, remove dust covers from W21(P1) and W20(P4).

EQUIPMENT INITIALIZATION (CONT)



44. Secure cables in rubber clips on Mast Tube.

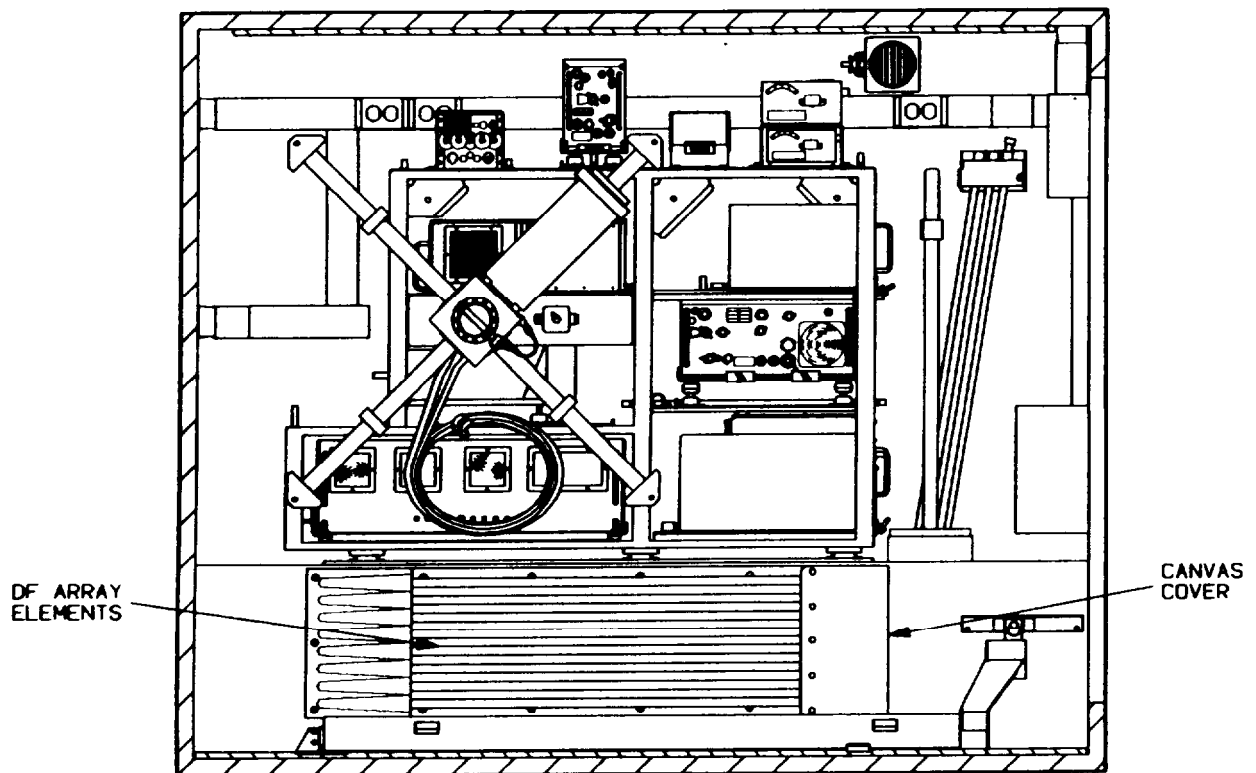
EQUIPMENT INITIALIZATION (CONT)



RACK 4 SIDE VIEW

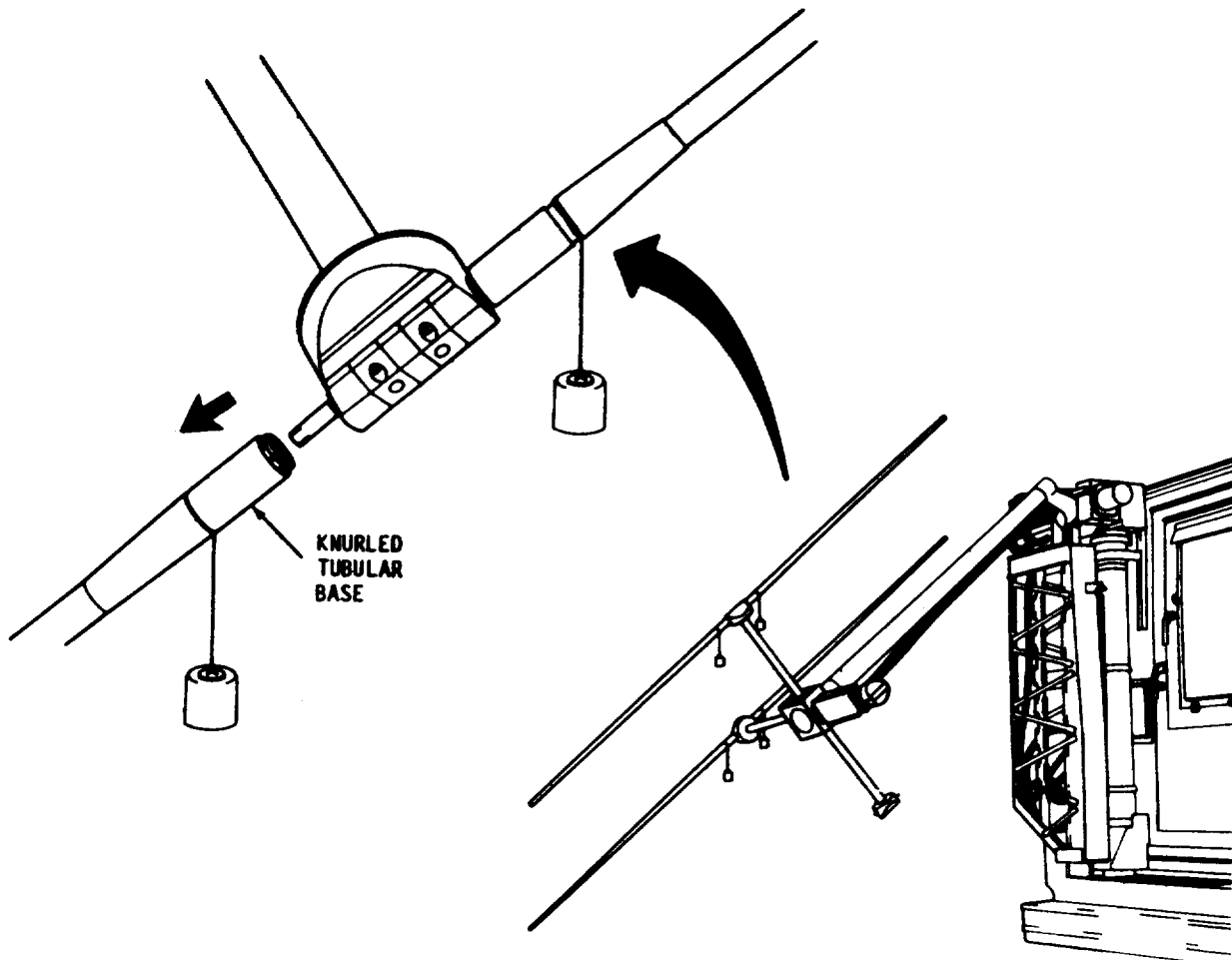
45. On RACK 4, rotate each of the four Mast Crown assembly storage support arms and secure inward.

EQUIPMENT INITIALIZATION (CONT)



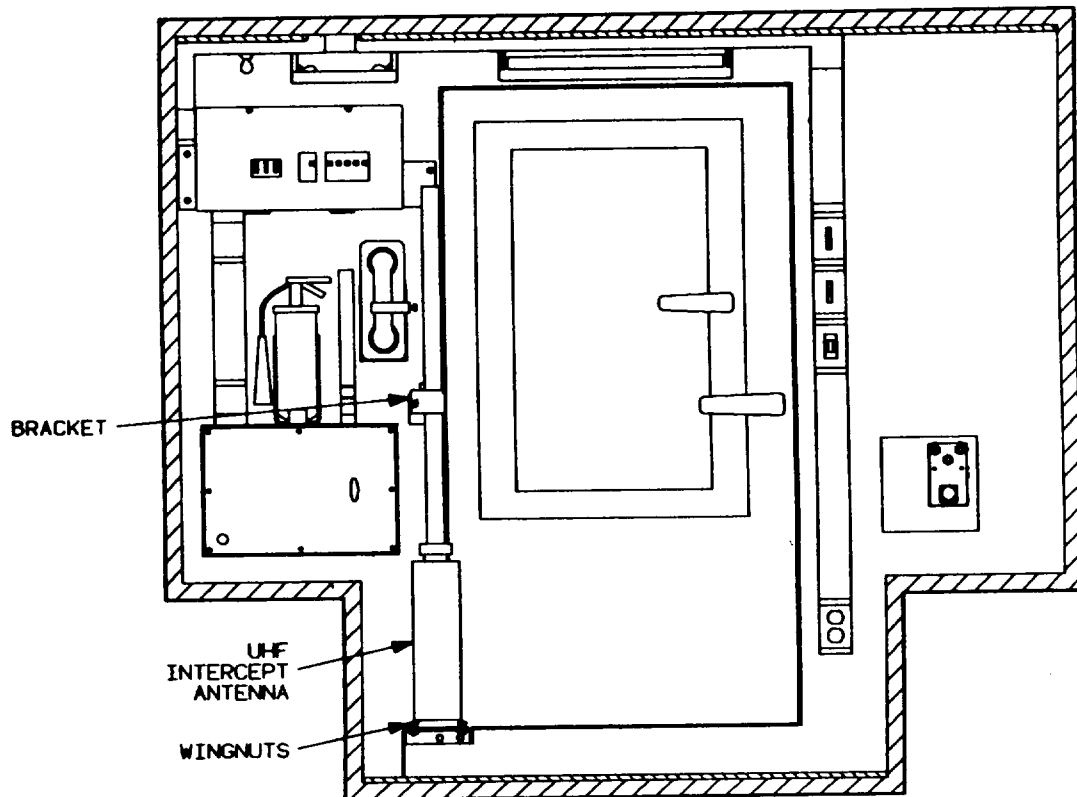
46. Inside shelter on curbside, open canvas cover of DF antenna element storage container.
47. Remove four antenna elements from the storage container. Hand antenna elements to operator outside shelter.

EQUIPMENT INITIALIATION (CONT)



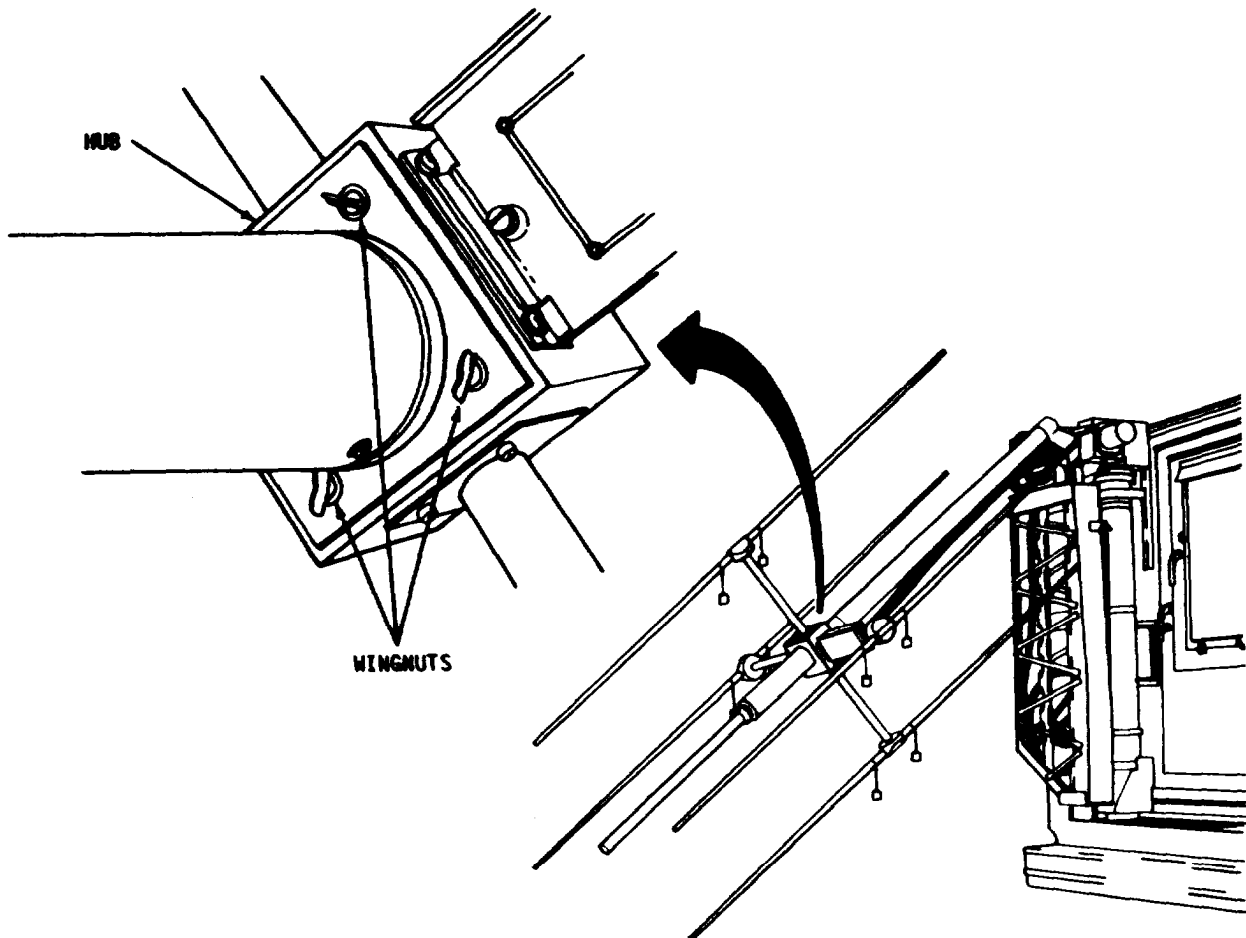
48. Remove dust cover from antenna elements. Slide knurled ring back and secure elements on Mast Crown assembly.

EQUIPMENT INITIALIZATION (CONT)



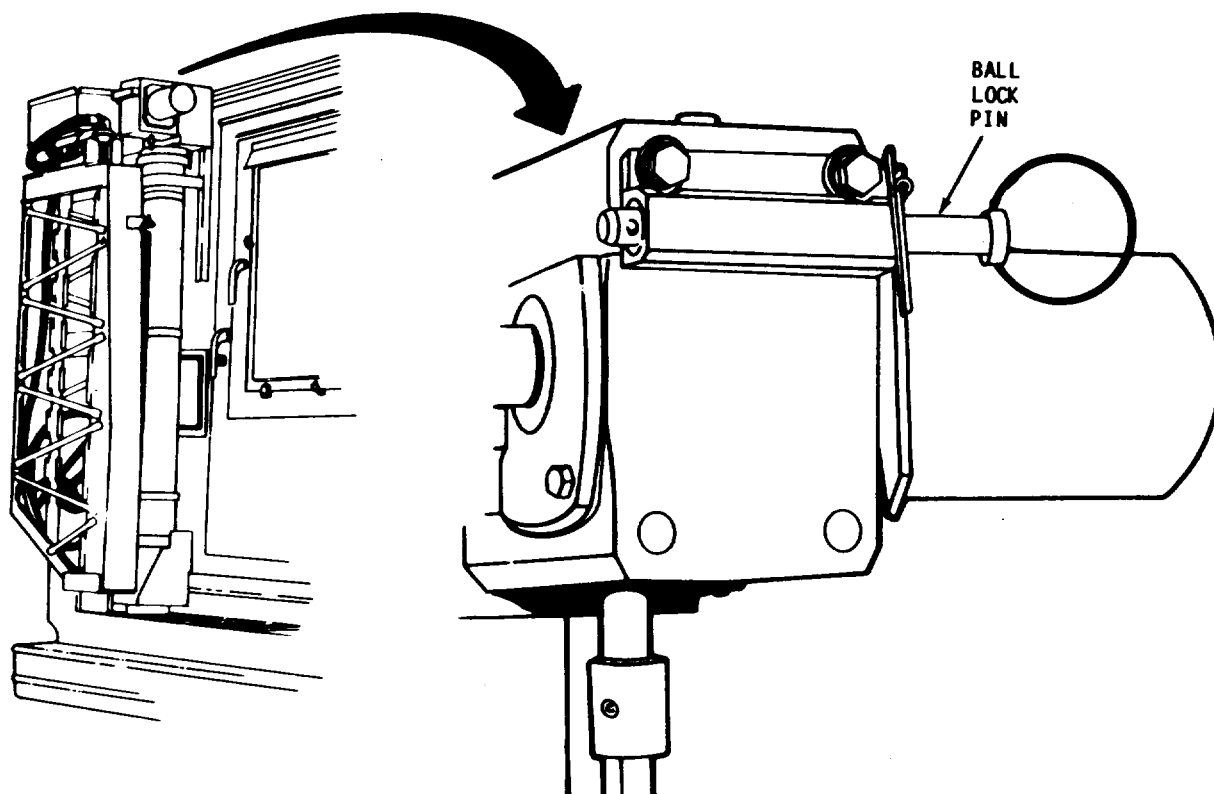
49. Inside shelter on rear wall, loosen captive thumbscrew on upper bracket securing UHF/Datalink antenna.
50. Loosen three captive wingnuts securing base of UHF/Datalink antenna to mounting bracket. Remove and hand to operator outside of shelter.
51. Close upper antenna storage bracket and secure by tightening captive thumbscrew.

EQUIPMENT INITIALIZATION (COW)



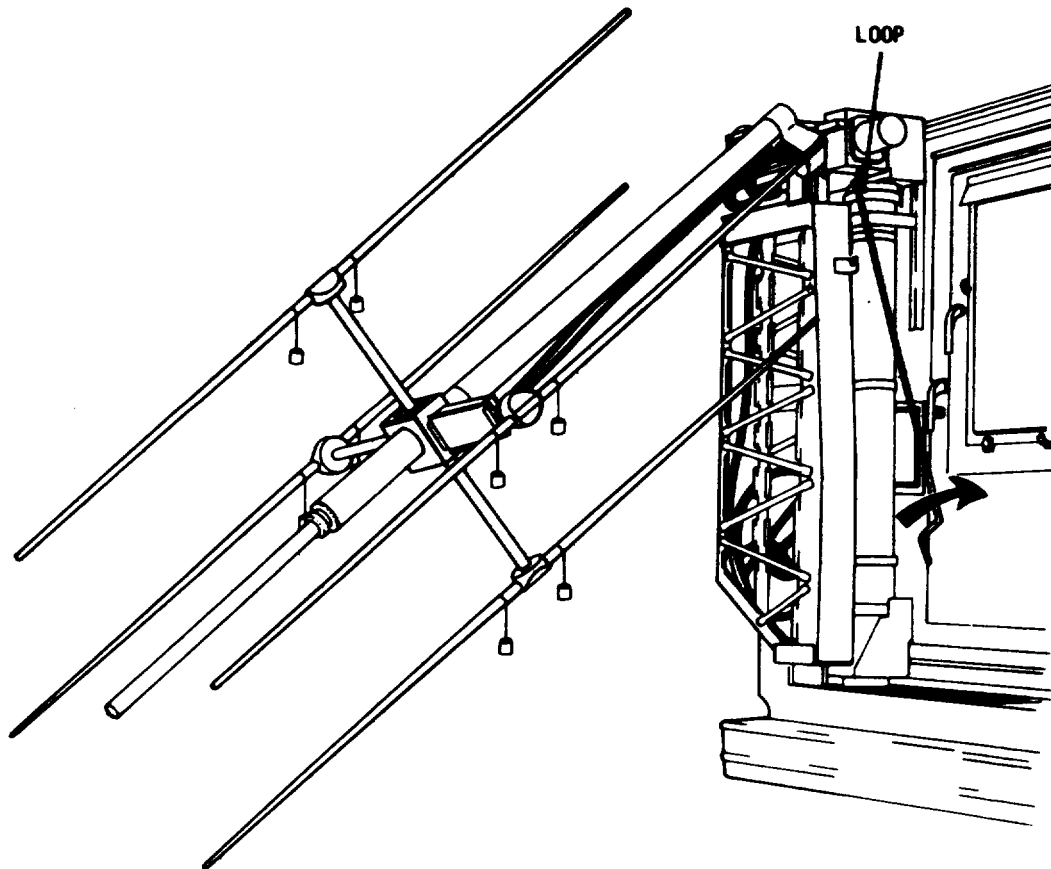
52. Align captive wingnuts and guide pins of base of UHF/Datalink antenna with mounting holes of Mast Crown assembly. Secure by tightening captive wingnuts.
53. Inside shelter on curbside, remove the four remaining DF antenna elements from storage container. Hand antenna elements to operator outside shelter.
54. Remove dust cover from antenna elements. Slide knurled ring back and secure elements on Mast Crown assembly.

EQUIPMENT INITIALIZATION (CONT)



55. On reductor, move ball lock pin out of the way of antenna mast tube.

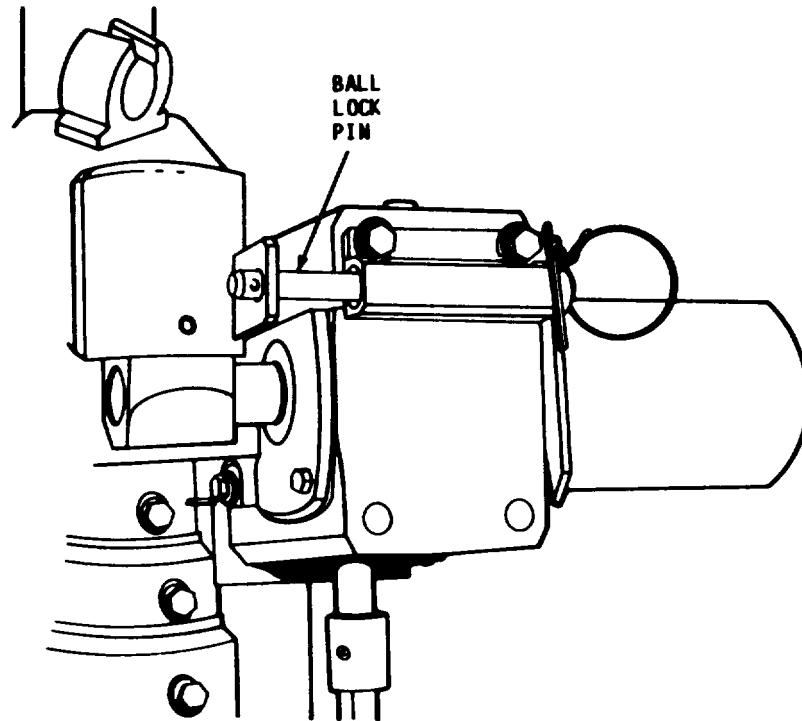
EQUIPMENT INITIALIZATION (CONT)



56. On cable basket, remove hand crank from bracket. Insert hook end of hand crank in loop on reductor.

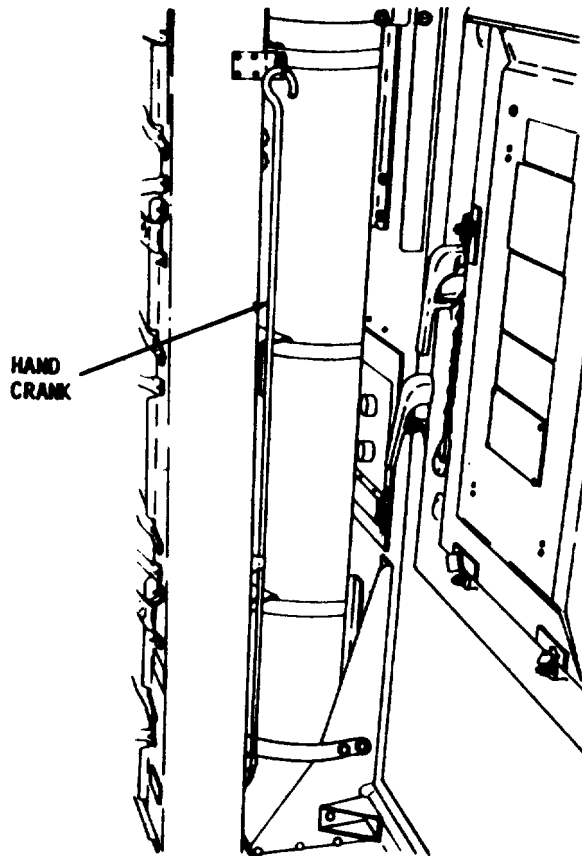
57. Turn hand crank clockwise to raise antenna to vertical position.

EQUIPMENT INITIALIZATION (CONT)



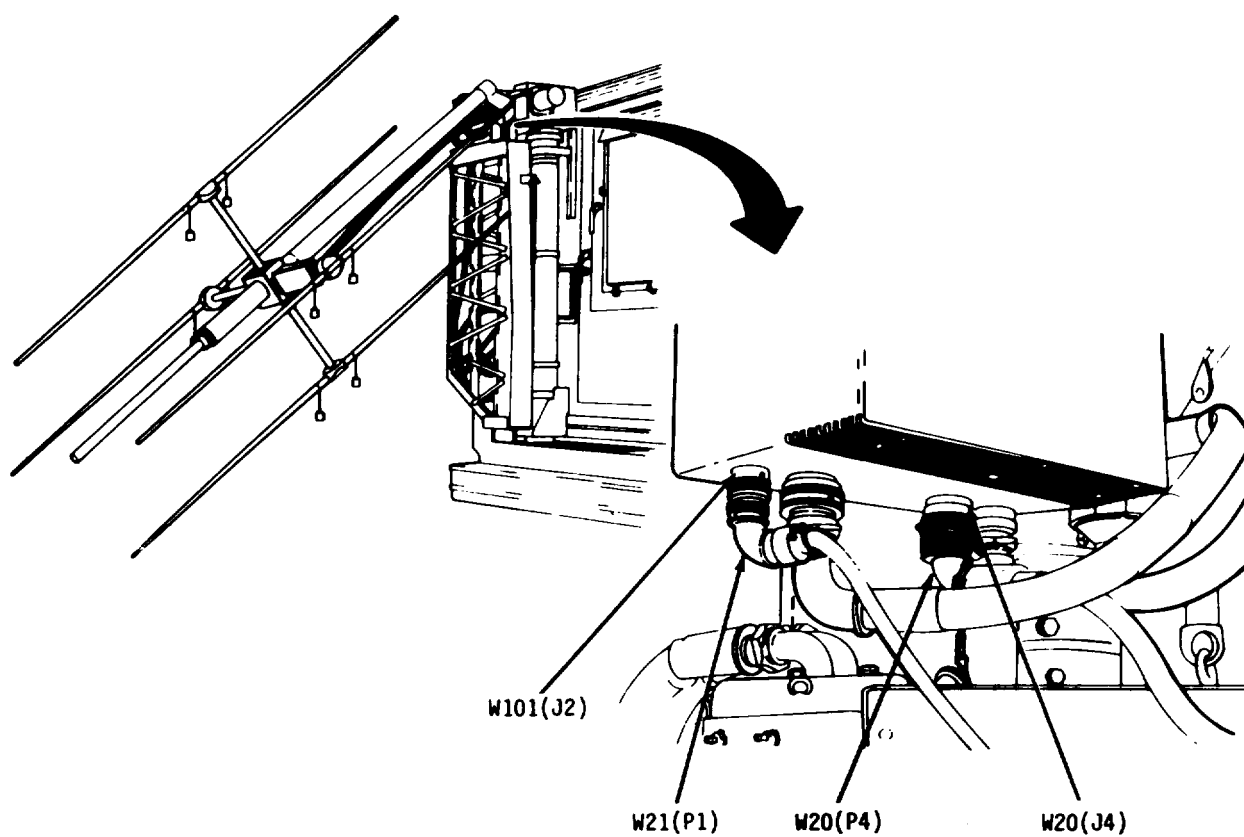
58. On REDUCTOR, insert ball lock pin through hole in Mast Tube.

EQUIPMENT INITIALIZATION (CONT)



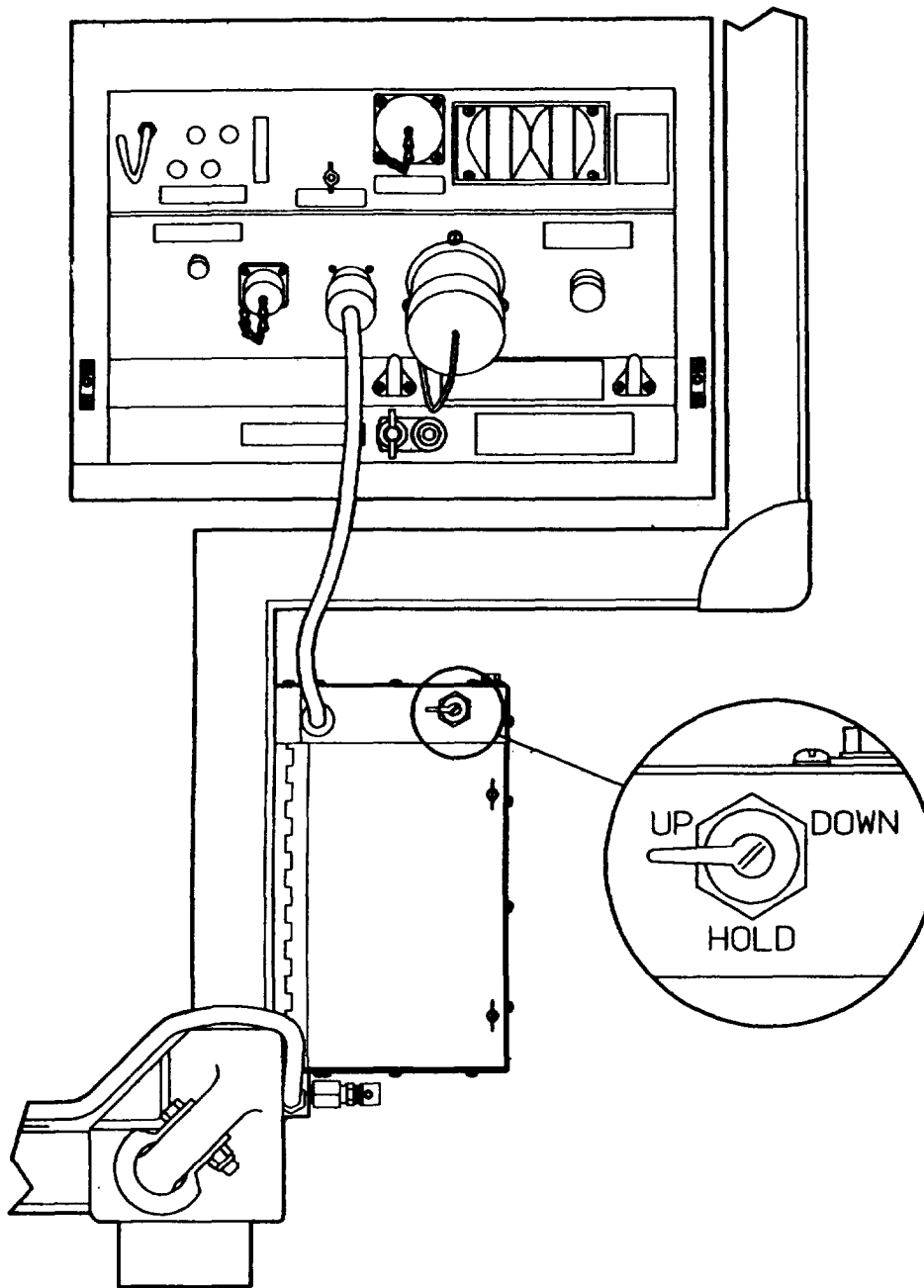
59. Remove hand crank from loop on the reductor and store on cable basket.

EQUIPMENT INITIALIZATION (CONT)



60. On EMI BOX, remove dust covers from W101(J2) and W20(J4).
61. Connect Mast Crown cables W21(P1) and W20(P4) to connectors W101(J2) and W20(J4) on EMI BOX.

EQUIPMENT INITIALIZATION (CONT)



WARNING

Ensure there are no obstructions above pneumatic mast prior to raising.

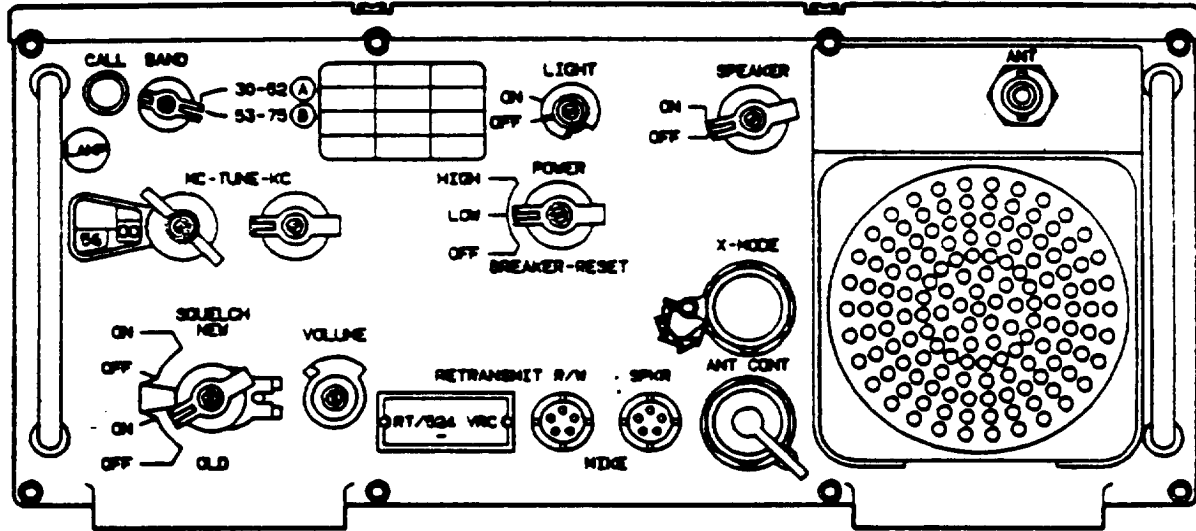
62. On COMPRESSOR ASSEMBLY, place pneumatic mast control valve in the UP position. Ensure that all 5 mast sections have fully extended.
63. Inside shelter, remove operator chairs from storage location.

EQUIPMENT INITIALIZATION (CONT)

64. Set the power switches for the assemblies listed below in the following positions:

<u>LOCATION</u>	<u>ASSEMBLY</u>	<u>POSITION</u>
RACKS 1 AND 3	SIGNAL DISPLAY UNITS	ON
RACK 2	RECORDER-REPRODUCER (2 recorders)	ON
RACK 4	DATA LINK PROCESSOR	ON
RACK 4	TSEC/KG-84 or TSEC/KG-84A	ON
RACK 4	GUARD RECEIVER	ON
RACK 4	AUDIO FREQUENCY SWITCH	R T

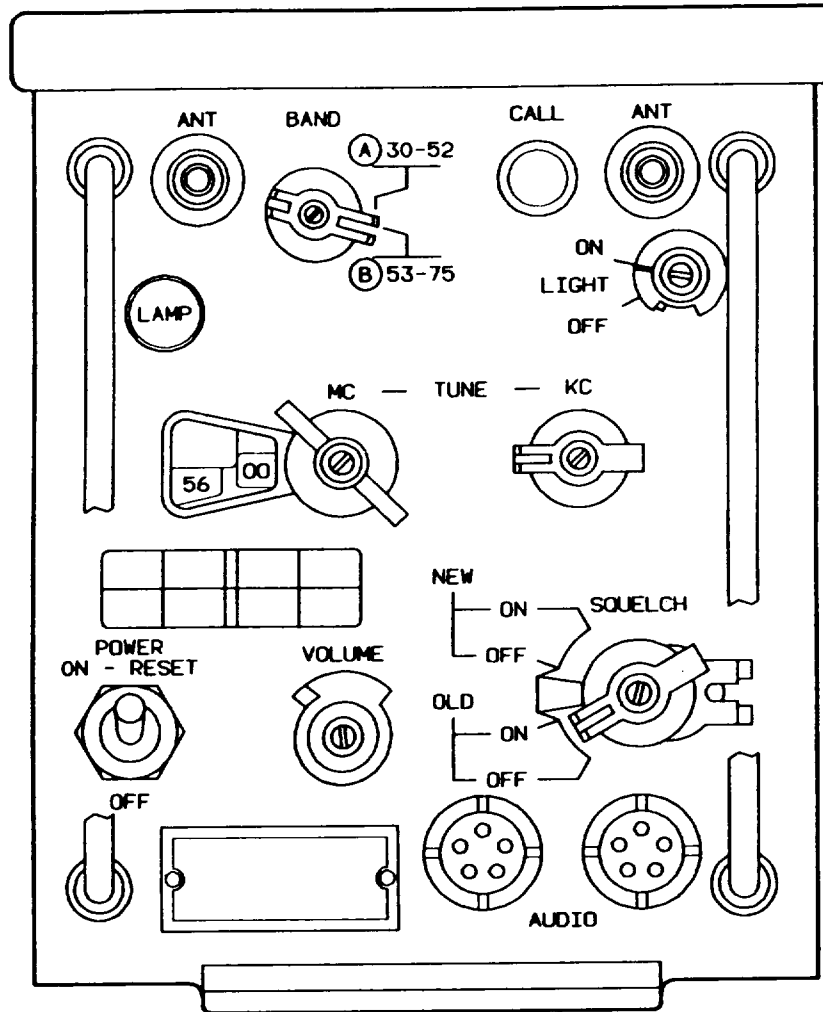
EQUIPMENT INITIALIZATION (CONT)



65. On VHF RT-524A/VRC, set controls as follows :

SWITCH	POSITION
POWER SWITCH	LOW
BAND	B
FREQUENCY	56 MHz
SQUELCH	OLD/ON
VOLUME	MIDRANGE
LIGHT	ON
SPEAKER	OFF

EQUIPMENT INITIALIZATION (CONT)

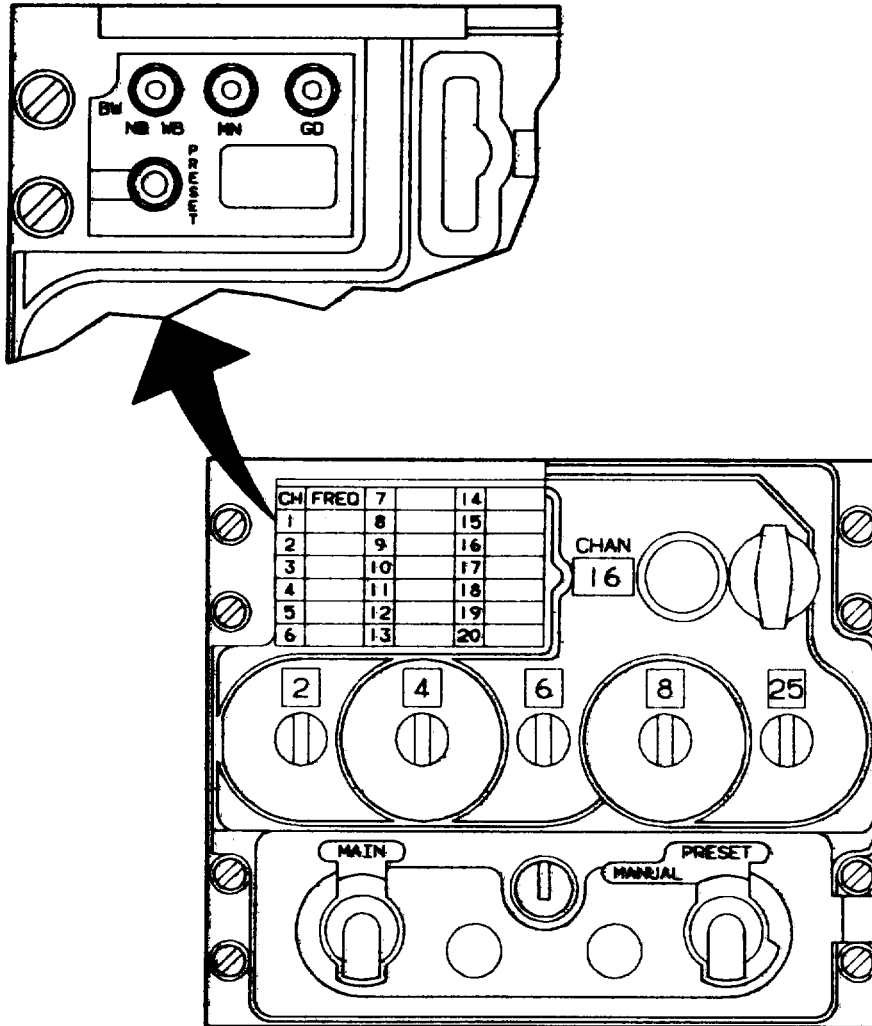


66. On VHF GUARD RECEIVER R-442A/VRC, set controls as follows:

<u>SWITCH</u>	<u>POSITION</u>
POWER SWITCH	ON
BAND	B
FREQUENCY	56 MHz
SQUELCH	OLD/ON
VOLUME	MIDRANGE
LIGHT	ON

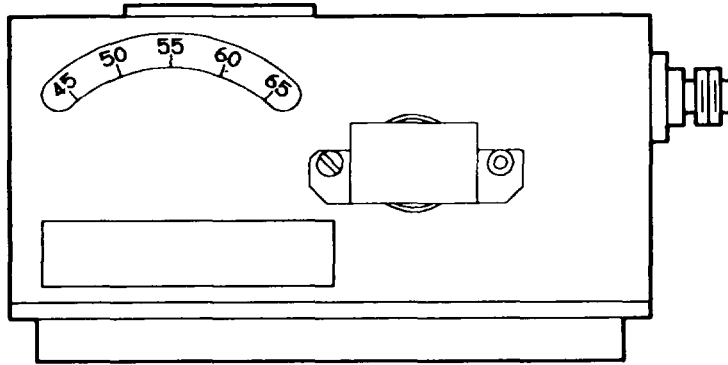
EQUIPMENT INITIALIZATION (CONT)

- 67. On TSEC/KY-57, set function to PLAIN TEXT MODE.
- 68. (V2 ONLY) On TSEC/KG-84 or TSEC/KG-84A, set ENABLE/ZEROIZE switch to ENABLE position. Verify power indicator is lit.

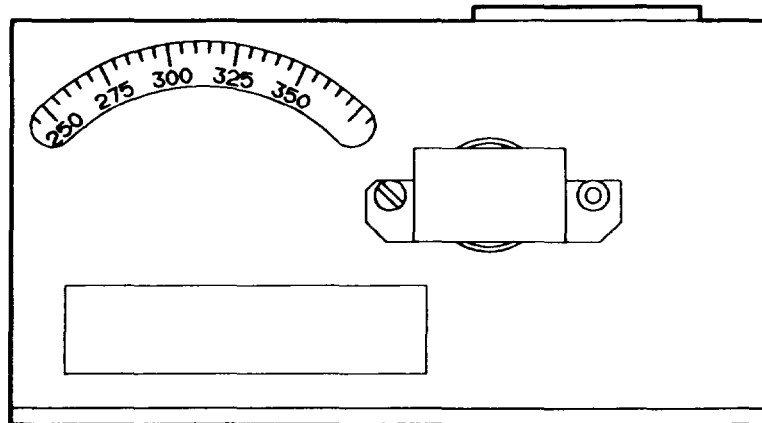


- 69. (V2 ONLY) On UHF Radio Control C-10547/ARC-164(V), set frequency controls as required for UHF operation.

EQUIPMENT INITIALIZATION (CONT)

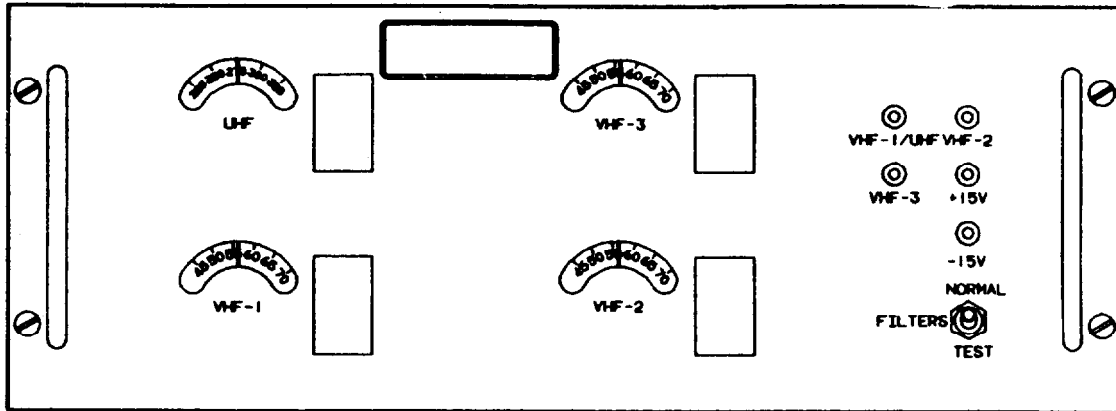


70. On VHF BANDPASS FILTER, adjust to 56 MHz.

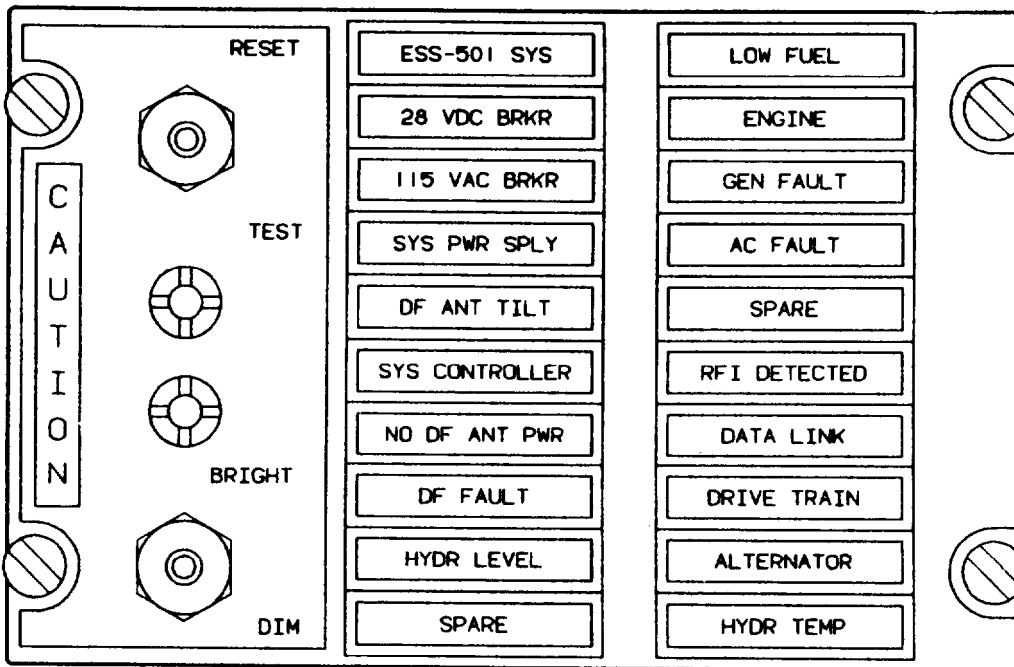


71. (V2 ONLY) On UHF BANDPASS FILTER, adjust to frequency of the RT-1288A/ARC-164 (V).

EQUIPMENT INITIALIZATION (CONT)

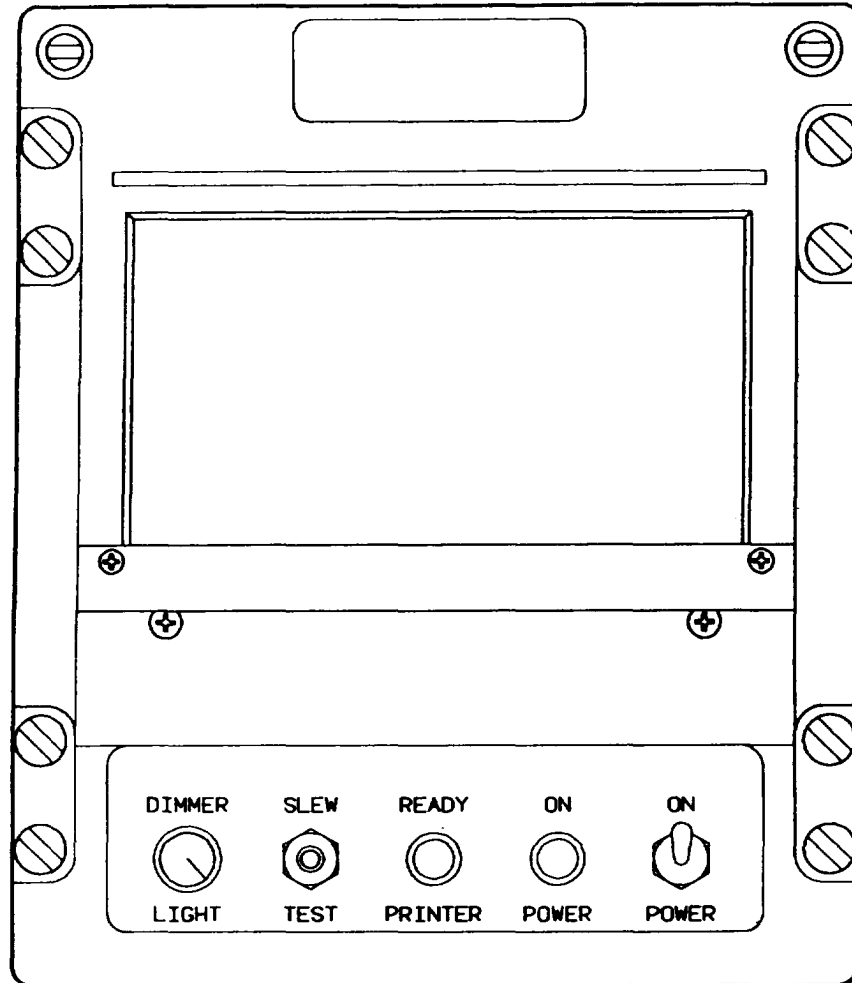


72. In RACK 1, on R.F. DISTRIBUTION UNIT verify filter switch is in NORMAL position and verify DC power indicators are lit.
73. Adjust VHF-1, VHF-2, and VHF-3 filters to 56 MHz, and (V2 ONLY) UHF filter to frequency of the RT-1288/ARC-164(V).



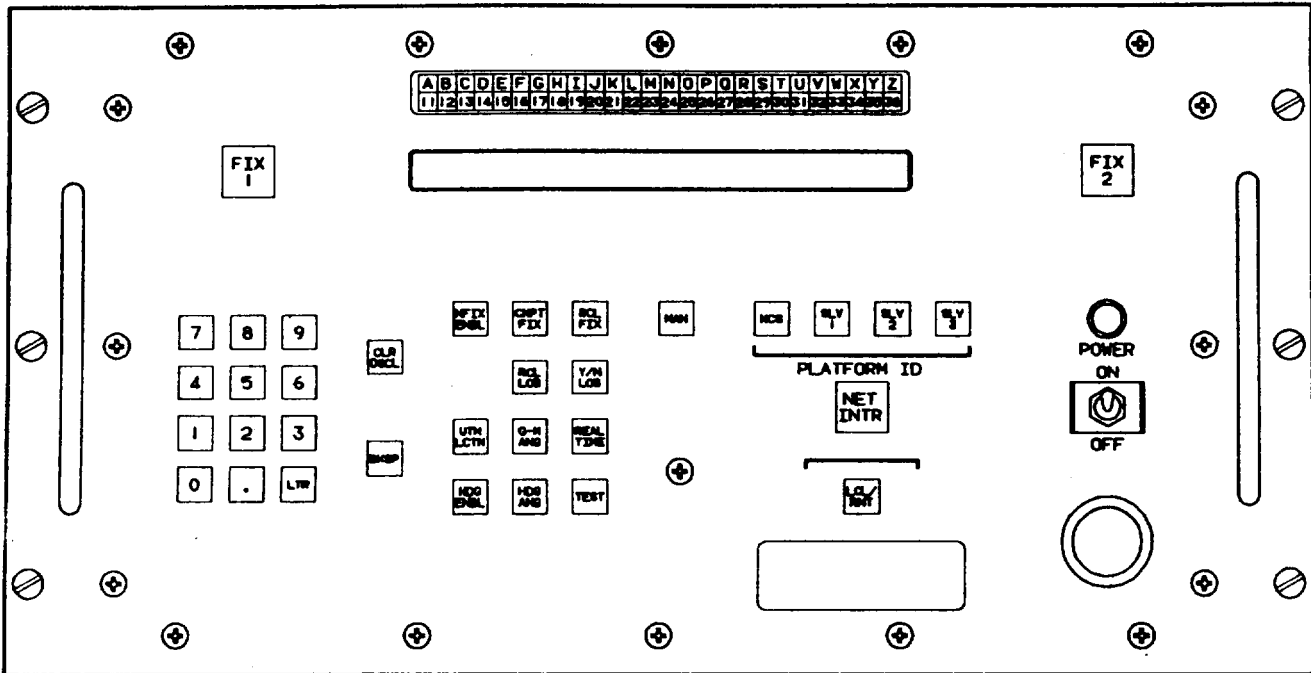
74. In RACK 2 on CAUTION PANEL, set BRIGHT/DIM switch to BRIGHT.
75. On CAUTION PANEL, place RESET/TEST switch to TEST position. Verify all indicators are lit then release switch.

EQUIPMENT INITIALIZATION (CONT)



76. On THERMAL PRINTER, set power switch to ON position and verify POWER and READY indicators are lit.

EQUIPMENT INITIALIZATION (CONT)



77. On SYSTEM CONTROLLER, set power switch to ON position and verify power indicator is lit. The BITE POWER UP test will

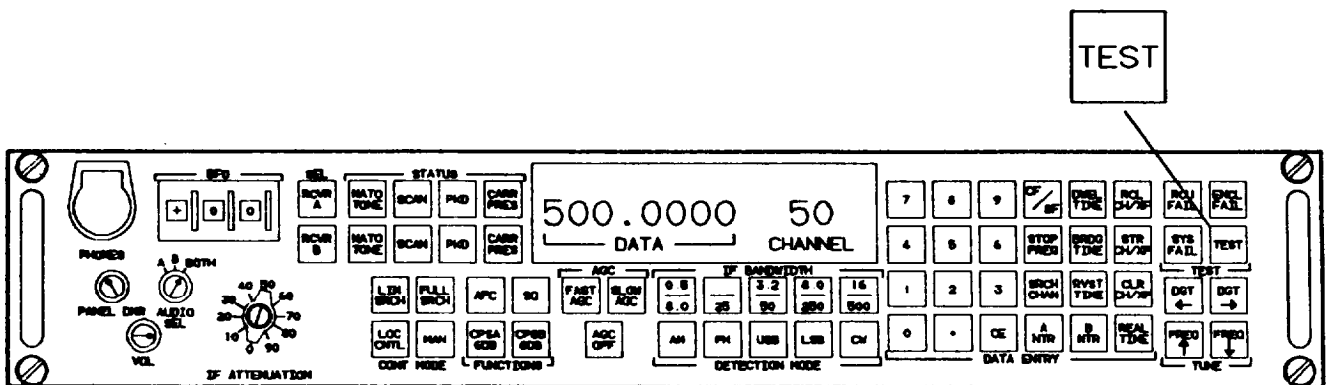
NOTE

ESS-501 SYS lamp will remain on and DATA LINK may be on until setup datalink is accomplished.

78. On CAUTION PANEL, verify there are no other fault indicators lit.

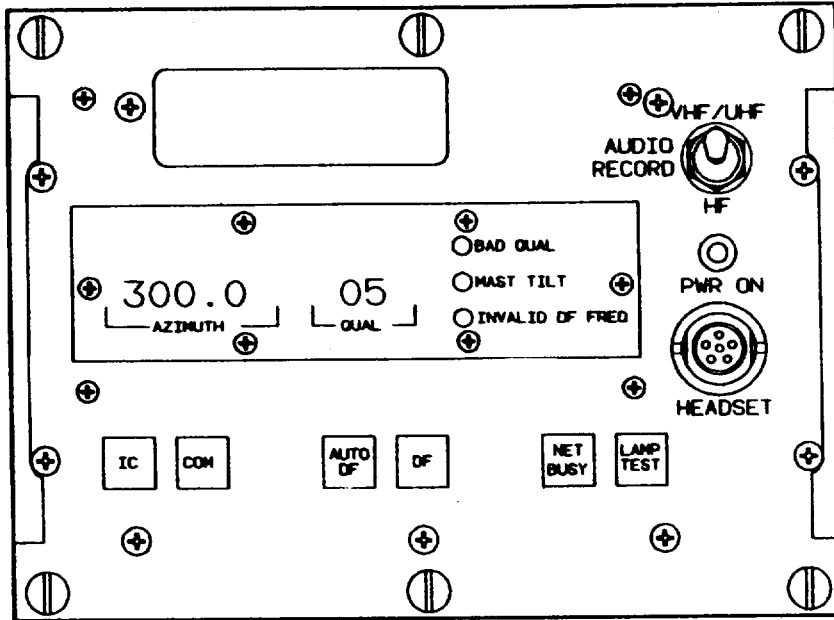
79. On SYSTEM CONTROLLER, display will read "READY FOR INITIALIZATION".

EQUIPMENT INITIALIZATION (CONT)



80. In RACKS 1 AND 3 on RECEIVER CONTROL UNITS, press and hold the TEST pushbutton, Verify all status and fault indicators are lit. Release TEST pushbutton and verify there are no fault indicators lit.

EQUIPMENT CHECKOUT

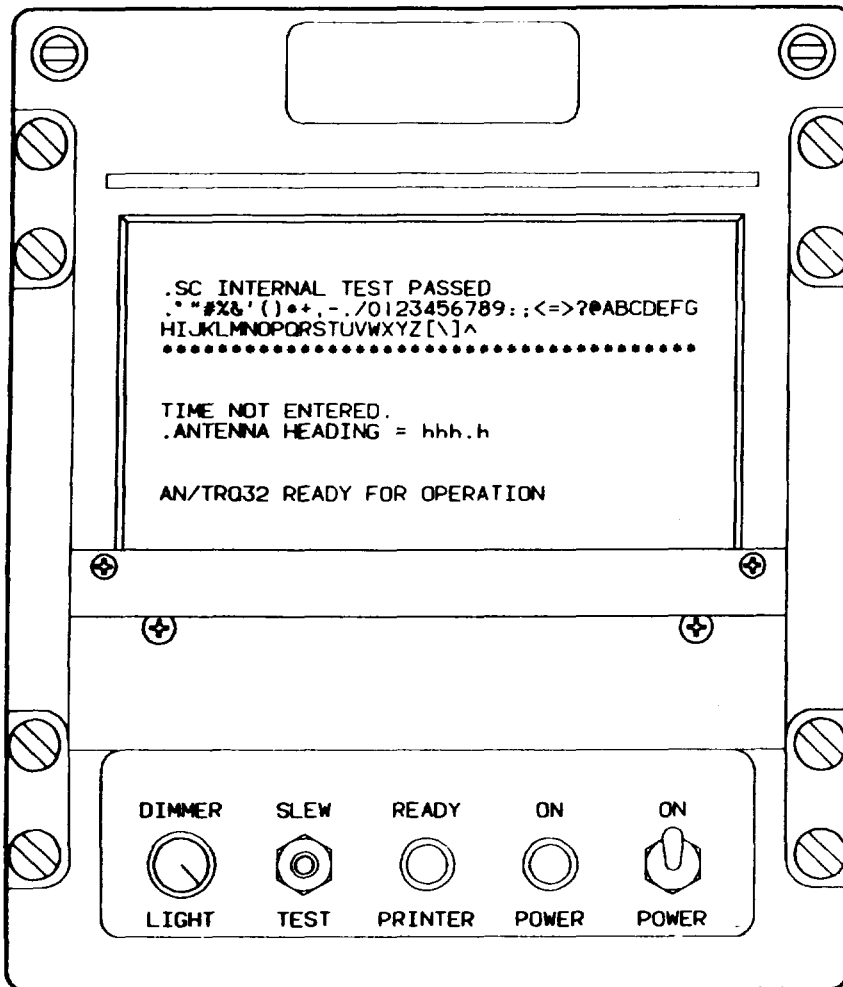


1. On OPERATOR CONTROL PANELS, press and hold LAMP TEST. Verify all lamps are lit. Release LAMP TEST.

EQUIPMENT CHECKOUT (CONT)

NOTE

Antenna heading given (013.0) is an example only.



2. In RACK 2 on THERMAL PRINTER, verify the following printout:

```
.SC INTERNAL TEST PASSED
!"$&'()*+,-/0123456789:;<=>?@ABCDEFGH
HIJKLMOPQRSTUVWXYZ[
*****

TIME NOT ENTERED.
.ANTENNA HEADING = 013.0

AN/TRQ32(V) READY FOR OPERATION
```

EQUIPMENT CHECKOUT (CONT)

3. Use compass to verify antenna heading as follows:

Stand 10 to 20 feet to the rear of VEHICLE and sight through the COMPASS along either side of SHELTER.

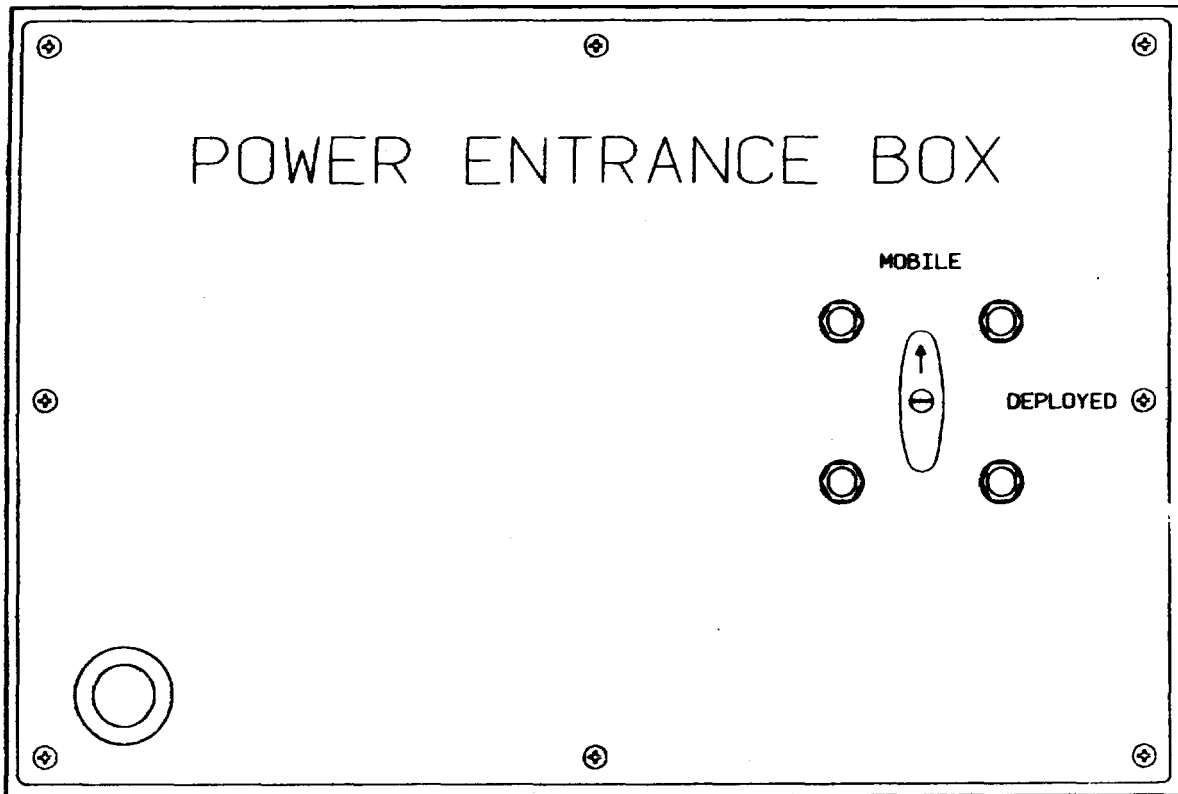
Add 73 degrees to COMPASS reading.

NOTE

If COMPASS reading plus 73 degrees exceeds 360 degrees, subtract 360 degrees to find the heading.

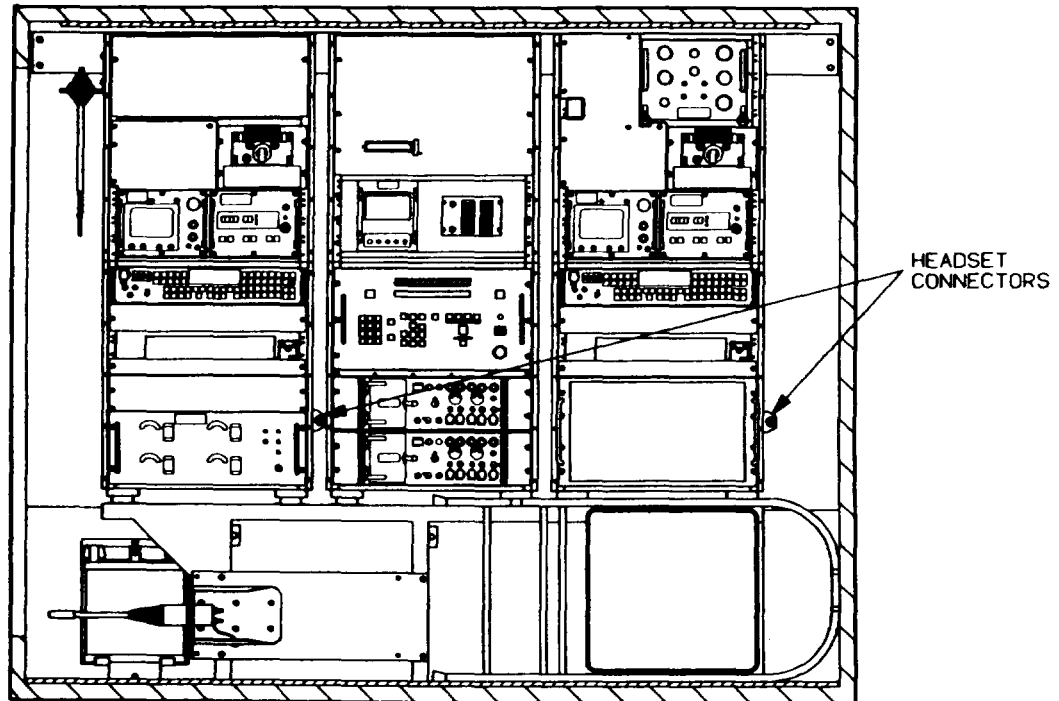
EXAMPLE: 300 + 73 = 373
 373 - 360 = 13

The COMPASS reading plus 73 degrees must be within 10 degrees of the printed ANTENNA HEADING.

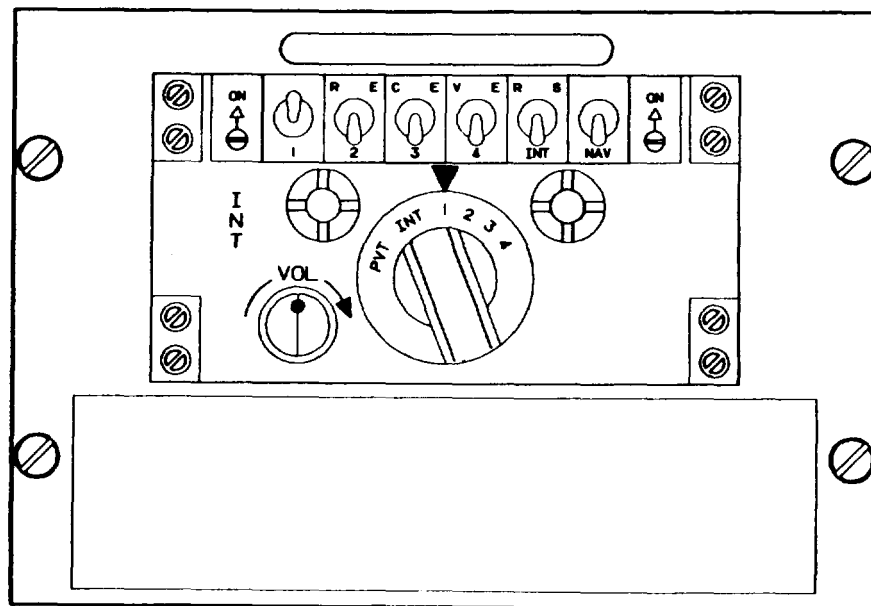


4. On DC POWER SELECTION PANEL, ensure switch is set to MOBILE.
5. In vehicle cab, place monitor switch in position A and press the press-to-talk switch and speak into handset. Verify operator in cab is heard over loudspeaker in shelter assembly.
6. On DC POWER SELECTION PANEL, set switch to DEPLOYED.

EQUIPMENT CHECKOUT (CONT)



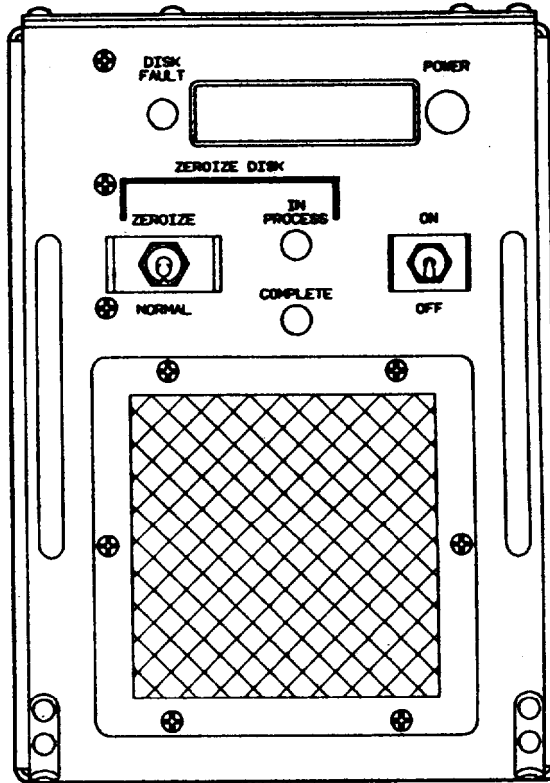
7. In RACK 1, remove headsets from storage compartment. Connect headsets to headset connectors located on right side of RACKS 1 and 3.



8. In RACKS 1 and 3 on INTERCOM CONTROL PANELS, set toggle switch 1 to ON position and rotary switch to position 1.

EQUIPMENT CHECKOUT (CONT)

9. Press the press-to-talk switch on headset cable and speak into microphone. Verify voice is heard over loudspeaker.
10. In RACKS 1 and 3 on INTERCOM CONTROL PANELS, turn rotary switch to the "INT" position. Press the P-T-T switch and verify intercommunication.



CAUTION

Verify ZEROIZE/NORMAL switch on DISK DRIVE CONTROL is in the NORMAL position BEFORE power is applied.

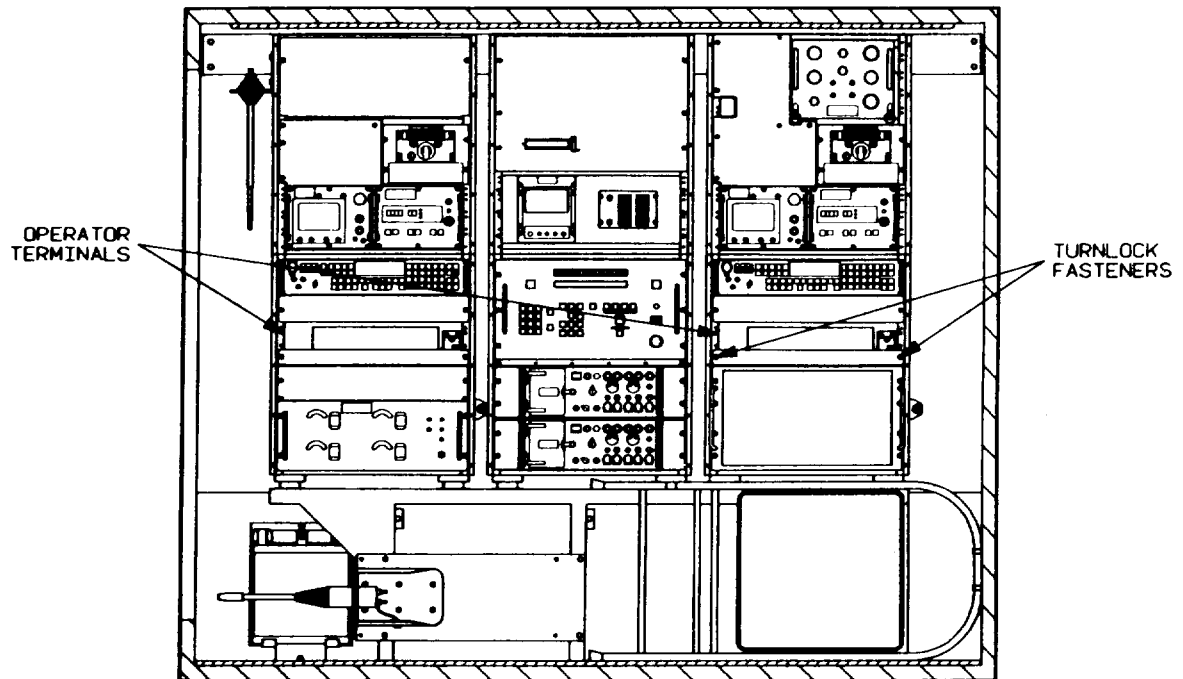
11. In RACK 4 on DISK DRIVE CONTROL, set power switch to ON position. Verify POWER indicator is lit.

NOTE

DATALINK lamp may remain on until setup datalink is accomplished.

12. In RACK 2 on CAUTION PANEL, set RESET/TEST switch to RESET position. Verify failure lamps are not illuminated.

EQUIPMENT CHECKOUT (CONT)

**NOTE**

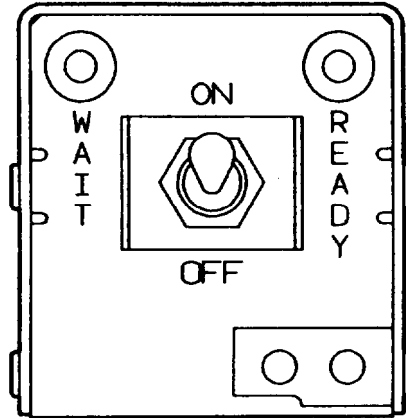
The OPERATOR TERMINAL power switch, located on rear of each terminal, shall remain in the ON position at all times.

13. In RACKS 1 and 3 on OPERATOR TERMINAL mounting trays, loosen two turnlock fasteners and pull out OPERATOR TERMINALS. Raise screen display to access OPERATOR TERMINALS.

EQUIPMENT CHECKOUT (CONT)

NOTE

Wait for READY lamp (green) to illuminate on DISK DRIVE before proceeding to next step.

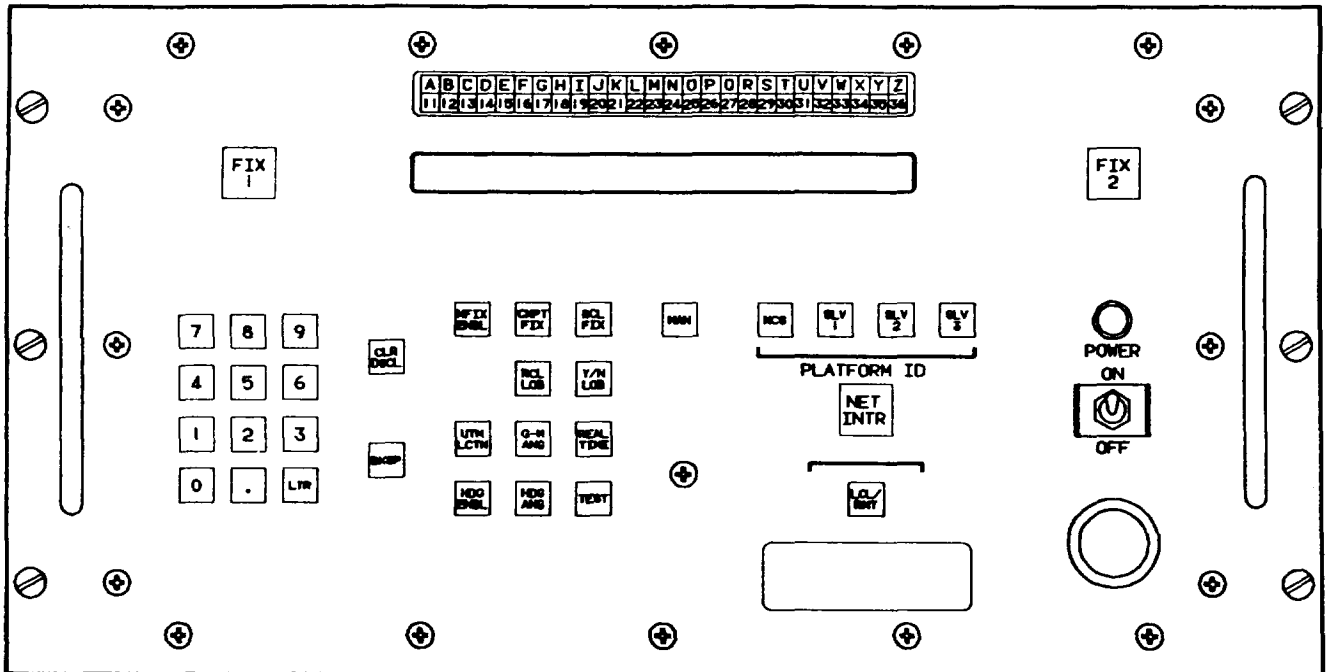


14. In RACKS 1 AND 3 on POWER SWITCH ASSEMBLIES, set switch to the ON position. Wait 30 seconds for READY indicator (green) to light. The WAIT indicator (red) will remain illuminated if temperature is below 0° Celsius (32° F). If this occurs, proceed to Section IV, Paragraph 2-12, Operation in Unusual Weather.

15. In RACKS 1 AND 3 on OPERATOR TERMINALS, the screen will display the following:

Configuration Mode: AN/TRQ-32A
Terminal Number 1 (or 2)
Waiting for GPIB

EQUIPMENT CHECKOUT (CONT)



NOTE

Remote operation from the OPERATOR TERMINALS will not be accessible until the OPERATOR TERMINAL program loads from the disk. There will be about a two minute wait until the next step is presented on the screen.

16. In RACK 2 on SYSTEM CONTROLLER, press "LCL/RMT" to transfer control from SYSTEM CONTROLLER to the OPERATOR TERMINALS.

The System Controller is the heart of the AN/TRQ-32(V) system. It controls all the hardware necessary to perform the Direction Finding and Fix functions on intercepted VHF signals. The primary interfaces are the Operator Terminals, however, the System Controller Front Panel can be used by the operator to interface with the system. If the operator terminals malfunction, follow the emergency procedures in Section 2-13 of this manual.

EQUIPMENT CHECKOUT (CONT)

There are two Operator Terminals provided in the AN/TRQ-32(V) system, one for each operator. The operator terminals provide the operators with remote control capability of all system controller functions with the exception of the two FIX keys. Each operator terminal is menu-driven and provides the operator with additional capabilities such as graphic display and analysis of FIX results, construction and editing of Task Log Worksheets, generation of reports, access to memo scratchpad areas, and search capability on selected database items.

The operator will be presented with three different types of displays on the operator terminal. They are Help Screens, Menus, and Forms.

The following information describes the basic menus, forms, and key functions of the operator terminal. It is necessary that the operator be familiar with operator terminal operation to complete equipment checkout.

NOTE

The operator terminal in RACK 1 is designated OPERATOR 1.

HELP SCREENS

Help Screens provide the operator with additional information for the menu or form that he is currently in if additional help is available. To enter a Help Screen the operator will press the CODE and ? keys on the operator terminal keyboard. The following display is a Help Screen that the operator will encounter:

This Operator Terminal Program provides you, the operator, with information by means of displayed lines, tables, and graphs. It gets your inputs by means of menus, forms, and prompts. Within these displays, there is provided a consistent screen layout and standard key definitions.

Within a screen, use the following keys:

RETURN -- Move to next line BACKSPACE -- Erase preceding letter CODE-BACKSPACE -- Erase preceding word	arrow-key -- Move one space combinations of CODE, SHIFT, and arrow-key -- Move several spaces
--	---

CAPS-LOCK is accomplished by using the SHIFT and ESC keys.

To move around among various screens, the following key definitions are available:

CODE-RETURN -- Enter data into computer CODE-ESC -- Return to main menu ESC -- Return to previous screen	CODE-? -- Help information for the screen CODE-S -- Review Private Scratch Pad CODE-U -- Show memory and media usage
---	--

Messages and prompts will be provided at the bottom of the screen to give you additional information. The graphic characters in the lower corners indicate communications status with the other devices in the system.

Operator Terminal Ready: Press ESC to Exit

EXAMPLE

EQUIPMENT CHECKOUT (CONT)

MENUS

Menus always have "Select and Code-Return" at the bottom of the screen. The "outline" is moved from one selection to another by using the UP-ARROW, DOWN-ARROW, or RETURN keys. When the desired selection is "outlined" it is entered into the computer by pressing the CODE and RETURN keys at the same time.

Platform ID: MAN	OperatorID: TERMI	14 1150:482 Apr 1987
<div style="border: 1px solid black; padding: 2px; display: inline-block; margin: 5px 0;">Reset System Parameters</div>		
Manage Task Log Manage Worksheets Search Worksheets Review Past LOBs Review Past Net Fixes Compute Manual Fix Manage ASAS Messages Enter Target Collection Mode Access Memo Pads		
Main Menu: Select and CODE-RETURN CODE-? for help		

EXAMPLE**FORMS**

Forms will always have "Fill in and Code-Return" at the bottom of the screen. Forms may have one or more input fields. Each field will be either editable, choice, or editable-choice.

EDITABLE FIELDS - Allow the entry of any text up to some predefined amount of characters.

CHOICE FIELDS - Allow the operator to move a "highlight" (reverse video area) among some fixed choices using the horizontal arrow keys.

EDITABLE-CHOICE FIELDS - Similar to choice fields but one or more of their choices are editable in themselves.

EQUIPMENT CHECKOUT (CONT)

The operator may fill out the fields on a form in any order and enter the form into the computer by pressing the CODE and RETURN keys at the same time.

Frequency (between 0.0 and 1000.0)	Unknown (0.0)
Frequency (Mhz):	Unknown (0.0)
Modulation:	---
Enter Frequency and Modulation: Fill in and CODE-RETURN	

EXAMPLE

The following text describes the menus and forms which appear on the operator terminals. You will find it useful to refer to the OPERATOR TERMINAL MENU DESCRIPTION while reading the following descriptions.

17. OPERATOR ONE: In RACK 1 on OPERATOR TERMINAL, the ready screen is displayed. Press ESC to exit and continue the initialization program. OPERATOR TWO: Leave operator terminal as is.

EQUIPMENT CHECKOUT (CONT)

Platform ID: MAN OperatorID:

If the time and date indicated on the system clock running in the upper right corner is correct, press ESC to leave this screen without adjusting the clock.

If the time or date is incorrect,

1. Do not use the other Operator Terminal until this screen has been erased.
2. In the form below, enter a Zulu time at least 1 minute in advance of the current time.
3. Correct the day, month, or year if necessary.
4. At the correct time, press the CODE-RETURN keys to transfer the updated time, day, month, and year into the system clock.

1985 - 2050

Time 1145
Day 14
Month Apr
Year 1987

Reset Date and Time: Fill in and CODE-RETURN REQUIRED

- 18. OPERATOR ONE: The "Reset Date and Time" form is presented. Fill in information and code-return.
- 19. OPERATOR TWO: On OPERATOR TERMINAL, press ESC. The "Operator ID/Resource Designator" form is presented.

Platform ID: MAN OperatorID: 14 1145:172 Apr 1987

The Operator ID is used to identify worksheets which you create during your time of duty. A blank ID is not allowed. The ID may contain a maximum of 10 characters. Change the operator ID at the beginning of each shift.

The Resource Designator is an identifier assigned to your AN/TRQ-32(V) unit that has the form LNNNUU

where L = letter indicating function of resource
 NNN = number indicating type of resource
 UU = unique number for specific unit.

It is used in sending and receiving ASAS messages.

10 characters maximum

Enter your Operator ID: TERMI

Enter your assigned Resource Designator: A03201

Operator ID / Resource Designator: Fill in and CODE-RETURN REQUIRED

- 20. OPERATOR ONE and TWO: The "Operator ID/Resource Designator" form is presented. Fill in information and code-return.

EQUIPMENT CHECKOUT (CONT)

Platform ID: MAN	Operator-ID: TERMI	14 1145:452 Apr 1987
<p>The System Controller has NOT been completely initialized.</p> <p>If neither operator initializes the System Controller, you will not be able to obtain Line-Of-Bearing or Fixes.</p>		
<input checked="" type="checkbox"/> YES <input type="checkbox"/> NO		
Do you want to initialize the System Controller? <input type="text" value="YES"/>		
SC Initialization: Fill in and CODE-RETURN <input type="checkbox"/> REQUIRED		

NOTE

Operator 1 will default YES and code-return will go to "UTM Location" form. If operator 1 does not want to select YES, NO must be selected and code-return. Operator 2 will default NO and code-return will go to "DLP Initialization" form. If operator 2 wants to select YES, YES must be selected and code-return will go to "UTM Location" form.

- 21. OPERATOR ONE and TWO: The "System Controller Initialization" form is presented, and "Do you want to initialize the System Controller?". BOTH operators CODE-RETURN.

NOTE

Initialization of SYSTEM CONTROLLER and DATALINK PROCESSOR can be accomplished from OPERATOR TERMINALS. Although the following procedures are directed to Operator 1 terminal, they are applicable to both terminals.

EQUIPMENT CHECKOUT (CONT)

Platform ID: MAN	OperatorID: TERMI	14 1146:132 Apr 1987
<p>UTM Coordinates are expressed in the form DD.ZZLEEEEEENNNNNN where DD = Datum (from Local Datum List) ZZ = Numeric map zone L = Alphabetic map zone EEEEE = Easting (from map, leading zero suppltd) NNNNN = Northing (from map)</p> <p>Press CODE-? for additional help on UTM Coordinates.</p>		
<div style="border: 1px solid black; padding: 2px; display: inline-block;">0 - 999999</div>		
Datum	8	
Zone Number and Letter	34U	
Easting	48000	
Northing	<div style="border: 1px solid black; padding: 2px; display: inline-block;">577400</div>	
<p>UTM Location: Fill in and CODE-RETURN CODE-? for help</p>		

22. On Operator terminal 1, the display screen will read "UTM Location". Fill in information and code-return. OPERATOR TWO: Leave operator terminal as is. Refer to the following page for Local Datum List.

LOCAL DATUM LIST	
<u>HORIZONTAL DATUM</u>	<u>LOCAL DATUM</u>
Adindan	1
ARC 1950	2
Australian Geodetic	3
Bukit Rimpah	4
Camp Area Astro	5
Chatham Observatory 1950	6
Djakarta	7
European	8
Geodetic Datum 1949	9
Ghana	10
Guam 1963	11
G. Segara	12
Herat North	13
Hjorsey 1955	14
Hu-Tzu-Shan	15
Indian	16
Kertau (Malayan Revised Triangulation)	17
Liberia 1964	18
Ascension Island Astro 1958	19
Canton Island Astro 1966	20
Johnston Island Astro 1961	21
Wake Island Astro 1952	22
Luzon	23
Montjong Lowe	24
Nigeria	25
North American 1927	
CONUS	26
Alaska and Canada	27
Maui (Old Hawaiian)	28
Oahu (Old Hawaiian)	29
Kauai (Old Hawaiian)	30
Ordinance Survey of Gt. Britain 1936	31
Qornog	32
Sierra Leone 1960	33
WGS-72 Special	34
Provisional South America 1956	35
Corrego Alegre	36
Campo Inchauspe	37
Chua Astro	38
Yacare	39
Tananarive Observatory 1925	40
Tambalai	41
Tokyo Wake-Eniwetok	42
Kwajalein Atoll	43
Wake Island	44
Eniwetok Atoll	45
WGS-72	46

EQUIPMENT CHECKOUT (CONT)

Platform ID: MAN	OperatorID: TERM1	14 1146:362 Apr 1987
<p>The Grid-to Magnetic Angle is expressed in the form LDDD.MM where L = E for East of Grid North W for West of Grid North DDD = Degrees (0 to 359) MM = Minutes (0 to 59)</p> <p>The G-M Angle is found on the map legend.</p> <p>In an emergency, or if the G-M Angle is not known, E0 or W0 may be entered. Report this error condition with any transmittal of LOB information and inform NCS prior to establishing AN/TRQ-32(V) net.</p>		
<div style="border: 1px solid black; display: inline-block; padding: 2px;">LDDD.MM</div>		
Enter Grid-to-Magnetic Angle: <div style="border: 1px solid black; display: inline-block; padding: 2px;">W000.00</div>		
G-M Angle: Fill in and CODE-RETURN		

23. On Operator terminal 1, the display screen will read "G-M Angle". Fill in information and code-return. OPERATOR TWO: Leave operator terminal as is.

Platform ID: MAN	OperatorID: TERM1	14-1146:532 Apr 1987
<p>The DataLink Processor has NOT been completely initialized.</p> <p>If neither operator initializes the DataLink Processor, you will not be able to transmit or receive ASAS messages.</p> <p>If the System Controller has been initialized, the AN/TRQ-32(V) network will still be operable.</p>		
<div style="border: 1px solid black; display: inline-block; padding: 2px;">YES</div> NO		
Do you want to initialize the DataLink Processor? <div style="border: 1px solid black; display: inline-block; padding: 2px;">YES</div>		
DLP Initialization: Fill in and CODE-RETURN <input type="checkbox"/> REQUIRED		

24. On both Operator terminals, the display screen will read "DataLink Processor Initialization" form and "Do You Want To Initialize the DataLink Processor?". BOTH operators, CODE-RETURN.

EQUIPMENT CHECKOUT (CONT)

Platform ID: MAN OperatorID: TERMI 14 1146,362 Apr 1987

The first choice on this menu, 'VALIDATE and ACCEPT all DATA', will get the DataLink Setup data from the disk, make sure all entries are valid, and will send the required items to the DataLink. You must select the first item and CODE-RETURN on it to save your data to the disk and to send it to the DataLink.

An error message will be displayed if any RELAY VIRTUAL NODES match any DIRECT NODES. You must modify the conflicting nodes to eliminate the match.

NOTE: SELECTION OF THE FIRST ITEM WILL ERASE THE TRANSMIT AND RECEIVE QUEUES IN THE DATALINK.

VALIDATE and ACCEPT all DATA
DataLink Parameters
ASAS Direct Links
ASAS Relay Links

Set Up DataLink: Select and CODE-RETURN

- 25. On Operator terminal 1, the display screen will read "Set Up DataLink". Select appropriate functions for your mission requirements. Enter the required data and when completed select "Validate and Accept All Data" and CODE-RETURN.

NOTE

Verify "DATALINK" lamp is not lit on CAUTION PANEL and "FULL OPR" lamp is lit on the TSEC/KG-84 or TSEC/KG-84A. If "FULL OPR" indicator lamp is not lit, recycle the TSEC/KG-84 or TSEC/KG-84A power ON/OFF switch.

EQUIPMENT CHECKOUT (CONT)

Platform ID: MAN	OperatorID: TERM1	14 1151:432 Apr 1987
UTM Location: 08.34U048000577400	G-M Angle: W000.00	MH Angle: Disabled
<div style="border: 1px solid black; padding: 5px; margin: 5px auto; width: fit-content;">Change System Controller Platform ID</div> <ul style="list-style-type: none">Perform Built-In TestsSet Up DataLinkEnter Operator ID/Resource DesignatorReset Date and TimeSet MH (Magnetic Heading) AngleSet UTM LocationSet G-M (Grid-to-Magnetic) AnglePerform Disk Database Cleanup		
System Parameters: Select and CODE-RETURN		

NOTE

The remaining OPERATOR TERMINAL steps can be accomplished from either terminal.

26. The display screen will read "Main" menu. Select "Reset System Parameters" function and CODE-RETURN. The "System Parameters" menu is presented on the screen.
27. Select "Perform Built-In Tests" function and CODE-RETURN. The "Built-In Tests" menu is presented on the screen.

EQUIPMENT CHECKOUT (CONT)

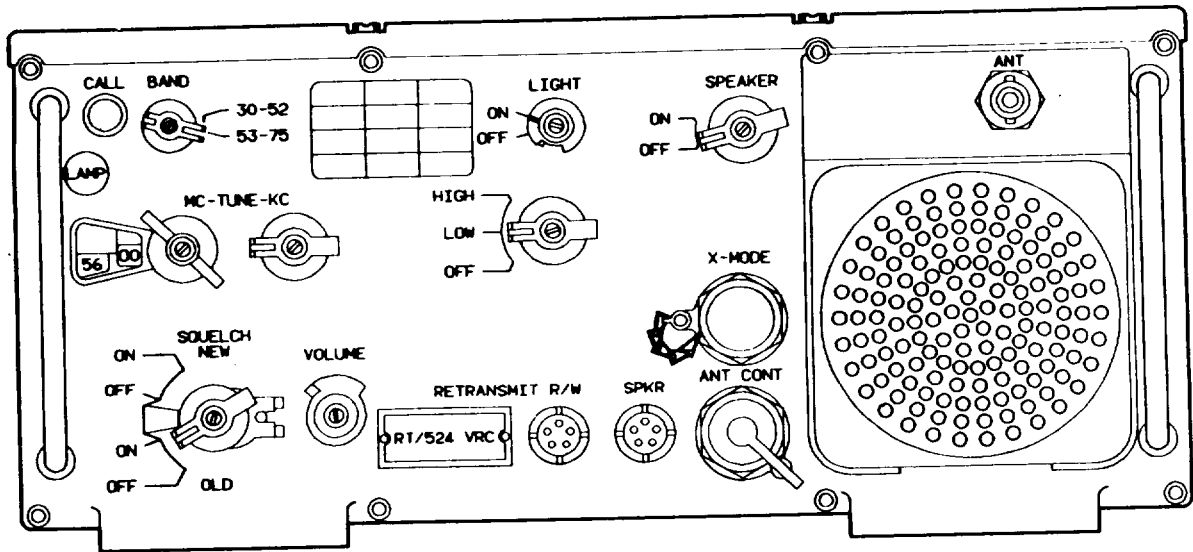
Platform ID: NCS	Operator ID: TERMI	14 1152:212 Apr 1987
<div style="border: 1px solid black; display: inline-block; padding: 2px;">System Controller Tests</div> DataLink Tests Operator Terminal Tests Disk Tests Printer Tests		
Built-In Tests: Select and CODE-RETURN		

28. Select "System Controller Tests" function and CODE-RETURN. The "System Controller Tests" menu is presented on the screen.

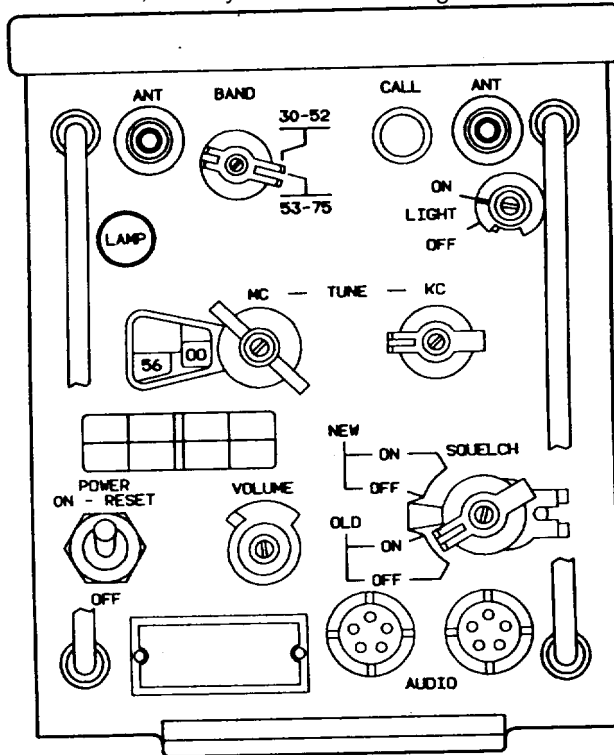
Platform ID: MAN	Operator ID: TERMI	14 1152:392 Apr 1987
These are the same tests as those performed at the System Controller Front Panel. The results of the tests, when appropriate, are displayed in the upper left corner of this screen. NOTE: The System Controller cannot perform Built-In Tests while TCM is active. An attempt to perform testing during TCM may result in an "INCORRECT ENTRY--" Message being returned to the Operator Terminal.		
<div style="border: 1px solid black; display: inline-block; padding: 2px;">Cancel Test In Progress</div> 0: Front Panel Lamp Test 1: Internal Tests 2: Front Panel Display Test 3: Front Panel Keyboard Test 4: Fluxgate Test 5: DFCU Bite Test (Operator #1) 6: DFCU Bite Test (Operator #2) 7: OCP Bite Test 8: Bite Oscillator Test 9: DF Demod Test (Operator #1) 10: DF Demod Test (Operator #2) 11: Sonalert Test		
System Controller Tests: Select and CODE-RETURN		

29. Select "8: Bite Oscillator Test" function and CODE-RETURN. "BITE OSCILLATOR ON" is displayed.

EQUIPMENT CHECKOUT (CONT)

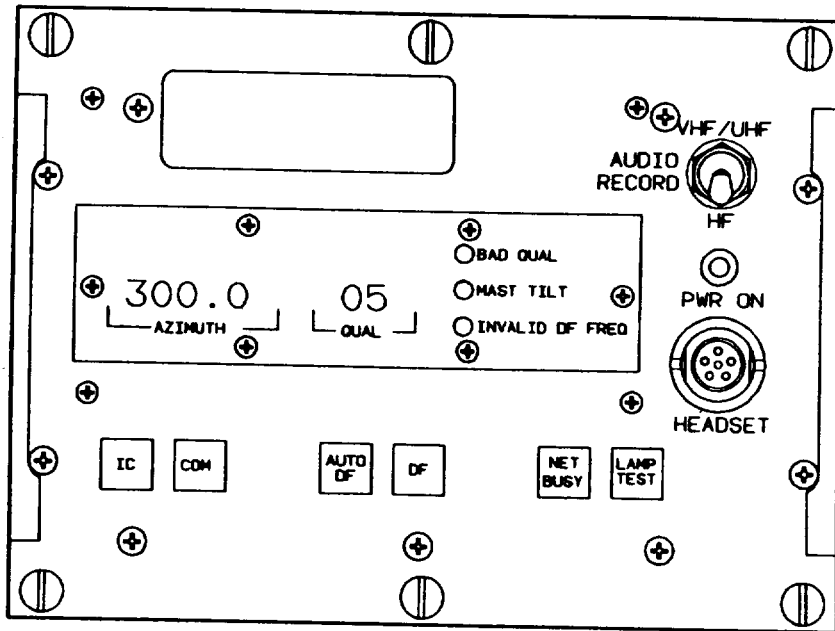


30. In RACK 4 on VHF RT-524A, verify the CALL light is lit.

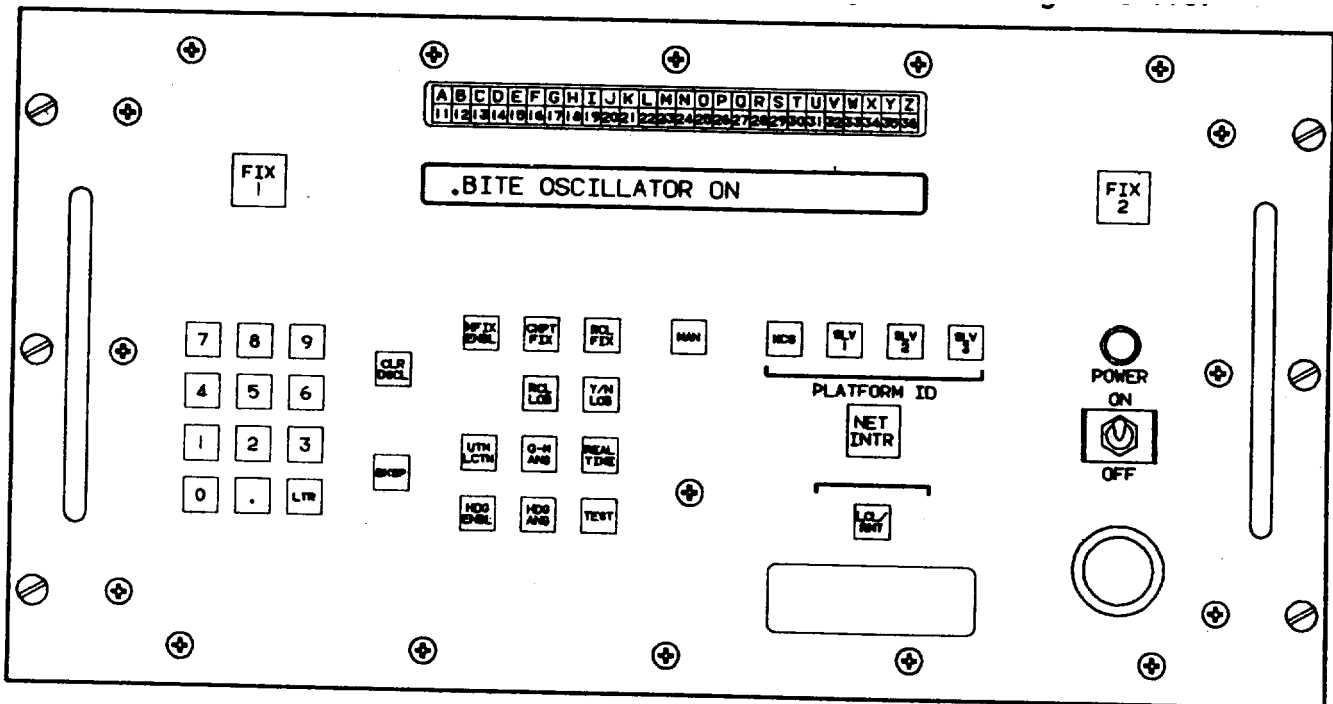


31. On GUARD RECEIVER R-442A, verify the CALL light is lit.

EQUIPMENT CHECKOUT (CONT)

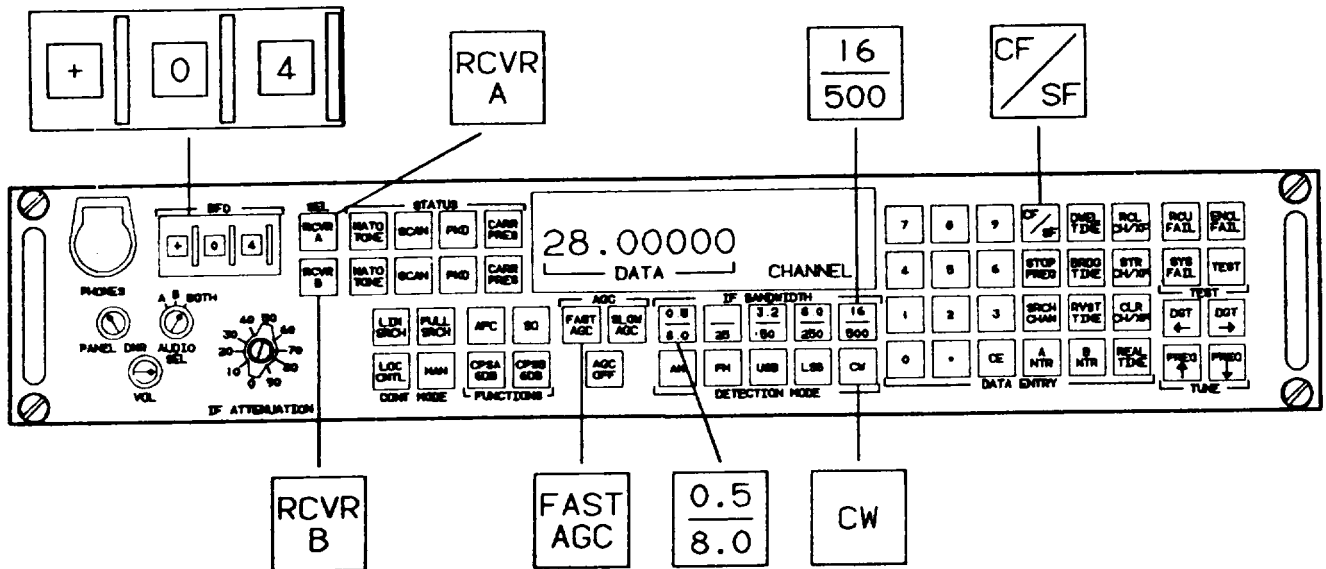


32. In RACKS 1 AND 3 on OPERATOR CONTROL PANELS, verify the COM light. is lit.



33. In RACK 2 on SYSTEM CONTROLLER, verify the display reads "BITE OSCILLATOR ON".

EQUIPMENT CHECKOUT (CONT)



34. In RACKS 1 and 3 on RECEIVER CONTROL UNITS, set controls to the following positions:

<u>CONTROLS/INDICATORS</u>	<u>POSITION/CONDITION</u>
SEL	RCVR A
AGC	FAST AGC
IF BANDWIDTH	16/500
DETECTION MODE	CW
BFO	+0.4

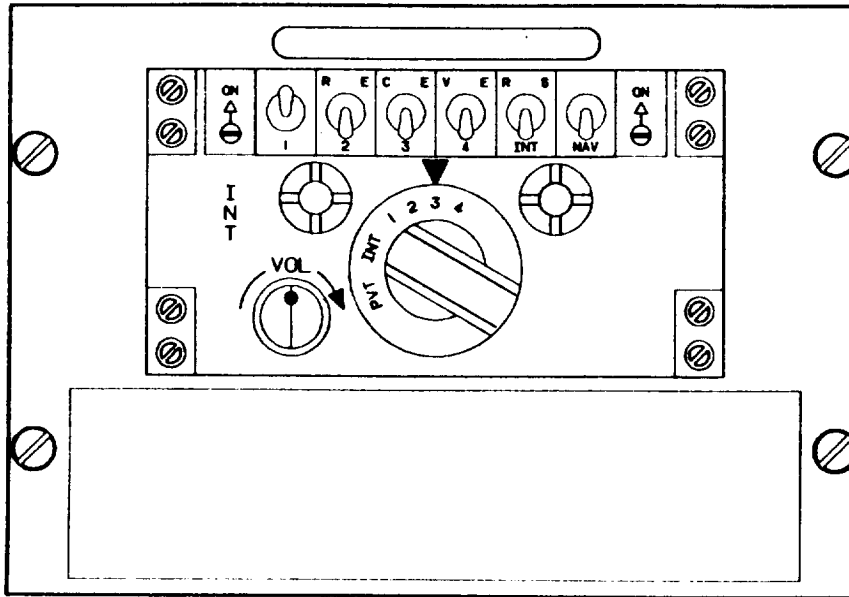
35. On RECEIVER CONTROL UNITS, enter "28.0000" MHz on the numeric keypads and press the "CF/SF" key. Verify display reads "28.0000" MHz.

36. On RECEIVER CONTROL UNITS, set controls to the following positions:

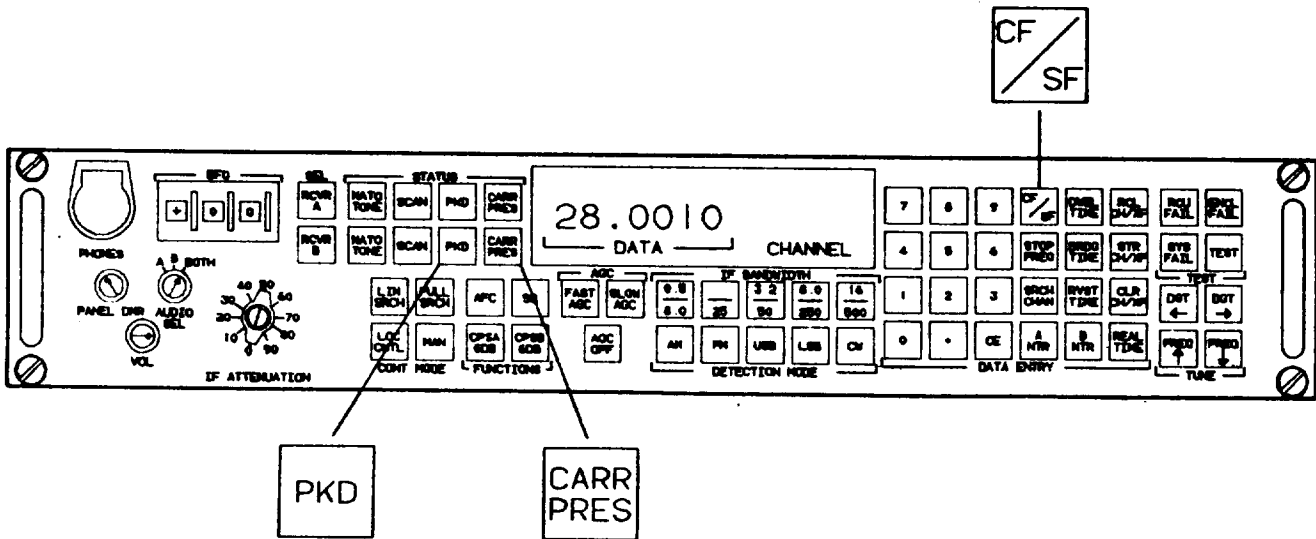
<u>CONTROLS/INDICATORS</u>	<u>POSITION/CONDITION</u>
SEL	RCVR B
AGC	FAST AGC
IF BANDWIDTH	0.5/8.0
DETECTION MODE	CW

37. On RECEIVER CONTROL UNITS, enter "28.0010" MHz on the numeric keypad and press the "CF/SF" key. The display will read "28.0010" MHz.

EQUIPMENT CHECKOUT (CONT)



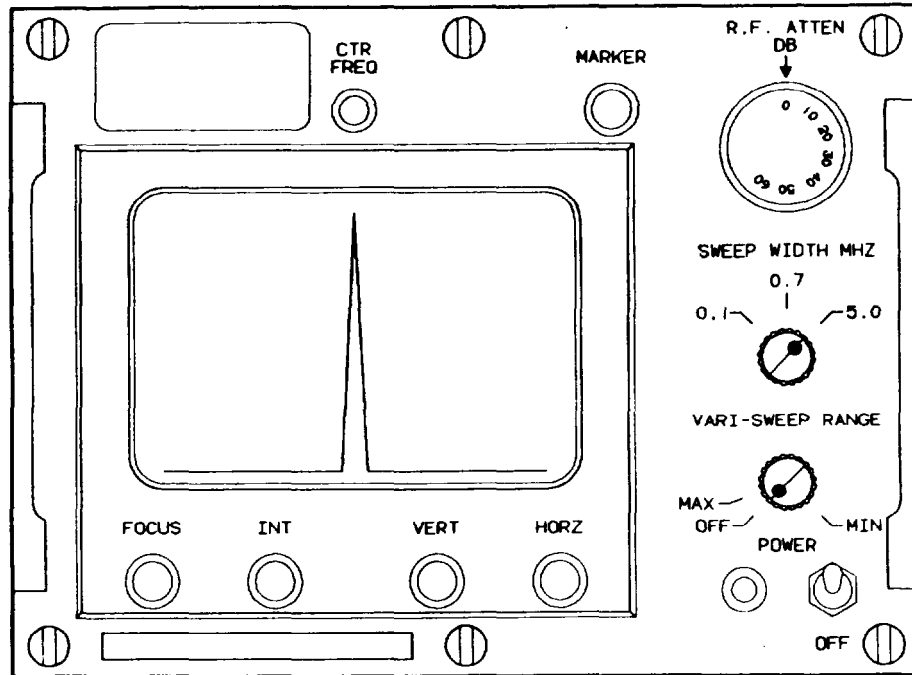
38. On INTERCOM CONTROL PANELS, set rotary switch to 3. Verify 1000 Hz tone is heard in headsets.



39. On RECEIVER CONTROL UNITS, verify "PKD" and "CARR PRES" indicators for RCVR B are lit.

40. On RECEIVER CONTROL UNITS, enter "500.000" MHz on the numeric keypad and press the "CF/SF" key. The display will read "500.000" MHz.

EQUIPMENT CHECKOUT (CONT)

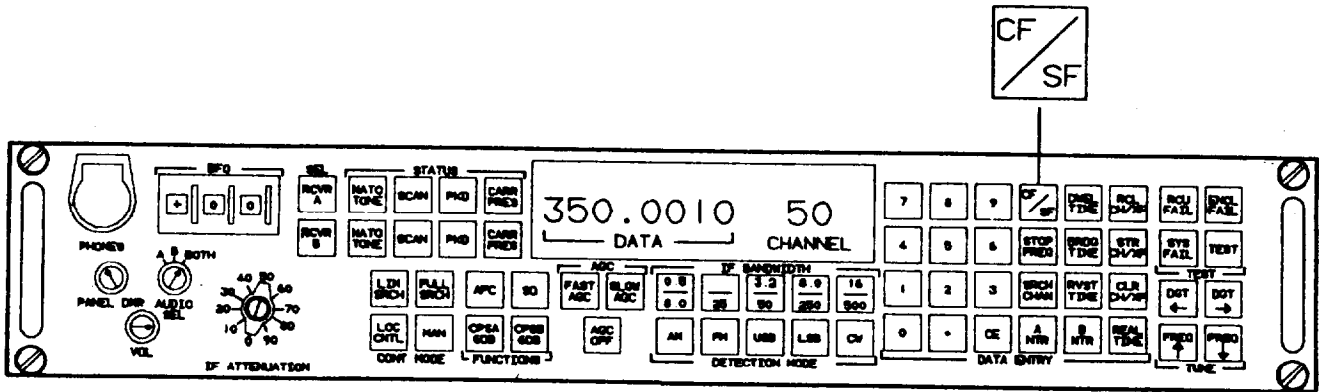


41. On SIGNAL DISPLAY UNITS, set the controls as follows:

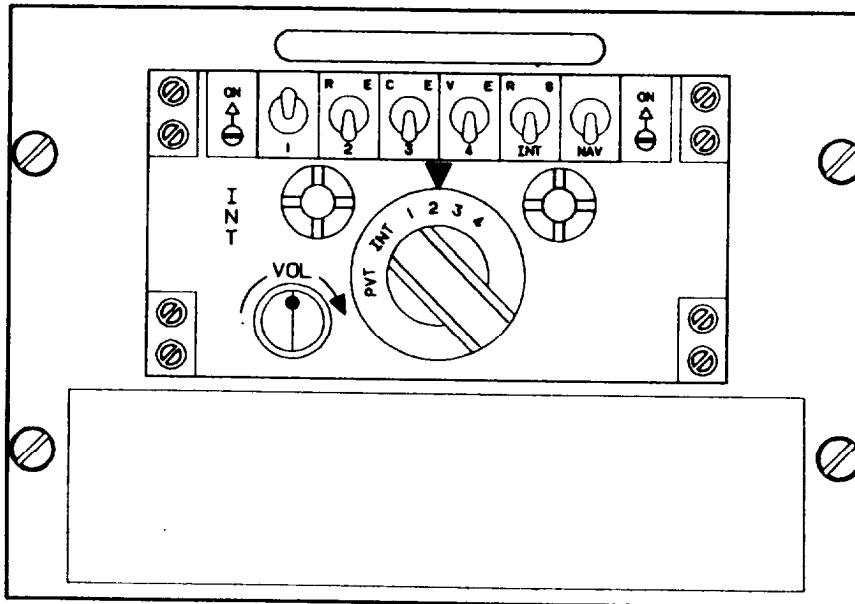
<u>CONTROLS</u>	<u>POSITION</u>
RF ATTEN	0 DB
SWEEP WIDTH MHZ	5.0
VARI-SWEEP RANGE	OFF

- a. Center HORIZONTAL line on the screen.
- b. Push MARKER button and adjust CTR FREQ knob to center the signal.
- c. Set SWEEP WIDTH MHZ to 0.7 and adjust CTR FREQ knob to center the signal.
- d. Set SWEEP WIDTH MHZ to 0.1 and adjust CTR FREQ knob to center the signal.
- e. Set SWEEP WIDTH MHZ to 5.0 and center the signal using the HORZ knob.
- f. Check the display at 0.7 and 0.1 using the SWEEP WIDTH MHZ knob.
- g. Repeat steps b-f until there is no change. Release MARKER button.

EQUIPMENT CHECKOUT (CONT)



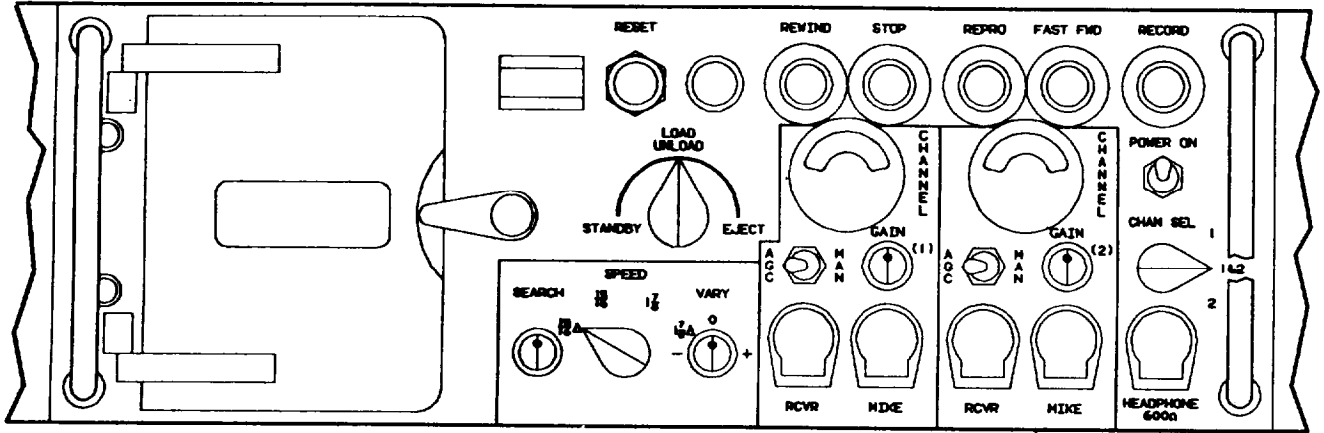
42. On RECEIVER CONTROL UNITS, enter "350.0010" MHz on numeric keypad and press "CF/SF" key. The display will read "350.0010" MHz.
43. On INTERCOM CONTROL PANELS, verify 1000 Hz tone is heard in headsets.
44. On SIGNAL DISPLAY UNITS, verify test signal is displayed.



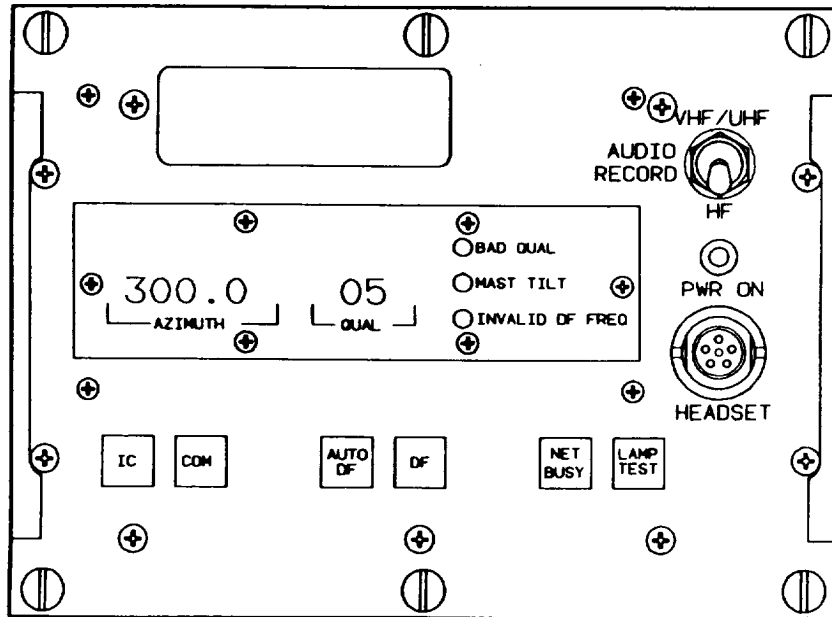
AN/TRQ-129
BLS060987

45. On INTERCOM CONTROL PANEL, set rotary switch to 2.

EQUIPMENT CHECKOUT (CONT)

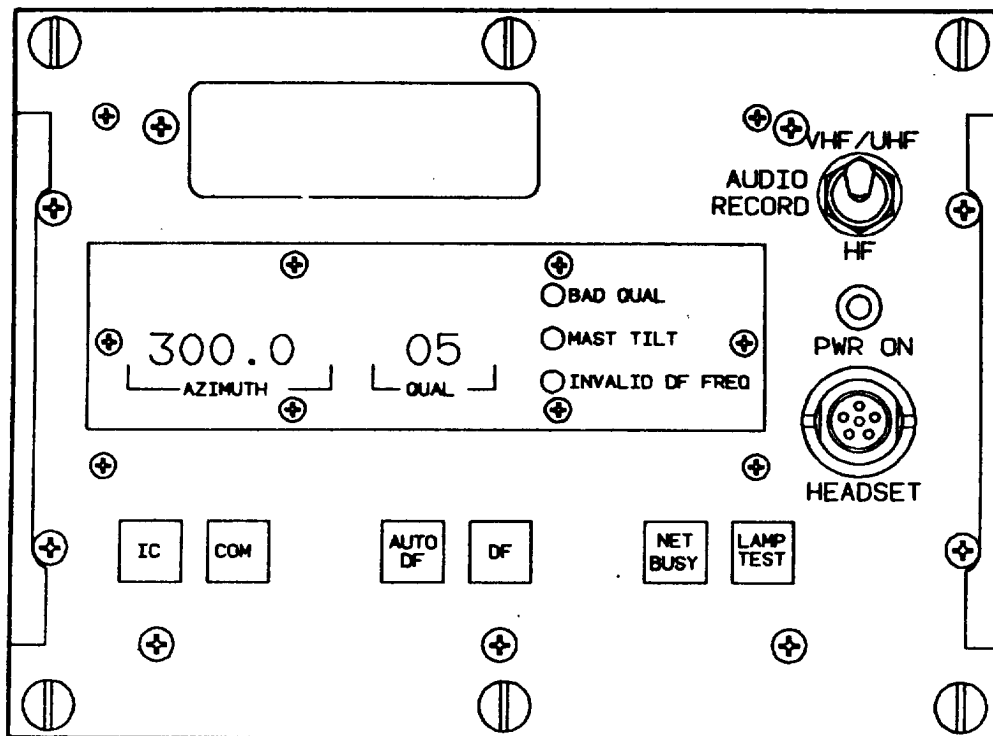


46. In RACK 2 on RECORDER-REPRODUCERS, set "CHAN SEL" switch to "1&2".



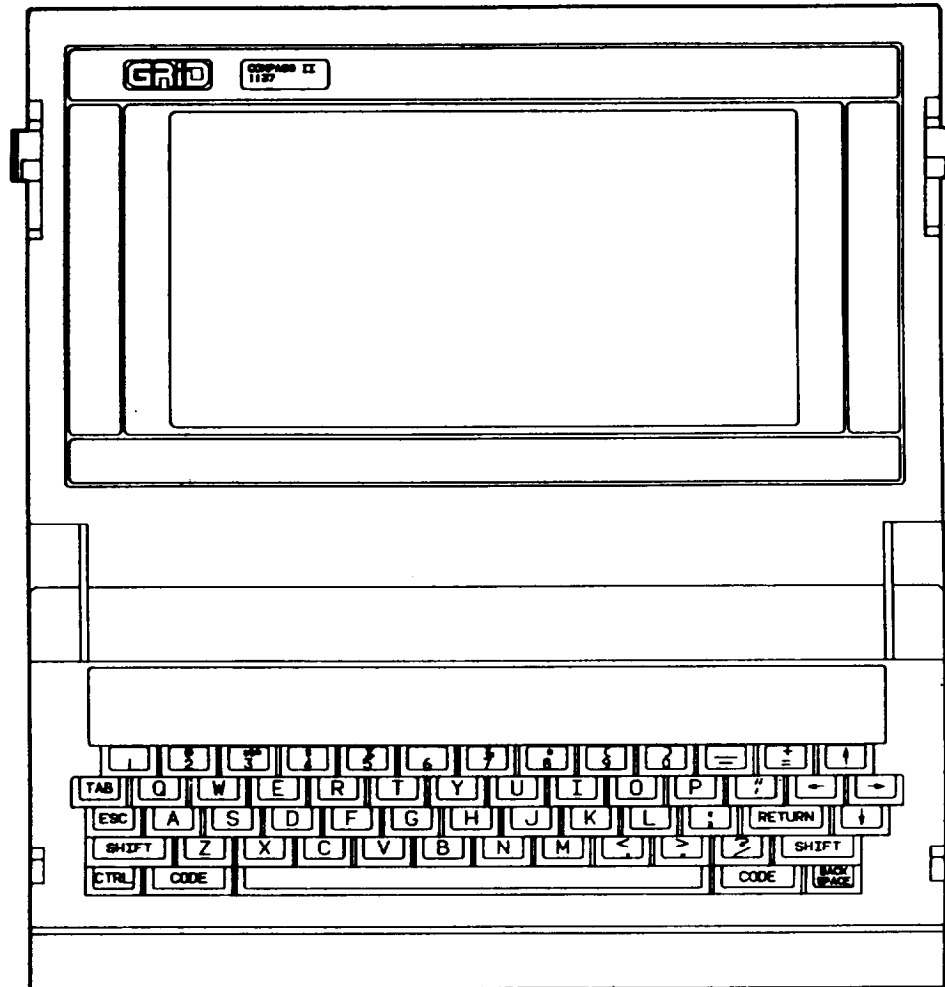
47. In RACKS 1 AND 3 on OPERATOR CONTROL PANELS, set the "AUDIO RECORD" select switch to HF. Verify a 400 Hz tone is heard in headsets.

EQUIPMENT CHECKOUT (CONT)



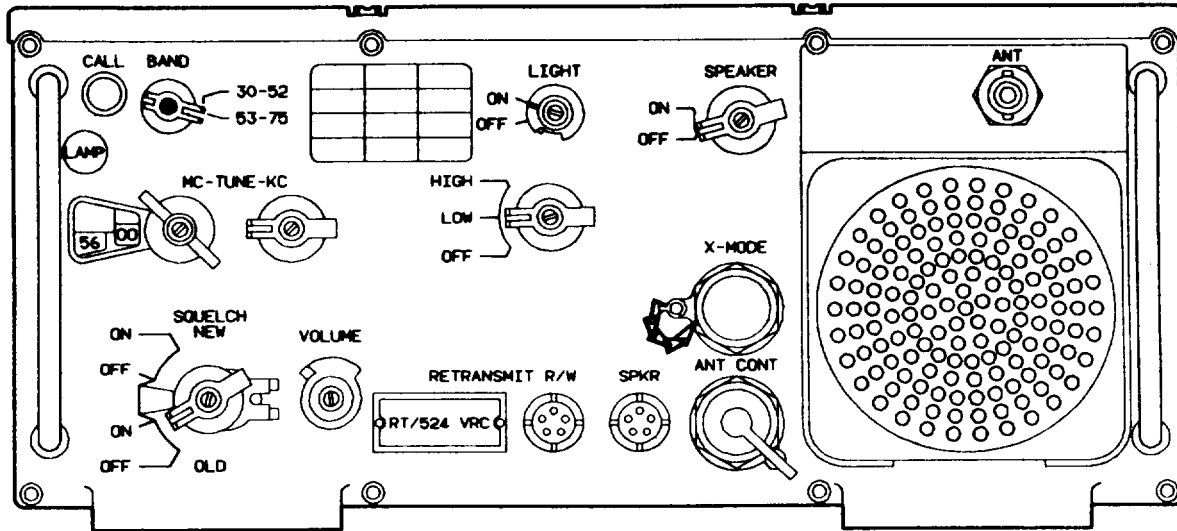
48. On OPERATOR CONTROL PANELS, set the "AUDIO RECORD" select switch to VHF/UHF. Verify a 1000 Hz tone is heard in headsets.
49. Press the press-to-talk switch on headset cable and speak into each microphone. Verify that sidetone is heard in headsets.
50. In RACK 2 on RECORDER-REPRODUCER, insert a blank cassette. Verify RECORDER-REPRODUCER operates IAW TM 32-5835-005-14&P.

EQUIPMENT CHECKOUT (CONT)

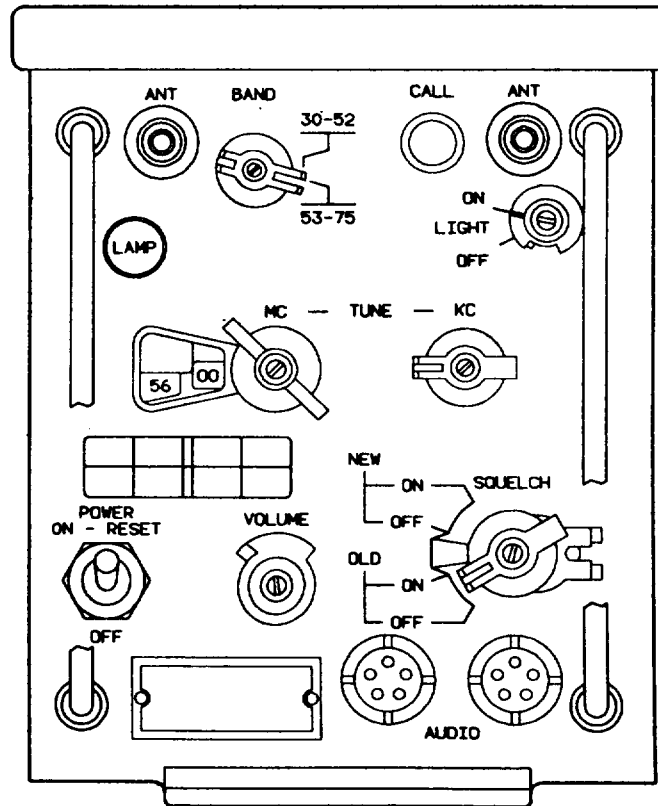


51. On OPERATOR TERMINAL that initiated the BITE test, press CODE-Q to terminate Bite Oscillator Test. The "System Controller Tests" is presented on the screen.

EQUIPMENT CHECKOUT (CONT)

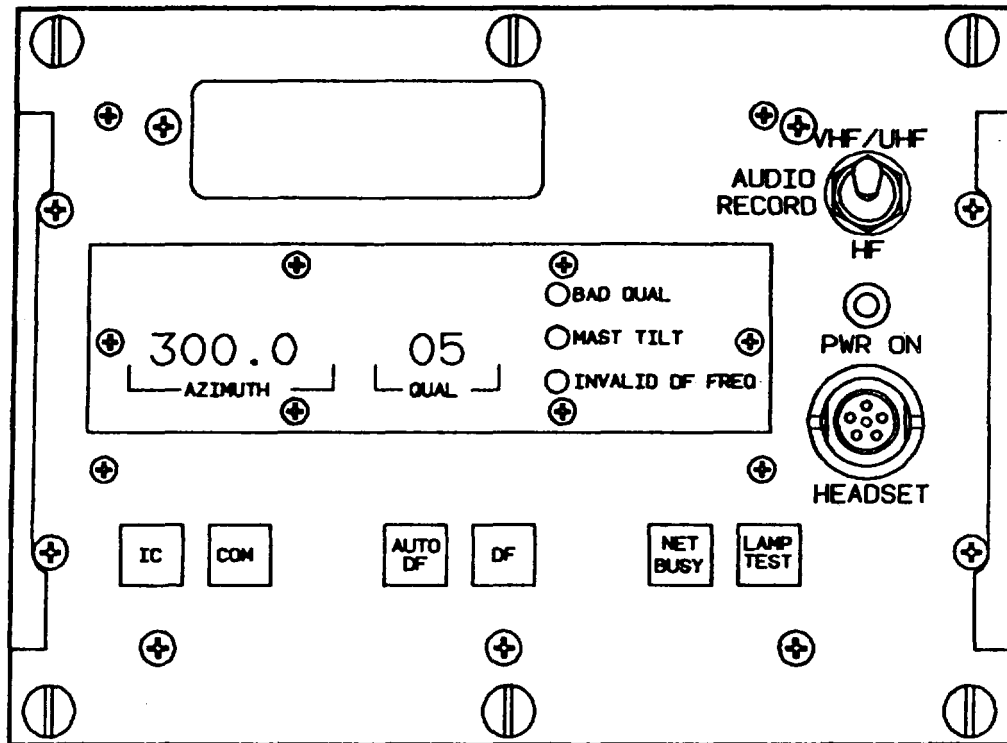


52. In RACK 4 on RT-524A, verify the CALL light is not lit.



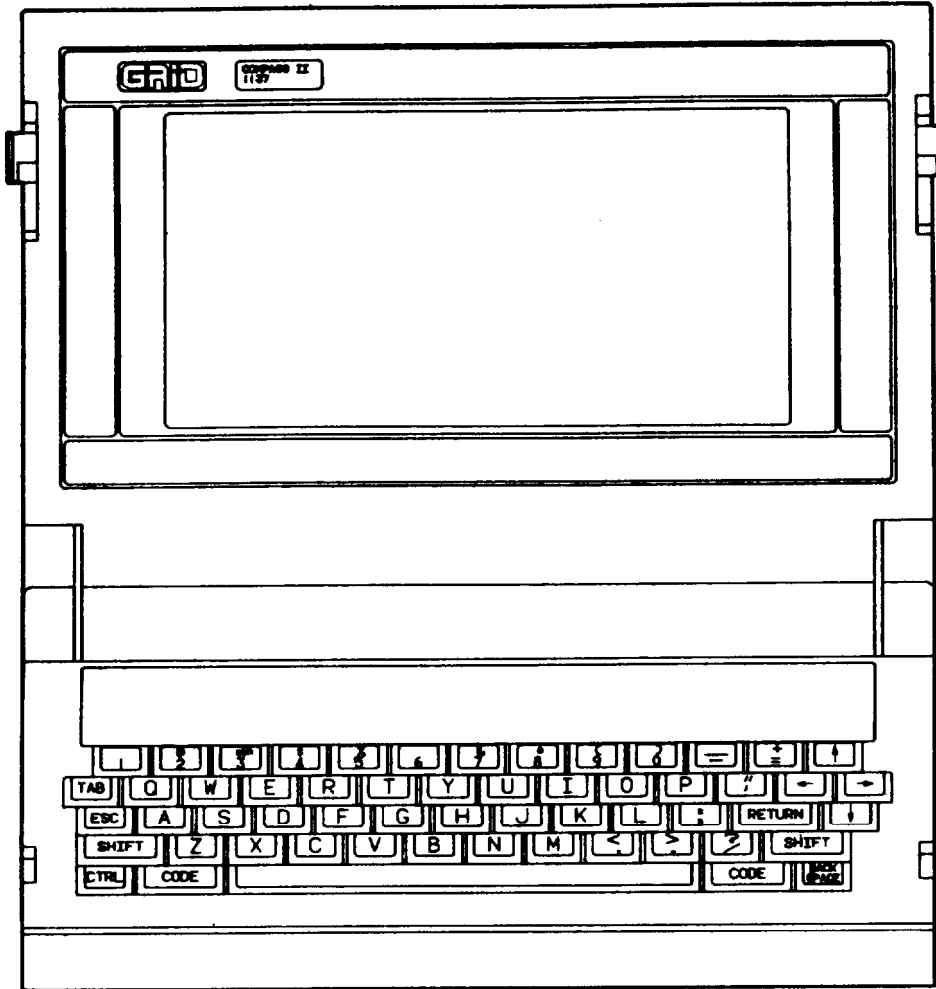
53. In RACK 4 on GUARD RECEIVER R-442A, verify the CALL light is not lit.

EQUIPMENT CHECKOUT (CONT)



54. In RACKS 1 AND 3 on OPERATOR CONTROL PANELS, verify the COM light is not lit.

EQUIPMENT CHECKOUT (CONT)



55. OPERATOR ONE: On OPERATOR TERMINAL, select "5: DFCU Bite Test (Operator 1)" function and CODE-RETURN. Verify the SYSTEM CONTROLLER displays "SYSTEM BUSY".

NOTE

The BITE tests will be executed and any failures will be reported to the screen without further operator intervention. This test will take up to 2 minutes to complete.

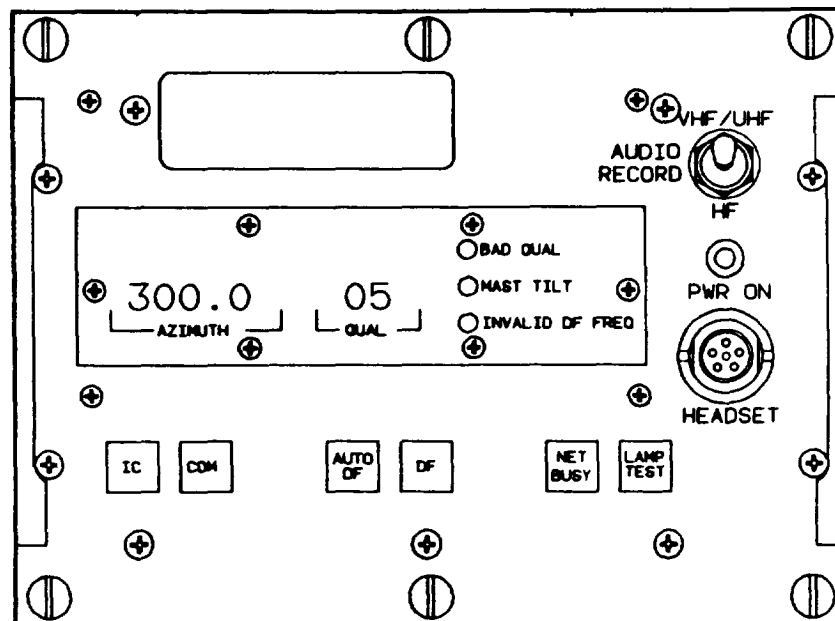
56. OPERATOR TWO: On OPERATOR TERMINAL, select "6: DFCU Bite Tests (Operator 2)" function and CODE-RETURN. Verify the SYSTEM CONTROLLER displays "SYSTEM BUSY".

EQUIPMENT CHECKOUT (CONT)

NOTE

The BITE tests will be executed and a failure will be reported to the screen without further operator intervention. This test will take up to 2 minutes to complete.

57. OPERATOR ONE: On OPERATOR TERMINAL, select "7: OCP BITE TEST" function and CODE-RETURN. Then press OCP #1 DF Key. The entire character set will scroll through the OCP display.



58. OPERATOR TWO: On OPERATOR TERMINAL, select "7: OCP BITE TEST" function and CODE-RETURN. Then press DCP #2 DF Key. The entire character set will scroll through the OCP display.
59. Press CODE-ESC and return to "Main" menu. The "Main" menu is presented on the screen.
60. Set controls of the VHF RECEIVER/TRANSMITTER, GUARD RECEIVER, UHF AND VHF BANDPASS FILTERS, RF DISTRIBUTION UNIT, UHF RADIO CONTROL and TSEC/KY-57 for mission requirements.
61. The AN/TRQ-32(V) radio receiving set is now ready for deployed operation.

DEPLOYED OPERATION

Deployed operation consists of the following functions:

1. Receiver Control Unit Operation (Programming)
2. Manual Mode Operation
3. Netted Mode Operation
4. Operator Terminal Menu Description

These functions are further described in the following text.

The tactical operating scenario is developed by your command. For further information on your tactical operating scenario, see your supervisor.

RECEIVER CONTROL UNIT OPERATION (PROGRAMMING)

The Receiver Control Unit (RCU) provides the operator with a means of controlling the receivers. Each operator controls one HF receiver and one VHF/UHF receiver. Frequencies to be monitored may be manually entered or preprogrammed into memory channels.

RCU MANUAL MODE.

NOTE

Toggle switch 3 on the intercom control panel must be on to hear input from RCVR B. Toggle switch 4 must be on to hear input from RCVR A.

When the RCU is in the manual mode, the receiver monitors the channel that the operator enters or a memory channel that has been recalled.

The following steps will enable the operator to manually enter a frequency into the receiver control unit.

1. Select RCVR A or RCVR B.
2. Press MAN key.
3. Press FAST AGC, SLOW AGC, or AGC OFF.
4. Press desired IF BANDWIDTH key.
5. Press AM, FM, USB, LSB, or CW DETECTION MODE key.

RECEIVER CONTROL UNIT OPERATION (PROGRAMMING) (CONT)

6. Enter the desired frequency on the DATA ENTRY panel.
7. Press CF/SF key.

The receiver will now be tuned to the frequency that you entered.

RCU MEMORY CHANNEL PROGRAMMING.

There are two types of memory channels, direct search and general search. Each receiver control unit may be programmed for up to 50 direct search and/or general search memory channels per receiver.

A direct search memory channel is programmed with a single frequency by entering a valid center frequency and entering zero (0) for the stop frequency. Thus, the center frequency is the only signal of interest in a given channel.

A general search memory channel is programmed with a band of frequencies. This is done by entering a valid start and stop frequency. This allows the receiver to begin its search at the start frequency and end its search at the stop frequency. When a memory channel is selected and the STOP FREQ key is lit, it indicates that the memory channel has a stop frequency entered for it.

Each general search memory channel may contain up to four exclude frequencies. The exclude frequencies prevent the receiver from detecting unwanted signals in the frequency band that was programmed.

The operator may clear a memory channel by entering the memory number (from 1 to 50) on the DATA ENTRY panel and pressing the CLR CH/XF key.

The operator may RECALL a memory channel by entering the memory channel number and pressing the RCL CH/XF key. If the channel recalled has a stop frequency entered, the operator may view the stop frequency that has been entered for that memory channel by pressing the STOP FREQ key.

The following steps will enable the operator to program a memory channel into the receiver control unit.

1. Select RCVR A or RCVR B.
2. Press MAN key.
3. Press FAST AGC, SLOW AGC, or AGC OFF.
4. Press desired IF BANDWIDTH key.
5. Press AM, FM, USB, LSB, or CW DETECTION MODE key.
6. Enter the desired frequency on the DATA ENTRY panel.
7. Press CF/SF key.

RECEIVER CONTROL UNIT OPERATION (PROGRAMING) (CONT)

8. Enter the desired stop frequency on the DATA ENTRY panel. If the frequency being programmed is to be a DIRECT search memory channel, enter zero (0) for the stop frequency.
9. Press the STOP FREQ key.
10. Enter the MEMORY CHANNEL NUMBER. (From 1 to 50)
11. Press the STR CH/XF key.

EXCLUDE FREQUENCIES.

The receiver control unit is now programmed for a memory channel with no exclude frequencies. If the programmed memory channel is a general search memory channel and contains one or more frequencies that you do not want the receiver to detect, the operator may enter from one to four exclude frequencies. The exclude frequencies prevent the receiver from detecting the unwanted signals. Exclude frequencies may be programmed into the RCU at any time when in the manual mode. Exclude frequencies are recalled and cleared in the same manner as the memory channels with the exception that the operator enters the exclude frequency number instead of the memory channel number. The operator may clear ALL memory channels and exclude frequencies by pressing and holding the TEST key, then sequentially entering zero (0) on the DATA ENTRY panel and pressing the CLR CH/XF key, and then releasing the TEST key.

The following steps will enable the operator to program EXCLUDE frequencies for a general search memory channel.

MANUAL MODE.

1. Enter the exclude frequency on the DATA ENTRY panel.
2. Press the CF/SF key.
3. Enter the exclude frequency channel number. (If programming memory channel 1, the exclude frequency channel numbers will be 1.1, 1.2, 1.3, and 1.4.)
4. Press STR CH/XF key.

SEARCH MODE.

While in a Search mode and dwelling on a signal, a depression of the STR CH/XF key will store that frequency in the exclude frequency file of the general search channel currently being scanned. Up to four exclude frequencies can be stored in this manner for each search channel. After that, any additional exclude frequencies will cause the oldest exclude frequency to be deleted from memory.

RECEIVER CONTROL UNIT, OPERATION (PROGRAMMING) (CONT)

RCU FULL SEARCH MODE.

When FULL SRCH is selected on the RCU, all direct search memory channels are sequentially searched, followed by all general search memory channels.

RCU LIMITED SEARCH MODE.

When LIM SRCH is selected on the RCU, only the direct search memory channels are sequentially searched. The operator has the capability to include one general search memory channel in the search by entering the general search memory channel number and pressing the SRCH CHAN key on the DATA ENTRY panel.

PROGRAMMABLE TIME PARAMETERS.

There are three programmable time parameters that are used in the search modes. The programmable time parameters are DWELL TIME, BRIDGE TIME, and REVISIT TIME. Dwell time is the maximum length of time the receiver will dwell on a detected signal. If the signal disappears before the dwell time expires, a BRIDGE timer will be started and the receiver will remain on that frequency until the BRIDGE TIME expires. When this occurs, the bridge time is reset. REVISIT TIME is used to interrupt a lengthy general search in order to revisit all the programmed direct search memory channels. The revisit time parameter assures that a direct search memory channel signal is not missed while performing a lengthy scan of a general search memory channel. The revisit timer only runs down during the search sequence. It does not run while the receiver is dwelling on a signal. The general search memory channel scan will be resumed at the frequency where it was interrupted after the revisit time expires.

The programmable time parameters are programmed in seconds. To program Dwell Time, Bridge Time, and Revisit Time, enter the time in seconds on the DATA ENTRY panel and press the desired time parameter key. On turn on, the programmable time is set at 1 second. It is programmable from 0.1 to 900 seconds in 0.1 increments.

NATO TONE REJECT.

The RCU has an A NTR key and a B NTR key. When the NTR (NATO Tone Reject) function is enabled (key lit), the scanning RCU will not dwell on any signal with NATO tone modulation. Also, with the NTR function enabled, the AN/TRQ-32(V) will not auto DF on signals with the NATO tone modulation.

CARRIER PRESENCE SENSITIVITY.

The RCU has a CPSA 6DB key and a CPSB 6DB key. These keys select the nominal signal-to-noise ratio required of a signal for the scanning RCU to dwell. When the key is lit, the receivers will dwell and auto DF on a lower signal level (6dB signal-to-noise ratio) than when the key is not lit. When the key is not lit (normally used in a high noise environment), the dwell and auto DF require a 12dB ratio.

MANUAL MODE OPERATION

In the manual mode, the operator may perform DF LOB and manual fix computations. Upon finding an active signal, the operator may record it using the Recorder-Reproducer and/or issue a DF LOB request from the OCP. The operator may also select auto DF on the OCP. This automatically gives a DF LOB request on any active signal. The results of a DF LOB are displayed on the OCP and the printer. The operator can manually perform a fix on any signal provided DF LOB data from at least one other system is available. The maximum number of DF LOB's to compute a fix is four. The operator manually enters DF LOB data from the other systems to compute a fix. The results of a fix will be displayed on the system controller and the printer.

The following steps are an EXAMPLE of a typical manual mode operation.

1. The operator scans the direct and general memory channels that are programmed into the Receiver Control Unit and listens for an active signal of interest.
2. Upon finding an active signal of interest, the operator may examine the signal on the Signal Display Unit, record the signal on the Recorder-Reproducer, request a DF LOB from the Operator Control Panel, or disregard the signal.

NOTE

For this example, the operator will request a DF LOB on the active signal of interest.

3. The operator presses the DF key on the Operator Panel. The result of the DF LOB request are displayed on the Operator Control Panel and printed on the Printer.

NOTE

In the auto DF mode, the procedure is identical except that the DF LOB is computed automatically (does not have to be requested by operator).

Once the operator has performed a DF LOB on the active signal of interest, the operator may continue to scan for other active signals or perform a manual fix on the signal that has had a DF LOB performed on it.

NETTED MODE OPERATION

In certain situations, the operators of two, three, or four platforms may wish to establish a method for reporting of LOB information, automatic tasking, and automatic calculation of the location of a target. This is called automatic netting, (or netted operation). When in this configuration, it is called a net.

NETTED MODE OPERATION (CONT)

The net is configured so that only one platform is the Net Control Station (NCS), while the others are slave terminals (SLV 1, SLV 2, or SLV 3). While netted, all operators have the full capability to do DF and intercepts. Either manual or auto LOBs can be done by all platforms. While netted, a system cannot perform any BITE tests, do manual fix entries or calculations, or communicate by voice with other systems. When the NCS requests a FIX from the net, operator position 1 in each slave may be affected. If Operator 1 in the slave has "RCVR B" selected on the receiver control unit, no key depressions are acknowledged during the NET BUSY condition. If the receiver control unit is scanning, it will temporarily stop until task is completed. If Operator 1 has RCVR A selected, there will be no effect. The guard receiver is still operational.

Before going into netted mode, the platform location in UTM coordinates must be entered. It must be determined which platform is to be the NCS and which is to be slave 1, 2, or 3. Improper net operation will result if more than one system has the same ID.

The following steps allow entry into the netted mode.

1. NCS will notify all net stations when netted mode is to be entered.
2. KY-57 must be in secure mode.
3. RT-524A/VRC must be with NEW SQUELCH ON.
4. From the "Change System Controller Platform ID" form, select the proper platform ID (NCS, SLV1, SLV2, or SLV3). The systems will now become netted. Continue with normal DF LOB and intercept work.
5. When either NCS operator detects a signal on the VHF/UHF receiver, the location of that signal can be determined by pressing the appropriate FIX key (FIX 1 or FIX 2).
6. The NCS system controller tasks the slave stations to perform an LOB on the same frequency and automatically report this information back to NCS.
7. The NCS System Controller receives this information and calculates the location of the target emitter. This information will be passed to the operator terminal, which also computes the FIX information. The FIX information and individual reports from the slave stations may be displayed or printed with the "Review Past Net Fixes" option from the main menu. A correlation factor, which indicates whether the slaves and the NCS performed an LOB on the same signal, is also displayed on operator terminal for each slave. A value of 2 or more is considered good, with 10 a perfect match. The quality factor indicates the reliability of the LOB measurement. A quality factor of 7 to 10 is considered near perfect; 4 to 6, very good; 2 to 3, fair; and 1, suspect.
8. After the FIX information has been displayed, the operator may scroll through the platform responses and delete any platform (including NCS) from the FIX calculation. It takes at least two separate LOBs to compute a FIX. The Elliptical Error Probability (EEP) should be checked to see if it gets appreciably smaller.

NETTED MODE OPERATION (CONT)

NOTE

The EEP numbers give the major and minor axis lengths in meters and the tilt in degrees for an ellipse which has a probability of 50% for containing the target emitter. The CEP (Circular Error Probability) number is the radius of a circle which also has a 50% probability of containing the target emitter. Both the circle and the ellipse are centered at the fix coordinates.

The operator terminal can store up to 20 fixes. After 20 fixes have been stored any subsequent fixes will cause the oldest to be discarded.

9. Any operator may break the net by selecting "Generate Net Interrupts" from the main menu. Possible reasons for breaking the net include a need to establish voice communications, a failure of equipment in the operator 1 position, or the need to move. When a net interrupt occurs, the sonalert starts beeping and the MAN key flashes. This happens in all the netted platforms. The operator must select the MAN mode from the "System Controller Platform ID" from the menu to turn off the sonalert. This puts the platform in manual mode. The system controller in each platform displays which system initiated the net interrupt. The system controller automatically restores the voice communication capability.

OPERATOR TERMINAL MENU DESCRIPTION

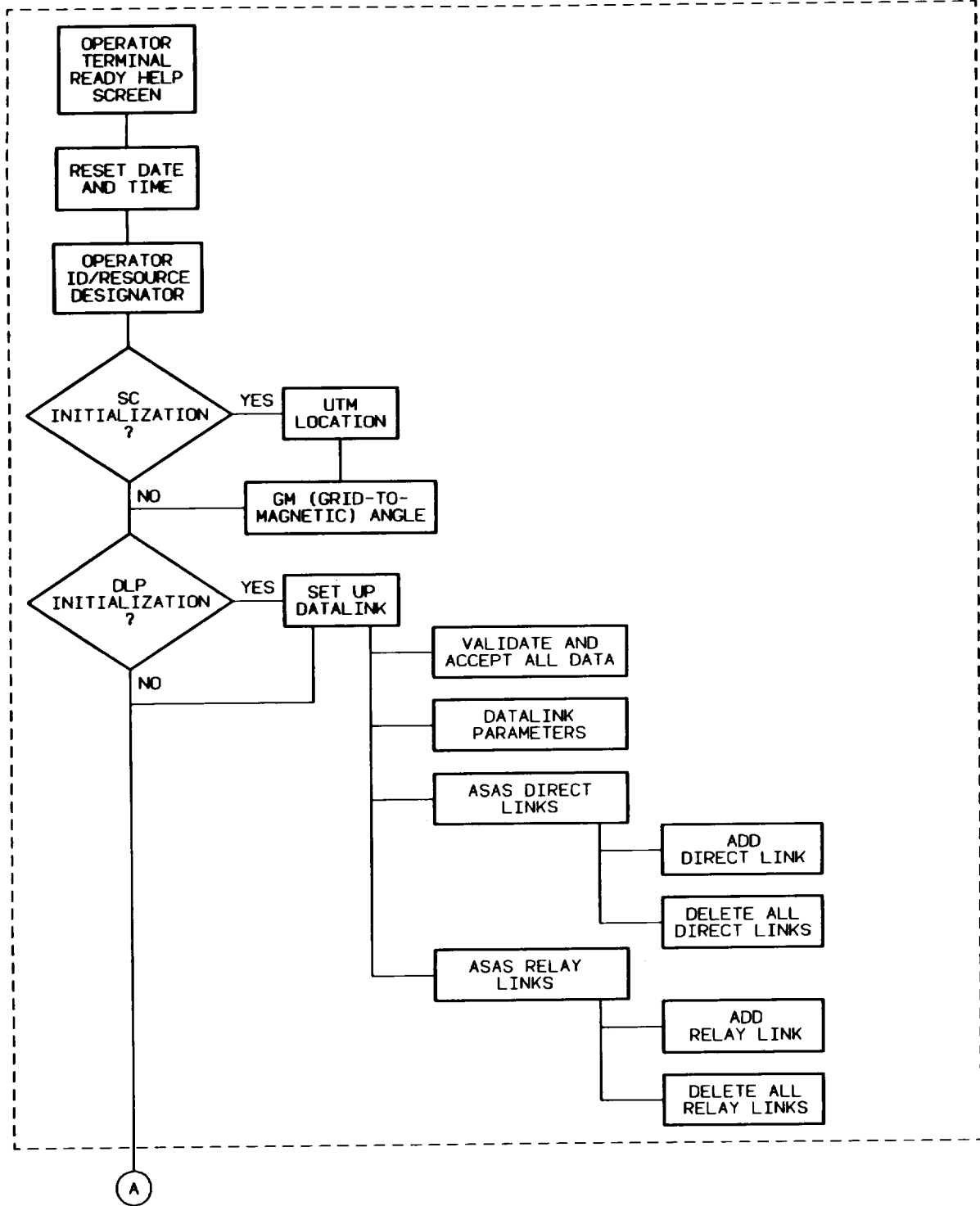
During Deployed Operation, the majority of operator functions will be performed from Operator Terminals located in racks 1 and 3.

The following six pages contain a map of all the menus. Deployed Operation contains a description of each menu that the operator may encounter. A brief description of each submenu is also provided. The descriptions provided will help guide the operators through the various functions and menus.

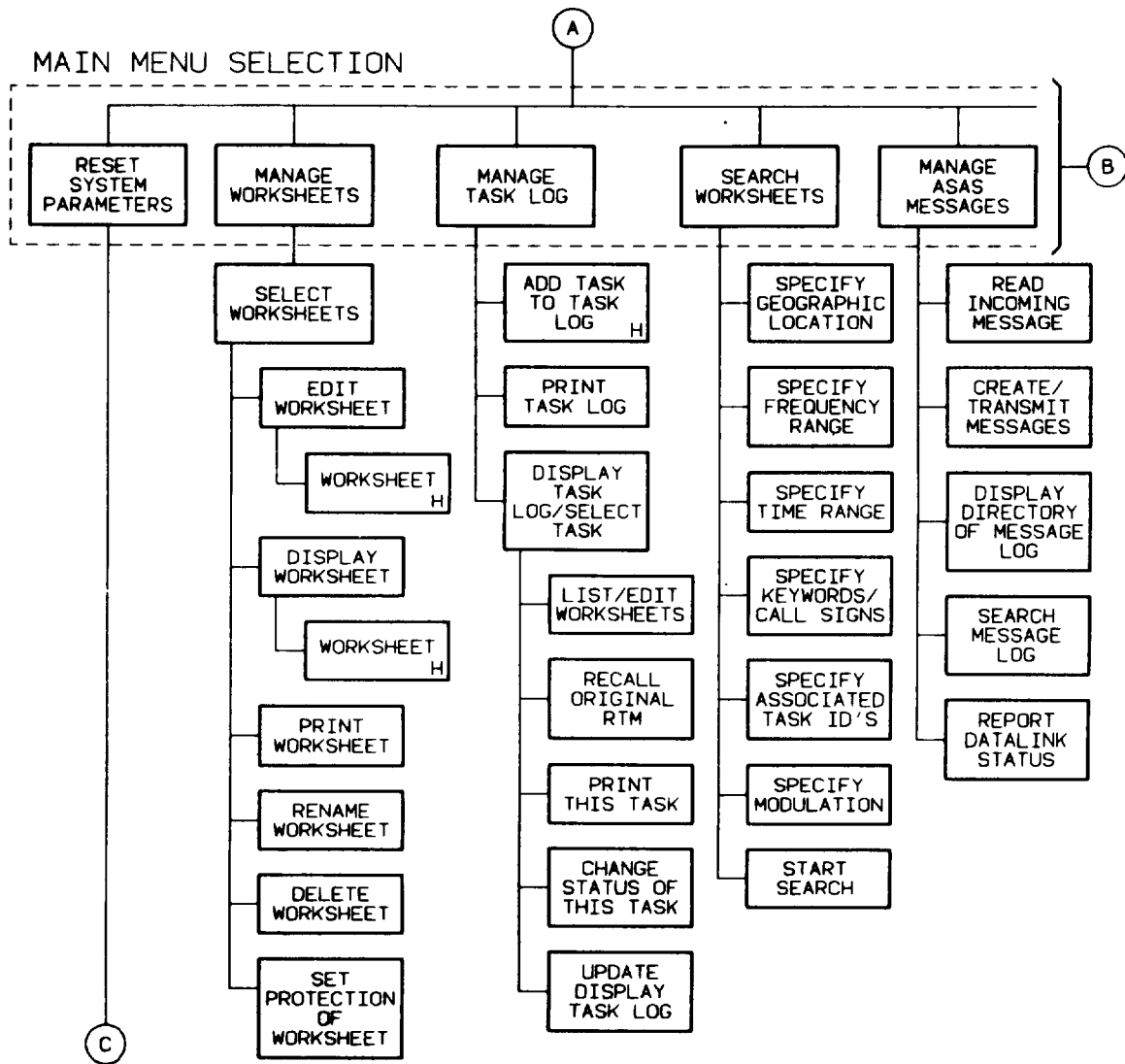
The following six pages provide the operator with a list of menus that will be encountered during the operation of the operator terminal. The extent of menus to be utilized will depend on the mission requirements.

OPERATOR TERMINAL MENU DESCRIPTION (CONT)

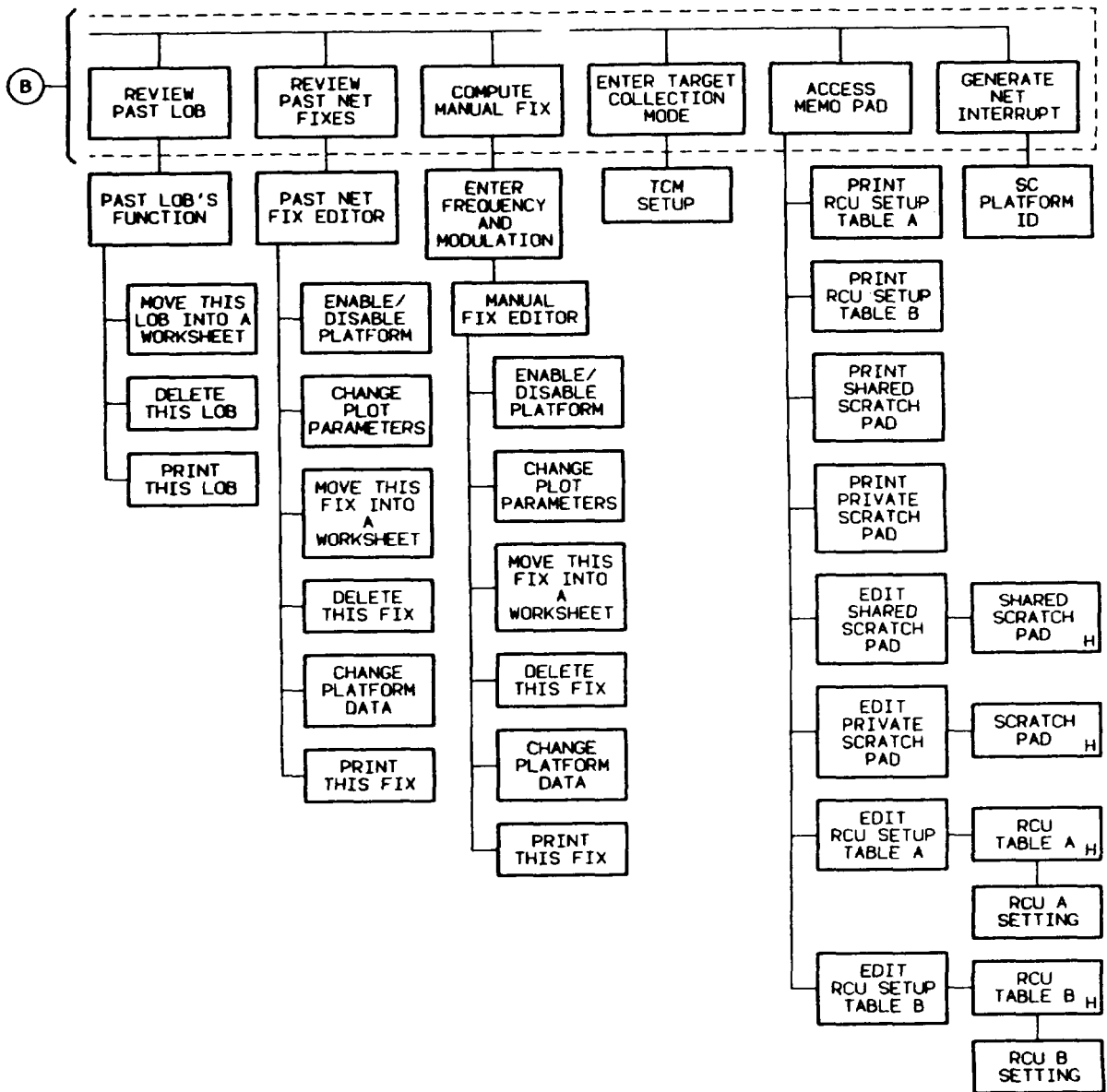
INITIALIZATION ROUTINE



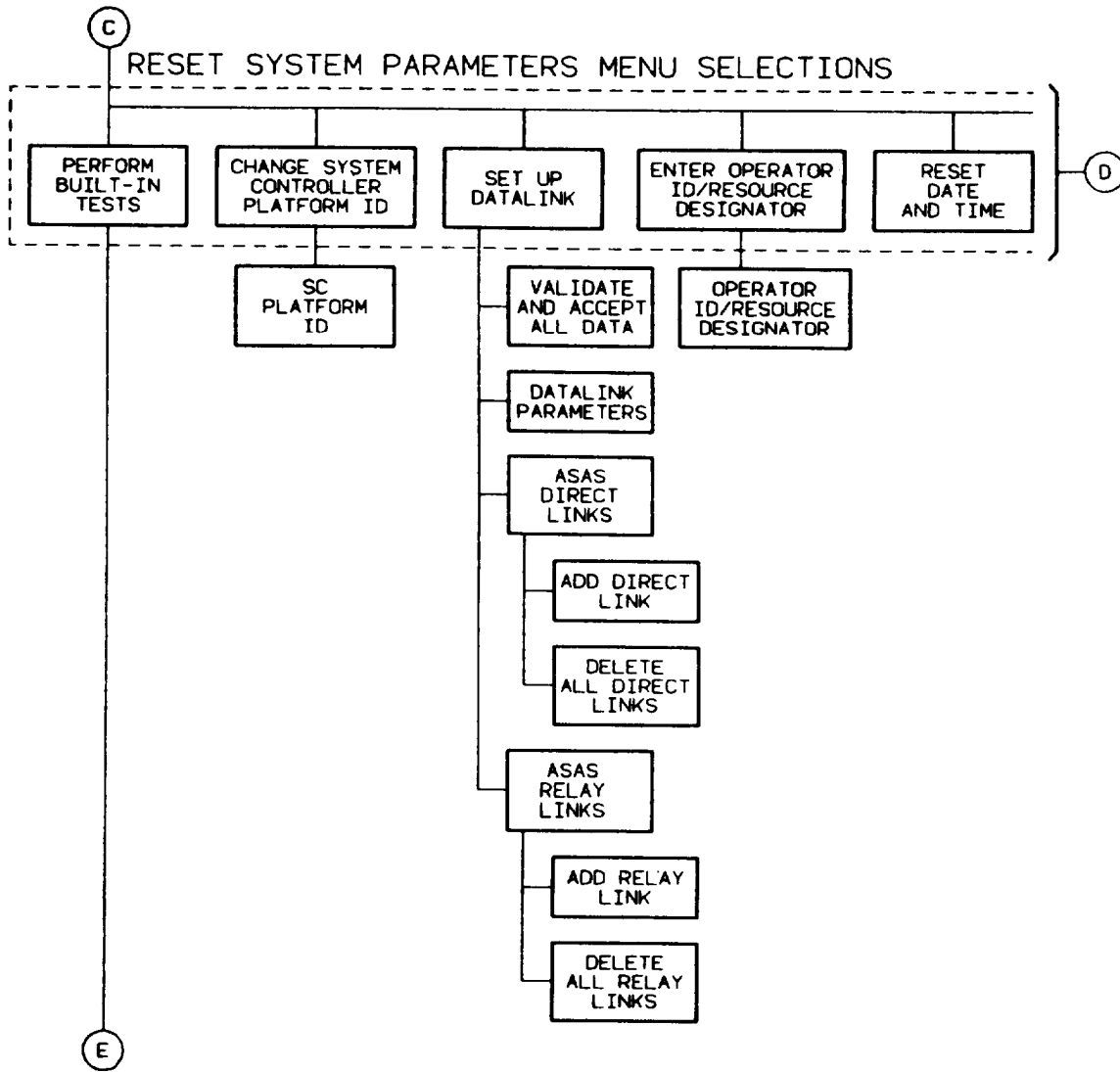
OPERATOR TERMINAL MENU DESCRIPTION (CONT)



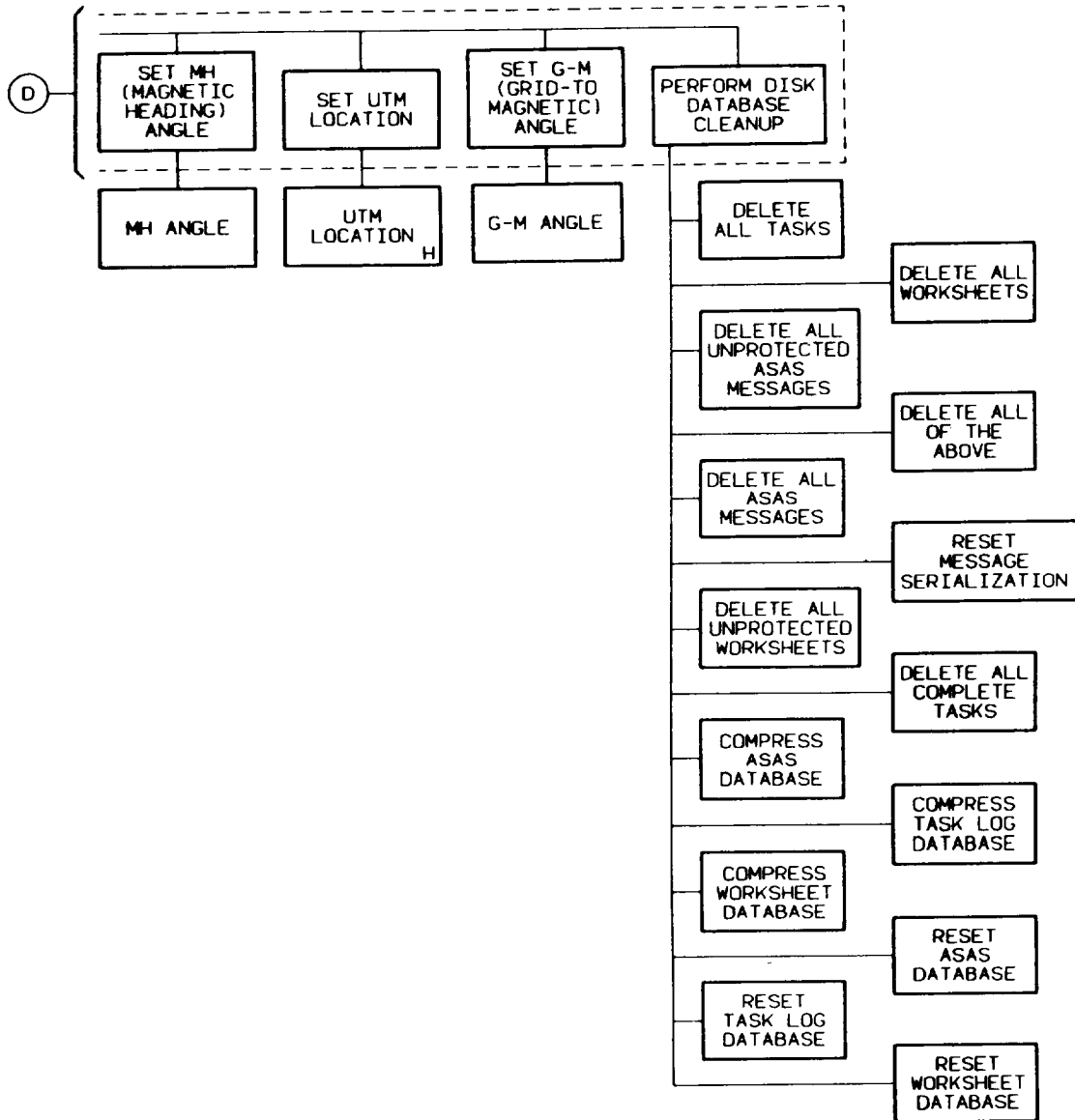
OPERATOR TERMINAL MENU DESCRIPTION (CONT)



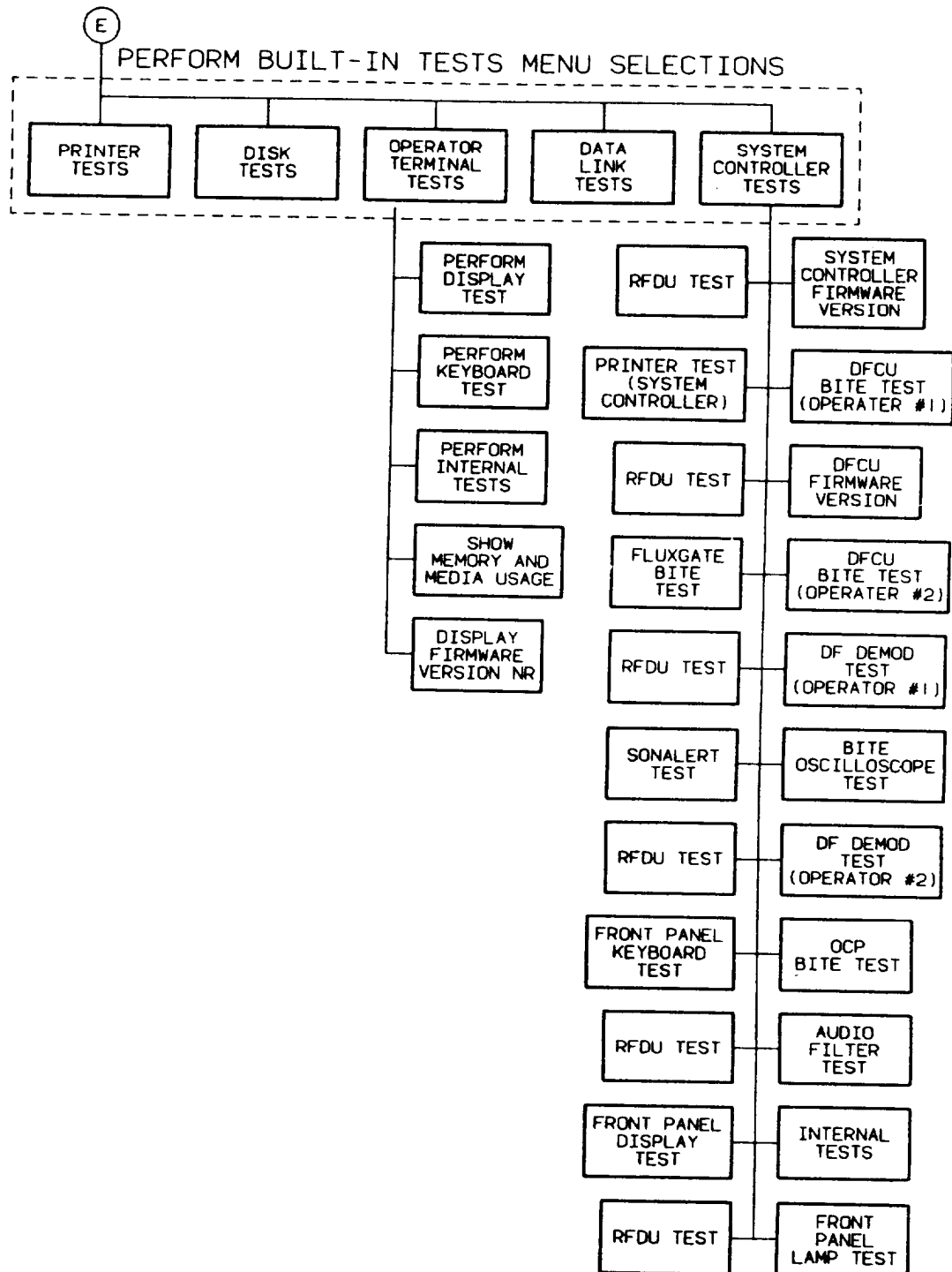
OPERATOR TERMINAL MENU DESCRIPTION (CONT)



OPERATOR TERMINAL MENU DESCRIPTION (CONT)



OPERATOR TERMINAL MENU DESCRIPTION (CONT)



MAIN MENU SELECTIONS

Platform ID: MAN	Operator ID: TERM1	14 1150:482 Apr 1987
<div style="border: 1px solid black; padding: 2px; display: inline-block; margin: 5px 0;">Reset System Parameters</div> Manage Task Log Manage Worksheets Search Worksheets Review Past LOBs Review Past Net Fixes Compute Manual Fix Manage ASAS Messages Enter Target Collection Mode Access Memo Pads		
Main Menu: Select and CODE-RETURN CODE-? for help		

The MAIN menu functions provided by the Operator Terminal enables the operator to perform the following:

- * Change system parameters and perform self-test
- * Examine and update his tasking database
- * Construct worksheets in which to store his findings
- * Analyze a LOB database
- * Analyze fix databases
- * Communicate with the ASAS network
- * Maintain internal notepads

The MAIN menu consists of the following sub-menus:

RESET SYSTEM PARAMETERS
 MANAGE TASK LOG
 MANAGE WORKSHEETS
 SEARCH WORKSHEETS
 REVIEW PAST LOB'S
 REVIEW PAST NET FIXES
 COMPUTE MANUAL FIX
 MANAGE ASAS MESSAGES
 ENTER TARGET COLLECTION MODE
 ACCESS MEMO PAD
 GENERATE NET INTERRUPT (Netted Mode Only)

MANACE TASK LOG - This function will allow the operator to examine and update his current tasking assignments. Tasking assignments come to the operator by means of either the ASAS network or by voice messages. This function also allows access to the worksheets associated with the tasking assignments.

DISPLAY TASK LOG/SELECT TASK - This function will display the first portion of the Task Log. Operator must then select one of the following menu items.

LIST/EDIT ASSOCIATED WORKSHEETS - When selected, allows operator to scan the worksheet database and display a list of worksheets which reference the task ID of the selected task. This also allows operator to delete, edit, change the protection and rename any worksheet in the database.

RECALL ORIGINAL RTM - When selected, allows operator to scan the ASAS database for the RTM whose serial number appears in the selected task. If it does not exist, an error message will be displayed.

PRINT THIS TASK - When selected, copies selected task to printer.

CHANGE STATUS OF THIS TASK - Allows operator to select one of three statuses (Active, Complete, or Delete) and to edit comments section of the task.

UPDATE DISPLAY TASK LOG - When selected, rebuilds the tasklog listing with any changes made by the operator in this session.

PRINT TASK LOG - Copies Task Log to printer. The print-out included a header reading "Task Log", the current time and date, operator ID, and the resource designator suffixed with position designator A or B.

ADD TASK TO TASK LOG - Allows operator to add a new task to the tasking database. Manual tasking data is added to the database through this function. This function works in cooperation with the search function.

MANAGE WORKSHEETS - This function is responsible for the creating, editing, listing, naming, and deleting of the worksheets used by the operator. The worksheets exist for the purpose of collecting the results of the operators work. One or more worksheets will exist for each frequency which has been intercepted by the operator.

SELECT WORKSHEET - Operator will be prompted to enter the Name and/or Frequency of the worksheet he wishes to act upon. When both name and frequency have been specified, the Worksheet Selected Menu will be presented on the screen. menu options are as follows:

EDIT WORKSHEET - When selected, allows operator to edit selected worksheet.

DISPLAY WORKSHEET - When selected, brings worksheet to the screen and invokes the worksheet editor in Read-Only mode.

PRINT WORKSHEET - When selected, copies worksheet to printer. All LOB's/fixes and the entire gist will be printed, but not as exact format as presented on screen.

RENAME WORKSHEET - When selected, prompts operator for a new name for the selected worksheet.

DELETE WORKSHEET - When selected, prompts operator to confirm his intention through a yes/no question. If worksheet is protected, an error message will be displayed. After completion, the Main Menu is presented on the screen.

SET PROTECTION OF WORKSHEET - When selected, presents the Protection Form, which offers a choice between "Protected" and "Unprotected" status. Protection refers to the susceptibility of the worksheet to deletion by either the program or an operator.

CREATE WORKSHEET - If no worksheet meets the parameters specified and the select worksheet menu, this option is presented. When selected, a new worksheet is created and the worksheet editor is displayed.

SEARCH WORKSHEETS - This function permits the operator to scan through the worksheet database using specified search parameters. Provides an indexing method to the worksheets associated with the search.

SPECIFY GEOGRAPHIC RECTANGLE - When selected, operator will be prompted for all necessary information to perform this function. Fill in and Code-return.

SPECIFY FREQUENCY RANGE - When selected, operator will be prompted for the limits of frequency range. Fill in and Code-return.

SPECIFY TIME RANGE - When selected, operator will be prompted for the limits of time range. Fill in and Code-return.

SPECIFY KEYWORDS/CALLSIGNS - When selected, operator will be prompted for specific keywords or callsigns. Fill in and code-return.

SPECIFY ASSOCIATED TASK ID'S - When selected, operator will be prompted for task ID's of associated tasks. Fill in and code-return.

SPECIFY MODULATION - When selected, operator will be prompted for a modulation type. Fill in and code-return.

START SEARCH - Enable operator to execute the search program selected.

REVIEW PAST LOB'S - This function enables the operator to examine the Line-Of-Bearing (LOB) database built from data supplied from the System Controller. It also allows operator to move LOB'S into worksheets.

SELECT PAST LOB'S - Operator may select one LOB in the list. The operator is then presented with the following options:

MOVE THIS LOB INTO A WORKSHEET - Operator can either enter the name and/or frequency of any existing worksheet as a destination or have the program present a list of probable destinations for the LOB record.

DELETE THIS LOB - Deletes the LOB record from the Past LOB's database and redisplay the list of LOB's.

PRINT THIS LOB - When selected, prints the LOB record.

REVIEW PAST NET FIXES - This function enables the operator to examine and analyze the AN/TRQ-32 net fix database built from data supplied from the System Controller and to move fixes into worksheets.

SELECT PAST NET FIX - Operator must select one Past Net Fix listed in the database. Each item in the database will contain frequency, modulation, date/time of the DF's used to make the fix, calculated emitter location, and possibly some other data on the fix. When operator has selected a fix, the Fix Editor subprogram will be invoked. A table of LOB's which constitute the fix, a plot of the fix, and a display of fix results. Automatic scaling and automatic plot location will be in effect. The Fix Editor Menu is now displayed.

ENABLE/DISABLE PLATFORM - Will prompt operator to enable or disable any of the platforms that are currently on the Fix screen. If a platform is disabled, it is not used as part of the fix calculation.

CHANGE PLATFORM DATA - Allows operator to manually add data for up to 4 more platforms to the fix computation. The program will replace the Fix Editor Form with a Platform Editing Form that prompts operator to select one of the 8 platforms and also an operation involving the selected platform.

UTM - Prompts operator to enter the UTM location (Datum, Zone, Easting, and Northing) for the selected platform.

LOB - Prompts operator to enter an LOB Angle for the selected platform.

QF - Prompts operator to enter a Quality Factor for the selected platform.

CHANGE PLOT PARAMETERS - Prompts operator to select a plot scale and a method of plot alignment. Choices for scale will include several fixed values, automatic scaling, and an editable field for manual entry of a scale factor. Choices for alignment will include the SouthWest corner, the plot center, and "automatic".

PRINT THIS FIX - The Fix results will be printed on the system printer, along with a graphic representation of the Fix plot.

DELETE THIS FIX - Will prompt operator for confirmation of this intention.

MOVE THIS FIX INTO A WORKSHEET - Will be entirely analogous to the "Move LOB to worksheet" function described under "Review Past LOBS".

COMPUTE MANUAL FIX - This function enables the operator to examine and analyze fix data manually entered by him. Operator is prompted to choose frequency or select unknown.

ENABLE/DISABLE PLATFORM - Will prompt operator to enable or disable any of the platforms that are currently on the Fix screen. If a platform is disabled, it is not used as part of the fix calculation.

CHANGE PLATFORM DATA - Allows operator to manually add data for up to 8 platforms to the fix computation. The program will replace the Fix Editor Form with a Platform Editing Form that prompts operator to select one of the 8 platforms and also an operation involving the selected platform.

UTM - Prompts operator to enter the UTM location (Datum, Zone, Easting, and Northing) for the selected platform.

LOB - Prompts operator to enter an LOB Angle for the selected platform.

QF - Prompts operator to enter a Quality Factor for the selected platform.

CHANGE PLOT PARAMETERS - Prompts operator to select a plot scale and a method of plot alignment. Choices for scale will include several fixed values, automatic scaling, and an editable field for manual entry of a scale factor. Choices for alignment will include the SouthWest corner, the plot center, and "automatic".

PRINT THIS FIX - The Fix results will be printed on the system printer, along with a graphic representation of the Fix plot.

DELETE THIS FIX - Will prompt operator for confirmation of this intention.

MOVE THIS FIX INTO A WORKSHEET - Will be entirely analogous to the "Move LOB to worksheet" function described under "Review Past LOBs".

MANAGE ASAS MESSAGES - This function allows the operator to receive messages and to report accumulated data back to the ASAS network. Reports will be constructed from the information contained in the worksheets. The operator may also reread messages previously sent or received. The menu selections are as follows:

READ INCOMING MESSAGE - Selected after notification of a message received by the datalink processor occurs. The new message is displayed, and operator is then given an option of print a hard copy of the message. The message will be entered into the ASAS Message Database.

CREATE/TRANSMIT MESSAGE - A menu with eight different types of out going messages will be presented on the screen.

DISPLAY DIRECTORY OF MESSAGE LOG - The program will display a scrolling list of all messages in the database. Each message in the list will include creation date and time, message type, serial number, an indication of incoming or outgoing, the source or destination address, precedence, and protection.

SEARCH MESSAGE LOG - Operator will be prompted to specify values for any number of the following search parameters: Message Type, Sender, Recipient, and Time Interval.

REPORT DATALINK STATUS - Allows operator to select one of the following menu items.

REVIEW DATALINK STATUS - Presents following information on the screen: datalink test results, weather or not the datalink has been initialized, last STX message transmitted, response to the last STX message, available queue memory, NAD timer count, NAD select, hold timer counter, hold timer type, contention wait timer, WBT1 wait timer count, WBT2 wait timer count, operator lockout timer count, and data link version number.

EXAMINE TRANSMIT QUEUE - Displays the following information for each message in the queue: message ID, OT number, precedence, size of message, destination, and number of transmits.

EXAMINE RECEIVE QUEUE - Displays the following information for each message in the queue: message ID, OT number, precedence, size of message, destination, and number of receives.

LINK EFFECTIVITY TABLE - The link effectivity table is displayed on the screen.

ENTER TARGET COLLECTION MODE - This function is used by the operator to assist in the intercept and DF of tactical targets. In this operational mode, a scanning 201C Receiver Control Unit may be interconnected to the tasking database. Upon detection of activity the 201C is stopped on that frequency and that frequency shall be passed to the Operator Terminal through the system controller. The operator terminal may check for the presence of that frequency in the tasking database and, if found and after confirmation by the operator, shall display an appropriate worksheet to the screen.

ACCESS MEMO PADS - This function allows the operator to manually edit free-field and fixed-field test memos. The operator may select one of the following selections:

- EDIT PRIVATE SCRATCH PAD
- EDIT SHARED SCRATCH PAD
- EDIT RCU SET UP TABLE A
- EDIT RCU SET UP TABLE B
- PRINT PRIVATE SCRATCH PAD
- PRINT SHARED SCRATCH PAD
- PRINT RCU SET UP TABLE A
- PRINT RCU SET UP TABLE B

GENERATE NET INTERRUPT - This function allows the operator to initiate the procedure to break the AN/TRQ-32 network.

RESET SYS PARA MENU SELECTIONS

Platform ID: MAN	OperatorID: TERMI	14 1151:432 Apr 1987
UTM Location: 08.34U048000577400	G-M Angle: W000.00	MH Angle: Disabled
<div style="border: 1px solid black; display: inline-block; padding: 2px;">Change System Controller Platform ID</div> Perform Built-In Tests Set Up DataLink Enter Operator ID/Resource Designator Reset Date and Time Set MH (Magnetic Heading) Angle Set UTM Location Set G-M (Grid-to-Magnetic) Angle Perform Disk Database Cleanup		
System Parameters: Select and CODE-RETURN		

The RESET SYSTEM PARAMETERS menu enables the operator to set, review, and change the system initialization parameters and to perform self testing of the system hardware (BITE). This menu is the path through which the system controller communicates to maintain the physical environment database information. This menu provides the following functions:

The RESET SYSTEM PARAMETERS menu consists of the following sub-menus:

CHANGE SYSTEM CONTROLLER PLATFORM ID
 PERFORM BUILT-IN TESTS
 SET UP DATALINK
 ENTER OPERATOR ID/RESOURCE DESIGNATOR
 RESET DATE AND TIME
 SET MH (MAGNETIC HEADING) ANGLE
 SET UTM LOCATION
 SET CM (GRID-TO-MAGNETIC) ANGLE
 PERFORM DISK DATABASE CLEANUP

CHANGE SYSTEM CONTROLLER PLATFORM ID - Displays current platform ID and allows operator to change to/from manual.

SET UP DATALINK - This function obtains values from the datalink processor and allows operator to change them and return them to the datalink processor. These are the same as the forms presented at initialization.

VALIDATE AND ACCEPT ALL DATA - This function retrieves the datalink parameters stored on the hard disk and transfers them to the data link processor.

DATALINK PARAMETERS - This function recalls the current datalink parameters from the hard disk for display or change.

ASAS DIRECT LINKS - This function recalls the direct links table from the hard disk for display or change.

ADD DIRECT LINK - This function allows the operator to add direct links to the direct link table.

DELETE ALL DIRECT LINKS - This function allows the operator to clear all direct links from the direct link table.

ASAS RELAY LINKS - This function recalls the relay links table from the hard disk for display or change.

ADD RELAY LINK - This function allows the operator to add relay links to the relay link table.

DELETE ALL RELAY LINKS - This function allows the operator to clear all relay links from the relay link table.

ENTER OPERATOR ID/RESOURCE DESIGNATOR - This function will prompt operator to enter present identification. (Same form as presented at initialization.)

RESET DATE AND TIME - This function will prompt operator to change the current date and/or time. (Same form as presented at initialization.)

SET MH (MAGNETIC HEADING) ANGLE - This function will prompt the operator to enter the Magnetic Heading angle, and/or ENABLE/DISABLE for use in DF computations.

SET UTM LOCATION - This function will prompt the operator to enter the UTM location.

SET GM (GRID-TO-MAGNETIC) ANGLE - This function will prompt the operator to enter the Grid-to-Magnetic angle.

PERFORM DISK DATABASE CLEANUP - This function handles compression, re-indexing, and deletion of the Tasking Data, Worksheet Database, and ASAS Database.

DELETE ALL COMPLETE TASKS - Delete all tasks marked as complete in manage task log menu.

DELETE ALL TASKS - Deletes all tasks in tasklog.

DELETE ALL UNPROTECTED ASAS MESSAGES - Deletes all ASAS messages not marked as protected by the operator.

DELETE ALL ASAS MESSAGES - Deletes all ASAS messages.

DELETE ALL UNPROTECTED WORKSHEETS - Deletes all unprotected worksheets.

DELETE ALL WORKSHEETS - Deletes all worksheets.

DELETE ALL OF THE ABOVE - Delete all databases.

RESET MESSAGE SERIALIZATION - Resets serial numbers of outgoing ASAS messages to start with 001.

RESET ASAS DATABASE - Resets all software flags to a known state. For use if an abnormal system shutdown occurred.

RESET TASKLOG DATABASE- Resets all software flags to a known state. For use if an abnormal system shutdown occurred.

RESET WORKSHEET DATABASE- Resets all software flags to a known state. For use if an abnormal system shutdown occurred.

COMPRESS ASAS DATABASE- Erases ASAS messages marked for deletion and eliminates duplicate files created during editing.

COMPRESS TASKLOG DATABASE - Erases task log items marked for deletion and eliminates duplicate files created during editing.

COMPRESS WORKSHEET DATABASE- Erases worksheets marked for deletion and eliminates duplicate files created during editing.

PERFORM BUILT-IN TESTS

Platform ID: NCS	OperatorID: TERMI	14 1152:212 Apr 1987
<u>System Controller Tests</u> DataLink Tests Operator Terminal Tests Disk Tests Printer Tests		
Built-In Tests:SeLect and CODE-RETURN		

This function permits operator to conduct self testing of the system hardware. The operator must specify which component is to be tested and which test is to be performed.

The BUILT-IN TESTS menu consists of the following sub-menus:

- PRINTER TESTS
- DISK TESTS
- OPERATOR TERMINAL TESTS
- DATALINK TESTS
- SYSTEM CONTROLLER TESTS

PRINTER TESTS - Tests the ability of the operator terminal to output data to the printer.

DISK TESTS - Requests the disk drive control to perform a self test.

OPERATOR TERMINAL TESTS - Presents the following list of operator terminal internal tests; display test, keyboard test, internal tests, media usage, software version.

PERFORM DISPLAY TEST - Presents 3 different patterns on the terminal display.

PERFORM KEYBOARD TEST - Prompts operator to press each key on the operator terminal and verifies the ability to sense the keypress.

PERFORM INTERNAL TESTS - Performs a series of internal terminal tests.

SHOW MEMORY AND MEDIA USAGE - Displays amount of data storage used and available.

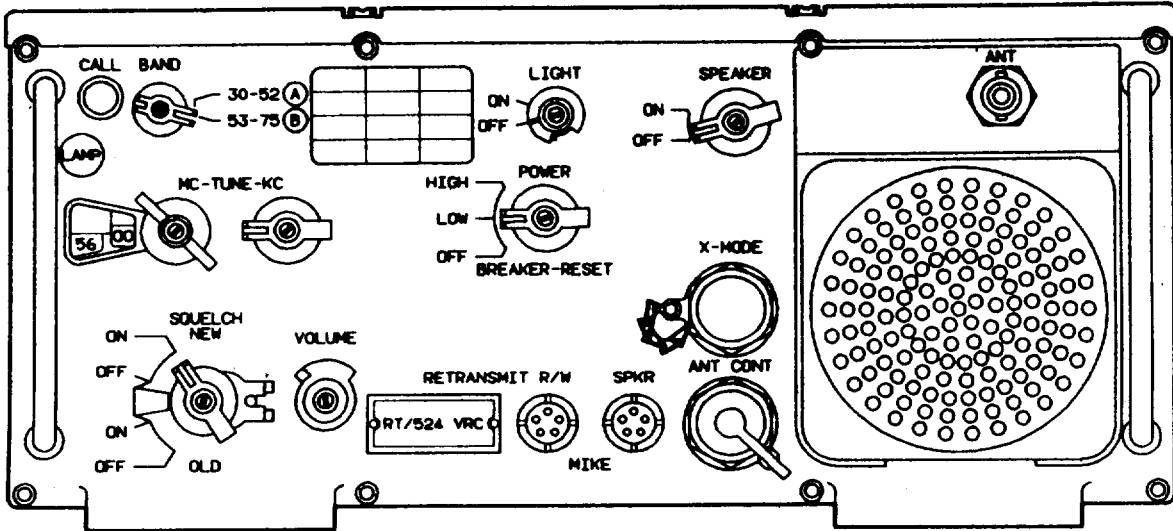
DISPLAY FIRMWARE VERSION NR. - Recalls the software version of the operator terminal based software and the version of the operator program stored on disk.

DATALINK TESTS - Tells the Datalink to perform a selftest and report the results.

SYSTEM CONTROLLER TESTS - Operator is authorized to run tests 5, 6, 7, and 8, all other tests are to be run by organizational maintenance.

PREPARATION FOR MOVEMENT

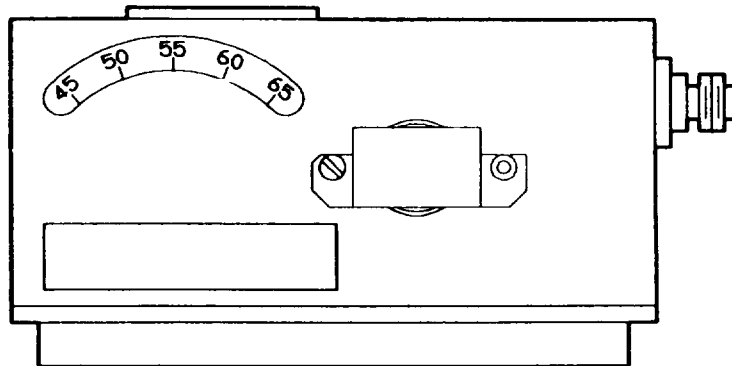
The following steps will prepare the AN/TRQ-32(V) for movement,



1. In RACK 4 on RT-524A, set the controls as follows:

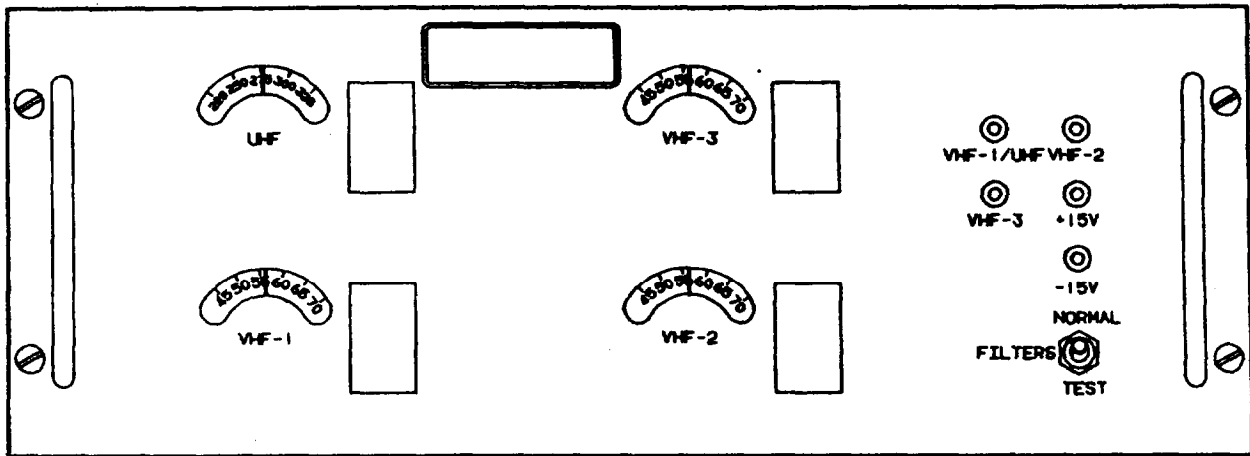
<u>CONTROL</u>	<u>POSITION</u>
BAND	A or B
MC-TUNE-KC	TACTICAL OPERATING FREQUENCY
SQUELCH	NEW/ON
POWER	LOW

PREPARATION FOR MOVEMENT (CONT)



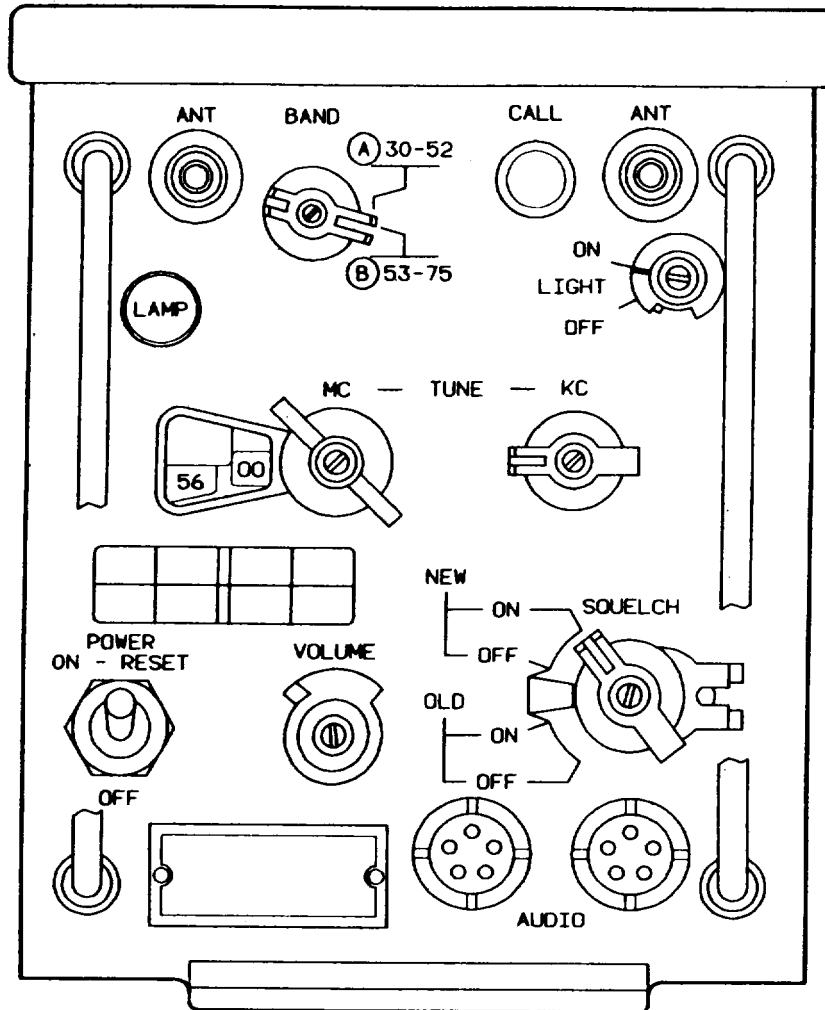
2. On VHF TUNABLE BANDPASS FILTER, adjust to tactical operating frequency.

PREPARATION FOR MOVEMENT (CONT)



3. In RACK 1 on, RF DISTRIBUTION UNIT, set filters VHF-1, VHF-2, and VHF-3 to tactical operating frequency.

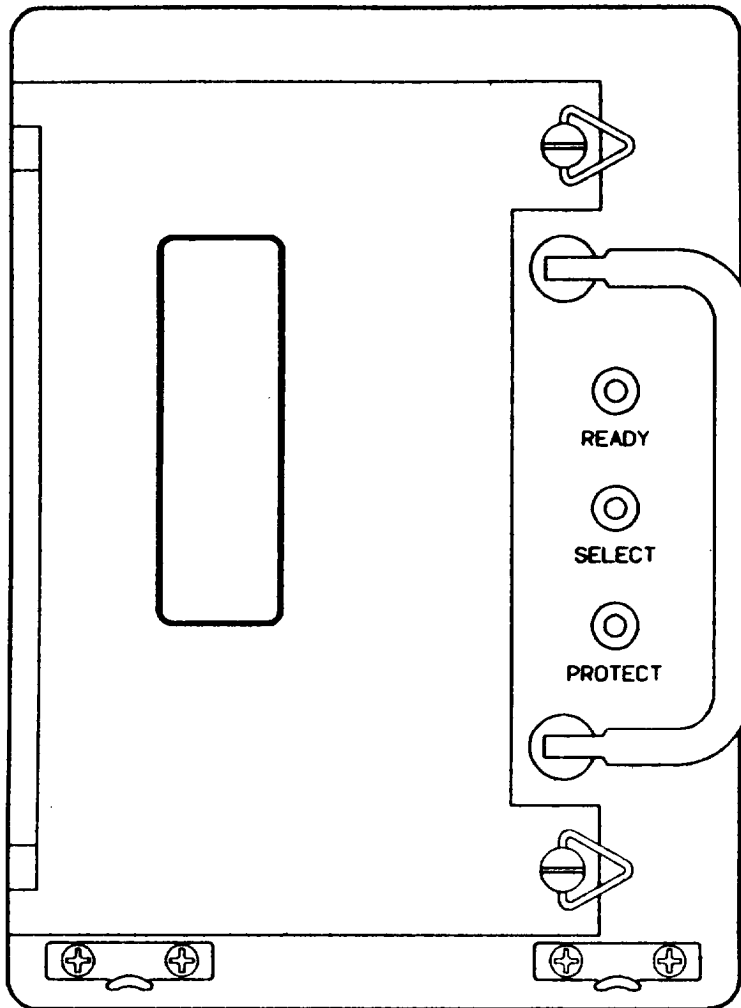
PREPARATION FOR MOVEMENT (CONT)



4. In RACK 4 on GUARD RECEIVER R-442A, set controls as follows:

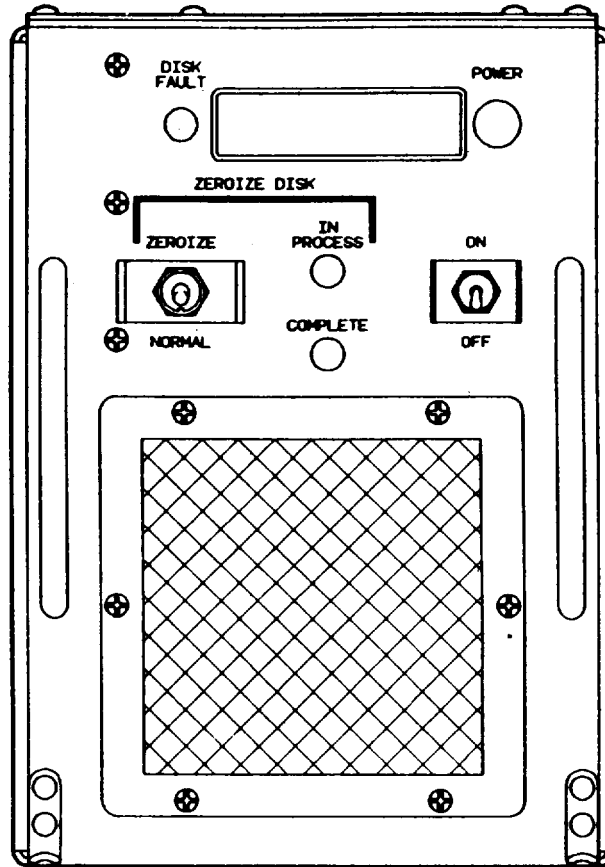
<u>CONTROL</u>	<u>POSITION</u>
BAND	A or B
MC-TUNE-KC	TACTICAL OPERATING FREQUENCY
SQUELCH	NEW/ON

PREPARATION FOR MOVEMENT (CONT)



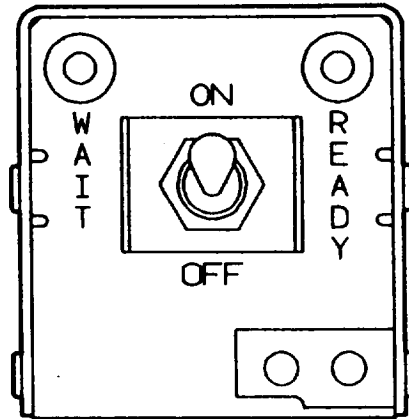
5. In RACK 4 on DISK DRIVE, ensure the SELECT light is not lit.

PREPARATION FOR MOVEMENT (CONT)



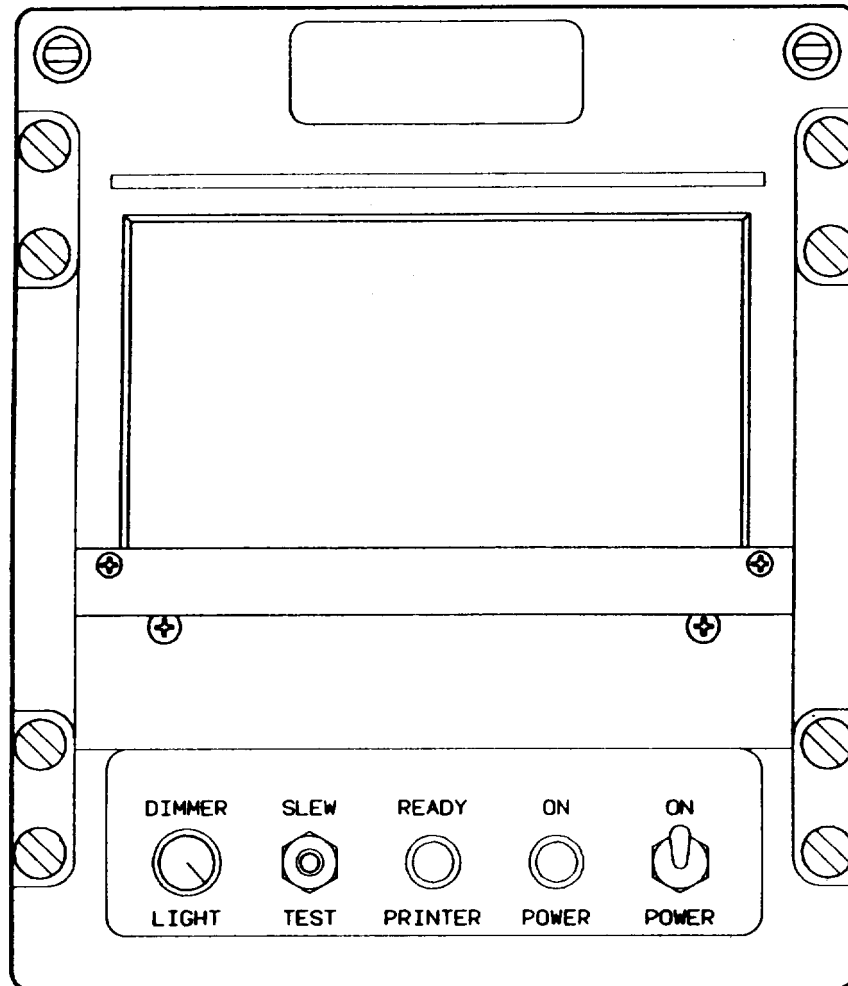
6. On DISK DRIVE CONTROL, place power switch to OFF position.

PREPARATION FOR MOVEMENT (CONT)



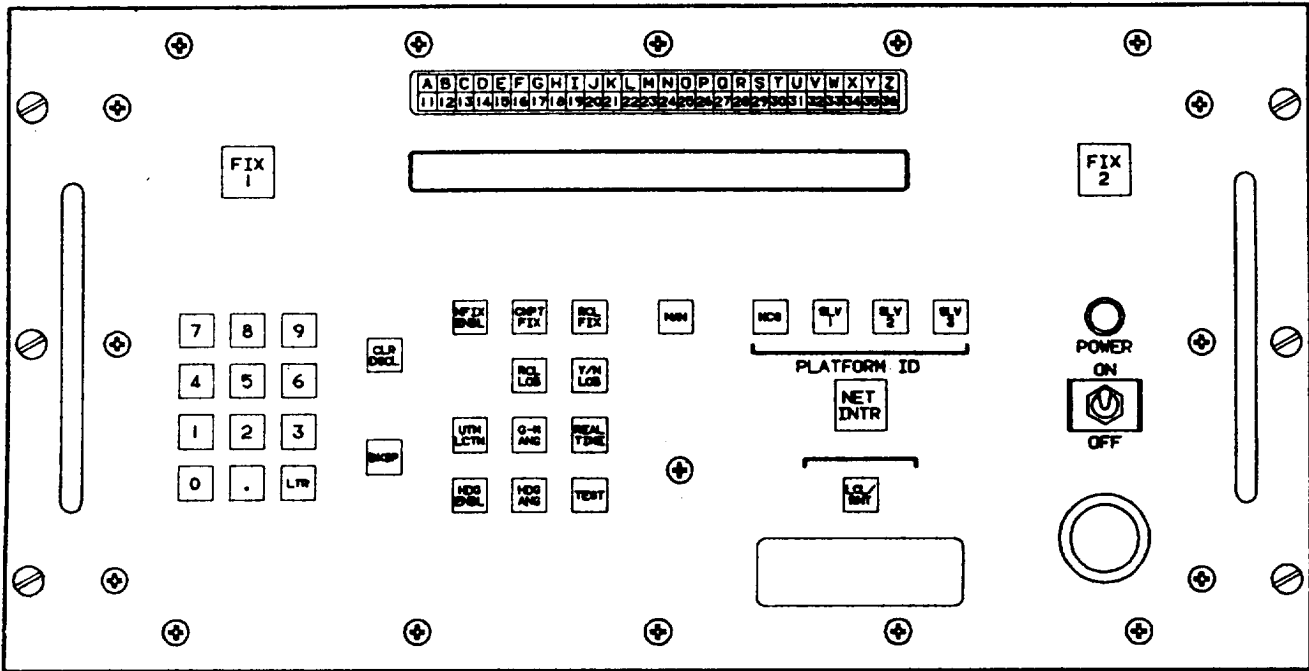
7. In RACKS 1 and 3 on POWER SWITCH ASSEMBLIES, set switch to OFF position.
8. On OPERATOR TERMINALS, lower screens, release lock on slides, and push mounting trays into rack. Secure to RACK with two turnlock fasteners.

PREPARATION FOR MOVEMENT (CONT)



9. In RACK 2 on THERMAL PRINTER, set power switch to OFF position.

PREPARATION FOR MOVEMENT (CONT)



10. On SYSTEM CONTROLLER, set power switch to OFF position.

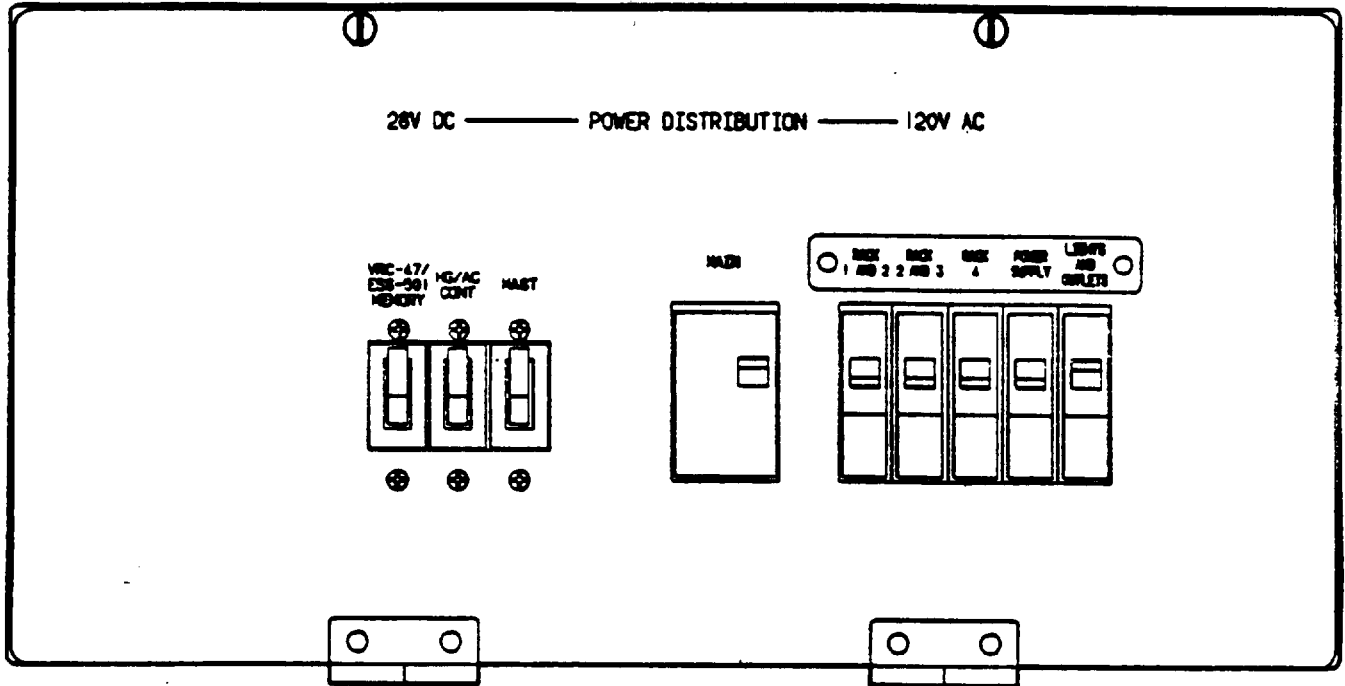
PREPARATION FOR MOVEMENT (CONT)

11. Set the power switches for the assemblies listed below in the following positions:

<u>LOCATION</u>	<u>ASSEMBLY</u>	<u>POSITION</u>
RACKS 1 AND 3	SIGNAL DISPLAY UNITS	OFF
RACK 2	RECORDER-REPRODUCER (2 recorders)	OFF
RACK 4	GUARD RECEIVER	OFF
RACK 4	DATA LINK PROCESSOR	OFF
RACKS 1 AND 3	SYSTEM POWER SUPPLY (2 switches)	OFF
RACK 4	TSEC/KG-84 or TSEC/KG-84A	OFF
RACK 4	TSEC/KY-57	
EXTERIOR REAR	POWER ENTRANCE BOX	MOBILE

12. Remove headsets from audio jacks located on right side of RACKS 1 and 3. Store headsets in upper storage compartment of RACK 1.

PREPARATION FOR MOVEMENT (CONT)



13. On POWER DISTRIBUTION PANEL, set circuit breakers to the following positions using the following sequence:

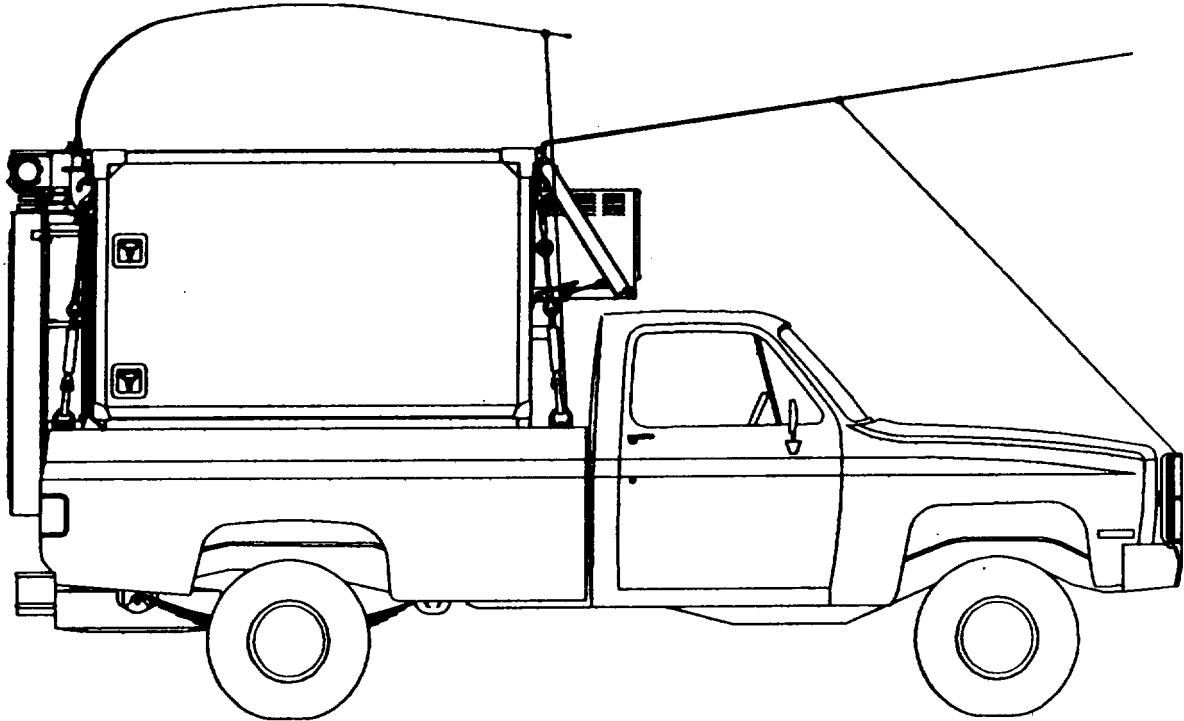
<u>CIRCUIT BREAKER</u>	<u>POSITION</u>
VRC-47/ESS-501 MEMORY	ON
HG/AC CONT	ON
MAST	ON
MAIN	
RACK 1 AND 2	OFF
RACK 2 AND 3	OFF
RACK 4	OFF
POWER SUPPLY	OFF
LIGHTS AND OUTLETS	ON

14. Secure chairs in storage location.

PREPARATION FOR MOVEMENT (CONT)

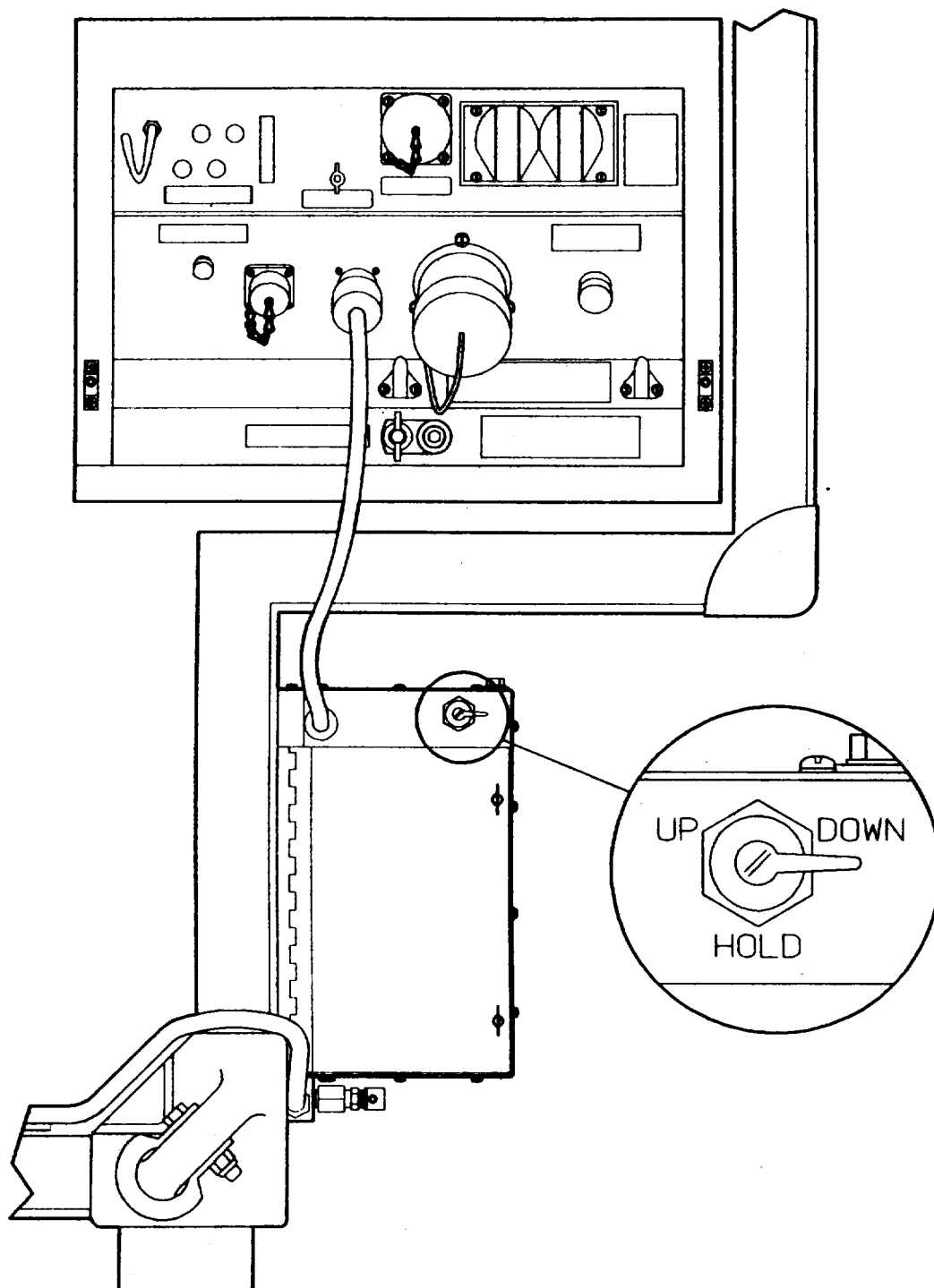
WARNING

DO NOT transmit on RT-524A when securing rear whip antenna. Personal injury may result from RF radiation.



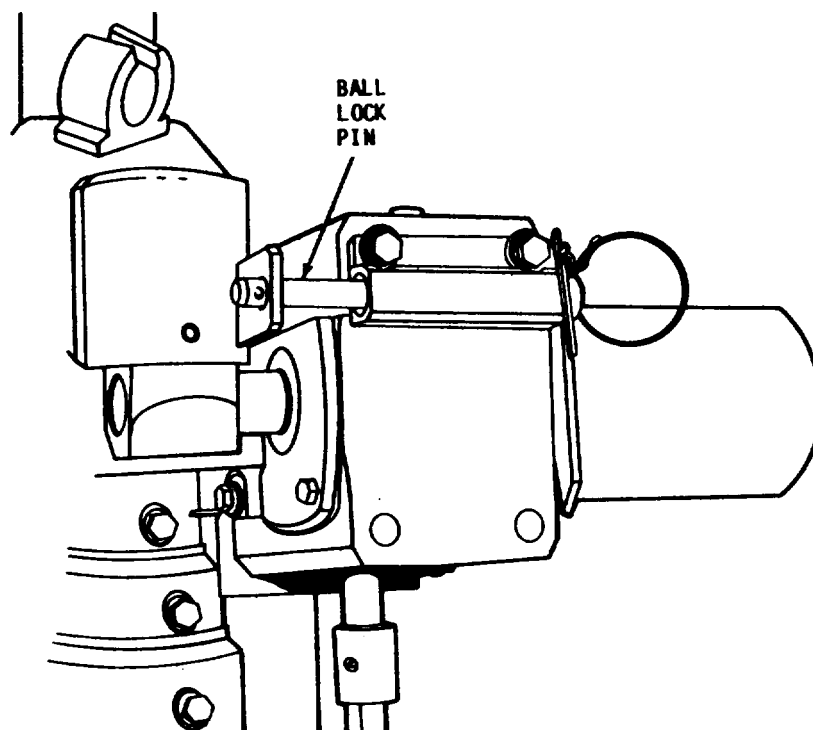
15. On shelter exterior, bend rear whip antenna toward front of vehicle and secure with tie-down rope. Leave a minimum of one foot between antenna and roof of shelter.
16. Bend right front whip antenna toward front of vehicle and secure using tie-down rope. Leave a minimum of one foot clearance between tip of antenna and roof line of shelter.
17. Bend left front whip antenna toward front of vehicle and secure using tie-down rope. Leave a minimum of one foot clearance between tip of antenna and roof line of shelter.

PREPARATION FOR MOVEMENT (CONT)



18. On COMPRESSOR ASSEMBLY, place PNEUMATIC MAST control valve in DOWN position. Ensure antenna cable feeds into cable basket as the mast descends.

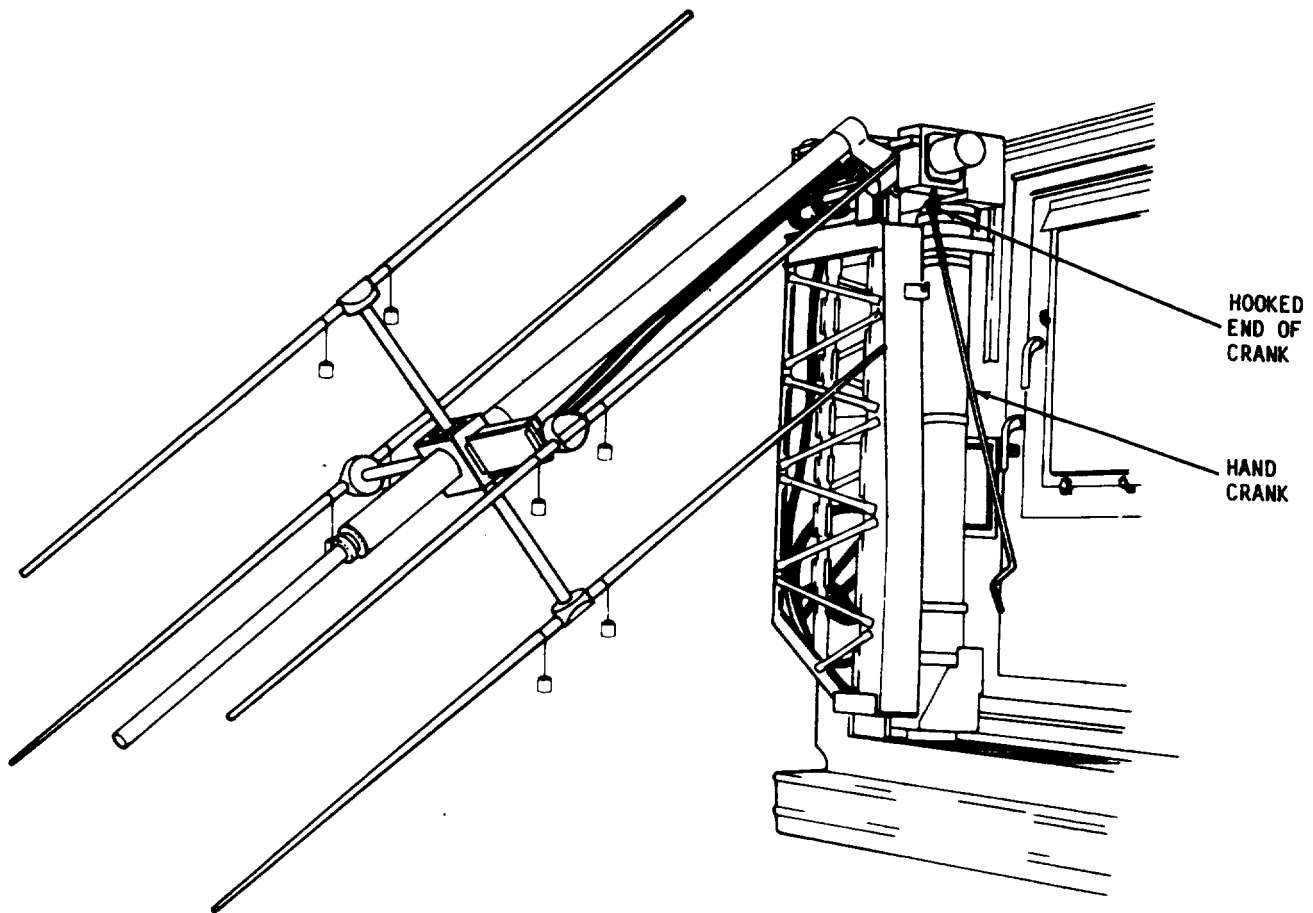
PREPARATION FOR MOVEMENT (CONT)



AN/TRQ-161

19. On REDUCTOR, remove bail lock pin securing antenna assembly.

PREPARATION FOR MOVEMENT (CONT)



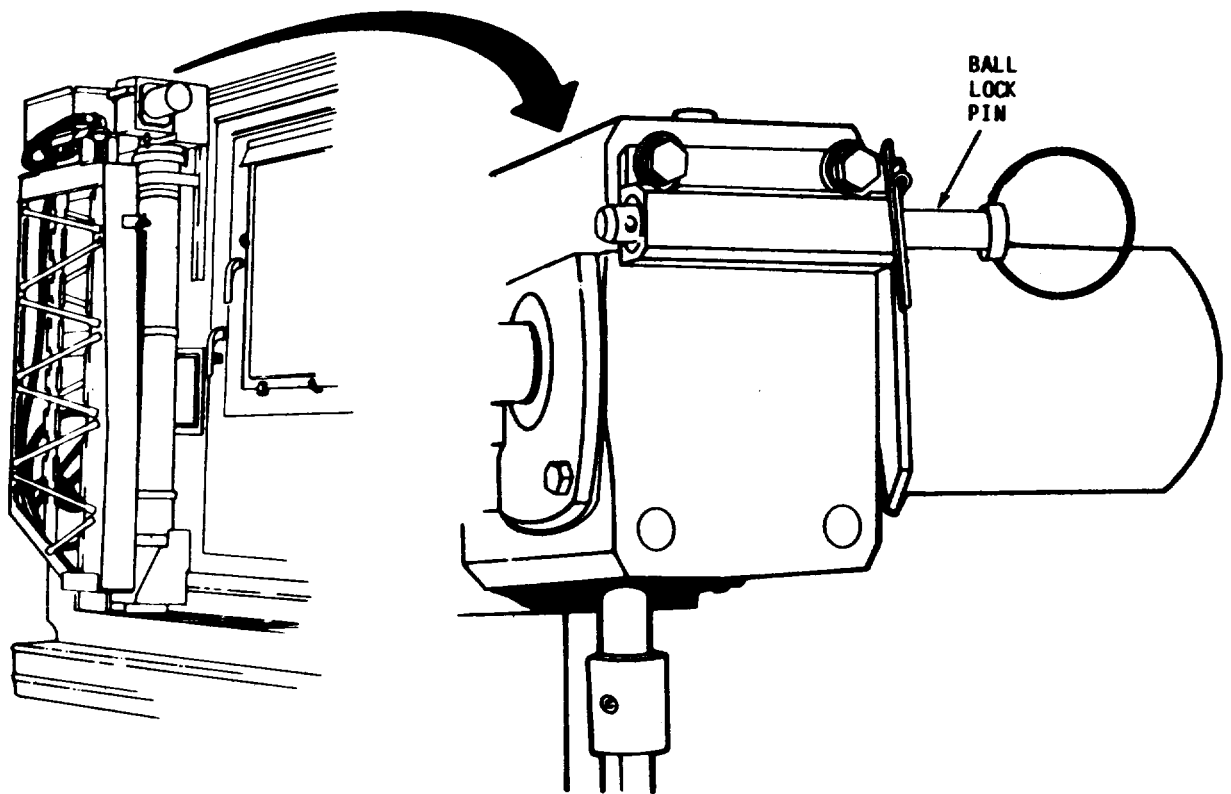
20. Remove hand crank secured to cable basket. Place hook end of hand crank in loop on reductor.

CAUTION

DO NOT allow antenna to touch ground when lowering.

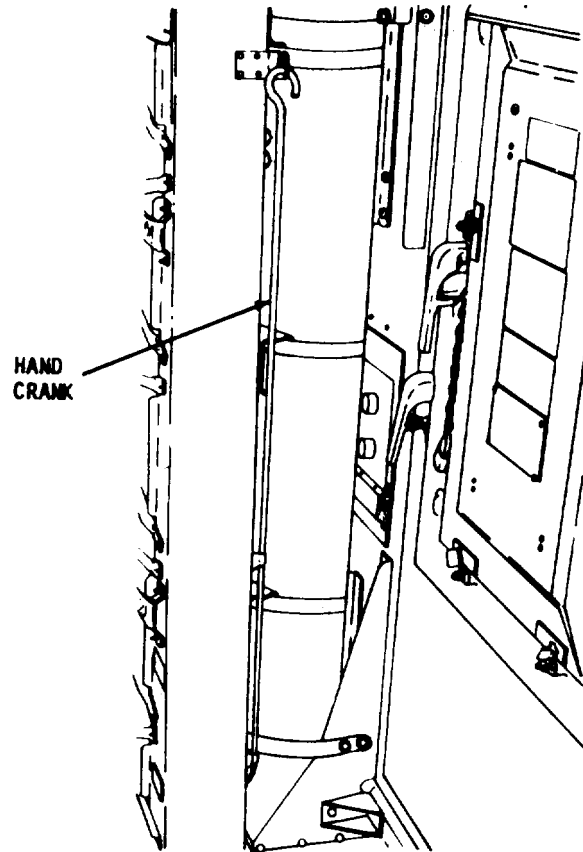
21. Turn hand crank counter clockwise to lower the antenna assembly.

PREPARATION FOR MOVEMENT (CONT)



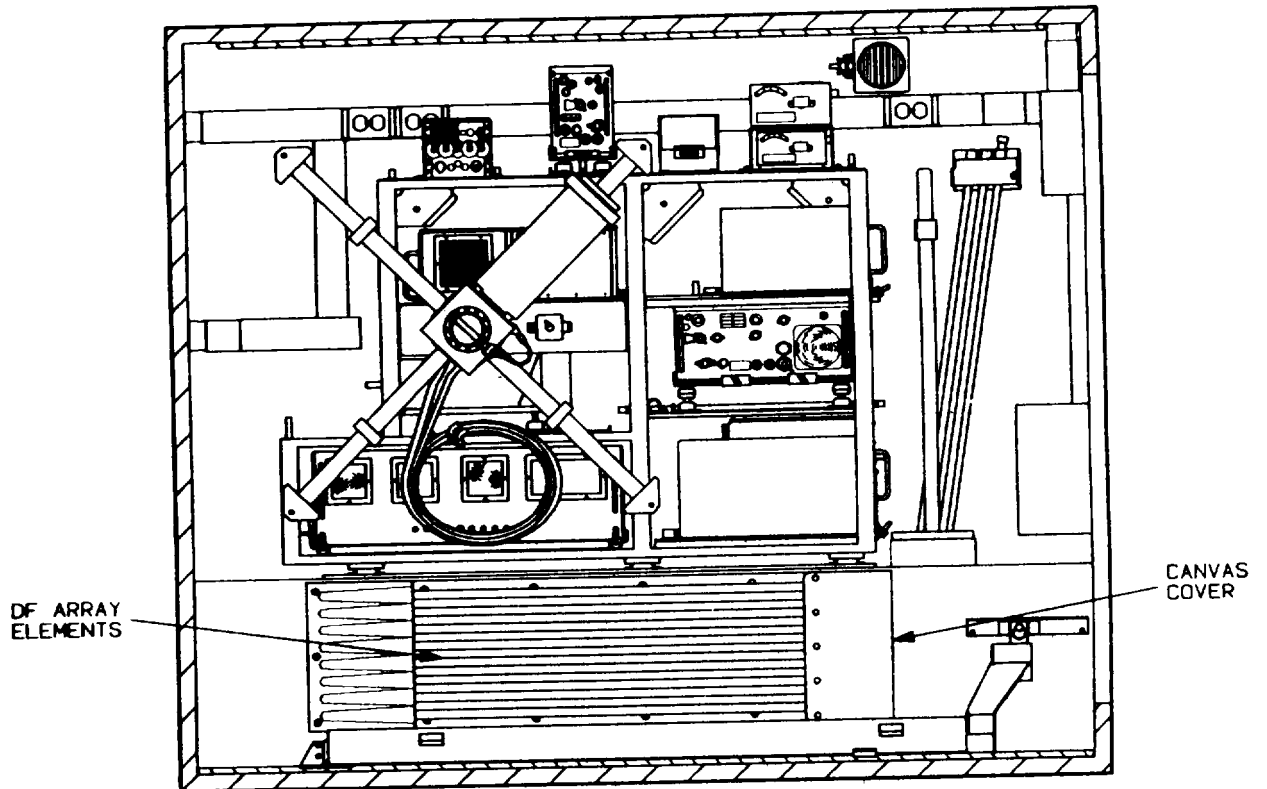
22. On reductor, slide ball lock pin back into place.

PREPARATION FOR MOVEMENT (CONT)



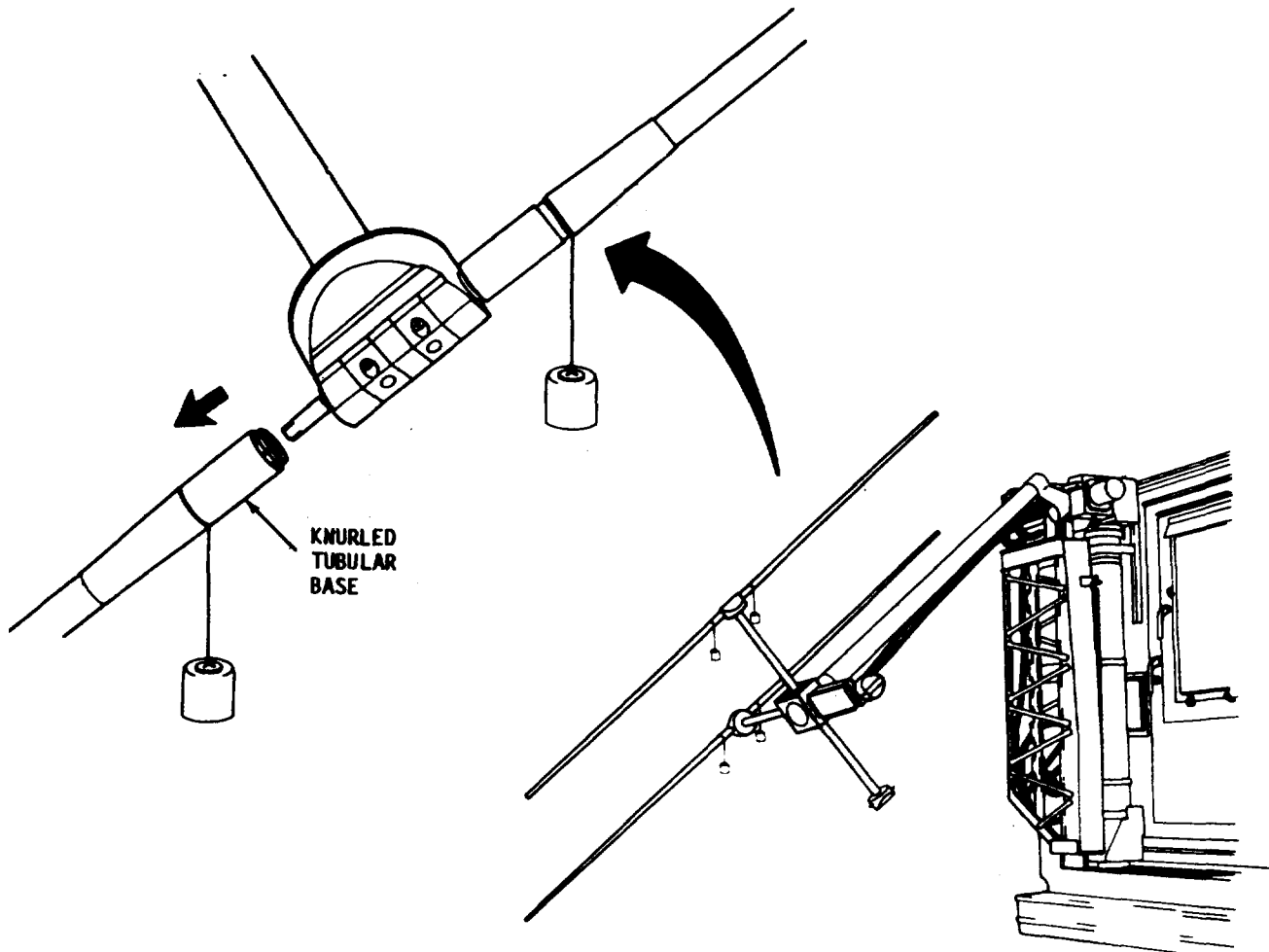
23. On reductor, remove hand crank from reductor and store on cable basket.

PREPARATION FOR MOVEMENT (CONT)



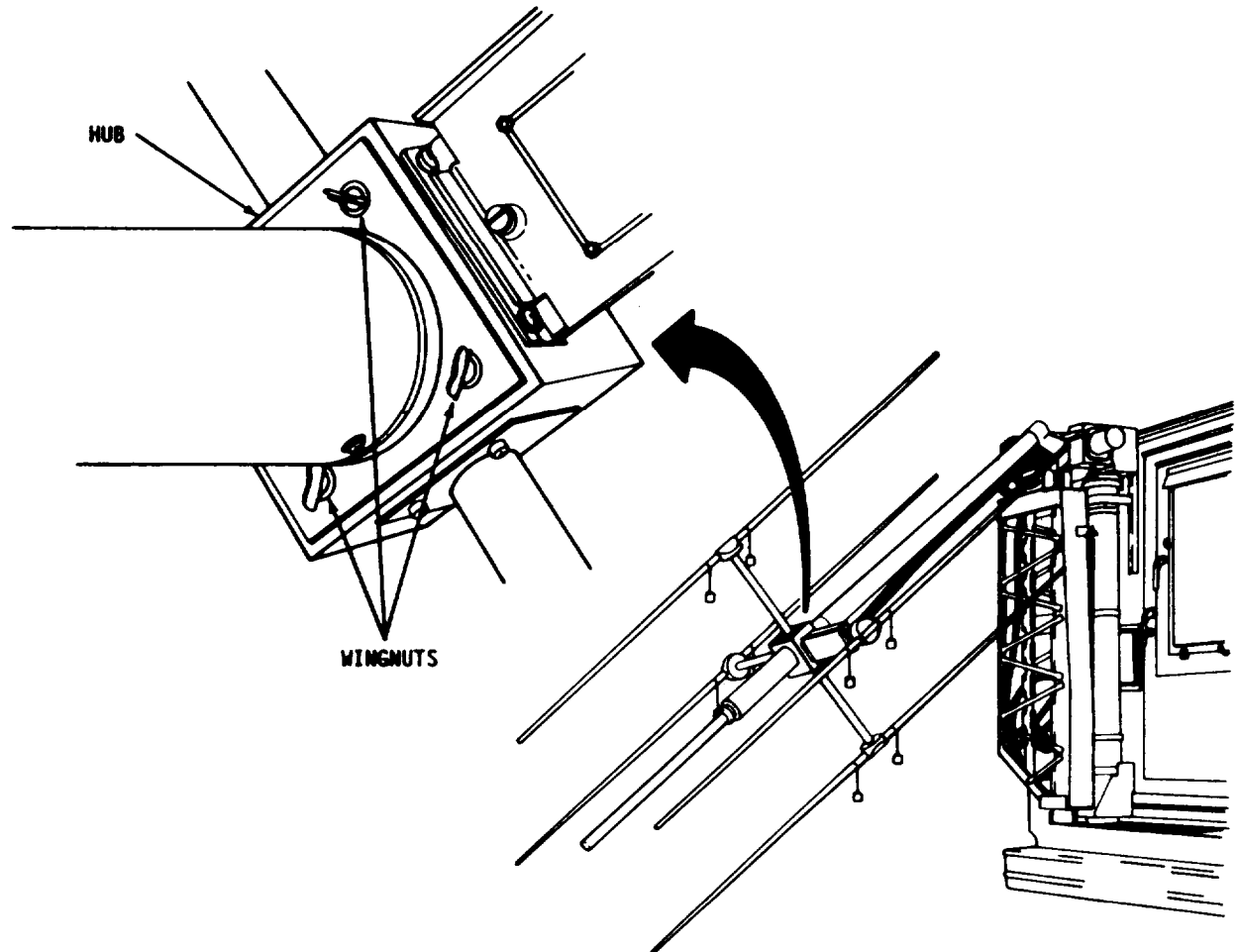
24. Inside shelter on curbside knee, open canvas cover of DF antenna element storage container.

PREPARATION FOR MOVEMENT (CONT)



25. Remove DF array antenna elements from Mast Crown. Place dust covers on antenna elements. Hand elements to operator in shelter as they are removed.
26. Inside shelter, place elements in the DF antenna element storage container.
27. Close canvas cover and secure with five snaps.

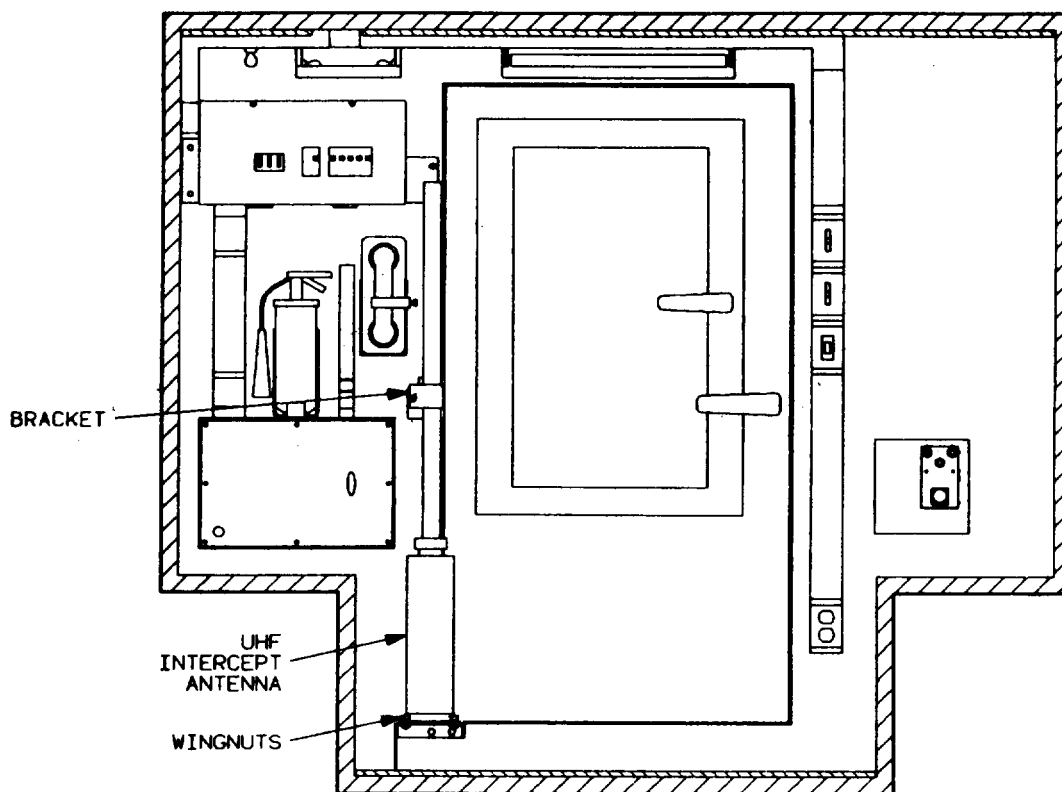
PREPARATION FOR MOVEMENT (CONT)

**CAUTION**

Use care not to scratch or break the nylon antenna element on the UHF/Datalink antenna.

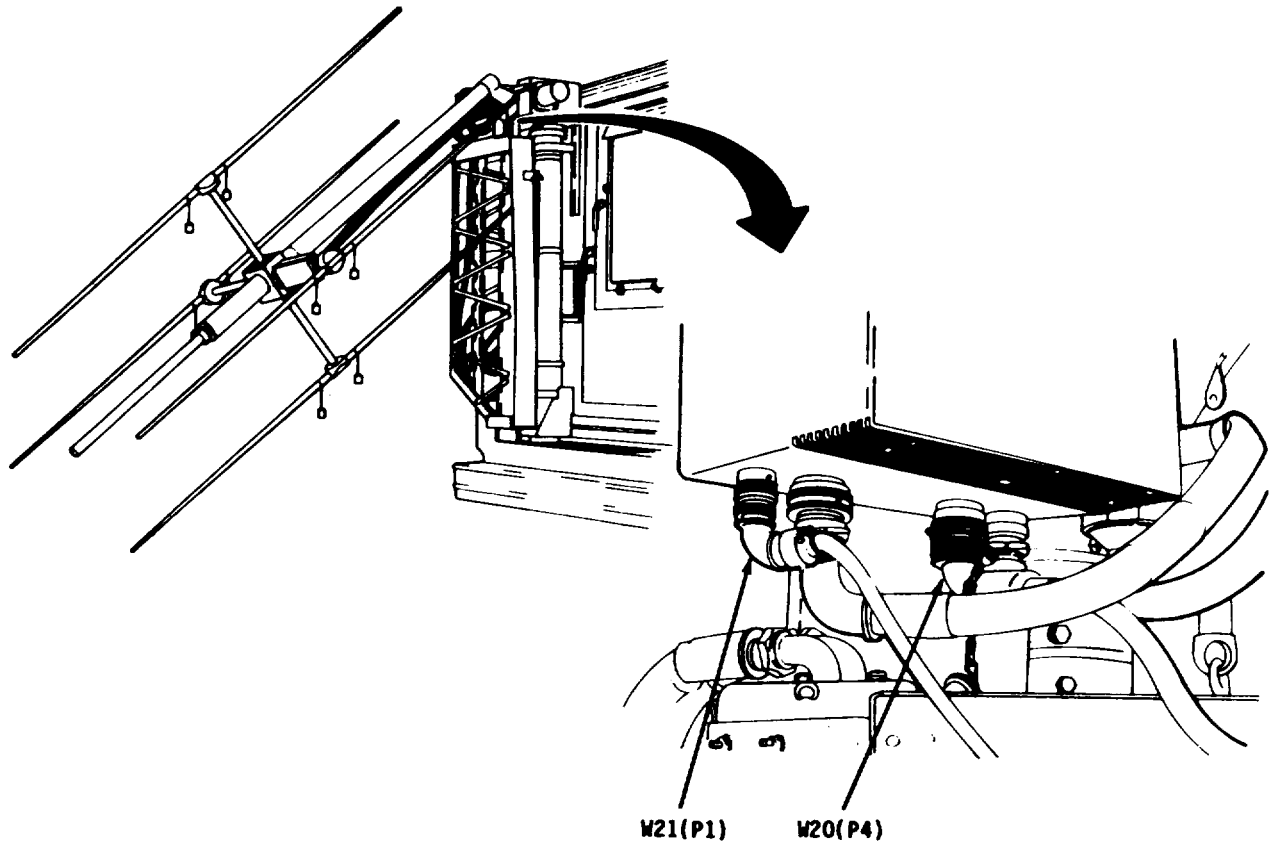
28. On Mast Tube, loosen four captive wingnuts securing UHF/Datalink antenna to hub of Mast Crown assembly. Hand UHF/Datalink antenna to operator in shelter.

PREPARATION FOR MOVEMENT (CONT)



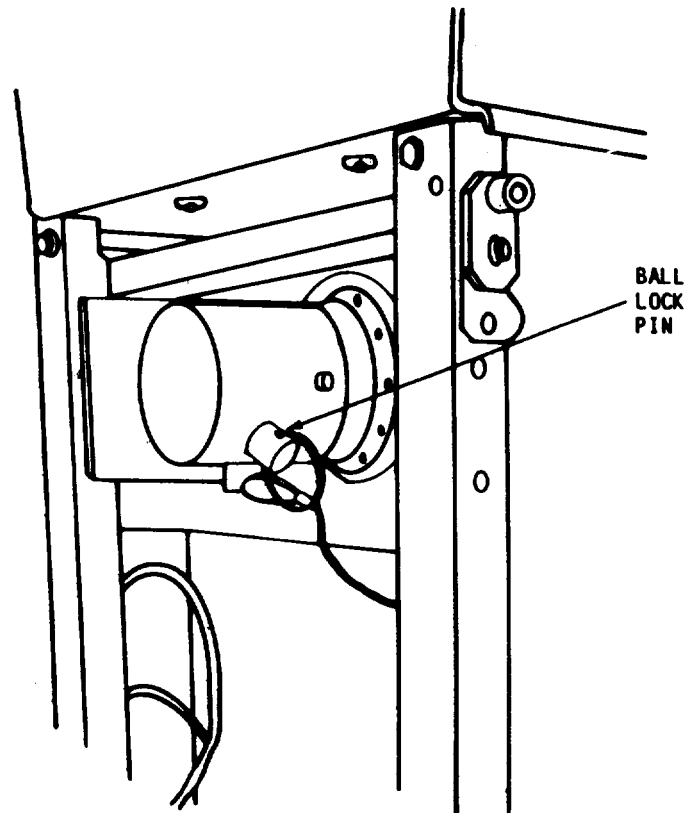
29. Inside shelter, open upper bracket and place UHF/Datalink antenna in storage bracket. Secure by tightening three captive thumbscrews on base of antenna and by closing upper bracket around top of antenna.

PREPARATION FOR MOVEMENT (CONT)



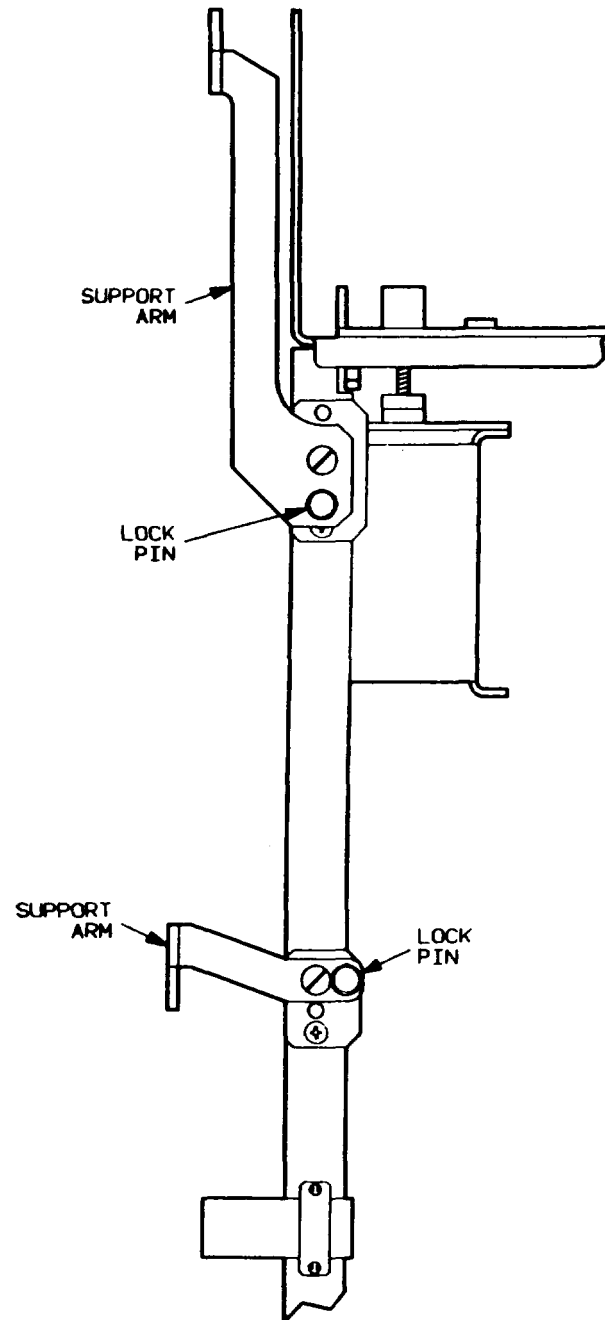
30. On EMI BOX, disconnect W20(P4) and W21(P1) and secure dust covers.

PREPARATION FOR MOVEMENT (CONT)



31. In RACK 4 on MAST CROWN storage hub, remove ball lock pin.

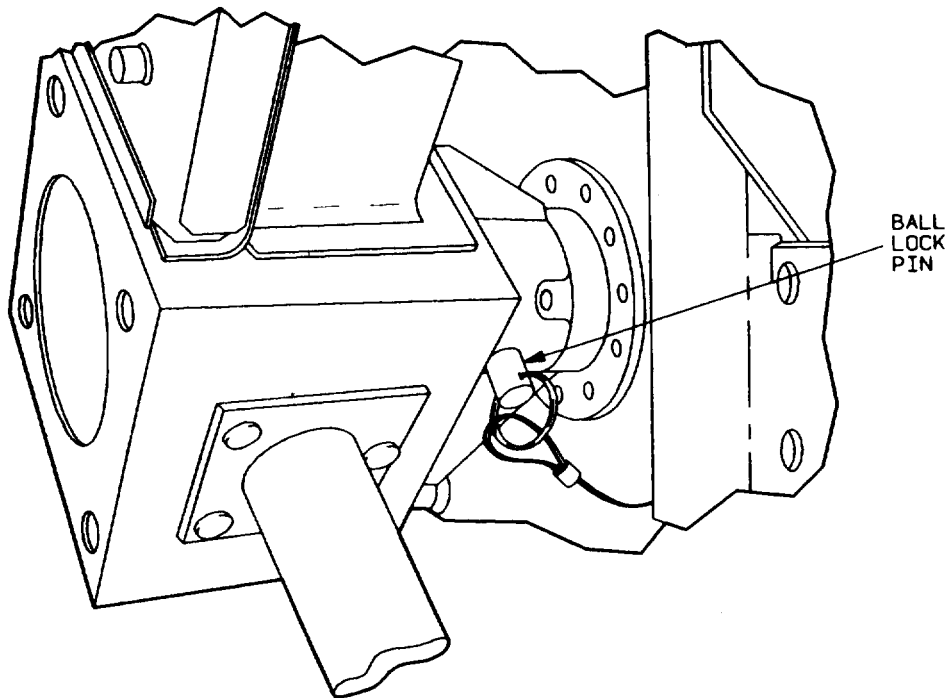
PREPARATION FOR MOVEMENT (CONT)



RACK 4 SIDE VIEW

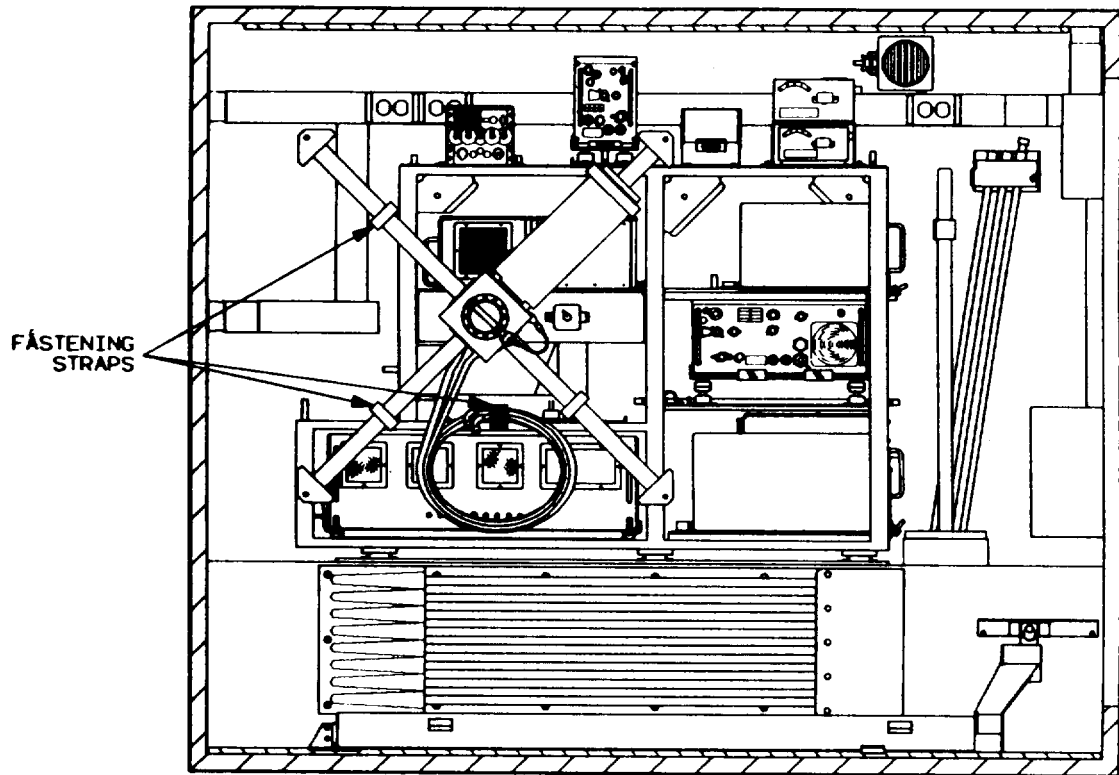
32. On RACK 4, rotate the four Mast Crown support arms away from the rack.
33. On Mast Tube, release mast crown cabling from rubber clips. Coil cables and hold.
34. On Mast Crown, remove ball lock pin securing the Mast Crown to the Mast Tube. Remove Mast Crown assembly from Mast Tube. Hand Mast Crown to operator in shelter.

PREPARATION FOR MOVEMENT (CONT)



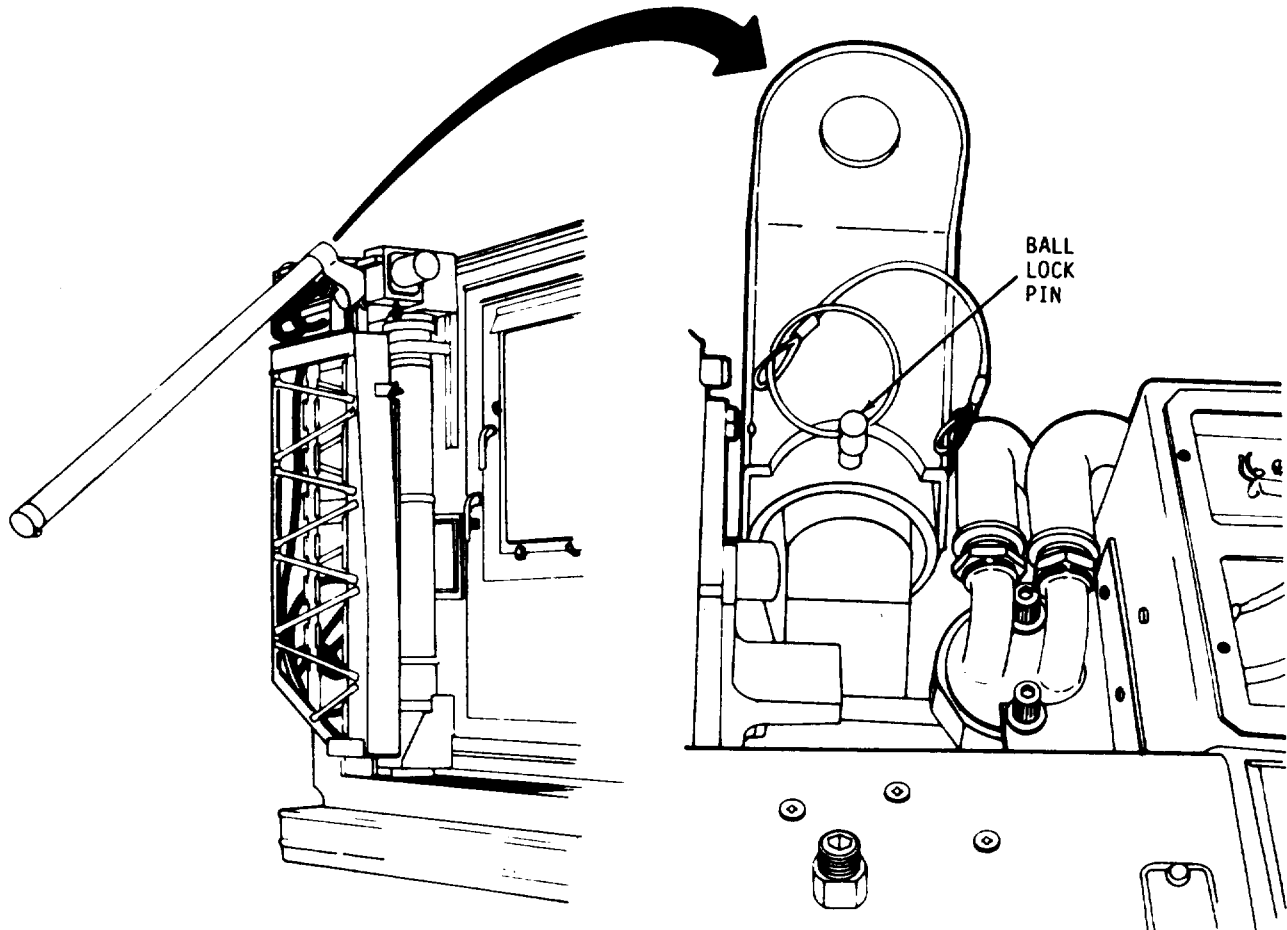
35. Inside shelter on RACK 4, place Mast Crown on storage hub and align slot with guide pin. Secure to storage hub with ball lock pin.

PREPARATION FOR MOVEMENT (CONT)



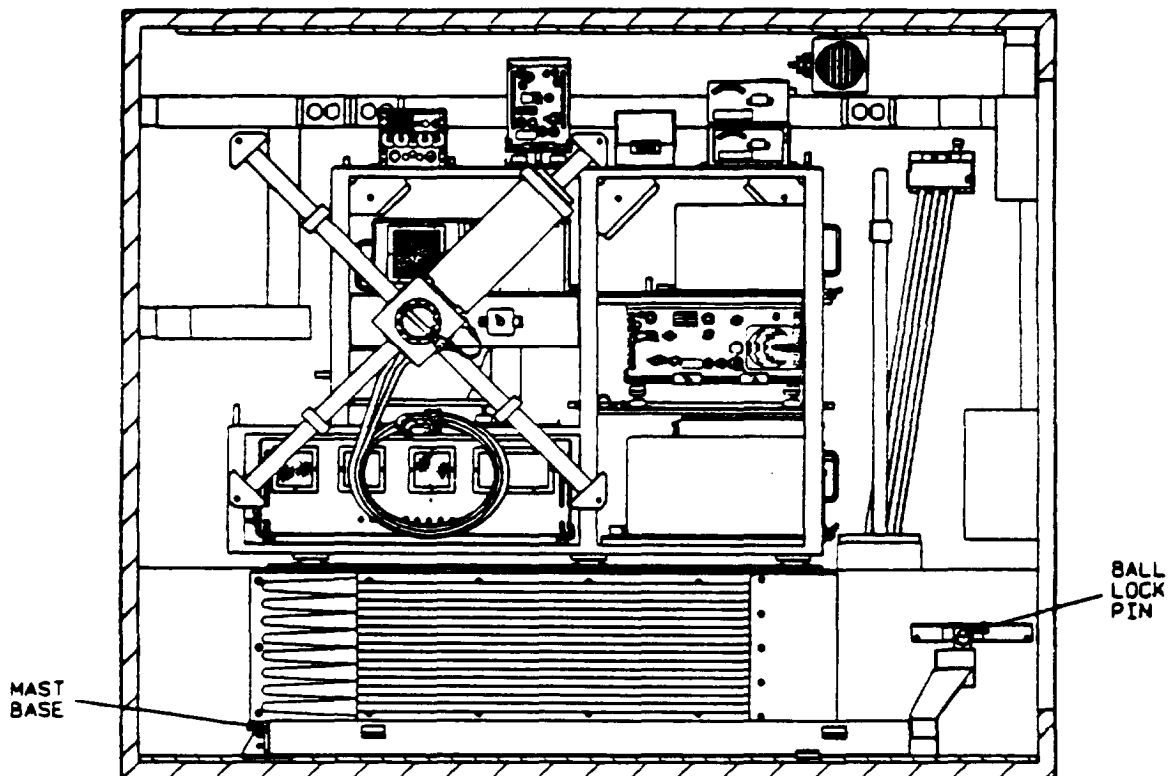
36. On RACK 4, secure cabling to rack with fastening tape.
37. On RACK 4, secure Mast Crown to support arms with fastening tape.

P'REPARATION FOR MOVEMENT (CONT)



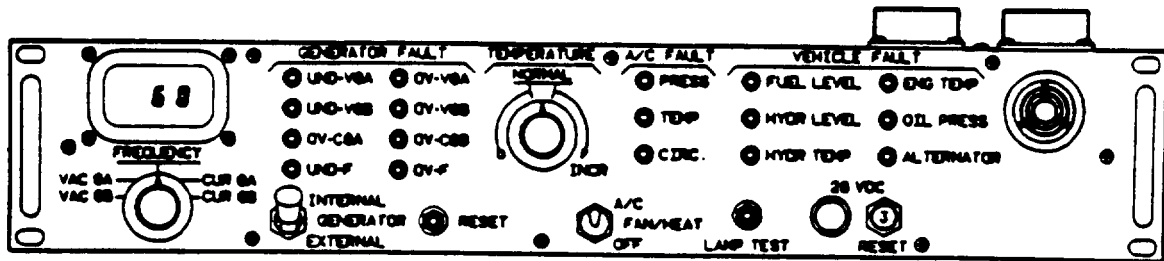
38. On base assembly, remove ball lock pin securing Mast Tube to antenna mounting socket. Remove Mast Tube and hand it to operator inside shelter.

PREPARATION FOR MOVEMENT (CONT)



39. Inside shelter, place straight end of Mast Tube in forward mounting bracket on curbside knee. Place Mast Tube in middle bracket and secure with ball lock pin.

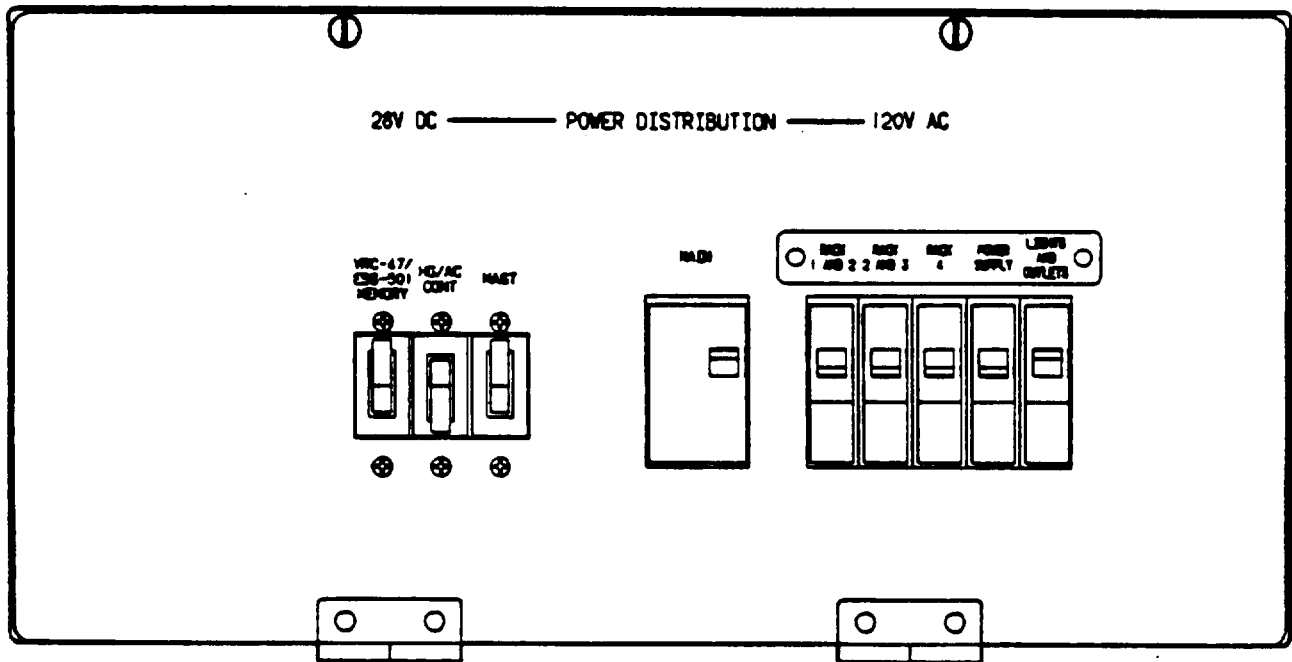
PREPARATION FOR MOVEMENT (CONT)



CAUTION

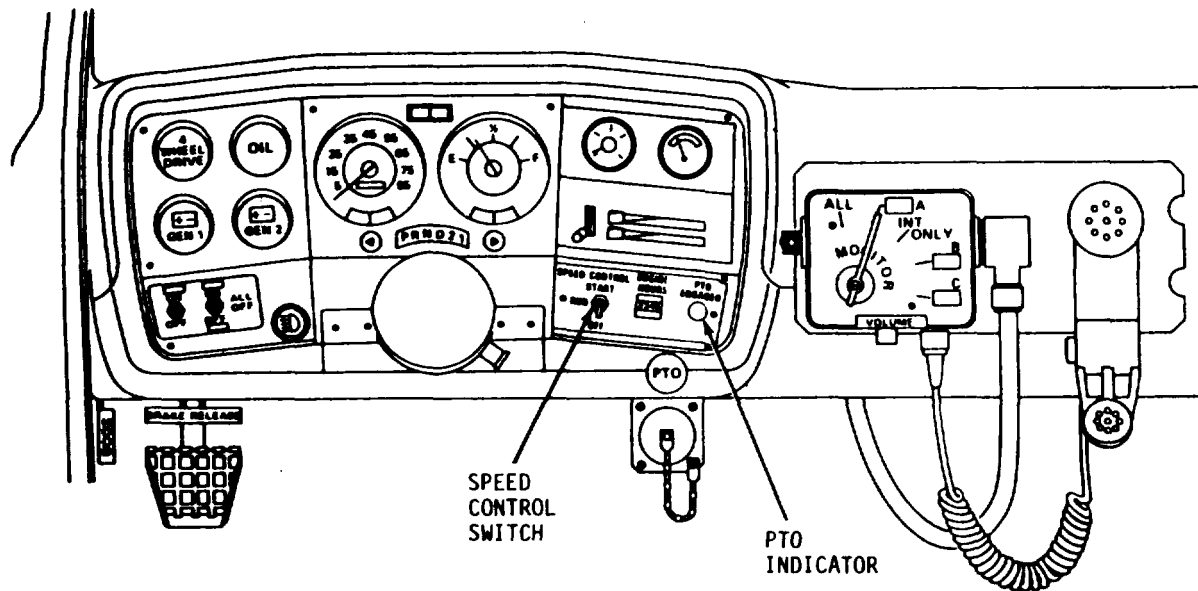
Insure MAIN and LIGHTS and OUTLETS circuit breakers are in the OFF position prior to setting GENERATOR switch to EXTERNAL position.

- On HG/AC CONTROL PANEL, set A/C-FAN/HEAT switch to OFF position. Set GENERATOR switch to EXTERNAL position.



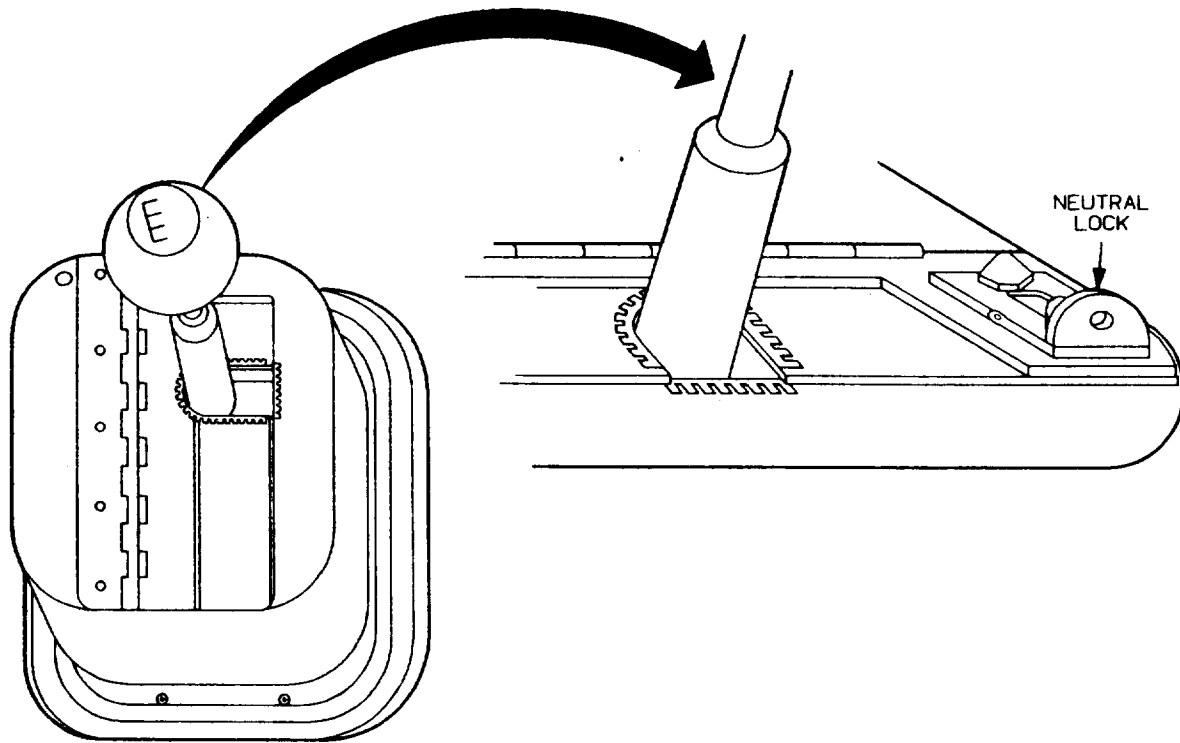
- On POWER DISTRIBUTION PANEL, set HG/AC CONT circuit breaker to OFF position.

PREPARATION FOR MOVEMENT (CONT)



42. In vehicle cab, on RPM REGULATOR ASSEMBLY, set SPEED CONTROL switch to OFF.
43. In vehicle cab, turn ignition switch to OFF position.
44. In vehicle cab, disengage PTO UNIT by pushing PTO knob forward.

PREPARATION FOR MOVEMENT (CONT)

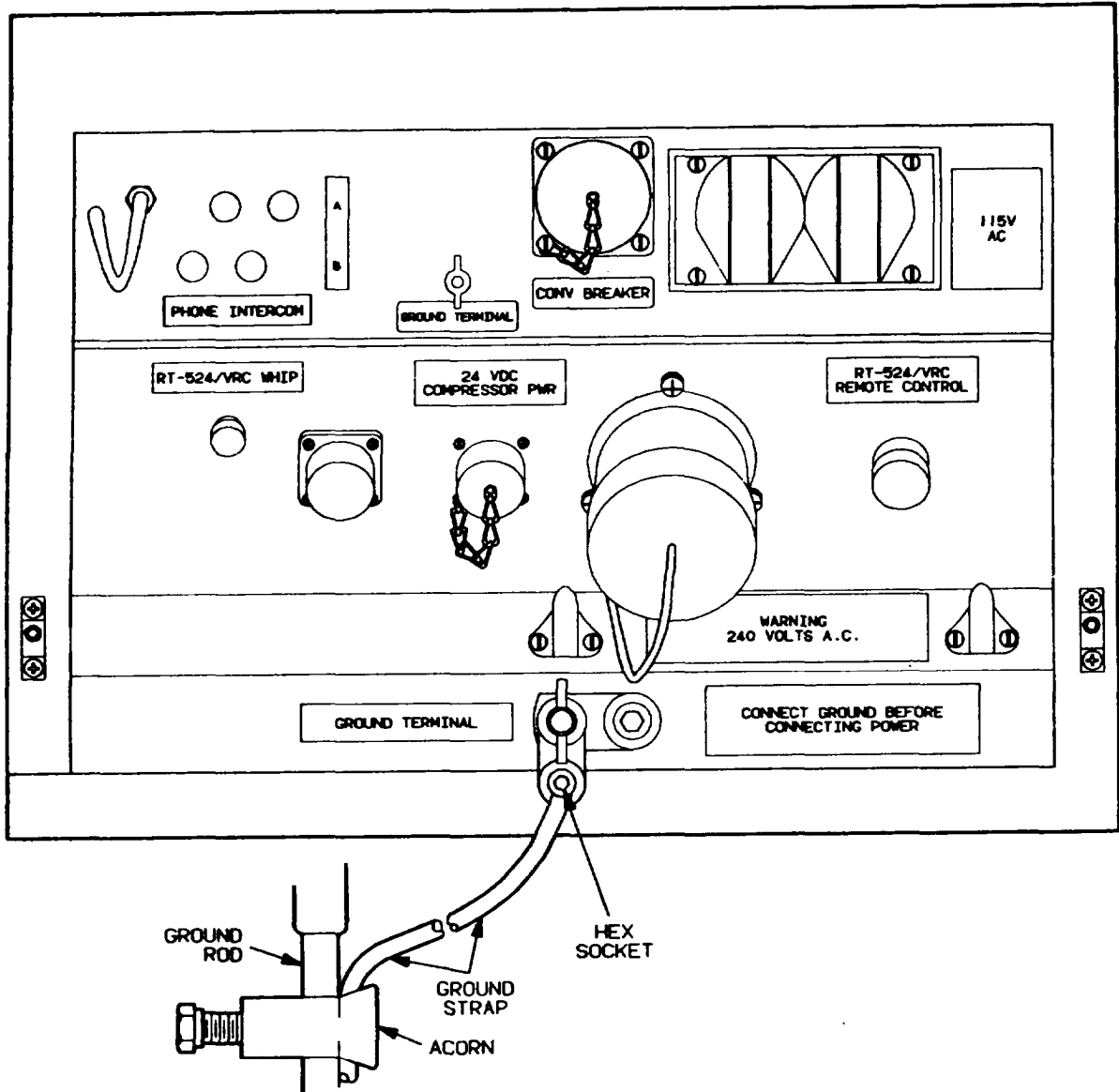


CAUTION

Vehicle engine must NOT be running to prevent damage to the transmission/transfer case in the following steps.

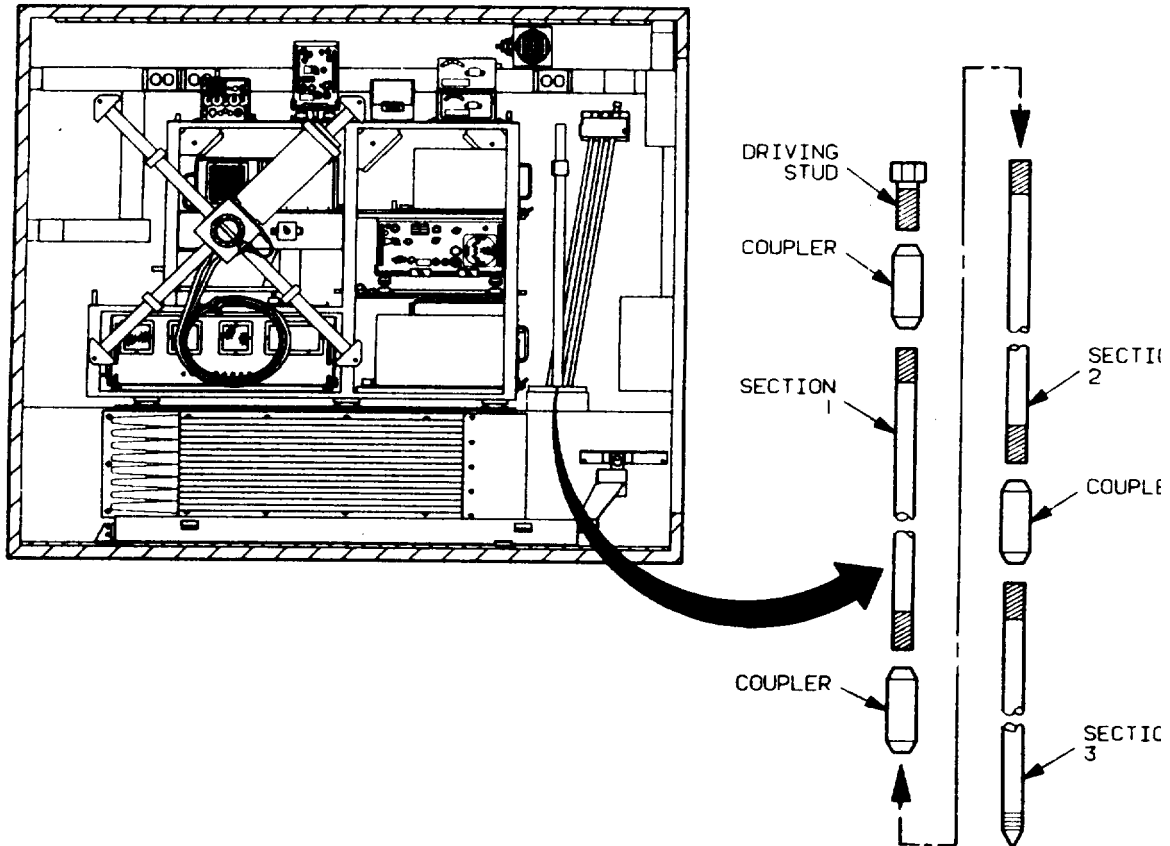
45. In vehicle cab on TRANSFER CASE LOCKOUT ASSEMBLY, disengage NEUTRAL lock and set transfer case control lever to 2 HI position.
46. In vehicle cab, set transmission gear shift lever to park (P) position.
47. Remove wheel chocks and store.

PREPARATION FOR MOVEMENT (CONT)



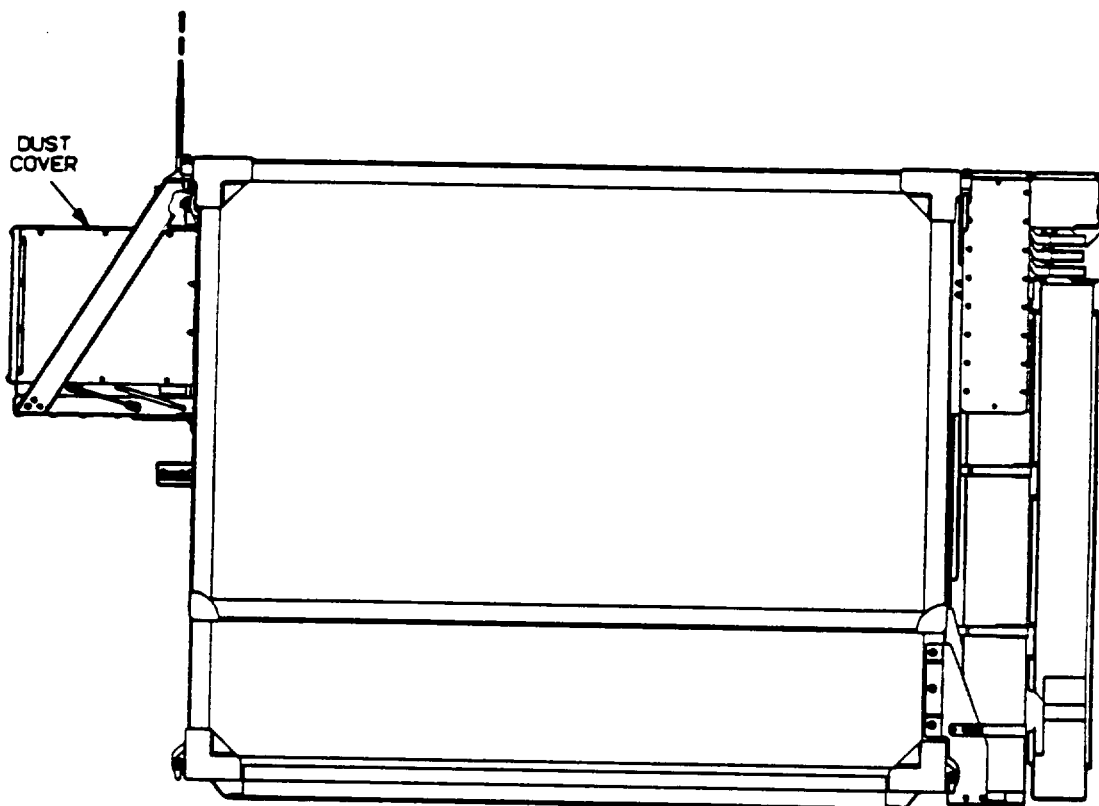
48. On POWER ENTRY PANEL, remove wing nut securing ground strap to ground terminal and remove ground strap. Replace wing nut on ground terminal.

PREPARATION FOR MOVEMENT (CONT)



49. When possible, retrieve ground rods and store in shelter.

PREPARATION FOR MOVEMENT (CONT)



50. On HG/AC, cover air intake by snapping cover into place.

CAUTION

If circuit breakers are left ON for extended periods of time without vehicle running, battery will drain. Turning circuit breakers OFF causes loss of all memory channels programmed into the RCU'S.

51. For overnight or other extended shutdowns, set RT-524A/VRC, KY-57, and VRC-47/ESS-501 MEMORY, and MAST circuit breakers on POWER DISTRIBUTION PANEL to OFF position.

Section IV.

OPERATION UNDER UNUSUAL CONDITIONS

2-12. OPERATION IN UNUSUAL WEATHER.

Radio Receiving Set AN/TRQ-32(V) is fully insulated and weatherproofed for operation in hot, cold, or moderate climates. The shelter facility provides complete protection from the elements for personnel and equipment. However, under extreme conditions, the following precautions are necessary:

COLD CLIMATES.

In extreme cold conditions field wire and cables may become hard, and difficult to handle. While handling cables and connecting them to the shelter, make sure there are no unnecessary kinks or loops in the cables. This will result in permanent damage.

Make sure that binding frost, snow and ice. Never drag or place an open cable connector in the snow or ground. Always replace the covers on connectors when they are not in use.

When retracting the telescoping mast, the antenna cables must be looped and secured to the outside of the cable basket using the cable retaining straps that are provided.

When shelter temperature falls below 32° F, the Operator Terminals must be allowed to warm up. In order to continue with initialization, the operator must use the system controller to enter the required initialization data.

COLD CLIMATE INITIALIZATION.

When Operator Terminals are not up to operating temperature, the operator will continue initialization from the System Controller.

The following text describes System Controller Operation followed by the steps required to operate from the system controller.

DATA ENTRY.

All data entered into the system controller is entered on the system controller keypad. It will be necessary for the operator to enter numbers and letters into the system controller. On the top of the system controller front panel is an alphabetical code label. The alphabetical code label references each letter of the alphabet (A to Z) to a number (11 to 36). To enter a letter into the system controller, enter the number corresponding to the letter (ie. A = 11) and press the LTR key on the keypad. The BKSP (backspace) key enables the operator to clear any incorrect entries that may be made. When the BKSP key is pressed, the system controller display will shift one space to the right. The CLR DSPL (clear display) key enables the operator to clear the system controller display.

SYSTEM CONTROLLER OPERATION

TIME OF DAY (TOD) ENTRY.

To enter the Time Of Day, perform the following steps.

1. On the SYSTEM CONTROLLER, enter DD.MO.YYYY.HH.MM.

Where:

DD = Day (01 to 31)
MO = Month (01 to 12)
YYYY = Year
(24 hour clock) HH = Hour (00 to 23)
MM = Minutes (00 to 59)

2. On the SYSTEM CONTROLLER, press the REAL TIME key.

UTM LOCATION ENTRY.

The UTM location entry is a mandatory entry for netted operation. This entry tells the system controller where you and the other platforms are on the earth. The system controller can not compute a fix without the UTM locations being entered. UTM location entries are made as follows:

1. On the SYSTEM CONTROLLER, enter UTM coordinates.
2. On the SYSTEM CONTROLLER, press the UTM LCTN key.

The operator may recall the UTM location entry by pressing the UTM LCTN key without entering any data.

G-M ANGLE ENTRY.

The grid to magnetic angle (G-M ANG) correction is a mandatory entry. The G-M angle is used by the system controller to correct the difference between magnetic north and grid north. If the G-M angle entered is not accurate, all DF LOB and FIX computations will be inaccurate. The format for the G-M angle is always EX or WX, where E is EAST, W is WEST, and X is decimal degrees. The G-M angle is found on the map legend. In case of an emergency, or if the G-M angle is not known, the operator may enter EO or WO. G-M angle entries are made as follows:

1. On the SYSTEM CONTROLLER, enter E or W and the degrees.
2. On the SYSTEM CONTROLLER, press the G-M ANG key.

To recall a previous G-M ANG entry, press the G-M ANG key without entering any data.

SYSTEM CONTROLLER OPERATION (CONT)

MAGNETIC HEADING ENTRY.

If the fluxgate fails, it will be necessary for the operator to enter the magnetic heading manually. Perform the following steps to manually enter the magnetic heading.

1. Use compass to verify the antenna heading as follows:

Stand 10 to 20 feet from the rear of the vehicle and sight through the compass along either side of shelter.

Add 73° to the compass reading.

NOTE

If compass reading plus 73° exceeds 360° subtract 360° to find the heading.

EXAMPLE: 300 + 73 = 373
 373 - 360 = 13

2. On the SYSTEM CONTROLLER, enter the magnetic heading that was calculated using the compass.
3. On the SYSTEM CONTROLLER, press the HOG ANG key. If the data is accepted by the system controller, the system controller display will read "HEADING ANGLE STORED -- (angle). If the system controller does not accept the data, the system controller display will read 'INCORRECT ENTRY -- (angle)". If this occurs, reenter the data.
4. On the SYSTEM CONTROLLER, press the HDG ENBL key. This enables the system to use the data that you have manually entered and disregards the data from the fluxgate.

MANUAL FIX OPERATION.

The system controller allows either operator to manually enter LOB information and compute the location of a target emitter. The system controller can calculate this location when two, three, or four separate entries are made. This manual (non-automatic) entry and editing of the data, followed by the calculation, display, and printing of the emitter location is called manual fix operation.

The following steps will enable the operator to to perform a manual fix.

1. On the SYSTEM CONTROLLER, press the MAN key.
2. On the SYSTEM CONTROLLER, press the MFIX ENBL key.

SYSTEM CONTROLLER OPERATION (CONT)

NOTE

Performance of the manual fix operation will not interfere with the normal DF or intercept capability of either operator.

3. On the SYSTEM CONTROLLER, press the RCL LOB key. When the RCL LOB key is pressed, the system controller display will display the first set of platform data (or blanks if no data had been entered previously) in the following format:

N N, DD.ZZLEEEEEENNND.DDD.D

PLATFORM ID Y/N FIELD UTM LOCATION OF LOB

NOTE

The operator may correct any errors in the UTM location entry by pressing the BKSP key. After the UTM location entry has been terminated with a period, the operator will have to recall the platform ID and reenter it to make any changes.

4. On the SYSTEM CONTROLLER, enter the UTM location of the first platform and terminate it with a period.
5. On the SYSTEM CONTROLLER, enter the LOB (in decimal degrees). If the entry is correct, and no errors have been made, press the RCL LOB key. This will advance the system controller display to the second set of platform data and enter the information into the system controller memory.
6. On the SYSTEM CONTROLLER, enter the UTM location of the second platform and terminate it with a period.
7. On the SYSTEM CONTROLLER, enter the LOB (in decimal degrees). If the entry is correct, and no errors have been made, press the RCL LOB key. This will advance the system controller display to the third set of platform data and enter the information into the system controller memory.

SYSTEM CONTROLLER OPERATION (CONT)

NOTE

Steps 6 and 7 will have to be performed for each system that the operator wants to use in the manual fix computation. The minimum number of systems is two. The maximum number of systems is four.

The operator has the capability to disable any platform data that will be used in the fix computation. The Y/N FIELD controls whether the data for that platform will be used. If the Y/N FIELD is Y, the platform data will be used. If the Y/N FIELD is N, the platform data will not be used. To change the Y/N FIELD from Y to N or from N to Y, press the Y/N LOB key. Each time the Y/N LOB key is pressed, the Y/N FIELD will change to the opposite state.

8. On the SYSTEM CONTROLLER, press the CMPT FIX key. The system controller will compute the fix and display the results on the system controller display and printer.

At any time after a manual fix has been performed and the system controller is in the manual mode, the operator may recall, display, edit, and recompute a fix from this manual data. This operation is done by pressing the RCL FIX key. To review LOB and platform data, press the RCL LOB key. Data may be edited as required. Remember to press the RCL LOB key after the last entry is made before pressing the CMPT FIX key. Make sure to delete (or disable with the Y/N key) data which had been entered for previous manual fix operations.

NETTED OPERATION.

The PLATFORM ID (platform identification) keys enable the operator to select the systems ID in the net.

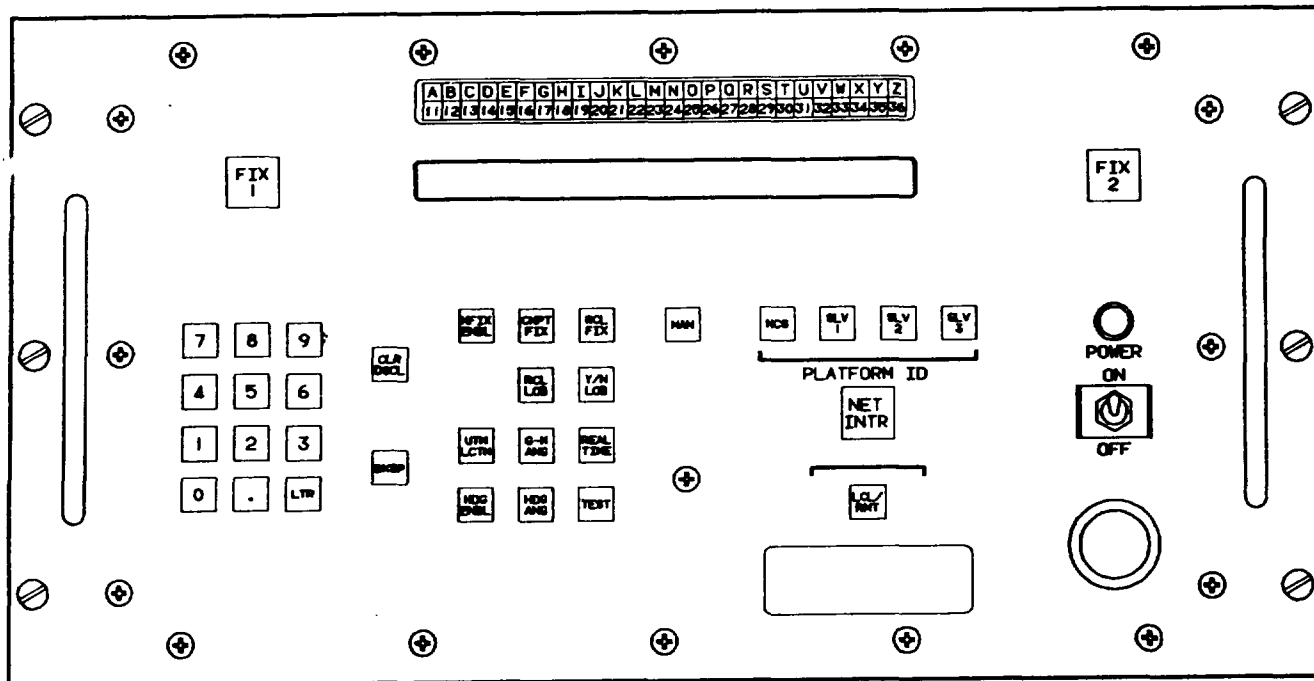
The FIX key is only operational when the operator has selected NCS (net control station) as the PLATFORM ID. When the FIX key is pressed, the NCS causes the slave stations to perform a DF LOB on the frequency to which the NCS is tuned. OF LOB results are returned to the NCS. The NCS SYSTEM CONTROLLER then computes a fix using the returned DF LOB's. The results are displayed on the system controller and printer.

The NET INTR (net interrupt) key allows any netted system to break the net. When the NET INTR key is pressed, the sonalert starts beeping and the MAN key starts to flash. The operator then presses the MAN key. The sonalert will stop beeping and the MAN key will be lit. The system controller display will display which net member initiated the net interrupt.

SYSTEM CONTROLLER INITIALIZATION

NOTE

GRID-TO-MAGNETIC correction (G-M) is a mandatory entry for OF requests and for netted operation.



1. In RACK 2, enter the GRID TO MAGNETIC (G-M) ANGLE on the SYSTEM CONTROLLER KEYPAD as follows:

NOTE

In an emergency, or if the G-M ANGLE is not known, E0 or W0 may be entered. As this must be known for correct interpretation of DF or net results, report this with any transmittal of LOB information and inform the NCS prior to establishing the net.

- a. Enter G-M ANGLE form map legend in the form of LDDD.MM

Where:

L = E or W (East or West of grid north)

DDD = Degrees (0 to 359)

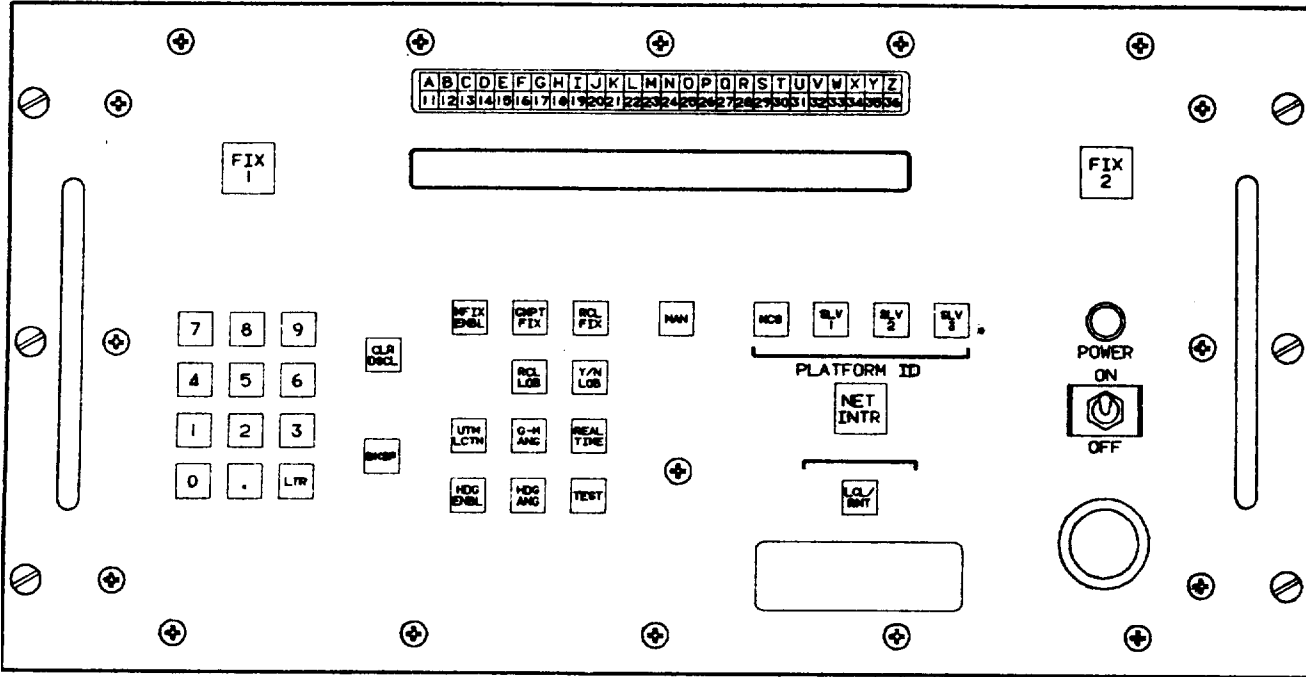
MM = Minutes (0 to 59)

- b. Press the G-M ANG key.

SYSTEM CONTROLLER INITIALIZATION (CONT)

NOTE

UNIVERSAL TRANSVERSE MERCATOR (UTM) location is a mandatory entry for NETTED OPERATION.



2. In RACK 2, enter the UTM coordinates on the SYSTEM CONTROLLER KEYPAD as follows:

NOTE

If datum is not known, use default datum (46).

- a. Enter the UTM coordinate in the form of D or DD.ZZLEEEEEENNNNNN.

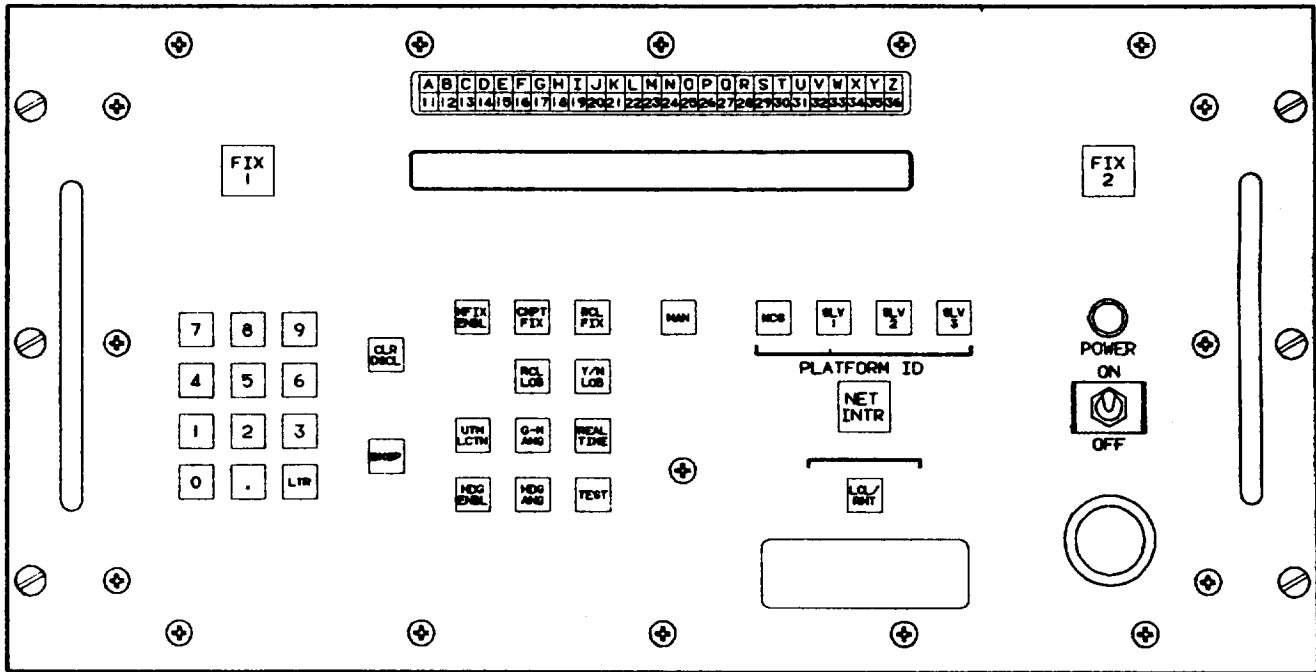
Where:

- D = Datum (1 to 46)
(From Local Datum List)
- ZZ = Numeric map zone (1 to 60)
- L = Alphabetic map zone
(C to X excluding I and O)
- EEEEEE = Easting (From map)
(First number must be zero)
- NNNNNN = Northing (From map)

- b. Press the UTM LCTN key.

LOCAL DATUM LIST	
<u>HORIZONTAL DATUM</u>	<u>LOCAL DATUM</u>
Adindan	1
ARC 1950	2
Australian Geodetic	3
Bukit Rimpah	4
Camp Area Astro	5
Chatham Observatory 1950	6
Djakarta	7
European	8
Geodetic Datum 1949	9
Ghana	10
Guam 1963	11
G. Segara	12
Herat North	13
Hjorsey 1955	14
Hu-Tzu-Shan	15
Indian	16
Kertau (Malayan Revised Triangulation)	17
Liberia 1964	18
Ascension Island Astro 1958	19
Canton Island Astro 1966	20
Johnston Island Astro 1961	21
Wake Island Astro 1952	22
Luzon	23
Montjong Lowe	24
Nigeria	25
North American 1927	
CONUS	26
Alaska and Canada	27
Maui (Old Hawiian)	28
Oahu (Old Hawiian)	29
Kauai (Old Hawiian)	30
Ordinance Survey of Gt. Britain 1936	31
Qornog	32
Sierra Leone 1960	33
WGS-72 Special	34
Provisional South America 1956	35
Corrego Alegre	36
Campo Inchauspe	37
Chua Astro	38
Yacare	39
Tananarive Observatory 1925	40
Tambalai	41
Tokyo Wake-Eniwetok	42
Kwajalein Atoll	43
Wake Island	44
Eniwetok Atoll	45
WGS-72	46

SYSTEM CONTROLLER INITIALIZATION (CONT)



3. In RACK 2, enter the TIME OF DAY (TOD) on the SYSTEM CONTROLLER KEYPAD as follows:

- a. Enter TOD in the form of DD.MO.YYYY.HH.MM

Where:

- DD = Day (01 to 31)
- MO = Month (01 to 12)
- YYYY = Year
- HH = Hour (00 to 23)
- MM = Minutes (00 to 59)

NOTE

The month should always be spelled out when entered.

- b. Press the REAL TIME key. The display should read:

DD-MONTH-YYYY-HH-MM

4. The system is now ready for operation from the system controller.

If the Operator Terminals have come on line and the wait lamp is out, system operation may be continued from the Operator Terminals by returning to Chapter 2, Section III, Step 14.

HOT CLIMATES.

In hot, dry climates, connectors and binding posts are subject to damage from dust and dirt. When handling cables, never drag or place an open cable connector on the ground. Make sure that the connector cover is replaced as soon as a cable is disconnected.

WARM, DAMP CLIMATES.

In warm, damp climates, wipe all moisture and fungi from equipment with a lint free cloth to prevent damage to the equipment.

2-13. EMERGENCY PROCEDURES**POWER FAILURE.**

Radio Receiving Set AN/TRQ-32(V) is capable of being powered by 120/240 Vat, 60 Hz. Auxiliary power can be supplied by mobile generator PU-620 or from commercial power. Shelter and communications equipment **MUST** be reinitialized after interruption of power.

CAUTION

When performing emergency stopping procedure, do not shut off DC circuit breakers or programmed memory in the RCU will be lost.

EMERGENCY STOPPING PROCEDURE.

To turn the equipment off in an emergency, turn the MAIN 120/240 Vac circuit breaker to OFF.

EMERGENCY EXIT PROCEDURE.

To get out of a locked shelter, first remove the thumbscrew [located under handle). Then, force the handle down to break the latch loose.

ZEROIZE DISK DRIVE CARTRIDGE.

When necessary, use the following instructions to zeroize the Disk Drive Cartridge:

NOTE

Insure that the disk drive cartridge is installed in the Hard Disk Drive unit.

1. Place the ZEROIZE/NORMAL switch on Disk Drive Control to the ZEROIZE position. The IN PROCESS indicator will remain lit until the zeroize process is complete.

NOTE

The zeroize disk function will take approximately 45 minutes to complete.

- 2 When the zeroize process is complete, the COMPLETE indicator on the Disk Drive Control will be lit. Place the ZEROIZE/NORMAL switch on the Disk Drive Control to the NORMAL position.
- 3 Place the Disk Drive Control power ON/OFF switch to the OFF position.

FAILURE OF OPERATOR TERMINALS.

Use instructions for cold climate initialization to initialize and operate the system.

MAINTENANCE INSTRUCTIONS

	Page		Page
Air Storage Tank Bleeding	3-9	Locks, Latches, Hinges and	
BITE Description	3-2	Hydraulic Generator	
Cleaning	3-24	Reservoir	3-1
Disk Drive Cartridge Removal		Lubrication Instructions	3-1
and Replacement	3-22	Maintenance Procedures	3-9
Equipment Troubleshooting	3-1	Paper Replacement	3-10
KY-57 Removal and		Pneumatic Mast Purging	
Replacement	3-15	Procedure	3-10
KG-84 or KG-84A Removal and		Shelter Equipment	
Replacement	3-19	Troubleshooting	3-3
		Troubleshooting Procedures . . .	3-1
		Troubleshooting Table	3-3

Section 1.

LUBRICATION INSTRUCTIONS

3-1. LOCKS, LATCHES, HINGES, AND HYDRAULIC GENERATOR RESERVOIR.

Lubricate door hinges, vent hinges, and door latches during routine maintenance checks. Use molybdenum disulfide MIL-M-7866C (Appendix D, Item 3) on the door latches. Use general purpose lubrication oil FED-W-L-800 (Appendix D, Item 6) or engine lubricating oil MIL-L-2104 (Appendix D, Item 5) on the entrance door hinges. Service the hydraulic generator reservoir in accordance with TM 5-4120-391-14, Chapter 2, PMCS. Only use hydraulic fluid M-17111 (Appendix D, Item 4).

Section II.

TROUBLESHOOTING PROCEDURES

3-2. EQUIPMENT TROUBLESHOOTING.

This section provides the operator with a list of BITE Tests that are run during equipment checkout. No operator/crew troubleshooting is authorized for the major electronics equipment installed in Radio Receiving Set AN/TRQ-32(V)2. Any trouble detected, notify maintenance.

3-3. BITE DESCRIPTION.

Allows the operator to select any system controller BITE test to be executed from the operator terminal.

To execute a system controller BITE test, select the test on the operator terminal and press the CODE-RETURN key.

NOTE

To execute the tests from the system controller, enter the number of the test on system controller keypad and press the TEST key. All tests may be terminated by pressing the TEST key a second time.

The following is a list and explanation of all of the tests that the operator is authorized to run.

TEST DESCRIPTION

5 DF CONTROL UNIT BITE TEST.

This test allows the operator to test the DFCU and RF processor using receiver #1. The system controller sends a test command to the DF control unit and waits for a reply. If the DF control unit does not send a reply to the system controller, the system controller display will read "DFCU FAILED TO RESPOND". When the DF control unit sends a reply to the system controller, the system controller replies with a BITE command.

This allows the DF control unit to run its local BITE. If the DF control unit test passes, the system controller display will read "DF S/S TEST PASSED". If the DF control unit test fails, the system controller display will read "DF S/S FAULT F:hhhh S1:hhhh S2:hhhh".

6 DF CONTROL UNIT BITE TEST.

Same as test 5 except receiver 2 is used.

7 OPERATOR CONTROL PANEL TEST.

This test allows the operator to check the display capability of the operator control panels. This test must be performed for each operator control panel. The system controller display will read "DEPRESS DF KEY ON OCP#1 or #2". The DF KEY that is pressed will light for 2 seconds and then go out. All LED's and the NET BUSY indicator will light on the operator control panel being checked. The hex character set will then be scrolled through the display of the operator control panel being checked. Test 7 checks only the operator control panel on which the DF KEY was depressed. It will be necessary to perform this test a second time to check the other operator control panel .

If test 7 fails, a fault is indicated in the operator control panel being tested.

8 BITE OSCILLATOR ON TEST.

This test allows the operator to turn on the BITE oscillator via the DF control unit and RF processor. When the BITE oscillator is on, the system controller display will read "BITE OSCILLATOR ON". If the BITE oscillator does not come on, the system controller display will read 'DFCU FAILED TO RESPOND*. Turn the BITE oscillator off and press the TEST key a second time. The system controller display will read "BITE OSCILLATOR OFF". If the BITE oscillator can not be turned off, the system controller display will read "DFCU FAILED TO RESPOND". The only way to turn the BITE oscillator off in this case is to secure power to the OF control unit and RF processor and reinitialize them.

If test 8 fails, a fault is indicated in the OF control unit or the RF processor.

3-4. SHELTER EQUIPMENT TROUBLESHOOTING.

This table lists the common malfunctions which you may find during operation or maintenance of the shelter equipment. You should perform the tests/inspections and corrective actions in the order listed.

This manual cannot list all the malfunctions that may occur, nor all tests or inspections and corrective actions. If a malfunction is not listed or is not corrected by listed corrective actions, notify your supervisor.

TRUBLESHOOTING TABLE

<u>SYMPTOM/FAULT INDICATOR</u>	<u>PROBABLE CAUSE</u>	<u>OPERATOR ACTION</u>
HYDRAULIC GENERATOR/AIR CONDITIONER (HG/AC)		
NO AC POWER	HC/AC CONT circuit breaker on POWER DISTRIBUTION PANEL has tripped or is OFF.	Reset circuit breaker.
	28 VDC circuit breaker on GENERATOR CONTROL PANEL has tripped or is OFF.	Reset circuit breaker.
	GENERATOR switch on GENERATOR CONTROL PANEL is not in the INTERNAL position.	Set switch to INTERNAL position.

TROUBLESHOOTING TABLE (CONT)

<u>SYMPTOM/FAULT INDICATOR</u>	<u>PROBABLE CAUSE</u>	<u>OPERATOR ACTION</u>
HYDRAULIC GENERATOR/AIR CONDITIONER (HG/AC) (cont)		
NO HEAT	A/C CONTROL switch on GENERATOR CONTROL PANEL is not in the FAN/HEAT position.	Set switch to FAN/HEAT position.
NO AIR CONDITIONING	A/C CONTROL switch on GENERATOR CONTROL PANEL is not in the A/C position.	Set switch to A/C position. Verify that A/C dust cover is in the OPEN position.
SHELTER EQUIPMENT		
SYSTEM POWER SUPPLY DOES NOT OPERATE	POWER SUPPLY circuit breaker is tripped OFF.	Reset circuit breaker on POWER SUPPLY or on POWER DISTRIBUTION PANEL.
FLUORESCENT CEILING LIGHTS DO NOT LIGHT	LIGHTS AND OUTLETS circuit breaker has tripped or is OFF.	Reset circuit breaker.
EQUIPMENT RACK 1 DOES NOT OPERATE	RACK 1 & 2 circuit breaker on POWER DISTRIBUTION PANEL has tripped or is OFF.	Reset circuit breaker.
EQUIPMENT RACK 2 DOES NOT OPERATE (EXCEPT RECORDER NO. 2)	RACK 1 & 2 circuit breaker on POWER DISTRIBUTION PANEL has tripped or is OFF.	Reset circuit breaker.
EQUIPMENT RACK 3 DOES NOT OPERATE (INCLUDING RECORDER NO.2 IN RACK 2)	RACK 2 & 3 circuit breaker on POWER DISTRIBUTION PANEL has tripped or is OFF.	Reset circuit breaker.
EQUIPMENT RACK 4 DOES NOT OPERATE	RACK 4 circuit breaker on POWER DISTRIBUTION PANEL has tripped or is OFF.	Reset circuit breaker.

TROUBLESHOOTING TABLE (CONT)

<u>SYMPTOM/FAULT INDICATOR</u>	<u>PROBABLE CAUSE</u>	<u>OPERATOR ACTION</u>
SHELTER EQUIPMENT (cont)		
LOCAL COMMUNICATIONS NOT AVAILABLE WITH FIELD PHONE		Attempt communications with another operator.
	FIELD PHONE batteries are dead.	Replace batteries, refer to TM 11-5805-201-12.
	Terminal connections on FIELD PHONE and shelter POWER ENTRY PANEL are loose or dirty.	Clean and tighten connections.
CAUTION PANEL INDICATORS		
ESS-501 SYS	BITE test failure.	Insure both SDUs are on. Push test buttons on both RCU's. Refer to RCU fault indicators.
28 VDC BRKR	One or more of the 28VDC circuit breakers have tripped or are OFF.	Check the following circuit breakers: VRC-47/ ESS-501 Memory, HG/AC Cont, and Mast. Reset circuit breakers.
115 VAC	One or more of the 115 VAC circuit breakers have tripped or are OFF.	Check the following circuit breakers: MAIN, RACK 1 & 2, RACK 2 & 3, RACK 4, POWER SUPPLY, and LIGHTS and OUTLETS. Reset circuit breakers.

TROUBLESHOOTING TABLE (CONT)

<u>SYMPTOM/FAULT INDICATOR</u>	<u>PROBABLE CAUSE</u>	<u>OPERATOR ACTION</u>
CAUTION PANEL INDICATORS (cont)		
SYS PWR SPLY	Malfunction in System and Transmitter power supply.	Verify that SYSTEM POWER SUPPLY "TRANSITION" and "SYSTEM" power switches are on. Verify power ON indicators are lit. Turn SYSTEM POWER SUPPLY switches OFF and back ON.
DF ANT TILT	High wind or vehicle is not level .	Level vehicle.
SYS CONTROLLER	SYSTEM CONTROLLER malfunction.	Verify that system controller is ON. Turn SYSTEM CONTROLLER OFF and back ON.
NO DF ANT PWR	No OF Antenna power.	Verify that RACH 1 & 2 circuit breaker is ON.
DF FAULT	Over temperature in DFCU .	Check 3 phase indicator on system power supply. If not lit, reset power supply circuit breaker SYS ON/OFF switch. If condition remains, shut down RACK 3 and allow equipment to cool.
HYDR LEVEL	Hydraulic fluid is low.	Shut down system. Add hydraulic fluid.
LOW FUEL	Vehicle fuel level is low.	Shut down system. Add fuel .
ENGINE	Low oil pressure, vehicle over-temperature.	Check gauges in vehicle cab. Shut down system. Refer to TM 9-2320-289-10
GEN FAULT	Hydraulic Generator malfunction.	Check HG/AC control panel . Push RESET on HG/AC control panel. Record indications then shut down system.

TROUBLESHOOTING TABLE (CONT)

<u>SYMPTOM/FAULT INDICATOR</u>	<u>PROBABLE CAUSE</u>	<u>OPERATOR ACTION</u>
CAUTION PANEL INDICATORS (cont)		
AC FAULT	Air Conditioner fault.	Check HG/AC control panel . Record indications. Shut down system.
RFI DETECTED	High power signal level at RFDU.	Retune RFDU filters to tactical operating frequency.
DATA LINK	DATALINK PROCESSOR fault including RT-1288A, MT-6017A, C-10547, and TSEC/KG-84 or TSEC/KG-84A.	Verify power ON indicators are ON. Initialize DATALINK PROCESSOR. Cycle KG-84 or KG-84A power switch OFF then ON. If OPR indicators not lit.
DRIVE TRAIN	Transfer case over-temperature.	Shut down system. Refer to TM9-2320-289.10.
ALTERNATOR	Fault in one or both of vehicle alternators.	Check HG/AC control panel . Shut down system. Refer to TM 9-2320-289-10
HYDR TEMP	Hydraulic fluid over-temperature.	Ensure HG/AC intake vent is clear of obstructions. Shut down system.
RECEIVER CONTROL UNIT INDICATORS		
RCU FAIL	Receiver control unit failure.	Push test button on RCU. RECYCLE power (turn circuit breaker of rack containing faulty RCU OFF and back ON) and push test button on RCU.

TROUBLESHOOTING TABLE (CONT)

<u>SYMPTOM/FAULT INDICATOR</u>	<u>PROBABLE CAUSE</u>	<u>OPERATOR ACTION</u>
RECEIVER CONTROL UNIT INDICATORS (cont)		
ENCL FAIL	Failure of Receiver Enclosure Unit.	RECYCLE power (turn circuit breaker RACK 2 AND 3 OFF and back ON). Push test button on both RCU's.
SYS FAIL	Receiver Enclosure Unit failure.	RECYCLE power (turn circuit breaker RACK 2 AND 3 OFF and back ON). Push test button ON both RCU's.
OPERATOR TERMINAL/DISK DRIVE INDICATORS		
OPERATOR TERMINAL SCREEN BLANK	Operator Terminal ON/OFF switch is OFF.	Set switch to ON position. Verify power switch assy READY light is lit.
POWER SWITCH ASSY STANDBY LIGHT IS ON	Temperature of power switch assembly is below 0 degrees C.	Wait until temperature of power switch assy warms above 0 degrees C.
DISK DRIVE CONTROL- POWER ON INDICATOR IS OFF	DISK DRIVE CONTROL circuit breaker has tripped or is OFF.	Reset circuit breaker ON/OFF switch on DISK DRIVE CONTROL.
DISK DRIVE CONTROL- DISK FAULT INDICATOR IS ON	DISK DRIVE CONTROL is defective.	Reset circuit breaker ON/OFF switch on DISK DRIVE CONTROL.
DISK DRIVE - READY INDICATOR IS NOT ON	DISK DRIVE CARTRIDGE is defective.	Reset DISK DRIVE CARTRIDGE. Replace DISK DRIVE CARTRIDGE.
DISK DRIVE - NO INDICATORS ON	DISK DRIVE defective.	Reset circuit breaker ON/OFF switch on DISK DRIVE CONTROL.
INVALID MAGNETIC HEADING	Magnetic Field Converter defective.	Manually enter magnetic heading.

Section III.

MAINTENANCE PROCEDURES

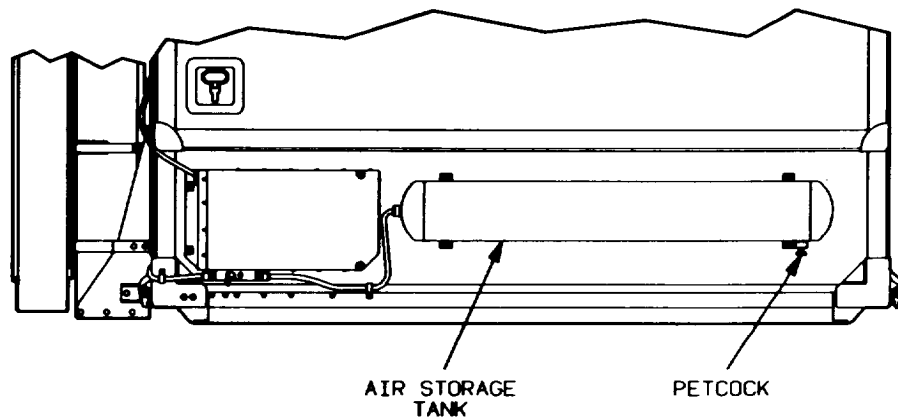
3-5. GENERAL.

Operator maintenance of the AN/TRQ-32(V)2 is limited to replacement of the paper supply in the printer and bleeding the storage tank.

3-6. AIR STORAGE TANK BLEEDING PROCEDURE.

The air storage tank is located outside the shelter under the curbside knee.

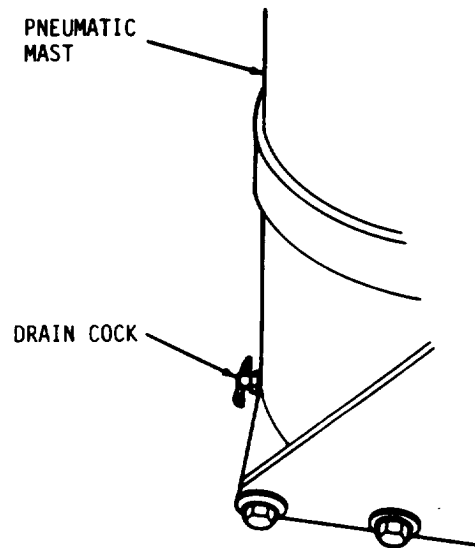
Bleed the air pressure from the air storage tank as follows:



1. On rear of air storage tank, open petcock and bleed off pressure.
2. Close petcock on rear of air storage tank.

3-7. PNEUMATIC MAST PURGING PROCEDURE.

The pneumatic mast is located on the rear exterior of the shelter, The drain cock is located at the bottom of the mast.



CAUTION

Use care when purging air pressure from the pneumatic mast, oil and water may spray from the drain cock.

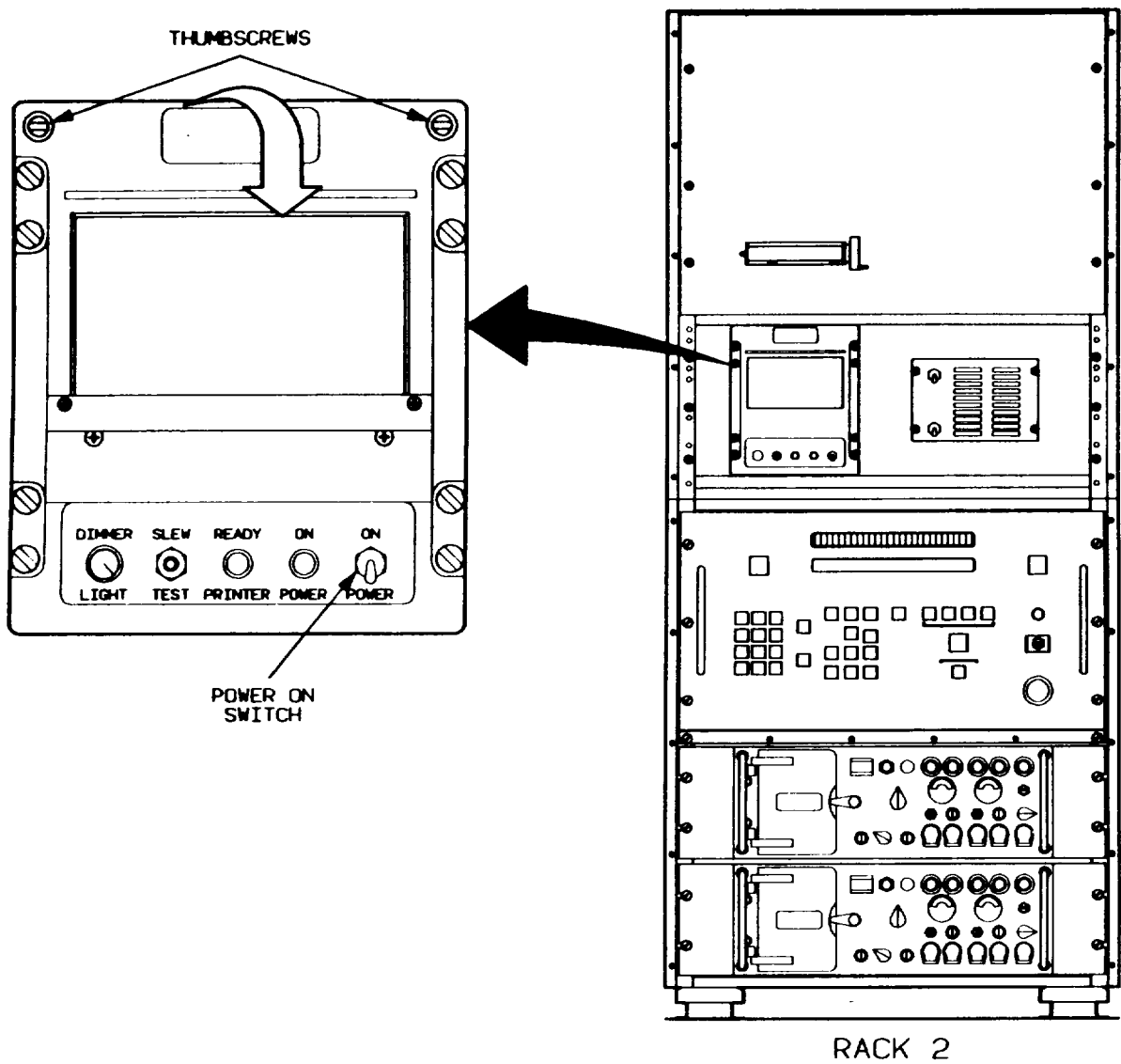
1. On compressor assembly, place the pneumatic mast control valve in the UP position. Raise mast one section, then place pneumatic mast control valve in the HOLD position.
2. At base of pneumatic mast, open drain cock and bleed off all air pressure.
3. Close drain cock at base of pneumatic mast.
4. On compressor assembly, place the pneumatic mast control valve in the DOWN position.

3-8. PAPER REPLACEMENT.

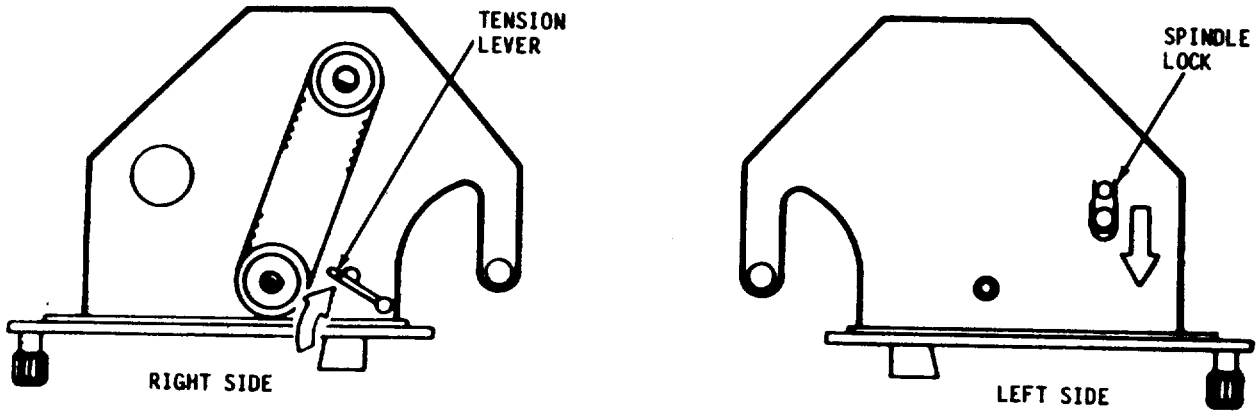
Use the following instructions to replace paper (Item 4. App. D) in the Printer whenever paper is expended or red markings appear on-the edges of the paper.

1. Set POWER ON switch to OFF (down) position.

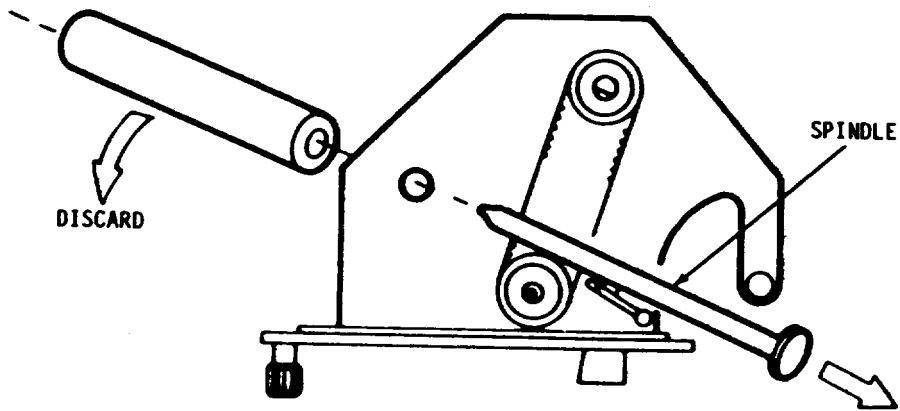
2. Remove expended roll of paper from take-up reel and store for normal disposition.



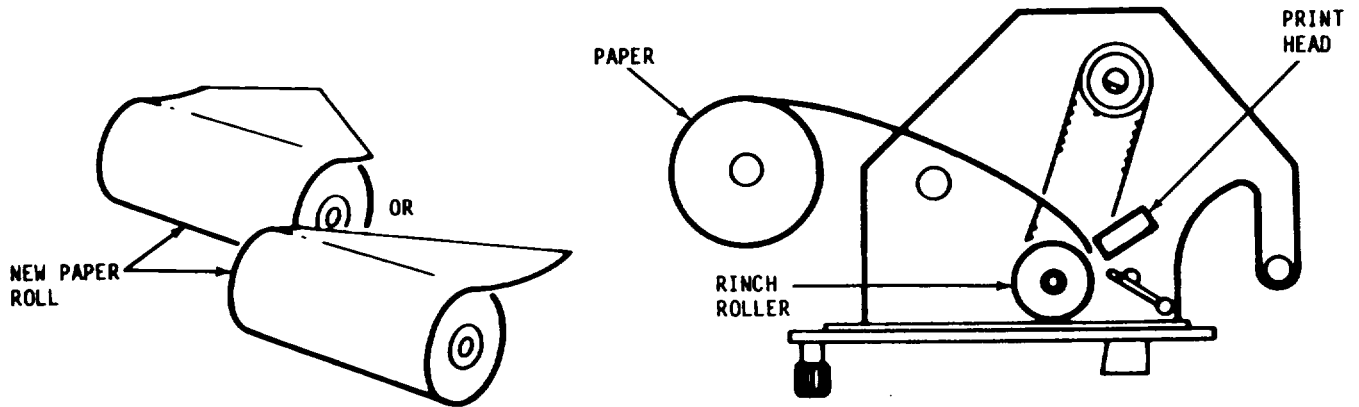
3. Loosen two captive thumbscrews securing front panel to the printer housing and lower front panel to horizontal position.



4. Release tension lever on right side by pushing up.
5. Release spindle lock on left side by pushing down.



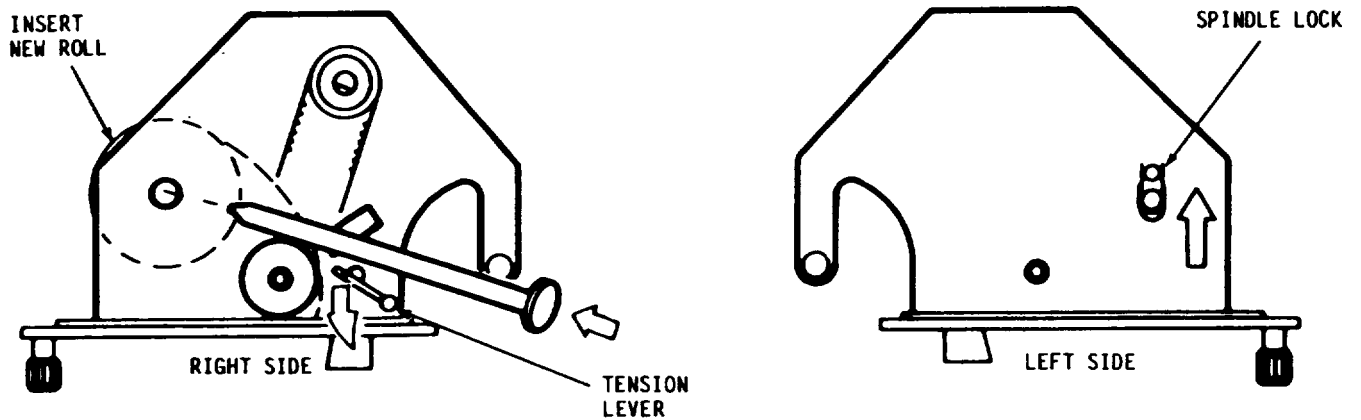
6. Pull spindle out, remove cardboard roll and discard.



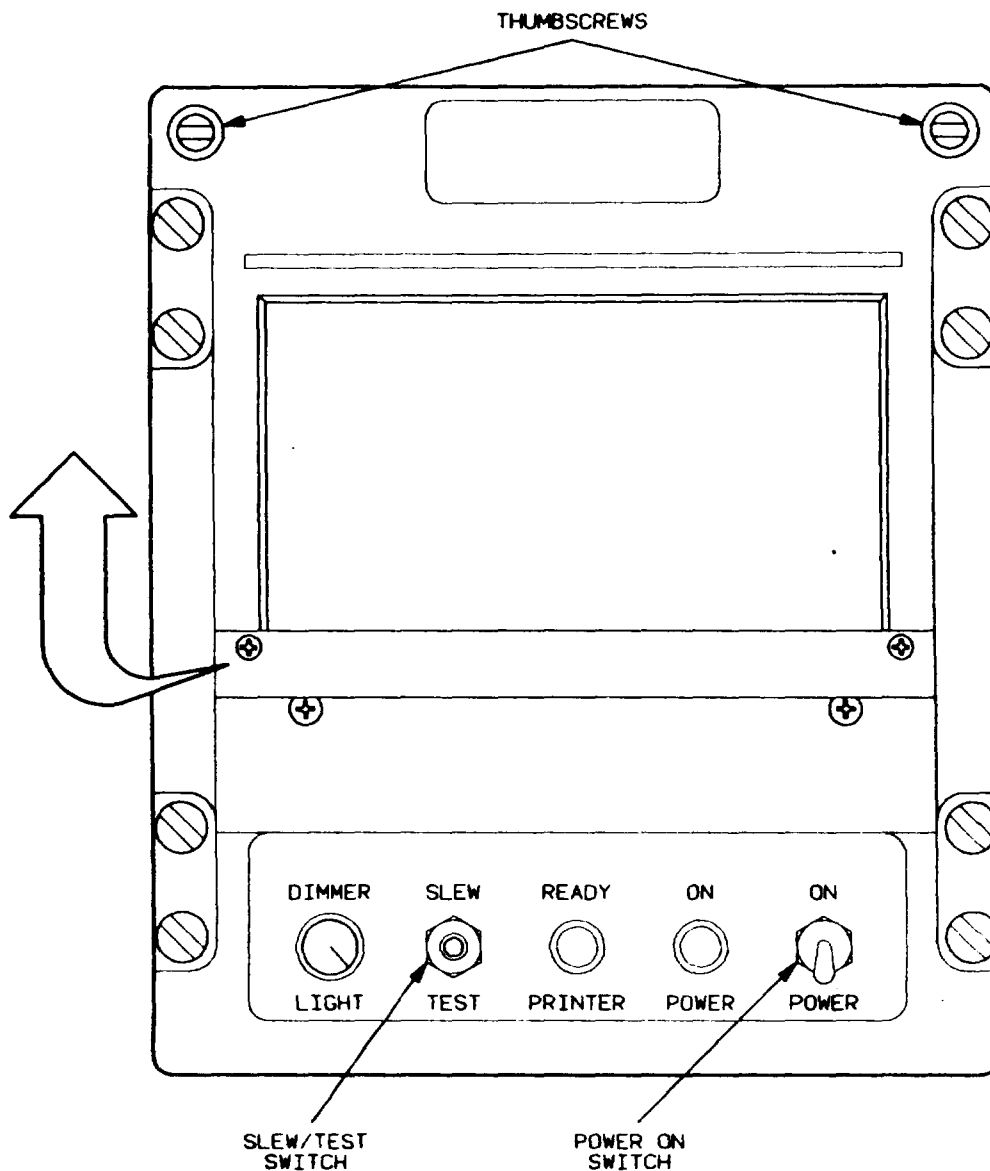
NOTE

A ragged edge will keep paper from feeding properly.

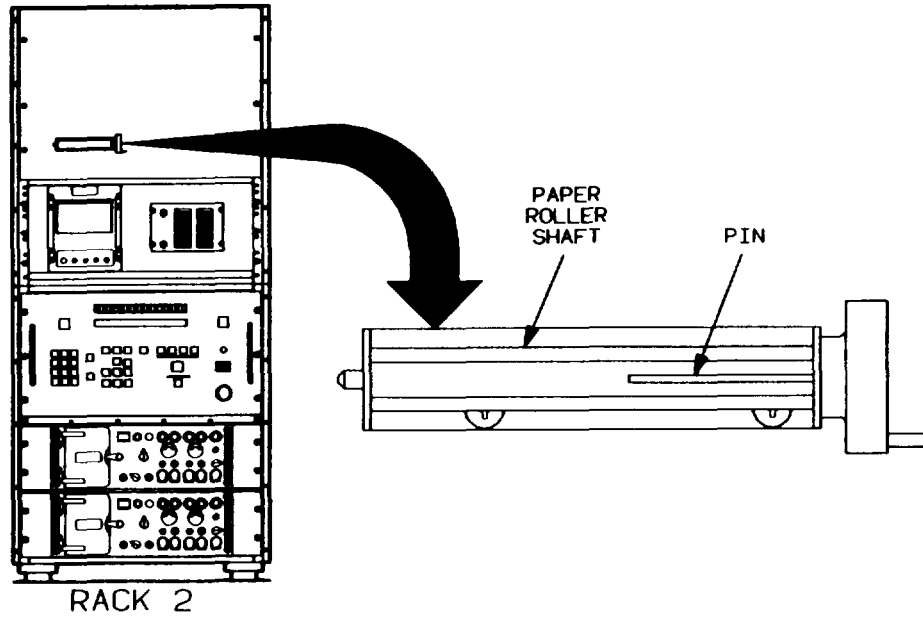
7. Fold end of new paper roll in a "V" shape.
8. Feed paper between pinch roller and print head.



9. Secure spindle to paper housing by pushing spindle lock on left side of housing to up position.
10. Push tension lever on right side of paper housing to down position.



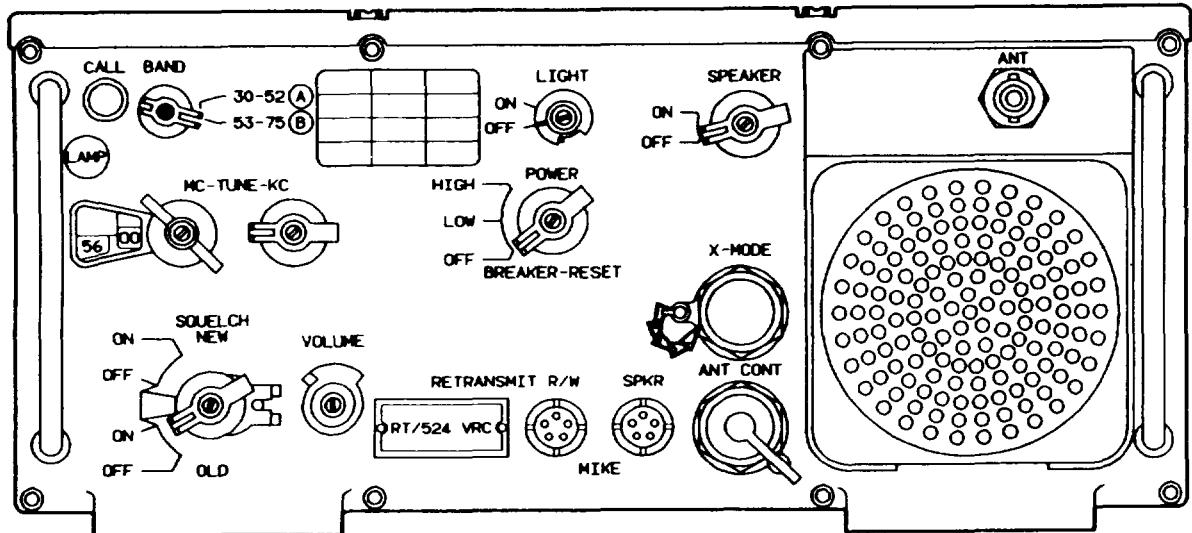
11. Push front panel to up position and secure to printer housing by tightening two captive thumbscrews.
12. Set printer power ON/OFF switch to ON position.
13. Hold printer SLEW/TEST switch in the SLEW position until enough paper is advanced to thread the take-up reel.
14. Release SLEW/TEST switch.



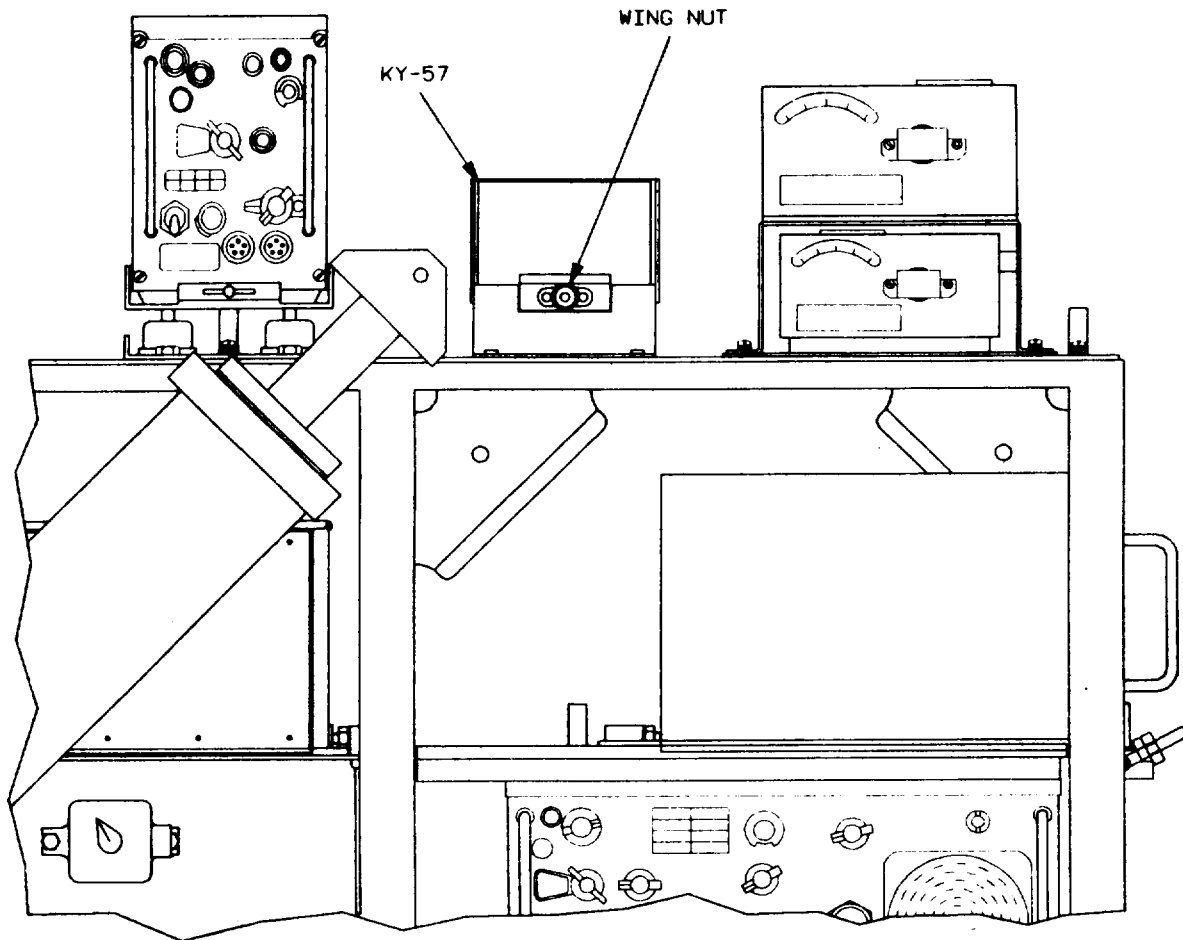
15. Insert end of paper in "V" shaped slot between pin and paper roller shaft on take-up reel .
16. Rotate take-up reel counter clockwise to take up slack in paper. Printer is now ready to print.

3-9. KY-57 REMOVAL AND REPLACEMENT.

Remove KY-57 (A23A1) as follows:

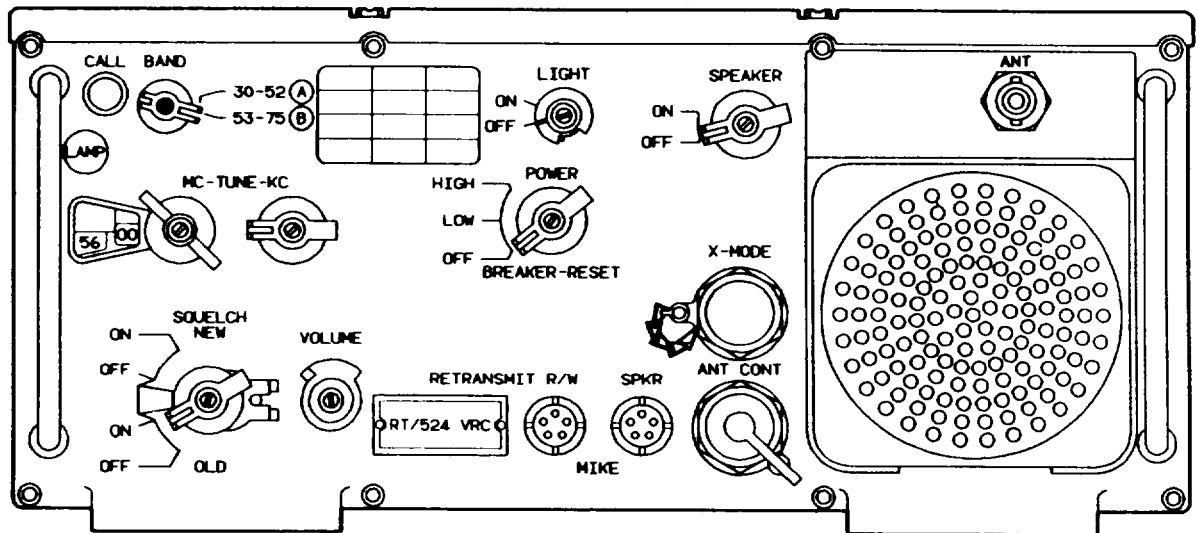


1. Turn rotary POWER switch on RT-524/VRC to OFF position.
2. On front of unit, disconnect A23A1J3(P2) from RADIO and A23A1J1(P2) from AUDIO .

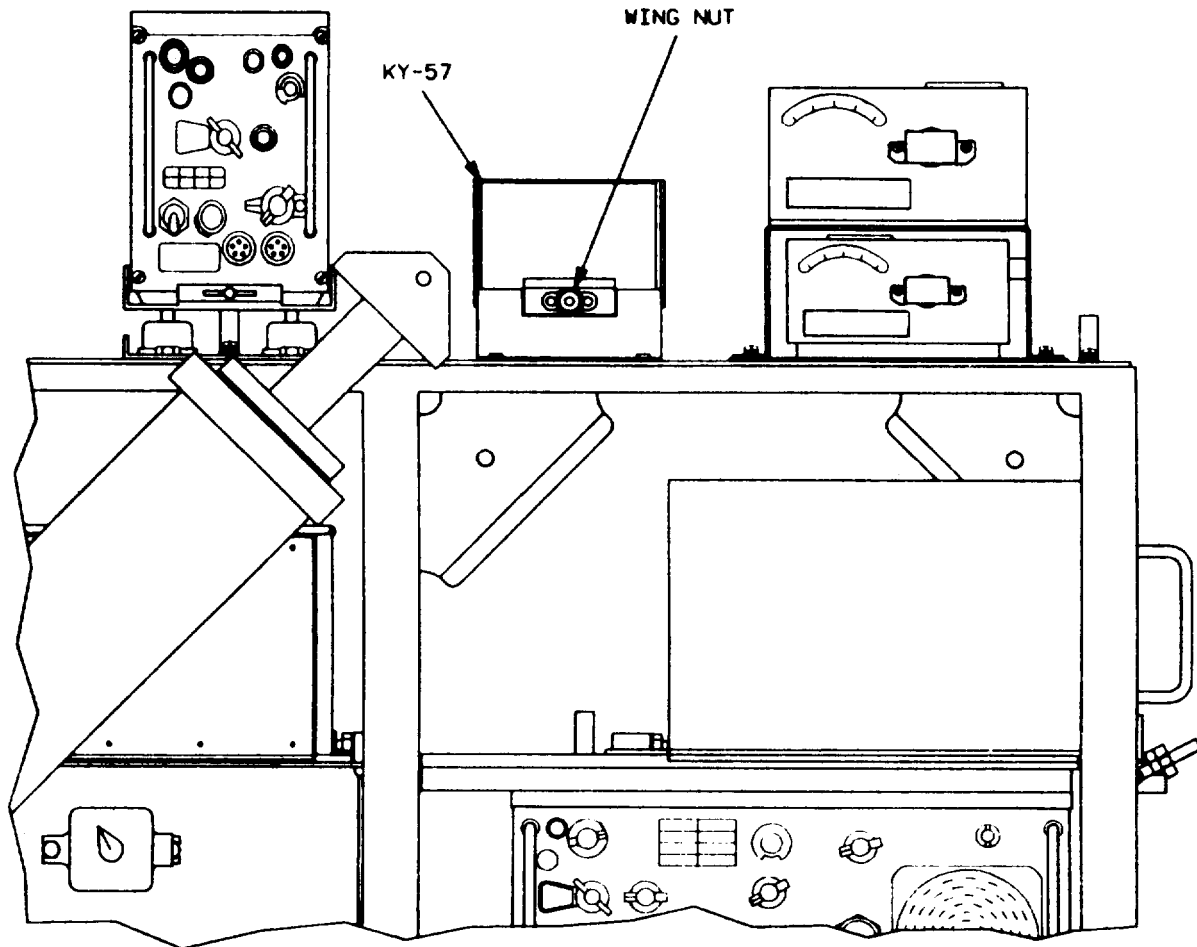


3. Loosen retaining nut on mounting clamp at front of unit. Allow clamp to drop down free of unit. If secured with a padlock, remove padlock.
4. Pull KY-57 forward until connector on rear is accessible. Disconnect P2 from A23A1J1 on rear of KY-57 and remove KY-57 from rack.

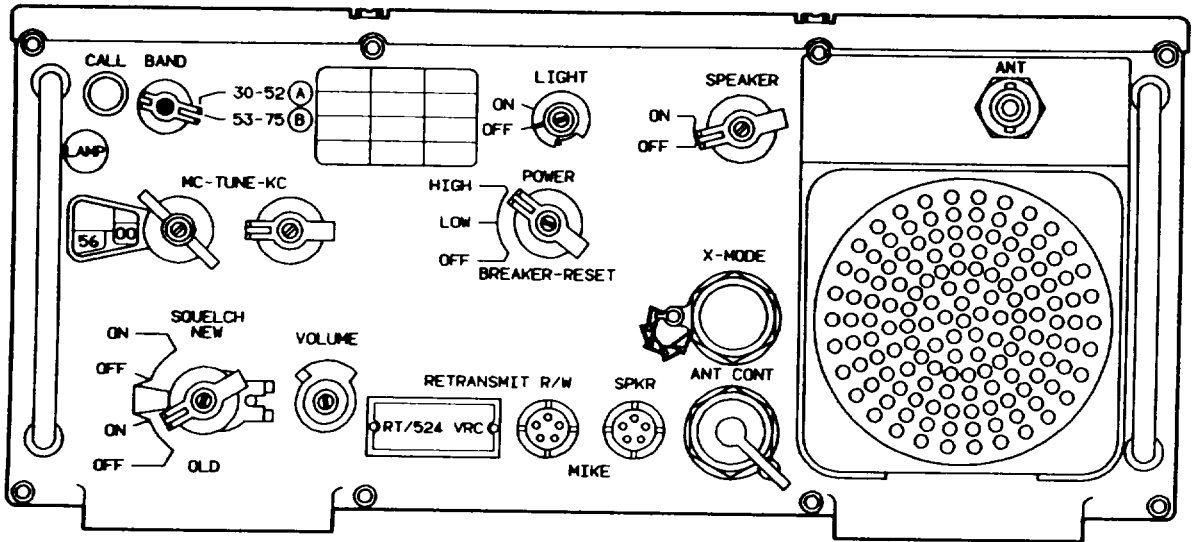
Replace KY-57 as follows:



1. Ensure rotary POWER switch on RT is in OFF position.
2. Place the KY-57 partially into mount on RACK 4, leaving it out far enough to gain access to rear connector.
3. Connect P2 to A23A1J2 on rear of KY-57.
4. Slide KY-57 into RACK 4.



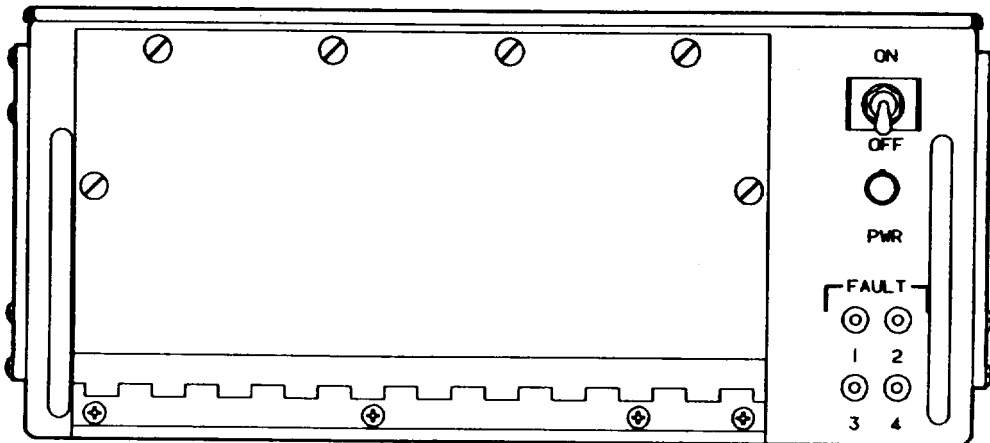
5. Place mounting clamp into position and tighten retaining nut to secure KY-57 .
6. Connect A23A1J3(P2) to RADIO and A23A1J1(P2) to AUDIO on front KY-57.



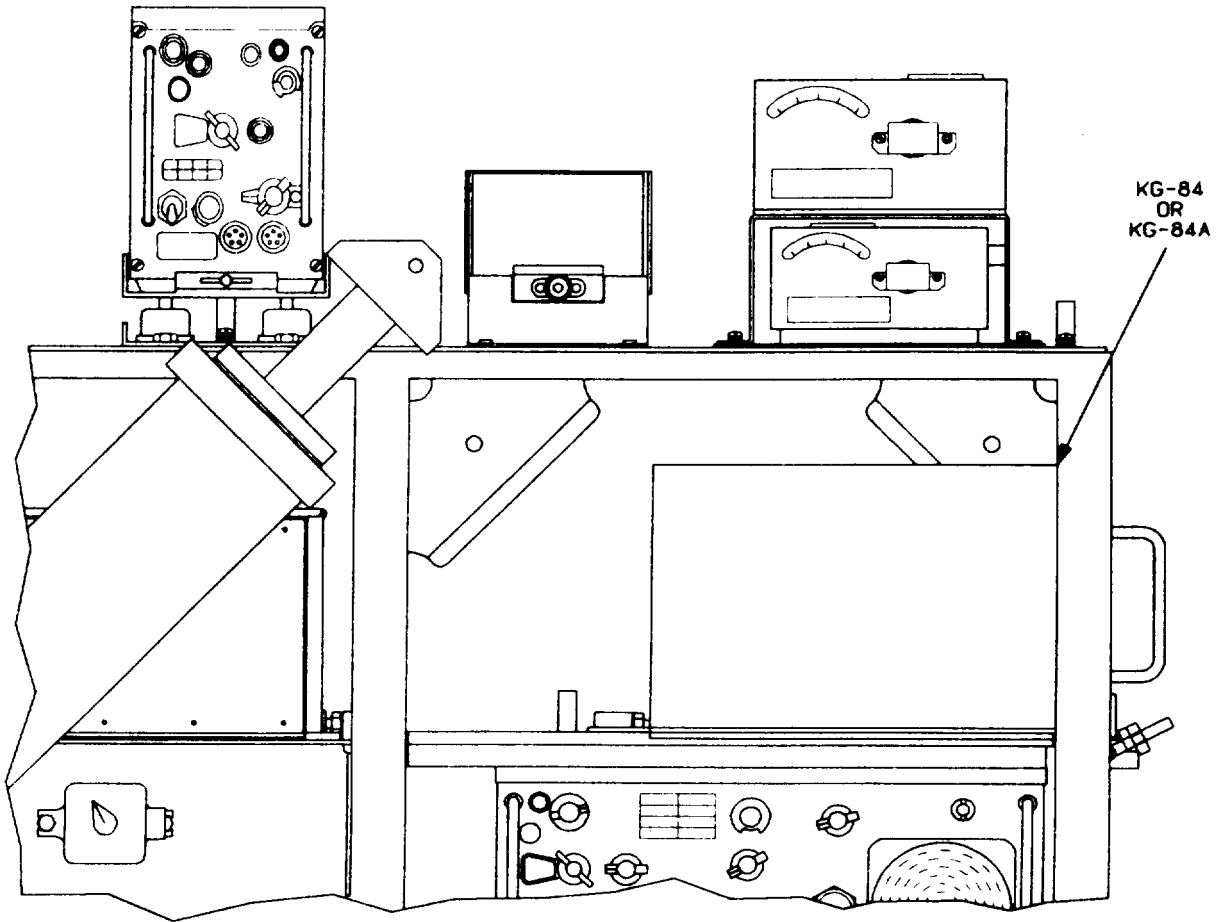
7. Place rotary POWER switch on RT-524/VRC to HIGH position.

3-10. KG-84 OR KG-84A REMOVAL AND REPLACEMENT.

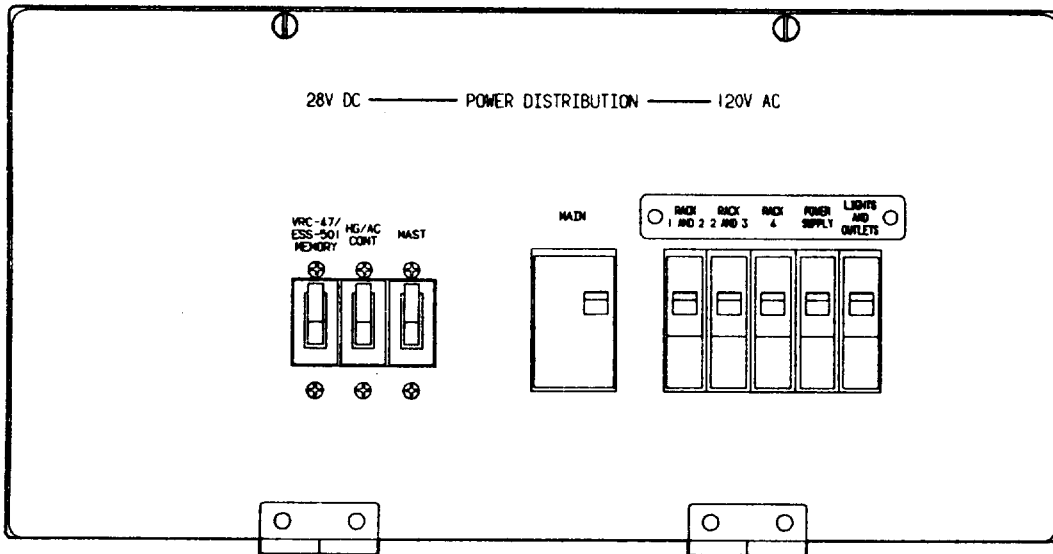
Remove KG-84 or KG-84A as follows:



1. Place power ON/OFF switch on data link processor to OFF position.



- Place power ON/OFF switch on KG-84 or KC-84A to OFF position.



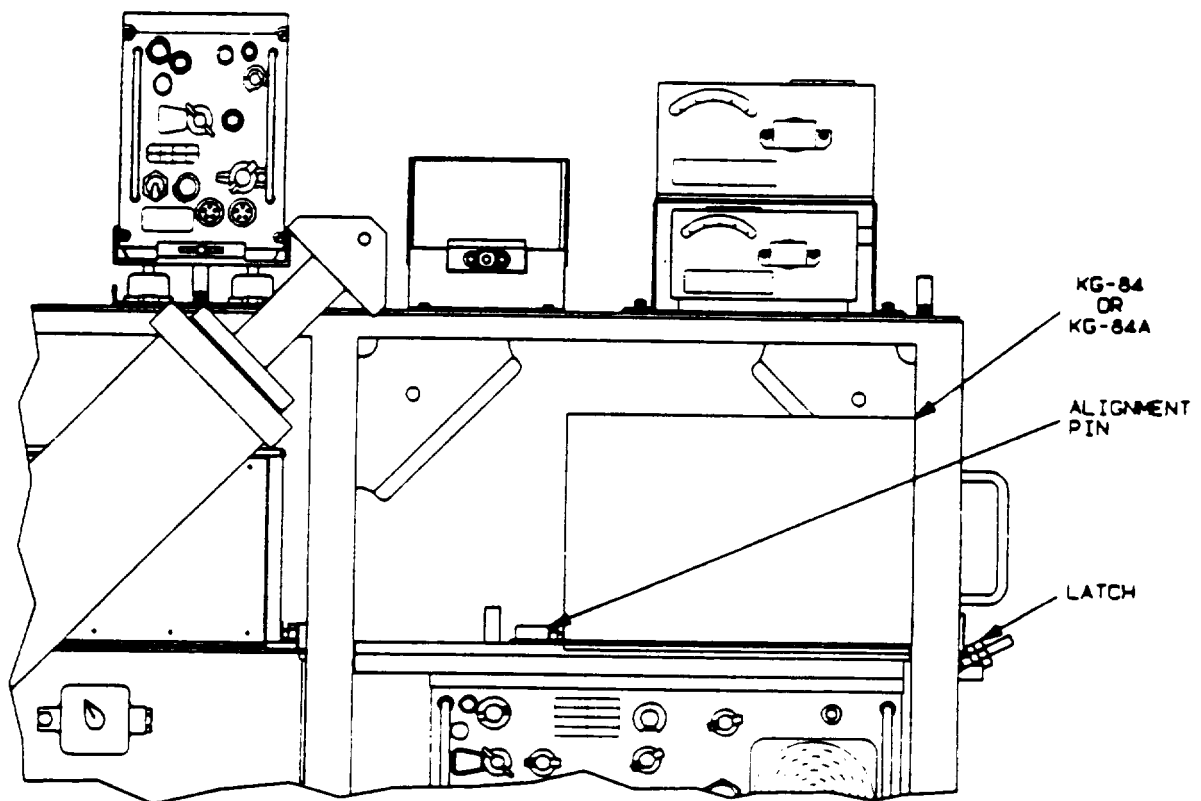
- Place RACK 4 circuit breaker on POWER DISTRIBUTION PANEL to OFF position.

4. Disconnect all cables from rear panel of KC-84 or KC-84A.
5. Loosen and release two ATR latches from retaining brackets on bottom front cover of KC-84 or KG-84A.
6. Slide KG-84 or KC-84A out of rack.

Replace KG-84 or KG-84A as follows:

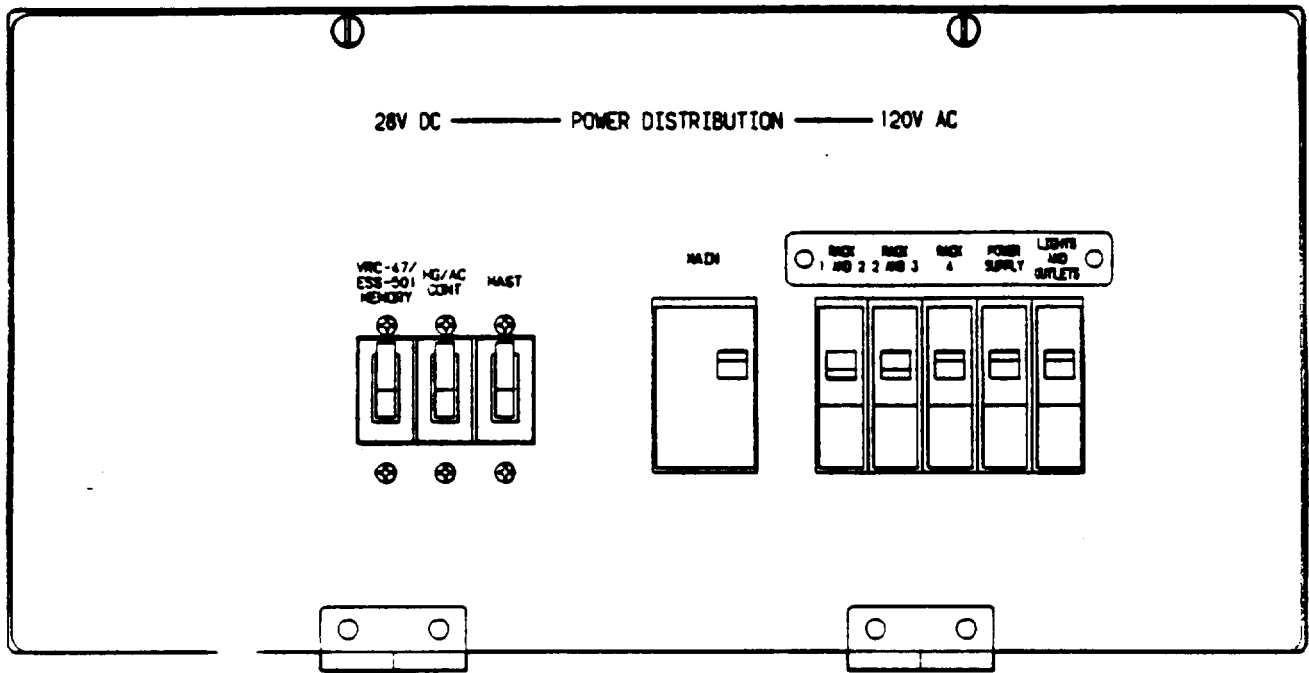
NOTE

For strapping and front panel information, refer to T B 32-5800-004-20.



1. Place KC-84 or KG-84A into RACK 4 and slide to left until seated against alignment pins.

2. Position the two ATR latches on the KG-84 or KG-84A retaining brackets and tighten.
3. Insure power ON/OFF switch is in the OFF position.
4. Connect cables to rear panel connectors as follows; W86(P2) to J3, W87(P2) to J2, and W91(P1) to J1.



5. Place RACK 4 circuit breaker on POWER DISTRIBUTION PANEL to the ON position.
6. Place power ON/OFF switch on KG-84 or KG-84A to the ON position.
7. Place power ON/OFF switch on DATALINK PROCESSOR to the ON position.

3-11. DISK DRIVE CARTRIDGE REMOVAL AND REPLACEMENT.

Remove the DISK DRIVE CARTRIDGE as follows:

NOTE

Before turning OFF power to DISK DRIVE CONTROL, verify that yellow select light on disk drive is not lit.

NOTE

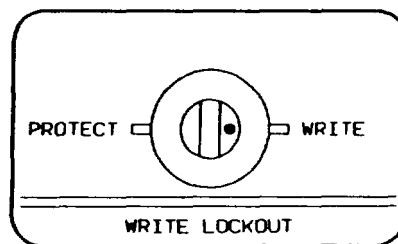
Zeroize DISK DRIVE CARTRIDGE in accordance with emergency procedures in Chapter 2, Section IV, this manual.

1. Place power ON/OFF switch on DISK DRIVE CONTROL to the OFF position.
2. Release two turnlock fasteners securing cartridge access door and open.
3. Push down cartridge release lever on right side of cartridge.
4. Remove cartridge from disk drive by pulling on cartridge handle.

Replace DISK DRIVE CARTRIDGE as follows:

NOTE

Ensure the key on rear of disk drive cartridge is in the "WRITE" position. If not, notify maintenance personnel.



1. Slide DISK DRIVE CARTRIDGE into position inside the disk drive.
2. Push cartridge firmly into chassis until cartridge release lever snaps back up into place.

NOTE

If cartridge release lever does not click into its locked position, then the DISK DRIVE CARTRIDGE is not seated properly.

3. Push in and turn clockwise the two turnlock fasteners securing cartridge access door.
4. Place power ON/OFF switch on the DISK DRIVE CONTROL ASSEMBLY from panel to the ON position.

3-12. CLEANING

WARNING

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

Use a dry, clean, lint-free cloth (Item 2, App. D) or brush to remove dust or dirt from front panels, knobs, filters and connectors. If necessary, moisten the cloth or brush with trichlorotrifluoroethane (Item 1, App. D) to clean front panels, knobs, and connectors displaying foreign matter. After cleaning, wipe dry with a clean cloth.

A**REFERENCES****A-1. SCOPE**

This appendix lists forms and publications that are referenced in this manual or that contain information applicable to the operation of Radio Receiving Set AN/TRQ-32 (V) 2.

A-2. FORMS

Report of Packing and Handling Deficiencies DA Form 6

Recommended Changes to Publications and Blank Forms DA Form 2028

Equipment Inspection and Maintenance Worksheet DA Form 2404

Discrepancy in Shipment Report SF 361

Report of Discrepancy (ROD) SF 364

Quality Deficiency Report.. SF 368

A-3. FIELD MANUALS

Installation Practices: Communication Systems
Grounding, Bonding, and Shielding FM 11-487-4/TO•31-10-24

First Aid for Soldiers FM 21-11

A-4. TECHNICAL MANUALS

Operator's, Organizational, Direct Support, and
General Support Maintenance Manual for Hydraulic
Generator/Air Conditioner Group, PU-784/TRQ-32(V) TM 5-4120-391-14

Operator's Manual for Truck, Cargo, Tactical, 1-1/4
Ton, 4X4, M1008 (2320-01-123-6827); Truck, Cargo,
Tactical, 1-1/4 Ton, 4X4 M1008A1 (2320-01-123-2671);
Truck, Utility, Tactical, 3/4 Ton, 4X4, M1909
(2320-01-123-2665); Truck, Ambulance, Tactical,
1-1/4 Ton, 4X4, M1010 (2310-01-123-2666); Truck,
Shelter Carrier, Tactical, 1-1/4 Ton, 4X4,
M1028 (2320-01-127-5077); Truck, Chassis, Tactical,
1-1/4 Ton, 4X4, M1031 (2320-01-133-5368) TM 9-2320-289-10

- Lubrication Order for Truck, Cargo, Tactical, 1-1/4 Ton, 4X4, M1008 (2320-01-123-6827); Truck, Cargo, Tactical, 1-1/4 Ton, 4X4 M1008A1 (2320-01-123-2671); Truck, Utility, Tactical, 3/4 Ton, 4X4, M1909 (2320-01-123-2665); Truck, Ambulance, Tactical, 1-1/4 Ton, 4X4, M1010 (2310-01-123-2666); Truck, Shelter Carrier, Tactical, 1-1/4 Ton, 4X4, M1028 (2320-01-127-5077); Truck, Chassis, Tactical, 1-1/4 Ton, 4X4, M1031 (2320-01-133-5368) LO 9-2320-289-12

- Operator and Organizational Maintenance Manual for Telephone Set, TA-312/PT (NSN 5805-00-543-0012) TM 11-5805-201-12

- Operator's and Organizational Maintenance Manual for Communications Security Equipment, TSEC/KY-57 TM 11-5810-256-12

- Operator's and Organizational Maintenance Manual for Installation Kits for Communications Security Equipment, TSEC/KY-57 TM 11-5810-312-12

- Operator's and Organizational Maintenance Manual for Tape Recorder, K01-18/TSEC TM 11-5810-292-12

- Operator's Manual, Radio Sets AN/VRC-12 (5820-00-223-7412), AN/VRC-43 (5820-00-223-7415), AN/VRC-44 (5820-00-223-7417), AN/VRC-45 (5820-00-223-7418), AN/VRC-46 (5820-00-223-7433), AN/VRC-47 (5820-00-223-7434), AN/VRC-48 (5820-00-223-7435), AN/VRC-49 (5820-00-223-7437), AN/VRC-54 (5820-00-223-7567), and AN/VRC-55 (5820-00-402-2265); Mounting MT-1029/VRC (5820-00-893-1323) and Mounting MT-1898/VRC (5820-00-893-1324); Antenna AT-912/VRC (5820-00-897-6357); Control Frequency Selector C-2742/VRC (5820-00-892-3343) and Control, Radio Set C-2299/VRC (5820-00-892-3340) TM 11-5820-401-10-1
NAVELEX 0967-432-3010

- Operator's, Organizational, Direct Support, and General Support Maintenance Manual (Including Repair Parts and Special Tools List) for Mast Base, AB-15/GR TM 11-5895-230-14W

- Operator, Organizational, Direct Support, General" Support, and Depot Maintenance Manual for Antenna, AS-1729/VRC TM 11-5985-262-15

- Operator's, organizational, Direct Support, and General Support Maintenance Manual (Including Repair Parts and Special Tools List) for Recorder-Reproducer Set, Sound AN/UNH-17A (NSN 5835-81-823-4332) TM 32-5835-005-14

Operator's, Organizational, Direct Support, and
 General Support Maintenance Manual (Including
 Repair Parts and Special Tools List) for Switch,
 SA-1921/G TM 32-5835-005-14&P

Hand Receipt Manual for Receiving Set, Radio
 AN/TRQ-32(V) TM 32-5895-070-10-HR

Operator's, Organizational, Direct Support, and General
 Support Maintenance Manual (Including Repair Parts
 and Special Tools List) for Digital Multimeter,
 AN/USM-486 TM 32-6625-2958-14&P

A-5. MISCELLANEOUS PUBLICATIONS

The Army Maintenance Management System (TAMMS) DA PAM 738-750

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

Expendable Items (Except Medical, Class V, Repair
 Parts, and Heraldic Items) CTA 50-970

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

Preservation, Packaging, and Packing and Marking
 Materials, Supplies, and Equipment Used by the Army . . SB 11-573

Federal Supply Code for Manufacturers; United States
 and Canada, Name to Code and Code Name (GSA-
 FSS H4-1/H4-2) SB 708-41/42

B**COMPONENTS OF END ITEM
AND BASIC ISSUE ITEMS LISTS****B-1. SCOPE**

This appendix lists components of end item and basic issue items for the Radio Receiving Set to help you inventory items required for safe and efficient operation.

8-2. GENERAL

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

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

b. Section III. Basic Issue Items. These are the minimum essential items required to place the Radio Receiving Set in operation, to operate it, and to perform emergency repairs. Although shipped separately packaged BII must be with the Radio Receiving Set during operation and whenever it is transferred between property accounts. The illustrations will assist you with hard-to-identify items. This manual is your authority to request/requisition replacement BII, based on TOE/MTOE authorization of the end item.

B-3. EXPLANATION OF COLUMNS

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

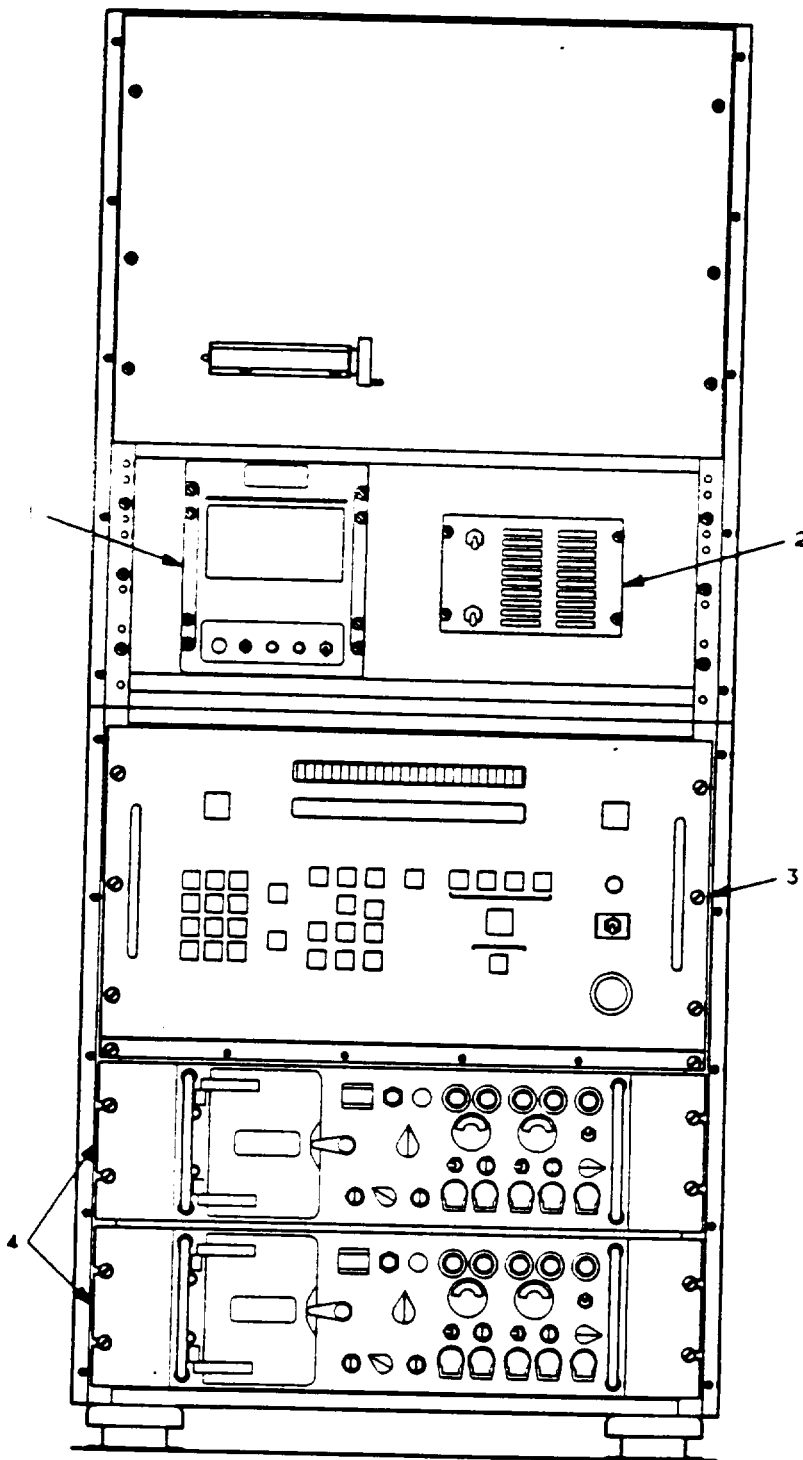
- a. Column (1) - Illustration Number (ILLUS NO). This column indicates the number of the illustration in which the item is shown.
- b. Column (2) - National Stock Number. Indicates the National stock number assigned to the item and will be used for requisitioning purposes.
- c. Column (3) - Description. Indicates the Federal item name and, if required, a minimum description to identify and locate the item. The last line for each item indicates the FSCM (in parentheses) followed by the part number. Uncoded items are applicable to all models. Identification of the usable codes in this publication are:

<u>CODE</u>	<u>USED ON</u>
U67	AN/TRQ-32(V)1
U68	AN/TRQ-32(V)2

- d. Column (4) - Units of Measure (U/M). Indicates the measure used in performing the actual operational/maintenance function. This measure is expressed by a two-character alphabetical abbreviation (e.g., ea, in, pr).
- e. Column (5) - Quantity required (QTY). Indicates the quantity of the item authorized to be used with/on the equipment.

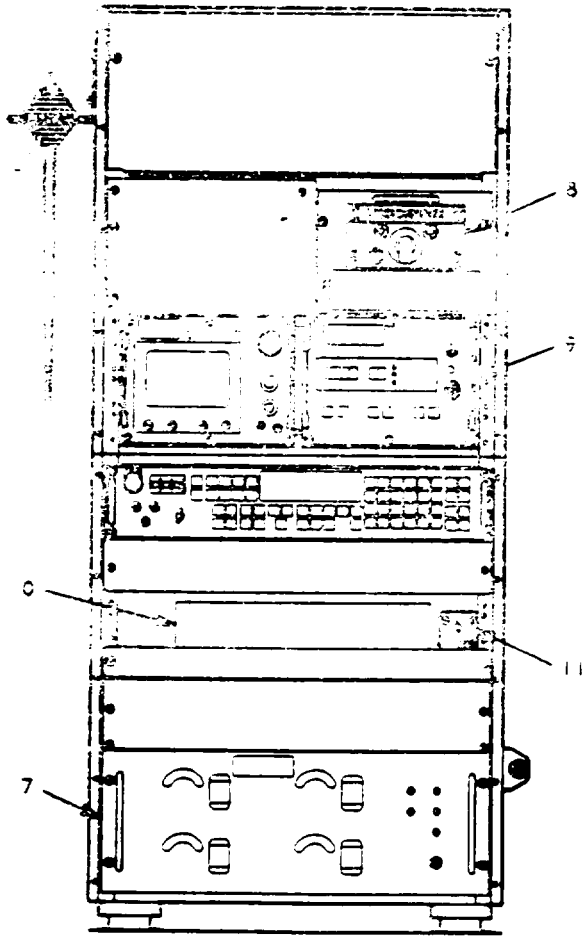
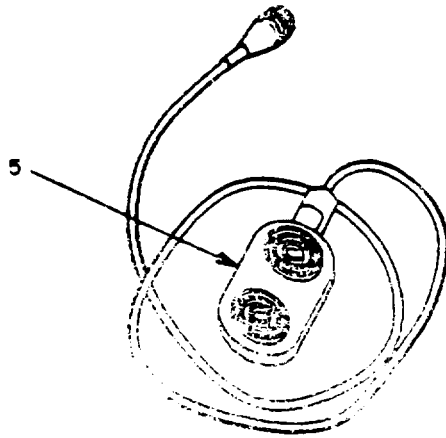
**SECTION II.
COMPONENTS OF END ITEM**

(1) ILLUS NO	(2) NATIONAL STOCK NUMBER	(3) DESCRIPTION FSCM AND PART NUMBER	(4) USABLE ON CODE U/M	(5) QTY
1	5895-01-168-0084	Printer, Thermal RP-272/G	ea	1
2	1680-00-903-4378	Caution Panel (961 82) 4408-100-29	ea	1
3	5811-01-257-0175	Controller, C-11845/TRQ-32(V)	ea	1
4	5835-01-023-4332	Recorder-Reproducer, Sound (80058) AN/UN H-17A	ea	2

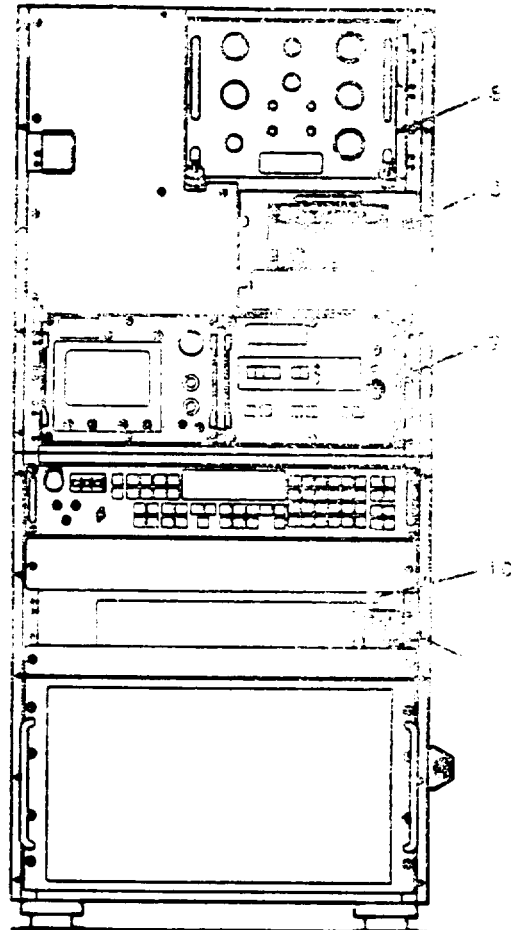


**SECTION II.
COMPONENTS OF END ITEM (CONT)**

(1) ILLUS NO	(2) NATIONAL STOCK NUMBER	(3) DESCRIPTION FSCM AND PART NUMBER	(4) USABLE ON CODE U/M	(5) QTY
5	5835-01-163-1118	Footswitch SA-1921/G	e a	2
6	5895-01-115-9154	Control, Direction Finder (5065934-1) C-1100~USQ	ea	1
7	5811-01-165-0405	Distribution, Unit, RF SA-2444/TRQ-32(V)	ea	1
8	5831-00-933-9822	Control, Intercommunications Set (81349)C-1611/AIC	ea	2
9	5895-01-165-6225	Panel, Operator Control MX-10570/TRQ-32(V)	ea	2
10	7025-01-257-0177	Computer, Operator Terminal CP-1824/TRQ-32(V)	ea	2
11	5093-01-258-8009	Switch, Power SA-2559/TRQ-32(V)	ea	2



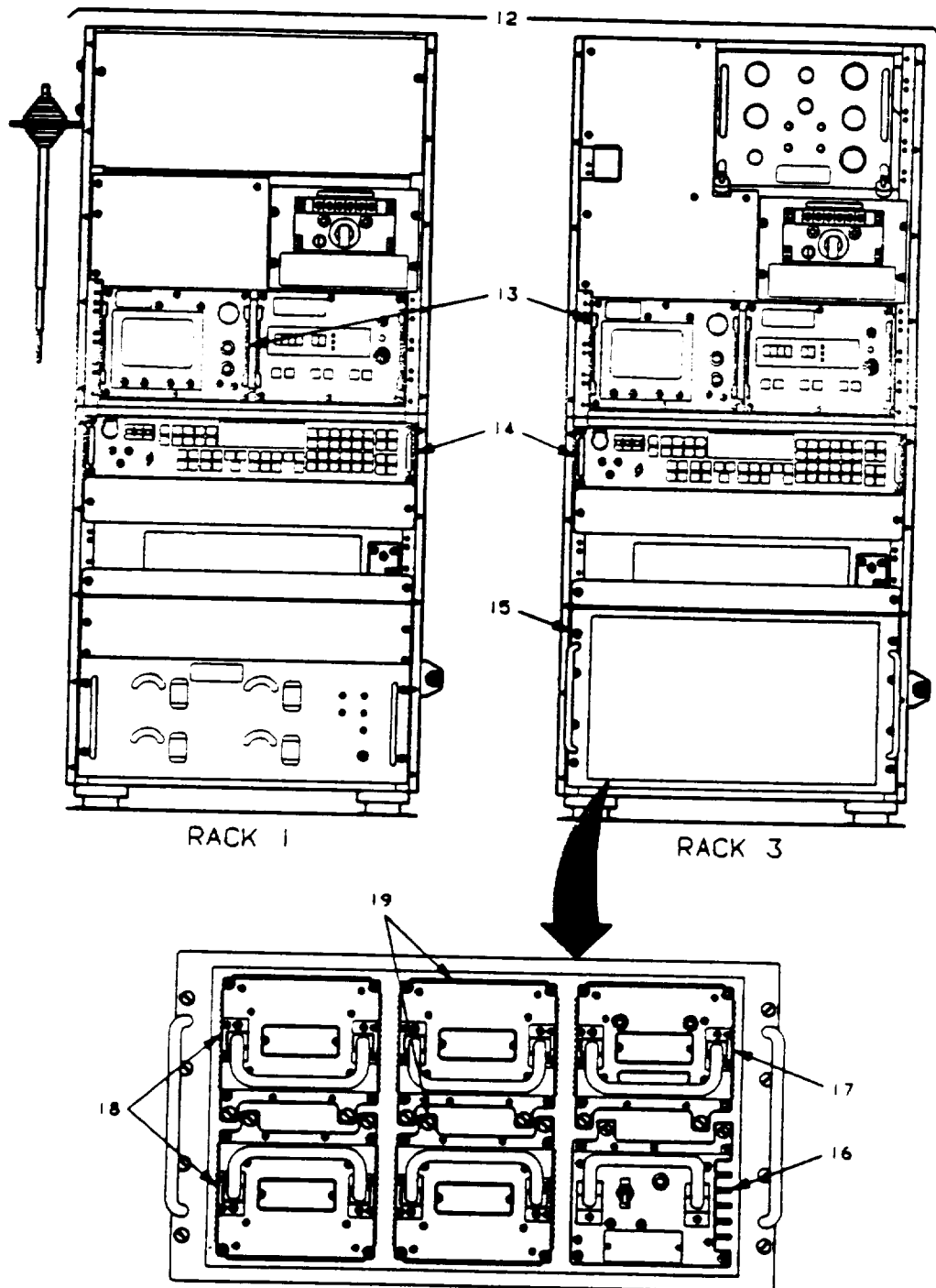
RACK 1



RACK 3

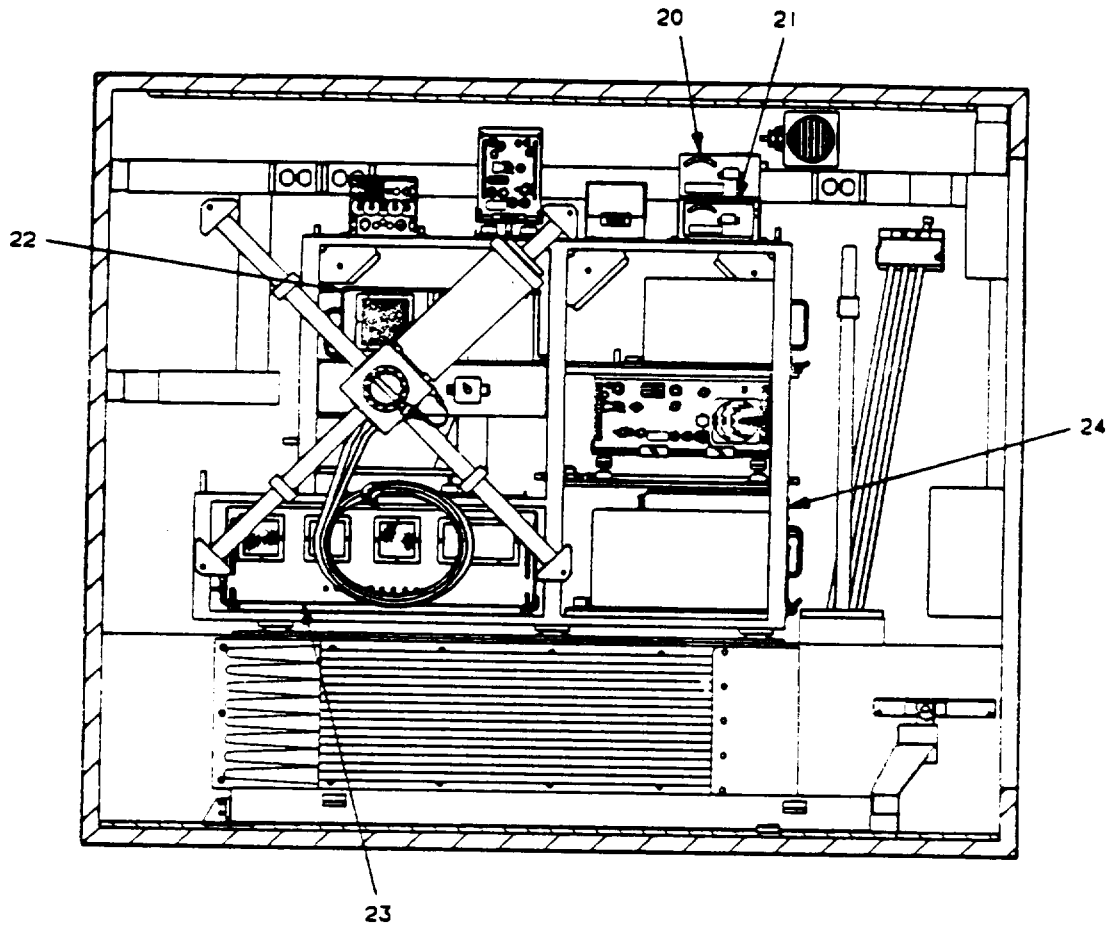
**SECTION II.
COMPONENTS OF END ITEM (CONT)**

(1) ILLUS NO	(2) NATIONAL STOCK NUMBER	(3) DESCRIPTION FSCM AND PART NUMBER	(4) USABLE ON CODE U/M	(5) QTY
12	5895-01-166-6954	Receiver Set, Radio AN/WTRR-35(V)3 Consisting of:		
13	5895-01-166-6949	Unit, Signal Display (37695)11D-2349/TRR-35	ea	2
14	5895-01-166-6958	Unit, Receiver Control (37695)C-11383/TRR-35	ea	2
15	5895-01-166-6950	Cabinet, Electronic Quad (57958)CY-8324/TRR-35	ea	1
16	5895-01-168-0086	Power Supply, Receiver (57958)PP-7817/URR	ea	1
17	5895-01-166-6951	Unit, Receiver Interface J-4144/RR-35	ea	1
18	5865-01-140-5013	Receiver, Radio R-2143/URR	ea	2
19	5865-01-136-8672	Receiver, Radio R-2144A/URR	ea	2



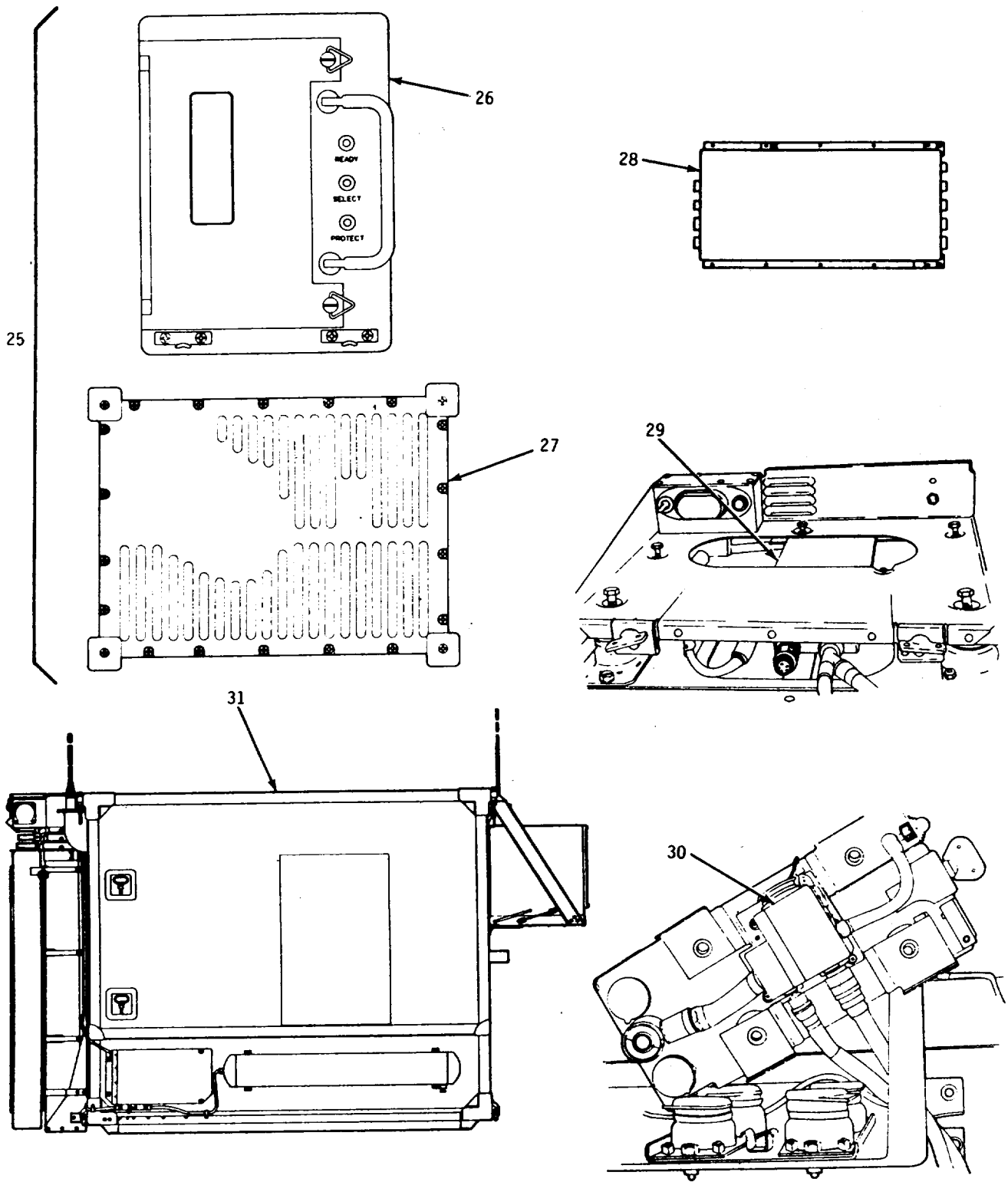
SECTION II.
COMPONENTS OF END ITEM (CONT)

(1) ILLUS NO	(2) NATIONAL STOCK NUMBER	(3). DESCRIPTION FSCM AND PART NUMBER	(4) USABLE ON CODE U/M	(5) QTY
20	5915-01-165-6223	UHF Bandpass filter (57958) C5110526-1	ea	
21	5915-01-165-6224	VHF Bandpass Filter (57958) C5110525-1	ea	1
22	5865-01-257-0174	Control, Processor Data Link C-1184/TRQ-32(V)	ea	1
23	6130-01-259-3074	Power Supply PP-8179/TRQ-32(V)	ea	1
24	7025-01-257-0178	Control, Disk Drive C-11843/TRQ-32(V)	ea	1



**SECTION II.
COMPONENTS OF END ITEM (CONT)**

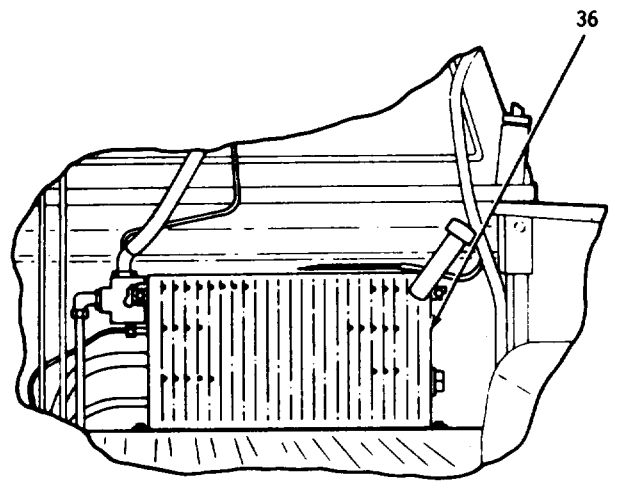
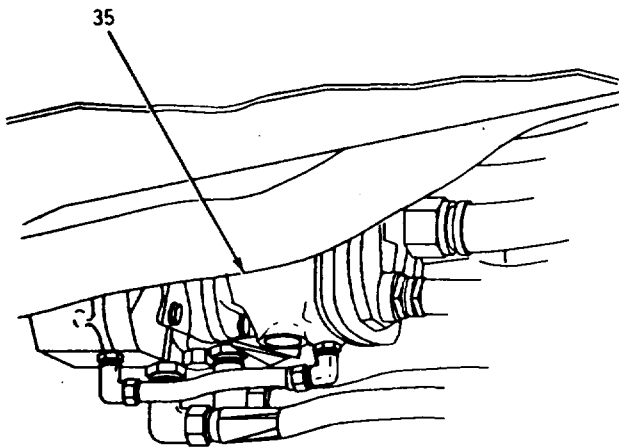
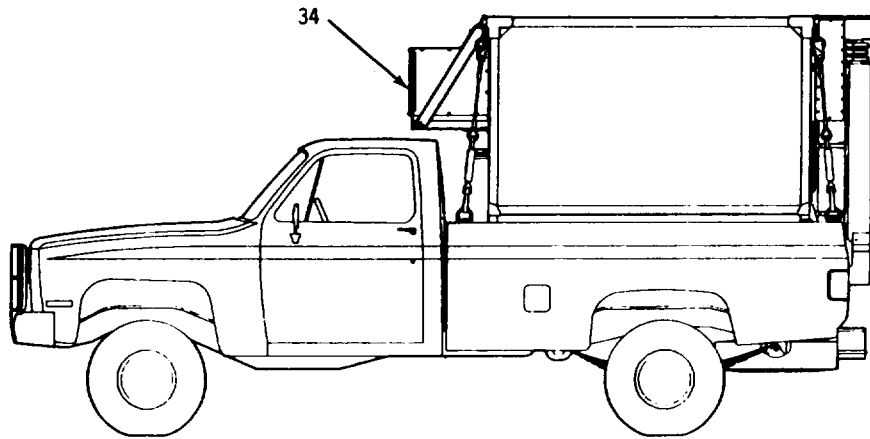
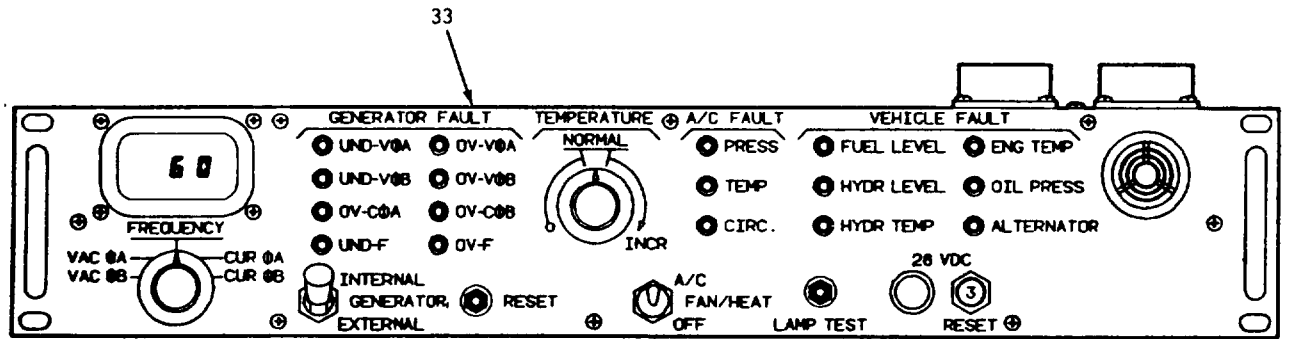
(1) ILLUS NO	(2) NATIONAL STOCK NUMBER	(3) DESCRIPTION FSCM AND PART NUMBER	USABLE ON CODE	(4) U/M	(5) QTY
25	NYA	Receiver-Reproducer, Magnetic Disk RD-583/TRQ-32(V) Consisting of:			
26	NYA	Chassis, Disk C5139622		ea	1
27	7045-01-260-4984	Disk, Hard (Programmed) C5139838-2		ea	1
28	5811-01-164-9988	Interconnecting Box, (57958)J-4099/TSQ-138		ea	1
29	5810-01-078-1881	Junction Box, J-3513/U		ea	1
30	5810-01-044-1979	Junction Box, J-3514/VRC		ea	1
31	5411-01-171-4750	Shelter, Elect. Equip. S-457 B/G		ea	1



**SECTION II.
COMPONENTS OF END ITEM (CONT)**

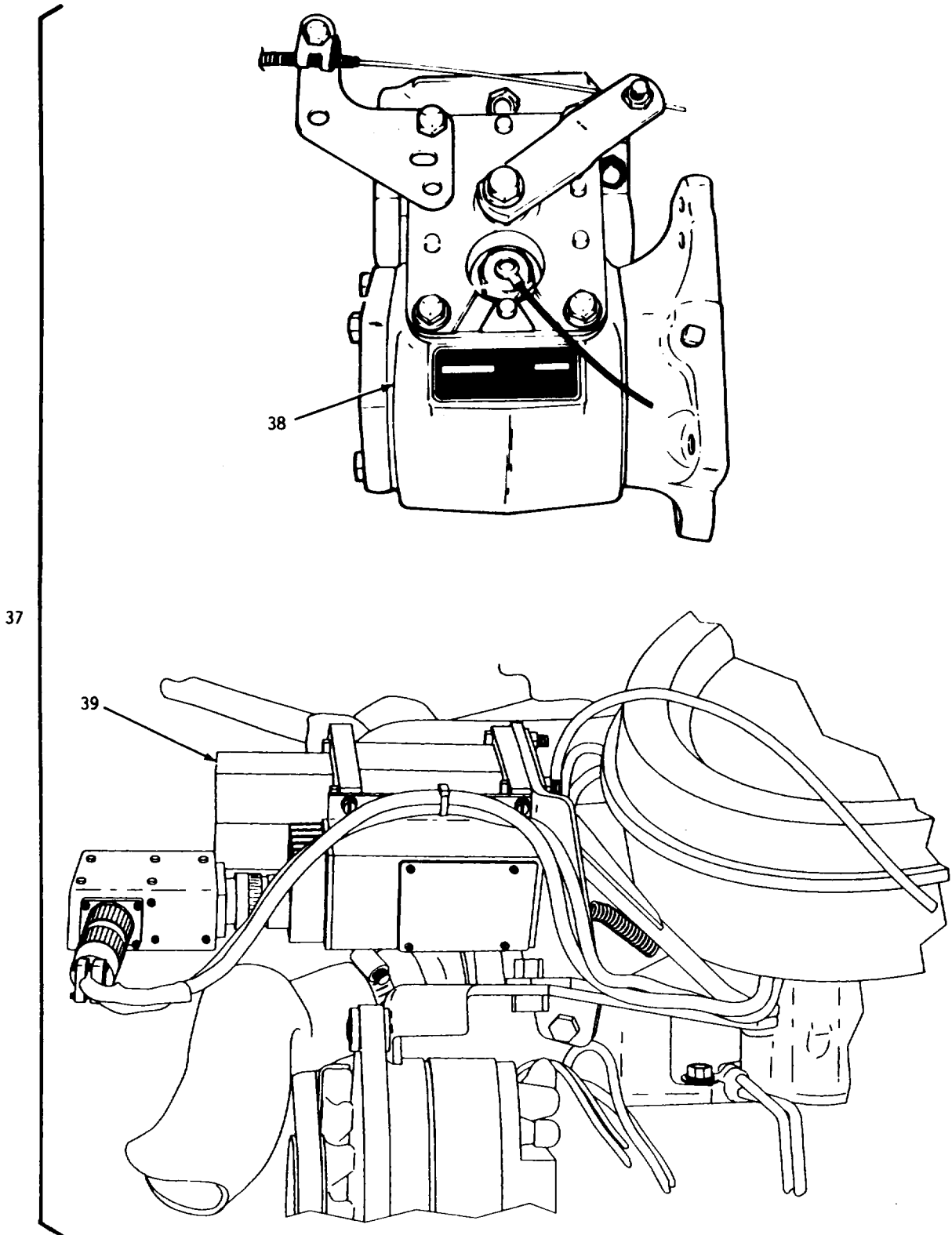
(1) NO	(2) NATIONAL STOCK NUMBER	(3) DESCRIPTION FSCM AND PART NUMBER	(4) USABLE ON CODE U/M	(5) QTY
32	4120-01-168-0087	Hydraulic Generator/Air Conditioner (57958)PU-784/TRQ-2(V) Consisting of:	ea	1
33	5895-01-186-8416	Panel, Hyd Gen/Air Cond. Control (5795)C5110898-1	ea	1
34	5411-01-186-8422	Shelter Mounted Unit Assy (5795)C5118900-1	ea	1
35	5895-01-171-3477	Pump Assy (5795)C5122498-1	ea	1
36	5895-01-171-3475	Reservoir Assy (57958)C5122481-1	ea	1

32



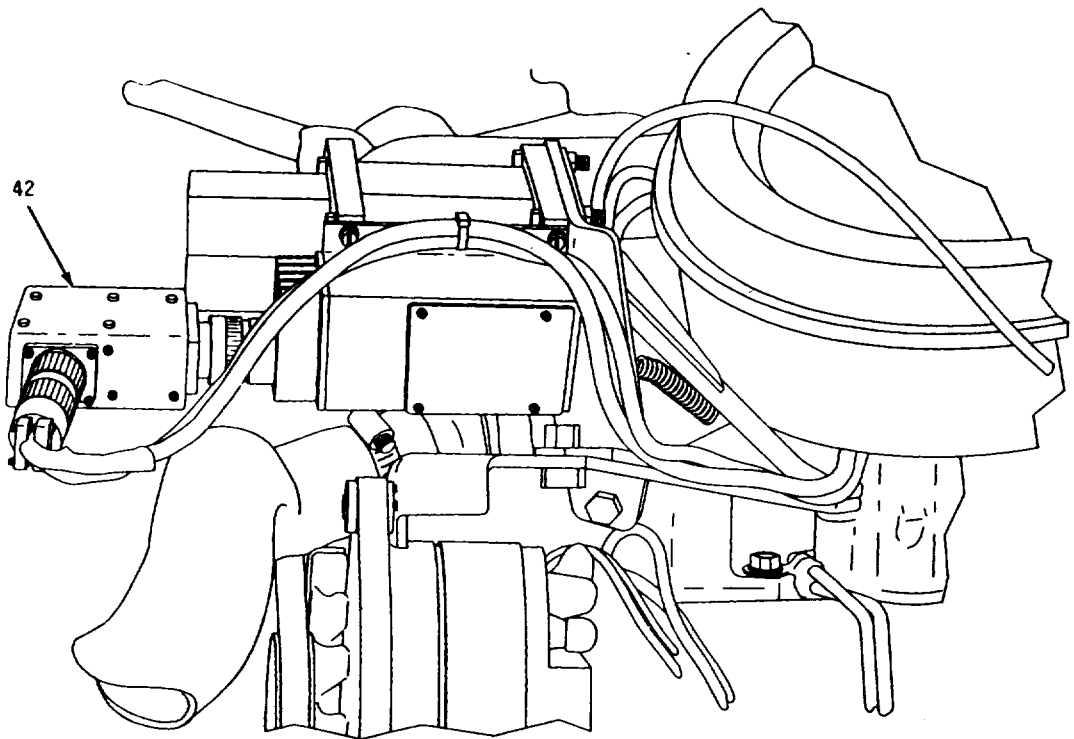
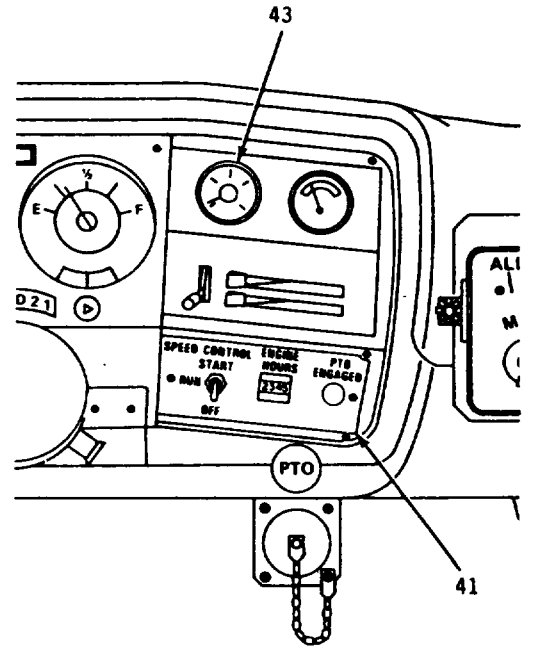
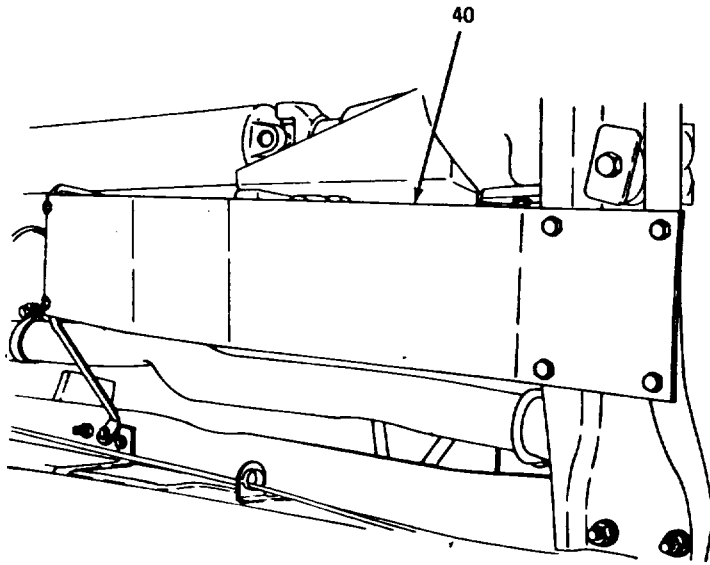
**SECTION II.
COMPONENTS OF END ITEM (CONT)**

(1) ILLUS NO	(2) NATIONAL STOCK NUMBER	(3) DESCRIPTION FSCM AND PART NUMBER	(4) USABLE ON CODE U/M	(5) QTY
37	5895-01-166-6959	Installation Kit, Truck MK-2291/TRQ-32(V) Consisting of:		
38	5895-01-171-4049	Unit, Power Take-off C5118905-1	ea	1
39	5895-01-171-3476	Group, Speed Control C5118904-1	ea	1



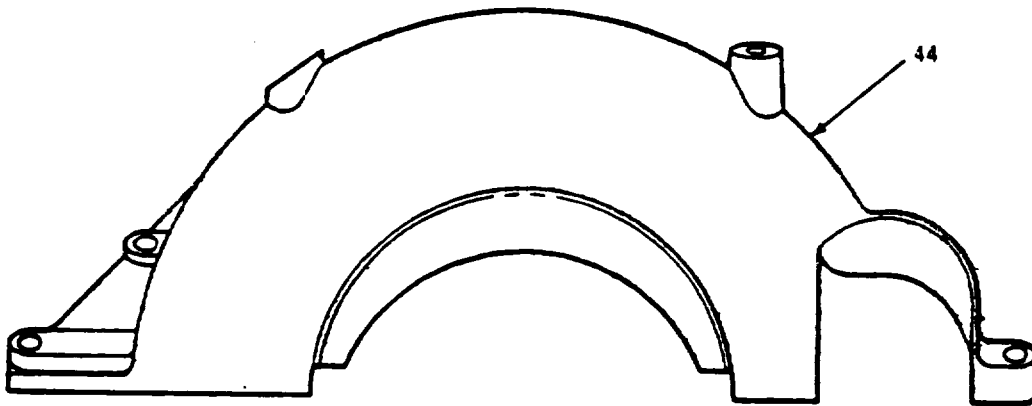
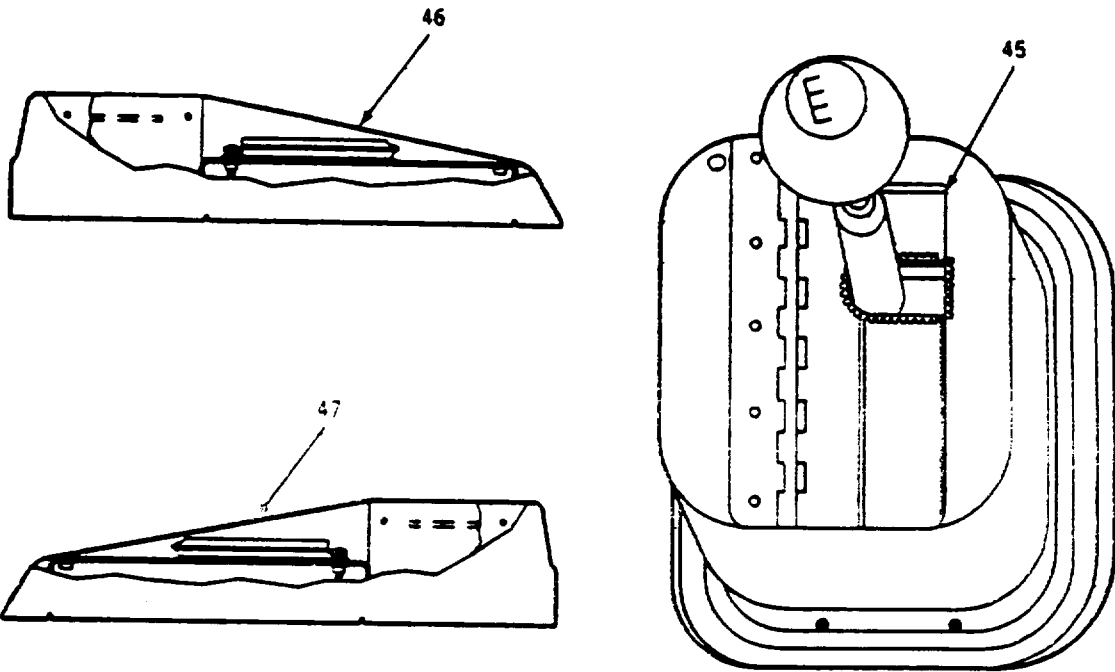
**SECTION II.
COMPONENTS OF END ITEM (CONT)**

(1) ILLUS NO	(2) NATIONAL STOCK NUMBER	(3) DESCRIPTION FSCM AND PART NUMBER	(4) USABLE ON CODE U/M	(5) QTY
40	NYA	Skid Plate C5118946-1	ea	1
41	NYA	Regulator Assy, RPM C5122557-1	ea	1
42	NYA	Assy, Filter C5131037-1	ea	1
43	NYA	Assy, Tachometer C5110708-1	ea	1



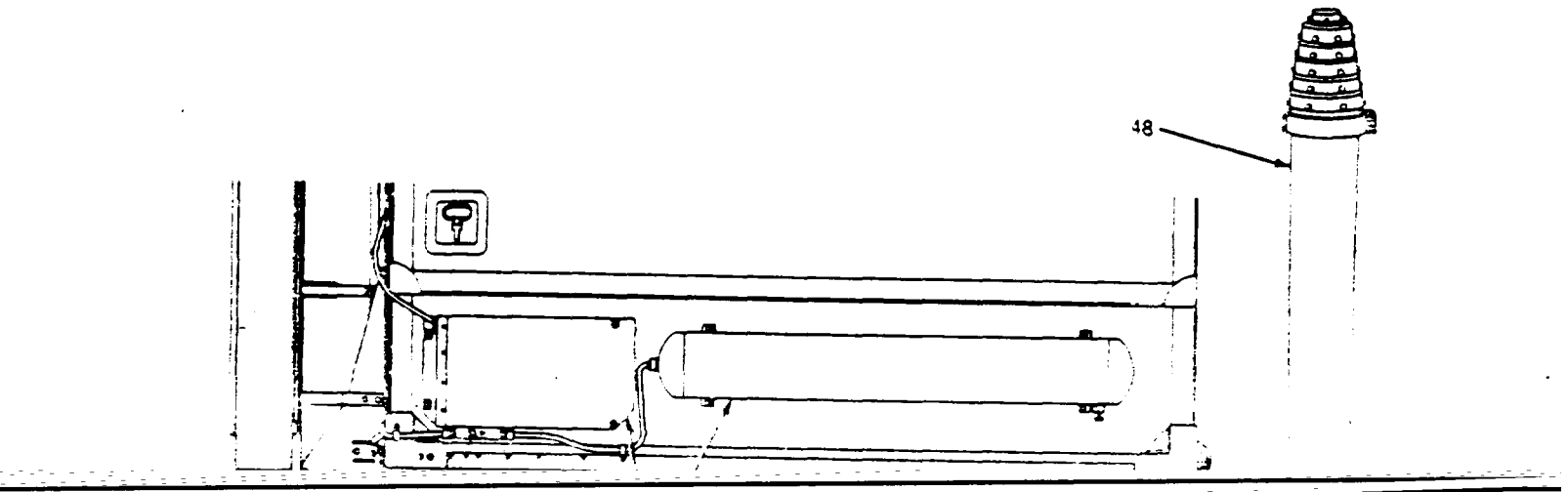
**SECTION II.
COMPONENTS OF END ITEM (CONT)**

(1) NO	(2) NATIONAL STOCK NUMBER	(3) DESCRIPTION FSCM AND PART NUMBER	(4) USABLE ON CODE U/M	(5) QTY
44	NYA	Cover, Flywheel C5110621-1	ea	1
45	NYA	Transfer Case Lockout Assy C5118950-1	ea	1
46	NYA	Pad, Shelter Alignment C5139765-1	ea	2
47	NYA	Pad, Shelter Alignment C5139765-2	ea	2



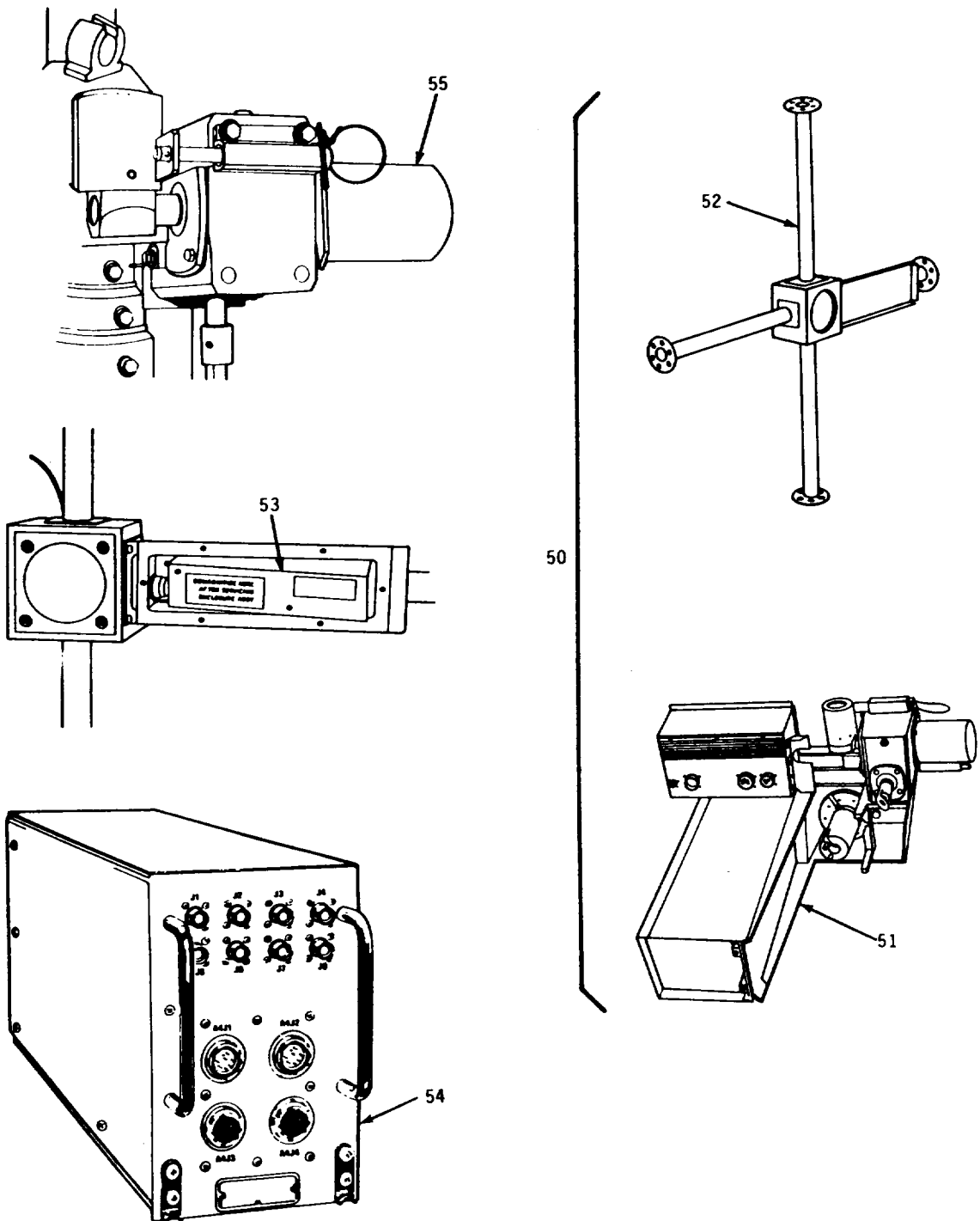
**SECTION II.
COMPONENTS OF END ITEM (CONT)**

(1) ILLUS NO	(2) NATIONAL STOCK NUMBER	(3) DESCRIPTION FSCM AND PART NUMBER	ON CODE	(4) U/M	(5) QTY
48	5985-01-274-8920	Pneumatic Mast 25' C5139843-1.		e a	1
49	5985-01-274-8934	Compressor Assy C5139844-1		ea	1



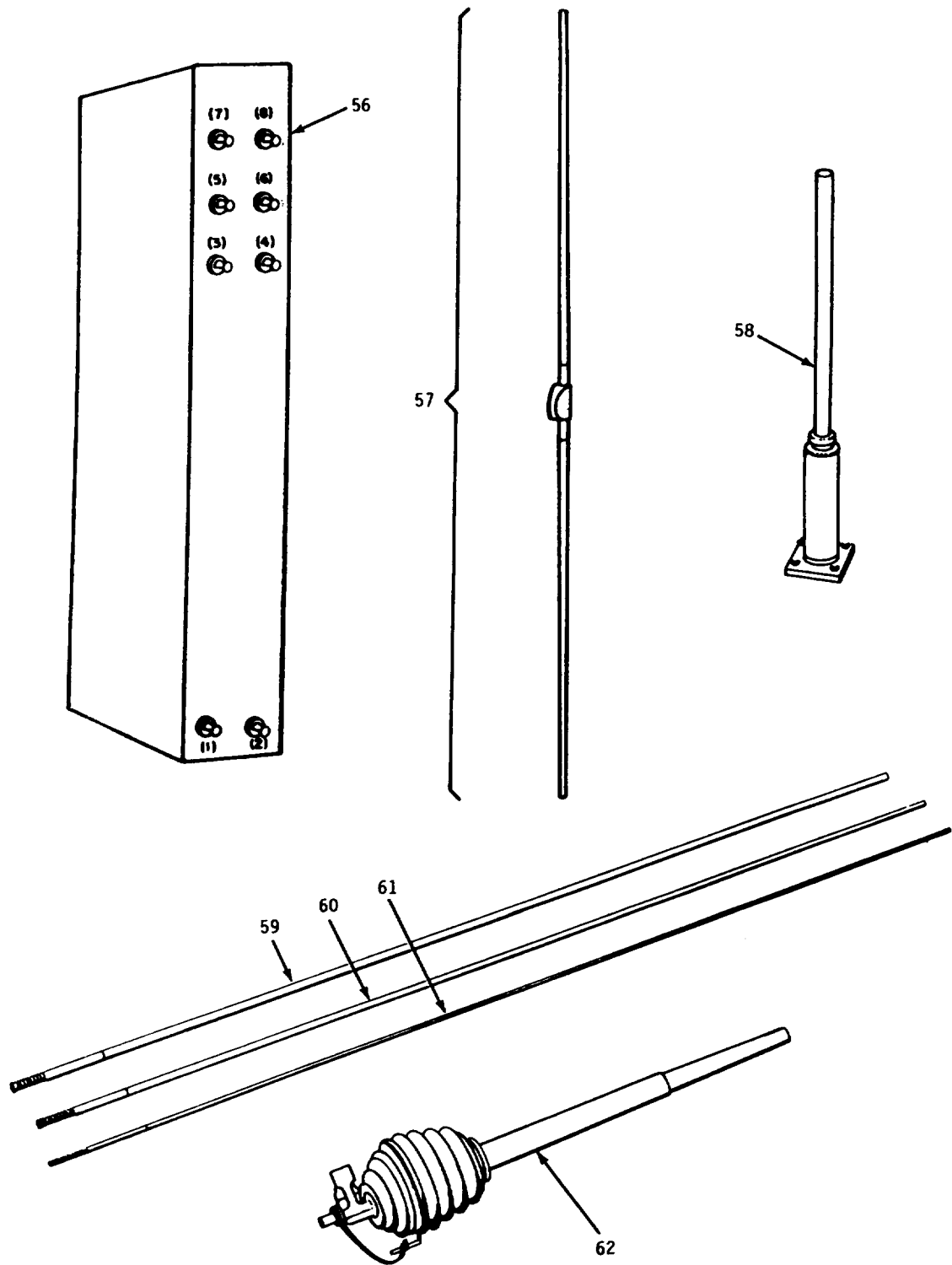
**SECTION II.
COMPONENTS OF END ITEM (CONT)**

(1) ILLUS NO	(2) NATIONAL STOCK NUMBER	(3) DESCRIPTION FSCM AND PART NUMBER	(4) USABLE ON CODE U/M	(5) QTY
50	5985-01-274-8935	Antenna Group OE-356/TRQ-32(V) C5139845-1		
51	5811-01-167-8442	Base Assembly Antenna C5114145-1	ea	1
52	5895-01-171-3474	Assembly, Mast Crown C5114139-1	ea	1
53	5865-01-084-0421	Converter, Magnetic Field CV-3579/TSQ	ea	1
54	5811-01-162-2447	Processor Radio Freq (57958) MX-10526/TRQ-32(V)	ea	1
55	5895-01-179-0671	Gearbox, Reducer (57958) C5114171-1	ea	1



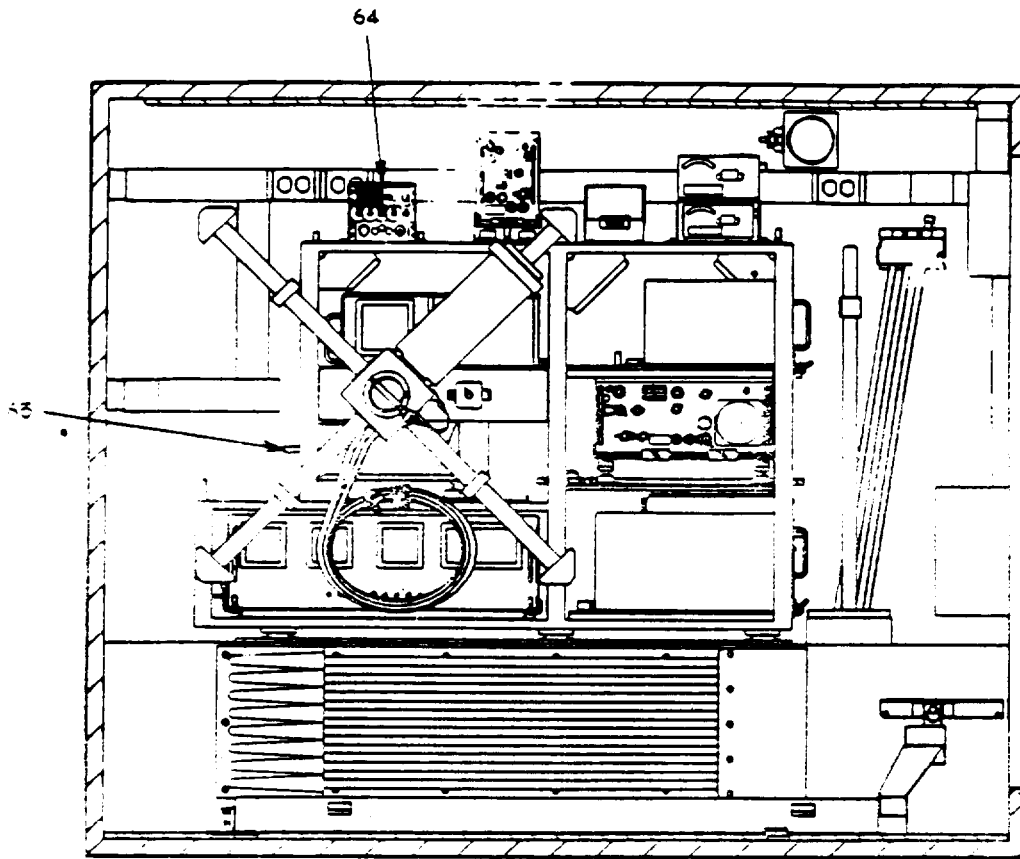
**SECTION II.
COMPONENTS OF END ITEM (CONT)**

(1) ILLUS NO	(2) NATIONAL STOCK NUMBER	(3) DESCRIPTION FSCM AND PART NUMBER	(4) USABLE ON CODE u/M	(5) QTY
56	6130-01-163-6149	Power Supply Antenna (04879) TL-3129	ea	1
57	5811-01-162-2451	Antenna AS-3660/TRQ-32(V)	ea	1
58	5811-01-162-2450	Antenna (57958) AS-3661/TRQ-32(V)	ea	1
59	5985-00-199-8831	Antenna Element (80063)MS-116A	ea	2
60	5985-00-155-7149	Antenna Element (80063)MS-117A	ea	2
61	5985-00-238-7474	Antenna Element (80063)MS-118A	ea	2
62	5895-00-221-5544	Mast Base, (80063)AB-15/GR	ea	2

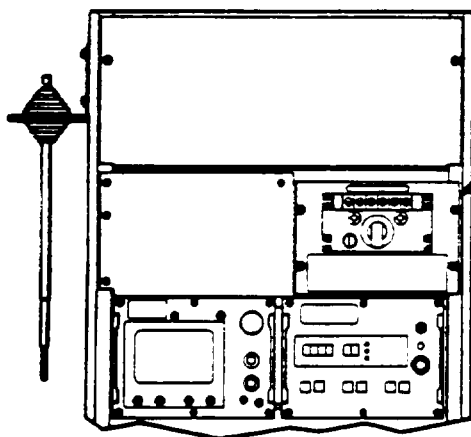


**SECTION II.
COMPONENTS OF END ITEM (CONT)**

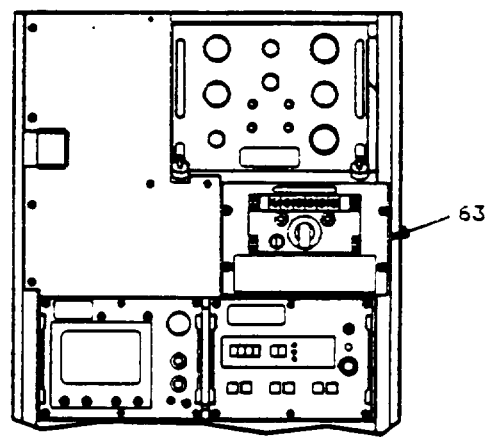
(1) NO	(2) NATIONAL STOCK NUMBER	(3) DESCRIPTION FSCM AND PART NUMBER	USABLE ON CODE	(4) U/M	(5) QTY
63	5811-01-164-6261	Intercom, Cont. (81349)5048981-1		ea	2
64	5821-01-070-4433	Control Head, Radio (80063)C10547/ARC-164	U68	ea	1
65	5821-01-122-7094	Receiver-Transmitter, Radio, RT-1288AARC-164(V)16	U68	ea	1



RACK 4



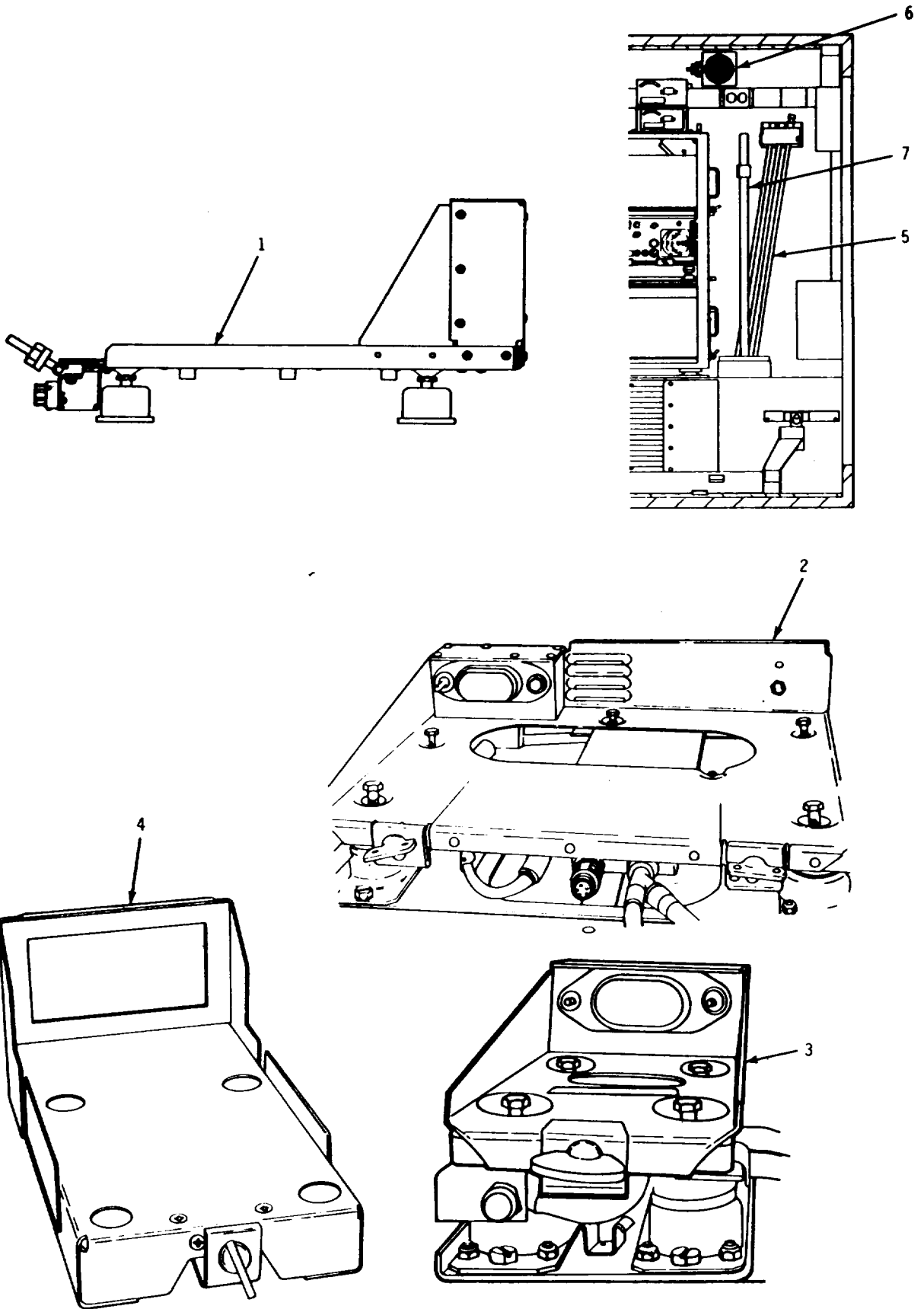
RACK 1



RACK 3

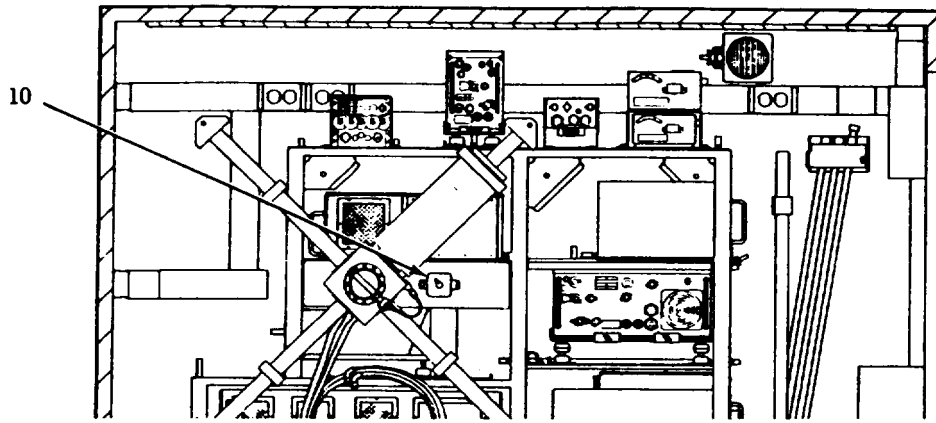
SECTION II.
COMPONENTS OF END ITEM (CONT)

(1) ILLUS NO	(2) NATIONAL STOCK NUMBER	(3) DESCRIPTION FSCM AND PART NUMBER	(4) USABLE ON CODE U/M	(5) QTY
1	5975-01-258-8013	Mounting Base, Elect. Equip. MT-6017A/ARC-164(V)	ea	1
2	5820-00-893-1323	Mounting Base, Elect. Equip. MT-1029NRC	ea	1
3	5820-00-893-1324	Mounting Base, Elect. Equip. MT-1898/VRC	ea	1
4	5810-01-057-6524	Mounting Base, Elect. Equip. MT-4626/VRC	ea	1
5	5975-00-878-3791	Ground Rod Assembly (82370)HW-E0089-001	ea	1
6	5965-00-876-2375	Loudspeaker (80063) LS-454/U	ea	1
7	5120-00-251-4489	Hammer, Hand (77348)GGG-H-86	ea	1

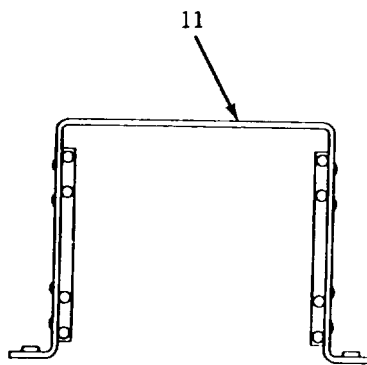
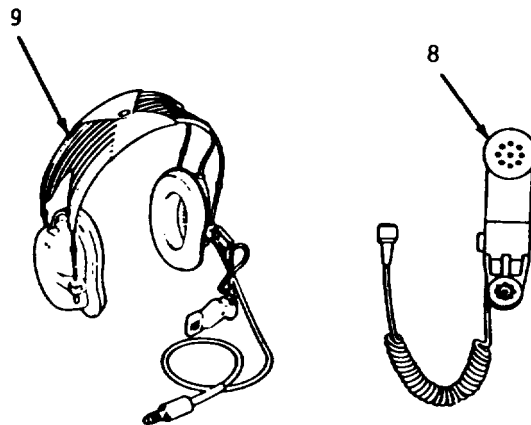


**SECTION III.
BASIC ISSUE ITEM (BII) (CONT)**

(1) NO	(2) NATIONAL STOCK NUMBER	(3) DESCRIPTION FSCM AND PART NUMBER	(4) USABLE ON CODE U/M	(5) QTY
8	5965-00-043-3463	Handset H-250/U	ea	1
9	5965-00-755-4656	Headset H-157/AIC	ea	2
10	5810-01-063-2875	Switch, Audio Frequency (81349) SA-2171/VRC	ea	1
11	NYA	Mounting Base, Control Head ARC-164	ea	1

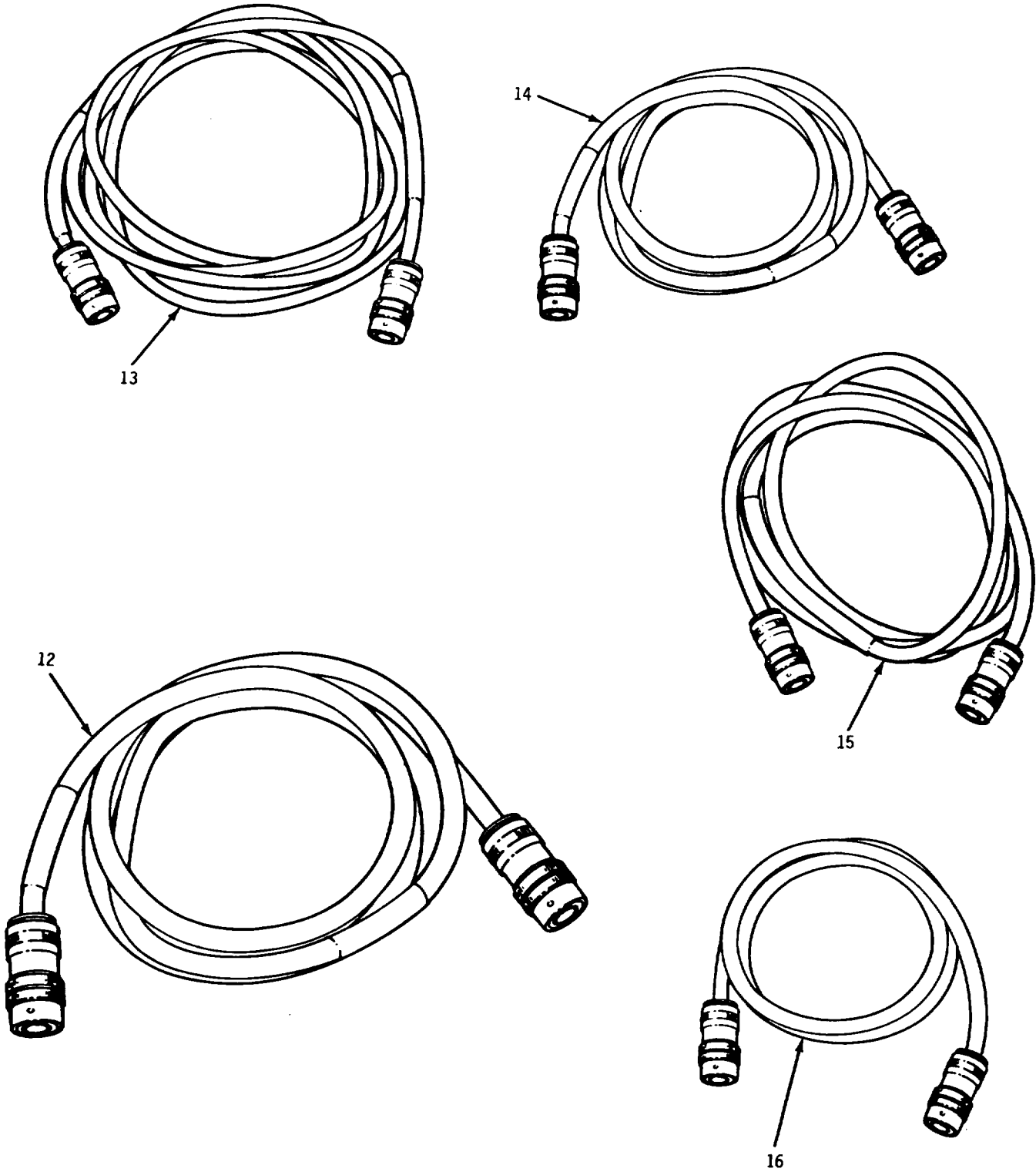


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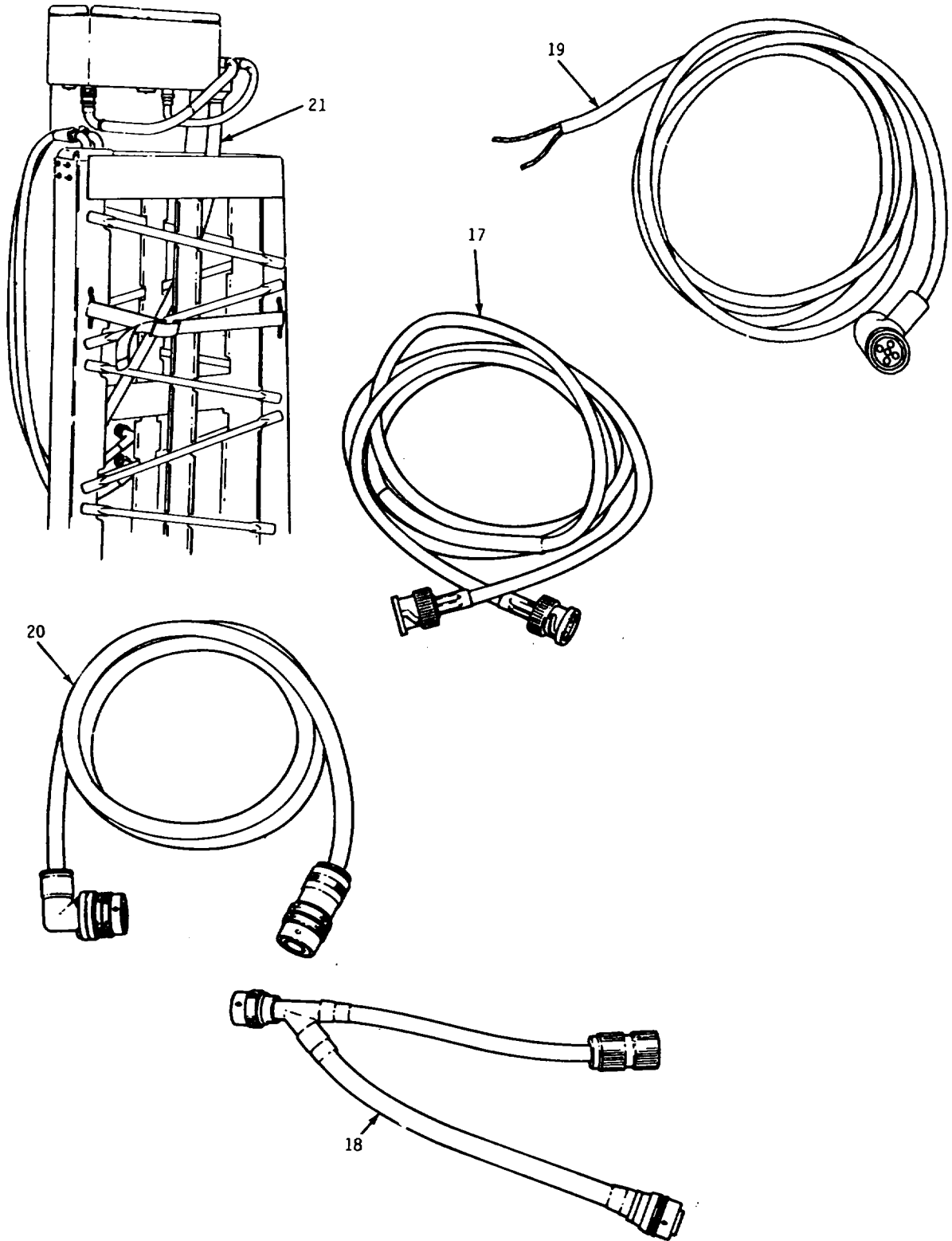
**SECTION III.
BASIC ISSUE ITEM (BII) (CONT)**

(1) NO	(2) NATIONAL STOCK NUMBER	(3) DESCRIPTION FSCM AND PART NUMBER	(4) USABLE ON CODE U/M	(5) QTY
12	5995-00-823-2726	Cable(10'0") CX-4720/VRC	ea	1
13	5995-01-058-4521	Cable(7'0') CX-13063/U	ea	1
14	5995-01-059-7113	Cable(4'0") CX-13063/U	ea	1
15	5995-01-044-4682	Cable(5'0n) CX-13067/U	ea	1
16	5995-01-057-0452	Cable(4'0") CX-13061/U	ea	1



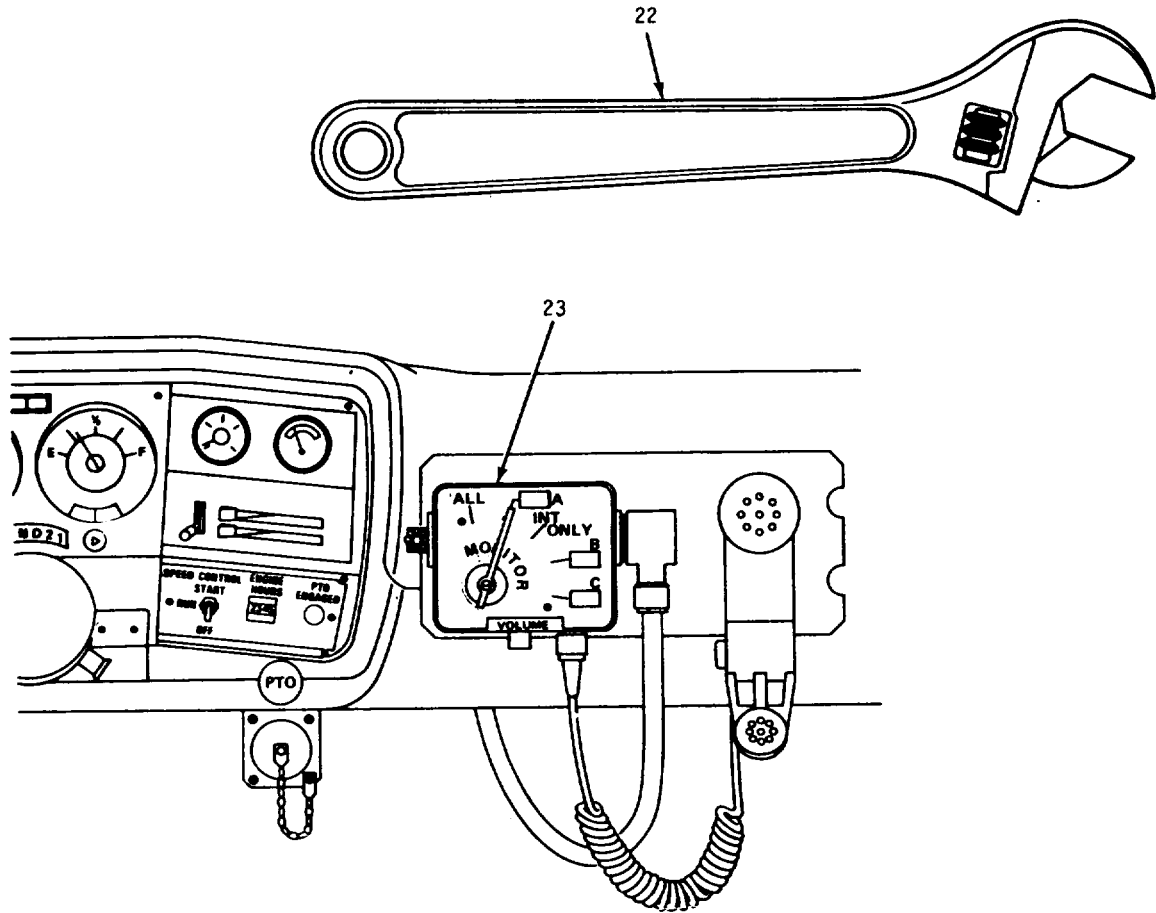
**SECTION III.
BASIC ISSUE ITEM (BII) (CONT)**

(1) NO	(2) NATIONAL STOCK NUMBER	(3) DESCRIION FSCM AND PART NUMBER	(4) USABLE ON CODE U/M	(5) QTY
17	NYA	Cable(4'0") C5132664-1	ea	03
18	5995-01-043-3872	Cable CX-13064/U	ea	1
19	5995-00-832-8945	Cable(5') CG-4720/VRC	ea	1
20	NYA	Cable(5') C5110983-1	ea	1
21	5995-01-167-8445	Cable Assy W22 (57958)C5114156-1	ea	1



**SECTION III.
BASIC ISSUE ITEM (BII) (CONT)**

(1) NO	(2) NATIONAL STOCK NUMBER	(3) DESCRIPTION FSCM AND PART NUMBER	(4) USABLE ON CODE U/M	(5) QTY
22	5120-00-246-3795	Adjustable Wrench GGG-W-631	ea	1
23	5830-00-829-3339	Intercom Cont. C-2298/VRC	ea	1



C**ADDITIONAL
AUTHORIZATION LIST****SECTION I.
INTRODUCTION****C-1. SCOPE**

This appendix lists additional items authorized for the support of the Radio Receiving Set.

C-2. GENERAL

This list identifies items that do not have to accompany the Radio Receiving Set and that do not have to be turned in with it. These items are all authorized to you by CAT, MTOE, TDA, or JTA.

C-3. EXPLANATION OF LISTING

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

**SECTION II.
ADDITIONAL AUTHORIZATION LIST**

(1) NATIONAL STOCK NUMBER	(2) DESCRIPTION FSCM AND PART NUMBER USABLE ON CODE	(3) U/M	(4) QTY AUTH
5810-01-068-3693	Elec. Key Generator, TSEC/KG-84 or TSEC/KG-84A U68	ea	1
5820-00-223-7434	Radio Set, AN/VRC-47 Consisting of:		
5895-00-985-9024	Antenna, (80058)AS-1729/VRC	ea	1
5820-00-892-0624	Receiver, Radio R-442A/VRC	ea	1
5820-00-892-0622	Receiver-Transmitter RT-524A/VRC	ea	1
5810-00-434-3640	Speech Security Equipment, TSEC/KY-57	ea	1
5805-00-543-0012	Telephone, (81349)TA-312/PT	ea	1
2320-01-158-0820	Vehicle, Cargo M-1028A1	ea	1

D**EXPENDABLE SUPPLIES
AND MATERIALS LIST****SECTION I.****INTRODUCTION****D-1. SCOPE**

This appendix lists expendable supplies and materials you will need to operate and maintain the Receiving Set. These items are authorized to you by CTA 50-970, Expendable Item (Except Medical, Class V, Repair Parts, and Heraldic Items).

D-2. EXPLANATION OF COLUMNS.

a. Column 1- Item number. This number is assigned to the entry in the listing and is referenced to the narrative instructions to identify the material (e.g., "Use" cleaning compound, item 5, App. D").

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

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

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

d. Column 4 - Description. Indicates the Federal item name and, if required, a description to identify the item. The last item for each item indicates the Federal Supply Code for Manufacturer (FSCM) in parentheses followed by the part number.

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

SECTION II.
EXPENDABLE SUPPLIES AND MATERIALS LIST

(1) ILLUS NO	(2) LEVEL	(3) NATIONAL STOCK NUMBER	(4) DESCRIPTION, PART NO. AND FSCM	U/M
1	CO	6850-00-105-3084	Cleaning Compound, Freon TF (TRICHLOROTRIFLUOROETHANE)	OZ
2	CO	8305-00-267-3015	Cloth; Cheese Cloth, Cotton, Lintless	YD
3	CO	6810-00-264-6715	Grease; Molybdenum Disulfide (81349) MIL-M-7866C	LB
4	CO	9150-00-261-8317	HYDRAULIC FLUID	5 GAL
5	CO	9150-00-183-7807	Oil, Engine Lubricating (81349) MIL-L-2104	QT
6	CO	9150-00-231-9062	Oil, General Purpose, Lubrication (81348) FED-VV-L-800	QT
7	CO	7530-01-120-3695	Paper, Thermal Printing (37695) 347625-2	Roll
8	CO	6850-00-880-7616	Lubricant, Silicone Compound (81349) MIL-F-8660	Tube

SUBJECT INDEX

SUBJECT	PAGE NUMBER
A	
Abbreviations and Acronyms, List of	1-6
Additional Authorization Lisa	C-1
AN/TRQ-32(V) Basic Block Diagram	1-21
Audio Frequency Switch:	
Location	2-56
Functions	2-56
B	
Basic Block Diagram, AN/TRQ-32(V)	1-21
Basic Issue Items List...	B-1
BITE Description	3-2
Built-In Tests, Perform.. . . .	2-162
C	
Carbon Monoxide Warning	i i
Capabilities and Features, Equipment	1-7
Caution Panel:	
Location	2-34
Functions	2-34
Cleaning	3-24
Components of End Item List	B-1
Controls, Indicators, and Connectors, Operator's, Description and Use of	2-2
Coordinates,	2-3
Cross Reference List, Nomenclature	1-2
D	
Data link Processor:	
Location	2-57
Functions	2-57
Data, Technical	1-18
Datum List, Local	2-122 2-205
DC Power Selection Panel:	
Location	2-6
Functions	2-6
Description and Use of Operator's Controls, Indicators, and Connectors:	
General	2-2
Site Selection	2-2
UTM Coordinates	2-3
Power Distribution Controls, Indicators, and Connectors	2-3
Shelter Environmental Controls and Indicators	2-8
Equipment Controls, Indicators, and Connectors	2-11

D (CONT)

Deployed Operation 2-140
 Deployed Operation With Long Range Antennas Warning i
 Decontrol Unit Bite Test 3-2
 Differences Between Models 1-16
 Dimensions and Weights 1-17
 Disk Drive Control:
 Location 2-52
 Functions 2-52

E

Elevation, Exterior Curbside. 1-11
 Elevation, Interior Curbside. 1-10
 Elevation, Exterior Forward 1-15
 Elevation, Exterior Rear 1-13
 Elevation, Exterior Roadside. 1-9
 Elevation, Interior Forward 1-14
 Elevation, Interior Rear 1-12
 Elevation, Interior Roadside. 1-8
 Emergency Procedures 2-207
 End Item List, Components of. B-1
 Equipment Checkout 2-108
 Equipment Description:
 Capabilities-and Features 1-7
 Differences Between Models 1-16
 Equipment Data 1-17
 Location and Description of Major Component. 1-8
 Equipment, How to Locate 2-4
 Equipment Improvement Recommendations (EIR), Reporting. 1-2
 Equipment Initialization 2-66
 Equipment Rack 1:
 Location 2-12
 Equipment Rack 2:
 Location 2-32
 Equipment Rack 3:
 Location 2-13
 Equipment Rack 4:
 Location 2-42
 Errors and Recommending Improvement v
 Expendable Supplies and Materials List D~1
 Exterior Curbside Elevation 1-11
 Exterior Forward Elevation 1-15
 Exterior Rear Elevation 1-13
 Exterior Roadside Elevation 1-9

F

Forms, Records, and Reports, Maintenance 1-1

G

General Information 1-1
 Glossary 1-7
 Guard Receiver:
 Location 2-46
 Functions 2-47

H

Hand Receipt	1-2
Hard Disk Drive:	
Location	2-53
Functions	2-53
HC/AC Control Panel:	
Location	2-8
Functions	2-8
How to Locate Your Equipment	2-4

I

Intercom Control Panel:	
Location	2-14
Functions	2-15
Interior Curbside Elevation	1-10
Interior Forward Elevation	1-14
Interior Rear Elevation	1-12
Interior Roadside Elevation	1-8
Introduction	1-1

K

KG-84 or KG-84A Removal and Replacement	3-19
KY-57 Removal and Replacement	3-15

L

List of Abbreviations and Acronyms	1-6
Local Datum List	2-122
	2-205
Location and Description of Major Components	1-8
Lubrication Instructions	3-1

M

Main Menu Selections	2-153
Maintenance Forms, Records, and Reports	1-1
Maintenance Instructions:	
Lubrication Instructions	3-1
Troubleshooting Procedures	3-1
Maintenance, Preventive Checks and Services	2-59
Maintenance Procedures:	
Cleaning	3-24
KY-57 Removal and Replacement	3-15
KG-84 or KG-84A Removal and Replacement	3-19
Paper Replacement	3-10
Major Components, Location and Description of	1-8
Manual Mode Operation	2-142
Mobile Operation	2-65
Movement, Preparation for	2-164

N

Netted Mode Operation	2-144
Nomenclature Cross Reference List	1-2

O

Operation:	
Emergency Procedures	2-207
Equipment Initialization	2-66
Manual Mode	2-144
Mobile	2-65
Netted Mode	2-144
Stationary	2-65
Under Unusual Conditions	2-198
Under Usual Conditions	2-65
Operator Control Pane	
Location	2-16
Functions	2-17
Test	3-2
Operator Terminal:	
Location	2-26
Failure	2-208
Functions	2-27
Menu Descriptions	2-146
Operator's Controls, Indicators, and Connectors,	
Description and Use of	2-2

P

Perform Built-In Tests	2-162
Power Distribution Controls, Indicators, and Connectors	2-3
Power Distribution Panel:	
Location	2-7
Power Entry Panel:	
Location	2-5
Power Requirements	1-18
Power Switch:	
Location	2-28
Functions	2-28
Preparation For Movement	2-164
Preventive Maintenance Checks and Services	2-59
PMCS Table	2-59
Principles of Operation, Technics	1-20
Printer:	
Location	2-33
Functions	2-33
Paper Replacement	3-10
Receiver Control Unit :	
Location	2-18
Functions	2-19
Programming	2-140

R (CONT)

Recorder:	
Location	2-40
Functions	2-40
References	A-1
Remote Radio Control:	
Location	2-58
Functions	2-58
Reporting Equipment Improvement Recommendations (EIR)	1-2
Reporting Errors and Recommending Improvements	v
RF Distribution Unit:	
Location	2-29
Functions	2-29
R/T524A/VRC:	
Location	2-50
Functions	2-50

S

Shelter Environmental Controls and Indicators:	
Location	2-8
Functions	2-8
Shelter Equipment Troubleshooting	3-3
Signal Display Unit:	
Location	2-30
Functions	2-31
Signal Entry Panel:	
Location.....	2-11
Site Selection	2-2
Stationary Operation	2-65
Supplies and Materials List, Expendable	D-1
System Controller:	
Location	2-36
Functions	2-37
Operation	2-199
System Operational Configuration	2-65
System Power Supply:	
Location	2-54
Functions	2-55

T

Table, PMCS	2-59
Technical Data	1-18
Technical Principles of Operation	1-20

T (CONT)

Troubleshooting Procedures:

- BITE Description 3-2
- BITE Oscillator Obtest. 3-3
- DF Control Unit BITE Test. 3-2
- Shelter Equipment 3-3
- Troubleshooting Table 3-3

TSEC/KY-57:

- Removal and Replacement.. 3-15

TSEC/KG-84 or TSEC/KG-84A:

- Removal and Replacement. 3-19

U

UHF Bandpass Filter:

- Location 2-48
- Functions 2-48

UHF Radio Control:

- Location 2-44
- Functions 2-44

UTM Coordinates 2-3

V

Ventilation warning ii

VHF Bandpass Filter:

- Location 2-49
- Functions 2-49

W

Warning, carbon monoxide ii

Warning, deployed operation with long range antennas ii

Warning, ventilation ii

Weights, and Dimensions 1-17

Z

Zeroize disk drive cartridge 2-207

By Order of the Secretary of the Army:

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PAGE NO.	PARA GRAPH	FIGURE NO.	TABLE NO.
1-6	3h.		
3-4		3	

This paragraph is totally wrong. The switch settings for this radio are to be for VHF operation. All switch settings are presently set for UHF operation.

Recommend RW/B switch is set to the ON position.

illustration needs a side view also. Callouts must be added to existing illustration.

SAMPLE

TEAR ALONG DOTTED LINE

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