

MOTOROLA  
MODELS 12K2, 12T3 (Ch. TS-53)

MOTOROLA MODEL 12T3

TRADE NAME	Motorola, Models 12K2, 12T3 (Ch. TS-53)	
MANUFACTURER	Motorola Inc., 4545 Augusta Blvd., Chicago 51, Illinois	
TYPE SET	Television Receiver	
TUBES	Twenty	
POWER SUPPLY	110-120 Volts AC-60 Cycle	RATING 1.5 Amp. at 117 Volts AC
TUNING RANGE	Channels 2 thru 13	

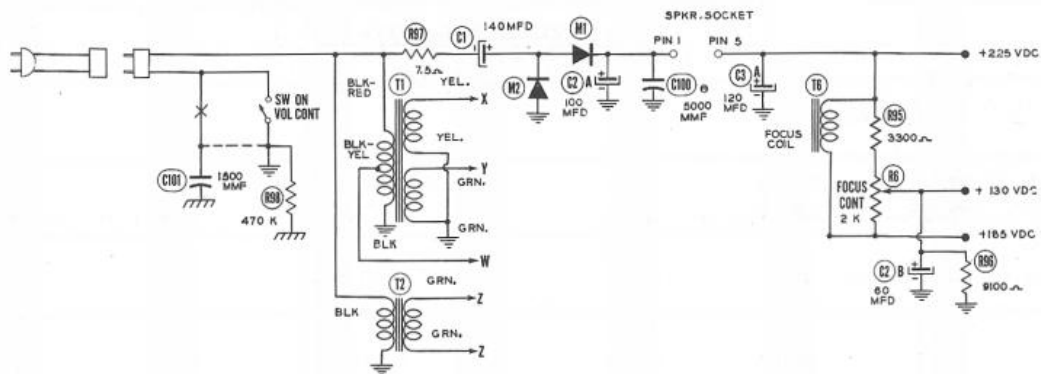
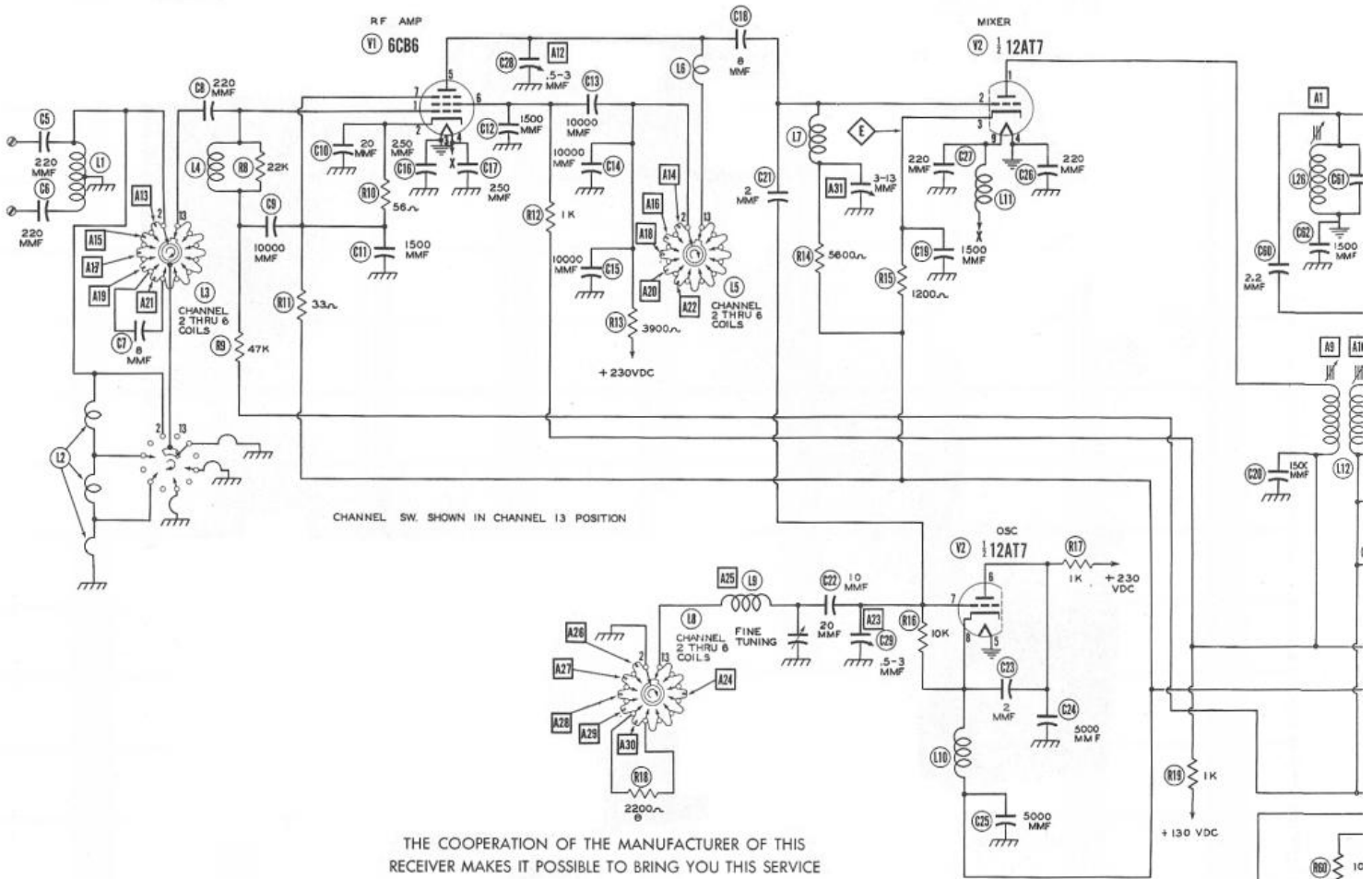
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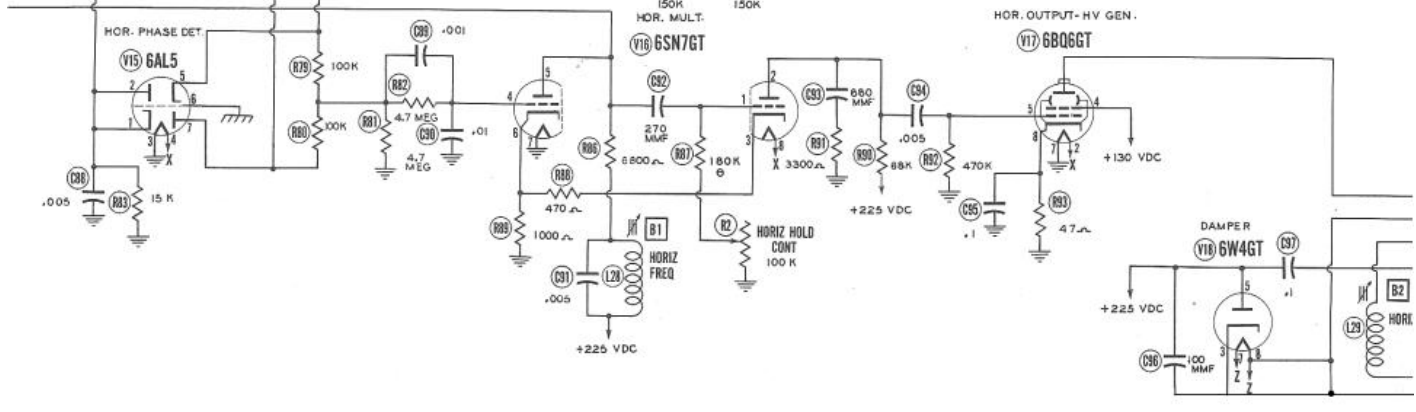
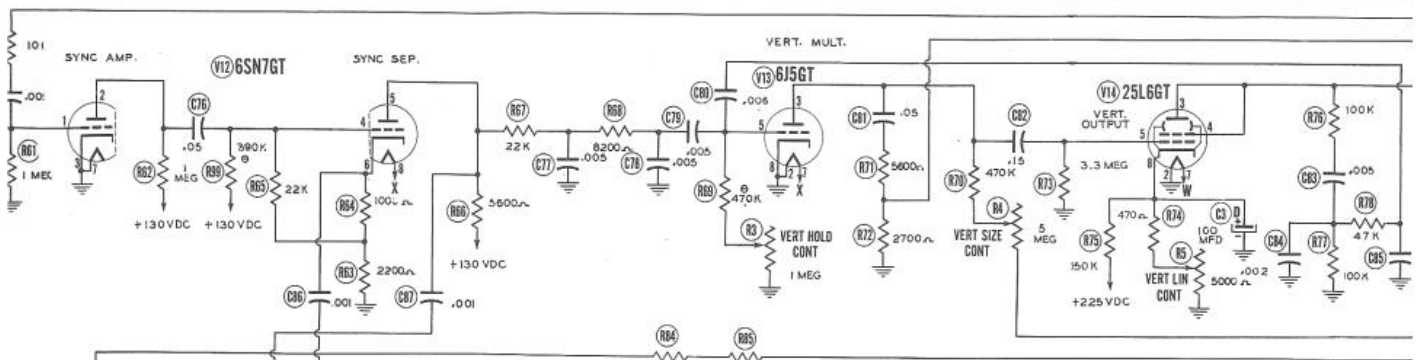
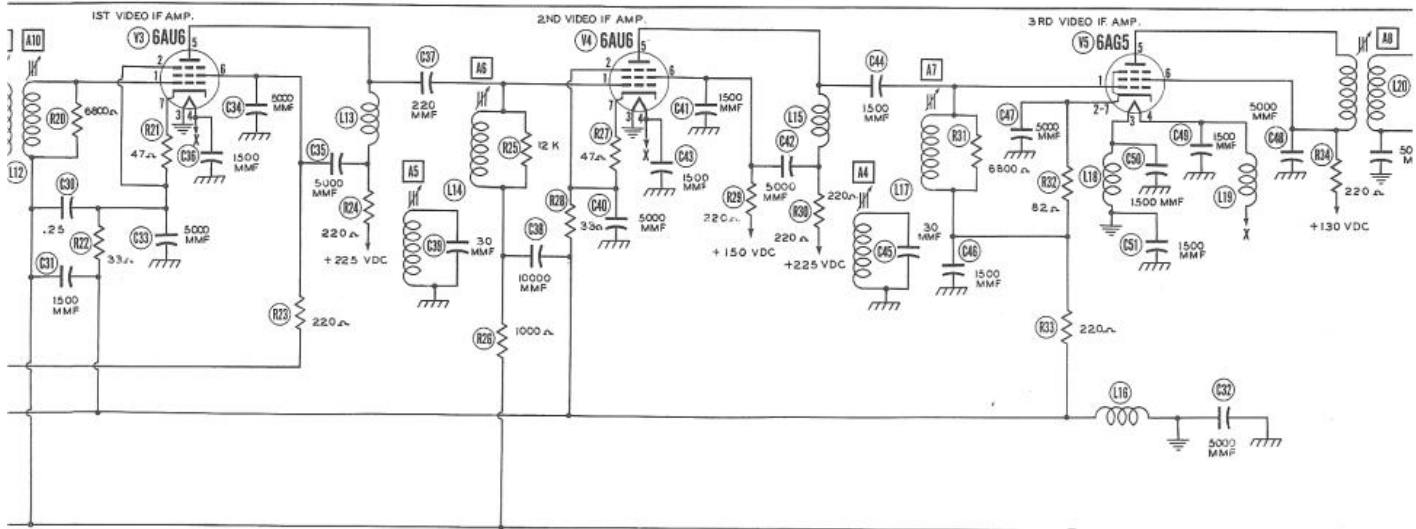
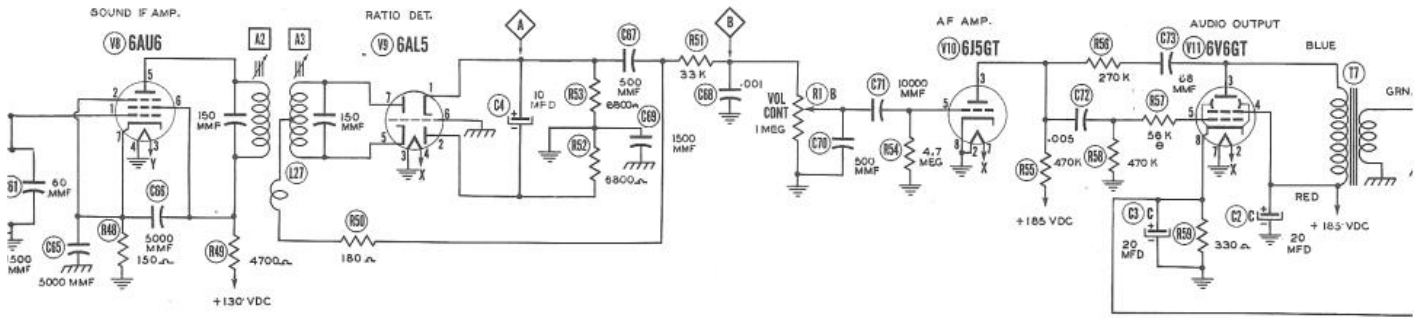
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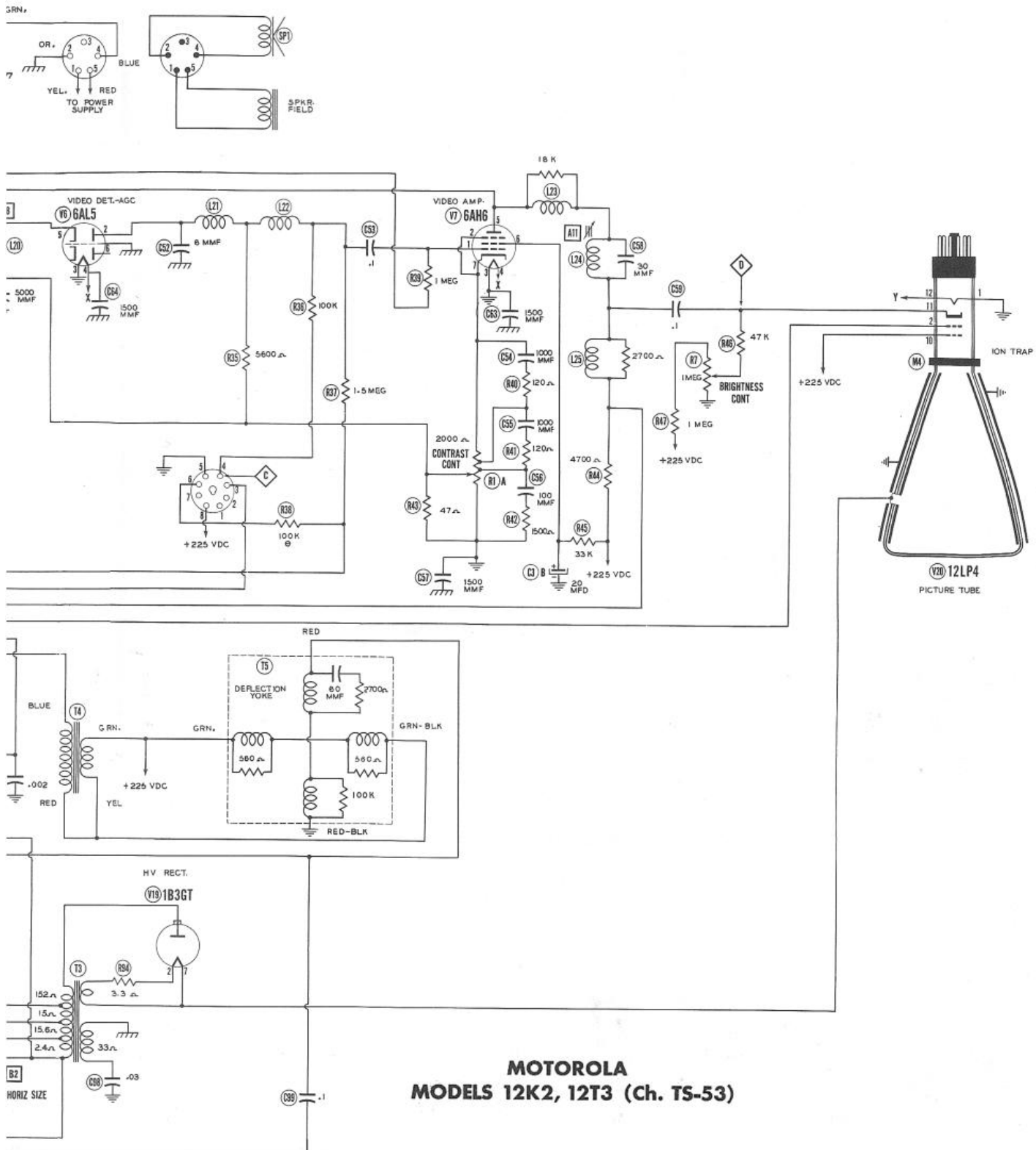


A PHOTOFAC STANDARD NOTATION SCHEMATIC  
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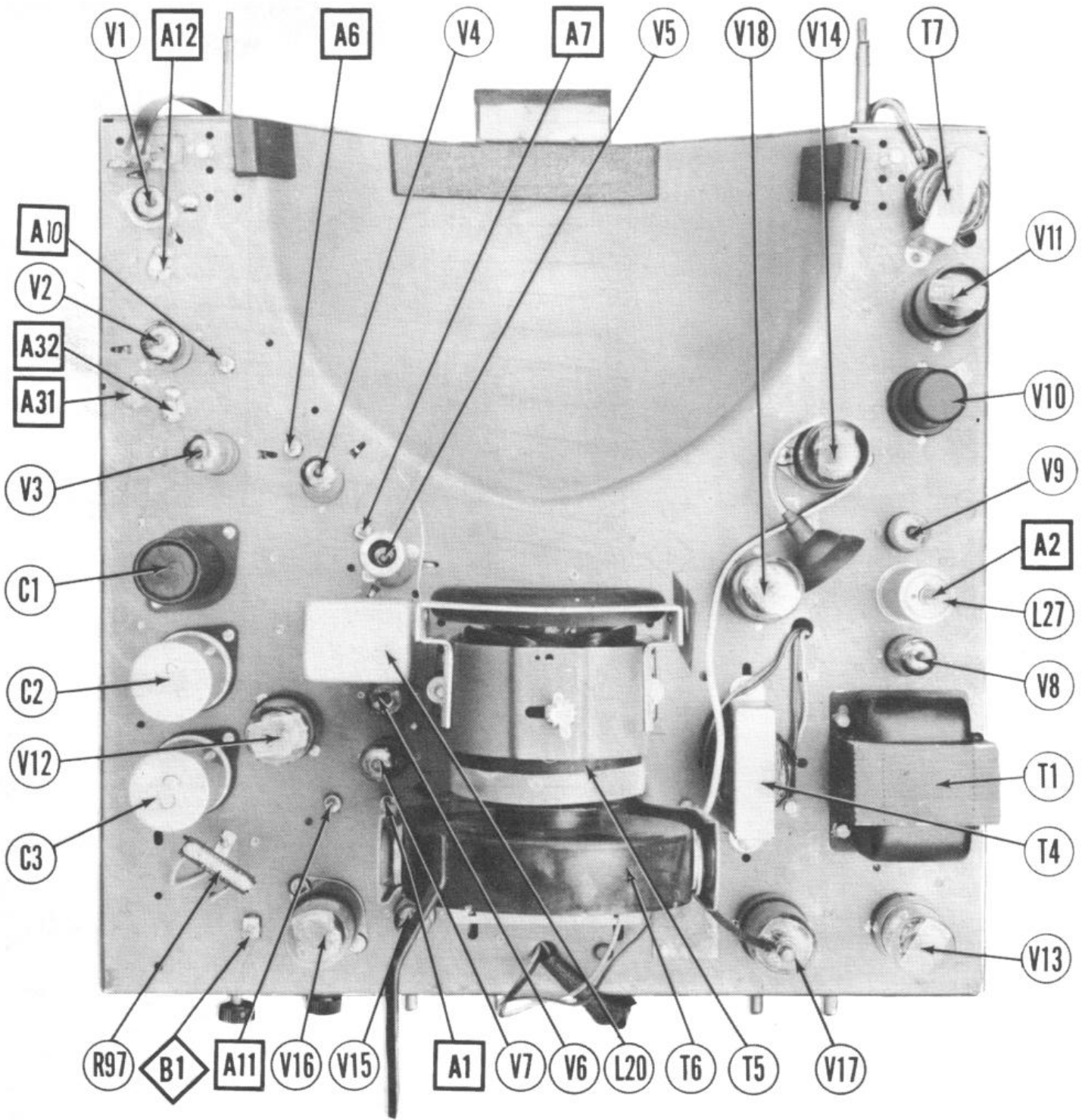
• SEE PARTS LIST FOR ALTERNATE  
 VALUE OR APPLICATION

DOTTED IN PARTS ARE NOT USED IN ALL  
 MODELS. WHEN DOTTED IN PARTS ARE  
 USED POINTS MARKED X ARE BROKEN.

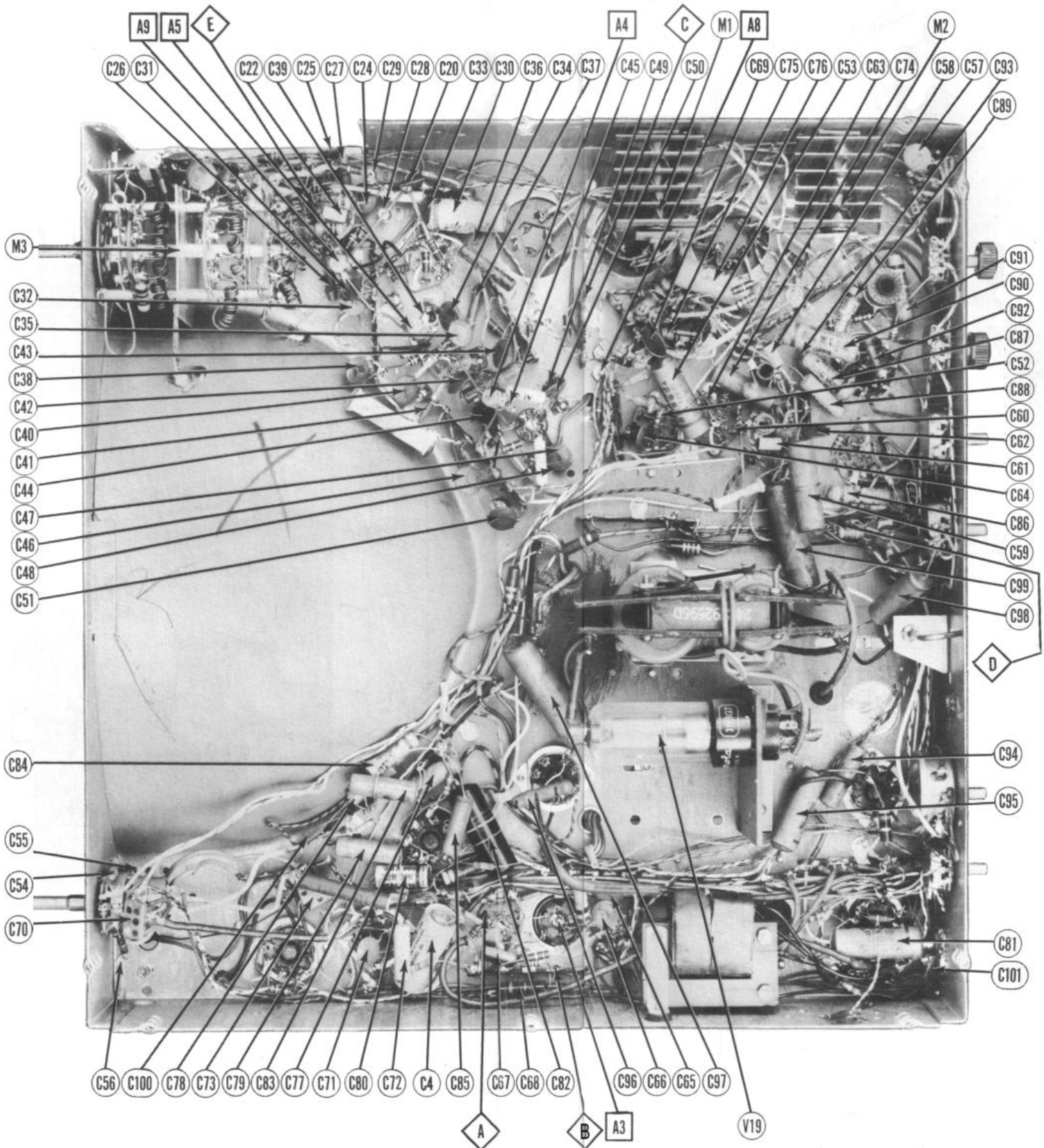




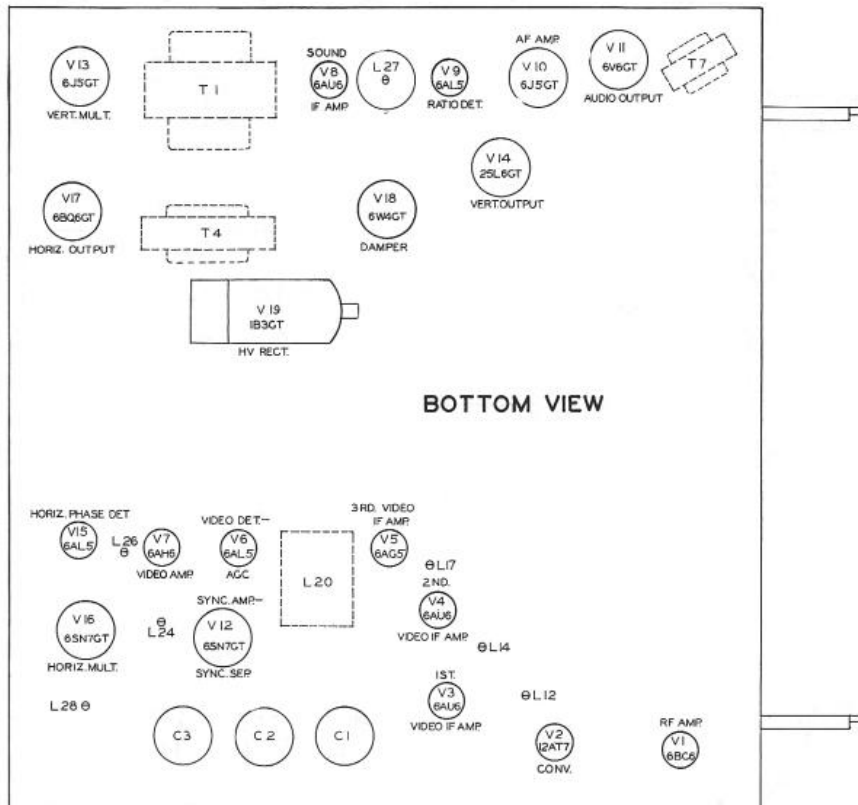
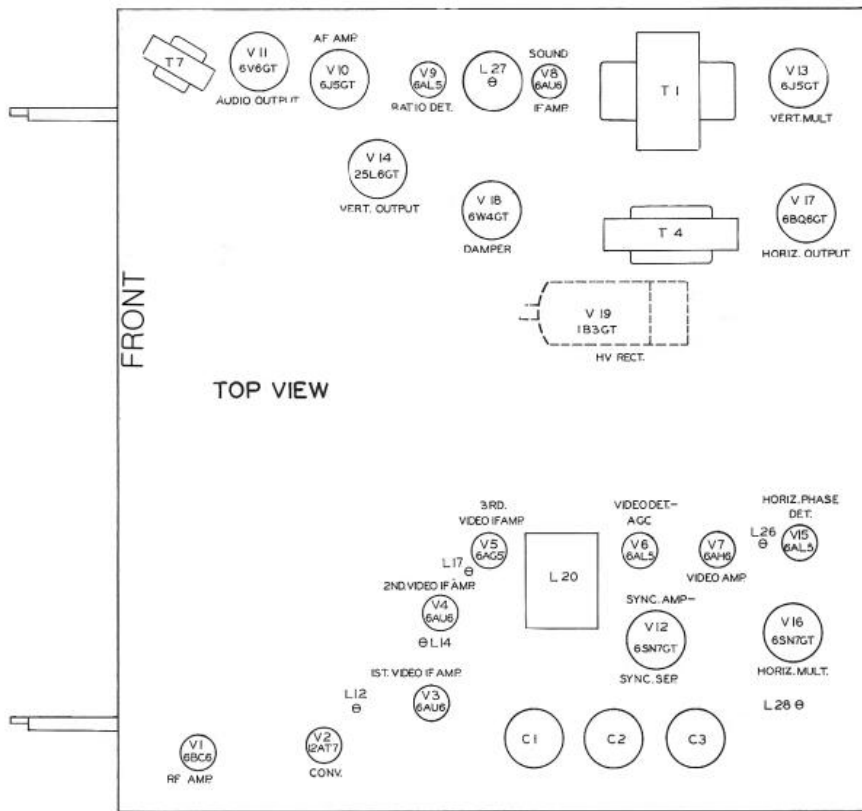
**MOTOROLA  
MODELS 12K2, 12T3 (Ch. TS-53)**



CHASSIS TOP VIEW



CHASSIS BOTTOM VIEW-CAPACITOR AND ALIGNMENT IDENTIFICATION



TUBE PLACEMENT CHART

# ALIGNMENT INSTRUCTIONS

## ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

If receiver is to be aligned with picture tube removed, the high voltage lead should be securely taped and dressed away from the chassis.

### SOUND IF ALIGNMENT

Turn the contrast control fully clockwise.  
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
1. .001MFD	High side to pin 1 (Grid) of 6AH6 (V7). Low side to B-.	4.5MC (450KC SWP)	4.5MC	Any	Vert. Amp. to Point A Low side to B-.	A1, A2	Disconnect stabilizer capacitor C4. Adjust for maximum amplitude and symmetry as per figure 1.
2. .001MFD	"	"	"	"	Vert. Amp. to Point B Low side to B-.	A3	Reconnect capacitor C4. Adjust A3 to place 4.5MC at center of crossover lines as per figure 2. Slightly retouch A2 for maximum amplitude and straightness of crossover lines.

### VIDEO IF ALIGNMENT

Disconnect the oscillator plate load resistor R17 (1000Ω) from pin 6 of the converter tube (V2), to eliminate erroneous indications.  
Connect the negative terminal of a 3 volt battery to the junction of R20, C30 and C31. Connect the positive terminal to B-.  
Turn the contrast control fully counter-clockwise. Before attempting step 8 connect a 10,000MMF ceramic disc type capacitor from the junction of R14 and L7 to chassis.  
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
3. .005MFD	High side to pin 1 (Grid) of 6AU6 (V3). Low side to B-.	24.6MC (10MC SWP)	21.9MC	Any	Vert. Amp. to Point C Low side to B-.	A4	Adjust for maximum attenuation of 21.9MC marker at the 21.9MC point on response curve as shown in figure 3.
4. .005MFD	"	"	27.3MC	"	"	A5	Adjust for maximum attenuation of 27.3MC marker at the 27.3MC point on response curve as shown in figure 3.
5. .005MFD	"	"	26.6MC	"	"	A6	Adjust to place 26.6MC marker at 40% response on high side of curve as shown in figure 3.
6. .005MFD	"	"	22.7MC	"	"	A7	Adjust to place 22.7MC marker at 40% response on low side of curve as shown in figure 3.
7. .005MFD	"	"	Not used	"	"	A8	Adjust for flat top and symmetrical response curve.
8. .005MFD	High side to pin 2 (Grid) of 12AT7 (V2). Low side to B-.	"	21.9MC 22.9MC 26.4MC 27.3MC	"	"	A9, A10	Turn both cores fully out (counter-clockwise) then turn both cores in simultaneously until the 22.9MC and 26.4MC markers appear at 50% response as shown in figure 4. If a dip occurs in response curve, it should not exceed 10%.

### 4.5MC TRAP ADJUSTMENT

DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
9. .001MFD	High side to pin 1 (Grid) of 6AH6 (V7). Low side to B-.	Not used	4.5MC (400% Mod.)	Any	Vert. Amp. to Point D Low side to B-.	All	Adjust for minimum 400% indication on scope. After alignment is completed, tune in a test pattern and adjust A9 for maximum vertical wedge definition.

### ANTENNA AND RF ALIGNMENT

Connect a short from the junction of R20, C30, and C31 to B-.  
The sweep generator output lead should be terminated with its characteristic impedance, usually 50 ohms.

DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
10. Two 120Ω carbon res.	Across antenna terminals with 120Ω in each lead.	195MC (10MC SWP)	193.25MC 197.75MC	10	Vert. Amp. thru 150KΩ to Point E Low side to B-.	A12	Adjust for response curve similar to figure 5 with markers as shown.
11. "	"	213MC (10MC SWP) 207MC (10MC SWP) 201MC (10MC SWP) 189MC (10MC SWP) 183MC (10MC SWP) 177MC (10MC SWP)	211.25MC 215.75MC 209.75MC 203.75MC 187.25MC 191.75MC 181.25MC 185.75MC 175.25MC 179.75MC	13 12 11 9 8 7	"	L6	Check all high band channels for response similar to figure 5. If necessary, expand or compress coil turns of L6 for proper response. If L6 is adjusted, repeat steps 10 and 11.
12. "	"	85MC (10MC SWP) 79MC (10MC SWP) 69MC (10MC SWP) 63MC (10MC SWP) 57MC (10MC SWP)	83.25MC 87.75MC 77.25MC 81.75MC 71.75MC 67.25MC 71.75MC 61.25MC 65.75MC 55.25MC 59.75MC	6 5 4 3 2	"	A13 A14 A15 A16 A17 A18 A19 A20 A21 A22	Expand or compress coil turns for response curve similar to figure 6 with markers as shown. Note that the antenna coil effects the position of the video marker and the RF coil effects the position of the sound marker.

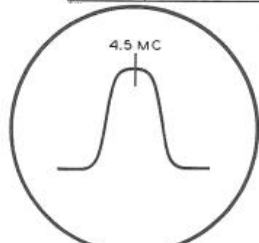


FIG. 1

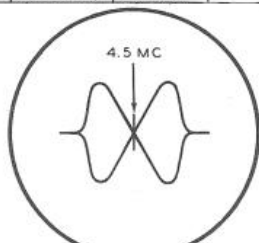


FIG. 2

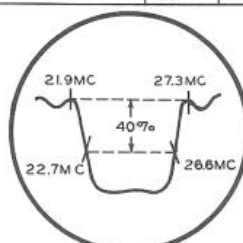


FIG. 3

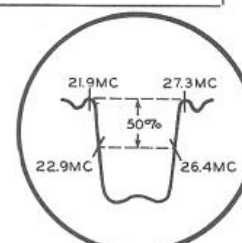




FIG. 4



# ALIGNMENT INSTRUCTIONS (CONT.)

## OSCILLATOR ALIGNMENT

Reconnect the 1000Ω resistor R17 to pin 6 of the converter tube (V2).  
 Remove the short from the junction of R20, C30 and C31 and connect the 3 volt battery as in Video IF Alignment.  
 Turn the contrast control fully counter-clockwise.  
 Remove the knob from the fine tuning control shaft and turn shaft until the slot is in the horizontal position, which is the mid-point of its range.  
 As the oscillator is tuned to channels 7, 8, 9 and 10 the oscillator is tuned below the carrier frequencies, therefore, the frequencies appearing on the response curve will be reversed.

DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS	
13.	Direct	Across antenna terminals with 120Ω in each lead.	207MC (10MC SWP)	209.75MC	12	Vert. Amp. to Point  Low side to B-.	A23	Adjust to place sound marker at the 21.9MC trap on the response curve as shown in figure 7.
14.	Direct	"	189MC (10MC SWP)	191.75MC	9	"	A24	Expand or compress coil turns to place sound marker at the 27.3MC trap on the response curve as shown in figure 8. Repeat steps 13 and 14 until no further improvement can be made.
15.	Direct	"	213MC (10MC SWP)	215.75MC	13	"		Check to see if sound marker can be placed at the 21.9MC trap on response curve within a 30° rotation of the fine tuning shaft from the horizontal position. If more than a 30° rotation is required, adjust A25 by expanding or compressing coil turns until the 30° requirement is met. If A25 is adjusted it will be necessary to recheck the adjustment of A23 in step 13.
16.	Recheck channels 7 thru 12 to see if the sound marker for each channel can be placed in the trap "notch" within the 30° rotation of the fine tuning shaft from the horizontal position. If one of the channels does not meet the 30° requirement, a compromise must be made by readjusting channels 9 or 12 (as in step 14 or 15) whichever is closer to the channel in question. For example: If channel 11 does not meet the 30° requirement, turn the channel selector and sweep generator to channel 12. Adjust A23 toward channel 11 (by tightening screw). This will move the channel 12 sound marker out of the trap "notch" but can be compensated for by adjustment of the fine tuning control. Do not adjust A23 any more than necessary to get the channel in question within the 30° requirement. If the channel in question should be channel 10, turn the channel selector and sweep generator to channel 9 and adjust A24 toward channel 10 (by expanding coil turns). This will also move the channel 9 sound marker out of the trap "notch", but will be compensated for by adjustment of the fine tuning control. Do not adjust A24 more than necessary to get the channel in question within the 30° requirement.							
17.	Direct	Across antenna terminals.	85MC (10MC SWP)	87.75MC	6	Vert. Amp. to Point  Low side to B-.	A26	Expand or compress coil turns to place sound marker at the 21.9MC trap on response curve as shown in figure 7 with the fine tuning shaft in a horizontal position.
18.	Direct	"	79MC (10MC SWP)	81.75MC	5	"	A27	Expand or compress coil turns to place sound marker at the 21.9MC trap on response curve as shown in figure 7 with the fine tuning control shaft set no more than 15° rotation from the horizontal position.
19.	Direct	"	69MC (10MC SWP)	71.75MC	4	"	A28	"
20.	Direct	"	63MC (10MC SWP)	65.75MC	3	"	A29	Expand or compress coil turns to place sound marker at the 21.9MC trap on response curve as shown in figure 7 with the fine tuning control shaft no more than 75° rotation from the horizontal position.
21.	Direct	"	57MC (10MC SWP)	59.75MC	2	"	A30	"

## MIXER LC ADJUSTMENT

Remove the 10,000MMF capacitor from the junction of R14 and L7. Connect sweep generator and oscilloscope as in step 8 of Video IF Alignment.  
 Adjust the LC trimmer (A31) to the point at which the top of the IF response curve straightens out. Increasing the capacity of A31 will pull down the curve on the high frequency side. Decreasing the capacity of A31 will pull down the curve on the low frequency side. CAUTION: Tuning the LC circuit very low will cause oscillation.

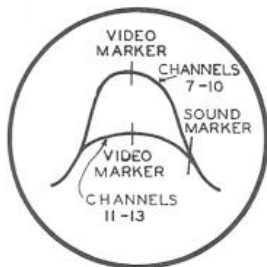


FIG. 5

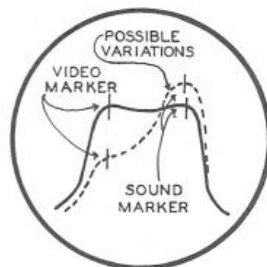


FIG. 6

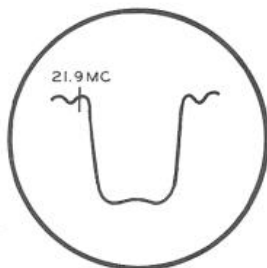


FIG. 7

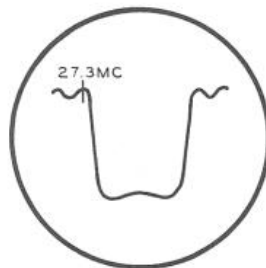


FIG. 8

# 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	6BC6	-.3VDC	.8VDC	0V	6.3VAC	180VDC	120VDC	.4VDC		
V 2	12AT7	125VDC	0V	2VDC	6.3VAC	6.3VAC	210VDC	\$.1.9VDC	0V	0V
V 3	6AU6	-.3VDC	.4VDC	0V	6.3VAC	225VDC	125VDC	.8VDC		
V 4	6AU6	-.3VDC	.4VDC	0V	6.3VAC	225VDC	130VDC	.8VDC		
V 5	6AG5	2.7VDC	3.6VDC	0V	6.3VAC	130VDC	130VDC	3.6VDC		
V 6	6AL5	0V	-.4VDC	0V	6.3VAC	0V	-.4VDC	0V		
V 7	6AH6	1.7VDC	12VDC	0V	6.3VAC	200VDC	195VDC	12VDC		
V 8	6AU6	0V	1.2VDC	6.3VAC	0V	100VDC	100VDC	1.2VDC		
V 9	6AL5	.5VDC	-.5VDC	0V	6.3VAC	-.1VDC	.4VDC	.1VDC		
V 10	6J5GT	.4VDC	0V	15VDC	0V	-.1VDC	0V	6.3VAC	0V	
V 11	6V6GT	0V	6.3VAC	180VDC	185VDC	0V	0V	0V	8.8VDC	
V 12	6SN7GT	-1.3VDC	8VDC	0V	7.5VDC	100VDC	11VDC	0V	6.3VAC	
V 13	6J5GT	-.4VDC	0V	210VDC	0V	-20VDC	0V	6.3VAC	0V	
V 14	25L6GT	0V	0V	30VDC	0V	-5VDC	0V	30VDC	18VDC	
V 15	6AL5	0V	.3VDC	0V	215VDC	.1VDC	0V	25VAC	0V	
V 16	6SN7GT	-6.2VDC	4.8VDC	0V	6.3VAC	2VDC	.4VDC	-2VDC	6.3VAC	
V 17	6BQ6GT	145VDC	6.3VAC	0V	130VDC	190VDC	6.2VDC	0V	3.7VDC	TOP CAP
V 18	6W4GT	0V	0V	380VDC	0V	-18VDC	0V	0V	0V	
V 19	1B3GT	* DO NOT MEASURE				225VDC	0V	0V	0V	
V 20	12LP4	0V	0V	PIN 10 225VDC	PIN 11 105VDC	PIN 12 6.3VAC				

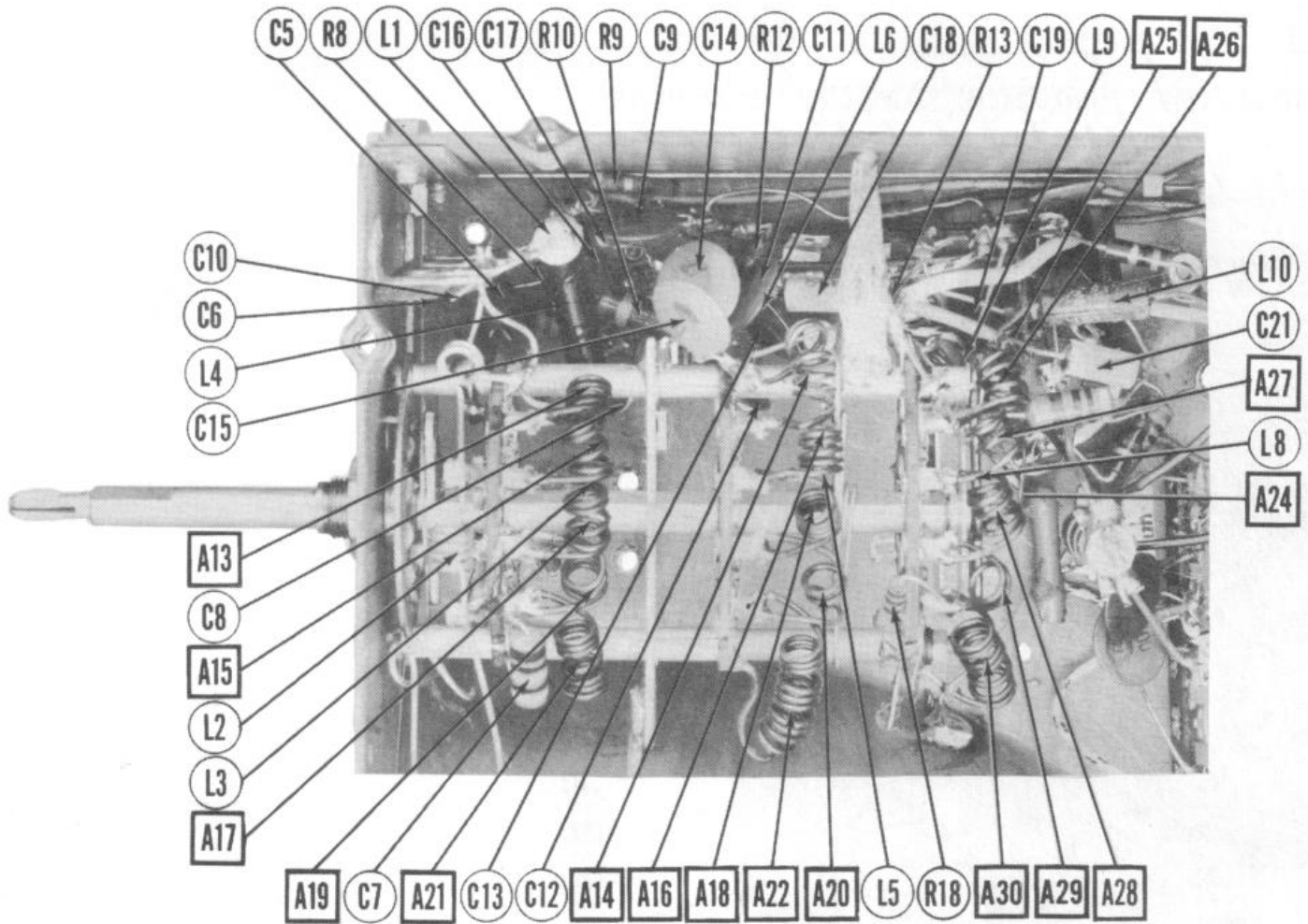
FOCUS CONTROL COUNTERCLOCKWISE  
 ‡ TAKEN WITH VACUUM TUBE VOLTMETER  
 † 6.3VAC MEASURED ACROSS FILAMENT

RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V 1	6BC6	1.5 Meg.	90Ω	0Ω	.1Ω	14.8KΩ	13.5KΩ	33Ω		
V 2	12AT7	12.5KΩ	5.6KΩ	1.2KΩ	0Ω	0Ω	11.1KΩ	10KΩ	2Ω	.2Ω
V 3	6AU6	1.5 Meg.	33Ω	0Ω	.1Ω	131Ω	12.7KΩ	80Ω		
V 4	6AU6	1.5 Meg.	33Ω	0Ω	.1Ω	131Ω	11.7KΩ	80Ω		
V 5	6AG5	220Ω	300Ω	.2Ω	.3Ω	11.7KΩ	11.7KΩ	300Ω		
V 6	6AL5	Inf.	5.9KΩ	0Ω	.1Ω	10Ω	470KΩ	Inf.		
V 7	6AH6	1 Meg.	2KΩ	0Ω	.1Ω	14.8KΩ	133KΩ	2KΩ		
V 8	6AU6	1.2Ω	150Ω	.1Ω	0Ω	16.5KΩ	16.5KΩ	150Ω		
V 9	6AL5	6.8KΩ	6.8KΩ	0Ω	.1Ω	1 Meg.	470KΩ	1 Meg.		
V 10	6J5GT	470KΩ	0Ω	1470KΩ	20Ω	4.7 Meg.	470KΩ	.1Ω	0Ω	
V 11	6V6GT	Inf.	.1Ω	11KΩ	1750Ω	530KΩ	0Ω	0Ω	330Ω	
V 12	6SN7GT	1 Meg.	1 Meg.	0Ω	24KΩ	16.5KΩ	3.2KΩ	0Ω	.1Ω	
V 13	6J5GT	470KΩ	0Ω	470KΩ	2.7KΩ	470KΩ	1.5 Meg.	.1Ω	0Ω	
V 14	25L6GT	150KΩ	0Ω	1825Ω	1825Ω	3.3 Meg.	Inf.	1.7Ω	5.5KΩ	
V 15	6AL5	15KΩ	15KΩ	0Ω	.1Ω	4.8 Meg.	470KΩ	4.8 Meg.	.1Ω	
V 16	6SN7GT	280KΩ	160KΩ	1.5KΩ	9.4 Meg.	16.9KΩ	1KΩ	0Ω	0Ω	TOP CAP
V 17	6BQ6GT	168KΩ	.1Ω	Inf.	11.5KΩ	470KΩ	Inf.	0Ω	47Ω	15Ω
V 18	6W4GT	Inf.	Inf.	Inf.	Inf.	190Ω	Inf.	▲ 6Ω	▲ 0Ω	
V 19	1B3GT	Inf.	Inf.	Inf.	Inf.	Inf.	Inf.	Inf.	Inf.	TOP CAP
V 20	12LP4	0Ω	2.7KΩ	PIN 10 190Ω	PIN 11 600KΩ	PIN 12 47KΩ				

FOCUS CONTROL COUNTERCLOCKWISE  
 ‡ MEASURED FROM OUTPUT OF M1  
 ▲ MEASURED FROM PIN 3 OF V18

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.



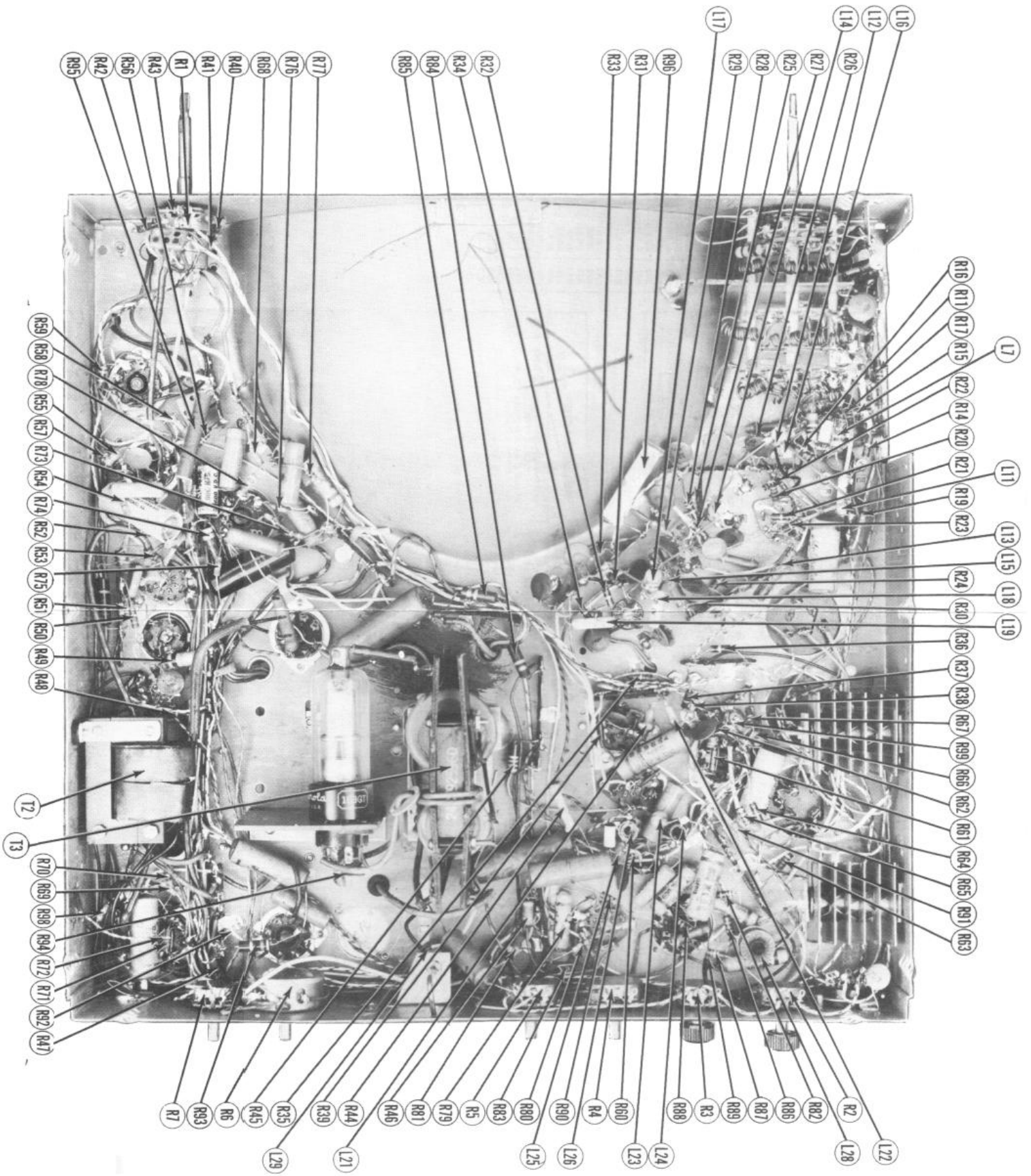
## RF TUNER-BOTTOM VIEW

### HORIZONTAL SWEEP CIRCUIT ADJUSTMENTS

- Connect a jumper wire across the horizontal oscillator coil L28.
- Turn the set on and tune in a TV station, preferably a test pattern.
- Move the picture to the left with the centering lever until the right edge of the raster can be seen.
- Turn the horizontal hold control to the mid-point of its range and note the width of the blanking bar.
- Remove the short from L28 and adjust the horizontal oscillator coil slug (B1) until the same amount of blanking bar can be seen as when the coil was shorted out.
- Adjust the horizontal size slug (B2) until the picture fills the mask horizontally.

### DISASSEMBLY INSTRUCTIONS

1. Remove four push-on type control knobs.
  2. Remove six wood screws holding rear cover in place. Remove cover.
  3. Remove built-in antenna.
  4. Remove speaker socket from speaker.
  5. Remove six 1/4" hex head screws holding chassis in cabinet. Remove chassis.
- FOR PICTURE TUBE REMOVAL FOLLOW INSTRUCTIONS ABOVE.



CHASSIS BOTTOM VIEW-RESISTOR AND INDUCTOR IDENTIFICATION

### TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA		RMA BASE TYPE	NOTES
		MOTOROLA PART No.	STANDARD REPLACEMENT		
V1	RF Amp.	6CB6	6CB6	5BT	
V2	Converter	12AT7	12AT7	9A	
V3	1st Video IF Amp.	6AU6	6AU6	7BK	
V4	2nd Video IF Amp.	6AU6	6AU6	7BK	
V5	3rd Video IF Amp.	6AG5	6AG5	7BD	
V6	Video Det.-AGC	6AL5	6AL5	6BT	
V7	Video Amp.	6AH6	6AH6	7BK	
V8	Sound IF Amp.	6AU6	6AU6	7BK	
V9	Ratio Detector	6AL5	6AL5	6BT	
V10	AF Amp.	6J5GT	6J5GT	7BF	
V11	Audio Output	6V6GT	6V6GT	7AC	
V12	Sync. Amplifier - Sync. Sep.	6SN7GT	6SN7GT	8BD	
V13	Vert. Mult.	6J5GT	6J5GT	6Q	
V14	Vert. Output	25L6	25L6	7AC	
V15	Hor. Phase Det.	6AL5	6AL5	6BT	
V16	Hor. Mult.	6SN7GT	6SN7GT	8BD	
V17	Hor. Output	6BQ6GT	6BQ6GT	6AM	
V18	Damper	6W4GT	6W4GT	4CG	
V19	High Voltage Rect.	1B3GT	1B3GT	3C	
V20	Picture Tube	12LP4A	12LP4A	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
	CAP.	VOLT	MOTOROLA PART No.	AEROVOX PART No.	CENTRALLAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	SPRAGUE PART No.	
C1	140	150				UPE15015		TVL-1428	Voltage Doubler Cap.
C2A	100	300				UPE13CJ		TVL-3562	▲ Filter
B	60	250							■ Filter
C	20	250							▲ Decoupling
C3A	120	300		E4D139		UPE13DJ		TVL-4562	▲ Filter
B	20	250							■ V. Amp. Screen
C	20	25							▲ Output Cathode
D	100	30							Vert. Output Cathode
C4	10	50		PRS50/10		BR105		TVA-1304	Stabilizing Cap.
C5	220			GP220M	D6-221		GP2K-220		Ant. Coupling
C6	220			GP220M	D6-221		GP2K-220		Ant. Coupling
C7	8			SI8FNPO			NPOK-8.2		Fixed Trimmer
C8	220			GP220M	D6-221		GP2K-220		RF Coupling
C9	10000			BPD-01	DD-103		811-01	36C1	AGC Filter
C10	20			GP20M	D6-200		GPIK-20		RF Cathode Bypass
C11	1500			BPD-0015	DD-152		811-0015	29C3	RF Decoupling
C12	1500			BPD-0015	DD-152		811-0015	29C3	RF Screen Bypass
C13	10000			BPD-01	DD-103		811-01	36C1	RF Screen Bypass
C14	10000			BPD-01	DD-103		811-01	36C1	RF Plate Dec.
C15	10000			BPD-01	DD-103		811-01	36C1	RF Plate Dec.
C16	250			GP250M	D6-251		GP2K-250		RF Fil. Bypass
C17	250			GP250M	D6-251		GP2K-250		RF Fil. Bypass
C18	8			SI8FNPO			NPOK-8.2		RF Coupling
C19	1500			BPD-0015	DD-152		811-0015	29C3	Mixer Cath. Bypass
C20	1500			BPD-0015	DD-152		811-0015	29C3	RF Bypass
C21	2								Osc. Coupling
C22	20			SI20KNPO	TCZ-20		NPOK-20		Osc. Grid Cap.
C23	2			SI2DNPO	TCZ-2.2				Osc. Feedback
C24	5000			BPD-005	DD-502		811-005	29C1	Osc. Plate Bypass
C25	5000			BPD-005	DD-502		811-005	29C1	RF Bypass
C26	220			GP220M	D6-221		GP2K-220		Conv. Fil. Bypass
C27	220			GP220M	D6-221		GP2K-220		Conv. Fil. Bypass
C28	.5-3				829-3				Variable Trimmer
C29	.5-3				829-3				Variable Trimmer
C30	.25	100		P488-25		GT2P25		TC-2-2	AGC Filter
C31	1500			BPD-0015	DD-152	1W5D15	811-0015	29C3	AGC Filter
C32	5000			BPD-005	DD-502	1D5D5	811-005	29C1	RF Bypass
C33	5000			BPD-005	DD-502	1D5D5	811-005	29C1	RF Bypass
C34	5000			BPD-005	DD-502	1D5D5	811-005	29C1	1st Video IF Screen
C35	5000			BPD-005	DD-502	1D5D5	811-005	29C1	1st V. IF Plate Dec.
C36	1500			BPD-0015	DD-152	1W5D15	811-0015	29C3	1st Video IF Fil.
C37	220			GP220M	D6-221	5W5T25	GP2K-220	1FM-325	IF Coupling
C38	10000			BPD-01	DD-103	PTE4S1	811-01	36C1	AGC Filter
C39	30					N150K-30			Fixed Trimmer
C40	5000			BPD-005	DD-502	1D5D5	811-005	29C1	RF Bypass
C41	1500			BPD-0015	DD-152	1W5D15	811-0015	29C3	2nd Video IF Screen
C42	5000			BPD-005	DD-502	1D5D5	811-005	29C1	2nd V. IF Plate Dec.
C43	1500			BPD-0015	DD-152	1W5D15	811-0015	29C3	2nd Video IF Fil.
C44	1500			BPD-0015	DD-152	1W5D15	811-0015	29C3	IF Coupling
C45	30					N150K-30			Fixed Trimmer
C46	1500			BPD-0015	DD-152	1W5D15	811-0015	29C3	3rd Video IF Dec.
C47	5000			BPD-005	DD-502	1D5D5	811-005	29C1	3rd Video IF Cath.
C48	5000			BPD-005	DD-502	1D5D5	811-005	29C1	3rd Video IF Dec.
C49	1500			BPD-0015	DD-152	1W5D15	811-0015	29C3	3rd Video IF Fil.
C50	1500			BPD-0015	DD-152	1W5D15	811-0015	29C3	3rd Video IF Fil.
C51	1500			BPD-0015	DD-152	1W5D15	811-0015	29C3	Filament Bypass
C52	6			GP5M	TCZ-6.8	5W5Q1	NPOK-6.8	MS-55	Video Diode Filter
C53	.1	200		P288-1	DF-104	PTE4S1		TM-1-2	Video Coupling
C54	1000			GPI1000M	D6-102	1W5D1	GP2L-001	1FM-21	Video Amp. Cath.
C55	1000			GPI1000M	D6-102	1W5D1	GP2L-001	1FM-21	Video Amp. Cath.
C56	100			GPI100M	D6-101	5W5T1	GPIK-100	1FM-31	Video Amp. Cath.
C57	1500			BPD-0015	DD-152	1W5D15	811-0015	29C3	RF Bypass
C58	30					N150K-30			Fixed Trimmer
C59	.1	400		P488-1	DF-104	PTE4P1		TM-1-4	Video Coupling
C60	2.2				TCZ-2.2				Sound IF Coupling
C61	60			SI60KN750	TCN-62		N750L-60		Fixed Trimmer
C62	1500			BPD-0015	DD-152	1W5D15	811-0015	29C3	RF Bypass
C63	1500			BPD-0015	DD-152	1W5D15	811-0015	29C3	Video Amp. Fil.
C64	1500			BPD-0015	DD-152	1W5D15	811-0015	29C3	Video Det. Fil.
C65	5000			BPD-005	DD-152	1D5D5	811-005	29C1	Sound IF Cathode
C66	5000			BPD-005	DD-152	1D5D5	811-005	29C1	Sound IF Decoupling

# PARTS LIST AND DESCRIPTIONS

## CAPACITORS (CONT.)

ITEM No.	RATING		REPLACEMENT DATA					IDENTIFICATION CODES AND INSTALLATION NOTES	
	CAP.	VOLT	MOTOROLA PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.		SPRAGUE PART No.
C67	500	500		1468-0005	D6-501	5W5T5	GP2K-500	1FM-35	Diode Load Cap
C68	.001	600		P688-001	D6-102	PTE6D1	GP2L-001	TM-21	De-emphasis
C69	1500			BPD-0015	DD-152	1W5D15	811-0015	29C3	RF Bypass
C70	500			1468-0005	D6-501	5W5T5	GP2K-500	1FM-35	Tone Compensation
C71	10000			BPD-01	DD-103	PTE481	811-01	36C1	Audio Coupling
C72	.005	600		P688-005	D6-502	PTE6D5	811-005	TM-25	Audio Coupling
C73	88	500		1468-000075	D6-680	5W5Q7	GPIK-68	MS-47	AF Feedback
C74	.005	600		P688-005	D6-502	PTE6D5	811-005	TM-25	Sync. Coupling
C75	20			GP20M	D6-200	5W5Q2	GPIK-20	MS-42	Sync. Amp. Grid Byp.
C76	.05	600		P688-005	DF-503	PTE8S5		TM-15	Sync. Coupling
C77	.005	600		P688-005	D6-502	PTE6D5	811-005	TM-25	Integrator Network
C78	.005	600		P688-005	D6-502	PTE6D5	811-005	TM-25	Integrator Network
C79	.005	600		P688-005	D6-502	PTE6D5	811-005	TM-25	Vert. Osc. Grid
C80	.006	600		P688-006	D6-502	PTE6D5		TM-26	Vert. M. V. Feedback
C81	.05	600		P688-005	D6-502	PTE6S5		TM-16	Vert. Discharge
C82	.15	400		P488-15		GT4P2		TM-2-4	Vert. Sweep Coupling
C83	.005	600		P688-005	D6-502	PTE6D5	811-005	TM-25	Vert. Sweep Coupling
C84	.002	600		P688-002	D6-202	PTE6D2	GP2M-002	TM-22	Voltage Divider
C85	.002	600		P688-002	D6-202	PTE6D2	GP2M-002	TM-22	Integrator Network
C86	.001	600		P688-001	D6-102	PTE6D1	GP2L-001	TM-21	Hor. Sync. Coupling
C87	.001	600		P688-001	D6-102	PTE6D1	GP2L-001	TM-21	Hor. Sync. Coupling
C88	.005	600		P688-005	D6-502	PTE6D5	811-005	TM-25	Voltage Divider
C89	.001	600		P688-001	D6-102	PTE6D1	GP2L-001	TM-21	AFC Filter
C90	.01	600		P688-01	D6-103	PTE6S1	811-01	TM-11	AFC Filter
C91	.005	600		P688-005		PTE6D5		TM-25	Fixed Trimmer
C92	270			GP270M	D6-271	5W5T25	GP2K-270	1FM-325	Hor. M. V. Feedback
C93	680	500			D6-681	1W5T7	GP2K-680	1FM-37	Hor. Discharge
C94	.005	600		P688-005	D6-502	PTE6D5	811-005	TM-25	Hor. Sweep Coupling
C95	.1	200		P288-1	DF-104	PTE4P1		TM-1-2	Hor. Output Cathode
C96	100			GP100M	D6-101	5W5T1	GPIK-100	1FM-31	Damper Plate Bypass
C97	.1	600		P688-1		PTE6P1		TM-1	Damper Filter
C98	.03	600		P688-03		PTE6S3		TM-13	Fixed Trimmer
C99	.1	600		P688-1	DF-104	PTE6P1		TM-1	Hor. Sweep Coupling
C100	5000			BPD-005	DD-502	1D5D5	811-005	29C1	RF Bypass
C101	1500			BPD-0015	DD-152	1W5D15	811-0015	29C3	RF Bypass

\* Note used in all models.

## CONTROLS

ITEM No.	RATING		REPLACEMENT DATA				INSTALLATION NOTES
	RESISTANCE	WATTS	MOTOROLA PART No.	IRC PART No.	CLAROSTAT PART No.	CENTRALAB PART No.	
RIA	2000Ω	1/2	18A792009		RTV-112		Contrast Control - Tapped @ 1500Ω & 1750Ω - Front
B	1 Meg.	1/2				B-40	Volume Control & Switch - Rear
R2A	100 KΩ	1/2	18A791574	Q11-128	AG-49-S		Horizontal Hold Control
B	Shaft		Not Req.	Not Req.	RS-2	Not Req.	Attach to R2A per instructions
R3A	1 Meg.	3/4	18A90147	Q11-137	AG-61-S	B-69	Vertical Hold Control
B	Shaft		Not Req.	Not Req.	RS-2	Not Req.	Attach to R3A per instructions
R4A	5 Meg.	3/4	18A90145	Q11-141	AM-85-S	AN-87	Vertical Size Control
B	Shaft		Not Req.	Not Req.	RS-2	AK-1	Attach to R4A per instructions
R5A	5000Ω	1/2	18A791132	Q11-114	AM-19-S	AN-10	Vertical Linearity Control
B	Shaft		Not Req.	Not Req.	RS-2	AK-1	Attach to R5A per instructions
R6	2000Ω	4	18A790162		RTV-129	SVP-998	Focus Control - Wire Wound
R7A	1 Meg.	1/2	18A90147	Q11-137	AG-61-S	B-69	Brightness Control
B	Shaft		Not Req.	Not Req.	RS-2	Not Req.	Attach to R7A per instructions

## RESISTORS

ITEM No.	RATING		REPLACEMENT DATA		IDENTIFICATION CODES
	RESISTANCE	WATTS	MOTOROLA PART No.	IRC PART No.	
R8	22 KΩ				RF Coil Shunt
R9	47 KΩ				AGC Network
R10	56Ω	20%		BTS-47K	RF Amp. Cathode
R11	33Ω				RF Amp. Cathode
R12	1000Ω			BTS-1000	RF Amp. Screen
R13	3900Ω			BTS-3900	RF Amp. Plate Decoupling
R14	5600Ω				Converter Grid
R15	1200Ω			BTS-1200	Converter Cathode
R16	10 KΩ				Osc. Grid
R17	1000Ω			BTS-1000	Osc. Plate Load
R18	2200Ω	20%		BTS-2200	Osc. Coil Shunt - See Note 1
R19	1000Ω			BTS-1000	Decoupling
R20	6800Ω				1st Video IF Trans. Shunt
R21	47Ω				1st Video IF Cathode
R22	33Ω				1st Video IF Cathode
R23	220Ω			BTS-220	1st Video IF Screen
R24	220Ω			BTS-220	1st Video IF Plate Decoupling
R25	12 KΩ				2nd Video IF Trans. Shunt
R26	1000Ω			BTS-1000	AGC Network
R27	47Ω				2nd Video IF Cathode
R28	33Ω				2nd Video IF Cathode
R29	220Ω			BTS-220	2nd Video IF Screen
R30	220Ω			BTS-220	2nd Video IF Plate Decoupling
R31	6800Ω				3rd Video IF Trans. Shunt
R32	82Ω			BTS-82	3rd Video IF Cathode
R33	220Ω			BTS-220	3rd Video IF Cathode
R34	220Ω			BTS-220	3rd Video IF Decoupling
R35	5600Ω				Video Det. Diode Load
R36	100 KΩ			BTS-100K	Series Test Point
R37	1.5 Meg.			BTS-1.5 Meg.	AGC Network
R38	100 KΩ	20%		BTS-100K	Series Test Point - See Note 1
R39	1 Meg.	20%		BTS-1 Meg.	Video Amp. Grid
R40	120Ω			BTS-120	Video Amp. Cathode
R41	120Ω			BTS-120	Video Amp. Cathode
R42	1500Ω			BTS-1500	Video Amp. Cathode
R43	47Ω			BW-1/2-47	Contrast Control Shunt
R44	4700Ω	20%		BTB-4700	Video Amp. Plate Load
R45	33 KΩ	1		BTA-33K	Video Amp. Screen

## RESISTORS (CONT.)

ITEM No.	RATING		REPLACEMENT DATA		IDENTIFICATION CODES
	RESISTANCE	WATTS	MOTOROLA PART No.	IRC PART No.	
R46	47 KΩ			BTS-47K	Voltage Divider
R47	1 Meg. 20%			BTS-1 Meg.	Voltage Divider
R48	150Ω			BTS-150	Sound IF Cathode
R49	4700Ω			BTA-4700	Sound IF Decoupling
R50	180Ω			BTS-180	Balancing
R51	33 KΩ			BTS-33K	De-emphasis
R52	6800Ω				Ratio Det. Diode Load
R53	6800Ω				Ratio Det. Diode Load
R54	4.7 Meg.			BTS-4.7 Meg.	AF Amp. Grid
R55	470 KΩ			BTS-470K	AF Amp. Plate Load
R56	270 KΩ			BTS-270K	Tone Compensation
R57	56 KΩ			BTS-56K	Tone Compensation - See Note 2
R58	470 KΩ			BTS-470K	Output Grid
R59	330Ω			BTS-330	Output Cathode
R60	10 KΩ			BTS-10K	Isolation
R61	1 Meg. 20%			BTS-1 Meg.	Sync. Amp. Grid
R62	1 Meg. 20%			BTS-1 Meg.	Sync. Amp. Plate Load
R63	2200Ω			BTS-2200	Sync. Sep. Cathode
R64	1000Ω			BTS-1000	Sync. Sep. Cathode
R65	22 KΩ			BTS-22K	Sync. Sep. Grid
R66	5600Ω 20%			BTA-5600	Sync. Sep. Plate Load
R67	22 KΩ			BTS-22K	Integrator Network
R68	8200Ω			BTS-8200	Integrator Network
R69	470 KΩ			BTS-470K	Vert. M. V. Grid - See Note 3
R70	470 KΩ			BTS-470K	Vert. M. V. Plate Load
R71	5600Ω			BTS-5600	Vert. Peaking
R72	2700Ω			BTS-2700	Picture Tube Grid
R73	3.3 Meg.			BTS-3.3 Meg.	Vert. Output Grid
R74	470Ω 20%			BTA-470	Vert. Output Cathode
R75	150 KΩ			BTS-150K	Bleeder
R76	100 KΩ			BTS-100K	Voltage Divider
R77	100 KΩ			BTS-100K	Voltage Divider
R78	47 KΩ			BTS-47K	Integrator Network
R79	100 KΩ			BTS-100K	Hor. AFC Diode Load
R80	100 KΩ			BTS-100K	Hor. AFC Diode Load
R81	4.7 Meg.			BTS-4.7 Meg.	Hor. AFC Diode Load
R82	4.7 Meg.			BTS-4.7 Meg.	Hor. AFC Filter Network
R83	15 KΩ			BTS-15K	Hor. Feedback
R84	150 KΩ			BTA-150K	Hor. Feedback
R85	150 KΩ			BTA-150K	Hor. Feedback
R86	6800Ω			BTS-6800	Hor. M. V. Plate Load
R87	180 KΩ			BTS-180K	Hor. M. V. Grid - See Note 4
R88	470Ω			BTS-470	Hor. M. V. Cathode
R89	1000Ω			BTS-1000	Hor. M. V. Cathode
R90	68 KΩ			BTS-68K	Hor. M. V. Plate Load
R91	3300Ω			BTS-3300	Hor. Peaking
R92	470 KΩ			BTS-470K	Hor. Output Grid
R93	47Ω			BW-1-47	Hor. Output Cathode
R94	3.3Ω				High Volt. Rect. Filament - Wire Wound
R95	3300Ω	10			Focus Coil Shunt - Wire Wound
R96	9100Ω	4			Bleeder
R97	7.5Ω	5			Surge Limiter - Wire Wound
R98	470 KΩ			BTS-470K	Line Isolation
R99	390 KΩ 5%			BTS-390K 5%	Bias Network - See Note 1

Note 1. Not used in all models.

Note 2. Some models use two 120KΩ resistors in parallel in this application.

Note 3. Some models use 680KΩ resistor in this application.

Note 4. Some models use 150KΩ resistor in this application.

## TRANSFORMER (POWER)

ITEM No.	RATING				REPLACEMENT DATA			
	PRI.	SEC. 1	SEC. 2	SEC. 3	MOTOROLA PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.
T1	117VAC ① 1.6A Tap ② 25VAC ③ .3A	6.3VAC ④ 6.5A	6.3VAC ⑤ .9A					
T2	117VAC ⑥ .1A	6.3VAC ⑦ 1.2A				P-6134 ⑧		FO-63 ⑨

① Drill new mounting holes.

# PARTS LIST AND DESCRIPTIONS (Continued)

## TRANSFORMER (SWEEP CIRCUITS)

ITEM No.	RATING		REPLACEMENT DATA				NOTES
	DC RESISTANCE		MOTOROLA PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	
	PRI.	SEC.					
T3	185Ω Tap ⓐ 2.4Ω, 18Ω, 33Ω	3.3Ω SEC. 2 0Ω	24C792596D				Hor. Output Trans.
T4	675Ω	11.5Ω	25B798545A	A-8113	A-3036	TSO-2 ①	Vert. Output Trans. Hor. Deflection Coil Vert. Deflection Coil Focus Coil
T5A	48Ω		24K792756		MD-3 ②		
T5B	62Ω						
T6	650Ω		24B792581				

① Drill one new mounting hole.

② Add resistors across hor. coils.

## TRANSFORMER (AUDIO OUTPUT)

ITEM No.	RATING				REPLACEMENT DATA				INSTALLATION NOTES
	IMPEDANCE		DC RES.		MOTOROLA PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	
	PRI.	SEC.	PRI.	SEC.					
T7	4500Ω	3.6Ω	300Ω	.4Ω	25B790686	A-3877	A-2930	RO-9 ①	① Drill one new mounting hole.

## SPEAKER

ITEM No.	RATINGS		REPLACEMENT DATA			NOTES
	FIELD RES.	V. C. IMP.	MOTOROLA PART No.	JENSEN PART No.	QUAM PART No.	
	CONE DIA.	V. C. DIA.				
SP1	90Ω	3.6Ω	50C791779		5E90S	
SP2	4 7/16"	9/16"				

## COILS (RF-IF)

ITEM No.	USE	DC RES.		REPLACEMENT DATA			NOTES
		PRI.	SEC.	MOTOROLA PART No.	MEISSNER PART No.	IRC PART No.	
L1	Ant. Matching Coil	.1Ω					Low freq. 10 microhenries Channel 13 3.3 microhenries Channel 13 2.2 microhenries .47 microhenries 5.6 microhenries With trap 5.6 microhenries .47 microhenries With trap .47 microhenries .47 microhenries Yellow dot Red dot Wound on 18KΩ resistor, red dot Wound on 2.7K. resistor, green dot
L2	Ant. Coil	0Ω					
L3	Ant. Coils	0Ω					
L4	RF Choke	1.4Ω					
L5	RF Coils	0Ω					
L6	RF Coil	0Ω					
L7	RF Choke	3.2Ω			CLA-3.3		
L8	Osc. Coils	0Ω					
L9	Osc. Coil	0Ω					
L10	RF Choke	1.8Ω			CLA-2.2		
L11	Fil. Choke	.2Ω			CLA-.47		
L12	1st Video IF	.6Ω	.4Ω				
L13	RF Choke	3.5Ω			CL-1-5.6		
L14	2nd Video IF	.5Ω					
L15	RF Choke	3.5Ω			CL-1-5.6		
L16	RF Choke	.2Ω			CLA-.47		
L17	3rd Video IF	.5Ω					
L18	Fil. Choke	.2Ω			CLA-.47		
L19	Fil. Choke	.2Ω			CLA-.47		
L20	4th Video IF	.6Ω	.6Ω				
L21	Peaking	9.5Ω					
L22	Peaking	4Ω					
L23	Peaking	10Ω					
L24	4.5 MC Trap	2.4Ω					
L25	Peaking	18Ω					
L26	Sound IF	1.2Ω					
L27	Ratio Det. Trans.	2.9Ω	.4Ω				
L28	Horiz. Osc. Coil	150Ω					
L29	Horiz. Size Coil	1.9Ω					

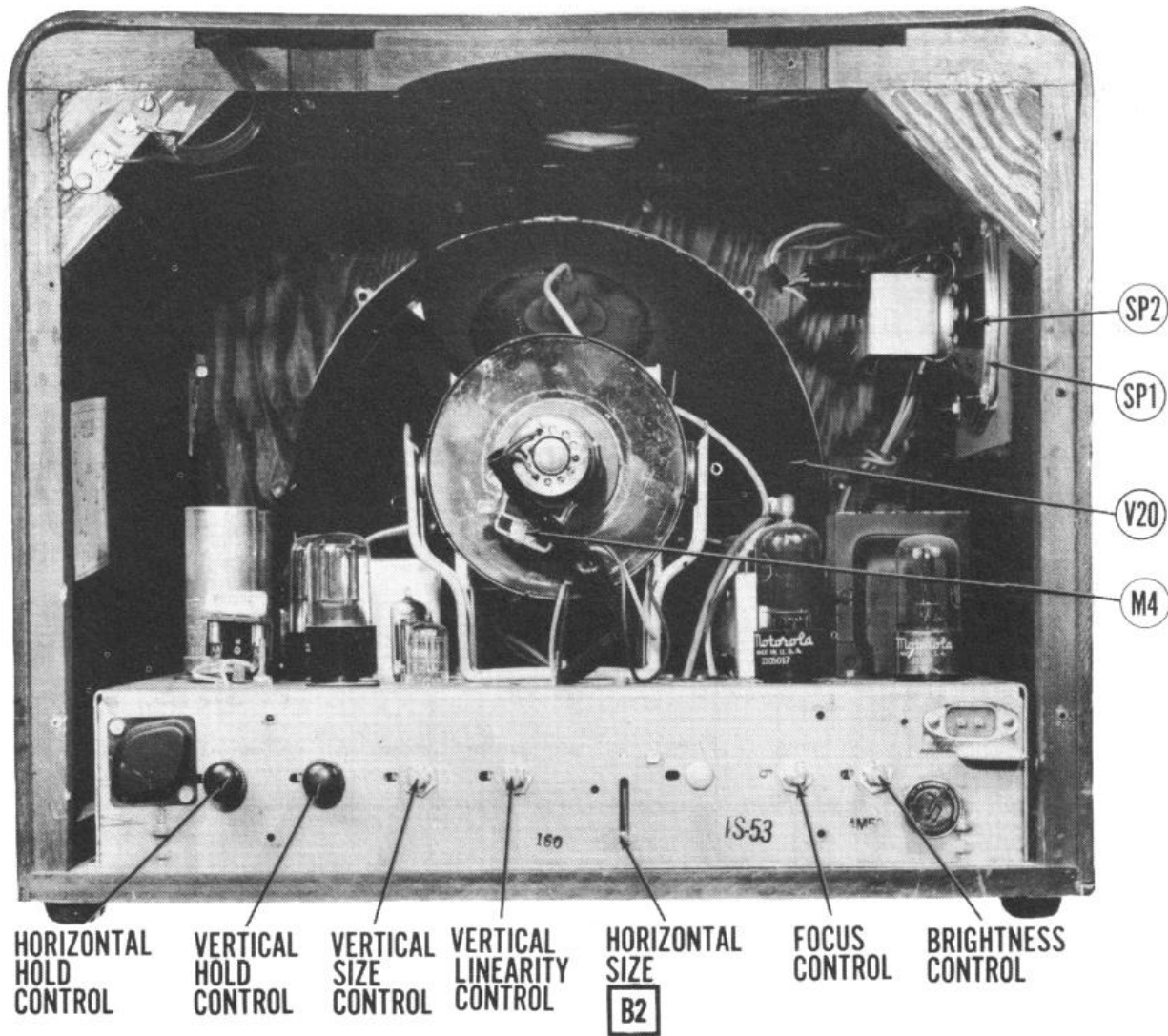
## SELENIUM RECTIFIER

ITEM No.	RATING	REPLACEMENT DATA			NOTES
	CURRENT	MOTOROLA PART No.	SYLVANIA PART No.	SELETRON PART No.	
M1	.240ADC	48B700555	NH-5	6Q2	
M2	.240ADC	48B700555	NH-5	6Q2	

## MISCELLANEOUS

ITEM No.	PART NAME	MOTOROLA PART No.	NOTES
M3	RF Tuner		
M4	Ion Trap		





CABINET-REAR VIEW