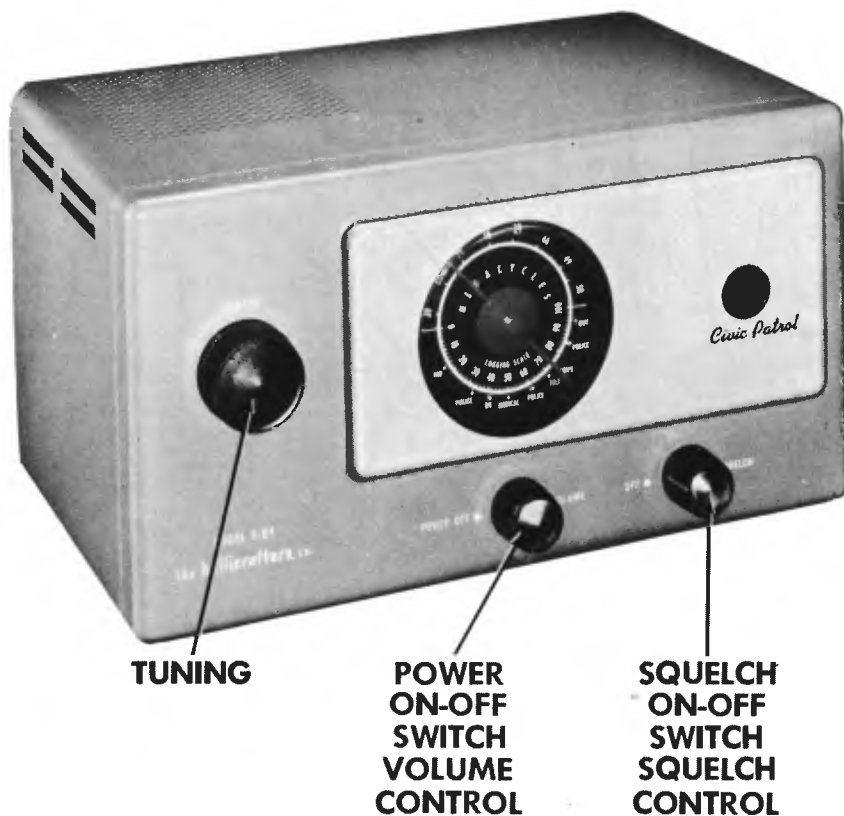




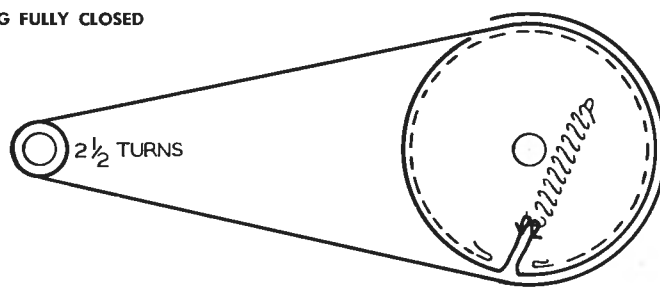
**HALLICTRAFTERS
MODEL S-94**



**HALLICTRAFTERS
MODEL S-94**

TRADE NAME	Hallicrafters Model S-94 (Ch. Mark 1A)
MANUFACTURER	Hallicrafters Co., 4401 W. 5th. Ave., Chicago 24, Illinois
TYPE SET	AC-DC Operated FM Superheterodyne Receiver
TUBES (Eight)	Types 6BH6 RF Amp., 12AT7 Mixer-Osc., 12BA6 1st. IF Amp., 12BA6 2nd. IF Amp., 12AL5 Ratio Det., 6BH6 AF Amp., 50L6 Output, 12AU7 Squelch
POWER SUPPLY	105-125 Volts AC-DC
TUNING RANGE-	FREQ. MOD. 30MC-50MC
	RATING .35 Amp. @ 117 Volts AC

TUNING GANG FULLY CLOSED



DIAL CORD STRINGING

HOWARD W. SAMS & CO., INC. • Indianapolis 5, Indiana

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CHASSIS—TOP VIEW

ITEM No.	USE	REPLACEMENT DATA		NOTES
		Hallcrafters PART No.	STANDARD REPLACEMENT	
V1	RF Amplifier	6BH6	6BH6	
V2	Mixer Osc.	12AU7	12AU7	
V3	1st AF Amp.	12BA6	12BA6	
V4	2nd AF Amp.	12BA6	12BA6	
V5	Ratio Det.	12AL5	12AL5	
V6	AF Amp.	6BH6	6BH6	
V7	Output	50L6GT	50L6GT	
V6	Squelch	12AU7	12AU7	

ELECTROLYTIC CAPACITORS

ITEM No.	RATING		REPLACEMENT DATA					SANGAMO PART No.	SPRAGUE PART No.
	CAP	VOLT	Ballastres PART No.	AEROVOX PART No.	CORNELL PART No.	MALLORY PART No.	PYRAMID PART No.		
C1A	50	150	45B091		BBRQ5515C	WQ250	C1DB-442	FMT-333	P2199
B	40	150					TD-60-150	FM-1540	TVA-1413
D	20	25							
C2	50	150	45C097		BR1015	TC 42	TD-10-150	FM-1512	TVA-1406
C3	30	150	45B192		BBR2-50	TC302	TD-2-50	MMT-0505	TVA-1301
C3 2	2								

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING		Hallameters	REPLACEMENT DATA							NOTES
	CAP.	VOLT		AEROVOX PART No.	CENTRALAB	CORNELL-DUBILIER PART No.	ERIE PART No.	MALLOY PART No.	SPRAGUE PART No.		
C4	330		47CA25331K/D	BPD-005	DD-502	K080	61L-005	DC-525	5HK-D5	Note 1 Note 1	
C5	330		47CA25431K/D	BPD-005	DD-502	K080	61L-005	DC-525	5HK-D5		
C6	5000		47A168	BPD-005	DD-502	TN15	7N50K-500	DC-525	5HK-D5		
C7	5000		47A168	N750-S150	TCN-50	TN15	N750K-500	DC-525	5HK-D5		
C8	50		47A168	N750-S14.7	TCN-4R7	TZ07	N750K-4R7	DC-525	5HK-D5		
C9	4.7		47A168-6	N750-S1100	TCN-100	TN22	N750L-101	DC-525	5HK-D5		
C10	100		47X25UK01K	N750-S1100	822-BN	TZ5A-7	TS2A-7	DC-525	5HK-D5		
C11	7-85		44A125	BPD-005	DD-502	K080	61L-005	DC-525	5HK-D5		
C12	5000		47A168	BPD-005	DD-502	K080	61L-005	DC-525	5HK-D5		
C13	33		47X25C130J7	N750-S133	TCN-33	TZ18	N750L-330	DC-5433	5TCCB-V47		
C14	5000		47A168	BPD-005	DD-502	K062	81L-01	DC-511	5HK-S1		
C15	10000		47A224	BPD-01	DD-103	K062	81L-01	DC-511	5HK-S1		
C16	5000		47A168	BPD-005	DD-502	K080	61L-005	DC-525	5HK-D5		
C17	5000		47A168	BPD-005	DD-502	K080	61L-005	DC-525	5HK-D5		
C18	5000		47A168	BPD-005	DD-502	K080	61L-005	DC-525	5HK-D5		
C19	5000		47A168	BPD-005	DD-502	K080	61L-005	DC-525	5HK-D5		
C20	100		47X25UK01K	N750-S1100	TCN-100	TN22	N750L-101	NT-531	5TCCB-V47		
C21	100		47X25UK01K	N750-S1100	TCN-100	TN22	N750L-101	NT-531	5TCCB-V47		
C22	100		47A230	BPD-001	DD-102	K069	801-001	DC-521	5HK-D1		
C23	10000		47A224	BPD-01	DD-103	K062	81L-01	DC-511	5HK-S1		
C24	330		47CA25331K/D	BPD-01	DD-103	K062	61L-01	DC-511	5HK-S1		
C25	330		47CA25331K/D	BPD-01	DD-103	K062	61L-01	DC-511	5HK-S1		
C26	10000		47A224	BPD-01	DD-103	K062	61L-01	DC-511	5HK-S1		
C27	10000		47A224	BPD-01	DD-103	K062	61L-01	DC-511	5HK-S1		
C28	5000		47A166	BPD-005	DD-502	K080	61L-005	DC-525	5HK-D5		
C29	5000		47A168	BPD-005	DD-502	K080	61L-005	DC-525	5HK-D5		
C30	5000		47A168	BPD-005	DD-502	K080	61L-005	DC-525	5HK-D5		
C31	5000		47A168	BPD-005	DD-502	K080	61L-005	DC-525	5HK-D5		
C32	5000		47A166	BPD-005	DD-502	K080	61L-005	DC-525	5HK-D5		
C33	5000		47A166	BPD-005	DD-502	K080	61L-005	DC-525	5HK-D5		
C34	1	800	46B44731L6	P668N-1	DF-104	CUB8P1	81L-005	PT001	6TMA-P1		

CONTROLS

Note 1: When C20 is 220 MMF, C21 is not used.

ITEM No.	RATING		REPLACEMENT DATA					INSTALLATION NOTES
	RESIST. ANCE	WATTS	Ballast/raters	CENTRALAS	CLAROSTAT	IRC	MALLORY	
			PART No.	PART No.	PART No.	PART No.	PART No.	
R1A	2Meg	$\frac{1}{2}$	25B1115	AB-76	A47-2Meg-Z	Q13-139	U-55	Volume
B	Shaft		Not Req.	AK-9	RS-2	Not Req.	US-16	Attach to R1A
C	Switch		Not Req.	KB-1	SWE-12	Q14-123	US-24	Attach to R1A
R2A	30K Ω	$\frac{1}{2}$	25B1114	AB-74		Not Req.	US-24	Squidch
B	Shaft		Not Req.	KB-1		Not Req.	US-26	Attach to R2A
R3A	30K Ω	1	25A1113	V-126	A49-750	W-750	R750L	Squidch Range (wire wound)
B	Shaft		Not Req.	PKS-1/4	Not Req.	Not Req.		Attach to R3A

PARTS LIST AND DESCRIPTIONS (Continued)

RESISTORS

ITEM No.	RATING		REPLACEMENT DATA		ITEM No.	RATING		REPLACEMENT DATA		NOTES
	OHMS	WATT	Hallcrafters PART No.	IRC PART No.		OHMS	WATT	Hallcrafters PART No.	IRC PART No.	
R4	10K Ω		23X20X103K	BTS-10K	R17	270K Ω		23X20X274K	BTS-270K	
R5	10K Ω		23X20X103K	BTS-10K	R18	1Meg		23X20X105K	BTS-1Meg	
R6	100 Ω		23X20X101K	BTS-100	R19	470K Ω		23X20X474K	BTS-470K	
R7	10K Ω		23X20X103K	BTS-10K	R20	100 Ω		23X20X101K	BTS-100	
R8	1000 Ω		23X20X102K	BTS-1000	R21	270K Ω		23X20X274K	BTS-270K	
R9	1000 Ω		23X20X102K	BTS-1000	R22	1200 Ω		23X20X122K	BTS-1200	
R10	1000 Ω		23X20X102K	BTS-1000	R23	10K Ω		23X20X103K	BTS-10K	
R11	1000 Ω		23X20X102K	BTS-1000	R24	470 Ω		23X20X471K	BTS-470	
R12	100 Ω		23X20X101K	BTS-100	R25	15 Ω		23X20X150K	BTA-470	
R13	1000 Ω		23X20X102K	BTS-1000	R26	220 Ω		23X40X221K	BW1-270	
R14	100 Ω		23X20X101K	BTS-100	R27	470 Ω		24BW271E	BTS-100	
R15	47K Ω		23X20X473K	BTS-47K	R28	270 Ω		23X20X271K		
R16	2.2Meg		23X20X225K	BTS-2.2Meg		100 Ω		23X20X101K		

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE		REPLACEMENT DATA		ITEM No.	REPLACEMENT DATA		NOTES
	SEC	SEC	Hallcrafters PART No.	Merit PART No.		Thordarson PART No.	Triad PART No.	
T1	2.4K Ω	1.98 Ω	55B127 55A127 ①	A-2002 ②	A-3925 ②	22S52 ②		① Alternate audio output transformer. ② Drill new mounting hole.

SPEAKER

ITEM No.	RATINGS		REPLACEMENT DATA		NOTES
	SIZE	FIELD	Hallcrafters PART No.	QUAM TYPE No.	
SP1	5"	PM	85C120	5A1	226S1

COILS (RF-IF)

ITEM No.	USE	DC RES.		REPLACEMENT DATA		NOTES
		PR1	SEC.	Hallcrafters PART No.	MEISSNER PART No.	
L1	FM Ant. Coil	0 Ω		51A1930		Tapped
L2	FM RF Coil	0 Ω		51A1928		
L3	FM Osc. Coil	0 Ω		51A1828		
L4	F11, Choke	6.1 Ω		53A333	18-1005	4612
L5	1st. FM IF	1 Ω		50C519	16-3487	FM-254
L6	2nd. FM IF	1 Ω		50C517	16-3487	FM-254
L7	Ratio Det.	3.8 Ω		50C518	17-3492	FM-255

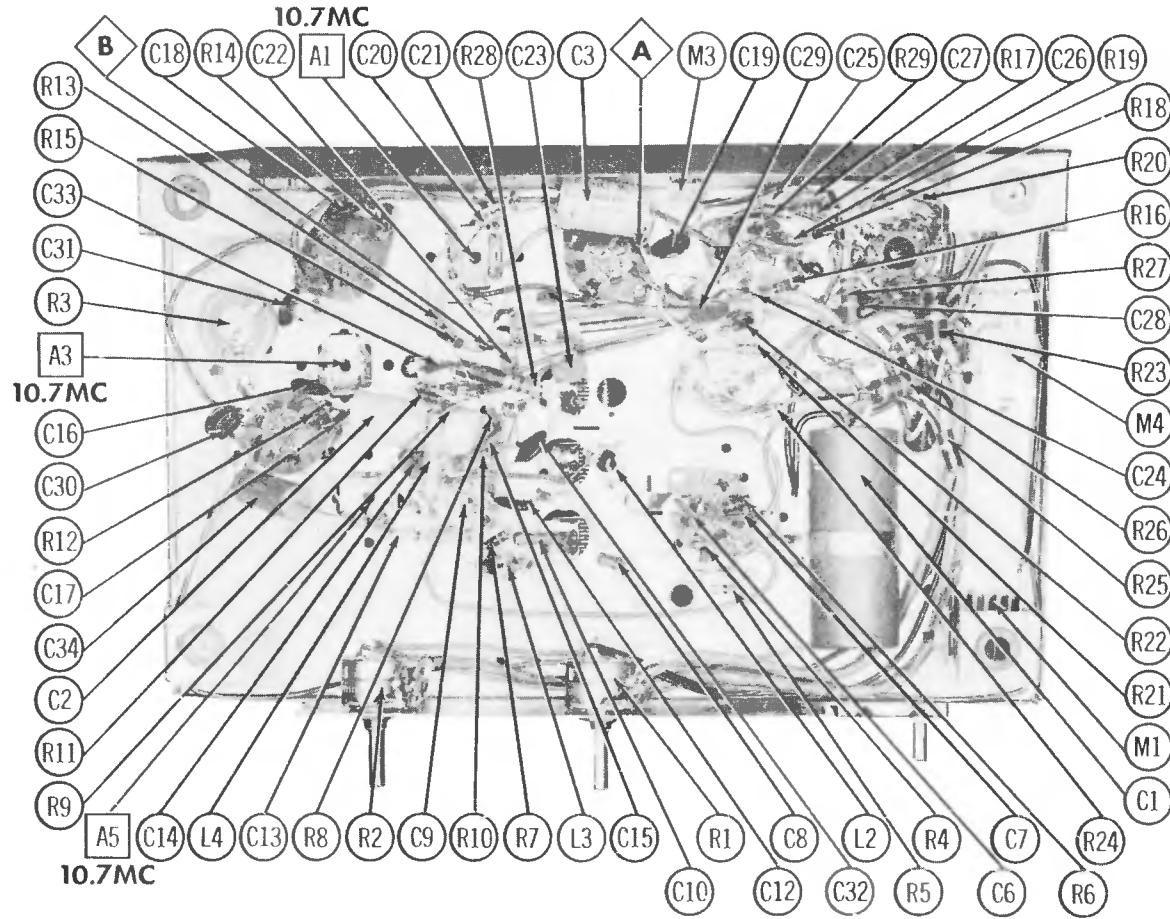
SELENIUM RECTIFIER

ITEM No.	RATING	CURRENT	REPLACEMENT DATA		NOTES
			Hallcrafters PART No.	FEDERAL INTERNATIONAL PART No.	
M1	114ADC		27A158	1005A	RS150

MISCELLANEOUS

ITEM No.	PART NAME	REPLACEMENT DATA		NOTES
		Hallcrafters PART No.	FEDERAL INTERNATIONAL PART No.	
M2	Tuning Gap.	48D348		
M3	Switch	60A243		3 Gang
M4	Relay	21B193		Speaker-phones (SPD T-Slide type)
	Cabinet	40C174		Squelch control
	Knob	15B802		Tuning
	Knob	15B816		On-off-volume & squelch
	Dial	83C510		
	Dial Pointer	82A277		
	Dial Window	22B345		

CHASSIS—BOTTOM VIEW



ALIGNMENT INSTRUCTIONS

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

Squelch control to "off".
To set pointer, turn tuning capacitor fully closed and set pointer to last reference mark at low frequency end of dial.
Use isolation transformer, if available. If not, connect a .01MFD capacitor in series with low side of signal generator and B-.

FM IF ALIGNMENT USING AM SIGNAL GENERATOR AND VTVM

Connect two matched 470K Ω ($\pm 1\%$) resistors in series from point Δ to chassis. Junction of these resistors is alignment point ∇ as shown on schematic.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	CONNECT VTVM	ADJUST	REMARKS
1.	.01MFD	High side to pin 7 (grid) of 12AT7 (V2). Low side to chassis.	10.7MC (Unmod)	Point of non-interference	DC probe to point Δ . Common to chassis.	A1, A2, A3, A4, A5	Adjust for maximum deflection.
2.	"	"	"	"	DC probe to point ∇ . Common to point Δ .	A6	Adjust for zero reading. A positive and negative reading will be obtained on either side of the correct setting.

FM IF ALIGNMENT USING FM SIGNAL GENERATOR AND OSCILLOSCOPE

Use frequency modulated signal with 60% modulation and 450KC sweep. Use 120% sawtooth voltage in scope for horizontal deflection.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	CONNECT SCOPE	ADJUST	REMARKS
1.	.01MFD	High side to pin 7 (grid) of 12AT7 (V2). Low side to chassis.	10.7MC (450KC Swp)	Point of non-interference	Vert. Amp. to point Δ . Low side to chassis.	A1, A2, A3, A4, A5	Adjust for curve of maximum amplitude and symmetry similar to Fig. 1.
2.	"	"	"	"	Vert. Amp. to point ∇ . Low side to point Δ .	A6	Adjust so that 10.7MC occurs at center of crossover lines similar to Fig. 2. SLIGHTLY retouch A5 for maximum amplitude and straightness of crossover lines.

FM RF ALIGNMENT

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	CONNECT VTVM	ADJUST	REMARKS
3.	270 Ω Carbon Resistor	High side thru 270 Ω to terminal "A" antenna. Low side to terminal "G".	49MC	49MC	DC probe to point Δ . Common to chassis.	A7, A8, A9	Adjust in order given for maximum deflection. Rock tuning gang while adjusting A9.
4.	"	"	33MC	33MC	"		Check for calibration and tracking. Not necessary unless osc. coil has been replaced.

SQUELCH RANGE CONTROL ADJUSTMENT

The squelch range control has been preset, but after replacement of squelch tube, relay or components it should be reset
Set volume control to maximum.
Squelch range control fully clockwise.
Squelch control (on front of set) fully counter clockwise (but not "off").
Tune to noisy part of band where there is no signal.
Slowly rotate squelch range control (counter clockwise) until noise is just squelched.
Rotate control 65 $^{\circ}$ (counter clockwise) beyond point of squelch.

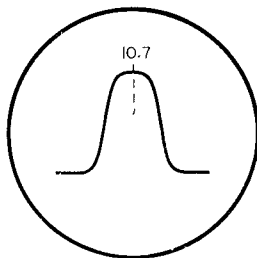


FIG. 1

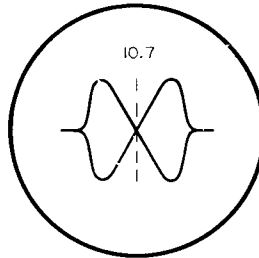
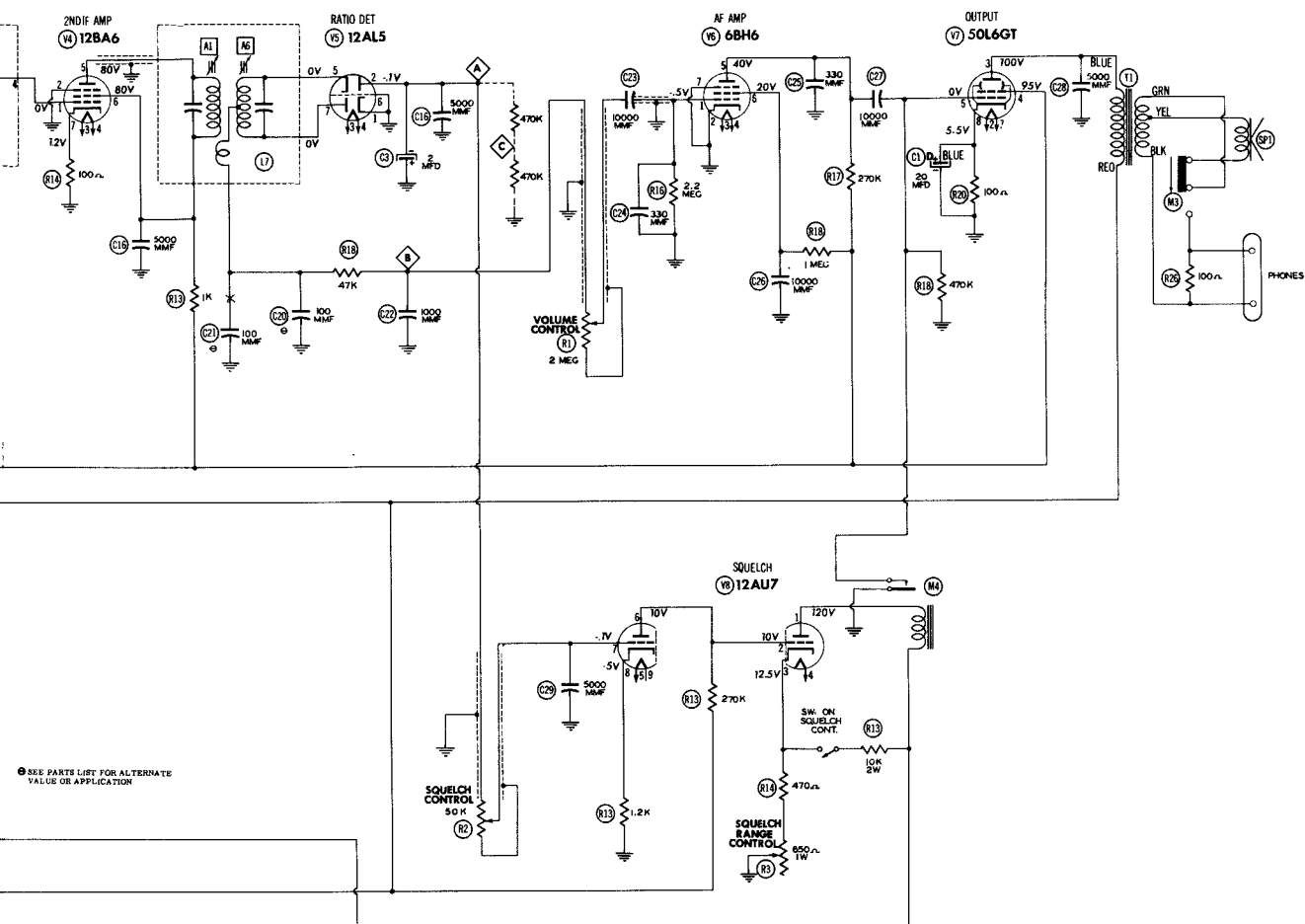
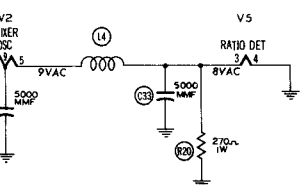


FIG. 2



SEE PARTS LIST FOR ALTERNATE
VALUES OR APPLICATION



RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V 1	6BH6	0 Ω	100 Ω	37 Ω	31 Ω	†20K Ω	†10K Ω	0 Ω		
V 2	12AT7	†1.6K Ω	10K Ω	0 Ω	31 Ω	19 Ω	†1.6K Ω	0 Ω	1K Ω	25 Ω
V 3	12BA6	1 Ω	0 Ω	79 Ω	67 Ω	†1.6K Ω	†1.6K Ω	100 Ω		
V 4	12BA6	1 Ω	0 Ω	55 Ω	67 Ω	†1.6K Ω	†1.6K Ω	100 Ω		
V 5	12AL5	0 Ω	50K Ω	13 Ω	0 Ω	2Meg	0 Ω	2Meg		
V 6	6BH6	2.2Meg	0 Ω	55 Ω	49 Ω	†270K Ω	†1Meg	0 Ω		
V 7	50L6GT	TP	129 Ω	†400 Ω	†700 Ω	0 Ω	TP	79 Ω	100 Ω	
V 8	12AU7	†1K Ω	†270K Ω	†1.1K Ω	49 Ω	37 Ω	†270K Ω	††0 Ω	1.2K Ω	43 Ω

ALL MEASUREMENTS TAKEN WITH SQUELCH RANGE CONTROL AT MAXIMUM CLOCKWISE POSITION AND SQUELCH CONTROL SET AT MAXIMUM COUNTER CLOCKWISE POSITION UNLESS DESIGNATED OTHERWISE.

† MEASURED FROM OUTPUT OF M1.

† SQUELCH RANGE CONTROL AT MAXIMUM COUNTER CLOCKWISE POSITION.

†† SQUELCH CONTROL AT MAXIMUM CLOCKWISE POSITION.