

PRC1088-MSOP

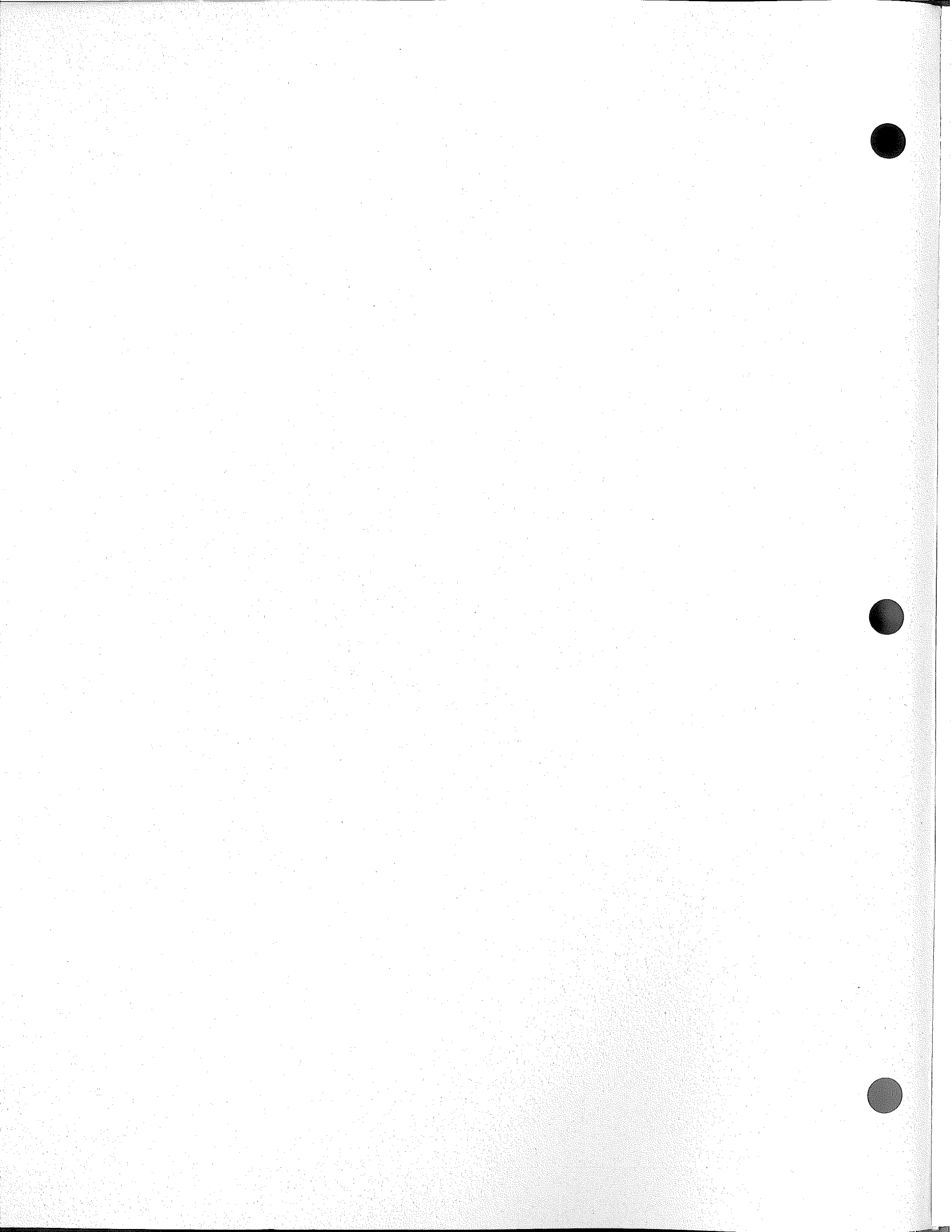
PRC1088
VHF ECCM/COMSEC RADIO SET
OPERATOR'S MANUAL

DATRON

DATRON WORLD COMMUNICATIONS INC.

Manual Part No. PRC1088-MSOP
Publication # 990601
Printed: July 1996
Revision: B

Datron World Communications Inc.
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One Year Limited Warranty and Remedies

Datron World Communications Inc. (DWC) warrants that its equipment is free from defects in design, materials and workmanship for a period of 12 months from the date of installation of the equipment, but in no event later than 15 months from the date of shipment. If the equipment does not provide satisfactory service due to defects covered by this warranty, DWC will, at its option, replace or repair the equipment free of charge.

Should it be impractical to return the equipment for repair, DWC will provide replacements for defective parts contained in the equipment for a period of 12 months from the date of installation of the equipment, but in no event later than 15 months from the date of shipment.

This warranty is limited to the original purchaser and is not transferable. Repair service performed by DWC is warranted for the balance of the original warranty or 90 days, whichever is longer.

Exclusive Warranty: There are no other warranties beyond the warranty as contained herein. No agent, employee, or representative of DWC has any authority to bind DWC to any affirmation, representation, or warranty concerning the equipment or its parts that is not in conformity with the warranties contained herein. EXCEPT AS EXPRESSLY SET FORTH ABOVE, NO OTHER WARRANTIES, EITHER EXPRESS OR IMPLIED, ARE MADE WITH RESPECT TO THE EQUIPMENT OR THE PARTS CONTAINED THEREIN, INCLUDING BUT NOT LIMITED TO THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE, AND DWC EXPRESSLY DISCLAIMS ALL WARRANTIES NOT STATED HEREIN.

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- Damage to the equipment or its parts caused by lightning, static discharge, voltage transients, or application of incorrect supply voltages.
- Defects or failures caused by unauthorized attempts to repair or modify the equipment.
- Defects or failures caused by Buyer abuse or misuse.

Return of Equipment - Domestic: To obtain performance of any obligation under this warranty, the equipment must be returned freight prepaid to the Customer Service Department. Datron World Communications Inc., 304 Enterprise Street, Escondido, California 92029. The equipment must be packed securely. DWC shall not be responsible for any damage incurred in transit. A letter containing the following information must be included with the equipment.

- a. Model, serial number and date of installation;
- b. Name of dealer or supplier of the equipment;
- c. Detailed explanation of problem;
- d. Return shipping instructions; and
- e. Telephone or fax number where buyer may be contacted.

DWC will return the equipment prepaid by United Parcel Service, Parcel Post, or truck. If alternate shipping is specified by Buyer, freight charges will be made collect.

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- a. Return the parts prepaid to "Parts Replacement" Datron World Communications Inc., 304 Enterprise Street, Escondido, California 92029; and
- b. Include a letter with the following information:
 1. part number;
 2. serial number and model of equipment; and
 3. date of installation.

Parts returned without this information will not be replaced. In the event of a dispute over the age of the replacement part, components date-coded over 24 months previously will be considered out of warranty.

Remedies: Buyer's sole remedies and the entire liability of DWC are set forth above. In no event will DWC be liable to buyer or any other person for any damages, including any incidental or consequential damages, expenses, lost profits, lost savings, or other damages arising out of use of or inability to use the equipment. 1/96

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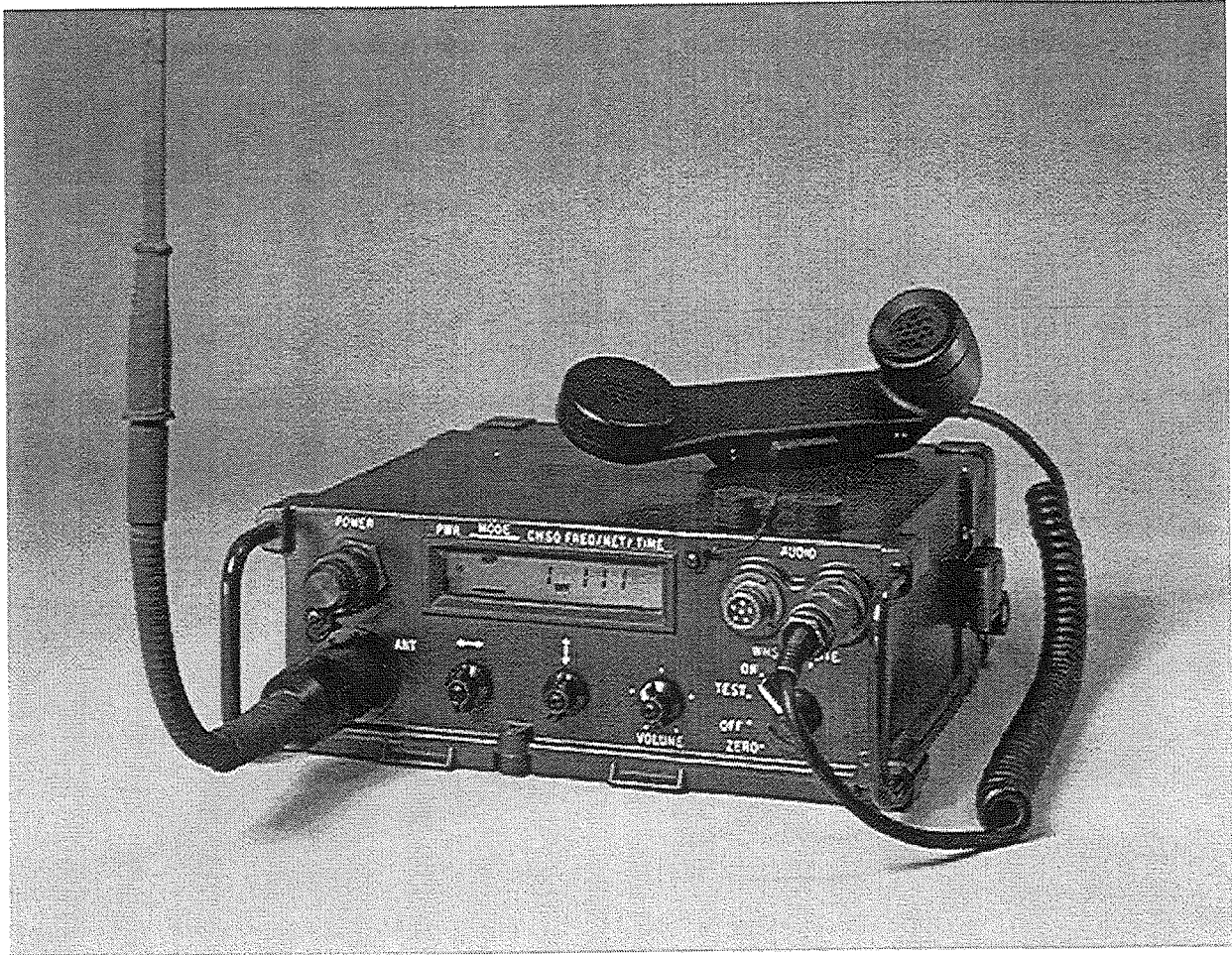


FIGURE 1
PRC 1088 Tactical VHF-FM Radio Set.

CHAPTER 1: INTRODUCTION

1.1 Introduction

The PRC1088 tactical VHF-FM radio set is a state-of-the-art manpack or vehicular radio set with COMSEC (SECure) and/or Electronic Counter-Counter Measures (ECCM) capabilities. The PRC1088 radio set (herein referred to as radio set) consists of the equipment listed in the table below.

TABLE 1-1
PRC1088 Test Equipment.

<u>EQUIPMENT</u>	<u>DESCRIPTION</u>
PRC1088	ECCM/Secure Transceiver
PRC1088H	ECCM Transceiver
PRC1088NH	Non ECCM/Non-Secure Transceiver
AT892BB	VHF Broadband Antenna (blade)
AT271BB	VHF Broadband Antenna (whip)
CY-2562/PRC-25	Battery Box
MT1088	Vehicular Power Supply/Adapter

All controls for the radio set are on the front panel of the PRC1088 transceiver (herein referred to as transceiver) and have been designed for ease of operation and minimal operator training. The radio set provides voice reception and transmission at a transmit power level of .25 or 5 watts. When the radio set is installed in the MT1088 vehicular power adapter, the transmit power level is increased to 50 watts.

The PRC1088 radio set has two main modes of operation: fixed frequency (NO HOP) and frequency hopping (HOP). The remaining selectable modes—channel scanning (SCAN), net control station (NCS), time (TIME), and COMSEC (SEC)—are used in conjunction with either fixed frequency or frequency

hopping. Channel scanning is used in conjunction with fixed frequency. Net control station and time are used in support of frequency hopping. COMSEC is selectable in either fixed frequency or frequency hopping.

- **PRC1088H**

This radio set has all the modes of operation as the PRC1088, but does not contain a COMSEC (secure) capability.

- **PRC1088NH**

This radio set is a fixed-frequency version of the PRC1088 and does not contain the HOP, TIME or SEC modes. The radio set does, however, still retain SCAN and BIT capability.

A feature of the radio set is the Built In Test (BIT) which provides fault isolation to the module level and identifies low battery power and antenna faults. Operational status of the radio set is provided to the operator by a liquid crystal display (LCD).

1.2 Modes of Operation

Modes of operation for the radio set are as follows.

- NO HOP (Fixed frequency) provides 2320 channels at 25 KHz spacing from 30 to 87.975 MHz. These may be selected manually or loaded* into one of nine operator-selectable preset channels.
- SCAN (Channel scanning) provides frequency scanning in NO HOP only and is compatible with VHF-FM radio sets with 150 Hz tone squelch. The radio set scans four preset channels: one channel as selected by the operator, plus three additional channels — 7, 8, and 9.
- HOP (Frequency hopping) provides 800 net identifiers (000 to 799) that may be selected manually or loaded* into one of nine selectable preset channels for frequency hopping with other PRC1088 radio sets. Frequency hopping provides ECCM capability for

communications defense (jammer evasion) against opposing forces electronic warfare activities.

- NCS is utilized only in the HOP mode. One radio set within each net is designated NCS and will have NCS selected on its display. Each time the NCS transmits, it automatically maintains time within the net.
- TIME displays the time and provides the means to transfer time from one radio set to another. The proper time is necessary in all radio sets to establish a frequency hopping net.
- SEC provides voice encrypted transmission and reception. Key information is loaded* into any of the nine preset channels. When in the SEC mode, it is still possible to receive a nonencrypted transmission.

* May be loaded either manually by the operator or automatically by the KF1088 programmable keyfill device.

NOTE: When keyfilling from a KF1088 programmable keyfill device, ensure that the PRC1088 is switched off.

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CHAPTER 2: OPERATION, MANPACK

2.1 Controls, Indicators, and Connectors

The operating controls, indicators, and connectors (except for input power from the battery) are located on the front panel of the PRC1088 transceiver.

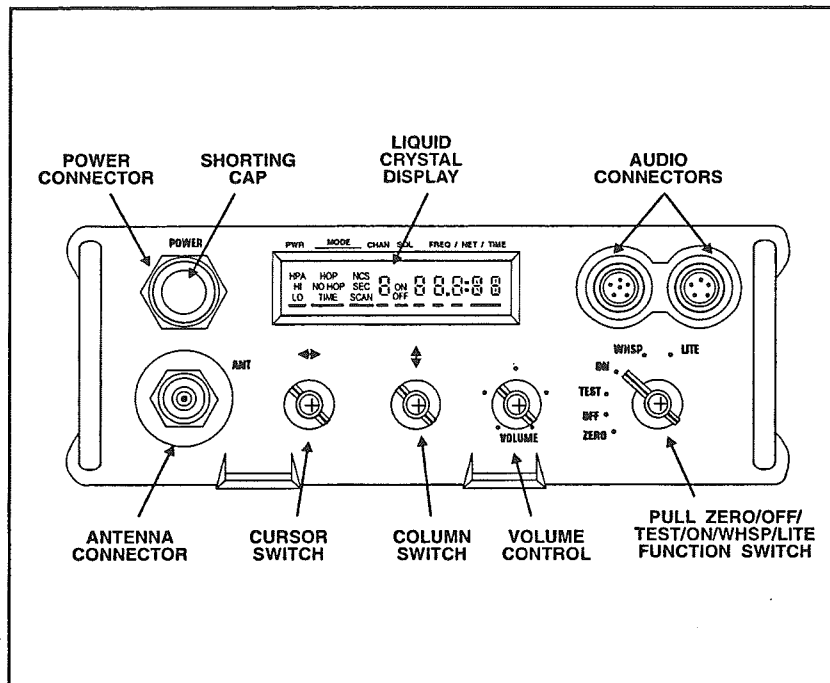


FIGURE 2-1
PRC1088 Front-Panel Controls.

- **“POWER” Connector**

Provides the power interface for the transceiver and the audio interface for intercom systems when installed in a vehicle. Also provides data interface for 16 kb/s data.

- **Shorting Cap**

Straps battery-pack power into the receiver-transmitter. Must be attached in the manpack configuration.

- **Liquid Crystal Display (LCD)**

Displays "PWR," "MODE," "CHAN," "SQL," and "FREQ/NET/TIME" with function switch in "ON" position, and fault information when function switch is in "TEST" position. Displays battery and transceiver faults in the "NO HOP," "HOP," and "TIME" modes.

- **"AUDIO" Connector**

Six-pin connector for interfacing external audio device. Provides transmit-audio in, receive-audio out, retransmit, and Push To Talk (PTT) key lines, and current-limited +12 V out for external accessories. A parallel connection is also provided.

- **Pull "ZERO"/"OFF"/"TEST"/"ON"/"WHSP"/"LITE" Function Switch**

Permits the operator to select one of three functions ("OFF," "TEST," "ON" or "WHISPER") with a spring loaded "LITE" position for illumination of the display, and a spring loaded Pull "ZERO" position to zeroize preset channels, ECCM fill information, and encryption keys.

- **"VOLUME" Control**

Permits the operator to set the audio output for the most desirable listening level.

- **Cursor Switch**

Permits the operator to move the cursor on the LCD under the function or digit ("PWR," "MODE," "CHAN," "SQL," or "FREQ/ NET/TIME") that requires change.

- **Column Switch**

Permits the operator to change the following functions in each column of the LCD:

- “PWR”

Either “HI,” “LO,” or “HPA” mode.

NOTE: “HPA” is used ONLY in the vehicular configuration.

- “CHAN”

1 through 9, “CHAN” is automatically displayed when “HOP” or “NO HOP” is selected. “CHAN” 0 is used for special functions. (Refer to operating procedures in Sections 2.7.2 and 2.12.1).

- “SQL”

Either “ON” or “OFF.”

- “FREQ/ NET/ TIME”

30.000 through 87.975 when “NO HOP” is selected. 000 through 799 when “HOP” is selected. 100:00 through 723:59 when “TIME” is selected. The first digit displayed is the day. Day 0 is used for special functions (refer to operating procedures in Section 2.10.2). The remaining four digits display time.

- “ANTENNA” Connector

RF input/output connector, for direct mounting of manpack antenna or for connecting coaxial cable.

2.2 Preoperational Procedures

Configure the PRC1088 radio set for operation as instructed in Section 2.2.1.

2.2.1 Installation/Replacement of Battery

- ☒ Set the function switch on the front panel of the transceiver to “OFF.”
 - ☒ Remove the transceiver from its harness by releasing the two holding straps.
-

-
- ✘ Situate the transceiver so that the battery box may be removed.
 - ✘ Release the two latches on the transceiver and remove the battery box.
 - ✘ Carefully pull on the battery until it separates from the base of the transceiver.
 - ✘ Place the new battery in position, being careful to align the socket on the battery with the jack on the base of the transceiver.
 - ✘ Gently push the battery into place.
 - ✘ Replace the battery box and secure it with the two latches on the transceiver.
 - ✘ Remount the transceiver in the harness and tighten the two holding straps.

NOTE: The transceiver may be powered by any 12.5 volt battery that is compatible with the AN/PRC-77 radio set, such as BA-5598/U, BA-5386/U, BA-386/PRC-25, BA4286/U, or BB-LA6 (rechargeable Lead Calcium).

2.2.2 *Installation of Antenna*

- ✘ Ensure the function switch on the front panel of the transceiver is in the "OFF" position.
- ✘ Mount the desired broadband antenna and coupler on the "ANT" connector located on the front panel of the transceiver and rotate the base of the antenna clockwise until it is tight.

2.2.3 *Installation of Handset*

- ✘ Place the handset connector on the "AUDIO" connector located on the front panel of the transceiver. Ensure that the keying on the plug matches the keying on the receptacle. Push and turn the connector clockwise until it snaps into place.
- ✘ To verify configuration and radio set performance, set the function switch to "TEST" and refer to BIT.

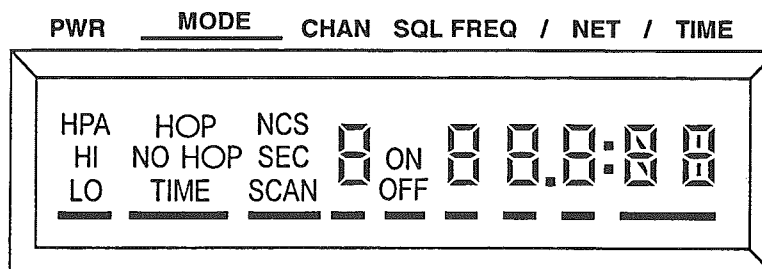
2.3 Built In Test (BIT)

The following is a description of the Built In Test (BIT) function.

2.3.1 Receive

- ▣ Set the function switch to "TEST."

The display shows all segments of the LCD for three seconds.



NOTE: The "SEC" segment is displayed by COMSEC (secure) transceivers only.

If the receiver is operating properly, the word "PASS" will be displayed alternately with the ECCM fill identifier immediately following the three-second period.

NOTE: Information on the left side of the display is not relevant to BIT but is merely information retained by the memory of the transceiver.

If a fault is detected, the LCD will display faults in the following manner:

"FAULT" is displayed alternately with the indicated fault (example: FAULT, BAT, FAULT.....).

MESSAGE	FAULT CONDITION	ACTION
"BAT FAULT"	Battery voltage is less than 10 Vdc.	Replace battery.

MESSAGE	FAULT CONDITION	ACTION
"RT FAULT"	Transceiver is degraded/inoperative.	Return for repair.

2.3.2 Transmit

If the PTT button on the handset is pressed while in the TEST mode, the transmit section will be checked.

The LCD will display the word "PASS" alternately with the ECCM fill identifier if no fault is detected.

If a fault is detected, the LCD will display faults in the following manner:

"FAULT" is displayed alternately with the indicated fault (example: FAULT, BAT, FAULT.....).

MESSAGE	FAULT CONDITION	ACTION
"BAT FAULT"	Battery is less than 10 Vdc.	Replace battery.

MESSAGE	FAULT CONDITION	ACTION
"ANT FAULT"	Antenna is inoperative.	Check physical condition of antenna and replace if necessary.

MESSAGE	FAULT CONDITION	ACTION
"RT FAULT"	Transceiver is inoperative.	Return for repair.

NOTE: Functions called out in the procedures are selected by using the cursor and column switches. To select a function to be changed, first rotate the cursor switch (↔) to position the cursor under the desired function, either “PWR,” “MODE,” “CHAN,” “SQL,” or “FREQ/NET/ TIME.”

- ✧ Once the cursor is positioned under the desired function, rotate the column switch (↓) to select the desired operation under that function. An example would be to first rotate the cursor switch to position the cursor under the “PWR” function and to then rotate the column switch to select either “HI” or “LO” power.

2.4 Fixed Frequency (NO HOP)

- ✧ Set the function switch to “ON.”
 - ✧ Set “PWR” to “LO.”
 - ✧ Select “NO HOP” mode.
 - ✧ Set “SQL” to “ON.”
 - ✧ Set “CHAN” to “1.”
 - ✧ Use the cursor and column switches to set the desired frequency (30.000 to 87.975 MHz) on the display. This frequency is now loaded in preset channel 1.
 - ✧ Set “CHAN” to “2.”
 - ✧ Use the cursor and column switches to set the next desired frequency (30.000 to 87.975 MHz) for channel 2. This frequency is now loaded in preset channel 2.
 - ✧ To load the remaining seven preset channels (3 through 9), first select the channel (3, 4, 5, 6, 7, 8, 9) to be loaded, then using the cursor and column switches, select the desired frequency (30.000 to 87.975) for each channel as described above.
 - ✧ If, at a later time, a preset frequency needs to be changed, select the channel to be changed and input the new frequency by using the cursor and column switches. Preset channels are stored in memory and are not lost when the radio set is turned off. The preset channels can also be loaded with the KF1088.
-

2.4.1 *Receive*

- ☒ Select the desired channel.
- ☒ Listen to the handset for channel activity and adjust volume control as desired.

2.4.2 *Transmit*

- ☒ Press the PTT button on the handset.
- ☒ Talk in a normal volume with mouth touching handset.
- ☒ Release the PTT button when message is complete.

When communicating with VHF-FM radio sets having a 150 Hz tone squelch, the "SQL" should be set to "ON." This eliminates the loud noise in the handset when no station is being received. If communication is required between the PRC1088 radio set and a radio set that does not have a 150 Hz tone squelch, the "SQL" should be set to "OFF."

"PWR" should be set to "LO" for short-range (less than 1 km (0.62 mi)) communications, and to "HI" for maximum range (8 km (4.97 mi)) communications. Maximum battery life is obtained when "PWR" is set to "LO."

If the operator wishes to manually select an operating frequency, position the cursor under each digit and alter accordingly with the column switch. Any alteration of a particular frequency changes the preset frequency of that channel. Therefore, a list of the preset channels should be kept by the operator in case an alteration of the preset frequencies is required.

2.5 *Channel Scanning (SCAN)*

- ☒ Set the function switch to "ON."
- ☒ Set "PWR" to "HI" or "LO."
- ☒ Select "NO HOP" mode.
- ☒ Verify that preset channels 7, 8, and 9 are loaded with the desired channel frequencies. "SQL" is automatically set to "ON" when the "SCAN" mode is selected.

-
- ✧ Select "CHAN" for the desired preset command (primary operating) channel (1 through 9).
 - ✧ Select "SCAN" mode.

NOTE: The SCAN mode operates with 150 Hz tone squelch.

In the SCAN mode, the selected preset-command channel, along with preset channels 7, 8, and 9, are scanned. When a signal is received, the receiver will lock on that station and remain for three seconds after the station stops transmitting, then resume scanning. During reception on a preset channel other than the command channel, the receiver continues to automatically monitor the command channel. Should activity be detected on the command channel while receiving on a different preset channel, a beeping tone will be heard in the operator's handset once every second. To listen to the command channel, the operator must abort reception on the other preset channel by pressing and releasing the PTT button on the handset. Scan will then retune the radio set to the command channel in the receive mode.

The operator may respond to a preset channel (7, 8, 9) by pressing the PTT button on the handset within three seconds after receiving a message. After transmission, the radio will resume scanning.

The operator may transmit on the command channel at any time while in the SCAN mode. Any time the receiver is scanning or receiving a message with no beeping tone, pressing the PTT button on the handset will cause a transmission on the command channel. If the receiver is within the three-second time out period or receiving a channel with a beeping tone, a second pressing of the PTT button on the handset is required to cause transmission on the command channel. All transmissions on the command channel are preceded with a sidetone beep in the headset. Any change of the display cursor or column switches will abort scan and return the display to the command channel selected prior to scan.

By loading the same frequency in more than one preset channel, it is possible to reduce the number of channels (frequencies) scanned.

2.6 *Frequency Hopping (HOP) - Introduction*

Operation of PRC1088 radio sets in frequency-hopping mode requires the use of net identifiers which are similar to disciplines typically exercised in military communication nets. The net may consist of two or more members, one of which is designated the net controller. The net controller has responsibility for establishing and controlling the communication nets. The procedures for setting up a NO HOP net are the same with PRC1088 radio sets, as they are with any family of fixed frequency radio sets, such as the PRC-77 radio set and the VRC series of equipment. The net controller has the added responsibility of establishing and maintaining net time for the HOP net. In a NO HOP net, all radios must be set up to operate on the same frequency. In a HOP net, all radios must be set up to operate with the same time reference and frequency-hopping pattern. The HOP pattern is determined by the ECCM fill, net identifier, and key number. The proper ECCM fill must be preloaded in the transceiver. Confirmation that the correct fill is contained in the radio is obtained through the fill number displayed in TEST mode as described in Section 2.3. The time reference is the time maintained in each radio by the internal clock.

The procedures for loading the key numbers and net identifiers are given in Sections 2.7.2 and 2.7.1. Key information may be loaded either manually by the operator or automatically by the keyfill device. The net controller is responsible for coordinating the setting of all radio set internal clocks to a common time (net time). Two techniques for setting time in a radio set are available; one is a manual time loading which is similar to setting a watch (Section 2.8) and the other is a procedure for transferring time from one radio set to one or more radio sets through a radio transmission (Sections 2.10 through 2.10.2).

The net controller may use one or both time entry techniques to set time in his radio set and to set the same time in all the radio sets that are to be members of the frequency hopping net.

NOTE: If manual time setting is used, an accuracy of ± 20 seconds must be achieved.

After a HOP net is set up, the net controller must maintain time within the net so that members will not lose communication due to a time error. This can occur if the internal clock is operating too fast or slow and falters over ± 20 seconds. The controller must maintain time throughout the net by setting his radio set in the NCS mode (Section 2.8). The NCS mode can only be selected in HOP mode. Each time the net controller transmits a message, all members receiving that message will automatically receive a time update, which resets their internal clocks. No other action is required to maintain net time.

A non-net member can contact the net controller of the hopping net by transmitting on the assigned page frequency in the fixed frequency mode. An alert signal will be provided to the net controller only in the hopping net and, by switching from HOP mode to NO HOP mode, the net controller can communicate with the non-net member on the page frequency. A non-net member, equipped with a PRC1088 radio set, may request a radio-to-radio time transfer, then by loading the proper net identifier and key number, he can join the hopping net.

2.7 *Frequency Hopping (HOP)*

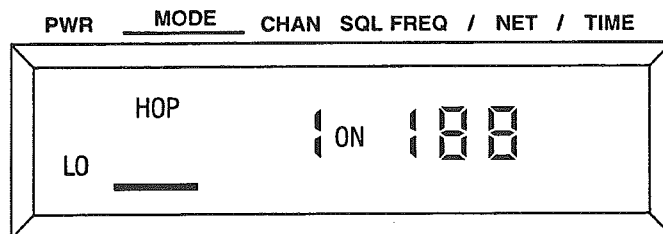
Before PRC1088 radio sets can communicate with each other in the HOP mode, all radio sets must be set up with a common/compatible ECCM fill, a common three-digit net identifier, a common four-digit key number, and common time (within ± 20 seconds).

If a valid ECCM fill has not been loaded, or if the net identifier selected is not defined in the ECCM fill contained in the transceiver, the display will indicate the net identifier alternately with the word "NO."

2.7.1 *Setting Net Identifier*

- ☒ Set the function switch to "ON."
- ☒ Set "PWR" to "HI" or "LO."
- ☒ Select "HOP" mode.
- ☒ Set "CHAN" to "1."
- ☒ Using the cursor and column switches, select the net identifier (000 to 799) for channel 1.
- ☒ Set "CHAN" to "2."
- ☒ Using the cursor and column switches, select the net identifier (000 to 799) for channel 2.

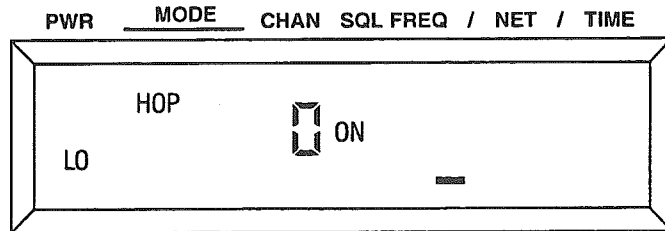
To load the remaining seven channels (3 through 9), first select the channel (3, 4, 5, 6, 7, 8, 9) to be preset, then by using the cursor and column switches, select the net identifier (000 to 799) for each channel. Load the page frequency assigned to each hopping net identifier in the associated fixed frequency preset channel.



2.7.2 *Key Number Loading*

- ☒ Select "HOP" mode.
- ☒ Set "CHAN" to 0. No digits will be displayed on the liquid crystal display when channel 0 is first selected. Shift the cursor "bar" one step to the right.
- ☒ Rotate the cursor and column switches to set the key number (0000 to 9999).

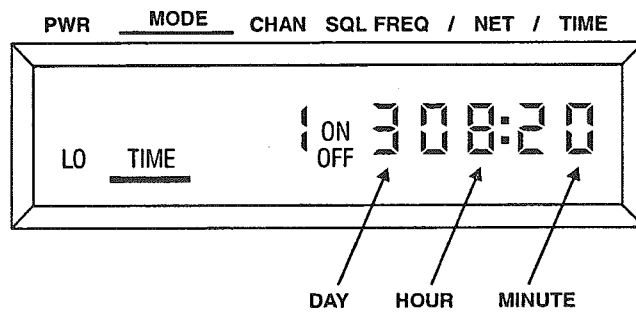
The key number loaded is common for all preset channels (1 through 9). If it is necessary to change the key number, select "HOP" mode, set "CHAN" to 0, and by using the cursor and column switches, load the new key number.



2.7.3 Manual Time Loading

- ☒ Select "TIME" mode.
- ☒ Set day (1 through 7).
- ☒ Set hour (00 through 23).
- ☒ Set minute (00 through 59) to within 1 minute of the desired time.
- ☒ As the time source starts a new minute, rotate the column switch to set the new minute on the radio set. Seconds are reset to 00 automatically every time the minute number changes.
- ☒ The time is now entered in the radio set.

For automatic transfer of time, use the procedure for time in Section 2.10.



2.8 Net Control Station (NCS)

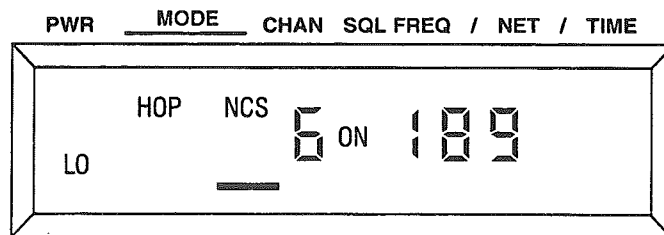
One station within each frequency hopping net is designated the net control station and must have "NCS" mode selected. The NCS has the responsibility of establishing, maintaining and controlling the net.

To establish a net, the NCS may either designate a time source to be manually loaded into the net radio sets (Section 2.7.3) or use the Time procedure (Section 2.10) to automatically transfer NCS time into the net radio sets.

To maintain net time, the NCS must communicate with the net periodically. All non-NCS radio sets will have their time updated when receiving normal HOP communication from the NCS. (This update is automatic and transparent to the operator.) Net time may be maintained for 96 hours without NCS update.

The NCS is the only radio set having the capability to recognize page messages. Refer to the NCS Radio Set Receiving PAGE procedures in Section 2.9.2.

If the NCS receives a transmission from another NCS, or from a net member who has inadvertently selected NCS, a "beep" will precede the message to alert the NCS operator. The time in either NCS radio set will not be updated or altered.



2.8.1 Radio Set in HOP, NCS Mode

- ☒ Set the function switch to "ON."
- ☒ Set "PWR" to "HI" or "LO."
- ☒ Select "HOP" mode.
- ☒ Select "CHAN" 0.
- ☒ Set cursor to mode.
- ☒ Select "NCS" mode with column switch.
- ☒ Select preset channel (1 through 9).
- ☒ Proceed with normal voice communication by pressing the PTT button on the handset to transmit. Release the button to receive.

2.9 Paging a Net Control Station Radio Set (PAGE)

Paging is used by a radio set in NO HOP mode to request communications with the net control station (NCS) of a hopping net.

2.9.1 Radio Set Transmitting PAGE

- ☒ Set the function switch to "ON."
- ☒ Set "PWR" to "HI" or "LO."
- ☒ Select "NO HOP" mode.
- ☒ Select the preassigned page channel.
- ☒ Set "SQL" to "ON" or "OFF."
- ☒ Press the PTT button on the handset for approximately three seconds to initiate paging.
- ☒ Voice communication is not necessary. Allow time for NCS or a designated net member to respond in NO HOP mode. If late net entry is desired, follow the time procedure of Radio Set Requesting/Receiving Time in Section 2.10.2.

NOTE: The page frequency for the net in use must be loaded into the corresponding NO HOP preset channel.

2.9.2 NCS Radio Set Receiving PAGE

The word "PAGE" is observed flashing alternately with the net-identification number on the LCD. A beeping tone (2 KHz) cycles every 12 seconds if "SQL" is set to "ON."

- ✘ Select the "NO HOP" mode to communicate with the other operator on the paging channel.
- ✘ If late net entry is desired by the pager, follow the Radio Set Transmitting Time procedures in Section 2.10.1.

To remove the tone, set "SQL" to "OFF." The word "PAGE" will continue to flash as long as paging activity persists. Pressing the PTT button on the handset overrides the "PAGE" indication while transmitting.

2.10 Time (TIME)

To transfer time in this mode, both the radio set sending time and the radio set or radio sets receiving time must first be set up to operate on the same frequency in NO HOP mode and then switched to TIME mode. This can be done by using fixed-frequency communication or any other available signaling techniques.

2.10.1 Radio Set Transmitting Time

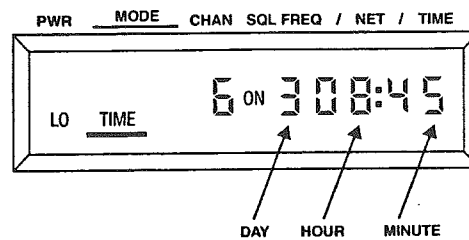
- ✘ Set the function switch to "ON."
- ✘ Set "PWR" to "HI" or "LO."
- ✘ Select "NO HOP" mode.
- ✘ Set to the preassigned frequency.
- ✘ Establish voice communication with time requester.
- ✘ Select "TIME" mode.

NOTE: When the unit is in TIME mode, it will receive TIME mode transmissions only, and will not receive HOP or NO HOP mode communications.

- ✘ Transmit a message to the time requester. The time is automatically updated in the requester's radio set at the end of transmission.
- ✘ Continue voice communication in TIME mode to confirm time was received and coordinate switching to HOP mode.

NOTE: TIME mode is not to be used as a secure transmitting mode.

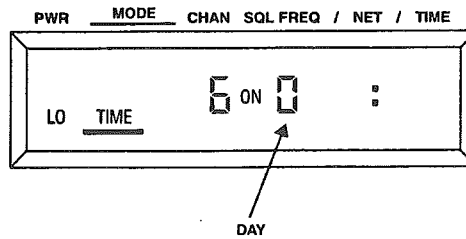
- ✘ Select HOP mode.



2.10.2 Radio Set Requesting/Receiving Time

- ✘ Set the function switch to "ON."
- ✘ Set "PWR" to "HI" or "LO."
- ✘ Select "NO HOP" mode.
- ✘ Set to the preassigned frequency.
- ✘ Establish voice communication and request time update.
- ✘ Select "TIME" mode.
- ✘ Set day to 0. The time display will be blank except for the colon and day 0.
- ✘ Advise the station transmitting time that the radio set is ready to receive. The time will automatically be displayed when received transmission is terminated.
- ✘ Acknowledge to the transmitter that time has been received and coordinate switching to HOP mode.

- ☒ Continued two-way voice communication is possible without changing time in either radio set.
- ☒ Select HOP mode.



2.11 COMSEC (SEC) - Introduction

COMSEC (SEC) mode is selectable in the HOP and NO HOP modes of communication. The radio set may be loaded with up to nine 20-digit encryption keys and their respective key identifiers. An encryption key is associated with each preset channel. Each encryption key has a four-digit identifier for identification purposes and a 20-digit encryption key. After the encryption key is loaded, only the key identifier will be displayed to verify that the right key has been loaded into the desired preset channel.

The encryption keys can be loaded with a fill device or manually from the radio set front panel. Refer to the procedures in Section 2.12.1 for manual loading.

In the secure mode the radio set is capable of receiving encrypted or non-encrypted transmissions. When SECure is not selected, reception of an encrypted transmission is not allowed. Encrypted transmissions are identified by a short tone heard in the handset of both the transmitter and receiver at the beginning of each transmission in all operating modes.

2.12 COMSEC (SEC) Mode

NOTE: Before radio sets can communicate with each other in the SEC mode, they must be set up with identical encryption keys for the communication channel. Refer to the manual procedures in Section 2.12.1 or the keyfill instruction book.

- ☒ Set the function switch to "ON."
- ☒ Set "PWR" to "HI" or "LO."
- ☒ Select "HOP" or "NO HOP" mode.
- ☒ Select "SEC" mode.
- ☒ Select desired "CHAN" (1 through 9).

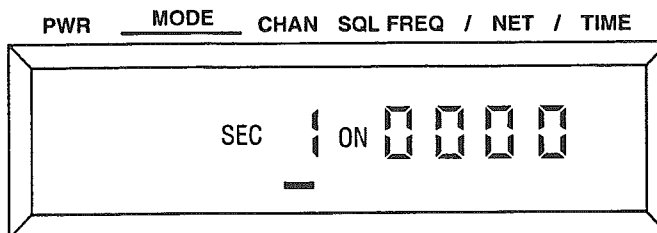
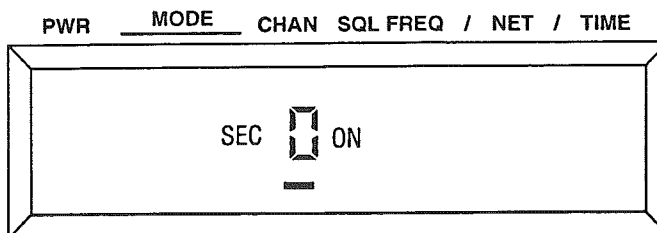
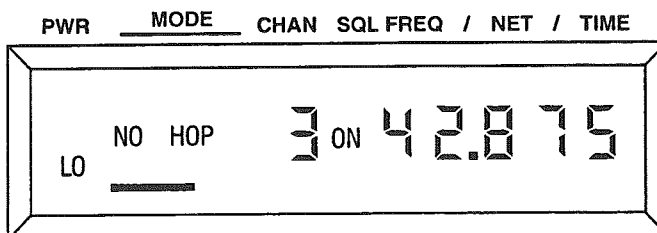
NOTE: With "SEC" selected it is still possible to receive a nonencrypted transmission.

Encrypted transmissions are identified by a short tone in the handset of both transmitter and receiver at the beginning of the transmission.

If an encryption key for a preset channel has not been loaded or the key identifier is all zeros, or the encryption key is all zeros, the display will indicate the channel alternately with the word "NO."

2.12.1 Encryption Key Loading Mode

- ☒ Set the function switch to "ON."

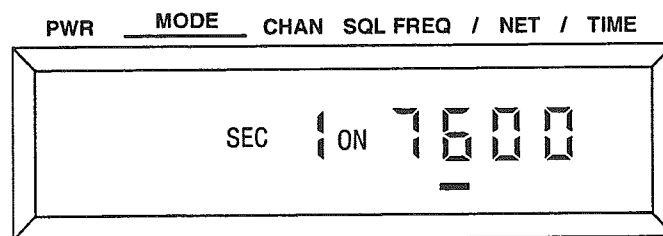
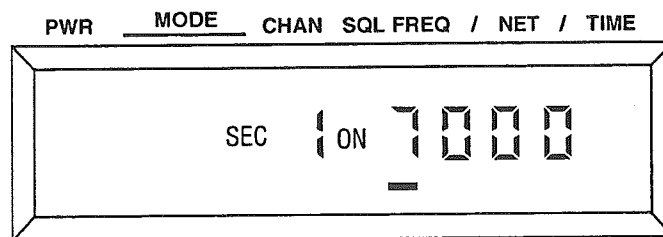
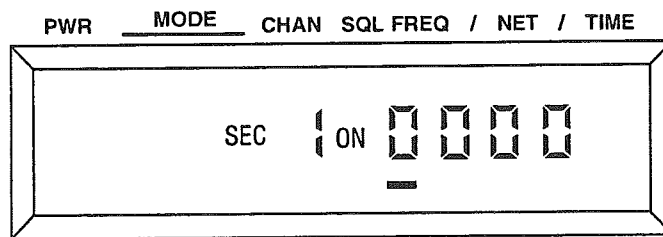


- ✘ Set "PWR" to "HI" or "LO."
- ✘ Select "NO HOP" mode.
- ✘ Set "CHAN" to 0.
- ✘ Select "SEC" mode.
- ✘ Select "CHAN" to load with encryption key.

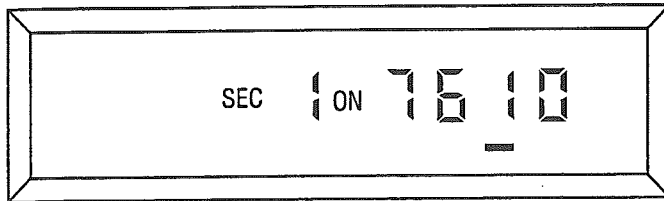
After selecting the desired channel, a four-digit key identifier will appear in the digits field. The key identifier will be non-zero if a key has been loaded in the selected channel. All zeros indicate the absence of a valid encryption key for the selected channel. In order to load a new encryption key, the key identifier must first be changed.

NOTE: If the key identifier is non-zero, it and the encryption key will be zeroized when any of the digits of the key identifier are changed.

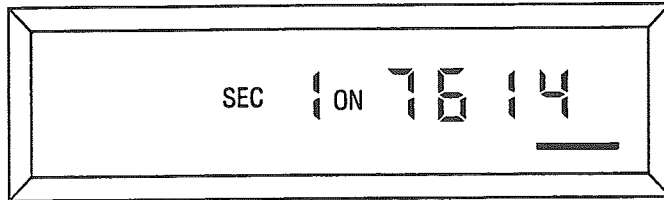
2.12.2 Entering Key Identifier



PWR MODE CHAN SQL FREQ / NET / TIME

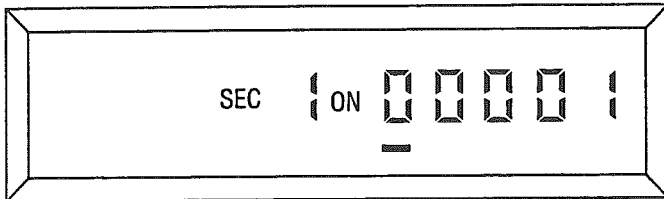


PWR MODE CHAN SQL FREQ / NET / TIME



- ✎ Using the cursor and column switches, enter the key identifier (0001 to 9999).

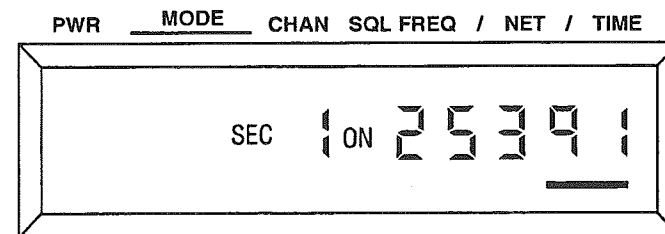
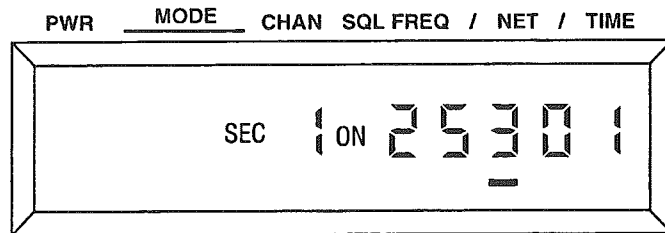
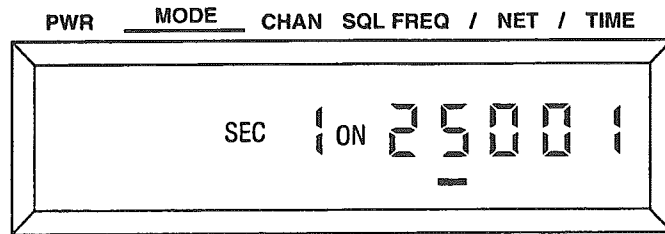
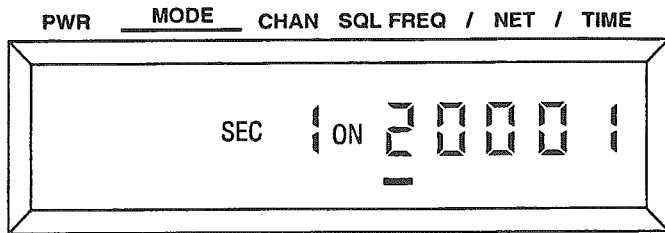
PWR MODE CHAN SQL FREQ / NET / TIME



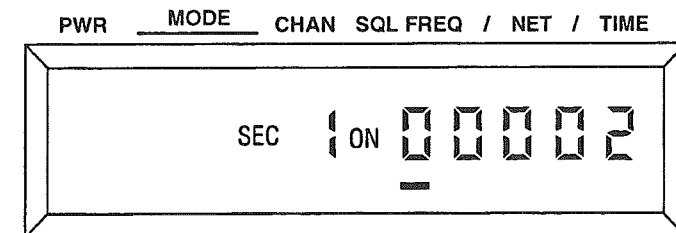
- ✎ Using the cursor switch, move the cursor past the right end of the display (as when using the cursor wrap-around feature).

This enters the key identifier into temporary storage. The first four digits change to zeros and a "1" appears in the fifth-digit position indicating that the radio set is ready for input of the first group of four encryption-key digits.

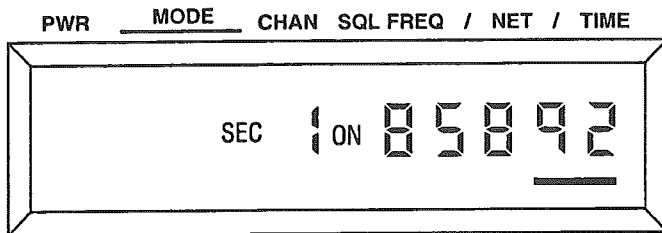
2.12.3 Entering Encryption Keys



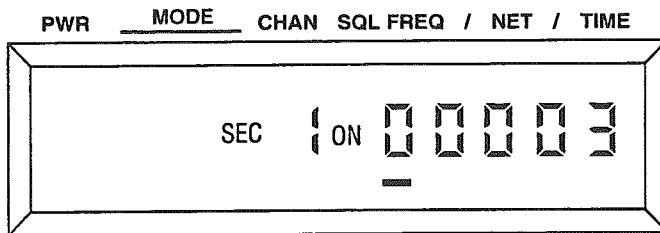
- ⌘ Using the cursor and column switches, input the first four key digits.
- ⌘ Using the cursor switch, move the cursor past the right end of the display (as when using the cursor wrap-around feature).



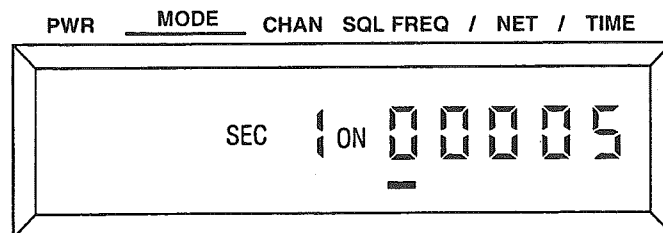
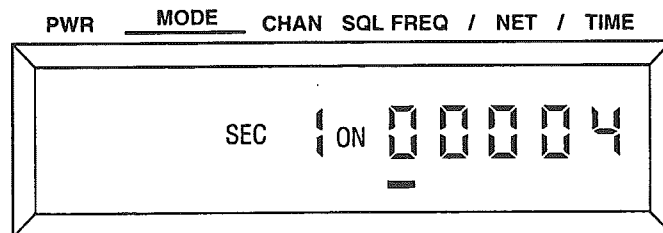
This enters the first group of key digits into temporary storage. The first four digits in the display again go to zeros and a "2" appears in the fifth digit position indicating the radio set is ready for input of the second group of four digits.

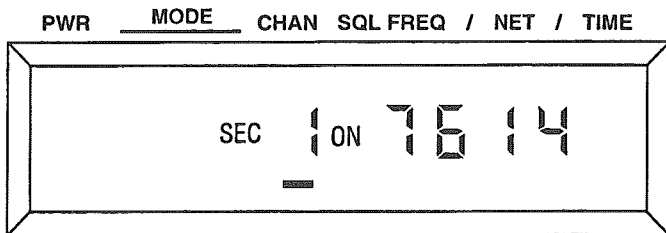


- ✎ Using the cursor and column switches, input the second four key digits.
- ✎ Using the cursor switch, move the cursor past the right end of the display (as when using the cursor wrap-around feature).



- ✎ Repeat this process for the third, fourth, and fifth group of key digits.





After the fifth group of key digits are entered, the key identifier will be displayed and begin flashing. The cursor will be below the “CHAN” position.

2.12.4 Key Verification

The encryption key can be verified before being loaded into memory. Once loaded into memory, only the key identifier may be displayed.

- ✘ Using the cursor switch, move the cursor past the right end of the display (as when using the cursor wrap-around feature).
- ✘ Verify the encryption key digit.
- ✘ Repeat the first and second steps for each group of encryption key digits.

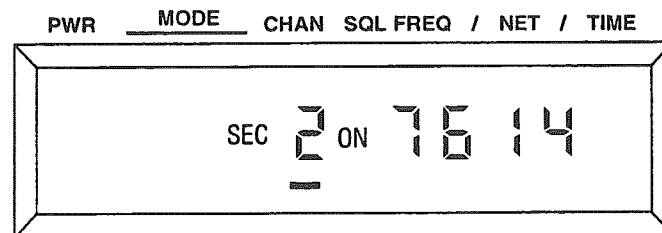
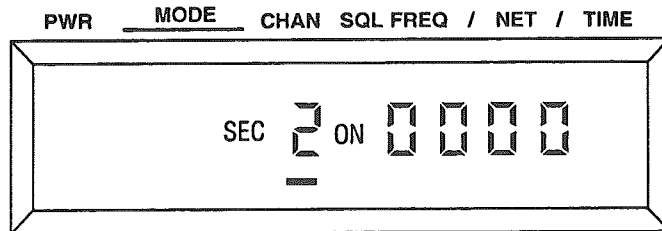
2.12.5 Loading Encryption Key

NOTE: After the encryption key and key identifier have been loaded, the encryption key digits cannot be displayed.

- ✘ Momentarily activate the radio set push-to-talk (PTT). The key identifier will stop flashing, indicating that the encryption key has been loaded.
- ✘ To load the remaining eight channels (2 through 9), select the preset channel to be loaded and repeat the entire procedure if the encryption key differs. If the encryption key to be loaded is identical to the previously loaded channel, the duplication option may be used.

2.12.6 Duplicating Encryption Keys

The last encryption key loaded may be duplicated into another preset channel by using the duplication option.



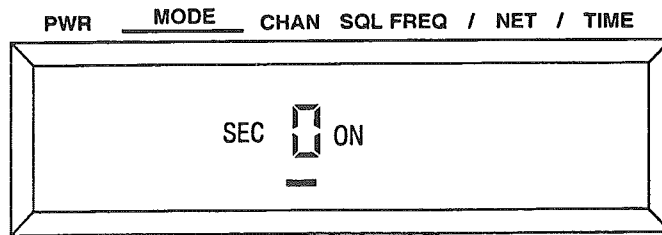
- ✧ Following the loading of an encryption key, select the next channel to be loaded.

NOTE: If the operator begins to change any of the key identifiers, the duplication process is voided and the encryption key must be loaded manually.

- ✧ Momentarily activate the radio set PTT. The key identifier will appear in the digits field and begin flashing.
- ✧ Momentarily activate the radio set PTT again. The key identifier will stop flashing, indicating the encryption key has been loaded.

NOTE: Key verification cannot be performed when utilizing the duplication option.

2.12.7 *Exiting Encryption Key Loading Mode*



- ✘ Upon completion of encryption key loading, set "CHAN" to 0.
- ✘ De-select "SEC" mode.
- ✘ Select "CHAN" (1 through 9).
- ✘ Resume normal radio set operation.

CHAPTER 3: OPERATION, VEHICULAR

3.1 Controls, Indicators, and Connectors

The operating controls, indicators, and cable/antenna connectors are located on the front panels of the PRC1088 transceiver and the MT1088 vehicular power adapter. The power/control plug on the rear of the MT1088 vehicular power adapter mates directly with the MT1029 equipment mounting base.

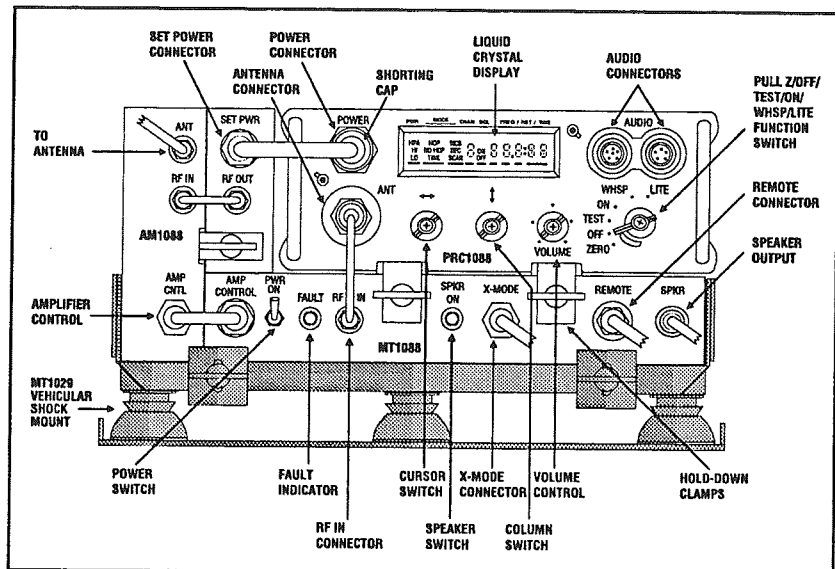


FIGURE 3-1.

Vehicular Configuration Controls, Indicators and Connectors.

3.1.1 Vehicular Power Adapter, MT1088

- “SET POWER” Connector

Provides power, transmit-audio in, receive-audio out, remote data in, remote data out, normal audio inhibit, retransmit, and PTT key lines between the transceiver and the vehicular power adapter.

- **“FAULT” Indicator**

Indicates detected faults when the PTT button is pressed (transceiver “PWR” must be set to “HPA”). The fault indicator is reset when the PTT button is released.

- **“SPEAKER” Switch**

Determines use of loudspeaker.

- **“POWER” Switch**

Main power switch for vehicular-power adapter and transceiver. Circuit-breaker type switch will trip in the event of an over-current condition.

- **“RF IN” Connector**

RF input connector. Provides control interface from antenna connector on the transceiver to the MT1088.

- **“REMOTE” Connector**

Provides for remote control of transceiver functions.

- **“X-MODE” Connector**

Provides transmit-audio in, receive-audio out, and key lines for secure voice communications.

- **“RF OUT” Connector**

RF output connector for connecting coaxial cable from vehicular power adapter, MT1088, to the vehicular power amplifier, AM1088.

- **Hold-down Clamps**

Secures the transceiver to the vehicular power adapter, and the adapter to the vehicular mount.

- **“AMP” Control**

Provides control interface between the MT1088 and the AM1088.

3.1.2 Vehicular Power Amplifier, AM1088

- **“AMP” Control**

Provides control interface between the MT1088 and the AM1088.

- **“RF IN” (Amplifier)**

RF input from the MT1088 to drive the AM1088.

- **“ANT”**

50 watt (nominal) output to base of the broadband antenna.

3.1.3 Transceiver

- **“POWER” Connector**

Provides the power interface for the transceiver and the audio interface for intercom systems when installed in a vehicle. Also provides data interface for 16 kb/s data.

- **Shorting Cap**

Straps battery-pack power into the PRC1088. Must be attached in the manpack configuration, and removed in the vehicular configuration.

- **Liquid Crystal Display (LCD)**

Displays “PWR,” “MODE,” “CHAN,” “SQL,” and “FREQ/NET/TIME” with function switch in “ON” position, and fault information when function switch is in the “TEST” position. Displays battery and transceiver faults in the “NO HOP,” “HOP,” and “TIME” modes.

- **“AUDIO” Connector**

Six-pin connector for interfacing audio external device. Provides transmit-audio in, receive-audio out, retransmit, push-to-talk (PTT) key lines and current-limited +12 Vdc for external accessories. Parallel connection also provided.

- **Pull “ZERO”/“OFF”/“TEST”/“ON”/“WHSP”/“LITE” Function Switch**

Permits the operator to select one of four functions (“OFF,” “TEST,” “ON,” or “WHSP” mode) with a spring loaded “LITE” position for illumination of the display and a spring loaded Pull ZERO position to zeroize preset channels, ECCM fill information, and encryption keys.

- **“VOLUME” Control**

Permits the operator to set the audio output for the most desirable listening level.

- **Cursor Switch**

Permits the operator to move the cursor on the liquid crystal display under the function or digit (“PWR,” “MODE,” “CHAN,” “SQL,” or “FREQ/ NET/TIME”) that requires change.

- **Column Switch**

Permits the operator to change the following functions in each column of the LCD:

- **“PWR”**
“HPA,” “HI” or “LO.”

- **“CHAN”**

1 through 9, “CHAN” is automatically displayed when “HOP” or “NO HOP” is selected. “CHAN” 0 is used for special functions. (Refer to operating procedures in

Section 2.7.2 and 2.12.1.)

- “SQL”

Either “ON” or “OFF.”

- “FREQ/ NET/ TIME”

30.000 through 87.975 when “NO HOP” is selected. 000 through 799 when “HOP” is selected. 100:00 through 723:59 when “TIME” is selected. The first digit displayed is the day. Day 0 is used for special functions (refer to operating procedures in Section 2.10.2). The remaining four digits display time.

- “ANTENNA” Connector

RF input/output connector, for direct mounting of manpack antenna or for connecting coaxial cable.

3.2 Preoperational Procedures

Configure the radio set for operation as instructed in Section 3.2.1.

3.2.1 Installation of Vehicular Power Adapter

- ☒ Set “POWER” switch on front of the vehicular power adapter to “OFF.”
- ☒ Slide the vehicular power adapter into position on the MT1029 equipment mounting base (the equipment mounting base should already be secured to the vehicle) and secure with the two hold-down clamps on the front of the mounting base. The power/control plug on the rear of the vehicular power adapter will automatically mate with the mounting base’s connector.

3.2.2 Installation of Transceiver

- ☒ Set the function switch on the front panel of the transceiver to “OFF.”
- ☒ Slide the transceiver into position on the vehicular power adapter (the battery and battery box must be removed prior to this step).

-
- ✘ Secure the transceiver to the vehicular power adapter with the two hold-down clamps on the front of the vehicular power adapter.
 - ✘ Connect the power cable from the “SET PWR” connector on the vehicular power adapter to the “PWR” connector on the transceiver.
 - ✘ Insert the (optional) AM1088 into the vehicular power adapter. Then tighten the hold-down clamp.
 - ✘ Connect coaxial cable from MT1088 RF out connector to AM1088 RF in connector.
 - ✘ Connect the coaxial cable from the “ANT” connector on the transceiver to the “RF IN” connector on the vehicular power adapter.

3.2.3 Installation of Vehicular Broadband Antenna

- ✘ Secure the vehicular-broadband antenna to the vehicle.
- ✘ Connect the coaxial cable from the “ANT” connector on the vehicular power amplifier to the base of the antenna coupler.

3.2.4 Installation of Handset

- ✘ Place the handset connector on the “AUDIO” connector located on the front panel of the transceiver. Ensure that the keying on the plug matches the keying on the receptacle and push and turn the connector clockwise until it snaps into place.

To verify configuration and radio set performance, set the function switch on the transceiver to “TEST” and refer to BIT.

3.3 Built In Test (BIT)

The following is a description of the Built In Test (BIT) function.

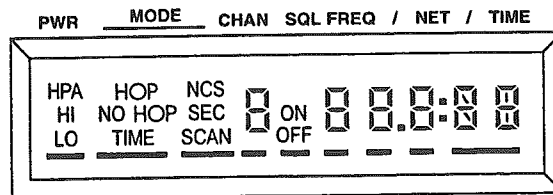
3.3.1 On Vehicular Power Amplifier

- ✘ Set the power switch to “PWR.”
 - ✘ Set the speaker switch to “OFF.”
-

3.3.2 Receive

- ⌘ On the transceiver, set the function switch to "TEST."

The display shows all segments of the LCD for three seconds.



NOTE: "SEC" displayed by COMSEC (secure) transceiver only.

If the receiver is operating properly, the word "PASS" will be displayed alternately with the ECCM fill identifier immediately following the three-second period.

NOTE: Information on the left side of the display is not relevant to BIT but is merely information retained by the memory of the transceiver.

If a fault is detected, the LCD will display faults in the following manner:

"FAULT" is displayed alternately with the indicated fault (example: FAULT, BAT, FAULT.....).

MESSAGE	FAULT CONDITION	ACTION
"BAT FAULT"	Voltage from vehicular power adapter is less than 10 Vdc.	Return vehicular power adapter for repair.

MESSAGE	FAULT CONDITION	ACTION
"R/T FAULT"	Transceiver is degraded/ inoperative.	Return for repair.

3.3.3 *Transmit*

If the PTT button on the handset is pressed while in the TEST mode, the transmit section will be checked.

The LCD will display the word "PASS" alternately with the ECCM fill identifier if no fault is detected.

If a fault is detected, the LCD will display faults in the following manner:

"FAULT" is displayed alternately with the indicated fault (example: FAULT, BAT, FAULT.....).

MESSAGE	FAULT CONDITION	ACTION
"BAT FAULT"	Voltage from vehicular power adapter is less than 10 Vdc.	Return vehicular power adapter for repair.

MESSAGE	FAULT CONDITION	ACTION
"ANT FAULT"	Antenna is degraded/ inoperative.	Check physical condition of antenna and replace if necessary.

MESSAGE	FAULT CONDITION	ACTION
"R/T FAULT"	Transceiver is degraded/ inoperative.	Return for repair.

NOTE: If a fault is detected in the vehicular power adapter, the "FAULT" light will illuminate when the PTT button is pressed. The fault circuitry is reset once the PTT button is released. A fault will be detected whenever the antenna performance is degraded, high temperature limit is exceeded, or the power output of the vehicular power amplifier drops below 25% of the nominal output power.

Functions called out in the procedures are selected by using the cursor and column switches. To select a function to be changed, first rotate the cursor switch (↔) to position the cursor under the desired function, either "PWR," "MODE," "CHAN," "SQL," or "FREQ/NET/TIME." Once the cursor is positioned under the desired function, rotate the column switch (↓) to select the desired operation under that function. An example would be to first rotate the cursor switch to position the cursor under the "PWR" function and to then rotate the column switch to select either "HPA," "HI," or "LO" power.

3.4 Vehicular Operation

The following describes vehicular operation.

3.4.1 On Vehicular Power Adapter

- ☒ Set the power switch to "PWR."
- ☒ Set the speaker switch to "SPKR" if the loudspeaker is desired.

3.4.2 On Transceiver

- ☒ Refer to the procedures for manpack modes of operation.

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CHAPTER 4: SPECIAL APPLICATIONS

4.1 *PRC1088 Radio Set Operation in the AM-2060/GRC Amplifier-Power Supply*

- ☒ Set the “PWR” switch on the amplifier-power supply to “ON.”
- ☒ Set the “SPKR” switch on the amplifier-power supply to “ON,” if loudspeaker is desired.
- ☒ Set the function switch on the transceiver to “ON.”
- ☒ If applicable, set the “ANT FREQ CONTROL” switch to the desired bandwidth required for fixed frequency or frequency-hopping operation. Refer to the following notes.

NOTE: A broadband-vehicular antenna may be used, which permits full-band frequency hopping for the radio set. When a broadband-vehicular antenna is used, the “ANT FREQ CONTROL” switch on the AM-2060/GRC amplifier-power supply is not operational.

Caution: When an AS-1729 antenna is used, narrow-band hopping net operation is possible. Select the frequency plan with the proper bandwidth, then set the “ANT FREQ CONTROL” switch on the AM-2060/GRC amplifier-power supply to the corresponding bandwidth. Do not attempt to use full-band frequency plans with an AS-1729 antenna.

- ☒ Proceed with normal voice communication by pressing the PTT button on the handset to transmit and releasing the button to receive.

High-power output of the transceiver is automatically limited to 2.5 watts due to limitations in the AM-2060/GRC amplifier-power supply.

4.2 *PRC1088 Radio Set Relay Using Electrical Cable Assembly CX-4656/GRC, or 1077RETRAN Cable Assembly*

Two PRC1088 radio sets may be configured as a radio relay station to extend the communication range of radios using the relay. The relay link is accomplished by an RF link (F1) between radio sets number 1 and number 2, a baseband frequency link between radio sets number 2 and number 3, and an RF link (F2) between radio sets number 3 and number 4. The relay may be used by radios in either the NO HOP, HOP, or TIME mode. However, NCS update in the HOP mode or automatic time transfer in the TIME mode is not provided between radio sets number 1 and number 4. Any combination of modes may be used providing that the radio sets interfacing with the RF links, F1 and F2, are using common modes. For example, radio sets number 1 and number 2 may be operating in the NO HOP mode while radio sets number 3 and number 4 are operating in the HOP mode. COMSEC may be used on either or both RF links.

To minimize interference at the relay site, the requirements for selecting the two RF links, F1 and F2, are as follows:

- F1 and F2 must be separated by a frequency band that is equal to or greater than 10% of the highest frequency of the two.
- Either F1 or F2 must not be double the frequency of the other.
- Either F1 or F2 must not equal the other plus 13.5 MHz.
- Either F1 or F2 must not equal the other plus 27.0 MHz.

To summarize:

- For $F1 > F2$, $\geq 10\% F1 + F2$
For $F2 > F1$, $\geq 10\% F2 + F1$
- $F1 <> 2F2$, $F2 <> 2F1$
- $F1 <> F2 + 13.5 \text{ MHz}$, $F2 <> F1 + 13.5 \text{ MHz}$
- $F1 <> F2 + 27.0 \text{ MHz}$, $F2 <> F1 + 27.0 \text{ MHz}$

To establish initial relay link, use the following procedures.

On radio sets number 1, number 2, number 3 and number 4:

- ☒ Set the function switch to "ON."
- ☒ Set "PWR" to "HI."
- ☒ Select "NO HOP" or "HOP" mode.
- ☒ Set "SQL" to "ON."

On radio sets number 1 and number 2:

- ☒ Set "CHAN" to the desired operating channel/net (F1).
- ☒ Establish voice communication between the radio sets and verify that squelch is satisfactory.
- ☒ Advise radio set number 1 to stand by.

On radio sets number 3 and number 4:

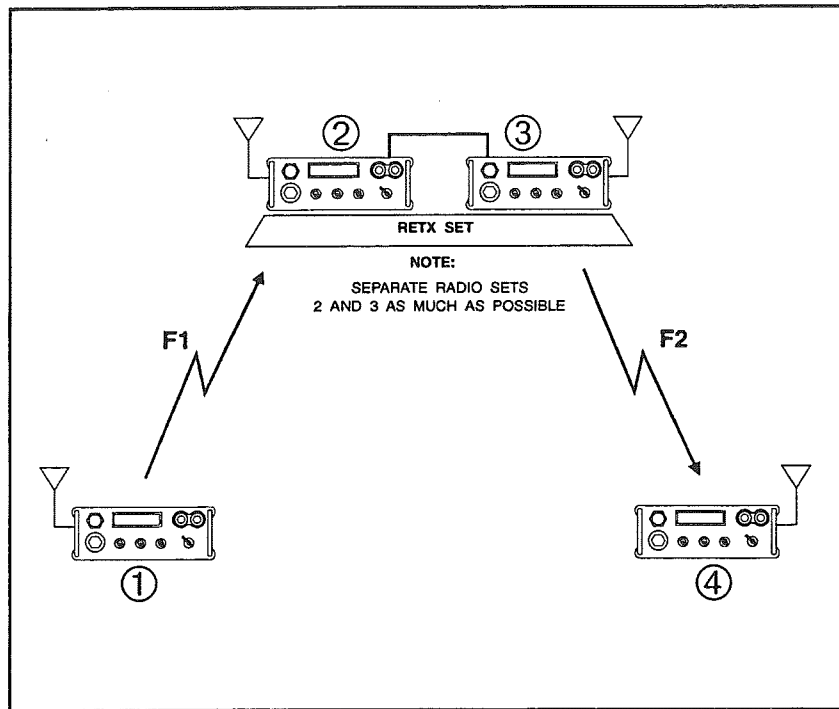
- ☒ Set CHAN to the desired operating channel/net (F2).
- ☒ Establish voice communication between the radio sets and verify that squelch is satisfactory.
- ☒ Advise radio set number 4 to stand by.

On radio sets number 2 and number 3:

- ☒ Attach the connectors on each end of the electrical cable assembly CX-4656/GRC or 1077RETRAN assembly to the "AUDIO" connector on radio sets number 2 and number 3 as shown in Figure 4-1.
-

- Establish communication between radio sets number 1 and number 2 and advise radio set number 1 that the relay site is prepared for communication with radio set number 4.

NOTE: To communicate with radio set number 1 or number 4, the operator at the relay site must have a handset connected to the spare "AUDIO" connector on the relay site radio associated with the distant radio set.



**FIGURE 4-1
PRC1088 Retransmission System.**

- Establish communication between radio sets number 3 and number 4 and advise radio set number 4 that the relay site is prepared for communication with radio set number 1.

Communication proceeds automatically between radio sets number 1 and number 4 without any operation required at the relay site.

To enable the operator at the relay site to receive instructions and to monitor communications between radio sets number 1 and number 4, a handset may be connected to either of the spare "AUDIO" connectors on radio sets number 2 and number 3 or to the audio connector on the network box of the cable assembly.

4.3 *PRC1088 Radio Set Remote Control Using Radio Set Control AN/GRA-39*

The radio set control AN/GRA-39 provides remote radio set control of the transmissions and receptions of the PRC1088 radio set for up to 3.3 km (2 mi) and also enables radio wire integration (RWI) between the telephone switchboard SB-22/PT and the radio set.

Operation of the PRC1088 radio set as described in the operating procedures is unchanged. The radio set control AN/GRA-39 with radio wire integration is connected as shown.

Since the remote control is set up at the switchboard, the switchboard operator will respond to calls from the distant radio set with the PTT button of his handset using proper radio communication procedures. In effect, the switchboard operator becomes the radio set operator.

When the radio set's call signal is heard on the loudspeaker of the remote control, proceed as follows:

- ✕ Insert the operator's cord into the radio set link jack and determine the desired subscriber.
- ✕ Advise the distant radio set to stand by.
- ✕ Connect the operator's cord to the subscriber's jack.
- ✕ Ring and notify the subscriber of the call. (The subscriber should be reminded to ring back when the call is completed.)
- ✕ Connect the subscriber's cord to the radio set link jack.

NOTE: Position the switchboard handset switch to the "RADIO" position on the remote control, while the operator's cord is connected to the subscriber's jack, to key the radio set.

- ✘ Remove the operator's cord from the subscriber's jack.

The incoming radio set communication can be heard on the remote control's loudspeaker; the subscriber's voice cannot be heard.

When the subscriber's signal indicator on the switchboard shows white, proceed as follows:

- ✘ Insert the operator's cord into the subscriber's jack without setting the switchboard handset switch to the radio position. Question the subscriber to determine if the circuit is still required.
- ✘ If the call is complete and the circuit is no longer required, remove the subscriber's cord from the radio set link jack.

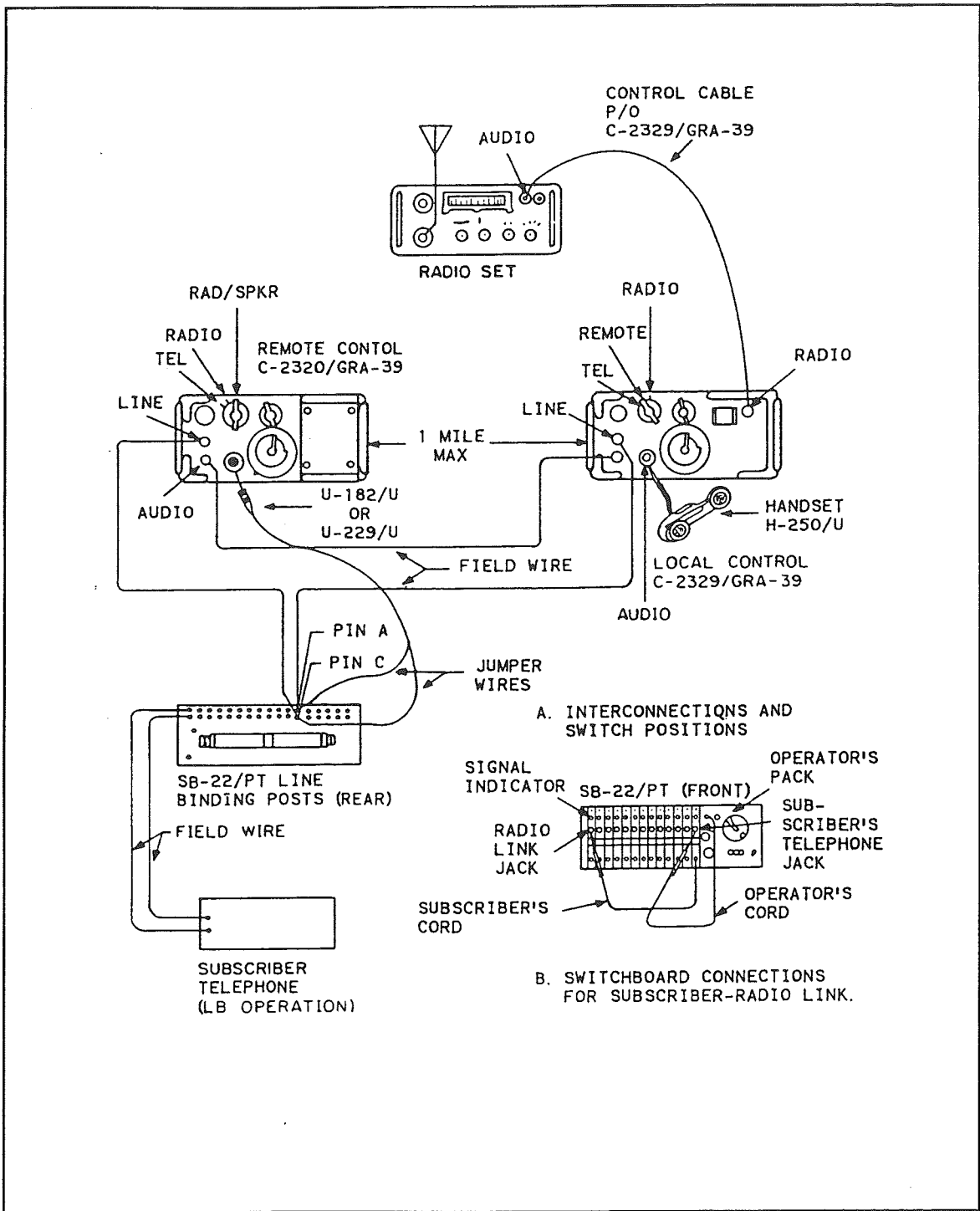


FIGURE 4-2
PRC1088/AN-GRA-39 Field Telephone System.

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CHAPTER 5: SPECIFICATIONS

5.1 Specifications

The following are the specifications for the PRC1088 radio set.

Frequency Range: 30 to 87.975 MHz in 25 KHz steps (2320 channels).

Preset Channel Selection: 9 preset channels available for NO HOP/fixed frequency.
9 preset channels available for anti-jam HOP/frequency hopping.

Modes of Operation

NO HOP: Fixed frequency communications with VHF, 30 to 87.975 MHz FM-radio sets.

SCAN: Available in NO HOP only. Compatible with transceivers with 150 Hz squelch tone. Scans preset channel presently selected on display plus three additional channels—presets 7, 8, and 9.

HOP: >100 frequency hops-per-second on any frequency between 30.000 and 87.975 MHz, on 25 KHz channel spacing. Digital voice and digital data, between two PRC1088's bursted 20 kb/s data with resynchronization every second.

NCS: Available in HOP only. Net control station (NCS) automatically provides time update with each transmission for non-NCS stations to update their internal digital quartz clocks.

TIME: Fixed frequency automatic time transfer and digital voice between two PRC1088's bursted 20 kb/s data.

SEC: COMSEC transmission and reception in either HOP or NO HOP modes. Nonencrypted transmissions are still received.

ECCM

Net Identifier: 800 ECCM net identifiers (000 to 799).
Key Number: 10,000 ECCM key numbers (0000 to 9999).
Hopping Rate: Greater than 100 hops per second.

COMSEC (secure)

Key Identifier: 10,000 COMSEC key identifiers (0000 to 9999).
Individual Keys: 5 groups of 5 digits. The last digit indicates which group is currently being updated. (00001 to 99991, 00002 to 99992, 00003 to 99993, 00004 to 99994, 00005 to 99995).

Power Output

Manpack: Selectable 5 W or 0.25 W.
Vehicular: Selectable 50 W, 5 W, or 0.25 W.

Primary Power

Manpack: Input voltage between 10 and 15 Vdc. Power consumption at 12.5 Vdc if input voltage is less than:
2.5 watts - receive.
11.3 watts - low power transmit (0.25 W).
28 watts - high power transmit (5 W).

Dimensions

Manpack: Width: 28 cm (11 in).
Height: 10 cm (4 in).
Depth: 28 cm (11 in).

Weight

Manpack: 6.8 kg (14.9 lb) - includes antenna, battery, and handset.
Temperature: -40° to +60° C. (-40° to +140° F.)
Humidity: up to 95%.
Altitude: 4572 m (15,000 ft).
Submersion: Down to 1.00 m (3.3 ft).

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