SBE Sidebander V Owner's Manual

Sidebander V

MODEL SBE-39CB

OWNER'S MANUAL

SBE®

ACCESSORIES

SBE-4AC BASE STATION POWER SUPPLY

Rear terminals permit you to connect your unit in seconds. Plugs into any 110V 60 Hz outlet. Top and bottom rubber feet hold it firm, yet prevent it from scratching surfaces above and below.

SBE-1 SP ACCESSORY SPEAKER

This speaker allows sound to be focused toward the listener when mounted overhead, on sun shield or on inside rear shelf of vehicle. Speaker is closer to operator and not subject to under-dash muffling.

Tiltable "U" shape bracket facilitates mounting. Compact speaker is attractively finished in flat black and has protective grill. Speaker cone and dust cover are treated for resistance to moisture. The 6 foot cable provided terminates in a miniature plug. Power rating, 4-6 W, impedance 4Ω.

Size 4.8"W, 4"H, 1.7"D. MM: 102H, 45D, 111W.

SBE-1SP/AMP ACCESSORY SPEAKER with amplifier

Another SBE, "Beat mobile noise" innovation turns any meek muffled audio channel into a roaring lion! The *means*: The SBE-1SP speaker is fortified by 6 big watts of audio supplied by a built-in solid-state audio amplifier that plugs into set's auxiliary speaker outlet. Amplifier is powered directly from vehicle 12V battery, *either positive or negative ground.* Amplifier is easily driven by audio output available from most CB transceivers, is biased near Class B so standby current is only 0.015A and increases in proportion to signal output.

Input can be either 4 or 8Ω. Cord with plug and power leads is supplied.

Size: 4.8"W, 4"H, 1.7"D. MM: 102H, 45D, 111W.

NC-100

MOBILE NOISE CANCELLING MIC.

SBE noise cancelling microphone makes mobile operation far more pleasant, avoids needless repeats by substantially reducing extraneous noise pickup that is ever present in cars, trucks, other vehicles driving on highways. Special acoustic design uses noise input from an extra sound port in the top of the unit to provide a modified cardioid sound pickup pattern. Noise rejection is 10db or more to the front, 20 db or greater to either side. Microphone operates with all SBE transceivers having 4-conductor male microphone input.

M-100X

MOBILE MIC. with amplifier

Conveniently small hand-held mobile microphone has a built-in solid-state amplifier, offers fixed station operating convenience in motion! A rear control with calibrated thumb wheel allows speech gain to be set for optimum modulation under prevailing background noise conditions. Amplifier is powered from internal penlight cells and is capable of more than 15db gain. Microphone has coil cord fitted with 4-conductor plug.

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GETTING ON THE AIR

You must have an FCC license to operate this unit. If you do not presently have one, consult page 26. You may start operating under a temporary license as soon as the enclosed Form 505 is mailed. If your SIDEBANDER V is already installed, you may proceed immediately to the next section — OPERATING INSTRUCTIONS. For those who prefer to do their own installation, detailed installation instructions are included.

OPERATING INSTRUCTIONS

Receive:

1. Set the CB/PA switch to CB, the 9E and the NB switches to off.
2. Turn the OFF/VOLUME control clockwise. The S/RF meter and CHANNEL INDICATOR should illuminate.
3. Turn SQUELCH control fully counterclockwise.
4. Turn RF GAIN control fully clockwise.
5. Adjust VOLUME control until a hissing sound or voice is heard at a comfortable level.
6. Slowly turn SQUELCH control clockwise until the hissing sound just disappears or until unintelligible weak signals are eliminated.
7. Rotate CHANNEL SELECTOR knob until a channel with CB traffic is found.
8. Set MODE SWITCH on mode (AM, USB, LSB) that produces intelligible reception.
9. Adjust CLARIFIER.
10. Readjust SQUELCH control until unwanted weak signals are eliminated.

Scan:

The Sidebander V has the capability of sequentially scanning the channels until a "vacant" channel is found. The following procedure should be used to operate the SCAN function.

1. Follow the procedure outlined in the receive, steps 1 through 5.
2. Slowly turn the SQUELCH control clockwise until the hiss just disappears or until unintelligible weak signals are eliminated. Depress the white push button marked SCAN. The Sidebander V will now sequentially scan the channels until a "vacant" channel (one on which any signal or noise is unable to break the squelch setting) is found.

3. To defeat the SCAN function, simply depress the white push button marked OFF.
4. If the SQUELCH control is left at the full counterclockwise position (minimum squelch setting) and the SCAN button depressed, then the Sidebander V will commence sequentially scanning channels and will not stop on any channel. In order for the vacant channel scan function to be properly used, the squelch setting **must** be adjusted to mute background noise, and/or weak signals.

Transmit:

You must have a Class D station license before transmitting. All channels, except channel 9, may be used for normal communications. Channel 9 has been reserved by the FCC for emergency communications, such as protection of property or assistance to a motorist.

1. Select desired channel; listen, and when clear press PTT button. Tx light will come on, and S/RF meter will show output power.
2. Hold the microphone close to your mouth and speak clearly.
3. Release the PTT button and listen for a reply.

CONTROLS AND INDICATORS

Control Functions

1. OFF/ON VOLUME — Turn OFF/ON Volume control clockwise to apply to the unit and to set the desired listening level.
2. RF Gain — The RF Gain control is used to adjust the sensitivity of the receiver during AM or SSB reception. When the control is in its extreme counterclockwise position the receiver sensitivity will be minimum. At this setting of the gain control, only the very strongest signals will be heard. As the control is rotated clockwise, weaker signals and noise will be heard. When the control is in its full clockwise position, sensitivity of the receiver will be maximum.

3. SQUELCH — The Squelch control blanks out unwanted noise when no signals are present. Turn this control fully counterclockwise then slowly clockwise until the receiver noise disappears. Any signal to be received must now be slightly stronger than the average received noise. Further clockwise rotation will increase the threshold level which a signal must overcome in order to be heard. Only strong signals will be heard at the maximum clockwise setting.

4. CLARIFIER — The Clarifier permits variation of the receiver operating frequencies above and below the assigned frequencies. Although this control is intended primarily to tune in SSB signals, it may be used to optimize AM signals as described in the operating procedure paragraphs.

5. CHANNEL SELECTOR — Selects the desired channel for transmission and reception. All channels, except channel 9, may be used between units operating under the same license. Channel 9 has been reserved by the F.C.C. for emergency communications or immediate protection or property. Channel 9 may also be used to render assistance to a motorist; it is commonly called the HELP channel.

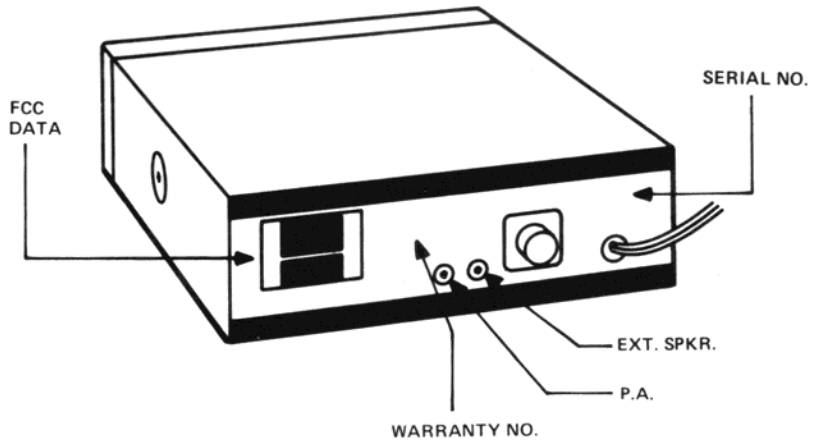
6. CHANNEL INDICATOR — LED display indicates the channel on which the unit is operating.

7. VACANT CHANNEL SCAN — When the SCAN button is pressed, channels are scanned sequentially until a "vacant" channel (one on which any signals are unable to break squelch), is found. Pressing the OFF button will stop the scanning at any time.

8. MODE SWITCH — The Mode Switch selects either of the SSB modes (USB or LSB) or standard double sideband AM. Unless the station with which communications is desired is equipped with SSB, the AM mode is normally used. The mode selector switch changes the mode of operation of both transmitter and receiver simultaneously. An explanation of how to determine which mode to use is contained in the following paragraphs under Operating Procedure.

9. CHANNEL 9 EMERGENCY SWITCH — When switched to the 9E position, sets the channel to 9 regardless of the channel selected by the channel selector.

10. NOISE BLANKER SWITCH — In addition to having a series gate noise limiter, the Sidebander V is equipped with a deluxe noise blanker which operates in both SM and SSB modes of operation.



The noise blanker has no effect on receiver fidelity but instead has the effect of enhancing receiver performance by the reduction of incoming atmospheric/ignition noise. During mobile operation, the NB switch will normally be left in the ON or NB position to reduce ignition noise.

11. PA/CB SWITCH — The PA/CB Switch determines whether the unit operates in CB or PA mode. The PA function should not be used unless an external speaker is connected as described in the installation section of this manual. In the CB position, the PA is disabled and the unit will transmit and receive on the selected frequencies. If a PA speaker is connected and the CB/PA switch is placed in the PA position, normal receiver audio will be heard on the PA speaker.
12. METER — The meter indicates received signal and transmitter output strength in both AM and SSB modes of operation.
13. TX LIGHT — Indicates power out of the transmitter.
14. RX LIGHT — Indicates that the unit is in receive mode.
15. EXTERNAL SPEAKER — The external speaker jack provides connection for a 4 or 8 Ω external speaker. The speaker should have a power rating of at least 4 watts. The Sidebander V's internal speaker will be disabled when an external speaker is connected.
16. PA — The PA jack provides connection for a 4 or 8 Ω, 4 watt speaker so that the Sidebander V may be used as a public address system.

OPERATING SINGLE SIDEBAND

There are three types of signals presently used in CB communication — AM (Amplitude modulation), and the two types of SSB (Single Sideband) signals — LSB (Lower Sideband) and USB (Upper Sideband). The SIDEBANDER V is capable of receiving and transmitting any of these signals. A SSB signal (either USB or LSB) may be recognized while in AM mode by its characteristic garbled sound. A SSB signal can only be received by a receiver operating in the same mode.

To receive a SSB signal, switch to either LSB or USB. If you are in the correct sideband mode, turning the CLARIFIER knob will make the signal intelligible. If you are in the wrong sideband mode, no amount of turning of the CLARIFIER knob will make the signal intelligible.

Single sideband has several advantages over AM. In AM transmission, at least two-thirds of the power is expended to produce the carrier while all of the power in SSB goes to produce only one sideband — the only part of the transmission conveying intelligence. Since only one sideband is produced, only half of a channel is used. Also, flutter effects often caused by vehicle motion are substantially reduced. Because of these advantages, Range Ratings of sideband radios are 2 to 3 times greater than AM radios at full modulation. Since sideband gives greater range to more people, special channels are extended to Sidebanders through CB courtesy.

INSTALLATION

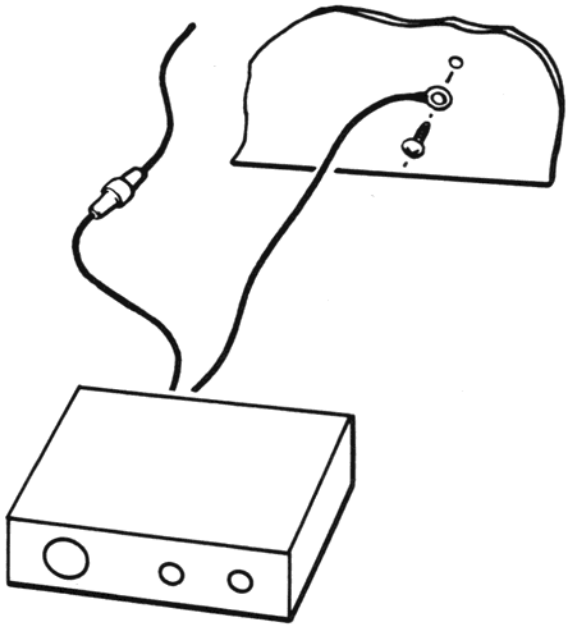
A good installation is the most important factor in achieving maximum performance from your SIDEBANDER V. Complete installation service is available from many CB radio dealers. While no special tools are needed for installation, the antenna installation should be checked with a good quality VSWR meter. If you do your own installation and do not have access to a VSWR meter, it is recommended that you have the installation checked by a local CB radio dealer.

PERMANENT INSTALLATION

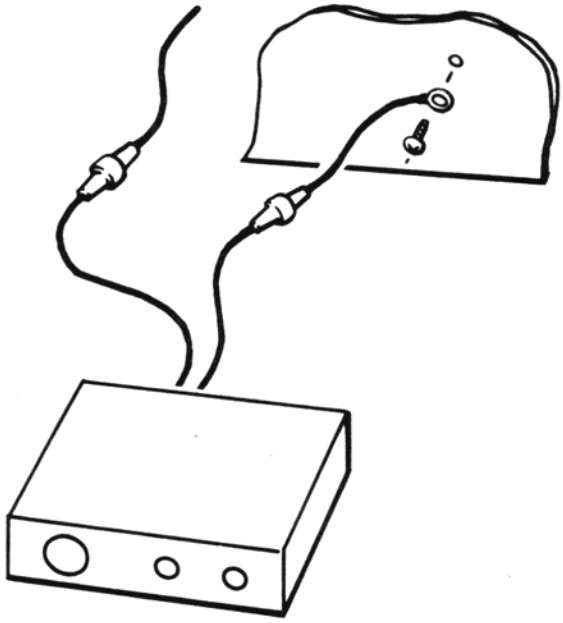
Choose a convenient location for your SIDEBANDER V. Usually, this is under the dash, but the SIDEBANDER V may be mounted in any position on a rigid surface. Check to be sure that the radio is not in the direct air stream of the vehicle's heater and that there is sufficient space behind the radio for antenna and accessory cable connections. Make certain that the microphone is easily accessible. The microphone holder may be mounted either on the side of the radio where convenient holes are provided or on any rigid surface.

Attach the bracket to the radio and hold the unit against the planned mounting surface. Draw around the bracket so as to leave an outline on the mounting surface. Check to be sure that holes drilled through the mounting surface to secure the bracket will not damage any of the vehicle's components. Find a clear, accessible path between the antenna and radio mounting locations. Remove the antenna cable from the antenna's packing. Snake the cable along the intended path. Tie or tape the excess cable into a neat roll and tuck into a concealed space. Install the antenna according to the manufacturer's instructions. Detach the bracket from the radio, place into the outline and mark and center punch screw holes. Drill 7/32" clearance. To insure that the drill will not punch through and damage any part of the vehicle, wind a few turns of tape about 1/2 inch from the tip of the drill bit. Mount bracket and then mount radio.

Before wiring your SIDEBANDER V to power, check the ground polarity of your vehicle by consulting the owner's manual or observing which battery terminal is connected to the vehicle's chassis. An additional 2 amp fuse and holder must be wired into the negative (black) power lead in positive ground vehicles. The SIDEBANDER V may be connected to the accessory side of the ignition switch. If this connection proves to be too noisy, direct connection to the battery is recommended.



NEGATIVE GROUND
HOOK-UP



POSITIVE GROUND
HOOK-UP

CHOOSING AN ANTENNA

The type of antenna and mounting location determines the direction and range of communication. A CO-PHASE antenna gives maximum range to the front and rear of the vehicle, and is best suited for communicating with distant vehicles traveling on the same straight highway. A single antenna mounted on the center of the vehicle gives the best range in all directions and is best suited for city or general purpose communication. A single antenna will be directional when mounted away from the center of the vehicle. Figure 1 shows a method for determining the direction.

ANTENNA MOUNTING LOCATION

The best antenna location is most vehicles is the center of the passenger compartment roof. The trunk is a satisfactory location, especially if it is large and flat. Due to ignition noise, the antenna should not be mounted over the engine compartment. Various types of clamp-on antennas are available for temporary mounting on side mirrors, luggage racks, raingutters and bumpers. These antennas permit the antenna cable to be dressed through vents, side windows, or under the vehicle without drilling holes. A permanent antenna should be mounted in a location that permits dressing the antenna cable through the vehicle's frame or under its upholstery.

ANTENNA TUNING

The final step in installation is to trim the antenna for minimum S.W.R. The recommended method of antenna tuning is to use an in-line wattmeter or S.W.R. bridge to adjust the antenna for minimum reflected power on channel 20. A properly tuned antenna system will present a suitable load to the transceiver and will insure that maximum power is transferred from the radio to the antenna. If the antenna system in use presents a poor load, as indicated by a high S.W.R. reading, transmitter range will be substantially reduced and damage to the transmitter final amplifier may occur. Poor. S.W.R. can usually be corrected by altering the antenna's electrical length in accordance with the manufacturer's instruction. Extremely high S.W.R. readings may be indicative of a defective transmission line, antenna, or connections.

To determine whether the antenna should be lengthened or shortened, test the S.W.R. on channels 1 and 40. If the S.W.R. is the highest on channel 40 the antenna is too long and if highest on channel 1, the antenna is too short. When the antenna system has been tuned correctly, channel 20 should have the lowest S.W.R. and channels 1 and 40 will be slightly higher.

PUBLIC ADDRESS

An external 8Ω 4 watt speaker may be connected to the PA jack located on the rear panel of the unit when it is to be used as a public address system. The speaker should be directed away from the microphone to prevent acoustical feedback.

EXTERNAL SPEAKER

The external speaker jack on the rear panel is used for remote receiver monitoring. The external speaker may be 4 or 8Ω impedance and should be rated at 3 watts power dissipation. When the external speaker is plugged in, the internal speaker is disconnected. Suitable units are the model SBE-1SP Non-amplified speaker or SBE-1SSP/AMP Amplified speaker.

ALTERNATE MICROPHONES & INSTALLATION

For best results, the user should select a low impedance dynamic type microphone or a transistorized preamplified microphone. For mobile use the SBE M-100X Mobile Preamplified Microphone or the SBE NC-100 Noise Cancelling Microphone may be used. For base station operation the SBE 100X Preamplified Base Station Microphone or the SBE 200X Non-amplified Base Station Microphone may be used. If another type of microphone is selected, refer to Figure 1 for the proper wiring connections for the microphone jack.

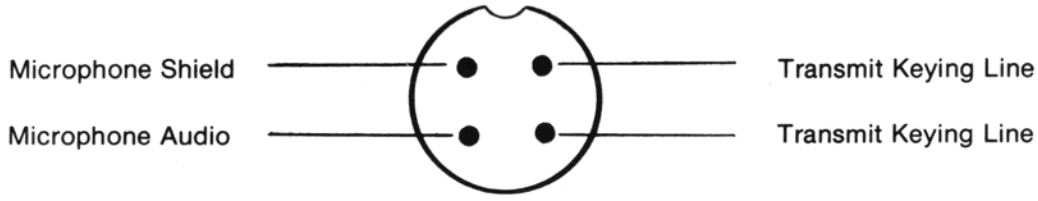


FIGURE 1
MICROPHONE JACK WIRING DIAGRAM
REAR VIEW

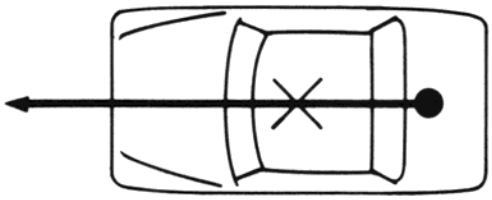
FINAL CHECKOUT

Make an operational checkout of the transceiver to insure operation of it and all the accessories installed. Contact other stations and inquire about their location and their reception of your signal. If an omnidirectional antenna is used, the distance to other stations contacted should be about the same in all directions. A directional antenna should reach more distant stations in the direction in which it is beamed. Also inquire whether the stations contacted are omnidirectional or directional and if directional which way they are beamed.

FIGURE 2
DETERMINING ANTENNA RANGE DIRECTION

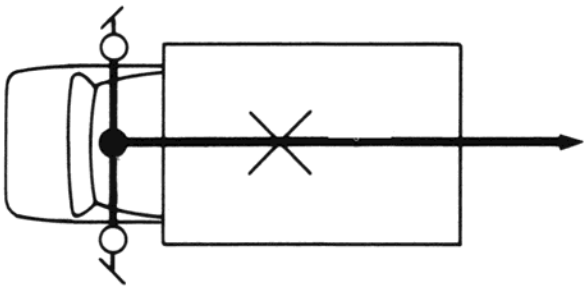
Before installing an antenna, an approximation of the direction of maximum range can be obtained by following these rules.

1. Draw a rough silhouette of the vehicle as seen from above.
2. Place a small x in the approximate center of the silhouette.
3. Place a dot on the silhouette where a single antenna is planned, or, if a co-phase is to be used, draw a line connecting the antennas. Place a dot in the center of this line.
4. Draw a line from the dot through the x. This line will point in the predominant direction. The longer the distance between the x and the dot the more predominant will be the range in that direction. A single antenna placed on the x will communicate equally in all directions. If the line connecting co-phase antennas intersect the x, the predominant direction will be in both directions perpendicular to the line.

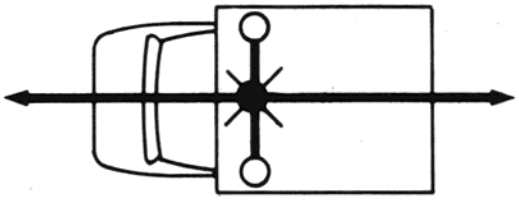


TRUNK MOUNT

PASSENGER COMPARTMENT MOUNT



CO-PHASE MIRROR MOUNT



CO-PHASE SIDE MOUNT

INTERFERENCE REMEDY CHART

TYPE OF INTERFERENCE	CAUSE	REMEDY
POPPING — increases rate with engine speed. Stops instantly when ignition is shut off.	Ignition	Make certain that engine is properly tuned. Install resistor plug with suppressor cable if vehicle does not already have them.
WHINE — goes up with engine speed. Whines down when ignition is shut off.	Generator or Alternator	Clean commutator or slip rings. Check brushes.
POPPING OR RUSHING — occurs in dry weather at high speeds.	Wheels and Tires	Install static collector rings in front wheel caps or put antistatic powder in inner tube or tire.
NOISE — occurs when accessory is turned on.	Accessory	Install 0.25 MFD capacitor across power terminals at accessory.
CRACKLING, CLICKING — occurs as gauges operate or dash is jarred.	Gauge or Voltage Limiter	Clip 0.25 MFD capacitor across gauges and voltage limiter until interference disappears. Install capacitor at that point.

TAKING A CB RADIO INTO ANOTHER COUNTRY

Since laws change, always check with a country's Consul General's Office before taking a CB radio into that country. Many countries do not presently offer CB service while others do not offer it on the same frequencies. The CB frequencies used in the United States and Canada are used by some countries for government and commerce.

Persons holding valid U.S. Citizens Band licenses or temporary permits may obtain authority to operate in Canada by requesting D.O.C. Form "APPLICATION FOR REGISTRATION OF RADIO STATION LICENSEE OF UNITED STATES OF AMERICA" from a Canadian consulate and mailing it in at least 60 days prior to entry into Canada. Canadians planning to travel in the United States chould obtain F.C.C. Form 410-B, "APPLICATION FOR PERMIT TO OPERATE A CANADIAN GENERAL RADIO SERVICE STATION IN THE UNITED STATES."

Mexico does not have a Citizens Band service. It is against the law to take a Citizens Band transceiver into Mexico.

SPECIFICATIONS

General	
Channels	40
Frequency Range	26.965 to 27.405 MHz
Frequency Control	Single Crystal, Digitally synthesized
Frequency Stability	0.005%
Operating Temperature Range	—30° C to +50° C
Humidity	95%
Microphone	Dynamic w/p.t.t. switch and coil cord
Input Voltage	13.8 VDC positive or negative ground. 15.9 VDC maximum, 11.7 VDC minimum
Current Drain	Transmit: AM 95% mod. Carrier 1.6 amps SSB 12 watts PEP output 2.5 amps Receive: Squelched 0.25 amp 2 watt audio output .5A
Size	2.3"H, 6.6"W, 9.1"D 58mm H, 168mm W, 213mm D
Weight	4 pounds 1.8 kg
Antenna Connector	UHF, SO-239
Transmitter	
Power Input	
Power Output	AM, 4 watts SSB, 12 watts
Modulation	AM, high and low level Class A
Modulation Capability	AM, 100%
Intermodulation Distortion	SSB: 3rd order —25db 5th order —35db
Carrier Suppression	SSB: —40db
Unwanted Sideband	—50db
Frequency Response	AM and SSB: 350—2500 Hertz
Output Impedance	50Ω, unbalanced
Automatic Level Control (ALC)	Adjustable, holds P.E.P. to 1db increase w/10db increase in audio input.
SSB Filter	7.8 MHz, crystal lattice type 6db @ 4.0 KHz 50db @ 5.5 KHz
Output Indicator	Backlit front panel meter

Receiver

Sensitivity	SSB: 0.25μV for 10db S+N/N AM: 0.5μV for 10db S+N/N
Selectivity	SSB: 6db @ 2.4 KHz, 50db @ 5.5 KHz AM: 6 db @ ±2 KHz, 50db @ 5.5 KHz
Image Rejection	50db
IF Frequency	7.8 MHz
Automatic Gain Control(AGC)	Less than 10db increase in audio output for inputs of 1 to 500,000μV
Squelch	Adjustable, Threshold less than 1μ
Noise Limiter	Series gate type
Noise Blanker	Deluxe noise blanker installed
Clarifier Range	±700 Hertz Minimum
Audio Output Power	4.0 watts with 10% T.H.D. into a 4Ω load
Hum and Noise	—40db
Built-in Speaker	3/1/2" round, 8Ω
External Speaker (not supplied)	4 or 8Ω. Disables internal speaker when connected.

PA System

Power Output	4 watts into external speaker
External Speaker for PA	4 or 8Ω. When PA/CB switch is in PA, the PA speaker also monitors the normal CB receiver

SERVICE

If your Sidebander V fails to perform as stated in this manual, it is recommended that SBE be contacted in writing at the following address:

SBE, INC.
220 Airport Blvd.
Watsonville, California 95076

SBE will either authorize return of the unit to the factory or refer you to an authorized SBE repair agency in your area. Do not ship equipment without prior written authorization from SBE. Your letter to SBE must include the following particulars.

1. Model number and serial number of equipment.
2. Date of purchase of equipment.
3. Nature of trouble.
4. Cause of trouble if known.
5. Name of distributor from whom the equipment was purchased.
6. Your return address.
7. Method of shipment by which the equipment should be returned.

Also, include any information that you feel will be helpful in locating or correcting the problem.

ORDERING PARTS

When ordering replacement parts, direct your order to an SBE distributor or SBE's parts faciities:

220 Airport Blvd.
Watsonville, California 95076

Furnish the following information:

1. Quantity required.
2. SBE part number and description.
3. Item or symbol number obtained from parts list, schematic, or component location drawing.
4. SBE model number and serial number.

Unless specified, SBE will determine the best method of shipment for the parts involved. If payment does not accompany the order, parts will be sent C.O.D.