

CB PLL 40 CHANNEL MOBILE TRANSCEIVER

TRC-448



OWNER'S MANUAL

PLEASE READ BEFORE
USING THIS EQUIPMENT

REALISTIC[®]

CAT. NO.
21-1561

CUSTOM MANUFACTURED FOR RADIO SHACK  A DIVISION OF TANDY CORPORATION

Your new **TRC-448** is a completely solid-state AM/SSB Transceiver. It uses a frequency synthesizing circuit with Digital Phase Lock Loop techniques to provide crystal controlled transmit and receive operation on all 40 channels.

You can use your **TRC-448** Transceiver on any one of the 40 channels in the conventional AM mode, plus the same 40 channels in either the Upper Sideband mode or the Lower Sideband mode. Using SSB will increase the effective range of communication because all the power is concentrated in one sideband to provide 100% talk-power. Single Sideband reception also adds advantages in sensitivity and selectivity, plus lower signal-to-noise. This of course also contributes to an increase in operating range.

The **TRC-448** has been carefully designed for easy operation. You can select AM, Upper Sideband or Lower Sideband with the simple change of a 3-position switch. Transmission is simple too—just press the microphone button. Ordinarily an SSB signal will reach farther and be heard more clearly than an equivalent AM signal. SSB reception is simple—just adjust the CLARIFIER control to bring in the voice transmissions.

We've added all the other most wanted features for optimum communications—RF Gain control, Squelch, Clarifier, Automatic Noise Limiter, Noise Blanker, Ignition Noise Filter and Crystal Lattice Filter.

FEATURES

- * Full 40 channel operation from innovative Phase Lock Loop system.
- * Dual C-MOS Field Effect Transistor in the critical mixer stage assures freedom from cross-modulation and other undesirable RF distortion products.
- * All-silicon solid-state circuitry (for minimum noise products and maximum circuit efficiency).
- * Crystal filter provides superior selectivity and freedom from adjacent channel interference.
- * Switchable Noise Blanker **and** Automatic Noise Limiter eliminate noise interference on both SSB and AM.
- * Variable Squelch control eliminates background noise between calls.
- * Push-pull audio provides excellent sound for high intelligibility.
- * Large, easy-to-read LED channel indicator.
- * P.A. (Public Address) capability at the touch of a switch.

For your own protection, we urge you to record the Serial Number of this unit in the space provided.

You'll find the Serial Number on the back panel of the unit.

Serial Number 009172

F.C.C. LICENSE (U.S.A.)

Before transmitting with your Transceiver, you must have an FCC Citizens Radio Service License. If you don't have a license yet, you can fill out the Temporary Permit Form 555-B for a temporary license. Also, fill out and mail in FCC Form 505 CB License Application to:

Federal Communications Commission
P.O. Box 1010
Gettysburg, Penn. 17326

You must also read and know Part 95 of the FCC rules and Regulations; they apply to the operation of a Citizens Band unit. We've provided a copy of this regulation (along with the forms noted above).

NOTE: Units manufactured for sale and use in the U.S.A. are type-accepted by the Federal Communications Commission and are not to be sold or used in Canada (they have not been approved by D.O.C.).

D.O.C. LICENSE (CANADA)

Before transmitting with your Transceiver, you must obtain a Department of Communications (D.O.C.) General Radio Service license. Obtain a license application form from your nearest D.O.C. Radio Regulations Office. Complete the form and mail with the appropriate fee to the Radio Regulations Office nearest you.

D.O.C. Approved Number:

NOTE: Units manufactured for sale and use in Canada are not identical to units type-accepted by the FCC. Canadian models have been approved by D.O.C. and are to be used only in Canada.

RADIO SHACK LIMITED WARRANTY

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

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

SSB (SINGLE SIDEBAND) WHAT IS IT?

To understand SSB, we need to know what an AM (Amplitude Modulated) signal is.

Amplitude Modulation is a form of heterodyning – mixing 2 signals together electrically. In the process of mixing, 3 signals result.

Example: An R.F. signal at 27.005 MHz (channel 4 C.B.) is mixed with (modulated by) a 1000 Hz tone.

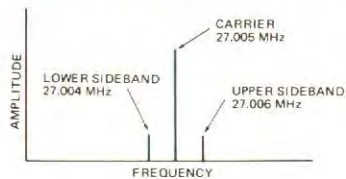
The resulting signals –

27.005 MHz = original or "carrier" signal

$27.005 \text{ MHz} - 1000 \text{ Hz}$ = 27.004 MHz, the Lower Sideband
(27,005,000 minus 1000)

$27.005 \text{ MHz} + 1000 \text{ Hz}$ = 27.006 MHz, the Upper Sideband
(27,005,000 plus 1000)

AMPLITUDE MODULATION

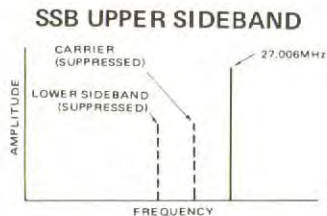
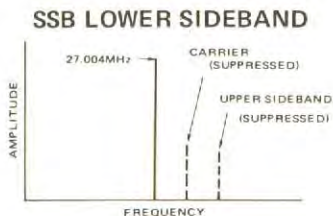


Notice that the communication or intelligence (the 1000 Hz tone) is contained in each sideband. The Carrier contains no intelligence. This fact is vital!

For the sake of communication, all we need to receive is the 1000 Hz tone. The receiver only needs to recover one signal, and yet we are transmitting 3 signals. Not only are we sending 3 signals, but also we are wasting most of our power in one of them (which carries none of the intelligence, ie. the carrier, 27.005 MHz) and the other two signals duplicate each other!

Thus, if we can eliminate the carrier (not needed for communication) and can send only one of the sidebands (since they duplicate each other's information anyway), we could concentrate all of the transmitting power into one sideband. This is exactly what Single Sideband accomplishes.

Single Sideband transmissions incorporate only **one** of the sidebands – ie. in the example above, **only** the upper sideband at 27.006 MHz or **only** the lower sideband at 27.004 MHz. The second sideband and the carrier are eliminated in the early stages of the transmitter circuitry.



When only one sideband is transmitted, we can concentrate all of the available power in this one sideband, greatly increasing the effective power of an SSB signal as compared to an AM signal.

See **Advantages of SSB Over Normal AM.**

ADVANTAGES OF SSB OVER NORMAL AM

A theoretically perfect AM transmitter used in Class "D" Citizens Band Radio Service as permitted by the Federal Communications Commission will have the following maximum input power specification:

Carrier – 4 watts with capability of 100% modulation

In order to fully Amplitude Modulate a 4 watt carrier, a full 2 watts of audio power is required. In this case, only 1 watt of power can exist in each sideband. Since the carrier contains no intelligence, and the sidebands duplicate each other, really **only one sideband is required to transmit the required intelligence.**

If we take the above transmitter and convert it to Double Sideband operation (eliminate the carrier power), we can increase the power in the sidebands to 2 watts each, without overloading the circuitry. Further, if we eliminate one of the two sidebands, we can put the full 4 watts of power into remaining sideband. Thus, while an AM transmitter has only 1 watt of power in one sideband, an SSB transmitter can have 4 watts of power in one sideband – or **4 times the power of an AM transmitter.**

Thus, effectively an SSB transmitter with the same power limitations is 4 times more powerful than an AM transmitter.

One further advantage, which is not often mentioned. Not only does the SSB signal take up only $\frac{1}{2}$ of the frequency spectrum space of an AM signal (only 1 sideband instead of 2), thus permitting twice the number of stations to be in the same amount of band space – but also, at the receiving end, the receiver only picks up $\frac{1}{2}$ of the total AM bandwidth. This means that 50% less noise is amplified along with the signal. This results in a 50% improvement in Signal-to-Noise figures; or, in more technical terms, a 3 dB improvement.

Thus, given equal limitations and conditions, an SSB signal will be 4 times more powerful and will have 2 times the signal-to-noise advantage of an AM signal — **8 times as effective**. In technical terms, a 9 dB advantage. Thus, for an AM transmitter to be equivalent in effectiveness it would have to be rated at 32 watts!

Enough said! We hope you're enthused.

CONTROLS AND THEIR FUNCTIONS



RF GAIN Control — varies the sensitivity of the RF amplifier stages of the Receiver circuitry. For normal operation, set **RF** to maximum and adjust **VOLume** for a suitable listening level. Under high-signal conditions, you may want to turn **RF** down a little and raise **VOLume** as required.

VOLume Control with "ON/OFF" switch — turn clockwise to apply power to the unit and then adjust for the desired level of sound from the speaker.

SQUELCH Control — sets the level of the internal Squelch circuitry to cut out the background noise when no signal is being received. When properly set, it allows signals to come through, but cuts off the receiver sound when no signal is being received, thus eliminating annoying background/atmospheric noise during standby and monitoring conditions. If set too high, you may miss some of the weaker signals. Operating conditions will determine the best setting.

CLARIFIER Control — functions as a fine tuning (or "delta" tuning) for reception of Single Sideband and AM signals.

AM-LSB-USB Switch – set this switch to the desired mode of operation for both transmit and receive. When in the **AM** position, both transmit and receive sections are operative for **AM**. When set to the **LSB** position, the Receiver operates to receive only the lower sideband portion of a signal; the Transmitter will transmit only the lower sideband of the modulated waveform. In the **USB** position, the Receiver operates to receive only the upper sideband portion of a signal; the Transmitter will transmit only the upper sideband of the modulated waveform.

Function LED are lit up to indicate which mode is selected by the **AM-LSB-USB switch**.

Microphone – the dynamic Microphone is connected to the jack on the side. To Transmit, press the button on the side of the Microphone and talk into the Microphone. To Receive, release the button.

When the **MON-PA-CB** switch is in “**MON**” or “**PA**”, the Microphone functions as a part of the Public Address feature. When transmitting, hold the microphone at an angle, 2” (5 cm) or 3” (7.5 cm) from your mouth and speak clearly in a normal voice. For **PA** operation, you must have a **PA** speaker connected to the **PA** jack on the rear chassis.

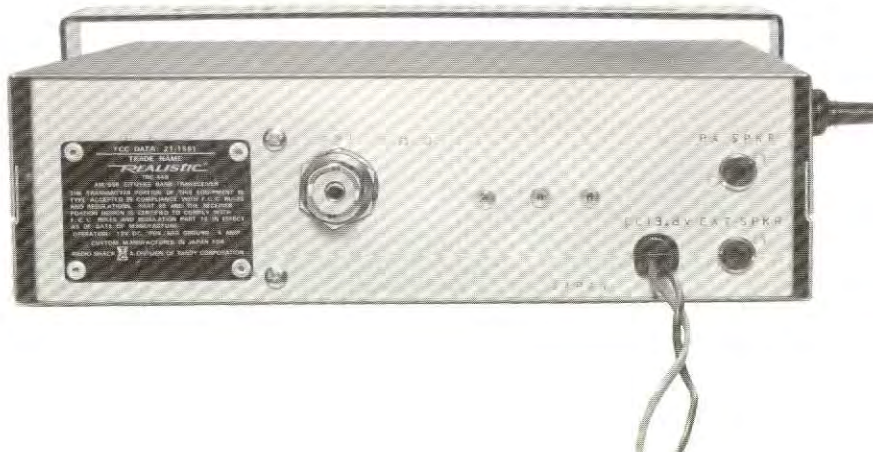
MON-PA-CB Switch – controls the function of the audio amplifier/modulation circuitry when the Microphone button is pressed. When the slide switch is in the “**CB**” position, the Microphone button turns the transmitter on for normal transmissions. When set to “**PA**” position, the Transmitter will not function – the Microphone turns on the Public Address Amplifier function. For **PA** operation you must have a **PA** speaker connected to the **PA** jack on the rear chassis. When set to “**MON**” position, you can use the **PA** function and yet can monitor **CB** incoming signals.

NB-OUT Switch – when in the “**NB**” position, it activates a “blanker-type” noise silencer for reception of SSB signals and a series-type ANL circuit for reception of AM signals under conditions of high impulse-type noise. When in the **OUT** position, the Noise Blanker and ANL are not in the receive circuit.

Channel Selector Switch – selects any one of the standard 40 channels.

RF/S Meter – indicates the relative strength of the incoming signal when receiving (in “**S**” units) and the relative power output when transmitting. When transmitting **AM**, the meter moves up to indicate the presence of the carrier and when transmitting **SSB**, the meter swings up with modulation. The Meter is lit up in both modes.

THE REAR PANEL



ANTenna Coax Connector — connect your CB antenna to this (SO-239 type, accepts PL-259 connectors).

EXTernal SPKR (Speaker) Jack — if you want to use an external speaker, plug it into this jack. You should use a standard 8 ohm type. When a miniature plug is inserted into this jack, the built-in speaker is automatically disconnected.

Public Address SPKR (Speaker) — for use with the Public Address function, plug the PA speaker into this jack. When the **MON-PA-CB** switch is **MON** or **PA**, press the Microphone button and speak into the Microphone, you have a 5-watt PA amplifier. Use an 8 ohm speaker and miniature plug with this jack.

Power Cable — this cable is to be connected to a source of 12-16 volts DC power, + or — ground. The Red wire with the in-line fuse must be connected to the + side and the Black wire to the — side.

USING YOUR TRANSCEIVER

TO RECEIVE AM SIGNALS

1. Turn power "on" by rotating **VOLUME** clockwise.
2. Set **SQUELCH** control maximum counterclockwise.
3. Set **RF Gain** control maximum clockwise.
4. Set Mode to **AM**.
5. Set **CHANNEL** Selector to the desired channel.
6. Adjust **SQUELCH** to cut out annoying background noise when no signal is being received. To do this, set **CHANNEL** Selector to where no signals are present (or wait till signals cease on your channel). Then rotate **SQUELCH** in a clockwise direction to the point where the background noise just stops. Now, when a signal is present you will hear it, but will not be disturbed by noise on the channel in between signals.

When properly set, **SQUELCH** will keep the receiver "dead" until a signal comes in on that channel. Do not set **SQUELCH** too high, or weak signals will not be able to "open" the Squelch circuit. To receive weak signals, it is best to leave **SQUELCH** set to the minimum position (maximum counterclockwise).

7. Use **CLARIFIER** to tune in slightly off-frequency stations, or to tune out adjacent channel interference caused by a station on the next channel (which may be too close to your channel).
8. Adjust **VOLUME** for a suitable listening level.

TO RECEIVE SSB OR DSB SIGNALS

1. Set **RF Gain** maximum clockwise.
2. Set **SQUELCH** maximum counterclockwise.
3. Set Mode to either **LSB** (lower sideband) or **USB** (upper sideband), depending on which sideband is being used by the transmitting station.

NOTE: When receiving DSB (double sideband) signals, you can use either **LSB** or **USB**.

4. Turn power "on" by rotating **VOLUME** clockwise.
5. Set **CHANNEL** Selector to the desired channel.
6. Adjust **SQUELCH** to cut out annoying background noise when no signal is being received. To do this, set **CHANNEL** Selector to where no signals are present (or wait till signals cease on your channel). Then rotate **SQUELCH** in a clockwise direction to the point where the background noise just stops. Now, when a signal is present you will hear it, but will not be disturbed by noise on the channel in between signals.

When properly set, **SQUELCH** will keep the receiver "dead" until a signal comes in on that channel. Do not set **SQUELCH** too high, or weak signals will not be able to "open" the Squelch circuit. To receive weak signals, it is best to leave **SQUELCH** set to the minimum position (maximum counterclockwise).

7. Use **CLARIFIER** to tune in the SSB signal.
SSB tuning takes practice; it is not difficult, it just takes a little experience. When first listening to an SSB signal, it probably will not be understandable; the voice may sound like "Donald Duck", or just a low guttural sound. In either case, very slowly adjust **CLARIFIER** to bring the signal into its natural voice tonal range.
If the signal is Donald Duck type, tune so the signal tones become lower in tone; careful tuning will make the voice sound natural. If the signal is low and guttural, tune for higher tones.

NOTE: If you try the above procedure and are not able to make the signal intelligible, it may be an SSB signal operating on the other sideband so try the other SSB Mode (**LSB** or **USB** as the case may be).

8. Adjust **VOLUME** for a suitable listening level.

NOTES ON RECEIVING

An SSB signal will produce a fluttering, unintelligible sound when receiving in the **AM** mode; in such a case, use either the **LSB** or **USB** mode and adjust **CLARIFIER** for intelligibility.

You can tune AM signals when the Mode switch is in the **USB** or **LSB** position; tune **CLARIFIER** control to eliminate the steady tone caused by the AM carrier ("zero-beat" the tone so it disappears).

TO TRANSMIT

Do not Transmit without a suitable antenna or load connected to the ANTenna connector. For installation, refer to that section.

1. Set Mode Switch to the desired position.
2. Select the desired channel of operation.
3. Press the push-to-talk button on the Handset and hold it at a slight angle, 2–3" (5–7.5 cm) from your mouth and speak in a normal voice.
4. The Meter will light up and one of the lamps behind the Meter will flash as you modulate the signal by speaking. The Meter will give a relative indication of the output power.
5. To Receive, release the push-to-talk button.



USING THE PUBLIC ADDRESS AMPLIFIER FEATURE

You can use your Transceiver to provide 5 watts of audio power as a Public Address Amplifier. To use this function, you must connect an 8 ohm public address type speaker to the PA speaker jack on the rear of the unit.

1. Be sure an 8 ohm speaker is connected to the PA speaker jack.
2. Set **MON-PA-CB** switch to **MON** or **PA**.
3. Turn power "on" by rotating **VOLUME** clockwise.
4. Connect the Microphone; press the push-to-talk button on the Microphone and talk into it. Adjust **VOLUME** for the desired level of amplification.
5. When **MON-PA-CB** switch is in "**MON**", CB signals can still be monitored. Since the receiver is operating, CB signals will be heard through the PA speaker. This feature assures that you will not miss important calls even while using the PA function. To turn the receiver's sound off, set the switch to "**PA**" position.
6. To return to normal Transceiver operation, position the **MON-CB-PA** switch to "**CB**".

INSTALLATION

Your unit is designed as a mobile station. We have included most of the things you need for mobile operation. All you need to purchase is an antenna and its accessories. Refer to the ANTENNA section for additional information.

LOCATION

Safety and convenience are the primary considerations for mounting any piece of mobile equipment. All controls must be readily available to the operator without interfering with the movements necessary for safe operation of the vehicle. Be sure all cables are clear of the brake, clutch and accelerator. Also, thought must be given to the convenience of passengers (will they have adequate leg room?).

Another extremely important requirement is the ease of installation and removal (for service and maintenance). Mount the transceiver so it can be slipped in and out very easily.

The most common mounting position for a transceiver is under the dashboard directly over the driveshaft hump. Do not mount the transceiver in the path of the heater or airconditioning air stream. See the illustration.

When you have determined the best location for mounting, use the Mobile Mounting Bracket as a template to mark mounting holes. Take care when you drill holes that you do not drill into wiring, trim or other accessories. Mount in position with bolts, lockwashers and nuts or self-threading screws. See the illustration.

DC POWER AND OTHER CONNECTIONS

The TRC-448 is designed for use with either Negative or Positive Ground Electrical Systems.

Negative Ground Systems

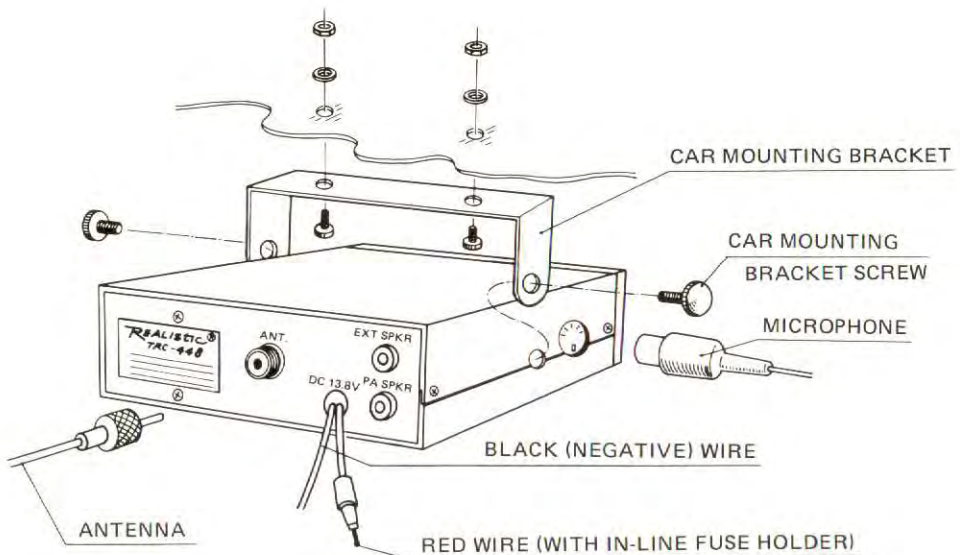
Connect the red fused wire of the power cable to the positive or (+) battery terminal (or to a fuse block or ignition switch or other convenient + connection point). The black wire is negative and should be connected to the metal part of the vehicle body or (-) battery terminal.

Positive Ground Systems

Connect the red fused wire of the power cable to the positive terminal (+) of the battery (or to the metal part of the vehicle's body). The black wire is negative and should be connected to the "hot" side of the ignition switch or directly to the negative terminal of the battery.

You can use an auto accessory plug (Radio Shack Catalog Number 274-331) to connect your transceiver to the vehicle's power source. However, it is better to connect the DC power cord directly to the accessory terminal of the ignition switch. This will prevent unauthorized usage of the transceiver, and will also prevent you from leaving the transceiver on unintentionally.

Connect the Antenna system to the ANTenna coax connector. If you are using an external speaker, connect it to the EXT SPKR jack.



ANTENNA SYSTEM

The antenna system includes the transmission line, and it is very important that you use the correct type of transmission line. The transmission line should be of the coaxial type and should have an impedance equal to the antenna impedance.

Since your Transceiver is designed to operate most efficiently into a 50 ohm load, it is best to use a type of coaxial cable with an impedance of 50 ohms. We suggest type RG-58/U for short lengths and RG-8/U for long lengths.

Generally speaking, you should keep the length of the transmission line to a minimum. Remember that transmission line losses increase with frequency. Use foam-insulation coax for best results.

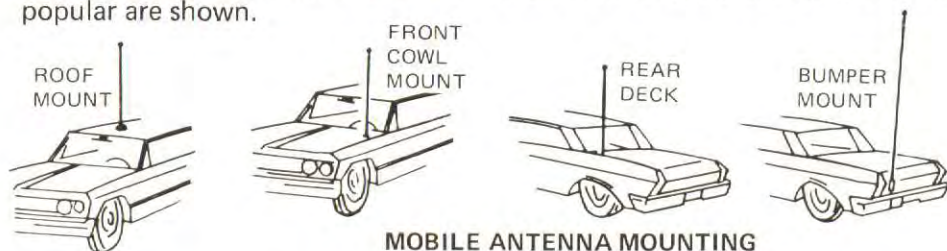
The above discussion is as important for reception as it is for transmission. If a mismatch exists between the antenna and the receiver, the excellent sensitivity and signal-to-noise ratio of the receiver circuitry will be defeated.

MOBILE ANTENNAS

There are two types of mobile CB antennas: a full-length whip or a loaded whip. Your local Radio Shack store has a complete line of both types and the salesman can help you choose the best antenna for your needs.

A vertically polarized whip antenna is best suited for mobile service. It is omni-directional and can be the loaded type or a full quarter-wave (quarter-wave being more efficient).

There are many possible antenna location on a car. Four of the most popular are shown.



ROOF MOUNT — In this position the antenna radiates equally in all directions. Since the normal $\frac{1}{4}$ wavelength whip antenna is too long (102" [2.6 m]) for roof mounting on a vehicle, the antenna is shortened and a

loading coil is utilized to provide the proper electrical length. Our Fiberglass Roof-Mount catalog number 21-925, is a good durable antenna.

FRONT COWL MOUNT — The radiation pattern is slightly greater in the direction of the rear fender opposite the side on which the antenna is mounted. However, this position offers a number of advantages. The CB antenna can be easily mounted. It can double as both the CB and the standard auto radio antenna by employing a two-way coupler. Ask about our catalog number 21-930 Front Cowl Mount antenna which is designed for CB, AM and FM operation.

REAR DECK — The radiation pattern is strongest in the direction of the front fender opposite the side on which the antenna is mounted. In this position you can use a full quarter-wave antenna or a shorter, loaded whip. Here you might consider Radio Shack's catalog number 21-926 or 21-908, or one of the full 102" (2.6 m) whips.

BUMPER MOUNT — The antenna radiates in a pattern directly in front of and to the rear of the vehicle, with maximum radiation directly away from the vehicle, in a horizontal plane. Despite its fairly irregular pattern, a bumper mounted full-length whip antenna will normally give the best results. Removing the antenna is simple and will leave no holes in the car. We suggest you try our bumper-mount fiberglass whip, catalog number 21-927.

A few general rules should help you install any mobile antenna properly.

1. Keep it as far as possible from the main bulk of the vehicle.
2. Keep as much of it as possible above the highest point of the vehicle or boat.
3. During operation, it must be vertical. Thus, it should be mechanically rigid so it will remain vertical when the vehicle or boat is in motion.
4. Mount it as far as possible from sources of noise (ignition system, gauges, etc.) and keep the transmission line away from these noise sources.

An antenna mounted in a boat requires a ground. This can be either a metal hull or a ground made of tin-foil or copper sheeting. This ground should cover an area of 12 square feet (1 m²) or more. Be sure the transceiver also has an adequate ground. Our Catalog Number 21-912 has been designed so no additional ground is needed, so if you use this antenna it will save you an extra bit of work.

FIXED STATION ANTENNAS

While your **TRC-448** is designed primarily for mobile use, you of course can use it in a base installation — providing you have a 12-volt DC power supply (available from Radio Shack). So, just in case you do operate from a base station, let's briefly mention base station type antennas.

The most popular fixed-station antenna is a complex colinear or ground plane.

Beam antennas provide maximum gain and maximum directivity. The directivity can be a disadvantage unless a rotor is used. Since a beam antenna is directional, it greatly reduces noise and interference from all other directions. This can be a decided advantage on the CB bands where man-made noise and interference from other CB signals is a problem.

Your Radio Shack store carries a complete line of base station CB antennas and accessories. For maximum efficiency, we strongly recommend using an SWR meter to aid in the proper matching of your antenna and Transceiver.

The antenna system should be adequately grounded.

Always use a static discharge unit on your antenna system.

HINTS

NOISE

Your vehicle or boat can be the cause of much noise interference. Since the receiver section of your transceiver is very sensitive, it will pick up even the smallest noise signals and amplify them. Any noise that you hear in the transceiver is almost totally from external sources. The receiver itself is exceptionally quiet. Steady high noise levels can not be totally eliminated by the internal Noise Blanker and Automatic Noise Limiter circuits. **Noise problems can not be solved internally (in the transceiver); they must be solved at the source of the noise.**

If you wonder if the noise is from your ignition system, the transceiver or an external source, try this simple test. Turn your ignition switch off and set it to ACC (accessories). This turns off the ignition, but supplies power to the transceiver. Most of the noise will disappear—indicating that the source of noise is your ignition system.

This interfering noise can be generated anywhere in the electrical system of the vehicle or boat. The first step in reducing or eliminating this noise is to locate the source of the noise.

IGNITION SYSTEM

The most common source of noise is the ignition system. This noise can be identified by the fact that it varies with the speed of the engine. It consists of a series of popping sounds occurring at a regular rate that will vary with the speed of the engine and stop when the ignition is turned off.

There are a number of things that can be done to reduce this type of noise:

1. Use only the "radio suppression type" high voltage ignition wire. Most new cars come already equipped with this type of wire.
2. Inspect the high voltage ignition wire and all connections made with this wire. Old ignition wire may develop leakage, resulting in hash.
3. If noise still persists, replace the spark plugs with spark plugs that have suppressor resistors built-in. Be sure to use the correct type for your vehicle.

Other sources of noise are: generator/alternator, regulator, gauges and static discharge. Most of these types of noise can be effectively reduced or eliminated by using bypass capacitors at the various output voltage points. We suggest you check your Radio Shack store for a wide selection of noise reduction accessories.

SERVICE AND MAINTENANCE

Your transceiver has been built in accordance with Radio Shack's exacting quality control standards. However, it should be treated with reasonable care accorded any electronic equipment. Avoid exposing it to severe shock, dirt or moisture.

If you run into problems with the unit, we recommended you check the following:

1. If trouble is experienced with receiving.
 - * Check the **VOLUME** On/Off switch setting.
 - * Be sure **SQUELCH** is adjusted properly. Is it over-squelched?
 - * Check if the unit is switched to an operating channel.
2. If trouble is experienced with transmitting.
 - * Check if the transmission line is securely connected to the ANTenna Connector.
 - * Check if the antenna is fully extended for proper operation.
 - * Are all transmission line connections secure and free of corrosion?
 - * Make sure you are fully pressing the Push-To-Talk button on the Mic.
 - * Be sure the Mic is firmly connected to its jack.

3. If the transceiver is completely inoperative.
* Check the power cable and fuse (4 A).

If these checks don't solve the trouble, do NOT attempt repairs or adjustments yourself. The unit should be serviced only by a qualified radio technician. Whenever possible, return the unit to the store from which it was purchased.

10-CODES

Citizen band radio operators have largely adopted the 10-code for standard questions and answers. Its use permits faster communication and better intelligibility in noisy areas. The following table lists some of the more common codes and their meanings.

Code	Meaning	Code	Meaning
10-1	Receiving poorly	10-10	Standing by
10-2	Receiving well	10-13	Advise road/weather conditions
10-3	Stop Transmitting	10-20	What is your location?
10-4	OK	10-33	Emergency traffic
10-7	Out of Service	10-36	Correct time
10-8	In Service	10-41	Switch to Channel
10-9	Repeat	10-62	Cannot copy you

WARNING

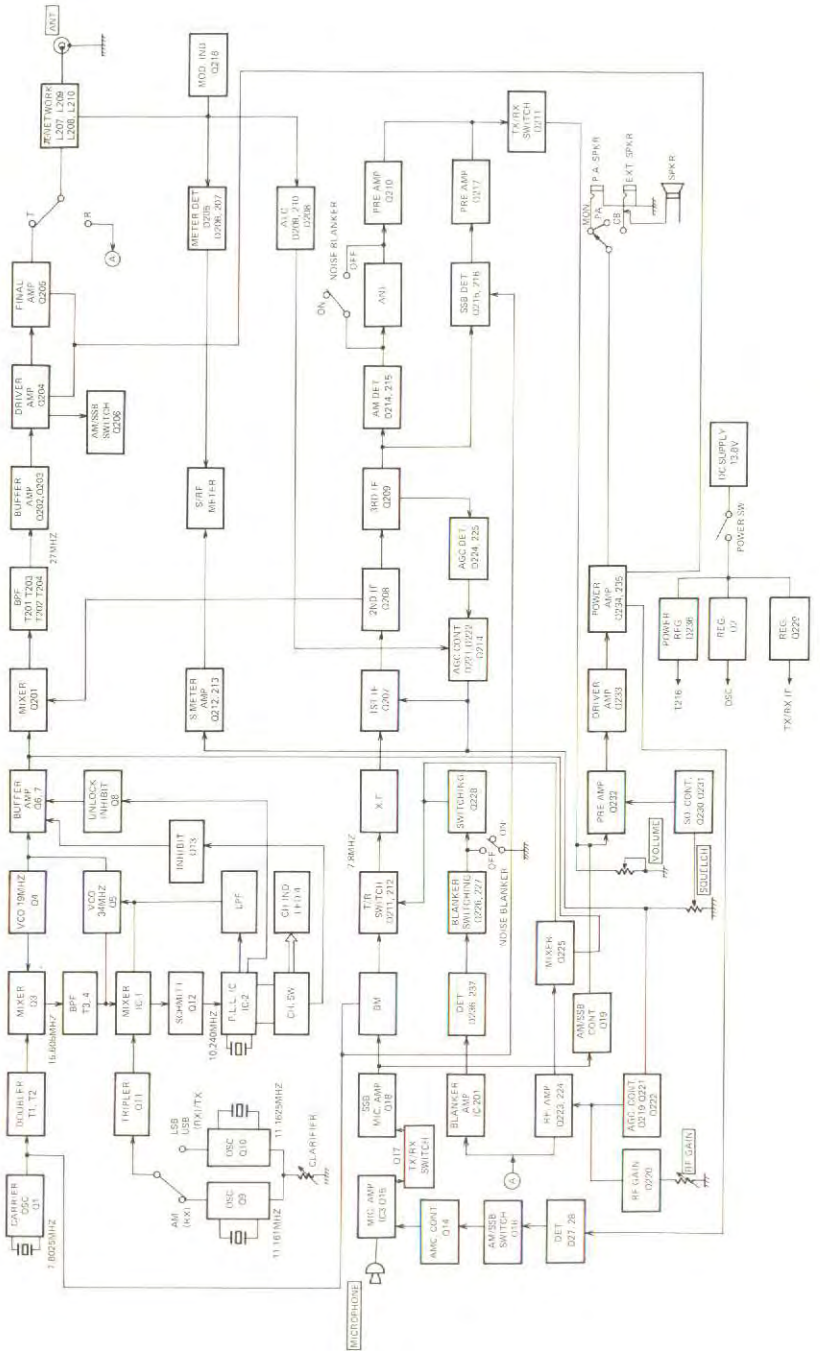
Do not open up the Transceiver to make any internal adjustments. Any internal adjustments can be made only by (or under the direct supervision of) a person holding an FCC 1st or 2nd Class Radio Operator's License.

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

TO BE SAFE AND SURE:

1. You should never open up the case of your Transceiver.
2. Never change or replace anything in your Transceiver.

BLOCK DIAGRAM



SPECIFICATIONS

RECEIVER

Frequency Coverage:	26.965 to 27.405 MHz
I.F.:	7.8 MHz
Sensitivity:	AM: $0.5\mu\text{V}$ or better for 10dB (S+N/N) SSB: $0.25\mu\text{V}$ or better for 10dB (S+N/N)
Selectivity:	More than 60dB
Adjacent Channel Rejection:	AM: 80dB SSB: 90dB
Cross Modulation:	Better than 60dB
Clarifier Range:	$\pm 1,000\text{Hz}$
Frequency Response:	300–2,500 Hz (+3, –20dB)
Image Rejection:	80dB
Audio Output:	3.5 watts (10% distortion)
Squelch:	Adjustable from $0.25\mu\text{V}$

TRANSMITTER

Emission:	8A3.4A3J
Frequency Coverage:	26.965 to 27.405 MHz
Power Output:	4 watts AM maximum 12 watts SSB (PEP)
Carrier Suppression:	50dB or better
Intermodulation Distortion:	Below –25dB (3rd)
Spurious Output:	–65dB
Frequency Tolerance:	$\pm 0.0003\%$
Antenna Impedance:	50 ohms
Current Drain (13.8volts DC):	AM: 2A, maximum SSB: 2.5A, maximum

PUBLIC ADDRESS

Power Output: 5 watts (maximum)

RADIO SHACK  A DIVISION OF TANDY CORPORATION

U.S.A.: FORT WORTH, TEXAS 76102
CANADA: BARRIE, ONTARIO L4M 4W5

TANDY CORPORATION

AUSTRALIA

280-316 VICTORIA ROAD
RYDALMERE, N.S.W. 2116

BELGIUM

PARC INDUSTRIEL DE NANINNE
5140 NANINNE

U K

BILSTON ROAD
WEDNESBURY, WEST MIDLANDS WS10 7JN