

**GAROD
SERIES 10TZ, 12TZ, 15TZ**

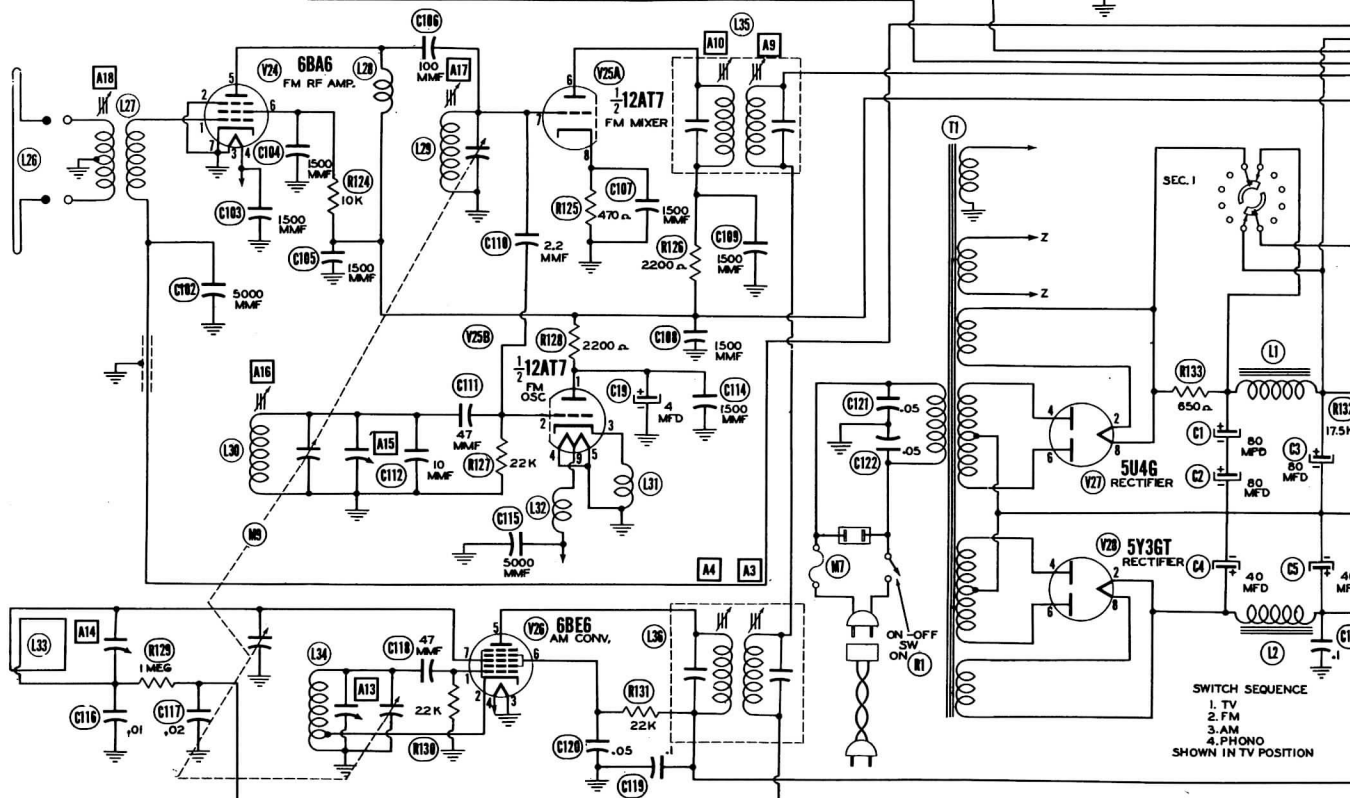
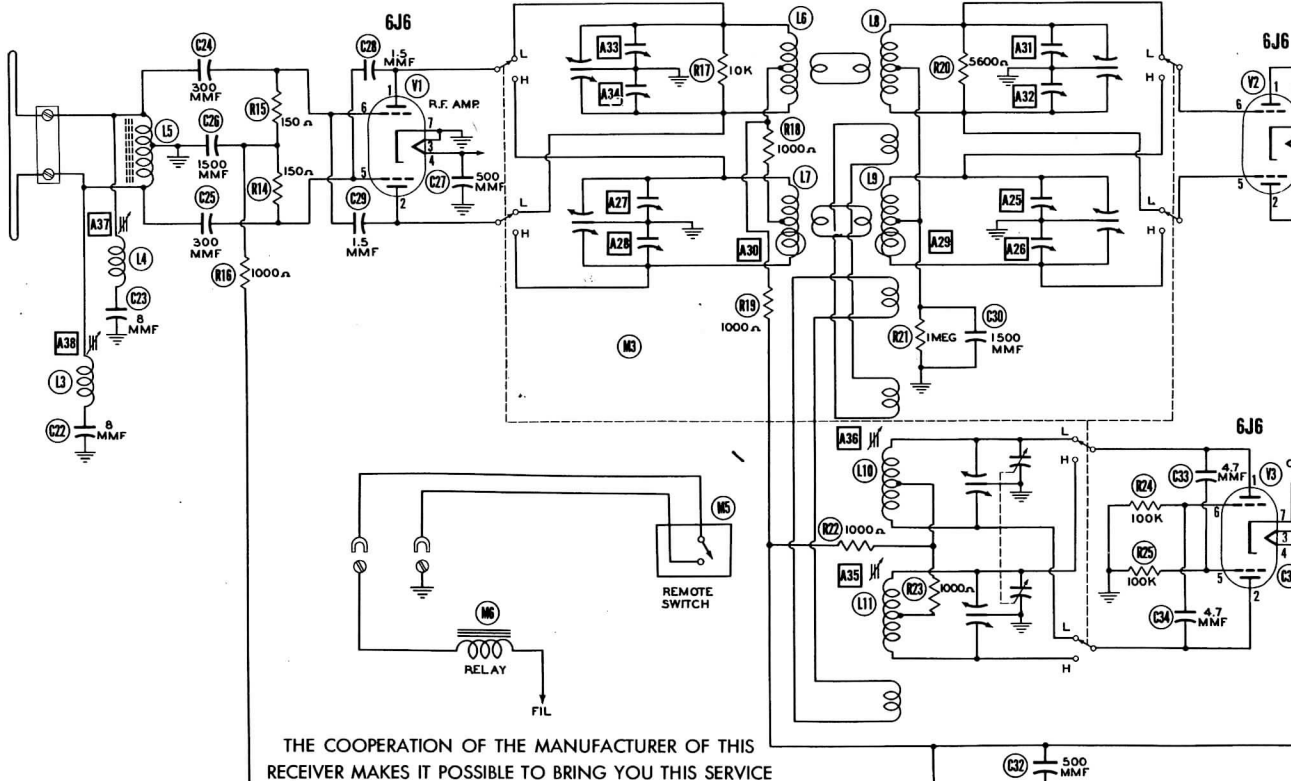
TRADE NAME	Garod Models 10TZ1, 2, 3, 4, 5, 12TZ1, 2, 3, 4, 5, 12TZ6A, 12TZ7A, 15TZ6, 15TZ7
MANUFACTURER	Garod Radio Corp., 70 Washington Street, Brooklyn 1, New York
TYPE SET	AM FM Television Receiver
TUBES	Twenty-nine. (Thirty-two in 12TZ6A, 12TZ7A, 15TZ6, 15TZ7.)
POWER SUPPLY	105-125 Volts, 60 cycle AC
TUNING RANGE	AM 540-1650KC, FM 88-108MC Television Channels 2 thru 13.
	RATING 2.4 Amps @ 117 Volts. (3.05 Amps on 12TZ6A, 7A, 15TZ6, 7)

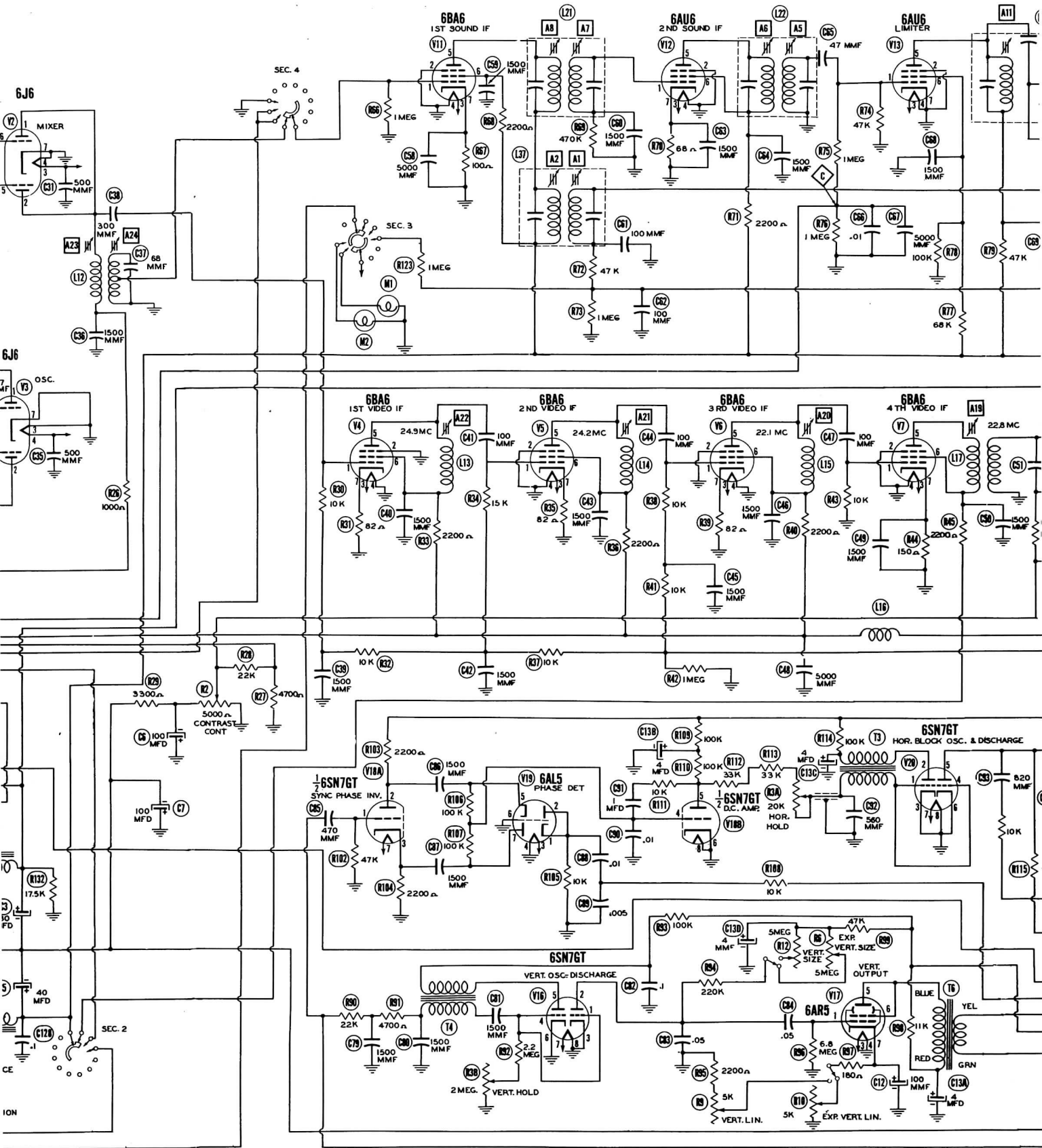
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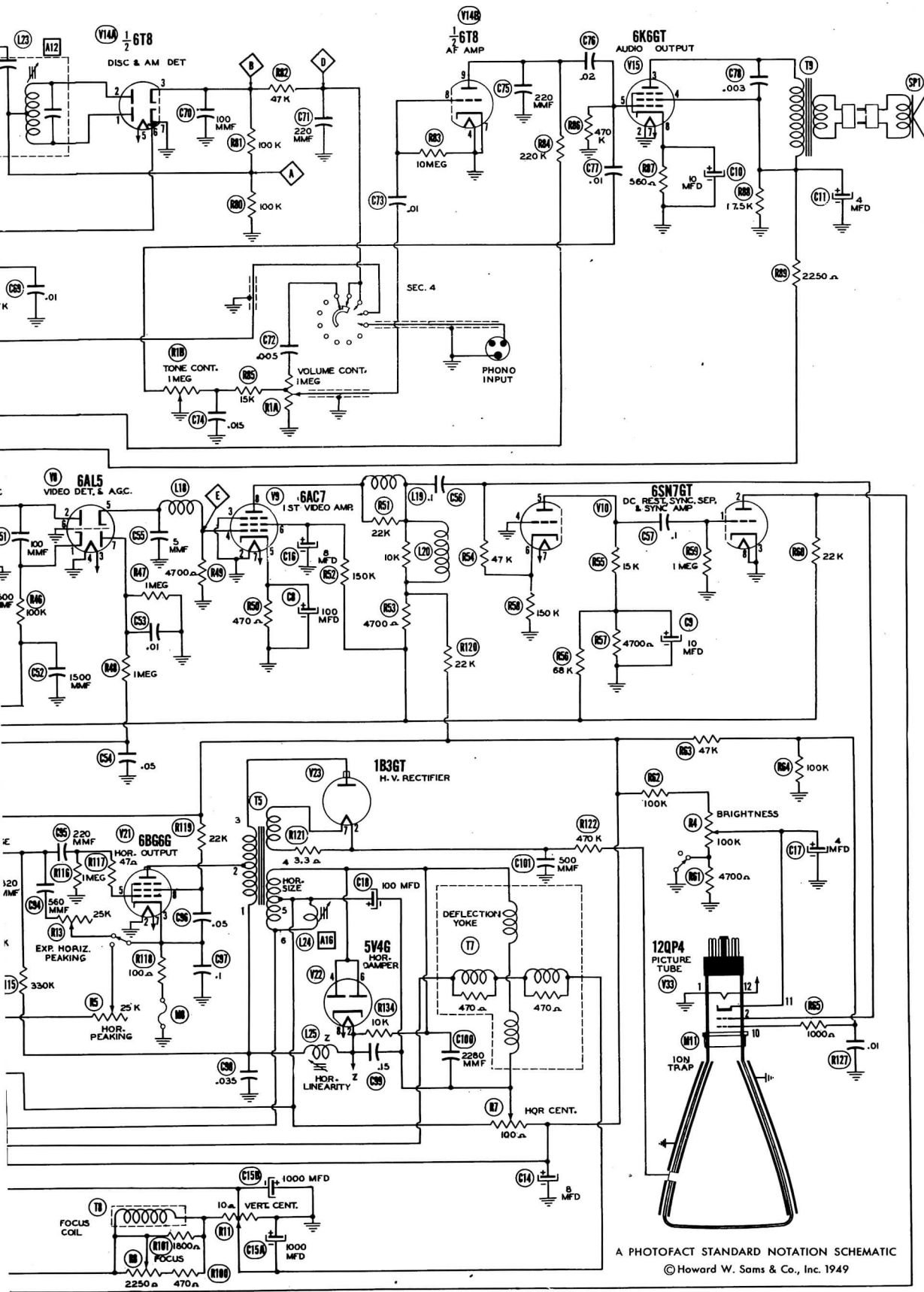
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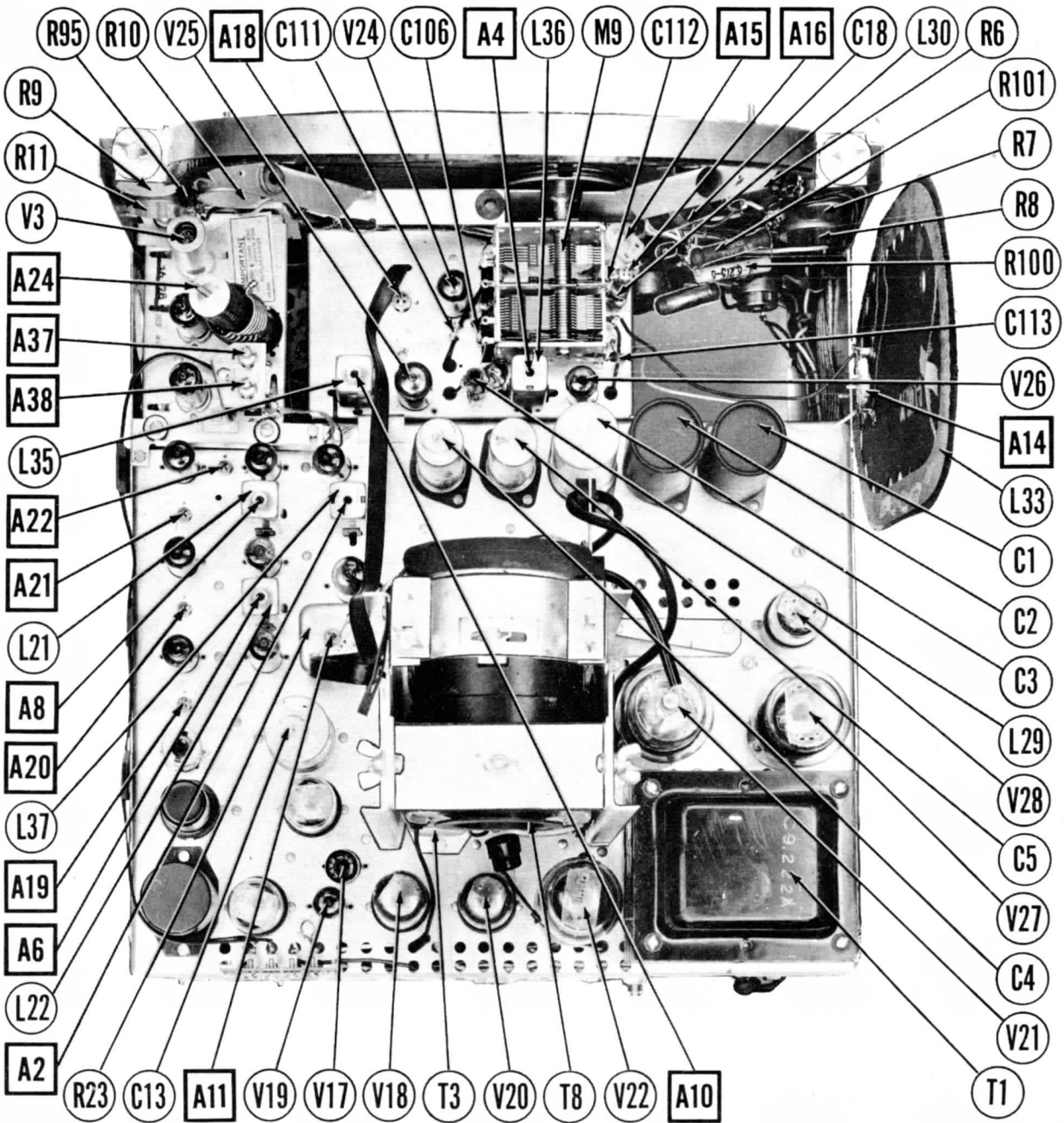




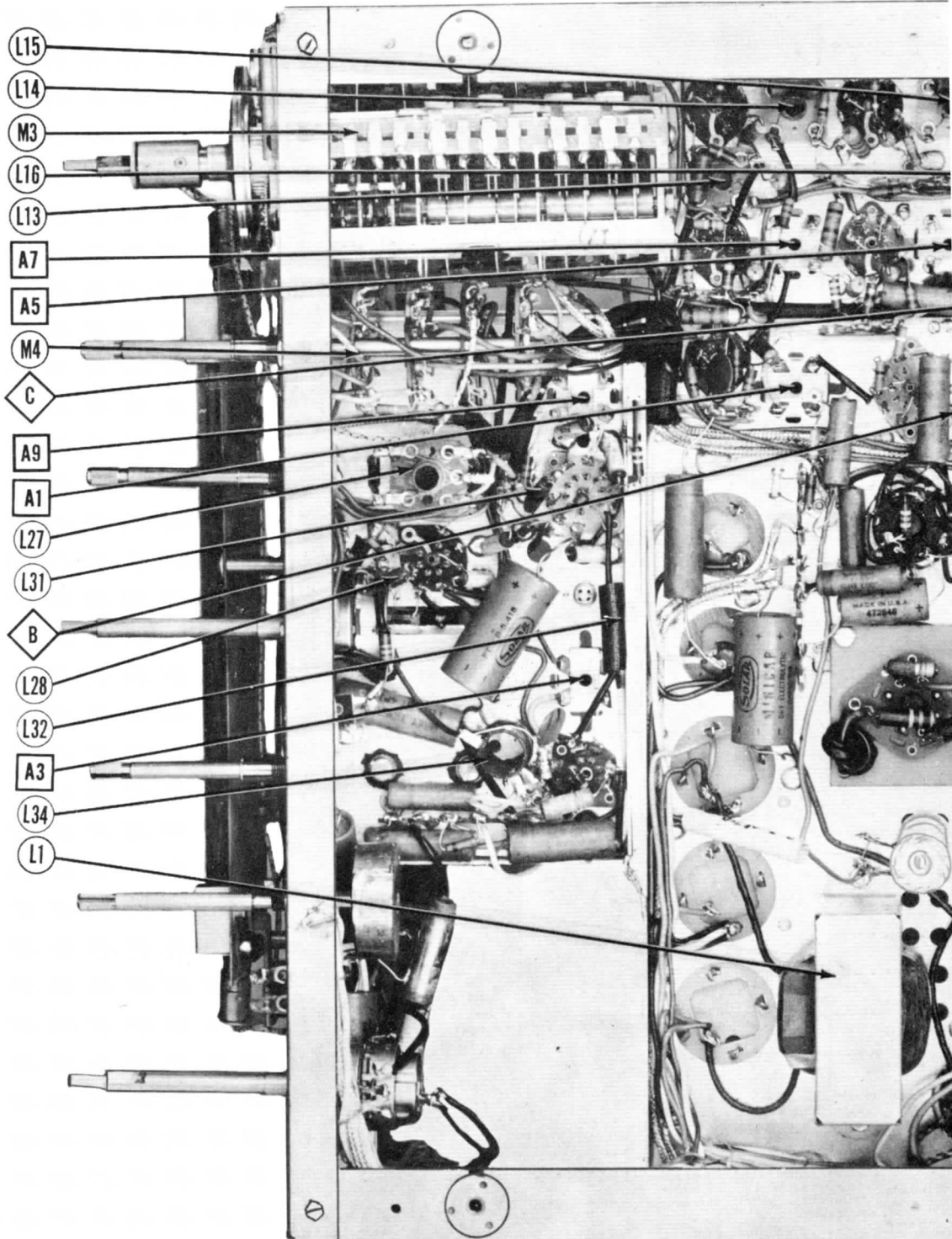
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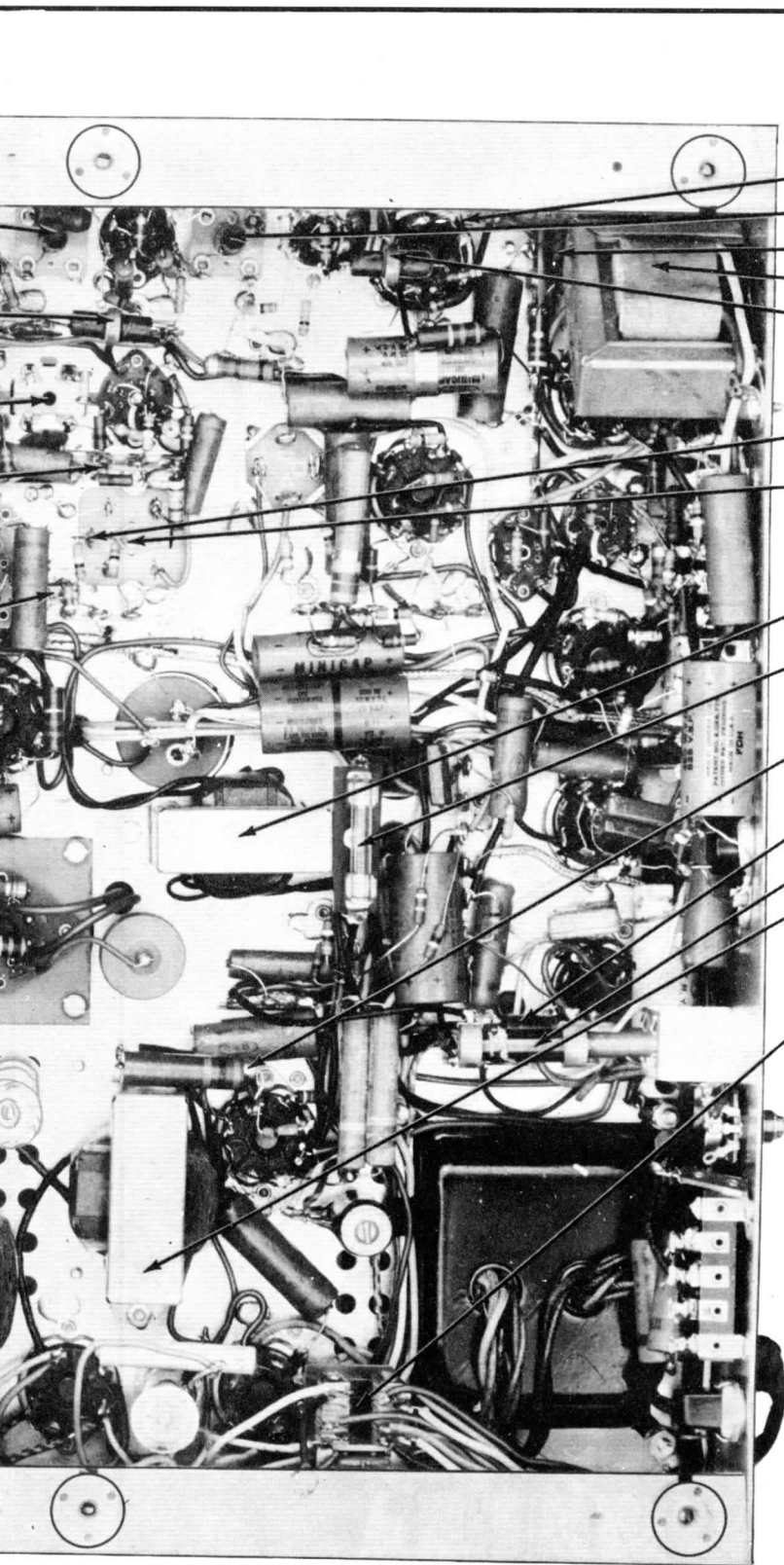
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CHASSIS TOP VIEW



CHASSIS BOTTOM VIEW-TRANS.,INDUCT



L19

L17

L20

T6

L18

A

A12

T9

M7

M8

L25

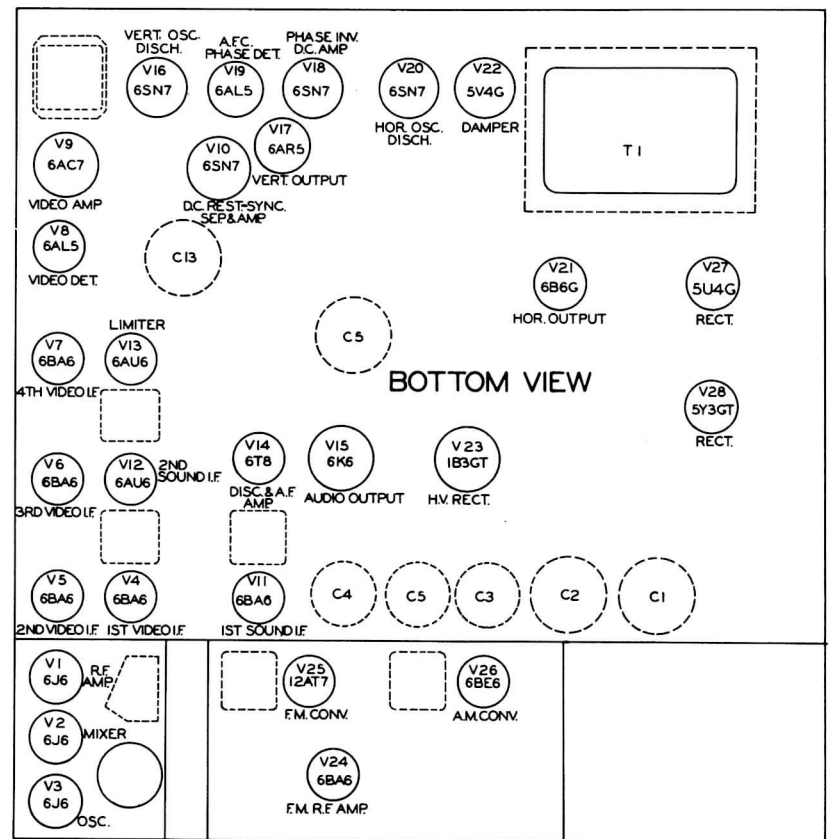
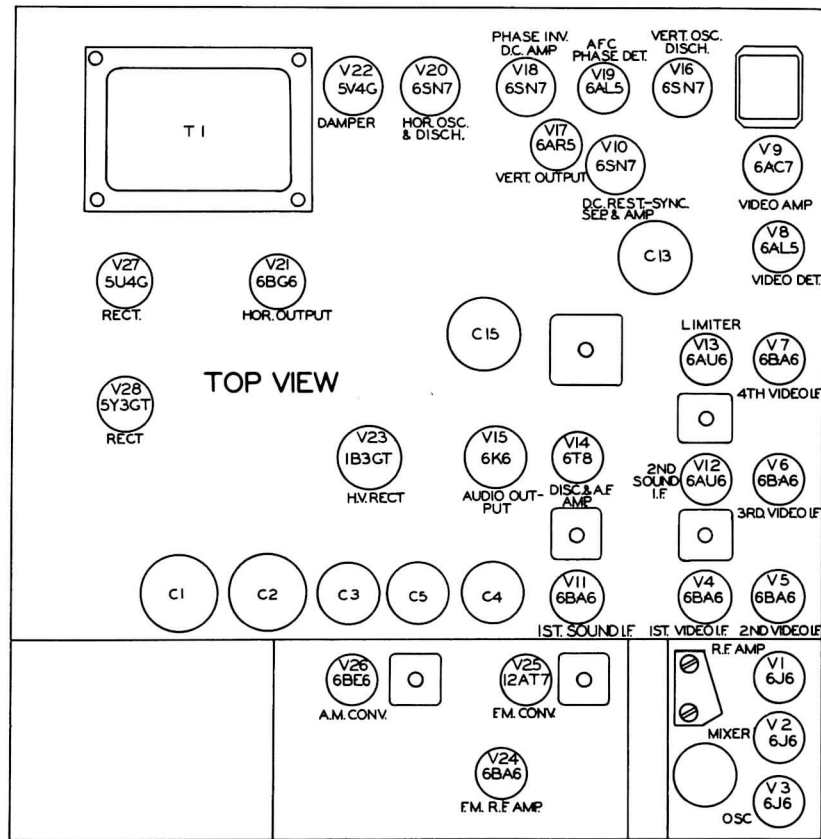
L24

L2

M6

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RECEIVER AND ALIGNMENT IDENTIFICATION



TUBE PLACEMENT CHART

ALIGNMENT INSTRUCTIONS

AM-FM ALIGNMENT

PRE-ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

Remove the horizontal oscillator tube (V20) to disable the high voltage. To set pointer turn tuning cap. fully closed and set pointer to last reference mark at low frequency end of dial. Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated alignment screwdriver for adjusting.

AM IF ALIGNMENT

DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1. .1MFD	High side to pin 7 (Grid) 6BE6 (V26). Low side to chassis.	455KC (Modulated)	AM	1650KC	Across Voice Coil	A1, A2 A3, A4	Adjust for max. Output.

FM IF ALIGNMENT USING AM SIGNAL GENERATOR AND VTVM

Use frequency modulated signal with 60% modulation and 1 MC sweep. Use 120V sawtooth voltage in scope for horizontal deflection.

DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	BAND SWITCH POS.	CONNECT SCOPE	ADJUST	REMARKS
2. .01MFD	High side to pin 7 (Grid) of 12AT7 (V25). Low side to chassis.	20.25MC (1 MC Sweep)	20.25MC	FM	Vert. Amp. to point A. Low side to chassis.	A11, A5 A6, A7 A8, A9 A10	Adjust for maximum amplitude and symmetry with placement of marker as per Fig. 1.
3. .01MFD	"	"	"	"	Vert. Amp. to point B. Low side to chassis.	A12	Adjust so crossover point occurs at center of pattern as per Fig. 2. Slightly retouch A11 for maximum amplitude and straightness of crossover lines. Continue with step 5.

FM IF ALIGNMENT USING FM SIGNAL GENERATOR AND OSCILLOSCOPE

DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	CONNECT VTVM	ADJUST	REMARKS
2. .01MFD	High side to pin 7 (Grid) of 12AT7 (V25). Low side to chassis.	20.25MC	FM	108.5MC	DC Probe to point C. Common to chassis.	A5, A6 A7, A8 A9, A10	Adjust for maximum deflection.
3. .01MFD	"	"	"	"	DC Probe to point A. Common to chassis.	A11	" " " "
4. .01MFD	"	"	"	"	DC Probe to point B. Common to chassis.	A12	Adjust for zero reading. A positive and negative reading is obtained on either side of the correct setting.

AM-FM RF ALIGNMENT

DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
5.	Loop	1650KC (Modulated)	AM	1650KC	Across Voice Coil	A13	Fashion loop of several turns of wire and radiate signal into loop of receiver. Adjust for maximum output.
6.	"	1500KC (Mod.)	"	Tune for max. signal.	"	A14	Adjust for maximum output.
DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	CONNECT VTVM	ADJUST	REMARKS
7.	Two 150Ω carbon res. Insert 150Ω in each generator lead and connect across FM Ant. terminals.	108.5MC (Unmod.)	FM	108.5MC	DC Probe to point C. Common to chassis.	A15	Adjust for maximum deflection.
8.	Two 150Ω carbon res.	87.5MC (Unmod.)	"	87.5MC	"	A16	Adjust for maximum deflection. Repeat steps 7 and 8.
9.	Two 150Ω carbon res.	95MC (Unmod.)	"	Tune for maximum deflection	"	A17, A18	Adjust for maximum deflection.

TV ALIGNMENT

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

This receiver incorporates the same sound IF system for both TV and FM reception, therefore the alignment for sound IF system is outlined under steps 2, 3, and 4 of AM-FM receiver alignment.

VIDEO IF ALIGNMENT

Remove the RF Amp. and oscillator tubes (V1 & V3) while making the following adjustments.

DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	CHANNEL	CONNECT VTVM	ADJUST	REMARKS
10. 5000MVF	High side to point D. Low side to chassis.	22.8MC (No Mod.)	8	Across Video Det. Load (R49)	A19	Adjust for max. deflection
11. 5000MVF	"	22.1MC	"	"	A20	" " " "
12. 5000MVF	"	24.2MC	"	"	A21	" " " "
13. 5000MVF	"	24.9MC	"	"	A22	" " " "
14. 5000MVF	"	21.75MC	"	"	A23	" " " "
15. 5000MVF	"	20.25MC	"	"	A24	Adjust for min. deflection.

ALIGNMENT INSTRUCTIONS (CONT.)

OVERALL VIDEO IF RESPONSE CHECK

Connect the vertical amplifier of the oscilloscope a cross resistor R51. Connect the synchronized sweep voltage from the signal generator to the horizontal input of the oscilloscope.

DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
16. 5000MMF	High side to point D. Low side to chassis.	24MC (10MC Sweep)	20.25MC 21.8MC 24.2MC 24.75MC	8	Vert. Amp. across resistor R51.		Check pattern and placement of markers as per Fig.3. If necessary, slightly retouch A19 thru A23 to properly place markers.

RF AMP & MIXER ALIGNMENT

Replace the RF Amp tube V1 before starting the following alignment.

DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS	
17. Two 150Ω carbon res.	Insert 150Ω resistor in each lead and connect across the Antenna terminals.	213MC (10MC Sweep)	211.25MC and 215.75MC	13	Vert. Amp. to point D. Low side to chassis.	A25, A26, A27, A28	Adjust for response approximately as shown in Fig.4 with markers more than 70% of peak amplitude. Keep RF and Mixer Trimmer pairs in approximately same relative position.	
18. Two 150Ω carbon res.	"	177MC (10MC Sweep)	175.25MC and 179.75MC	7	"	A29, A30	Adjust rings for waveform as shown in Fig.4.	
19. Two 150Ω carbon res.	"	183MC (10MC Sweep)	181.25MC and 185.75MC	8	"		Check response on channels 8 thru 12. Slight adjustment of A25, A26, A27 and A28 may be required to obtain optimum performance on all channels.	
			189MC (10MC Sweep)	187.25MC and 191.75MC				9
			195MC (10MC Sweep)	193.25MC and 197.75MC				10
			201MC (10MC Sweep)	199.25MC and 203.75MC				11
			207MC (10MC Sweep)	205.25MC and 209.75MC				12
			20. Two 150Ω carbon res.	"				85MC (10MC Sweep)
21.	"	79MC (10MC Sweep)	77.25MC and 81.75MC	5	"		Check response on channels 2 thru 5. Slight adjustment of A31, A32, A33 and A34 may be required to obtain optimum response on all channels.	
			69MC (10MC Sweep)	67.25MC and 71.75MC				4
			63MC (10MC Sweep)	61.25MC and 65.75MC				3
			57MC (10MC Sweep)	55.25MC and 59.75MC				2

OSCILLATOR ALIGNMENT

Replace the oscillator tube V3 before making the following adjustments. Set the fine tuning control to the midpoint of its tuning range.

The oscillator tube in this tuner is specially selected for low microphonism. Should microphonics be experienced it is suggested the mixer and RF tube be tried as an oscillator. If these tubes are also microphonic, try other 6J6 tubes until one is found that is satisfactory.

DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	CHANNEL	CONNECT VTVM	ADJUST	REMARKS
22. Two 150Ω carbon res.	Insert 150Ω in each generator lead and connect across Antenna terminals.	215.75MC	13	DC Probe to point C. Common to chassis.	A35	Adjust for max. deflection
23. Two 150Ω carbon res.	"	87.75MC	6	"	A36	" " " "
24.	Check to see that all other channels are received well within the limits of the fine tuning control. If not, some compromise may be made by adjusting A35 for the high-band channels and A36 for the low-band channels.					
25.	Wave traps A37 and A38 are used for specific types of interference and their alignment will depend upon the type encountered. With the receiver tuned to the channel having the interference set fine tuning control until interference is at maximum. Adjust A37 and A38 for minimum interference in the picture and sound keeping the cores at approximately the same relative position. Turn one core 1/2 turn adjust the other for minimum interference.					

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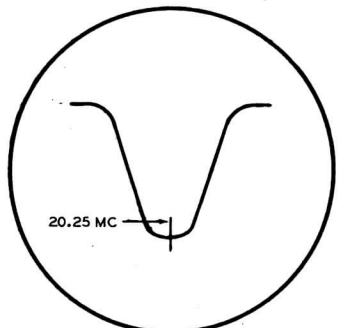


FIG. 1

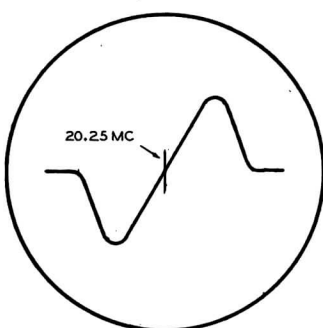


FIG. 2

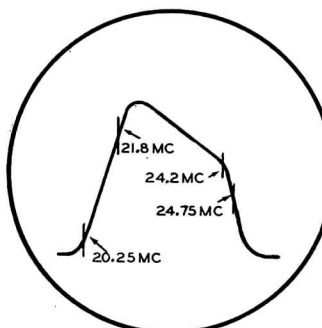


FIG. 3

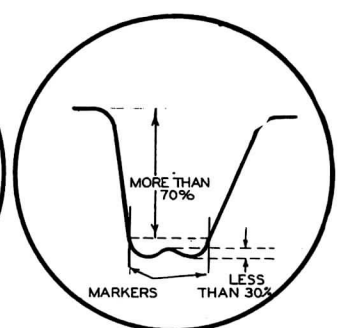


FIG. 4

VOLTAGE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V1	6J6	138VDC	138VDC	0V	6.3VAC	-4VDC	-4VDC	0V		
V2	6J6	125VDC	125VDC	6.3VAC	0V	-8VDC	-8VDC	0V		
V3	6J6	120VDC	120VDC	0V	6.3VAC	\$-5.2VDC	\$-5.2VDC	0V		
V4	6BA6	-3VDC	0V	6.3VAC	0V	138VDC	138VDC	3VDC		
V5	6BA6	-3VDC	0V	6.3VAC	0V	138VDC	138VDC	3VDC		
V6	6BA6	-3VDC	0V	6.3VAC	0V	138VDC	138VDC	3VDC		
V7	6BA6	0V	0V	6.3VAC	0V	120VDC	120VDC	1.2VDC		
V8	6AL5	-19VDC	0V	6.3VAC	0V	1VDC	0V	-19VDC		
V9	6AC7	0V	0V	0V	1VDC	2.9VDC	175VDC	6.3VAC	320VDC	
V10	6SN7GT	-3VDC	60VDC	0V	0V	7.8VDC	9VDC	6.3VAC	0V	
V11	6BA6	0V	0V	6.3VAC	0V	145VDC	138VDC	3VDC		
V12	6AU6	0V	0V	6.3VAC	0V	128VDC	128VDC	6VDC		
V13	6AU6	-4VDC	0V	6.3VAC	0V	40VDC	50VDC	0V		
‡ V14A	6T8	-6VDC	-6VDC	-1VDC	6.3VAC	0V	-7VDC	0V	-6VDC	70VDC
‡ V14B	6T8	-7VDC	-7VDC	-1VDC	6.3VAC	0V	-6VDC	0V	-6VDC	85VDC
V15	6K6GT	0V	0V	235VDC	245VDC	0V	0V	6.3VAC	16.5VDC	
V16A	6SN7GT	-122VDC	15VDC 280VDC	0V	-122VDC	320VDC	0V	6.3VAC	0V	
V16B	6SN7GT	-127VDC	25VDC 230VDC	0V	-127VDC	340VDC	0V	6.3VAC	0V	
V17A	6AR5	0V	1VDC 44VDC	6.3VAC	0V	212VDC	212VDC	0V		
V17B	6AR5	-5VDC	25VDC 53VDC	6.3VAC	0V	245VDC	245VDC	-5VDC		
V18	6SN7GT	0V	340VDC	13VDC	-2VDC	14VDC	0V	6.3VAC	0V	
V19	6AL5	-1VDC	-1VDC	6.3VAC	0V	1VDC	0V	1.3VDC		
V20	6SN7GT	-40VDC	250VDC	0V	-40VDC	185VDC	0V	6.3VAC	0V	
V21A	6BG6G	0V	0V	-28VDC -34VDC	-43VDC	-34VDC	-34VDC	6.3VAC	205VDC	TOP CAP ↑
‡ V21B	6BG6G	0V	0V	-24VDC -32VDC	-43VDC	-35VDC	-35VDC	6.3VAC	205VDC	TOP CAP ↑
V22	5V4G	0V	440VDC	0V	360VDC	0V	380VDC	0V	440VDC	
V23	1B3GT			† DO NOT MEASURE						
‡ V24	6BA6	-7VDC	0V	0V	6.3VAC	185VDC	120VDC	0V		
‡ V25	12AT7	170VDC	\$-2.8VDC	0V	0V	0V	175VDC	0V	1VDC	6.3VAC
‡ V26	6BE6	\$-6.6VDC	0V	0V	6.3VAC	200VDC	85VDC	-1VDC		
V27	5U4G	0V	415VDC	380VDC	400VAC	0V	400VAC	0V	415VDC	
V28	5Y3GT	0V	208VDC	410VDC	215VAC	0V	215VAC	0V	208VDC	
V29	6AT6	0V	1VDC	6.3VAC	0V	0V	0V	150VDC		
V30	6V6GT	0V	6.3VAC	300VDC	300VDC	0V	0V	0V	14VDC	
V31	6V6GT	0V	6.3VAC	300VDC	300VDC	0V	0V	0V	14VDC	
V32	5Y3GT	0V	340VDC	0V	320VAC	0V	320VAC	0V	340VDC	
V33	12QP4	0V	7VDC	PIN 10 230VDC	PIN 11 155VDC	PIN 11 165VDC	PIN 12 6.3VAC			

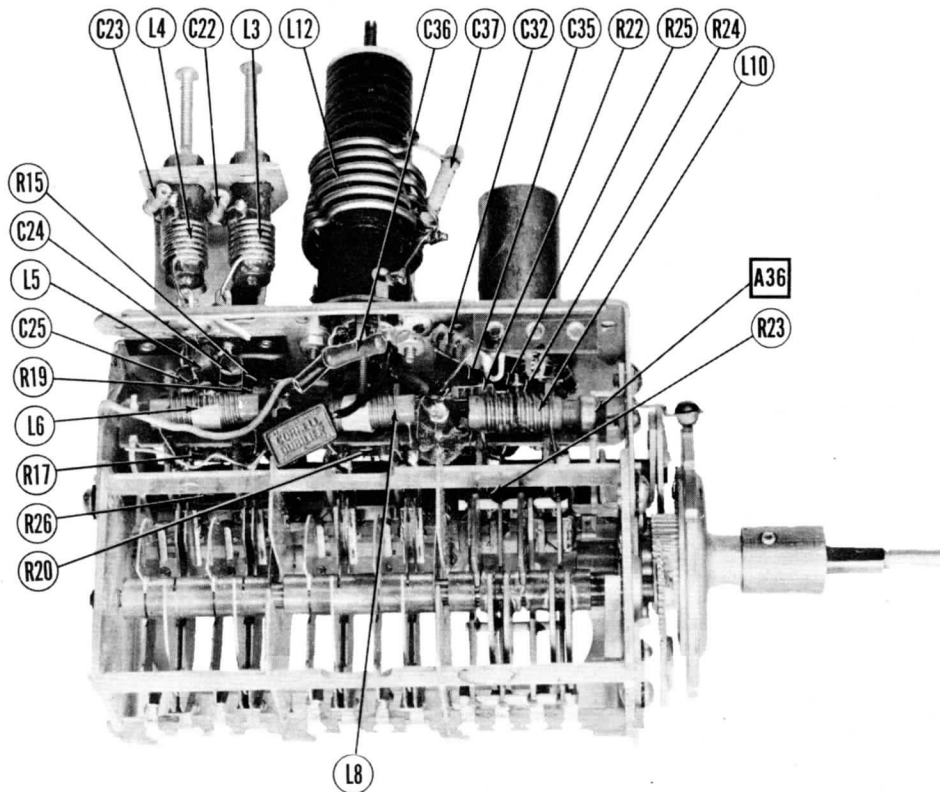
‡ Taken in normal position. † Taken in BC position.
‡ Taken with band switch in TV position. ‡ Taken in AM position.
§ Taken with VTVM

RESISTANCE READINGS

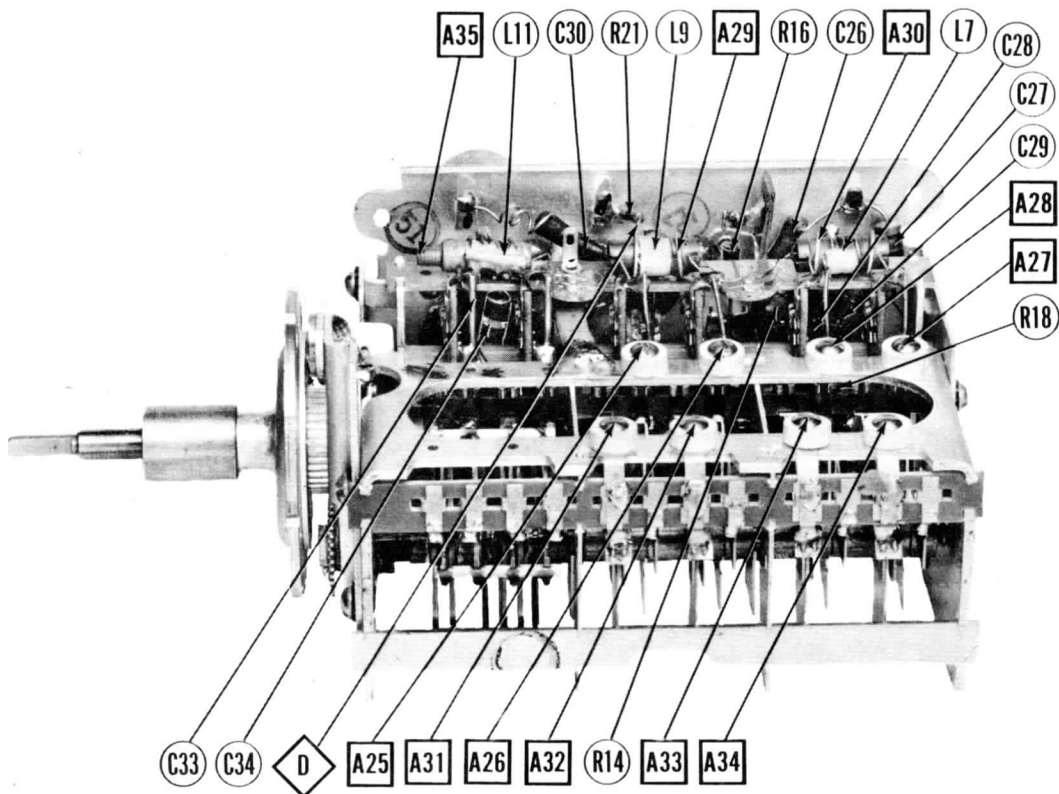
Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V1	6J6	*1000Ω	*1000Ω	0Ω	.2Ω	4.7KΩ	4.7KΩ	0Ω		
V2	6J6	*1000Ω	*1000Ω	.2Ω	0Ω	1 Meg.	1 Meg.	0Ω		
V3	6J6	*1000Ω	*1000Ω	0Ω	.2Ω	100KΩ	100KΩ	0Ω		
V4	6BA6	700KΩ	0Ω	.2Ω	0Ω	*2.3KΩ	*2.3KΩ	82Ω		
V5	6BA6	700KΩ	0Ω	.2Ω	0Ω	*2.3KΩ	*2.3KΩ	82Ω		
V6	6BA6	700KΩ	0Ω	.2Ω	0Ω	*2.3KΩ	*2.3KΩ	82Ω		
V7	6BA6	10KΩ	0Ω	.2Ω	0Ω	*2KΩ	*2KΩ	180Ω		
V8	6AL5	100KΩ	.5Ω	.2Ω	0Ω	4.7KΩ	0Ω	650KΩ		
V9	6AC7	0Ω	0Ω	0Ω	4.7KΩ	470Ω	** 150KΩ	.2Ω	** 4.7KΩ	
V10	6SN7GT	1 Meg.	*22KΩ	0Ω	0Ω	*68KΩ	150KΩ	.2Ω	0Ω	
V11	6BA6	0Ω	0Ω	.2Ω	0Ω	*75Ω	*2.2KΩ	100Ω		
V12	6AU6	470KΩ	0Ω	.2Ω	0Ω	*2KΩ	*2KΩ	68Ω		
V13	6AU6	47KΩ	0Ω	.2Ω	0Ω	*47KΩ	*50KΩ	0Ω		
‡ V14A	6T8	100KΩ	100KΩ	200KΩ	.2Ω	0Ω	1 Meg.	0Ω	10 Meg.	* 220KΩ
‡ V14B	6T8	100KΩ	100KΩ	200KΩ	.2Ω	0Ω	750KΩ	0Ω	10 Meg.	* 220KΩ
V15	6K6GT	0Ω	0Ω	** 2.6KΩ	** 2.2KΩ	470KΩ	Inf.	.2Ω	560Ω	
V16	6SN7GT	4.2 Meg.	** 5Meg. **250KΩ	0Ω	4.2 Meg.	** 100KΩ	0Ω	.2Ω	0Ω	
V17	6AR5	6.8 Meg.	5KΩ 180Ω	.2Ω	0Ω	** 12KΩ	**12KΩ	6.8Meg.		
V18	6SN7GT	47KΩ	** 2.5KΩ	2.2KΩ	Inf.	** 200KΩ	0Ω	.2Ω	0Ω	
V19	6AL5	10KΩ	10KΩ	.2Ω	0Ω	Inf.	0Ω	Inf.		
V20	6SN7GT	300KΩ	** 100KΩ	0Ω	300KΩ	** 380KΩ	0Ω	.2Ω	0Ω	
V21	6BG6G	Inf.	0Ω	340Ω	230Ω	1 Meg.	1 Meg.	.2Ω	** 11KΩ	** 10KΩ
V22	5V4G	Inf.	** 10KΩ	Inf.	** 100Ω	Inf.	** 100Ω	Inf.	** 10KΩ	** 10KΩ
‡ V23	1B3GT	Inf.	Inf.	Inf.	Inf.	Inf.	Inf.	Inf.	Inf.	** 10KΩ
‡ V24	6BA6	500KΩ	0Ω	0Ω	.2Ω	*62Ω	*10KΩ	0Ω		
‡ V25	12AT7	*2.2KΩ	22KΩ	1Ω	0Ω	0Ω	*2.2KΩ	0Ω	470Ω	.2Ω
V26	6BE6	22KΩ	.5Ω	0Ω	.2Ω	*75Ω	*22KΩ	1.5 Meg.		
V27	5U4G	Inf.	12KΩ	12KΩ	250Ω	Inf.	250Ω	Inf.	12KΩ	
V28	5Y3GT	Inf.	90KΩ	10KΩ	240Ω	Inf.	240Ω	Inf.	90KΩ	
V29	6AT6	12KΩ	3.3KΩ	.2Ω	0Ω	0Ω	0Ω	† 200KΩ		
V30	6V6GT	0Ω	.2Ω	1830Ω	1650Ω	470KΩ	Inf.	0Ω	220Ω	
V31	6V6GT	0Ω	.2Ω	1850Ω	1650Ω	480KΩ	Inf.	0Ω	220Ω	
V32	5Y3GT	Inf.	160KΩ	Inf.	120Ω	Inf.	115Ω	Inf.	160KΩ	
V33	12QP4	0Ω	190KΩ	PIN 10 **38KΩ	Inf.	PIN 11 **50KΩ	PIN 12 **2Ω			

‡ Taken with band switch in TV position. † Measured from pin 8 of V32
* Measured from pin 8 of V28 ‡ Taken in FM position
** Measured from pin 8 of V27 † Taken in BC position

- DC Voltage measurements are at 20,000 ohms per volt; AC Voltage measured at 1000 ohms.
- Pin numbers are counted in a clockwise direction on bottom of socket.
- Measured values are from socket pin to common negative unless otherwise stated.
- Line voltage maintained at 117 volts for voltage readings.
- Front panels controls set at minimum.
- Where readings may vary according to the setting of the service controls, both minimum and maximum readings are given.

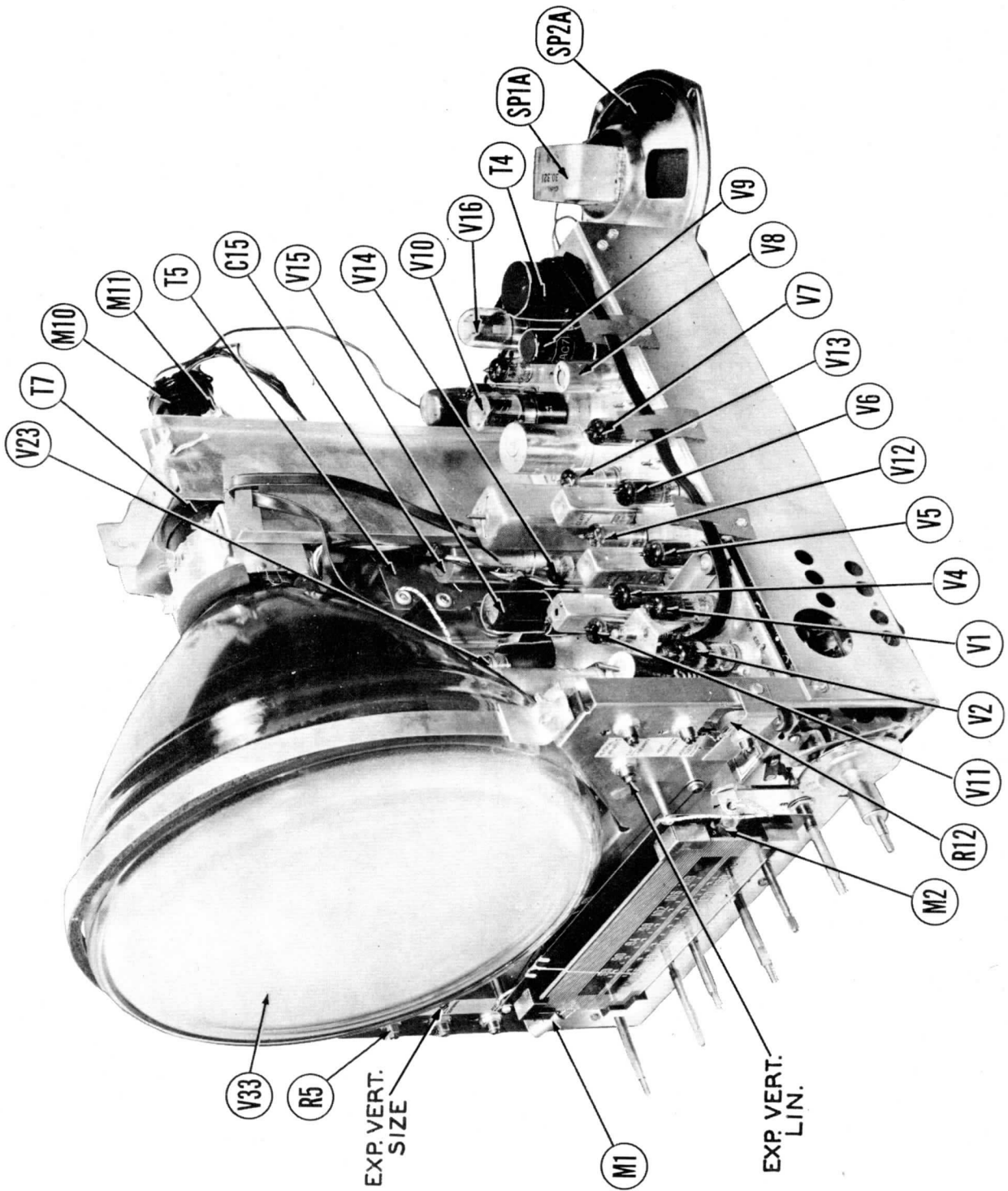


RF TUNER-LEFT SIDE

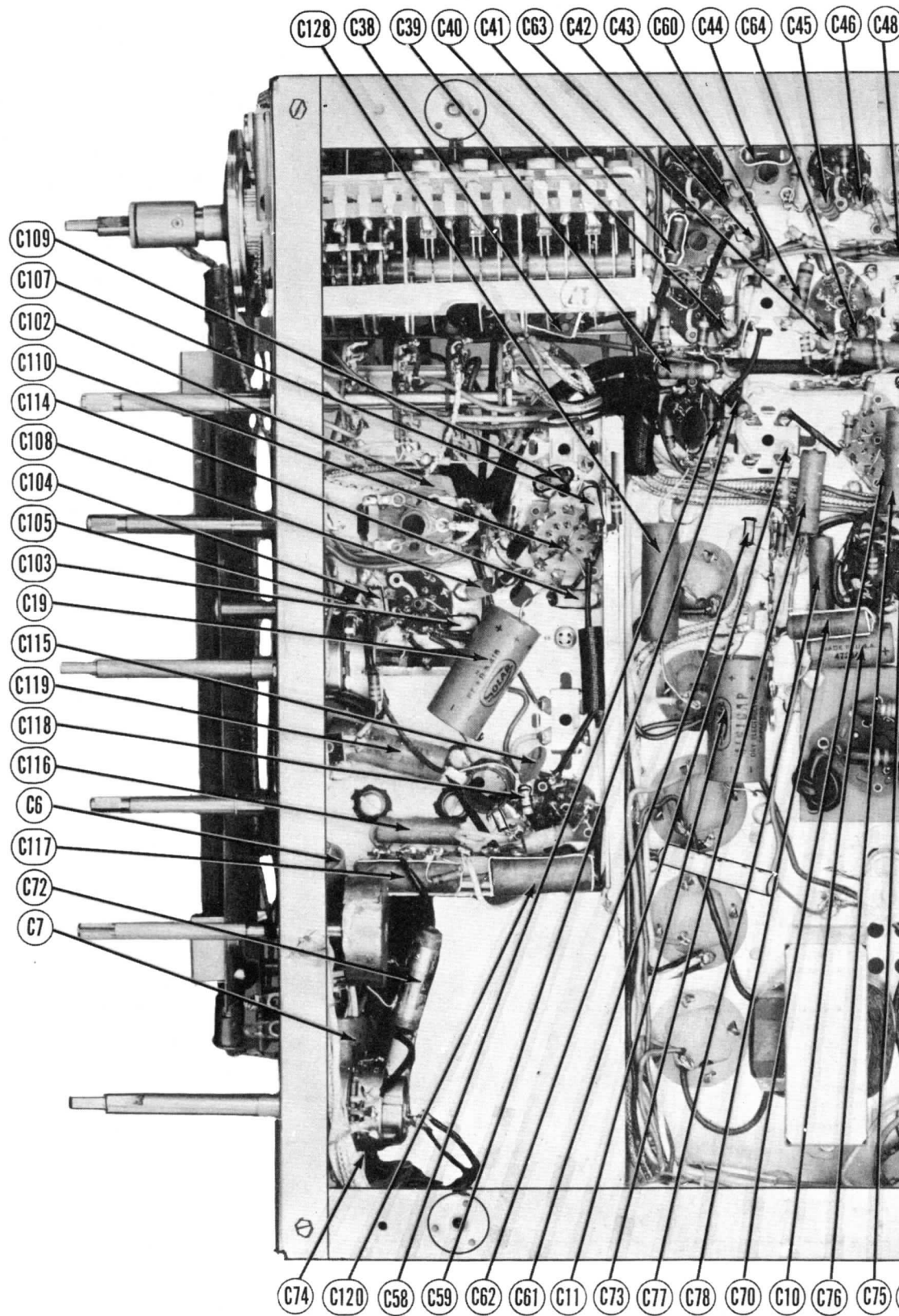


RF TUNER-RIGHT SIDE

GAROD
SERIES 10TZ, 12TZ, 15TZ

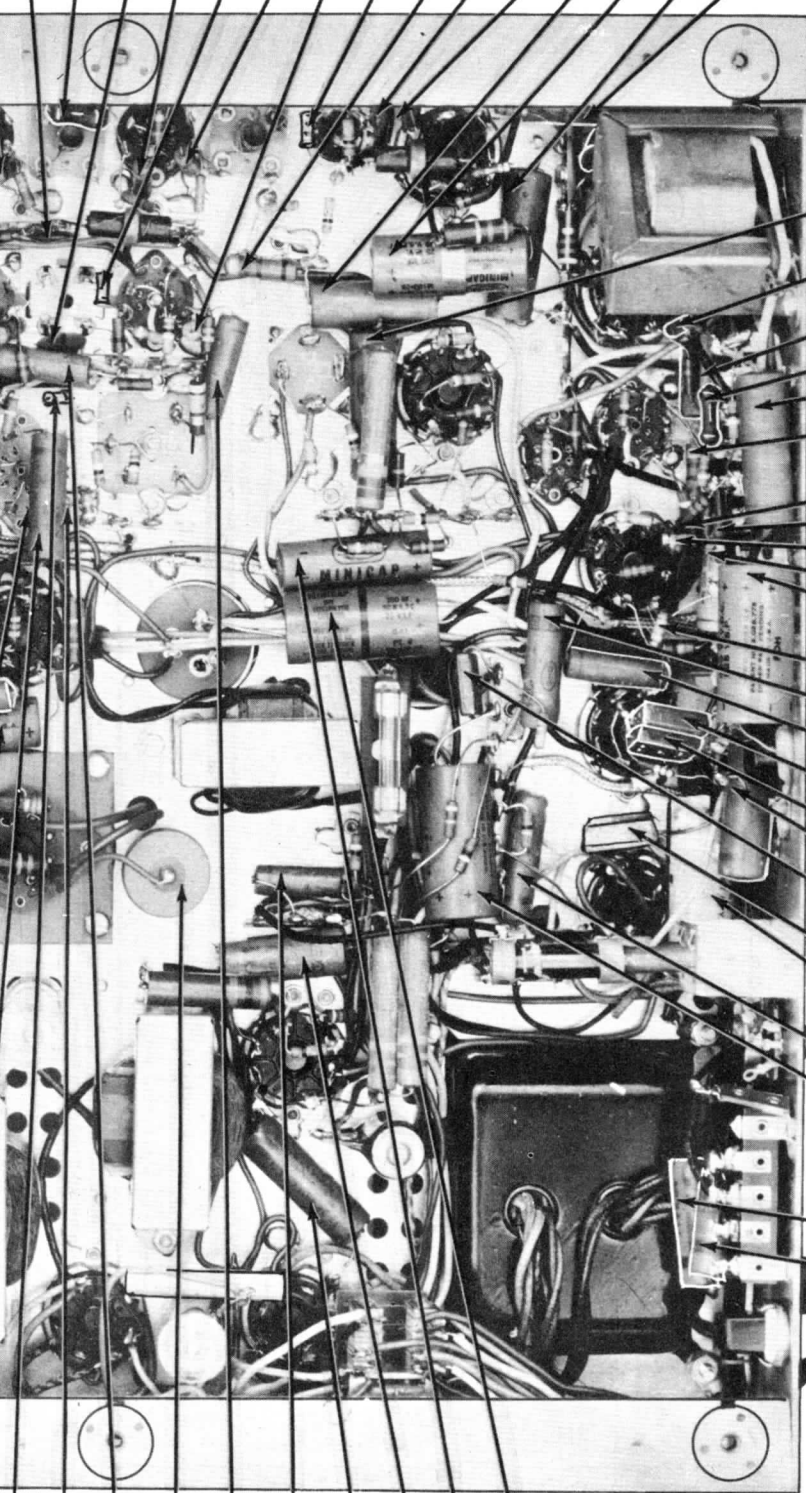


CHASSIS-TOP VIEW



CHASSIS BOTTOM VIEW-CAP

C48 C47 C67 C49 C65 C50 C68 C51 C52 C55 C53 C54 C8 C56 C16

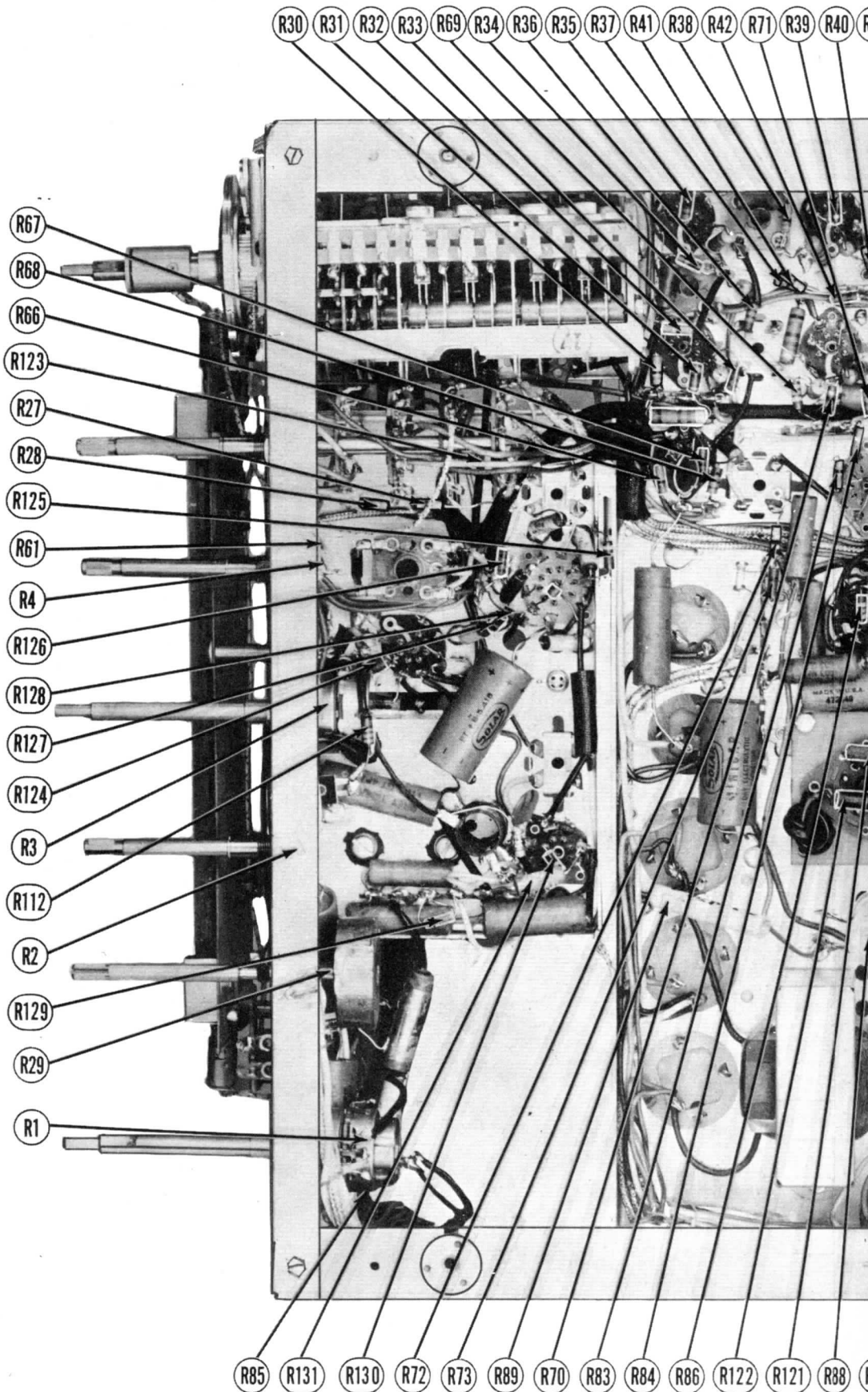


C83
C57
C81
C84
C80
C82
C86
C87
C79
C85
C91
C14
C95
C88
C90
C93
C94
C98
C92
C100
C99
C89
C17
C121
C122

C75 C71 C66 C101 C69 C127 C97 C96 C9 C12

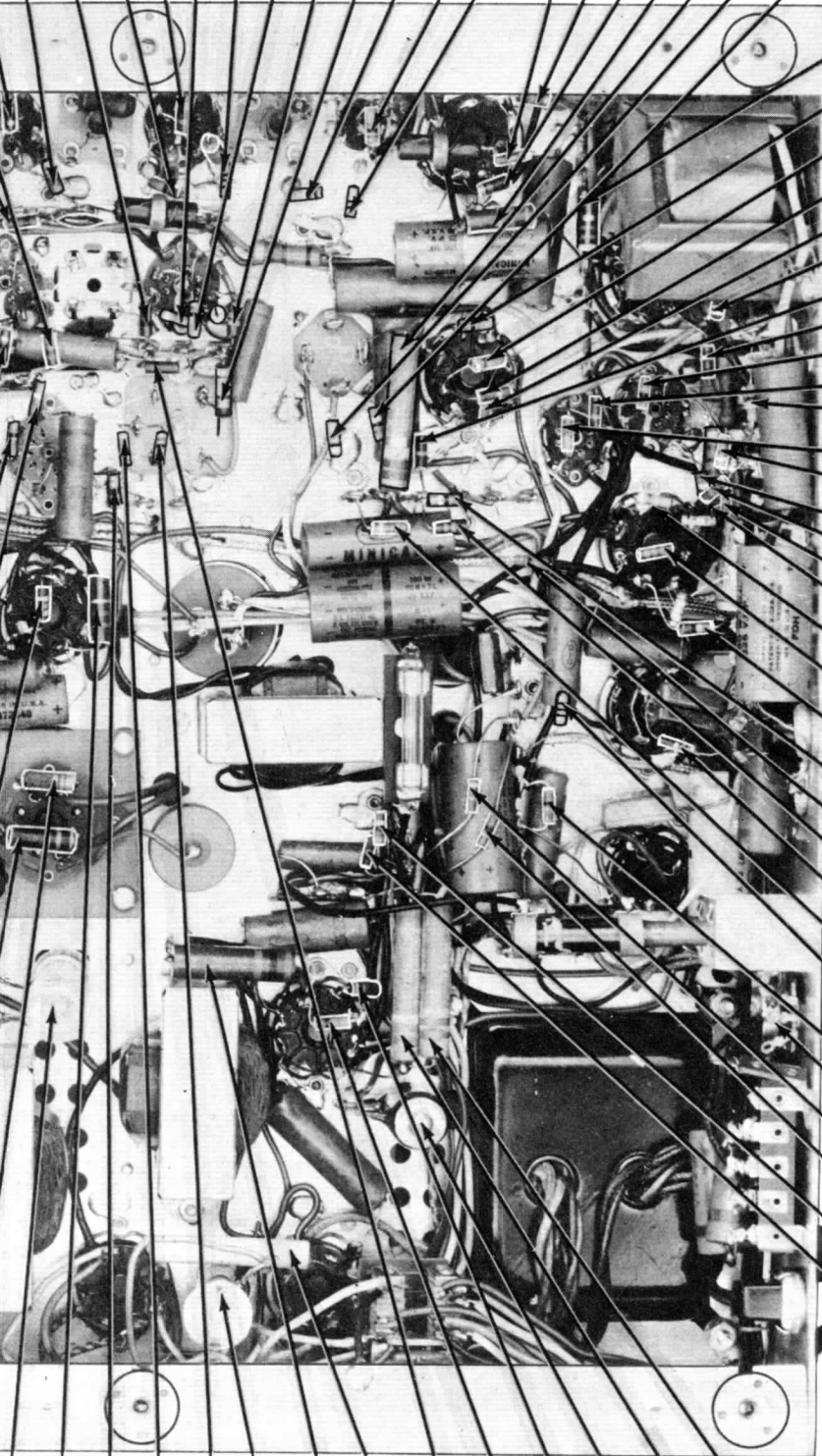
GAROD
SERIES 10TZ, 12TZ, 15TZ

CAPACITOR IDENTIFICATION



CHASSIS BOTTOM VIEW-RE

R40 R75 R43 R44 R74 R45 R78 R77 R79 R46 R47 R48 R49 R51 R50 R52 R98 R99 R114

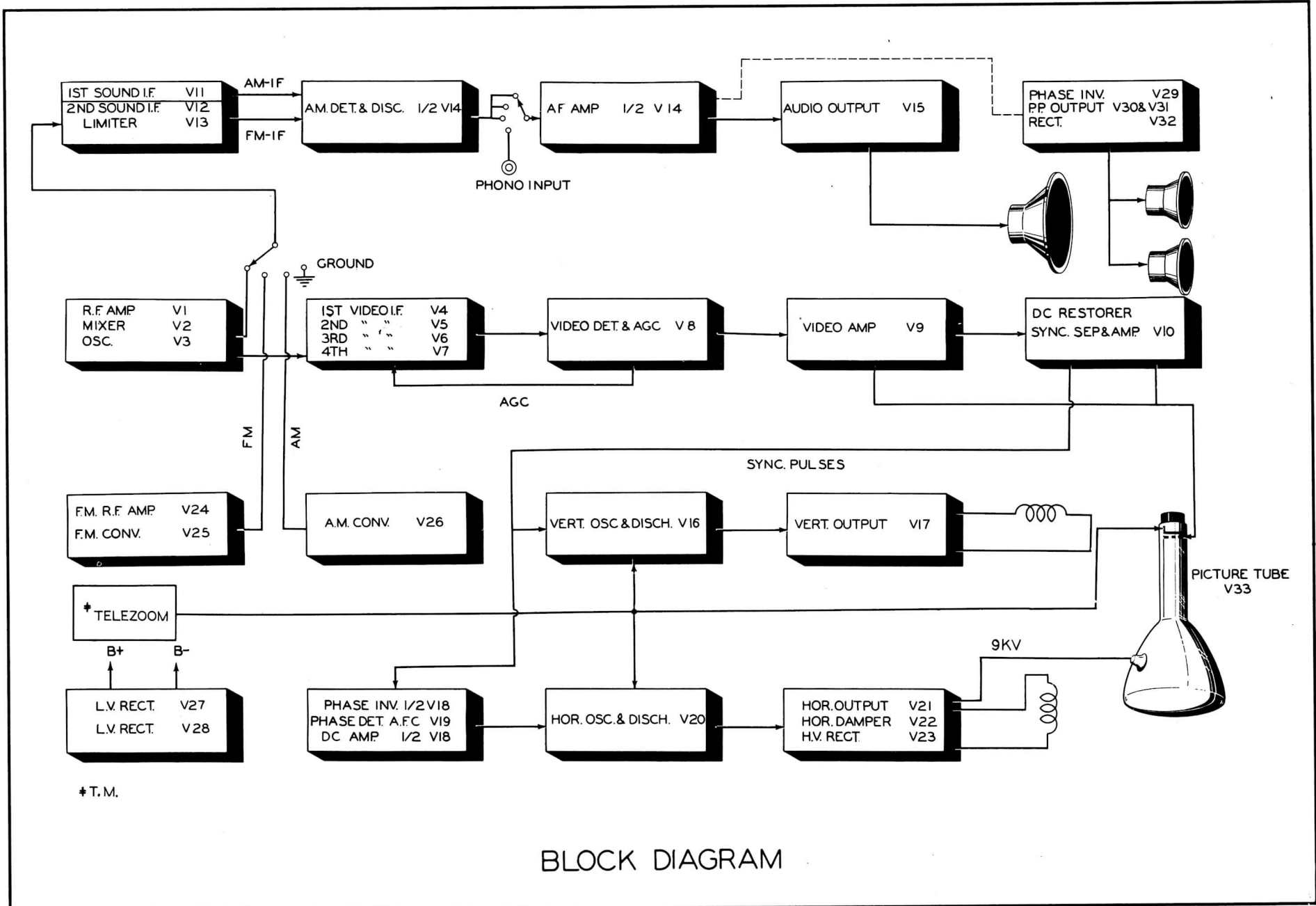


R53
R59
R54
R58
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R111
R109
R110
R56
R115
R57
R113
R108
R13
R63
R62
R64
R65

R88 R87 R82 R81 R80 R132 R118 R133 R76 R116 R117 R134 R119 R120

- RESISTOR IDENTIFICATION

GAROD
SERIES 10TZ, 12TZ, 15TZ



BLOCK DIAGRAM

PARTS LIST AND DESCRIPTIONS (Continued)

RESISTORS (CONT.)

ITEM No.	RATING		REPLACEMENT DATA		IDENTIFICATION CODES	
			GAROD	IRC		
	RESISTANCE	WATTS	PART No.	PART No.		
R121	3.3Ω	1	C-6.212-1	BW-1-3.3	Or.-Or.-Gold	Filament Dropping
R122	470KΩ	1	D-7.102-137		Yl.-Vl.-Yl.	HV Filter
R123	1 Meg.	1	D-7.100-143	BTS-1 Meg.	Br.-Blk.-Grn.	AVC Filter
R124	10KΩ	1	D-7.102-66	BTA-10K	Br.-Blk.-Or.	FM RF Screen
R125	470Ω	1	D-7.100-3	BTS-470	Yl.-Vl.-Br.	" Mixer Cathode
R126	2200Ω	1	D-7.101-31	BTS-2200	Red-Red-Red	" Mixer Plate Decoupling
R127	22KΩ	1	D-7.100-73	BTS-22K	Red-Red-Or.	" Osc. Grid
R128	2200Ω	1	D-7.101-31	BTS-2200	Red-Red-Red	" Plate
R129	1 Meg.	1	D-7.100-143	BTS-1 Meg.	Br.-Blk.-Grn.	AVC Network
R130	22KΩ	1	D-7.100-73	BTS-22K	Red-Red-Or.	AM Osc. Grid
R131	22KΩ	1	D-7.102-81	BTA-22K	Red-Red-Or.	" Anode
R132	17500Ω	25	B-6.216			Bleeder
R133	650Ω	7	B-6.215-6			Voltage Dropping
R134	10KΩ	25	B-6.218	DG-10K		Damper Filter
R135	3300Ω	1	D-7.101-38	BTS-3300	Or.-Or.-Red	Phase Inv. Cathode
R136	12KΩ	1	D-7.100-62	BTS-12K	Br.-Red-Or.	" Grid
R137	470KΩ	1	D-7.100-129	BTS-470K	Yl.-Vl.-Yl.	Output Grid
R138	100KΩ	1	D-7.101-101	BTS-100K	Br.-Blk.-Yl.	Phase Inv. Plate
R139	100KΩ	1	D-7.101-101	BTS-100K	Br.-Blk.-Yl.	" Decoupling
R140	470KΩ	1	D-7.100-129	BTS-470K	Yl.-Vl.-Yl.	Output Grid
R141	22Ω	20	D-7.103-59	BW-2-220	Red-Red-Br.	" Cathode
R142	650Ω	7	B-6.215-6	AB-700		Filter

Note 1. Item R103 not used on models employing 12J4 or 15AP4. When 12Q4 or 12K4 tube is used R103 is 1800Ω IRC replacement AB-1800

Note 2. Item R63 was 6800Ω in early production. IRC replacement BTS-6800.

Note 3. Item R114 was 25KΩ in early production.

TRANSFORMER (POWER)

ITEM No.	RATING					REPLACEMENT DATA			
						GAROD PART No.	STANCOR PART No.	CHICAGO PART No.	MERIT PART No.
	PRI.	SEC. 1	SEC. 2	SEC. 3					
T1	117VAC @ 2.4A	320VCT @ 250ADC	430VCT @ 092ADC	5VAC @ 2A	C-9.222				
		SEC. 4	SEC. 5	SEC. 6					
		5VAC @ 2A	5VAC @ 3A	6.6VAC @ 9.3A					
T2	117VAC @ .65A	690VCT @ 089ADC	5VAC @ 2A	6.8VAC @ 1.3A	C-9201†	P-6012 †	PH-90	P-2952 †	

† Used in models 12T26A, 12T27A, 15T26, 15T27.

♦ Drill new mounting holes.

TRANSFORMER (SWEEP CIRCUITS)

ITEM No.	RATING		REPLACEMENT DATA				NOTES
			GAROD PART No.	STANCOR PART No.	CHICAGO PART No.	MERIT PART No.	
	DC RESISTANCE PRI.	SEC.					
T3	3.25Ω	7.5Ω	C-9.212	A-8120	TBO-1	A-4002	Hor. Block Osc. Trans. " Vert. Hor. Output Trans.
T4	180Ω	1800Ω	C-9.213	A-8121	TFB-1	A-4000	
T5	410ΩTAP @ 170Ω		C-9.220	A-8117			
		SEC. 1					
		8.7Ω TAP					
		8.5Ω					
T6	500Ω	4.5Ω	C-9.221*	A-8115	TSO-1	A-3035	Vert. Output XFMR.
T7A	15Ω		C-9.209	DY-1			Hor. Deflection Yoke
B	60Ω						Vert. " "
T8	390Ω		C-9.211	FC-10			Focus Coil

* Alternate Part Number C-9.228

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	RATING				REPLACEMENT DATA				INSTALLATION NOTES
	IMPEDANCE		DC RES.		GAROD PART No.	STANCOR PART No.	CHICAGO PART No.	MERIT PART No.	
	PRI.	SEC.	PRI.	SEC.					
T9A	7000Ω	4Ω	575Ω	.3Ω	C-9.225 †	A-3823	RO-303	A-2901	♦ Drill new mounting holes.
B	9.2KΩ	7.2Ω	365Ω	.5Ω	C-9.226‡	A-3824	RO-303	A-3027 †	
CT									

† Used in models 10T21, 10T22, 10T23, 10T24, 10T25, 12T21, 12T22, 12T23, 12T24, 12T25.

‡ Used in models 12T26A, 12T27A, 15T26, 15T27.

SPEAKER

ITEM No.	RATINGS		REPLACEMENT DATA			INSTALLATION NOTES
			GAROD PART No.	JENSEN PART No.	QUAM PART No.	
	FIELD	V. C. IMP.				
SP1A	PM	4Ω	C-30.321*	ST-110	6A21	Used in models 10T21, 10T22, 10T23, 12T21, 12T22, 12T23. Used in models 10T24, 5, 12T24, 5. Matched pair. Used in models 12T26A, 12T27A, 15T26, 15T27.
B	PM		C-30.320‡	Model P6-V		
C	PM	3.3Ω	C-30.322‡			
D	PM	3.9Ω	C-30.323‡			
SP2A	CONE DIA. V. C. DIA.					
B	6"	9/16"				
C	10"					
D	10"					

FILTER CHOKE

ITEM No.	RATINGS			REPLACEMENT DATA				INSTALLATION NOTES
	TOTAL DIRECT CURRENT	D. C. RESISTANCE	INDUCTANCE (0 CURRENT 1000 cps)	GAROD PART No.	STANCOR PART No.	CHICAGO PART No.	MERIT PART No.	
L1	.250A	90Ω	4H	C-9.224	C-2325		C-2991	
L2	.092A	60Ω	4H	C-9.223	C-2304		C-2991	

COILS (RF-IF)

ITEM No.	USE	DC RES.		REPLACEMENT DATA		NOTES
		PRI.	SEC.	GAROD PART No.	MEISSNER PART No.	
L3	Interrer-ence Trap Coil	0Ω				Part of Tuner Assy. Part # D-36.128
L4	Interfer-ence Trap Coil	0Ω				
L5	Ant. Input	.2ΩCT				
L6	RF Plate Low Band	0Ω				
L7	RF Plate High Band	0Ω				
L8	Mixer Grid Coil, Low Band	0Ω				
L9	Mixer Grid Coil, High Band	0Ω				
L10	Osc. Coil Low Band	0Ω				
L11	Osc. Coil High Band	0Ω				
L12	1st Video IF	0Ω	0Ω			
L13	2nd Video IF	.2Ω		C-1.475-1		
L14	3rd Video IF	.2Ω		C-1.475-1		
L15	4th Video IF	.2Ω		C-1.475-1		
L16	RF Choke			C-1.465-7		
L17	5th Video IF	.8Ω	.3Ω	C-1.476		
L18	Peaking	5Ω		C-1.465-1	Inductance-128 Microhenries (Red dot) " -290 " (Red-Green) " -440 " (Yellow-Green)	
L19	Peaking	8.5Ω		C-1.465-8		
L20	Peaking	10Ω		C-1.465-9		
L21	2nd Sound IF	.2Ω	.2Ω	C-1.477-2		
L22	3rd Sound IF	.2Ω	.2Ω	C-1.477-2		
L23	Sound Disc. XFMR	.2Ω	.2Ω	C-1.461		
L24	Horiz. Width Control	.3Ω		B-1.458		
L25	Horiz. Linearity Control	.34Ω		B-1.459		
L26	FM Dipole Ant.	0Ω		C-20.219		
L27	FM Ant.	0Ω	0Ω	C-1.480		
L28	RF Plate Chk.	1Ω				
L29	FM RF Coil	0Ω		C-1.481		
L30	FM Osc. Coil	0Ω		C-1.481		
L31	RF Choke	1Ω				
L32	Fil. Choke	.1Ω		C-1.474		
L33	Am Loop Ant.	1.2Ω		C-1.483		
L34	AM Osc. Coil	5.5Ω		C-1.436-2	14-1060	
L35	1st Sound IF	.2Ω	.2Ω	C-1.477-2		
L36	1st AM IF	16Ω	15Ω	C-1.445-3	16-6678	
L37	2nd AM IF	16Ω	15Ω	C-1.445-3	16-6678	

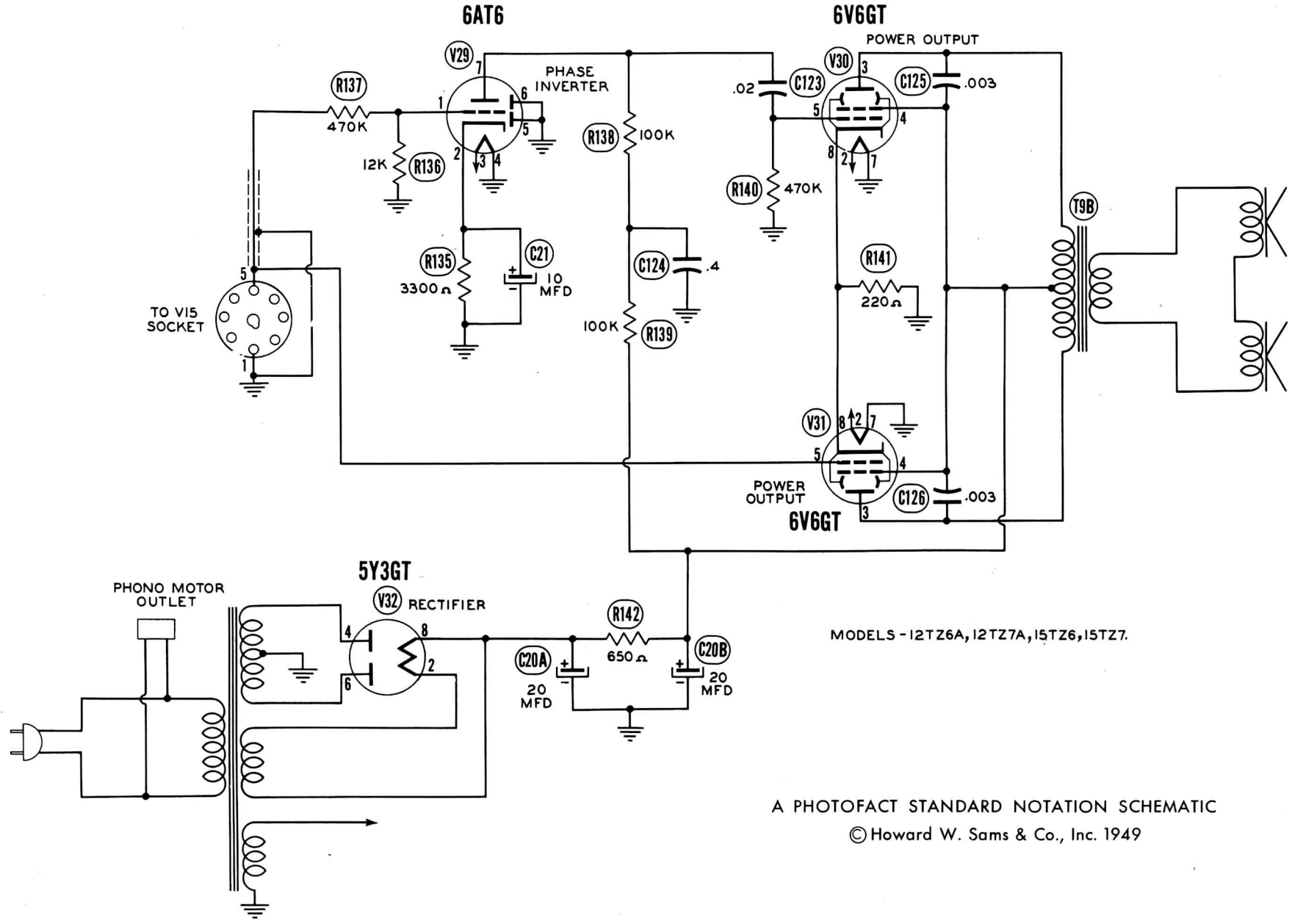
GAROD
SERIES 10TZ, 12TZ, 15TZ

DIAL LIGHTS

ITEM No.	BASE TYPE	VOLTS	AMPS.	BEAD COLOR	REPLACEMENT DATA		NOTES
					GAROD PART No.		
M1	Bayonet	6-8V	0.25A	Blue			Type #44
M2	Bayonet	6-8V	0.25A	Blue			Type #44

MISCELLANEOUS

ITEM No.	PART NAME	GAROD PART No.	NOTES
M3	Tuner Assembly	P-36.128	
M4	Band Switch	B-11.220	
M5	Push Button Switch	11.222	
M6	Relay	11.223	
M7	Fuse		4PDT 6VAC Relay Type 3AG, 5 Amp.
M8	Fuse		Type AGC. .125 Amp.
M9	Tuning Gang	C-2.219	AM-FM, two section, AM-(16-497MMF) WO/T, (33-189MMF) W/T
M10	Socket	C-24.225-1	Picture tube
M11	Ion Trap	36.126	Do not use when 10FP4, 12JP4, 12KP4, 15AP4, Picture Tubes are employed.
	Speaker Plug	B-24.218	
	Ant. Terminal Strip	B-23.212	
	Cabinet	E-12.290	Models-12TZ6A
	Cabinet	E-12.293	Table Models,-10TZ1, 10TZ2, 12TZ1, and 12TZ2.
	Cabinet	E-12.294	Console Models,-10TZ4, 10TZ5, 12TZ4, and 12TZ5
	Cabinet	E-12.302	Models-10TZ3, and 12TZ3.
	Knobs	B-13.103	Tuning, Contrast and Brightness Controls
	Knobs	B-13.116	Band Switch
	Knob Plate	C-13.165	
	Knobs	B-13.167	Volume, Horiz. hold and fine tuning
	Knobs	B-13.168	Tone, and Vert. Hold
	Channel Indicator	26.562	



MODELS - 12TZ6A, 12TZ7A, 15TZ6, 15TZ7.

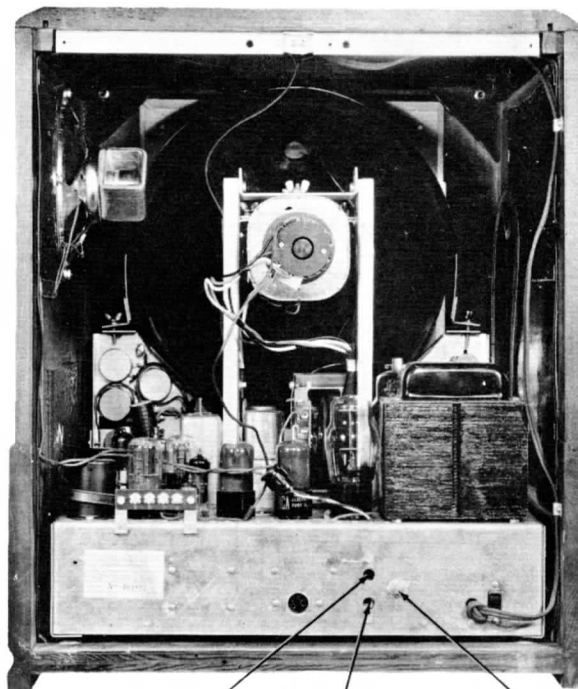
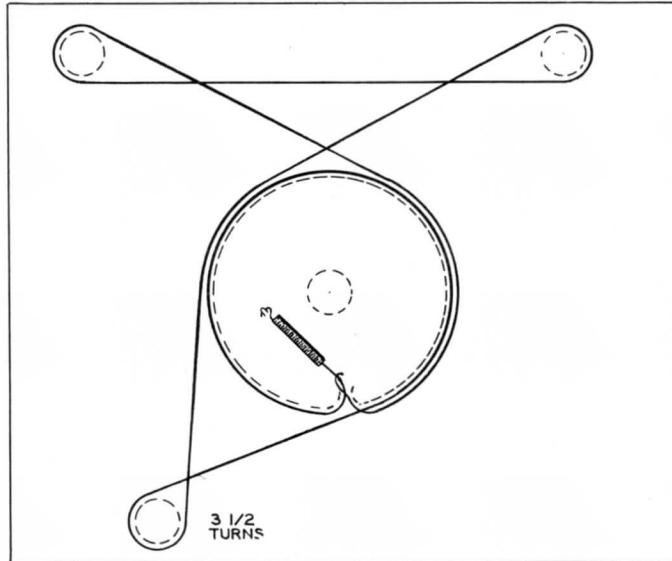
A PHOTOFAC STANDARD NOTATION SCHEMATIC
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DISASSEMBLY INSTRUCTIONS

MODEL 12TZ1

1. Remove ten push-on type control knobs.
2. Remove three screws holding back cover. Remove back cover.
3. Disconnect speaker plug and FM Antenna leads.
4. Remove two phillips head screws holding picture tube safety glass. Remove safety glass.
5. Loosen wing head screws holding picture tube at front of tube.
6. Remove picture tube plug and Ion trap at rear of picture tube.
7. Remove picture tube by pulling it straight out front of cabinet.
8. Remove six metal screws holding chassis. Remove chassis from cabinet.

DIAL CORD STRINGING



HORIZ. LIN.

HORIZ. SIZE

EXP. HORIZ. PEAK

CABINET-REAR VIEW