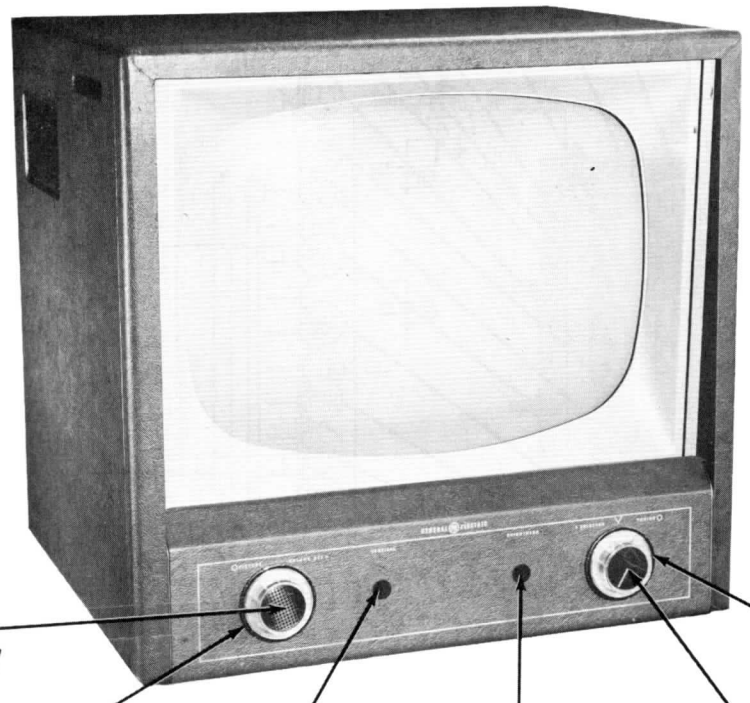
GENERAL ELECTRIC
MODELS 21C115, 21T14 (Ch. 21TF)



GENERAL ELECTRIC MODEL 21T14

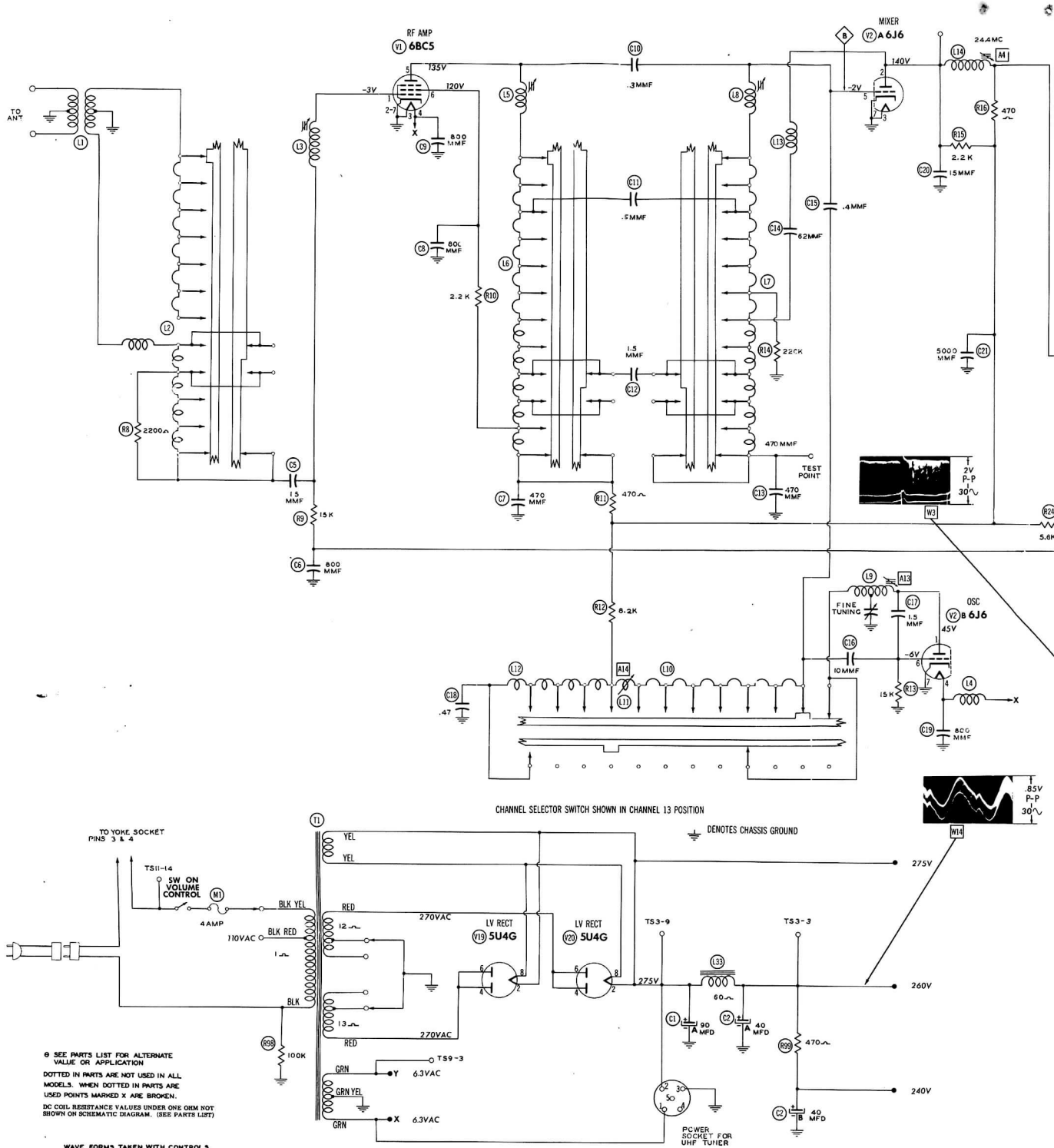
TRADE NAME	General Electric Models 21C115, 21T14 (Ch. 21TF)
MANUFACTURER	General Electric Co., Electronics Dept., Electronics Park, Syracuse, N. Y.
TYPE SET	Television Receiver
TUBES	Twenty-one
POWER SUPPLY	110-120 Volts AC-60 cycle RATING 1. 92 Amp. @ 117 Volts AC
TUNING RANGE—	Channels 2 thru 13, Video IF 45. 75MC, Sound IF 45. 75MC, Sound IF 41. 25MC (Intercarrier)

INDEX

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

DATE 2-54 SET 229 FOLDER 7

GENERAL ELECTRIC
MODELS 21C115, 21T14 (Ch. 21TF)



⊖ SEE PARTS LIST FOR ALTERNATE VALUE OR APPLICATION

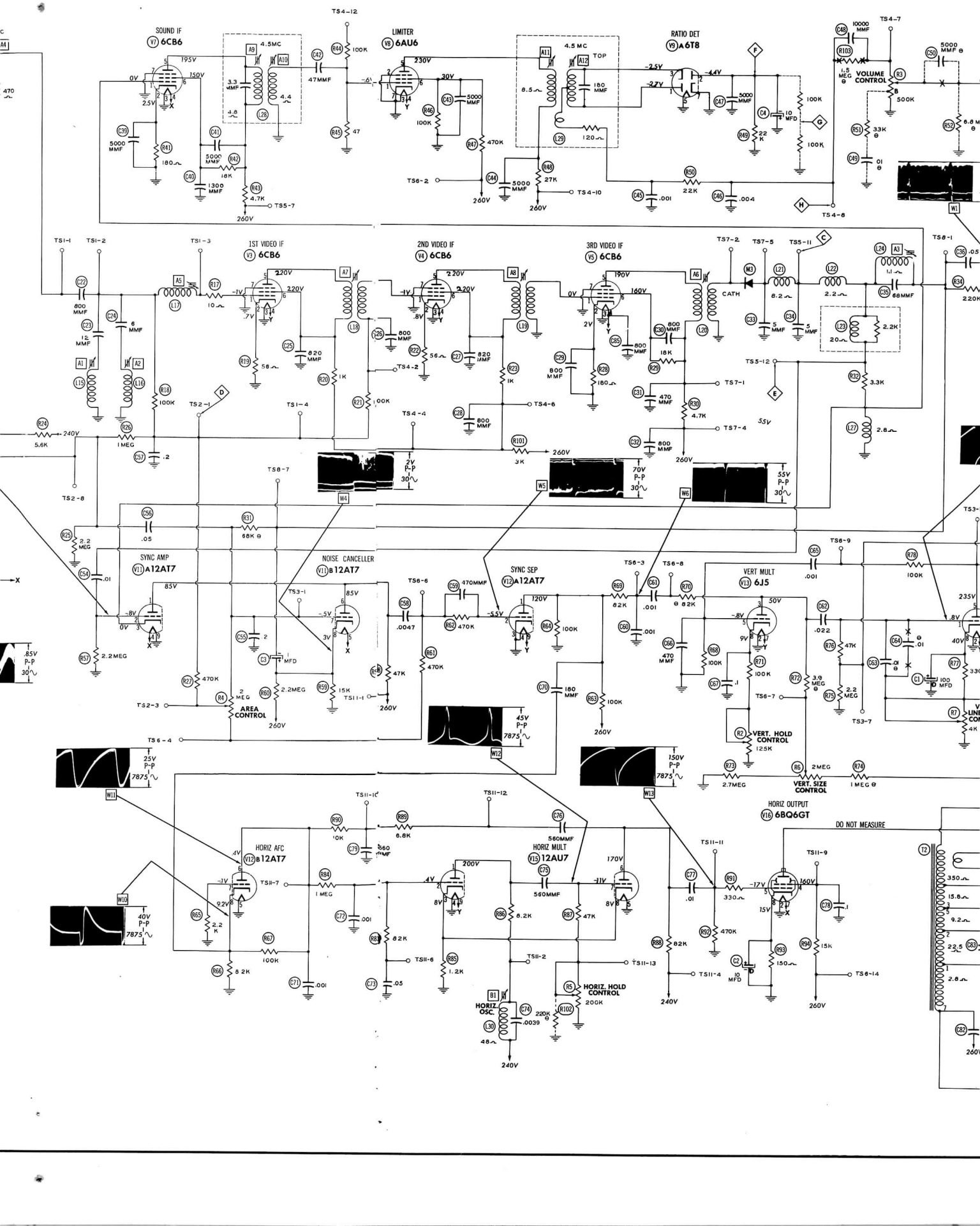
DOTTED IN PARTS ARE NOT USED IN ALL MODELS. WHEN DOTTED IN PARTS ARE USED POINTS MARKED X ARE BROKEN.

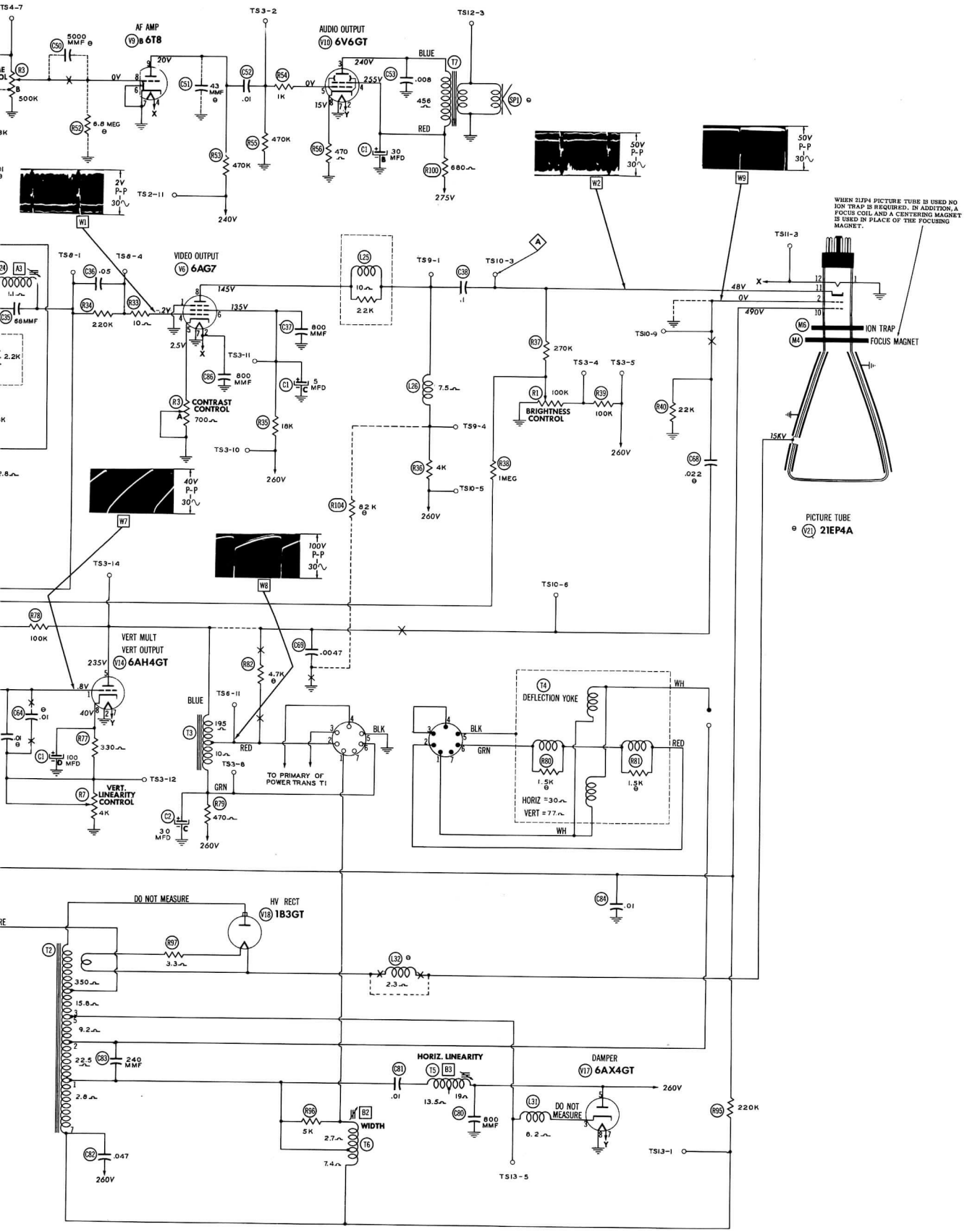
DC COIL RESISTANCE VALUES UNDER ONE OHM NOT SHOWN ON SCHEMATIC DIAGRAM. (SEE PARTS LIST)

WAVE FORMS TAKEN WITH CONTROLS SET TO PRODUCE 50 VOLTS PEAK TO PEAK SIGNAL AT PICTURE TUBE

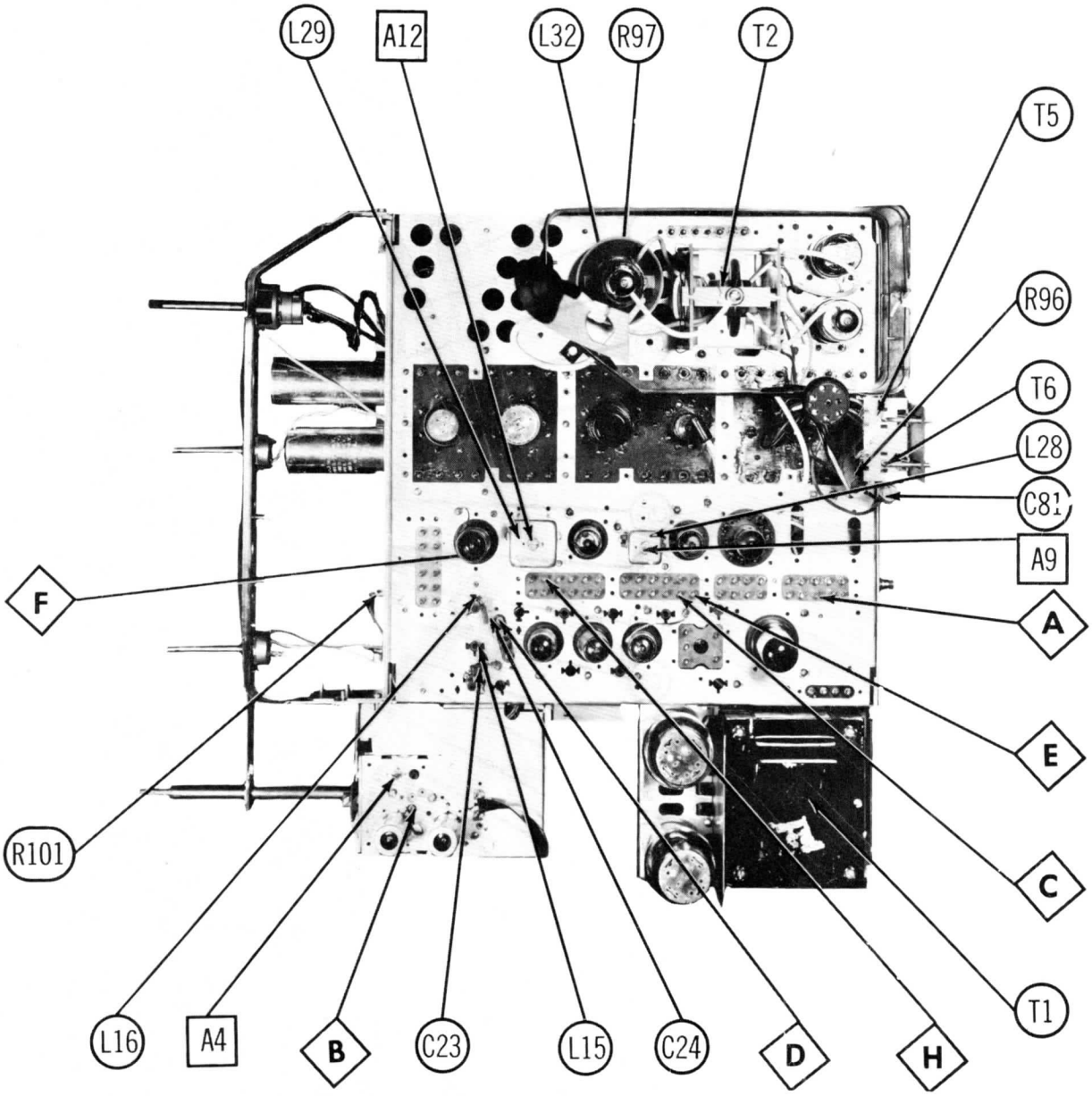
1. DC voltage measurements taken with vacuum tube voltmeter; AC voltage measured at 1,000 ohms per volt.
2. Pin numbers are counted in a clockwise direction on bottom of socket.
3. Measured values are from socket pin to common negative unless otherwise stated.
4. Line voltage maintained at 117 volts for voltage readings.
5. All controls set for normal operation; no signal applied.

A PHOTOFACT STANDARD NOTATION SCHEMATIC


SOUND IF
V7 6CB6
LIMITER
V8 6AU6
RATIO DET
V9 A6T8
VOLUME CONTROL
1ST VIDEO IF
V3 6CB6
2ND VIDEO IF
V4 6CB6
3RD VIDEO IF
V5 6CB6
SYNC AMP
V11 A12AT7
NOISE CANCELLER
V11 B12AT7
SYNC SEP
V12 A12AT7
VERT MULT
V13 6J5
AREA CONTROL
VERT. HOLD CONTROL
VERT. SIZE CONTROL
HORIZ AFC
V12 B12AT7
HORIZ MULT
V15 12AU7
HORIZ OUTPUT
V16 6BQ6GT
HORIZ. HOLD CONTROL
HORIZ. OSC.
DO NOT MEASURE

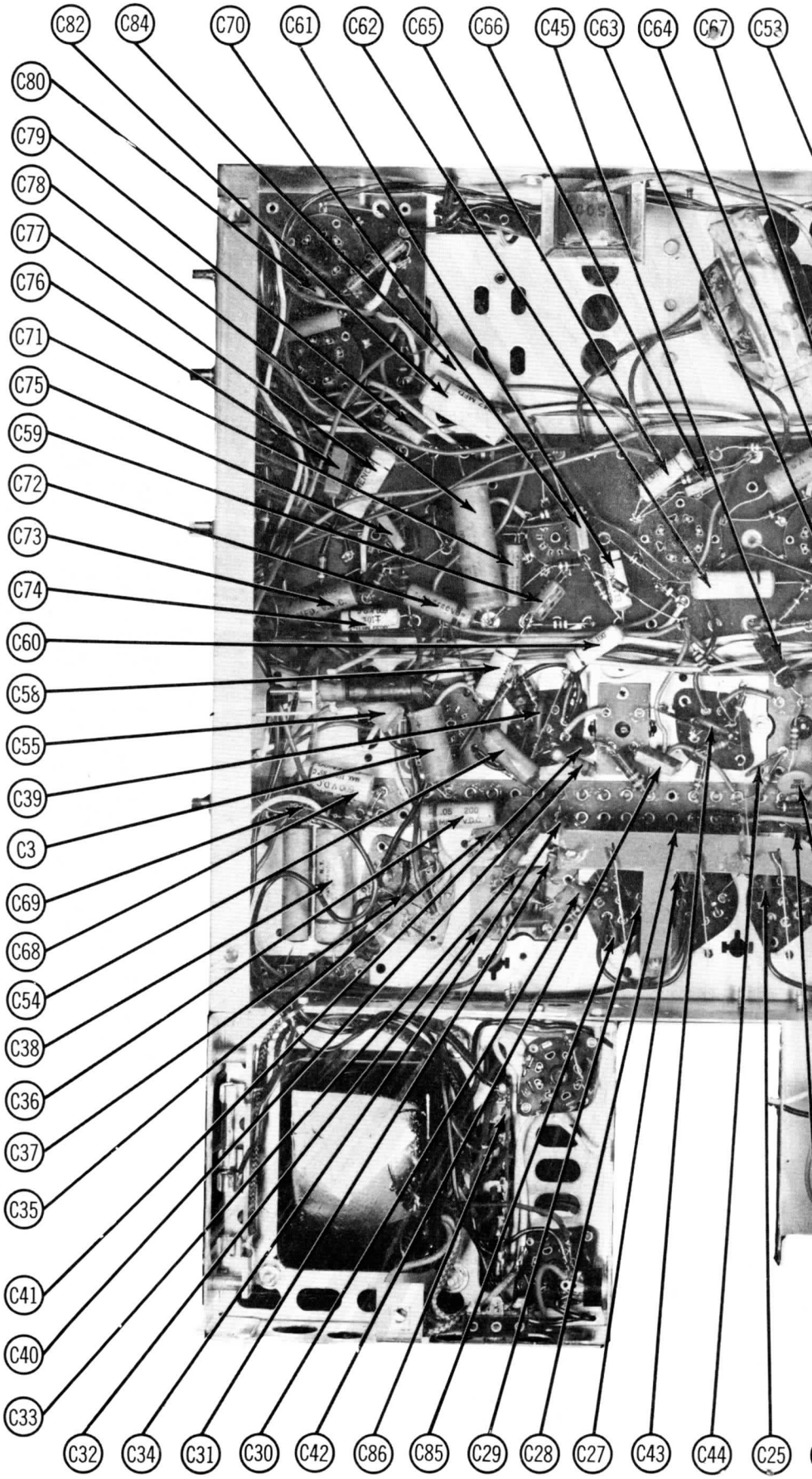


GENERAL ELECTRIC
MODELS 21C115, 21T14 (Ch. 21TF)

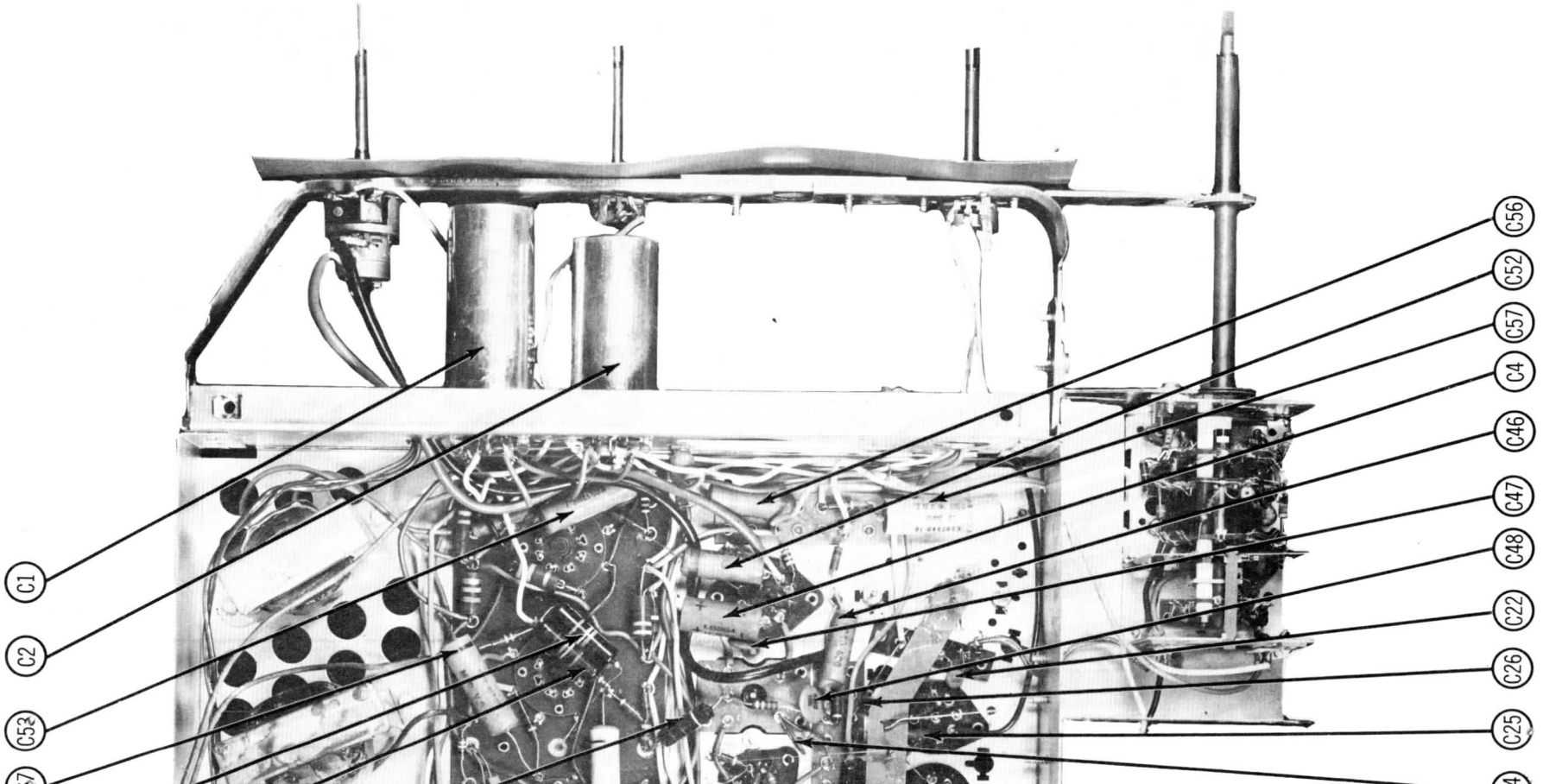


For tube location see
Tube Placement chart page 5.

CHASSIS TOP VIEW

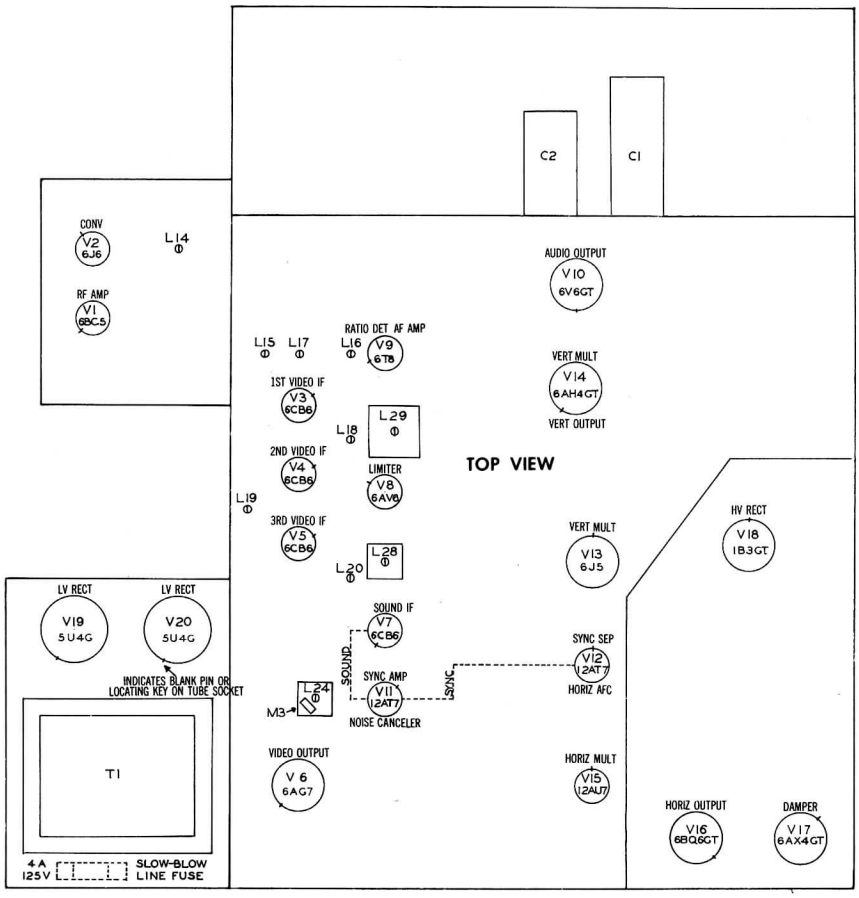


CHASSIS BOTTOM VIEW-CAPACI



CAPACITOR IDENTIFICATION

TUBE PLACEMENT CHART



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 - V19, V20, Fuse (M1)

LOSS OF PICTURE OR SOUND
No pic, no sound, has raster - V2, V3, V4, V5
No pic, no sound, has snow - V1, V2, V3
No pic, has sound, has raster - V6, V21
Has pic, no sound - V7, V8, V9, V10
Overloaded picture -

SYNC FAILURE
No vert. sync - V12, V13, V14
No horiz. sync - V12, V15
No vert. or horiz. sync - V12

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

ALIGNMENT INSTRUCTIONS

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

The high voltage shock hazard may be eliminated by removing the horizontal multivibrator tube from its socket.
Allow 20 minute warm-up period for receiver and test equipment.

TRAP ALIGNMENT

Turn the fine tuning control and the contrast control fully clockwise. Turn the volume control and the area control fully counter clockwise.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
1.	Direct	High side to point (B). Low side to chassis.	Not used	47.25MC (400∿Mod)	11	Vert. Amp. to point (A). Low side to chassis.	A1	Remove V11 and V16 from their sockets. Adjust for MINIMUM 400∿ indication on scope. If necessary, set scope gain to maximum.
2.	"	"	"	41.25MC	"	"	A2	"
3.	"	High side to point (C). Low side to chassis.	"	4.5MC (400∿Mod)	"	Vert. Amp. thru detector (Fig.1) to point (A). Low side to chassis.	A3	Adjust for MINIMUM 400∿ indication on scope.

VIDEO IF ALIGNMENT

Connect the negative lead of a 4.5 volt bias supply to point (D). Connect positive lead to chassis.
Turn contrast control fully counter clockwise.
Remove the converter tube from its socket and replace with 6J6 which has pin 1 removed. This will disable the local oscillator and reduce the possibility of erroneous indications.
Connect the synchronized sweep voltage from the sweep 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
4.	Direct	High side to an ungrounded tube shield floating over dummy converter tube. Low side to chassis.	44MC (10MC Swp)	44.15MC 44.15MC 44.15MC 45.25MC 42.9MC	11	Vert. Amp. thru 10KΩ resistor to point (E). Low side to chassis.	A4, A5 A6 A7 A8	Calibrate scope so that .75 volt produces 2 inch vertical deflection. Peak A4 thru A8 for maximumum response at marker frequency.
5.	"	"	"	41.25MC 42.5MC 45.0MC 45.75MC 47.25MC	"	"		Adjust A4 thru A8 for response similar to Fig.2. If necessary, retouch A4, A5 and A6 to shape peak region of curve.

SOUND IF ALIGNMENT USING AM SIGNAL GENERATOR AND VTVM

Connect two matched 100KΩ (±1%) resistors in series from point (F) to chassis. The junction of these two resistors is alignment point (G) as shown on the schematic.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	CHANNEL	CONNECT VTVM	ADJUST	REMARKS
6.	.01MFD	High side to pin 1 (grid) of 6CB6 (V7). Low side to chassis.	4.5MC (Unmod)	Any non-interfering channel	DC probe to point (F). Common to chassis.	A9, A10, A11	Adjust for maximum deflection.
7.	"	"	"	"	DC probe to point (H). Common to point (G).	A12	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∿ modulated 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
6.	.01MFD	High side to pin 1 (grid) of 6CB6 (V7). Low side to chassis.	4.5MC (450KC Swp)	4.5MC	Any non-interfering channel	Vert. Amp. thru 10KΩ to point (F). Low side to chassis.	A9, A10 A11	Disconnect stabilizer capacitor C4. Adjust for curve of maximum amplitude and symmetry as in Fig. 3.
7.	"	"	"	"	"	Vert. Amp. thru 10KΩ to point (H). Low side to chassis.	A12	Reconnect stabilizer capacitor C4. Adjust so that 4.5MC occurs at center of crossover lines as in Fig.4. SLIGHTLY retouch A11 for maximum amplitude and straightness of crossover lines.

SOUND IF ALIGNMENT USING TV SIGNAL AND VTVM

Replace V11 and V16.
Remove dummy oscillator tube and replace original 6J6 in its socket.
Turn the set on and tune in a TV station.
Connect the VTVM and adjust A9, A10, A11 and A12 as in steps 6 and 7 under "Sound IF alignment using AM signal generator and VTVM".

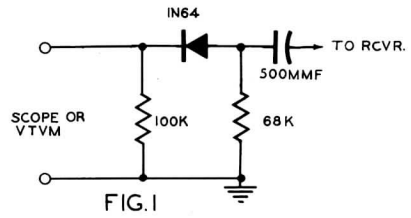


FIG.1

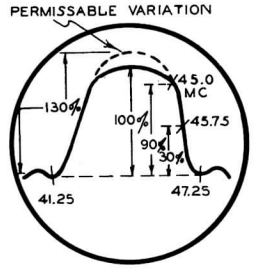


FIG.2

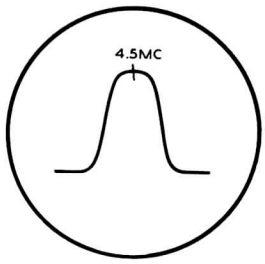


FIG3

ALIGNMENT INSTRUCTIONS (cont)

OSCILLATOR ADJUSTMENT

Leave bias connected as under Video IF alignment.
Connect the synchronized sweep voltage from the sweep 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
8.	Two 120Ω Carbon Resistors	Across antenna terminals with 120Ω in each lead.	213MC (10MC Swp)	211.25MC 215.75MC	13	Vert. Amp. thru 10KΩ resistor to point ◇E◇. Low side to chassis.	A13	Adjust to place sound marker in the trap notch as in Fig. 5.
			207MC (10MC Swp)	205.25MC 209.75MC	12			
			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			
9.	"	"	85MC (10MC Swp)	83.25MC 87.75MC	6	"	A14	"
			79MC (10MC Swp)	77.25MC 81.75MC	5			
			69MC (10MC Swp)	67.25MC 71.75MC	4			
			63MC (10MC Swp)	61.25MC 65.75MC	3			
			57MC (10MC Swp)	55.25MC 59.75MC	2			

RF AND MIXER ALIGNMENT

The RF and mixer portion of this receiver has been properly aligned at the factory and is very stable. Alignment of this portion should not be attempted in the field.

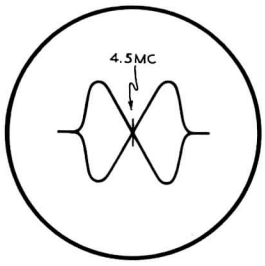


FIG.4

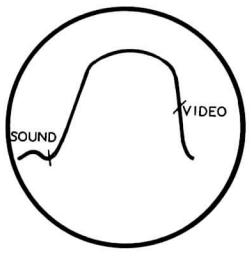
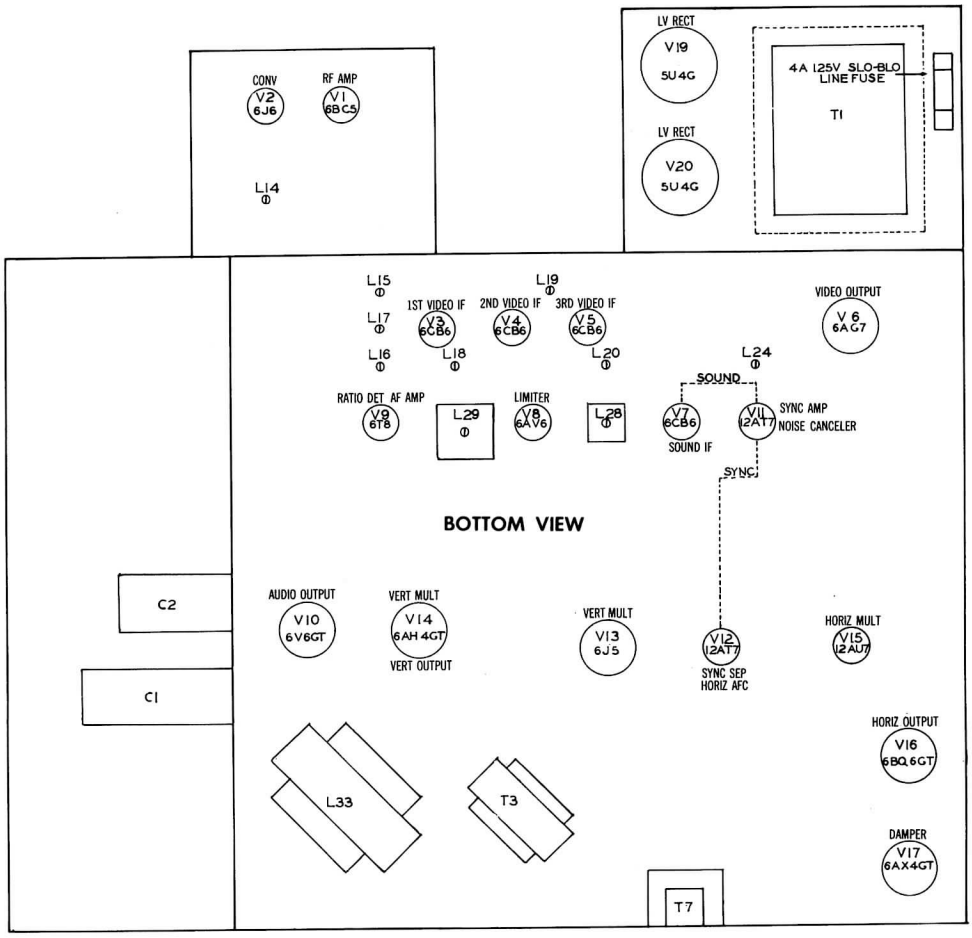


FIG.5

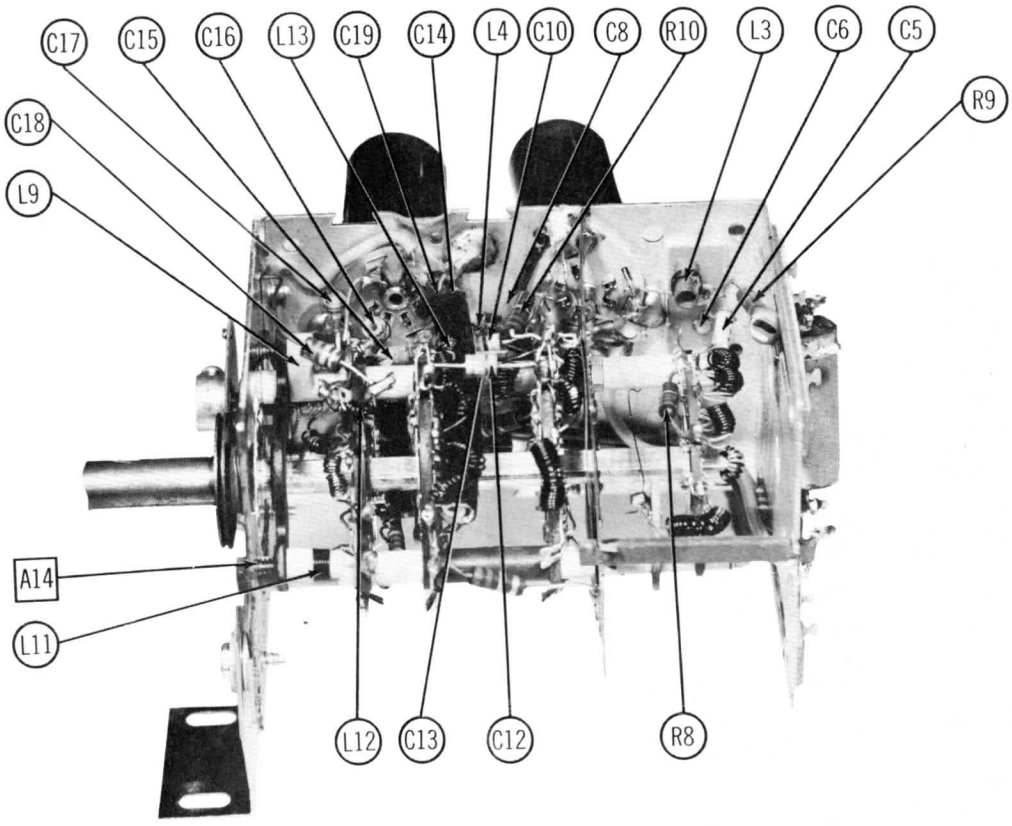
RESISTANCE MEASUREMENTS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V 1	6BC5	1. 3Meg	0Ω	0Ω	.1Ω	† 6. 7KΩ	† 8. 9KΩ	0Ω		
V 2	6J6	† 14. 3KΩ	† 6. 5KΩ	0Ω	.1Ω	220KΩ	15KΩ	0Ω		
V 3	6CB6	1. 2Meg	56Ω	0Ω	.1Ω	† 4KΩ	† 4KΩ	0Ω		
V 4	6CB6	1. 2Meg	56Ω	0Ω	.1Ω	† 4KΩ	† 4KΩ	0Ω		
V 5	6CB6	. 2Ω	180Ω	0Ω	.1Ω	† 4. 7KΩ	† 22. 7KΩ	0Ω		
V 6	6AG7	0Ω	.1Ω	0Ω	220KΩ	83Ω	† 18KΩ	0Ω	† 4KΩ	
V 7	6CB6	2. 8Ω	180Ω	0Ω	.1Ω	† 4. 7KΩ	† 22. 7KΩ	0Ω		
V 8	6AU6	47KΩ	0Ω	0Ω	.1Ω	† 27 KΩ	75KΩ	0Ω		
V 9	6T8	2. 0Meg	22KΩ	2. 0Meg	.1Ω	0Ω	0Ω	0Ω	250K	† 470KΩ
V 10	6V6GT	INF	.1Ω	† 1. 1KΩ	† 680Ω	470KΩ	INF	0Ω	470Ω	
V 11	12AT7	† 47KΩ	2. 2Meg	2. 8Ω	.1Ω	.1Ω	† 47KΩ	70KΩ	15KΩ	0Ω
V 12	12AT7	† 60KΩ	3Meg	0Ω	0Ω	0Ω	180KΩ	2. 2KΩ	82KΩ	.1Ω
V 13	6J5	INF	0Ω	▲ 7Meg	INF	100KΩ	INF	.1Ω	225KΩ	
V 14	6AH4GT	2. 2Meg	0Ω	INF	100KΩ	† 730Ω	600Ω	.1Ω	600Ω	
V 15	12AU7	† 8. 7KΩ	L 2Meg	1. 2KΩ	0Ω	0Ω	† 82KΩ	130KΩ	1. 2KΩ	.1Ω
V 16	6BQ6GT	INF	0Ω	INF	†15KΩ	470KΩ	† 500Ω	.1Ω	150Ω	TOP CAP ▲ 16Ω
V 17	6AX4GT	INF	INF	6Meg	INF	† 60Ω	INF	.1Ω	0Ω	
V 18	1B3GT	PINS 1-8 HAVE INF. RESISTANCE								TOP CAP ▲ 366Ω
V 19	5U4G	INF	70KΩ	INF	13Ω	INF	13Ω	INF	70KΩ	
V 20	5U4G	INF	70KΩ	INF	12Ω	INF	12Ω	INF	70KΩ	
V 21	21EP4A	0Ω	22KΩ	PIN 10 ▲ 220KΩ	PIN 11 300KΩ	PIN 12 .1Ω				

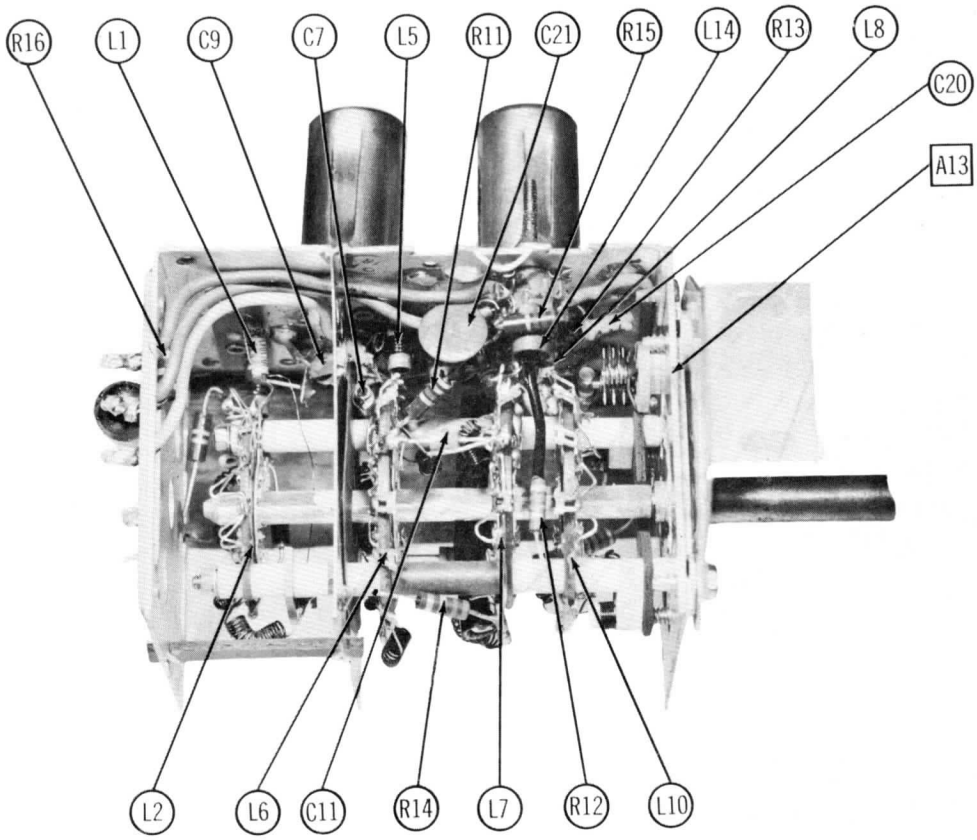
† MEASURED FROM PIN 2 OF V 20.
▲ MEASURED FROM PIN 3 OF V17.



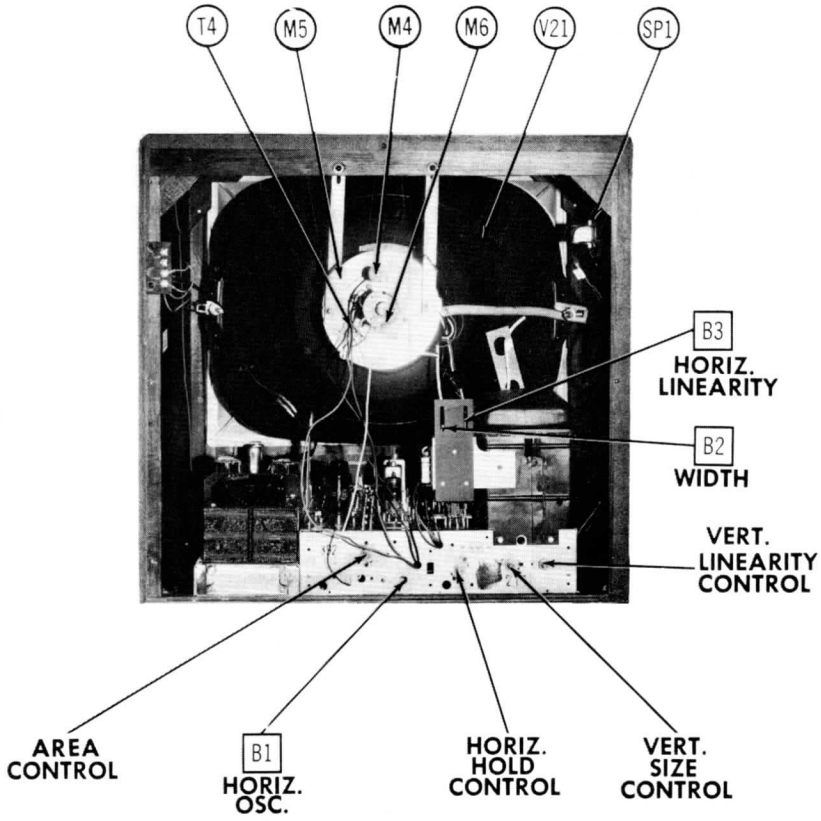
TUBE PLACEMENT CHART



RF TUNER-RIGHT SIDE



RF TUNER-LEFT SIDE



CABINET—REAR VIEW

HORIZONTAL SWEEP CIRCUIT ADJUSTMENTS

Turn the set on and tune in a TV station preferably a test pattern.

1. Short pin 2 (grid) of 12AU7 (V15) to chassis.
2. Short-circuit terminals of horizontal oscillator coil L30.
3. Bring picture closely into sync by adjusting horizontal hold control.
4. Remove short across L30.
5. Adjust horizontal oscillator slug (B1) until picture is in sync.
6. Remove short from pin 2 of V15 to chassis.

Check for proper lock-in of horizontal sync on all available channels.

The width slug (B2) should be adjusted 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.

TROUBLE SHOOTING AIDS

SWEEP

HORIZONTAL

LOSS OF SWEEP

Follow procedure outlined under "Loss of High Voltage".

INSUFFICIENT SWEEP

Check by substitution V15, V16, V17, V19 and V20. Check adjustment of B2 and B3. Check waveform W13.

If Satisfactory	If Unsatisfactory
Check C78, C81, C82, R94, R96, T2, T4A and other associated components.	Check C75, C76, C77, R85, R88, R92 and other associated components.

DRIVE LINES

Check by substitution V15, V16 and V17. Check C75, C76, C77, C78, C81, C82, T2, T4A and other associated circuit components for failure or change of value.

COMPRESSED LEFT SIDE

Check by substitution V16 and V17. Check horizontal output and damper circuit components especially T2 and T4A.

FOLDS

Follow procedure outlined under "Drive Lines".

XMAS TREE EFFECT

Substitute V15. Check C74, C75, L30 and other components associated with the horizontal oscillator stage.

VERTICAL

LOSS OF SWEEP

Check by substitution V13 and V14. Check waveform W7.

If Satisfactory	If Unsatisfactory
Check T3, T4B, R79 and other associated circuit components.	Check C62, C65, C66, R71, R75 and other associated components.

INSUFFICIENT SWEEP

Check adjustment of height and vertical linearity controls. Proceed as outlined under "Loss of Sweep".

COMPRESSED AT TOP

Check by substitution V13 and V14. Check T3, T4B, C1D and other associated circuit components.

COMPRESSED AT BOTTOM

Check by substitution V13 and V14. Check C62, C63 and other associated circuit components.

FOLDS

Substitute V13 and V14. Check components associated with these stages for failure or change of value.

SYNC

LOSS OF HORIZONTAL AND VERTICAL SYNC

Check by substitution V11 and V12. Check C54, C58, C3 and other components associated with V11 and V12.

LOSS OF VERTICAL SYNC - HORIZONTAL SYNC SATISFACTORY

Check by substitution V11, V12 , V13. Check waveform at W6.

If Satisfactory	If Unsatisfactory
Check components associated with V13.	Check C60, R69 and other components associated with V11 and V12.

LOSS OF HORIZONTAL SYNC - VERTICAL SYNC SATISFACTORY

Check by substitution V12 and V15. Check components associated with V12B and V15 especially C74 and C75.

HORIZONTAL BENDING

Check by substitution V12, V15 and V16. Check circuit of V12, V15 and V16 for filament lead dress short. Check horizontal AFC filter network for component failure or change of value.

VIDEO

LOSS OF VIDEO

Substitute V6. Check associated components including picture tube.

SOUND BARS (4.5MC Beat)

Check fine tuning adjustment. Check 4.5MC trap adjustment (A3).. Check video IF alignment.

POOR CONTRAST

Substitute V6. Check video detector crystal and assembly. Check components associated with these stages. Check picture tube.

NEGATIVE PIX

Substitute V6 and V11. Check video detector crystal and assembly. Check picture tube. Check adjustment of the "Area Control". Check AGC network.

SMEAR

Check by substitution V6. Check video detector crystal and assembly. Check C36, C38, L25, R35, R36, R37, R1, R3A, picture tube and other associated circuit components.

WIDE BLACK BAR ACROSS PIX

Check V1, V2, V3, V4, V5 and V6 for heater to cathode leakage. Check B+ filter capacitors for open.

AUDIO

WEAK OR NO SOUND

Check by substitution V7, V8, V9 and V10. Check stages of V9B and V10 using an audio signal generator. Apply audio signal across R52 or R3B.

If Satisfactory	If Unsatisfactory
Check ratio detector and audio IF alignment and components.	Check components associated with V9B and V10.

BUZZ

Adjust A12 for minimum buzz. If buzz is still objectionable substitute V9 and readjust A11 and A12. Follow procedure outlined in the alignment section.

DISTORTED

Check by substitution V7, V8, V9 and V10. Follow procedure outlined under "Weak or No Sound".

TROUBLE SHOOTING AIDS (cont)

POWER

DEAD SET

If filaments fail to light, check AC interlock assembly, yoke plug interlock, switch on volume control and T1. If filaments light, substitute V19 and V20. Check B+ filter and decoupling components.

SMALL AND/OR DIM PIX

Substitute V19 and V20. Check B+ filter and decoupling components.

HIGH VOLTAGE

LOSS OF HIGH VOLTAGE

Check by substitution V15, V16, V17 and V18. Check waveform W13.

If Satisfactory	If Unsatisfactory
Check C78, C81, C82, R94, R96, R97, L32, T2, T4A and other associated circuit components.	Check C75, C76, C77, R85, R88, R92 and other associated components.

INSUFFICIENT HIGH VOLTAGE

Check by substitution V15, V16, V17, V18, V19, and V20. Check picture tube. Proceed as outlined under "Loss of High Voltage".

BLOOMING

Check by substitution V15, V16, V17, V18, V19 and V20. Check C78, R94, R97, T2, T4A and other associated circuit components.

GENERAL

RASTER SOUND NO PIX

Follow procedure outlined under "Loss of Video".

RASTER NO SOUND NO PIX

Check by substitution V1, V2, V3, V4, and V5. Check video detector crystal and assembly. Check other associated components.

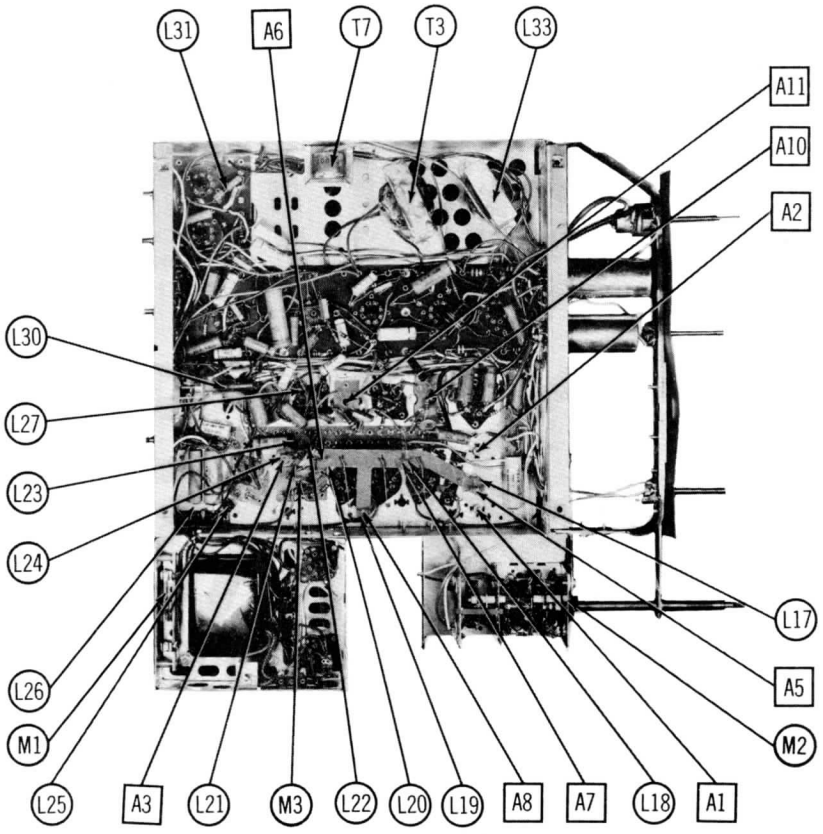
NO RASTER NO SOUND

Follow procedure outlined under "Dead Set".

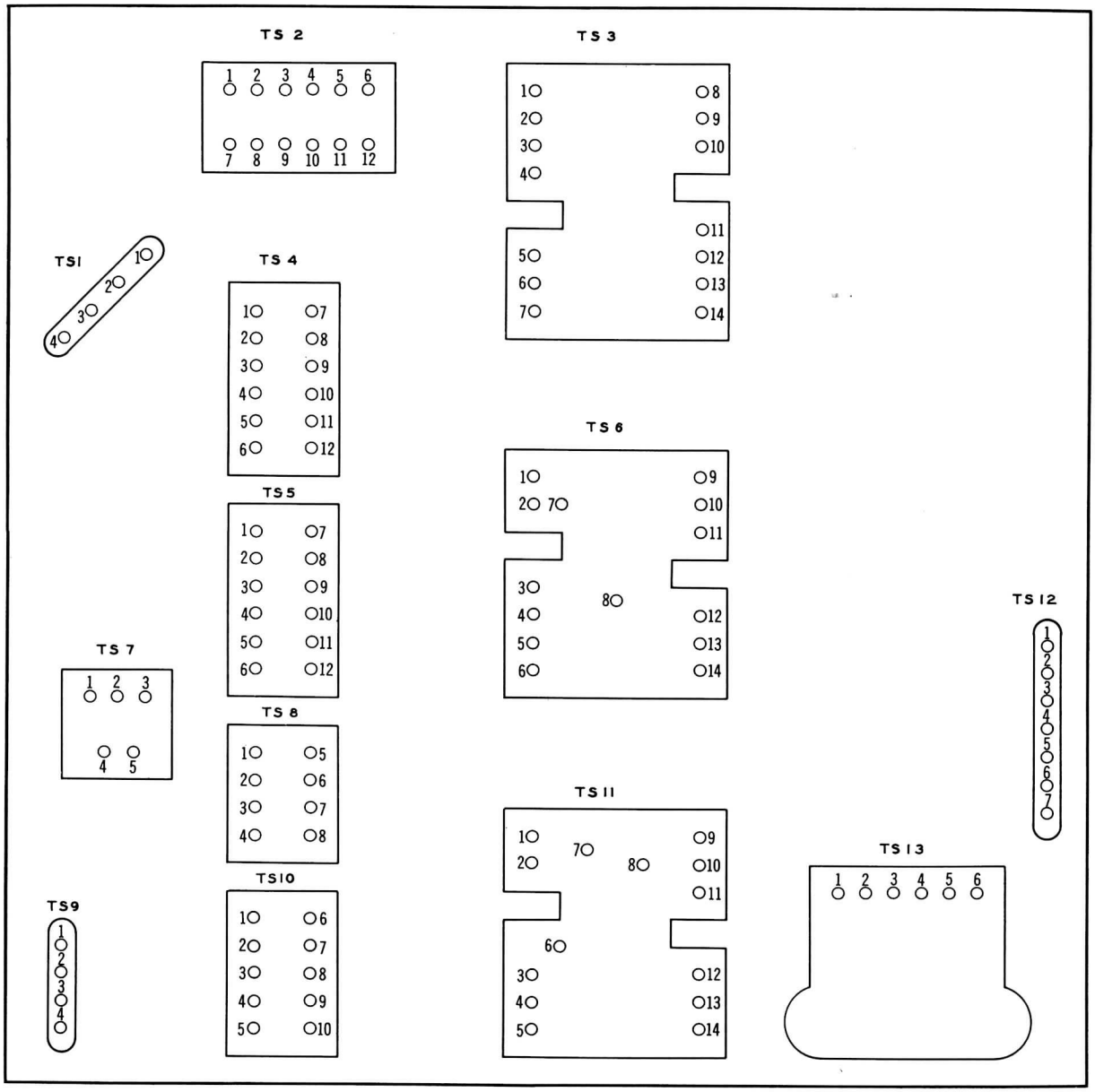
INTERMITTENT STREAKS

Check high voltage section for corona discharge and arcing. Check video signal for interference pulses.

Symptoms shown are assumed and are not indicative of the quality and workmanship of this equipment.



CHASSIS BOTTOM VIEW-TRANS., INDUCTOR & ALIGN. IDENTIFICATION



TERMINAL LOCATION CHART

SET 229 FOLDER 7

TUBES (SYLVANIA, GENERAL ELECTRIC, WESTINGHOUSE)

ITEM No.	USE	REPLACEMENT DATA: General Electric PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RETMA BASE TYPE	NOTES
V1	RF Amplifier	6BC5	6CB5	7BD	
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 Output	6AG7	6AG7	8Y	
V7	Sound IF Amp.	6CB6	6CB6	7CM	
V8	Limiter	6AU6	6AU6	7BK	
V9	Ratio Detector – AF Amplifier	6T8	6T8	9E	
V10	Audio Output	6V6GT	6V6GT	7S	
V11	Sync Amplifier-Noise Canceller	12AT7	12AT7	9A	
V12	Sync Sep.–Horiz. AFC	12AT7	12AT7	9A	
V13	Vert. Mult.	6J5	6J5	6Q	
V14	Vert. Mult.–Vert. Output	6AH4GT	6AH4GT	8EL	
V15	Horiz. Mult.	12AU7	12AU7	9A	
V16	Horiz. Output	6BQ6GT	6BQ6GT	6AM	
V17	Damper	6AX4GT	6AX4GT	4CG	
V18	HV Rectifier	1B3GT	1B3GT	3C	
V19	LV Rectifier	5U4G	5U4G	5T	
V20	LV Rectifier	5U4G	5U4G	5T	

CATHODE-RAY TUBE

ITEM No.	REPLACEMENT DATA: General Electric PART No.	SYLVANIA PART No.	GENERAL ELECTRIC PART No.	WESTINGHOUSE PART No.	RETMA BASE TYPE	NOTES
V21A	21EP4A	21EP4A	21EP4A		12D	① Circuit changes necessary
		21EP4 ①	21EP4 ①		12D	
		21EP4B			12D	
		21FP4 ①			12C	
		21FP4A ①			12C	
B	21JP4		21JP4		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: CAP.	RATING: VOLT	REPLACEMENT DATA: General Electric PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	MALLORY PART No.	SPRAGUE PART No.	NOTES
C1A	▰90	350	RCE-163	E4D645					TVL-4625	
B	■30	350								
C	▲5	350								
D	100	75								
C2A	▰40	350								
B	■40	350	RCE-161	AFH4-52		DO43		FP419.3	TVL-4622	
C	▲30	350								
D	10	25								
C3	1	50	RCE-090	PRS150/4		BBR-1-50T		TC31		
C4	10	25	RCE-164	PRS25/10		BR-102A		TC22	TVA-1204	
C5	15			SI15	D6-150		GP1K-150	UC-5415	5GA-Q15	
C6	800		RCW-3037	BPD-0008	DD-801	TM5T8			5GA-T8	
C7	470			SI470	D6-471		GP2K-471	UC-5347	5GA-T47	
C8	800		RCW-3037	BPD-0008	DD-801	TM5T8			5GA-T8	
C9	800		RCW-3037	BPD-0008	DD-801	TM5T8			5GA-T8	
C10	.3									
C11	.5									
C12	1.5			SI1.5NP0	TCZ-1.5		NP0K-1R5		5TCCB-V15	
C13	470			SI470	D6-471		GP2K-471	UC-5347	5GA-T47	
C14	62									
C15	.4									
C16	10			SI10N750	TCN-10		N750K-100	NT-541	5TCU-Q1	
C17	1.5									
C18	.47									
C19	800		RCW-3037	BPD-0008	DD-801	TM5T8	801-001	DC-521	5GA-T8	
C20	15			SI15	D6-150		GP1K-150	UC-5415	5GA-Q15	
C21	5000		RCW-3014	BPD-005	MD-502	TM5D5	811-005	DC-525	5HK-D5	
C22	800		RCW-3037	BPD-0008	D6-801	TM5T8			5GA-T8	
C23	12	500		SI12	D6-120		GP1K-120	UC-5412	5GA-Q12	
C24	6	500	RCN-040							
C25	820		RCW-3052		D6-821				5GA-T82	
C26	800		RCW-3037	BPD-0008	DD-801	TM5T8	801-001	DC-521	5GA-T8	
C27	820		RCW-3052		D6-821				5GA-T82	
C28	800		RCW-3037	BPD-0008	DD-801	TM5T8	801-001	DC-521	5GA-T8	
C29	800		RCW-3037	BPD-0008	DD-801	TM5T8	801-001	DC-521	5GA-T8	
C30	800		RCW-3037	BPD-0008	DD-801	TM5T8	801-001	DC-521	5GA-T8	
C31	470		RCW-3097	SI470	D6-471		GP2K-471	UC-5347	5GA-T47	
C32	800		RCW-3037	BPD-0008	DD-801	TM5T8	801-001	DC-521	5GA-T8	
C33	5		RCW-3057							
C34	5		RCW-3057							
C35	68	500	UCG-2024	1469-00007		5R5Q7			MS-47	
C36	.05	200	UCC-045	P288-05	DF-503	PTE4S5		PT415	2TM-S5	
C37	800		RCW-3037	BPD-0008	DD-801	TM5T8	801-001	DC-521	5GA-T8	
C38	.1	600	UCC-047	P688-1	DF-104	PTE6P1		PT601	6TM-P1	
C39	5000		RCW-3014	BPD-005	MD-502	TM5D5	811-005	DC-525	5HK-D5	
C40	1300		RCW-3053	SI1300	D6-132		GP2L-132		5GA-D13	
C41	5000		RCW-3014	BPD-005	MD-502	TM5D5	811-005	DC-525	5HK-D5	
C42	47	500	UCW-520	SI47	D6-470	5R5Q5	GP1K-470	UC-5447	5GA-Q47	
C43	5000		RCW-3014	BPD-005	MD-502	TM5D5	811-005	DC-525	5HK-D5	
C44	5000		RCW-3014	BPD-005	MD-502	TM5D5	811-005	DC-525	5HK-D5	
C45	.001	400	RCC-035	P488-001	D6-102	PTE4D1	GP2L-102	PT421	4TM-D1	
C46	.004	600	RCC-038	P688-004	D6-402	PTE4D4	GP2-333-402	PT424	4TM-D4	
C47	5000		RCW-3014	BPD-005	MD-502	TM5D5	811-005	DC-525	5HK-D5	
C48	10000		RCW-3054	BPD-01	DD-1032	TM5S1	811-01	DC-511	5HK-S1	
C49	.01			P688-01	D6-103	PTE6S1	GP2-333-103	PT611	6TM-S1	Note 1
C50	5000		RCW-3014	BPD-005	MD-502	TM5D5	811-005	DC-525	5HK-D5	Note 4
C51	43		UCG-1019							Note 4
C52	.01	600	UCC-040	P688-01	D6-103	PTE6S1	GP2-333-103	PT611	6TM-S1	
C53	.008	1000	UCC-061	P1088-008		PTE16D8		PT1628	MB-D8	

PARTS LIST

CAPACITORS (

ITEM No.	RATING: CAP.	RATING: VOLT	General Electric PART No.	AEROVOX PART No.	CENTRALAB PART No.
C54	.01	200	UCC-040	P488-01	D6-103
C55	.2	200	UCC-051	P288-2	
C56	.05	200	UCC-045	P288-05	DF-503
C57	.2	200	UCC-051	P288-2	
C58	.0047	600	RCN-051	P688-0047	D6-472
C59	470	500	UCU-544	SI470	D6-471
C60	.001	600	RCN-062		
C61	.001	600	RCN-062		
C62	.022	600	RCN-050	P688-022	
C63	.01	600		P688-01	D6-103
C64	.01	600		P688-01	D6-103
C65	.001	600	RCN-071	P688-001	D6-102
C66	470	500	UCU-544	1469-0005	
C67	.1	200	UCC-047	P288-1	DF-104
C68	.022	600	RCN-050	P688-022	
C69	.0047	600	RCN-051	P688-0047	D6-472
C70	180	500	RCU-307		
C71	.001	600	UCC-035	P688-001	D6-102
C72	.001	200	UCC-035	P688-001	D6-102
C73	.05	200	UCC-047	P288-05	DF-503
C74	.0039	600	RCN-034	1464-004	
C75	560	500	UCU-1046		
C76	560	500	UCU-1046		
C77	.01	600	RCN-063	P688-01	D6-103
C78	.1	600	UCC-048	P688-1	DF-104
C79	560	500	UCU-1046		
C80	800		RCW-3037	BPD-0008	DD-801
C81	.01	600	RCN-025		
C82	.047	600	RCN-041		
C83	240	3000	RCW-3101		
C84	.01	1000	RCN-030	P1088-01	
C85	800		RCW-3037	BPD-0008	DD-801
C86	800		RCW-3037	BPD-0008	DD-801

Note 1. Capacitor used on console models only.
Note 2. Some Models may use a 560MMF in this application.
Note 3. In some Models, C63 is .022MFD and C64 is not used
Note 4. Not used in all Models.

CONT

ITEM No.	RATING: RESISTANCE	RATING: WATTS	General Electric PART No.	IRC PART No.
R1A	100KΩ	½	RRC-191	Q11-128
B	Shaft		Not Req.	Not Req.
R2A	125KΩ	½	RRC-193	Q11-228
B	Shaft		Not Req.	Not Req.
R3A	700Ω	2	RRC-233	*QJ-506
B	500KΩ	½	Not R eq.	
C	Switch		Not Req.	
R4A	2Meg	½	RRC-225	Q11-139
B	Shaft		Not Req.	Not Req.
R5A	200KΩ	½	RRC-219	Q11-129
B	Shaft		Not Req.	Not Req.
R6A	2Meg	½	RRC-225	Q11-139
B	Shaft		Not Req.	Not Req.
R7A	4000Ω	2	RRC-218	W-4000
B	Shaft		Not Req.	Not Req.

† Universal replacement (Mallory exact duplicate part #
* CONCENTRIKIT EQUIVALENT KIT - K-3 BASE ELEME
B13-133 & R2-308

RESIST

ITEM No.	RATING: OHMS	RATING: WATT	REPLACEMENT DATA: General Electric PART No.	REPLACEMENT DATA: IRC PART No.	NOTES
R8	2200Ω	½		BTS-2200	
R9	15KΩ	½		BTS-15K	
R10	2200Ω	½		BTS-2200	
R11	470Ω	½		BTS-470	
R12	8200Ω	½		BTS-8200	
R13	15KΩ	½		BTS-15K	
R14	220KΩ	½		BTS-220K	
R15	2200Ω	½		BTS-2200	
R16	470Ω	½		BTS-470	
R17	10Ω	½	URD-001	BTS-10	
R18	100KΩ	½	URD-097	BTS-100K	
R19	56Ω	½	URD-019	BTS-56	
R20	1000Ω	½	URD-049	BTS-1000	
R21	100KΩ	½	URD-097	BTS-100K	
R22	56Ω	½	URD-019	BTS-56	
R23	1000Ω	½	URD-049	BTS-1000	
R24	56000Ω	5	RRW-079		
R25	2.2Meg	½	URD-129	BTS-2.2Meg	
R26	1Meg	½	URD-121	BTS-1Meg	
R27	470KΩ	½	URD-113	BTS-470K	
R28	180Ω	½	URD-031	BTS-180	
R29	18KΩ	½	URD-079	BTS-18K	
R30	4700Ω	1	URE-065	BTA-4700	
R31	68KΩ	½		BTS-68K	Note 1
R32	3300Ω	½	URD-061	BTS-3300	
R33	10Ω	½	URD-001	BTS-10	
R34	220KΩ	½	URD-105	BTS-220K	
R35	18KΩ	2	URF-079	BTB-18K	
R36	4000Ω	10	RRW-053	1 3/4A-4000	
R37	270KΩ	½	URD-107	BTS-270K	
R38	1Meg	½	URD-121	BTS-1Meg	
R39	100KΩ	½	URD-097	BTS-100K	
R40	22KΩ	½	URD-081	BTS-22K	
R41	180Ω	½	URD-031	BTS-180	
R42	18KΩ	½	URD-079	BTS-18K	
R43	4700Ω	1	URE-065	BTA-4700	
R44	100KΩ	½	URD-097	BTS-100K	
R45	47KΩ	½	URD-089	BTS-47K	
R46	100KΩ	½	URD-097	BTS-100K	
R47	470KΩ	½	URD-113	BTS-470K	

STINGHOUSE)

NOTES

A E	NOTES
	① Circuit changes necessary

Electrolytic Capacitors.

MALLORY PART No.	SPRAGUE PART No.	NOTES
	TVL-4625	
FP419.3	TVL-4622	
TC31		
TC22	TVA-1204	
UC-5415	5GA-Q15	
	5GA-T8	
UC-5347	5GA-T47	
	5GA-T8	
	5GA-T8	
	5TCCB-V15	
UC-5347	5GA-T47	
NT-541	5TCU-Q1	
DC-521	5GA-T8	
UC-5415	5GA-Q15	
DC-525	5HK-D5	
	5GA-T8	
UC-5412	5GA-Q12	
	5GA-T82	
DC-521	5GA-T8	
	5GA-T82	
DC-521	5GA-T8	
DC-521	5GA-T8	
DC-521	5GA-T8	
UC-5347	5GA-T47	
DC-521	5GA-T8	
	MS-47	
PT415	2TM-S5	
DC-521	5GA-T8	
PT601	6TM-P1	
DC-525	5HK-D5	
	5GA-D13	
DC-525	5HK-D5	
UC-5447	5GA-Q47	
DC-525	5HK-D5	
DC-525	5HK-D5	
PT421	4TM-D1	
PT424	4TM-D4	
DC-525	5HK-D5	
DC-511	5HK-S1	
PT611	6TM-S1	Note 1
DC-525	5HK-D5	Note 4
		Note 4
PT611	6TM-S1	
PT1628	MB-D8	

PARTS LIST AND DESCRIPTIONS

CAPACITORS (cont)

ITEM No.	RATING CAP.	VOLT	REPLACEMENT DATA General Electric PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	MALLORY PART No.	SPRAGUE PART No.	NOTES
C54	.01	200	UCC-040	P488-01	D6-103	PTE4S1	GP2-333-103	PT4 S1	4TM-S1	
C55	.2	200	UCC-051	P288-2		PTE4P2		PT402	2TM-P2	
C56	.05	200	UCC-045	P288-05	DF-503	PTE4S5		PT415	2TM-S5	
C57	.2	200	UCC-051	P288-2		PTE4P2		PT402	2TM-P2	
C58	.0047	600	RCN-051	P688-0047	D6-472	PTE6D47	GP2-333-472	PT4247	4TM-D47	
C59	470	500	UCU-544	SI470	D6-471	5R5T5	GP2K-471	UC-5347	5GA-T47	
C60	.001	600	RCN-062							
C61	.001	600	RCN-062							Note 2
C62	.022	600	RCN-050	P688-022		PTE6S22		PT6222	6TM-S22	
C63	.01	600		P688-01	D6-103	PTE6S1	GP2-333-103	PT611	6TM-S1	Note 3
C64	.01	600		P688-01	D6-103	PTE6S1	GP2-333-103	PT611	6TM-S1	Note 3
C65	.001	600	RCN-071	P688-001	D6-102	PTE6D1	GP2L-102	PT621	6TM-D1	
C66	470	500	UCU-544	1469-0005		5R5T5		MCB245	MS-35	
C67	.1	200	UCC-047	P288-1	DF-104	PTE4P1		PT401	2TM-P1	
C68	.022	600	RCN-050	P688-022		PTE6S22		PT6122	6TM-S22	Note 4
C69	.0047	600	RCN-051	P688-0047	D6-472	PTE6D47	GP2-333-472	PT6247	6TM-D47	
C70	180	500	RCU-307							
C71	.001	600	UCC-035	P688-001	D6-102	PTE6D1	GP2L-102	PT621	6TM-D1	
C72	.001	200	UCC-035	P688-001	D6-102	PTE6D1	GP2L-102	PT621	6TM-D1	
C73	.05	200	UCC-047	P288-05	DF-503	PTE4S5		PT495	2TM-S5	
C74	.0039	600	RCN-034	1464-004		1DR5D4		MCB463	MS-24	
C75	560	500	UCU-1046							
C76	560	500	UCU-1046							
C77	.01	600	RCN-063	P688-01	D6-103	PTE6S1	GP2-333-103	PT611	6TM-S1	
C78	.1	600	UCC-048	P688-1	DF-104	PTE6P1		PT601	6TM-P1	
C79	560	500	UCU-1046							
C80	800		RCW-3037	BPD-0008	DD-801	TM5T8			5GA-T8	
C81	.01	600	RCN-025							
C82	.047	600	RCN-041							
C83	240	3000	RCW-3101							
C84	.01	1000	RCN-030	P1088-01		PTE16S1		PT1611	MB-S1	
C85	800		RCW-3037	BPD-0008	DD-801	TM5T8	801-001	DC-521	5GA-T8	
C86	800		RCW-3037	BPD-0008	DD-801	TM5T8	801-001	DC-521	5GA-T8	

Note 1. Capacitor used on console models only.
Note 2. Some Models may use a 560MMF in this application.
Note 3. In some Models, C63 is .022MFD and C64 is not used
Note 4. Not used in all Models.

CONTROLS

ITEM No.	RATING RESISTANCE	WATTS	REPLACEMENT DATA General Electric PART No.	IRC PART No.	CLAROSTAT PART No.	CENTRALAB PART No.	MALLORY PART No.	INSTALLATION NOTES
R1A	100KΩ	½	RRC-191	Q11-128	AG-49-S	AB-40	U-41	Brightness
B	Shaft		Not Req.	Not Req.	KSS-3	AK-4	Not Req.	Attach to R1A
R2A	125KΩ	½	RRC-193	Q11-228	AG-49-S		U-415	Vert. Hold
B	Shaft		Not Req.	Not Req.	KSS-3		Not Req.	Attach to R2A
R3A	700Ω	2	RRC-233	*QJ-506	RTV-439		WF751 } †	Contrast - Panel
B	500KΩ	½	Not Req.				UR55A } †	Volume - Rear
C	Switch		Not Req.				US-26 } †	Attach to R3B
R4A	2Meg	½	RRC-225	Q11-139	AG-83-S	AB-75	U-56	Area
B	Shaft		Not Req.	Not Req.	FKS-1/4	AK-1	Not Req.	Attach to R4A
R5A	200KΩ	½	RRC-219	Q11-129	AG-52-S	AB-46	U-43	Horiz. Hold
B	Shaft		Not Req.	Not Req.	FKS-1/4	AK-1	Not Req.	Attach to R5A
R6A	2Meg	½	RRC-225	Q11-139	AG-83-S	AB-75	U-56	Vert. Size
B	Shaft		Not Req.	Not Req.	FKS-1/4	AK-1	Not Req.	Attach to R6A
R7A	4000Ω	2	RRC-218	W-4000	A-43-4000	VK-134	R5000L	Vert. Linearity
B	Shaft		Not Req.	Not Req.	FKS-1/4	Not Req.	Not Req.	Attach to R7A

† Universal replacement (Mallory exact duplicate part # UE24WS)
* CONCENTRIKIT EQUIVALENT KIT - K-3 BASE ELEMENTS & SHAFTS W17-105 & P3-210 (Panel) B13-133 & R2-308 (Rear) & SWITCH 76-1.

RESISTORS

ITEM No.	RATING OHMS	WATT	REPLACEMENT DATA General Electric PART No.	IRC PART No.	NOTES
R8	2200Ω	½		BTS-2200	
R9	15KΩ	½		BTS-15K	
R10	2200Ω	½		BTS-2200	
R11	470Ω	½		BTS-470	
R12	8200Ω	½		BTS-8200	
R13	15KΩ	½		BTS-15K	
R14	220KΩ	½		BTS-220K	
R15	2200Ω	½		BTS-2200	
R16	470Ω	½		BTS-470	
R17	10Ω	½	URD-001	BTS-10	
R18	100KΩ	½	URD-097	BTS-100K	
R19	56Ω	½	URD-019	BTS-56	
R20	1000Ω	½	URD-049	BTS-1000	
R21	100KΩ	½	URD-097	BTS-100K	
R22	56Ω	½	URD-019	BTS-56	
R23	1000Ω	½	URD-049	BTS-1000	
R24	5600Ω	5	RRW-079		
R25	2. 2Meg	½	URD-129	BTS-2. 2Meg	
R26	1Meg	½	URD-121	BTS-1Meg	
R27	470KΩ	½	URD-113	BTS-470K	
R28	180Ω	½	URD-031	BTS-180	
R29	18KΩ	½	URD-079	BTS-18K	
R30	4700Ω	1	URE-065	BTA-4700	
R31	68KΩ	½		BTS-68K	Note 1
R32	3300Ω	½	URD-061	BTS-3300	
R33	10Ω	½	URD-001	BTS-10	
R34	220KΩ	½	URD-105	BTS-220K	
R35	18KΩ	2	URF-079	BTB-18K	
R36	4000Ω	10	RRW-053	1 3/4A-4000	
R37	270KΩ	½	URD-107	BTS-270K	
R38	1Meg	½	URD-121	BTS-1Meg	
R39	100KΩ	½	URD-097	RTS-100K	
R40	22KΩ	½	URD-081	BTS-22K	
R41	180Ω	½	URD-031	BTS-180	
R42	18KΩ	½	URD-079	BTS-18K	
R43	4700Ω	1	URE-065	BTA-4700	
R44	100KΩ	½	URD-097	BTS-100K	
R45	47KΩ	½	URD-089	BTS-47K	
R46	100KΩ	½	URD-097	BTS-100K	
R47	470KΩ	½	URD-113	BTS-470K	

ITEM No.	RATING OHMS	WATT	REPLACEMENT DATA General Electric PART No.	IRC PART No.	NOTES
R48	27KΩ	½	URD-083	BTS-27K	
R49	22KΩ	½	URD-081	BTS-22K	
R50	22KΩ	½	URD-081	BTS-22K	
R51	33KΩ	½		BTS-33K	Note 2
R52	6. 8Meg	½		BTS-6. 8Meg	Note 3
R53	470KΩ	½	URD-113	BTS-470K	
R54	1000Ω	½	URD-049	BTS-1000	
R55	470KΩ	½	URD-113	BTS-470K	
R56	470Ω	2	URF-041	BTB-470	
R57	2. 2Meg	½	URD-129	BTS-2. 2Meg	
R58	48KΩ	½	URD -089	BTS-47K	
R59	15KΩ	½	URD-077	BTS-15K	
R60	2. 2Meg	½	URD-129	BTS-2. 2Meg	
R61	470KΩ	½	URD-113	BTS-470K	
R62	470KΩ	½	URD-113	BTS-470K	
R63	100KΩ	½	URD-097	BTS-100K	
R64	100KΩ	½	URD-097	BTS-100K	
R65	2200Ω	½	URD-057	BTS-2200	
R66	82KΩ	½	URD-095	BTS-82K	
R67	100KΩ	½	URD-097	BTS-100K	
R68	100KΩ	½	URD-097	BTS-100K	
R69	82KΩ	½	URD-095	BTS-82K	
R70	82KΩ	½	URD-095	BTS-82K	Note 1
R71	100KΩ	½	URD-097	BTS-100K	
R72	3. 9Meg	½		BTS-3. 9Meg	Note 5
R73	2. 7Meg	½	URD-131	BTS-2. 7Meg	
R74	1Meg	½	URD-121	BTS-1Meg	Note 6
R75	2. 2Meg	½	URD-129	BTS-2. 2Meg	
R76	47KΩ	½	URD-089	BTS-47K	
R77	330Ω	½	URD-037	BTS-330	
R78	100KΩ	½	URD-097	BTS-100K	
R79	470Ω	1	URE-041	BTA-470	
R80	1500Ω	½		BTS-1500	Note 7
R81	1500Ω	½		BTS-1500	Note 7
R82	4700Ω	½		BTS-4700	
R83	82KΩ	½	URD-095	BTS-82K	
R84	1Meg	½	URD-121	BTS-1Meg	
R85	1200Ω	½	URD-051	BTS-1200	
R86	8200Ω	½	URD-071	BTS-8200	
R87	47KΩ	½	URD-089	BTS-47K	

ITEM No.	RATING OHMS	WATT	REPLAC General Electric PART No.
R88	82KΩ	½	URD-095
R89	6800Ω	½	URD-069
R90	10KΩ	½	URD-073
R91	330Ω	½	URD-037
R92	470KΩ	½	URD-113
R93	150Ω	2	URF-029
R94	15KΩ 5%	2	URF-10 77
R95	220KΩ	½	URD-105
R96	5000Ω	6	RRW-106

Note 1. Some models may
Note 2. Used in console r
Note 3. Not used in all m
Note 4. Some models may
Note 5. Some models may
Note 6. Some models may
Note 7. Some models may
Note 8. This resistor is r

ITEM No.	RATING PRI.	SEC. 1	SEC. 2
T1	117VAC @1.92A	530VCT .300ADC	5VAC @6A

① This trans. has taps on HV s
② Drill new mounting holes.
③ Connect 6.3 V windings in se

ITEM No.	RATING DC RESISTANCE PRI.	SEC.	Gener PA
T2	400.3Ω tap@ 2.8Ω, 35.3Ω, 44.5Ω, 60.3Ω	0Ω	RTO-
T3	205Ω tap @ 10.1Ω		RTO-
T4A	30Ω		RLD-
B	77Ω		
T5	32.5Ω tap @ 13.4Ω		RLD-
T6	10.1Ω tap @ 2.7Ω		RLD-

① Connect terminal #8 to terminal
to new #5, original #1 to new #3, o
② Drill one new mounting hole.
③ Connect to coded red and bule t
④ Bend clip or use original slider

ITEM No.	RATING IMPEDANCE PRI.	SEC.	DC RES. PRI.	SEC
T7	5. 1KΩ	3. 7Ω	456Ω	.63

ITEM No.	RATINGS SIZE	FIELD	V. C. IMP.
SP1A	5 1/4"	PM	3. 7Ω
B	10"	PM	3. 7Ω

ND DESCRIPTIONS
ont)

CEMENT DATA				
CORNELL-DUBILIER PART No.	ERIE PART No.	MALLORY PART No.	SPRAGUE PART No.	NOTES
PTE4S1	GP2-333-103	PT4 81	4TM-S1	
PTE4P2		PT402	2TM-P2	
PTE4S5		PT415	2TM-S5	
PTE4P2		PT402	2TM-P2	
PTE6D47	GP2-333-472	PT4247	4TM-D47	
5R5T5	GP2K-471	UC-5347	5GA-T47	
				Note 2
PTE6S22		PT6222	6TM-S22	
PTE6S1	GP2-333-103	PT611	6TM-S1	Note 3
PTE6S1	GP2-333-103	PT611	6TM-S1	Note 3
PTE6D1	GP2L-102	PT621	6TM-D1	
5R5T5		MCB245	MS-35	
PTE4P1		PT401	2TM-P1	
PTE6S22		PT6122	6TM-S22	Note 4
PTE6D47	GP2-333-472	PT6247	6TM-D47	
PTE6D1	GP2L-102	PT621	6TM-D1	
PTE6D1	GP2L-102	PT621	6TM-D1	
PTE4S5		PT495	2TM-S5	
IDR5D4		MCB463	MS-24	
PTE6S1	GP2-333-103	PT611	6TM-S1	
PTE6P1		PT601	6TM-P1	
TM5T8			5GA-T8	
PTE16S1		PT1611	MB-S1	
TM5T8	801-001	DC-521	5GA-T8	
TM5T8	801-001	DC-521	5GA-T8	

ROLS

DATA			
T	CENTRALAB PART No.	MALLORY PART No.	INSTALLATION NOTES
	AB-40	U-41	Brightness
	AK-4	Not Req.	Attach to R1A
		U-415	Vert. Hold
		Not Req.	Attach to R2A
		WF751 }	Contrast - Panel
		UR55A } †	Volume - Rear
		US-26 }	Attach to R3B
	AB-75	U-56	Area
	AK-1	Not Req.	Attach to R4A
	AB-46	U-43	Horiz. Hold
	AK-1	Not Req.	Attach to R5A
	AB-75	U-56	Vert. Size
	AK-1	Not Req.	Attach to R6A
	VK-134	R5000L	Vert. Linearity
	Not Req.	Not Req.	Attach to R7A

24WS)
TS & SHAFTS W17-105 & P3-210 (Panel)
Rear) & SWITCH 76-1.

ORS

ITEM No.	RATING		REPLACEMENT DATA		NOTES
	OHMS	WATT	General Electric PART No.	IRC PART No.	
R48	27KΩ	1/2	URD-083	BTS-27K	
R49	22KΩ	1/2	URD-081	BTS-22K	
R50	22KΩ	1/2	URD-081	BTS-22K	
R51	33KΩ	1/2		BTS-33K	Note 2
R52	6.8Meg	1/2		BTS-6.8Meg	Note 3
R53	470KΩ	1/2	URD-113	BTS-470K	
R54	1000Ω	1/2	URD-049	BTS-1000	
R55	470KΩ	1/2	URD-113	BTS-470K	
R56	470Ω	2	URF-041	BTB-470	
R57	2.2Meg	1/2	URD-129	BTS-2.2Meg	
R58	48KΩ	1/2	URD -089	BTS-47K	
R59	15KΩ	1/2	URD-077	BTS-15K	
R60	2.2Meg	1/2	URD-129	BTS-2.2Meg	
R61	470KΩ	1/2	URD-113	BTS-470K	
R62	470KΩ	1/2	URD-113	BTS-470K	
R63	100KΩ	1/2	URD-097	BTS-100K	
R64	100KΩ	1/2	URD-097	BTS-100K	
R65	2200Ω	1/2	URD-057	BTS-2200	
R66	82KΩ	1/2	URD-095	BTS-82K	
R67	100KΩ	1/2	URD-097	BTS-100K	
R68	100KΩ	1/2	URD-097	BTS-100K	
R69	82KΩ	1/2	URD-095	BTS-82K	
R70	82KΩ	1/2	URD-095	BTS-82K	Note 1
R71	100KΩ	1/2	URD-097	BTS-100K	
R72	3.9Meg	1/2		BTS-3.9Meg	Note 5
R73	2.7Meg	1/2	URD-131	BTS-2.7Meg	
R74	1Meg	1/2	URD-121	BTS-1Meg	Note 6
R75	2.2Meg	1/2	URD-129	BTS-2.2Meg	
R76	47KΩ	1/2	URD-089	BTS-47K	
R77	330Ω	1/2	URD-037	BTS-330	
R78	100KΩ	1/2	URD-097	BTS-100K	
R79	470Ω	1	URE-041	BTA-470	
R80	1500Ω	1/2		BTS-1500	Note 7
R81	1500Ω	1/2		BTS-1500	Note 7
R82	4700Ω	1/2		BTS-4700	
R83	82KΩ	1/2	URD-095	BTS-82K	
R84	1Meg	1/2	URD-121	BTS-1Meg	
R85	1200Ω	1/2	URD-051	BTS-1200	
R86	8200Ω	1/2	URD-071	BTS-8200	
R87	47KΩ	1/2	URD-089	BTS-47K	

RESISTORS (cont)

ITEM No.	RATING		REPLACEMENT DATA		NOTES
	OHMS	WATT	General Electric PART No.	IRC PART No.	
R88	82KΩ	1/2	URD-095	BTS-82K	
R89	6800Ω	1/2	URD-069	BTS-6800	
R90	10KΩ	1/2	URD-073	BTS-10K	
R91	330Ω	1/2	URD-037	BTS-330	
R92	470KΩ	1/2	URD-113	BTS- 470K	
R93	150Ω	2	URF-029		
R94	15KΩ 5%	2	URF-1077	BTB-15K 5%	
R95	220KΩ	1/2	URD-105	BTS-220K	
R96	5000Ω	6	RRW-106	1 3/4A-5000	

ITEM No.	RATING		REPLACEMENT DATA		NOTES
	OHMS	WATT	General Electric PART No.	IRC PART No.	
R97	3.3Ω	1/2	RRW-105		
R98	100KΩ	1	URE-097	BTA-100K	
R99	470Ω	2	URF-041	BTB-470	
R100	680Ω	2	URF-045	BTB-680	
R101	3000Ω	7.5	RRW-095		
R102	220KΩ	1/2		BTS-220K	Note 8
R103	1.5Meg	1/2		BTS-1.5Meg	Note 3
R104	82KΩ	1/2		BTS-82K	Note 3

Note 1. Some models may use a 33KΩ resistor in this application.
Note 2. Used in console models only.
Note 3. Not used in all models.
Note 4. Some models may use a 150KΩ resistor in this application.
Note 5. Some models may use a 4.7Meg resistor in this application.
Note 6. Some models may use a 1.5Meg resistor in this application.
Note 7. Some models may use a 2200Ω resistor in this application.
Note 8. This resistor is not used in all models and may be removed to extend range of sync control.

TRANSFORMER (POWER)

ITEM No.	RATING				REPLACEMENT DATA					
	PRI.	SEC. 1	SEC. 2	SEC. 3	General Electric PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	TRIAD PART No.	RCA TYPE No.
T1	117VAC @1.92A	530VCT .300ADC	5VAC @6A	12.6VCT @4.7A	RTP-315 ①	P-8167 ② ③				

① This trans. has taps on HV secondary not being used. Also, 110V tap on primary.
② Drill new mounting holes.
③ Connect 6.3 V windings in series for Sec. 3.

TRANSFORMER (SWEEP CIRCUITS)

ITEM No.	RATING		REPLACEMENT DATA						NOTES
	DC RESISTANCE		General Electric PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	TRIAD PART No.	RCA TYPE No.	
	PRI.	SEC.							
T2	400.3Ω tap @ 2.8Ω, 35.3Ω, 44.5Ω, 60.3Ω	0Ω	RTO-141			TFB-13 ①	D-19 ①		Horiz. Output Trans.
T3	205Ω tap @ 10.1Ω		RTO-142			TSO-14 ②			Vert. Output Trans.
T4A	30Ω		RLD-052						Horiz. Deflection Coils
B	77Ω								Vert. Deflection Coils
T5	32.5Ω tap @ 13.4Ω		RLD-057	WC-5 ③④	MWC-1 ③ ④	TWL-1	WC-12 ③④		Horiz. Linearity
T6	10.1Ω tap @ 2.7Ω		RLD-058						Width

① Connect terminal #8 to terminal #7, then connect original #3 to new #9, original #5 to new #8 & #7, original #2 to new #5, original #1 to new #3, original #7 to new #1.
② Drill one new mounting hole.
③ Connect to coded red and bule terminals.
④ Bend clip or use original slider and core.

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	RATING				REPLACEMENT DATA					NOTES
	IMPEDANCE		DC RES.		General Electric PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	TRIAD PART No.	
	PRI.	SEC.	PRI.	SEC.						
T7	5.1KΩ	3.7Ω	456Ω	.63Ω	RTO-139 RTO-140 ②	A-3877	A-2930	RO-9 ①	S-3X	① Drill one new mtg. hole. ② Audio output transformer used in model 21C11-5.

SPEAKER

ITEM No.	RATINGS			REPLACEMENT DATA			NOTES
	SIZE	FIELD	V. C. IMP.	General Electric PART No.	VIKING PART No.	QUAM PART No.	
SP1A	5 1/4"	PM	3.7Ω	S527-D7		52A1	① Alternate 10" PM speaker.
B	10"	PM	3.7Ω	S1012-D7 ①	10J11	10A31	

PARTS LIST AND DESCRIPTIONS (Continued)

COILS (RF-IF)

ITEM No.	USE	DC RES. PRI.	DC RES. SEC.	REPLACEMENT DATA General Electric PART No.	REPLACEMENT DATA MEISSNER PART No.	REPLACEMENT DATA MERIT PART No.	REPLACEMENT DATA MILLER PART No.	NOTES
L1	Ant. Trans.	0Ω CT	0Ω					Low Channel Secondary -0Ω
L2	Ant. Coils	0Ω						
L3	Ant. Coil	0Ω						Channel 13
L4	Fil. Choke	0Ω						
L5	RF Coil	0Ω						Channel 13
L6	RF Coils	0Ω						
L7	Mixer Grid Coils	0Ω						
L8	Mixer Grid Coil	0Ω						Channel 13
L9	Osc. Plate Coil	0Ω CT						Channel 13
L10	Osc. Coils	0Ω						
L11	Osc. Coil	0Ω						Channel 6
L12	Osc. Coil	0Ω						Channel 2
L13	Feedback Coil	1.1Ω						
L14	Conv. Plate	.1Ω						
L15	47.25MC Trap	0Ω		RLI-204				GE part no. includes C23
L16	41.25MC Trap	0Ω		RLI-206				GE part no. includes C24
L17	1st. Video IF	.1Ω		RLI-192				
L18	2nd. Video IF	.1Ω	.1Ω	RTL-144	17-4522		6219	
L19	3rd. Video IF	.1Ω	.1Ω	RTL-144	17-4523		6219	
L20	4th. Video IF	.1Ω	.1Ω	RLX-042	17-4523		6219	
L21	Series Peaking Coil	8.2Ω		RLI-138			4612	10 Microhenries, IRC part #CL-1
L22	Series Peaking Coil	2.2Ω		RLF-024	19-3036	TV-180	6176	31 Microhenries
L23	Shunt Peaking Coil	20Ω		RLI-216			4664 *	1.3 Millihenries, wound on 2.2KΩ resistor
L24	4.5MC Trap	1.1Ω		RLI-215	20-1004	TV-151	1470	GE part no. includes L21, L22, L23 & C35
L25	Series Peaking Coil	10Ω		RLI-208	19-3300 †	TV-185 †	6155 †	300 Microhenries, wound on 22KΩ resistor
L26	Shunt Peaking Coil	7.5Ω		RLI-209	19-3250	TV-185	6181	270 Microhenries
L27	Cathode Choke	2.8Ω		RLI-214	19-3036	TV-180	4628	47 Microhenries
L28	Sound IF	4.8Ω	4.4Ω	RTL-180	17-1021	TV-108 ■	1466 ■	
L29	Ratio Det.	8.5Ω	.6ΩCT	RID-014	17-3493 ▲	TV-115 ▲	1498 ▲ 1	Includes 120Ω resistor
L30	Horiz. Osc.	48Ω		RLI-210	19-1576	TV-163	6210	
L31	RF Choke	8.2Ω		RLI-138			4612	10 Microhenries IRC part #CL-1
L32	RF Choke	2.3Ω			19-3036	TV-180	6176	30 Microhenries Not used in all Models

* Parallel with 2.2KΩ resistor.
† Parallel with 22KΩ resistor.
■ Drill one new mtg. hole.
▲ Add 120Ω resistor externally.
▲ Add 120Ω resistor externally and use adaptor plate.

FILTER CHOKE

ITEM No.	RATINGS TOTAL DIRECT CURRENT	RATINGS D. C. RESISTANCE	RATINGS INDUCTANCE (0 CURRENT 1000 ∿)	REPLACEMENT DATA General Electric PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	TRIAD PART No.
L33	.260ADC	60Ω	1.62HY	RLF-062	C-2326 ①	C- 2996 ①	TR-1733 ①	C-23X

① Drill one new mounting hole.

FUSES

ITEM No.	TYPE	RATING	REPLACEMENT DATA General Electric PART No. FUSE	General Electric PART No. HOLDER	LITTELFUSE PART No. FUSE	LITTELFUSE PART No. HOLDER	BUSS PART No. FUSE	BUSS PART No. HOLDER
M1	3AG S/B	4A	REF-010	RJB-027	313004	350038	MDX4	

MISCELLANEOUS

ITEM No.	PART NAME	General Electric PART No.	NOTES
M2A	RF Tuner	RJX-052	Model 21T14
B	RF Tuner	RJX-053	Model 21C115
M3	Crystal	RED-003	Video Detector
M4A	Focus magnet	RLF-058	Includes centering arm and focus adj. funnel (PM)
B	Focus unit	REA-006	Shunt assembly used with 21JP4
M5	Centering magnet	REA-007	Used with 21JP4
M6	Ion trap	RET-013	Used with 21EP4A
	Cabinet	RAV-216	Brown leatherette model 21T14
	Cabinet	RAV-223	Mahogany-model 21C115
	Knob	RDK-286	Chan. sel. model 21T14
	Knob	RDK-287	Fine tuning model 21T14
	Knob	RDK-288	Off-on volume model 21T14
	Knob	RDK-289	Contrast model 21T14
	Knob	RDK-290	(2) vert. hold-brightness model 21T14
	Knob	RDK-239	Area control model 21C115
	Knob	RDK-336	Contrast model 21C115
	Knob	RDK-337	Off-on volume model 21C115
	Knob	RDK-338	Fine tuning model 21C115
	Knob	RDK-339	Channel selector model 21C115
	Knob	RDK-340	(2) brightness and vert. hold model 21C115
	Safety glass	RDW-061	Model 21T14
	Safety glass	RDW-068	Model 21C115

SERVICING IN THE FIELD

TUNER OSCILLATOR ADJUSTMENTS

Touch-up adjustments of the RF tuner oscillator circuit may be accomplished by removing the channel selector and fine tuning knobs.

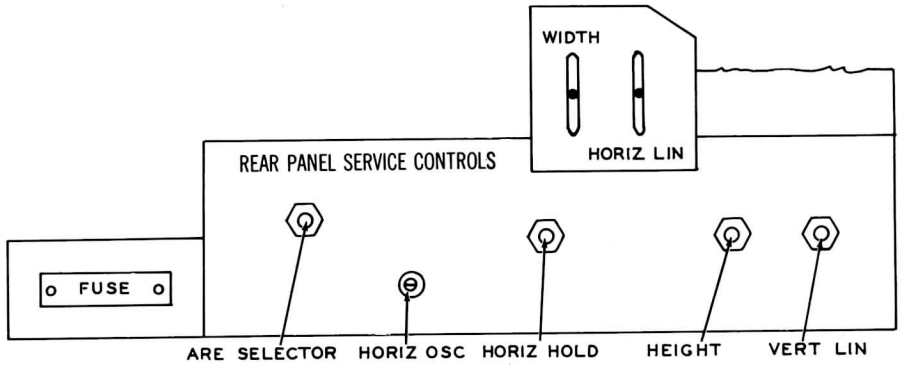
PICTURE TUBE SAFETY GLASS CLEANING

For picture tube safety glass cleaning, it is necessary to remove chassis. (See disassembly instructions).

PICTURE TUBE REMOVAL

For picture tube removal it is necessary to remove chassis. (See disassembly instructions).

SERVICE ADJUSTMENT LOCATION



HORIZONTAL OSCILLATOR FIELD ADJUSTMENT

Adjustment of the horizontal oscillator circuit can be made from the rear panel of the chassis. Set the horizontal hold control at the mid-position of its range and adjust the Horiz.Osc.slug (L30) until the picture synchronizes horizontally.

SOUND IF DETECTOR BUZZ ADJUSTMENT

To eliminate sound IF detector buzz, adjust the ratio detector secondary (L29) located on top of chassis. (See tube placement chart).

FUSES

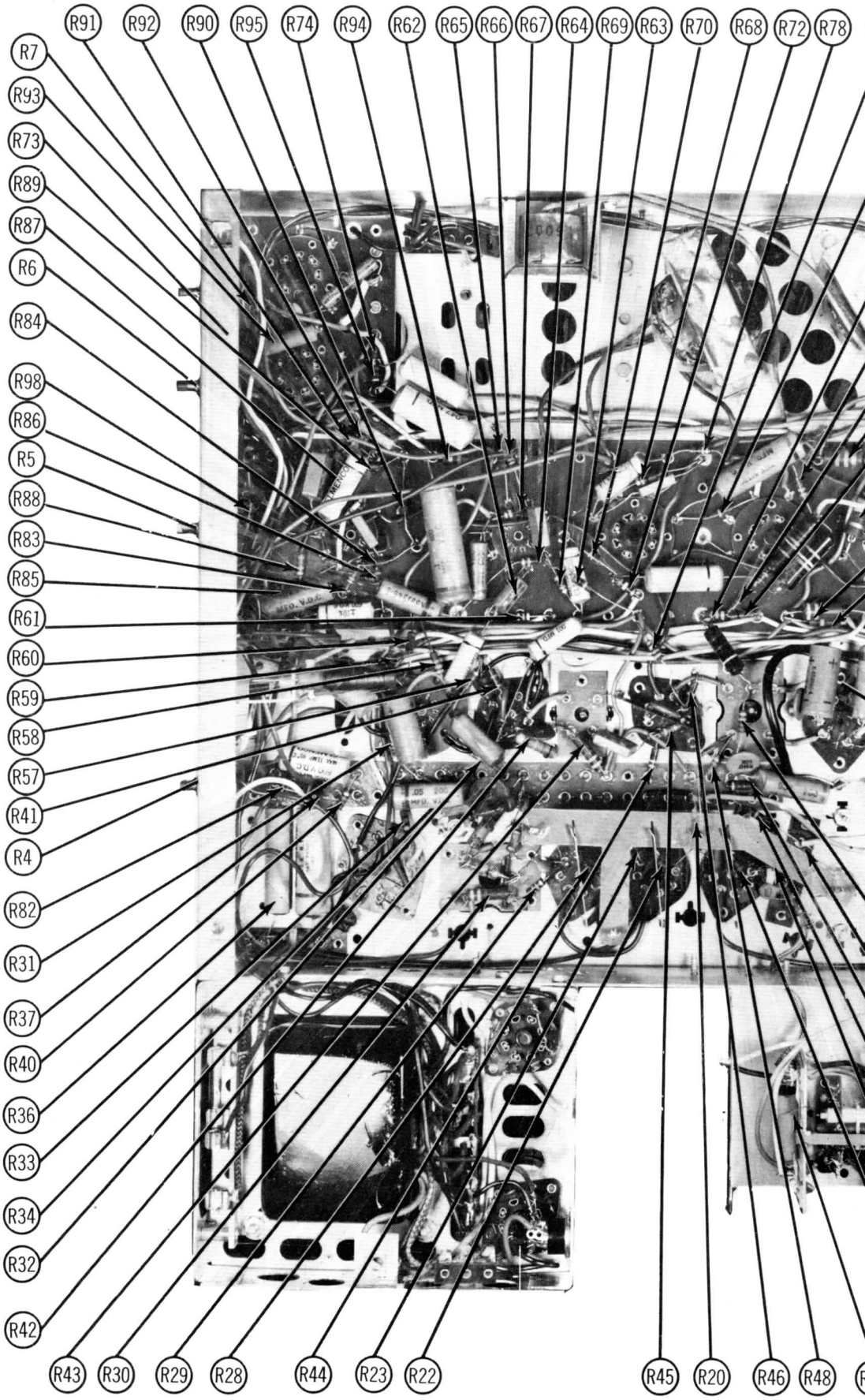
One fuse is used for LV power supply protection. (For location, see tube placement chart).

CENTERING

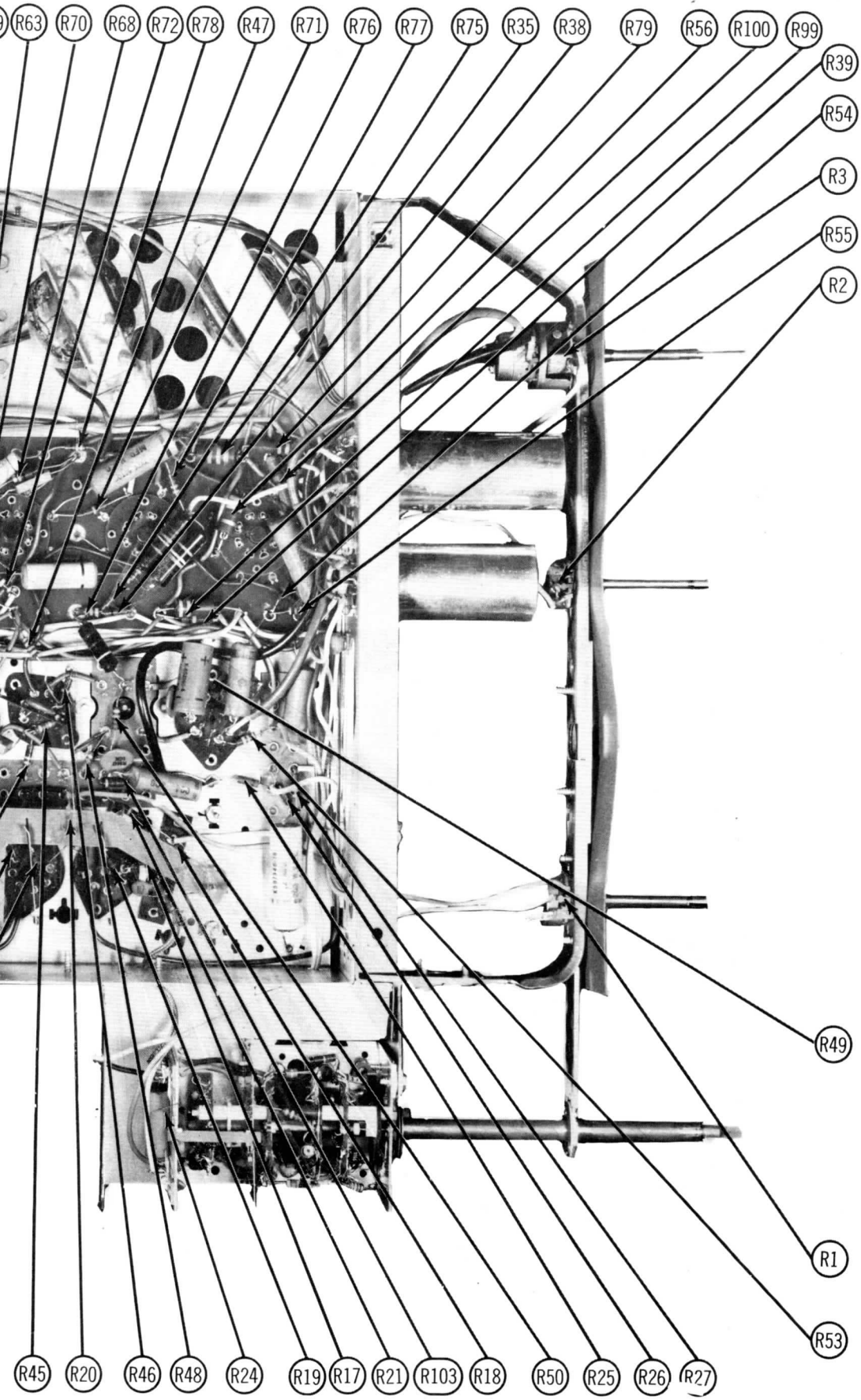
Centering is accomplished mechanically by means of a centering lever on the PM focusing assembly. Adjust the centering lever from side to side and up and down until picture is properly centered.

DISASSEMBLY INSTRUCTIONS

1. Remove 6 push on type control knobs from front panel.
2. Remove 8 wood and 1 metal screws. Remove rear cover.
3. Disconnect built-in antenna. Disconnect transmission lines.
4. Disconnect speaker, yoke plug, horizontal yoke plug (small), CRT socket and HV lead.
5. Remove 5 chassis bolts. Remove chassis.
6. Remove 4 speaker nuts. Remove speaker.



CHASSIS BOTTOM VIEW-RESISTOR



M VIEW-RESISTOR IDENTIFICATION