



MODEL SX-71

**ALIGNMENT PROCEDURE**

It will be necessary to remove the receiver chassis from the cabinet to make all alignment adjustments. The chassis is held in the cabinet by two screws on the bottom rear and by the flanges on the side and bottom. The following control settings are to be set before alignment: TONE control at maximum. SENSITIVITY control at maximum. VOLUME control at maximum. NOISE LIMITER switch at OFF. RECEIVE/STANDBY switch at RECEIVE.

**I-F ALIGNMENT**

Step	Signal Gen. Coupling	Signal Gen. Frequency	Receiver Control Settings	Receiver Dial Set	Adjust	Remarks
1	Connect gen. to stator of gang, mixer sect.	455 KC Unmodulated	BAND SELECTOR at 2. RECEPTION switch at BROAD CRYSTAL. BFO switch at BFO.	Both dials set at 50 on the logging scale		Remove CW PITCH control knob and set shaft for zero beat. Replace knob with the zero at the index line.
2	Same as step 1.	Same as step 1.	Adjust CW-PITCH for a 1000 cycle note. Other controls same as step 1.	Same as step 1.	U	While turning the slug very slowly in one direction, "rock" the signal generator. As the adjustment passes thru the response of the crystal filter, the output goes thru a maximum, dips down, and starts going up again. The correct setting of this slug is in the center of the observed dip. A swishing note, in contrast to the sharp crystal tone will be apparent when the correct adjustment has been reached.
3	Same as step 1.	Same as step 1.	RECEPTION switch at SHARP CRYSTAL. Other controls same as step 1.	Same as step 1.		Set the generator frequency for maximum output on the crystal frequency.
4	Same as step 1.	Same as step 3. Modulated	RECEPTION switch at NORMAL I.F. BFO switch at OFF. Other controls same as step 1.	Same as step 1.	V W X Y Z (1) (2)	Maximum output Maximum output Maximum output Maximum output Maximum output Maximum output Repeat above until maximum gain is obtained.

**F-M ALIGNMENT**

5	Same as step 1.	Same as step 3. Increase output to approx. 1000 microvolts.	RECEPTION switch at NBFM. Other controls same as step 1.	Same as step 1.	(3)	Set up circuit shown in Fig. 2. Until vacuum tube voltmeter shows zero voltage.
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**I-F ALIGNMENT**

6	Same as step 1.	2.075 MC Modulated	RECEPTION switch at NORMAL I.F. BAND SELECTOR at 4.	Same as step 1.	(4) (5) (6)	Until a signal is heard. For maximum output. For maximum output. Repeat until the maximum output is obtained.
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**R-F ALIGNMENT**

Leave BANDSPREAD dial at 100 for all steps. The following adjustments can be made without removing the chassis from the cabinet.

1	Connect the high side of the gen. thru a 300 ohm resistor to term. A1 of the ant. term. strip. Connect a jumper between A2 & G. Use just enough gain to obtain a 500 milliwatt audio output level.	1500 KC 600 KC 1500 KC	BAND SELECTOR at 1. RECEPTION switch at NORMAL I.F. BFO switch at BFO	1500 KC 600 KC 1500 KC	A(osc.trim) B C D(osc.pad) A B Repeat	Until a signal is heard. For maximum output. For maximum output. Until a signal is heard. For maximum output. For maximum output Until maximum output is obtained.
2	Same as step 1	4 MC	BAND SELECTOR at 2. Other controls as in step 1.	4 MC	E(osc.trim) F G E F G	Until a signal is heard. For maximum output For maximum output For maximum output For maximum output For maximum output Repeat until maximum output is obtained
3	Same as step 1.	12 MC 5.2 MC 12 MC	BAND SELECTOR at 3. Other controls as in step 1.	12 MC 5.2 MC 12 MC	H(osc.trim) I H J K	Until a signal is heard Until a signal is heard For maximum output. ("Rock" the gang) For maximum output. ("Rock" the gang) For maximum output. ("Rock" the gang) Repeat until maximum results are obtained.
4	Same as step 1	30 MC 14 MC	BAND SELECTOR at 4. Other controls as in step 1.	30 MC 14 MC	L(osc.trim) M (slug) N O L P Q	Until a signal is heard. Until a signal is heard. For maximum output. ("Rock" the gang) For maximum output. ("Rock" the gang) Repeat until maximum results are obtained.
5	Same as step 1.	54 MC	BAND SELECTOR at 5. Other controls as in step 1.	100 on logging scale.	R(osc.trim) S T	Until a signal is heard. For maximum output. ("Rock" the gang) For maximum output. ("Rock" the gang) Repeat until maximum results are obtained.

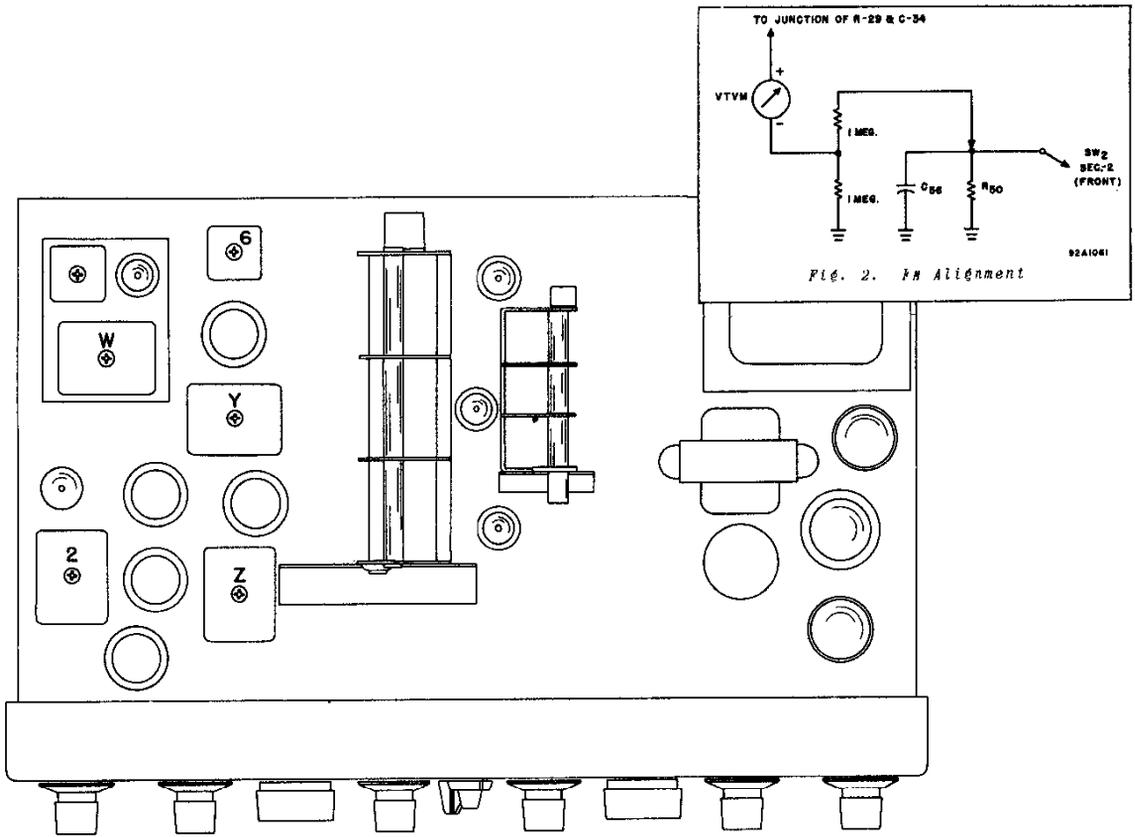


Fig. 3. Alignment adjustments, top view

92D964

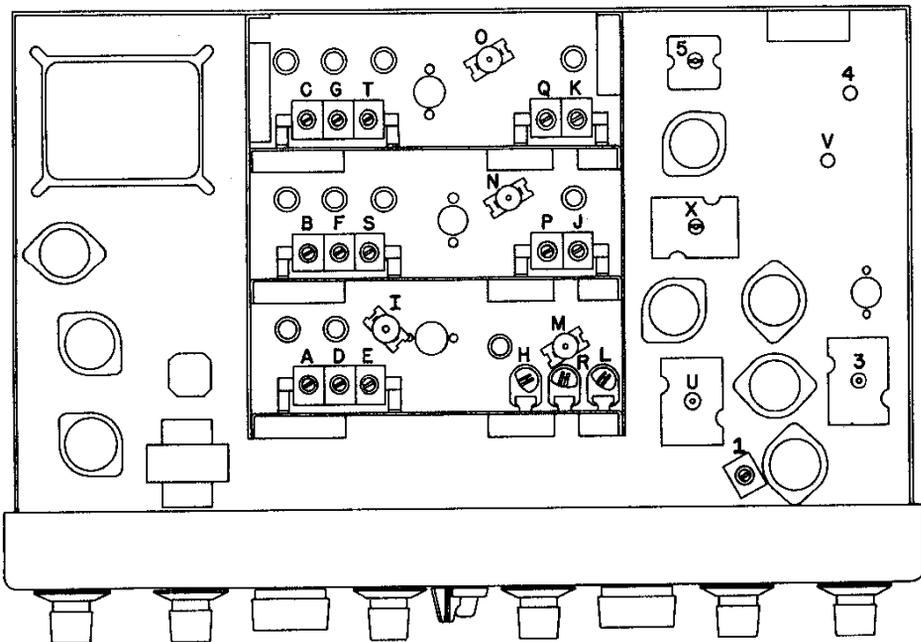


Fig. 4. Alignment adjustments, bottom view

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MODEL SX-71

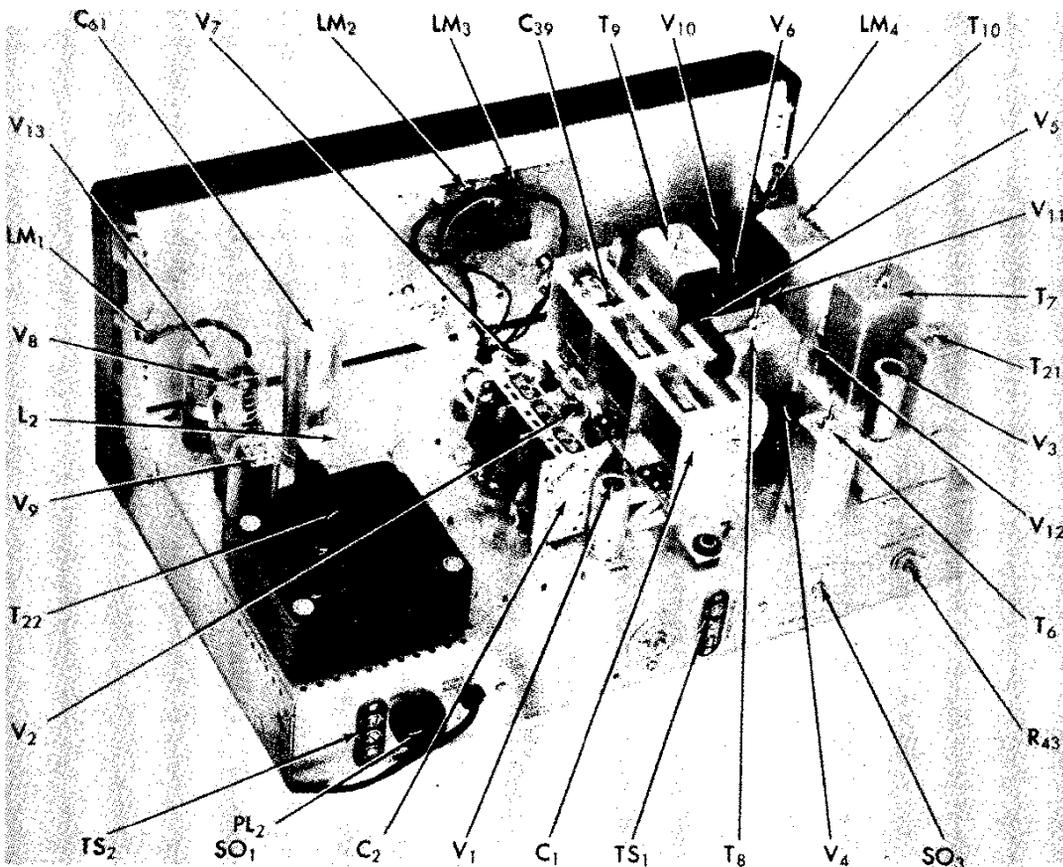


Fig. 5. Component locations, top view

92X966

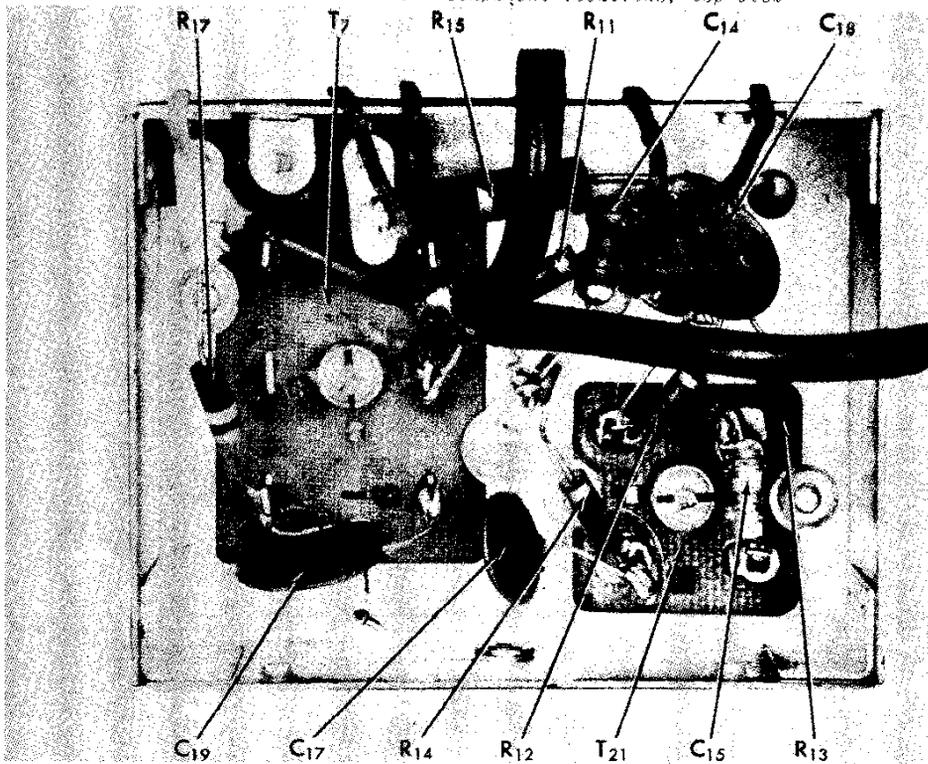


Fig. 6. Component locations, bottom view second converter unit

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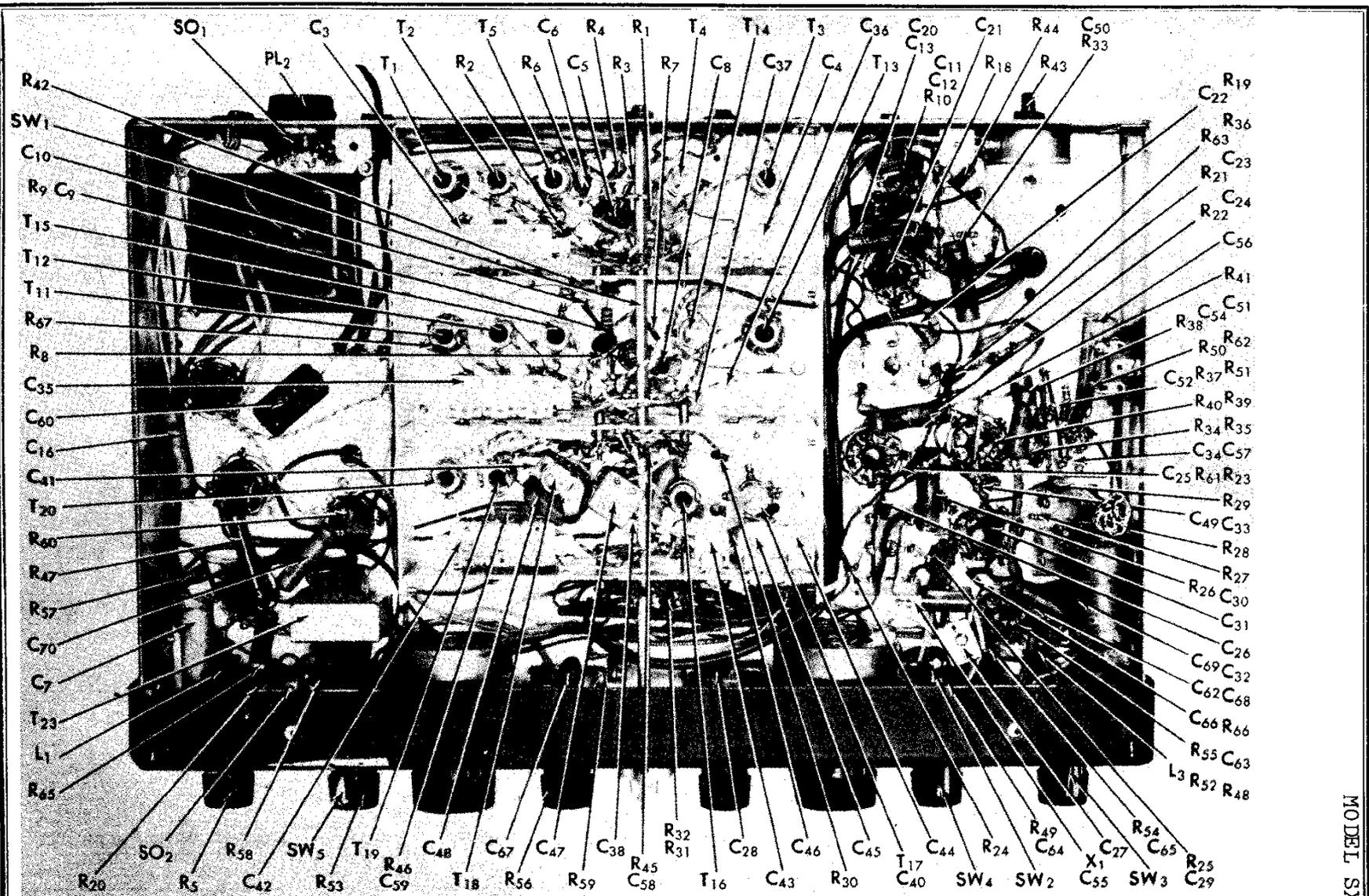
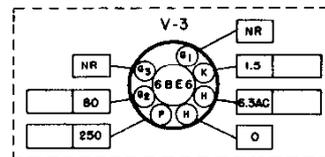
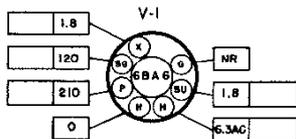


Fig. 7. Component locations, bottom view

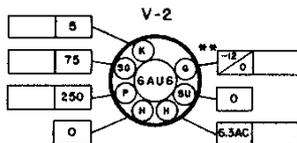
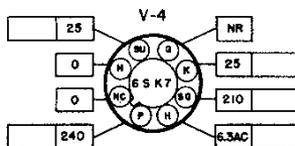
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FRONT PANEL CONTROL SETTINGS UNLESS OTHERWISE NOTED

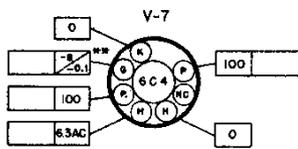
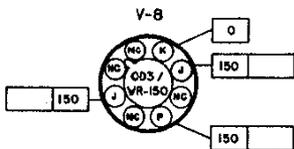
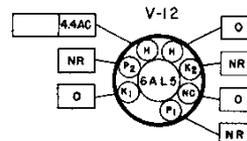
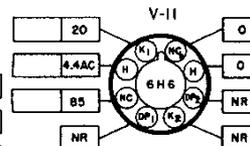
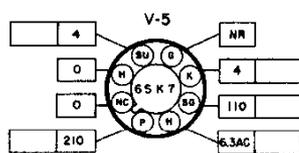
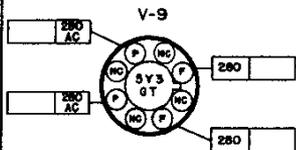
B.F.O. ....	OFF
RECEPTION .....	NOR. I.F.
NOISE LIMITER .....	ON
MAIN TUNING .....	LOW FREQ. END OF DIAL
BAND SPREAD .....	LOW FREQ. END OF DIAL
BAND SELECTOR .....	BAND 1
TONE .....	CCW
VOLUME .....	CCW (SWITCH ON)
RECEIVE / STANDBY .....	RECEIVE
SENSITIVITY .....	CW



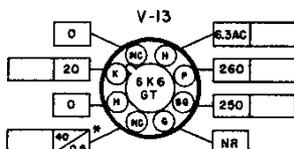
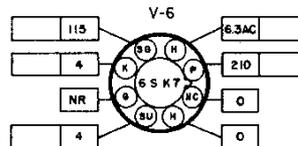
VOLTAGES SHOWN FOR V-3 WERE MEASURED WITH BANDSWITCH IN POSITIONS 3, 4 AND 5. VOLTAGE AT  $\phi_2$  IS ZERO ON BANDS 1 AND 2.



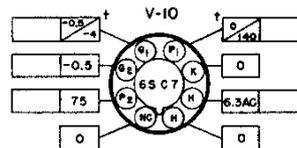
\*\* NOTE - MAX./MIN. GRID VOLTAGE VARIES WITH SETTING OF MAIN TUNING GANG AND BANDSWITCH.



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\* SENSITIVITY CONTROL CCW/CW.



† B.F.O. SWITCH OFF/ON

NOTES-

1. SOCKET VIEWS ARE BOTTOM VIEWS.
2. ALL VOLTAGES ARE MEASURED BETWEEN TUBE SOCKET TERMINALS AND GROUND WITH ZERO SIGNAL INPUT.
3. LINE VOLTAGE 117 V. AC.
4. ALL VOLTAGES SHOWN ARE DC UNLESS OTHERWISE SPECIFIED.
5. DC VOLTAGES SHOWN WERE MEASURED WITH AN ELECTRONIC VOLTMETER.
6. "NC" - NO CONNECTION, VOLTAGE SHOWN FOR THIS TERMINAL ONLY WHEN TERMINAL IS USED AS A TIE LUG.
7. "NR" - NOT READABLE, VOLTAGES MEASURED AT THESE TERMINALS GENERALLY MEANINGLESS.
8. "CW" - CLOCKWISE. "CCW" - COUNTER-CLOCKWISE.
9.  SPACE PROVIDED FOR SERVICE METER READINGS.

FRONT PANEL

92D983

Fig. 9. Tube socket voltage chart

**SERVICE PARTS LIST**

Ref. No.	Description	Manufacturer's Part Number	Ref. No.	Description	Manufacturer's Part Number
<b>CONDENSERS</b>			<b>RESISTORS (Cont.)</b>		
C-1	Capacitor, MAIN TUNING (3 section)	48D209	R-9	330,000 ohms 1/2 watt, carbon	23X20X334K
C-2	Capacitor, BANDSPREAD (3 section)	48C210	R-10, 24,	3300 ohms 1/2 watt, carbon	23X20X332K
C-3	Trimmer Ass'y, antenna stage (Bands 1, 2 & 5)	44B381	28,42		
C-4	Trimmer Ass'y, antenna stage (Bands 3 & 4)	44B379	R-11	220 ohms 1/2 watt, carbon	23X20X221K
C-5,33,34,	220 mmf. 500 V., ceramic	47B20221K5	R-12,45,52	22,000 ohms 1/2 watt, carbon	23X20X223K
52,57,			R-14,48	150 ohms 1/2 watt, carbon	23X20X151K
63,68			R-15,46,60	10,000 ohms 1 watt, carbon	23X30X103K
C-6,10,19,	2 x 4,000 mmf. 450 V., ceramic	47A218	R-17,21,25,	100,000 ohms 1/2 watt, carbon	23X20X104K
67			49,55		
C-7	.25 mfd. 200 V., tubular	46AT254J	R-18,22,26	270 ohms 1/2 watt, carbon	23X20X271K
C-8,14,38,	100 mmf. 500 V., ceramic	47X20UJ101K	R-19,27	33,000 ohms 1/2 watt, carbon	23X20X333K
41,58			R-20	47,000 ohms 1 watt, carbon	23X30X473K
C-9,12,17,	5,000 mmf. 450 V., ceramic	47A168	R-23	6800 ohms 1/2 watt, carbon	23X20X682K
18,21,22,			R-29	56,000 ohms 1/2 watt, carbon	23X20X563K
23,25,26,			R-31	680 ohms 1/2 watt, carbon	23X20X681K
31,64,65,			R-32,33	2700 ohms 1/2 watt, carbon	23X20X272K
**C-11,13	300 mmf. 500 V., mica	47X20B301J	R-34,35,40	470,000 ohms 1/2 watt, carbon	23X20X474K
C-15	47 mmf. 500 V., ceramic	47X20UK470K	R-36	180,000 ohms 1/2 watt, carbon	23X20X182K
C-16,20,24,	.05 mfd. 400 V., tubular	46AW503J	R-37	82,000 ohms 1/2 watt, carbon	23X20X823K
30,50			R-38,50,59	220,000 ohms 1/2 watt, carbon	23X20X224K
C-27	Trimmer, adjustable	44A047	R-43	Resistor, variable, 500 ohms, S-METER ADJUSTMENT	25C022
C-28	Capacitor, variable CRYSTAL PHASING	48A182	R-47	Resistor, 2500 ohms 10 watts, wirewound	24BG252D
C-29	33 mmf. 500 V., mica	47X20A330K	R-51	39,000 ohms 1/2 watt, carbon	23X20X393K
C-32	.25 mfd. 600 V., tubular	46AX254J	R-53	Resistor, variable, 500,000 ohms, VOLUME control	25B604
C-35	Trimmer Ass'y, mixer stage (Bands 1, 2 & 5)	44B382	R-54	15 megohms 1/2 watt, carbon	23X20X156K
C-36	Trimmer Ass'y, mixer stage (Bands 3 & 4)	44B380	R-56	Resistor, variable, 500,000 ohms, TONE control	25B589
C-37	15 mmf. 500 V., ceramic	47X20UJ150K	R-57,58	560 ohms 1 watt, carbon	23X30X561K
C-39	2.2 mmf. 450 V., ceramic	47A160-4	R-61,62	6.8 ohms 1 watt, carbon	23X30X068K
C-40,49	25 mmf. 500 V., ceramic	47X20UK250K	R-63	27,000 ohms 1/2 watt, carbon	23X20X273K
C-42	Trimmer Ass'y, oscillator stage (Bands 1 & 2)	44B383	R-65	47,000 ohms 2 watts, carbon	23X40X473K
C-43,44,45	Trimmer Ass'y, oscillator stage (Bands 3, 4, & 5)	44A378	R-67	100 ohms 1/2 watt, carbon	23X20X101K
**C-46	2200 mmf. 500 V., mica	47X30D222J	<b>TRANSFORMERS AND COILS</b>		
**C-47	910 mmf. 500 V., mica	47X30D911J	T-1	Transformer, antenna stage, band 1	51B1088
**C-48	1500 mmf. 500 V., mica	47X30D152G	T-2	Transformer, antenna stage, band 2	51B1089
C-51	.1 mfd. 200 V., tubular	46AU104J	T-3	Transformer, antenna stage, band 3	51B1090
C-54	.02 mfd. 200 V., tubular	46AU203J	T-4	Transformer, antenna stage, band 4	51B1091
C-55	10 mmf. 500 V., ceramic	47X20UK100K	T-5	Transformer, antenna stage, band 5	51B1092
C-56	1 mfd. 50 V., electrolytic	45A163	T-6	Transformer, 1st IF (2.075 MC)	50C414
**C-59	Capacitor, temperature compensator	44A158	T-7,8	Transformer, 1st and 2nd IF (455 KC)	50C416
**C-60	.01 mfd. 600 V., moulded	46X35X103M	T-9	Transformer, 3rd IF (455 KC)	50C415
C-61	60-20 mfd. 450 V., & 20 mfd. 400 V., electrolytic	45B113	T-10	Transformer, FM detector	50C418
C-62,70	.01 mfd. 600 V., tubular	46AY103J	T-11	Transformer, mixer stage, band 1	51B1093
C-66	1 mmf. 450 V., ceramic	47A160-2	T-12	Transformer, mixer stage, band 2	51B1094
C-69	470 mmf. 500 V., mica	47X20B471J	T-13	Transformer, mixer stage, band 3	51B1095
<b>RESISTORS</b>			T-14	Transformer, mixer stage, band 4	51B1096
R-1,30	10 ohms 1/2 watt, carbon	23X20X100K	T-15	Transformer, mixer stage, band 5	51B1097
R-2,13	15 ohms 1/2 watt, carbon	23X20X150K	T-16	Transformer, osc. stage, band 5	51B1160
R-3,41	1 megohm 1/2 watt, carbon	23X20X105K	T-17	Transformer, osc. stage, band 4	51B1101
R-4,44	82 ohms 1/2 watt, carbon	23X20X820K			
R-5	Resistor, variable, 10,000 ohms, SENSITIVITY control	25B582			
R-6	8200 ohms 1/2 watt, carbon	23X20X822K			
R-7,39,66	2.2 megohms 1/2 watt, carbon	23X20X225K			
R-8	2200 ohms 1/2 watt, carbon	23X20X222K			

\* Used on universal model SX-71U only.  
 \*\* Use exact replacement part only.

MODEL SX-71

Ref. No.	Description	Manufacturer's Part Number	Ref. No.	Description	Manufacturer's Part Number
<b>TRANSFORMERS AND COILS (Cont.)</b>			<b>TUBES, RECTIFIERS AND LAMPS (Cont.)</b>		
T-18	Transformer, osc. stage, band 3	51B1100	V-10	Type 6SC7, 1st audio amplifier and beat frequency oscillator	90X6SC7
T-19	Transformer, osc. stage, band 2	51B1099	V-11	Type 6H6, automatic volume control and automatic noise limiter	90X6H6
T-20	Transformer, osc. stage, band 1	51B1098	V-12	Type 6AL5, detector	90X6AL5
T-21	Transformer, 2.53 MC osc. stage, bands 3, 4 and 5	50C448	V-13	Type 6K6GT, audio output	90X6K6GT
T-22	Transformer, power	52C174	LM-2,3	Lamp, carrier level meter light GE #44	39A003
*T-22	Transformer, power (Universal)	52C175	LM-1,4	Lamp, main dial scale light GE #47	39A004
T-23	Transformer, output	55B120			
L-1	Choke, RF	53A107			
L-2	Choke, filter	56B107			
L-3	Coil, BFO	54B039			
<b>SWITCHES</b>			<b>MISCELLANEOUS</b>		
SW-1	Switch, BAND SELECTOR Section 1 (Antenna stage) and Section 2 (Mixer stage)	62B051	TS-1	Terminal strip, antenna	88A032
	Section 3 (Osc. grid)	62B049	TS-2	Terminal strip, speaker	88B578
	Section 4 (Osc. plate)	62B050		Escutcheon, meter	7B124
	Section 5 (Converter plate and bias)	62B048	M-1	Meter, carrier level	82B166
SW-2	Switch, RECEPTION	60B343		Plate, dial drive mounting	63B415
SW-3	Switch, BFO-OFF	60A285		Bracket, pulley mounting	67A1140
SW-4	Switch, NOISE LIMITER-OFF	60A138		Pulley, small idler	28A078
SW-5	Switch, RECEIVE-STANDBY	60A139		Pulley, large idler	28A079
				Cord, dial	38A019
				Spring, dial cord	75A173
				Pointer, bandspread and main tuning	82A169
				Scale, dial	83D358
				Window, dial	22C284
				Flywheel, bandspread and main tuning	71A178
				Drum, bandspread and main tuning gang drives	28A080
PL-1	Line Cord	87B1573		Shaft, bandspread and main tuning pulley drives	74A298
PL-2	Plug, AC shorting	35A003		Shaft, bandspread and main tuning pulley drives	74A299
SO-1	Socket, POWER (DC operation)	6B296		Ring, retainer, tuning assembly drive shafts	76A552
SO-2	Jack, PHONES	36A036		Ring, retainer, tuning assembly pulley shafts	76A551
SO-3	Jack, PHONO	36A041		Washer, spring	4A043
	Socket, octal (tube)	6B296		Coupling, bandspread gang shaft	29A126
	Socket, octal (tube) with center shield	6A315		Coupling, main tuning gang shaft	29A123
	Socket, miniature	6A347		Shaft and index plate, band switch	74B267
	Socket, tuning dial scale lamps	86B092		Collar, band switch	77A055
	Socket, carrier lever meter dial lamps	86B091		Lock, line cord	76A397
				Knob, BANDSPREAD and MAIN TUNING	15A047
				Knob, CRYSTAL PHASING	15A087
				Knob, CW PITCH	15A089
				Knob, POWER-VOLUME, TONE and SENSITIVITY	15A097
				Knob, BAND SELECTOR	15B209
				Knob, RECEPTION	15A212
				Foot, rubber	16A007
				Crystal, 455 KC	19A123
			X-1		

\* Used on universal model SX-71U Only.

**REPLACING LAMPS**

Refer to Fig. 8 for the location of the dial lamps in the receiver. To gain access to the defective lamps, remove the chassis from the cabinet by removing the screws on the sides and bottom. The two end lamps are fastened by screws to an angle bracket. Remove the screws and change the lamp using a type Mazda #47 (brown bead) or equivalent. To change the two dial lamps in the center, remove the screws holding the sockets in place and replace the lamps using a type Mazda #44 (blue bead) or equivalent.

**"S" METER ADJUSTMENT**

**MECHANICAL:**

Turn off the receiver.

Immediately below the dial face of the "S" meter is a round metal disc. This disc is pivoted so that it may be moved to one side. Doing this discloses the pivot adjustment screw of the "S" meter. Use a screw driver and carefully rotate the screw in either direction until the needle indicates zero.

**ELECTRICAL ADJUSTMENT:**

Turn the receiver on.

Set the RECEIVE/STANDBY switch at RECEIVE.

Set BFO at OFF

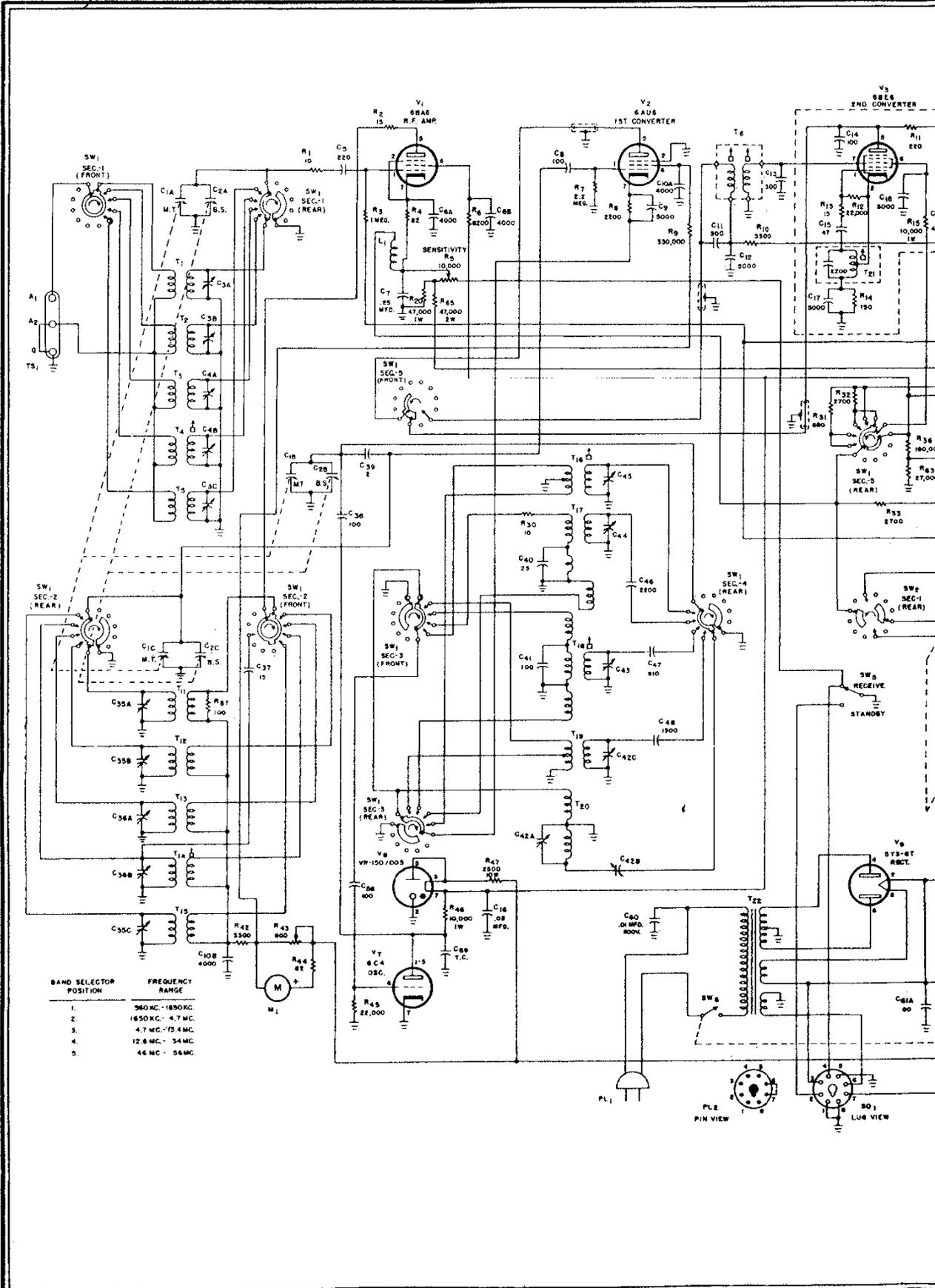
Set the SENSITIVITY control at maximum.

Set the NOISE-LIMITER at OFF.

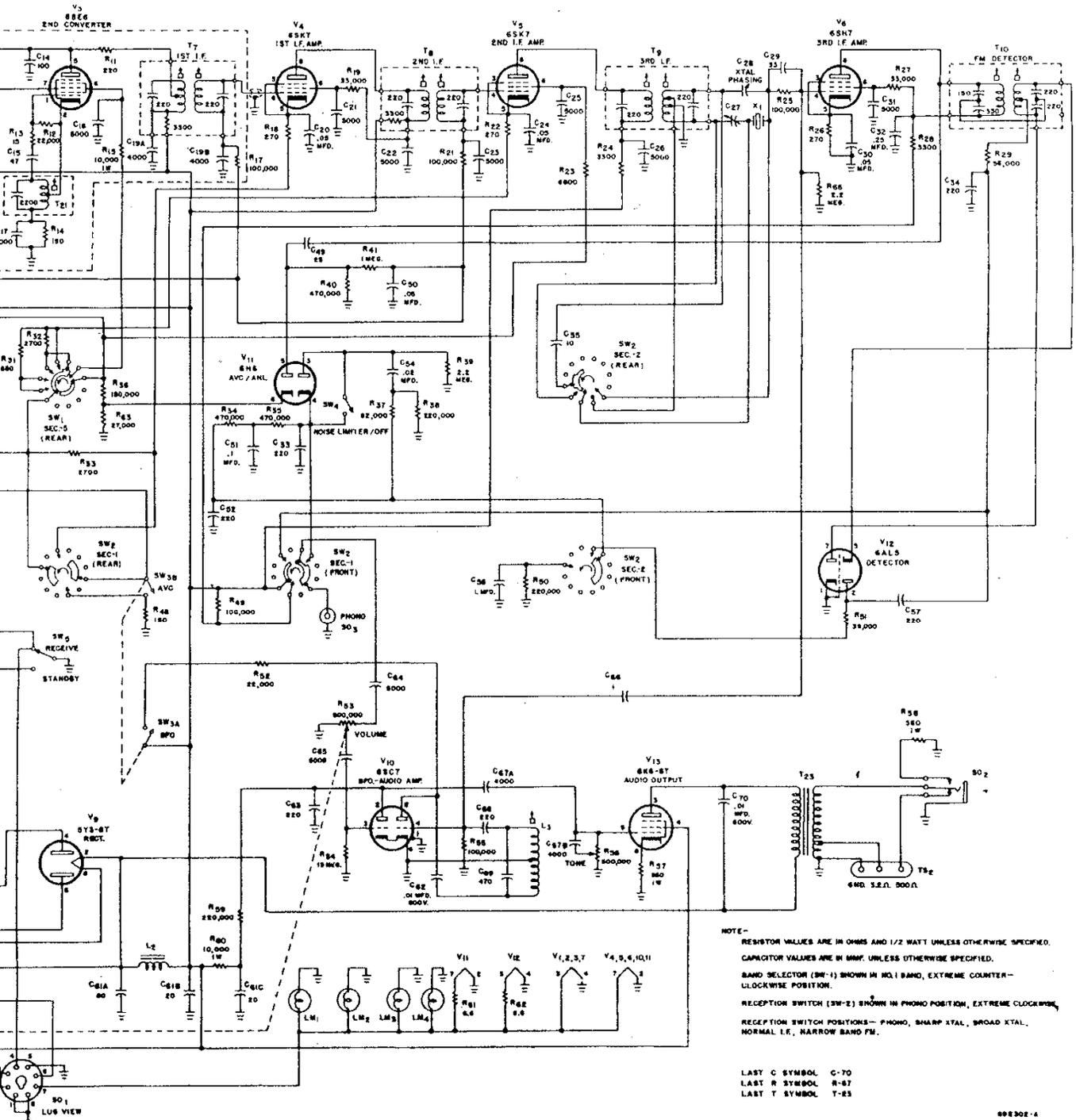
Short the antenna terminals to ground.

The "S" meter adjustment control is located on the left rear apron of the chassis. Turn this control slowly until the needle in the "S" meter indicates zero.

21-2930



BAND SELECTOR POSITION	FREQUENCY RANGE
1.	360 KC. - 1850 KC.
2.	1650 KC. - 4.7 MC.
3.	4.7 MC. - 75.4 MC.
4.	12.8 MC. - 34 MC.
5.	44 MC. - 56 MC.



NOTE—  
 RESISTOR VALUES ARE IN OHMS AND 1/2 WATT UNLESS OTHERWISE SPECIFIED.  
 CAPACITOR VALUES ARE IN MMF. UNLESS OTHERWISE SPECIFIED.  
 BAND SELECTOR (SW-1) SHOWN IN NO.1 BAND, EXTREME COUNTER—  
 CLOCKWISE POSITION.  
 RECEPTION SWITCH (SW-2) SHOWN IN PHONO POSITION, EXTREME CLOCKWISE.  
 RECEPTION SWITCH POSITIONS— PHONO, SHARP XTAL., BROAD XTAL.,  
 NORMAL I.F., NARROW BAND FM.

LAST C SYMBOL C-70  
 LAST R SYMBOL R-57  
 LAST T SYMBOL T-25

663302-4

Fig. 10. Schematic diagram