

OPERATION MANUAL

40 channels SSB/AM Mobile CB Transceiver



MODEL CB-950



BOMAN INDUSTRIES
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WARNING

Certain repairs and adjustments to this transceiver may be made legally only by a person in possession of a valid First or Second Class FCC Radio Telephone Operator License or a person under the direct supervision of a holder of such a license. This applies particularly to these repairs or adjustments, such as replacement or substitution of crystals, and semiconductors or other components, which might affect the transmitter's ability to comply with FCC technical regulations of Part 95, Part 2.

FCC LICENSING REQUIREMENTS

Operation of this transceiver requires a valid station license issued by the Federal Communications Commissions. Illegal operation may result in severe penalties. Be certain that you have read Part 95 of the FCC Rules and Regulations, which is furnished with your transceiver, before operating your station. By completing FCC Form 555B and applying for your license on FCC Form 505 [both of which are included with your transceiver] you may operate immediately and for 60 days while waiting for your license.

You are required to maintain a current copy of Part 95 of the FCC Rules as a part of your records. Your station license is to be posted in accordance with paragraph 95.101 of the Rules and an excuted Transmitter Identification Card [FCC Form 452C] is to be attached to each transmitter. [A copy of the Form 452C is included with your transceiver.]

GENERAL DESCRIPTION

Your BOMAN CB-950 is a full 40 channel SSB/AM Citizens Band Mobile Transceiver designed for use under the license of class D operation. The CB-950 has a floating electrical ground system which makes you able to use the transceiver in either negative or positive ground system in your vehicle. The transceiver incorporates many features such as Clarifier, Dimmer, NB [Noise Blanker] circuit, Three-functions Meter, SWR measurement facilities etc. All controls and switches are front-mounted for your convenience. All solid-state, compact, light-weight, suitable for mobile installation.

TECHNICAL SPECIFICATIONS

GENERAL

- * Frequency Control PLL [phase lock loop] synthesizer
- * Channels 40 channels
- * Mode of Operation LSB, USB and AM
- * Power Source Voltage 13.8 V DC
- * Speaker [built-in] 3" dynamic type, 8 Ω
- * Microphone Dynamic type with PTT bar

RECEIVER

- * System SSB: Single conversion superheterodyne
AM: Dual conversion super heterodyne
- * Sensitivity SSB: 0.25 μV for 10 dB S/N
AM: 1 μV for 10 dB S/N
- * Selectivity SSB: 2.5 kHz at 6 dB down
AM: 6 kHz at 6 dB down
- * Clarifier ± 600 Hz range
- * Audio Output 3 watts at 8 Ω
- * Squelch Range SSB: 0.7 μV to 20 μV
AM: 1 μV to 500 μV
- * IF SSB: 10.695 MHz
AM: 1st; 10.695 MHz, 2nd; 0.455 MHz

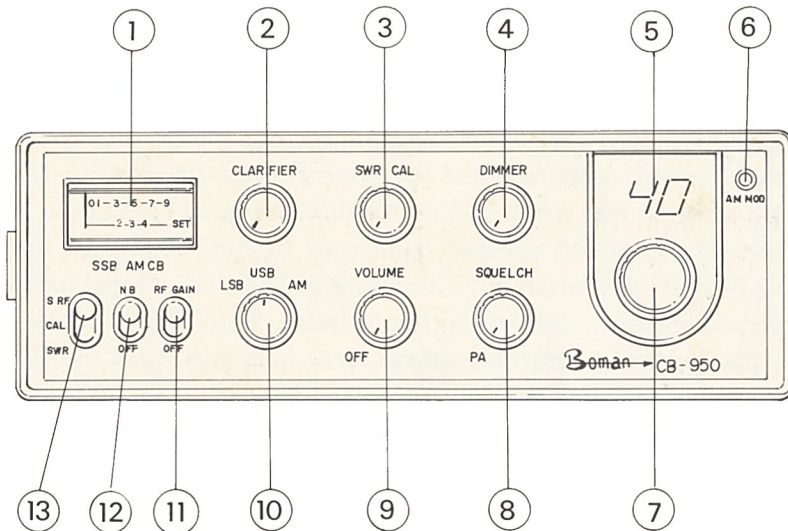
SSB TRANSMITTER

- * Generation Double Balanced Modulator with Crystal Lattice Filter
- * RF Output Power 12 W P.E.P., FCC maximum, at 13.8 V DC
- * Carrier Suppression More than 40 dB down
- * Unwanted Side Band Suppression More than 60 dB down
- * Harmonic Suppression More than 60 dB down

AM TRANSMITTER

- * RF Output Power 4 watts [FCC max.], at 13.8 V DC
- * Harmonic Suppression More than 60 dB down
- * Modulation High Class Level B

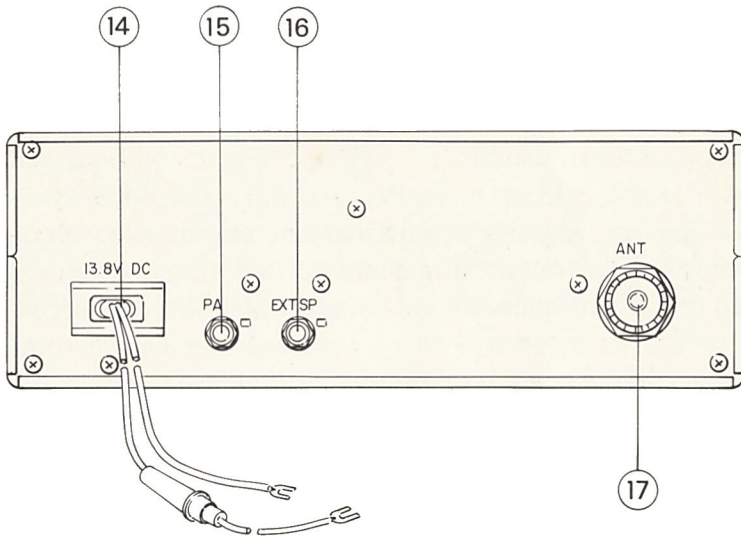
OPERATING CONTROLS



FRONT PANEL

1. SWR-CAL-RF/S meter: This meter functions in three ways. When receiving this indicates relative strength of incoming signals and when transmitting RF power output. [To watch these functions, the SWR-CAL-S/RF switch must be placed in "S/RF" position.] The measurement of your antenna SWR and its prior calibration will be shown in lowest and middle scale. Please refer to SWR MEASUREMENT instruction described in following pages.
2. CLARIFIER control: During AM reception, if a station received is not clear, adjust this control for clearer reception referring S meter indication. During SSB reception, also rotate this until clearer voice of your partner is obtained.
3. SWR/CAL control: Used for calibration prior to SWR measurement of your antenna system. Refer to SWR MEASUREMENT instruction.
4. DIMMER control: Controls the illumination strength of channel indicator LED [Light Emitting Diode].
5. CHANNEL INDICATOR: An LED digital read-out to show the channel your have desired.

6. AM MOD LAMP: Lights up variously according to the modulation strength in AM transmitting.
7. CHANNEL SELECTOR: Selects one of 40 channels by rotating the knob. you can read the channel selected by clear LED indication directly.
8. SQUELCH control /PA switch: Your radio has been equipped with a PA [Public Adress] amplifier system. Setting the control fully counter clockwise position actuates the PA system. Press the Push-to-Talk bar on the micorphone and speak at a normal tone of voice, then your voice will be heard thru the PA speaker connected to the PA SP jack on the rear panel. For CB operation this functions as Squelch control, so you must place the control in other than PA position. Turning the knob clockwise until background noise disappears. Now you can hear signals without annoying background noises. However, rotating the Squelch too far clockwise direction decreasees reception sensitivity and very weak station would not be received, therefore when you are in communication with a distant or weak station rotate the Squelch all the way counter clockwise.
9. VOLUME control/Power on-off switch: Turns the power on or off and controls the sound output from the speaker when receiving.
10. LSB-USB-AM switch: Selects a mode of operation. For AM operation, place this in AM. To operate the unit as a SSB transceiver, selects LSB or USB. This affects both transmit and receive simultaneously.
11. RF GAIN-OFF switch: Changes receiver sensitivity. If a station transmitting is very close, place this in "OFF" position.
12. NB-OFF switch: Your radio has been equipped with a NB [Noise Blanking] circuit. During reception, when you have come to encounter the "impulse" type noise, place this in NB and the NB circuit will blank them out.
13. S/RF-CAL-SWR meter switch: Selects meter functions in three ways. For usual CB operation, both in AM and SSB, always set this in S/RF position. For antenna SWR measurement and its prior calibration, refer to SWR MESAUREMENT instructions.



REAL PANEL

14. DC POWER connector: Used for connection with DC power cord supplied. For further details, see DC POWER CONNECTION instructions.
15. PA SP jack: Used for connection with PA speaker with impedance of 8 to 16 Ω . Matches 3.5 mm ϕ , standard type plug.
16. EXT. SP jack: Used for connection of EXT [external] speaker with impedance of 8 to 16 Ω . Matches 3.5 mm ϕ , standard type phone plug. Note that insertion of an external speaker into this jack will automatically silences the internal [built-in] speaker.
17. ANT [antenna] connector: Used for connection with antenna, matches PL-259 type [standard] plug.

MOBILE INSTALATION

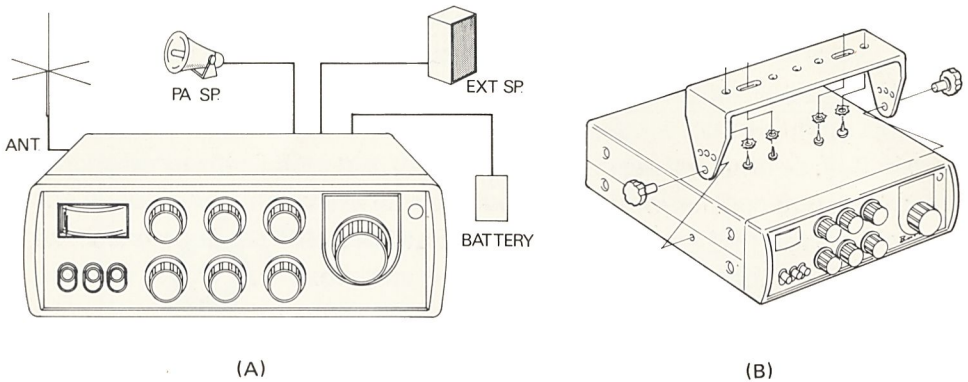


Figure 3

First choose a location to be mounted. The location should be the place which is convenient to use the transceiver and does not interfere the driver. Usually underside of the instrument panel or dashboard of a vehicle will be selected. A special bracket for this purpose is supplied with the unit.

1. The transceiver will be mounted as illustrated in Figure 3 (B). First drill three or four holes (diameter about: 3.6 mm: 9/64") to the location to be mounted.
2. Attach the bracket, using selftapping screws and washers supplied.
3. A microphone hanger is also supplied with the unit. If necessary, also attach the bracket on a place close to the transceiver, using two screws included.
4. Secure the transceiver to the bracket by means of the large thumb screws and washers supplied.

OPERATION

MAKE SURE YOUR ANTENNA SYSTEM IS CONNECTED TO THE ANTENNA CONNECTOR ON THE REAR PANEL. DO NOT OPERATE THE TRANSCEIVER WITHOUT CONNECTION OF YOUR ANTENNA SYSTEM.

A. AM Operation

1. Connect the Push-to-Talk microphone to the MIC jack.
2. Turn the power on and increase the sound level.
3. Temporarily rotate the PA/SQUELCH control to 9 o'clock position.
4. Place the LSB-USB-AM switch in the AM position.
5. Select a channel you desired.
6. To transmit: Depress the Push-to-Talk button on the microphone and speak into the microphone at a normal voice, holding the microphone 3 to 6 inches from the mouth. Do not shout or move the microphone too close to your mouth.
7. To receive: simply release the Push-to-Talk button.
8. If necessary adjust the clarifier control for clearer reception.

B. SSB Reception

1. Turn the power on and rotate the VOLUME control to a proper sound level.
2. Temporarily place the LSB-USB-AM switch in the AM position. If the signal you received is a AM signal, clear voice reception will be obtained. But if the signal produces unintelligible sound, it may be the SSB signal. First place the LSB-USB-AM switch in the LSB or USB position at which clearer voice reception is obtained. Then adjust the clarifier control slowly for clearest voice reception.
3. If necessary adjust SQUELCH, ANL, NB controls as previously stated.

C. SSB Transmission

1. First select the channel you want.
2. Place the LSB-USB-AM switch in the LSB or USB position.

NOTE: If you want to communicate with the station transmitting in a mode of LSB, your transceiver must be set in the same mode (LSB) of operation. This will be true for USB operation. To know a station is being transmitted in either mode of operation, temporarily try to receive the station as stated under SSB reception.

3. To transmit depress the Push-to-Talk button on the microphone and speak at the microphone as stated in the step 6 under AM operation.
4. To receive, simply release the Push-to-Talk button.

When using the transceiver as a public address amplifier.

1. Connect a PA speaker (8–16 ohms) to the PA jack on the rear panel.
2. Place the PA/SQUELCH control in the PA position.
3. Turn the power on.
4. Depress the Push-to-Talk button on the microphone and speak at the microphone.

SWR MEASUREMENT INSTRUCTIONS

SWR is a measure of how your antenna is matched to your transmitter. A desirable SWR is 1.5 :1 or less. With your antenna properly connected, measure your SWR as follows.

1. Set Squelch/PA control out of PA position [about 9 o'clock position].
2. Set S/RF-CAL-SWR meter switch to CAL position.
3. Press Push-to-talk switch and adjust CAL control so that the meter pointer coincides with SET mark on the meter.
4. Release the push-to-talk switch.
5. Set S/RF-CAL-SWR switch to SWR position and again press the push-to-talk switch. The SWR of your antenna system is shown on the lowest scale.
6. After checking SWR, be sure to set the S/RF-CAL-SWR switch to S/RF position so that the meter indicates S and RF units.

DC POWER CONNECTION

This transceiver is designed to be operated from a 12 V DC battery on Negative or Positive Ground System.

A. Power Connection for Negative Ground System

1. Connect Black power lead from the transceiver to the metal chassis ground of the vehicle or negative battery terminal.
2. Connect Red power lead from the transceiver to the any convenient hot (positive) side of the electrical system or Plus (+) battery terminal.

B. Power Connection for Positive Ground System

1. Connect Black power lead from the transceiver to any convenient hot (negative) side of the electrical system or Minus (–) battery terminal.
2. Connect Red power lead from the transceiver to the metal chassis ground of the vehicle or positive battery terminal.

NOTE: When you are in doubt about the electrical ground system in your vehicle, please consult with your car dealer. But when you can not obtain the necessary information, directly connect the Red power lead to the Plus (+) battery terminal and Black power lead to the negative (–) battery terminal to avoid any possible short circuit due to mis-understanding.

ANTENNA CONNECTION

BEFORE OPERATING THE TRANSCEIVER, YOU MUST CONNECT A PROPER ANTENNA SYSTEM. OPERATING THE TRANSCEIVER WITHOUT AN ANTENNA OR A DUMMY LOAD MAY CAUSE DAMAGE TO THE EXPENSIVE RF POWER TRANSISTORS.

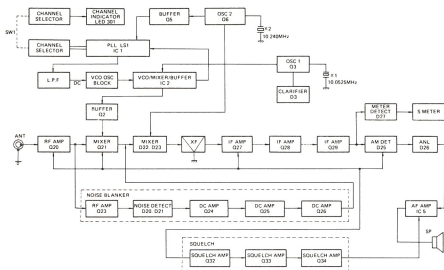
The antenna is one of important factors in operation of the transceiver with its full efficiency. Improper antenna may decrease reception sensitivity and lowers the communication range in transmitting. The CB antenna and its mounting method will largely depend upon the type of your vehicle, mounting position, etc. Also the antenna may be different according to your needs – using the transceiver as a mobile or base station transceiver. So we will recommend you to consult about these matters with your dealer from which you purchased the transceiver or any other CB/Amateur radio equipment supplying shops. They will meet your specific needs.

INTERFERENCE NOISES IN RECEPTION

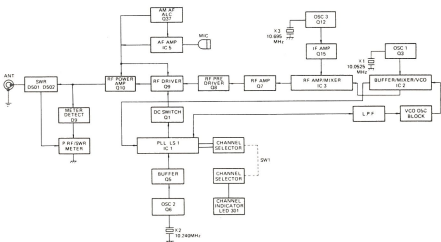
During reception you may find that your transceiver will pick up interference noises which make the reception of weaker stations difficult. The most common source of these noises is the ignition system of your own vehicle, since your transceiver is placed relatively close to your ignition system (engine). In such a case, we will recommend you to consult with your car dealer to eliminate the ignition noise. Usually the ignition noise will be suppressed in a considerable degree by using a proper radio suppression type high voltage ignition wire and suppressor resistor in the ignition system. (Most vehicles employ these wire and resistor but it may necessary to check them for correct operation.) Another method to suppress the noises is to use additional noise suppressor which will be available from your local CB radio shops.

CHANNEL FREQUENCY CHART

Frequency	Channel	Frequency	Channel
26.965 MHz	1	27.215 MHz	21
26.975 MHz	2	27.225 MHz	22
26.985 MHz	3	27.255 MHz	23
27.005 MHz	4	27.235 MHz	24
27.015 MHz	5	27.245 MHz	25
27.025 MHz	6	27.265 MHz	26
27.035 MHz	7	27.275 MHz	27
27.055 MHz	8	27.285 MHz	28
27.065 MHz	9	27.295 MHz	29
27.075 MHz	10	27.305 MHz	30
27.085 MHz	11	27.315 MHz	31
27.105 MHz	12	27.325 MHz	32
27.115 MHz	13	27.335 MHz	33
27.125 MHz	14	27.345 MHz	34
27.135 MHz	15	27.355 MHz	35
27.155 MHz	16	27.365 MHz	36
27.165 MHz	17	27.375 MHz	37
27.175 MHz	18	27.385 MHz	38
27.185 MHz	19	27.395 MHz	39
27.205 MHz	20	27.405 MHz	40

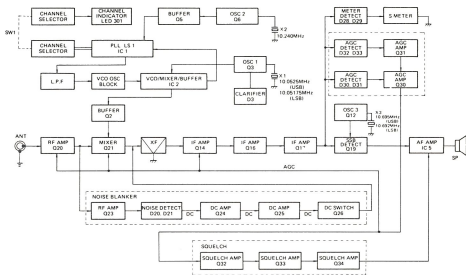


AM RX

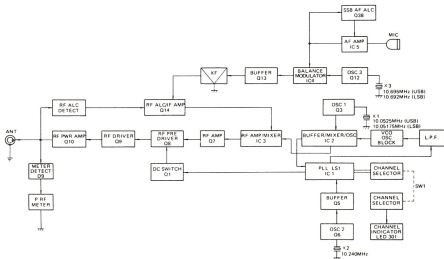


AM TX

DIAGRAMS



SSB RX



SSB TX

SCHEMATIC DIAGRAM

