



**OPERATING AND SERVICE INSTRUCTIONS**

**TRANSCIVER  
MODEL CB-11**

## WARRANTY

"The Hallicrafters Company warrants each new radio product manufactured by it to be free from defective material and workmanship and agrees to remedy any such defect or to furnish a new part in exchange for any part of its manufacture which under normal installation, use and service discloses such defect, provided the unit is delivered by the owner to our authorized radio dealer, wholesaler, from whom purchased, or, authorized service center, prior, for examination, with all transportation charges prepaid within ninety days from the date of sale to original purchaser and provided that such examination discloses in our judgment that it is thus defective.

This warranty does not extend to any of our radio products which have been subjected to misuse, neglect, accident, incorrect wiring, not our own, improper installation, or to use in violation of instructions furnished by us, nor extended to units which have been repaired or altered outside of our factory or authorized service center, nor to cases where the serial number thereof has been removed, defaced or changed, nor to accessories used therewith not of our own manufacture.

Any part of a unit approved for remedy or exchange hereunder will be remedied or exchanged by the authorized radio dealer or wholesaler without charge to the owner.

This warranty is in lieu of all other warranties expressed or implied and no representative or person is authorized to assume for us any other liability in connection with the sale of our radio products."

*The* hallicrafters 

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## SECTION I INTRODUCTION

### 1-1. DESCRIPTION.

The Hallicrafters Model CB-11 is a compact, battery-operated, completely self-contained, fully-transistorized transmitter-receiver designed for voice communication in the 27-megacycle band. It is capable of operation in an FCC licensed Class D Citizens Band system or can be operated unlicensed by anyone, regardless of age, in conjunction with other units of the same type.

Two of these units will provide convenient, reliable voice communication for business or pleasure at ranges up to two miles. Applications are many — outdoor sports (boating, hunting, fishing), home or business intercommunication, rescue work, fire and police work begin just a few.

It is recommended that you read and become familiar with the operating procedure and rules given in this manual before operation.

### 1-2. LICENSING

As previously mentioned, no license is required for operation providing communication is between other unlicensed units of the same type.

If it is desired to use the Model CB-11 with a higher power Class D system, it must be licensed in accordance with Part 19 of the Federal Communications Commission Rules and Regulations. The CB-11 meets all Class D technical requirements. Additional information concerning Class D citizens band radio can be obtained from your local Hallicrafters dealer.

### 1-3. CIRCUIT DESCRIPTION.

The signal received from the antenna is amplified by RF transistor stage Q1. The received signal (27 MC) is then combined in the RF mixer transistor Q2 with the oscillator signal from the crystal oscillator Q9 (27 MC-455 KC) to produce the intermediate frequency of 455 KC. Transistors Q3 and Q4 amplify this relatively small IF signal to a level suitable for detection by IN60 diode CR1. Through the VOLUME control, the signal is fed to the audio amplifier transistor Q5 and to the AF power output transistor Q6 and Q7 which are arranged in a push-pull configuration. From here the signal is applied to the speaker. An AVC circuit controls the gain of IF amplifier transistor Q3 and RF amplifier transistor Q1.

When the PUSH-TO-TALK switch is depressed, the speaker, now serving as a microphone, is connected to transistors Q5, Q6 and Q7. Modulating voltage from AF output transistors Q6 and Q7 is supplied to the final amplifier transistor Q8 to produce an amplitude-modulated signal at the crystal frequency of Y1. The output of transistor Q8 is connected to the whip antenna through the transmitter antenna coil, L4.

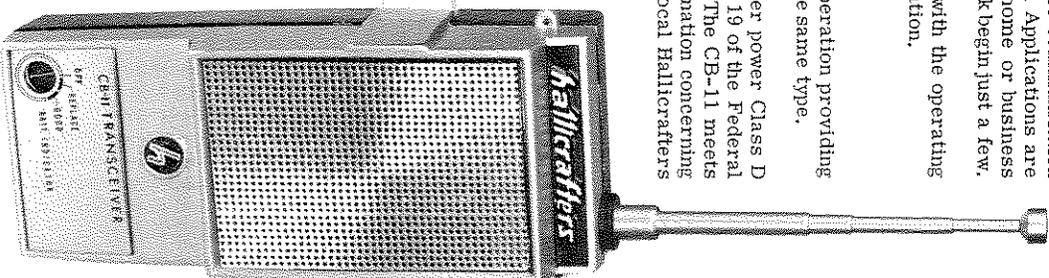


Figure 1. Hallicrafters Model CB-11.

TECHNICAL DATA

	Transmitter	Receiver
Power Input to RF Stage	100 MW (FCC maximum).	
Modulation	AM, maximum 85%.	
Frequency Control	Plug-in quartz crystal	
Speaker Output	125 MW.	
IF Frequency	455 KC.	
Frequency Control	Plug-in quartz crystal (as in transmitter except 455 KC lower in frequency).	
Earphone Jack	Low impedance earphone.	
General		
Antenna	39 inch (collapsible whip).	
Battery	9 volt battery	
Dimensions (HxWxD)	6-3/8 x 2-3/4 x 1-1/2 inches.	
Weight (Net)	10 oz. (Less Battery)	

**SECTION II  
INSTALLATION**

2-1. UNPACKING.

After unpacking your Model CB-11, examine it closely for damage that may have occurred in transit. Should any sign of damage be apparent, immediately file a claim with the carrier stating the extent of the damage. Carefully check the instructions on all shipping labels and tags before removing or destroying them.

2-2. BATTERY INSTALLATION.

Before operation, the Model CB-11 must be equipped with a nine volt battery. The battery (Burgess type 2U6; Ray-O-Vac 1604; Eveready 216; Mallory M1604; or equivalent) can be supplied and installed by your Hallcrafters dealer.

**SECTION III  
OPERATION**

3-1. OPERATION PROCEDURE.

There are two controls associated with operation of the Model CB-11. The VOLUME control, which is also the POWER on/off switch, and the PUSH-TO-TALK button. Extend the antenna to its full length. Turn the unit on by rotating the VOLUME on/off switch in an upward direction until a click is heard. Adjust the control in the same direction until a slight hissing sound comes from the speaker. The unit is now set to receive incoming calls from your other units.

TO TRANSMIT: Hold the unit in either hand, as convenient, with the speaker (perforated area in front of unit) about four inches away from your mouth. Depress the PUSH-TO-TALK button all the way. Speak clearly in a normal voice. Do not shout. After you have completed your transmission, release the PUSH-TO-TALK button, returning the unit to the receive mode. You must press the button each time you talk and release it in order to listen. Best results will be obtained by holding the unit in a near vertical position, antenna extended upward, clear of any obstructions. To shut the unit off rotate the VOLUME control downward until it clicks off.

3-2. OPERATION SUGGESTIONS.

Since frequencies on which the Model CB-11 is authorized to operate are shared on a party-line basis, common sense and courtesy should be observed while operating.

POINTS TO REMEMBER:

1. Do not transmit if you hear other stations using the frequency. Your transmission may interfere with their communication. Wait until they are finished.
2. Address your call directly to the unit you are calling through some prearranged signal such as "unit one calling unit two, come-in." If other stations are listening they will know you are using the frequency and will stand by until you have finished your communication.
3. Use only language appropriate for radio communications.
4. You may hear Class D Citizens Band stations on your unit. Remember, by law, you are not permitted to talk to them unless your unit is Class D licensed or unless there is an emergency.

**SECTION IV  
SERVICE DATA**

4-1. BATTERY REPLACEMENT.

Under normal conditions of usage and operation, the battery cells recommended for use in your Model CB-11 can be expected to give at least 12 hours of service. Operation in fairly cold temperatures (under 32°F) will require more frequent replacement.

To assure maximum efficiency from your transceiver, replace battery when the battery indicator points to "REPLACE."

The battery recommended is as specified in paragraph 2-2 and are available from your Hallcrafters dealer. Battery replacement in the Model CB-11 is quite simple and requires no special tools. To replace the battery proceed as follows:

1. Be sure the unit is off.
2. Loosen the battery cover screw (at rear of cabinet) with a coin or screw-driver and remove the cover.
3. Lift out the battery.
4. Replace the battery and battery cover by reversing the procedure above.

**CAUTION**

Do not leave the unit in excessively warm or cold locations such as on the rear deck or in the glove compartment of an automobile, for any length of time. Permanent transistor damage may result because of excess heat. Excessively cold temperatures reduce battery efficiency.

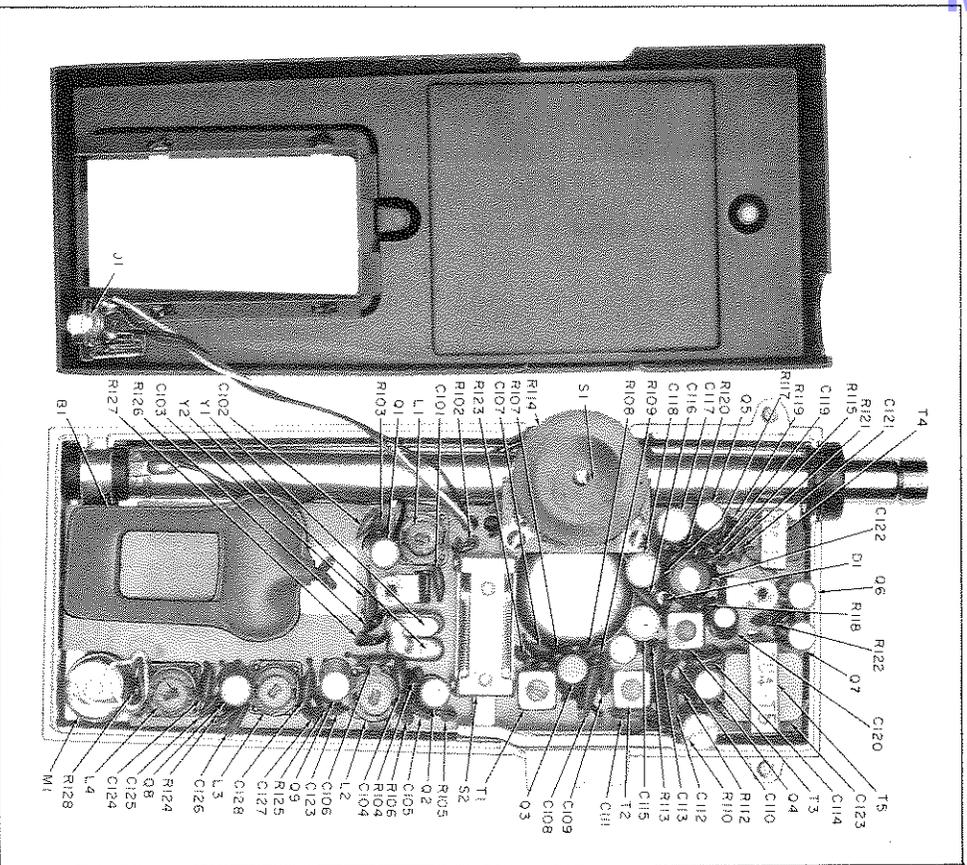


Figure 2. Internal View of Model CB-11

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#### 4-2. CHANGING FREQUENCY.

Your Model CB-11 has been equipped and adjusted at the factory for operation on Channel 9 (27,065 MC). This frequency is determined by a quartz crystal, plug-in unit. Two are used: one for transmit, and one for receive. To change channels, both crystals must be replaced. Factory tuning adjustments are adequate for operation on any of the authorized frequencies using Hallcrafters crystals. For your convenience, your Hallcrafters dealer has in stock all Citizen Band channel crystals and is equipped to install them at a nominal charge. Any Citizen Band channel crystal between 2 and 28 may be used in the Model CB-11.

#### 4-3. ADJUSTMENTS.

Changing to any other channel between channels 2 and 28 may be accomplished by merely inserting the proper crystals in the unit without any further adjustments. Adjustments should only be made by qualified persons familiar with FCC Rules and Regulations and transistorized equipment. In the event of damage to or suspected malfunctioning of the receiver or transmitter RF coils, realignment will be necessary.

#### RECEIVER ADJUSTMENT.

The 455-KC IF amplifier will not normally need readjustment unless an IF transformer is replaced. To align the IF amplifier, use an accurately calibrated signal generator set to 455 KC, with 30% modulation at 1000 CPS. Connect the hot lead from the signal generator to the antenna. Connect the ground lead from the signal generator to the brass stud/spacer located adjacent to T4.

Connect an output power meter, set to 8 ohms, to the earphone jack at the bottom of the unit. Turn the CB-11 on and set the VOLUME control to maximum. Adjust transformers T1, T2, and T3 for maximum output, readjusting signal generator input to maintain an output of approximately 10 milliwatts.

To align the antenna circuit, the whip antenna should be fully collapsed. Connect a signal generator capable of covering the citizens band frequencies to the antenna through a 30 micromicrofarad capacitor. Ground the signal generator to the brass stud/spacer.

Tune the signal generator to the channel frequency and rock it slightly for maximum output. Adjust coil L2 for maximum output, readjusting the signal generator input to maintain an output of approximately 10 milliwatts.

#### TRANSMITTER ADJUSTMENT

Connect a calibrated milliammeter with a 0-30 MA full-scale deflection in series with a 9-volt source.

Extend the antenna fully and hold the unit in an upright position with the left hand, making certain that the antenna is clear of all obstructions. Press the PUSH-TO-TALK switch to transmit. Turn the core of oscillator coil, L3, counterclockwise until oscillation stops. At this point the normal reading on the meter will be approximately ten milliamperes.

Slowly adjust the oscillator coil, L3, clockwise while observing the meter. The circuit begins to oscillate when the meter shows a sharp rise in current. Adjust L3 one complete turn clockwise after oscillation begins.

While still observing the meter, adjust the transmitter output coil, L4, for approximately 22 milliamperes.

The transmitter section is now aligned and ready for operation.

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4-4. SERVICE AND OPERATING QUESTIONS.

For further information regarding operation or servicing of this equipment, contact the Hallcrafters dealer from whom it was purchased. The Hallcrafters Company maintains an extensive system of Authorized Service Centers where any required service will be performed promptly and efficiently at no charge if this equipment is delivered to the service center within 90 days from date of purchase by the original buyer and the defect falls within the terms of the warranty. It is necessary to present the bill of sale in order to establish warranty status. After the expiration of the warranty, repairs will be made for a nominal charge. All Hallcrafters Authorized Service Centers display the sign shown at right.

For the location of the one nearest you, consult your local telephone directory.

Service shipments should not be made to the factory unless instructed to do so by letter, as The Hallcrafters Company will not accept responsibility for unauthorized shipments.

The Hallcrafters Company reserves the privilege of making revisions in current production of equipment and assumes no obligation to incorporate such revisions in earlier models.



NOTE

When ordering replacement crystals, specify the Hallcrafters, part number 120-002062 (receive crystal) and 120-002061 (transmit crystal) plus the channel required. For example: 120-002062-9 and 120-002061-9 for channel 9 or 120-002062-12 and 120-002061-12 for channel 12.

SERVICE PARTS LIST

Schematic Symbol	Description	Hallcrafters Part Number	Schematic Symbol	Description	Hallcrafters Part Number
CAPACITORS					
C101,102,105, C106,107,116, C125,126,127, C129	0.01 $\mu$ F, Ceramic	120-002040	R124	10 ohm	120-002035
C103,124	30 P.F. Ceramic	120-002047	R127	42K ohm	120-002034
C104,114	0.02 $\mu$ F, Mylar	120-002049	R128	34K ohm	120-002036
C108,112	0.05 $\mu$ F, Ceramic	120-002042	*All Resistors are carbon type, 10%, 1/8 watt unless otherwise specified.		
C109	7 P.F. Ceramic	120-002045	RESISTORS (CONT)		
C110	0.1 $\mu$ F, Ceramic	120-002043	COILS AND TRANSFORMERS		
C111,123	0.02 $\mu$ F, Ceramic	120-002041	L1	Coil, RF	120-002019
C113	5 P.F. Ceramic	120-002044	L2,3,4	Coil, RF	120-002020
C115,117	10 $\mu$ F, 3V, Electro-lytic	120-002050	T1,2,3	Transformer, 45K/C	120-002018
C118	30 $\mu$ F, 3V, Electro-lytic	120-002051	T4	Transformer, Audio Driver	120-002021
C119	100 P.F. Ceramic	120-002048	T5	Transformer, Audio Output	120-002022
C120	10 $\mu$ F, 10V, Electro-lytic	120-002052	TRANSISTORS AND DIODES		
C121	0.005 $\mu$ F, Ceramic	120-002039	CR1	Diode, Type 1N60	120-002016
C122	50 $\mu$ F, 10V, Electro-lytic	120-002053	Q1,2,9	Transistor, Type 2SA350	120-001190
C128	20 P.F. Ceramic	120-002046	Q3,4	Transistor, Type 2SA12	120-002012
RESISTORS					
R101,108	150K ohm	120-002038	Q6,7	Transistor, Type 2SB75	120-002013
R102	2.2K ohm	120-002028	Q8	Transistor, Type 2SB77	120-002014
R103,112,117	1K ohm	120-002027	Q9	Transistor, Type 2SA174	120-002015
R104,115	33K ohm	120-002033	MISCELLANEOUS		
R105,110,116, R126	5.6K ohm	120-002030	Antenna, Collapsible Whip		120-002064
R106	3.3K ohm	120-002029	Connector, Battery Snap		120-002065
R107	680 ohm	120-002026	Crystal, Transmitt		120-002061
R109	1.5K ohm	120-002054	Crystal, Receive		120-002062
R111	56K ohm	120-002037	Jack, Earphone		120-002067
R113	6.8K ohm	120-002031	Meter, Battery Voltage		120-002066
R114	Variable, 5K ohm, OFF-VOLUME (Inc. Switch S1)	120-002055	Socket, Crystals		120-002063
R118,123,125	220 ohm	120-002024	Speaker, 2-1/4", 8 ohms		120-002059
R119	Thermistor, Type B-2B	120-001198	Switch, 6-Circuit, 2-Contact, Push-Type		120-002060
R120	9K ohm	120-002032			
R121	470 ohm	120-002025			
R122	5 ohm	120-002023			

