

WESTINGHOUSE MODELS H-617T12, H-618T16,  
H-619T12, U, H-620K16 (Ch. V-2150-176, U, V-2150-186)

WESTINGHOUSE MODEL H-619T12

TRADE NAME	Westinghouse, Models H-617T12 (Ch. V-2150-176), H-618T16 (Ch. V-2150-186), H-619T12 (Ch. V-2150-176), H-619T12U (Ch. V-2150-176U), H-620K16 (Ch. V-2150-186)		
MANUFACTURER	Westinghouse Electric Corp., Receiver Div., Sunbury, Pa.		
TYPE SET	Television Receiver		
TUBES	Twenty - Five (Ch. V-2150-176, U) Twenty - Six (Ch. V-2150-186)		
POWER SUPPLY	110 - 120 Volts AC - 60 Cycles	RATING	1.8 Amp. @ 117 Volts AC
TUNING RANGE	Channels 2 thru 13		

INDEX

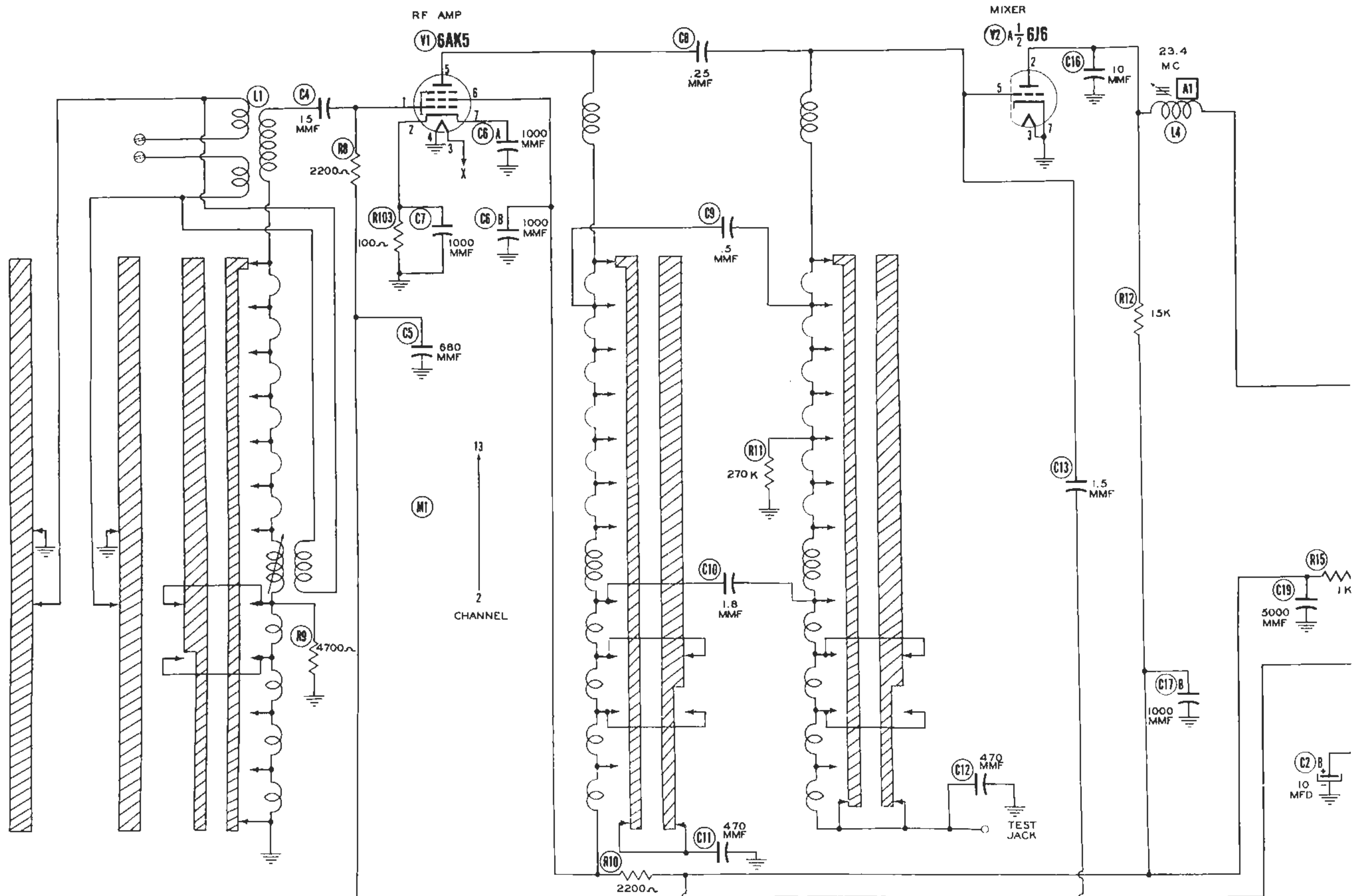
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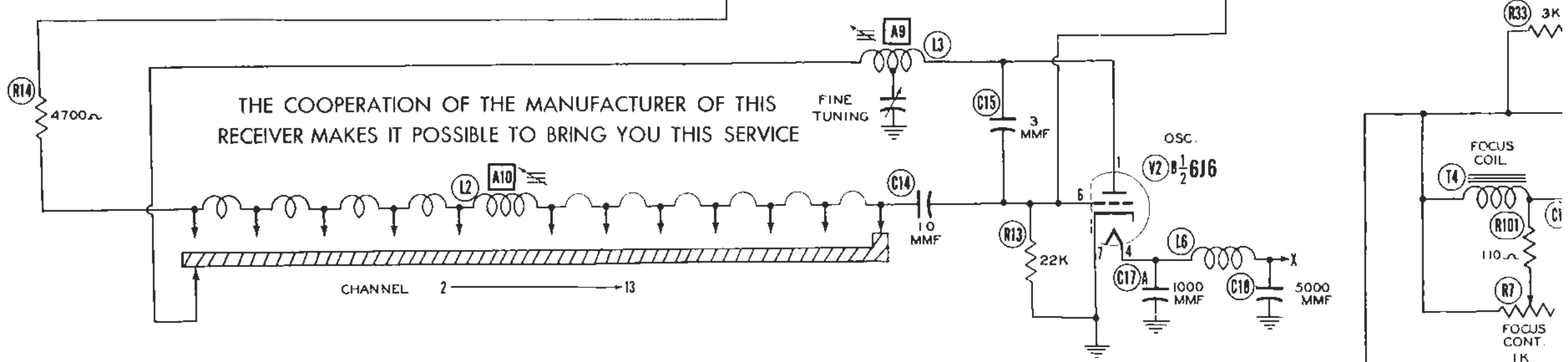
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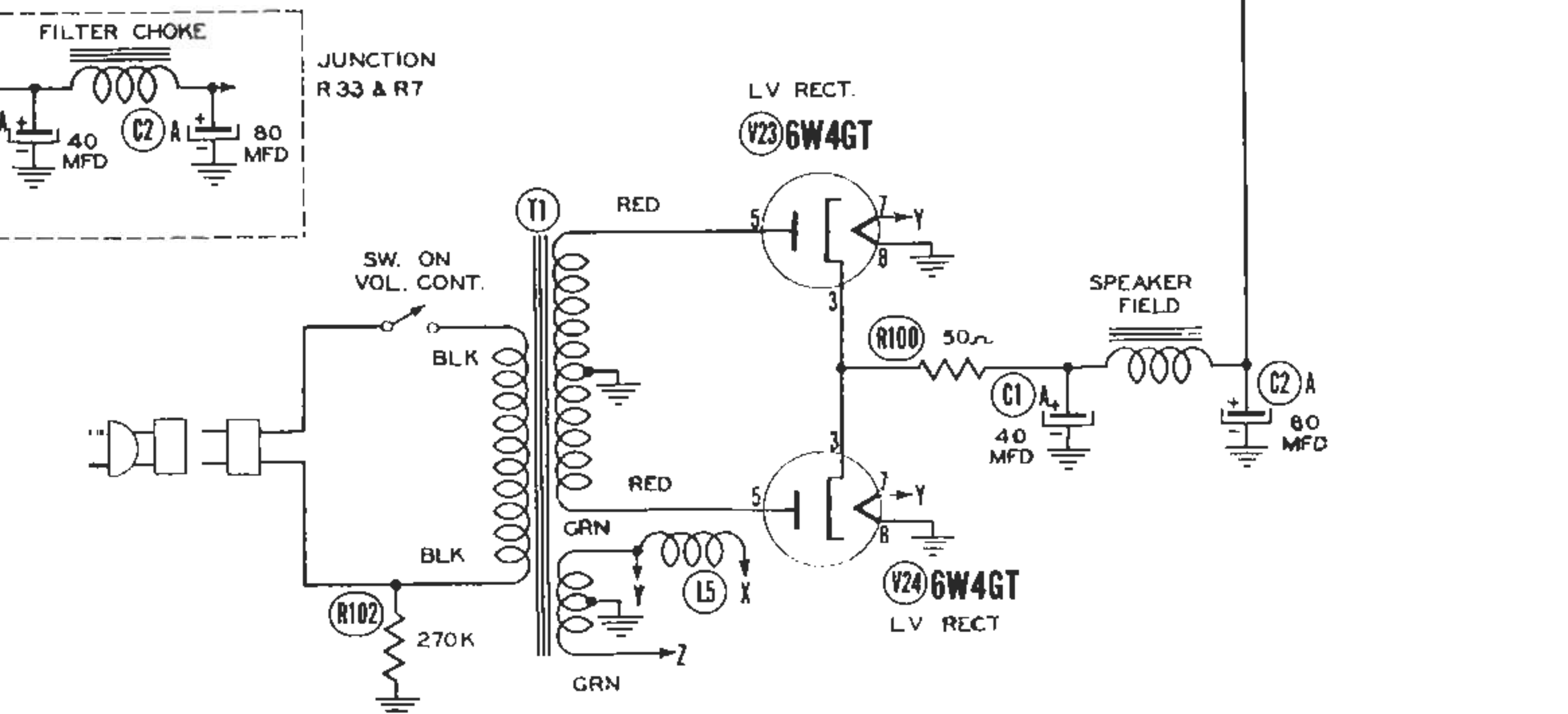
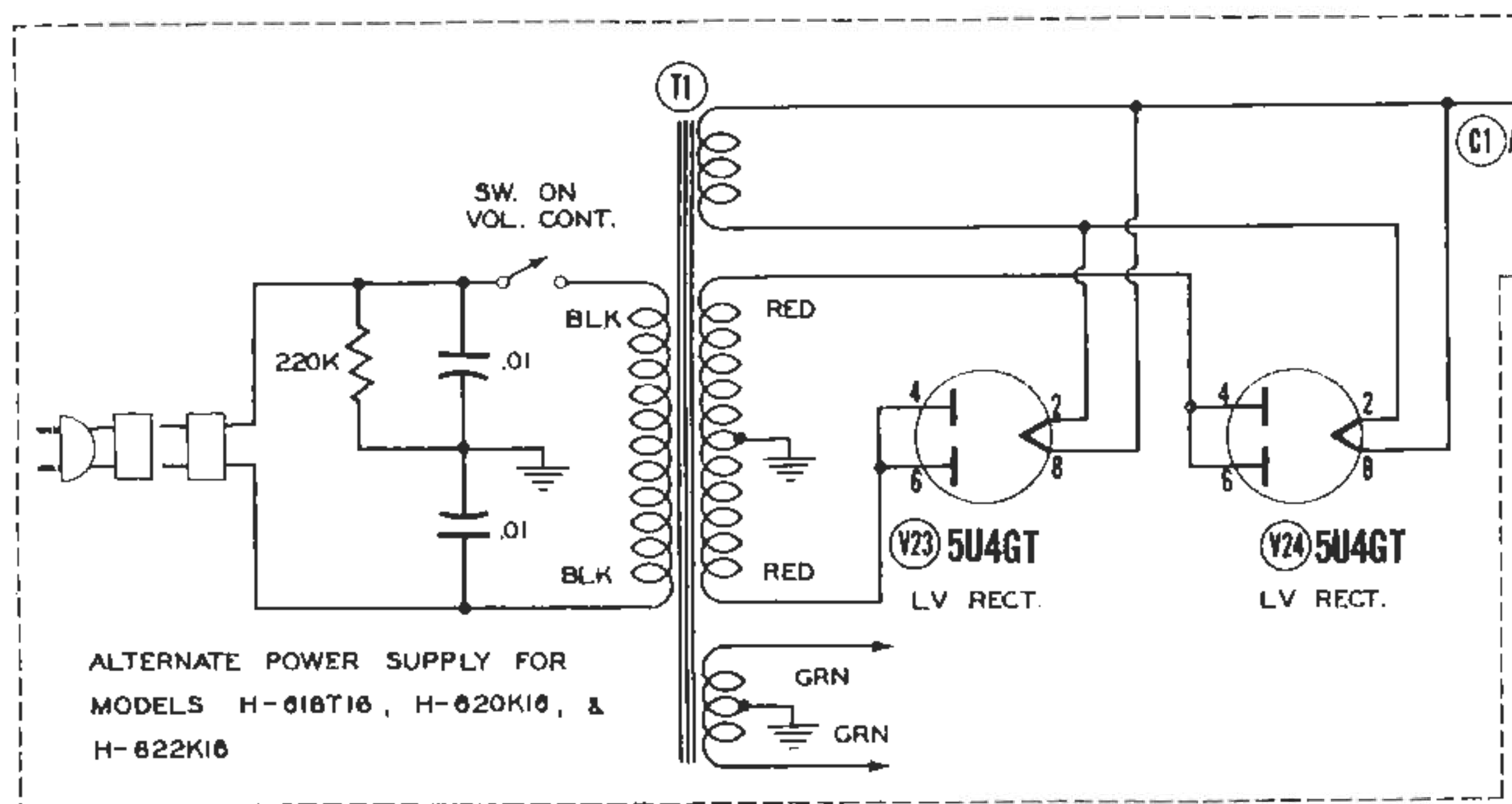




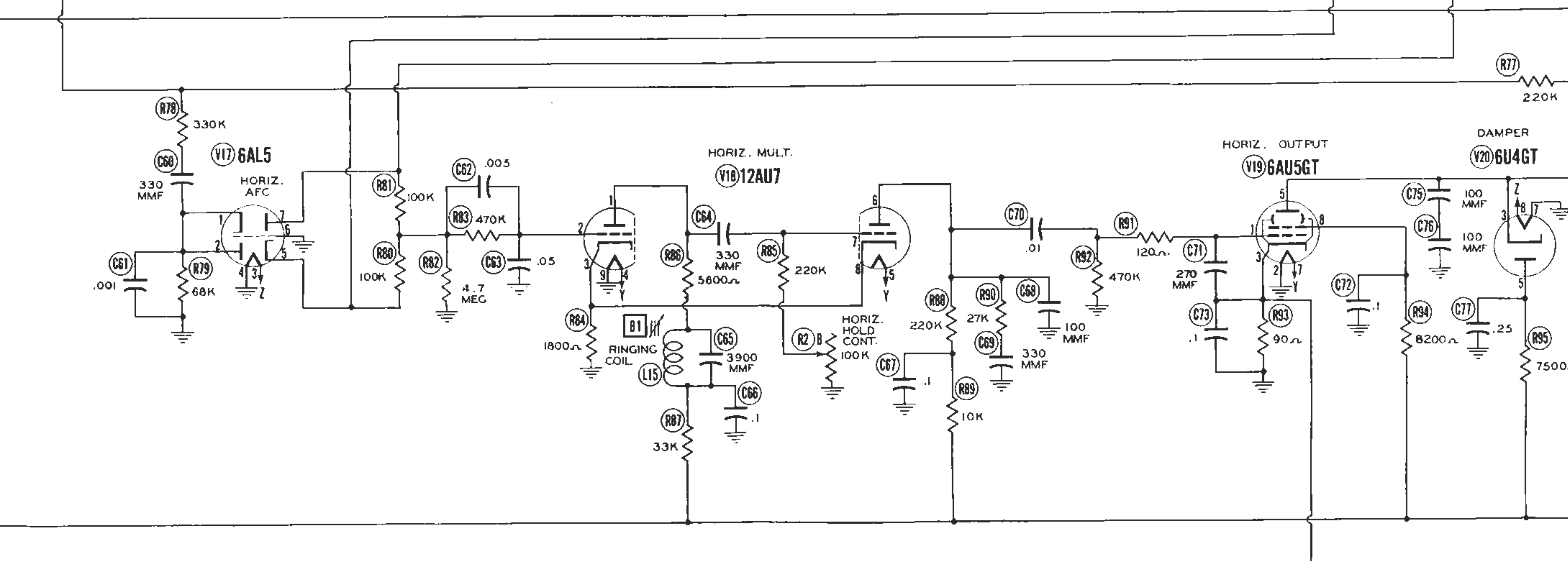
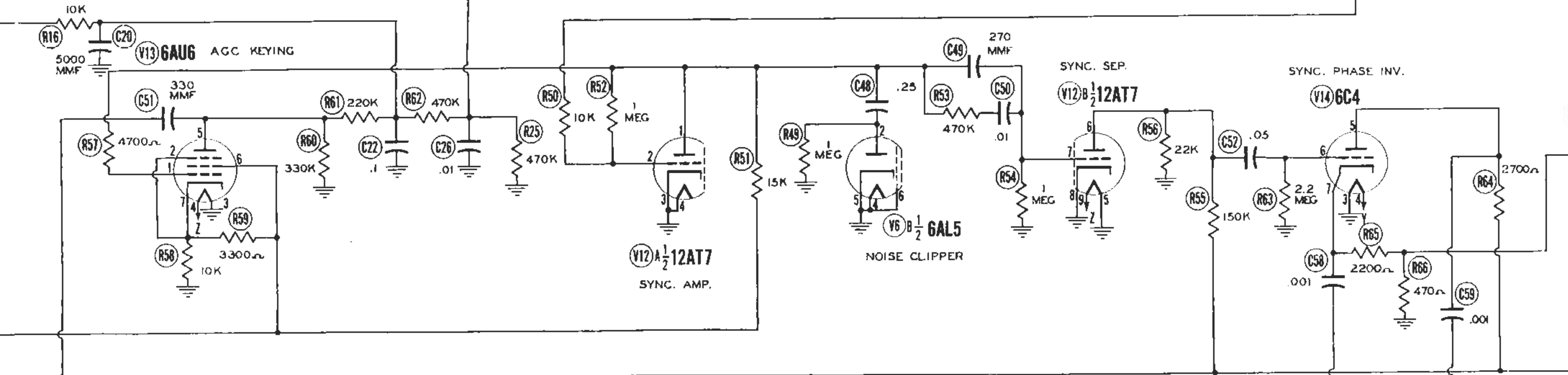
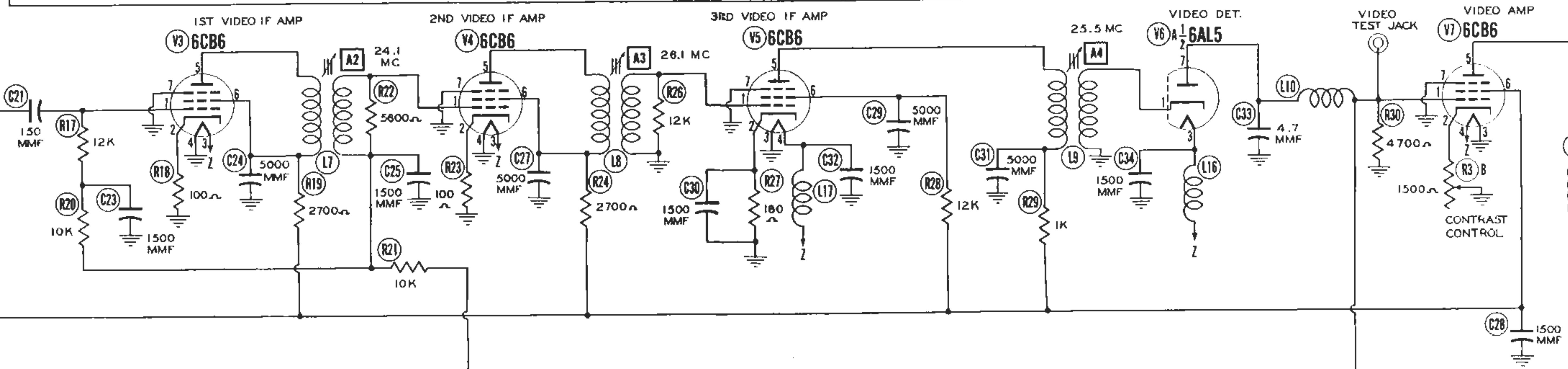
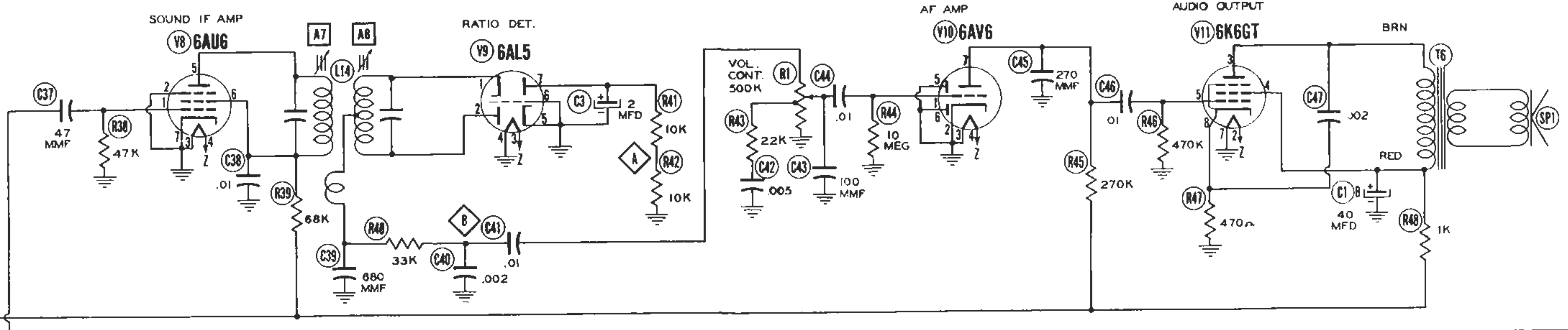
CHANNEL SW. SHOWN IN CHANNEL 13 POS.



THE COOPERATION OF THE MANUFACTURER OF THIS RECEIVER MAKES IT POSSIBLE TO BRING YOU THIS SERVICE

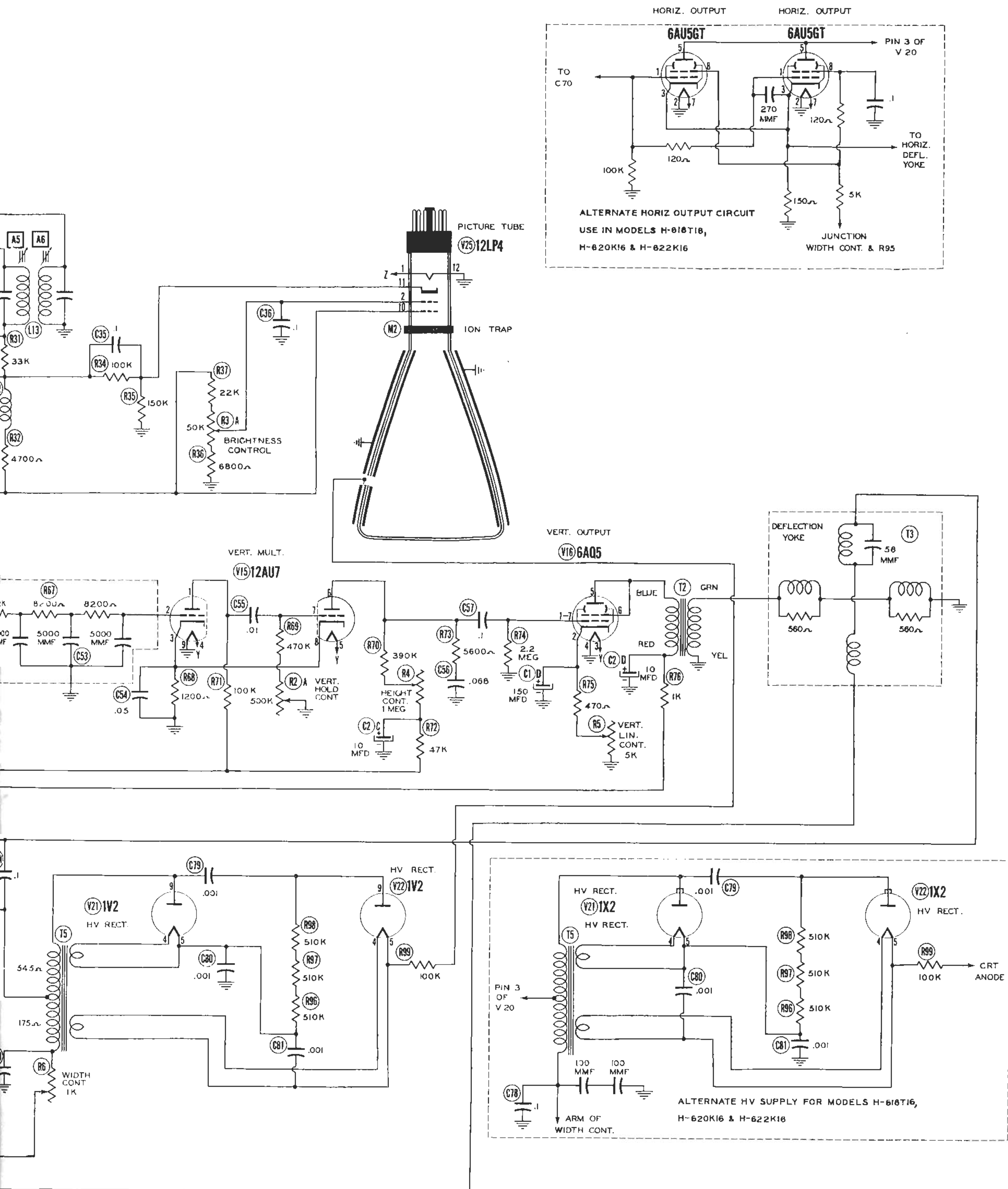


A PHOTOFAC STANDARD NOTATION SCHEMATIC  
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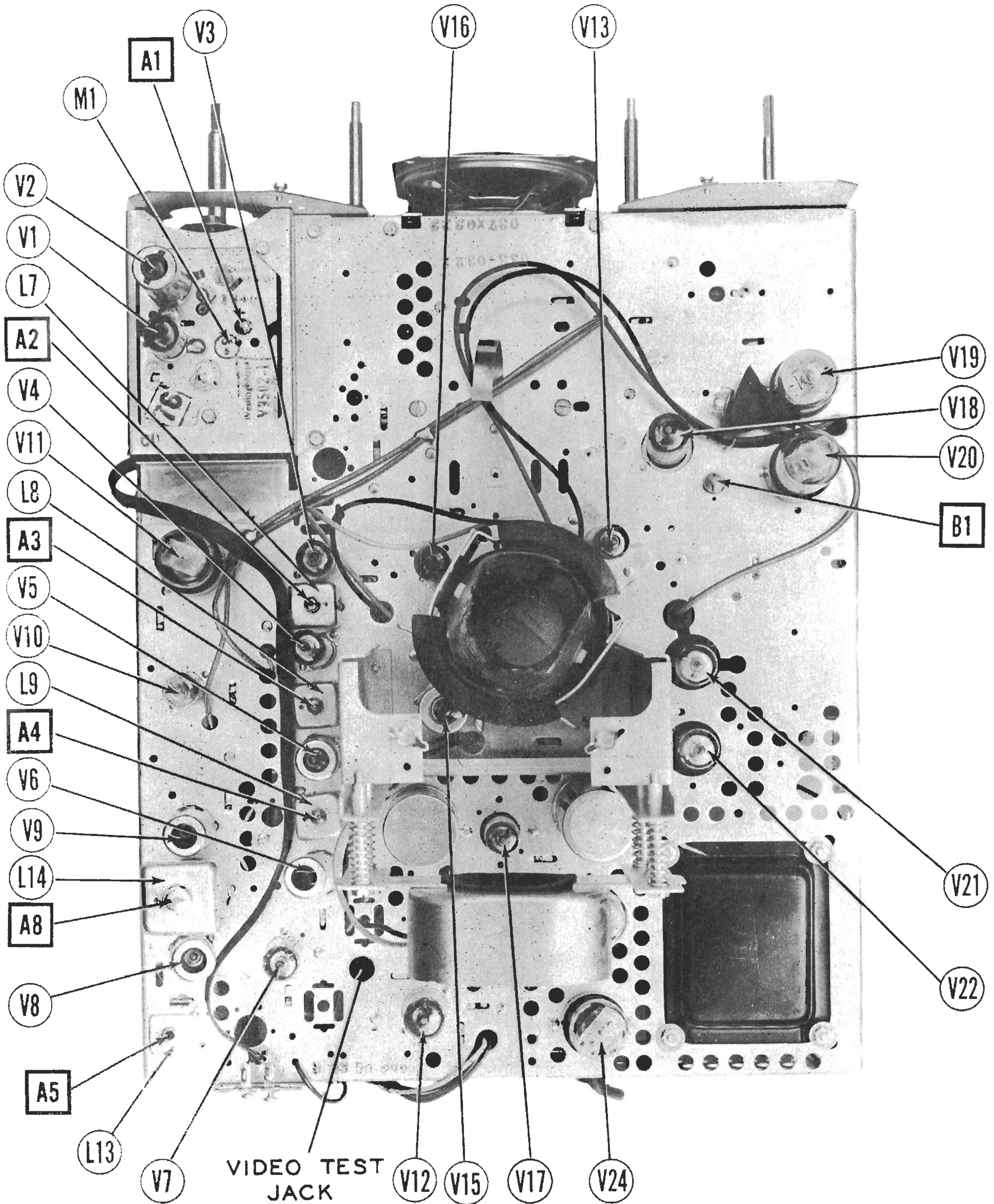


40 MFD

**WESTINGHOUSE MODELS H-617T12, H-618T16,  
H-619T12, U, H-620K16 (Ch. V-2150-176, U, V-2150-186)**

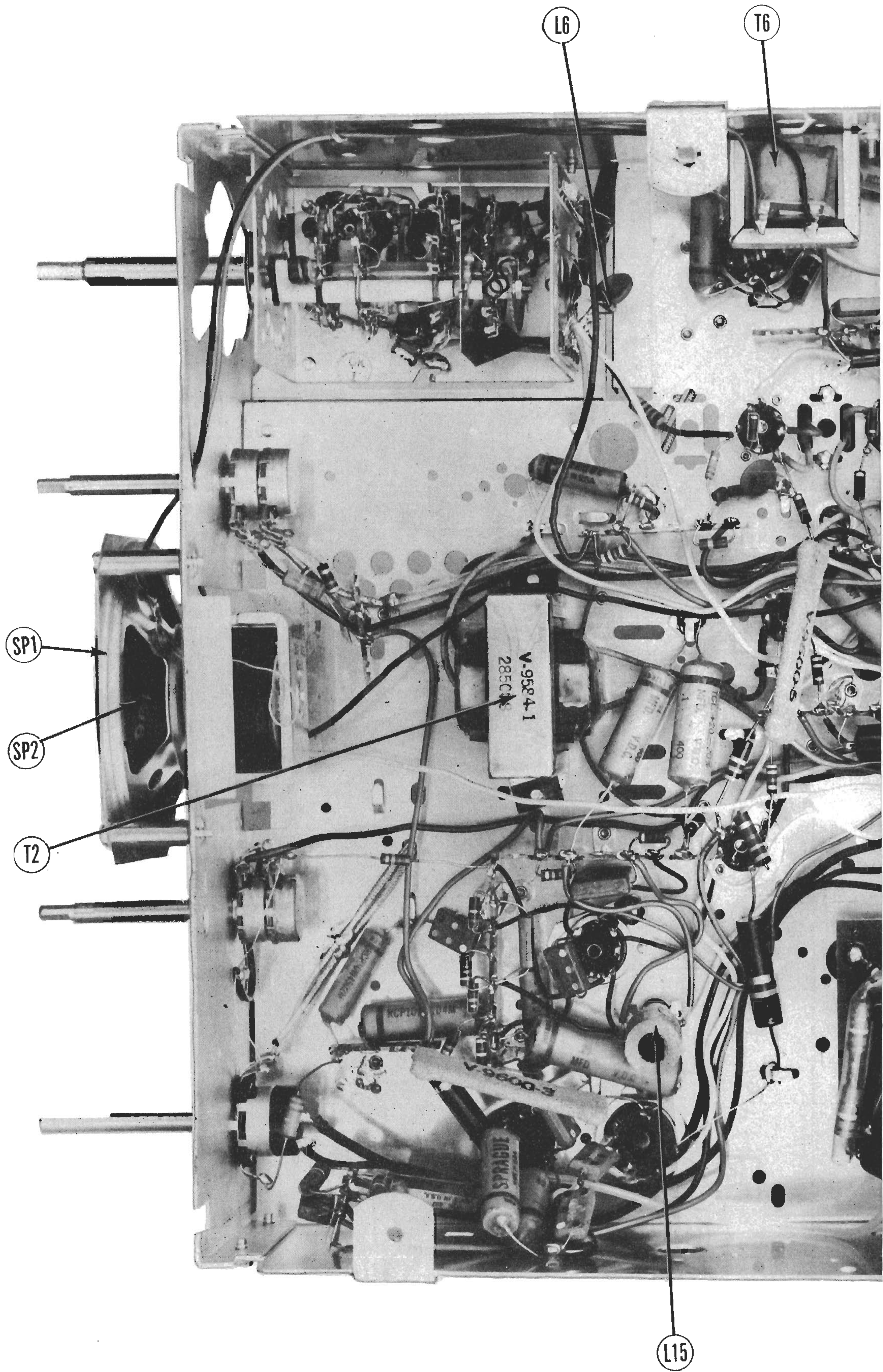






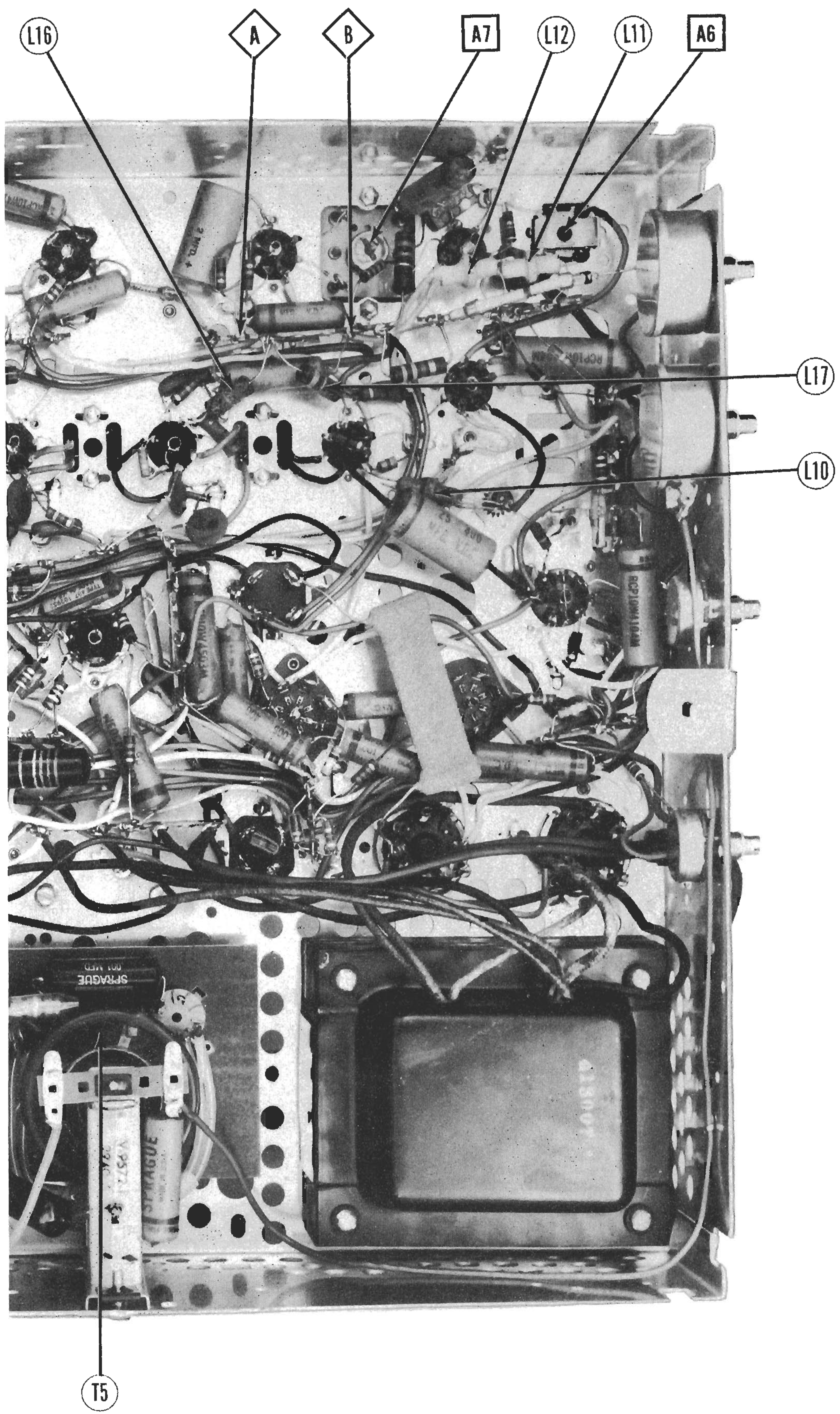
CHASSIS TOP VIEW





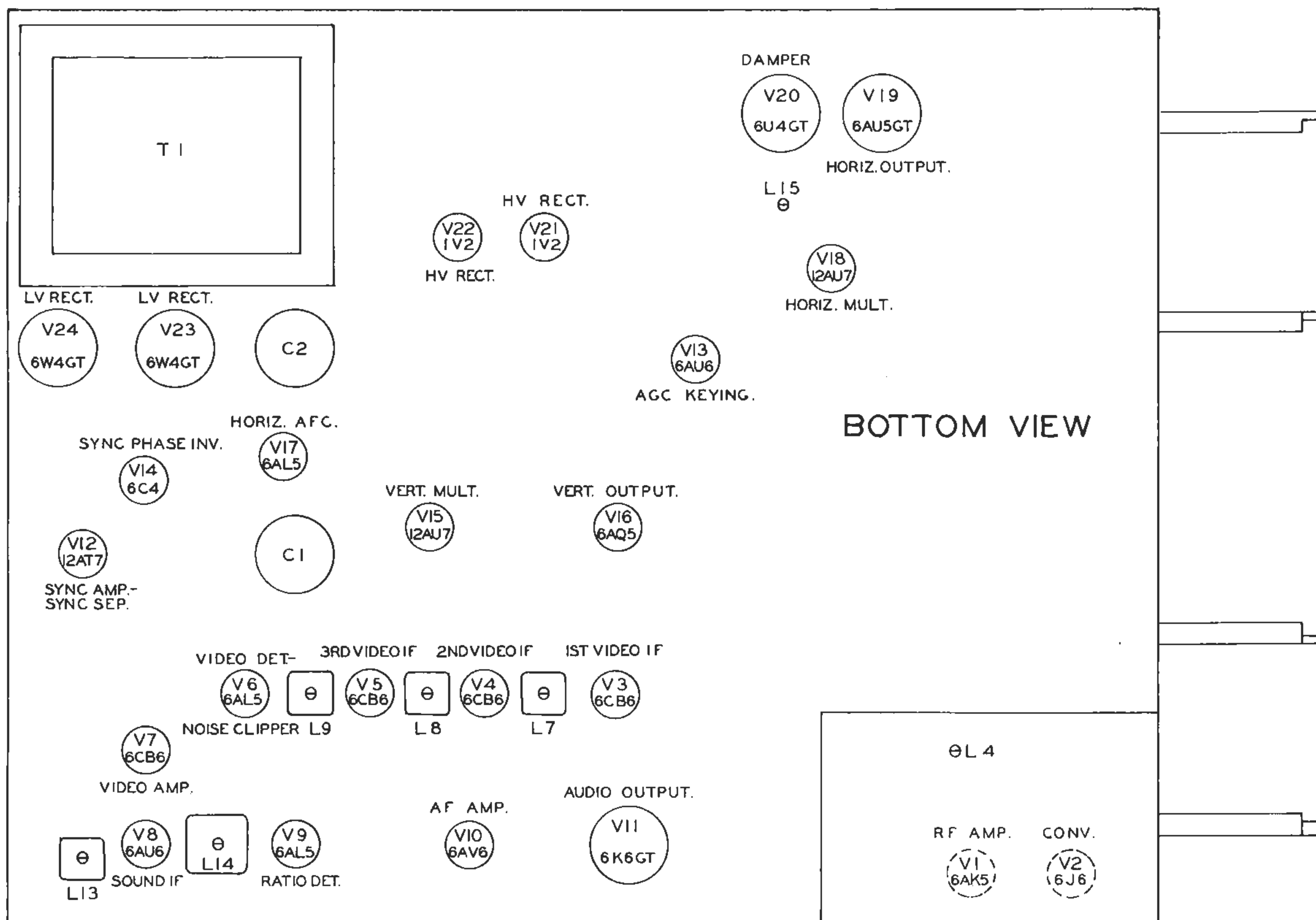
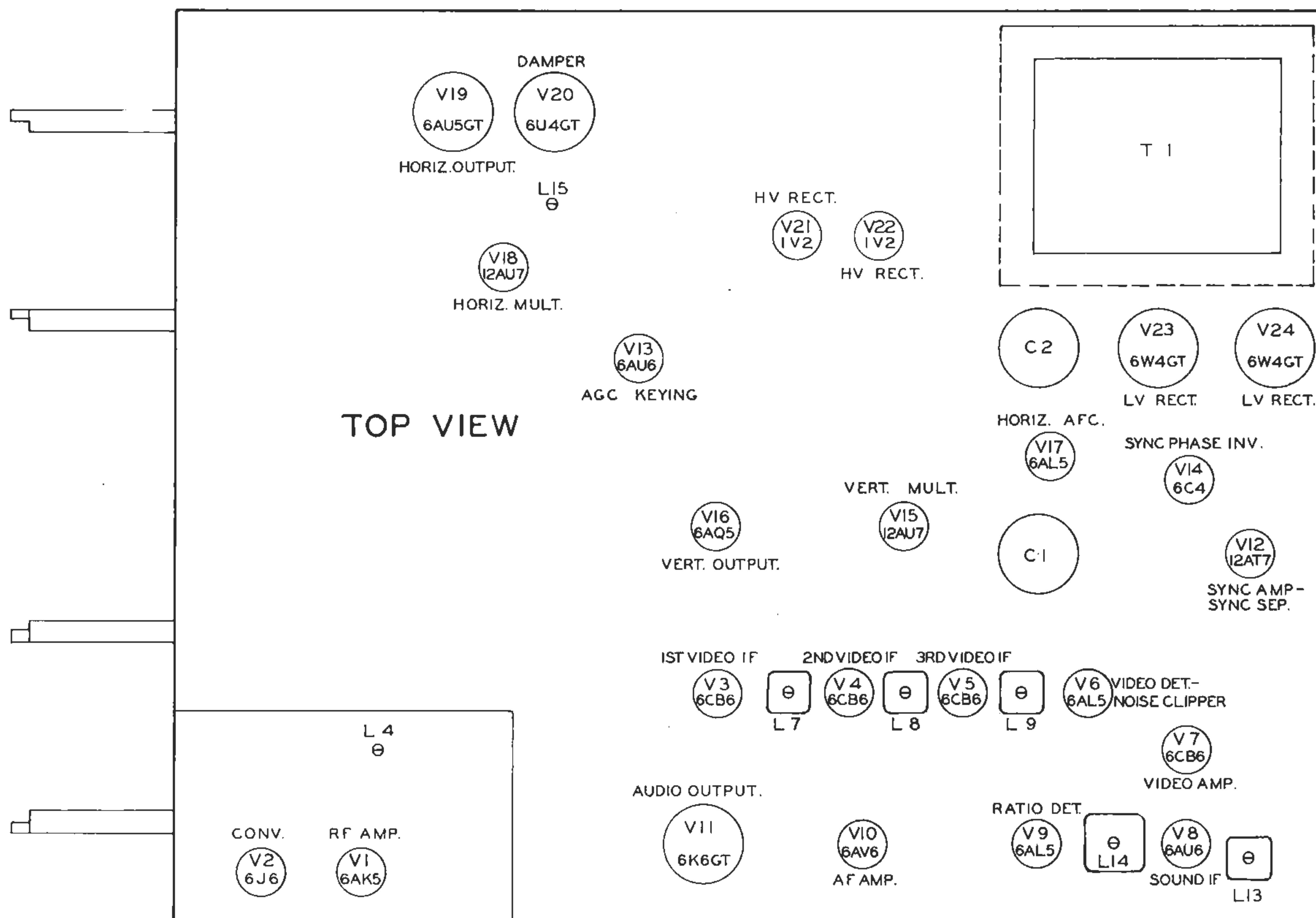
CHASSIS BOTTOM VIEW-TRANS., INDUC





TOR AND ALIGNMENT IDENTIFICATION





**TUBE PLACEMENT CHART**



# ALIGNMENT INSTRUCTIONS

## ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

The high voltage shock hazard may be eliminated by removing the horizontal output tube (V19) from its socket.

### VIDEO IF ALIGNMENT

Remove the converter tube (V2) and replace it with a 6J6 which has pin 1 removed. This will disable the local oscillator and prevent erroneous indications.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	CHANNEL	CONNECT VTVM	ADJUST	REMARKS
1.	Direct	High side to ungrounded tube shield floating over dummy converter tube (V2). Low side to chassis.	25.6MC (Unmod.)	Any	DC Probe to "video test jack". Common to chassis.	A1	Adjust for maximum deflection.
2.	Direct	"	24.1MC	"	"	A2	"
3.	Direct	"	23.6MC	"	"	A3	"
4.	Direct	"	24.7MC	"	"	A4	"

### OVERALL VIDEO IF RESPONSE CHECK

Connect the synchronized sweep voltage from the signal generator to the horizontal input of the oscilloscope for horizontal deflection.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
5.	Direct	High side to ungrounded tube shield floating over dummy mixer tube (V2). Low side to chassis.	24MC (10MC SWP)	21.25MC 25.75MC	Any	Vert. Amp. to "video test jack". Low side to chassis.		Check for response curve similar to figure 1. If necessary retouch A1 thru A4 for proper response.

### SOUND IF ALIGNMENT USING AM SIGNAL GENERATOR AND VTVM

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	CHANNEL	CONNECT VTVM	ADJUST	REMARKS
6.	.001MFD	High side to "video test jack". Low side to chassis.	4.5MC (Unmod.)	Any	DC Probe to Point $\diamond$ A. Common to chassis.	A5, A6, A7	Adjust for maximum deflection.
7.	.001MFD	"	"	"	DC Probe to Point $\diamond$ B. Common to Point $\diamond$ A.	A8	Adjust for zero reading. A positive and negative reading will be obtained on either side of the correct setting.

### SOUND IF ALIGNMENT USING FM SIGNAL GENERATOR AND OSCILLOSCOPE

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

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
6.	.001MFD	High side to "video test jack". Low side to chassis.	4.5MC (450KC Sweep)	4.5MC	Any	Vert. Amp. to Point $\diamond$ A. Low side to chassis.	A5, A6, A7	Disconnect stabilizer capacitor C3. Adjust for maximum amplitude and symmetry as per figure 2.
7.	.001MFD	"	"	"	"	Vert. Amp. to Point $\diamond$ B. Low side to chassis.	A8	Reconnect C3. Adjust A8 so 4.5MC occurs at center of crossover lines as per Fig. 3. SLIGHTLY retouch A7 for max. amplitude and straightness of crossover lines.

### OSCILLATOR ALIGNMENT

Connect the synchronized sweep voltage from the signal generator to the horizontal input of the oscilloscope for horizontal deflection.

Remove the dummy converter tube and replace the original 6J6 in its socket.

Set the fine tuning control to the mid-position of its range.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
8.	Two 120Ω carbon res.	Across antenna terminals with 120Ω in each lead.	213MC (10MC SWP)	211.25MC 215.75MC	13	Vert. Amp. to "video test jack". Low side to chassis.	A9	Adjust to place sound marker as shown in figure 4. The video marker should be at 50%.
9.	"	"	207MC (10MC SWP) 201MC (10MC SWP) 195MC (10MC SWP) 189MC (10MC SWP) 183MC (10MC SWP) 177MC (10MC SWP)	205.25MC 209.75MC 199.25MC 203.75MC 193.25MC 197.75MC 187.25MC 191.75MC 181.25MC 185.75MC 175.25MC 179.75MC	12 11 10 9 8 7	"		Check all high band channels to see that the sound marker can be properly placed well within the range of the fine tuning control. If not, compromise adjustment of A9 may be necessary.
10.	"	"	85MC (10MC SWP)	83.25MC 87.75MC	6	"	A10	Adjust to place sound marker as shown in figure 4. The video marker should be at 50%.
11.	"	"	79MC (10MC SWP) 69MC (10MC SWP) 63MC (10MC SWP) 57MC (10MC SWP)	77.25MC 81.75MC 67.25MC 71.75MC 61.25MC 65.75MC 55.25MC 59.75MC	5 4 3 2	"		Check all low band channels to see that the sound mark can be properly placed well within the range of the fine tuning control. If not, compromise adjustment of A10 may be necessary.

THE RF AND MIXER PORTIONS OF THIS RECEIVER HAVE BEEN PROPERLY ALIGNED AT THE FACTORY AND ARE VERY STABLE. THEY WILL NOT NORMALLY REQUIRED ALIGNMENT IN THE FIELD.

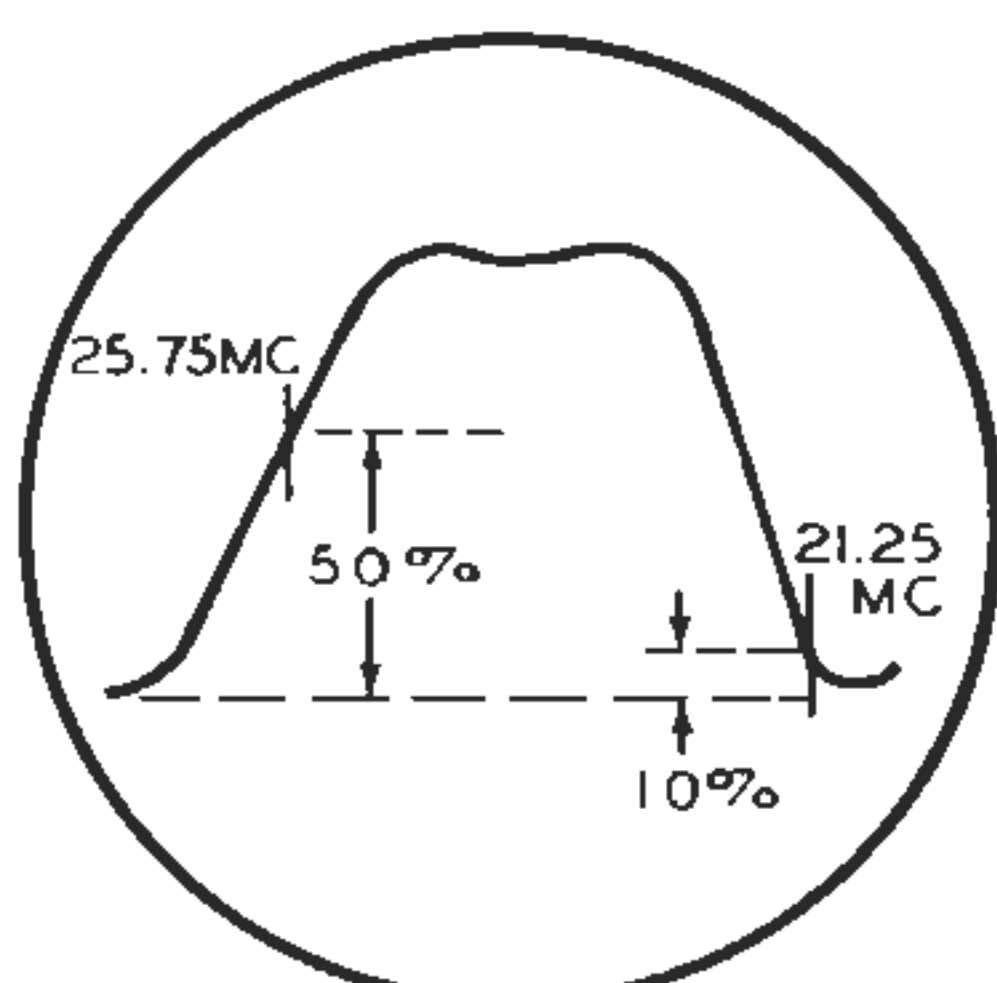


FIG. 1

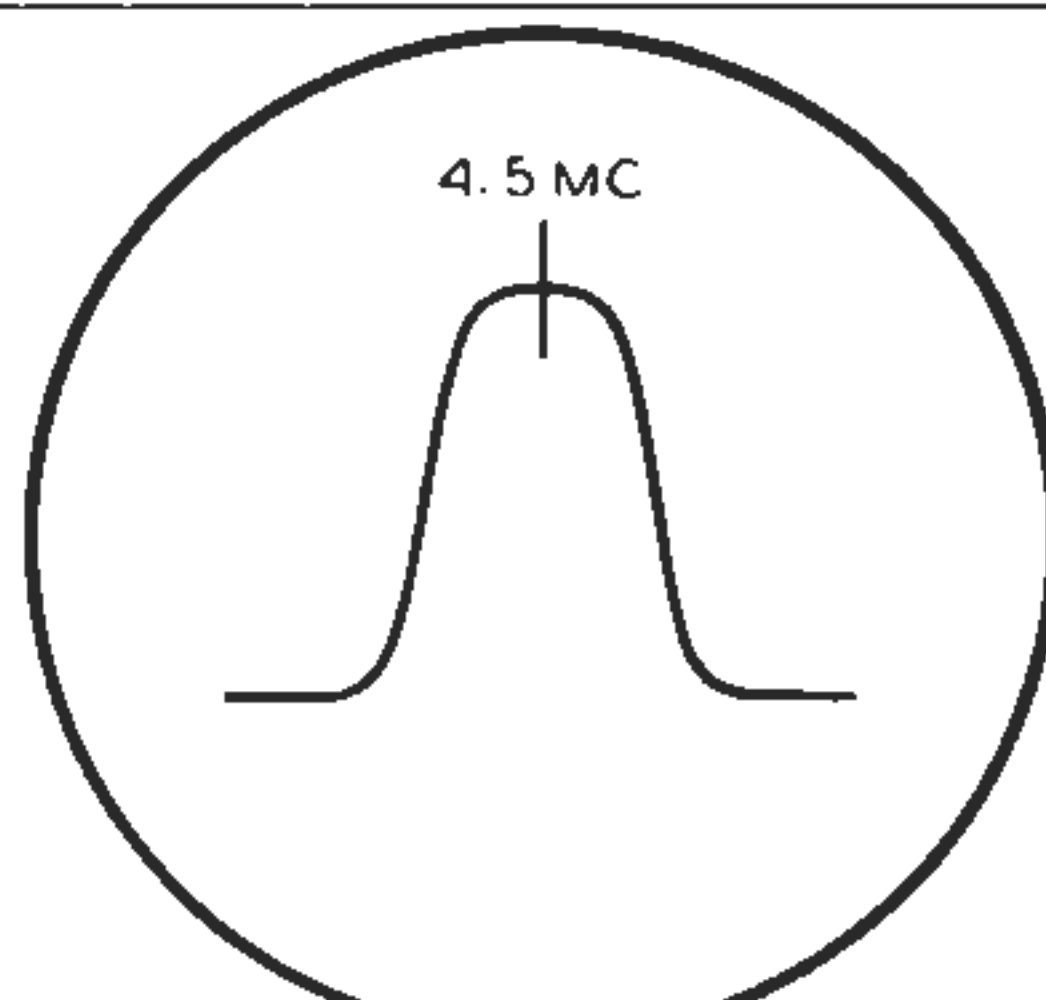


FIG. 2

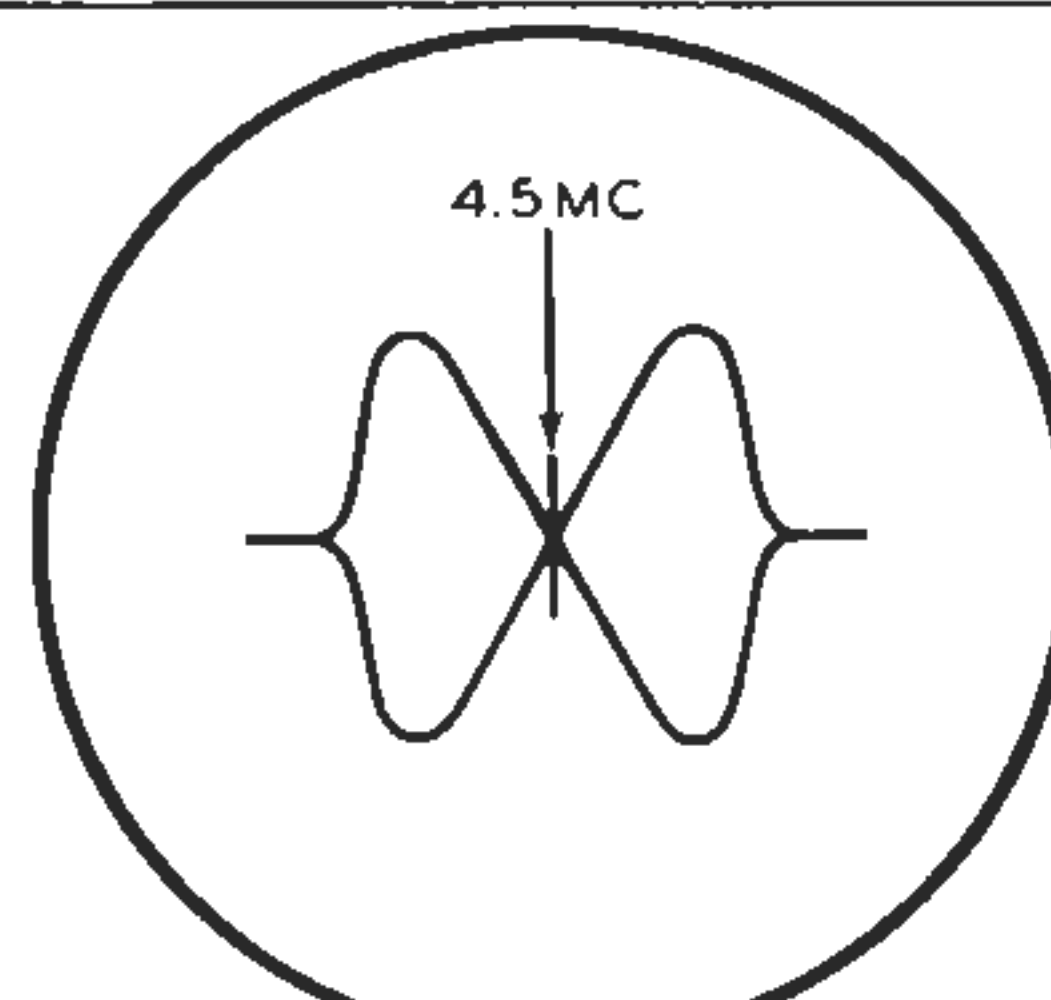


FIG. 3

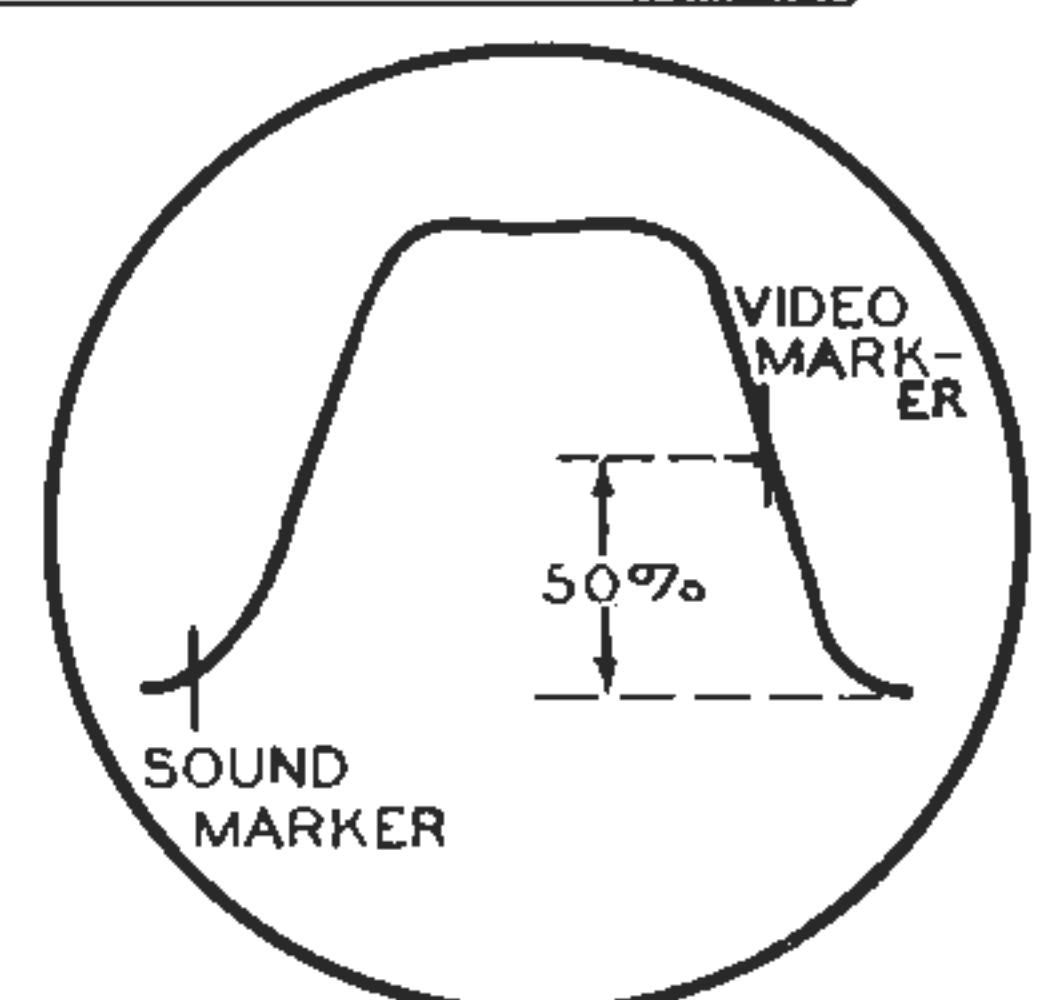
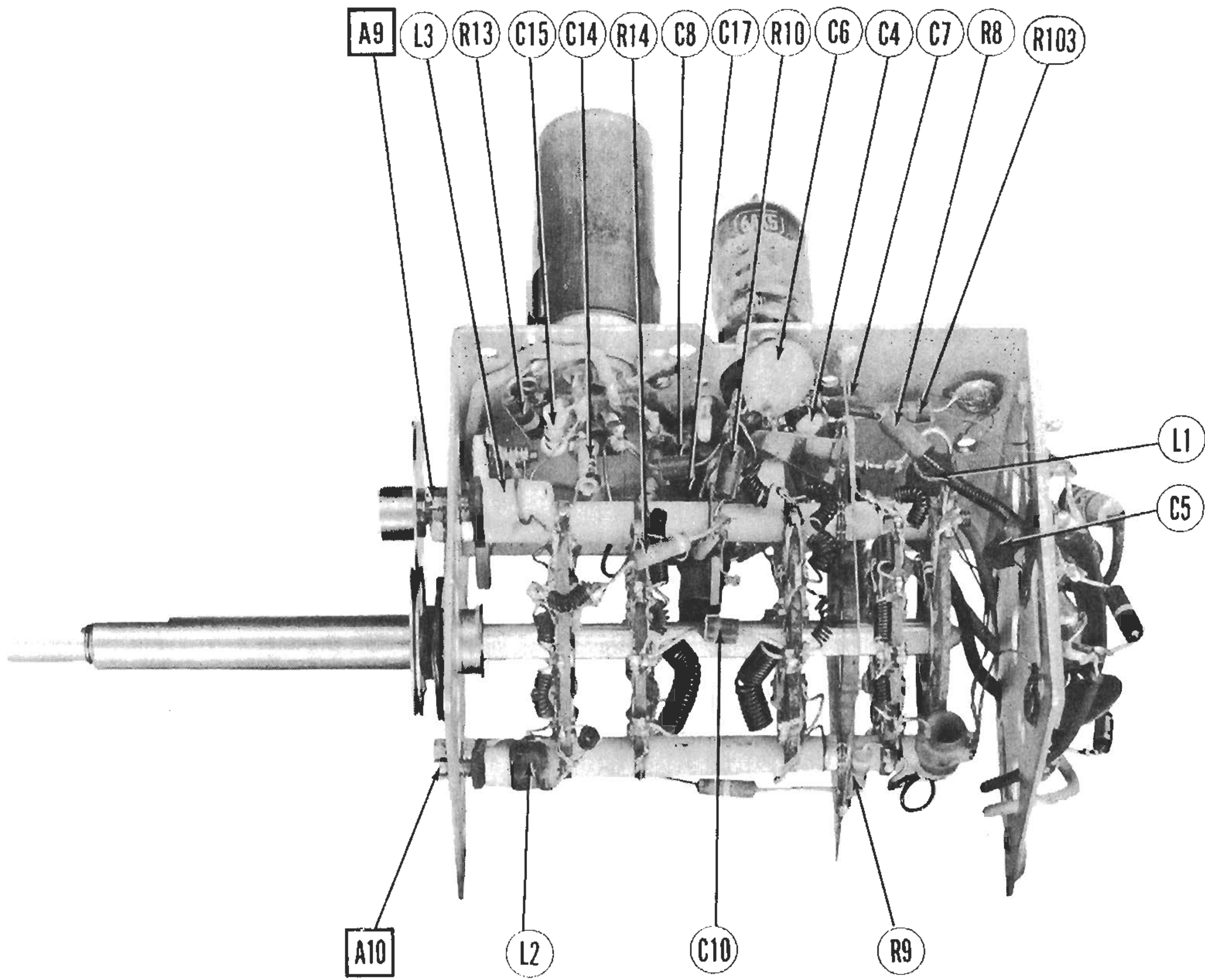
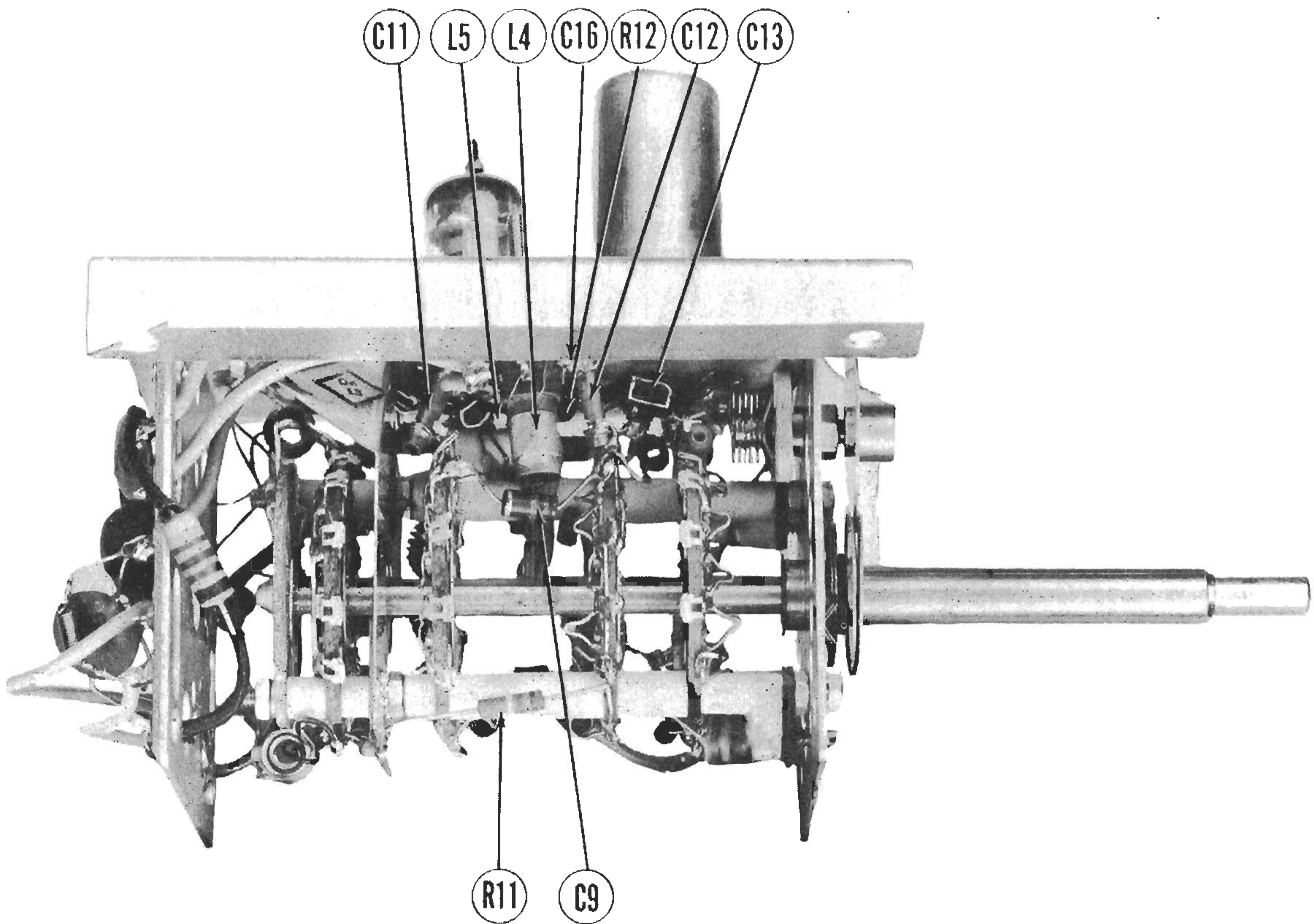


FIG. 4





RF TUNER-RIGHT SIDE



RF TUNER-LEFT SIDE

WESTINGHOUSE MODELS H-617T12, H-618T16,  
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# VOLTAGE AND RESISTANCE MEASUREMENTS

VOLTAGE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9		
V 1	6AK5	.3VDC	1VDC	6.3VAC	0V.	85VDC	85VDC	1VDC				
V 2	6J6	80VDC	80VDC	0V.	6.3VAC	-14VDC	5-6.4VDC	0V.				
V 3	6CB6	.1VDC	1.1VDC	6.3VAC	0V.	100VDC	100VDC	0V.				
V 4	6CB6	.1VDC	1VDC	6.3VAC	0V.	100VDC	100VDC	0V.				
V 5	6CB6	0V.	1.4VDC	0V.	6.3VAC	125VDC	107VDC	0V.				
V 6	6AL5	0V.	-1.2VDC	6.3VAC	0V.	0V.	0V.	-.5VDC				
V 7	6CB6	-.4VDC	2.5VDC	0V.	6.3VAC	280VDC	130VDC	0V.				
V 8	6AU6	-.9VDC	0V.	0V.	6.3VAC	55VDC	55VDC	0V.				
V 9	6AL5	-.3VDC	-.3VDC	6.3VAC	0V.	0V.	0V.	-.3VDC				
V 10	6AV6	-.6VDC	0V.	0V.	6.3VAC	0V.	0V.	105VDC				
V 11	6K6GT	0V.	6.3VAC	240VDC	250VDC	0V.	0V.	0V.	15VDC			
V 12	12AT7	65VDC	-.2VDC	0V.	0V.	0V.	36VDC	-1.6VDC	0V.	6.3VAC		
V 13	6AU6	65VDC	100VDC	0V.	6.3VAC	-.1VDC	130VDC	100VDC				
V 14	6C4	270VDC	0V.	0V.	6.3VAC	270VDC	0V.	12VDC				
V 15	12AU7	60VDC	1.8VDC	3.3VDC	6.3VAC	110VDC	110VDC	23VDC	3.3VDC	0V.		
V 16	6AQ5	.1VDC	12VDC	6.3VAC	0V.	300VDC	300VDC	.1VDC				
V 17	6AL5	0V.	0V.	6.3VAC	0V.	3.6VDC	0V.	-2.9VDC				
V 18	12AU7	155VDC	.2VDC	8VDC	6.3VAC	6.3VAC	95VDC	-2.6VDC	8VDC	0V.		
V 19	6AU5GT	-12VDC	0V.	9.1VDC	0V.	*	0V.	6.3VAC	205VDC			
V 20	6U4GT	0V.	0V.	*	0V.	60VDC	0V.	0V.	6.3VAC			
V 21	1V2			* DO NOT MEASURE.								
V 22	1V2			* DO NOT MEASURE.								
V 23	6W4GT	0V.	0V.	360VDC	0V.	320VAC	0V.	6.3VAC	0V.			
V 24	6W4GT	0V.	0V.	360VDC	0V.	320VAC	0V.	6.3VAC	0V.			
V 25	12LP4A	6.3VAC	30VDC	PIN 10 305VDC	PIN 11 175VDC	PIN 12 0V.						

§ TAKEN WITH VACUUM TUBE VOLTMETER.  
\* DO NOT MEASURE.

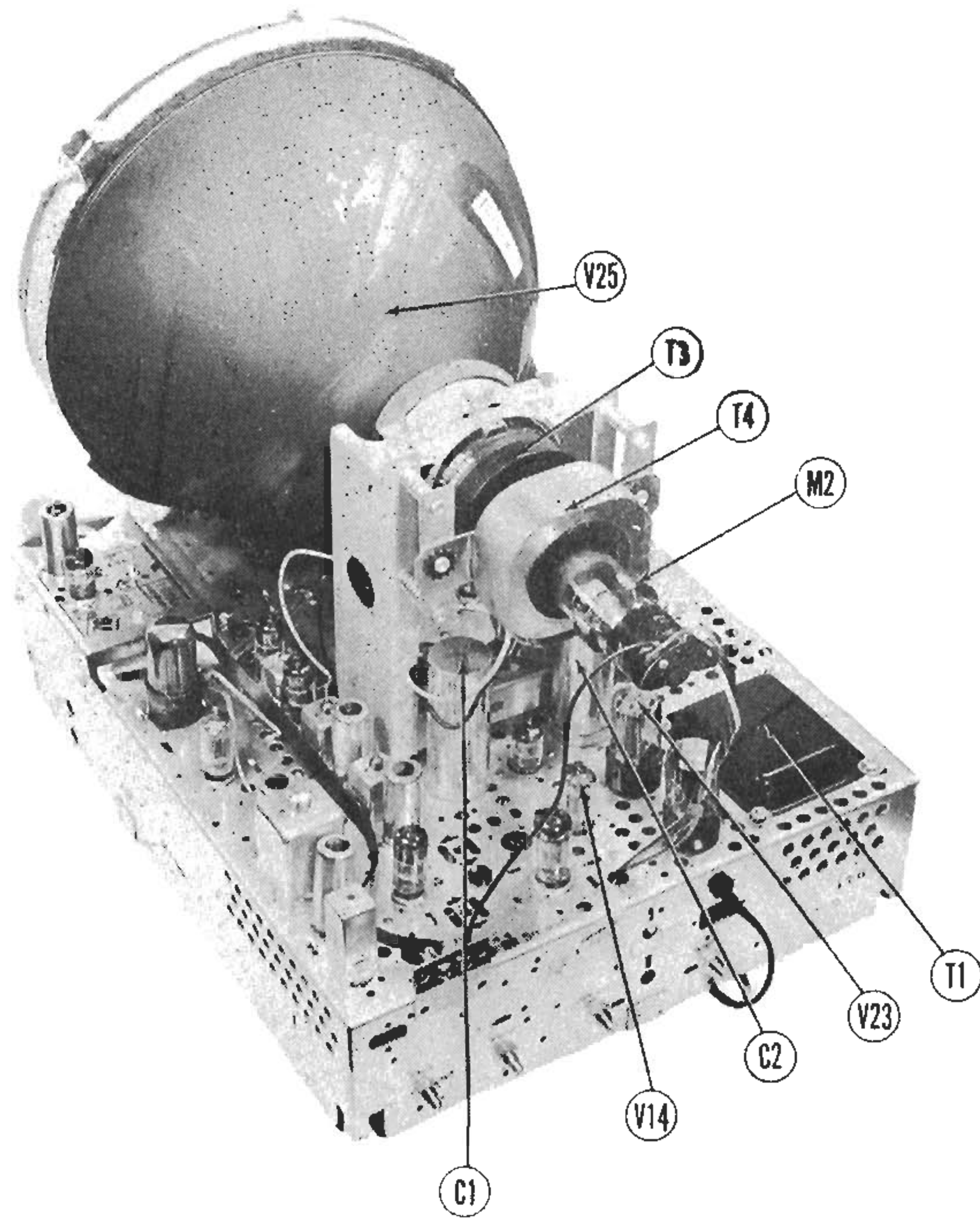
RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V 1	6AK5	380KΩ	100Ω	.1Ω	0Ω	†6.5KΩ	†6.5KΩ	100Ω		
V 2	6J6	†9KΩ	†19KΩ	0Ω	.1Ω	270KΩ	22KΩ	0Ω		
V 3	6CB6	340KΩ	100Ω	.1Ω	0Ω	†6KΩ	†6KΩ	0Ω		
V 4	6CB6	320KΩ	100Ω	.1Ω	0Ω	†6KΩ	†6KΩ	0Ω		
V 5	6CB6	1Ω	180Ω	0Ω	.1Ω	†4.3KΩ	†15KΩ	0Ω		
V 6	6AL5	.1Ω	1 Meg.	.1Ω	0Ω	0Ω	0Ω	4.7KΩ		
V 7	6CB6	4.7KΩ	1.5KΩ	0Ω	.1Ω	†5.4KΩ	†3.3KΩ	0Ω		
V 8	6AU6	47KΩ	0Ω	0Ω	.1Ω	†70KΩ	†70KΩ	0Ω		
V 9	6AL5	Inf.	Inf.	.1Ω	0Ω	0Ω	0Ω	20KΩ		
V 10	6AV6	10 Meg.	0Ω	0Ω	.1Ω	0Ω	0Ω	†270KΩ		
V 11	6K6GT	0Ω	.1Ω	†2KΩ	†1.5KΩ	470KΩ	Inf.	0Ω	470Ω	
V 12	12AT7	†18KΩ	14KΩ	0Ω	0Ω	0Ω	22KΩ	1 Meg.	0Ω	.1Ω
V 13	6AU6	†25KΩ	9KΩ	0Ω	.1Ω	300KΩ	†3.3KΩ	9KΩ		
V 14	6C4	†3KΩ	Inf.	0Ω	.1Ω	†3KΩ	2.2 Meg.	2.2KΩ		
V 15	12AU7	†100KΩ	39KΩ	1.2KΩ	.1Ω	.1Ω	†420KΩ	470KΩ	1.2KΩ	0Ω
V 16	6AQ5	2.2 Meg.	5.4KΩ	.1Ω	0Ω	†1.7KΩ	†1.7KΩ	2.2 Meg.		
V 17	6AL5	68KΩ	68KΩ	.1Ω	0Ω	4.8 Meg.	0Ω	4.8 Meg.		
V 18	12AU7	†40KΩ	5.1 Meg.	1.8KΩ	.1Ω	.1Ω	†240KΩ	220KΩ	1.8KΩ	0Ω
V 19	6AU5GT	470KΩ	0Ω	90Ω	Inf.	†380Ω	Inf.	.1Ω	†8.5KΩ	
V 20	6U4GT	Inf.	Inf.	†380Ω	Inf.	†8KΩ	Inf.	0Ω	.1Ω	
V 21	1V2	Inf.	Inf.	Inf.	Inf.	Inf.	Inf.	Inf.	Inf.	†880Ω
V 22	1V2	Inf.	Inf.	Inf.	Inf.	Inf.	Inf.	Inf.	Inf.	Inf.
V 23	6W4GT	Inf.	Inf.	10KΩ	Inf.	38Ω	Inf.	.1Ω	0Ω	
V 24	6W4GT	Inf.	Inf.	10KΩ	Inf.	38Ω	Inf.	.1Ω	0Ω	
V 25	12LP4A	.1Ω	6.8KΩ	PIN 10 †230Ω	PIN 11 70KΩ	PIN 12 0Ω				

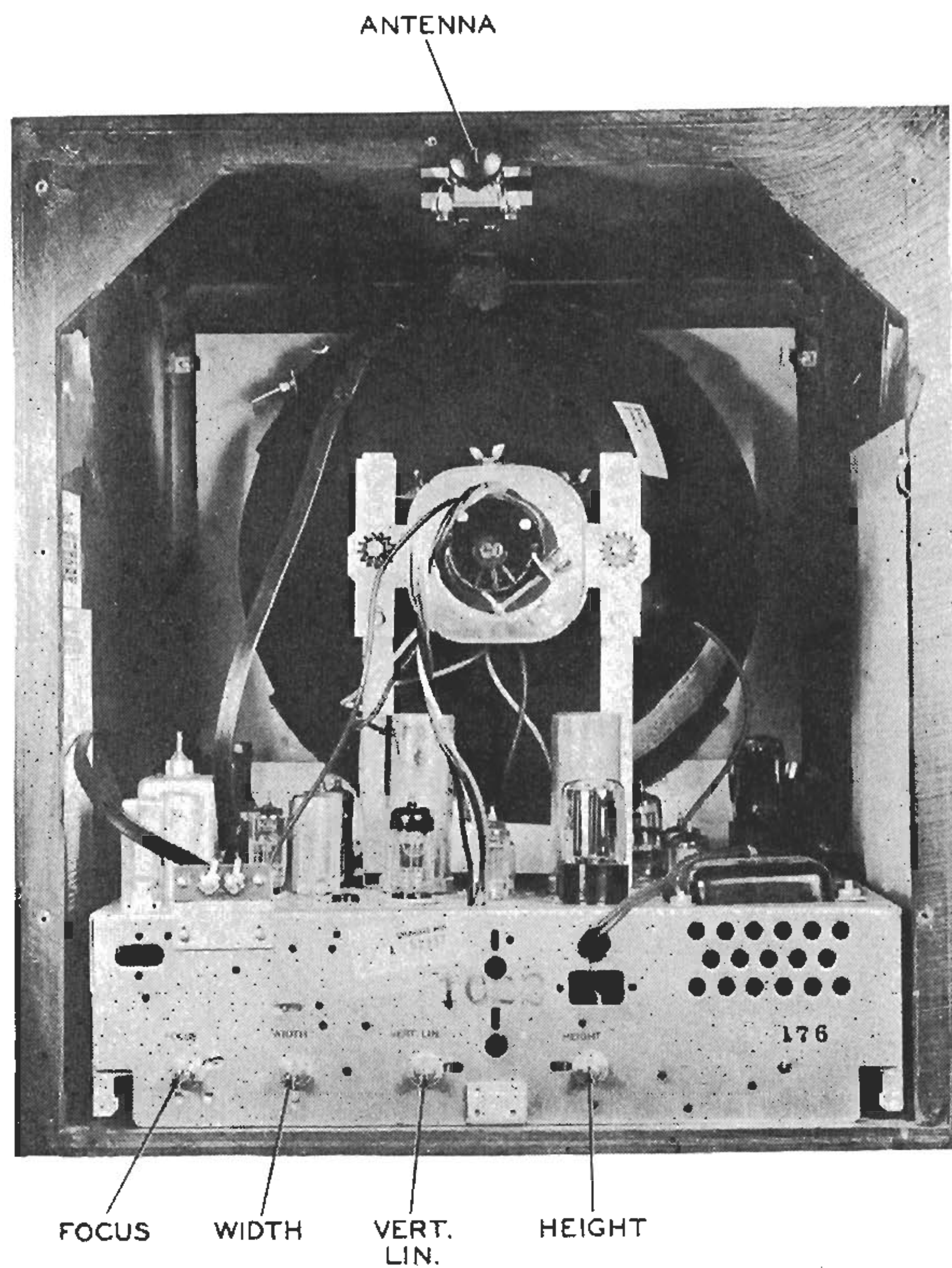
† MEASURED FROM PIN 3 OF V23.

1. DC Voltage measurements are at 20,000 ohms per volt; AC Voltage measured at 1,000 ohms.
2. Pin numbers are counted in a clockwise direction on bottom of socket.
3. Measured values are from socket pin to common negative unless otherwise stated.
4. Line voltage maintained at 117 volts for voltage readings.
5. Front panels controls set at minimum.
6. Where readings may vary according to the setting of the service controls, both minimum and maximum readings are given.





CHASSIS-TOP VIEW



CABINET-REAR VIEW

## HORIZONTAL SWEEP CIRCUIT ADJUSTMENTS

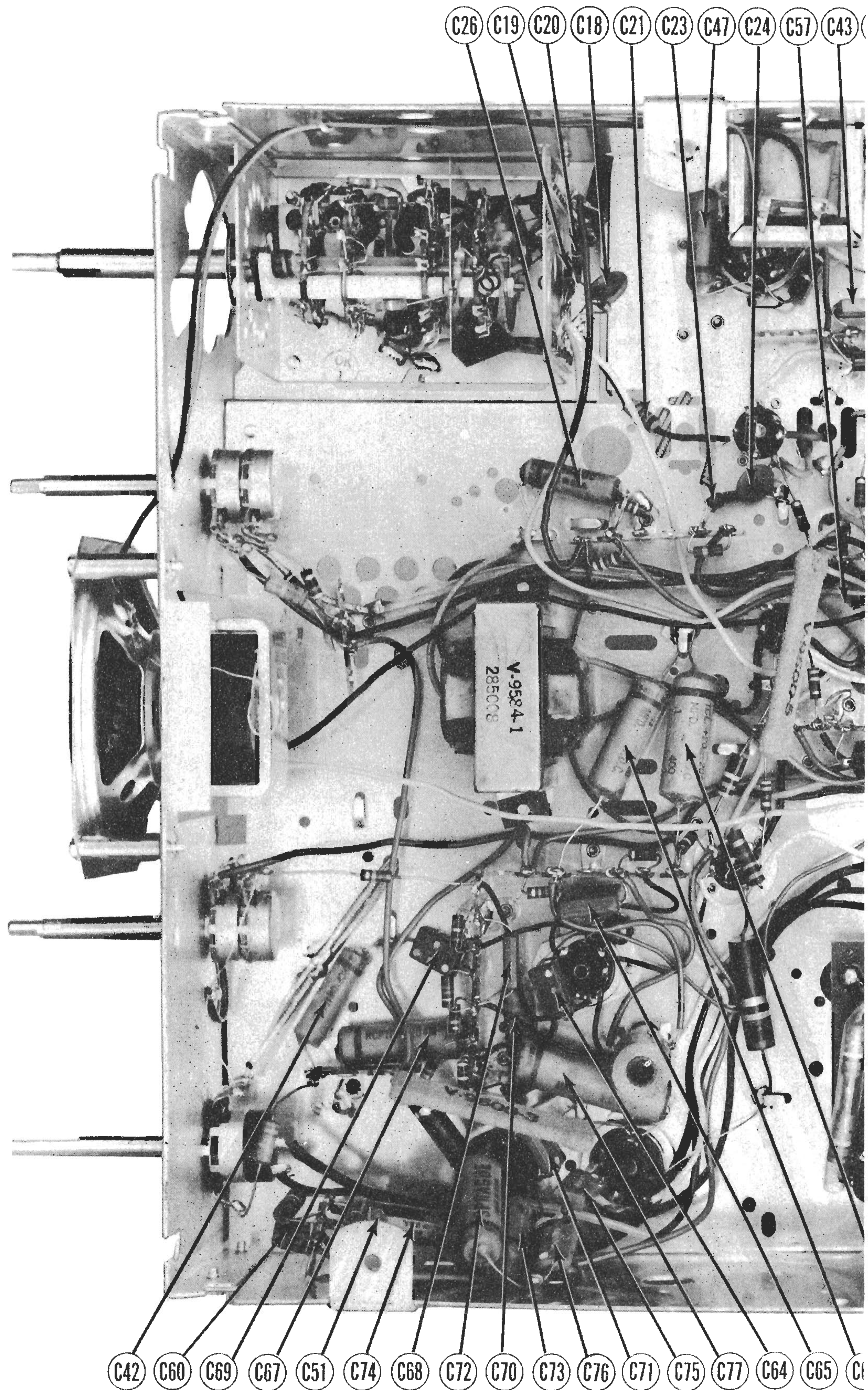
Turn the receiver on and tune in a TV station, preferably a test pattern.

Turn the horizontal hold control to the mid-position of its range.

Adjust the horizontal frequency slug (B1) until the picture synchronizes horizontally.

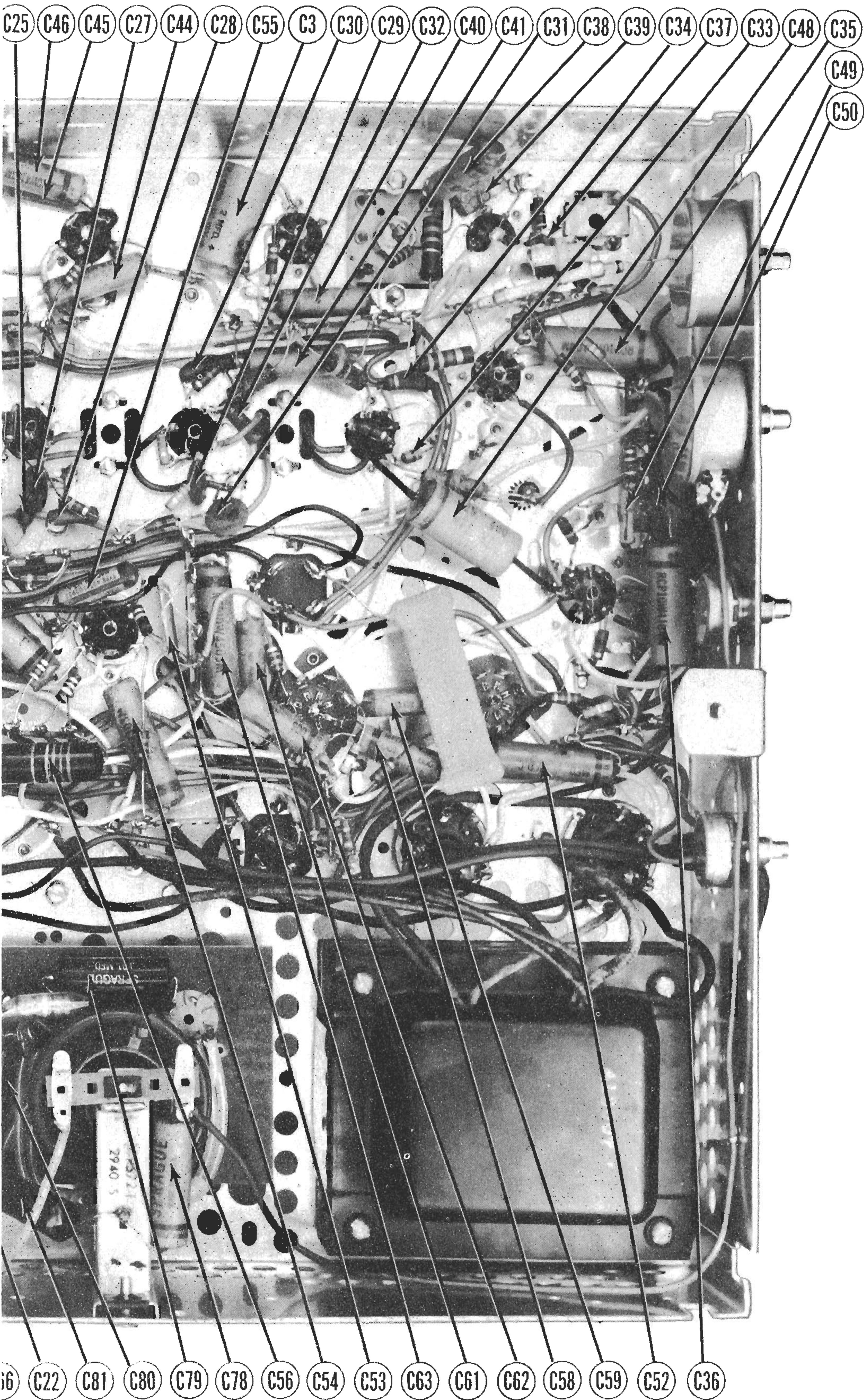
Adjust the horizontal width control until the picture fills the mask horizontally.





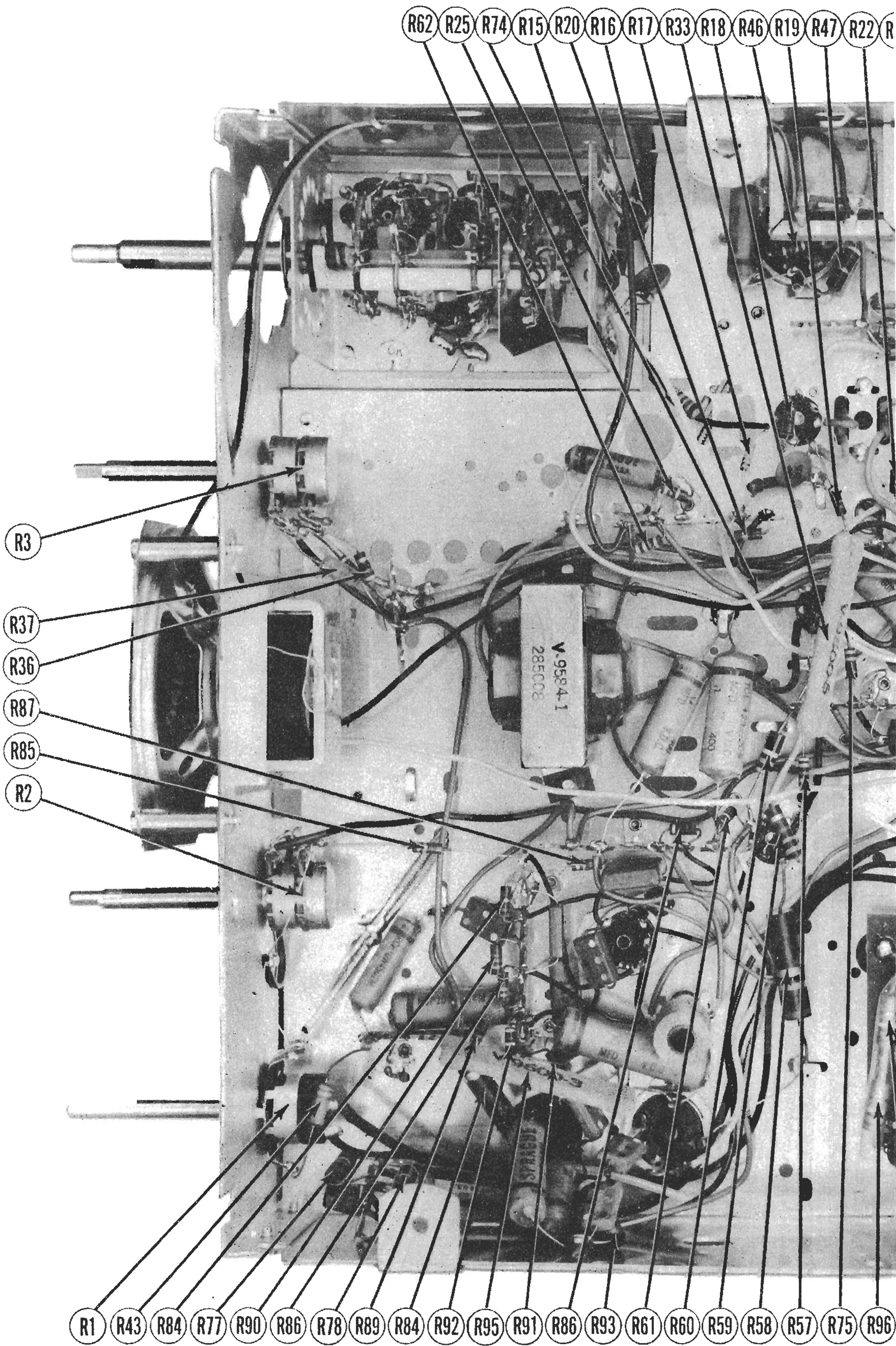
CHASSIS BOTTOM VIEW-C





CAPACITOR IDENTIFICATION

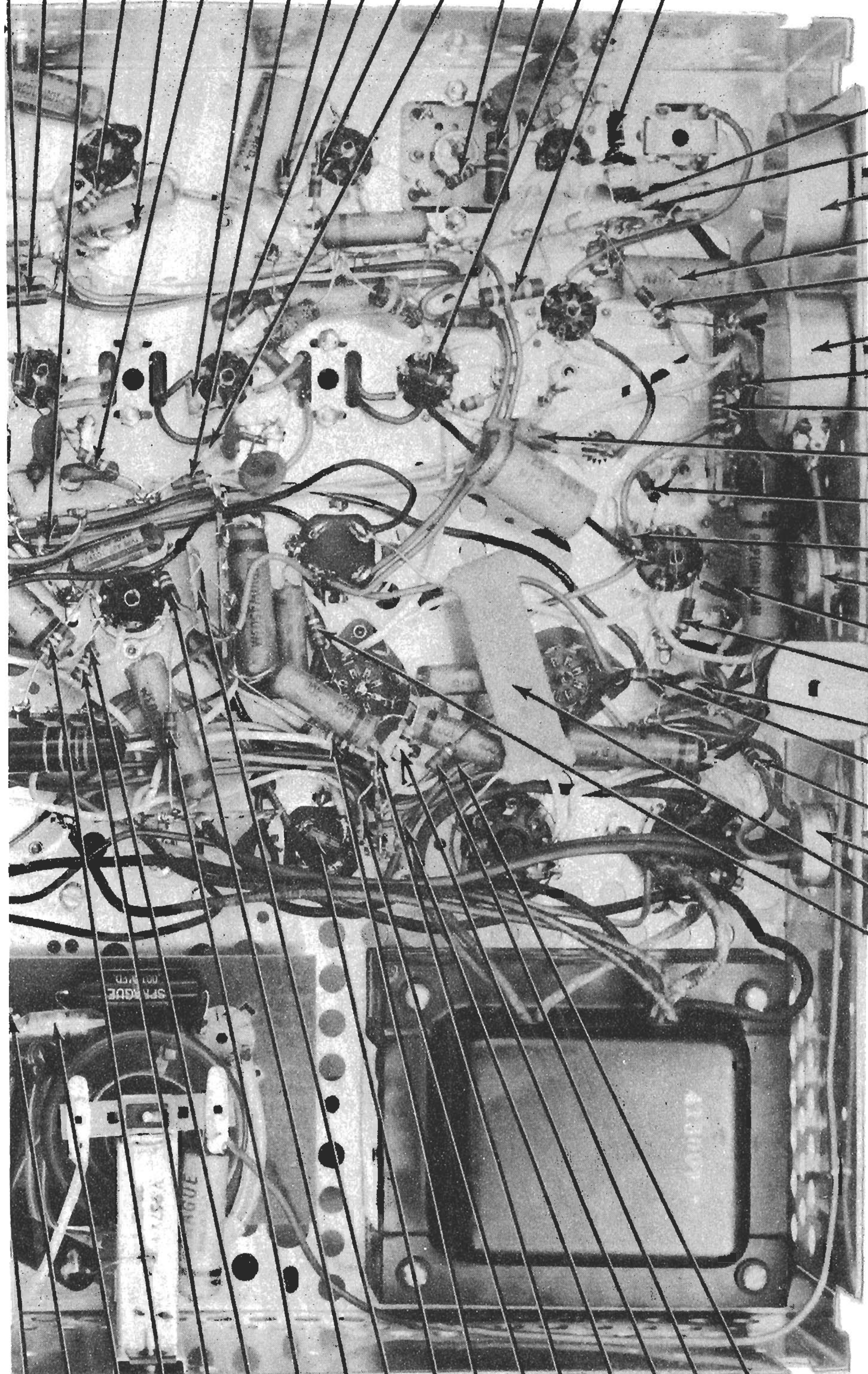




CHASSIS BOTTOM VIEW-RI



R23 R48 R21 R45 R44 R24 R26 R29 R42 R27 R41 R28 R40 R39 R49 R32 R38



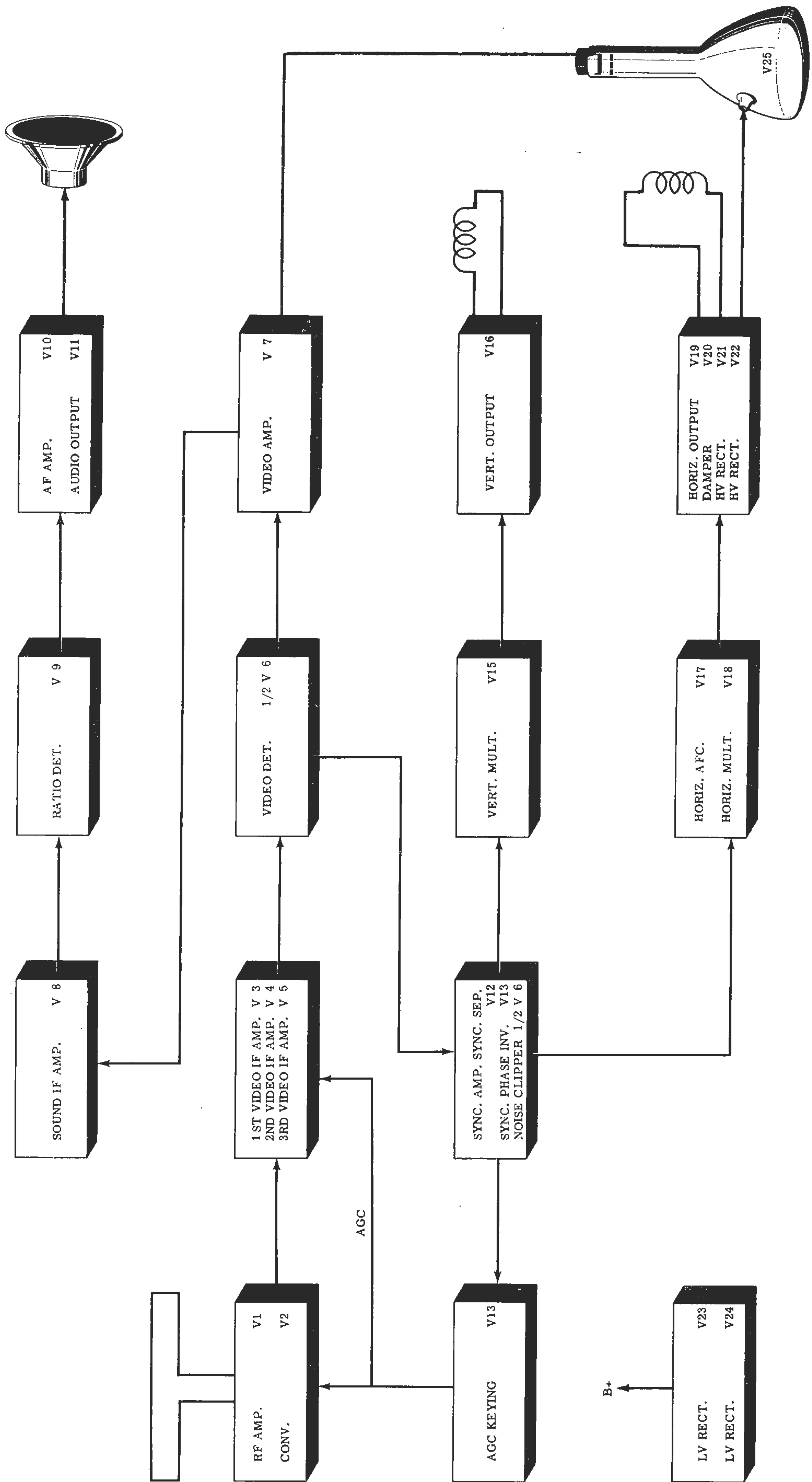
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R35  
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R6  
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R52  
R5  
R56  
R54  
R55  
R64  
R72  
R4  
R100  
R79

R97 R99 R98 R69 R70 R73 R68 R71 R67 R76 R83 R82 R81 R66 R80 R65 R63

WESTINGHOUSE MODELS H-617T12, H-618T16,  
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RESISTOR IDENTIFICATION





BLOCK DIAGRAM

WESTINGHOUSE MODELS H-617T12, H-618T16,  
H-619T12, U, H-620K16 (Ch. V-2150-176, U, V-2150-186)



TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA		RMA BASE TYPE	NOTES
		WESTINGHOUSE PART No.	STANDARD REPLACEMENT		
V1	RF Amp.	6AK5	6AK5	7BD	
V2	Converter	6J6	6J6	7BF	
V3	1st Video IF	6CB6	6CB6	7CM	
V4	2nd Video IF	6CB6	6CB6	7CM	
V5	3rd Video IF	6CB6	6CB6	7CM	
V6	Video Det. -Noise Clipper	6AL5	6AL5	6BT	
V7	Video Amp.	6CB6	6CB6	7CM	
V8	Sound IF	6AU6	6AU6	7BK	
V9	Ratio Det.	6AL5	6AL5	6BT	
V10	AF Amp.	6AV6	6AV6	7BT	
V11	Audio Output	6K6GT	6K6GT	7S	
V12	Sync. Amp. -Sync. Sep.	12AT7	12AT7	9A	
V13	AGC Keying	6AU6	6AU6	7BK	
V14	Sync. Phase Inv.	6C4	6C4	6BG	
V15	Vert. Mult.	12AU7	12AU7	9A	
V16	Vert. Output	6AQ5	6AQ5	7BZ	
V17	Hor. AFC	6AL5	6AL5	6BT	
V18	Hor. Mult.	12AU7	12AU7	9A	
V19	Hor. Output	6AU5GT	6AU5GT	6CK	2 used in Ch. V-2150-186
V20A	Damper	6U4GT	6U4GT	4CG	
B	Damper	6W4GT	6W4GT	4CG	Alternate
V21A	HV Rect.	1V2	1V2	9U	Ch. V-2150-176
B	HV Rect.	1X2	1X2	7CB	Ch. V-2150-176U and V-2150-186
V22A	HV Rect.	1V2	1V2	9U	Ch. V-2150-176
B	HV Rect.	1X2	1X2	7CB	Ch. V-2150-176U and V-2150-186
V23A	LV Rect.	6W4GT	6W4GT	4CG	
B	LV Rect.	6U4GT	6U4GT	4CG	
C	LV Rect.	5U4G	5U4G	5T	Ch. V-2150-186 only
V24A	LV Rect.	6W4GT	6W4GT	4CG	
B	LV Rect.	6U4GT	6U4GT	4CG	
C	LV Rect.	5U4G	5U4G	5T	Ch. V-2150-186 only
V25A	Picture Tube	12LP4A	12LP4A	12D	Ch. V-2150-176 and V-2150-176U
B	Picture Tube	16RP4	16RP4	12D	Ch. V-2150-186

ITEM No.	RATING		REPLACEMENT DATA		
	CAP.	VOLT	WESTINGHOUSE PART No.	AEROVOX PART No.	CENTRAL PART No.
C50	.01	400	RCPI0W4103M	P488-01	D6-103
C51	330	500	RCM20C331J	1469-00035	D6-331
C52	.05	400	RCPI0W4503M	P488-05	
C53A	2000		†	GP2000M	D6-202
B	5000			GP5000M	D6-502
C	5000			GP5000M	D6-502
C54	.05	400	RCPI0W4503M	P488-05	
C55	.01	400	V-6023-4103K	P488-01	D6-103
C56	.068	400	V-6023-4683K	P488-068	
C57	.1	400	RCPI0W4104M	P488-1	
C58	.001	600	RCPI0W6102M	P688-001	D6-102
C59	.001	600	RCPI0W6102M	P688-001	D6-102
C60	330	500	RCM20C331J	1469-00035	D6-331
C61	.001	600	RCPI0W6102M	P688-001	D6-102
C62	.005	400	RCPI0W4502M	P688-005	D6-502
C63	.05	400	RCPI0W4503M	P488-05	
C64	330	500	RCM20C331J	1469-00035	D6-331
C65	3900	500	RCM30C392K	1464-004	
C66	.1	400	RCPI0W4104M	P488-1	
C67	.1	400	RCPI0W4104M	P488-1	
C68	100	500	RCM20B101M	1468-0001	D6-101
C69	330	500	RCM20C331J	1469-00035	D6-331
C70	.01	400	RCPI0W4103M	P488-01	D6-103
C71	270	500	RCM20B271M	1468-00025	D6-271
C72	.1	400	RCPI0W4104M	P488-1	
C73	.1	400	RCPI0W4104M	P488-1	
C74	.1	400	V-6023-4104M	P488-1	
C75	100	1500	V-9176-15101K		
C76	100	1500	V-9176-15101K		
C77	.25	400	RCPI0W4254M	P488-25	
C78	.1	400	RCPI0W4104M	P488-1	
C79	.001	6000	V-9571-1		
C80	.001	6000	V-9571-1		
C81	.001	6000	V-9571-1		

\* Some models used 680MMF in this application.  
† Items C53A, C53B, C53C, R67A, R67B and R67C are con

CAPACITORS

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

ITEM No.	RATING		REPLACEMENT DATA					IDENTIFICATION CODES AND INSTALLATION NOTES	
	CAP.	VOLT	WESTINGHOUSE PART No.	AEROVOX PART No.	CENTRAL LAB PART No.	CORNELL DUBILIER PART No.	ERIE PART No.		SPRAGUE PART No.
C1A	40	350	V-6509	AFH888H30B		UP4445		TVL-409	▲ Filter
B	40	350				BRH5015			■ Output Decoup.
C	40	350							▲ Filter
D	150	50							Vert. Output Cath. Byp.
C2A	80	350	V-5891	AF16222H		UPI1DJ1047		TVL-47	▲ Filter
B	10	350						TVA-25	■ Decoupling
C	10	350							▲ Vert. MV Plate Dec.
D	10	350							Vert. Output Decoup.
C3	2	50	V-4880	PRS150/4		BBR2-50		TVA-12	Stabilizing Cap.
C4	15			GP10K	D6-150		GPIK-15		RF Coupling
C5	680			GP680M	D6-681		GP2K-680		AGC Filter
C6A	1000			GP1000M	D6-102		882-2 x 0015	29C7	RF Cathode Bypass
B	1000			GP1000M	D6-102		811-001	29C4	RF Decoupling
C7	1000								RF Cath. Bypass
C8	.25								RF Coupling
C9	5				D2-.5				RF Coupling
C10	1.8								RF Coupling
C11	470			GP470M	D6-471		GP2K-470		RF Plate Decoupling
C12	470			GP470M	D6-471		GP2K-470		RF Bypass
C13	1.5			C11.5CNPO	D2-1.5		NPOK-1.5		Osc. Coupling
C14	10			CN10DNPO	D2-10		NPOK-10		Osc. Grid Cap.
C15	3			CN3DNPO			NPOK-3		Osc. Feedback
C16	10			CN10DNPO	D2-10		NPOK-10		Fixed Trimmer
C17A	1000			GP1000M	D6-102		882-2 x 0015	29C7	Conv. Fil. Bypass
B	1000			GP1000M	D6-102				RF Bypass
C18	5000		V-5596	BPD-5	D6-502		811-005	29C1	Filament Bypass
C19	5000		V-5596	BPD-5	D6-502		811-005	29C1	RF Bypass
C20	5000		V-5596	BPD-5	D6-502		811-005	29C1	AGC Filter
C21	150		R5CC21ZY151M	GP150M	D6-151		GP2K-150	1FM-315	IF Coupling
C22	.1	400	RCPI0W4104M	P488-1		PTE4P1		TM-1	AGC Filter
C23	1500		R5CC26ZY152M	GP1500M	D6-152	1W5D15	GP2L-0015	1FM-215	AGC Filter
C24	5000		V-5596	BPD-5	D6-502	1D5D5	811-005	29C1	1st V. IF Decoupling
C25	1500		R5CC26ZY152M	GP1500M	D6-152	1W5D15	GP2L-0015	1FM-215	AGC Filter
C26	.01	400	RCPI0W4103M	P488-01	D6-103	PTE4S1	811-01	TM-11	AGC Filter
C27	5000		V-5596	BPD-5	D6-502	1D5D5	811-005	29C1	2nd V. IF Decoupling
C28	1500		R5CC26ZY152M	GP1500M	D6-152	1W5D15	GP2L-0015	1FM-215	RF Bypass
C29	5000		V-5596	BPD-5	D6-502	1D5D5	811-005	29C1	3rd V. IF Screen Byp.
C30	1500		R5CC26ZY152M	GP1500M	D6-152	1W5D15	GP2L-0015	1FM-215	3rd V. IF Cath. Byp.
C31	5000		V-5596	BPD-5	D6-502	1D5D5	811-005	29C1	3rd V. IF Plate Dec.
C32	1500		R5CC26ZY152M	GP1500M	D6-152	1W5D15	GP2L-0015	1FM-215	3rd V. IF Fil. Byp.
C33	4.7		V-5658-6	GP5K	D2-4.7	5W5V5	NPOK-4.7	MS-55	V. Diode Filter
C34	1500		R5CC26ZY152M	GP1500M	D6-152	1W5D15	GP2L-0015	1FM-215	V. Det. Fil. Byp.
C35	.1	400	RCPI0W4104M	P488-1		PTE4P1		TM-1	Video Coupling
C36	.1	400	RCPI0W4104M	P488-1		PTE4P1		TM-1	Pic. Tube Grid Byp.
C37	47	500	RCM20B470M	1468-00005	D6-470	5W5Q5	GPIK-47	1FM-45	S. IF Coupling
C38	.01	400	RCPI0W4103M	P488-01	D6-103	PTE4S1	811-01	TM-11	S. IF Decoupling
C39	680	500	RCM20B681M	1468-00005	D6-681	1W5T7	GP2K-680	1FM-37	Diode Load Cap.
C40	.002	600	RCPI0W6202M	P688-002	D6-202	PTE6D2	GP2M-002	TM-22	De-emphasis
C41	.01	400	RCPI0W4103M	P488-01	D6-103	PTE4S1	811-01	TM-11	Audio Coupling
C42	.005	400	RCPI0W4502M	P688-005	D6-502	PTE6D5	811-005	TM-25	Tone Comp.
C43	100	500	RCM20B101M	1468-00001	D6-101	5W5T1	GPIK-100	1FM-31	RF Bypass
C44	.01	400	RCPI0W4103M	P488-01	D6-103	PTE4S1	811-01	TM-11	Audio Coupling
C45	270	500	RCM20B271M	1468-00025	D6-271	5W5T25	GP2K-270	1FM-325	AF Amp. Plate Bypass
C46	.01	400	RCPI0W4103M	P488-01	D6-103	PTE4S1	811-01	TM-11	Audio Coupling
C47	.002	600	RCPI0W6202M	P688-002	D6-202	PTE6D2	GP2M-002	TM-22	Output Plate Bypass
C48	.25	400	V-6066-4254M	P488-25		GT4P25		TC-2	Sync. Coupling
C49	270	500	RCM20B271M	1468-00025	D6-271	5W5T25	GP2K-270	1FM-325	Sync. Coupling.

CON

ITEM No.	RATING		REPLACEMENT DATA		
	RESISTANCE	WATTS	WESTINGHOUSE PART No.	IRC PART No.	CLARO PART
R1A	500KΩ	1/2	V-6198-4	Q13-133X	T-78
B	Switch		Not Req.	76-1	SW-A
R2A	500KΩ	1/2	V-9233	Concentrikit B11-133 * B11-128 * E-202 *	V-9233
B	100KΩ				
C	Shaft End				
R3A	50KΩ	1/2	V-9235-2		V-9235-
B	1500Ω				
R4A	1 Meg.	1/2	V-6462	Q11-137	M-61-S
B	Shaft		Not Req.	Not Req.	Not Req.
R5A	5000Ω	1/2	V-6463	Q11-114	M-19-S
B	Shaft		Not Req.	Not Req.	Not Req.
R6	1000Ω	4	V-9612-1		58-1000
R7	1000Ω	4	V-9612-1		58-1000

\* Additional parts to be used with "Concentrikit".  
Note 1. Chassis V-2150-176U uses 1 Meg. control part No. V

RES

ITEM No.	RATING		REPLACEMENT DATA	
	RESISTANCE	WATTS	WESTINGHOUSE PART No.	IRC PART No.
R8	2200Ω 20%	1/2		BTS-2200
R9	4700Ω	1/2		BTS-4700
R10	2200Ω 20%	1/2		BTS-2200
R11	270KΩ 20%	1/2		BTS-270K
R12	15KΩ 20%	1/2		
R13	22KΩ 20%	1/2		
R14	4700Ω	1/2		BTS-4700
R15	1000Ω 20%	1/2	RC20AE102M	BTS-1000
R16	10KΩ 20%	1/2	RC20AE103M	BTS-10K
R17	12KΩ	1/2	RC20AE123K	BTS-12K
R18	100Ω	1/2	RC20AE101K	
R19	2700Ω	1/2	RC20AE272K	BTS-2700
R20	10KΩ 20%	1/2	RC20AE103M	BTS-10K
R21	10KΩ 20%	1/2	RC20AE103M	BTS-10K
R22	5600Ω	1/2	RC20AE562K	
R23	100Ω	1/2	RC20AE101K	
R24	2700Ω	1/2	RC20AE272K	BTS-2700
R25	470KΩ 20%	1/2	RC20AE474M	BTS-470K
R26	12KΩ	1/2	RC20AE123K	BTS-12K
R27	180Ω	1/2	RC20AE181K	
R28	12KΩ	1/2	RC20AE123K	BTS-12K
R29	1000Ω 20%	1/2	RC20AE102M	BTS-1000
R30	4700Ω	1/2	RC20AE472K	BTS-4700
R31	33KΩ	1/2	RC20AE333K	BTS-33K
R32	4700Ω	1/2	RC30AE472K	BTA-4700
R33	3000Ω	1/2	V-9600-5	AB-3000
R34	100KΩ	1/2	RC20AE104K	BTS-100K
R35	150KΩ	1/2	RC20AE154K	BTS-150K
R36	6800Ω	1/2	RC20AE682K	BTS-6800
R37	22KΩ 20%	1/2	RC20AE223M	BTS-22K
R38	47KΩ	1/2	RC20AE473K	
R39	68KΩ	1/2	RC30AE683K	



# DESCRIPTIONS

RES (CONT.)

IDENTIFICATION DATA			IDENTIFICATION CODES AND INSTALLATION NOTES
CORNELL-DUBILIER PART No.	ERIE PART No.	SPRAGUE PART No.	
PTE4S1	811-01	TM-11	Sync. Coupling
5R5T3	GP2K-330	MS-43	Hor. Feedback
PTE4S5		TM-15	Sync. Coupling
PTE6D2	GP2M-002	TM-22	Integrator Net.
PTE6D5	811-005	TM-25	Integrator Net.
PTE6D5	811-005	TM-25	Integrator Net.
PTE4S5		TM-15	Vert. MV Cath. Byp.
PTE4S1	811-01	TM-11	Vert. MV Feedback
			Vert. Discharge
PTE4P1		TM-1	Vert. Sweep Coupling
PTE6D1	GP2L-001	TM-22	Hor. Sync. Coupling
PTE6D1	GP2L-001	TM-22	Hor. Sync. Coupling
5R5T3	GP2K-331	MS-33	Hor. Feedback
PTE6D1	GP2L-001	TM-21	Voltage Divider
PTE6D5	811-005	TM-25	AFC Filter
PTE6S5		TM-15	AFC Filter
5R5T3	GP2K-330	MS-33	Hor. MV Feedback
IDR5D4		MS-24	Fixed Trimmer
PTE4P1		TM-1	Hor. MV Decoupling
PTE4P1		TM-1	Hor. MV Decoupling
5W5T1	GPIK-100	IFM-31	Hor. Discharge
5R5T3	GP2K-330	MS-33	Hor. Discharge *
PTE4S1	811-01	TM-11	Hor. Sweep Coup.
5W5T25	GP2K-270	IFM-325	Hor. Output Grid Byp.
PTE4P1		TM-1	Hor. Output Screen Byp.
PTE4P1		TM-1	Hor. Output Cath. Byp.
PTE4P1		TM-1	Hor. Sweep Coupling
			Fixed Trimmer
GT4P25		TC-2	Damper Filter
PTE4P1		TM-1	Hor. Output Decoup.
PTE60D1		TVM-216	Voltage Doubler Cap.
PTE60D1		TVM-216	HV Filter
PTE60D1		TVM-216	HV Filter

Combined into one unit obtainable under MFR'S Part No. V-9213.

## CONTROLS

STAT No.	CENTRAL LAB PART No.	INSTALLATION NOTES
	BT-66-S Not Req.	Volume control tapped at 100KΩ Attach to R1A per instructions
	SBB-514	Vert. hold control-front Horiz. hold control-rear Attach per instructions in "Concentrikit".
	SBB-513	Brightness control-front Contrast control-rear
	AN-69	Height control-See note 1
	AK-1	Attach to R4A per instructions
	AN-10	Vert. linearity control
	AK-1	Attach to R5A per instructions
	V-129	Width control-Wire Wound
	V-129	Focus control-Wire Wound

-9813.

## TRANSFORMERS

IDENTIFICATION CODES	
ALL RESISTORS ARE ± 10% UNLESS OTHERWISE STATED.	
RF Grid	Ant. Coil Shunt-See Note 2
RF Decoupling	Conv. Grid
Conv. Plate	Osc. Grid
Osc. Plate	Decoupling
AGC Network	1st Video IF Grid
1st Video IF Grid	1st Video IF Cathode
1st Video IF Cathode	1st Video IF Decoupling
1st Video IF Decoupling	AGC Network
AGC Network	AGC Network
2nd Video IF Transformer Shunt	2nd Video IF Cathode
2nd Video IF Cathode	2nd Video IF Decoupling
2nd Video IF Decoupling	AGC Network
AGC Network	3rd Video IF Transformer Shunt
3rd Video IF Transformer Shunt	3rd Video IF Cathode
3rd Video IF Cathode	3rd Video IF Screen
3rd Video IF Screen	3rd Video IF Plate Decoupling
3rd Video IF Plate Decoupling	Video Det. Diode Load
Video Det. Diode Load	Peaking Coil Shunt
Peaking Coil Shunt	Video Amp. Plate
Video Amp. Plate	Decoupling-Wire Wound
Decoupling-Wire Wound	Voltage Divider
Voltage Divider	Picture Tube Cathode
Picture Tube Cathode	Voltage Divider
Voltage Divider	Voltage Divider
Voltage Divider	Sound IF Grid
Sound IF Grid	Sound IF Decoupling
Sound IF Decoupling	

# RESISTORS (CONT.)

ITEM No.	RATING		REPLACEMENT DATA		IDENTIFICATION CODES
	RESISTANCE	WATTS	WESTINGHOUSE PART No.	IRC PART No.	
R40	33KΩ	1	RC20AE333K	BTS-33K	De-emphasis
R41	10KΩ	1	RC20AE103K	BTS-10K	Ratio Det. Diode Load
R42	10KΩ	1	RC20AE103K	BTS-10K	Ratio Det. Diode Load
R43	22KΩ 20%	1	RC20AE223M	BTS-22K	Tone Compensation
R44	10 Meg. 20%	1	RC20AE106M	BTS-10 Meg.	AF Amp. Grid
R45	270KΩ	1	RC20AE274K	BTS-270K	AF Amp. Plate
R46	470KΩ	1	RC20AE474K	BTS-470K	Output Grid
R47	470Ω	1	RC30AE471K	BTA-470	Output Cathode
R48	1000Ω 20%	1	RC30AE102M	BTA-1000	Output Decoupling
R49	1 Meg.	1	RC20AE105K	BTS-1 Meg.	Noise Clipper Load-See Note 3
R50	10KΩ	1	RC20AE103K	BTS-10K	Isolation
R51	15KΩ	1	RC20AE153K	BTS-15K	Sync. Amp. Plate-See Note 4
R52	1 Meg.	1	RC20AE105K	BTS-1 Meg.	Sync. Amp. Grid
R53	470KΩ	1	RC20AE474K	BTS-470K	Charge Limiting
R54	1 Meg.	1	RC20AE105K	BTS-1 Meg.	Sync. Sep. Grid
R55	150KΩ	1	RC20AE154K	BTS-150K	Sync. Sep. Plate
R56	22KΩ	1	RC20AE223K	BTS-22K	Voltage Divider
R57	4700Ω	1	RC20AE472K	BTS-4700	AGC Keying Grid
R58	10KΩ	2	BT-2-10K	BT-2-10K	AGC Keying Cathode-See Note 5
R59	3300Ω	1	RC30AE332K	BTA-3300	Voltage Divider-See Note 6
R60	330KΩ 20%	1	RC30AE334K	BTA-330K	Voltage Divider
R61	220KΩ 20%	1	RC20AE224M	BTS-220K	AGC Keying Plate
R62	470KΩ	1	RC20AE474K	BTS-470K	AGC Network
R63	2.2 Meg.	1	RC20AE225K	BTS-2.2 Meg.	Sync. Phase Inv. Grid-See Note 11
R64	2700Ω	1	RC20AE272K	BTS-2700	Sync. Phase Inv. Plate
R65	2200Ω	1	RC20AE222K	BTS-2200	Sync. Phase Inv. Cathode
R66	470Ω	1	RC20AE471K	BTS-470	Sync. Phase Inv. Cathode
R67A	22KΩ	1	†	BTS-22K	Integrator Network
B	8200Ω	1	†	BTS-8200	Integrator Network
C	8200Ω	1	†	BTS-8200	Integrator Network
R68	1200Ω	1	RC20AE122K	BTS-1200	Vert. MV Cathode
R69	470KΩ	1	RC20AE474K	BTS-470K	Vert. MV Grid
R70	390KΩ	1	RC20AE394K	BTS-390K	Vert. MV Plate
R71	100KΩ	1	RC20AE104K	BTS-100K	Vert. MV Plate
R72	47KΩ	1	RC20AE473K	BTS-47K	Vert. MV Plate Decoupling
R73	5600Ω	1	RC20AE562K	BTS-5600	Vert. Peaking-See Note 7
R74	2.2 Meg. 20%	1	RC20AE225M	BTS-2.2 Meg.	Vert. Output Grid
R75	470Ω	1	RC20AE471K	BTS-470	Vert. Output Cathode
R76	1000Ω 20%	1	RC20AE102M	BTS-1000	Vert. Output Decoupling
R77	220KΩ	1	RC30AE224K	BTA-220K	Feedback Network
R78	330KΩ	1	RC30AE334K	BTA-330K	Feedback Network
R79	68KΩ	1	RC20AE683K	BTS-68K	Horiz. AFC Filter Network
R80	100KΩ 5%	1	RC20AE104J	BTS-100K-5%	Horiz. AFC Diode Load
R81	120KΩ 5%	1	RC20AE104J	BTS-100K-5%	Horiz. AFC Diode Load
R82	4.7 Meg. 20%	1	RC20AE475M	BTS-4.7 Meg.	Horiz. AFC Diode Load
R83	470KΩ	1	RC20AE474K	BTS-470K	Horiz. AFC Filter Network
R84	1800Ω	1	RC2JAE182K	BTS-1800	Horiz. MV Cathode
R85	220KΩ 5%	1	RC20AE224J	BTS-220K-5%	Horiz. MV Grid
R86	5600Ω	1	RC20AE562K	BTS-5600	Horiz. MV Plate
R87	33KΩ	1	RC20AE333K	BTS-33K	Horiz. MV Plate Decoupling
R88	220KΩ	1	RC20AE224K	BTS-220K	Horiz. MV Plate
R89	10KΩ	1	RC20AE103K	BTS-10K	Horiz. MV Plate Decoupling
R90	27KΩ	1	RC20AE273K	BTS-27K	Horiz. Peaking-See Note 8
R91	120Ω 20%	1	RC20AE121M	BTS-120	Parasitic Supp.
R92	470KΩ 20%	1	RC20AE474M	BTS-470K	Horiz. Output Grid
R93	91Ω	2	V-9002-4900K		Horiz. Output Cathode- Wire Wound
R94	8200Ω	2	V-9002-4822K	BT-2-8200	Horiz. Output Screen-Wire Wound
R95	7500Ω	10	V-9600-3		Damper Filter-Wire Wound
R96	510KΩ 5%	1	V-9016-2514J		HV Rect. Load
R97	510KΩ 5%	1	V-9016-2514J		HV Rect. Load
R98	510KΩ 5%	1	V-9016-2514J		HV Rect. Load
R99	100KΩ 20%	1	RC20AE104M		HV Filter
R100	50Ω	10	V6597		Surge Limiter-Wire Wound
R101	190Ω	3	V-5134		Focus Coil Shunt-Wire Wound-See Note 10
R102	270KΩ 20%	1	RC20AE274M	BTS-270K	Line Filter-See Note 9
R103	100Ω	1	RC20AE100K		RF Amp. Cathode

† Items C53A, C53B, C53C, R67A, R67B, and R67C are combined into one unit obtainable under MFR'S Part No. V-9213.

- Note 2. Not used in all models.
- Note 3. Some models use 3.9 Meg. resistor in this application.
- Note 4. Some models use 22KΩ resistor in this application.
- Note 5. Some models use 47KΩ resistor in this application.
- Note 6. Some models use 10KΩ, 1 watt resistor in this application.
- Note 7. Some models use 4700Ω resistor in this application.
- Note 8. Some models use 15KΩ resistor in this application.
- Note 9. Used in chassis V-2150-176U only.
- Note 10. Some models use 110Ω resistor in this application.
- Note 11. Some models use 1 Meg. resistor in this application.

## TRANSFORMER (POWER)

ITEM No.	RATING				REPLACEMENT DATA			
	PRI.	SEC. 1	SEC. 2	SEC. 3	WESTINGHOUSE PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.
T1A	117VAC	620VCT	12.6VCT		V-9723			
B	④ 1.8A	.250ADC	④ 5.5A		V-9780 ④			

④ Used in chassis V-2150-186.

WESTINGHOUSE MODELS H-617T12, H-618T16, H-619T12, U, H-620K16 (Ch. V-2150-176, U, V-2150-186)



# PARTS LIST AND DESCRIPTIONS (Continued)

## TRANSFORMER (SWEEP CIRCUITS)

ITEM No.	RATING		REPLACEMENT DATA				NOTES
	DC RESISTANCE		WESTINGHOUSE PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	
	PRI.	SEC.					
T2	650Ω	8.7Ω	V-9584-1	A-8113	A-3036	TSO-5 ①	Vert. Output Trans. Hor. Deflection Coil Vert. Deflection Coil Focus Coil HV Trans.
T3A	37Ω		V-9210-2	DY-7	MD-3		
B	68Ω						
T4	250Ω		V-9590-2				
T5A	720Ω	0Ω	V-9572-1 ②				
	Tap ②	SEC. 2					
	175Ω	0Ω					
B			V-9759 ③ ④				HV Trans.

- ① Drill one new mounting hole.  
 ② Used in chassis V-2150-176.  
 ③ Used in chassis V-2150-176U.  
 ④ Used in chassis V-2150-186.

## TRANSFORMER (AUDIO OUTPUT)

ITEM No.	RATING				REPLACEMENT DATA				INSTALLATION NOTES
	IMPEDANCE		DC RES.		WESTING. PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	
	PRI.	SEC.	PRI.	SEC.					
T6A	7100Ω	3.8Ω	485Ω	.7Ω	V-9238 ②	A-3878	A-2931	RO-13	② Used in chassis V-2150-176 ③ Used in chassis V-2150-176U ④ Used in chassis V-2150-186
B					V-9814 ③				
C					V-9807 ④				

## SPEAKER

ITEM No.	RATINGS		REPLACEMENT DATA			NOTES
	FIELD RES.	V. C. IMP.	WESTINGHOUSE PART No.	JENSEN PART No.	QUAM PART No.	
SP1A	68Ω	3.8Ω	V-9236-2		4E68S	Models H-617T12, H-619T12, U Model H-620K16 Model H-618T16
B			V-9770			
C			V-6555-2			
	CONE DIA.	V. C. DIA.				
SP2A	4"	9/16"				
B	9 7/8"					
C						

## COILS (RF-IF)

ITEM No.	USE	DC RES.		REPLACEMENT DATA		NOTES
		PRI.	SEC.	WESTINGHOUSE PART No.	MEISSNER PART No.	
L1	Ant. Coil	0Ω	0Ω			Part of tuner V-9502-1 Channel 6 part of tuner V-9502-1 Channel 13 part of tuner V-9502-1 Part of tuner V-9502-1 Part of tuner V-9502-1  Chassis V-2150-176U and V-2150-186  Chassis V-2150-176U and V-2150-186  Chassis V-2150-176U and V-2150-186
L2	Osc. Coil	.1Ω				
L3	Osc. Coil	.1Ω				
L4	1st Video IF	.6Ω				
L5	Fil. Choke	.1Ω				
L6	Fil. Choke	.9Ω		V-9099-1		
L7A	2nd Video IF	1Ω	1Ω	V-9586-1		
B	2nd Video IF			V-9798		
L8A	3rd Video IF	1Ω	1Ω	V-9586-1		
B	3rd Video IF			V-9798		
L9A	4th Video IF	1Ω	1Ω	V-9582-2		
B	4th Video IF			V-9798		
L10	Peaking	4.9Ω		V-5902-4		
L11	Peaking	6Ω		V-5902-1		
L12	Peaking	6Ω		V-5902-1		
L13	Sound IF	2.7Ω	2.7Ω	V-9371		
L14	Ratio Det. Trans.	7Ω	.8Ω	V-9574		
L15	Ringing	110Ω		V-6764		
L16	Fil. Choke	1.9Ω		V-9099-2		
L17	Fil. Choke	.9Ω		V-9099-1		

## MISCELLANEOUS

ITEM No.	PART NAME	WESTINGHOUSE PART No.	NOTES
M1A	RF Tuner	V-9502-1	Built-In Antenna Contrast, Horiz. Hold Brightness, Vert. Hold Volume, Off-On (Rear) Volume, Off-On (Front) Fine Tuning Channel Selector Antenna
B	RF Tuner	V-8210	
M2	Ion Trap	V-6573-3	
	Antenna Assembly	V-9366-2	
	Knob	V-6146-1	
	Knob	V-9104-1	
	Knob	V-9104-3	
	Knob	V-6146-5	
	Knob	V-9104-4	
	Knob	V-6284-6	
	Knob	V-5100-1	
	Safety Glass	V-6288-10	