Cat. No. 21-1579

OWNER'S MANUAL

Please read before using this equipment.

TRC-495

40-Channel CB Base Station Transceiver

Radio Shack

FEATURES

Your Radio Shack TRC-495 40-Channel CB Base Station Transceiver is a compact, 40-channel CB specially designed for use as a Class D citizen's band base station. The TRC-495 transmits with the maximum power allowed by the FCC, so your signal really gets out. Its built-in PLL (phase-locked loop) frequency synthesizer uses a precise frequency reference crystal for reliable and exact tuning.

You can operate the CB from either 120 volts AC or 12 volts DC, so you can use it at home or the office, even when AC power fails. With a base station in your home or office and a mobile CB in your vehicle, you can stay in touch wherever you go, without the expense of mobile telephone operation. You can also talk with other CBs for business or just for fun.

Your CB also has the following valuable features:

Large Analog Meter — lets you see how well you are "getting out," and how well others are "getting in."

Scan — seeks out other CB users by searching through all channels for transmissions.

Switchable Noise Blanker and Automatic Noise Limiter — reduce interference from ignition systems, motors, and other electrical equipment.

RF Gain Control — helps prevent overloading from strong signals.

Hysteresis Squelch Circuit — compensates for signal fading and eliminates signal chopping when you listen to a broadcast.

Two Ceramic Filters — give superior selectivity and freedom from adjacent channel interference.

CH9 Switch — lets you quickly switch to Channel 9, used for emergencies or motorist assistance.

Channel Display — shows the selected channel in large red digits, for easy viewing in most lighting conditions.

NB, ANL, and SCAN Indicators — show you when you are in the Noise Blanker, Automatic Noise Limiter, or Scan mode.

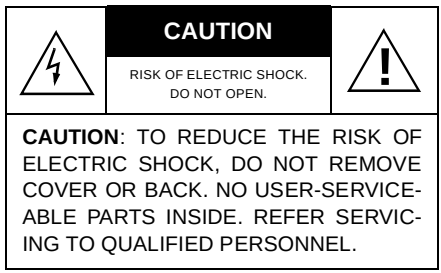
External Speaker and Headphone Jacks — let you connect another speaker or headphones to your CB.

Note: You need a base station antenna to operate this CB. Your local Radio Shack store has a variety of antennas. See “Connecting an Antenna.”

For your records, we urge you to record the serial number of your CB in the space below. You'll find the serial number on the back panel of the CB.

Serial Number _____

Warning: To prevent fire or shock hazard, do not expose this product to rain or moisture.



This symbol is intended to alert you to the presence of uninsulated dangerous voltage within the product’s enclosure that might be of sufficient magnitude to constitute a risk of electric shock. Do not open the product’s case.

This symbol is intended to inform you that important operating and maintenance instructions are included in the literature accompanying this product.

FCC STATEMENT

The Federal Communications Commission (FCC) does not require you to get a CB license to operate your CB. However, you are required to know Part 95 of *FCC Rules*. This information applies to the operation of a Class D citizen's band CB. A copy of Part 95 is enclosed with your CB.

Your CB might cause TV or radio interference, even when it is operating properly. To determine whether your CB is causing the interference, turn off your CB. If the interference goes away, your CB is causing the interference. Try to eliminate the interference by:

- Moving your CB away from the receiver.
- Connecting your CB to an outlet that is on a different electrical circuit from the receiver.
- Contacting your local Radio Shack store for help.

If you cannot eliminate the interference, the FCC requires that you stop using your CB.

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INSTALLATION

SELECTING A LOCATION

Choose a location for your CB that is near a standard AC power outlet and your antenna installation and away from sources of electrical noise.

CONNECTING AN ANTENNA

An antenna is an important part of your CB installation. Choose and install the antenna with care.

Consider the following when you install the antenna:

- Mount the antenna as far as possible from soures of electrical noise (power lines, transformers, ignition systems, electrical motors, and so on) and keep the antenna's cable away from these noise sources.
- Provide a good ground for the antenna with UL-listed components.
- Be sure the antenna cable's shield is securely connected.
- Mount the antenna as high as possible without exceeding 60 feet above the ground or 20 feet higher than the highest point on a building.
- For the best performance, the antenna must be tuned (see the instructions provided with the antenna) and positioned vertically.

Select an antenna with a PL-259 connector. This type of antenna works most efficiently as a base station antenna. For example, a 1/2-wave base station antenna (Radio Shack Cat. No. 21-967) is a high-efficiency antenna that has omni-directional characteristics. You can use this type of antenna for medium and long-range communications.

Use coaxial cable with an impedance of 50 ohms to connect the antenna to your CB. We suggest you use RG-58/U for lengths under 10 feet, or RG-8/U for longer lengths, and keep the length of the antenna cable to a minimum.

Once you select the antenna, mount it following the instructions supplied with it. Then route the cable to the CB and connect the cable to the **ANT** connector on the back of the CB.

Warning: When installing or removing a base station CB antenna, use extreme caution. If the antenna starts to fall, let it go! It could contact overhead power lines. If the antenna touches the power line, contact with the antenna, mast, cable, or guy wires can cause electrocution and death. Call the power company to remove the antenna. DO NOT attempt to do so yourself.

CONNECTING THE MICROPHONE

Mount the supplied microphone clip on the left side of the CB, horizontally or vertically, using the two supplied screws. Then slide the microphone onto the microphone holder.

Connect the microphone cable to the **MIC** jack on the front panel. Press the tab on the top of the microphone plug and match the notch in the plug with the top notch in the jack. Then insert the plug into the jack.

To remove the microphone cable, press the tab and pull the plug out of the jack. Never pull on the microphone cable.

CONNECTING POWER

You can power your CB from either standard 120-volt AC or from a 12-volt DC source, such as a storage battery.

Using Standard 120-Volt AC Power

When you use a standard 120-volt AC power source, set the power select switch on the back of the CB to **120V AC**.

Then plug the CB's AC power cord into a standard AC outlet.

Note: The plug is polarized (one blade is bigger than the other) so it only fits one way. If it will not fit, turn it over and try again. Do not force it.

Using 12-Volt DC Power

If you want to use your CB where 120-volt AC power is not available (for example, when AC power fails or at a remote location), you can power your CB from 12-volt DC power. Use the supplied DC power lead (with in-line fuse).

Follow these steps to connect the CB to 12-volt DC power.

1. Connect the plug end of the DC power leads to the **13.8V DC** power jack on the back of the CB.
2. Set the power select switch on the back of the CB to **13.8V DC**.
3. Connect the red and black power leads to the DC power source as follows:
   - Connect the red lead (with in-line fuse holder and fuse) to the source's (+) terminal.
   - Connect the black lead to the source's negative (–) terminal.

CONNECTING AN EXTERNAL SPEAKER

You can connect an external speaker to the **EXT.SP.** jack. Use an 8-ohm speaker that has a power rating of 3 to 10 watts and a 1/8-inch plug.

Notes:

- Your local Radio Shack store carries a full line of speakers, including one (Cat. No. 21-549) specifically designed for use as an external CB speaker.
- Connecting an external speaker silences the CB's internal speaker.

CONNECTING HEADPHONES

To reduce distractions or help you hear weak signals, you can use your CB with monaural headphones that have a 1/4-inch plug and an impedance of 4, 8, 16, or 100 ohms. Plug the headphones' plug into the **PHONES** jack on the front of your CB.

Note: Plugging in headphones silences both the internal and external speakers.

Caution: Do not use your CB before you connect it to an antenna.

Before you start using your CB, you should know how to use it effectively and courteously. See “CB Courtesy” and “Using 10-Codes.”

RECEIVING TRANSMISSIONS

Note: You must connect the microphone to your CB or it will not receive.

1. Set **VOLUME** to **MIN**.
2. To turn on the CB, press **POWER** to the | position. The CHANNEL display shows the last channel used.
3. Turn **RF GAIN** to **HIGH** (fully clockwise).
4. Turn **SQUELCH** to **MIN** (fully counterclockwise) so you can hear background noise (hiss).
5. Adjust **VOLUME** to a comfortable listening level.
6. Rotate **CHANNEL** to the right to increase the channel number, or to the left to decrease the channel number. The SIGNAL meter shows the strength of the incoming signal.

7. Slowly turn **SQUELCH** to the right until the background hiss disappears.

   Notes:

   - Do not set **SQUELCH** too far to the right, or you cannot hear weak signals.
   - To receive very weak signals, turn **SQUELCH** to the left. You hear noise between transmissions, but you also hear weak signals (those not strong enough to completely break through the squelch).

8. Adjust **VOLUME** again to a comfortable listening level.

TRANSMITTING

Note: We recommend you try receiving before you begin transmitting.

1. Rotate **CHANNEL** to select a channel.

2. Hold the microphone about 3 inches from your mouth. Press and hold the microphone's talk button and speak in a normal voice.

   The TX POWER meter shows the strength of the transmitting signal.

   The microphone automatically adjusts its gain to provide the best modulation. However, speaking very loudly or very softly can still cause unwanted noise or distortion.

3. Release the talk button when you finish speaking.

4. When you are finished, turn off the power by pressing **POWER** to the m position.

USING SPECIAL CONTROLS

Your CB features several special controls. We suggest you learn about these controls so you can fully enjoy your CB.

Using CH9

Important: Channel 9 is reserved for motorist assistance and for reporting emergency information about accidents, hazardous road conditions, and so on. Always give emergency messages priority on Channel 9.

You can instantly switch to Channel 9 at any time by pressing **CH9**. The display shows **9**.

Note: Pressing **CH9** disables **CHANNEL** and **SCAN**.

To return to normal operation, press **CH9** again. Your CB returns to the channel you were previously using.

Using SCAN

You can use the scan function to scan for incoming signals. Press **SCAN**. The TRC-495 starts to scan, and the SCAN indicator lights.

The CHANNEL indicator shows the scanned frequencies, then stops at the incoming signal.

Note: If the signal is lost for about 3 seconds, the CB begins scanning again.

Using NB and ANL

If you encounter noise while receiving, press **NB** (noise blanker) or **ANL** (automatic noise limiter). The NB or ANL indicator lights, and the noise level should drop.

NB eliminates impulse-type noise (like that produced by vehicle ignitions or engines).

ANL reduces the level of continuous noise so it does not interfere with reception.

If you still hear the noise, refer to “Noise Reduction” for additional information.

If parts of the received signal sound choppy, press **NB** or **ANL** again (to the out position) to turn off the function.

Using RF GAIN

Rotate this control to adjust your CB's sensitivity when receiving. Normally, you will leave this control set to **HIGH.** This is useful for blocking out weak stations, while still receiving nearby stations.

When the SIGNAL/TX POWER meter indicates more than half scale, it means that you are receiving a strong signal. If the signal overloads or distorts, rotate **RF GAIN** to the left. For weak signals, rotate **RF GAIN** to the right.

CB COURTESY

Remember these hints when using your CB:

- Wait for a pause in transmission before asking for a break.
- If you do not receive an answer after two calls to a station, let others use the channel. Try again later.
- Do not hold down the talk button when you are not talking. (This is called dead-keying.)
- Help callers with directions, information about road conditions, and any other reasonable requests.
- Always yield any channel for emergency transmissions.

MAXIMUM RANGE

The maximum range and quality of CB transmissions vary depending on these conditions:

- The type and quality of antenna used.
- The height of the antenna's mounting location — the higher the antenna, the better the signal's range.
- The surrounding terrain — mountains and tall buildings limit the range.
- Weather conditions.
- The number of nearby CBs operating on the same channel.
- Standing wave ratio (SWR) between the antenna and the CB. You can check the SWR between the CB and a mobile or base-station antenna using an SWR tester (Cat. No. 21-523). Follow the instructions supplied with the SWR tester and the mobile or base-station antenna to change the SWR, if necessary.

USING COMMON 10-CODES

Citizen's band operators have largely adopted the 10-codes for standard questions and answers. These codes permit faster communication and better intelligibility in noisy areas. This table lists codes adopted by the Associated Public Safety Communications Officers (APCO).

Code	Meaning
10-1	Cannot understand your message.
10-2	Your signal is good.
10-3	Stop transmitting.
10-4	Message received and understood.
10-5	Relay information to _____.
10-6	I am busy or are you busy?
10-7	Out of service.
10-8	In service.
10-9	Repeat last message.
10-10	Negative (No).
10-11	_____ in service.
10-12	Stand by.
10-13	Report _____ conditions.
10-14	Information.
10-15	Message delivered.
10-16	Reply to message.
10-17	En route.
10-18	Urgent.
10-19	Contact _____.
10-20	What is your location?
10-21	Call _____ by telephone.
10-22	Cancel last message.
10-23	Arrived at the scene.
10-24	Assignment complete.
10-25	Meet _____.
10-26	Estimated time of arrival is _____.
10-30	Use caution.
10-31	Pick up.
10-33	Emergency traffic. Clear the channel.
10-34	What time is it?

TROUBLESHOOTING

If your CB is not working as it should, refer to the following charts to see if you can eliminate the problem. If you cannot, take the CB to your local Radio Shack store. DO NOT attempt repairs or adjustments yourself.

Symptom: Trouble with reception

Check	Solution
Insufficient volume?	Adjust **VOLUME** as needed.
Too much squelch?	Adjust **SQUELCH** as needed.
CB not on operating channel?	Switch to active channel.
Microphone connected?	Connect microphone.
Antenna connections?	Secure connections.
RF gain too low?	Adjust **RF GAIN** as needed.
Channel 9 locked?	Press **CH9** again.

Symptom: Trouble with transmission

Check	Solution
Transmission cable connected to antenna?	Secure antenna connector.
Antenna not fully extended?	Extend to full length.
Connectors corroded?	Clean and tighten.
Talk button not fully pressed?	Press completely. Hold down button while speaking.
Microphone connector loose?	Firmly press in jack.

Symptom: CB does not work at all

Check	Solution
Power connected incorrectly?	Secure connections to a live source.
Fuse in the DC power lead needs replacing?	Replace with identical fuse.

NOISE REDUCTION

Since the receiver section of your CB is very sensitive, it easily picks up even the smallest signals and amplifies them. Any noise that you hear from the CB most probably originates from external sources. The receiver itself is exceptionally quiet.

If the noise is continuous and fairly loud, it cannot be totally eliminated by the automatic noise limiter (ANL) and noise blanker (NB) circuits. You must solve the problem at its source.

The sources of noise might be high-voltage power lines, fluorescent lights, electrical motors, automobile ignition systems and so on. Also, incorrect installation of your CB, antenna, or cable might cause noises.

- Try relocating your CB or antenna away from any noise-generating sources.
- Provide a good ground for your antenna with UL-listed components.
- Ensure a good shielding connection in the antenna coaxial cable. Check the connectors and cable, and make repairs if necessary.
- Check the routing of the antenna cable. Reroute the cable away from any noise-generating sources.

In some cases, an AC line interference filter added to the AC input of your CB can help. If a particular appliance or motor seems to be the major cause of noise, try to reduce or eliminate that noise problem at the source (the appliance or motor). You can find many useful accessories including AC line interference filters, cables, and connectors at your local Radio Shack store.

CARE AND MAINTENANCE

Your TRC-495 40-Channel CB Base Station Transceiver is an example of superior design and craftsmanship. The following suggestions will help you care for your CB so you can enjoy it for years.

Keep the CB dry. If it gets wet, wipe it dry immediately. Liquids might contain minerals that can corrode the electronic circuits.

Handle the CB gently and carefully. Dropping it can damage circuit boards and cases and can cause the CB to work improperly.

Use and store the CB only in normal temperature environments. Temperature extremes can shorten the life of electronic devices and distort or melt plastic parts.

Keep the CB away from dust and dirt, which can cause premature wear of parts.

Wipe the CB with a damp cloth occasionally to keep it looking new. Do not use harsh chemicals, cleaning solvents, or strong detergents to clean the CB.

Modifying or tampering with the CB's internal components can cause a malfunction and might invalidate your CB's warranty. If your CB is not performing as it should, take it to your local Radio Shack store for assistance.

Warning: Do not open your CB to make any internal adjustments. Any internal adjustments can be made only by an authorized Radio Shack service center.

Internal adjustments and/or modification can lead to illegal operation as defined by *FCC Rules*, Part 95. Such illegal operation can lead to very serious consequences.

To be safe and sure:

- Never open your CB's case.
- Never change or replace anything in your CB.

REPLACING THE FUSE

Your CB has an in-line fuse that protects the CB when you power it from 12-volts DC. If the CB does not work when you apply power, check the fuse. If it has blown, replace it with one of an identical type and rating (2 Amps, Cat. No. 270-1007).

1. Grasp the ends of the fuse holder and press in while twisting both ends counterclockwise.

2. Remove the old fuse and replace it with a new one.

3. Align the tabs on the male end with the slots on the female end. Then press the two ends together and twist them both clockwise.

SPECIFICATIONS

RECEIVER

Frequency Coverage.....All 40 CB Channels (Class D)
26.965 to 27.405 MHz

Sensitivity ..... 0.7 µV for 10 dB S + N/N

Adjacent Channel Rejection ..... 60 dB (±10 kHz)

Intermediate Frequency ..... 1st IF = 10.695 MHz, 2nd IF = 455 KHz

Audio Output .....3.5 Watts (Max)

Frequency Response (–6 dB) ..... 450-2500 Hz

Squelch Sensitivity 100µV

TRANSMITTER

Frequency Coverage.....All 40 CB Channels (Class D)
26.965 to 27.405 MHz

Output Power .....4 Watts

Modulation Capability.....90%

Spurious Emission.....Less Than 70 dB

Frequency Tolerance.....0.002%

Antenna Impedance ..... 50 Ohms

Power Requirements.... 120V AC, 60Hz, 50 Watts or 12 VDC, Negative Ground

Dimensions (HWD).....$2^{15}/_{16}$ x $11^{1}/_{8}$ x $8^{1}/_{4}$ Inches (74 x 282 x 209 mm)

Weight .....6.6 lbs (2.3 Kg)

Specifications are typical; individual units might vary. Specifications are subject to change and improvement without notice.

NOTES

RADIO SHACK LIMITED WARRANTY

This product is warranted against defects for 90 days from date of purchase from Radio Shack company-owned stores and authorized Radio Shack franchisees and dealers. Within this period, we will repair it without charge for parts and labor. Simply **bring your Radio Shack sales slip** as proof of purchase date to any Radio Shack store. Warranty does not cover transportation costs. Nor does it cover a product subjected to misuse or accidental damage.

EXCEPT AS PROVIDED HEREIN, RADIO SHACK MAKES NO EXPRESS WARRANTIES AND ANY IMPLIED WARRANTIES ARE LIMITED IN DURATION TO THE DURATION OF THE WRITTEN LIMITED WARRANTIES CONTAINED HEREIN. Some states do not permit limitation or exclusion of implied warranties; therefore, the aforesaid limitation(s) or exclusion(s) may not apply to the purchaser.

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

We Service What We Sell *9/94*

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