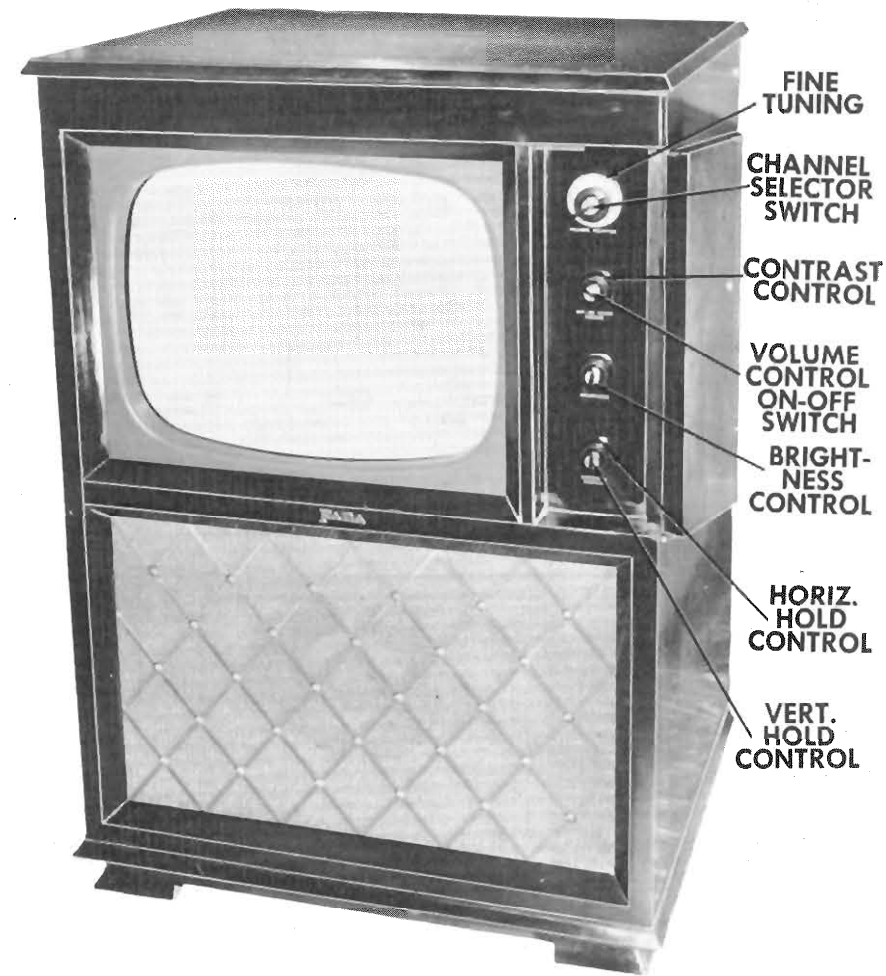


RESISTOR AND INDUCTOR IDENTIFICATION



FADA
MODELS 20C22, 20T12, 24T10

FADA 20C22

TRADE NAME	Fada Models 20C22, 20T12, 24T10		
MANUFACTURER	Fada Radio & Electric Co., Inc., 525 Main St., Belleville, New Jersey		
TYPE SET	Television Receiver		
TUBES	Twenty-one		
POWER SUPPLY	110-120 Volts AC-60 Cycle	RATING	2.3 Amp. @ 117 Volts AC
TUNING RANGE—	Channels 2 thru 13		

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Alignment Instructions	6, 7	Photographs (Cont.)	
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HOWARD W. SAMS & CO., INC. • Indianapolis 5, Indiana

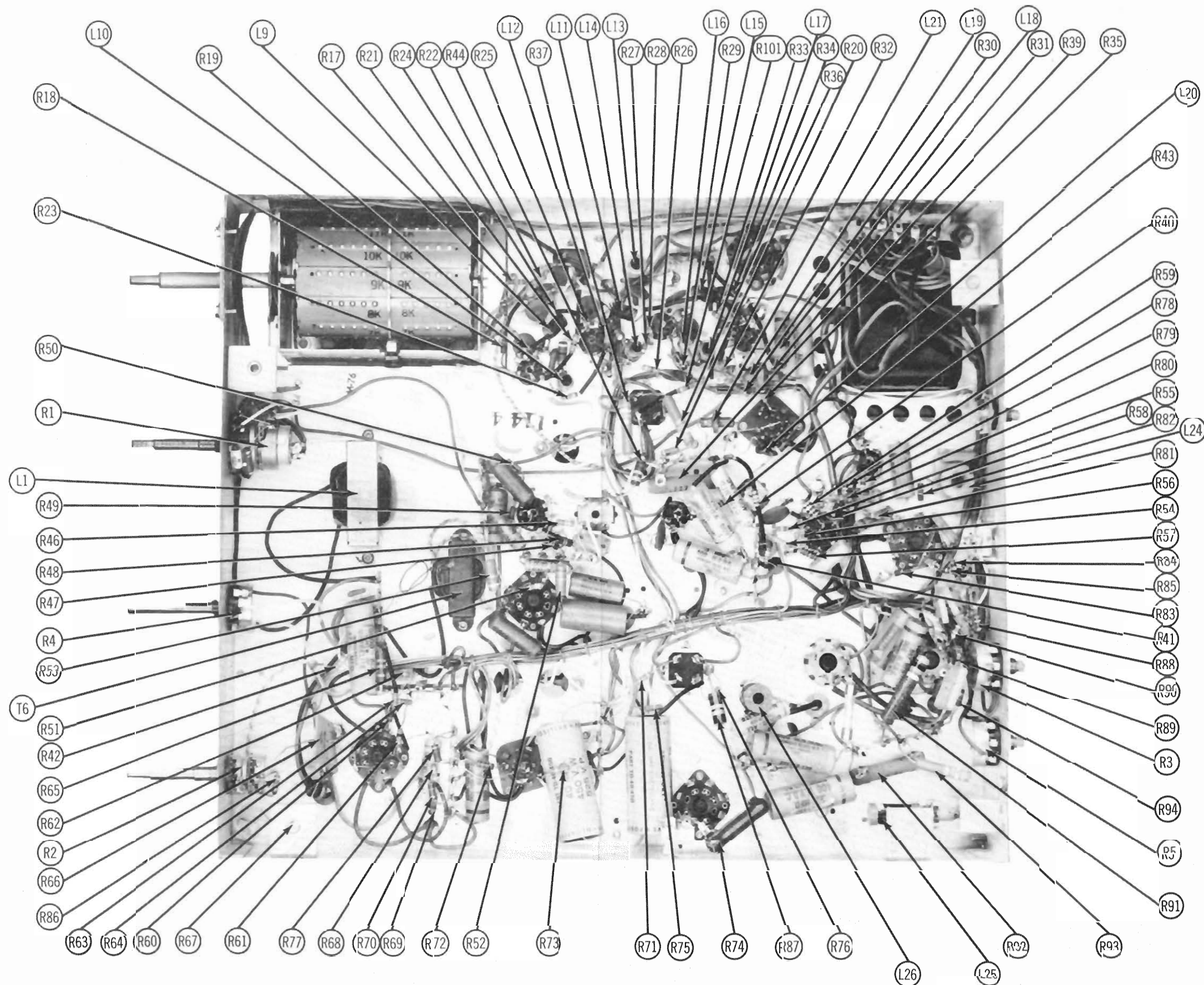
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DATE 9-52

SET 180

FOLDER 3



CHASSIS BOTTOM VIEW-RESISTOR AND INDUCTOR IDENTIFICATION

TRADE NAME Fada Mod
MANUFACTURER Fada Radi
TYPE SET Television
TUBES Twenty-or

POWER SUPPLY 110-120 V_a
TUNING RANGE—Channels

Alignment Instructions

Disassembly Instructions ...

Horizontal Sweep Circuit Adj.

Parts List and Descriptions

Photographs

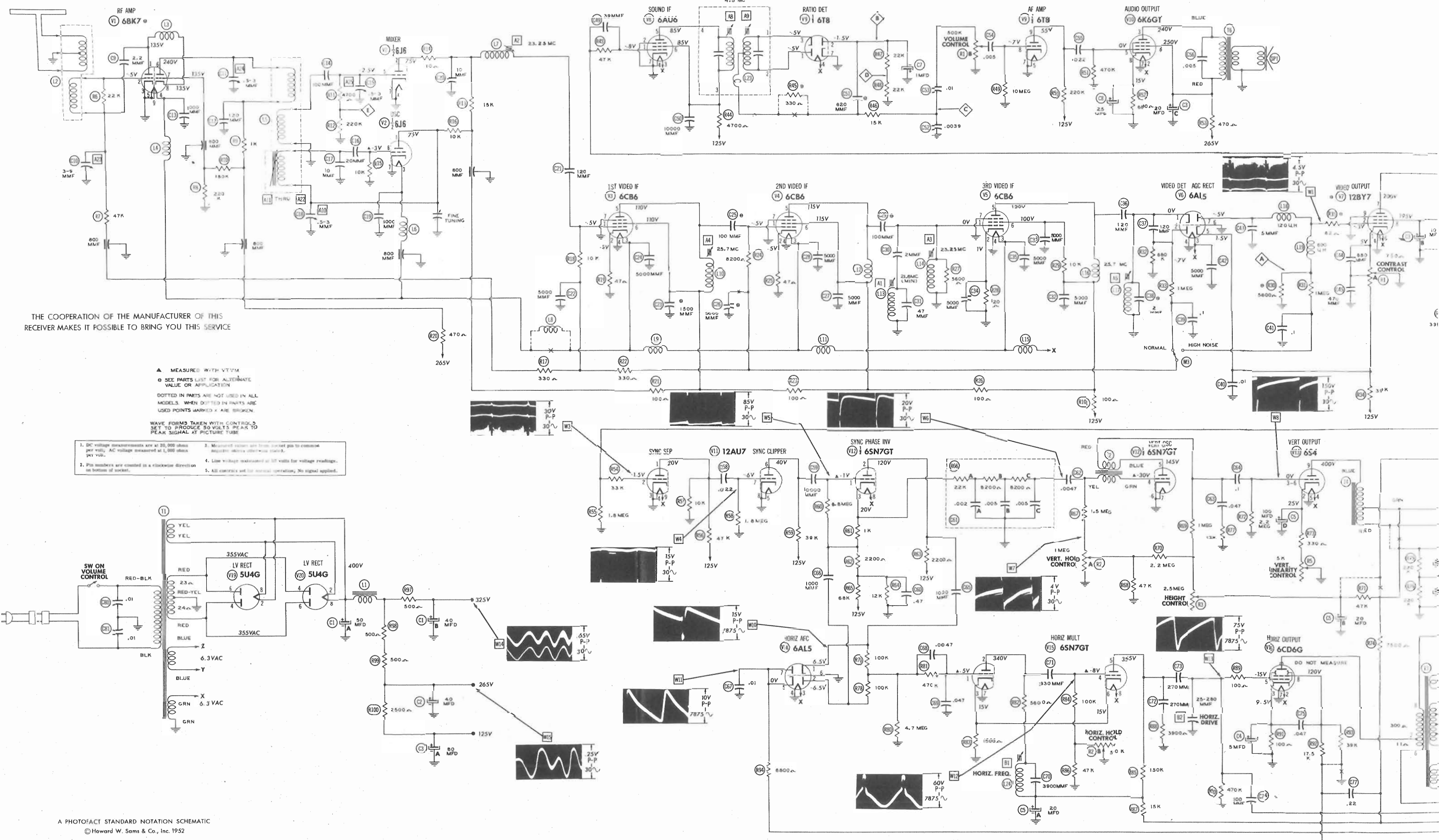
Cabinet—Rear View

Capacitor and Alignment

Chassis—Top View

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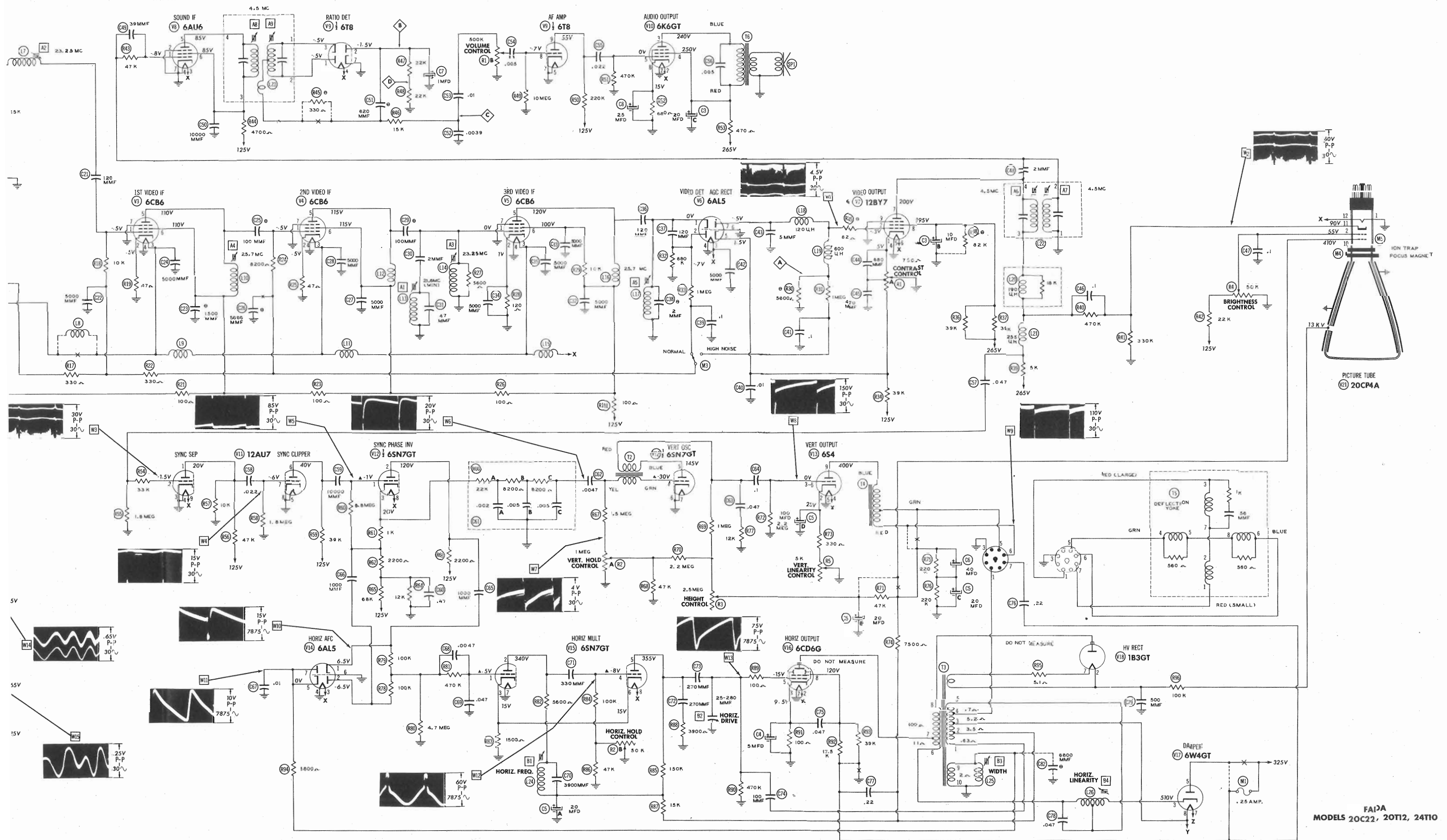
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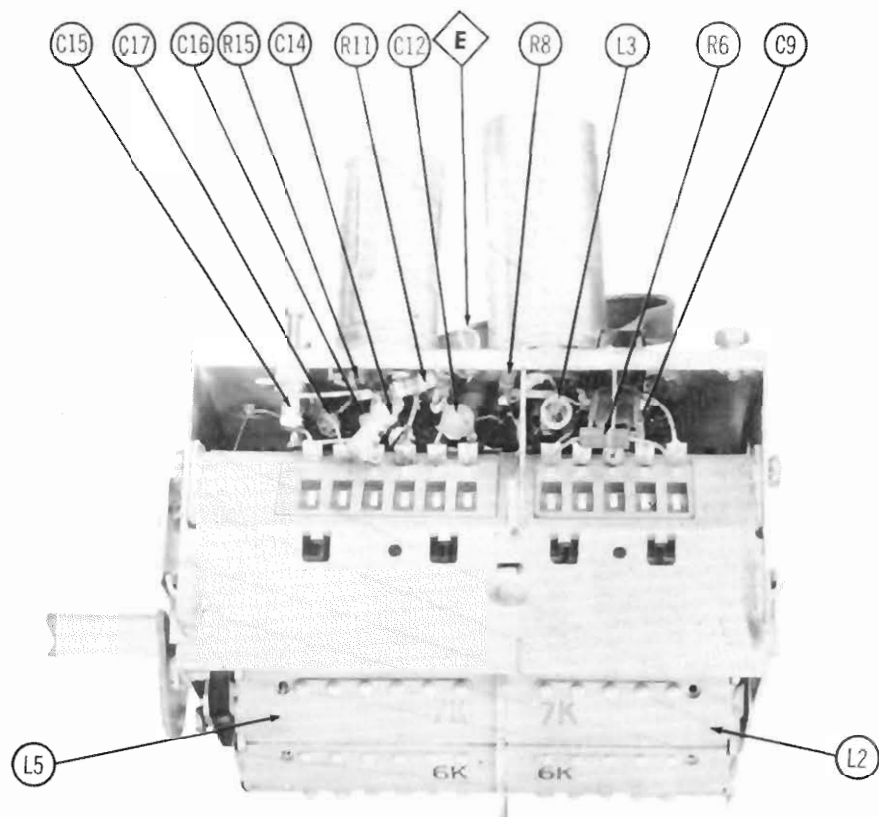


THE COOPERATION OF THE MANUFACTURER OF THIS RECEIVER MAKES IT POSSIBLE TO BRING YOU THIS SERVICE

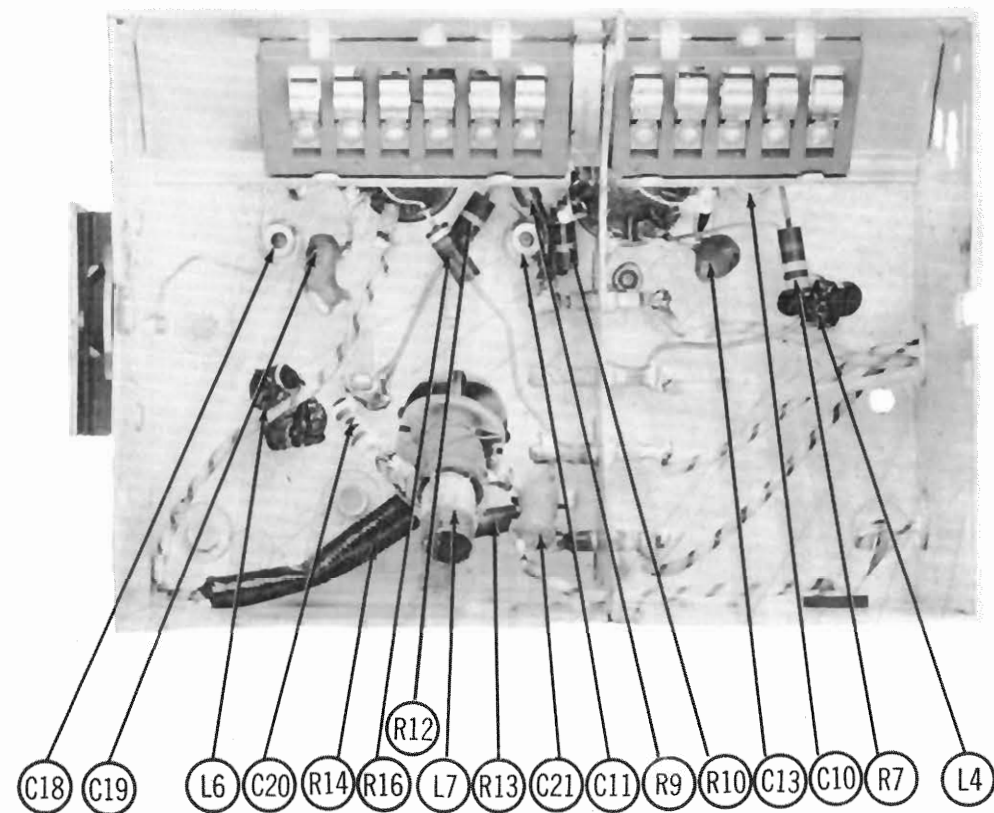
- ▲ MEASURED WITH VTVM
- ⊙ SEE PARTS LIST FOR ALTERNATE VALUE OR APPLICATION
- ⋯ DOTTED IN PARTS ARE NOT USED IN ALL MODELS. WHEN DOTTED IN PARTS ARE USED POINTS MARKED X ARE BROKEN.
- WAVE FORMS TAKEN WITH CONTROL 3 SET TO PRODUCE 80 VOLTS PEAK TO PEAK SIGNAL AT PICTURE TUBE

1. DC voltage measurements are at 50,000 ohms per volt. AC voltage measured at 1,000 ohms per volt.
2. Pin numbers are counted in a clockwise direction on bottom of socket.
3. Measured across from socket pin to common ground unless otherwise noted.
4. Line voltage measured at 117 volts for voltage readings.
5. All controls set for normal operation, No signal applied.

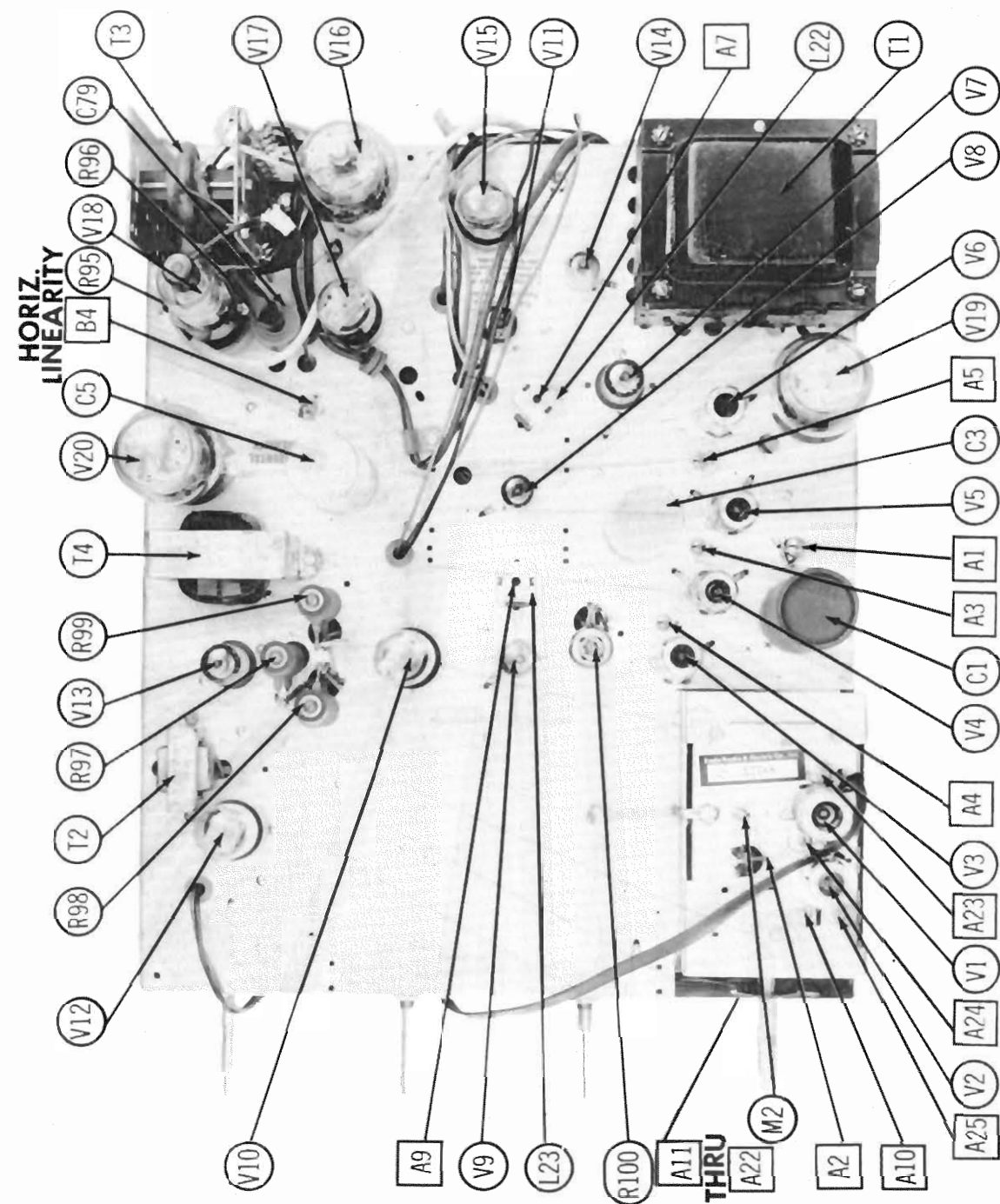


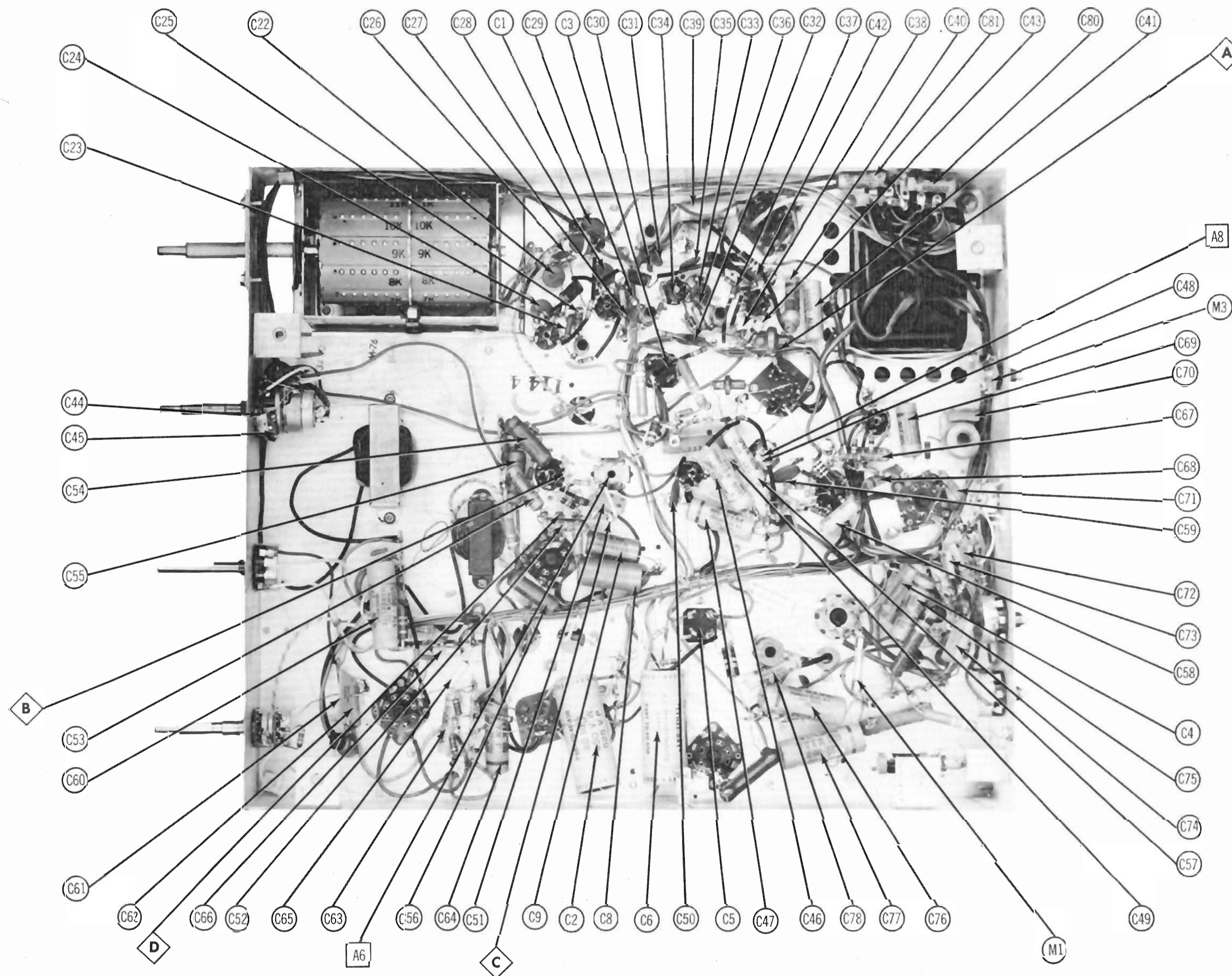


RF TUNER-RIGHT SIDE



RF TUNER-BOTTOM VIEW

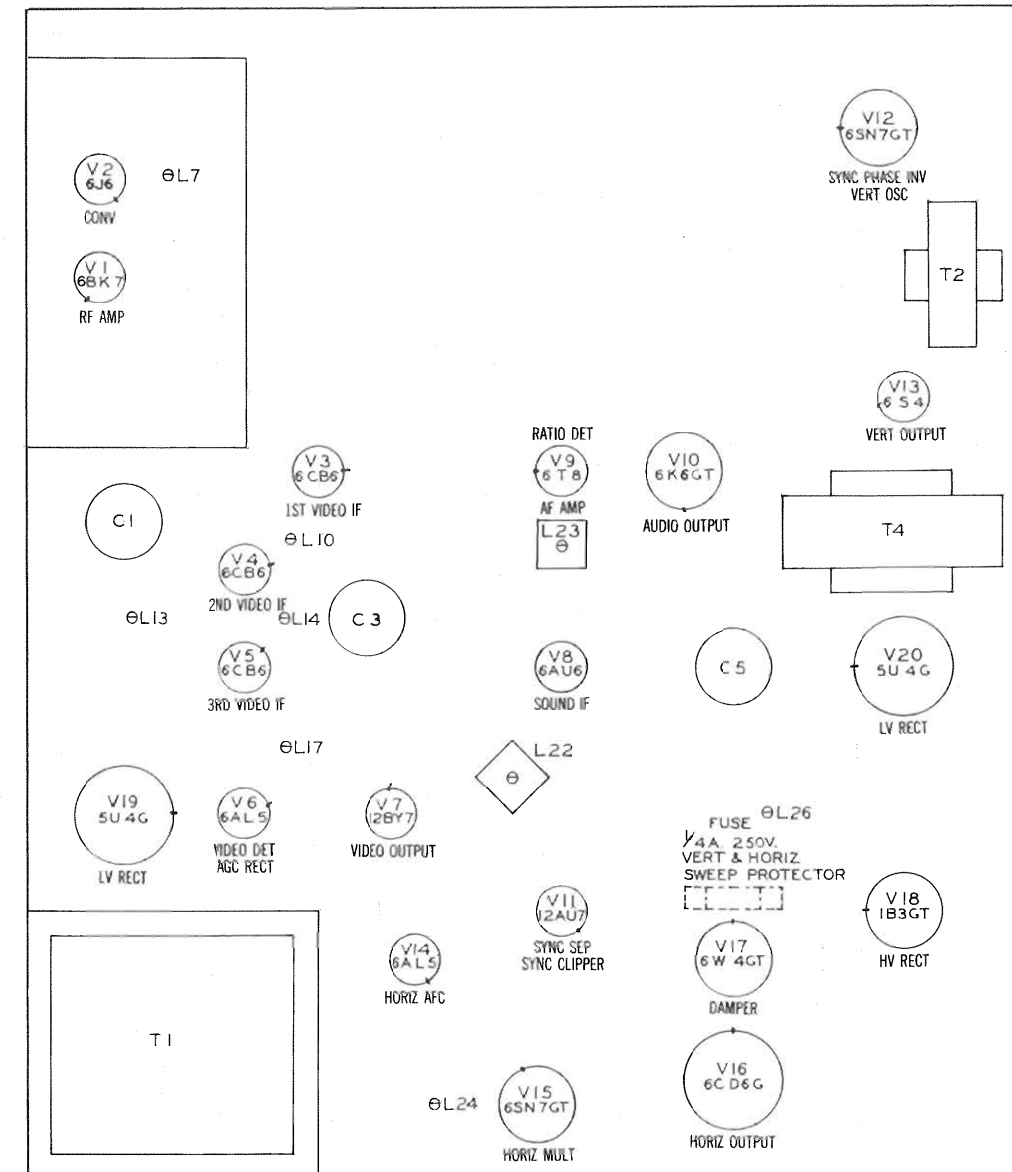




CHASSIS BOTTOM VIEW-CAPACITOR AND ALIGNMENT IDENTIFICATION

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9	
V 1	6BK7	INF	1.7Meg	0Ω	1Ω	0Ω	†2.5KΩ	†100KΩ	INF	0Ω	
V 2	6J6	†14KΩ	†19KΩ	1Ω	0Ω	220KΩ	10KΩ	0Ω			
V 3	6CB6	1.7Meg	47Ω	1Ω	0Ω	†3.8KΩ	†3.8KΩ	0Ω			
V 4	6CB6	1.7Meg	47Ω	1Ω	0Ω	†3.7KΩ	†3.7KΩ	0Ω			
V 5	6CB6	1Ω	120Ω	1Ω	0Ω	†3.6KΩ	†13KΩ	0Ω			
V 6	6AL5	1Ω	680KΩ	1Ω	0Ω	550Ω	0Ω	5.6KΩ			
V 7	12BY7	210Ω	5.7KΩ	0Ω	0Ω	0Ω	1Ω	†6KΩ	†20KΩ	0Ω	
V 8	6AU6	47KΩ	0Ω	1Ω	0Ω	†8.2KΩ	†8.2KΩ	0Ω			
V 9	6T8	INF	44KΩ	INF	1Ω	0Ω	INF	0Ω	10Meg	†220KΩ	
V 10	6K6GT	INF	1Ω	†1.9KΩ	†1.5KΩ	470KΩ	INF	0Ω	680Ω		
V 11	12AU7	9KΩ	1.8Meg	0Ω	0Ω	0Ω	†42KΩ	1.8Meg	0Ω	1Ω	
V 12	6SN7GT	6.8Meg	†5.7KΩ	15KΩ	2Meg	1.3Meg	0Ω	0Ω	1Ω		
V 13	6S4	INF	2.5KΩ	2.2Meg	1Ω	0Ω	2.2Meg	INF	INF	#9KΩ	
V 14	6AL5	4.8Meg	4.8Meg	1Ω	0Ω	6.8KΩ	0Ω	6.8KΩ			
V 15	6SN7GT	5.1Meg	#20KΩ	1.5KΩ	130KΩ	#165KΩ	1.5KΩ	0Ω	1Ω		
V 16	6CD6G	INF	1Ω	100Ω	470KΩ	470KΩ	INF	0Ω	†13KΩ	TOP CAP #16Ω	
V 17	6W4GT	INF	INF	120KΩ	INF	†565Ω	†565Ω	#6.9Ω	#6.8Ω		
V 18	1B3GT	PINS	1-8 HAVE INF			RESISTANCE					TOP CAP #316Ω
V 19	5U4G	INF	11KΩ	INF	24Ω	INF	23Ω	INF	11KΩ		
V 20	5U4G	INF	11KΩ	INF	23Ω	INF	24Ω	INF	11KΩ		
V 21	20CP4A	0Ω	20KΩ	PIN 10 #7.5KΩ	PIN 11 195KΩ	PIN 12 1Ω					

TUBE PLACEMENT CHART



The diagram illustrates the internal layout of a radio receiver chassis. Components are represented by standard electronic symbols: circles for vacuum tubes, rectangles for capacitors, and diamonds for inductors. The following table lists the components shown in the diagram:

Component	Part Number	Function / Label
Vacuum Tube	V1	6BK7, RF AMP
Vacuum Tube	V2	6J6, CONV
Vacuum Tube	V3	6CB6, 1ST VIDEO IF
Vacuum Tube	V4	6CB6, 2ND VIDEO IF
Vacuum Tube	V5	6CB6, 3RD VIDEO IF
Vacuum Tube	V6	6AL5, VIDEO DET AGC RECT
Vacuum Tube	V7	12BY7, VIDEO OUTPUT
Vacuum Tube	V8	6AU6, SOUND IF
Vacuum Tube	V9	6T8, RATIO DET AF AMP
Vacuum Tube	V10	6K6GT, AUDIO OUTPUT
Vacuum Tube	V11	12AU7, SYNC SEP SYNC CLIPPER
Vacuum Tube	V12	6SN7GT, SYNC PHASE INV VERT OSC
Vacuum Tube	V13	6S4, VERT OUTPUT
Vacuum Tube	V14	6AL5, HORIZ AFC
Vacuum Tube	V15	6SN7GT, HORIZ MULT
Vacuum Tube	V16	6CD6G, HORIZ OUTPUT
Vacuum Tube	V17	6W4GT, DAMPER
Vacuum Tube	V20	5U4G, LV RECT
Capacitor	C1	
Capacitor	C3	
Capacitor	C5	
Inductor	L1	
Inductor	L23	
Inductor	L24	
Inductor	L26	
Transformer	T1	
Transformer	T6	
Transformer	T7	
Transformer	T8	
Transformer	T9	
Transformer	T10	
Transformer	T11	
Transformer	T12	
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Transformer	T98	
Transformer	T99	
Transformer	T100	

BOTTOM VIEW
TUBE PLACEMENT CHART

No raster, has sound-V15, V16, V17, V18, V21
No vertical deflection-V13
Poor vert. linearity or foldover-V12, V13
Poor horiz. linearity or foldover-V15, V16, V17
Narrow picture-V15, V16, V17, V18, V19, V20
Vert off freq. -V12
Horiz. off freq. -V12, V14, V15


ALIGNMENT INSTRUCTIONS

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

The high voltage lead should be securely taped and kept away from the chassis. Do not remove the horizontal multibrator tube to disable the high voltage.


VIDEO IF ALIGNMENT

Remove the converter tube, V2, from its socket and replace with a 6J6 which has pin 1 removed. This will disable the local oscillator and reduce the possibility of erroneous indications.
Connect the negative lead of a 4.5 volt battery to the ungrounded side of C22. Connect the positive lead to chassis.





DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	CHANNEL	CONNECT VTVM	ADJUST	REMARKS
Direct	High side to an ungrounded tube shield floating over dummy converter tube (V2). Low side to chassis.	21.6MC (Unmod.)	Any	DC probe to point  . Common to chassis.	A1	Adjust for MINIMUM deflection.
"	"	23.25MC	"	"	A2, A3	Adjust for maximum deflection. Attenuate generator output to maintain approximately 2.5 volts at VTVM.
"	"	25.7MC	"	"	A4, A5	"

OVERALL VIDEO IF RESPONSE CHECK

Leave bias battery connected as under Video IF Alignment. If output of sweep generator is too low to give a usable indication on scope reduce the bias to 3 volts.
Connect the synchronized sweep voltage from the signal generator to the horizontal input of oscilloscope for horizontal deflection.




DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
Direct	High side to an ungrounded tube shield floating over dummy converter tube (V2). Low side to chassis.	24MC (10MC Swp)	21.6MC 22.7MC 26.1MC	Any	Vert. amp. to point  . Low side to chassis.		Check for response curve as per fig. 1. If necessary retouch A2 thru A5 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 point  . Low side to chassis.	4.5MC (Unmod.)	Any	DC probe to point  . Common to chassis.	A6, A7, A8	Adjust for maximum deflection.
"	"	"	"	DC probe to point  . Common to point  .	A9	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 40KC 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 point  . Low side to chassis.	4.5MC (450KC Swp)	4.5MC	Any	Vert. amp. to point  . Low side to chassis.	A6, A7, A8	Disconnect stabilizer capacitor C7. Adjust for curve of maximum amplitude and symmetry as per fig. 2.
"	"	"	"	"	Vert. amp. to point  . Low side to chassis.	A9	Reconnect capacitor C7. Adjust so that 4.5MC occurs at center of crossover lines as per fig. 3. SLIGHTLY retouch A8 for maximum amplitude and straightness of crossover lines.

OSCILLATOR ALIGNMENT

Remove the dummy converter tube and replace the original 6J6 in its socket.
Complete oscillator alignment may not be necessary.
If the oscillator seems to be off frequency approximately the same amount for a majority of the channels it may be possible to correct them in one step using A10. It should be noted that this is an all channel oscillator circuit adjustment and should not be used to correct for any individual channel. If adjustment of A10 will not bring all channels well within the range of the fine tuning control it will be necessary to adjust the channel strip adjustment for each channel that is off frequency. The channel adjustment screws are reached through a hole just to the right of the channel switch shaft. The correct adjustment screw is accessible through this hole as the channel switch is turned to each channel.
Connect the synchronized sweep voltage from the signal generator to the horizontal input of the oscilloscope for horizontal deflection. The sweep generator output lead should be terminated with its characteristic impedance, usually 50 ohms.
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 Resistors	Across antenna terminals with 120Ω in each lead.	213MC (10MC Swp)	211.25MC 215.75MC	13	Vert. amp. to point  . Low side to chassis.	A11	Adjust to place sound marker in notch as per fig. 4. Video marker should be at 50% of response.
		207MC (10MC Swp)	205.25MC 209.75MC	12		A12	
		201MC (10MC Swp)	199.25MC 203.75MC	11		A13	
		195MC (10MC Swp)	193.25MC 197.75MC	10		A14	
		189MC (10MC Swp)	187.25MC 191.75MC	9		A15	
		183MC (10MC Swp)	181.25MC 185.75MC	8		A16	
		177MC (10MC Swp)	175.25MC 179.75MC	7		A17	
		171MC (10MC Swp)	169.25MC 173.75MC	6		A18	
		165MC (10MC Swp)	163.25MC 167.75MC	5		A19	
		159MC (10MC Swp)	157.25MC 161.75MC	4		A20	
		153MC (10MC Swp)	151.25MC 155.75MC	3		A21	
		147MC (10MC Swp)	145.25MC 149.75MC	2		A22	
		141MC (10MC Swp)	139.25MC 143.75MC				
		135MC (10MC Swp)	133.25MC 137.75MC				
		129MC (10MC Swp)	127.25MC 131.75MC				
		123MC (10MC Swp)	121.25MC 125.75MC				
		117MC (10MC Swp)	115.25MC 119.75MC				
		111MC (10MC Swp)	109.25MC 113.75MC				
		105MC (10MC Swp)	103.25MC 107.75MC				
		99MC (10MC Swp)	97.25MC 101.75MC				
		93MC (10MC Swp)	91.25MC 95.75MC				
		87MC (10MC Swp)	85.25MC 89.75MC				

ALIGNMENT INSTRUCTIONS (CONT.)

RF AND MIXER ALIGNMENT										
Connect a 3 volt bias battery as under Video IF Alignment. Connect the synchronized sweep voltage from the signal generator to the horizontal input of the oscilloscope for horizontal deflection. 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			
Two 120Ω Carbon Resistors	Across antenna terminals with 120Ω in each lead.	207MC (10MC Swp)	205.25MC 209.75MC	12	Vert. amp. thru 10KΩ to point  . Low side to chassis.	A23, A24, A25	Adjust for response curve similar to fig. 5, with markers above 90%.			
"	"	213MC (10MC Swp)	211.25MC 215.75MC	13			Check all channels for response similar to fig. 5. If markers fall below 70% on any channel make slight compromise adjustment of A23, A24, and A25 with selector switch set to that channel. Recheck all other channels to see that they have not been seriously affected.			
		201MC (10MC Swp)	199.25MC 203.75MC	11						
		195MC (10MC Swp)	193.25MC 197.75MC	10						
		189MC (10MC Swp)	187.25MC 191.75MC	9						
		183MC (10MC Swp)	181.25MC 185.75MC	8						
		177MC (10MC Swp)	175.25MC 179.75MC	7						
		171MC (10MC Swp)	169.25MC 173.75MC	6						
		165MC (10MC Swp)	163.25MC 167.75MC	5						
		159MC (10MC Swp)	157.25MC 161.75MC	4						
		153MC (10MC Swp)	151.25MC 155.75MC	3						
		147MC (10MC Swp)	145.25MC 149.75MC	2						

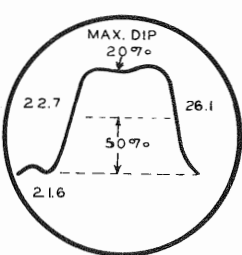


FIG. 1

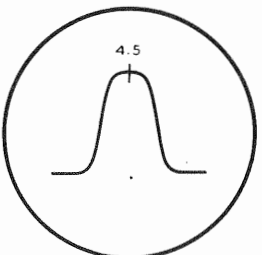


FIG. 2

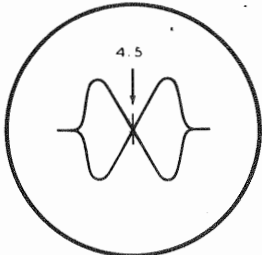


FIG. 3

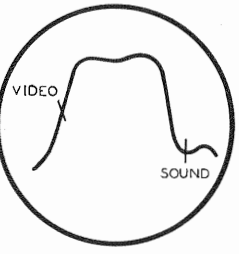


FIG. 4

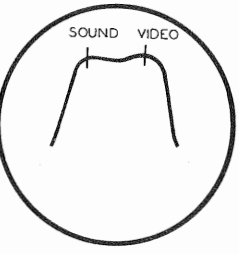


FIG. 5

FADA
MODELS 20C22, 20T12, 24T10

PARTS LIST AND DESCRIPTIONS (Continued)

ITEM No.	USE	DC RES.		REPLACEMENT DATA		NOTES
				FADA	MERIT	
		PRI.	SEC.	PART No.	PART No.	
L2	Ant. Coils	0Ω	0Ω			Not used in all models.
L3	RF Choke	0Ω				
L4	Fil. Choke	0Ω				
L5	RF Mixer Grid & Osc. Coils	0Ω				
L6	Fil. Choke	0Ω				
L7	1st. Video IF	.8Ω				
L8	Fil. Choke	0Ω				
L9	Fil. Choke	0Ω		37.89		
L10	2nd. Video IF	.1Ω		37.99	TV-102 or TV-112	
L11	Fil. Choke	0Ω		37.89		
L12	RF Choke	1.6Ω		37.197		120 Microhenries 600 Microhenries Wound on 18K resistor 190 Microhenries 245 Microhenries Tertiary winding .7Ω Tap @ 1.4Ω
L13	Sound Trap	0Ω		37.268		
L14	3rd. Video IF	.1Ω		37.99	TV-102 or TV-112	
L15	Fil. Choke	0Ω		37.89		
L16	RF Choke	1.6Ω		37.197		
L17	4th. Video IF	.1Ω		37.99	TV-102 or TV-112	
L18	Peaking Coil	4.4Ω		37.234	TV-188	
L19	Peaking Coil	12.5Ω		37.235	TV-188	
L20	Peaking Coil	6.4Ω		37.236	*TV-184	
L21	Peaking Coil	7Ω		37.237	TV-185	
L22	Sound Take-off	1.8Ω	1.8Ω	37.252	TV-113	Tertiary winding .7Ω
L23	Ratio Det.	5.3Ω	1.7ΩCT	37.253	TV-115	
L24	Horiz. Osc.	58Ω		37.233	TV-163	
L25	Width Coil	2.3Ω		37.248	MWC-2	
L26	Horiz. Lin.	5.4Ω		37.244		

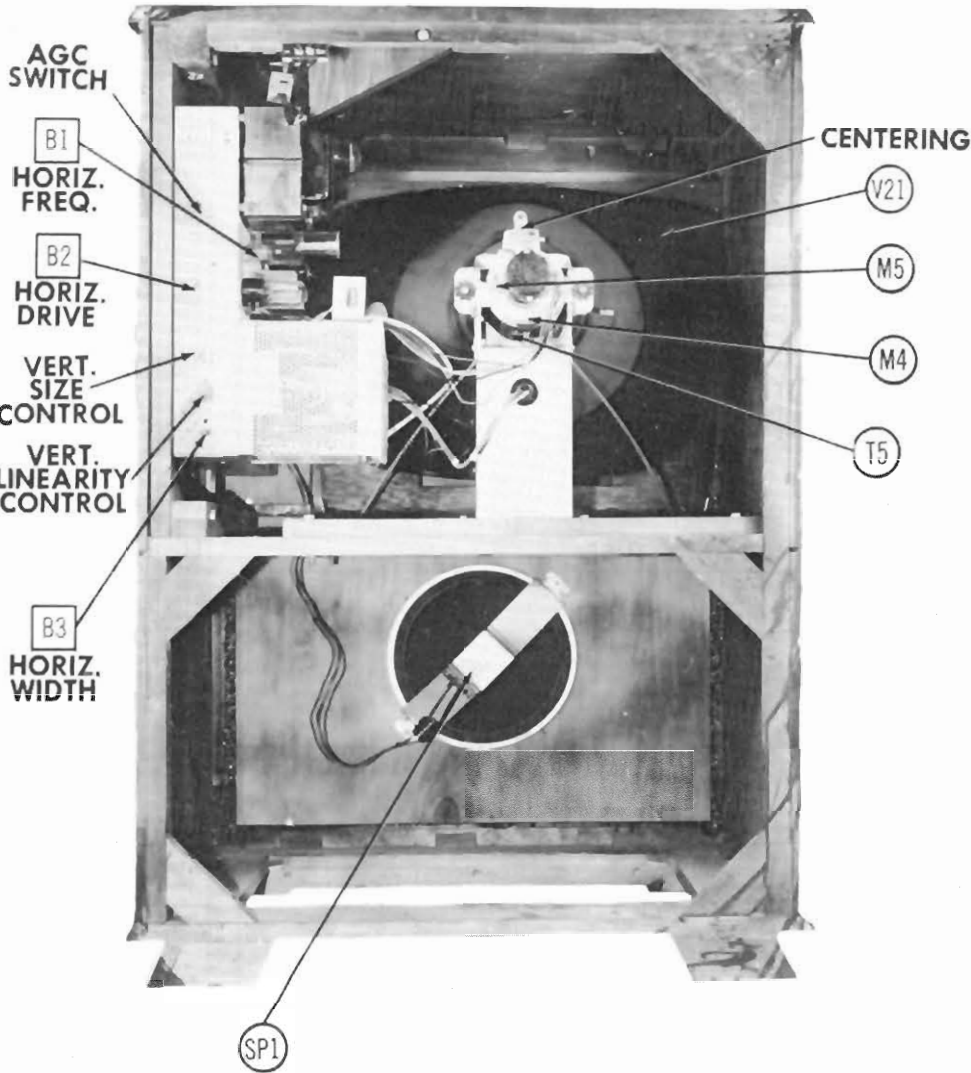
* Parallel with 18K resistor.

FUSES

ITEM No.	TYPE	RATING	REPLACEMENT DATA			
			FADA		LITTELFUSE	
			PART No.	HOLDER	PART No.	HOLDER
M1		1/4A 250V.			318.250 (3AG-P/T)	

MISCELLANEOUS

ITEM No.	PART NAME	FADA PART No.	NOTES
M2	RF Tuner	42.71	AGC (Noise & Normal Area)
M3	Switch		Model 20C22 & 24T10
M4A	Focus Magnet	112.38	Model 20T12
M B	Focus Magnet	112.40	Model 20T12 & 20C22
M5 A	Ion Trap	112.30	Model 24T10
B	Ion Trap	112.23	Model 24T10
B2	Trimmer	132.18	Horiz. Drive (25-280MMF)
	Knob	142.77	Vert. Hold, Contrast
	Knob	142.78	Off/On Volume, Horiz. Hold
	Knob	142.80	Channel Selector
	Knob	142.81	Fine Tuning
	Knob	157.39	Brightness
	Back Cover	97.431	Model 20T12
	Back Cover	97.379	Model 20C22
	Back Cover	97.460	Model 24T10
	Safety Glass	92.479	Model 20T12
	Safety Glass	92.403	Model 20C22
	Safety Glass	92.502	Model 24T10
	Escutcheon	92.381	Model 20T12
	Escutcheon	92.504	Model 20C22-24T10
	Spring	92.114	Escutcheon
	Mask	97.436G	Model 20T12
	Mask	97.399G	Model 20C22
	Mask	97.459	Model 24T10



CABINET-REAR VIEW
HORIZONTAL SWEEP CIRCUIT ADJUSTMENTS

- Turn the set on and tune in a TV station, preferably a test pattern.
- Set the horizontal hold at the mid-position of its range and adjust the horizontal frequency slug (B1) until the picture synchronizes horizontally.
- Adjust the horizontal drive trimmer (B2) to the maximum counter clockwise position without the presence of a vertical white line in the picture.
- Adjust the width slug (B3) for a picture slightly wider than enough to fill the picture mask horizontally.
- Adjust the horizontal linearity slug (B4) for a picture that is symmetrical from left to right.

DISASSEMBLY INSTRUCTIONS

1. Remove 7 push on type control knobs from front panel.
 2. Remove 11 wood screws. Remove rear cover.
 3. Disconnect speaker, deflection and focus plug, CRT socket, built-in antenna and HV lead.
 4. Remove 2 wood screws. Remove antenna bracket from cabinet.
 5. Remove 1 screw and 1 nut holding speaker. Remove speaker.
 6. Remove 2 chassis mounting board bolts and remove from cabinet.
- NOTE: FOR PICTURE TUBE REMOVAL IT IS NECESSARY TO REMOVE CHASSIS AS OUTLINED ABOVE.

FADA
MODELS 20C22, 20T12, 24T10

CAPACITORS (CONT.)

REPLACEMENT DATA	RMA	
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ITEM No.	REPLACEMENT DATA			RTMA BASE TYPE	NOTES
	FADA PART No.	SYLVANIA PART No.			
V21	20CP4A	20CP4A 20CP4 20DP4 20DP4A 20HP4 20HP4A 20LP4	① ① ② ④ ① ② ① ② ① ②	12D	① Circuit changes necessary ② 3/8" longer

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

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REPLACEMENT DATA

Note 1. Some Models use 5000MMF in this application (Part #17.44)
 Note 2. Some Models use 120MMF in this application (Part #17.106)
 Note 3. Some Models use 3MMF in this application (Part #17.131)
 Note 4. Some Models use 330MMF in this application
 Note 5. Not used in all Models
 • Items C61A, C61B, C61C, R66A, R66B, R66C are combined in one unit.

PLACEMENT DATA

* CONCENTRIKIT EQUIVALENT-KIT K-3 BASE ELEMENTS & SHAFTS W17-105X & P4-124 (PANEL)
B13-133 & R1-212 (REAR) & SWITCH 76-1.

** CONCENTRIKIT EQUIVALENT-KIT K-2, BASE ELEMENTS & SHAFTS B11-137 & P1-126 (PANEL)
B11-123 & R1-212 (REAR)

[illegible]

A		TYPE A	B.A.
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* Items R66A, R66B, R66C, C61A, C61B, C61C are combined in one unit.
 Note 1 Some models use a 8200Ω resistor in this application.
 Note 2 Some models use a 120Ω resistor in this application.
 Note 3 R38 is deleted when C3C is rated at 350 volts
 Note 4 Note used in all models

	REPLA
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② Parallel both 5V windings.

REPLACEMENT DATA

① Mount on top of chassis.

[illegible][illegible]

CEMENT DATA

① Drill one new mtg. hole.