

SERVICE DATA FOR MODEL CB-1



Figure 1. Hallicrafters Model CB-1.

TECHNICAL SPECIFICATIONS.

TUBES 11 including rectifier
 SPEAKER 4" x 6" PM, 3.2 ohm voice coil
 HEADPHONE OUTPUT IMPEDANCE 15 ohms
 ANTENNA INPUT IMPEDANCE 51.5 ohms
 INTERMEDIATE FREQUENCY 455 KC
 POWER INPUT 117 volts, 60 cycles AC
 POWER CONSUMPTION65 watts
 FREQUENCY COVERAGE *Established by the crystals employed.

WEIGHT Net 15 lbs., Shipping 18 1/2 lbs.
 DIMENSIONS ... 6 1/2" x 13 1/4" x 8 1/4" (H. W. D.)

*The tuning range of the Oscillator and Amplifier is adequate to properly tune through any frequency between the limits of 26.965 MC and 27.255 MC.

TUBE AND DIAL LAMP REPLACEMENT.

For complete access to the tubes and the dial lamp, remove the Transmitter/Receiver from the cabinet. See "CHASSIS REMOVAL". The tube and lamp locations are shown in Fig. 4.

CHASSIS REMOVAL.

The chassis and front panel assembly can be easily withdrawn from the cabinet as a unit after removing the three slotted flat head screws from the cabinet bottom and the three phillips head screws from the top of the cabinet front panel. When removing the chassis, exercise care to prevent damaging the speaker.

SQUELCH CONTROL ADJUSTMENT.

The SQUELCH control is a screw-driver operated adjustment located on the rear of the chassis; its purpose is to quiet background noise in the absence of a signal. (See Fig. 2.) Before attempting any squelch adjustment, rotate the Squelch Control to its extreme

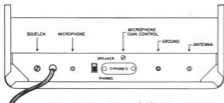


Figure 2. Rear View of Chassis.

counterclockwise ("OFF") position. Then, with no signal being received, rotate the Squelch Control clockwise until background noise is barely audible.

MICROPHONE GAIN CONTROL ADJUSTMENT.

The MICROPHONE GAIN control is a screw-driver operated adjustment located on the rear of the chassis; its purpose is to establish a gain level setting for proper voice modulation. (See Fig. 3.)

Before attempting any adjustment, be sure the antenna and microphone are connected to the Transmitter/Receiver and that the Transmitter/Receiver is turned on and the PUSH-TO-TALK bar is depressed. Then, with the microphone in either a hand-held or fixed position, speak into the microphone at a normal voice level. Rotate the MICROPHONE GAIN control until the wedge-shaped, dark portion on the indicator eye is completely illuminated on voice peaks. (See Fig. 3A.) With this setting established, it is only necessary to speak at a level which will permit closure of the eye tube on voice peaks.

When operating the transmitter properly, the leading edges of the illuminated area converge; they should not overlap. (See Fig. 3B.) Under no conditions should the MICROPHONE GAIN control setting be advanced beyond the position, or the voice level increased to a point, that causes a bright foldover area to appear where the two leading edges come together, as this will create unnecessary interference and distortion. (See Fig. 3C.) This condition can be eliminated by monitoring the indicator while speaking. On the other hand, do not speak with such a low voice level that causes only an occasional complete illumination of the dark area, as this will result in an under-modulated and possibly unintelligible signal.

If excessive hum develops in the audio section of the transmitter, the leading edges of the illuminated area will become fuzzy. Should this fuzziness occur, discontinue transmission until the fault has been corrected.

IMPORTANT: Under no conditions shall any adjustments be made to the CRYSTAL and TUNING controls located on the transmitter box. Tampering with these controls could effect a change in the transmitter carrier. This, in turn, could cause the FCC to take action and terminate the authority to operate this equipment. Only personnel, properly licensed by the FCC and having specialized test equipment capable of measuring the transmitter carrier frequency to an accuracy of 0.005%, can effect repairs. The transmitter and receiver crystals are not interchangeable. See Par. 19.24, Subpart B (Applications and Licenses), Part 19 (Citizens Radio Service) of FCC Rules and Regulations.



Figure 3. Microphone Gain Setting Indications.

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ALIGNMENT PROCEDURE

Step	Signal Generator Connections	Signal Generator Frequency	Adjust	Instructions
RECEIVER IF ALIGNMENT				
1	High side through a .01 mfd capacitor to pin 7 of V2 (6BY6). Low side to chassis.	455 KC	Tap and bottom of T3, T4, and T5	*Adjust for maximum audio output at the speaker voice coil. Use just enough signal gen. output to obtain under a 0.05 watt indication on the output meter.
*Connect an output meter to the speaker leads.				
RECEIVER RF ALIGNMENT				
1	High side through a resistive 50 ohm termination to antenna jack (50-1). Low side to chassis.	**Xtal frequency plus 455 KC.	T1 and T2	Same as step 1 under "Receiver IF Alignment".
**The signal generator output must be set to peak at the crystal plus IF frequency.				
Step	Tektronic Oscilloscope and RF Probe	Audio Oscilloscope	Adjust	Instructions
TRANSMITTER RF ALIGNMENT				
1			L104	***Adjust osc. tuning slug for maximum negative voltage indication.
			L301	Adjust amplifier tuning slug for a maximum indication on the wattmeter.
2	Connect across wattmeter with the vertical gain controls set in the maximum gain position.		C305	****Adjust neutralizing capacitor for minimum vertical deflection on scope.
****Remove jumper lead plug (PL2) from terminal lug on chassis bottom.				
3				Replace jumper lead plug (PL2) and repeat step 1 of "Transmitter RF Alignment".
MODULATION INDICATION CALIBRATION				
4	Connect to antenna jack (501).	Connect through a 100K ohm resistor and a shielded lead to the Microphone Input Jack (502). Set output for 500 CPS.	Audio Osc. output (0.03V) and R27	Adjust gain controls (while observing RF output envelope on oscilloscope) to provide 85% modulation at 500 CPS.
5			R35	Adjust Indicator Sensitivity control for a complete closure of the indicator eye at 85% modulation without foldover or bright area.

● Remove chassis from cabinet (See "CHASSIS REMOVAL").

● Use signal generator with modulated output covering 455 KC and 26,965 through 27,255 MC. (HP Model 608D or equivalent.)

● Use a 51.5 ohm termination pad (HP Type 608A-16D or equivalent).

● Use a frequency standard (HP Model 524A frequency counter and HP Model 512A frequency converter) or equivalent which will measure within .005% accuracy.

● Use an output meter (GR Type 583-A or equivalent).

● Use a 51.5 ohm non-reactive load to 30 MC (BIRD Termline Model 61 Wattmeter or equivalent).

● Use a Tektronix oscilloscope (Model 545 and RF probe or equivalent).

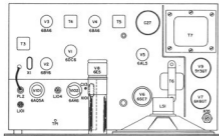
● Use an audio oscillator (HP Model 200AB or equivalent).

● Use a 20,000 ohms per volt meter or VTVM.

● Use a non-metallic alignment tool.

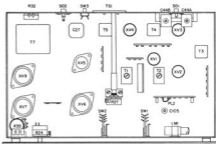
● Control Settings: VOLUME control fully clockwise; SQUELCH, MICROPHONE GAIN and INDICATOR SENSITIVITY controls fully counterclockwise.

● See Figs. 4 and 5 for location of alignment adjustments.



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Figure 4. Top View of Chassis.



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Figure 5. Bottom View of Chassis.

SERVICE PARTS LIST

Schematic Symbol	Description	Reference Part Number	Schematic Symbol	Description	Reference Part Number	Schematic Symbol	Description	Reference Part Number
CAPACITORS			*RESISTORS (CONT.)			JACKS, PLUGS AND SOCKETS		
C1	33 mfd., 25, KPO, Cr. Tub.	401-10430-22	R11, 15	100 ohm, 20%	401-15310	TP1	Jack, Test Point
C2	10 mfd., NPO, Cr. Tub.	401-10430-22	R12	18 ohm	401-15310	SO1, 3, 101	Jack, Antenna Plug and Output, Microphone Input and Transceiver Output	630-10043
C3, 4, 8, 20	100 mfd., 500V., Cr. Disc	401-10040	R17	22K ohm, 5%	401-15313			
C5, 14	.01 mfd., 40-205, 500V., Cr. Disc	401-10040	R20, 20, 101	500 ohm	401-15314	PL101	Connector, Transceiver Output Jack	401-10043
C6	10 mfd., 25, NPO, Cr. Tub.	401-10430-22	R24	100K ohm, variable, VOL/ME control	630-20710	PL1	Plug, Power and Line Cord	401-10043
C7	10 mfd., NPO, Cr. Tub.	401-10430-22	R25	1.8 megohm, 5%	401-15313	PL3	Plug, Finger	401-10043
C8	.02 mfd., 40-205, 500V., Cr. Disc	401-10040	R26	500 ohm, variable, MICROPHONE GAIN control	630-20712			
C9, 13, 15, 23, 28	10 mfd., 500V., Matted Paper	401-02030	R29	1.2 megohm, 5%	401-15313			
C10, 12, 17, 18	.01 mfd., 500V., Matted Paper	401-02030	R30, 103	27K ohm	401-15313			
C11, 19	10 mfd., 500V., Matted Paper	401-02030	R31	100 ohm	401-15313			
C12	10 mfd., 500V., Matted Paper	401-02030	R32	100 ohm, 5%	401-15313			
C13	5 mfd., 500V., Cr. Tub.	401-10050-05	R33	250 ohm, variable, VOLUME control	630-10710			
C14	5 mfd., 500V., Cr. Tub.	401-10050-05	R34	100 ohm, 5%	401-15313			
C17, 18, 19	10 mfd., NPO, Cr. Tub.	401-10040-22	R35	100 ohm, 5%	401-15313			
C20	100 mfd., 500V., Matted Paper	401-02030	R41	15 ohm, 5%	401-15310			
C22	10 mfd., 500V., Matted Paper	401-02030	R42	6.8 ohm, 5%	401-15309			
C23, 25, 31	101 mfd., 40-105, 500V., Matted Paper	401-02030	R43	4.7K ohm, 5%	401-15347			
C24, 29	100 mfd., 500V., Cr. Disc	401-10050	R103	3.9K ohm, 5%	401-15310			
C25A, B, C, D	50-10-10 mfd., 450V., 10 mfd., 25V., Electrolytic	445-20012	R104	100 ohm, 5%	401-15310			
C30	4 mfd., 4-5 mfd., NPO, Cr. Tub.	401-10040-22	T1	Transformer, Antenna Input	630-20200			
C31	25 mfd., NPO, Cr. Tub.	401-10430-22	T2	Transformer, Mixer Coupling	630-20207			
C32	0.5 mfd., 500V., Matted Paper	401-02030	T3, 4	Transformer, 1st and 2nd IF	630-20240			
C33, 42, 43	.001 mfd., 1400V., QMV, Cr. Disc	401-20110	T5	Transformer, 3rd IF	630-20240			
C40, 41, 101, 102, 103, 109, 110	.001 mfd., 1400V., QMV, Cr. Disc	401-20110	T6	Transformer, Power Transformer, Power	630-20260			
C44, 5	9-36, 50-60 mfd., 2 Trimmer Assy., Mix	444-30017	L, 1, 2	Coil, Screen Trap	630-20048			
C104	100 mfd., 500V., Matted Paper	401-02030	L, 3	Coil, SP Filter	630-10010			
C105	4.5-10 mfd., NPO, Cr. Tub.	401-10430-22	L, 4	Coil, AC Line Filter	630-20040			
C107	680 mfd., 125V., 500V., 30V.	444-10018-73	L, 501	Coil, Output Tank	630-20071			
C111	8 mfd., 4-5 mfd., NPO, Cr. Tub.	401-10430-22	L, 502	Coil, SP	630-10010			
C112	10 mfd., 25, NPO, Cr. Tub.	401-10430-22	L, 503	Coil, Screen	630-10010			
C113	0.5-2-0.5 mfd., Trimmer	445-10018-03	L, 104	Coil, Transmitter Cou.	630-20070			
			L, 107	Coil, SP	630-20018			
*RESISTORS			SW1A, B, C			SWITCHES		
R1, 2, 15, 21, 27	1 megohm	401-15310		Switch, Receive-Transmit (PUSH-TO-TALK)	600-20070			
R3, 5, 11, 21, 30, 41	470K ohm, 5%	401-15347		Switch, Receive-Transmit (PUSH-TO-TALK)	600-20070			
R4	220 ohm, 20%	401-15313		Switch, SPEAKERS-PROBES (PUSH)	600-20077			
R6	100 ohm, 5%	401-15313		Switch, ON-OFF	600-20077			
R7, 15	270K ohm, 5%	401-15314		Part of VOLUME control (20K)			
R8	27 ohm, 5%	401-15310						
R9	180K ohm	401-15314						
R10, 19	47K ohm, 5%	401-15347						

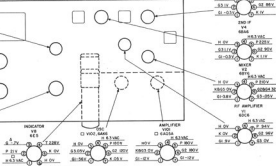
ANALOG



NOTES:
 1. LINE VOLTAGE AT MICROPHONES.
 2. VOLTAGE MEASURED WITH 50 OHM LOAD UNLESS OTHERWISE SPECIFIED.
 3. VOLTAGE MEASURED TAKEN IN THE

***RECEIVE POSITION WITH NO SIGNAL APPLIED. VOLUME CONTROL SET FOR MAXIMUM VOLUME. SPEAKERS-PROBES (PUSH) MUST BE CONNECTED IN PARALLEL. *IF "A" OR "B" CONNECTIONS ARE USED AS A 100 OHM LOAD, 0.5V VOLTAGE MEASUREMENTS TAKEN IN THE TRANSMIT POSITION.**

SET UP



* SQUELCH CONTROL, CLOCKWISE
 # SQUELCH CONTROL, COUNTERCLOCKWISE

* "V" VALUES WITH THE SETTING OF #35

Figure 7. Model CB-1 Voltage Chart.