



hallicrafters

OPERATING AND SERVICE INSTRUCTIONS

**COMMUNICATION
RECEIVER
MODEL CRX-3**

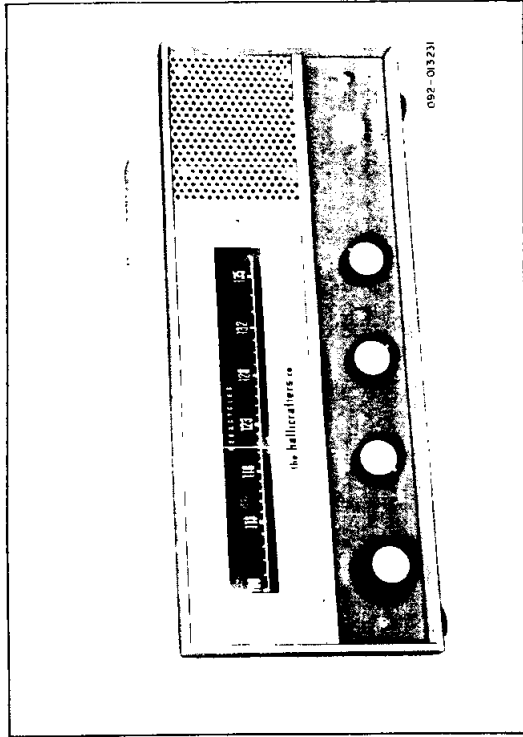


Figure 1. View of Model CRX-3 Receiver.

SECTION I

GENERAL DESCRIPTION

1-1. INTRODUCTION.

Your new Hallicrafters Model CRX-3 is a precision built, sensitive, reliable AM communications receiver providing complete coverage in the frequency range from 108 megacycles to 135 megacycles. Seven tubes, plus two silicon rectifiers are employed in advanced, efficient electronic circuitry to give maximum performance in the reception of the VHF Aviation services. These services include the receiving of emergency communications, landing control, central control, and VHF communications.

Tuning in the crowded portions of the 108-MC to 135-MC frequency band is controlled by vernier drive and fast drive controls. These controls are mounted on coaxial shafts which are coupled to a slide-rule pointer. The pointer traverses a dial calibrated directly in megacycles. An electronic squelch control permits easy and accurate setting of the squelch function. In addition to the manual tuning function, two optional crystal-controlled channels are available.

Other important and special features of the Model CRX-3 Receiver include . . . narrow selectivity for all possible future operation . . . an external-internal speaker connector and switch . . . and an accessory socket.

Careful attention should be directed to the installation and operating instructions that follow. These instructions will familiarize you with the routine necessary to insure satisfaction in the ownership of a Hallicrafters precision-built product.

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 its change 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, which dealer, from whom purchased, or authorized service center, within ninety days from the date of sale to original purchaser and provided that such examination discloses in our judgment that it is then defective.

This warranty does not extend to any of our radio products which have been subjected to misuse, neglect, accident, incorrect wiring and 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 a dealer seller 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."

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SECTION II

TECHNICAL CHARACTERISTICS

RECEPTION	AM.
INTERMEDIATE FREQUENCIES	10.7 MC and 455 KC.
FREQUENCY COVERAGE	108 MC to 135 MC.
POWER SOURCE	105 volt to 125 volts AC, 50/60 cycles.
POWER CONSUMPTION	35 watts.
NUMBER OF TUBES	Seven tubes, plus two silicon rectifiers.
SPEAKER OUTPUT	Internal speaker provided. Toggle switch and two-contact, screw-type terminal strip provided on the chassis rear for alternate use of external 3-ohm to 4-ohm speaker.
ANTENNA INPUT	50-ohm to 75-ohm coaxial; pin-type receptacle provided on rear of chassis to accept a pin-type connector.
DIMENSIONS	13-1/2 inches wide, 5-3/4 inches high, and 6 inches deep.
SHIPPING WEIGHT	15.50 pounds.
NET WEIGHT	12.75 pounds.

SECTION III INSTALLATION

3-1. UNPACKING.

After unpacking the receiver, 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.

3-2. LOCATION.

The receiver is equipped with rubber mounting feet for table-top or shelf mounting. In selecting a location, avoid excessively warm locations near radiators and heating vents; also, avoid drafty places. This latter precaution is particularly desirable if manual-controlled operation is intended. For proper ventilation, allow at least one inch of clearance between the back of the receiver and the wall.

3-3. POWER SOURCE.

The Model CRX-3 Receiver is designed to operate from a 105-volt to 125-volt 50/60 cycle AC power source. Power consumption is 35 watts.

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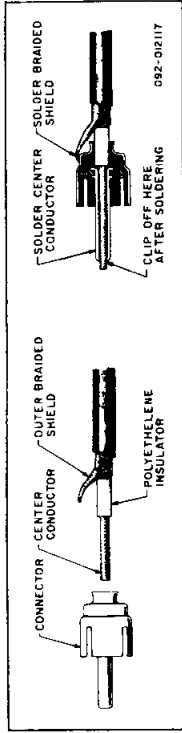


Figure 2. Fabricating the Antenna Input Cable.

IMPORTANT

Your power outlet must furnish AC (alternating current). If in doubt about your power source, contact your local power company prior to inserting the power cord in a power outlet. Plugging the cord into the wrong power source may cause extensive damage to the unit, requiring costly repairs.

3-4. ANTENNAS.

The radio frequency input to the receiver is designed for operation from a 50-ohm to 75-ohm coaxial transmission line, or lead-in, from a suitable outside antenna. The coaxial line allows long lead-ins to be used without impairing the performance of the antenna. The ground-plane vertical antenna is the most widely used type of outdoor antenna suitable for this application. Coaxial cable and ground-plane vertical antennas are available from a number of manufacturers and, in almost all cases, can be obtained from the dealer from whom this receiver was purchased.

Regardless of the antenna type used, it will be found that any given antenna will work best in one range of frequencies but, at the same time, will give satisfactory performance over the entire range of this receiver. Follow the instructions furnished by the antenna manufacturer and cut the antenna to your own requirements. Where you are interested in a specific frequency, cut the antenna to this frequency. Otherwise, the antenna may be cut to approximately 120 megacycles.

For local ground-wave reception, performance will depend generally on the height of the antenna. Place the antenna in the clear, and if possible, above the tree tops. The higher the antenna, the better the reception. Use any available natural supports, but use a chimney or smoke stack only as a last resort. The fumes from a chimney can be corrosive to the metal elements of the antenna and connections.

Use the antenna connector furnished to connect the coaxial line to the receiver. Strip and connect the line as shown in figure 2. These connections must be soldered to assure a good electrical connection.

3-5. EXTERNAL SPEAKER.

Screw terminals for an external speaker connection are located on the back of the chassis (see figure 3). These terminals can also be used for other external audio connections, such as headphones or a recorder. The switch on the back apron of the receiver selects either the internal speaker or the external connection.

Any size of external speaker may be used. Electrically, a permanent-magnet type speaker with a 3-ohm to 4-ohm voice coil is preferred. The 12-ohm resistor, connected across the terminals, may be removed when using the equipment with an external speaker.

When connecting to a recorder or to headphones, the 12-ohm resistor connected across the terminals in parallel with the external device should remain connected.

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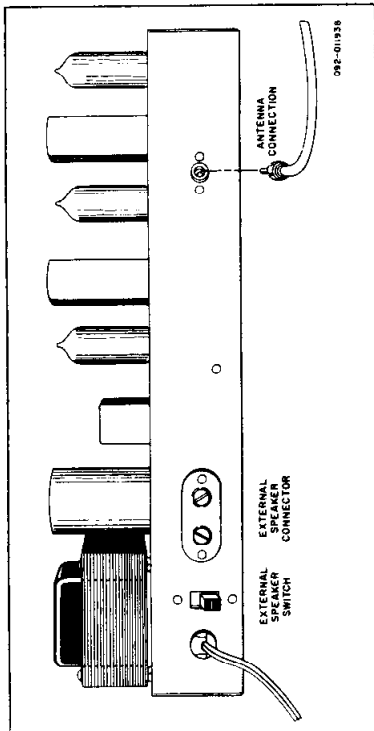


Figure 3. Rear View of Receiver Chassis.

-6. ACCESSORY SOCKET.

An accessory socket is located on the top deck of the receiver, immediately behind the speaker. Ground, power, and signal voltages have been brought out to this socket. The accessory socket will furnish 12-volt AC at 150 MA and 180-volt AC power at 0.01 amperes for possible future accessory devices.

**SECTION IV
OPERATION**

-1. GENERAL.

There are only four controls on the front panel of the Model CRX-3 Receiver. A few minutes of air-testing will familiarize you with the operation of each control and the effect each control has on the performance of the receiver.

-2. TUNING CONTROL.

The TUNING control consists of a vernier-drive and a fast-drive control mounted on coaxial shafts and is located on the extreme left of the front panel of your receiver. The rear knob, fast drive, will move the slide-rule pointer relatively fast on one section of the dial to another to tune-in a station. The vernier drive, front knob, is used as a fine-tuning adjustment to accurately tune-in a desired station in a crowded portion of the band.

-3. VOLUME CONTROL.

The VOLUME control, in the extreme counterclockwise position, turns the receiver off. To turn the receiver on, rotate the VOLUME control clockwise approximately one-half from the OFF position. Tune to a station and readjust the VOLUME control to the desired listening level.

-4. SQUELCH CONTROL.

The SQUELCH control is an automatic electronic switch. This switch silences a receiver when no radio signals are present on a channel. When a radio station comes on the channel, the switch will automatically open and will stay open as long as the radio carrier tuned-in is on the air. The purpose of this switch is to allow the VOLUME control to always be set at a comfortable listening level for message reception, and to silence the noise between radio transmissions.

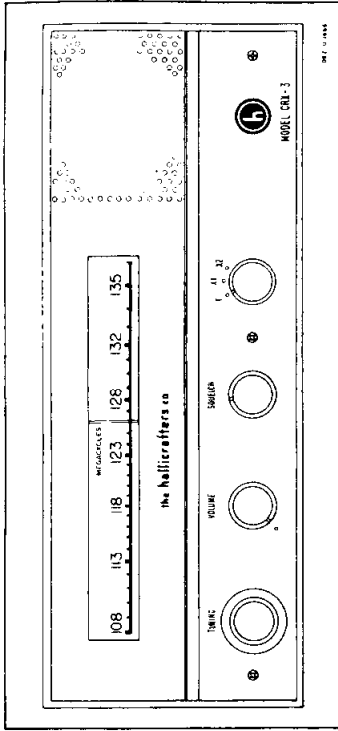


Figure 4. Front Panel View of Receiver.

As the SQUELCH control is rotated in a clockwise direction, a point will be reached in the rotation where the electronic switch opens, allowing off-signal noise to come through. Rotate this control back in a counterclockwise direction until all noise is silenced. This adjustment is to be made when no stations are on the air. A further adjustment can be made, depending upon the weakest signal to be received.

4-5. T-XI-X2 (SELECTOR) CONTROL.

For manual tuning operation, the selector switch should be placed in the T position. In this position, you may tune in stations anywhere on the band and set the VOLUME and SQUELCH controls as desired.

Two crystal positions have been provided for owners who will only be using the receiver on one or two frequencies and who wish to devote a minimum of time to tuning and adjusting the receiver.

Quartz frequency control crystals may be purchased and installed with a minimum of effort.

Assume a crystal is on hand for a specific desired channel for this receiver. Insert the crystal into the socket marked XI on the top deck of the receiver chassis near the front panel. Turn the receiver on and allow 15 minutes for warmup. Rotate the selector knob to the XI position. Connect a probe on a DC VTVM to the test point on the crystal oscillator coil nearest the front panel of the receiver (see figure 7). Set the range on the VTVM to the minus voltage, 0 to 100 scale. Turn the coil slug nearest the front panel until a maximum reading is obtained on the meter. With an antenna connected, stations on the desired channel should be heard. Set the main-tuning pointer to approximately the same frequency being received in the crystal-controlled position. Note the pointer position which gives best reception. You can then switch from crystal control to manual tuning and back, merely by resetting the pointer at the noted position.

Where a good quality crystal has been used, the receiver is now locked on the desired channel. Reset VOLUME and SQUELCH controls as required. The receiver should require only occasional resetting of the VOLUME and SQUELCH controls.

Occasionally it is possible for permissible tolerances on your quartz crystal and on the quartz crystal at the radio transmitter you are monitoring to add up enough to cause mistuning or off-channel errors. The crystal in your receiver can be shifted slightly in frequency to compensate for reasonable errors by inserting a tuning tool through the hole in the bottom of the cabinet to trim the proper crystal oscillator coil.

When the proper crystals are obtained, you should experience no difficulty in setting the receiver on the correct frequency. Crystals may be ordered from the dealer from whom you purchased the receiver or directly from The Hallicrafters Company Service Department.

4-6. CRYSTAL ORDERING INFORMATION.

When ordering crystals for your receiver, follow the information given below:

- A. Specify receiver model (CRX-3) and the serial number.
- B. Specify crystal type as follows:
 - One each type CR-23/U or commercial equivalent crystal, Hallicrafters part number 019-002642.
- C. Compute the required crystal frequency from the transmitter frequency. The following formula is to be used in computing the crystal frequency. An example is given using a transmitting frequency of 121.5 megacycles.

$$\begin{aligned} \text{Crystal Frequency} &= \frac{121.5 + 10.7}{4} \text{ MC} \\ &= \frac{132.2}{4} \text{ MC} \\ &= 33.0500 \text{ MC} \end{aligned}$$

- D. Specify the crystal frequency (not the signal or dial frequency) in six digit numbers.

Example: 32.9250 megacycles, 34.4000 megacycles, 38.0125 megacycles.

Do not estimate the frequency from the dial reading on the receiver. Obtain this information from a reliable source. Information on VHF radio frequencies can be obtained at a very small cost from the "Sectional Aeronautical Charts," printed by the "Coast and Geodetic Survey." A catalog of these charts can be obtained from dealers in aviation supplies at the larger airports. The charts are also obtainable from the same suppliers.

The non-professional user of this equipment will find that excellent stability and reliability can be obtained from the Model CRX-3 without the crystal-control feature. On the other hand, when the user requires this unit to receive signals directed specifically to him, the use of the crystal-control feature is strongly recommended. The increased reliability justifies the comparatively small additional cost.

SECTION V SERVICE DATA

5-1. CHASSIS REMOVAL.

The chassis and front panel assembly are removable as a unit. Remove the four rubber mounting feet. Slide the chassis out through the rear of the cabinet. Care should be taken to make certain that the tuning dial is at the low end of the band (tuning capacitor fully closed) before removing the chassis.

5-2. TUBE AND LAMP REPLACEMENT.

To gain access to the tubes and dial lamps, see paragraph 5-1, CHASSIS REMOVAL.

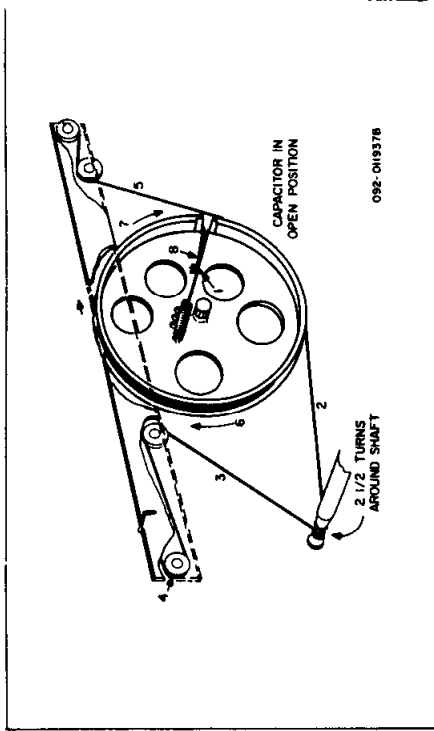


Figure 5. Dial Stringing Diagram.

5-3. DIAL CORD RESTRINGING.

Remove the chassis assembly from the cabinet as described in paragraph 5-1. String the dial cord by following the numerical sequence shown in figure 5.

5-4. SERVICE OR OPERATION QUESTIONS.

For further information regarding operation or servicing of your Model CRX-3 Receiver, contact your Hallicrafters dealer. 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 at the right.



For the location of the one nearest you, consult your local dealer or telephone directory. Make no service shipments to the factory, as The Hallicrafters Company will not accept the responsibility for unauthorized shipments.

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

SECTION VI ALIGNMENT

6-1. GENERAL.

The Model CRX-3 Receiver has been carefully aligned at the factory by specially trained personnel using precision equipment. Alignment of the receiver should not be attempted until all other possible causes of faulty operation have been investigated. Alignment should not be required unless the receiver has been tampered with or component parts in the RF or IF stages have been replaced. Alignment should only be attempted by persons experienced in this work, using the proper test equipment.

IMPORTANT

Where it is planned to use the crystal-controlled reception feature of this receiver, it is absolutely essential that the 455-KC IF transformer be exactly centered on frequency. The crystal correlation will only hold when this circuit is properly on frequency.

The oscillator, RF, and tunable IF must track together, according to the following formula:

$$\text{OSCILLATOR FREQUENCY} = \text{RF} + 10.7 \text{ MC}$$

With the receiver turned off, this tracking can be checked using a grid-dip meter.

6-2. TEST EQUIPMENT REQUIRED.

The following test equipment, or its approved equivalent, is to be used in performing necessary alignment on the Model CRX-3 Receiver.

1. Signal Generator, Measurements Corporation Model 80; to be used for RF alignment.
2. A good quality sweep generator, in conjunction with an oscilloscope; to be used for IF alignment. Use procedure given in paragraph 6-4.
3. A good quality signal generator, such as the Measurements Corporation Model 65B; to be used as an alternate for the IF alignment if a sweep generator and/or oscilloscope is not available. Use alternate procedure given in paragraph 6-5.

NOTE

Only quality signal generators which operate on fundamentals across their entire range are to be used in this alignment. Generators operating on harmonics should not be used.

4. DC Vacuum Tube Voltmeter (VTVM), RCA Senior Voltohmyst; to be used for RF alignment.
5. Hexagonal alignment tool, preferably plastic.
6. Nylon screwdriver blade (with metal blade on opposite end, if one is available).

6-3. INITIAL CONTROL SETTINGS.

Before the alignment is begun, the front panel controls should be set as follows:

VOLUME Approximately centered (one-half clockwise)
T-X1-X2 (Selector) . . . T (Manual tuning)
SQUELCH Open
TUNING As required

6-4. IF ALIGNMENT PROCEDURE.

1. 455-KC IF Alignment - Connect sweep generator horizontal output to horizontal connection on oscilloscope. Connect RF output from the sweep generator to pin 1 of V4. Set sweep generator frequency to 455 KC. Connect probe from vertical connection on oscilloscope to pin 9 of V6. Adjust alignment points A (T3 secondary) and B (T3 primary) until the signal on the oscilloscope is the same as that shown in figure 6.

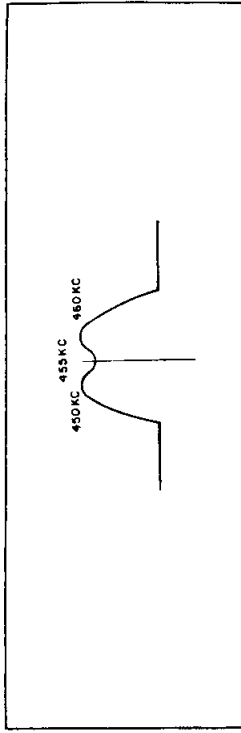


Figure 6. Alignment Waveform.

Move the sweep generator to pin 2 of V3. Adjust alignment points C (T2 secondary) and D (T2 primary) for a symmetrical signal the same as shown in figure 6.

NOTE

The oscilloscope trace should be positioned so that it is symmetrical about 455 KC. The IF must be centered on 455 KC, or 10.7 MC will be inaccurate; and, most important, the crystal-control correlation will be wrong.

2. 10.7 MC IF Alignment. - Reset the sweep generator to exactly 10.7 MC and connect the RF output from the sweep generator to pin 2 of V2. The signal presentation on the oscilloscope will resemble that shown in figure 6, except it will be centered around 10.7 MC. Adjust alignment points E (T1 secondary) and F (T1 primary) until the scope presentation is symmetrical and the 10.7-MC marker is exactly centered.

6-5. ALTERNATE IF ALIGNMENT PROCEDURE.

This procedure is to be followed if a sweep generator and/or oscilloscope is not available.

1. 455-KC IF Alignment. - Set the signal generator to exactly 455 KC and connect it to pin 1 of V4 through a 0.01 mfd capacitor. Connect the DC VTVM to pin 5 of the accessory socket. Set the signal generator to maintain an output level at approximately mid-scale. Adjust alignment points A and B for maximum indication on the VTVM.

Move the signal generator to pin 2 of V3. Adjust alignment points C and D for maximum indication on the VTVM.

Detune the signal generator 10 KC above and below 455 KC. The output should be reasonably flat on top and symmetrical about the 455-KC center frequency. Retouching one or two of the alignment points should give a symmetrical output.

2. 10.7-MC Alignment. - Set the signal generator to 10.7 MC. Move the generator connection to pin 2 of V2. Adjust alignment pins E and F for maximum indication on the VTVM.

This completes the IF alignment. All of the RF alignment procedure which follows can be completed using the Model 80 Signal Generator connected as specified and the DC VTVM connected to pin 5 of the accessory socket.

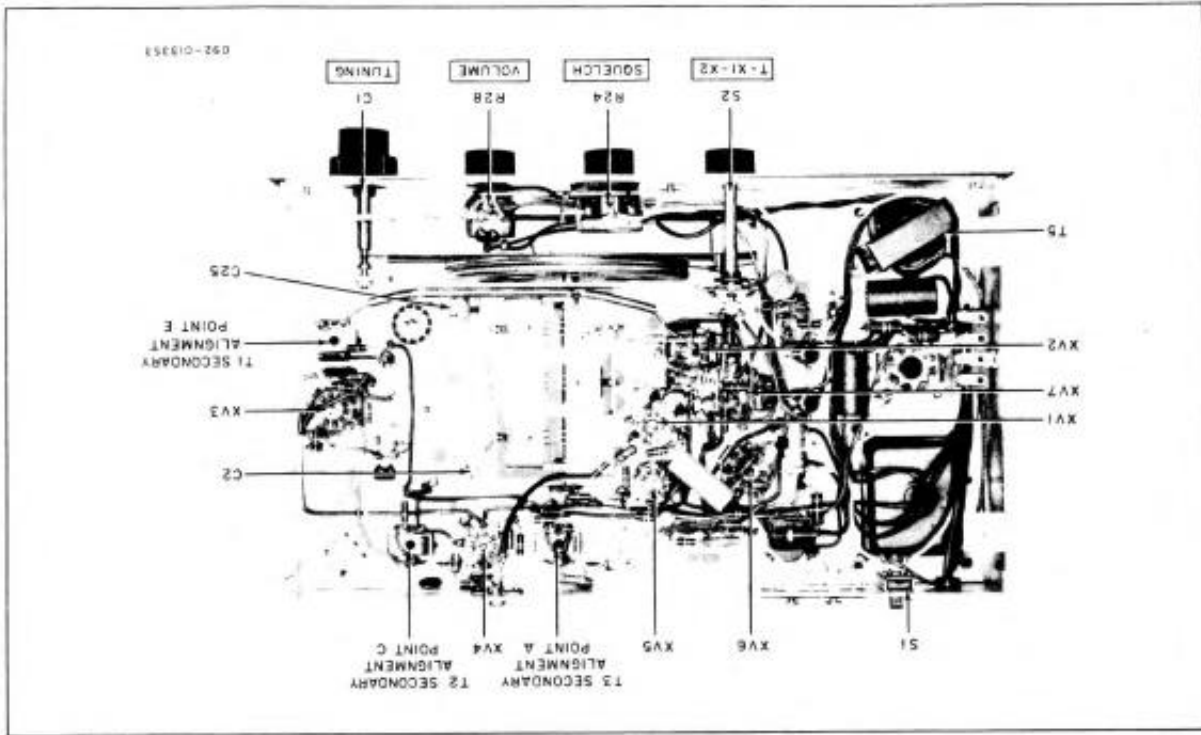


Figure 8. Bottom Chassis View of Receiver.

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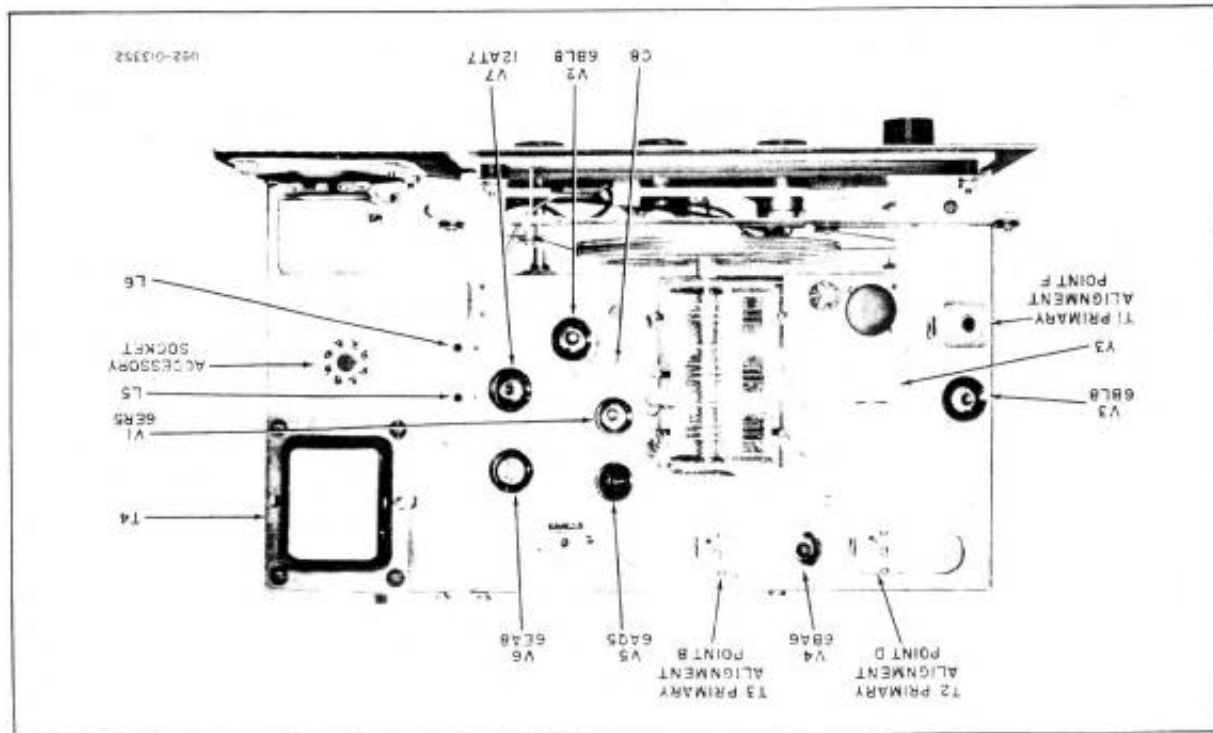


Figure 7. Top Chassis View of Receiver.

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6-6. RF ALIGNMENT PROCEDURE.

Connect the signal generator to the antenna jack (J1). Set the receiver dial to 135 MC. Set the generator output to approximately 10 or 20 microvolts. Rock the generator slowly above and below 135 MC until the generator signal is heard in the receiver. Adjust C25 (oscillator trimmer) until the dial calibration is correct. Adjust C2 and C8 for maximum indication on the VTVM. When these circuits are peaked, an immediate performance check can be made before proceeding with the next step in the alignment.

Reduce the generator output to zero. Close the SQUELCH control to the point where the noise is just silenced. Increase the generator output to 1.0 microvolt. As the receiver is slowly tuned through the signal, the squelch should open and close.

Set the receiver dial to 115 MC. Reset the generator output to 10 or 20 microvolts. Rock the generator slowly above and below 115 MC until the generator signal is heard in the receiver. Adjust L3 until dial calibration is correct. Adjust L1 and L2 for maximum indication on the VTVM. Repeat this procedure a few times until a negligible increase in output is obtained by further alignment. Coils L1, L2, and L3 are adjustable by varying the spacing between the windings with an insulated tool.

SERVICE REPAIR PARTS LIST

Schematic Symbol	Description	Ballcrafters Part Number	Schematic Symbol	Description	Ballcrafters Part Number	Schematic Symbol	Description	Ballcrafters Part Number
C1A,B,C	Variable, TUNING		R1,31	1 megohm	451-252105	V4	Electron Tube, Type 6EA6, IF Amplifier	090-901112
C2,3	Variable, 0.5 mmf to 5 mmf, Tubular Trimmer	048-000428	R2,9,16	10K ohm	451-252103	V5	Electron Tube, Type 6AQ5, Audio Output	090-901331
C1	18 mmf, 10%, N750	044-000543	R3	475K ohm	451-252474	V6	Electron Tube, Type 6EA6, Crystal Oscillator	090-901350
C4,7,11,15,29,37,41,42	Ceramic Tubular, 1000 ohm, 500V, 50V, Ceramic Disc	491-108150-35	R4,9	1000 ohm	451-252102	CR1	Diode, Type IN294A, Detector	019-002736
C5,9,10,12,13,17,20,24,36,38	0.01 mfd, -80%, -20%, 500V, Ceramic Disc	047-000230	R5,10,13	100K ohm	451-252104	CR2,3	Diode, Silicon, Type IN319A, Rectifier	019-002789
C6	24 mmf, 10%, N750	047-100217	R6,32	4700 ohm	451-252472	TUBES AND DIODES (CONT)		
C7	0.05 mfd, 50V, N750		R7	68K ohm	451-252483	MISCELLANEOUS		
C8	105 mmf, 2%, 300V	491-108240-95	R8,39	33 22K ohm	451-252202	Cabinet Assembly		
C9	105 mmf, 2%, 300V	492-121050-324	R9,18,38,40	560 ohm	451-252151	Clip, IF Transformer		
C10	36 mmf, 2%, 300V	481-151380	R10,22	150K ohm	451-252154	J1	Connector, Antenna, Coaxial	078-100385
C11	0.05 mfd, -80%, -20%, 50V, Ceramic Disc	047-001144	R11,15	1500 ohm	451-252154	Y3	Crystal (10, 245 MC)	019-002795
C12	200 mmf, 10%, N750	047-001139	R12	100 ohm	451-252101		Dial Cord	038-100949
C13	13 mmf, 2%, 300V, Plastic	491-158201-95	R13,21	47K ohm	451-252473		Dial Cord	038-100949
C14	Variable, 1.5 mmf to 7 mmf, Ceramic Disc	492-210130-321	R14,21	47K ohm	451-252473		Dial Cord	083-000944
C15	Variable, 1.5 mmf to 7 mmf, Ceramic Disc	044-000844	R15,22	47K ohm	451-252473		Foot, Rubber	018-101469
C16	0.05 mfd, -80%, -20%, 50V, Plastic	045-200307	R16,23	22K ohm, 1 watt	451-332223		Front Panel	152-000095
C17	0.005 mfd, 20%, 500V, Ceramic Tubular	481-161401	R17	10 megohm	025-001974		Knob, Selector and VOLUME	015-001572
C18	0.005 mfd, 20%, 500V, Ceramic Tubular	481-161401	R18,24	Variable, 10K ohm, 2 watt, SQUELCH	451-332106		Knob, TUNING (Coarse)	015-001570
C19	0.005 mfd, 20%, 500V, Ceramic Tubular	481-161401	R19,25	Variable, 1 megohm, 2 watt	025-001973		Knob, TUNING (Fine)	015-001570
C20	0.005 mfd, 20%, 500V, Ceramic Tubular	481-161401	R20,26	Variable, 1 megohm, 2 watt	025-001973		Lamp, Indicator, Type NO. 47	039-100094
C21	0.005 mfd, 20%, 500V, Ceramic Tubular	481-161401	R21	10 megohm	451-332106		Line Cord	087-100078
C22	0.005 mfd, 20%, 500V, Ceramic Tubular	481-161401	R22	Variable, 1 megohm, 2 watt	025-001974		Look, Line Cord	078-200397
C23	0.005 mfd, 20%, 500V, Ceramic Tubular	481-161401	R23	Variable, 1 megohm, 2 watt	025-001974		Socket, 7-Pin Miniature	008-200730
C24	0.005 mfd, 20%, 500V, Ceramic Tubular	481-161401	R24	Variable, 10K ohm, 2 watt, SQUELCH	451-332106		Socket, 9-Pin Miniature (Mica)	008-200493
C25	0.005 mfd, 20%, 500V, Ceramic Tubular	481-161401	R25	Variable, 1 megohm, 2 watt	025-001974		Socket, 9-Pin Miniature (Mica)	008-200493
C26	0.005 mfd, 20%, 500V, Ceramic Tubular	481-161401	R26	Variable, 1 megohm, 2 watt	025-001974		Socket, Crystal (Y1 and 2)	006-000984
C27	0.005 mfd, 20%, 500V, Ceramic Tubular	481-161401	R27	10 megohm	451-332106		Socket, Crystal (Y3)	006-100320
C28	0.005 mfd, 20%, 500V, Ceramic Tubular	481-161401	R28	Variable, 1 megohm, 2 watt	025-001974		Socket, Pilot Lamp Assembly (L. R.)	008-200760
C29	0.005 mfd, 20%, 500V, Ceramic Tubular	481-161401	R29	Variable, 1 megohm, 2 watt	025-001974		Socket, Pilot Lamp Assembly (R. R.)	086-000496
C30	0.005 mfd, 20%, 500V, Ceramic Tubular	481-161401	R30	150 ohm, 2 watt	451-332170		Spring, Crystal Retaining	075-000837
C31	0.005 mfd, 20%, 500V, Ceramic Tubular	481-161401	R31	500K ohm	451-252154		Spring, Dial Cord	075-100012
C32	0.005 mfd, 20%, 500V, Ceramic Tubular	481-161401	R32	10K ohm, 1 watt	451-252151		Switch, Slide (SPDT)	060-200477
C33	0.005 mfd, 20%, 500V, Ceramic Tubular	481-161401	R33	390 ohm	451-332103		Switch, Rotary, Selector (T-X1-X2)	060-002398
C34	0.005 mfd, 20%, 500V, Ceramic Tubular	481-161401	R34	10K ohm, 1 watt	451-332103		Terminal Board (42 Ohm, GND)	088-100090
C35	0.005 mfd, 20%, 500V, Ceramic Tubular	481-161401	R35	2.2 megohm	451-252223		Trim Strip, Cabinet	007-000803
C36	0.005 mfd, 20%, 500V, Ceramic Tubular	481-161401	R36	2.2 megohm	451-252223			
C37	0.005 mfd, 20%, 500V, Ceramic Tubular	481-161401	R37	2.2 megohm	451-252223			
C38	0.005 mfd, 20%, 500V, Ceramic Tubular	481-161401	R38	10K ohm, 1 watt	451-332103			
C39	0.005 mfd, 20%, 500V, Ceramic Tubular	481-161401	R39	27 ohm, 1 watt	451-332170			
C40	0.005 mfd, 20%, 500V, Ceramic Tubular	481-161401	R40	150 ohm, 2 watt	451-332170			
C41	0.005 mfd, 20%, 500V, Ceramic Tubular	481-161401	R41	500K ohm	451-252154			
C42	0.005 mfd, 20%, 500V, Ceramic Tubular	481-161401	R42	390 ohm	451-252151			
C43	0.005 mfd, 20%, 500V, Ceramic Tubular	481-161401	R43	10K ohm, 1 watt	451-332103			
C44	0.01 mfd, 1400V, Ceramic Disc	481-161401	R44	2.2 megohm	451-252223			
C45	0.01 mfd, 1400V, Ceramic Disc	481-161401	R45	2.2 megohm	451-252223			
C46	2 x 40 mfd, 250V, Electrolytic	047-001309	R46	2.2 megohm	451-252223			
C47	0.005 mfd, 20%, 500V, Ceramic Disc	045-000742	R47	2.2 megohm	451-252223			
C48	0.005 mfd, 20%, 500V, Ceramic Disc	045-000742	R48	2.2 megohm	451-252223			
C49	0.005 mfd, 20%, 500V, Ceramic Disc	045-000742	R49	2.2 megohm	451-252223			
C50	0.005 mfd, 20%, 500V, Ceramic Disc	045-000742	R50	2.2 megohm	451-252223			
C51	0.005 mfd, 20%, 500V, Ceramic Disc	045-000742	R51	2.2 megohm	451-252223			
C52	0.005 mfd, 20%, 500V, Ceramic Disc	045-000742	R52	2.2 megohm	451-252223			

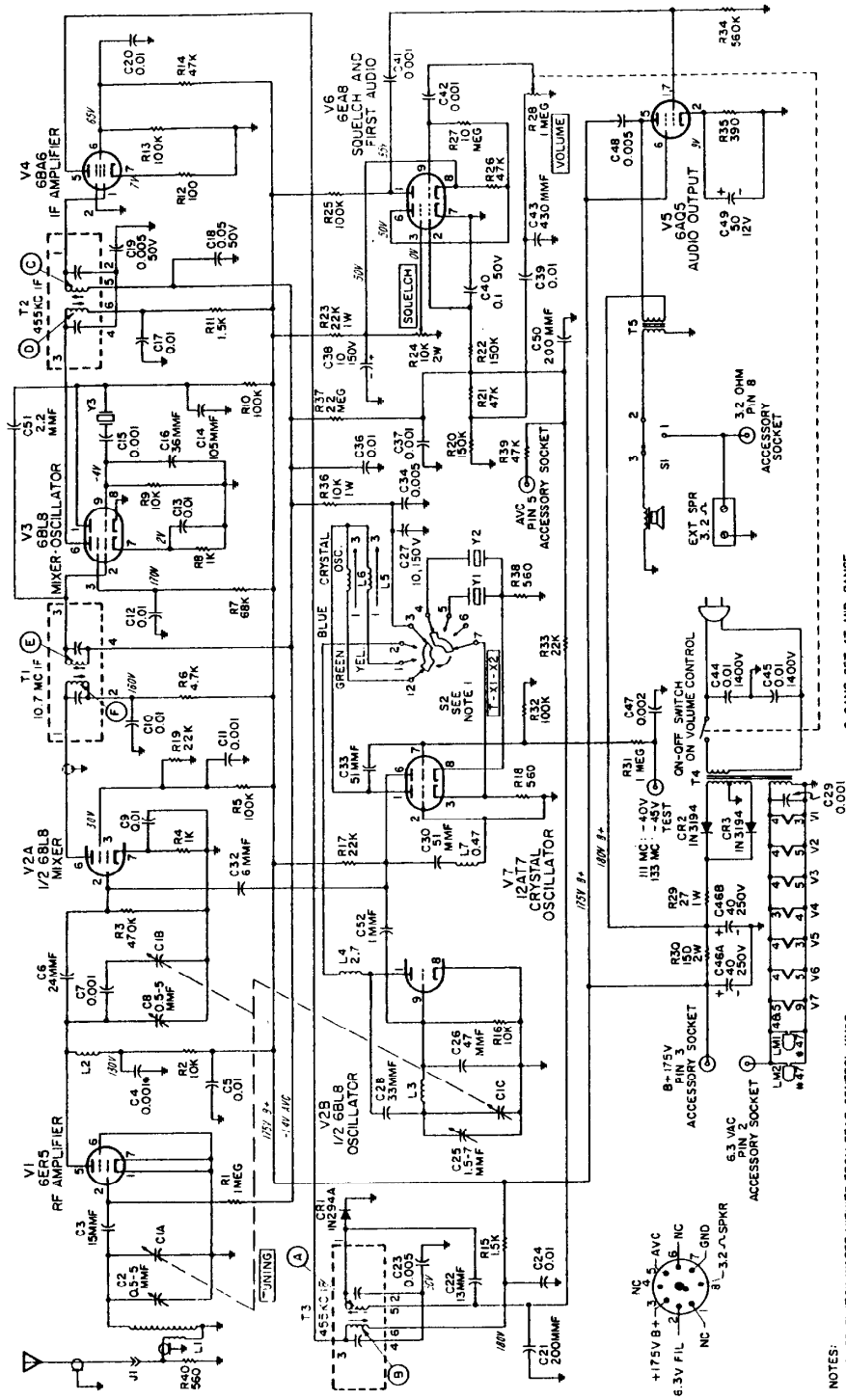
* ALL RESISTORS are carbon type, 10%, 1/2 watt unless otherwise stated.

COILS AND TRANSFORMERS

Schematic Symbol	Description	Ballcrafters Part Number
L1	Coil, Antenna	061-003518
L2	Coil, Mixer	051-003119
L3	Coil, Oscillator	051-003119
L4	Coil, RF Choke, 2.7 μ H	055-100470
L5,6	Coil, Crystal Oscillator	051-003318
L7	Coil, RF Choke, 0.47 μ H	061-000684
T1	Transformer, IF (13.7 MC)	050-000774
T2,3	Transformer, Power	050-000764
T4	Transformer, Output	052-000934
T5	Transformer, Output	052-000457

TUBES AND DIODES

Schematic Symbol	Description	Ballcrafters Part Number
V1	Electron Tube, Type 6ER5, RF Amplifier	090-901461
V2	Electron Tube, Type 6BL6, First Mixer-Oscillator	090-901431
V3	Electron Tube, Type 6BE6, Second Mixer-Oscillator	090-901431



NOTES:

1. SE SWITCH WIPER VIEWED FROM REAR CONTROL KNOB
2. ALL CAPACITORS ARE 50% TOLERANCE UNLESS OTHERWISE NOTED.
3. VOLTAGE READINGS TAKEN UNDER FOLLOWING CONDITIONS:
 - A. LINE VOLTAGES 117 VAC.
 - B. ALL VOLTAGES ARE DC AND POSITIVE UNLESS OTHERWISE NOTED.

C. GANG SET AT MID-RANGE.
 D. SOLELCH CONTROL FULL CLOCKWISE POSITION.

Figure 9. Schematic Diagram of the Model CRX-3 Receiver.