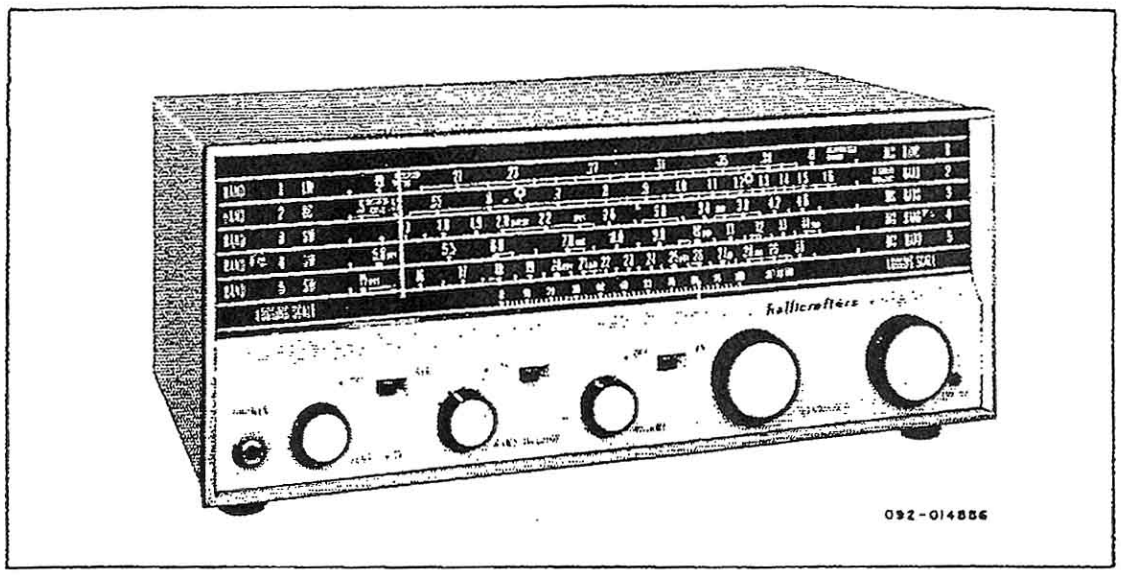
hallicrafters

OWNERS GUIDE

FIVE-BAND COMMUNICATION, RECEIVER MODEL S-118



Model S-118 Receiver.

GENERAL DESCRIPTION.

Your new Hallicrafters Model S-118 Receiver is a five-band superheterodyne receiver designed to provide you with the finest in world-wide radio reception. By tuning through the 185 KC to 420 KC and 495 KC to 31.0 MC frequency ranges, you will hear foreign and domestic short-wave broadcasts, amateur radio operators, police, aircraft, ships and countless other exciting, distant stations . . . as well as all your favorite programs on the standard broadcast band. The receiver employs a superheterodyne circuit consisting of five tubes (three of which are multipurpose type) and two silicon diodes, and provides for the reception of voice (AM) and code (CW) signals throughout its entire tuning range.

Special features built into your receiver include: an electrical bandspread dial for fine tuning in the amateur and short-wave bands, a sensitivity control, provisions for connecting to an external amplifier, provisions for using the audio amplifier section of the receiver as a phono amplifier, provisions for headphone operation, and a powerful Alnico V permanent magnet type speaker. A RECEIVE-STANDBY switch on the front panel permits you to silence the receiver without turning it off.

Your receiver has an unusually high degree of sensitivity necessary to receive weak and distant stations. Careless operation may result in excess noise or background hiss. These undesirable effects can be held to a minimum by careful adjustment of the tuning controls, as well as by proper selection and arrangement of the antenna.

POWER SOURCE.

The Model S-118 Receiver is designed to operate from a 115-volt, 50/60 cycle, AC power source. Power consumption is 33 watts.

> If in doubt about your power source, contact your local power company prior to inserting the power plug into a power outlet. Connecting the receiver to the wrong power source can cause extensive damage to the receiver and entail costly repairs.

Provision is also made so that the receiver can be used with an external power supply of 12.6 volts and 185 volts DC.

HEADPHONES.

A standard two-conductor headphone jack, marked PHONES, is located on the front panel of the receiver and is wired so that the speaker is automatically disabled when headphones are plugged into the jack. Any commercial low-impedance headphones may be used.

ANTENNAS.

The receiver is designed to operate from either a single-wire antenna, a half-wave doublet antenna, or another type of tuned antenna. On bands 1 and 2 (broadcast), a self-contained ferrite loopstick is used for the antenna.

Single-Wire Antenna.

The simplest antenna, one which will provide satisfactory performance throughout the entire tuning range, is a conventional single-wire antenna. In most localities, satisfactory results can be obtained with just 15 feet of antenna wire. It is only necessary to attach one end of this wire to the terminal marked A (antenna) and then run the wire about the room in any convenient manner. If the receiver is operated where receiving conditions are exceptionally poor (for example, in a steel constructed building), an outside antenna 50 feet to 100 feet long may be necessary. In some locations, reception may be improved by connecting a ground wire (ordinary copper wire) from the terminal marked G (ground) to a cold water pipe or other outside ground. While the use of an outside ground rod installed in accordance with Insurance Underwriter's Laboratories requirements is adequate protection against lightning, it is strongly recommended that an additional connection be made to the nearest cold water pipe to eliminate any shock hazard.

Half-Wave Doublet Antenna.

For top performance on a particular band, the use of a half-wave doublet or other type of antenna employing a 50-ohm to 70-ohm transmission line is recommended. A typical doublet antenna installation is shown below. The overall length in feet of a doublet antenna is determined by the following formula:

$$\text{Length in Feet} = \frac{468}{\text{Frequency in Megacycles}}$$

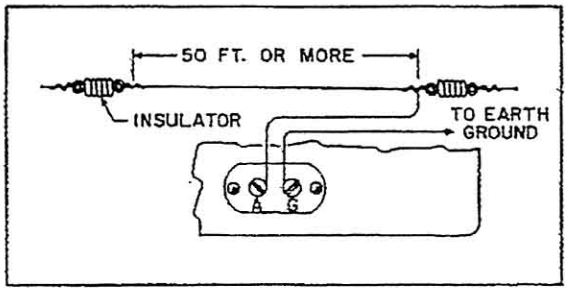
The doublet antenna is directional and should be erected with its entire length facing a desired station for maximum signal pickup.

The doublet antenna may be fed with either a balanced or unbalanced transmission line. When a balanced line such as twin-lead or a twisted pair is used, the line connects to the terminals marked A and G. When using an unbalanced line such as coaxial cable, the inner conductor connects to the terminal marked A and the outer metal braid connects to the terminal marked G. A ground wire may improve reception when using an unbalanced line.

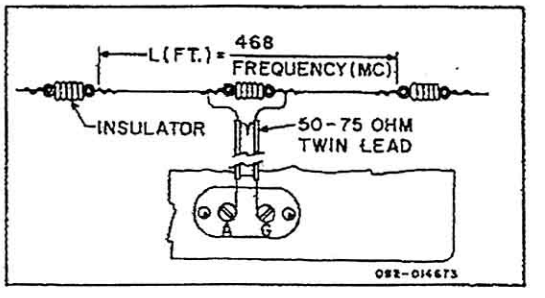
The doublet antenna provides optimum performance only in the band for which it is cut. Therefore, when using a doublet antenna, it may be desirable for reception on other bands to utilize the antenna as a single-wire type. This is accomplished by connecting the two transmission line leads together and connecting them to the terminal marked A.

TUNING DIAL.

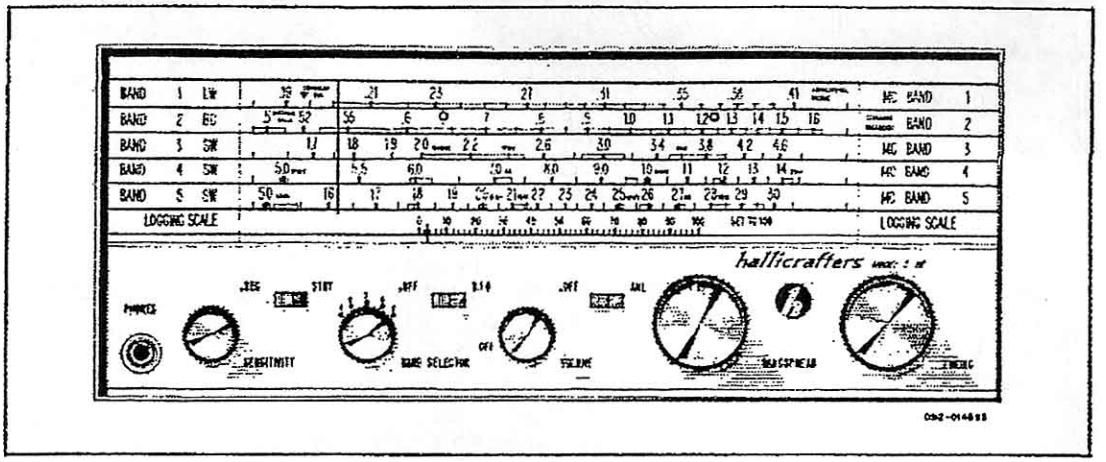
The readings on bands 1 and 2 are converted to kilocycles simply by adding one zero (for example: 70 on the dial is 700 kilocycles). The readings on the short-wave bands (bands 3, 4 and 5) are in megacycles. The standard broadcast band is marked



Single-Wire Antenna Connections.



Tuned Antenna Connections.



Receiver Controls.

with a triangular CD emblem and a dot at 640 kilocycles and at 1240 kilocycles to indicate the two official civil defense frequencies. In a civil defense emergency, tune either of these two frequencies for official civil defense news, instructions, and information.

RECEIVE-STANDBY SWITCH.

This switch is normally set at RECEIVE. When set at STANDBY, the receiver is silenced but the tubes remain at operating temperature for instant use. To resume reception at any time, merely return the switch to the RECEIVE position.

AM-CW SWITCH

Set this switch at AM to listen to voice or musical broadcasts. Set it at CW only if you wish to hear code signals.

BAND SELECTOR CONTROL.

Set this control for the band to which you wish to tune. The five positions of this control correspond to the band numbers at the left side of the dial.

BAND	FREQUENCY RANGE
1	185 KC - 420 KC
2	495 KC - 1620 KC
3	1.6 MC - 4.95 MC
4	4.85 MC - 15.0 MC
5	14.8 MC - 31.0 MC

OFF-VOLUME CONTROL.

Rotate this control clockwise to turn the receiver on and to increase volume. Allow about one minute for the tubes to warm up. To turn the receiver off, simply rotate the OFF-VOLUME control fully counterclockwise until a click is heard.

SENSITIVITY CONTROL.

Set the SENSITIVITY control fully clockwise for maximum sensitivity. If hiss or background noise is excessive, or if strong signals cause distortion or block the receiver, reduce the sensitivity slightly by turning the control counterclockwise. If, after reducing the SENSITIVITY control, more volume is needed, advance the VOLUME control.

NOISE LIMITER SWITCH.

Normally set the NOISE LIMITER switch at OFF. If severe electrical disturbances, ignition noise, or other types of pulse-type noise interfere with reception, place the switch in the NOISE LIMITER position to activate the automatic noise limiter circuit.

TUNING THE RECEIVER.

Set the BANDSPREAD dial pointer at 100 and carefully tune-in the desired station with the TUNING control. After the station has been accurately tuned-in, reset the VOLUME control for the desired volume level. When trying to locate weak, distant stations, it is suggested that the VOLUME control be initially set near maximum and then readjusted for the desired level after the station has been tuned-in.

If the signal is too strong, always reduce it by means of the VOLUME control, not by using the TUNING control. For CW reception, adjust the TUNING control for the desired pitch when tuning in the station.

IMPORTANT: The dial readings will be correct only if the BANDSPREAD dial pointer is set at 100.

BANDSPREAD CONTROL.

The BANDSPREAD control is a fine tuning adjustment which permits accurate tuning of stations on all bands. It may be used in two different ways. The first method of tuning is used when it is desired to tune-in a signal with precision accuracy. The BANDSPREAD dial pointer is set at about 95, then the signal is located with the TUNING control, and finally the signal is accurately tuned-in by rocking the BANDSPREAD control . . . turning it a few degrees to the left and right until the signal is loudest and clearest. The second method of tuning is used when it is desired to tune through a range of frequencies, such as the amateur bands. Set the BANDSPREAD dial pointer at 100, set the TUNING control for the high end of the selected band or range of frequencies, and then tune through the range with the BANDSPREAD control. Turning the BANDSPREAD control from 100 to 0 tunes the receiver progressively lower in frequency.

EXTERNAL AMPLIFIER JACK.

The External Amplifier Jack, located on the rear panel of your receiver, permits the receiver to be used as a tuner. This allows attachment to an external low level amplifier for the purpose of obtaining a higher level audio output. The receiver controls are operated in the same manner as for normal receiver operation, except the VOLUME control which is set for minimum volume. The External Amplifier Jack accepts a standard phono pin-plug type connector.

The External Amplifier Jack may also be used as a phono input receptacle for audio signals, such as the high impedance signal from a ceramic phonograph cartridge. For this application, set the NOISE LIMITER switch to the OFF position and the RECEIVE-STANDBY switch to STANDBY and operate the VOLUME control in the normal manner.

SERVICE AND OPERATING QUESTIONS.

For further information regarding operation or servicing of the Model S-118 Receiver, contact the dealer from whom the unit was purchased. The Hallicrafters Company maintains an extensive system of Authorized Service Centers where any required service will be performed promptly and efficiently at a nominal charge. All Hallicrafters Authorized Service Centers display the sign shown below. For the location of the one nearest you, consult your dealer or your local telephone directory.

Make no service shipments to the factory as The Hallicrafters Company will not accept responsibility for unauthorized shipments.

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

WARRANTY

"The Hallicrafter's 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 any unit 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, intact, 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 co.

092-014557

SERVICE DATA FOR MODEL S-118 RECEIVER

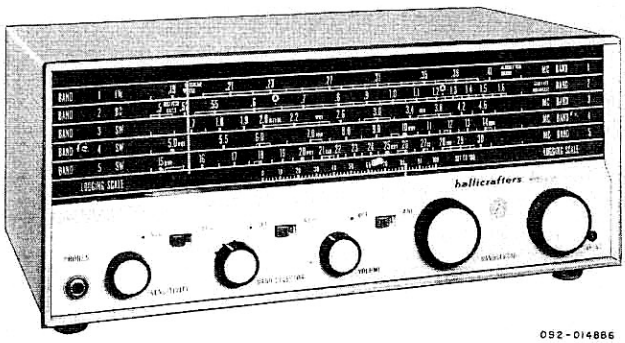


Figure 1. Hallicrafters Model S-118 Receiver.

SPECIFICATIONS

Frequency Coverage

Band	Frequency Range
1	185 KC to 420 KC
2	495 KC to 1620 KC
3	1600 KC to 4.95 MC
4	4.85 MC to 15.0 MC
5	14.8 MC to 31.0 MC

Intermediate Frequency. . 455 KC.

Number of Tubes . . . . . Five tubes, plus two silicon diodes.

Power Source . . . . . 105 volts to 125 volts, 50/60 cycles, AC.

Speaker. . . . . 4-inch permanent magnet type with a 3.2 ohm voice coil.

Power Consumption . . . . 33 watts at normal line voltage (115 volts); External power plug on rear panel to operate receiver from an external supply of 12.6V @ 1.30 amperes and 185 VDC @ 75 milli-amperes.

Antennas. . . . . Band 1 and Band 2 (Broadcast): self-contained ferrite loopstick. Band 3, Band 4, and Band 5: two contact, screw-type terminal strip on rear panel for external antenna of 52 ohms to 600 ohms impedance.

Dimensions (overall) . . . . 6-3/8 inches high, 14-1/2 inches wide, 9-7/8 inches deep.

Net Weight . . . . . 15 pounds

Shipping Weight . . . . . 17-1/2 pounds.

TUBE AND DIAL LAMP REPLACEMENT

To gain access to the tubes in the receiver, remove the three screws holding the rear panel in place and remove the panel. Care should be exercised to prevent damage to the leads from the loopstick antenna mounted on this panel. Remove the chassis from the cabinet to replace the dial lamps (see CHASSIS REMOVAL).

CHASSIS REMOVAL

To remove the chassis, remove the four screws securing the chassis to the cabinet and slide the chassis out the rear of the cabinet. CAUTION: Before removing the chassis from the cabinet, rotate the MAIN TUNING and BANDSPREAD controls fully counterclockwise to prevent damaging the variable capacitors.

DIAL CORD RESTRINGING

Remove the chassis from the cabinet when restringing either the main tuning or bandspread dial cord. Remove the dial scale by removing two screws; remove the dial plate by removing four hex-head screws. Removing the dial plate provides complete access to the drive pulleys. Exercise care when removing the dial plate to prevent damage to the pointers. Follow the arrows and number sequence in figure 2 for the main tuning dial and figure 3 for the bandspread dial. The dial cord springs should be expanded from one-quarter inch to one-half inch. Engage the dial cord with the pointer clips; replace the dial plate and dial scale. With the MAIN TUNING and BANDSPREAD controls fully counterclockwise, align the pointers to the mark on the dial scale and apply a drop of cement to the dial cord and pointer clip. Replace the chassis in the cabinet.

ALIGNMENT

The following equipment is necessary to correctly align the receiver:

1. Amplitude modulated signal generator covering 185 KC to 31 MC.
2. An output meter connected across the speaker voice coil.
3. A non-metallic alignment tool.
4. A 27-ohm carbon resistor connected between the generator and the receiver.

Refer to figures 5 and 6 for the location of all adjustments. Set the controls as follows:

RECEIVE/STANDBY . . . . . RECEIVE
AM/CW . . . . . AM
NOISE LIMITER . . . . . OFF
SENSITIVITY . . . . . FULLY CLOCKWISE
VOLUME . . . . . FULLY CLOCKWISE
BANDSPREAD . . . . . FULLY CLOCKWISE

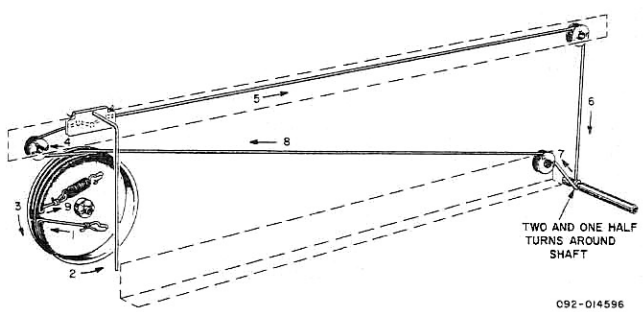


Figure 2. Restringing the Main Tuning Dial.

ALIGNMENT PROCEDURE

Step	Signal Generator Connections	Generator Frequency	Band Selector Setting	Receiver Dial Setting	Adjust
1	High side through a 0.01 μf capacitor to pin 2 of V1; low side to chassis ground.	455 KC (modulated 30%).	2	Center of dial.	Alignment points A, B, C, D, E, and F for maximum output. Reduce the generator output to maintain meter indication below 50 milliwatts.
2	Same as step 1.	455 KC(unmodulated).	2	Center of dial.	Set AM/CW switch to CW and adjust C7 for zero beat. Reset AM/CW switch to AM.
3	High side through 27-ohm resistor to terminal A on rear panel; low side to terminal G.	1600 KC (modulated 30%).	2	1600 KC.	Adjust C12 (oscillator) and C2 (antenna) for maximum output.
4	Same as step 3.	500 KC (modulated 30%).	2	500 KC.	Adjust L12 (oscillator) and L2 (antenna) for maximum output.
5	Same as step 3.	- - - - - -	2	- - - - - -	Repeat steps 3 and 4 until no increase in output can be obtained with either adjustment.
6	Same as step 3.	410 KC (modulated 30%).	1	410 KC.	Adjust C11 (oscillator) and C1 (antenna) for maximum output.
7	Same as step 3.	190 KC (modulated 30%).	1	190 KC.	Adjust L11 (oscillator) for maximum output. L1, loop adjustment should not be necessary.
8	Same as step 3.	- - - - - -	1	- - - - - -	Repeat steps 6 and 7 until no increase in output can be obtained with either adjustment. Then repeat steps 3 and 4.
9	Same as step 3.	4800 KC (modulated 30%).	3	4800 KC.	Adjust C13 (oscillator) and C3 (antenna) for maximum output.
10	Same as step 3.	1650 KC (modulated 30%).	3	1650 KC.	Adjust L13 (oscillator) and L3 (antenna) for maximum output.
11	Same as step 3.	- - - - - -	3	- - - - - -	Repeat steps 9 and 10 until no increase in output can be obtained with either adjustment.
12	Same as step 3.	14.5 MC (modulated 30%).	4	14. 5 MC.	Adjust C14 (oscillator) and C4 (antenna) for maximum output.
13	Same as step 3.	5.0 MC (modulated 30%).	4	5.0 MC.	Adjust L14 (oscillator) and L4 (antenna) for maximum output.
14	Same as step 3.	- - - - - -	4	- - - - - -	Repeat steps 12 and 13 until no increase in output can be obtained with either adjustment.
15	Same as step 3.	30.0 MC (modulated 30%).	5	30.0 MC.	Adjust C15 (oscillator) and C5 (antenna) for maximum output.
16	Same as step 3.	15.0 MC (modulated 30%).	5	15.0 MC.	L15 (oscillator) and L5 (antenna) for maximum output.
17	Same as step 3.	- - - - - -	5	- - - - - -	Repeat steps 15 and 16 until no increase in output can be obtained with either adjustment.

NOTE 1. The local oscillator frequency is above the incoming signal on bands 1, 2, 3, 4, and is lower than the incoming signal on band 5.

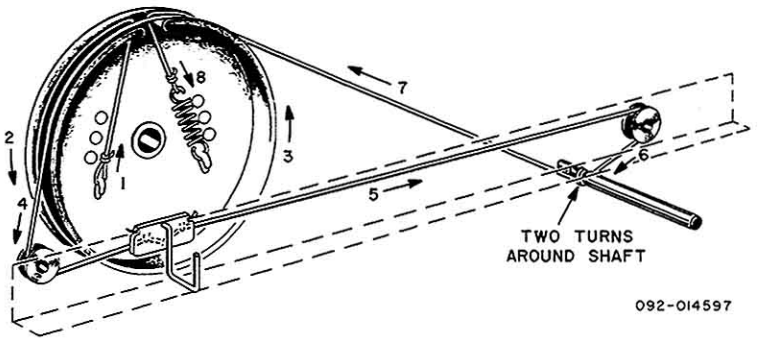


Figure 3. Restringing the Bandspread Dial.

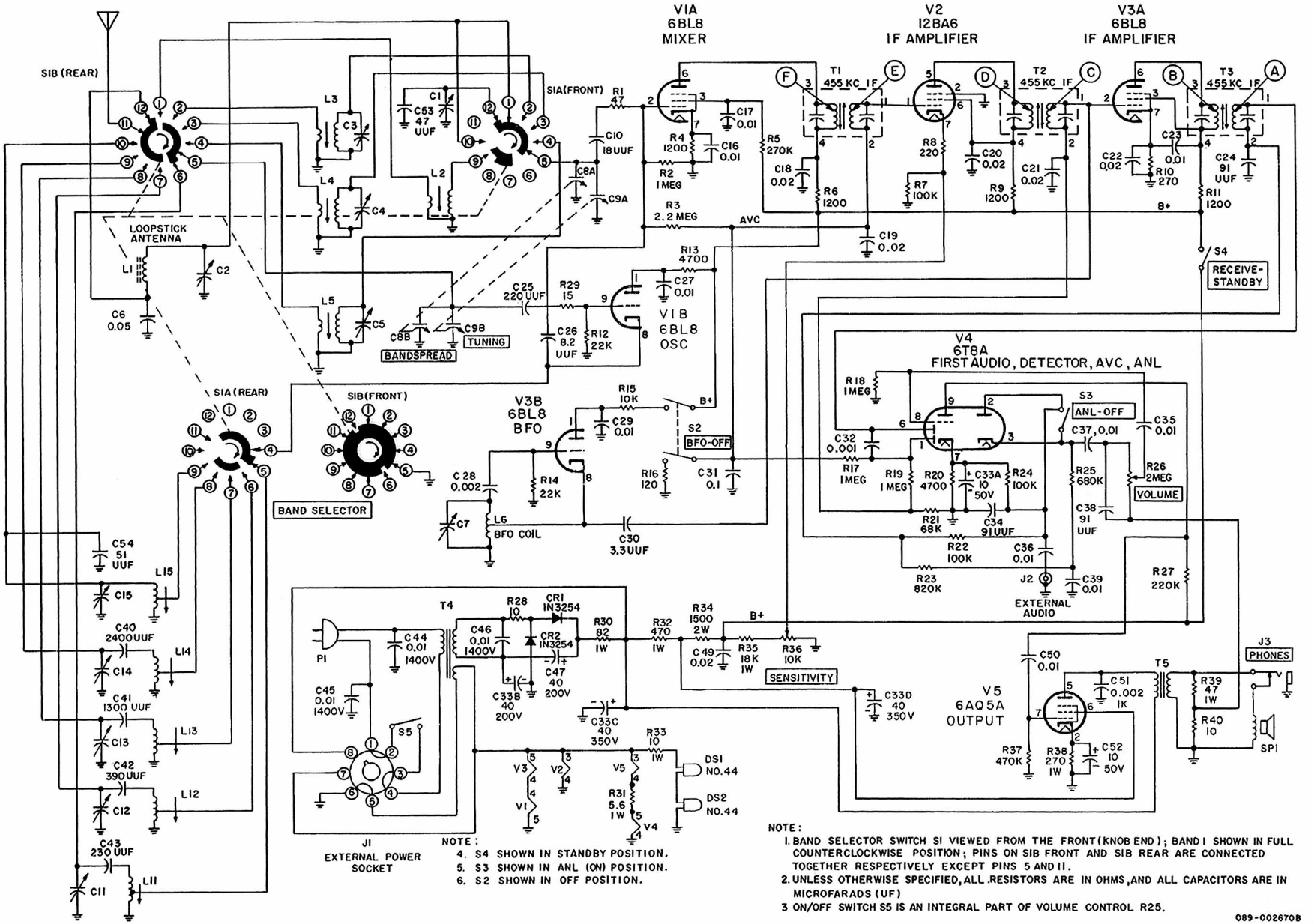


Figure 4. Schematic Diagram.

SERVICE REPAIR PARTS LIST

Schematic Symbol	Description	Hallicrafters Part Number
	CAPACITORS	
C1,2,3,4,5	Variable, Antenna Trimmer Assembly	044-000562
C6	0.05 μF, 20%, 100V, Ceramic Disc	047-001649
C7,11,12, 13,14,15	Variable, Oscillator Trimmer Assembly	044-000561
C8A&B, 9A&B	Variable, TUNING & BANDSPREAD	048-400432
C10	18 μμF, 2%, 300V, Duramica	481-131180
C16,17,23 27,29,35 36,37,39, 48,50	0.01 μF, +80%, -20%, 500V, Ceramic Disc	047-100224
C18,19,20, 21,22,49	0.02 μF, +80%, -20%, 500V, Ceramic Disc	047-100242
C24,34,38	91 μμF, 2%, 300V, Duramica	481-161910
C25	220 μμF, 2%, 300V, Duramica	481-161221
C26	8.2 μμF, ±0.5 μμF, 300V, Duramica	481-135082
C28	0.002 μF, 2%, 300V, Duramica	481-261202
C30	3.3 μμF, ±0.5 μμF, 300V, Duramica	481-135033
C31	0.1 μF, +80%, -20%, 100V, Ceramic Disc	047-001428
C32	0.001 μF, GMV, 500V, Ceramic Disc	047-200230
C33A,B, C&D	10 μF, 50V; 40 μF, 200V; 2 x 40 μF, 350V; Electrolytic	045-000632
C40	2400 μμF, 2%, 300V, Duramica	481-261242
C41	1300 μμF, 2%, 300V, Duramica	481-261132
C42	390 μμF, 2%, 300V, Duramica	481-161391
C43	230 μμF, 2%, 300V, Duramica	481-161231
C44,45,46	0.01 μF, GMV, 1400V, Ceramic Disc	047-200752
C47	40 μF, 200V, Electrolytic	045-000633
C51	0.002 μF, 20%, 1000V, Ceramic Disc	047-100794
C52	10 μF, 50V, Electrolytic	045-000755
C53	47 μμF, 2%, 300V, Duramica	481-151470
C54	51 μμF, 10%, 500V, NPO Ceramic Tubular	491-006510-22
	**RESISTORS*	
R1	47 ohm	451-252470
R2,17,18, 19	1 megohm	451-252105
R3	2.2 megohm	451-252225
R4,6,9, 11	1200 ohm	451-252122
R5	270K ohm	451-252274
R7,22,24	100K ohm	451-252104
R8	220 ohm	451-252221
R10	270 ohm	451-252271
R12,14	22K ohm	451-252223
R13,20	4700 ohm	451-252472
R15	10K ohm	451-252103
R16	120 ohm	451-252121
R21	68K ohm	451-252683
R23	820K ohm	451-252824
R25	680K ohm	451-252684
R26	Variable, 2 megohm, 30%, 1/4 watt, VOLUME (Inc. S5)	025-002083
R27	220K ohm	451-252224
R28,40	10 ohm	451-252100
R29	15 ohm	451-252150
R30	82 ohm, 1 watt	451-352820
R31	5.6 ohm, 1 watt	451-352056
R32	470 ohm, 1 watt	451-352471
R33	10 ohm, 1 watt	451-352100
R34	1500 ohm, 2 watt	451-652152
R35	18K ohm, 1 watt	451-352183
R36	Variable, 10K ohm, 20%, 2 watt, SENSITIVITY	025-002082
R37	470K ohm	451-252474
R38	270 ohm, 1 watt	451-352271
R39	47 ohm, 1 watt	451-352470
	*All RESISTORS are carbon type, 1/2 watt, 10% unless otherwise stated.	
	COILS AND TRANSFORMERS	
L1	Coil, Antenna Loopstick, Band 1	057-000422
L2	Coil, Antenna, Band 2	051-003401
L3	Coil, Antenna, Band 3	051-003402
L4	Coil, Antenna, Band 4	051-003403
L5	Coil, Antenna, Band 5	051-003404
L6	Coil, BFO	054-000061
L11	Coil, Oscillator, Band 1	051-003405
L12	Coil, Oscillator, Band 2	051-003406
L13	Coil, Oscillator, Band 3	051-003407
L14	Coil, Oscillator, Band 4	051-003408
L15	Coil, Oscillator, Band 5	051-003409
T1,2,3	Transformer, IF, 455-KC	050-300241
T4	Transformer, Power	052-000967
T5	Transformer, Output (Part of SP1)	----------
	SWITCHES AND CONNECTORS	
S1	Switch, Rotary, BAND SELECTOR	060-002451
S2	Switch, Slide, DPDT, BFO-OFF	060-002561
S3	Switch, Slide, SPDT, ANL-OFF	060-002560
S4	Switch, Slide, SPDT, RECEIVE-STANDBY	060-002560
S5	Switch, ON/OFF (Part of R26)	
J1	Connector, External Power Socket (Shorting type Octal)	006-200296
J2	Connector, Socket, External Audio	036-100041
J3	Connector, Socket, PHONES	036-100243
	ELECTRON TUBES, DIODES, AND TUBE SOCKETS	
V1	6BL8, Mixer - Oscillator	090-901431
V2	12BA6, IF Amplifier	090-900039
V3	6BL8, IF Amplifier - BFO	090-901431
V4	6T8A First Audio - Detector - AVC - ANL	090-901403
V5	6AQ5A, Output	090-901331
CR1,2	1N3254, Silicon Rectifier	019-003939-02
XV1,3,4	Socket, 9-Pin	006-000888
XV2,5	Socket, 7-Pin	006-000886
	MISCELLANEOUS	
	Bandspread Pulley Assembly	150-004219
	Bracket and Stud Assembly (C8&C9)	041-250392
	Bracket Assembly, Dial Plate Mounting	150-004147
	Bracket Assembly, Pointer Rail	150-004146
	Cabinet	150-004151
	Clamp, Loop	076-202743
	Clip, IF Transformer Mounting	076-100385
	Dial Cord	038-000049
	Dial Glass, Calibrated	083-000988
	Escutcheon	007-000828
	Foot, Plastic	016-001469
	Gear, Pinion (C8&C9)	026-200846
	Iron Core	003-203388
	Knob, BANDSPREAD and TUNING	015-001751
	Knob, BAND SELECTOR and VOLUME	015-001561
	Knob, SENSITIVITY	015-001559
	Lamp, Pilot (No. 44)	039-100003
	Line Cord and Plug	087-100078
	Lock, Line Cord	076-100974
	Pilot Lamp Assembly	086-000618
	Pinion Pulley Assembly (C8&C9)	041-250391
	Plate, Dial Background	063-005691
	Pointer, Bandspread	082-000572
	Pointer, Main Tuning	082-000573
	Rail, Pointer	150-004148
	Rear Panel Assembly	150-004149
	Retainer, E Ring	076-101570
	Ring, Retaining	076-100883
	Shaft, Bandspread	074-002709
	Shaft, Main Tuning	074-002710
	Shield, Electron Tube	069-100667
	Shield, Electron Tube (V2)	069-100232
	Shield, Pilot Lamp	069-001675
	Socket, Octal (C33 Mounting)	010-002467
	Spacer, Pointer Rail Mounting	073-004325
	Speaker (Includes T5)	085-000219
	Spring, Dial Cord	075-000893
	Spur Gear Assembly (C8&9)	041-250389
	Terminal Board (A-G)	088-202026
	Trim Strip, Cabinet	007-000830

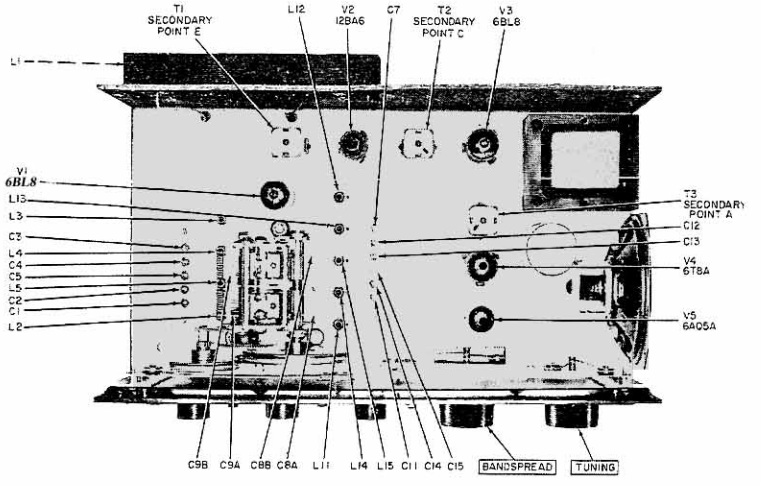


Figure 5. Top View of Chassis.

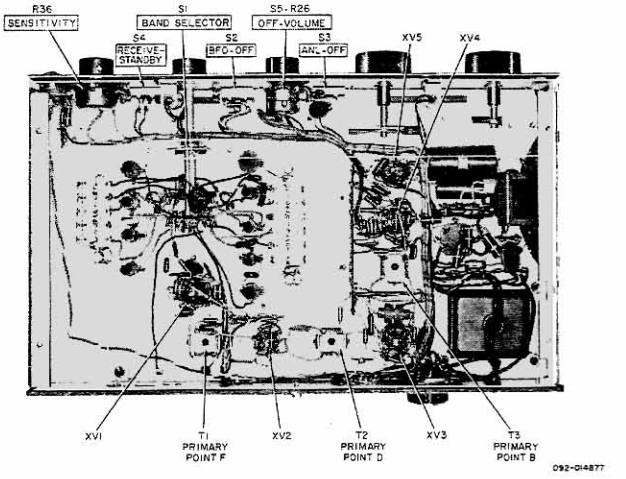


Figure 6. Bottom View of Chassis.

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