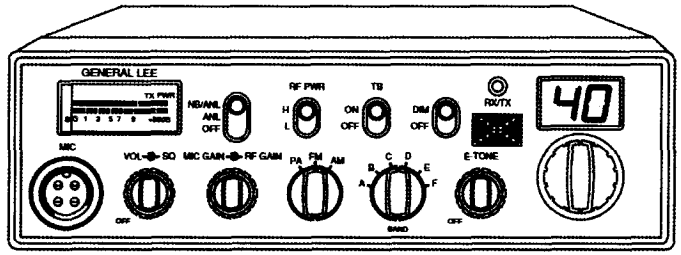
General Lee



Full Channel AM/FM

Amateur Mobile Transceiver

OWNER'S MANUAL

Printed In Vietnam
A41230889V

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CHAPTER 1 SPECIFICATIONS

GENERAL

Frequency Range	RX/TX : 28.015 ~ 28.585 MHz
Emission	AM/FM
Frequency Control	Phase-Lock-Loop Synthesizer
Frequency Stability	0.001%
Temperature Range	-30°C to +50°C
Input Voltage	13.8V DC
Antenna Impedance	50 Ohms
Size	7 7/8" (W) x 9 1/4" (D) x 2 3/8" (H)
Weight	5.0 1b.

TRANSMITTER

AM/FM RF Power Output	H: 12W ; L: 3W
Spurious Emission	Better than -50 dB
Audio Distortion	10%
Frequency Response	300 to 2500 Hz
Microphone	Dynamic

RECEIVER

Sensitivity for 10 dB S+N/N	AM: < 1 uV
Sensitivity for 20 dB S+N/N	FM: < 1 uV
Squelch Sensitivity	Less than 0.5 uV
Audio Power Output	2W @ 10% Distortion
Image Rejection Ratio	> 50 dB
AGC Figure of Merit	50 mV for 10 dB Change in Audio Output
Audio Response	300 to 2500 Hz

(SPECIFICATIONS SUBJECT TO CHANGE WITHOUT NOTICE)

CHAPTER 2 INSTALLATION

LOCATION

Plan the location of the transceiver and microphone bracket before starting the installation. Select a location that is convenient for operation and does not interfere with the driver or passengers. In automobiles, the transceiver is usually mounted below the dash panel with the microphone bracket beside it.

MOUNTING THE RADIO

The transceiver is supplied with a universal mounting bracket. When mounting the bracket and radio to your car, make sure it is mechanically strong. Also provide a good electrical grounding connection to the chassis of the vehicle. Proceed as follows to mount the transceiver:

1. After you have determined the most convenient location in your vehicle, hold the transceiver with mounting bracket in the exact location desired. If nothing will interfere with mounting it in the desired position, remove the mounting bolts. Before drilling the holes, make sure nothing will interfere with the installation of the mounting bolts.

2. Connect the antenna cable plug to the standard antenna receptacle on the rear panel. Most transceiver antennas are terminated with a type PL-259 plug and mate with the ANT receptacle.

3. Connect the red DC power input wire (with the fuse) to +13.8V DC. This wire extends from the rear panel. In automobile installation, +13.8V DC is usually obtained from the accessory contact on the ignition switch. This prevents the set being left on accidentally when the driver leaves the car and also permits operating the unit without the engine running. Locate the accessory contact on most ignition switches by tracing the power wire from the AM broadcast receiver in the car.

4. Connect the black lead to –13.8V DC. This is usually the chassis of the car. Any convenient location with good electrical contact (remove paint) may be used.

5. Mount the microphone bracket on the right side of the transceiver or near the transceiver, using two screws supplied. When mounting in an automobile, place the bracket under the dash so the microphone is readily accessible.

IGNITION NOISE INTERFERENCE

Use of a mobile receiver at low signal levels is normally limited by the presence of electrical noise. The primary source of noise in automobile installations is from the generator and ignition system in the vehicle. Under most operating conditions, when signal level is adequate, the background noise does not present a serious problem. Also, when extremely low level signals are being received, the transceiver may be operated with vehicle engine turned off. The unit requires very little current and therefore will not significantly discharge the vehicle battery.

Even though the transceiver has ANL and NB controls, in same installations ignition interference may be high enough to make good communications impossible. The electrical noise may come from several sources. Many possibilities exist and variations between vehicles require different solutions to reduce the noise.

ANTENNA

A vertically polarized, quarter-wavelength whip antenna provides the most reliable operation and greatest range. Shorter, loaded-type whip antennas are more attractive, compact and adequate for applications where the maximum possible distance is not required. Also, the loaded whips do not present the problems of height imposed by a full quarter-wavelength whip.

Mobile whip antennas utilize the metal body of the vehicle as a ground plane. When mounted at a corner of the vehicle they are slightly directional, in the direction of the body of the vehicle. For all practical purposes, however, the radiation pattern is non directional. The slight directional characteristic will be observed only at extreme distances.

A standard antenna connector (type SO239) is provided on the transceiver for easy connection to a standard PL-259 cable termination. If the transceiver is not mounted on a metal surface, it is necessary to run a separate ground wire from the unit to a good metal electrical ground in the vehicle. When installed in a boat, the transceiver will not operate at maximum efficiency without a ground plate, unless the vessel has a steel hull. Before installing the transceiver in a boat, consult your dealer for information regarding an adequate grounding system and prevention of electrolysis between fittings in the hull and water.

EXTERNAL SPEAKER

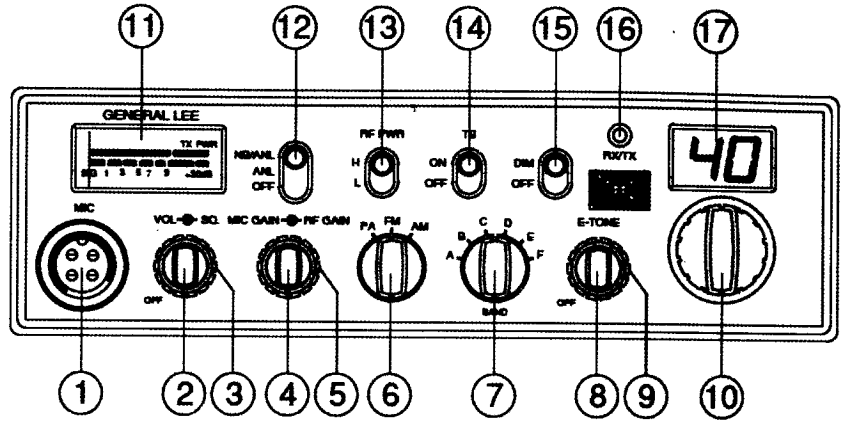
The external speaker jack (EXT. SP) on the rear panel is used for remote receiver monitoring. The external speaker should have 8 ohms impedance and be able to handle at least 4 watts. When the external speaker is plugged in, the internal speaker is disconnected.

PUBLIC ADDRESS

To use the transceiver as a public address system, connect an external 8 Ohms speaker (4 watts minimum) to the PA SP jack located on the rear panel. Direct speaker away from the microphone to prevent acoustic feedback. Physical separation or isolation of the microphone and speaker is important when operating the PA at high output levels.

CHAPTER 3 OPERATION

FRONT PANEL



1. **MICROPHONE JACK:** This jack accept 4 pin microphone.

2. **ON/OFF VOLUME CONTROL :** Turn clockwise to apply power to radio and to set the desired listening level.

3. **SQUELCH CONTROL:** This control is used to eliminate background noise being heard through the receiver which can be disturbing when no transmissions are being received. To use this feature of your radio, gently turn the switch counterclockwise until the switch will not turn further. Then turn the switch clockwise until the background noise is just eliminated. If you turn the switch too far in a clockwise direction, you may not be able to hear weak transmissions.

4. **MIC GAIN CONTROL:** Adjusts the microphone gain in transmit and PA modes. This controls the gain to the extent that full talk power is available several inches away from the microphone. In the Public Address (PA) mode, the control functions as the volume control.

5. **RF GAIN CONTROL:** This control is used to reduce the gain of the RF amplifier under strong signal conditions.

6. **MODE CONTROL :** This control allows you to select one of the following operating modes: PA/FM/AM.

7. **BAND SELECTOR:** This switch is used to select the band of operation (A – F).

8. **ECHO CONTROL:** This control is used for echo effect.

9. **TONE CONTROL :** This control is used to control the intervals of the echo sound.

10. **CHANNEL SELECTOR:** This control is used to select a desired transmit and receive channel.

11. **FRONT PANEL METER :** The Front Panel Meter allows the user to monitor signal strength and RF output power.

12. **NB/ANL/OFF SWITCH:** When the switch is placed in the NB/ANL position, the Automatic Noise Limiter is in the audio circuits and the RF Noise Blanker is also activated. The RF Noise Blanker is very effective in eliminating repetitive impulse noise such as ignition interference.

13. **RF PWR HI/LOW SWITCH :** This switch is used to select transmitting power. In the H position, the transceiver operates in 12 watts RF output power. In the L position, the transceiver operates in 3 watts RF output power.

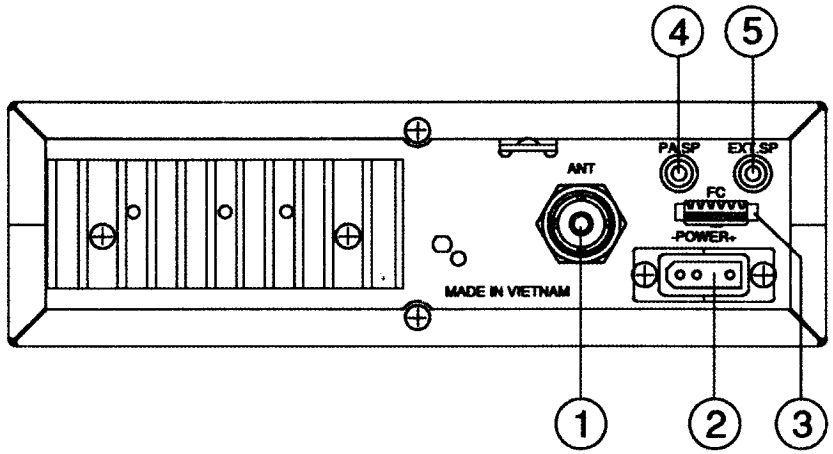
14. **TALKBACK/OFF SWITCH :** This switch is used to monitor the sound feedback effects.

15. **DIMMER SWITCH :** This switch is used to select the brightness of display.

16. **TX/RX LED :** This red LED indicates the unit is in the transmit mode. The green LED indicates the unit is in the receive mode.

17. **CHANNEL DISPLAY :** The channel display indicates the current selected channel

REAR PANEL



1. **ANTENNA :** This jack accepts 50 ohms coaxial cable with a PL-259 type plug.

2. **POWER :** This accepts 13.8V DC power cable with built-in fuse. The power cord provided with the radio has a black and red wire. The black goes to negative and the red goes to positive.

3. **F.C. :** This connector is used for external frequency counter which indicates the frequency of selected channel.

4. **PA. SP.** : Used to connect a PA speaker (8 ohm 4W) for PA operation. Before operating PA you must first connect a PA speaker to this jack.

5. **EXT SP. :** This jack accepts 4 to 8 ohms, 5 watts external speaker. When external speaker is connected to this jack, the built-in speaker will be disabled.

PROCEDURE TO RECEIVE AND TRANSMIT

A. MICROPHONE

The receiver and transmitter are controlled by the push-to-talk switch on the microphone. Press the switch and the transmitter is activated, release switch to receive. When transmitting, hold the microphone two inches from the mouth and speak clearly in a normal "voice". The transceiver come complete with a low impedance dynamic microphone.

B. PROCEDURE TO RECEIVE

1. Be sure that power source, microphone and antenna are connected to the proper connectors before going to the next step.
2. Turn unit on by turning the **VOL** knob clockwise.
3. Set the **VOL** for a comfortable listening level.
4. Set the **MODE** switch to the desire mode.
5. Listen to the background noise from the speaker. Turn the **SQ** knob slowly clockwise until the noise just disappear. Level the control at this setting. This **SQ** is now properly adjusted. The receiver will remain quiet until a signal is actually received. Do not advance the control too far, or some of the weaker signal will not be heard.
6. Set **CHANNEL** selector switch to the desired channel.
7. Set the **RF GAIN** control fully clockwise for maximum **RF** gain.

C. PROCEDURE TO TRANSMIT

1. Select the desired channel of transmission.
2. Set the **MIC GAIN** control fully clockwise.
3. If the channel is clear, depress the push-to-talk switch on the microphone and speak in a normal voice.

ALTERNATE MICROPHONES AND INSTALLATION

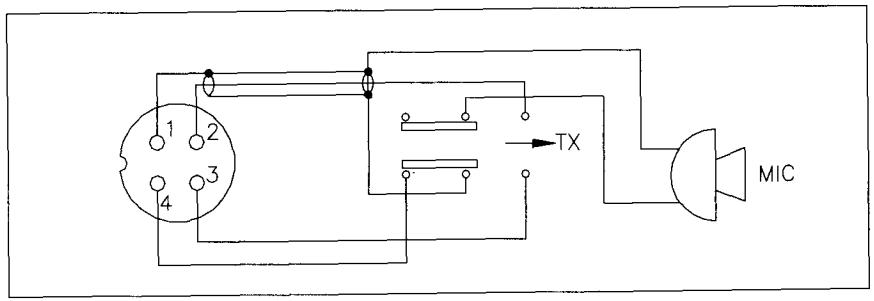
For best results, the user should select a low-impedance dynamic type microphone or a transistorized microphone. Transistorized type microphones have a low output impedance characteristics. The microphones must be provided with a four-lead cable. The audio conductor and its shielded lead comprise two of the leads. The third lead is for transmit control and the forth is for receive control.

The microphone should provide the functions shown in schematic below.

4 WIRE MIC CABLE

Pin Number	Mic Cable Lead
1	Audio Shield
2	Audio Lead
3	Transmit Control
4	Receive Control

Fig. 1 Schematic of microphone

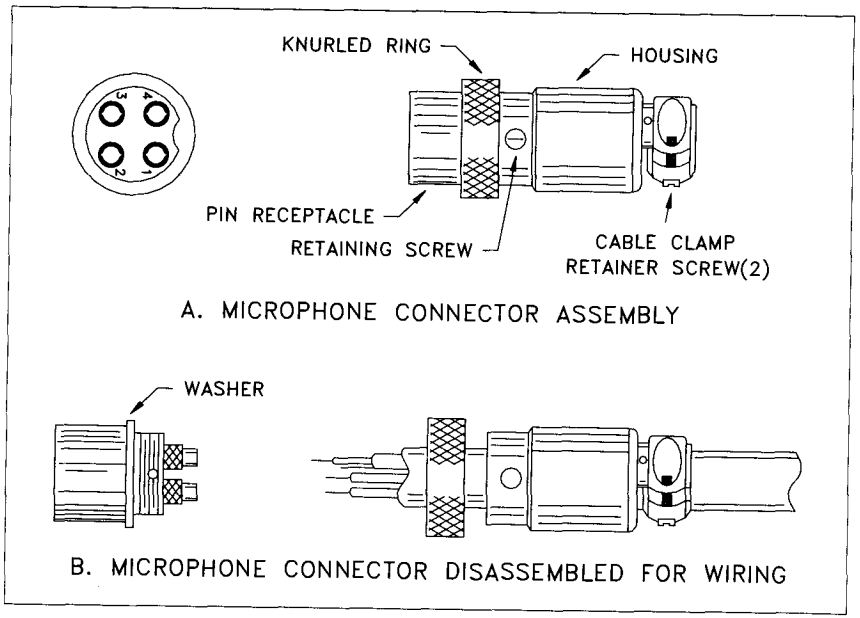


If the microphone to be used is provided with pre-cut leads, they must be revised as ollows :

1. Cut leads so that they extend 7/16" beyond the plastic insulating jacket of the microphone cable.
2. All leads should be cut to the same length. Strip the ends of each wire 1/8" and tin the exposed wire.

Before beginning the actual wiring, read carefully the circuit and wiring information provided with the microphone you select. Use the minimum heat required in soldering the connections. Keep the exposed wire lengths to a minimum to avoid shorting when the microphone plug is reassembled.

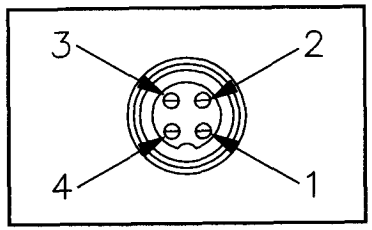
Fig. 2 Microphone plug wiring



To wire the microphone cable to the plug provided, proceed as follows :

1. Remove the retaining screw
2. Unscrew the housing from the pin receptacle body
3. Loosen the two cable clamp retainer screws.
4. Feed the microphone cable through the housing, knurled ring and washer as Figure 2.
5. The wires must now be soldered to the pins as indicated in the above wiring tables. If a vise or clamping tool is available it should be used to hold the pin receptacle body during the soldering operation, so that both hands are free to perform the soldering. If a vise or clamping tool is not available, the pin receptacle body can be held in a stationary position by inserting it into the microphone jack on the front panel. The numbers of the microphone plug are shown in Fig. 3, as viewed from the back of the plug. Before soldering the wire to the pins, pre-tin the wire receptacle of each pin of the plug.

Fig 3. Microphone pin numbers.



6. Be sure that the housing and the knurled ring of Figure 2 are pushed back onto the microphone cable before starting to solder. If the washer is not captive to the pin receptacle body, make sure that it is placed on the threaded portion of the pin receptacle body before soldering.
7. If the microphone jack is used to hold the pin receptacle during the soldering operation, best results are obtained when the connections to pin 1 and 3 are made first and then the connections to pins 2 and 4. Use a minimum amount of soldering and be careful to prevent excessive solder accumulation on pins, which could cause a short between the pin and the microphone plug housing.

8. When all soldering connections to the pins of the microphone are completed, push the knurled ring and the housing forward and screw the housing onto the threaded portion of the pin receptacle body. Note the location of the screw clearance hole in the plug housing with respect to the threaded hole in the pin receptacle body. When the housing is completely threaded into the pin receptacle body, a final fraction of a turn either clockwise or counterclockwise may be required to align the screw hole with the threaded hole in the pin receptacle body. When these are aligned, the retaining screw is then screwed into the place to secure the housing to the pin receptacle body.

9. The two cable clamp retainer screws should now be tightened to secure the housing to the microphone cord. If the cutting directions have been carefully followed, the cable clamp should secure to the insulation jacket of the microphone cable.

10. Upon completion of the microphone plug wiring, connect and secure the microphone plug in the transceiver.