

VOLUME CONTROL
ON-OFF SWITCH

HORIZ.
VERT.
HOLD

CONTRAST
BRIGHTNESS

CHANNEL
SELECTOR
FINE
TUNING

**AUTOMATIC
MODEL TV-P490**

TRADE NAME Automatic, Model TV-P490
 MANUFACTURER Automatic Radio Mfg., Co., Inc., 122 Brookline Ave., Boston 15, Mass.
 TYPE SET Television Receiver
 TUBES Twenty Two

POWER SUPPLY 110-120 Volts AC
 TUNING RANGE—Channels 2 thru 13

RATING: 1.03 Amp. at 117 Volts AC

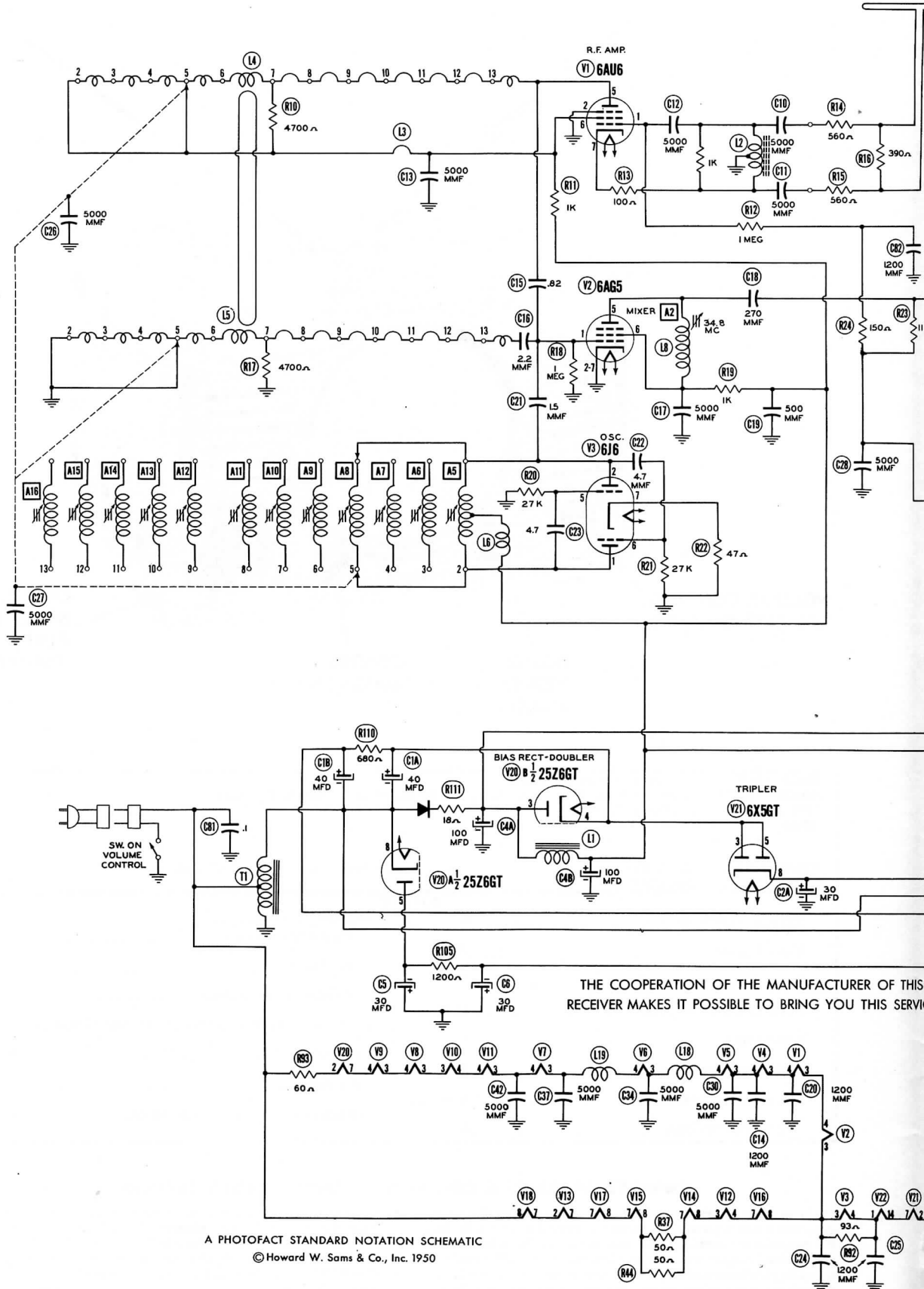
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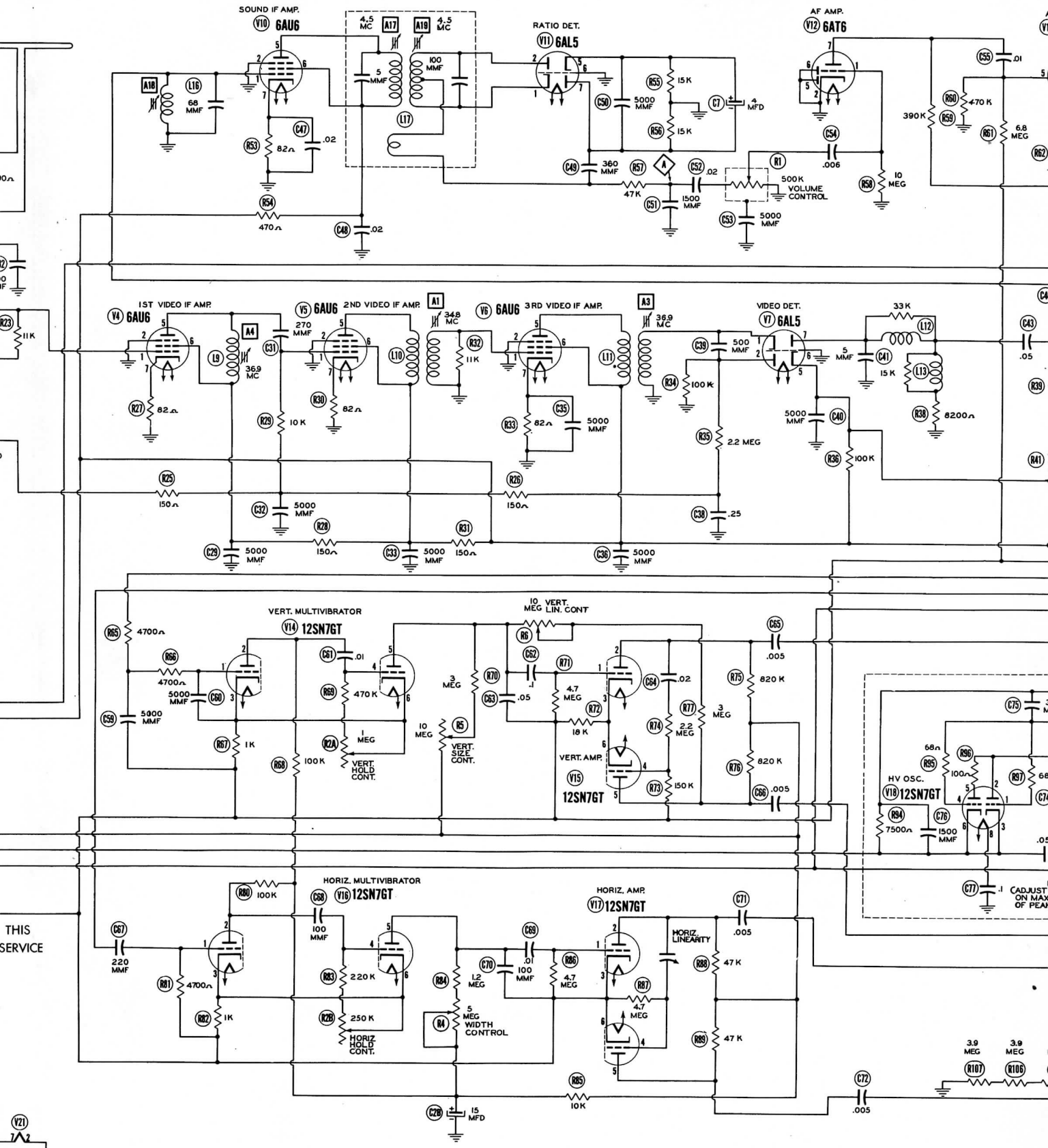
HOWARD W. SAMS & CO., INC. • Indianapolis 1, Indiana

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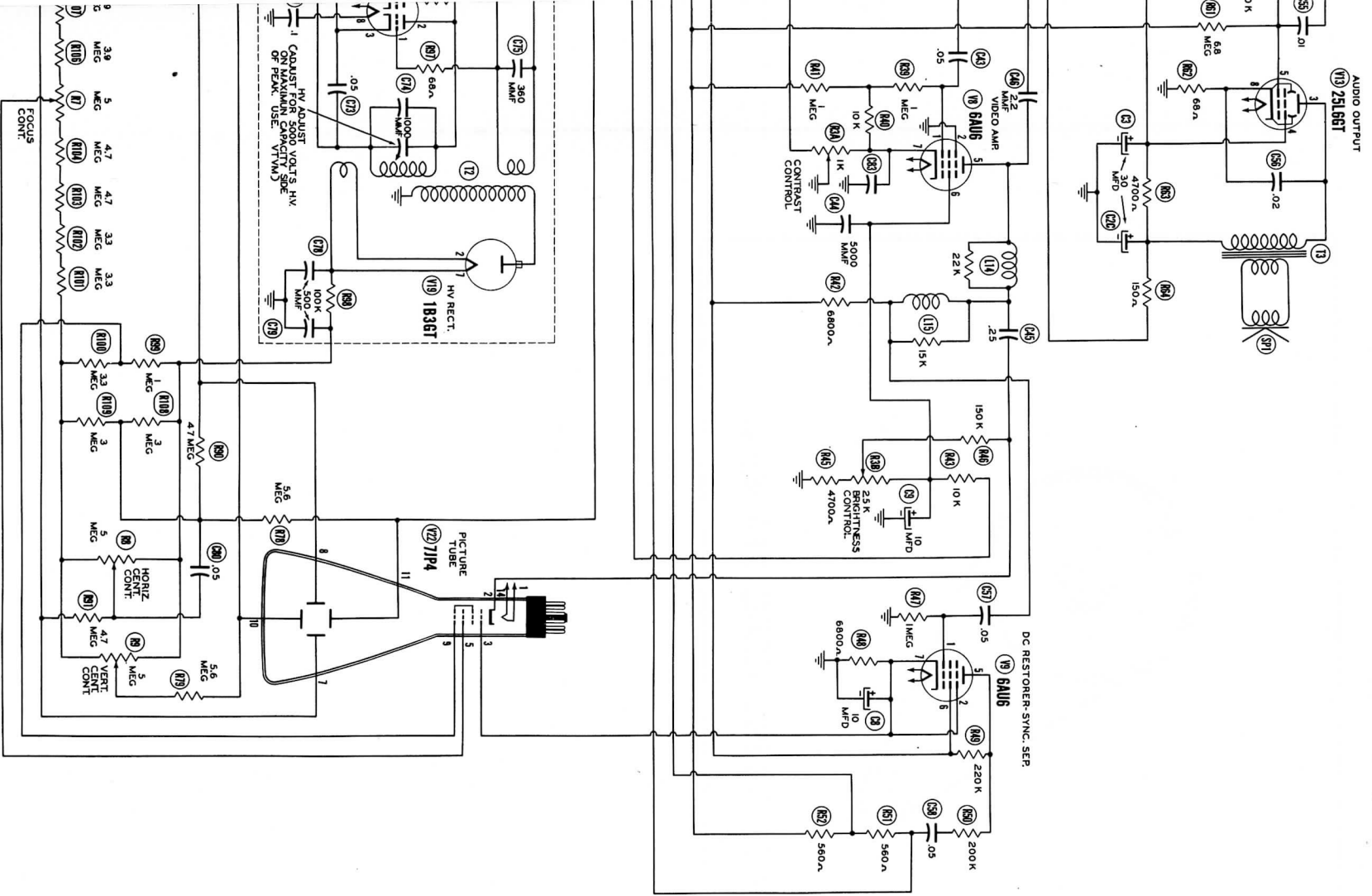
A PHOTOFAC STANDARD NOTATION SCHEMATIC
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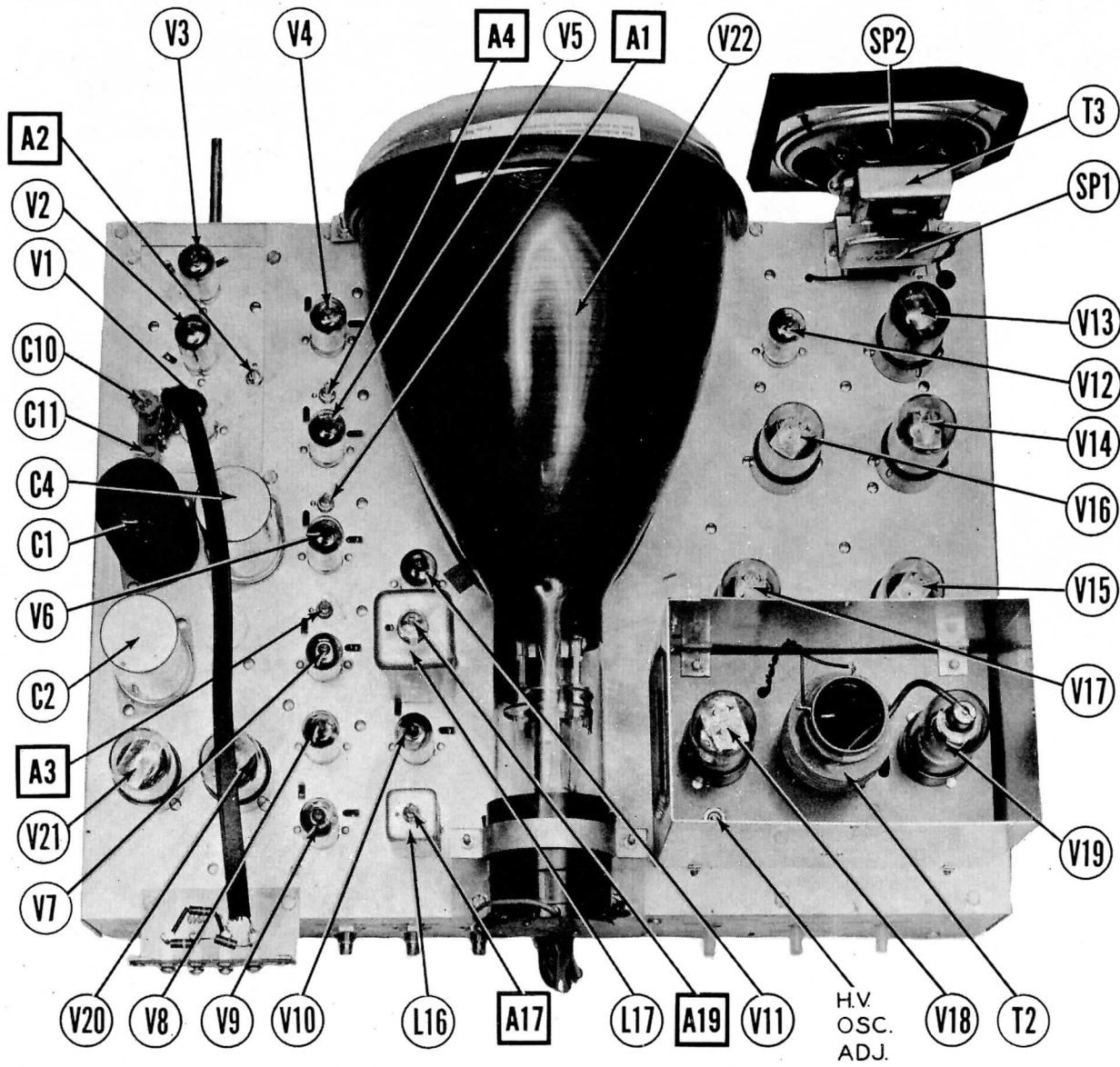


THIS SERVICE

(V21)

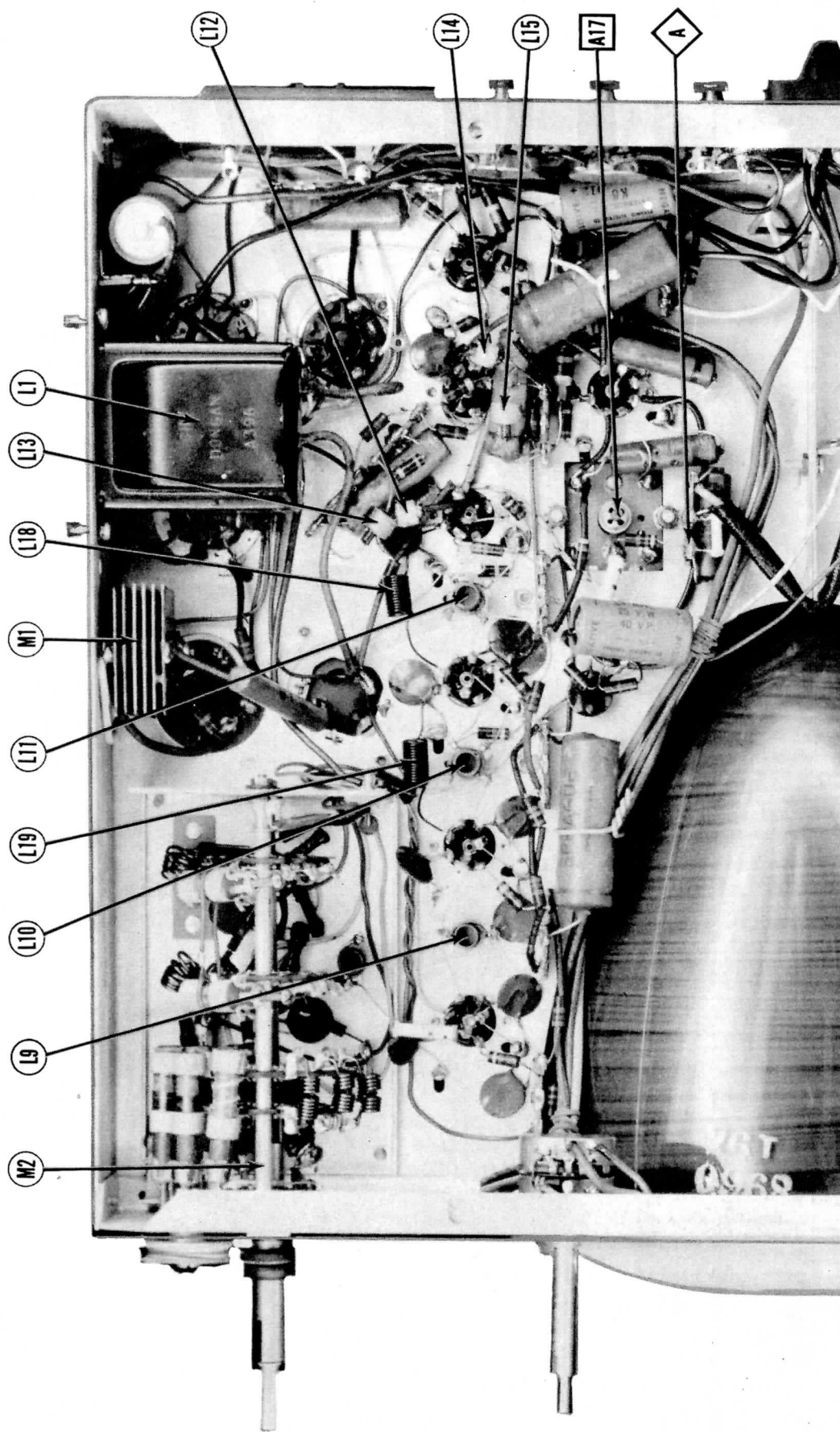
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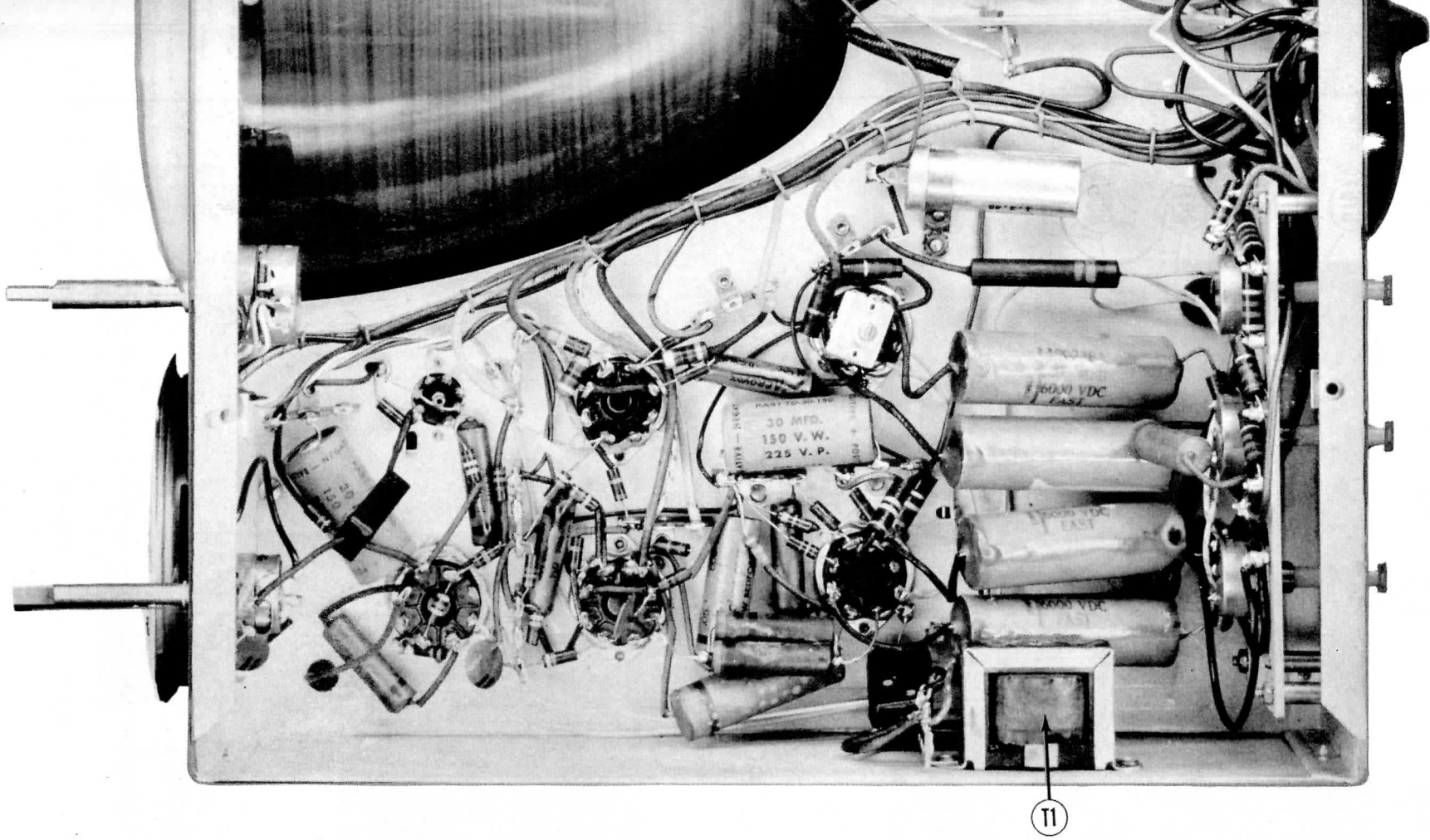




CHASSIS TOP VIEW

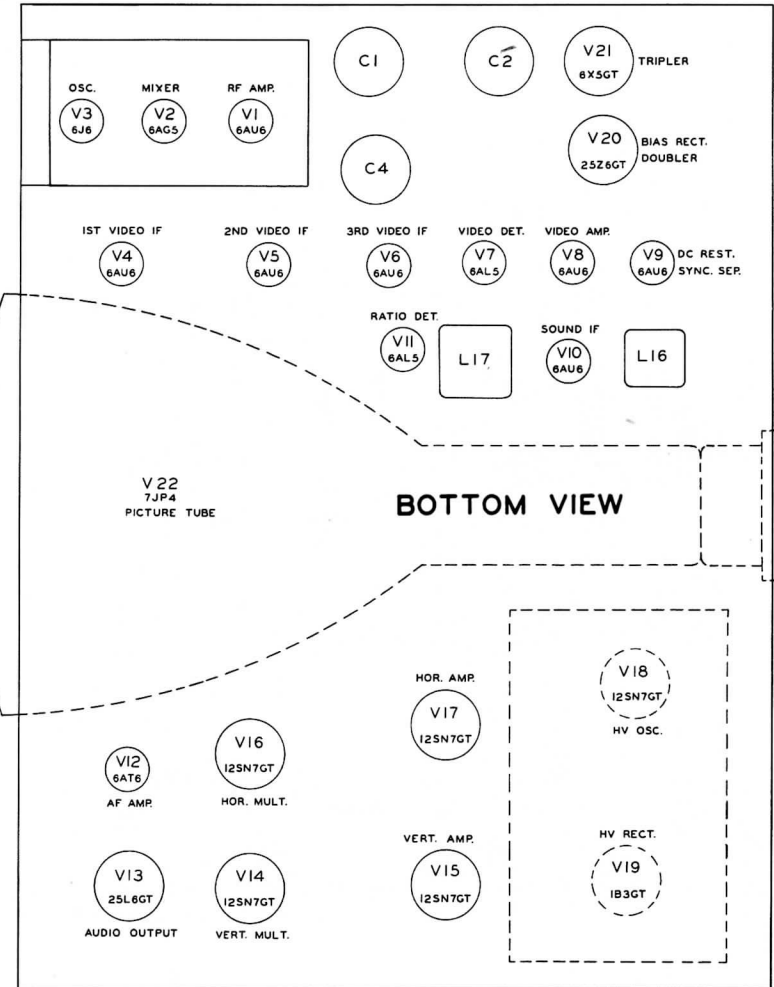
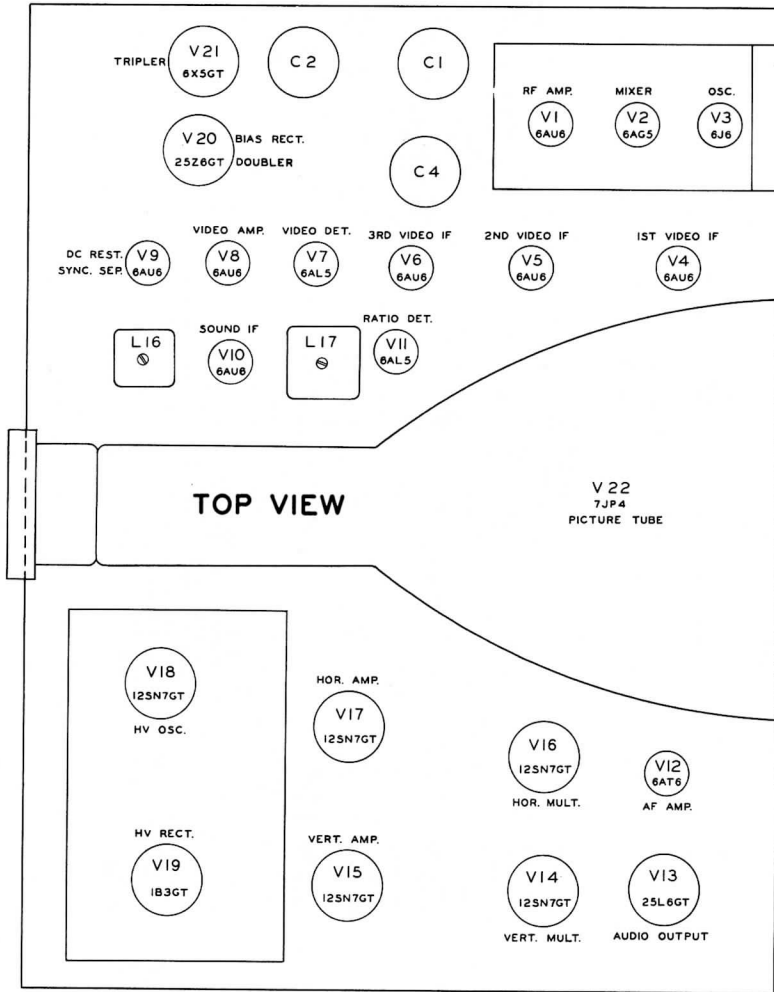
**AUTOMATIC
MODEL TV-P490**





CHASSIS BOTTOM VIEW-TRANS., INDUCTOR AND ALIGNMENT IDENTIFICATION

**AUTOMATIC
MODEL TV-P490**



AUTOMATIC
MODEL TV-P490
TUBE PLACEMENT CHART

ALIGNMENT INSTRUCTIONS

PRE-ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

To eliminate shock hazard, disable high voltage by unsoldering the lead feeding B+ to high voltage oscillator tube 12SN7 (V18). Use an isolation transformer when available as one side of the line is connected to chassis.

VIDEO IF ALIGNMENT

A tube shield slipped over the mixer tube, but not grounded, makes a practical and convenient method of injecting the signal from the signal generator. The signal generator output is adjusted to give a reading of approximately -1 volt at Pin 7 6AL5 (V7) with AGC line grounded.

DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	CHANNEL	CONNECT VTVM	ADJUST	REMARKS
1	High side to ungrounded tube shield (See prealignment instructions). Low side to chassis.	34.8MC (No mod.)	Any	DC probe to Pin 7 6AL5 (V7). Common lead to chassis.	A1,A2	Adjust for maximum deflection. Reduce signal gen. output if necessary to hold about -1 volt reading
2	"	36.9MC (No mod.)	"	"	A3,A4	"

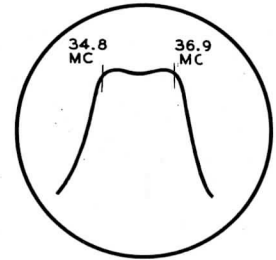


FIG. 1

OVERALL IF RESPONSE CHECK

DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
3	High side to ungrounded tube shield (See above). Low side to chassis.	35MC (10MC sweep)	34.8MC & 36.9MC	Any	Vertical amp. to Pin 1 6AU6 (V8). Low side to chassis.		Check response pattern to see that markers appear as per Fig. 1. If not, make slight adjustments of A1, A2, A3 and A4.

RF OSCILLATOR ALIGNMENT

The RF Amplifier and mixer lines are pre-set at the factory and due to their stability normally do not require adjustment. Since Channel 2 Oscillator Coils is in parallel with all other osc. coils at their respective channels. Channel 2 must be aligned first. If Channel 2 is readjusted at any time, it will be necessary to realign all the other channels.

DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
4	2 - 1500 carbon antenna terminal series with each sig. gen. lead.	Across "Distant" (10MC sweep)	57MC (Picture) 59.75MC (Sound)	2	Vert. Amp. to Pin 1 6AU6 (V8). Low side to chassis.	A5	Adjust to place picture marker at 50% point on pattern as per Fig. 2. Check sound carrier to see if it appears at proper point as per Fig. 2.
5	"	63MC (10MC sweep)	61.25MC (Picture) 65.75MC (Sound)	3	"	A6	"
6	"	69MC (10MC sweep)	67.25MC (Picture) 71.75MC (Sound)	4	"	A7	"
7	"	79MC (10MC sweep)	77.25MC (Picture) 81.75MC (Sound)	5	"	A8	"
8	"	85MC (10MC sweep)	83.25MC (Picture) 87.75MC (Sound)	6	"	A9	"
9	"	177MC (10MC sweep)	175.25MC (Picture) 179.75MC (Sound)	7	"	A10	"
10	"	183MC (10MC sweep)	181.25MC (Picture) 185.75MC (Sound)	8	"	A11	"
11	"	189MC (10MC sweep)	187.25MC (Picture) 191.75MC (Sound)	9	"	A12	"
12	"	195MC (10MC sweep)	193.25MC (Picture) 197.75MC (Sound)	10	"	A13	"
13	"	201MC (10MC sweep)	199.25MC (Picture) 203.75MC (Sound)	11	"	A14	"
14	"	207MC (10MC sweep)	205.25MC (Picture) 209.75MC (Sound)	12	"	A15	"
15	"	213MC (10MC sweep)	211.25MC (Picture) 215.75MC (Sound)	13	"	A16	"

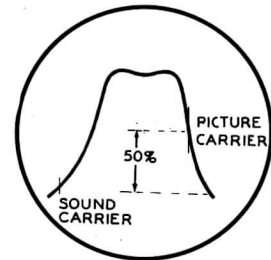
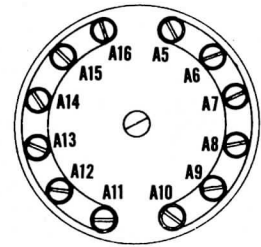


FIG. 2



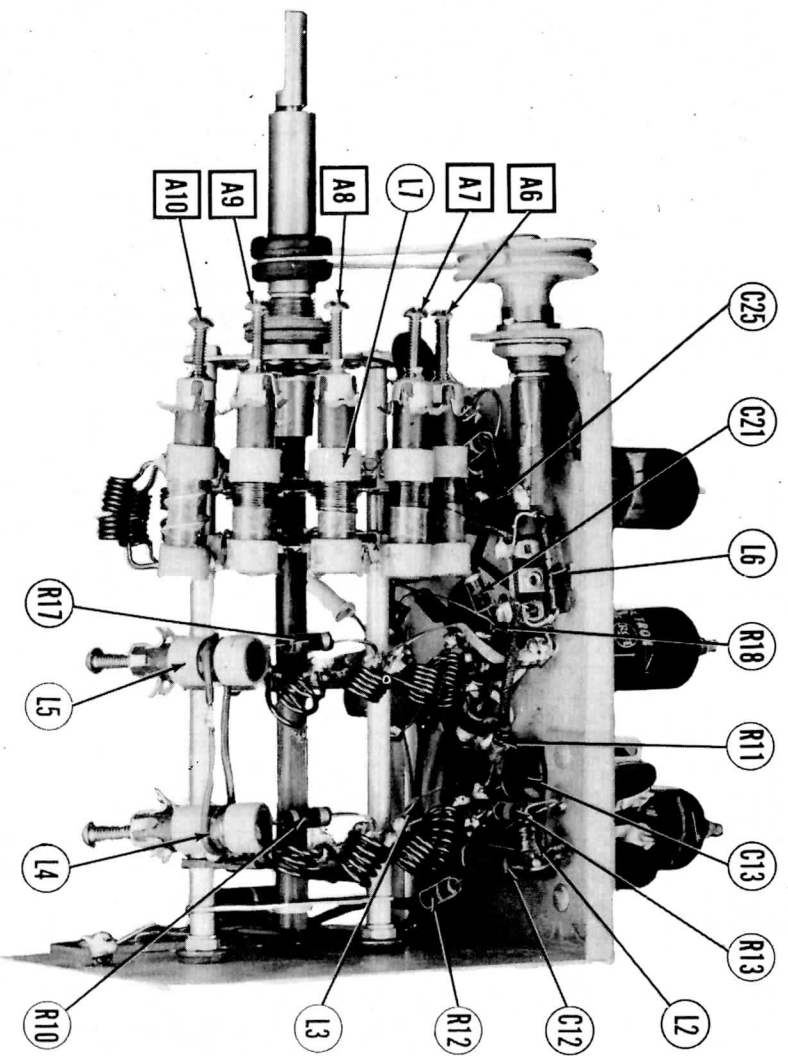
OSC. ALIGNMENT POINTS

SOUND IF ALIGNMENT

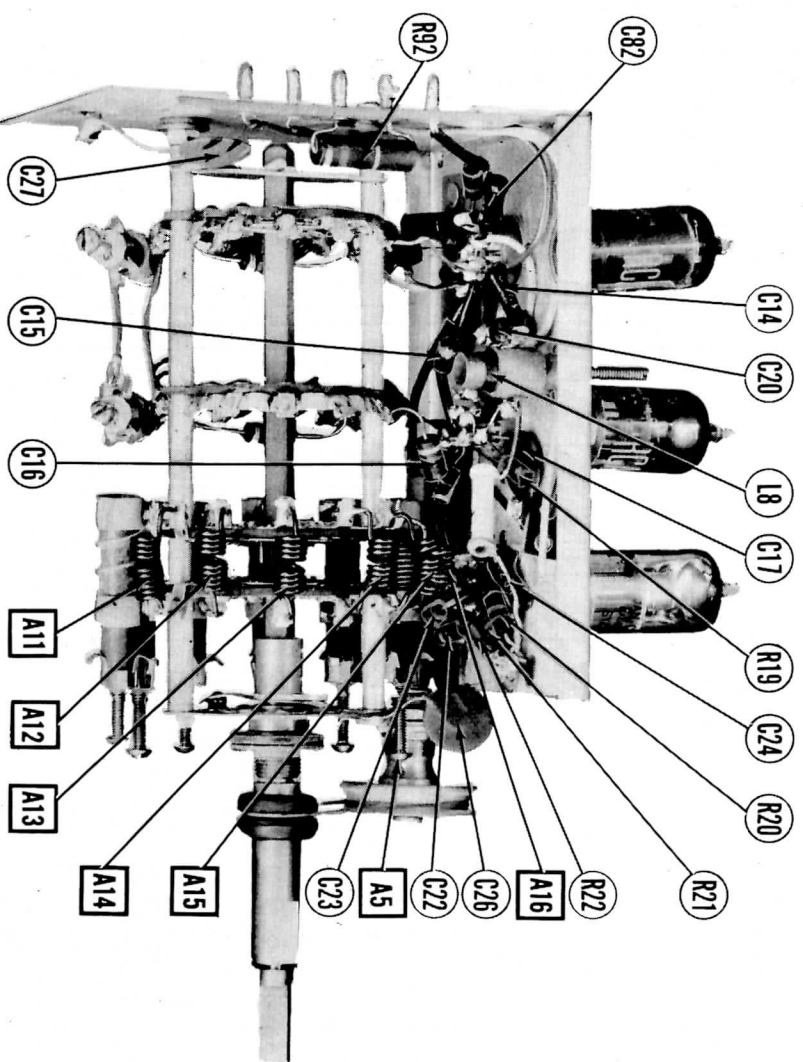
When adjusting the 4.5MC trap and the primary of the ratio detector coils (A17 & A18), attenuate signal generator so VTVM reading is held to approximately -3 to -4 volts.

DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	CHANNEL	CONNECT VTVM	ADJUST	REMARKS
16	5000MMF. High side to Pin 1 6AU6 (V8). Low side to chassis.	4.5MC (No mod.)	Any	DC probe to Pin 7 6AL5 (V10). Common lead to chassis.	A17, A18	Adjust for maximum deflection.
17	5000MMF.	"	"	DC probe to Point \diamond . Common lead to chassis.	A19	Adjust for zero reading. A positive & negative reading can be obtained on either side of the correct setting.

**AUTOMATIC
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RF TUNER-RIGHT SIDE



RF TUNER-LEFT SIDE

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	6AU6	OV.	OV.	24VAC	30VAC	125VDC	125VDC	.3VDC							
V 2	6AG5	-1.7VDC	OV.	18VAC	24VAC	125VDC	125VDC	OV.							
V 3	6J6	120VDC	120VDC	18VAC	12VAC	§-5VDC	§-3.5VDC	.8VDC							
V 4	6AU6	-1.2VDC	OV.	31VAC	36VAC	125VDC	125VDC	OV.							
V 5	6AU6	-.8VDC	OV.	36VAC	42VAC	125VDC	125VDC	OV.							
V 6	6AU6	OV.	OV.	42VAC	48VAC	127VDC	127VDC	.9VDC							
V 7	6AL5	OV.	-2.6VDC	48VAC	53VAC	OV.	OV.	-1.9VDC							
V 8	6AU6	.4VDC	OV.	64VAC	70VAC	90VDC	175VDC	10VDC							
V 9	6AU6	OV.	3.5VDC	70VAC	75VAC	47VDC	125VDC	3.5VDC							
V 10	6AU6	OV.	OV.	64VAC	58VAC	122VDC	122VDC	.8VDC							
V 11	6AL5	-1.1VDC	-1.1VDC	53VAC	58VAC	.1VDC	OV.	-1.1VDC							
V 12	6AT6	-.5VDC	OV.	39VAC	31VAC	OV.	OV.	37VDC							
V 13	25L6GT	OV.	103VAC	125VDC	115VDC	-2.4VDC	OV.	78VAC	2.5VDC						
V 14	12SN7GT	† OV.	†100VDC	† 3VDC	†-2.8VDC	† 13VDC † 37VDC	†3VDC	50VAC	38VAC						
V 15	12SN7GT	† OV.	†225VDC	† 12VDC	† OV.	† 225VDC	† 12VDC	64VAC	50VAC						
V 16	12SN7GT	† OV.	† 67VDC	†2.2VDC	†-4.9VDC	† 12VDC † 50VDC	† 2.2VDC	31VAC	19VAC						
V 17	12SN7GT	† -22VDC	†300VDC	† OV.	†-1.9VDC	†300VDC	† OV.	78VAC	64VAC						
V 18	12SN7GT	† -35VDC	†260VDC	† OV.	†-35VDC	†250VDC	†OV.	103VAC	117VAC						
V 19	1B3GT	* DO NOT MEASURE													
V 20	25Z6GT	OV.	100VAC	135VDC	270VDC	-160VDC	OV.	75VAC	134VAC						
V 21	6X5GT	OV.	OV.	270VDC	OV.	270VDC	OV.	6.3VAC	410VDC						
V 22	PINS 7JP4	1 12VAC	2 165VDC	3 3.4VDC	4 OV	5 *	6 OV	7 *	8 *	9 *	10 *	11 *	12 OV	13 OV	14 6.3VAC

† Measured from pin 3 of V17

‡ Measured from pin 8 of V20

* 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	6AU6	3.3 Meg.	0Ω	7.5Ω	12Ω	†1000Ω	†1000Ω	100Ω							
V 2	6AG5	1 Meg.	0Ω	5Ω	7.5Ω	†1000Ω	†1000Ω	0Ω							
V 3	6J6	†150Ω	†150Ω	5Ω	3Ω	27KΩ	27KΩ	47Ω							
V 4	6AU6	2.3 Meg.	0Ω	19Ω	22Ω	†450Ω	†450Ω	0Ω							
V 5	6AU6	2.3 Meg.	0Ω	22Ω	25Ω	†300Ω	†300Ω	0Ω							
V 6	6AU6	.1Ω	0Ω	25Ω	28Ω	†150Ω	†150Ω	82Ω							
V 7	6AL5	.1Ω	100KΩ	28Ω	31Ω	4Ω	0Ω	8.2KΩ							
V 8	6AU6	1 Meg.	0Ω	35Ω	38Ω	†7KΩ	#10KΩ	1000Ω							
V 9	6AU6	1 Meg.	6.8KΩ	38Ω	40Ω	†220KΩ	†150Ω	6.8KΩ							
V 10	6AU6	1.5Ω	0Ω	35Ω	33Ω	†550Ω	†550Ω	82Ω							
V 11	6AL5	INF	INF	30Ω	33Ω	15KΩ	0Ω	15KΩ							
V 12	6AT6	10 Meg.	0Ω	23Ω	20Ω	0Ω	0Ω	†400KΩ							
V 13	25L6GT	0Ω	42Ω	†320Ω	†4KΩ	470KΩ	INF	43Ω	68Ω						
V 14	12SN7GT	† 11KΩ	† 110KΩ	† 2KΩ	† 470KΩ	† 7 Meg. † 2.5 Meg.	† 2KΩ	29Ω	23Ω						
V 15	12SN7GT	† 4.7 Meg.	† 820KΩ	† 18KΩ	† 150KΩ	† 820KΩ	† 18KΩ	42Ω	40Ω						
V 16	12SN7GT	† 5KΩ	† 110KΩ	† 2KΩ	† 230KΩ	† 6.2 Meg. † 1.3 Meg.	† 1000Ω	19Ω	12Ω						
V 17	12SN7GT	† 4.7 Meg.	† 47KΩ	† 1000Ω	† 4.7 Meg.	† 47KΩ	† 1000Ω	43Ω	41Ω						
V 18	12SN7GT	† 7.5KΩ	# 700Ω	† 0Ω	† 7.5KΩ	# 800Ω	† 0Ω	43Ω	40Ω						
V 19	1B3GT	INF	INF	INF	INF	INF	INF	INF	INF	TOP CAP 680Ω					
V 20	25Z6GT	INF	40Ω	22KΩ	40KΩ	500KΩ	INF	34Ω	43Ω						
V 21	6X5GT	INF	0Ω	40KΩ	INF	40KΩ	INF	1.8Ω	190KΩ						
V 22	PINS 7JP4	1 1.8Ω	2 115KΩ	3 6.8KΩ	4 INF.	5 13Meg. 8Meg.	6 INF.	7 33Meg.	8 33Meg.	9 28Meg.	10 33Meg.	11 33Meg.	12 INF.	13 INF.	14 3Ω

† Measured from pin 3 of V20.

Measured from pin 4 of V20.

‡ Measured from pin 8 of V21.

▲ Measured from pin 5 of V20.

♦ Measured from pin 8 of V20.

‡ Measured from pin 3 of V17.

1. DC Voltage measurements are at 20,000 ohms per volt; AC Voltage measured at 1,000 ohms.

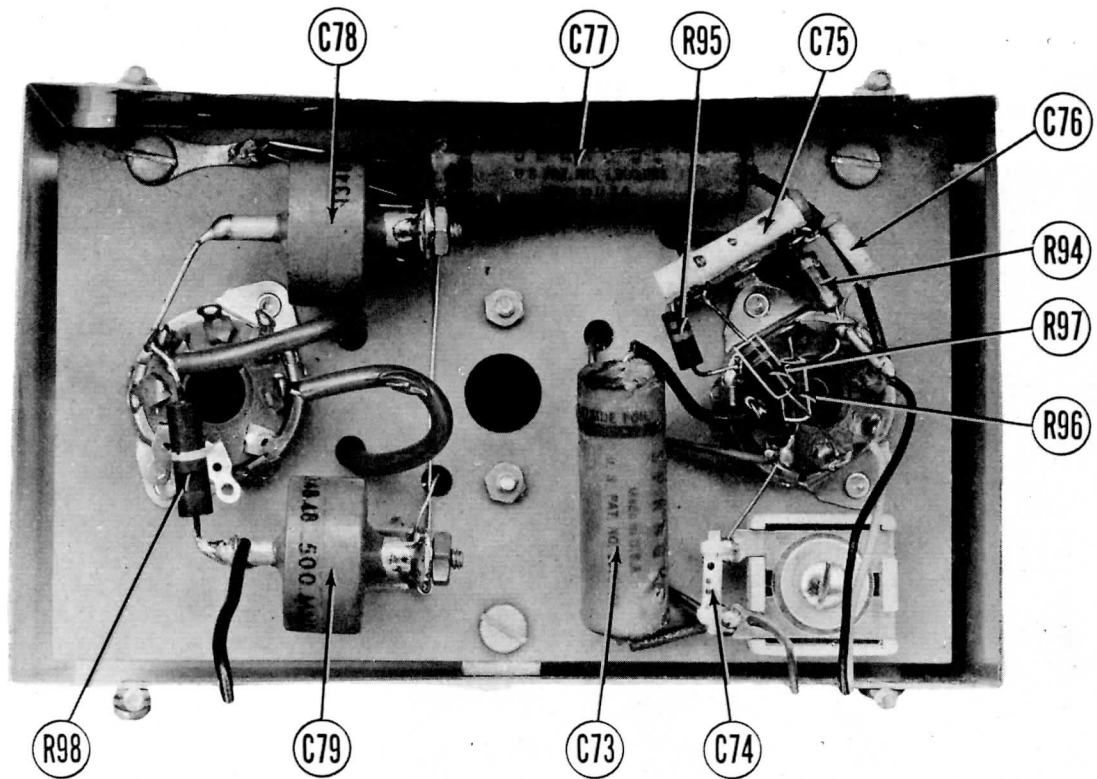
2. Pin numbers are counted in a clockwise direction on bottom of socket.

3. Measured values are from socket pin to common negative unless otherwise stated.

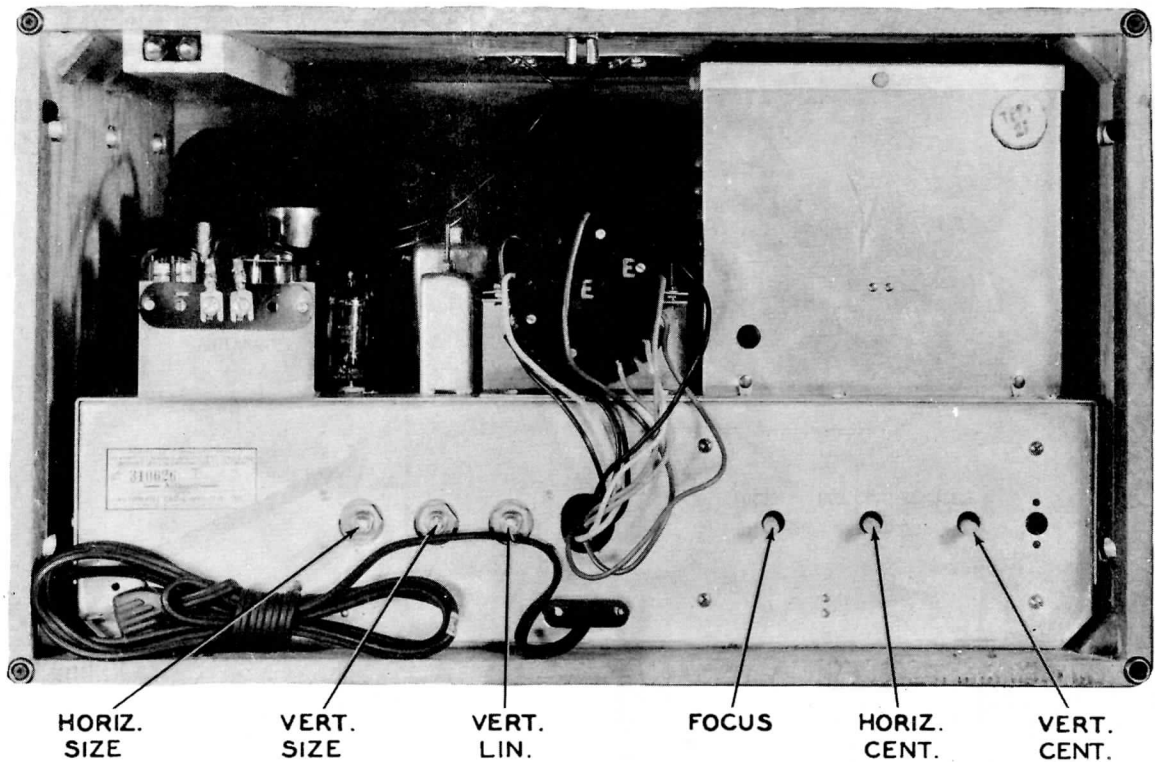
4. Line voltage maintained at 117 volts for voltage readings.

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.



HIGH VOLTAGE SUPPLY - BOTTOM VIEW

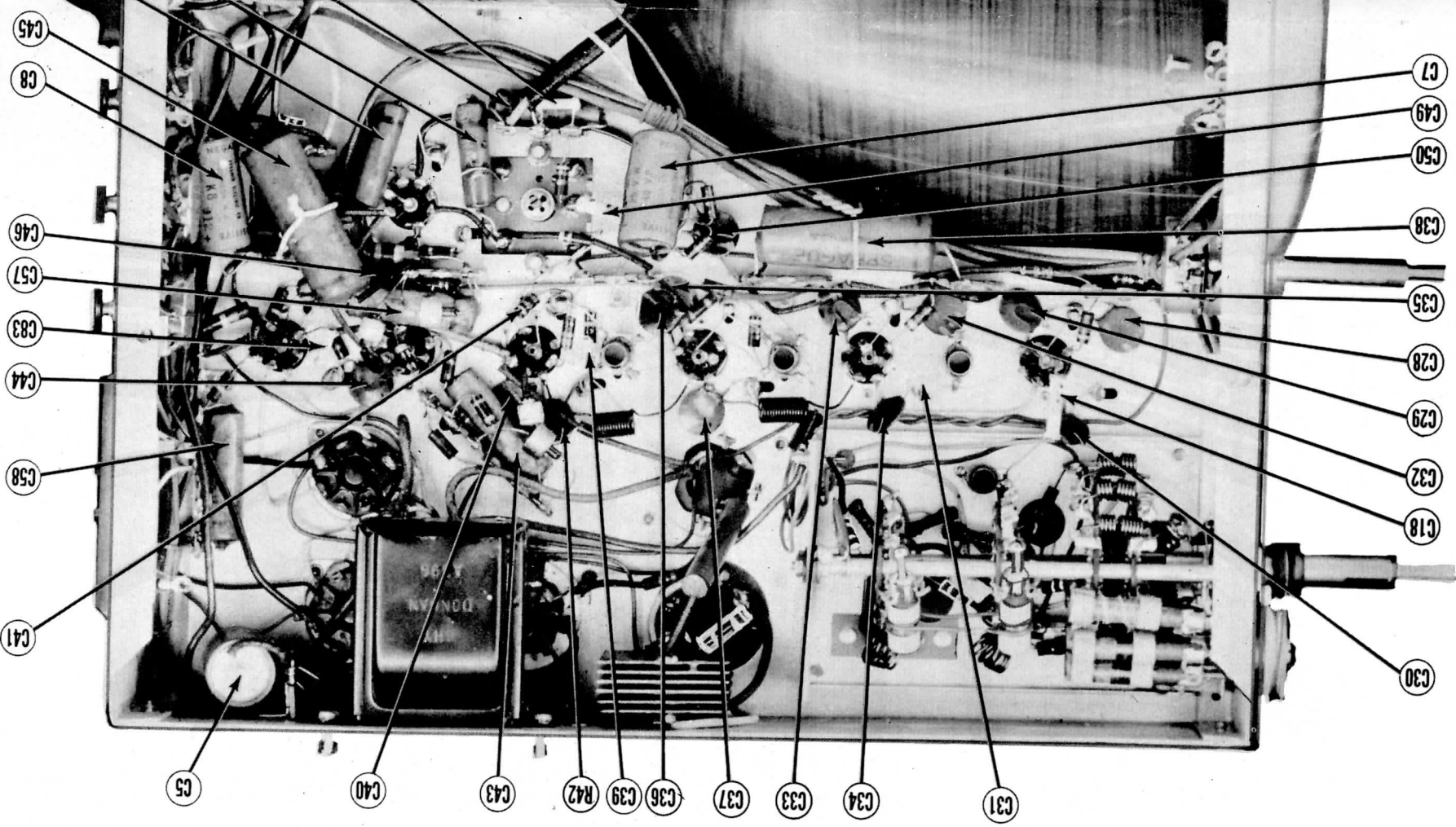


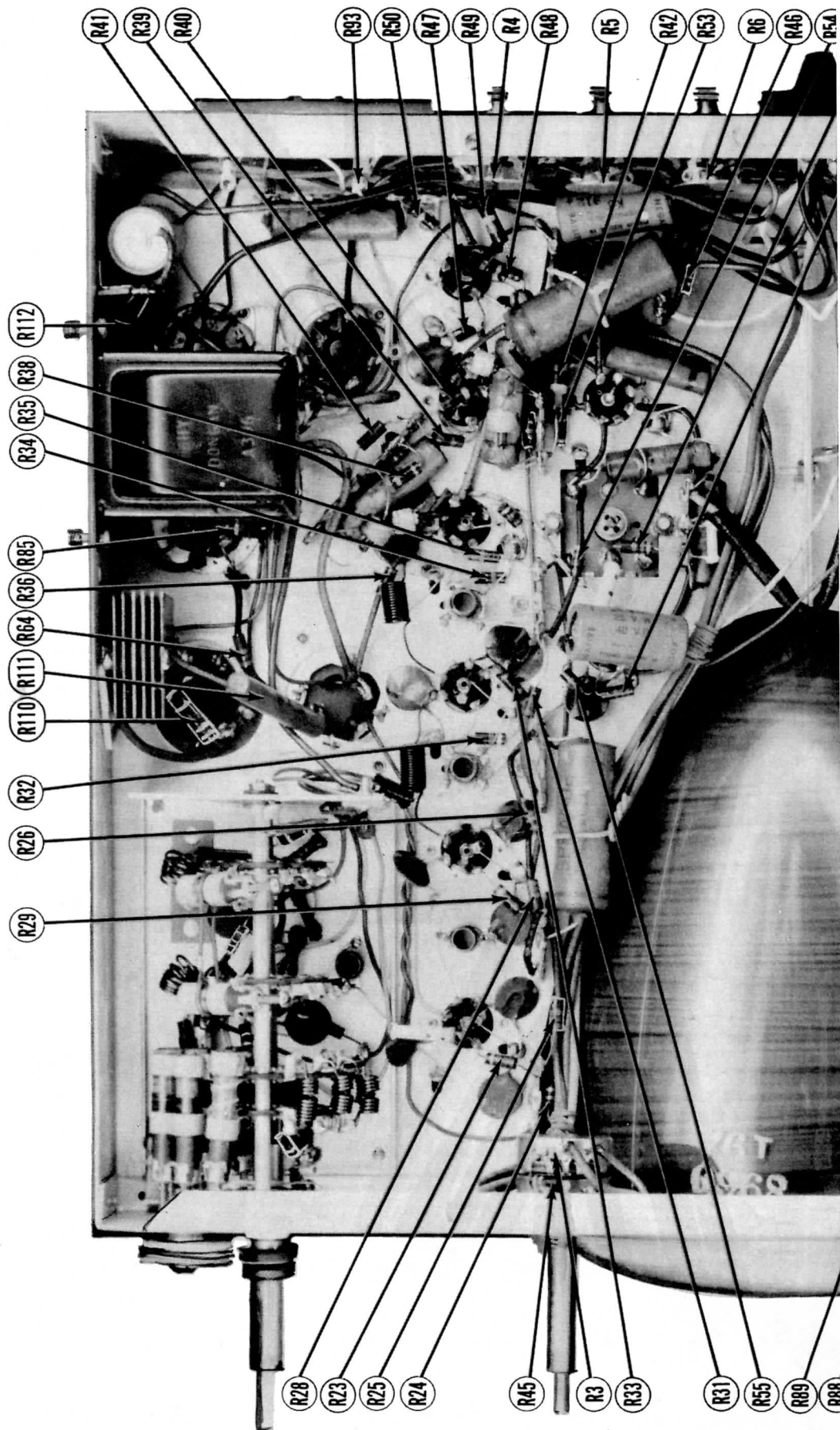
CABINET - REAR VIEW

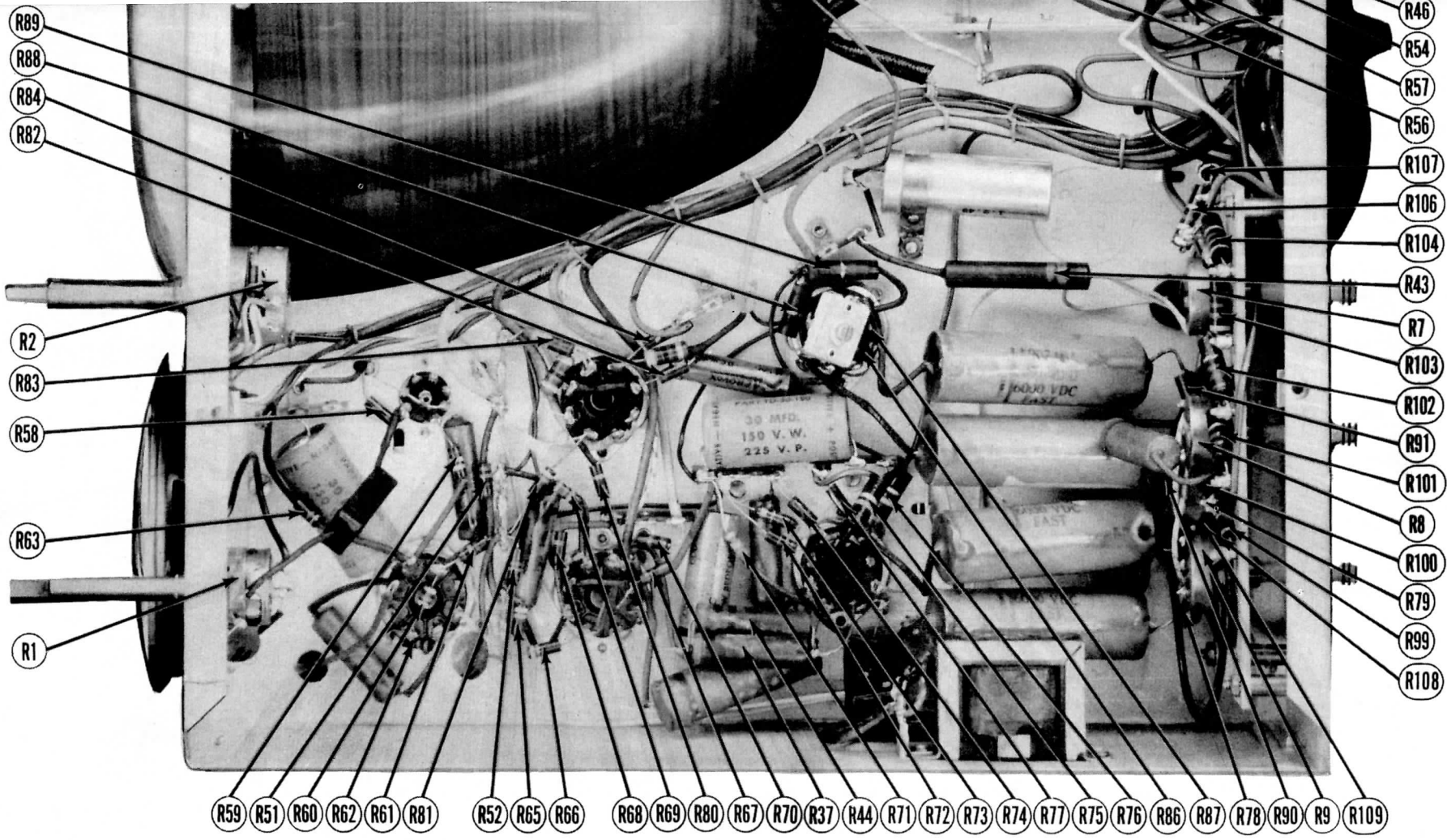
CHASSIS BOTTOM VIEW-CAPACITOR IDENTIFICATION



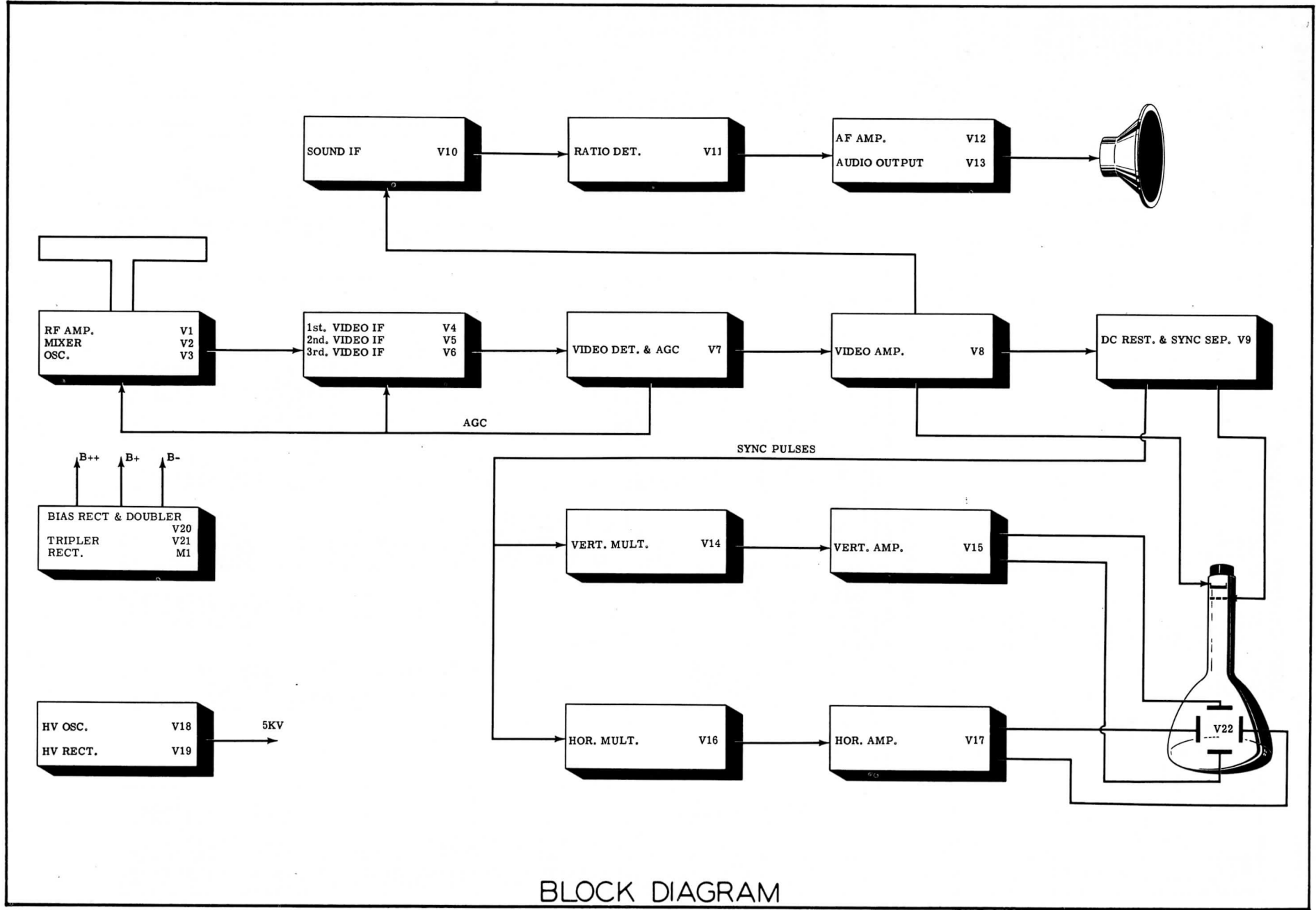
**AUTOMATIC
MODEL TV-P490**







AUTOMATIC
MODEL TV-P490
 CHASSIS BOTTOM VIEW-RESISTOR IDENTIFICATION



BLOCK DIAGRAM
MODEL TV-P490
AUTOMATIC

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA		RMA BASE TYPE	NOTES
		AUTOMATIC PART No.	STANDARD REPLACEMENT		
V1	RF Amp	6AU6	6AU6	7BK	
V2	Mixer	6AG5	6AG5	7BD	
V3	Osc.	6J6	6J6	7BF	
V4	1st Video IF Amp.	6AU6	6AU6	7BK	
V5	2nd Video IF Amp.	6AU6	6AU6	7BK	
V6	3rd Video IF Amp.	6AU6	6AU6	7BK	
V7	Video Det.	6AL5	6AL5	6BT	
V8	Video Amp.	6AU6	6AU6	7BK	
V9	DC Restorer - Sync. Sep.	6AU6	6AU6	7BK	
V10	Sound IF Amp.	6AU6	6AU6	7BK	
V11	Ratio Det.	6AL5	6AL5	6BT	
V12	AF Amp.	6AT6	6AT6	7BT	
V13	Audio Output	25L6GT	25L6GT	7AC	
V14	Vert. Mult.	12SN7GT	12SN7GT	8BD	
V15	Vert. Amp.	12SN7GT	12SN7GT	8BD	
V16	Hor. Mult.	12SN7GT	12SN7GT	8BD	
V17	Hor. Amp.	12SN7GT	12SN7GT	8BD	
V18	HV Osc.	12SN7GT	12SN7GT	8BD	
V19	HV Rectifier	1B3GT	1B3GT	3C	
V20	Bias Rectifier - Doubler	25Z6GT	25X6GT	7Q	
V21	Tripler	6X5GT	6X5GT	6S	
V22	Picture Tube	7JP4	7JP4	14G	

CAPACITORS

ITEM No.	RATING		REPLACEMENT DATA		
	CAP.	VOLT	AUTOMATIC PART No.	AEROVOX PART No.	C D P/
C81	.01	600		P688-01	GT
C82	.1	600		P688-1	GT
C83	.05	600		P488-05	GT
C84	.02	400		P488-02	GT
C85	.005	6000		7584-005	DS
C86	.005	6000		7584-005	DS
C87	220			1468-00025	5W
C88	100			1468-0001	5W
C89	.01	600		P688-01	GT
C70	100			1468-0001	5W
C71	.005	6000		7584-005	DS
C72	.005	6000		7584-005	DS
C73	.05	600		P688-05	GT
C74	1000			1464-001	2R
C75	360			1469-00035	5W
C76	1500			1467-0015	1W/1
C77	.1	600		P688-1	GT
C78	500	10000		P488-05	GT
C79	500	10000		P488-1	GT
C80	.05	400		1467-0015	1W/1
C81	.1	400		P488-1	GT
C82	1200			1467-0015	1W/1
C83	1500			1467-0015	1W/1

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	AUTOMATIC PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	SPRAGUE PART No.		
C1A	40	350		AF88J	UP4445			TVL-64	▲ Doubler
B	40	350							▲ Filter
C2A	30	450		AF862J4A #	UP9CJ1039			TVL-54	▲ Filter
B	15	450							■ Filter
C	30	150							▲ Filter
C3	30	150		PRS150/30	BR3015			UT-301	Filter
C4A	100	150		AF101010D4A *	UP9B71038				▲ Filter
B	100	150		PRS150/30	BR3015			UT-301	▲ Filter
C5	30	150		PRS150/30	BR3015A			TV-18	Filter
C6	30	150		PRS150/30	BR3015A			TVA-13	Filter
C7	4	25		PRS150/4	BR415			TVA-5	Stabilizing Cap.
C8	10	25		PRS150/4	BR102A			TVA-21	Sync. Sep. Cathode Bypass
C9	10	350		PRS25/10	UP1535				Decoupling
C10	5000						811-005	29C1	Ant. Coupling
C11	5000						811-005	29C1	Ant. Coupling
C12	500						GP2K-500	29C1	RF Coupling
C13	5000						811-005	29C1	RF Coupling
C14	1200						GP2L-0012		RF Filament Bypass †
C15	.82								RF Coupling
C16	22						GP1K-22		Mixer Grid Cap.
C17	5000						811-005	29C1	Mixer Decoupling
C18	270						GP2K-270		IF Coupling
C19	500						GP2K-500		RF Bypass †
C20	1200						GP2L-0012		Mixer Filament Bypass †
C21	1.5						NPOK-1.5		Osc. Coupling
C22	4.7						NPOK-4.7		Osc. Feedback
C23	4.7						NPOK-4.7		Osc. Feedback
C24	1200						GP2L-0012		Osc. Filament Bypass †
C25	1200						GP2L-0012		Osc. Filament Bypass †
C26	5000						811-005	29C1	Switch Bypass
C27	5000						811-005	29C1	Switch Bypass
C28	5000						1467-005	29C1	AGC Filter
C29	5000						1467-005	29C1	1st V. IF Decoupling
C30	5000						1467-005	29C1	1st V. IF Fil. Bypass
C31	270						1468-00025	1FM-325	IF Coupling
C32	5000						1467-005	29C1	AGC Filter
C33	5000						1467-005	29C1	2nd V. IF Decoupling
C34	5000						1467-005	29C1	2nd V. IF Fil. Bypass
C35	5000						1467-005	29C1	3rd V. IF Cath. Bypass
C36	5000						1467-005	29C1	3rd V. IF Decoupling
C37	5000						1467-005	29C1	3rd V. IF Fil. Bypass
C38	.25	400					P488-25	TC-2	AGC Filter
C39	500						1468-0005	1FM-35	IF Coupling
C40	5000						1467-005	29C1	DAGC Diode Filter
C41	.5	400					1468-000005	MS-55	V. Diode Filter
C42	5000						1467-005	29C1	Det. Filament Bypass
C43	.05	400					P488-05	TM-15	Video Coupling
C44	5000						1467-005	29C1	Decoupling
C45	.25	400					P488-25	TC-2	Video Coupling
C46	2.2								S. IF Coupling
C47	.02	400					P488-02	TM-12	1st S. IF Cath. Bypass
C48	.02	400					P488-02	TM-12	1st S. IF Decoupling
C49	360						1468-00035	1FM-335	Diode Load Cap.
C50	5000						1467-005	29C1	RF Bypass
C51	1500						1467-0015	1FM-215	De-emphasis
C52	.02	400					P488-02	TM-12	Audio Coupling
C53	5000						1467-005	29C1	Vol. Control Isolation
C54	.006	600					P688-006	TM-26	Audio Coupling
C55	.01	600					P688-01	TM-11	Audio Coupling
C56	.02	400					P488-02	TM-12	Output Plate Bypass
C57	.05	400					P488-05	TM-15	Video Coupling
C58	.05	400					P488-05	TM-15	Sync. Coupling
C59	5000						1467-005	29C1	Integrator Net.
C60	5000						1467-005	29C1	Integrator Net.

ITEM No.	RATING		REPLACEMENT DATA		
	RESISTANCE	WATTS	AUTOMATIC PART No.	IRC PART No.	C
R1A	500KΩ	1/2	TRV-75	Q13-133	M
B	Switch		Not Req.	76-1	SI
R2A	1 Meg.		TRV-77	B11-137**	
B	250KΩ			B11-130**	
C	Shaft End			E202**	
R3A	1000Ω		TRV-76	B11-108**	
B	25KΩ			B11-120**	
C	Shaft End			E202**	
R4	5 Meg.		TRV-79	Q11-141	M
R5	10 Meg.		TRV-78	Q11-143	M
R6	10 Meg.		TRV-78	Q11-143	M
R7A	5 Meg.		TRV-80	Q11-141	
B	Shaft		Not Req.	TQ	
R8A	5 Meg.		TRV-80	Q11-141	
B	Shaft		Not Req.	TQ	
R9A	5 Meg.		TRV-80	Q11-141	
B	Shaft		Not Req.	TQ	

** Additional parts to be used with "Concentritik".

ITEM No.	RATING		REPLACEMENT DATA	
	RESISTANCE	WATTS	AUTOMATIC PART No.	IRC PART No.
R10	4700Ω	10%		
R11	1000Ω	5%		
R12	1 Meg.			BTS-1000-5
R13	100Ω			
R14	560Ω	10%		
R15	560Ω	10%		
R16	390Ω	10%		
R17	4700Ω	10%		
R18	1 Meg.			
R19	1000Ω			
R20	27KΩ			BTS-1000
R21	27KΩ			
R22	47Ω			
R23	11KΩ	10%		
R24	150Ω			
R25	150Ω			
R26	150Ω			
R27	82Ω			
R28	150Ω			
R29	10KΩ	10%		
R30	82Ω			
R31	150Ω			
R32	11KΩ	10%		
R33	82Ω	5%		
R34	100KΩ			BTS-100K
R35	2.2 Meg.	5%		BTS-2.2 M
R36	100KΩ			BTS-100K
R37	50Ω	2		BW-2-47
R38	8200Ω	5%		BTS-8200-5
R39	1 Meg.			BTS-1 Meg.
R40	10KΩ			BTS-10K
R41	1 Meg.			BTS-1 Meg.
R42	6800Ω			BT-6800
R43	10KΩ	1		BT-2-10K
R44	50Ω	2		BW-2-47

PARTS LIST AND DESCRIPTIONS

CAPACITORS (CONT.)

ITEM No.	RATING		REPLACEMENT DATA				IDENTIFICATION CODES AND INSTALLATION NOTES	
	CAP.	VOLT	AUTOMATIC PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.		SPRAGUE PART No.
C61	.01	600		P688-01	GT6S1	GP2-335-01	TM-11	Vert. MV Feedback
C62	.1	600		P688-1	GT6P1		TM-1	Vert. Sweep Coupling
C63	.05	600		P688-05	GT6S5		TM-15	Vert. Discharge
C64	.02	400		P488-02	GT4S2		TM-12	Vert. Sweep Coupling
C65	.005	8000		7584-005	DSTH60D5		TVM-256	Vert. Sweep Coupling
C66	.005	6000		7584-005	DSTH60D5		TVM-256	Vert. Sweep Coupling
C67	220			1468-00025	5W5T25	GP2K-220	IFM-325	Differentiator
C68	100			1468-0001	5W5T1	GPIK-100	IFM-31	Hor. MV Feedback
C69	.01	600		P688-01	GT6S1	GP2-335-01	TM-11	Hor. Sweep Coupling
C70	100			1468-0001	5W5T1	GPIK-100	IFM-31	Hor. Discharge
C71	.005	6000		7584-005	DSTH60D5		TVM-256	Hor. Sweep Coupling
C72	.005	6000		7584-005	DSTH60D5		TVM-256	Hor. Sweep Coupling
C73	.05	600		P688-05	GT6S5		TM-15	HV Osc. Plate Decoupling
C74	1000	500		1464-001	2R5D1		MS-21	Fixed Trimmer †
C75	360			1469-00035				Fixed Trimmer
C76	1500			1467-0015	1W5D15	GP2L-0015	IFM-215	HV Osc. Grid Cap.
C77	.1	600		P688-1	GT6P1		TM-1	HV Osc. Fil. Bypass
C78	500	10000				410-500		HV Filter
C79	500	10000				410-500		HV Filter
C80	.05	400		P488-05	GT4S5		TM-15	Hor. Cent. Cont. Bypass
C81	.1	400		P488-1	GT4P1		TM-1	Line Filter ‡
C82	1200			1467-0015	1W5D15	GP2L-0012	IFM-215	AGC Filter †
C83	1500			1467-0015	1W5D15	GP2L-0015	IFM-215	V. Amp. Cath. Bypass

- * Parallel sections to obtain desired capacity.
- † Not used in all models.
- ‡ Some models use 500MMF in this application.
- § Some models use 5000MMF in this application.
- Some models use 7500MMF in this application.
- # Omit bypass section.

Electrolytic Capacitors.

IDENTIFICATION CODES AND INSTALLATION NOTES
• Doubler
▲ Filter
△ Filter
■ Filter
▲ Filter
▲ Filter
▲ Filter
Filter
Filter
Stabilizing Cap.
Sync. Sep. Cathode Bypass
Decoupling
Ant. Coupling
Ant. Coupling
RF Coupling
RF Screen Bypass
RF Filament Bypass †
RF Coupling
Mixer Grid Cap.
Mixer Decoupling
IF Coupling
RF Bypass †
Mixer Filament Bypass †
Osc. Coupling
Osc. Feedback
Osc. Feedback
Osc. Filament Bypass †
Osc. Filament Bypass †
Switch Bypass
Switch Bypass
AGC Filter
1st V. IF Decoupling
1st V. IF Fil. Bypass
IF Coupling
AGC Filter
2nd V. IF Decoupling
2nd V. IF Fil. Bypass
3rd V. IF Cath. Bypass
3rd V. IF Decoupling
3rd V. IF Fil. Bypass
AGC Filter
IF Coupling
DAGC Diode Filter
V. Diode Filter
Det. Filament Bypass
Video Coupling
Decoupling
Video Coupling
S. IF Coupling
1st S. IF Cath. Bypass
1st S. IF Decoupling
Diode Load Cap.
RF Bypass
De-emphasis
Audio Coupling
Vol. Control Isolation
Audio Coupling
Audio Coupling
Output Plate Bypass
Video Coupling
Sync. Coupling
Integrator Net.
Integrator Net.

CONTROLS

ITEM No.	RATING		REPLACEMENT DATA			INSTALLATION NOTES
	RESISTANCE	WATTS	AUTOMATIC PART No.	IRC PART No.	CLAROSTAT PART No.	
RIA	500KΩ	1/2	TRV-75	Q13-133	M-60-Z	Volume Control Attach to RIA per instructions
B	1 Meg.		Not Req.	76-1	SW-A	
R2A	250KΩ		TRV-77	BI1-137**		Dual Concentric Vert. hold control, front } Horiz. hold control, rear }
B	250KΩ			BI1-130**		
C	Shaft End			E202**		Attach per instructions in "Concentrikit". Contrast control, front } Brightness control, rear }
R3A	1000Ω		TRV-76	BI1-108**		
B	25KΩ			BI1-120**		
C	Shaft End			E202**		Attach per instructions in "Concentrikit". Horiz. Size control
R4	5 Meg.		TRV-79	Q11-141	M-85-S	
R5	10 Meg.		TRV-78	Q11-143	M-86-S	
R6	10 Meg.		TRV-78	Q11-143	M-86-S	
R7A	5 Meg.		TRV-80	Q11-141	M-86-S	
B	Shaft		Not Req.	TQ		Focus control Attach to R7A per instructions
R8A	5 Meg.		TRV-80	Q11-141		
B	Shaft		Not Req.	TQ		Horiz. centering control Attach to R8A per instructions
R9A	5 Meg.		TRV-80	Q11-141		
B	Shaft		Not Req.	TQ		Vert. centering control Attach to R9A per instructions

** Additional parts to be used with "Concentrikit".

RESISTORS

ITEM No.	RATING		REPLACEMENT DATA		IDENTIFICATION CODES
	RESISTANCE	WATTS	AUTOMATIC PART No.	IRC PART No.	
R10	4700Ω	10%			ALL RESISTORS ARE ±20% UNLESS OTHERWISE STATED: RF Coil Shunt RF Decoupling RF Grid RF Cathode Attenuator Network See Note 1 Attenuator Network See Note 1 Attenuator Network See Note 1 Mixer Coil Shunt Mixer Grid Mixer Decoupling Osc. Grid Osc. Grid Osc. Cathode 1st Video IF Grid AGC Network AGC Network AGC Network 1st Video IF Cathode See Note 2 1st Video IF Decoupling 2nd Video IF Grid 2nd Video IF Cathode See Note 2 2nd Video IF Decoupling 3rd Video IF Grid 3rd Video IF Cathode AGC Rect. Load AGC Network Voltage Divider Filament Dropping See Note 2 Video Det. Diode Load Video Amp. Grid Bias Network Bias Network Video Amp. Plate Video Amp. Screen Decoupling Filament Dropping See Note 2
R11	1000Ω	5%		BTS-1000-5%	
R12	1 Meg.				
R13	100Ω				
R14	560Ω	10%			
R15	560Ω	10%			
R16	390Ω	10%			
R17	4700Ω	10%			
R18	1 Meg.				
R19	1000Ω			BTS-1000	
R20	27KΩ				
R21	27KΩ				
R22	47Ω				
R23	11KΩ	10%			
R24	150Ω				
R25	150Ω				
R26	150Ω				
R27	82Ω				
R28	150Ω				
R29	10KΩ	10%			
R30	82Ω				
R31	150Ω				
R32	11KΩ	10%			
R33	82Ω	5%			
R34	100KΩ			BTS-100K	
R35	2.2 Meg.	5%		BTS-2.2 Meg-5%	
R36	100KΩ			BTS-100K	
R37	50Ω			BW-2-47	
R38	8200Ω	5%		BTS-8200-5%	
R39	1 Meg.			BTS-1 Meg.	
R40	10KΩ			BTS-10K	
R41	1 Meg.			BTS-1 Meg.	
R42	6800Ω			BTA-6800	
R43	10KΩ			BT-2-10K	
R44	50Ω			BW-2-47	

ITEM No.	RATING		A
	RESISTANCE	WATTS	
R45	4700Ω		
R46	150KΩ	5%	
R47	1 Meg.		
R48	6800Ω	10%	
R49	220KΩ	5%	
R50	200KΩ		
R51	500Ω		
R52	560Ω		
R53	82Ω	5%	
R54	470Ω		
R55	15KΩ		
R56	15KΩ		
R57	47KΩ		
R58	10 Meg.		
R59	390KΩ		
R60	470KΩ		
R61	6.8 Meg.		
R62	68Ω		
R63	4700Ω		
R64	150Ω		
R65	4700Ω		
R66	4700Ω		
R67	1000Ω		
R68	100KΩ		
R69	470KΩ		
R70	3 Meg.		
R71	4.7 Meg.		
R72	18KΩ		
R73	150KΩ	5%	
R74	2.2 Meg.		
R75	820KΩ	10%	
R76	820KΩ	10%	
R77	3 Meg.		
R78	5.6 Meg.	10%	
R79	5.6 Meg.	10%	
R80	100KΩ		
R81	4700Ω		
R82	100Ω		
R83	220KΩ	5%	
R84	1.2 Meg.		
R85	10KΩ	10%	
R86	4.7 Meg.		
R87	4.7 Meg.		
R88	47KΩ	10%	
R89	47KΩ	10%	
R90	4.7 Meg.	10%	
R91	4.7 Meg.	10%	
R92	43Ω	10%	
R93	60Ω		10
R94	7500Ω	5%	
R95	68Ω		
R96	100Ω		
R97	68Ω		
R98	100KΩ		
R99	1 Meg.		
R100	3 Meg.		
R101	3.3 Meg.	10%	
R102	3.3 Meg.	10%	
R103	4.7 Meg.	10%	
R104	4.7 Meg.	10%	
R105	1200Ω		
R106	3.9 Meg.	10%	
R107	3.9 Meg.	10%	
R108	3 Meg.		
R109	3 Meg.		
R110	680Ω		
R111	18Ω		5

- Note 1. Use for local reception
- Note 2. Not used in all models
- Note 3. Some models use 180K

ITEM No.	RATING		
	PRI.	SEC. 1	SEC.
T1	117VAC at .05A	133VAC .017ADC	

ITEM No.	RATING		
	PRI.	SEC. 1	SEC.
T2	1.5Ω	650Ω	38Ω

DESCRIPTIONS

SPRAGUE PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
TM-11	Vert. MV Feedback
TM-1	Vert. Sweep Coupling
TM-15	Vert. Discharge
TM-12	Vert. Sweep Coupling
TVM-256	Vert. Sweep Coupling
TVM-256	Vert. Sweep Coupling
IFM-325	Differentiator
IFM-31	Hor. MV Feedback
TM-11	Hor. Sweep Coupling
IFM-31	Hor. Discharge
TVM-256	Hor. Sweep Coupling
TVM-256	Hor. Sweep Coupling
TM-15	HV Osc. Plate Decoupling
MS-21	Fixed Trimmer *
IFM-215	HV Osc. Grid Cap.
TM-1	HV Osc. Fil. Bypass
	HV Filter
	HV Filter
TM-15	Hor. Cent. Cont. Bypass
TM-1	Line Filter ‡
IFM-215	AGC Filter †
IFM-215	V. Amp. Cath. Bypass

INSTALLATION NOTES
Volume Control
Attach to R1A per instructions
Vert. hold control, front } Dual Concentric
Horiz. hold control, rear } Dual Concentric
Attach per instructions in "Concentrikit".
Contrast control, front } Dual Concentric
Brightness control, rear } Dual Concentric
Attach per instructions in "Concentrikit".
Horiz. Size control
Vert. size control
Vert. linearity control
Focus control
Attach to R7A per instructions
Horiz. centering control
Attach to R8A per instructions
Vert. centering control
Attach to R9A per instructions

IDENTIFICATION CODES
RESISTORS ARE ±20% UNLESS OTHERWISE STATED:
Shunt
coupling
id
thode
ator Network See Note 1
ator Network See Note 1
ator Network See Note 1
Coil Shunt
Grid
Decoupling
grid
grid
athode
eo IF Grid
etwork
etwork
etwork
eo IF Cathode See Note 2
eo IF Decoupling
eo IF Grid
eo IF Cathode See Note 2
eo IF Decoupling
eo IF Grid
eo IF Cathode
ect. Load
etwork
: Divider
nt Dropping See Note 2
et. Diode Load
mp. Grid
etwork
etwork
mp. Plate
mp. Screen Decoupling
nt Dropping See Note 2

RESISTORS (CONT.)

ITEM No.	RATING		REPLACEMENT DATA		IDENTIFICATION CODES
			AUTOMATIC	IRC	
	RESISTANCE	WATTS	PART No.	PART No.	
R45	4700Ω			BTS-4700	Voltage Divider
R46	150KΩ 5%			BTS-150K-5%	Picture Tube Cathode
R47	1 Meg.			BTS-1 Meg.	Sync. Sep. Grid
R48	6800Ω 10%			BTS-6800	Sync. Sep. Cathode
R49	220KΩ 5%			BTS-220K-5%	Sync. Sep. Plate
R50	200KΩ			BTS-180K	Phase Correction See Note 3
R51	560Ω			BTS-560	Bias Voltage Divider
R52	560Ω			BTS-560	Bias Voltage Divider
R53	82Ω 5%				Sound IF Cathode
R54	470Ω				Sound IF Decoupling
R55	15KΩ			BTS-15K	Ratio Det. Diode Load
R56	15KΩ			BTS-15K	Ratio Det. Diode Load
R57	47KΩ			BTS-47K	De-emphasis
R58	10 Meg.			BTS-10 Meg.	AF Grid
R59	390KΩ			BTS-390K	AF Plate
R60	470KΩ			BTS-470K	Output Grid
R61	6.8 Meg.			BTS-6.8 Meg.	Bias Network
R62	68Ω			BW-½-68	Output Cathode
R63	4700Ω			BTS-4700	Filter
R64	150Ω			BW-½-150	Filter
R65	4700Ω			BTS-4700	Integrator
R66	4700Ω			BTS-4700	Integrator
R67	1000Ω			BTS-1000	Vert. MV Cathode
R68	100KΩ			BTS-100K	Vert. MV Plate
R69	470KΩ			BTS-470K	Vert. MV Grid
R70	3 Meg.			BTS-3.3 Meg.	Vert. MV Plate
R71	4.7 Meg.			BTS-4.7 Meg.	Vert. Amp. Grid
R72	18KΩ			BTS-18K	Vert. Amp. Cathode
R73	150KΩ 5%			BTS-150K-5%	Vert. Amp. Grid
R74	2.2 Meg.			BTS-2.2 Meg.	Voltage Divider
R75	820KΩ 10%			BTA-820K	Vert. Amp. Plate
R76	820KΩ 10%			BTA-820K	Vert. Amp. Plate
R77	3 Meg.			BTS-3.3 Meg.	Feedback Network
R78	5.6 Meg. 10%			BTA-5.6 Meg.	Vert. Deflection Load
R79	5.6 Meg. 10%			BTA-5.6 Meg.	Vert. Deflection Load
R80	100KΩ			BTS-100K	Horiz. MV Plate
R81	4700Ω			BTS-4700	Horiz. MV Grid
R82	1000Ω			BTS-1000	Horiz. MV Cathode
R83	220KΩ 5%			BTS-220K-5%	Horiz. MV Grid
R84	1.2 Meg.			BTS-1.2 Meg.	Horiz. MV Plate
R85	10KΩ 10%			BTA-10K	Filter
R86	4.7 Meg.			BTS-4.7 Meg.	Horiz. Amp. Grid
R87	4.7 Meg.			BTS-4.7 Meg.	Horiz. Amp. Grid
R88	47KΩ 10%			BTA-47K	Horiz. Amp. Plate
R89	47KΩ 10%			BTA-47K	Horiz. Amp. Plate
R90	4.7 Meg. 10%			BTA-4.7 Meg.	Horiz. Deflection Load
R91	4.7 Meg. 10%			BTA-4.7 Meg.	Horiz. Deflection Load
R92	43Ω 10%				Osc. Filament Shunt
R93	60Ω	10			Filament Dropping (Wire Wound)
R94	7500Ω 5%				HV Osc. Grid
R95	68Ω				Parasitic Supp.
R96	100Ω				Parasitic Supp.
R97	68Ω				Parasitic Supp.
R98	100KΩ				HV Filter
R99	1 Meg.			BTS-1 Meg.	Voltage Divider
R100	3 Meg.			BTS-3.3 Meg.	Voltage Divider
R101	3.3 Meg. 10%				Voltage Divider
R102	3.3 Meg. 10%				Voltage Divider
R103	4.7 Meg. 10%				Voltage Divider
R104	4.7 Meg. 10%				Voltage Divider
R105	1200Ω			BW-1-1200	Filter
R106	3.9 Meg. 10%				Voltage Divider
R107	3.9 Meg. 10%				Voltage Divider
R108	3 Meg.			BTS-3.3 Meg.	Voltage Divider
R109	3 Meg.			BTS-3.3 Meg.	Voltage Divider
R110	680Ω			BW-1-680	Filter
R111	18Ω	5			Surge Limiter (Wire Wound)

Note 1. Use for local reception only.
 Note 2. Not used in all models.
 Note 3. Some models use 180KΩ resistor in this application.

**AUTOMATIC
 MODEL TV-P490**

TRANSFORMER (POWER)

ITEM No.	RATING				REPLACEMENT DATA			
					AUTOMATIC	STANCOR	MERIT	CHICAGO
	PRI.	SEC. 1	SEC. 2	SEC. 3	PART No.	PART No.	PART No.	PART No.
T1	117VAC	133VAC						
	at .05A	.017ADC						

TRANSFORMER (POWER)

ITEM No.	RATING				REPLACEMENT DATA			
					AUTOMATIC	STANCOR	MERIT	CHICAGO
	PRI.	SEC. 1	SEC. 2	SEC. 3	PART No.	PART No.	PART No.	PART No.
T2	1.5Ω	650Ω	38Ω	0Ω				

PARTS LIST AND DESCRIPTIONS (Continued)

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	RATING				REPLACEMENT DATA				INSTALLATION NOTES
	IMPEDANCE		DC RES.		AUTOMATIC PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	
	PRI.	SEC.	PRI.	SEC.					
T3	3K Ω	4 Ω	180 Ω	.6 Ω		A-3876 §	A-2928 §	R0-2 §	§ Bend mounting tabs down and mount on original bracket.

SPEAKER

ITEM No.	RATINGS		REPLACEMENT DATA			NOTES
	FIELD RES.	V. C. IMP.	AUTOMATIC PART No.	JENSEN PART No.	QUAM PART No.	
SP1	PM	4 Ω		ST-113 # MOD .P4-X	4A1	# Fabricate new mounting bracket.
SP2	CONE DIA. 3 7/8"	V. C. DIA. 9/16"				

FILTER CHOKE

ITEM No.	RATINGS			REPLACEMENT DATA				INSTALLATION NOTES
	TOTAL DIRECT CURRENT	D. C. RESISTANCE	INDUCTANCE (0 CURRENT 1000 ω)	AUTOMATIC PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	
L1	.066A	150 Ω	6 Henrys		C-2303 †	C-2977 †	R-885 †	† Drill one new mounting hole.

COILS (RF-IF)

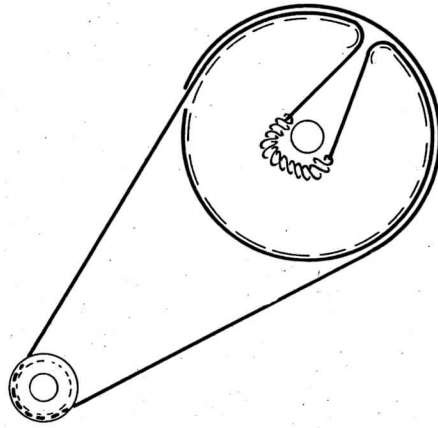
ITEM No.	USE	DC RES.		REPLACEMENT DATA		NOTES
		PRI.	SEC.	AUTOMATIC PART No.	MEISSNER PART No.	
L2	Ant. Input	.2CT				160 Microhenries, Wound on 33K Ω resistor. 520 Microhenries 160 Microhenries, Wound on 15K Ω resistor. 520 Microhenries.
L3	RF Strap Inductance	0 Ω				
L4	RF End Inductance	0 Ω				
L5	RF End Inductance	0 Ω				
L6	RF Plate Chk.	0 Ω				
L7	Osc. Coils	0 Ω				
L8	1st Video IF	.2 Ω				
L9	2nd Video IF	.2 Ω				
L10	3rd Video IF	.1 Ω	.1 Ω			
L11	4th Video IF	.1 Ω	.1 Ω			
L12	Peaking	9.5 Ω				
L13	Peaking	20 Ω				
L14	Peaking	10 Ω				
L15	Peaking	20 Ω				
L16	Sound IF Trap	2 Ω				
L17	Ratio Det. Transformer	4 Ω	.8 Ω			
L18	Fil. Choke	0 Ω				
L19	Fil. Choke	0 Ω				

SELENIUM RECTIFIER

ITEM No.	RATING	REPLACEMENT DATA			NOTES
	CURRENT	AUTOMATIC PART No.	SYLVANIA PART No.		
M1	.155A		NE-5		

MISCELLANEOUS

ITEM No.	PART NAME	AUTOMATIC PART No.	NOTES
M2	RF Tuner		



FINE TUNING CORD STRINGING