

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

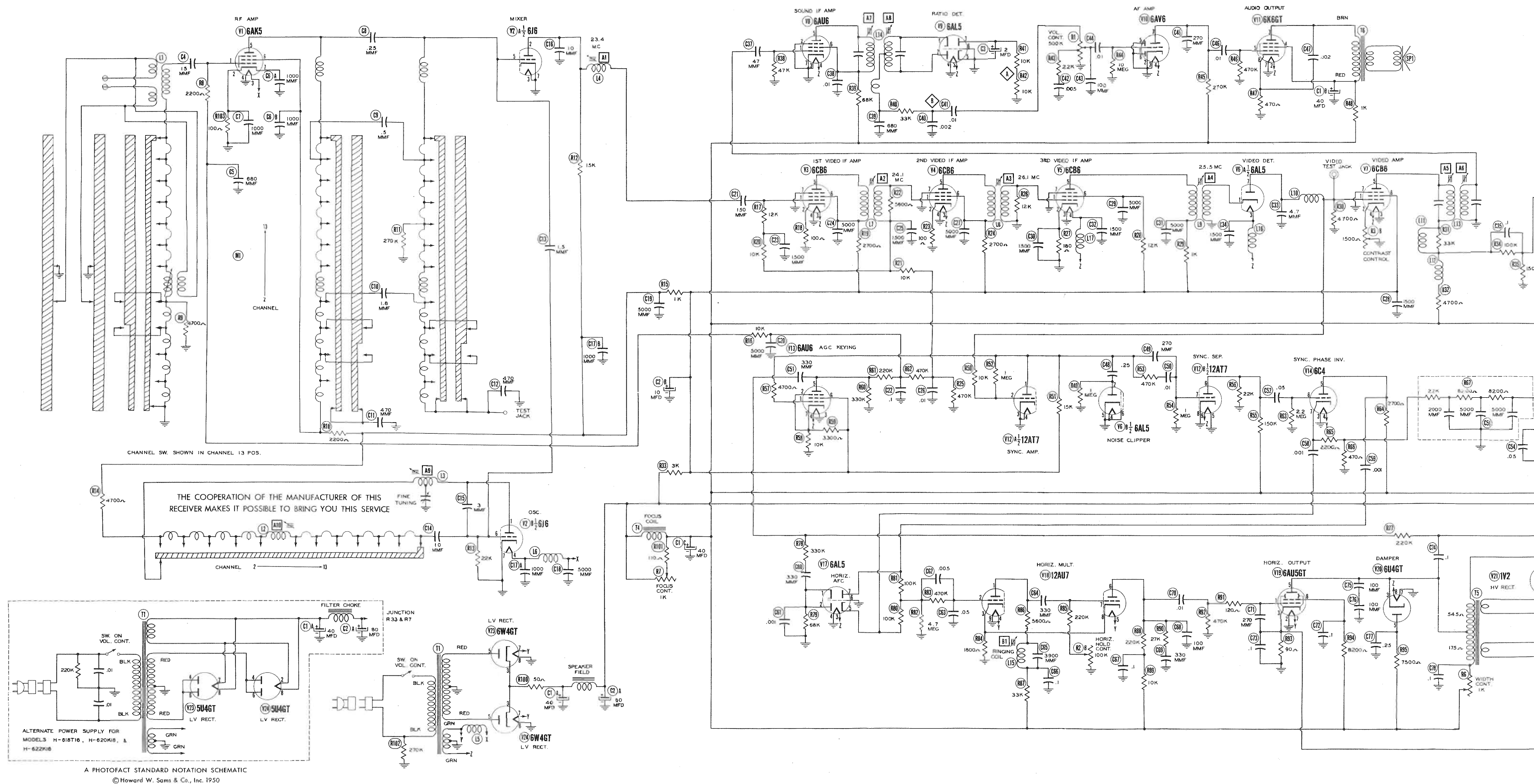
WESTINGHOUSE MODEL H-619T12			
TRADE NAME	Westinghouse, Models H-617T12 (Ch. V-2150-176), H-618T16 (Ch. V-2150-186), H-619T12 (Ch. V-2150-176), H-619T12U (Ch. V-2150-176U), H-620K16 (Ch. V-2150-186)		
MANUFACTURER	Westinghouse Electric Corp., Receiver Div., Sunbury, Pa.		
TYPE SET	Television Receiver		
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		
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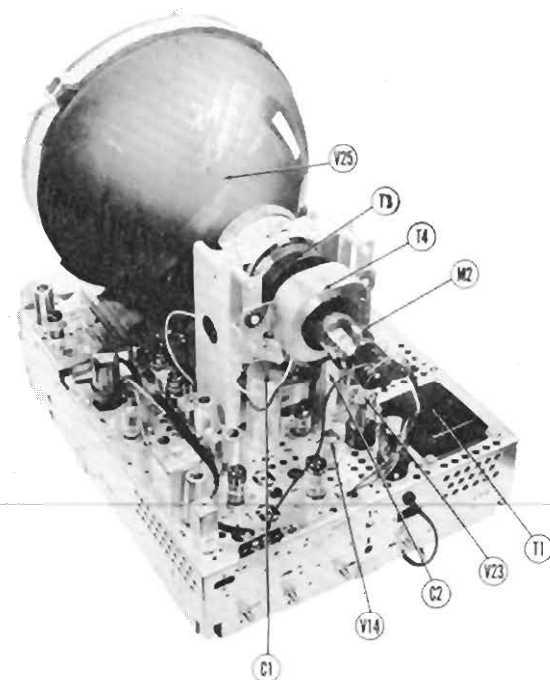
HOWARD W. SAMS & CO., INC. • Indianapolis 1, Indiana

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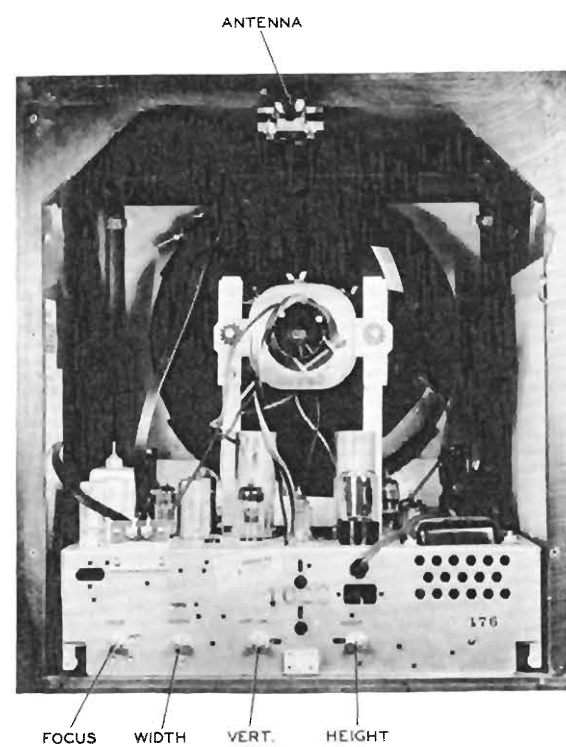
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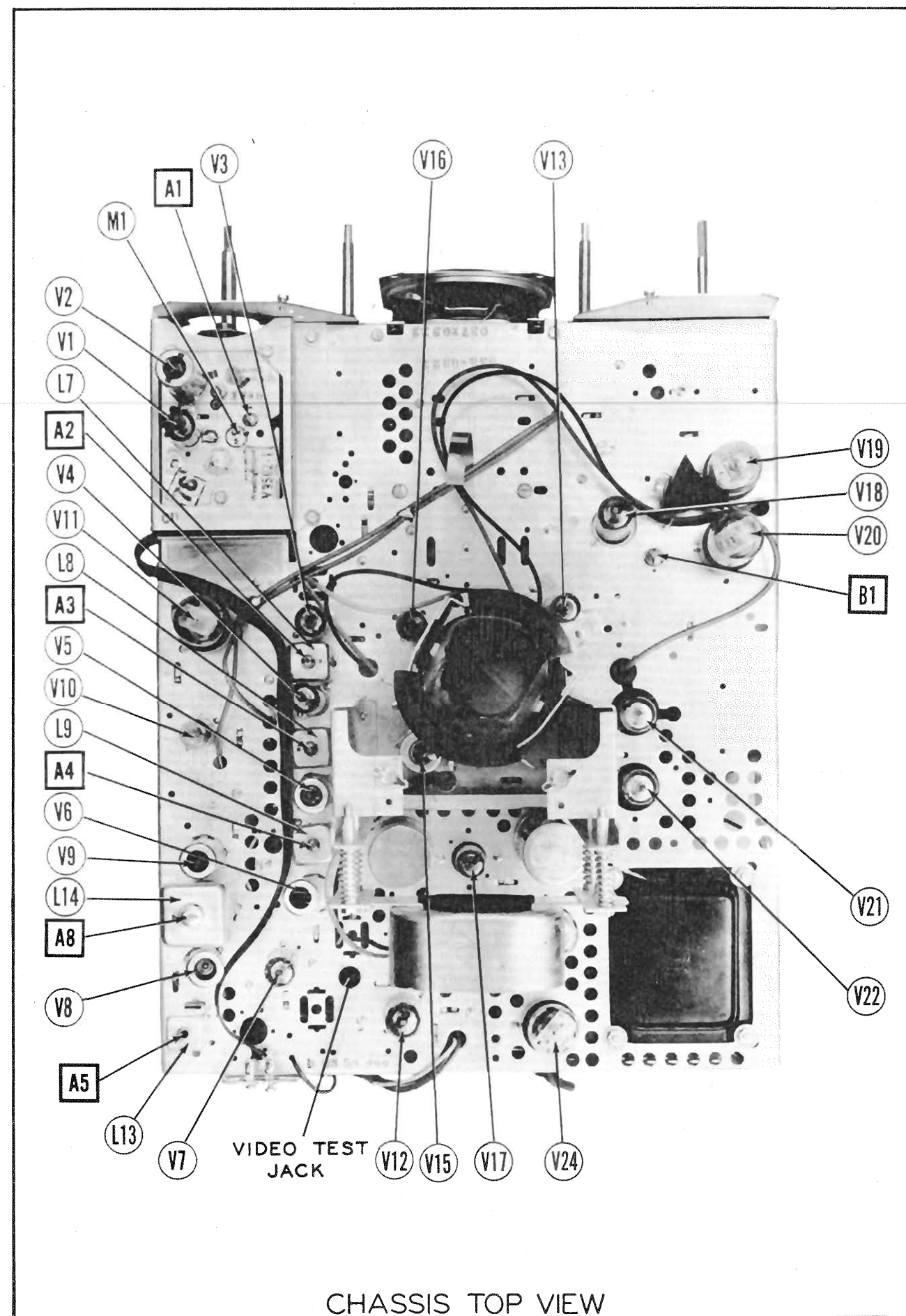
CHASSIS-TOP VIEW



CABINET-REAR VIEW

HORIZONTAL SWEEP CIRCUIT ADJUSTMENTS

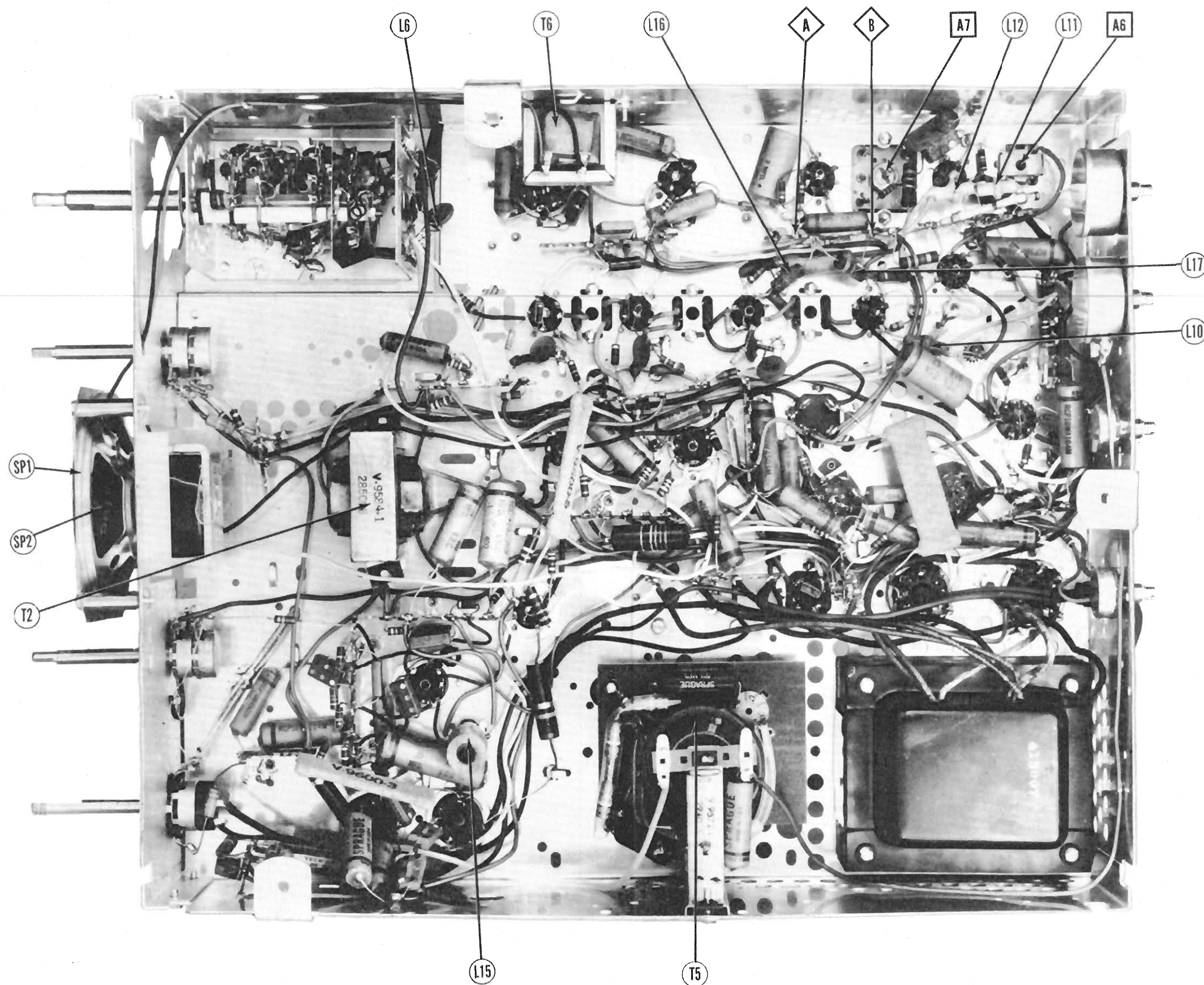
Turn the receiver on and tune in a TV station, preferably a test pattern.
Turn the horizontal hold control to the mid-position of its range.
Adjust the horizontal frequency slug (B1) until the picture synchronizes horizontally.
Adjust the horizontal width control until the picture fills the mask horizontally.



CHASSIS TOP VIEW

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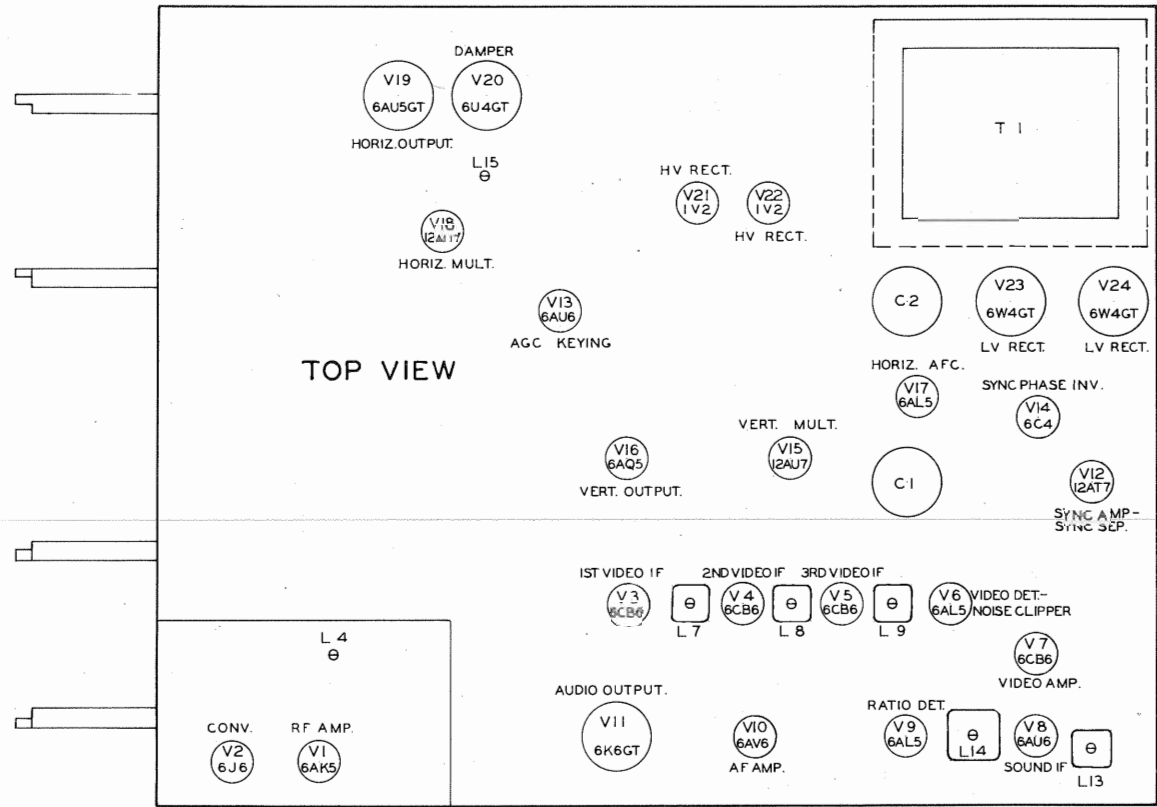
CHASSIS BOTTOM VIEW-TRANS., INDUCTOR AND ALIGNMENT IDENTIFICATION

VOLTAGE AND RESISTANCE MEASUREMENTS

† 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.

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



TUBE PLACEMENT CHART

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

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	
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.	
Direct	"	24.1MC	"	"	A2	"	
Direct	"	23.6MC	"	"	A3	"	
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
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	
.001MFD	High side to "video test jack". Low side to chassis.	4.5MC (Unmod.)	Any	DC Probe to Point A. Common to chassis.	A5, A6, A7	Adjust for maximum deflection.	
.001MFD	"	"	"	DC Probe to Point B. Common to Point 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 120% sawtooth voltage in scope for horizontal deflection.							
DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
.001MFD	High side to "video test jack". Low side to chassis.	4.5MC (450KC Sweep)	4.5MC	Any	Vert. Amp. to Point A. Low side to chassis.	A5, A6, A7	Disconnect stabilizer capacitor C3. Adjust for maximum amplitude and symmetry as per figure 2.
.001MFD	"	"	"	"	Vert. Amp. to Point 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
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%.
"	"	207MC (10MC SWP) 201MC (10MC SWP) 195MC (10MC SWP) 189MC (10MC SWP) 183MC (10MC SWP) 177MC (10MC SWP)	205.25MC 209.75MC 214.25MC 218.75MC 223.25MC 227.75MC	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.
"	"	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%.
"	"	79MC (10MC SWP) 69MC (10MC SWP) 63MC (10MC SWP) 57MC (10MC SWP)	77.25MC 81.75MC 86.25MC 90.75MC	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.							

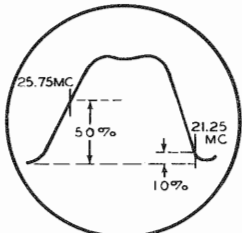


FIG. 1

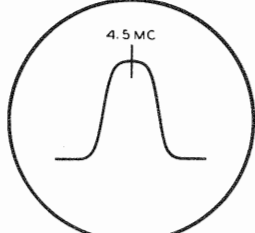


FIG. 2

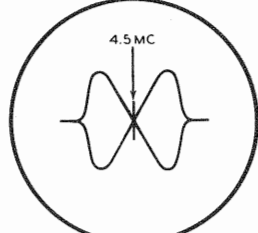


FIG. 3

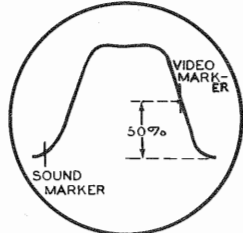
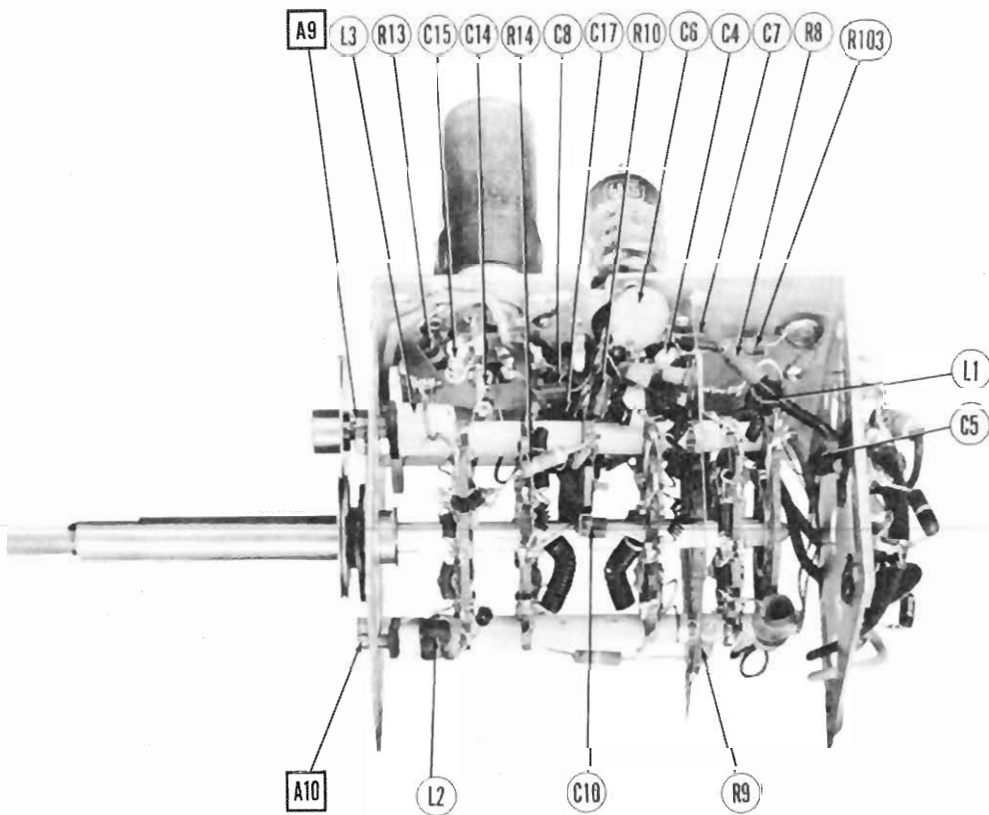
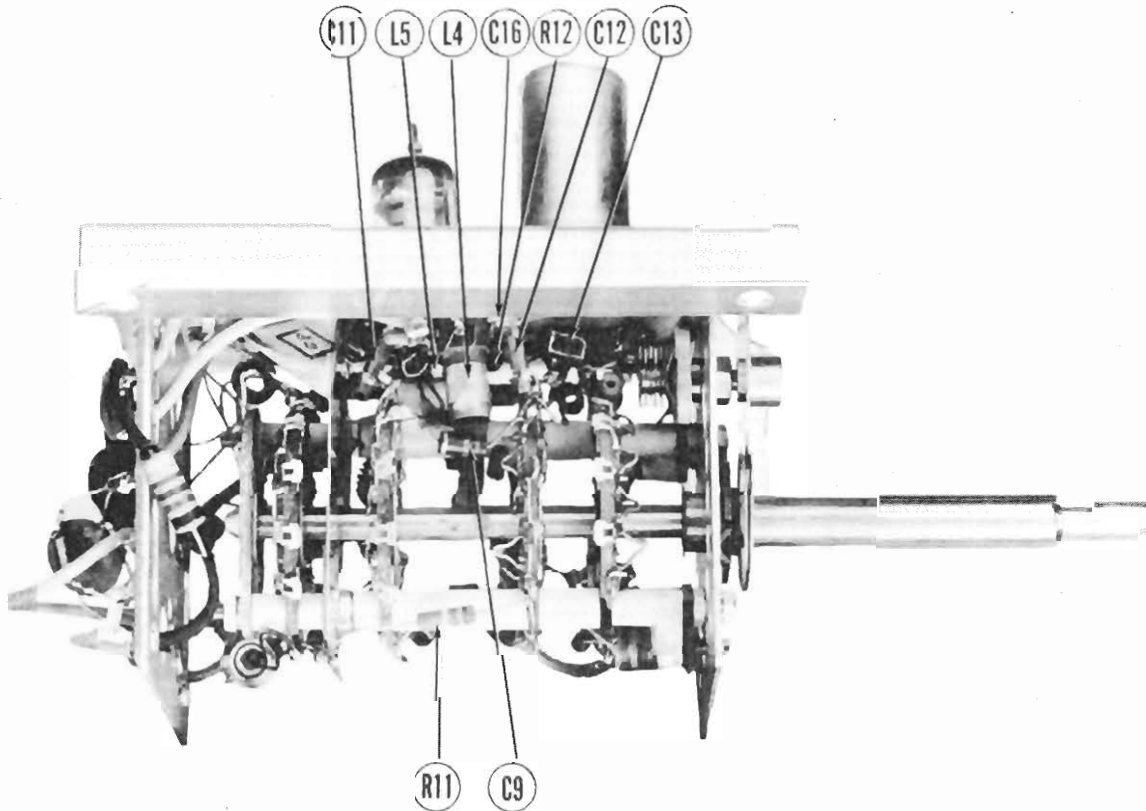


FIG. 4

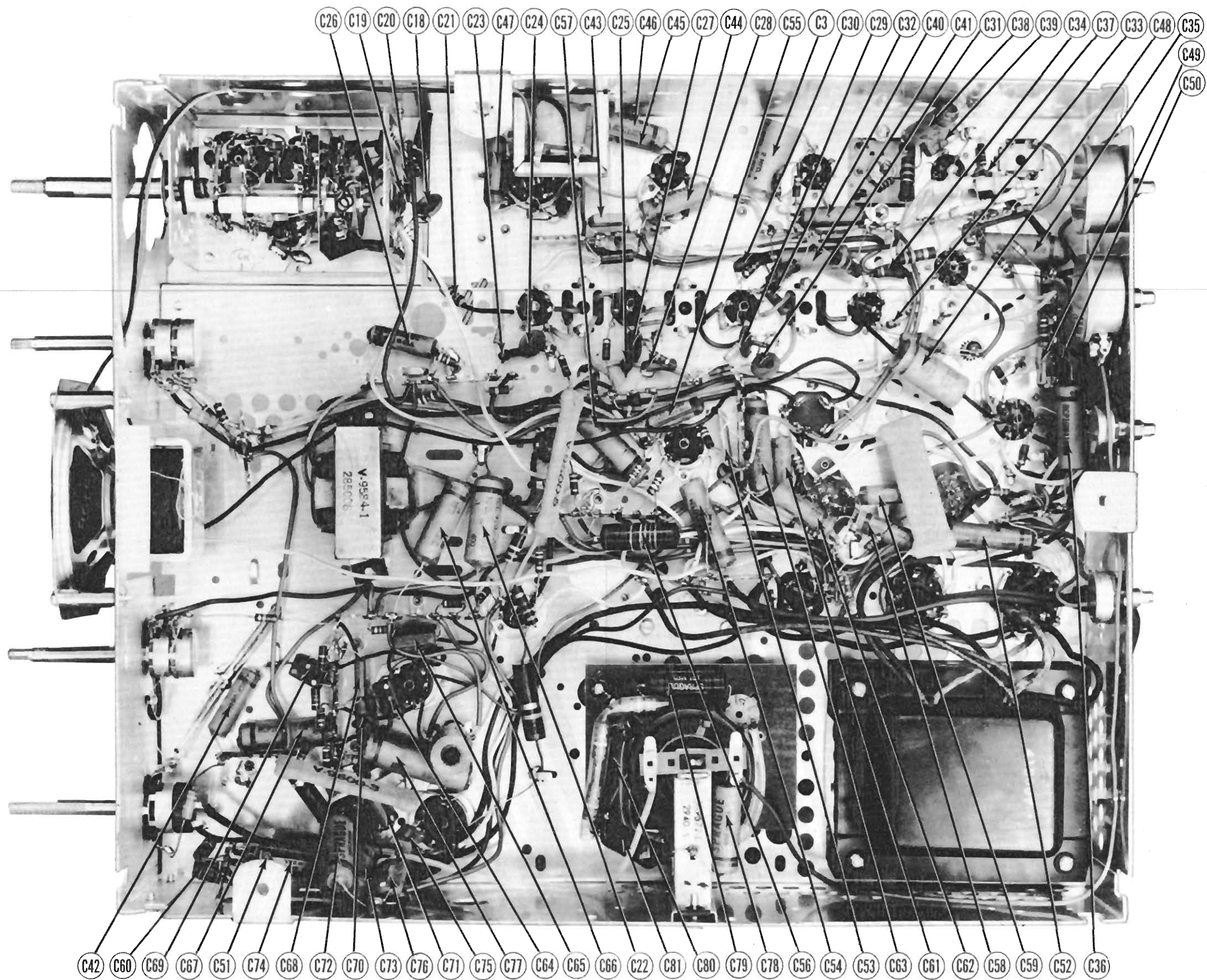


RF TUNER—RIGHT SIDE

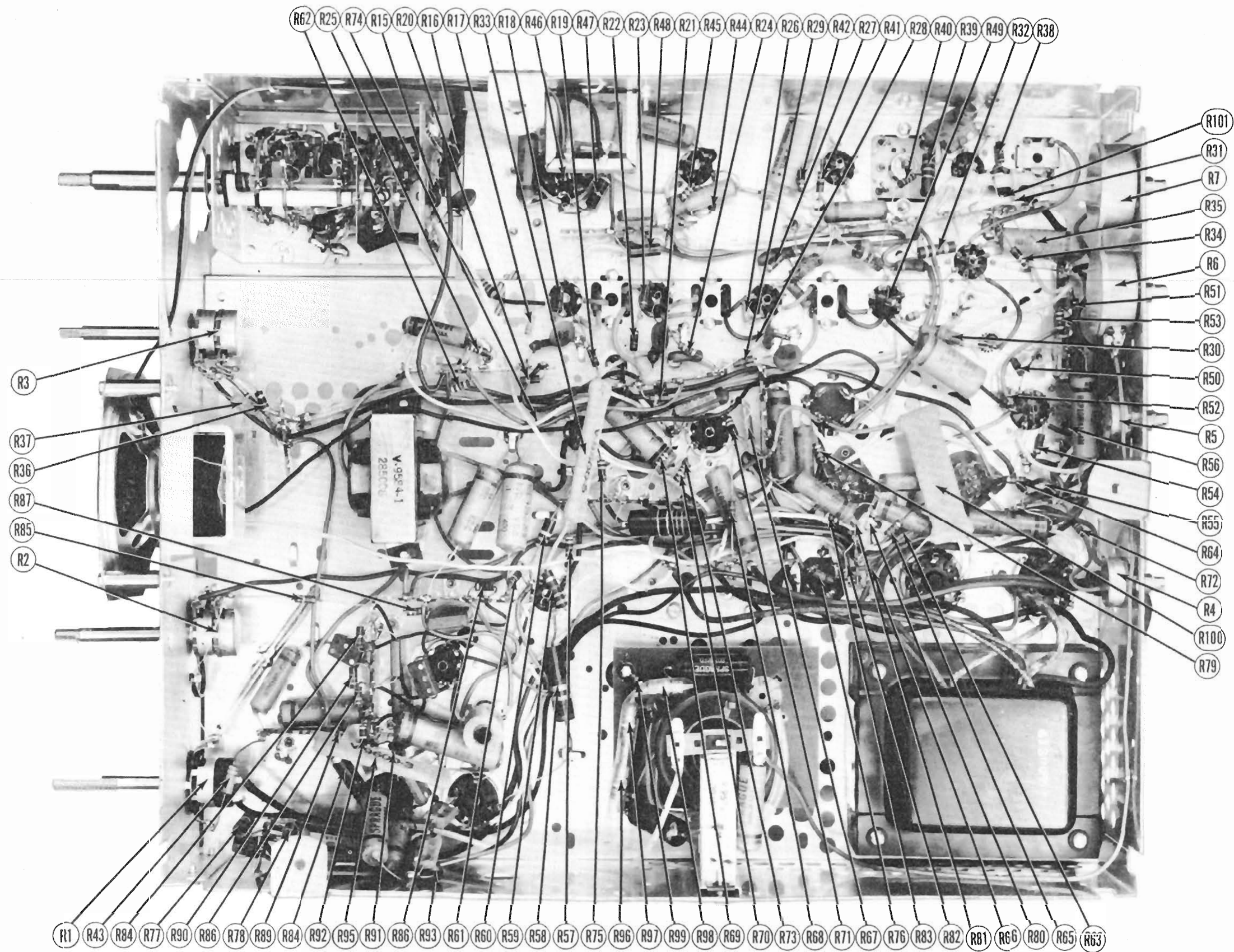


RF TUNER—LEFT SIDE

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



CHASSIS BOTTOM VIEW-CAPACITOR IDENTIFICATION



CHASSIS BOTTOM VIEW-RESISTOR IDENTIFICATION

WESTINGHOUSE MODELS H-617T12, H-618T16,
H-619T12, U, H-62CK16 (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		V-9590-2				
T4	250Ω		V-9572-1 ②				
T5A	720Ω	0Ω					
	Tap ④	SEC. 2					
	175Ω	0Ω	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
B					V-9814 ③				③ Used in chassis V-2150-176U
C					V-9807 ④				④ Used in chassis V-2150-186

SPEAKER

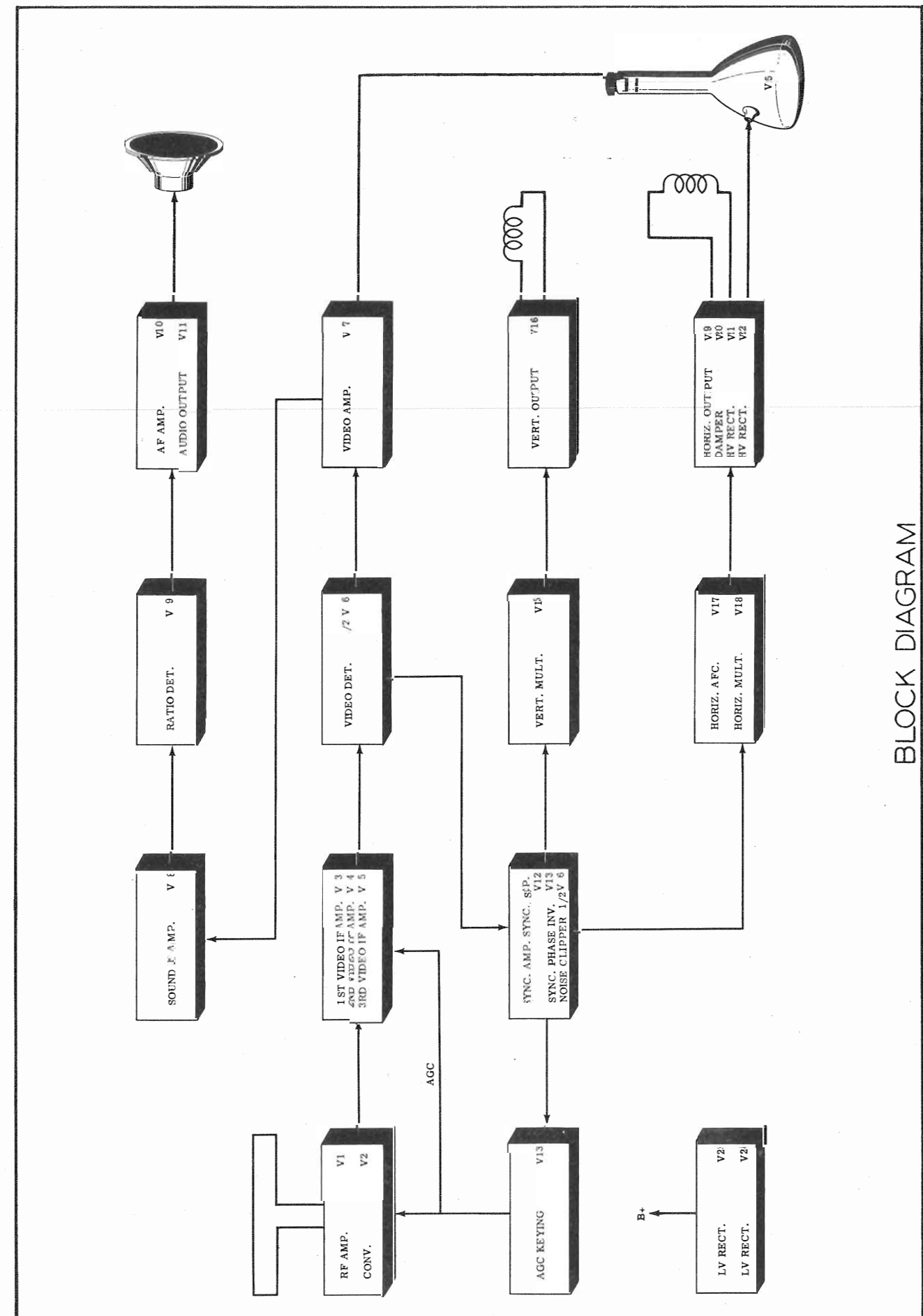
ITEM No.	RATINGS		REPLACEMENT DATA			NOTES
			WESTINGHOUSE	JENSEN	QUAM	
	FIELD RES.	V. C. IMP.	PART No.	PART No.	PART No.	
SP1A B C	68Ω	3.8Ω	V-9236-2 V-9770 V-6555-2		4E68S	Models H-617T12, H-619T12, U Model H-620K16 Model H-618T16
SP2A B C	CONE DIA. 4" 9 7/8"	V. C. DIA. 9/16"				

COILS (RF-IF)

ITEM No.	USE	DC RES.		REPLACEMENT DATA		NOTES
				WESTINGHOUSE	MEISSNER	
		PRI.	SEC.	PART No.	PART No.	
L1	Ant. Coil	0Ω	0Ω			Part of tuner V-9502-1
L2	Osc. Coil	.1Ω				Channel 6 part of tuner V-9502-1
L3	Osc. Coil	.1Ω				Channel 13 part of tuner V-9502-1
L4	1st Video IF	.6Ω				Part of tuner V-9502-1
L5	Fil. Choke	.1Ω				Part of tuner V-9502-1
L6	Fil. Choke	.9Ω		V-9099-1		
L7A	2nd Video IF	1Ω	1Ω	V-9506-1		
B	2nd Video IF			V-9778		Chassis V-2150-176U and V-2150-186
L8A	3rd Video IF	1Ω	1Ω	V-9516-1		
B	3rd Video IF			V-9778		Chassis V-2150-176U and V-2150-186
L9A	4th Video IF	1Ω	1Ω	V-9512-2		
B	4th Video IF			V-9778		Chassis V-2150-176U and V-2150-186
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	
B	RF Tuner	V-8210	
M2	Ion Trap	V-65 73-3	
	Antenna Assembly	V-93 66-2	Built-In Antenna
	Knob	V-6146-1	Contrast, Horiz. Hold
	Knob	V-9104-1	Erlightness, Vert. Hold
	Knob	V-9104-3	Volume, Off-On (Rear)
	Knob	V-6146-5	Volume, Off-On (Front)
	Knob	V-9104-4	Fine Tuning
	Knob	V-6284-6	Channel Selector
	Knob	V-5100-1	Antenna
	Safety Glass	V-6288-10	



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

BLOCK DIAGRAM

PARTS LIST AND DESCRIPTIONS

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	6AV6	6AV6	7BK	
V9	Ratio Det.	6AL5	6AL5	6BT	
V10	AF Amp.	6AV6	6AV6	7BT	
V11	Audio Output	6K6GT	6K6GT	7S	
V12	Sync. Amp. -Sync. Sep.	12A7	12A7	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	
V21A	HV Rect.	1V2	1V2	9U	
B	HV Rect.	1X2	1X2	7CB	
V22A	HV Rect.	1V2	1V2	9U	
B	HV Rect.	1X2	1X2	7CB	
V23A	LV Rect.	6W4GT	6W4GT	4CG	
B	LV Rect.	6U4GT	6U4GT	4CG	
V24A	LV Rect.	6W4GT	6W4GT	4CG	
B	LV Rect.	6U4GT	6U4GT	4CG	
V25A	Picture Tube	5U4G	5U4G	5T	
B	Picture Tube	12LP4A	12LP4A	12D	
		16RP4	16RP4	12D	

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
		WESTINGHOUSE PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	
C1A	40	V-6509	AFH888H30B		UP4445	Filter
B	40				BRH5015	Output Decoupling
C	40					Filter
D	150					Vert. Output Cath. Byp.
C2A	80	V-5891	AF16222H		UP11DJ1047	Filter
B	10					Decoupling
C	10					Vert. MY Plate Dec.
D	10					Vert. Output Decoupling
C3	2	V-4880	PR5150/4		BBR2-50	Stabilizing Cap.
C4	15		GP10K	D6-150		RF Coupling
C5	68		GP100M	D6-102		AGC Filter
C6A	1000		GP100M	D6-102		RF Cathode Bypass
B	1000		GP100M	D6-102		RF Decoupling
C7	1000				811-001	RF Cath. Bypass
C8	.25					RF Coupling
C9	5					RF Coupling
C10	1.8					RF Coupling
C11	47					RF Coupling
C12	47					RF Coupling
C13	1.5					RF Coupling
C14	10					RF Coupling
C15	3					RF Coupling
C16	10					RF Coupling
C17A	1000					RF Coupling
B	1000					RF Coupling
C18	5000	V-5596	BPD-5	D6-502		RF Coupling
C19	5000	V-5596	BPD-5	D6-502		RF Coupling
C20	5000	V-5596	BPD-5	D6-502		RF Coupling
C21	150	R5CC212Y151M	GP150M	D6-151		RF Coupling
C22	1	RC20W4104M	P488-1		PTE4PI	RF Coupling
C23	1500	R3CC26Z1Y152M	GP1500M	D6-152	1W5D15	RF Coupling
C24	5000	V-5596	BPD-5	D6-502	1D5D15	RF Coupling
C25	1500	R5CC26Z1Y152M	GP1500M	D6-152	1W5D15	RF Coupling
C26	01	RC20W4103M	P488-01		PTE4PI	RF Coupling
C27	5000	V-5596	BPD-5	D6-502	1D5D15	RF Coupling
C28	1500	R5CC26Z1Y152M	GP1500M	D6-152	1W5D15	RF Coupling
C29	5000	V-5596	BPD-5	D6-502	1D5D15	RF Coupling
C30	1500	R5CC26Z1Y152M	GP1500M	D6-152	1W5D15	RF Coupling
C31	5000	V-5596	BPD-5	D6-502	1D5D15	RF Coupling
C32	1500	R5CC26Z1Y152M	GP1500M	D6-152	1W5D15	RF Coupling
C33	4.7	V-5658-6	GP5X	D2-4.7	5W5V5	RF Coupling
C34	1500	R5CC26Z1Y152M	GP1500M	D6-152	1W5D15	RF Coupling
C35	.1	RC20W4104M	P488-1		PTE4PI	RF Coupling
C36	.1	RC20W4104M	P488-1		PTE4PI	RF Coupling
C37	47	RC20B470M	1468-00005	D6-470	5W5Q5	RF Coupling
C38	.01	RC20W4103M	P488-01	D6-103	PTE4PI	RF Coupling
C39	.002	RC20B681M	GP680M	D6-681	1W5T7	RF Coupling
C40	.002	RC20W620M	P688-002	D6-202	PTE6D1	RF Coupling
C41	.01	RC20W4103M	P488-01	D6-103	PTE4PI	RF Coupling
C42	.005	RC20W4502M	P688-005	D6-502	PTE6D1	RF Coupling
C43	100	RC20B101M	1468-0001	D6-101	5W5T7	RF Coupling
C44	.01	RC20W4103M	P488-01	D6-103	PTE4PI	RF Coupling
C45	270	RC20B271M	1468-00025	D6-271	5W5T25	RF Coupling
C46	.01	RC20W4103M	P488-01	D6-103	PTE4PI	RF Coupling
C47	.002	RC20W620M	P688-002	D6-202	PTE6D1	RF Coupling
C48	.25	V-6066-4254M	P488-25		GT4P25	RF Coupling
C49	270	RC20B271M	1468-00025	D6-271	5W5T25	RF Coupling

CAPACITORS (CONT.)

ITEM No.	RATING	REPLACEMENT DATA				IDENTIFICATION CODES AND INSTALLATION NOTES
		WESTINGHOUSE PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	
C50	.01	RC20W4103M	P488-01	D6-103	PTE4PI	RF Coupling
C51	330	RC20C331J	1469-00035	D6-331	5R5T3	RF Coupling
C52	.05	RC20W4503M	P488-05	D6-202	PTE6D2	RF Coupling
C53A	2000			D6-502	PTE6D5	RF Coupling
B	5000			D6-502	PTE6D5	RF Coupling
C	5000			D6-103	PTE4PI	RF Coupling
C54	.05	RC20W4503M	P488-05	D6-202	PTE6D2	RF Coupling
C55	.01	V-6023-103K	P488-01	D6-103	PTE4PI	RF Coupling
C56	.068	V-6023-103K	P488-068			RF Coupling
C57	.1	RC20W4104M	P488-1	D6-102	PTE4PI	RF Coupling
C58	.001	RC20W4102M	P688-001	D6-102	PTE6D1	RF Coupling
C59	.001	RC20W4102M	P688-001	D6-102	PTE6D1	RF Coupling
C60	330	RC20C331J	1469-00035	D6-331	5R5T3	RF Coupling
C61	.001	RC20W4102M	P688-001	D6-102	PTE6D1	RF Coupling
C62	.005	RC20W4502M	P688-005	D6-502	PTE6D5	RF Coupling
C63	.05	RC20W4503M	P488-05	D6-202	PTE6D5	RF Coupling
C64	330	RC20C331J	1469-00035	D6-331	5R5T3	RF Coupling
C65	3000	RC20C302K	1464-004		1DR5D4	RF Coupling
C66	.1	RC20W4104M	P488-1	D6-101	PTE4PI	RF Coupling
C67	.1	RC20W4104M	P488-1	D6-101	PTE4PI	RF Coupling
C68	100	RC20B101M	1468-0001	D6-101	5W5T7	RF Coupling
C69	330	RC20C331J	1469-00035	D6-331	5R5T3	RF Coupling
C70	.01	RC20W4103M	P488-01	D6-103	PTE4PI	RF Coupling
C71	270	RC20B271M	1468-00025	D6-271	5W5T25	RF Coupling
C72	.1	RC20W4104M	P488-1	D6-101	PTE4PI	RF Coupling
C73	.1	RC20W4104M	P488-1	D6-101	PTE4PI	RF Coupling
C74	.1	V-6023-104M	P488-1		PTE4PI	RF Coupling
C75	100	V-9176-1510K				RF Coupling
C76	100	V-9176-1510K				RF Coupling
C77	.25	RC20W4254M	P488-25		GT4P25	RF Coupling
C78	.1	RC20W4104M	P488-1		PTE4PI	RF Coupling
C79	.001	V-9571-1			PTE6D1	RF Coupling
C80	.001	V-9571-1			PTE6D1	RF Coupling
C81	.001	V-9571-1			PTE6D1	RF Coupling

* Some models used 680MMF in this application.

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

CONTROLS

ITEM No.	RATING	REPLACEMENT DATA				IDENTIFICATION CODES AND INSTALLATION NOTES
		WESTING. PART No.	IRC PART No.	CLAROSTAT PART No.	CENTRALAB PART No.	
R1A	500KΩ	V-698-4	Q13-133X	T-78	BT-66-S	Volume control tapped at 100KΩ
B	Switch	Not Req.	76-1	SW-A	Not Req.	Attach to R1A per instructions
R2A	500KΩ	V-9233	Concentrik	V-9233	SBB-514	Vert. hold control-front
B	100KΩ		Bill-133 *			Horiz. hold control-rear
C	Shaft End		Bill-128 *			Attach per instructions in "Concentrik"
R3A	50KΩ	V-9235-2	E-202 *	V-9235-2	SBB-513	Brightness control-front
B	1500Ω					Contrast control-rear
R4A	1 Meg.	V-6462	Q11-137	M-19-S	ANT-69	Height control-See note 1
B	Shaft	Not Req.	Not Req.	Not Req.	AK-1	Attach to R4A per instructions
R5A	5000Ω	V-6462	Q11-114	M-19-S	ANT-10	Vert. linearity control
B	Shaft	Not Req.	Not Req.	Not Req.	AK-1	Attach to R5A per instructions
R6	1000Ω	V-9612-1	58-1000	V-129	V-129	Width control-Wire Wound
R7	1000Ω	V-9612-1	58-1000	V-129	V-129	Focus control-Wire Wound

* Additional parts to be used with "Concentrik".

Note 1. Chassis V-2150-176U uses 1 Meg. control part No. V-9813.

RESISTORS

ITEM No.	RATING	REPLACEMENT DATA				IDENTIFICATION CODES AND INSTALLATION NOTES
		WESTINGHOUSE PART No.	IRC PART No.	ALL WESTINGHOUSE AND IRC PARTS ARE ± 10% UNLESS OTHERWISE STATED.		
R8	2200Ω 20%		BTS-2200		RF Grid	
R9	4700Ω		BTS-4700		Ant. Coil Shunt-See Note 2	
R10	2200Ω 20%		BTS-2200		RF Decoupling	
R11	270KΩ 20%		BTS-270K		Conv. Grid	
R12	15KΩ 20%				Conv. Plate	
R13	22KΩ 20%				Osc. Grid	
R14	4700Ω		BTS-4700		Osc. Plate	
R15	1000Ω 20%	RC20AE102M	BTS-10K		Decoupling	
R16	10KΩ 20%	RC20AE103M	BTS-10K		AGC Network	
R17	12KΩ	RC20AE123K	BTS-12K		1st Video IF Grd	
R18	100Ω	RC20AE101K			1st Video IF Cathode	
R19	2700Ω	RC20AE27K	BTS-2700		1st Video IF Decoupling	
R20	10KΩ 20%	RC20AE103M	BTS-10K		AGC Network	
R21	10KΩ 20%	RC20AE103M	BTS-10K		AGC Network	
R22	5000Ω	RC20AE50K			2nd Video IF Transformer Shunt	
R23	100Ω	RC20AE101K			2nd Video IF Cathode	
R24	2700Ω	RC20AE27K	BTS-2700		2nd Video IF Decoupling	
R25	470KΩ 20%	RC20AE47K	BTS-470K		AGC Network	
R26	12KΩ	RC20AE123K	BTS-12K		3rd Video IF Transformer Shunt	
R27	180Ω	RC20AE18K			3rd Video IF Cathode	
R28	12KΩ	RC20AE123K	BTS-12K		3rd Video IF Screen	
R29	1000Ω 20%	RC20AE102M	BTS-1000		3rd Video IF Plate Decoupling	
R30	4700Ω	RC20AE47K	BTS-4700		Video Det. Diode Load	
R31	33KΩ	RC20AE33K	BTS-33K		Peaking Coil Shunt	
R32	4700Ω	RC20AE47K	BTA-4700		Video Amp. Plate	
R33	3000Ω	V-9600-5	AB-3000		Decoupling-Wire Wound	
R34	100KΩ	RC20AE104K	BTS-100K		Voltage Divider	
R35	150KΩ	RC20AE154K	BTS-150K		Picture Tube Cathode	
R36	6800Ω	RC20AE68K	BTS-6800		Voltage Divider	
R37	22KΩ 20%	RC20AE22K	BTS-22K		Sound IF Grid	
R38	47KΩ	RC20AE47K			Sound IF Decoupling	
R39	68KΩ	RC30AE68K				

RESISTORS (CONT.)

ITEM No.	RATING	REPLACEMENT DATA		IDENTIFICATION CODES	
		WESTINGHOUSE	IRC		
	RESISTANCE	WATTS	PART No.		
R40	33KΩ		RC20AE33K	BTS-33K	De-emphasis
R41	10KΩ		RC20AE103K	BTS-10K	Ratio Det. Diode Load
R42	10KΩ		RC20AE103K	BTS-10K	Ratio Det. Diode Load
R43	22KΩ 20%		RC20AE223M	BTS-22K	Tone Compensation
R44	10 Meg. 20%		RC20AE106M	BTS-10 Meg.	AF Amp. Grid
R45	270KΩ		RC20AE274K	BTS-270K	AF Amp. Plate
R46	470KΩ		RC20AE474K	BTS-470K	Output Grid
R47	470Ω	1	RC30AE47K	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		RC20AE103K	BTS-10K	Isolation
R51	15KΩ		RC20AE153K	BTS-15K	Sync. Amp. Plate-See Note 4
R52	1 Meg.		RC20AE105K	BTS-1 Meg.	Sync. Amp. Grid
R53	470KΩ		RC20AE474K	BTS-470K	Charge Limiting
R54	1 Meg.		RC20AE105K	BTS-1 Meg.	Sync. Sep. Grid
R55	150KΩ		RC20AE154K	BTS-150K	Sync. Sep. Plate
R56	22KΩ		RC20AE223K	BTS-22K	Voltage Divider
R57	4700Ω		RC20AE472K	BTS-4700	AGC Keying Grid
R58	10KΩ	2		BT-2-10K	AGC Keying Cathode-See Note 5
R59	3300Ω	1	RC30AE332K	BTA-3300	Voltage Divider-See Note 6
R60	330KΩ 20%		RC30AE334K	BTA-330K	Voltage Divider
R61	220KΩ 20%		RC20AE224M	BTS-220K	AGC Keying Plate
R62	470KΩ		RC20AE474K	BTS-470K	AGC Network
R63	2.2 Meg.		RC20AE225K	BTS-2.2 Meg.	Sync. Phase Inv. Grid-See Note 11
R64	2700Ω		RC20AE272K	BTS-2700	Sync. Phase Inv. Plate
R65	2200Ω		RC20AE222K	BTS-2200	Sync. Phase Inv. Cathode
R66	470Ω		RC20AE471K	BTS-470	Integrator Network
R67A	22KΩ			BTS-22K	Integrator Network
B	8200Ω			BTS-8200	Integrator Network
C	8200Ω			BTS-8200	Integrator Network
R68	1200Ω		RC20AE122K	BTS-1200	Vert. MV Cathode
R69	470KΩ		RC20AE474K	BTS-470K	Vert. MV Grid
R70	390KΩ		RC20AE394K	BTS-390K	Vert. MV Plate
R71	100KΩ		RC20AE104K	BTS-100K	Vert. MV Plate
R72	47KΩ		RC20AE473K	BTS-47K	Vert. MV Plate Decoupling
R73	5600Ω		RC20AE562K	BTS-5600	Vert. Peaking-See Note 7
R74	2.2 Meg. 20%		RC20AE225M	BTS-2.2 Meg.	Vert. Output Grid
R75	470Ω		RC20AE471K	BTS-470	Vert. Output Cathode
R76	1000Ω 20%		RC20AE102M	BTS-1000	Vert. Output Decoupling
R77	220KΩ	1	RC30AE224K	BTA-220K	Feedback Network
R78	330KΩ		RC30AE334K	BTA-330K	Feedback Network
R79	68KΩ		RC20AE683K	BTS-68K	Horiz. AFC Filter Network
R80	100KΩ 5%		RC20AE104J	BTS-100K-5%	Horiz. AFC Diode Load
R81	120KΩ 5%		RC20AE104J	BTS-100K-5%	Horiz. AFC Diode Load
R82	4.7 Meg. 20%		RC20AE475M	BTS-4.7 Meg.	Horiz. AFC Diode Load
R83	470KΩ		RC20AE474K	BTS-470K	Horiz. AFC Filter Network
R84	1800Ω		RC73AE182K	BTS-1800	Horiz. MV Cathode
R85	220KΩ 5%		RC20AE224J	BTS-220K-5%	Horiz. MV Grid
R86	5600Ω		RC20AE562K	BTS-5600	Horiz. MV Plate
R87	33KΩ		RC20AE333K	BTS-33K	Horiz. MV Plate Decoupling
R88	220KΩ		RC20AE224K	BTS-220K	Horiz. MV Plate
R89	10KΩ		RC20AE103K	BTS-10K	Horiz. MV Plate Decoupling
R90	27KΩ		RC20AE273K	BTS-27K	Horiz. Peaking-See Note 8
R91	120Ω 20%		RC20AE121M		Parasitic Supp.
R92	470Ω 20%		RC20AE474M	BTS-470K	Horiz. Output Grid
R93	91Ω		V-9002-490K		Horiz. Output Cathode- Wire Wound
R94	7500Ω	2	V-9002-482K	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%		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%		RC20AE274M	BTS-270K	Line Filter-See Note 9
R103	100Ω		RC20AE100K		RF Amp. Cathode