



OPERATING AND SERVICE INSTRUCTIONS

**RADIO RECEIVER
MODEL SX-62B**

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.

1100-00000



Figure 1. Radio Receiver Model SX-62B/62BU

GENERAL SPECIFICATIONS

Tubes	Thirteen plus voltage regulator and rectifier
Speaker Output	3.2/8/500 ohms
Headset Output	High impedance
Antenna Input	For 50 to 600 ohm line or single wire lead-in
Phono Input	High impedance
Tuning Range	See Frequency Coverage
Intermediate Frequency	455 kc/10.7 mc
Power Supply ... SX-62B	105-125V 60 Cycles AC
SX-62BU	105-250V 25/100 Cycles AC
Power Consumption	120 Watts

FREQUENCY COVERAGE

BAND	FREQUENCY RANGE	TYPE OF RECEPTION
1	550 KC - 1620 KC	AM/CW
2	1.62 MC - 4.9 MC	AM/CW
3	4.9 MC - 15 MC	AM/CW
4	15 MC - 32 MC	AM/CW
5	27 MC - 56 MC	AM/FM/CW
6	54 MC - 109 MC	AM/FM/CW

The Model SX-62B (SX-62BU, available on special order) receiver is a sensitive high fidelity superheterodyne receiver covering all of the broadcasting services between 540 kilocycles (KC) and 109 megacycles (MC). The receiver is capable of receiving both the FM (Frequency Modulation) and AM (Amplitude Modulation) broadcasts transmitted in this frequency range as shown in the FREQUENCY COVERAGE chart.

A built-in 500 kc crystal controlled calibrating oscillator and adjustable dial pointer permit accurate dial calibration on the large direct reading slide rule dial. Marker signals appear every 500 kc on the dial scale with this type of marker oscillator; hence, dial calibration may be held to very close limits over the entire dial scale by comparison with the marker signal.

This calibration feature of the Model SX-62 receiver makes it possible to log the most prominent shortwave stations by countries directly on the dial. In addition, many of the active communication channels; government, amateur, police, aviation, etc. are logged by bars to indicate their location on the dial. World-wide reception is accomplished simply by selecting the desired frequency band (band selector switch) and adjusting the tuning control so that the pointer is above the station locating dot.

The receiver selectivity is adjustable to accommodate the broad response required for high fidelity FM and AM broadcast reception to the sharpest crystal selectivity required for code reception in the crowded channels of the short wave bands. A FM-AFC position on the RECEPTION switch "locks" the receiver onto the station frequency.

The high fidelity tone compensated audio system provides four distinct tone ranges covering full range reception for entertainment purposes as well as the restricted range required for communication work in either voice or code.

An automatic noise limiter, operated by a toggle switch, permits the operator to reduce the background noise caused by severe electrical disturbances. Background noise is reduced in the model SX-62 with a minimum of audio distortion.

A RECEIVE-STANDBY switch permits receiver disabling for short standby periods without having to wait for the tube heaters to reach operation temperature when reception is again required.

The receiver normally operates from a 105-125 volt 60 cycle alternating current (AC) source. A special model of the SX-62B receiver permits operation from 25 to 100 cycle alternating current sources operating at voltages ranging from 105-250 volts. The power requirements for your receiver must be checked carefully. Read over the installation section of this book before connecting to your power source.

IMPORTANT

Your careful attention is especially invited to the installation and operating instructions. They have been provided to insure the satisfaction you have a right to expect from a Hallicrafters "Precision Built" product. Your receiver has an unusually high degree of sensitivity necessary to receive weak and distant stations. Careless operation of a high sensitivity receiver may result in excess noise or background hiss. These undesirable effects can be held to a minimum by careful adjustment of the sensitivity, tuning and tone controls as well as proper selection and arrangement of the antenna.

INSTALLATION

UNPACKING - Check all shipping instruction tags carefully before removing them.

LOCATION - The receiver is equipped with rubber feet for table top or shelf mounting. When locating the receiver, avoid excessively warm locations such as near radiators, hot air registers, or confined dead air spaces such as are encountered in recessed installations.

POWER SOURCE - The receiver, as normally supplied, operates from a 105 to 125 volt, 50/60 cycle AC outlet. Power consumption is approximately 120 watts. If you are in doubt or unfamiliar with the voltage and frequency rating of your utility service, consult your local power company representative. Attempting to operate the receiver from other sources of power than specified may involve costly repairs.

A special model is available for operation from 115 V./130 V./150 V./220 V./250 V. 25/100 cycle AC sources. A selector switch on the power transformer permits operation on any of the line voltages shown.

CAUTION - When operating the universal model, it is necessary to check, and set if necessary, the selector switch on the power transformer before connecting the receiver to the source of power.

SPEAKER CONNECTION - Four screw type terminals located on the rear chassis apron are provided for the speaker connection. The output impedances are 3.2, 8, and 500 ohms. Any suitable speaker unit which will operate with the available output impedances may be used with the Model SX-62B receiver. Hallicrafters Model R-48A speaker connects to the 3.2 ohm terminals (marked COM/3.2).

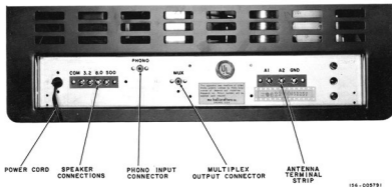


Figure 2. Rear View

ANTENNA - The terminals marked A1, A2, and G on the back of the receiver are for the antenna and ground connections. Satisfactory results can be obtained in most localities with the 15 foot antenna wire included with your receiver. Simply uncoil this wire, connect one end of it to terminal A1, and then connect the jumper between terminals A2 and G. An outside antenna 50 to 100 feet long (ordinary copper wire) may be necessary if the receiver is located in a difficult reception area or steel constructed building. In some locations, reception may be improved by connecting a lead from terminal G to a cold water pipe or outside ground rod.

Doublet Antenna - For really top performance, there is no substitute for an outside doublet antenna. When properly constructed and installed, the doublet antenna will provide not only optimum shortwave reception but excellent standard broadcast reception as well. The overall length (in feet) of the doublet is determined by dividing 468 by the frequency (in megacycles) at the high end of the range to which you wish to listen. A doublet antenna is directional broadside to its length and should be so oriented with respect to a desired station for maximum signal pickup.

By feeding the doublet antenna with a 300 ohm transmission line, a broader frequency response is obtained than that possible with a 50-75 ohm line. If a ribbon type transmission line is used, connect the line to terminals A1 and A2 and disconnect the jumper between A2 and G. When using a coaxial transmission line, connect the inner conductor to A1, the outer conductor to A2, and place the jumper between A2 and G.

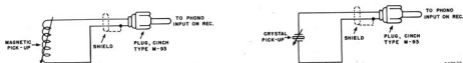


Figure 3. Wiring Diagram, Record Player Connection.

RECORD PLAYER CONNECTION - A shielded type receptacle is provided at the rear chassis apron to accommodate a record player pickup cable connector. Any record player employing a crystal cartridge or high level magnetic pickup in its tone arm may be used with the receiver. Refer to Figure 3. for wiring details.

OPERATION

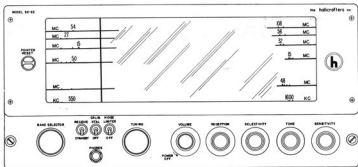


Figure 4. Front View, Location of Controls.

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GENERAL BROADCAST RECEPTION - Certain front panel controls have been color coded to simplify the tuning procedure for general entertainment purposes. High fidelity reception in the standard broadcast (AM) and frequency modulation (FM) bands may be accomplished as follows: Turn the volume control clockwise to turn on the receiver or increase volume, and counter-clockwise to reduce volume or turn off the receiver. This turns the receiver on as indicated by the illumination of one of the dial scales. Similarly the receiver is turned off by turning the control counter-clockwise beyond the click of the switch. At this point the three "bat-handle" switches may be set at "RECEIVE" and "OFF" and forgotten. To receive standard broadcast (AM) services; set the BAND SELECTOR for the position that illuminates the 550-1620 kilocycle scale (bottom scale), set the RECEPTION, SELECTIVITY, TONE and SENSITIVITY controls per the red dot, and adjust the TUNING and VOLUME controls in the normal manner, tuning for "clearest reception as usual."

OPERATION FOR RADIO TELEPHONE AND CW

CONTROL

RADIO-TELEPHONE

CW

VOLUME control -	This control turns the receiver on and off in addition to controlling the volume. Turn the control clockwise to turn on the receiver or increase volume, and counter-clockwise to reduce volume or turn off the receiver.	Same
RECEIVE/STANDBY switch -	Normally set at "RECEIVE". May be set at "STANDBY" to disable the receiver for short standby periods and yet keep the tube heaters at operating temperature for instant use.	Same
RECEPTION control -	Set at "AM" for reception of amplitude modulated stations located in the standard broadcast band or any of the shortwave bands, or at "FM" to tune FM stations located in the two highest frequency ranges (two top dial scales), then set at "FM-AFC" to lock onto the station frequency.	Set at "CW"
BAND SELECTOR -	Set for position that illuminates the dial scale covering the desired band of frequencies. Extreme left hand position of this control illuminates the lowest dial scale.	Same
TUNING control -	The tuning control sets the frequency of reception, tuning the band of frequencies shown on the illuminated dial scale. The frequency of reception is shown in kilocycles (KC) on the standard broadcast range and in megacycles (MC) on the shortwave and FM ranges. The frequencies of the local stations are generally listed in newspapers, AM stations in kilocycles and FM stations in megacycles. Information on short wave stations, not identified directly from the dial, may be obtained from published log books available at most book stores or radio supply houses. When tuning for the station, tune carefully for the clearest reception and obtain top performance from your receiver.	The tuning control sets the frequency of reception, tuning the band of frequencies shown on the illuminated dial scale. The frequency of reception is shown in megacycles (MC) on the shortwave bands used by code transmitters. When tuning for the station, tune for the pitch of the code signal found easiest to copy. The pitch of the code signal will usually run approximately 1000 cycles.

SELECTIVITY
control -

Normally set at "NORMAL/BROAD" for high fidelity reception in the standard broadcast and FM bands. Use the "NORMAL/MED." or "NORMAL/SHARP" for the more crowded conditions existing in most of the short-wave ranges. Note that as the receiver is made more selective, the background noise and interference from nearby stations is reduced. The setting of the selectivity control is generally best determined by receiving conditions, using just enough selectivity to isolate the desired stations. The "CRYSTAL/BROAD" position may be used when the frequency of reception is extremely congested.

This control may be set at "NORMAL/MED." or "NORMAL/SHARP" for the reception of code stations not suffering local interference. Congested receiving conditions may be handled by increasing selectivity, switching to one of the three crystal positions for the degree of selectivity required. Note that in the crystal position the tuning of the receiver changes, i.e. the desired station will be very loud on one side of zero beat and very weak (crystal slot) on the other side.

SENSITIVITY
control -

Normally set maximum clockwise. Local high powered stations may overload the receiver, showing up as distortion, hence conditions may require that this control be turned counter-clockwise to reduce the sensitivity of the receiver accordingly.

The receiver sensitivity must be controlled manually for code reception, hence the SENSITIVITY control must be advanced just enough to keep the code stations from blocking the receiver.

TONE control -

Normally set at "HI-FI" or "BASS" for AM or FM entertainment purposes. The "LOW" and "MED." positions will be found desirable when listening on the shortwave bands.

Normally set at "LOW" or "MED." for code reception.

USE OF THE CALIBRATING CRYSTAL - A built-in secondary frequency standard and adjustable dial pointer permits accurate frequency calibration over any portion of the receiver dial. Three degrees of dial calibration accuracy may be had as follows:

1. General Dial Indexing - Run the dial pointer down to the left hand end of the dial scale, turning the TUNING knob until the left hand dial stop is reached. Line up the dial pointer with the index line using the small POINTER RESET knob located to the left of the dial escutcheon.
2. Average Dial Calibration - Index the dial pointer as described above. Set the CALIB. XTAL switch at "CALIB. XTAL", RECEPTION switch at CW, and tune the receiver to zero beat with the calibrating oscillator signal, i.e. the pitch of the whistle or beat note will pass through zero cycles at the exact center of the marker signal. The oscillator signals will be found at multiples of 500 kilocycles on the lower 5 dial scales, i.e. 1000 kc and 1500 kc; 2 mc, 2.5 mc, 3 mc etc.; 5 mc, 5.5 mc, 6 mc, etc.; 15 mc, 15.5 mc, 16 mc, etc.; or 27 mc, 27.5 mc, 28 mc, etc. After setting the TUNING control for zero beat, center the dial pointer exactly on the half-megacycle dial division. For best results, the receiver sensitivity must be held to a minimum while making calibration adjustments.
3. Precise Dial Calibration - To obtain a precise dial calibration the procedure outlined above should be repeated for the particular section of the dial in use rather than merely checking calibration at either end of the dial scale. Since the calibration signals appear every 500 kc along the dial, a calibration point may easily be obtained on either side of the frequency of reception at any point along the dial.

After calibrating the receiver dial with the calibrating crystal, the oscillator is switched OFF and the RECEPTION switch returned to the desired setting for normal reception.

RECORD PLAYER OPERATION - With a record player connected to the receiver it is merely necessary to set the RECEPTION control at PHONO and operate the VOLUME and TONE controls as for normal radio reception.

CAUTION - The receiver will not respond if the RECEIVE/STANDBY switch is set at "STANDBY". The setting of the remaining controls, except those mentioned above, is immaterial as they are not in use for record player operation.

MULTIPLEX OUTPUT - A jack, located on the rear panel, provides an output from the FM detector that may be used with a multiplex adapter and stereo system for reception of stereo broadcasts in the FM band.

HEADPHONE RECEPTION - A headset jack, located at the front panel, provides for headphone reception. Insertion of the headset plug disables the speaker. Any high impedance headset, magnetic or crystal, will work with the receiver.

SERVICE

TUBE REPLACEMENT - The types of tubes required and their relative position in the receiver are shown in the illustration, Fig. 5. When installing a replacement tube, insert the center guide pin into the center hole of the tube socket; rotate the tube until the key on the guide pin drops into the notch in the socket hole; and push down until the base of the tube rests firmly on the socket. A slightly different technique must be used on the miniature tubes. They have seven small pins which have to be lined up with the socket holes before pushing into place. Handle with care as all tubes are considered fragile and do not tolerate much mechanical abuse.

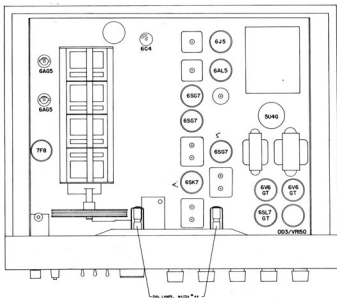


Figure 5. Top View Showing Location of Tubes and Dial Lamps

DIAL LAMP REPLACEMENT - Refer to Fig. 5 for the location of the dial lamps used in the receiver. To gain access to defective lamps, open the cabinet cover, remove the light shield (four screws) and unclip the dial lamp socket by compressing the side springs. The socket may then be brought out into the open to change the defective lamps. Replace all lamps with 6-8 volt Mazda No. 44 (blue bead) or equivalent.

SERVICE OR OPERATING QUESTIONS - For further details regarding operation or servicing of the receiver, contact your dealer. Make no service shipments directly to the factory before first writing for authorization and instructions.

The factory cannot accept responsibility for unauthorized shipments.

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

POSITIONING CONTROL KNOBS

BAND SELECTOR . . . As required by flat on shaft
VOLUME Set at 10 for full clockwise rotation
RECEPTION As required by markings

SELECTIVITY. As required by markings
TONE. As required by markings
SENSITIVITY. Set at 10 for full clockwise rotation

RESTRINGING DIAL CORD

Restring the tuning capacitor drive with a 45 inch length of 30 lb. test dial cord. Tie one end of the cord to the tension spring at position A and follow the stringing sequence A through J as shown. At position J stretch the tension spring and tie the cord securely to the spring. Note that the dial cord is wrapped around the tuning drive shaft two and three-quarters times for proper traction.

Restring the dial pointer drive with a 75 inch length of 30 lb. test dial cord. Tie one end of the cord to the tension spring at position 1 and follow the stringing sequence 1 through 12 as illustrated. At position 12 stretch the tension spring and tie the cord securely.

Index the dial pointer by setting the tuning gang at maximum capacity, the RESET control in the middle of its range, and aligning the pointer with the left hand dial index marker.

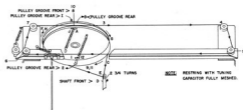


Figure 6. Dial Cable Stringing Procedure

ALIGNMENT PROCEDURE

IF AMP ALIGNMENT (455 kc) - Set the controls as follows:

BAND SELECTOR 550/1620 kc range
RECEIVE/STANDBY switch. RECEIVE
CALIB. XTAL switch OFF
NOISE LIMITER switch. OFF
VOLUME control Near Maximum

RECEPTION control AM
SELECTIVITY control NORMAL/SHARP
SENSITIVITY control Near Maximum
Set tuning dial pointer at approximately 1,000 kc.

Connect high side of signal generator through an 0.1 mfd. capacitor to pin #1, of the 7F8 converter tube. With signal generator set at approximately 455 kc align slugs S-1, 3, 5, 10, 12 and 14 for maximum output.

Set RECEPTION control at CW and adjust slug S-8 for a 1,000 cycle note.

Set the SELECTIVITY control at CRYSTAL/BROAD. While slowly turning slug S-10 in one direction across the resonant setting obtained above, "rock" the signal generator tuning and observe the dip in the output meter reading as the adjustment passes through the response of the crystal filter. The correct setting of the slug S-10 is in the center of the observed dip. Set the signal generator at the weaker of the two responses obtained on either side of zero beat and adjust the crystal phasing trimmer C-57 for the null.

Set the SELECTIVITY control at CRYSTAL/SHARP and with trimmer C-61 set near minimum capacity, slowly increase its capacity while "rocking" the signal generator and adjust for maximum output. It may be necessary at this point to reduce the signal generator input and the receiver sensitivity to prevent overloading. After peaking the adjustment turn the trimmer in until a drop in output of about 2 db occurs. At this point the sharp crystal will have very good selectivity without sacrificing too much gain.

Tune the signal generator to exact crystal frequency and note output meter reading. Set the SELECTIVITY control at CRYSTAL/BROAD and note the drop in output, and output meter reading. Now switch to CRYSTAL/MEDIUM and with trimmer C-60 near minimum capacity, slowly increase its capacity, while "rocking" the signal generator, until the output meter indicates about midway between the output readings obtained in sharp crystal and broad crystal position.

Set the SELECTIVITY control at CRYSTAL/SHARP and reset signal generator for the exact crystal frequency. Switch to NORMAL/SHARP and reset slugs S-1,3,5 12,14 and trimmer C-58 for maximum output.

Set the RECEPTION control at CW and adjust the BFO slug S-8 for zero beat.

IF AMP. ALIGNMENT (10.7 mc) - Set the controls as follows:

BAND SELECTOR 27/56 mc range
RECEIVE/STANDBY switch. RECEIVE
CALIB. XTAL switch OFF
NOISE LIMITER switch. OFF
VOLUME Near Maximum

RECEPTION control AM
SELECTIVITY control NORMAL/SHARP
SENSITIVITY control Near Maximum
Set tuning dial pointer at approx. midscale.

Connect the high side of the signal generator through an 0.1 mfd. capacitor to pin #1 of the 7F8 converter tube. Set signal generator at 10.7 mc and adjust slugs S-4,6,9,13 and 15 for maximum output. Now set slugs S-2 and S-11 for maximum output but do not readjust slugs S-4 6,9, 13 and 15.

Set RECEPTION control at CW and adjust slugs S-17 for zero beat.

Set RECEPTION control at FM and adjust slug S-16 for maximum output. Now set Slug S-7 for the null or minimum output as indicated on the output meter. Check the discriminator by slowly tuning the signal generator through 10.7 mc and observe the two maximum audio level readings on the output meter. If the two peaks are equal the job is done; if not it may be necessary to reset Slug S-16 until a reasonable balance is obtained.

RF AMP ALIGNMENT

After completing the alignment of the IF amplifier stages the RF amplifier stages may be aligned according to the following chart. Connect the high side of the signal generator to terminal A-1 through the dummy antenna specified and connect a jumper between antenna terminal A-2 and GND. Use just enough signal generator output to obtain a 500 milliwatt audio output level for best results.

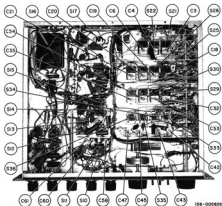


Figure 7. Alignment Adjustments, Bottom View

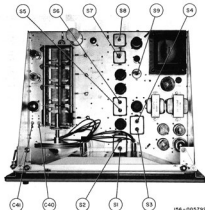


Figure 8. Alignment Adjustments, Top View

ALIGNMENT CHART

Dummy Antenna	Signal Generator Frequency	Band Selector Range	Radio Dial Setting	Adjust	Remarks
RMA	1500 kc	550-1600 kc	1500 kc	C-47*, 6, 21, 35	Adjust for max. output
	600 kc		600 kc	S-36*	
RMA	4.5 mc	1.62-4.9 mc	4.5 mc	C-45*, 20, 34	Adjust for max. output
	2.0 mc		2.0 mc	S-35*	
RMA	14.0 mc	4.9-15 mc	14.0 mc	C-43*, 4, 19, 33	Adjust for max. output
	7.0 mc		7.0 mc	S-34*, 22, 26, 30	
RMA	28 mc	15-32 mc	28 mc	C-42*, 3, 18, 32	Adjust for max. output
	18 mc		18 mc	S-33*, 21, 25, 29	
300-ohm non-inductive resistor	50 mc	27-56 mc	50 mc	C-41*, 2, 17, 31	Adjust for max. output
	30 mc		30 mc	S-32*, 20, 24, 28	
300-ohm non-inductive resistor	105 mc	54-109 mc	105 mc	C-40*, 1, 16, 30	Adjust for max. output
	60 mc		60 mc	S-31*, 19, 23, 27	

* Note - Calibration adjustment.

Note - The standard RMA dummy antenna mentioned in the alignment chart consists of a 200 mmf condenser in series with a 20 ohm r-f choke which is shunted by a 400 mmf condenser in series with a 400 ohm carbon resistor.

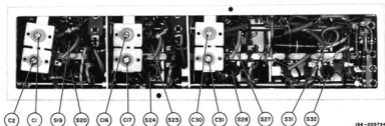


Figure 9. Alignment Adjustments, Left Side View

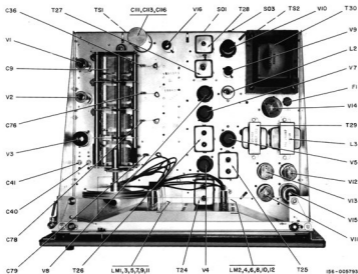


Figure 10. Component Locations, Top View

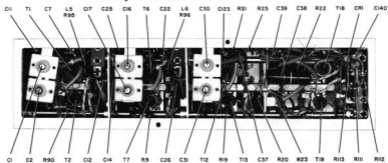


Figure 11. Component Locations, Left Side View

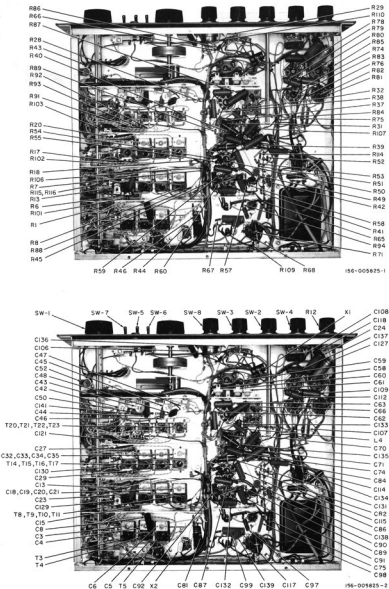


Figure 12. Component Locations, Bottom View

SERVICE PARTS LIST

Schematic Symbol	Description	Ballistics Part Number	Schematic Symbol	Description	Ballistics Part Number	Schematic Symbol	Description	Ballistics Part Number	
CAPACITORS			*RESISTORS (CONT.)			TRANSFORMERS AND COILS (CONT.)			
C1,2,16,17,30,31	Trimmer, adjustable; 2 section antenna, RF amp, and mixer stages	044-200165	R23 47 ohms 20%	451-232470	T74 Transformer, 1st IF amp. stage	T74	Transformer, 1st IF amp. stage	050-200196	
C3,4,6,13,18,20,22,32,33,34,35	Parallel trimmer T3,4,5,6,9,10,11,13,14,16 and 17 respectively	-----	R24 33 ohms 20%	451-232130	T75 Transformer, 2nd IF amp. stage	T75	Transformer, 2nd IF amp. stage	050-200196	
C5,129,130	2.2 mfd. 500V., bakelite	047-100546-04	R25 75	10K ohms	451-232109	T77 Transformer, FM detector	T77	Transformer, FM detector	050-200291
C7,78	5 mfd. 500V., ceramic	091-002950-95	R26 5.4K ohms, 1 watt	451-232162	T79 Transformer, audio output	T79	Transformer, audio output	050-200213	
C8,11,15	.047 mfd. 200V., molded tubular	099-014473	R27 15	470 ohms 20%	451-232471	T80 Transformer, power; 115V.	T80	Transformer, power; 115V.	050-200414
C12,28,29,37,83,92,104,114,115,117,121,122,138,139,143,145	.01 mfd. 600V., molded tubular	099-014473	R28 100K ohms, 1 watt	451-232583	L1 RF choke (coiled rod)	L1	RF choke (coiled rod)	051-200018	
C13,115,121,122,138,139,143,145,87,91,104,115,132	.022 mfd. 600V., molded tubular	099-014473	R29 100K ohms, 1 watt	451-232583	L2 IF coupling coil (loc. 48)	L2	IF coupling coil (loc. 48)	051-200018	
C14,28	5000 mfd. 500V., mica	070-514562	R30 100K ohms, 1 watt	451-232583	L3 RF choke; filament	L3	RF choke; filament	051-200018	
C22,123,141	15 mfd. 500V., ceramic	091-002156-95	R31 100K ohms, 1 watt	451-232583	L4 RF choke; screen (wound on R5 & R6)	L4	RF choke; screen (wound on R5 & R6)	051-200018	
C23,62,70,74	.047 mfd. 200V., molded tubular	099-014473	R32 100K ohms, 1 watt	451-232583	L5 RF choke; plate	L5	RF choke; plate	051-200018	
C25,62,70,74	.047 mfd. 200V., molded tubular	099-014473	R33 100K ohms, 1 watt	451-232583					
C26 22 mfd. 200V., molded tubular		099-014473	R34 100K ohms, 1 watt	451-232583					
C36,55,78,120	7 mfd. 500V., ceramic	091-002950-95	R35 100K ohms, 1 watt	451-232583					
C37,97	47 mfd. 500V., mica	070-514562	R36 100K ohms, 1 watt	451-232583					
C39,49	110 mfd. 500V., ceramic	091-002156-95	R37 100K ohms, 1 watt	451-232583					
C40,41,51	Trimmer, adjustable; oscillator section bands 5 and 6; crystal phasing	044-100347	R38 100K ohms, 1 watt	451-232583					
C42	Trimmer, adjustable; oscillator section, band 4	044-100347	R39 100K ohms, 1 watt	451-232583					
C43,45	Trimmer, adjustable; oscillator section, bands 2 and 3	044-100347	R40 100K ohms, 1 watt	451-232583					
C44	4700 mfd. 25, 500V., silver mica	070-514562	R41 100K ohms, 1 watt	451-232583					
C46	1500 mfd. 25, 500V., silver mica	070-514562	R42 100K ohms, 1 watt	451-232583					
C47	Trimmer, adjustable; oscillator section band 1	044-100347	R43 100K ohms, 1 watt	451-232583					
C48	470 mfd. 25, 500V., silver mica	070-514562	R44 100K ohms, 1 watt	451-232583					
C49	220 mfd. 25, 500V., silver mica	070-514562	R45 100K ohms, 1 watt	451-232583					
C50	330 mfd. 25, 500V., silver mica	070-514562	R46 100K ohms, 1 watt	451-232583					
C51	.047 mfd. 600V., molded tubular	099-014473	R47 100K ohms, 1 watt	451-232583					
C52,145,154	P/O transformer T24	-----	R48 100K ohms, 1 watt	451-232583					
C53,82,83	Trimmer, adjustable; crystal phasing	044-200094	R49 100K ohms, 1 watt	451-232583					
C54,85,87,88,89	Trimmer, adjustable; crystal phasing	044-200094	R50 100K ohms, 1 watt	451-232583					
C55,72,73	P/O transformer T25	-----	R51 100K ohms, 1 watt	451-232583					
C56	P/O transformer T26	-----	R52 100K ohms, 1 watt	451-232583					
C57	P/O transformer T27	-----	R53 100K ohms, 1 watt	451-232583					
C58	P/O transformer T28	-----	R54 100K ohms, 1 watt	451-232583					
C59	100 mfd. 500V., mica	070-514562	R55 100K ohms, 1 watt	451-232583					
C60	100 mfd. 500V., mica	070-514562	R56 100K ohms, 1 watt	451-232583					
C61	100 mfd. 500V., mica	070-514562	R57 100K ohms, 1 watt	451-232583					
C62	100 mfd. 500V., mica	070-514562	R58 100K ohms, 1 watt	451-232583					
C63	100 mfd. 500V., mica	070-514562	R59 100K ohms, 1 watt	451-232583					
C64	100 mfd. 500V., mica	070-514562	R60 100K ohms, 1 watt	451-232583					
C65	100 mfd. 500V., mica	070-514562	R61 100K ohms, 1 watt	451-232583					
C66	100 mfd. 500V., mica	070-514562	R62 100K ohms, 1 watt	451-232583					
C67	100 mfd. 500V., mica	070-514562	R63 100K ohms, 1 watt	451-232583					
C68	100 mfd. 500V., mica	070-514562	R64 100K ohms, 1 watt	451-232583					
C69	100 mfd. 500V., mica	070-514562	R65 100K ohms, 1 watt	451-232583					
C70	100 mfd. 500V., mica	070-514562	R66 100K ohms, 1 watt	451-232583					
C71	100 mfd. 500V., mica	070-514562	R67 100K ohms, 1 watt	451-232583					
C72	100 mfd. 500V., mica	070-514562	R68 100K ohms, 1 watt	451-232583					
C73	100 mfd. 500V., mica	070-514562	R69 100K ohms, 1 watt	451-232583					
C74	100 mfd. 500V., mica	070-514562	R70 100K ohms, 1 watt	451-232583					
C75	100 mfd. 500V., mica	070-514562	R71 100K ohms, 1 watt	451-232583					
C76	100 mfd. 500V., mica	070-514562	R72 100K ohms, 1 watt	451-232583					
C77	100 mfd. 500V., mica	070-514562	R73 100K ohms, 1 watt	451-232583					
C78	100 mfd. 500V., mica	070-514562	R74 100K ohms, 1 watt	451-232583					
C79	100 mfd. 500V., mica	070-514562	R75 100K ohms, 1 watt	451-232583					
C80	100 mfd. 500V., mica	070-514562	R76 100K ohms, 1 watt	451-232583					
C81	100 mfd. 500V., mica	070-514562	R77 100K ohms, 1 watt	451-232583					
C82	100 mfd. 500V., mica	070-514562	R78 100K ohms, 1 watt	451-232583					
C83	100 mfd. 500V., mica	070-514562	R79 100K ohms, 1 watt	451-232583					
C84	100 mfd. 500V., mica	070-514562	R80 100K ohms, 1 watt	451-232583					
C85	100 mfd. 500V., mica	070-514562	R81 100K ohms, 1 watt	451-232583					
C86	100 mfd. 500V., mica	070-514562	R82 100K ohms, 1 watt	451-232583					
C87	100 mfd. 500V., mica	070-514562	R83 100K ohms, 1 watt	451-232583					
C88	100 mfd. 500V., mica	070-514562	R84 100K ohms, 1 watt	451-232583					
C89	100 mfd. 500V., mica	070-514562	R85 100K ohms, 1 watt	451-232583					
C90	100 mfd. 500V., mica	070-514562	R86 100K ohms, 1 watt	451-232583					
C91	100 mfd. 500V., mica	070-514562	R87 100K ohms, 1 watt	451-232583					
C92	100 mfd. 500V., mica	070-514562	R88 100K ohms, 1 watt	451-232583					
C93	100 mfd. 500V., mica	070-514562	R89 100K ohms, 1 watt	451-232583					
C94	100 mfd. 500V., mica	070-514562	R90 100K ohms, 1 watt	451-232583					
C95	100 mfd. 500V., mica	070-514562	R91 100K ohms, 1 watt	451-232583					
C96	100 mfd. 500V., mica	070-514562	R92 100K ohms, 1 watt	451-232583					
C97	100 mfd. 500V., mica	070-514562	R93 100K ohms, 1 watt	451-232583					
C98	100 mfd. 500V., mica	070-514562	R94 100K ohms, 1 watt	451-232583					
C99	100 mfd. 500V., mica	070-514562	R95 100K ohms, 1 watt	451-232583					
C100	100 mfd. 500V., mica	070-514562	R96 100K ohms, 1 watt	451-232583					
C101	100 mfd. 500V., mica	070-514562	R97 100K ohms, 1 watt	451-232583					
C102	100 mfd. 500V., mica	070-514562	R98 100K ohms, 1 watt	451-232583					
C103	100 mfd. 500V., mica	070-514562	R99 100K ohms, 1 watt	451-232583					
C104	100 mfd. 500V., mica	070-514562	R100 100K ohms, 1 watt	451-232583					
C105	100 mfd. 500V., mica	070-514562	R101 100K ohms, 1 watt	451-232583					
C106	100 mfd. 500V., mica	070-514562	R102 100K ohms, 1 watt	451-232583					
C107	100 mfd. 500V., mica	070-514562	R103 100K ohms, 1 watt	451-232583					
C108	100 mfd. 500V., mica	070-514562	R104 100K ohms, 1 watt	451-232583					
C109	100 mfd. 500V., mica	070-514562	R105 100K ohms, 1 watt	451-232583					
C110	100 mfd. 500V., mica	070-514562	R106 100K ohms, 1 watt	451-232583					
C111	100 mfd. 500V., mica	070-514562	R107 100K ohms, 1 watt	451-232583					
C112	100 mfd. 500V., mica	070-514562	R108 100K ohms, 1 watt	451-232583					
C113	100 mfd. 500V., mica	070-514562	R109 100K ohms, 1 watt	451-232583					
C114	100 mfd. 500V., mica	070-514562	R110 100K ohms, 1 watt	451-232583					
C115	100 mfd. 500V., mica	070-514562	R111 100K ohms, 1 watt	451-232583					
C116	100 mfd. 500V., mica	070-514562	R112 100K ohms, 1 watt	451-232583					
C117	100 mfd. 500V., mica	070-514562	R113 100K ohms, 1 watt	451-232583					
C118	100 mfd. 500V., mica	070-514562	R114 100K ohms, 1 watt	451-232583					
C119	100 mfd. 500V., mica	070-514562	R115 100K ohms, 1 watt	451-232583					
C120	100 mfd. 500V., mica	070-514562	R116 100K ohms, 1 watt	451-232583					
C121	100 mfd. 500V., mica	070-514562	R117 100K ohms, 1 watt	451-232583					
C122	100 mfd. 500V., mica	070-514562	R118 100K ohms, 1 watt	451-232583					
C123	100 mfd. 500V., mica	070-514562	R119 100K ohms, 1 watt	451-232583					
C124	100 mfd. 500V., mica	070-514562	R120 100K ohms, 1 watt	451-232583					
C125	100 mfd. 500V., mica	070-514562	R121 100K ohms, 1 watt	451-232583					
C126	100 mfd. 500V., mica	070-514562	R122 100K ohms, 1 watt	451-232583					
C127	100 mfd. 500V., mica	070-514562	R123 100K ohms, 1 watt	451-232583					
C128	100 mfd. 500V., mica	070-514562	R124 100K ohms, 1 watt	451-232583					
C129	100 mfd. 500V., mica	070-514562	R125 100K ohms, 1 watt	451-232583					
C130	100 mfd. 500V., mica	070-514562	R126 100K ohms, 1 watt	451-232583					
C131	100 mfd. 500V., mica	070-514562	R127 100K ohms, 1 watt	451-232583					
C132	100 mfd. 500V., mica	070-514562	R128 100K ohms, 1 watt	451-232583					
C133	100 mfd. 500V., mica	070-514562	R129 100K ohms, 1 watt	451-232583					
C134	100 mfd. 500V., mica	070-514562	R130 100K ohms, 1 watt	451-232583					
C135	100 mfd. 500V., mica	070-514562	R131 100K ohms, 1 watt	451-232583					
C136	100 mfd. 500V., mica	070-514562	R132 100K ohms, 1 watt	451-232583					
C137	100 mfd. 500V., mica	070-514562	R133 100K ohms, 1 watt	451-232583					
C138	100 mfd. 500V., mica	070-514562	R134 100K ohms, 1 watt	451-232583					
C139	100 mfd. 500V., mica	070-514562	R135 100K ohms, 1 watt	451-232583					
C140	100 mfd. 500V., mica	070-514562	R136 100K ohms, 1 watt	451-232583					
C141	100 mfd. 500V., mica	070-514562	R137 100K ohms, 1 watt	451-232583					
C142	100 mfd. 500V., mica	070-514562	R138 100K ohms, 1 watt	451-232583					
C143	100 mfd. 500V., mica	070-514562	R139 100K ohms, 1 watt	451-232583					
C144	100 mfd. 500V., mica	070-514562	R140 100K ohms, 1 watt	451-232583					
C145	100 mfd. 500V., mica	070-514562	R141 100K ohms, 1 watt	451-232583					
C146	100 mfd. 500V., mica	070-514562	R142 100K ohms, 1 watt	451-232583					
C147	100 mfd. 500V., mica	070-514562	R143 100K ohms, 1 watt	451-232583					

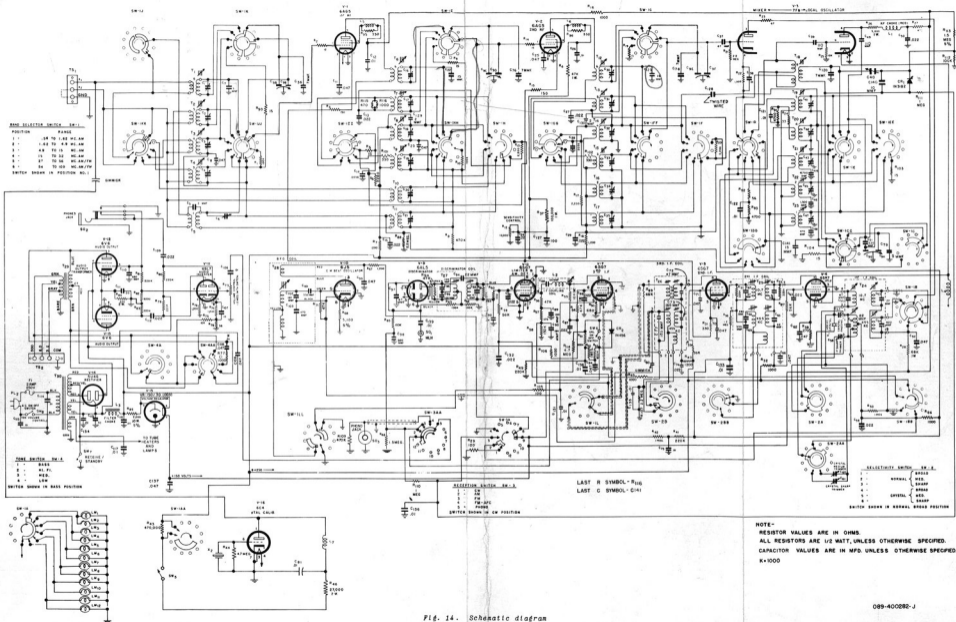


Fig. 14. Schematic diagram

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