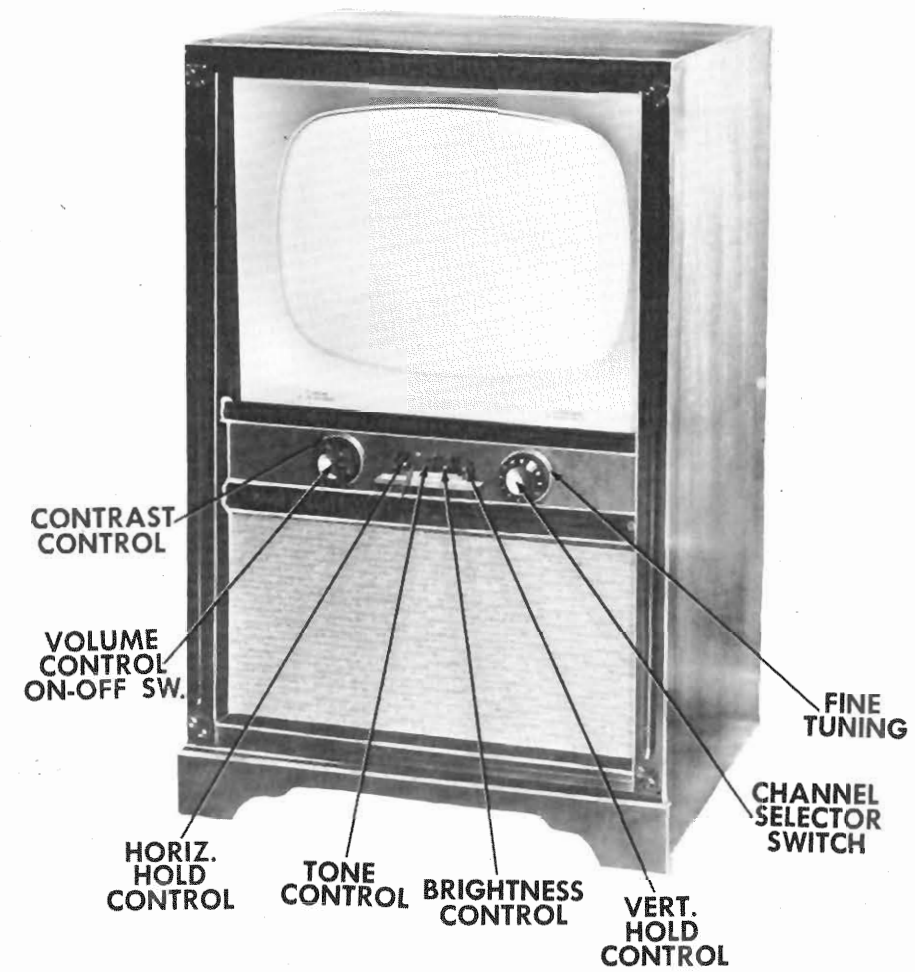


RESISTOR AND INDUCTOR IDENTIFICATION



FIRESTONE 13-G-110A		
TRADE NAME	Firestone Models 13-G-110A, 13-G-115, 13-G-116, 13-G-119, 13-G-120(Code 334-2-MS31CA)	
SUPPLIER	Firestone Tire & Rubber Co., 1200 Firestone Parkway, Akron, Ohio	
TYPE SET	Television Receiver	
TUBES	Twenty-three	
POWER SUPPLY	110-120 Volts AC-60Cycle	RATING 1.82 Amp. @ 117 Volts AC
TUNING RANGE-CHANNELS	2 thru 13	

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Chassis - Top View	3	Tube Placement Chart (Top View)	5

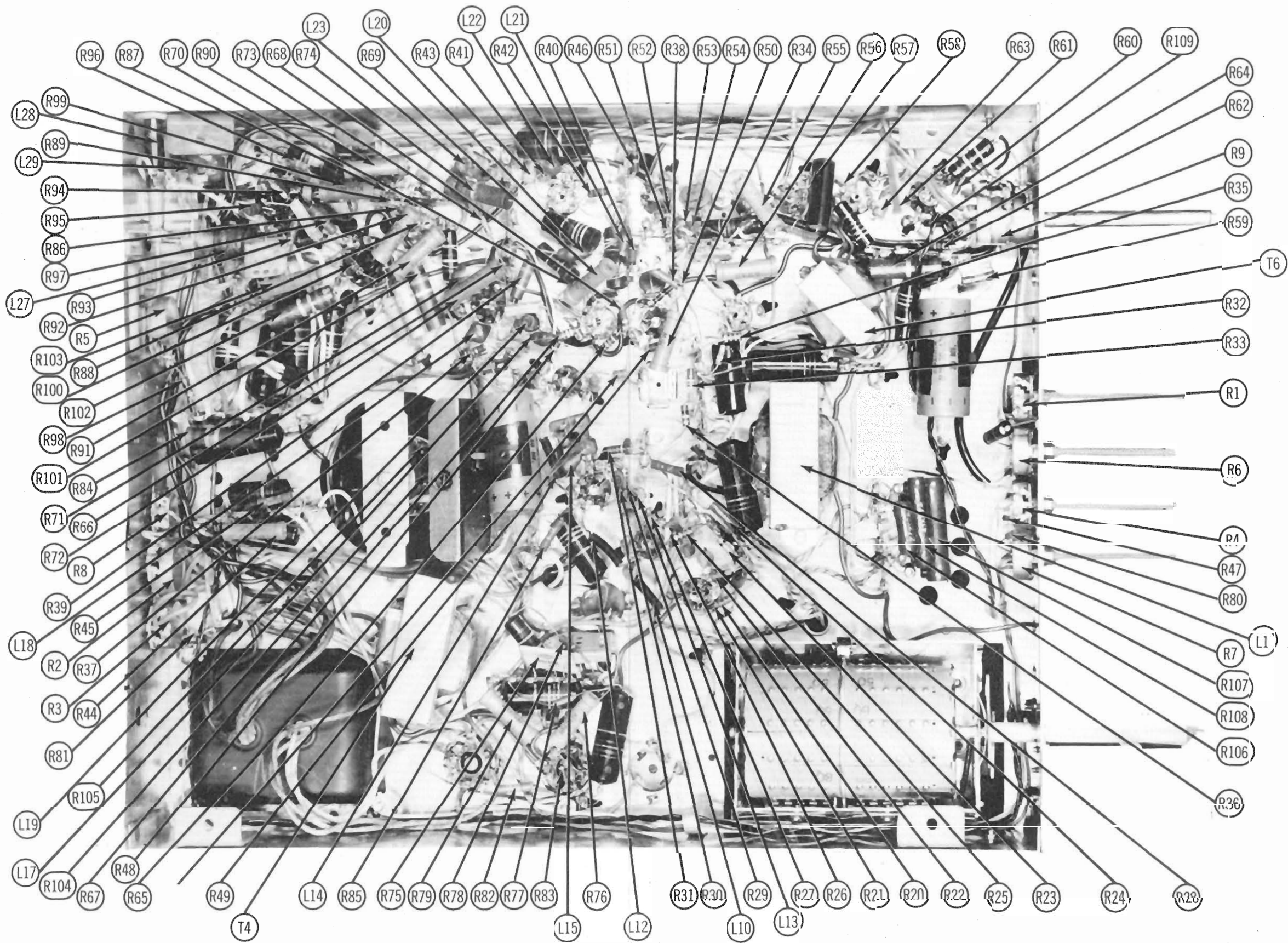
FIRESTONE MODELS 13-G-110A, 13-G-115, 13-G-116, 13-G-119, 13-G-120 (Code 334-2-MS31CA)

HOWARD W. SAMS & CO., INC. • Indianapolis 5, Indiana

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DATE 10-52



CHASSIS BOTTOM VIEW-RESISTOR AND INDUCTOR IDENTIFICATION

CONTRA
CONTRO

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HO
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SO

TRADE NAME	Firestone
SUPPLIER	Firestone
TYPE SET	Televisio
TUBES	Twenty-ll

POWER SUPPLY 110-120 Vc
TUNING RANGE-CHANNEL

Alignment Instructions

Disassembly Instructions ..

Horizontal Sweep Circuit Adj

Parts List and Descriptions

Photographs

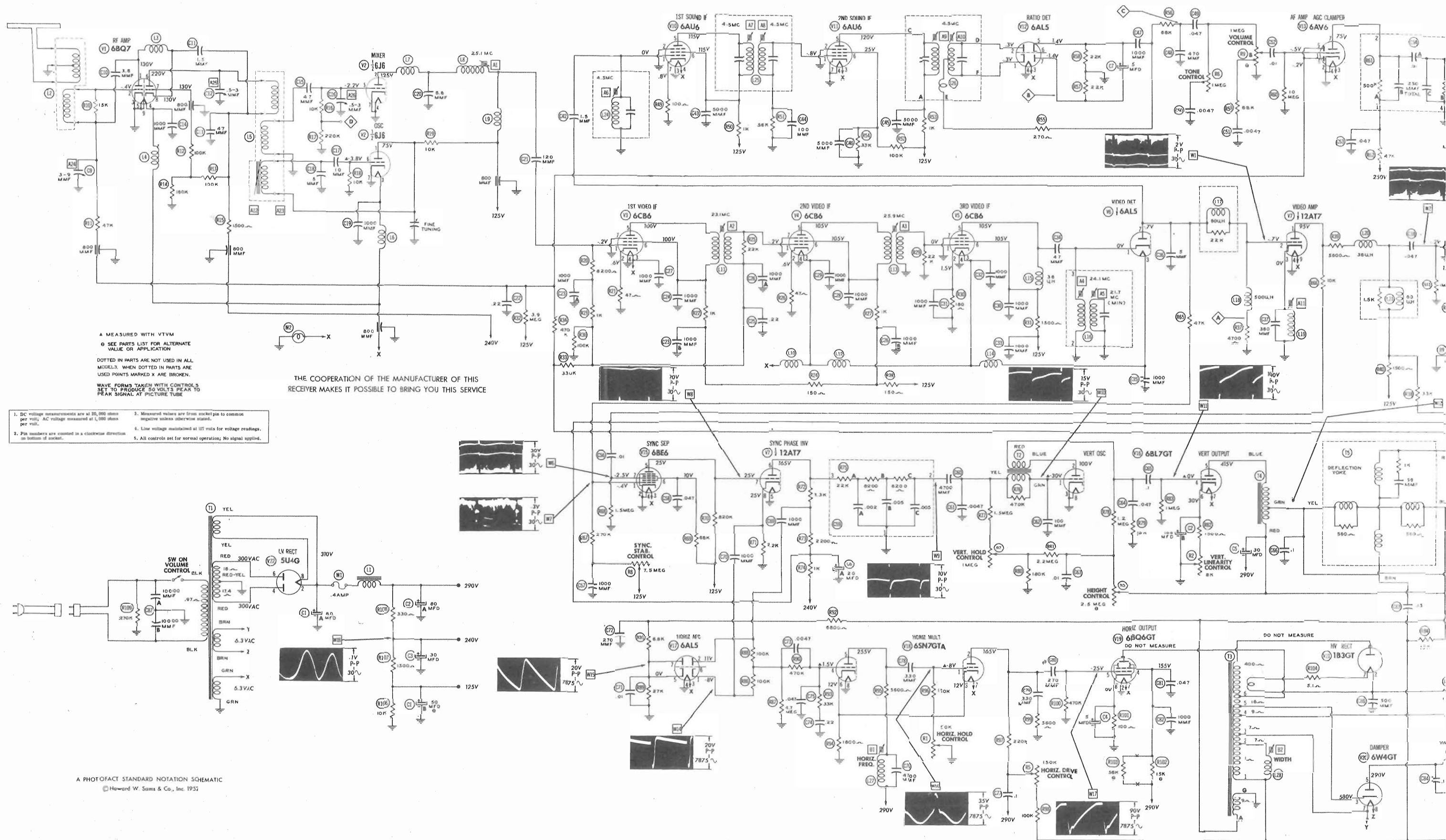
Cabinet - Rear View ...

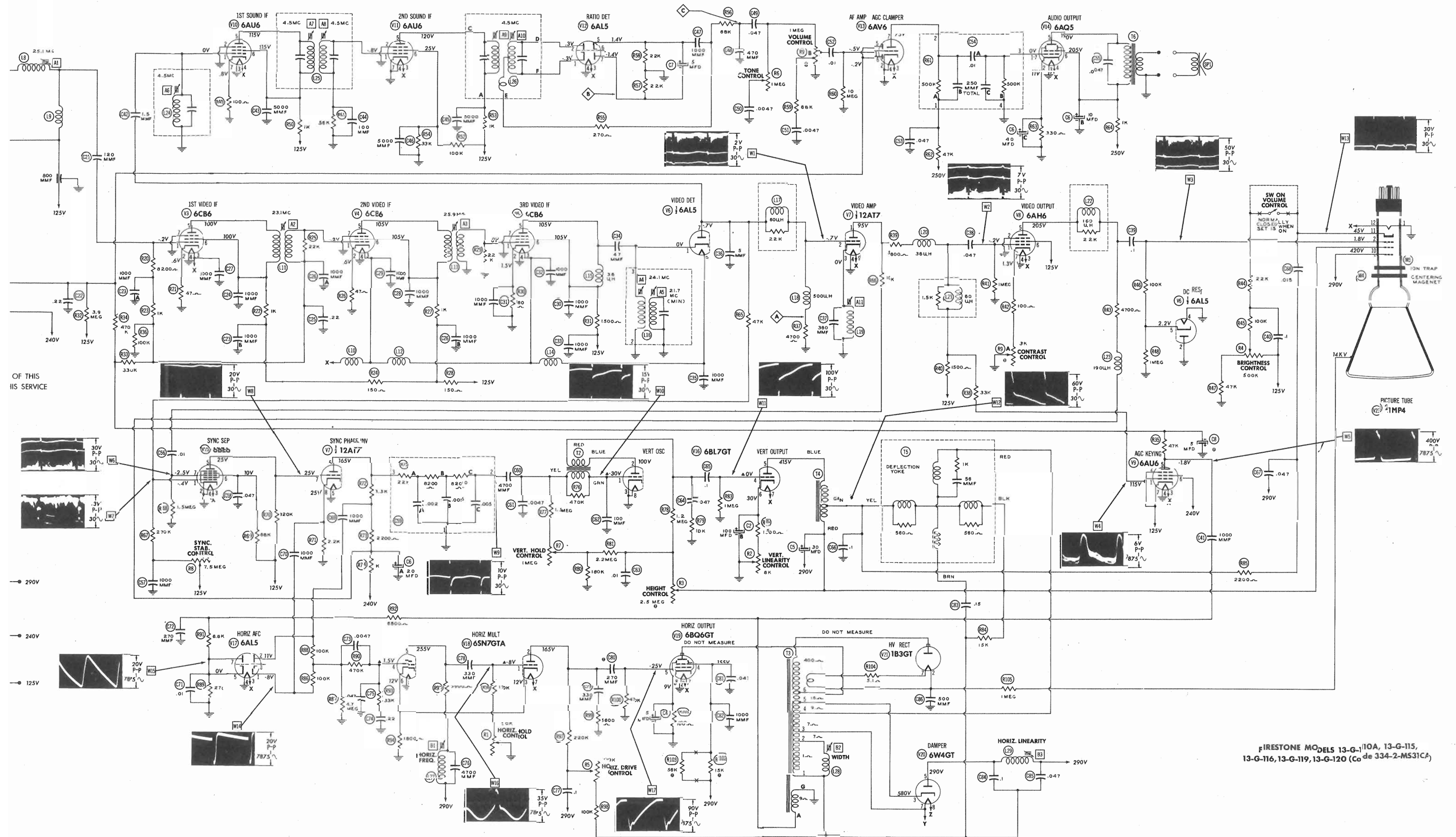
Capacitor and Alignment

Chassis - Top View

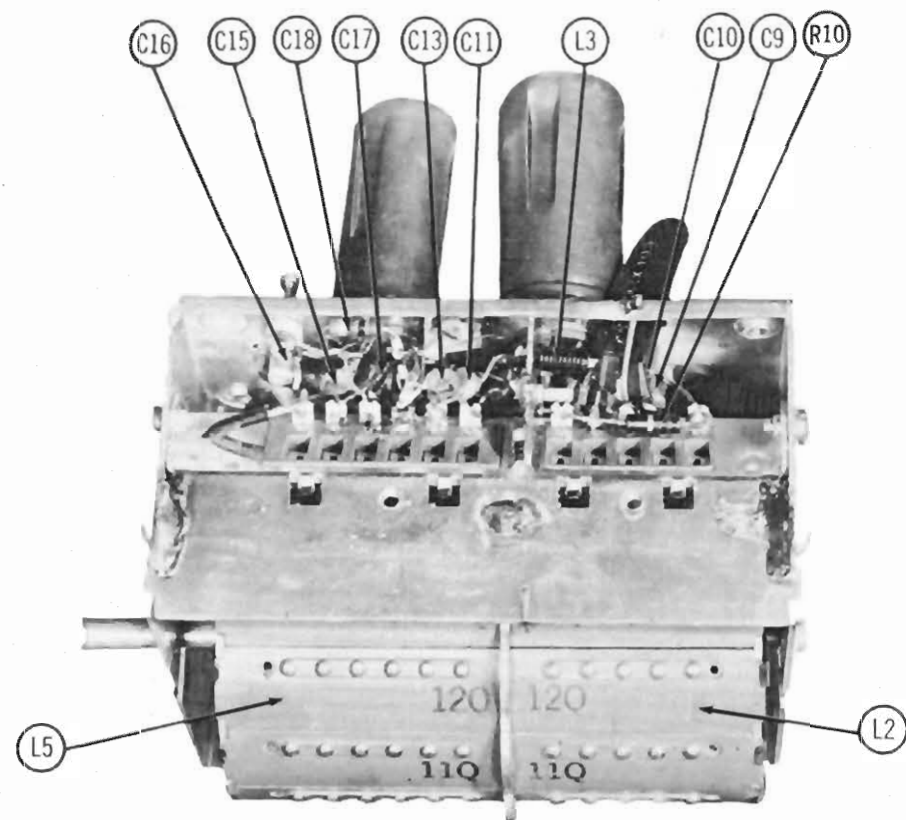
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"The listing of any available replacer
case a recommendation, warranty or s
as to the quality and suitability of suc
parts have been compiled from inform
Inc., by the manufacturers of the part
"Reproduction or use, without expres

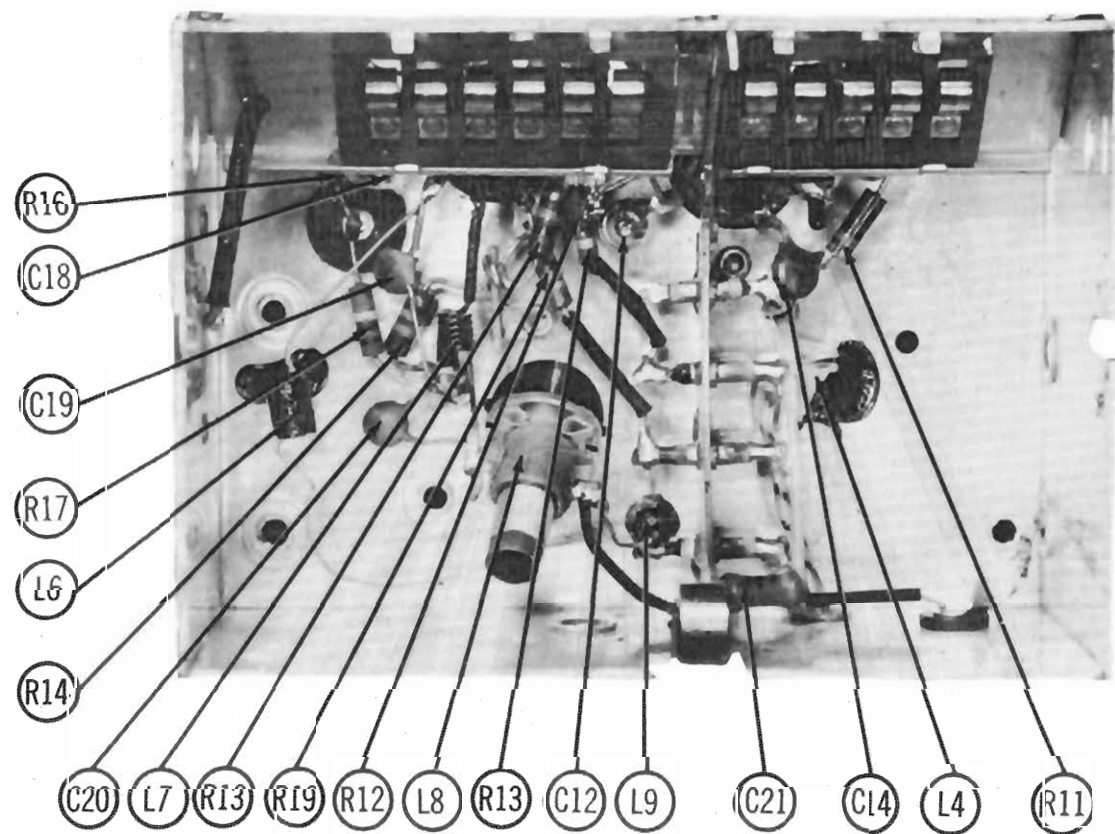




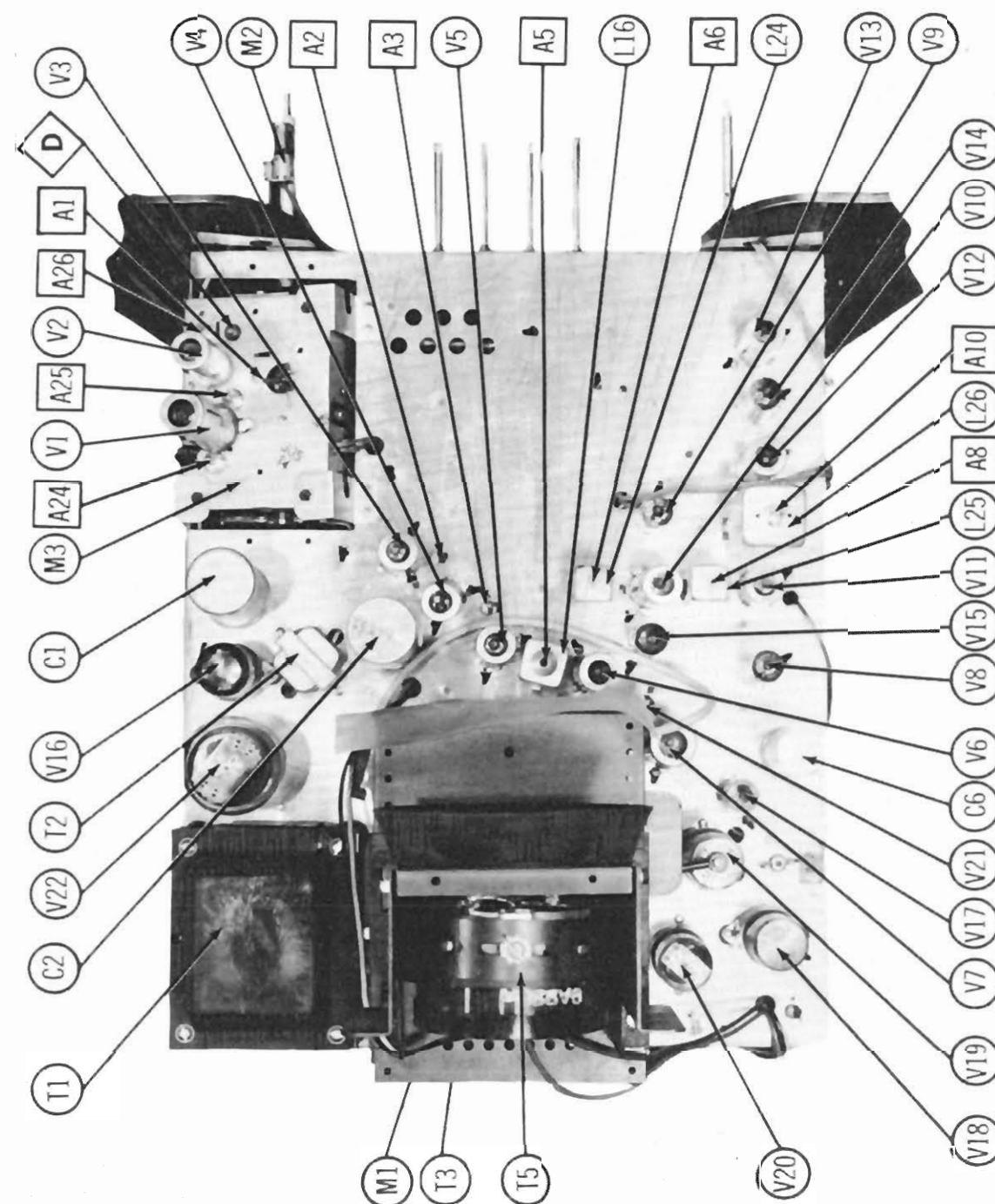
FIRESTONE MODELS 13-G-110A, 13-G-115,
13-G-116, 13-G-119, 13-G-120 (Code 334-2-MS31CA)



RF TUNER-RIGHT SIDE

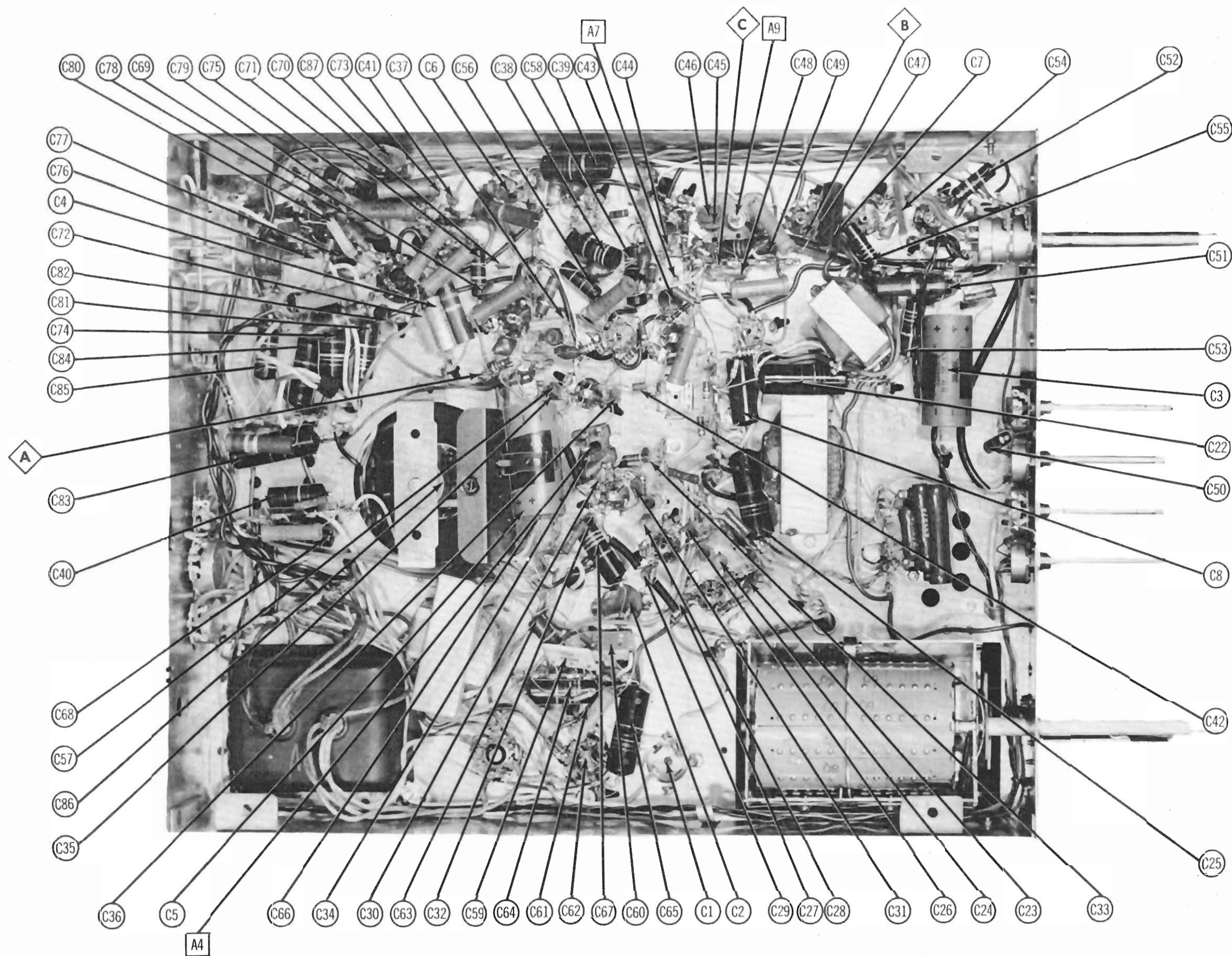


RF TUNER-BOTTOM VIEW



MAIN DOL SISSVCH

FIRESTONE MODELS 13-G-110A, 13-G-115, 13-G-116,
13-G-119, 13-G-120 (Code 334-2-MS31CA)



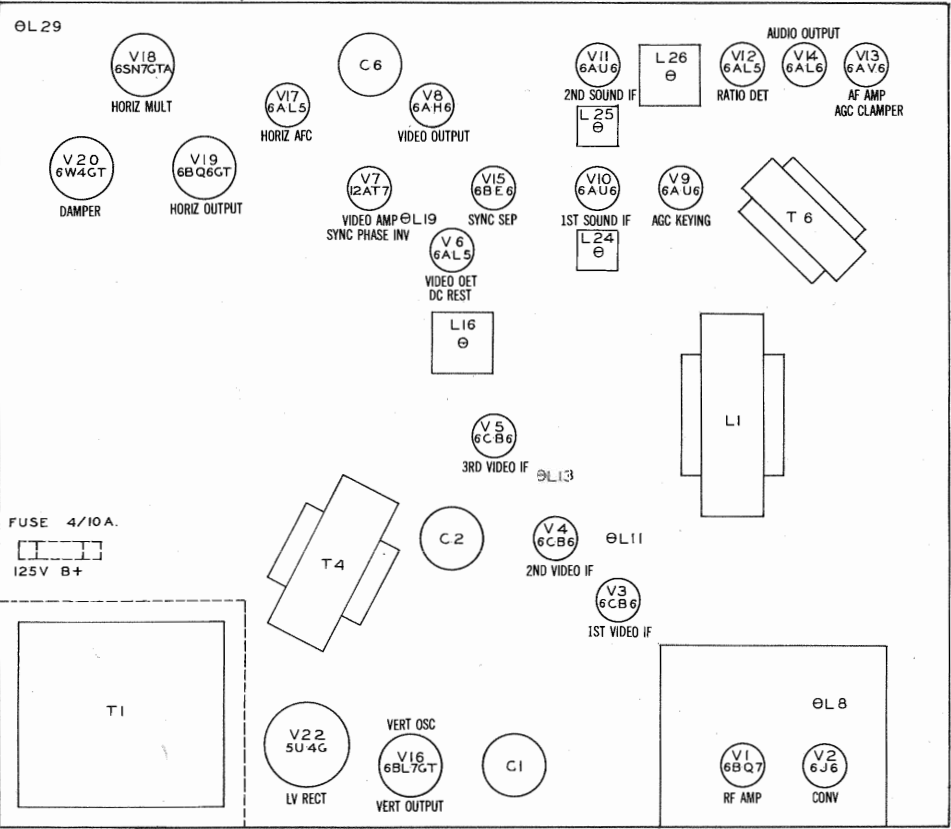
CHASSIS BOTTOM VIEW-CAPACITOR AND ALIGNMENT IDENTIFICATION

FIRESTONE MODELS 13-G-110A, 13-G-115, 13-G-116,
13-G-119, 13-G-120 (Code 334-2-MS31CA)

RESISTANCE MEASUREMENTS

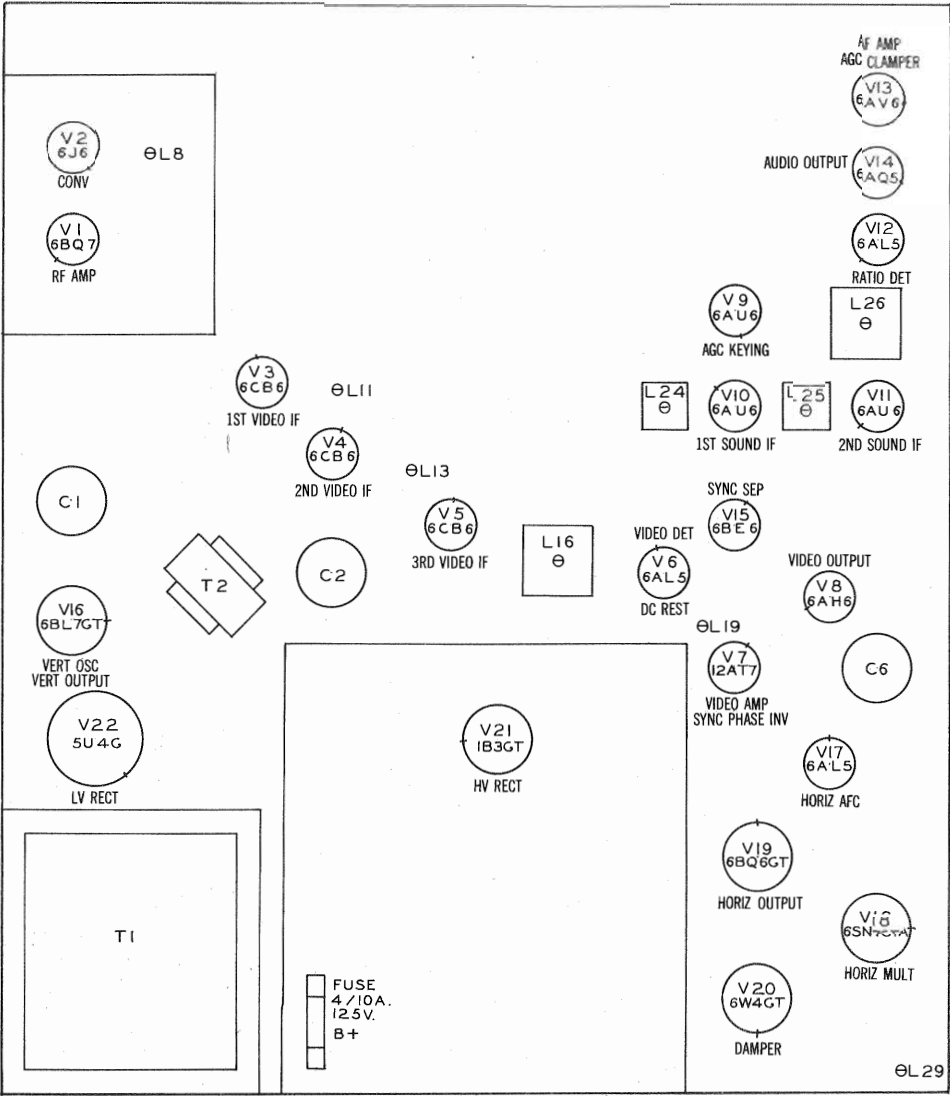
Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V 1	6BQ7	INF	720KΩ	0Ω	.1Ω	0Ω	1.9KΩ	†175KΩ	INF	0Ω
V 2	6J6	†12KΩ	†1.9KΩ	.1Ω	0Ω	230KΩ	10KΩ	0Ω		
V 3	6CB6	110KΩ	47Ω	.1Ω	0Ω	†3.2KΩ	†3.2KΩ	0Ω		
V 4	6CB6	100KΩ	47Ω	.1Ω	0Ω	†3KΩ	†3KΩ	0Ω		
V 5	6CB6	.3Ω	180Ω	.1Ω	0Ω	†3.4KΩ	†3.4KΩ	0Ω		
V 6	6AL5	.2Ω	0Ω	.1Ω	0Ω	1 Meg	0Ω	4.7KΩ		
V 7	12AT7	†9KΩ	4.7KΩ	.3Ω	0Ω	0Ω	†6.9KΩ	†820KΩ	2.2KΩ	.1Ω
V 8	6AH6	1 Meg	0Ω	.1Ω	0Ω	†6.1KΩ	†1.9KΩ	250Ω		
V 9	6AU6	†36KΩ	†1.9KΩ	.1Ω	0Ω	440KΩ	†380Ω	†1.9KΩ		
V 10	6AU6	2.8Ω	0Ω	0Ω	.1Ω	†2.9KΩ	†2.9KΩ	100Ω		
V 11	6AU6	56KΩ	0Ω	.1Ω	0Ω	†2.9KΩ	25KΩ	0Ω		
V 12	6AL5	INF	INF	.1Ω	0Ω	22KΩ	INF	22KΩ		
V 13	6AV6	10 Meg	0Ω	.1Ω	0Ω	670KΩ	670KΩ	550KΩ		
V 14	6AQ5	500KΩ	330Ω	0Ω	.1Ω	†1.9KΩ	†1.4KΩ	500KΩ		
V 15	6BE6	52KΩ	0Ω	.1Ω	0Ω	†820KΩ	70KΩ	1.5Meg		
V 16	6BL7GT	2.3Meg	#1.6Meg	0Ω	1 Meg	#16KΩ	3KΩ	.1Ω	0Ω	
V 17	6AL5	4.8Meg	4.8Meg	.1Ω	0Ω	8.7KΩ	INF	8.7KΩ		
V 18	6SN7GTA	175KΩ	#420KΩ	1.8KΩ	5.1Meg	†5.7KΩ	1.8KΩ	.1Ω	0Ω	
V 19	6BQ6GT	5.7KΩ	0Ω	INF	†11KΩ	470KΩ	#200KΩ	.1Ω	100Ω	Top Cap #16Ω
V 20	6W4GT	†51Ω	INF	190KΩ	4.7Meg	†67Ω	†51Ω	#16Ω	#16Ω	Top Cap #416Ω
V 21	1B3GT	PINS 1 - 8 HAVE INF RESISTANCE								
V 22	5U4G	INF	9.5KΩ	INF	17.4Ω	1.5KΩ	16Ω	INF	9.5KΩ	
V 23	21MP4	0Ω	1.1Meg	†51Ω	Pin 6 †51Ω	Pin 10 #15KΩ	Pin 11 200KΩ	Pin 12 .1Ω		

ALL CONTROLS SET FOR NORMAL OPERATION, NO SIGNAL APPLIED
† MEASURED FROM PIN 2 OF V22
MEASURED FROM PIN 3 OF V20



BOTTOM VIEW
TUBE PLACEMENT CHART

TUBE PLACEMENT CHART



TOP VIEW
TUBE FAILURE CHECK CHART

The following chart lists tubes whose failures are most likely to produce the indicated symptoms. Refer to tube placement chart for location and type of tube.

- POWER SUPPLY FAILURE**
No raster, no sound - V22, Fuse(M1)
- LOSS OF PICTURE OR SOUND**
No pic, no sound, has raster - V2, V3, V4, V5, V6
No pic, no sound, has snow - V1, V2, V3
No pic, has sound, has raster - V6, V7, V8, V23
Has pic, no sound - V10, V11, V12, V13, V14
Overloaded picture - V9, V13
- SYNC FAILURE**
No vert. sync. - V7, V16
No horiz. sync. - V7, V17, V18
No vert. or horiz. sync. - V7, V15
- SWEEP FAILURE**
No raster, has sound - V18, V19, V20, V21, V23
No vertical deflection - V16
Poor vert. linearity or foldover - V16
Poor horiz. linearity or foldover - V18, V19, V20
Narrow picture - V18, V19, V20, V21, V22
Vert. off freq. - V7, V16
Horiz. off freq. - V7, V17, V18

FIRESTONE MODELS 13-G-110A, 13-G-115,
13-G-116, 13-G-119, 13-G-120 (Code 334-2-MS31CA)

ALIGNMENT INSTRUCTIONS

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

The high voltage shock hazard can be eliminated by removing the horizontal multivibrator tube, V18.

VIDEO IF ALIGNMENT

Remove the converter tube, V2 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 3 volt battery to the ungrounded side of C25. 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.	25.1MC (Unmod)	Any	DC probe to point Δ Common to chassis.	A1	Adjust for maximum deflection.
"	"	23.1MC	"	"	A2	"
"	"	25.9MC	"	"	A3	"
"	"	24.1MC	"	"	A4	"
"	"	21.7MC	"	"	A5	Adjust for MINIMUM deflection.

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 an ungrounded tube shield floating over dummy converter tube, V2. Low side to chassis.	24MC (10MC Swp)	21.7MC 23MC 23.5MC 25.25MC 26.2MC	Any	Vert. amp. to point Δ . Low side to chassis.		Check for response curve similar to fig. 1. If necessary retouch A1 through A4 for desired response.

SOUND IF ALIGNMENT USING AM SIGNAL GENERATOR AND VTVM

DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	CHANNEL	CONNECT VTVM	ADJUST	REMARKS
.01MFD	High side to pin 1, (cathode) of 6AL5 (V6). Low side to chassis.	4.5MC (Unmod)	Any	DC probe to point Δ Common to chassis.	A6, A7, A8, A9	Adjust for maximum deflection.
"	"	"	"	DC probe to point Δ Common to chassis.	A10	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 V sawtooth voltage in scope for horizontal deflection.

DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
.01MFD	High side to pin 1 (Cathode) of 6AL5 (V6). Low side to chassis.	4.5MC (450KC Swp)	4.5MC	Any	Vert. amp. to point Δ . Low side to chassis.	A6, A7, A8, A9	Disconnect stabilizer capacitor C7. Adjust for curve of maximum amplitude and symmetry as in fig. 2.
"	"	"	"	"	Vert. Amp. to point Δ . Low side to chassis.	A10	Reconnect capacitor C7. Adjust so that 4.5MC occurs at center of crossover lines as in fig. 3. SLIGHTLY retouch A9 for maximum amplitude and straightness of crossover lines.

4.5MC TRAP ADJUSTMENT

Turn contrast control to maximum clockwise position.

DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
Direct	High side to pin 1 of 6AL5 (V12).	Not used	4.5MC (400% Mod.)	Any	Vert. amp. to pin 2 of picture tube.	All	Adjust for MINIMUM 400% indication on scope.

OSCILLATOR ALIGNMENT

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

The oscillator adjustment screws for each channel 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 120 Ω Carbon Resistors	Across antenna terminals with 120 Ω in each lead.	213MC (10MC Swp)	211.25MC	13	Vert. amp. to point Δ . Low side to chassis.	A12	Adjust to place sound marker in notch as in fig. 4. Video marker should be at 50%.
		207MC (10MC Swp)	205.25MC	12		A13	
		201MC (10MC Swp)	199.25MC	11		A14	
		195MC (10MC Swp)	193.25MC	10		A15	
		189MC (10MC Swp)	187.25MC	9		A16	
		183MC (10MC Swp)	181.25MC	8		A17	
		177MC (10MC Swp)	175.25MC	7		A18	
		171MC (10MC Swp)	169.25MC	6		A19	
		165MC (10MC Swp)	163.25MC	5		A20	
		159MC (10MC Swp)	157.25MC	4		A21	
		153MC (10MC Swp)	151.25MC	3		A22	
		147MC (10MC Swp)	145.25MC	2		A23	
		141MC (10MC Swp)	139.25MC				
		135MC (10MC Swp)	133.25MC				
		129MC (10MC Swp)	127.25MC				
		123MC (10MC Swp)	121.25MC				
		117MC (10MC Swp)	115.25MC				
		111MC (10MC Swp)	109.25MC				
		105MC (10MC Swp)	103.25MC				
		99MC (10MC Swp)	97.25MC				
		93MC (10MC Swp)	91.25MC				
		87MC (10MC Swp)	85.25MC				
		81MC (10MC Swp)	79.25MC				
		75MC (10MC Swp)	73.25MC				

ALIGNMENT INSTRUCTIONS (CONT.)

RF AND MIXER 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
11. Two 120 Ω Carbon Resistors	Across antenna terminals with 120 Ω in each lead.	207MC (10MC Swp)	205.25MC 209.75MC	12	Vert. amp. thru 10K Ω to point Δ . Low side to chassis.	A24, A25 A26	Adjust for response curve similar to fig. 5. with markers above 90%.
12. "	"	213MC (10MC Swp)	211.25MC 215.75MC	13	"		Check for response similar to fig. 5. If markers fall below 70% on any channel make slight compromise adjustments of A24, A25 and A26 with channel switch set that channel. Reread 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			
		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				
		81MC (10MC Swp)	79.25MC 83.75MC				
		75MC (10MC Swp)	73.25MC 77.75MC				

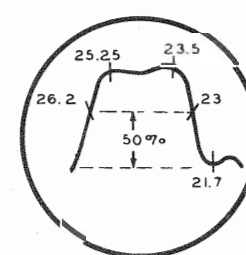


FIG. 1

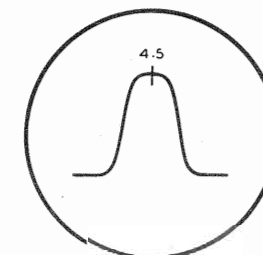


FIG. 2

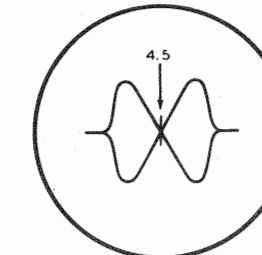


FIG. 3

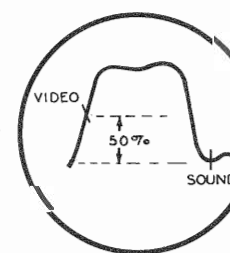


FIG. 4

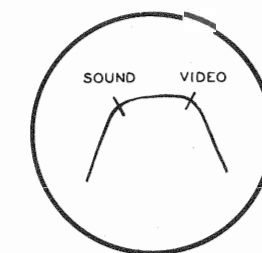


FIG. 5

FIRESTONE MODELS 13-G-110A, 13-G-115,
13-G-116, 13-G-119, 13-G-120 (Code 334-2-MS31CA)

PARTS LIST AND DESCRIPTIONS (Continued)

(COILS RF-IF) CONT.

ITEM No.	USE	DC RES.		REPLACEMENT DATA		NOTES
		PRI.	SEC.	FIRESTONE PART No.	MERIT PART No.	
L8	1st. Video IF	1.1Ω		31A-078	TV-112	
L9	RF Choke	1.2Ω		31B-239		
L10	Fl. Choke	0Ω		9A2033		
L11	2nd. Video IF	.3Ω	.3Ω	9A2230		
L12	Fl. Choke	0Ω		9A2033		
L13	3rd. Video IF	.3Ω	.3Ω	9A2230		
L14	Fl. Choke	0Ω		9A2033		
L15	RF Choke	2.5Ω		9A1979	TV-180	36 Microhenries
L16	4th. Video IF	.1Ω		9A2226	TV-101	Includes Trap
L17	Series Peaking Coil	7.5Ω		36A10		60 Microhenries wound 22K resistor
L18	Shunt Peaking Coil	24Ω		36A11		500 Microhenries
L19	4.5MC Trap	.3Ω		9A2074	TV-151	
L20	Series Peaking Coil	2.5Ω		9A1979	TV-180	36 Microhenries
L21	Shunt Peaking Coil	7.5Ω		36A10		60 Microhenries wound on 1.5K resistor
L22	Series Peaking Coil	12.5Ω		36A12	TV-182	160 Microhenries wound on 22K resistor
L23	Shunt Peaking Coil	14Ω		36A2	TV-184	190 Microhenries
L24	1st. Sound IF	2.8Ω		9A2168		
L25	2nd. Sound IF	1.7Ω	1.7Ω	9A2170	TV-113	
L26	Ratio Det.	3.4Ω	.7 CT	9A2269		
L27	Horiz. Osc.	.6Ω		9A2096	TV-163	Tertiary winding .15Ω
L28	Width Coil	.6Ω		9A2183		
L29	Horiz. Lin.	.16Ω		9A2262		

FUSES

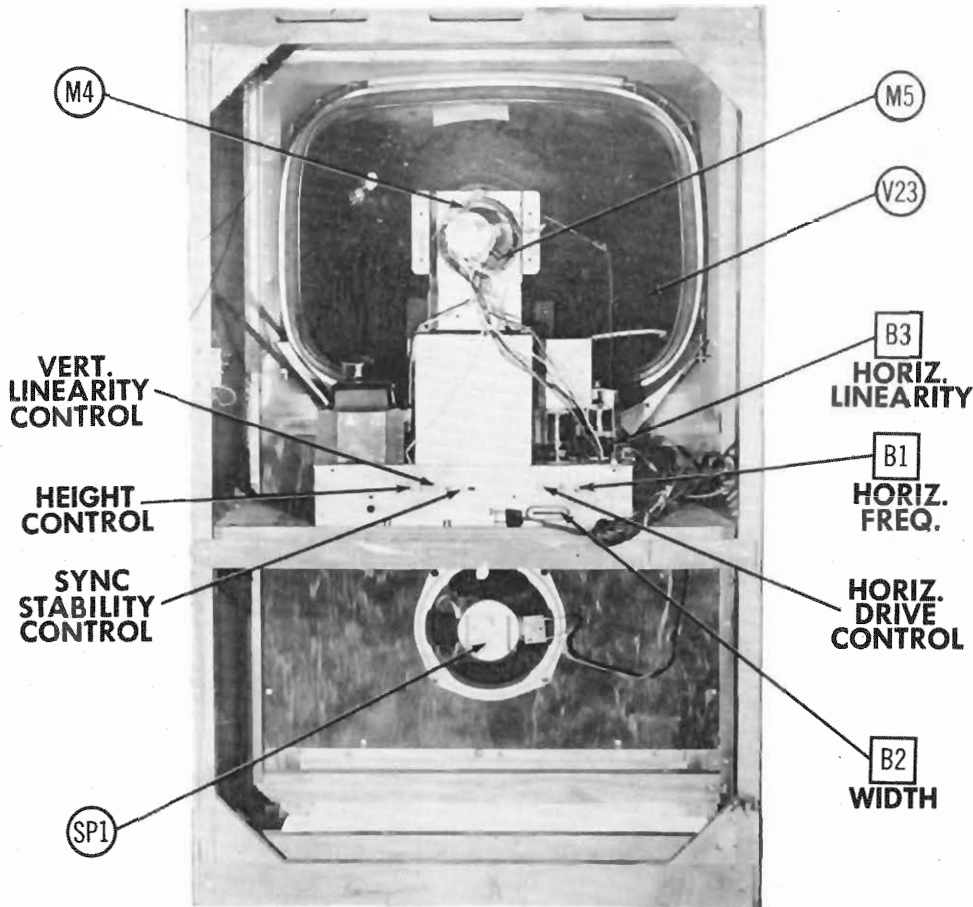
ITEM No.	TYPE	RATING	REPLACEMENT DATA					
			FIRESTONE PART No.		LITTELFUSE PART No.		BUSS PART No.	
			FUSE	HOLDER	FUSE	HOLDER	FUSE	HOLDER
M1	3AG-Slo-Blo	4/10 A. 125V	16X147-3	16X146	313.400	357001	MDL-4/10	4405

DIAL LIGHTS

ITEM No.	BASE TYPE	VOLTS	AMPS.	BEAD COLOR	REPLACEMENT DATA		NOTES
					FIRESTONE PART No.		
M2	Bayonet	7.5	.2	white	7A32		Type #51

MISCELLANEOUS

ITEM No.	PART NAME	FIRESTONE PART No.	NOTES
M3	RF Tuner	26A1006	
M4	Centering Magnet	2A419	
M5	Ion Trap	2A407	
	Ant. Coils	9A2278-2	Channel #3
	Ant. Coils	9A2278-3	Channel #4
	Ant. Coils	9A2278-4	Channel #5
	Ant. Coils	9A2278-5	Channel #6
	Ant. Coils	9A2278-6	Channel #7
	Ant. Coils	9A2278-7	Channel #8
	Ant. Coils	9A2278-8	Channel #9
	Ant. Coils	9A2278-9	Channel #10
	Ant. Coils	9A2278-10	Channel #11
	Ant. Coils	9A2278-11	Channel #12
	Ant. Coils	9A2278-12	Channel #13
	RF, Mixer Grid & Osc. Coil	9A2279-2	Channel #3
	RF, Mixer Grid & Osc. Coil	9A2279-3	Channel #4
	RF, Mixer Grid & Osc. Coil	9A2279-4	Channel #5
	RF, Mixer Grid & Osc. Coils	9A2279-5	Channel #6
	RF, Mixer Grid & Osc. Coil	9A2279-6	Channel #7
	RF, Mixer Grid & Osc. Coil	9A2279-7	Channel #8
	RF, Mixer Grid & Osc. Coil	9A2279-8	Channel #9
	RF, Mixer Grid & Osc. Coil	9A2279-9	Channel #10
	RF, Mixer Grid & Osc. Coil	9A2279-10	Channel #11
	RF, Mixer Grid & Osc. Coil	9A2279-11	Channel #12
	RF, Mixer Grid & Osc. Coil	9A2279-12	Channel #13
	Knob	10A779	Off/On Volume
	Knob	10A812	Channel Select or Fine Tuning
	Knob	10A820-1	Contrast
	Knob	10A821-1	Control Panel (Models 13-G-110A, 13-G-115, 13-G-119)
	Escutcheon	S-4X21	
	Back Cover Assembly	S-14X62	
	Mask	4X1192	Models 13-G-115, 13-G-116
	Safety Glass	17X170	
	Back Cover Assembly	S-14X65	
	Mask	4X1195	Models 13-G-119, 13-G-120.
	Safety Glass	17X172	
	Back Cover Assembly	S-14X58	
	Mask	4X1180	Model 13-G-110A
	Safety Glass	17X166	



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 control at the center of its range and adjust the horizontal frequency slug (B1) until the picture falls into sync.

Adjust the horizontal drive control for the best compromise between brightness and linearity.

Adjust the width slug (B2) for a picture slightly wider than necessary to fill the picture mask horizontally.

Adjust the horizontal linearity slug (B3) for a picture that is symmetrical from left to right.

SYNC STABILITY CONTROL ADJUSTMENT

Tune set to strongest TV signal available.

Turn the sync stability control clockwise until bending of the picture occurs at the top, then turn counter clockwise until the bending just disappears.

DISASSEMBLY INSTRUCTIONS

1. Remove 4 push on type control knobs from front panel.
2. Remove 2 wood & 2 metal screws. Remove rear cover.
3. Disconnect built-in antenna & speaker.
4. Remove 5 chassis bolts. Remove chassis.
5. Remove 4 speaker nuts. Remove speaker.

NOTE:
FOR PICTURE TUBE REMOVAL IT IS NECESSARY TO REMOVE CHASSIS AS OUTLINED ABOVE.

FIRESTONE MODELS 13-G-110A, 13-G-115,
13-G-116, 13-G-119, 13-G-120 (Code 334-2-MS31CA)

PARTS LIST AND DESCRIPTIONS

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA		RMA BASE TYPE	NOTES
		FIRESTONE PART No.	STANDARD REPLACEMENT		
V1	RF Amplifier	6BQ7	6BQ7	9A7	
V2	Converter	6J6	6J6	7BF	
V3	1st. Video IF Amp.	6CB6	6CB6	7CM	
V4	2nd. Video IF Amp.	6CB6	6CB6	7CM	
V5	3rd. Video IF Amp.	6CB6	6CB6	7CM	
V6	Video Detector-DC Restorer	6AL5	6AL5	6BT	
V7	Video Amplifier-Sync Phase Inv.	12AT7	12AT7	9A	
V8	Video Output	6AH6	6AH6	7BK	
V9	AGC Keying	6AU6	6AU6	7BK	
V10	1st. Sound IF Amp.	6AU6	6AU6	7BK	
V11	2nd. Sound IF Amp.	6AU6	6AU6	7BK	
V12	Ratio Detector	6AL5	6AL5	6BT	
V13	AF Amplifier-AGC Clamper	6AV6	6AV6	7BT	
V14	Audio Output	6AQ5	6AQ5	7BZ	
V15	Sync Separator	6BE6	6BE6	7CH	
V16	Vert. Oscillator-Vert. Output	6BL7GT	6BL7GT	8BD	
V17	Horiz. AFC	6AL5	6AL5	6BT	
V18	Horiz. Mult.	6SN7GTA	6SN7GTA	8BD	
V19	Horiz. Output	6BQ6GT	6BQ6GT	6AM	
V20	Damper	6W4GT	6W4GT	4CG	
V21	HV Rectifier	1B3GT	1B3GT	3C	
V22	LV Rectifier	5U4G	5U4G	5T	

CATHODE-RAY TUBE

ITEM No.	REPLACEMENT DATA		RMA BASE TYPE	NOTES
	FIRESTONE PART No.	SYLVANIA PART No.		
V23	21MP4		12C	

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		NOTES
		FIRESTONE PART No.	AEROVOX PART No.	
C1A	475	45X390	AFH3-46	UPT84245
C1B	450	45X391	AFH3-142	UPT4445-V10
C2A	450	45X391	AFH3-142	UPT4445-V10
C3	30	45X393	PRS450/30	BR3045A
C4	5	45X378	PRS150/4	TC30
C5	30	45X393	PRS450/30	BR3045A
C6A	200	45X392	AFH3-137	UPT2145-V5
C7	5	45X378	PRS150/4	TC30
C8	5	45X378	PRS150/4	TC30
C9	3-9	31B-207		829-10
C10	3-6	CD8C1R6C	SIL.5NP0	TC2-1.5
C11	1.5	CD8C1R5M	SIL.5NP0	TC2-1.5
C12	5-3	31B-206		829-3
C13	47	CD8X470K	SI47N750	TCN-47
C14	1000	CD8X102Z	BPD-001	DD-102
C15	47	CD8Q470K	NT-5447	TCN-47
C16	5-3	31B-206		829-3
C17	10	CD10C100K	SI10N750	TCN-10
C18	5	CD8U050C	SI5NP0	TC2-4.7
C19	1000	CD8X102Z	BPD-001	DD-102
C20	6.8	CD8C1R6C	SIL.5NP0	TC2-6.8
C21	120	120-055	SI120	D6-121
C22	22	RCPI0M2224M	P488-22	TM5D1
C23A	1000	80X3	BPD-2X001	DD-2-102
C23B	1000	80X1	BPD-001	DD-102
C24	1000	80X1	BPD-001	DD-102
C25	22	RCPI0M2224M	P488-22	TM5D1
C26A	1000	80X3	BPD-2X001	DD-2-102
C27	1000	80X1	BPD-001	DD-102
C28	1000	80X1	BPD-001	DD-102
C29	1000	80X1	BPD-001	DD-102
C30	1000	80X1	BPD-001	DD-102
C31	1000	80X1	BPD-001	DD-102
C32	1000	80X1	BPD-001	DD-102
C33	1000	80X1	BPD-001	DD-102
C34	47	47X603	SI47	D6-470
C35	1000	80X1	BPD-001	DD-102
C36	5	47X562	SI5NP0	TC2-4.7
C37	360	47X568		
C38	.047	400	RCPI0M4473M	P488-047
C39	.1	400	RCPI0M4104M	P488-01
C40	.1	200	RCPI0M2104M	P288-1
C41	1000	80X1	BPD-001	DD-102
C42	1.5	47X584	SIL.5NP0	TC2-1.5
C43	5000	47X507	BPD-005	DD-502
C44	100	47X604	SI100	D6-101
C45	5000	47X507	BPD-005	DD-502
C46	5000	47X507	BPD-005	DD-502
C47	1000	80X1	BPD-001	DD-102
C48	470	47X525	I468-0005	D6-471
C49	.047	200	RCPI0M2473M	P288-047
C50	.0047	400	RCPI0M4472M	P688-0047
C51	.0047	400	RCPI0M4472M	P688-0047
C52	.01	400	RCPI0M4103M	P488-01
C53	.047	400	RCPI0M4473M	P488-047

CAPACITORS (CONT.)

ITEM No.	RATING	REPLACEMENT DATA		NOTES
		FIRESTONE PART No.	AEROVOX PART No.	
C54A	.01	176X5		1PC-80
C54B	.250			
C55	.0047	600	RCPI0M6472M	P688-0047
C56	.01	400	RCPI0M4103M	P488-01
C57	1000	80X1	BPD-001	DD-102
C58	.047	400	RCPI0M4473M	P488-047
C59A	.002			
C59B	.005			
C60	4700	500	47X543	I464-005
C61	.0047	400	RCPI0M4472M	P688-0047
C62	100	600	47X604	SI100
C63	.01	800	RCPI0M6103M	P688-01
C64	.047	800	RCPI0M6473M	P688-047
C65	.1	600	RCPI0M6104M	P688-1
C66	.1	600	RCPI0M6104M	P688-1
C67	.047	600	RCPI0M6473M	P688-047
C68	.015	600	RCPI0M6153M	P688-015
C69	1000	80X1	BPD-001	DD-102
C70	1000	80X1	BPD-001	DD-102
C71	.01	400	RCPI0M4103M	P488-01
C72	270	500	RCM20A271K	I469-0003
C73	.0047	600	RCPI0M6472M	P688-0047
C74	.22	200	RCPI0M2224M	P288-22
C75	.047	200	RCPI0M2473M	P288-047
C76	4700	500	47X543	I464-005
C77	.1	600	RCPI0M4104M	P688-1
C78	330	500	47X570	I469-00035
C79	330	500	47X570	I469-00035
C80	270	500	RCM20A271K	I469-0003
C81	.047	400	RCPI0M4473M	P488-047
C82	1000	80X1	BPD-001	DD-102
C83	.15	400	RCPI0M4154M	P488-15
C84	.1	400	RCPI0M4104M	P488-1
C85	.047	400	RCPI0M4473M	P488-047
C86	500	20000	MMC-20T5	HV20C
C87A	10000		BPD-01	DD-3-103
C87B	10000		BPD-01	DD-3-103

Note 1. Some models use 60MFD in this application.
 Note 2. Some models use 4MFD in this application (Part #45X361).
 Note 3. Some models use 180MMF in this application (Part #47X564).
 * Items C59A, C59B, C59C, R75A, R75B, R75C are combined in one unit.
 † Items C54A, C54B, C54C, R61A, R61B are combined in one unit.
 ‡ When replacing items separately C54B, C54C should total 250MMF.

CONTROLS

ITEM No.	RATING	REPLACEMENT DATA		NOTES
		FIRESTONE PART No.	IRC PART No.	
R1A	50KΩ	40X361A	Q11-123	AG-44-S
R2A	50KΩ	40X361B	Q11-123	AG-44-S
R3A	2.5Meg	40X-233-C	Q11-259	AG-84-S
R4A	50KΩ	40X333-A	Q11-133	AG-58-S
R5A	150KΩ	40X333-A	Q11-123	AG-52-S
R6A	1 Meg	40X334-D	Q11-137	AG-61-S
R7A	1 Meg	40X334-D	Q11-137	AG-61-S
R8	7.5Meg	40X223C	QJ-337	
R9A	3000Ω	78X9		

Note 1. Some models use alternate control (Part No. 40X364).
 Note 2. Some models use alternate control (Part No. 78X12).
 * CONCENTRIK EQUIVALENT KIT K-2, BASE ELEMENTS B17-112 & P1-310 (Panel).
 ‡ B13-117 & R2-322 (Rear) & SWITCH 76-2.

RESISTORS

ITEM No.	RATING	REPLACEMENT DATA		NOTES
		FIRESTONE PART No.	IRC PART No.	
R10	15KΩ	12A-004	BTS-15K	
R11	47KΩ	12A-039	BTS-47K	
R12	100KΩ	12A-094	BTS-100K	
R13	100KΩ	12A-166	BTS-100K	
R14	160KΩ-5%	12A-167	BTS-160K-5%	
R15	1500Ω	12A-183	BTS-1500	
R16	10KΩ	12A-040	BTS-10K	
R17	220KΩ	12A-041	BTS-220K	
R18	10KΩ	12A-040	BTS-10K	
R19	10KΩ	12A-040	BTS-10K	
R20	8200Ω	B83822		
R21	470Ω	B83470		
R22	1000Ω	B85102	BTS-1000	
R23	1000Ω	B85102	BTS-1000	
R24	150Ω	B85151	BTS-150	
R25	22KΩ	B83223		
R26	470Ω	B83470		
R27	1000Ω	B85102	BTS-1000	
R28	150Ω	B85151	BTS-150	
R29	22KΩ	B83223		
R30	180Ω	B84181	BTS-180	
R31	1500Ω	B84182	BTS-1500	
R32	3.9Meg-5%	B83395	BTS-3.9Meg-5%	
R33	330KΩ-5%	B83334	BTS-330K-5%	

RESISTORS (CONT.)

ITEM No.	RATING	REPLACEMENT DATA		NOTES
		FIRESTONE PART No.	IRC PART No.	
R59	68KΩ	B84683	BTS-68K	
R60	10 Meg	B85106	BTS-10 Meg	
R61A	500KΩ	176X5		
R62	47KΩ	B84473	BTS-47K	
R63	330Ω	DC-4331	5HK-D1	
R64	1000Ω	D64102	BTS-1000	
R65	47KΩ	PT622	BTS-47K	
R66	10KΩ	B84103	BTS-10K	
R67	270KΩ	B84274	BTS-270K	
R68	1.5 Meg	B84155	BTS-1.5 Meg	
R69	68KΩ	B84683	BTS-68K	
R70	520KΩ	B84824	BTS-520K	
R71	2200Ω	B83222	BTS-2200	
R72	3300Ω	B84332	BTS-3300	
R73	2200Ω-5%	B83222	BTS-2200-5%	
R74	1000Ω	PT601	BTS-1000	
R75A	22KΩ	BTS-22K		
B	8200Ω	BTS-8200		
C	620Ω	BTS-620		
R76	470KΩ	B84474	BTS-470K	
R77	1.5 Meg	B84155	BTS-1.5 Meg	
R78	1.2 Meg	B84125	BTS-1.2 Meg	
R79	10KΩ	B84103	BTS-10K	
R80	180KΩ	B84184	BTS-180K	
R81	1500Ω	B84223	BTS-1500	
R82	1500Ω	B84152	BTS-1500	

Note 1. Some models use a 12KΩ resistor in this application.
 Note 2. Not used in all models.
 † Items R61A, R61B, C54A, C54B, C54C are combined in one unit.
 ‡ Items R75A, R75B, R75C, C59A, C59B, C59C are combined in one unit.

TRANSFORMER (POWER)

ITEM No.	RATING	REPLACEMENT DATA		NOTES
		FIRESTONE PART No.	STANCOR PART No.	
T1	117VAC 1.82 A	600VCT 240ADC	5VAC 3A	53X324

① Use for Secondary #3.

TRANSFORMER (SWEEP CIRCUITS)

ITEM No.	RATING	REPLACEMENT DATA		NOTES
		FIRESTONE PART No.	STANCOR PART No.	
T2	194Ω 440Ω tap 15 Ω 240, 400 Ω	54X8 53X326	A-8125	A-3000 ①
T3	15 Ω 1600Ω Tap 4.5 Ω	51X156	A-8141	A-3039
T4	18Ω 50Ω	9A2256 9A2274 ②	DY-9A	MDF-70
T5A	18Ω 50Ω	9A2256 9A2274 ②	DY-9A	MDF-70

1. Drill one new mtg. hole.
 2. Alternate deflection yoke.

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	RATING	REPLACEMENT DATA		NOTES
		FIRESTONE PART No.	STANCOR PART No.	
T6	5.8KΩ 3.2Ω 495Ω .9Ω	51X150A	A-3850	A-3850

SPEAKER

ITEM No.	RATINGS	REPLACEMENT DATA		NOTES
		FIRESTONE PART No.	JENSEN PART No.	
SPI	8" PM 3.7Ω	C-12A477 12A504 ① 12A502 ②	ST-115 Mod. P8-V	8A21

FILTER CHOKE

ITEM No.	RATINGS	REPLACEMENT DATA
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