OPERATING INSTRUCTIONS FOR...

RADIO RECEIVER MODEL SX-42

the hallicrafters co.

A Subsidiary of Northrop Corporation

TABLE OF CONTENTS

LIST OF ILLUSTRATIONS

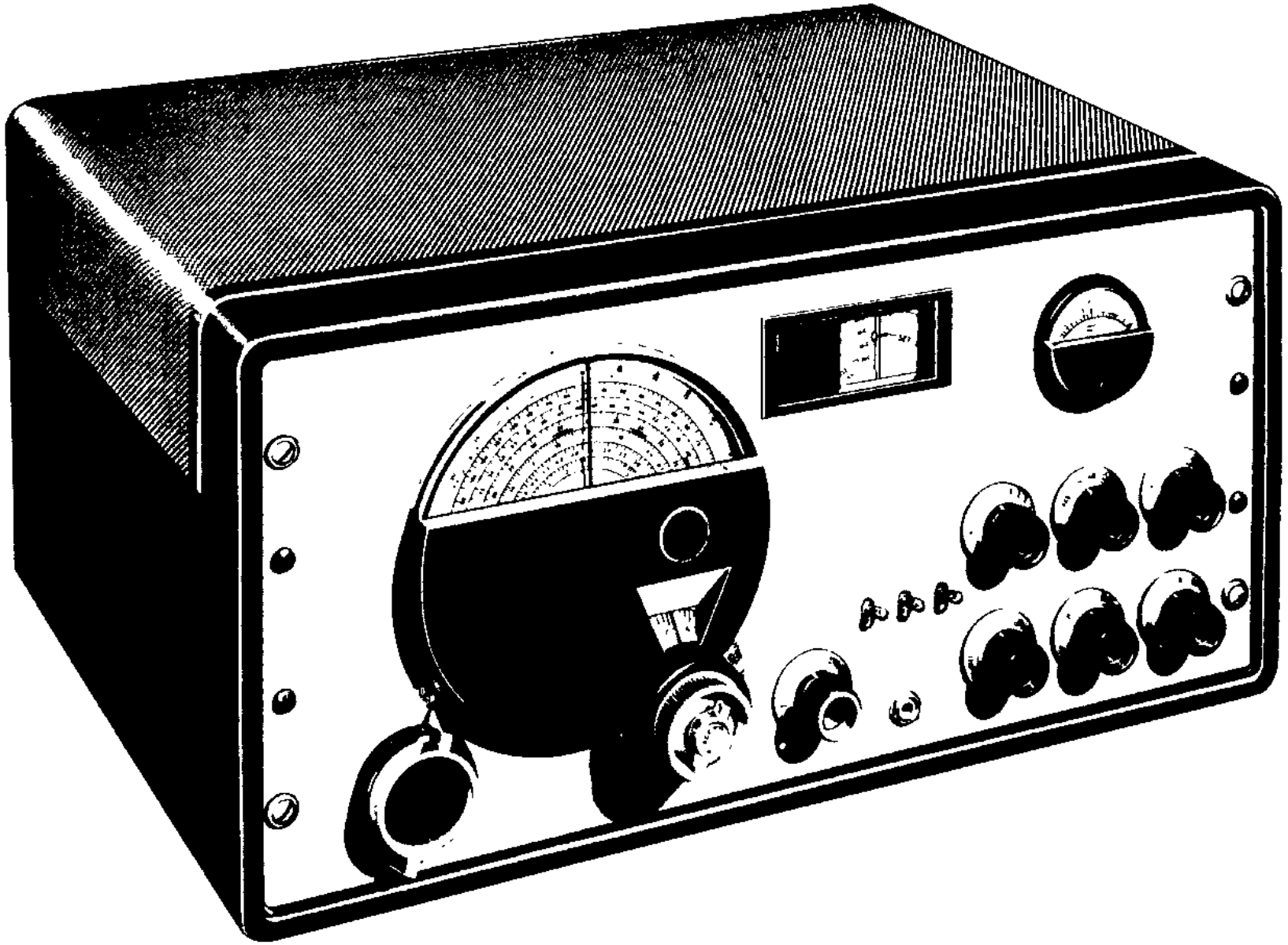


Figure 1. Model SX-42 Radio Receiver front view

INSTALLATION AND OPERATING INSTRUCTIONS FOR RADIO RECEIVER MODEL SX-42

PART I

GENERAL INFORMATION

1. INSTALLATION

It is recommended that, upon receipt, the carton and then the unpacked receiver be carefully examined for any damage which may have occurred during shipment. Should any damage be apparent, immediately file claim with the carrier, stating the extent of damage.

IMPORTANT. Unless otherwise marked, this receiver is operated from 105 to 125 volts 50-60 cycle a-c power. If in doubt call your local utility company for information.

After the receiver is unpacked from the carton, it should be placed on a convenient operating table or on one of the Hallicrafters floor model reproducers R-75 or R-80. If used on a table or desk the R-42 Reproducer is recommended.

Connect the R-42 Reproducer, or the R-75 or R-80, as the case may be, to the 500 and "C" terminals on the SX-42.

Turn the VOLUME control to the left as far as possible. (See Fig. 2.) This turns off the radio. Plug the power cord into the a-c outlet.

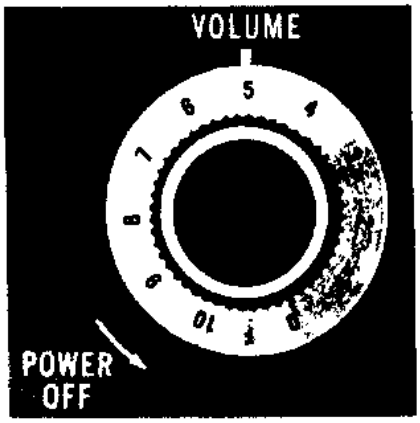


Figure 2. View showing Volume Control

Attach an antenna (aerial) to the post marked A-1. This antenna wire should be, preferably, outdoors above surrounding structures and from 25 to 100 feet long. Attach a wire from a good ground to the post marked GND. In general the better the antenna system, the better the signal will be heard.

Having followed instructions to this point you are now ready to operate your receiver. Let's first tune in a-m (standard broadcast) stations.

2. GENERAL OPERATION

1. To turn the receiver on, the VOLUME control is turned to the right to about 3 on the knob scale. When the receiver is on, the dial scales and the meter will light up. If the dials do not light up, a-c power is not being supplied to the receiver. Test the socket used with a floor lamp or an electrical appliance as it may be defective.

2. Turn the BAND SELECTOR knob left to the red dot. (See Fig. 3.)

Figure 3. View showing Band Selector Switch

3. Set the three toggle switches in the up position. (See Fig. 4.)

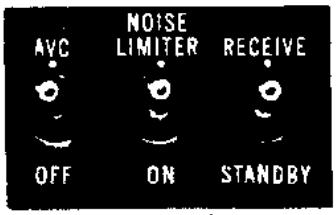


Figure 4. View showing three toggle switches

4. Set the six right hand control knobs to the red dot setting. (See Fig. 5.)

5. Set the bandspread (fine tuning) dial to 0 (See Fig. 6) by turning the outer or metal knob on the tuning assembly. If the bandspread dial doesn't move, operate the locking knob (See Fig. 6) by turning to the right to unlock the bandspread dial. After setting the bandspread dial to zero, again turn the locking knob to the right to lock the bandspread.

6. Now tune in stations by tuning with the main control knob. (See Fig. 6.) As the station is tuned in, the carrier meter needle (See Fig. 7) will move from the left side of the scale to the

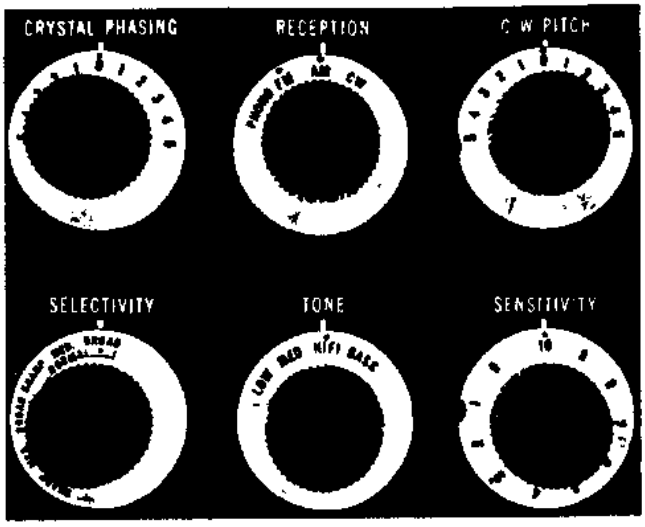


Figure 5. View showing six right hand controls

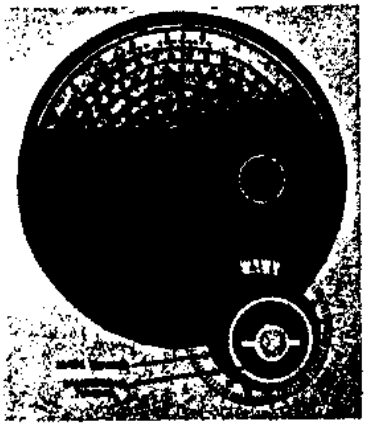


Figure 6.
View showing Bandspread and Main Tuning Dials

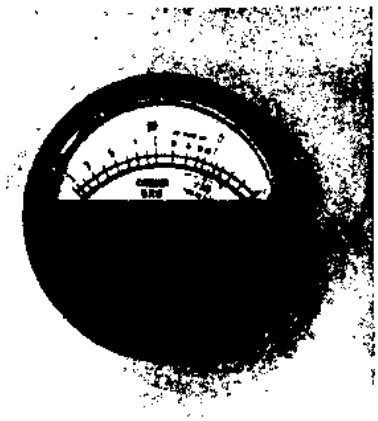


Figure 7. View showing Carrier Meter

right. Carefully tune the receiver by causing the meter needle to move as far to the right as possible. At this point the receiver is properly tuned to the station.

7. To control the volume, adjust the VOLUME control (See Fig. 2.) by turning it to the right for a louder signal or to the left for a softer signal.

8. The frequency calibration on the main tuning dial for the broadcast band is shown on the scale at the bottom of the dial. (See Fig. 6.) This scale as all other scales is calibrated in mc (megacycles) and tunes over the broadcast band from .54 to 1.62 mc (in kilocycles 540 to 1620 kc). For example, radio station WGN Chicago is 720 kc or .72 mc. Just divide kc by 1000 to get mc.

9. The next control which will be of interest to you, will be the TONE control. (See Fig. 8.) When it is set on the red dot, the receiver produces substantially all musical tones as sent out by the radio station. However, by setting this control to BASS, HI FI, MED, or LOW, you can adjust the tone as you prefer.

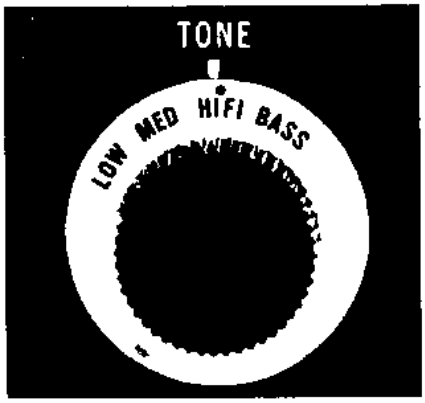


Figure 8. View showing Tone Control

10. The next control in sequence of importance is the SELECTIVITY control (See Fig. 9.). This control is very useful when it is desired to tune in a weak station on a frequency close to a powerful one, in which instance the control should be switched to MED, or in extreme cases to SHARP.

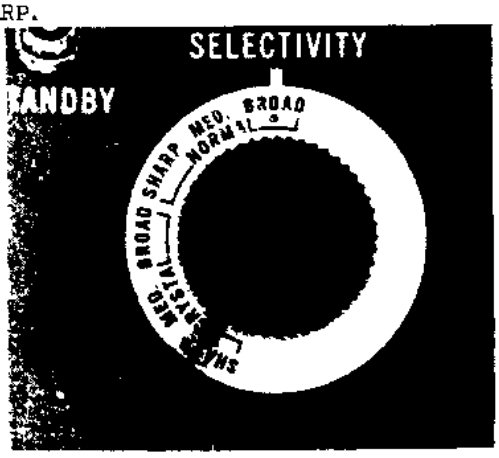


Figure 9. View showing Selectivity Contro

11. The knobs for CRYSTAL PHASING, RECEPTION, CW PITCH, and SENSITIVITY should in all casee be left set at the red dot.

Thus far we have tuned the receiver for a-m reception. If it is desired to use it on f-m reception, all controls should be set as previously described with the exception of the following:

1. The RECEPTION knob should be switched to FM (green dot).

2. The BAND SELECTOR switch should be set on the green dot. This covers the band 55 to 108 mc. Most f-m stations are on this band; the few that are not can be tuned in by changing the BAND SELECTOR knob to 28 to 55 mc.

3. For a normal f-m station the position of the toggle switch marked AVC may be left in the up position; if it is a weak station, the switch should be in the down position.

4. Tune in f-m stations by turning the larger of the tuning knobs until the main tuning dial indicates the desired f-m frequency. As the station is being tuned, the meter pointer will deflect first to one side of zero (red line marked "FM tune to 0"), return to zero, and deflect to opposite side of zero. When meter pointer returns to zero the first time, the station is tuned in.

5. The Carrier Level Meter reads the relative signal strength of received signals as well as indicating when an AM signal is properly tuned in by the maximum deflection of the meter needle. When using the carrier level meter, the AVC toggle switch must be in the "up" position (AVC OFF) and the SENSITIVITY CONTROL must be turned to the Red Dot setting. Volume is then controlled by the MANUAL VOLUME control.

So far we have covered three bands of the receiver (Broadcast, and the f-m bands 55-108 mc and 28-55 mc). For the other three bands of the set, operation is the same, the only difference being in the setting of the BAND SELECTOR switch knob, which may be turned to the desired band.

1. GENERAL

The Model SX-42 is a 15 tube superheterodyne radio receiver designed to provide amplitude modulated (a-m) reception over the frequency range 540 kc (kilocycles) to 110 mc (megacycles) and high fidelity, frequency modulated (f-m) reception over the frequency range 27 to 110 mc. Calibrated bandspread is provided for the 80, 40, 20, 10, and 6 meter amateur bands. The general coverage dial and bandspread dial are operated from one tuning control which consists of two independent knobs turning on concentric shafts. A dial lock is provided to lock the unused dial while tuning the receiver. This exclusive Hallicrafters feature insures accurate tuning and logging.

FREQUENCY COVERAGE

BAND	COVERAGE	TYPE OF RECEPTION
1	540 to 1620 kilocycles	AM/CW
2	1.62 to 5 megacycles	AM/CW
3	5 to 15 megacycles	AM/CW
4	15 to 30 megacycles	AM/CW
5	27 to 55 megacycles	AM/FM/CW
6	55 to 110 megacycles	AM/FM/CW

Adequate overlap is provided at ends of all bands.

The receiver as normally supplied is designed to operate from a 105 to 125 volts 50/60 cycle, single phase source of a-c power. These operating instructions also cover Universal Models which operate from a 105 to 250 volts, 25/60 cycle single phase a-c source.

2. A-C OPERATION

Be sure line voltage is 105 to 125 volts and frequency is 50 to 60 cycles before inserting power cord plug into power outlet. Be sure all tubes are securely inserted in their proper sockets before receiver power is turned on. The chart below lists the current and voltage data.

Power Consumption	110 Watts
Frequency	50/60 Cycles
Line Voltage.	117 Volts
Line Current.	0.93 Amperes

During a-c operation, the shorting plug supplied with the receiver must be in the octal socket on the rear apron of the chassis.

3. D-C OPERATION

The receiver may be operated from a 6 volt d-c source, generally a storage battery, and a 270 volt d-c supply in the form of "B" batteries or vibrator type power pack. Consult the chart on power requirements at the end of this paragraph and provide battery or power pack facilities capable of supplying these demands. The receiver is connected to the d-c supply as follows:

1. Remove the octal shorting plug for a-c operation from the socket SO-1 located on the rear apron of the receiver chassis.

2. Wire an octal plug, as shown in Fig. 10, and plug it into socket SO-1. Use #19 (AWG) wire leads for the 270 volt "B" supply connections to pins #3 and #5, and #12 (AWG) wire leads for the 6 volt battery connections to pins #1, #7, and #8. *CAUTION*. Check the wiring carefully before connecting to the battery supply. The chart below lists the current voltage data.

"B" Voltage	270 Volts
"B" Current	150 ma.
Filament Voltage.	6 Volts
Filament Current.	5 Amperes

Total battery drain when operating from a 6-volt vibrator power supply is approximately 16 amperes.

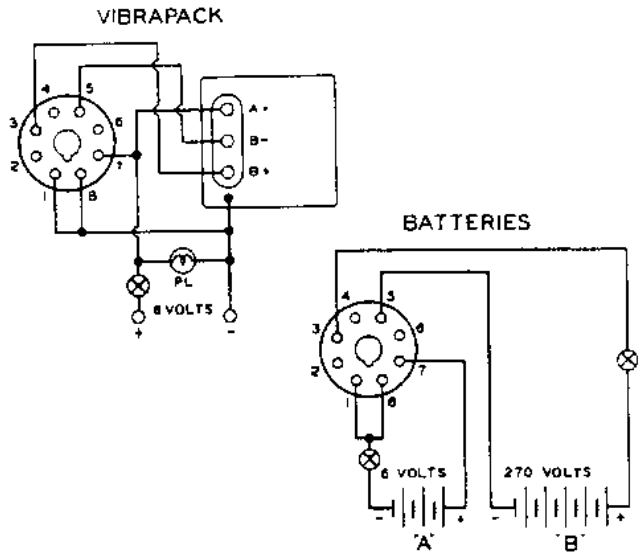


Figure 10. Octal plug wiring diagram

4. OUTPUT CONNECTIONS

Output connections for the speaker are provided for on the rear apron of the chassis. Two output impedances are available. Either the 500/600 or the 5000 ohm speaker connection may be used according to the output impedance desired. This arrangement of dual output impedances will accommodate most requirements. The Hallicrafters Model PM-23 speaker requires 5000 ohms impedance; the Hallicrafters Model R-42, R-44, R-75, or R-80 requires 500/600 ohms. However, any standard type, permanent magnet dynamic speaker with output transformer may be connected to the output terminals. If the permanent magnet dynamic speaker impedance is unknown, try the 5000 ohm and then the 500/600 ohm impedance, and use the one which gives the better tone quality and volume.

5. PHONO INPUT CONNECTION

A receptacle is provided on the rear apron of the chassis for connecting a phonograph record player to the receiver. This receptacle is designed to accommodate a Cinch, type M-93, pin connector plug. (See Fig. 11. for diagram)

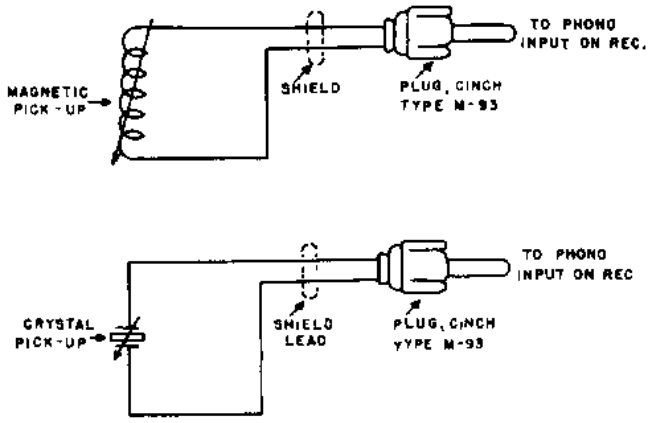


Figure 11. Phono input diagram

6. ANTENNA AND GROUND CONNECTIONS

The Model SX-42 is designed for a 300 ohm antenna impedance. The antenna impedance is not critical and excellent reception can be obtained from an antenna of from 50 to 600 ohm impedance. For maximum performance, the best possible antenna should be employed.

The antenna terminals on the Model SX-42 are arranged for any type of antenna from those requiring a ground to those using a transmission line. The transmission type of antenna connects to the A-1 and A-2 terminals whereas a single wire antenna utilizes terminal A-1 for the antenna lead. A-2 and GND terminals must be connected together and connected to a good ground.

7. DETAILED OPERATIONS

a. *Controls and Their Functions.* In order to obtain the desired results from the receiver, it is recommended that you become familiar with the function of each control. Red indicators on the controls for broadcast reception and green for f-m reception are there to simplify operation. Controls and their functions are as follows:

(1) *BAND SELECTOR.* The BAND SELECTOR knob operates the bandswitch to select the desired band of frequencies. The frequency range covered by each band is read directly on the BAND SELECTOR knob.

(2) *General Coverage Tuning and Bandspread Tuning Control.* The larger of the two concentric knobs tunes the receiver to the desired frequency. The smaller knob provides bandspread action or fine tuning as indicated on the bandspread scale. The winged knob in the center alternately locks the general coverage and the bandspread dials so that one remains fixed while the other one is being tuned. The knob should be rotated in a clockwise direction only, locking first one dial and then the other as it is turned through one complete revolution. Note that the locked dial knob is free to turn, but that the dial itself is locked in position.

(a) *General Coverage Dial.* The general coverage dial has six calibrated scales and a logging scale. All six scales are calibrated in mc. The calibrated metal skirt of the general coverage dial knob acts as the vernier calibration for the logging scale. The outer logging scale (on the general coverage dial) is divided into 21 divisions, each division representing one revolution of the vernier dial which also carries a logging scale divided into 100 divisions, thus providing 2100 divisions for logging use. The dial settings for the various amateur bands are indicated on the main tuning dial by black dots and the abbreviations 80M, 40M, etc. directly below the dot. When tuning the amateur bands with the calibrated bandspread dial, the general coverage dial must be set and locked at the setting corresponding to the amateur band desired.

For a reference when tuning in foreign broadcast stations, the word FOREIGN has been placed at the appropriate positions along the dial scales. The f-m channel 88 to 108 mc has been divided into 100 divisions by the scale above it marked 0, 10, 20, 30, etc. in green numbers which correspond with the frequency modulated channel assignments. Since the general coverage and bandspread tuning systems are electrically related, it is necessary to *set the bandspread dial at "0" when tuning the receiver with the general coverage dial control to obtain correct receiver frequency readings on the general coverage dial.*

(b) *Bandspread Dial.* The bandspread dial has five scales calibrated for the amateur bands and a 100 division logging scale. The five scales are calibrated to read receiver frequency directly in mc when the general coverage dial has been set to the corresponding indexing dot and locked in position.

(3) *AVC-OFF Switch.* This switch when set at AVC, provides a relatively constant volume level at the speaker for reasonable variations in signal strength at the antenna by automatically controlling the sensitivity of the receiver. Best results are obtained when the SENSITIVITY control is set at maximum sensitivity. The AVC switch must be set at OFF for c-w code reception.

(4) *NOISE-LIMITER-ON Switch.* This switch opens or closes the noise limiter circuit and is to be set at ON when the operator

wishes to limit excessive noise resulting from automobile ignition and other forms of noise interference.

The noise limiter circuit "clips" the intermittent noise peaks down to the level of the desired signal where they tend to become unnoticeable. (See Fig. 12 for illustration on noise limiter action.)

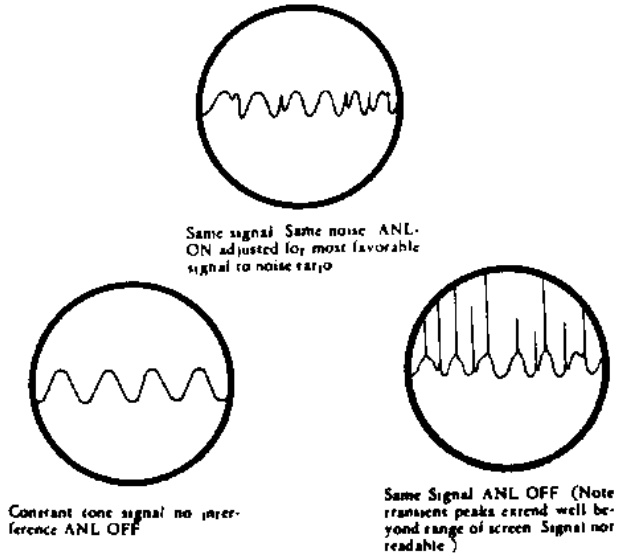


Figure 12.
Illustration showing Noise Limiter action

(5) *RECEIVER-STANDBY Switch.* When set at STANDBY, this switch renders the receiver inoperative, while transmitting or for any other purpose, although the tube heaters remain hot and ready for instant use.

(6) *CRYSTAL PHASING Control.* This control permits the discrimination of code signals whose frequencies are very nearly the same. The SELECTIVITY control must be set at one of its three crystal selectivity positions when using the phasing control.

It is extremely simple to attain single signal c-w reception with the SX-42. First, set the RECEPTION switch at CW and the SELECTIVITY control at CRYSTAL SHARP. Pick a good solid c-w signal, preferably a commercial station because a commercial is likely to stay on long enough for you to complete the phasing adjustment for single signal reception.

You will find on tuning across this signal that it has two amplitudes. Tune first to the weaker of these two amplitudes. Now, turn the CRYSTAL PHASING control until the weaker of the two amplitudes is reduced to a minimum. Then, tune to the stronger of the two amplitudes and adjust the PITCH control to a tone most pleasing to you. This adjustment for single signal selectivity will hold with no further adjustment unless you change the phasing control. (See Fig. 13 for an illustration of single signal operation.)

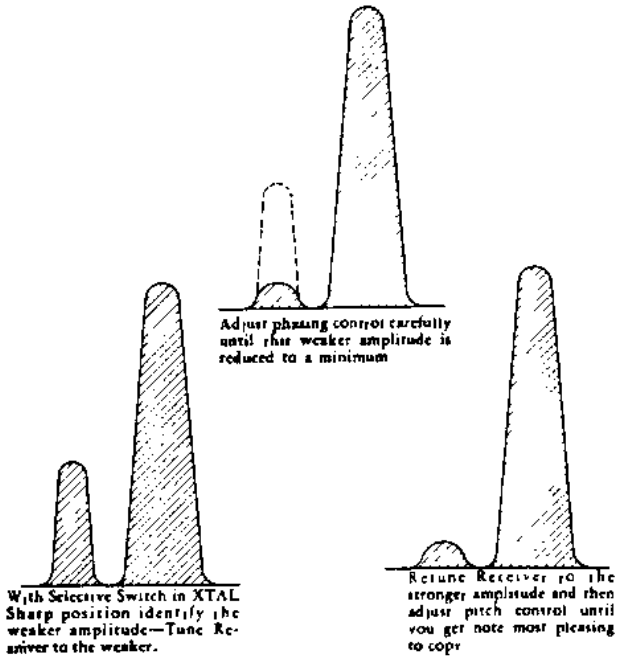


Figure 13.
Illustration showing Single Signal Operation

(7) *SELECTIVITY Control.* This control determines the sharpness of the response. Six degrees of selectivity are provided, ranging from CRYSTAL SHARP for c-w code reception under difficult receiving conditions to NORMAL BROAD response for high fidelity reception. (See Fig. 14 for i-f selectivity curves.)

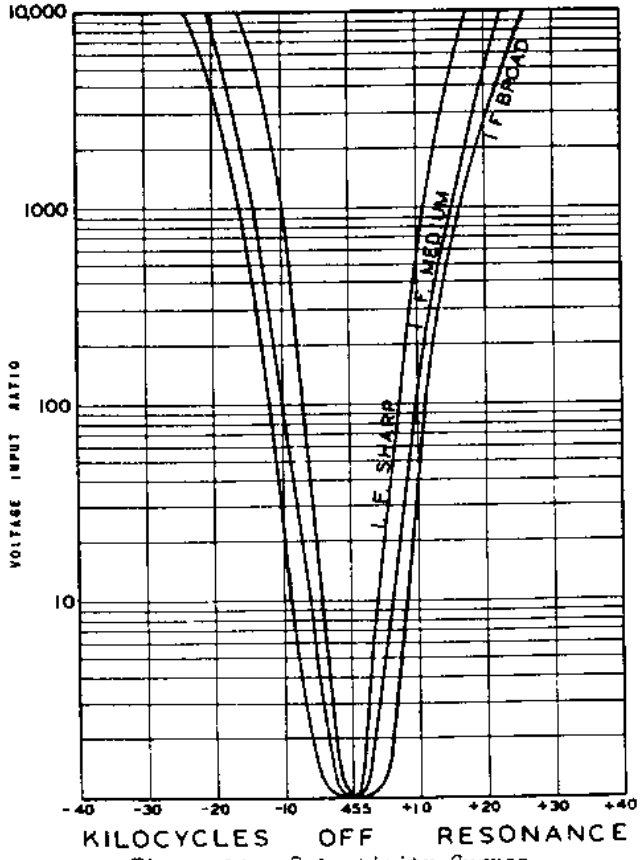


Figure 14. Selectivity Curves

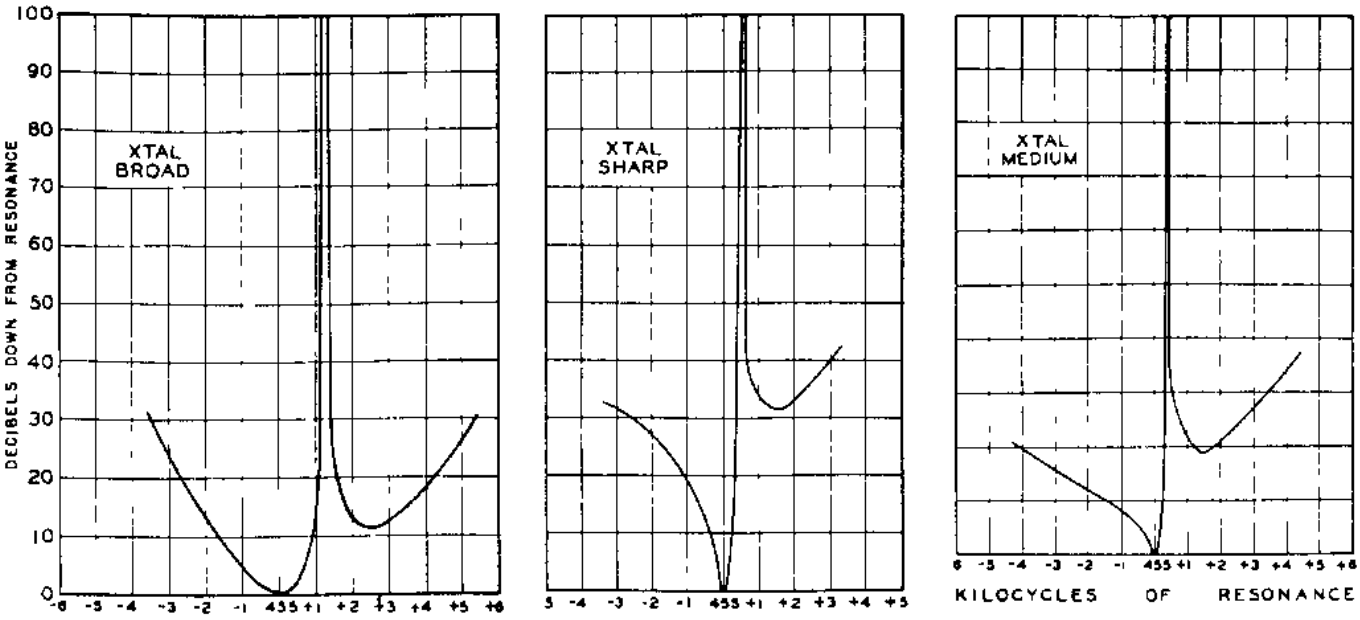


Figure 15. Crystal Curves

1. BROAD I-F (for high fidelity reception)
2. MEDium I-F (more selectivity, less highs)
3. SHARP I-F (reduces adjacent channel interferences and gives less highs.
4. CRYSTAL BROAD (similar to sharp i-f but sharper cutting on sidebands)
5. CRYSTAL MEDium (greatly increased sideband cutting very little highs present)
6. CRYSTAL SHARP (position of extreme selectivity - practically no sideband content)

(See Fig. 15 for crystal filter selectivity curves.)

(8) *TONE Control*. This control selects the tone qualities desired by the operator. The four types of response available are LOW, MED, HI FI, and BASS.

(a) *LOW*. The bass and high audio frequencies are attenuated to provide a minimum response for voice reception when the background noise level is objectionably high.

(b) *MED*. The bass and high frequencies are attenuated somewhat less than for the LOW position providing a response for more than the ordinary voice frequencies. This position is preferred for voice communication when the signal to noise ratio will permit.

(c) *HI FI (High Fidelity)*. The bass and high frequencies are passed at the same level as the mid-frequency range thereby providing as near a true reproduction of the original signal as possible. The response is essentially flat between 50 and 15,000 cycles per second for high fidelity reception.

(d) *BASS*. The response in the high frequency end of the audio range remains uniform as for the HI FI position; however, the level of the lower frequencies is boosted above the level of the medium and high frequency ranges.

Fig. 16 shows the typical audio frequency response curves for the four positions of the TONE switch.

(9) *CW PITCH Control*. This control varies the frequency of the beat frequency oscillator thus varying the pitch of the c-w code signal as desired.

(10) *SENSITIVITY Control*. This control adjusts the sensitivity by varying the resistance in the cathodes of the r-f and i-f amplifiers. Turning the control to the right increases the sensitivity. This control must be set at maximum sensitivity when using the carrier level meter. At any other setting of this control, readings of the carrier meter are meaningless.

8. "S" METER ADJUSTMENT

Adjustment of the "S" meter control is performed by varying the knurled knob located on the rear apron of the receiver chassis. This control enables you to properly set the "S" meter to zero. In order to make the adjustment correctly, advance the SENSITIVITY control to 10 (red dot). Set the AVC switch at ON position. Short the two antenna terminals to the ground terminal and tune receiver off station. Then adjust the "S" meter control until the pointer rests on left hand zero. Remove the short from the antenna terminals and the meter will indicate the relative carrier strength of each incoming signal as various signals are tuned in.

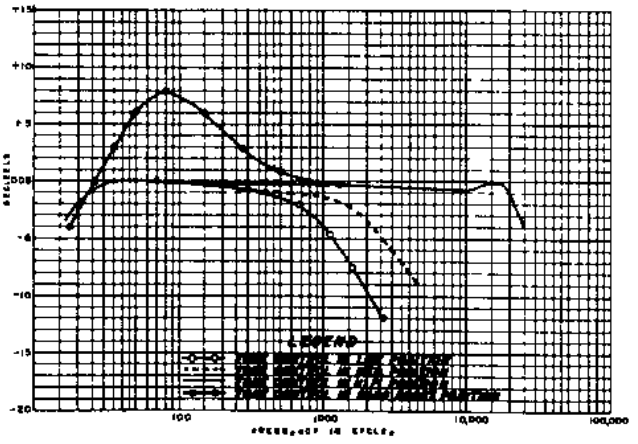


Figure 16. Tone Control Curves

1. REPLACING TUBES

All tubes are accessible at the top of the chassis through the hinged cover of the cabinet. When replacing tubes, check tube type carefully and replace with the correct type. Refer to top view of the chassis to determine the location of the tubes (See Fig. 17.)

2. REPLACING DIAL LAMPS

The receiver employs four dial lamps with the bayonet type sockets to illuminate the main and bandspread tuning dials as well as the meter scale. The lamps are to be replaced with 6-8 volt, 250 ma, (blue bead) #44 G.E. type, or, equivalent. The color code referred to is the color of the glass bead above the glass stem inside the envelope of the lamps.

3. SERVICE OR OPERATING QUESTIONS

Factory type service is available at Hallicrafters authorized field service centers. For Warranty Service or further details regarding operation or servicing of the receiver in general, contact the dealer directly. Make no service shipments directly to the factory before first writing for authorization and instructions. The factory cannot accept responsibility for unauthorized shipments.

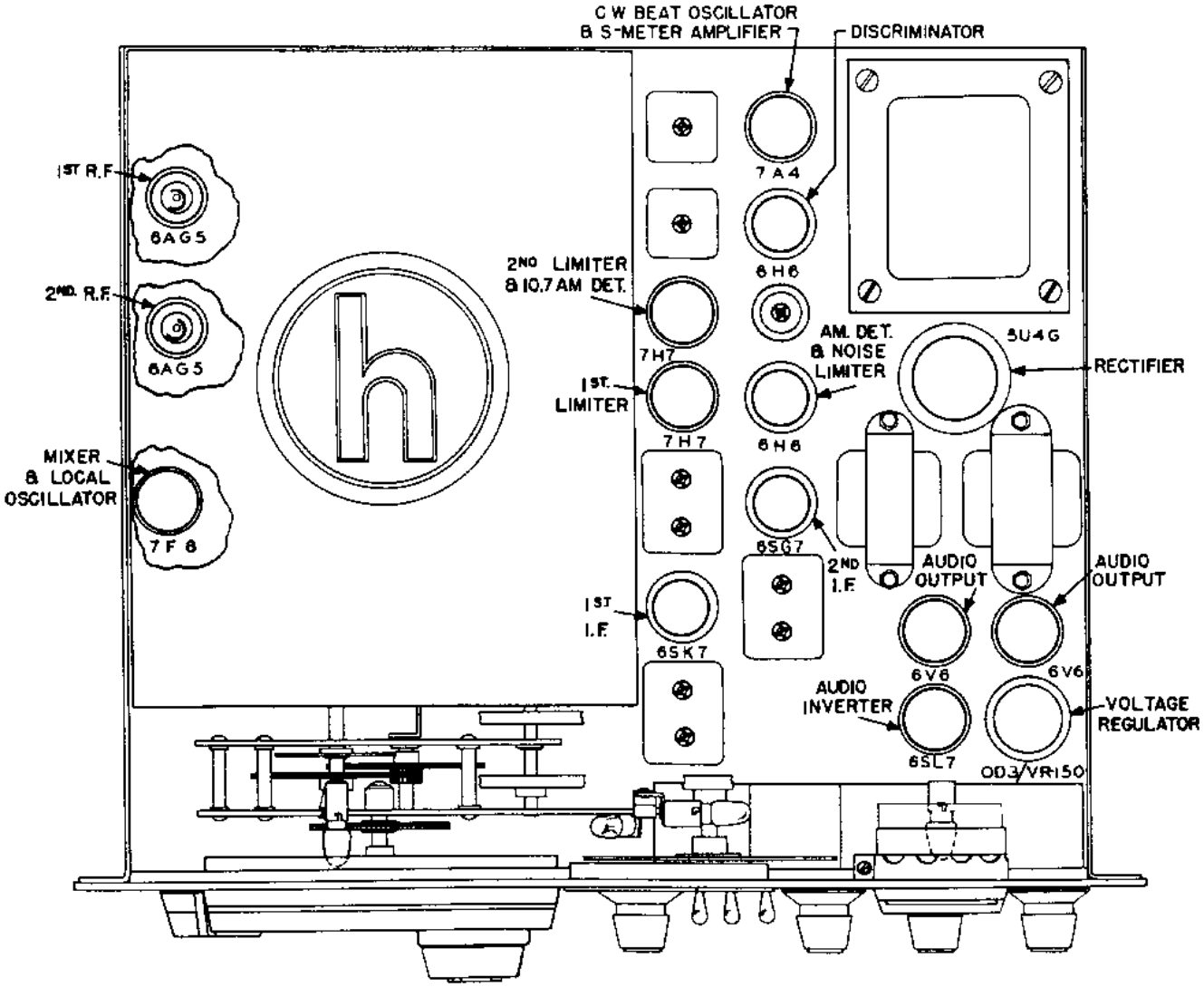


Figure 17. Top view of Chassis

REMOTE CONTROL OPERATION:

Connect a single pole single throw relay to pins #5 and 8 on PL1 located on the rear apron of the receiver. Receiver "SEND- RECEIVE" switch is then placed in "SEND" position. When the Transmitter is turned on the Receiver is automatically disabled.

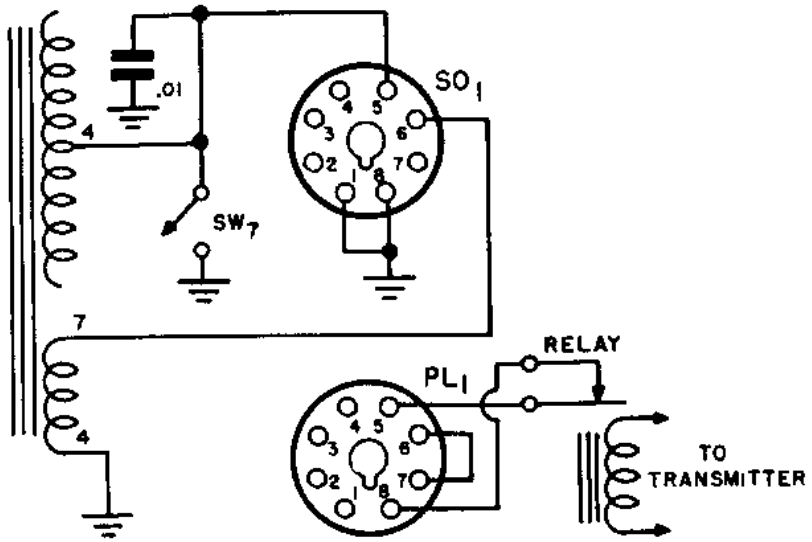


Figure 18. Schematic Remote Control Operation

WARRANTY

"This product is warranted to be free from defective material or parts, and it is agreed to furnish a new part in exchange for any part of this unit which under normal installation, use and service discloses such defect, provided the unit is delivered by the owner to the authorized radio dealer or wholesaler from whom purchased, intact, for examination with all transportation charges prepaid, within one year from the date of sale to original purchaser and provided that such examination discloses that it is thus defective. Warranty on tubes, pilot lights, transistors, and silicon diodes is effective for a period of 90 days.

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

This warranty is in lieu of 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.

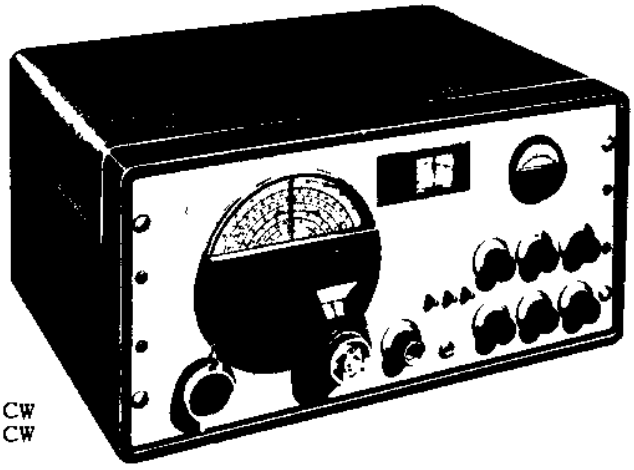
A Subsidiary of Northrop Corporation

156-001623B

the hallicrafters co.

SERVICE BULLETIN FOR MODEL SX-42

JANUARY, 1949
94X317
Run No. 2
SEE CHASSIS STAMP



GENERAL:

Tubes.	Fourteen plus rectifier
Speaker Output	500/5000 Ohms
Headset Output	High Impedance
Antenna Input.	For 72 to 600-ohm line or single wire lead-in
Phono Input. .	High Impedance
External Power Connector . .	Std. Octal Socket
Tuning Range .	Band 1. 540 kc - 1620 kc AM/CW
	2. 1.6 mc - 5 mc AM/CW
	3. 5 mc - 15 mc AM/CW
	4. 15 mc - 30 mc AM/CW
	5. 27 mc - 55 mc AM/FM/CW
	6. 55 mc - 110 mc AM/FM/CW
Intermediate Frequency . .	455 kc/10.7 mc.
Power Supply .	105-125 V. 50/60 cycles AC.
Power Consumption.	110 Watts

CARRIER LEVEL METER ADJUSTMENT:

1. Before turning on the receiver, set the pointer adjustment screw on the face of the meter for the right hand rest position. (Line up the pointer with the last division on the scale.)

2. Connect a jumper between the two antenna terminals (A1 and A2) and ground. (GND.)

3. Set front panel controls as follows:

   SENSITIVITY - Maximum
   RECEPTION - AM
   SELECTIVITY - Normal/Sharp
   AVC SWITCH - AVC
   RECEIVE-STANDBY SWITCH - Receive
   BAND SELECTOR - 15/30
   VOLUME - Maximum (No signal should be heard.)

4. Set S METER ADJ. control located on rear chassis apron for the "S" unit zero on the CARRIER LEVEL meter.

POSITIONING CONTROL KNOBS:

BAND SELECTOR - As required by markings
VOLUME - Zero at full counter clockwise rotation.
CRYSTAL PHASING - Zero with plates half meshed.
RECEPTION - As required by markings.
CW PITCH - Zero with plates half meshed.
SELECTIVITY - As required by markings.
TONE - As required by markings.
SENSITIVITY - Zero at full counter clockwise rotation.

RESTRINGING DIAL CORD:

Two dial drive cords are used on the bandspread dial drive mechanism. To restring the upper dial cord, use a length of 18 lb. test cord and tie one end to the tension spring in the large pulley at position 1. in the diagram. Follow the numbers 1 through 15., stretch the tension spring and tie the cord securely. To restring the lower dial cord, tie the cord at A and follow the lettered route A through N as illustrated.

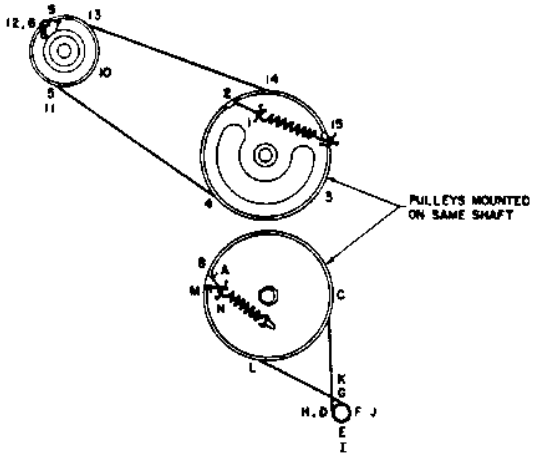


Fig. 1. Dial cable stringing procedure.

REPLACING LAMPS:

There are three dial lamps and one meter lamp. To replace the lamps, it is necessary to remove the receiver chassis from the cabinet and remove the light shield across the top of the dial drive mechanism. The chassis is fastened to the cabinet by four front panel screws and three chassis screws at the bottom rear of the cabinet. The light shield is held down by four screws, two at each end of the channel. Replace the dial lamps with 6-8 V. 250 MA. G.E. #44 (Blue bead) lamps or equivalent. The meter lamp is removed by pulling the socket straight out of the grommet. Replace this lamp with 6-8 V. 150 MA. G.E. #47 (Brown bead) or equivalent. *Do not use a 250 MA. lamp in the meter housing as the excessive heat will discolor the meter scale.* Refer to the SERVICE PARTS LIST for recommended lamps with a green tint.

ALIGNMENT PROCEDURE

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

Throughout the alignment of the receiver, the bandspread dial must be set at zero to obtain exact calibration on the general coverage dial.

I.F. ALIGNMENT (455 kc) - Set the controls as follows:

BAND SELECTOR - .54/1.62
AVC - OFF.
NOISE LIMITER - Off.
RECEIVE-STANDBY - RECEIVE
RECEPTION - AM
SELECTIVITY - NORMAL/SHARP.
SENSITIVITY - Near maximum
VOLUME - Near maximum
General coverage dial set at approx. 1000 kc.

Connect signal generator through an 0.1 mfd capacitor to pin #1. of the 7F8 converter stage.

With signal generator set at approx. 455 kc. align slugs S-1, 3, 5, 10, 12 and 14 for maximum output.

Set RECEPTION control at CW and CW PITCH knob at zero and adjust slug S-8 for zero beat. Reset the CW PITCH control for a 1000 cycle note.

Turn SELECTIVITY control to CRYSTAL/BROAD and while slowly turning slug S-10 in one direction, "rock" the signal generator and observe that the signal output decreases, then slowly increases. Set signal generator at weaker of two signals on each side of zero beat and adjust CRYSTAL PHASING control for a complete null. This setting is left untouched for following adjustments.

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

Set the SELECTIVITY control at CRYSTAL/SHARP and reset signal generator for the exact crystal frequency, then switch to NORMAL/SHARP and reset slugs S-4, 3, 5, 12, 14 and trimmer C-58 for maximum output.

Now repeat the adjustment of the BFO slug S-8 for zero beat with the CW PITCH control set at zero.

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

BAND SELECTOR - 28/55
AVC - OFF
NOISE LIMITER - Off
RECEIVE-STANDBY - RECEIVE
RECEPTION - AM
SELECTIVITY - NORMAL/SHARP
SENSITIVITY - Near maximum
VOLUME - Near maximum.
General coverage dial set about midscale.

Connect signal generator through an 0.1 capacitor to pin #1 of the 7F8 converter stage.

Set signal generator for 10.7 mc and adjust slugs S-4, 6, 9, 13, 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 slug S-17 for zero beat with the CW PITCH control set at zero.

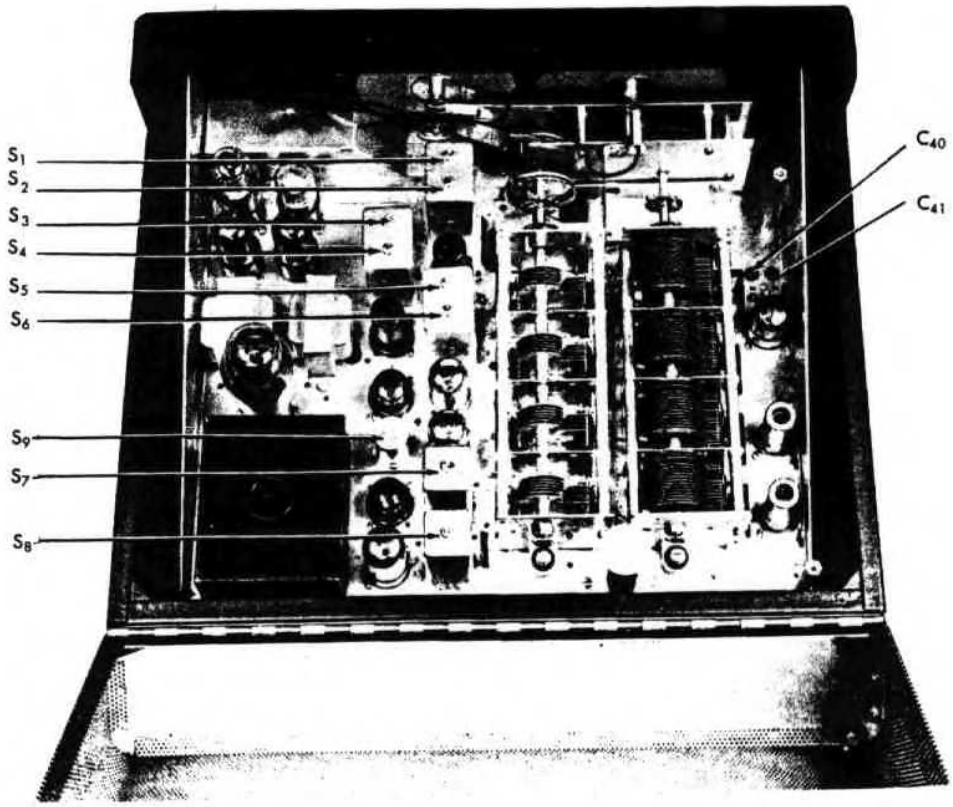
Set RECEPTION control at FM and adjust slug S-16 for maximum output. Now set slug S-7 for the null or minimum output as indicated on the output meter. Check the discriminator by slowly tuning the signal generator through 10.7 mc and observe the two maximum audio level readings on the output meter. If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

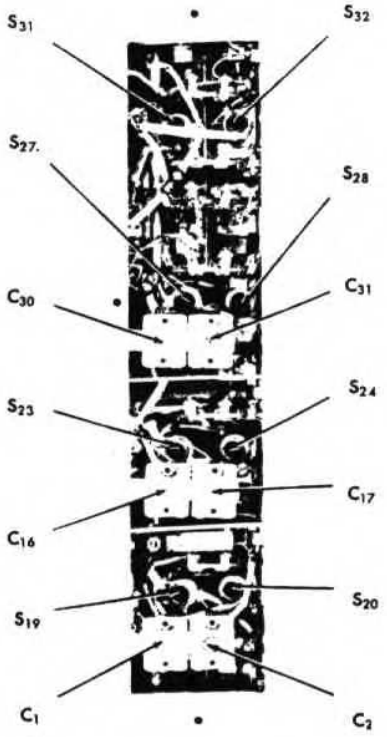
RF ALIGNMENT - After completing the alignment of the IF stages, the RF stages may be aligned according to the following alignment chart. Connect the signal generator to terminal A-1 through the dummy antenna specified and connect a jumper between antenna terminal A-2 and GND.

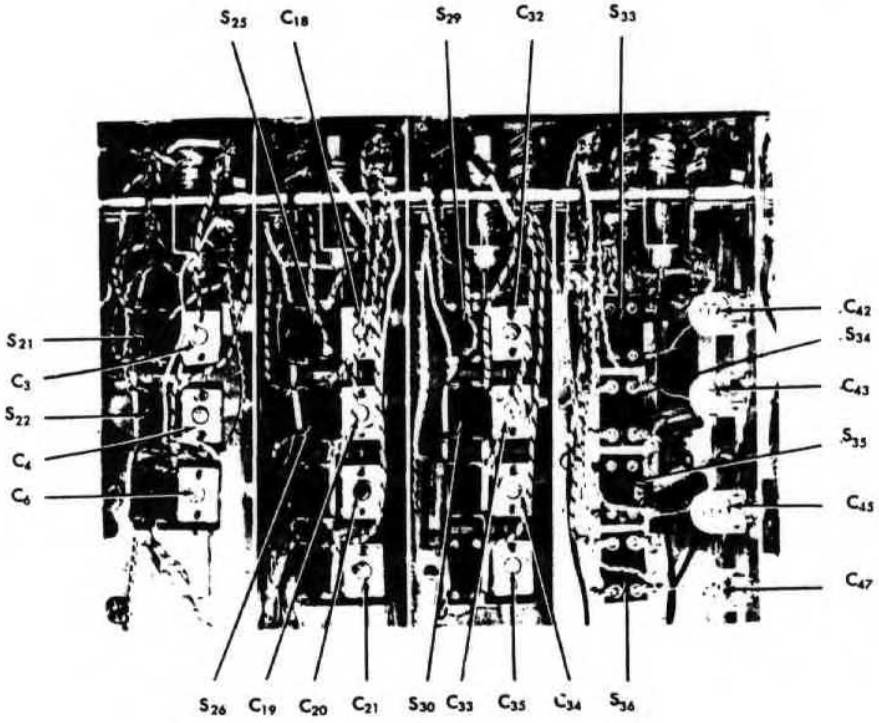
ALIGNMENT PROCEDURE

Dummy Antenna	Signal Generator Frequency	Band Selector Pos.	Radio Dial Setting	Adjust	Remarks
RMA	1500 kc	.54/1.62	1500 kc	C-47*, 6, 21, 35	Adjust for max. output.
	600 kc		600 kc	S-36*	
RMA	4.5 mc	1.62/5.0	4.5 mc	C-45*, 20, 34	Adjust for max. output.
	2.0 mc		2.0 mc	S-35*	
RMA	14.0 mc	5/15	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	15/30	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	28/55	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	55/108	105 mc	C-40*, 1, 16, 30	Adjust for max. output.
	60 mc		60 mc	S-31*, 19, 23, 27	

* Note - Calibration adjustment







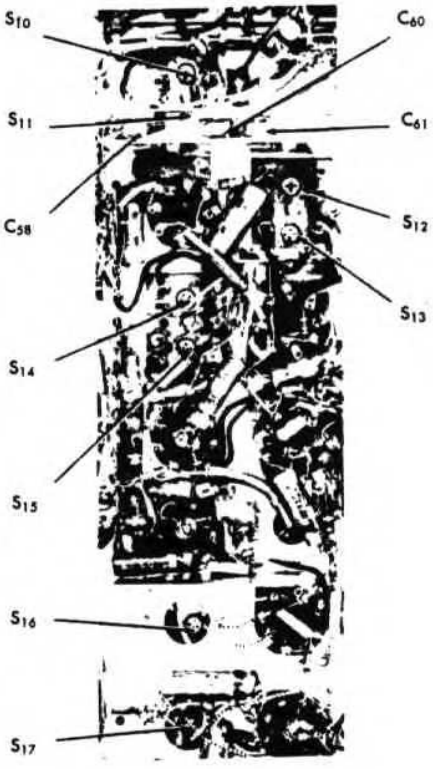


Fig. 2. Top, bottom and side views showing alignment adjustments.

SERVICE PARTS LIST

CAPACITORS

REF NO	DESCRIPTION	HALLICRAFTER S PART NUMBER
C-1, 2, 16, 17, 30, 31	Capacitor, trimmer, dual mounting ass'y	44B165
C-3, 4, 6, 18, 19, 20, 21, 32, 33, 34, 35,	Capacitor, trimmer. Part of transformers T-3, 4, 5, 8, 9, 10, 11, 14, 15, 16 & 17 respectively.	
C-5, 129, 130	2 mmf. 500 V., molded bakelite.	49A002
C-7	5 mmf. 500 V. T.C., ceramic	CC20UK050D
C-8, 11, 25	.05 mfd. 200 V., tubular paper	46A091
C-9	Capacitor, tuning, general coverage	48C158
C-10	Capacitor, tuning, bandspread	48C159
C-12, 26	.01 mfd. 400 V., tubular paper	46AB103J
C-13, 15, 27, 29, 50, 59, 63, 74, 86, 87, 91, 100, 104, 109, 112, 132	.02 mfd. 400 V., tubular paper	46AW203J
C-14, 28	5600 mmf. 500 V., mica	CM35A562M
C-22	15 mmf. 500 V. T.C., ceramic	CC20UK150K
C-23, 62, 70, 84, 85	.05 mfd. 200 V. tubular paper	46AU503J
C-24	.25 mfd. 200 V., tubular paper	46AT254J
C-37, 97	47 mmf. 500 V., mica	CM20A470K
C-38, 75, 92, 106, 121, 122, 131	.01 mfd. 400 V., tubular paper	46AW103J
C-39, 49	110 mmf. 500 V. T.C., ceramic	CC25UK111J
C-40, 41	Capacitor, trimmer 4-20 mmf	44A078
C-42	Capacitor, trimmer 55-75 mmf	44A347
C-43, 45	Capacitor, trimmer 2-6 mmf	44A077
C-44	4700 mmf. 500 V., mica	CM35C472G
C-46	1500 mmf. 500 V., mica	CM30C152G
C-47	Capacitor, trimmer 4-20 mmf	44A076
C-48	470 mmf. 500 V., mica	CM20A471G
C-51	220 mmf. 500 V., mica	CM25E221G
C-52, 66, 71, 99,	.05 mfd. 400 V., tubular paper	46AW503J
C-57, 105	Capacitor, variable, CW PITCH & CRYSTAL PHASING	48A064
C-58, 60, 61	Capacitor, trimmer ass'y	44B164
C-89, 90	180 mmf. 500 V., mica	CM20A181K
C-98	560 mmf. 500 V., mica	CM25A561K
C-107	10 mfd. 25 V., electrolytic	45A064
C-108, 118	.05 mfd. 600 V., tubular paper	46AY503J
C-110	680 mmf. 500 V., mica	CM25A681K
C-111, 113, 116	20 mfd. 25 V.: 30-20 mfd. 450 V. electrolytic	45A041
C-114, 115, 117	.01 mfd. 600 V., tubular paper	46AG103J
C-120	7 mmf. 500 V. T.C., ceramic	CC20UK070K
C-123	15 mmf. 500 V. T.C., ceramic	CC20UK150K
C-127	100 mfd. 25 V., electrolytic	45A116
C-133, 134, 135	.01 mfd. 600 V., tubular paper	46AY103J

SERVICE PARTS LIST (Continued)

RESISTORS

REF NO.	DESCRIPTION	HALLICRAFTER'S PART NUMBER
R-1, 10, 51	100,000 ohms ½ watt, carbon	RC20AE104M
R-2	12 ohms ½ watt, carbon	RC20AE120K
R-3, 15	150 ohms ½ watt, carbon	RC20AE151K
R-4, 54	47,000 ohms 1 watt, carbon	RC30AE473K
R-5, 9, 14, 19, 90, 103, 104	15 ohms ½ watt, carbon	RC20AE150M
R-6, 13, 17, 20	2200 ohms ½ watt, carbon	RC20AE222M
R-7, 18, 40, 67, 74, 78	1200 ohms ½ watt, carbon	RC20AE122K
R-8, 53, 66	470,000 ohms ½ watt, carbon	RC20AE474M
R-11	5.6 megohms ½ watt, carbon	RC20AE565K
R-12	Resistor, variable, SENSITIVITY control	25A548
R-16, 22, 32, 45, 70, 86, 106	1000 ohms ½ watt, carbon	RC20AE102M
R-21, 48, 107	2.2 megohms ½ watt, carbon	RC20AE225M
R-23	47 ohms ½ watt, carbon	RC20AE470M
R-24	33 ohms ½ watt. carbon	RC20AE330M
R-25, 69, 75	10,000 ohms ½ watt, carbon	RC20AE103K
R-26	5600 ohms 1 watt, carbon	RC20AE562K
R-27	470 ohms ½ watt, carbon	RC20AE471M
R-28	68,000 ohms 1 watt, carbon	RC30AE683K
R-29	120 ohms ½ watt, carbon	RC20AE121K
R-30, 42, 52, 64	1 megohm ½ watt, carbon	RC20AE105M
R-31, 60	330 ohms ½ watt, carbon	RC20AE331K
R-34	Resistor, variable, carrier level meter adjustment	25C022
R-36	1.2 megohms ½ watt, carbon	RC20AE125K
R-37	100,000 ohms 1 watt, carbon	RC30AE104K
R-38	270 ohms ½ watt, carbon	RC20AE271K
R-39, 59, 87	56,000 ohms ½ watt, carbon	RC20AE563K
R-41, 58, 79, 80, 81, 83	220,000 ohms ½ watt, carbon	RC20AE224K
R-49	330,000 ohms ½ watt, carbon	RC20AE334K
R-50	1800 ohms ½ watt, carbon	RC20AE182K
R-55	10,000 ohms 1 watt, carbon	RC30AE103K
R-56, 57, 71 94	47,000 ohms ½ watt, carbon	RC20AE473K
R-65	150,000 ohms ½ watt, carbon	RC20AE154K
R-68	5100 ohms ½ watt, carbon	RC20AE512J
R-72, 105	100 ohms ½ watt, carbon	RC20AE101K
R-73	Resistor, variable VOLUME control	25A549
R-76, 92	56 ohms ½ watt, carbon	RC20AE560K
R-77	100 ohms 2 watts, carbon	RC40AE102K
R-82	8200 ohms ½ watt, carbon	RC20AE822K
R-84	220 ohms 2 watts, carbon	RC40AE221K
R-85	2000 ohms 10 watts, wire wound	24BG202D
R-88	2.2 megohms ½ watt, carbon	RC20AE225K
R-89	68,000 ohms ½ watt, carbon	RC20AE683K
R-91, 93	4700 ohms ½ watt, carbon	RC20AE472K
R-101, 102	330 ohms ½ watt, carbon	RC20AE331M
R-108	6.8 ohms 1 watt, carbon	RC30AE068K

TRANSFORMERS AND COILS

T-1	Transformer, antenna, band 6	51B829
T-2	Transformer, antenna, band 5	51B828
T-3	Transformer, antenna, band 4	51B990

SERVICE PARTS LIST

REF. NO	DESCRIPTION	HALLICRAFTER'S PART NUMBER
T-4	Transformer, antenna, band 3	51B826
T-5	Transformer, antenna, band 1	51B823
T-6	Transformer, r-f stage, band 6	51B833
T-7	Transformer, r-f stage, band 5	51B832
T-8	Transformer, r-f stage, band 4	51B989
T-9	Transformer, r-f stage, band 3	51B987
T-10	Transformer, r-f stage, band 2	51B825
T-11	Transformer, r-f stage, band 1	51B824
T-12	Transformer, converter, band 6	51B833
T-13	Transformer, converter, band 5	51B844
T-14	Transformer, converter, band 4	51B989
T-15	Transformer, converter, band 3	51B988
T-16	Transformer, converter, band 2	51B986
T-17	Transformer, converter, band 1	51B985
T-18	Transformer, oscillator, band 6	51B839
T-19	Transformer, oscillator, band 5	51B838
T-20	Transformer, oscillator, band 4	51B991
T-21	Transformer, oscillator, band 3	51B836
T-22	Transformer, oscillator, band 2	51B835
T-23	Transformer, oscillator, band 1	51B834
T-24	Transformer, 1st I-F	50C198
T-25	Transformer, 2nd I-F	50C190
T-26	Transformer, 3rd I-F	50C373
T-27	Transformer, FM detector	50C191
T-28	Transformer, BFO	54C032
T-29	Transformer, audio output	55B077
T-30	Transformer, power (115 V. 50/60 cycles)	52C141
T-30	Transformer, power (115/230 V. 50/60 cycles)	52C131
L-1	R.F. choke, oscillator	53B008
L-2	I-F coupling coil	53B104
L-3	Choke, filter	56B067
L-4	R.F. choke, filament	53B009
L-5	R.F. choke, screen (Wound on R-95)	53A117
L-6	R.F. choke, screen (Wound on R-96)	53A117

SWITCHES

SW-1	Switch, BAND SELECTOR	60D298
SW-2	Switch, SELECTIVITY	60A234
SW-3	Switch, RECEPTION	60C235
SW-4	Switch, TONE	60C236
SW-5, 6, 7	Switch, toggle, SPST	60A138
SW-8	Switch, power, part of VOLUME control R-73	

PLUGS AND SOCKETS

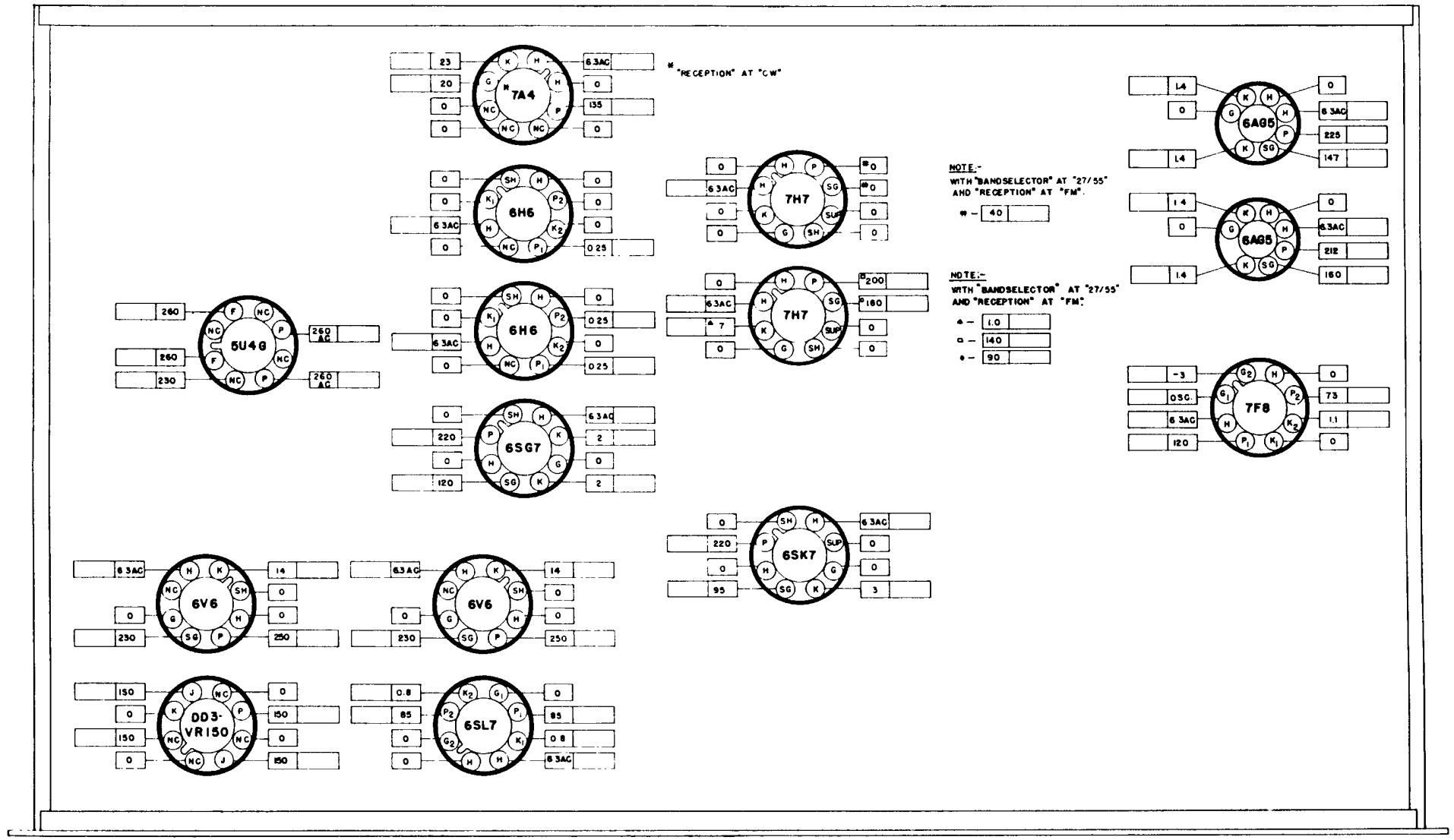
PL-1	Plug, octal, with jumpers	35A015
PL-2	Plug and cord, power	87A078
	Socket, octal (tube) bakelite	6A035
	Socket, miniature (tube) ceramic	6A193
	Socket, loktal (tube) bakelite	6A213
	Socket, loktal (tube) mica filled	6A223
	Socket, dial light, general coverage dial	6A258
	Socket, dial light, logging scale	6A259
	Socket, dial light, band-spread dial	6A260
	Socket, dial light, tuning meter	6A262
J-1	Jack, phono	36A029
J-2	Jack, phones	36B030

TUBES, RECTIFIERS AND LAMPS

	Type 6AG5, antenna	90X6AG5
	Type 6AG5, R-F amplifier	90X6AG5
	Type 7F8, oscillator-converter	90X7F8
	Type 6SK7, 1st I-F amplifier	90X6SK7
	Type 6SG7, 2nd I-F amplifier	90X6SG7
	Type 6H6, noise limiter	90X6H6
	Type 7H7, 3rd I-F amplifier	90X7H7
	Type 7H7, AM detector	90X7H7
	Type 6H6, discriminator	90X6H6
	Type 6SL7, phase inverter	90X6SL7
	Type 6V6, AF power amplifier	90X6V6
	Type 6V6, AF power amplifier	90X6V6
	Type 7A4, BFO and FM tuning meter amplifier	90X7A4
	Type OD3/VR150 Volt Regulator	90XVR150
	Type 5U4G Rectifier	90X5U4G
LM-1, 2, 3,	Lamp, 6-8 V., 250 MA., green tint	39A018
LM-4	Lamp, 6-8 V., 150 MA., green tint	39A019

MISCELLANEOUS COMPONENTS

TS-1, 2	Terminal strip, antenna-ground or speaker	88A567
	Screw, knurled head, for above terminal strip	3A1371
M-1	Meter, CARRIER LEVEL	82B100
X-1	Crystal, 455 kc	19A123
	Knob, VOLUME control	15A060
	Knob, CW PITCH or CRYSTAL PHASING control	15A061
	Knob, RECEPTION control	15A045
	Knob, SELECTIVITY control	15A063
	Knob, TONE control	15A062
	Knob, SENSITIVITY control	15A064
	Knob, BAND SELECTOR control	15A057
	Dial, micro tuning	83B243
	Knob, main tuning	15A055
	Knob, band spread	15A054
	Knob, brake	15A052
	Shield, tube (miniature tube)	69A065
	Core, powdered iron	77A068
	Dial drive assembly	71C177
	Dial, general coverage tuning	83C330
	Dial, bandspread tuning	83B328
	Escutcheon, band spread dial	7B019
	Window, bandspread dial escutcheon	22A160
	Escutcheon, general coverage dial	7D020
	Pointer, general coverage dial escutcheon	82A110
	Clip, general coverage dial escutcheon	76A364
	Clip, bandspread dial escutcheon	76A309

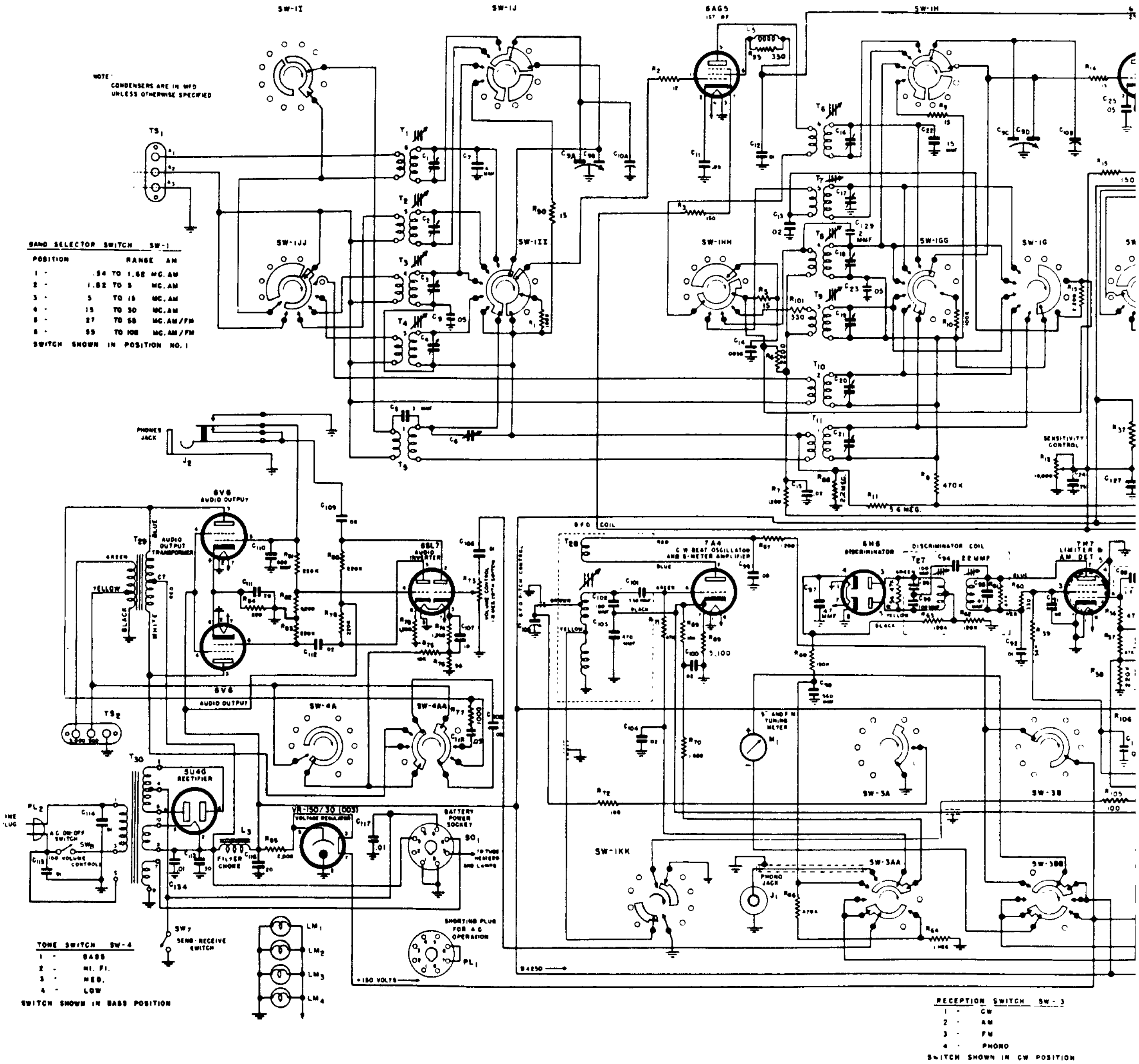


NOTE-

1 SOCKET VIEWS ARE BOTTOM VIEWS.
2 ALL VOLTAGES MEASURED BETWEEN TUBE SOCKET TERMINALS AND GROUND
3 LINE VOLTAGE — 117 V AC
4 ALL VOLTAGES SHOWN ARE DC UNLESS OTHERWISE SPECIFIED
5 VOLTAGES SHOWN WERE MEASURED WITH A 20,000 OHM/VOLT METER
6 "NC" — NO CONNECTION

7 CONTROL SETTING—UNLESS SPECIFIED
"BAND SELECTOR" AT BAND 1.
"RECEPTION" AT "AM"
"AVC" AT ON
"NOISE LIMITER" OFF
"RECEIVE — STANDBY" AT "RECEIVE"
"SENSITIVITY" AT MAXIMUM GAIN
"SELECTIVITY" AT "NORMAL / BOARD"

Fig. 3. Tube socket voltage chart.


NOTE: CONDENSERS ARE IN MFD UNLESS OTHERWISE SPECIFIED
BAND SELECTOR SWITCH SW-1
POSITION RANGE AM
1 - .54 TO 1.62 MC. AM
2 - 1.62 TO 5 MC. AM
3 - 5 TO 15 MC. AM
4 - 15 TO 30 MC. AM
5 - 27 TO 55 MC. AM/FM
6 - 55 TO 108 MC. AM/FM
SWITCH SHOWN IN POSITION NO. 1
TONE SWITCH SW-4
1 - BASS
2 - HI. FI.
3 - MED.
4 - LOW
SWITCH SHOWN IN BASS POSITION
RECEPTION SWITCH SW-3
1 - CW
2 - AM
3 - FM
4 - PHONO
SWITCH SHOWN IN CW POSITION
6V6 AUDIO OUTPUT
6SL7 AUDIO INVERTER
5U4G RECTIFIER
VR-150/30 (OD3) VOLTAGE REGULATOR
BATTERY POWER SOCKET
SHORTING PLUG FOR A C OPERATION
PHONES JACK
SENSITIVITY CONTROL
C.W. BEAT OSCILLATOR AND S-METER AMPLIFIER
6H6 DISCRIMINATOR
DISCRIMINATOR COIL
"S" AND "F" M TUNING METER
PHONO JACK
SEND-RECEIVE SWITCH
A.C. ON-OFF SWITCH
FILTER CHOKE
+150 VOLTS

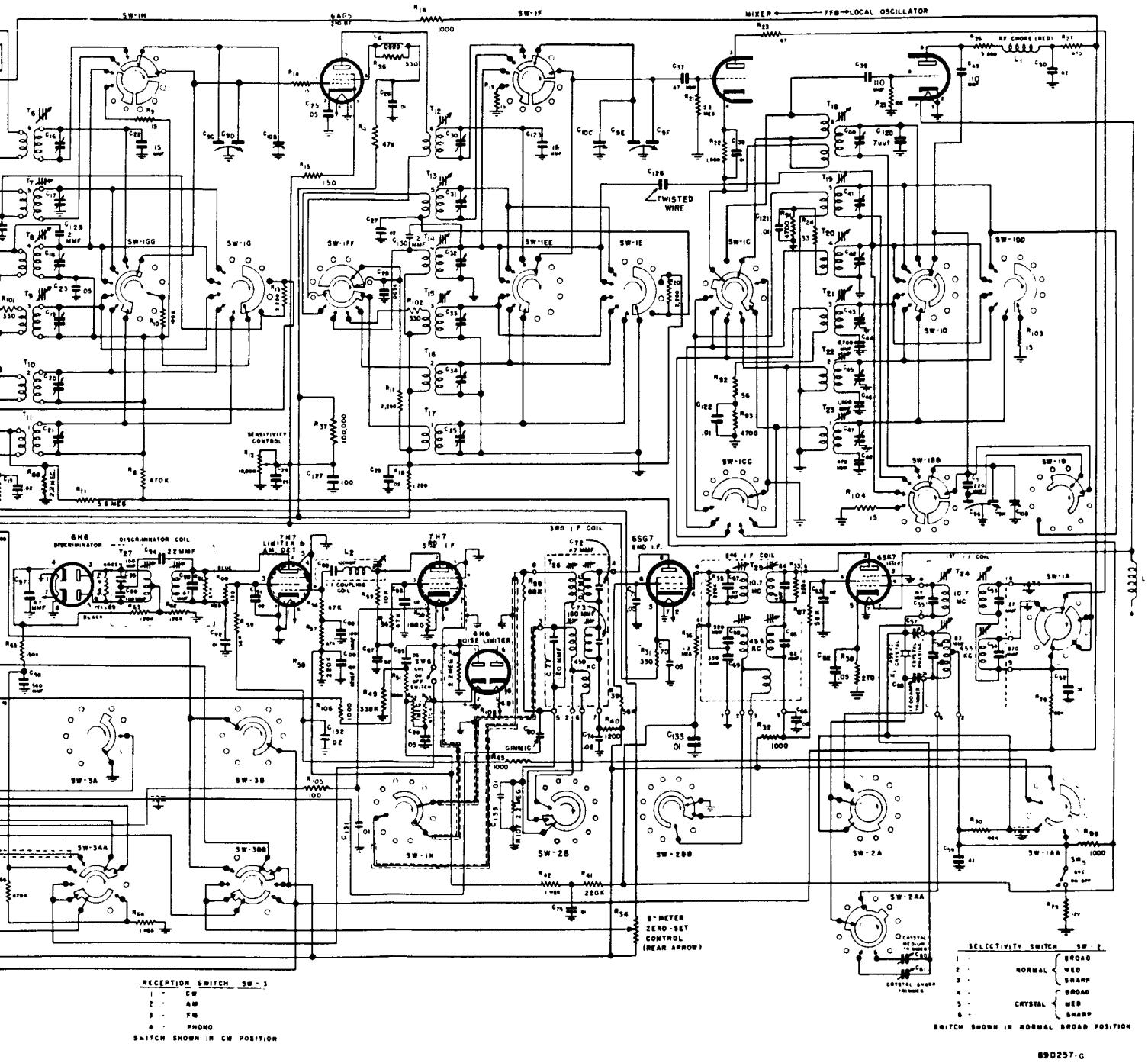


FIG. 4. SCHEMATIC