



MIDLAND[®]

OWNER'S MANUAL
Model 77-120ESP



www.midlandradio.com

Your 40 channel CB represents the state of the art in high tech engineering. This unit is not only a full feature CB transceiver but incorporates a high performance 10 channel NOAA weather bureau VHF receiver. The full 10-channel weather receiver allows use on all current and future NOAA weather bureau channels plus Canadian and international channels. The unit incorporates microprocessor controlled PLL circuitry for precise tuning and increased function. Receiver noise and interference can now be largely eliminated by the new ESP2™ noise reduction system. Also included is a backlighted Liquid Crystal Display (LCD) digital information center that out-dates CB's with LED readouts.

How to install your Midland mobile CB

This transceiver may be installed in any **12 volt negative ground-system** car or truck. Almost all current U.S. and foreign vehicles use a negative system, but some older models and some newer large trucks may have a positive ground.

Check the requirements for your vehicle before you begin installation.

Generally, you have a **negative-ground** system if the minus (-) battery terminal is connected to the motor block. Contact your dealer in the event you are unable to determine your vehicle's polarity system.

Installation and operating accessories furnished with your Midland CB:

1. Easy removal mounting bracket system.
2. Microphone bracket system.
3. All main-unit and microphone mounting hardware needed for normal installation.
4. Plug-in microphone with coil cord.
5. FCC part 95, Subpart D.
6. Owner's Manual.

Where to locate your CB transceiver.

Your new Midland CB is designed to be installed under the dash or vertically on a console of your vehicle.

Safety and convenience are the primary considerations in deciding exactly where to locate your radio.

Caution: Be sure that the unit is located so that it does not interfere with the driver or impair access to any controls. Connecting cables must be routed and secured in such a manner as not to interfere with the operation of the brake, accelerator or other controls. Interference from either the unit or connecting cables may contribute to the loss of control of the vehicle.

Mechanical mounting

Note: Extreme care should be exercised when drilling into dash to avoid damage to under-dash electronic ignition, cruise control, instrument and / or accessory wiring. Your unit must be mounted so as not to interfere with air bag (SRS) operation.

Step 1: Heeding the caution, use the mounting bracket as a template for marking the location of screw holes under the dash. Use an awl, nail or other sharp pointed object to mark the metal.

Step 2: Drill a 1/8" hole for each screw hole in the mounting bracket. Attach the bracket to the dash with the 3/8" Phillips machine screws provided.

Step 3: Locate and secure the radio into the mounting bracket allowing working space for later power connections.

Power wiring (negative ground only).

Step 1: If you have not determined whether your vehicle has a negative or positive ground, do so now. Then disconnect the negative lead from the battery to prevent short circuits that can occur during wiring.

Step 3: With negative ground, connect the red wire (the one with in-line fuse holder) to either the (a) fuse block radio circuit (filtered), (b) cigarette lighter (unfiltered for noise), or (c) directly to the positive post on your battery.

(Usually, the fuse block is the most convenient connecting point. It is also possible to connect to the Accessory terminal on the fuse block, so that your CB automatically goes off when the ignition goes off, preventing accidental battery drainage.)

Note: In many new vehicles the only circuit that has noise filtering is the radio circuit.

Then tightly connect the black wire directly to the vehicle's metal frame. A good direct metal - to - metal ground is essential for optimum performance. Installations using the cigarette lighter socket for power require an extra ground wire from the radio chassis to the vehicle if the radio is not fastened to a grounded part of the vehicle.

Step 3: Plug - in the power cord to the receptacle provided on the back of the transceiver.

Mounting the main unit.

Step 1: Position the main unit between the bracket arms in line with the retention knobs. Set the angle for optimum operating comfort and accessibility.

Step 2: Tighten the retention knobs.

Installation of microphone hanger.

Mounting holes are provided on the microphone hanger bracket. The bracket can be attached to the vehicle dash, or other convenient location.

Antenna: How to select, position, install and tune the right one for you.

Basically, you have two types of mobile CB antennas - full-length whip and loaded whip - and a variety of types of mounts (depending on where you locate your antenna) to choose from.

Midland markets a broad line of high-performance antennas. The dealer who sold you your Midland CB can advise which type is best for you.

Where you locate your antenna does make a difference.

Some general rules for antenna location that can aid CB performance:

1. Put your antenna mount as high on the vehicle as possible.
2. The higher the proportion of antenna length that is above the roof, the better.
3. If possible, mount the antenna in the center of whatever surface you choose.
4. Keep antenna cables away from noise sources, such as the ignition system, gauges, electric fuel pumps, etc.
5. Make sure you have a solid metal - to - metal ground.
6. Exercise care to prevent cable damage.

Essentially, you have five location choices: the roof, gutter, rear deck, front cowl or rear bumper. Where you decide to locate your antenna will determine the type of antenna you install. Again consult your Midland CB dealer for advice and guidance, and measure your needs against the attributes of the various Midland antenna models he carries. Weather radio performance may be degraded by use of a base loaded antenna.

Antenna installation.

Follow the manufacturer's installation instructions carefully.

Warning: Never operate your CB radio without attaching an antenna or with a broken antenna cable. This can result in damage to transmitter circuitry.

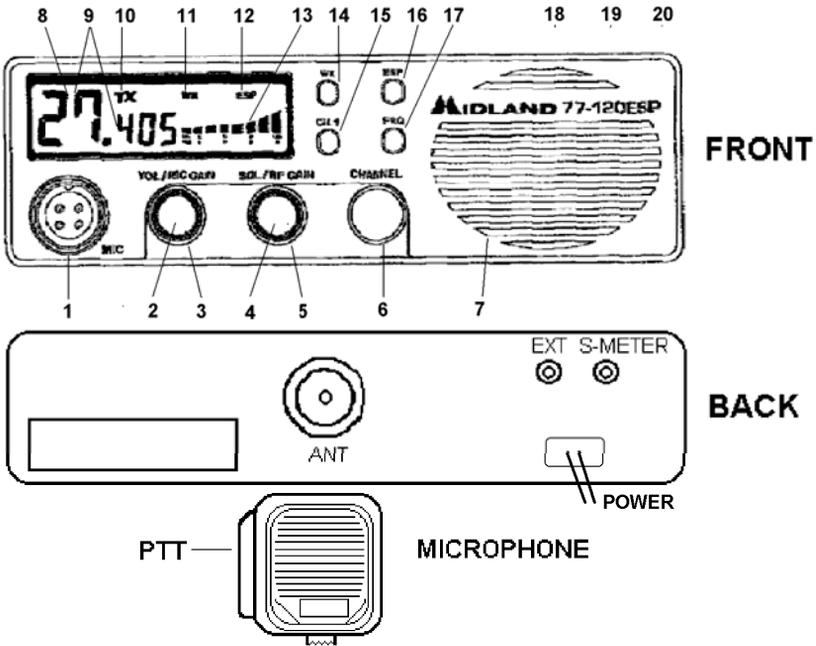
Tuning your antenna.

Some antennas are factory tuned. However, performance can usually be improved by slightly lengthening or shortening its length, using a Standing Wave Ratio (SWR) meter. For the exact procedures to be used refer to the antenna manufacturer's installation manual.

You can buy an SWR meter separately or have your antenna checked by your Midland CB Dealer's service department or a two-way comm shop.

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FUNCTION AND LOCATION OF CONTROLS



FRONT PANEL CONTROLS

- 1. MICROPHONE CONNECTOR:** Plug in the supplied microphone to this connector. The collar ring has a screw on locking ring. Push the ring onto the units collar and screw on until it is tight.
- 2. ON/OFF VOLUME:** In the off position your transceiver's power is off. Turn this control clockwise to switch on the unit and adjust the volume.
- 3. MIC GAIN:** Rotating this control fully clockwise will result in the greatest microphone output. /rotating the control counter-clockwise reduces the microphone output, improving the sound in high noise environments. This control can also be used to control optional power microphone output.
- 4. SQUELCH CONTROL:** Adjust this control until background noise just disappears. If the control is adjusted too far clockwise it may cause muting of weaker signals.
- 5. RF GAIN CONTROL:** This control adjusts the receiver, sensitivity. Adjust the control for best reception of distant or local stations. Begin with control fully clockwise. To reduce reception of unwanted distant stations, turn control counter-clockwise until only desired stations are heard.
- 6. ROTARY CHANNEL SELECTOR:** This easy to operate control allows changing of weather or CB channel, either up or down. This control will not operate when emergency channel 9 has been selected by using the "CH9" button or when the channel "LOCK" function has been activated.
- 7. SPEAKER:**
- 8. CHANNEL DISPLAY:** LCD (liquid crystal display) read-out of selected CB or weather channel.
- 9. FREQUENCY DISPLAY.** Displays channel frequency in MHz and kHz when the "FRQ" switch is on.
- 10. TX INDICATOR:** LCD indicator for showing the unit is transmitting.
- 11. WX INDICATOR:** When this indicator is illuminated it indicates your unit is in the weather receive mode. Weather channels are displayed.

- 12. ESP. INDICATOR:** Indicates the ESP2™ “Noise Killer” circuit has been activated.
- 13. S/R F DISPLAY:** LCD read-out of received signal strength and relative transmitter power output.
- 14. CB/WX:** This button causes your unit to change modes between NOAA weather bureau receiver and CB operation.
- 15. CH.9 SWITCH:** Press this for quick selection of emergency channel 9. All other channels are locked out when channel 9 is activated by using the “CH9” switch. Switch off “CH9” switch to return to normal CB operation.
- 16. ESP:** Pressing this button controls the ESP2™ audio system. Channel noises are reduced and voices enhanced when ESP2™ is active.
- 17. FRQ:** This switch selects Frequency in MHz display instead of channel numbers.

BACK PANEL

ANTENNA CONNECTOR: Connect a standard 50-ohm CB antenna to this connector.

S-METER JACK: A DC voltmeter may be connected to this jack for precision monitoring of received signal strength.

EXT SPEAKER JACK: When a speaker is connected to this jack the internal speaker is by-passed. All received signals will be heard through the external speaker when it is connected. The speaker connected to the “EXT” jack should be rated at 8 ohms and 5 watts or more.

HOW TO OPERATE YOUR TRANSCEIVER FOR CB USE

You should become familiar with the controls and complete the preceding installation instructions before attempting operation of your CB.

1. Adjust the squelch control fully counter-clockwise
2. Rotate the on/off volume control clockwise to turn the unit on. Adjust the volume for a normal listening level.
3. Select the desired channel by the rotary channel selector. Rotate the squelch control until the background noise is just quieted. You are now in the receive mode.

NOTE: If the channel will not change, check that the “CH9 switch is not on. In this case switch the “CH9” switch off to deactivate this function

4. To transmit press the PTT bar on the side of the microphone. Hold the microphone 2 to 3 inches from your lips and speak in a normal voice.
5. To receive simply release the PTT bar.

TO OPERATE YOUR TRANSCEIVER FOR WEATHER RECEIVE

1. Follow steps 1 and 2 above.
2. Press the “WX” button.
3. Using the rotary channel selector select the active channel in your area.

How ESP2™ works to make your CB sound better.

The ESP2™ noise reduction system constantly monitors the signal strength and the type of noise present. When the signal strength is too low for good reception, the receiver sound is automatically adjusted to dramatically reduce the noise that comes through the speaker. While the noise is decreased the actual sounds you need to hear are increased.

Skip interference can cause whistles and howling sounds. Electrical interference from power lines, ignition systems or other sources can produce low humming and buzzing noise. These high and low sounds are not needed for communications. ESP2™ can determine the difference between undesired noises and sounds you want to hear and filter the noises out.

These results ESP2™ can accomplish without decreasing receiver range (it usually increases range). Most importantly, ESP2™ works by itself and does not need to be listening to other ESP2™ equipped CB's to be 100% effective.

The end result of ESP™ is that you can lower or completely stop using your squelch control. You will hear weak signals that cause other CB's to hear

only noise. With this new patented sound control system you will find yourself using your CB more thereby increasing your safety and enjoyment.

TECHNICAL SPECIFICATIONS

GENERAL

Frequency range26.965-27.405 MHz
 Channels40
 Modulation typeAM
 Antenna impedance50 Ohm
 Loudspeaker8 Ohm
 MicrophoneElectret
 Power Supply13.8 VDC negative ground

RECEIVER (CB, 26.965-27.405 MHz)

Sensitivity at 10db S/N.....0.6 uV
 Selectivity6 db @ 5 KHz
 Squelch range0.5 uV-500 uV
 Audio output power3.0 W @ 8 Ohm (10% distortion)
 Distortion at 1000 mV3%
 Audio frequency response400-2400 Hz
 Intermediate frequencyI ° 10.695 MHz II ° 455 KHz
 Spurious responsemore than 45 db

TRANSMITTER

RF Output Power4.0 W
 Frequency Tolerance0.005%
 Harmonic SuppressionMore than 60 db
 ModulationAM 90% (± 5%)

SPECIFICATION - WEATHER RECEIVER

CHANNELS

<u>00</u>	<u>163.275</u>	<u>05</u>	<u>162.450</u>
<u>01</u>	<u>162.550</u>	<u>06</u>	<u>162.500</u>
<u>02</u>	<u>162.400</u>	<u>07</u>	<u>162.525</u>
<u>03</u>	<u>162.475</u>	<u>08</u>	<u>161.650</u>
<u>04</u>	<u>162.425</u>	<u>09</u>	<u>161.775</u>

Sensitivity _____ 1.0 uV for 20 db
 Audio Power _____ 3.0 W
 Audio Load _____ 8 ohms
 Intermediate Frequency _____ 455 KHz

LIMITED WARRANTY.

Midland Consumer Radio will repair or replace, at its option without charge, any Midland Mobile, Base Station, or full power Hand-Held Citizens Band transceiver which fails due to a defect in material or workmanship within one year following the initial consumer purchase.

This warranty does not include any carrying cases, earphones, or telescoping antennas which may be a part of or included with the warranted product, or the cost of labor for removal or re-installation of the product in a vehicle or other mounting.

Performance of any obligation under this warranty may be obtained by returning the warranted product, freight prepaid, along with proof of purchase date, to MIDLAND RADIO CORPORATION, Warranty Service Department 1120 Clay St., N. Kansas City, Missouri 64116.

This warranty gives you specific legal rights, and you may also have other rights which vary from state to state.

Note: The above warranty applies only to merchandise purchased in the United States of America or any of the territories or possessions or from U.S. military exchange. For warranty coverage on merchandise purchased elsewhere, consult the supplemental warranty information included with this product or ask your dealer.

SERVICE

If it ever becomes necessary to return your unit for service:

Pack the unit in its original box and packing. Improper packing may result in damage during shipment. Include \$7.50 for return postage and handling. (Note: Some states do not require you to pay for postage and handling).

Include a full description of any problems. Include your telephone number.

You do not need to return accessory items (brackets, screws, power cord, antenna, etc.) unless they may be directly related to the problem.

Include a photocopy of the bill of sale or other proof of purchase showing the date of sale. This information must be included before warranty service can be considered.

A flat rate of \$45.00 will apply to repairs not covered by warranty. Send only cashiers check, money order or Master Card or Visa card number.

MIDLAND RADIO CORPORATION

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FCC Compliance Information
Midland Citizens Band Transceiver
Model 77-120ESP

This device complies with part 15 of the FCC Rules. Operation is subject to the following two conditions:

- (1) This device may not cause harmful interference
- (2) This device must accept any interference received including interference that may cause undesired operation.

For compliance information contact:

Midland Radio Corporation
1120 Clay St.
North Kansas City, MO 64116
Tel: (816) 241-8500