

C125

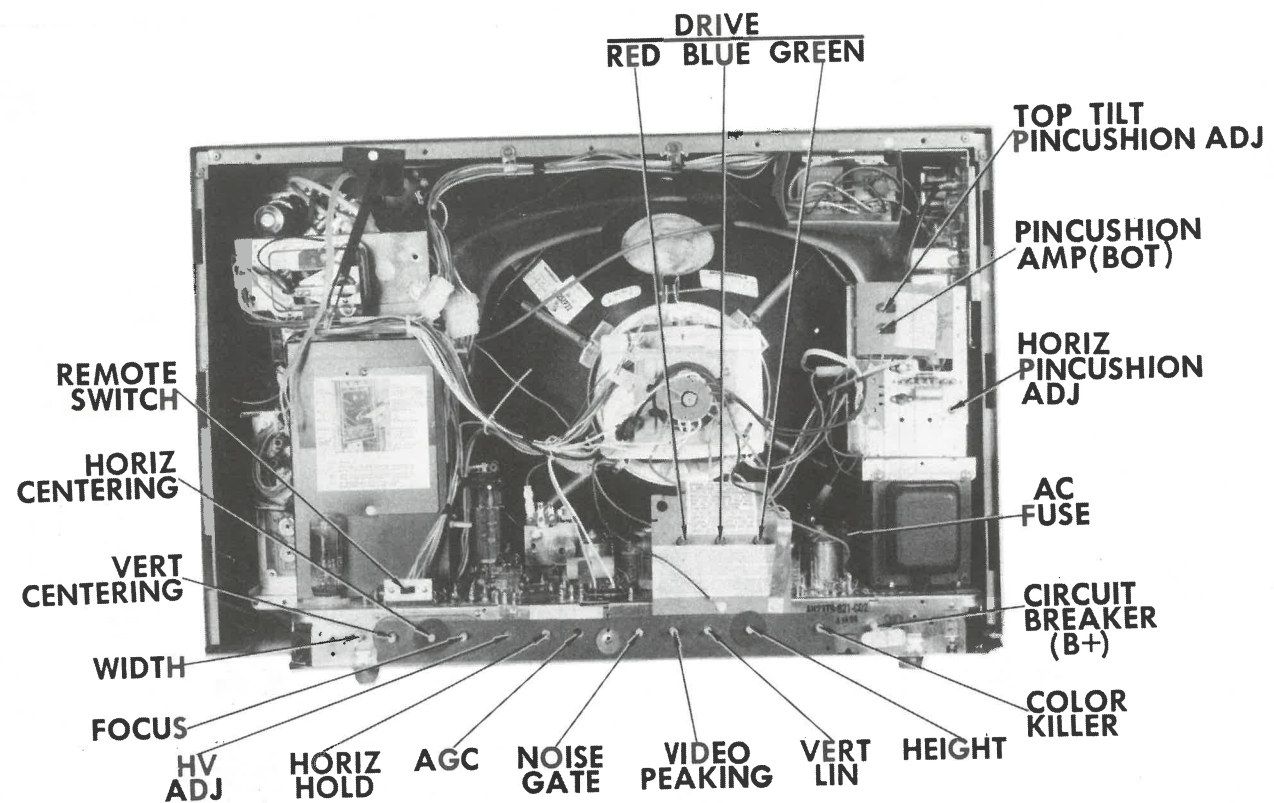
C124

MOTOROLA CHASSIS A20TS-921B/C, AF/AH/E/F/H/K/L23TS-921B/C

C123

C126

FOLDER 1



CABINET-REAR VIEW

DISASSEMBLY INSTRUCTIONS

CHASSIS REMOVAL MODEL RT813DN

1. Remove 9 screws holding rear cover and disconnect antenna leads. Remove all knobs from the set.
2. Disconnect picture-tube socket, high-voltage anode lead, deflection-yoke plug, convergence plug, tuner plug, degaussing wires, control plug, and speaker leads.
3. To remove speaker panel from the front of the cabinet, turn panel-locking screw 90° to the left.
4. To remove convergence panel, remove 4 rubber retainers (screws in some sets) and lift retaining spring. The convergence panel may be extended further for parts replacement by removing convergence plug.
5. To remove front escutcheon, place screwdriver in UHF tuner hole, apply upward pressure, and gently pull forward on the escutcheon.

6. Remove chassis screws from bottom of the set. Remove 2 control bracket retaining screws and 2 control-panel retaining screws from the set. Remove chassis from the cabinet

PICTURE TUBE REMOVAL

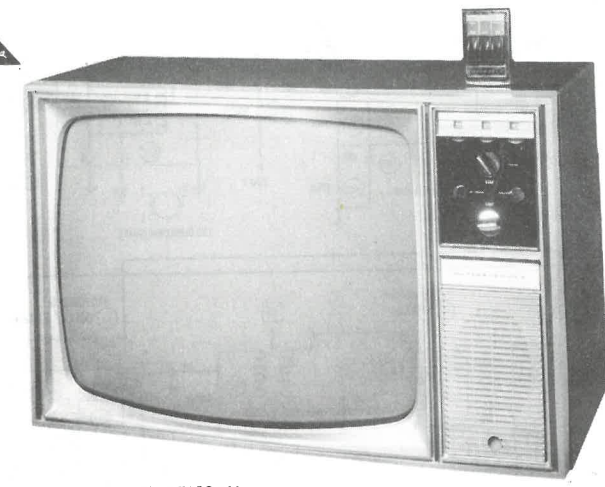
1. Follow Step 1 under "Chassis Removal" and lay set face down on a soft protective surface.
2. Remove bezel by removing 9 screws from bezel. Remove 2 screws from top of tuner bracket. Remove control escutcheon and 2 screws from the high-voltage cage.
3. Disconnect high-voltage anode lead and picture-tube socket. Remove blue-lateral and purity-ring convergence yoke and deflection yoke from the picture-tube neck.
4. Remove 4 picture-tube mounting screws and remove picture tube from the front of the set.

SET 1031 FOLDER 1

MOTOROLA CHASSIS A20TS-921B/C, AF/AH/E/F/H/K/L23TS-921B/C

PHOTOFACT® Folder with CIRCUITRACE™

For Supplier Address See PHOTOFACT Index



MODEL RT813DN

MODELS	CHASSIS	
CL807DS, CL808DF, CL809DC, CL811DW	K23TS-921B/C	
CL810DW, CS806DM/DW, CU866DW, CU867DS	F23TS-921B/C	
CL890DW, CL891DW, CL893DM, CL895DS, CL896DF	L23TS-921B/C	
CT812DN	E23TS-921B/C	
CT813DN, CT814DW	H23TS-921B/C	
CU815DM/DW, CU816DS, CU817DP, CU818DC	K23TS-921B/C	
RT606CN	A20TS-921B/C	
RT802DN	AF23TS-921B/C	
RT813DN	AH23TS-921B/C	

Remote Transmitter TRT-5 and Remote Receiver TRR-6 *

Covering Chassis Codes B-00 thru C-02

* TRR-6 Code A-01

SAFETY PRECAUTIONS

- Make sure line voltage does not exceed rating of set.
- Check high-voltage regulation and adjust to correct value.
- Be sure shields and rear cover are in place and secure.
- Beware of shock from high voltage or AC line. Discharge high voltage to HV cage only.
- Use extreme care when handling picture tube. Do not bump, scratch, or exert undue strain.

SERVICING IN THE FIELD

SAFETY GLASS

The safety glass is an integral part of the picture tube.

FUSE OR FUSE DEVICE

A 2" length of #31 fuse wire is used for AC protection. (For location, see F2 in photo "Cabinet - Rear View.")

A 1" length of #18 fuse wire is used for filament protection. (For location, see F3 in photo "Chassis - Bottom View.")

A Circuit Breaker is used for low voltage power supply protection and may be reset by depressing the reset button. (See photo "Cabinet - Rear View" for location.)

VHF OSCILLATOR ADJUSTMENT

The fine tuning mechanically engages oscillator slug for adjustment (one slug for each channel). It may be necessary to adjust overall oscillator trimmer for best results.

AGC

The AGC may be varied by means of an AGC control. (See photo "Cabinet - Rear View" for location.)

HORIZONTAL OSCILLATOR FIELD ADJUSTMENT

The Horizontal Oscillator slug is used for the horizontal hold. (See photo "Cabinet - Rear View" for location.)

WIDTH

The width may be varied by a Width Coil slug. (See photo "Cabinet - Rear View" for location.)

FOCUS

The focus may be varied by means of a Focus control. (See photo "Cabinet - Rear View" for location.)

REMEMBER TO ASK— "What else needs fixing?"

HOWARD W. SAMS & CO., INC. Indianapolis, Indiana 46206

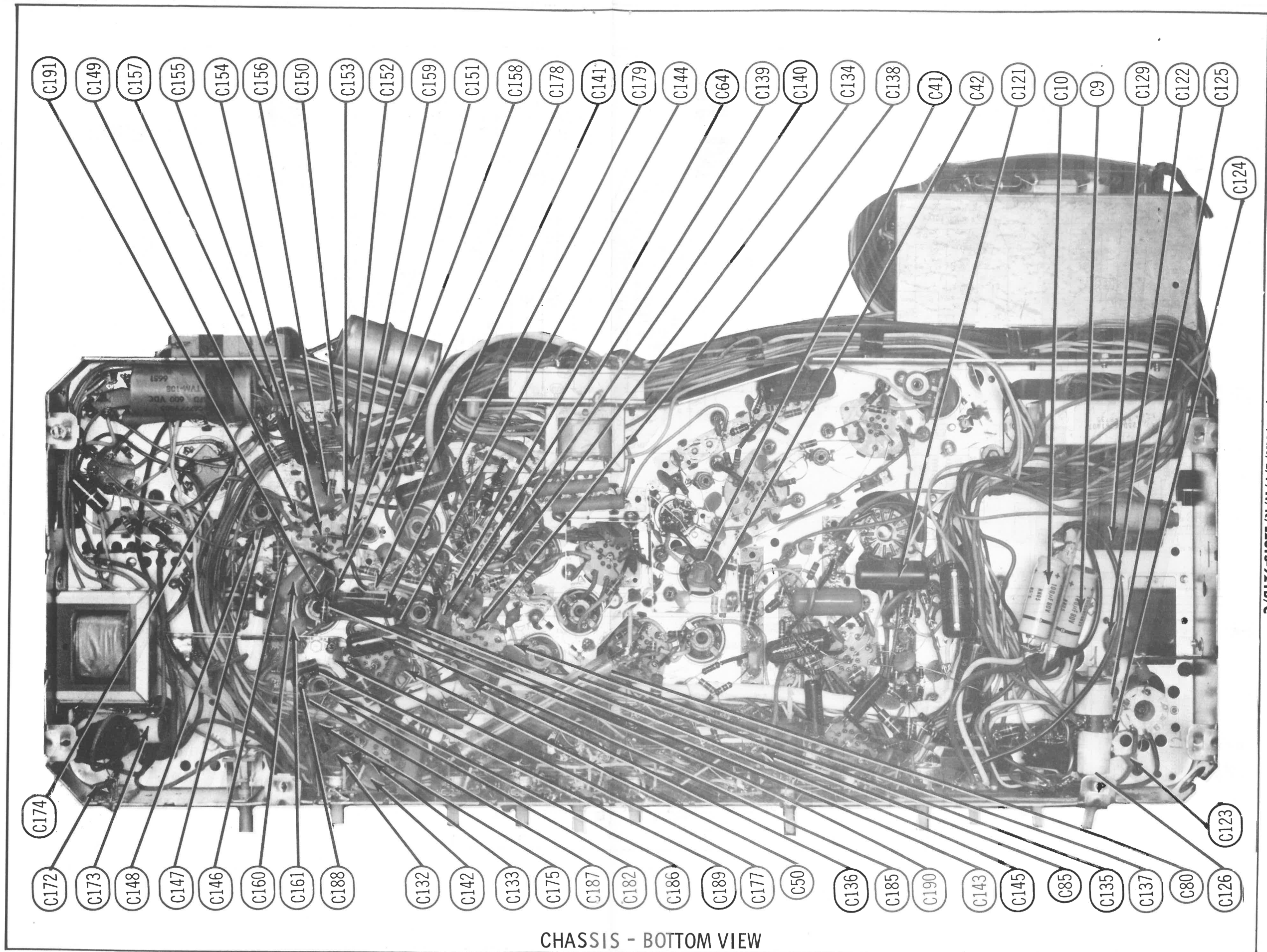
The listing of any available replacement part herein does not constitute in any case a recommendation, warranty or guaranty by Howard W. Sams & Co., Inc., as to the quality and suitability of such replacement part. The numbers of these parts have been compiled from information furnished to Howard W. Sams & Co., Inc., by the manufacturers of the particular type of replacement part listed. UB153 10 9 8 7

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DATE 5-69 SET 1031 FOLDER 1

MOTOROLA CHASSIS A20TS-921B/C, AF/AH/E/F/H/K/L23TS-921B/C

SET 1031 FOLDER 1



CHASSIS - BOTTOM VIEW

MOTOROLA CHASSIS A20TS-921B/C, AF/AH/E/F/H/K/L23TS-921B/C

FOLDER 1

REMOTE SWITCH

HORIZ CENTERING

VERT CENTERING

WIDTH

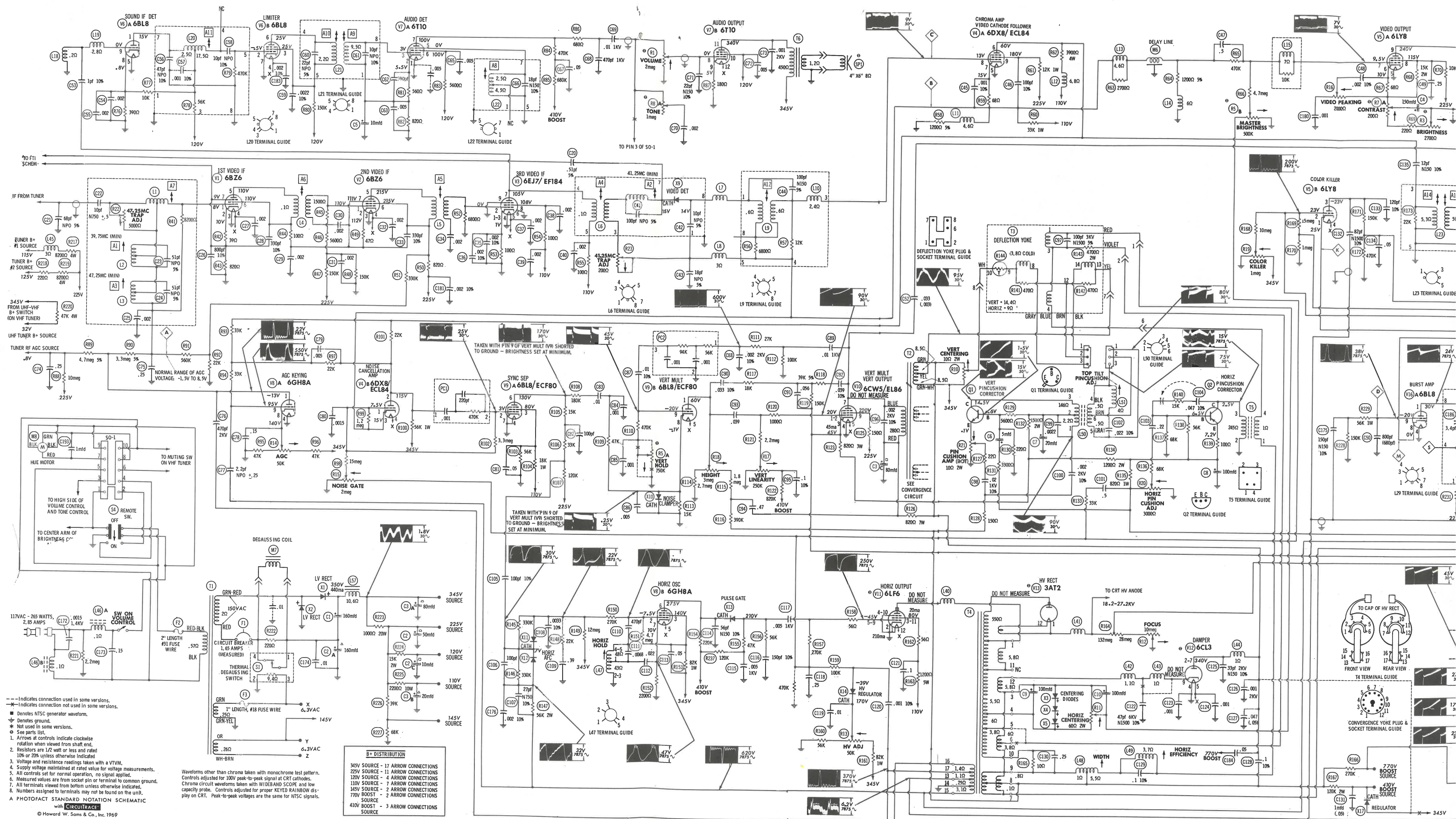
FOCUS

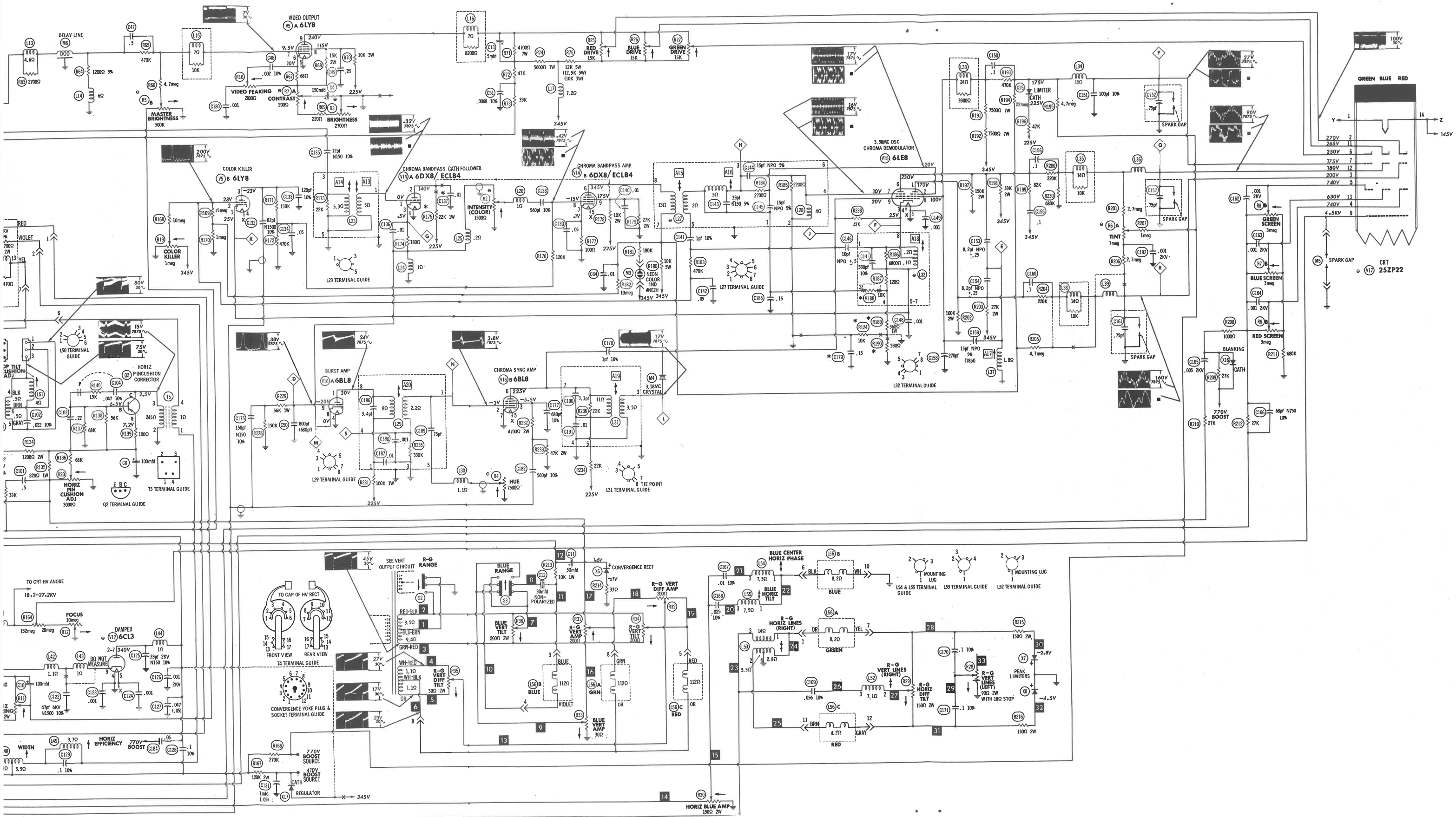
HV ADJ

HOR HO

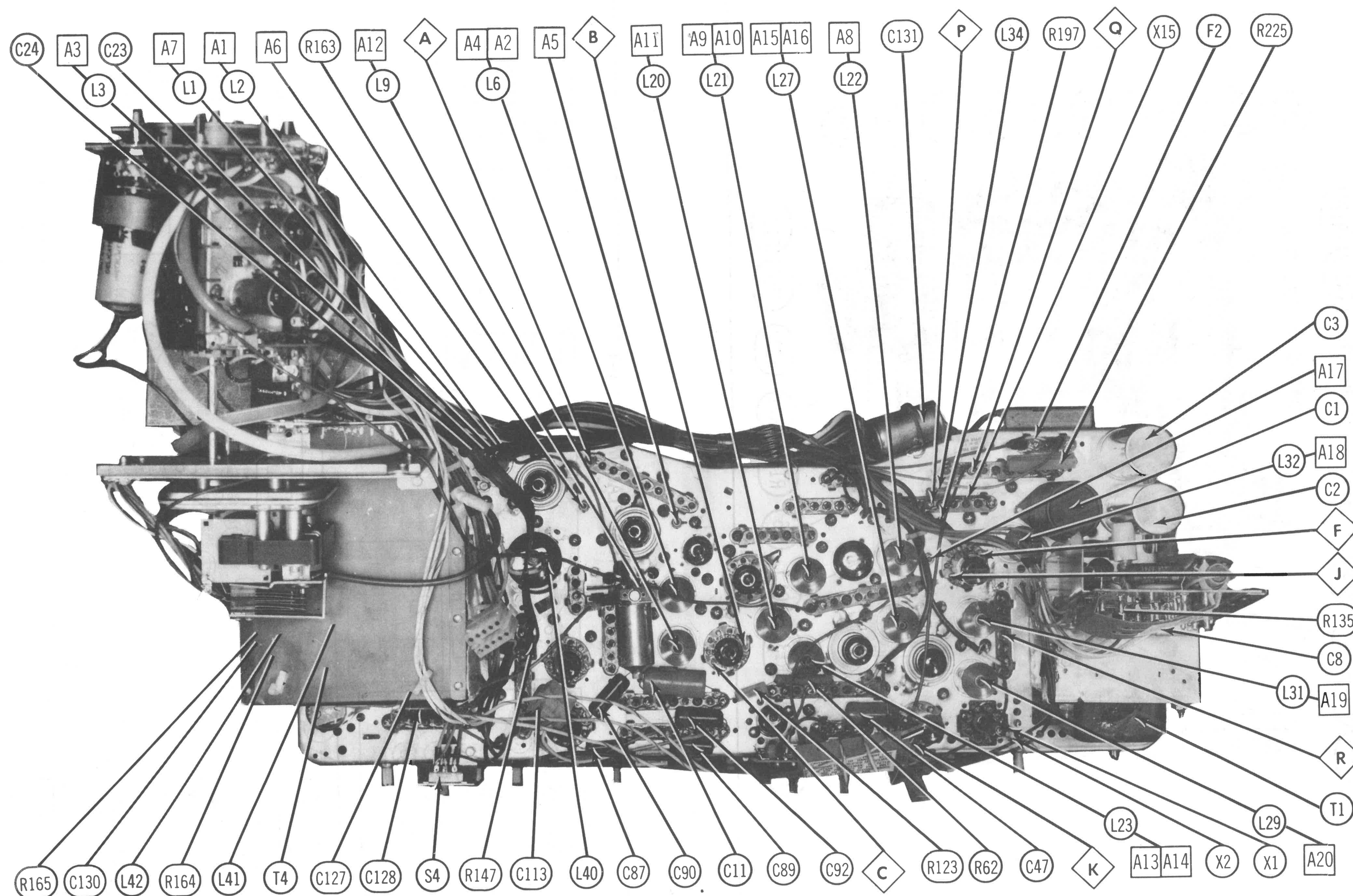
CHASSIS REMOVAL MODEL R

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2. Disconnect picture-tube socket, l yoke plug, convergence plug, tun plug, and speaker leads.
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4. To remove convergence panel, r in some sets) and lift retaining s; be extended further for parts rep plug.
5. To remove front escutcheon, pla apply upward pressure, and gen

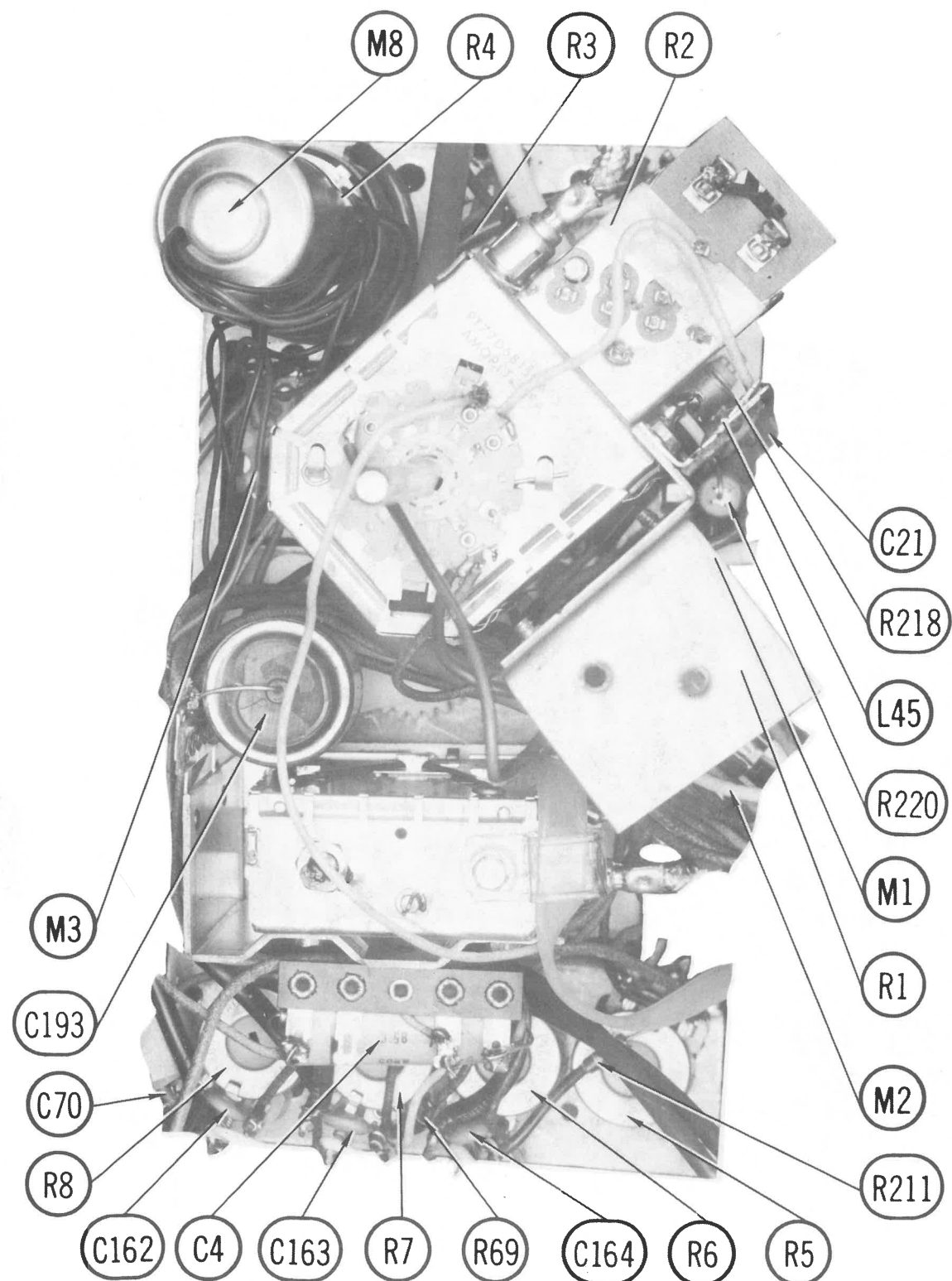




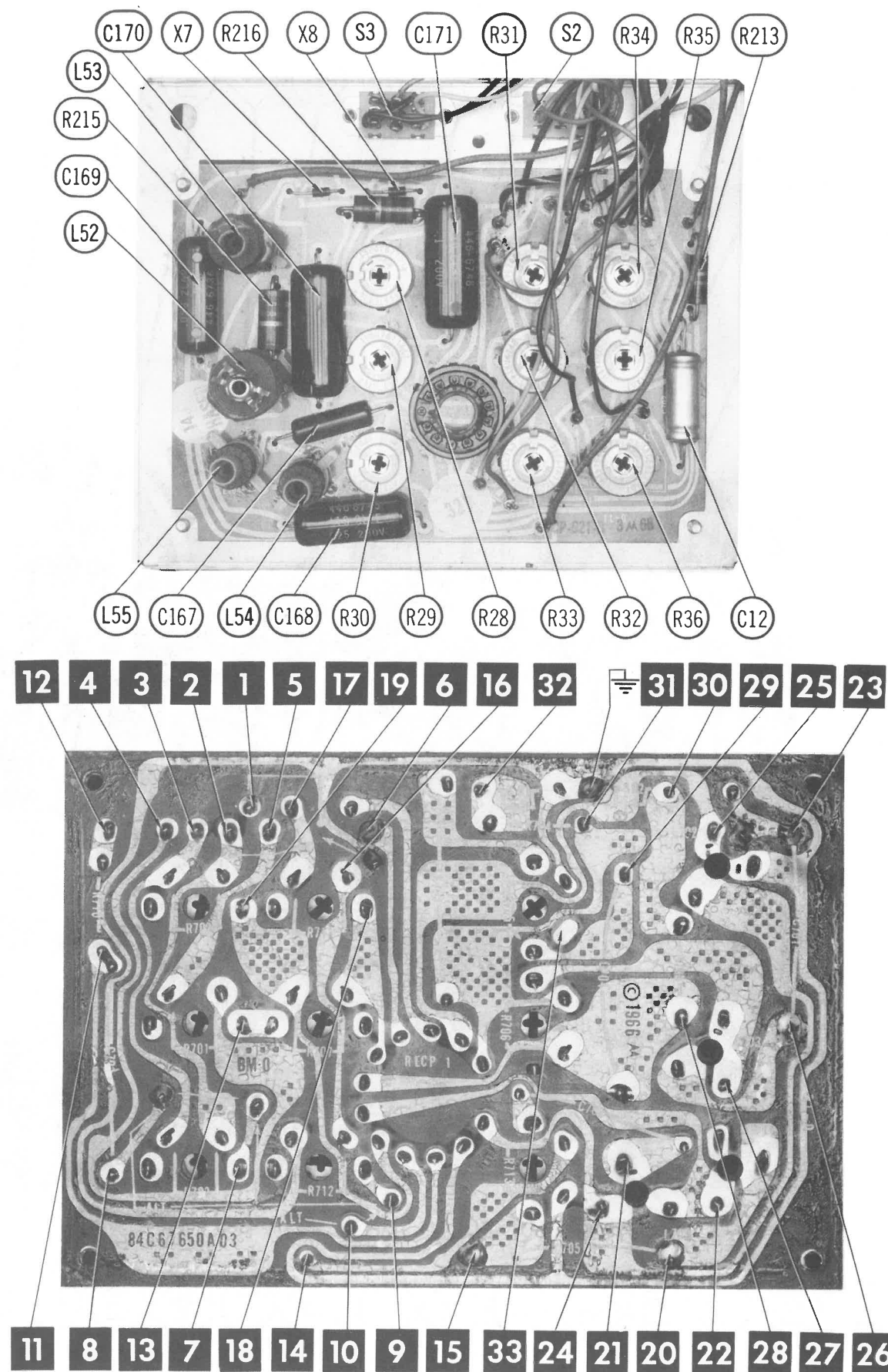




CHASSIS - TOP VIEW

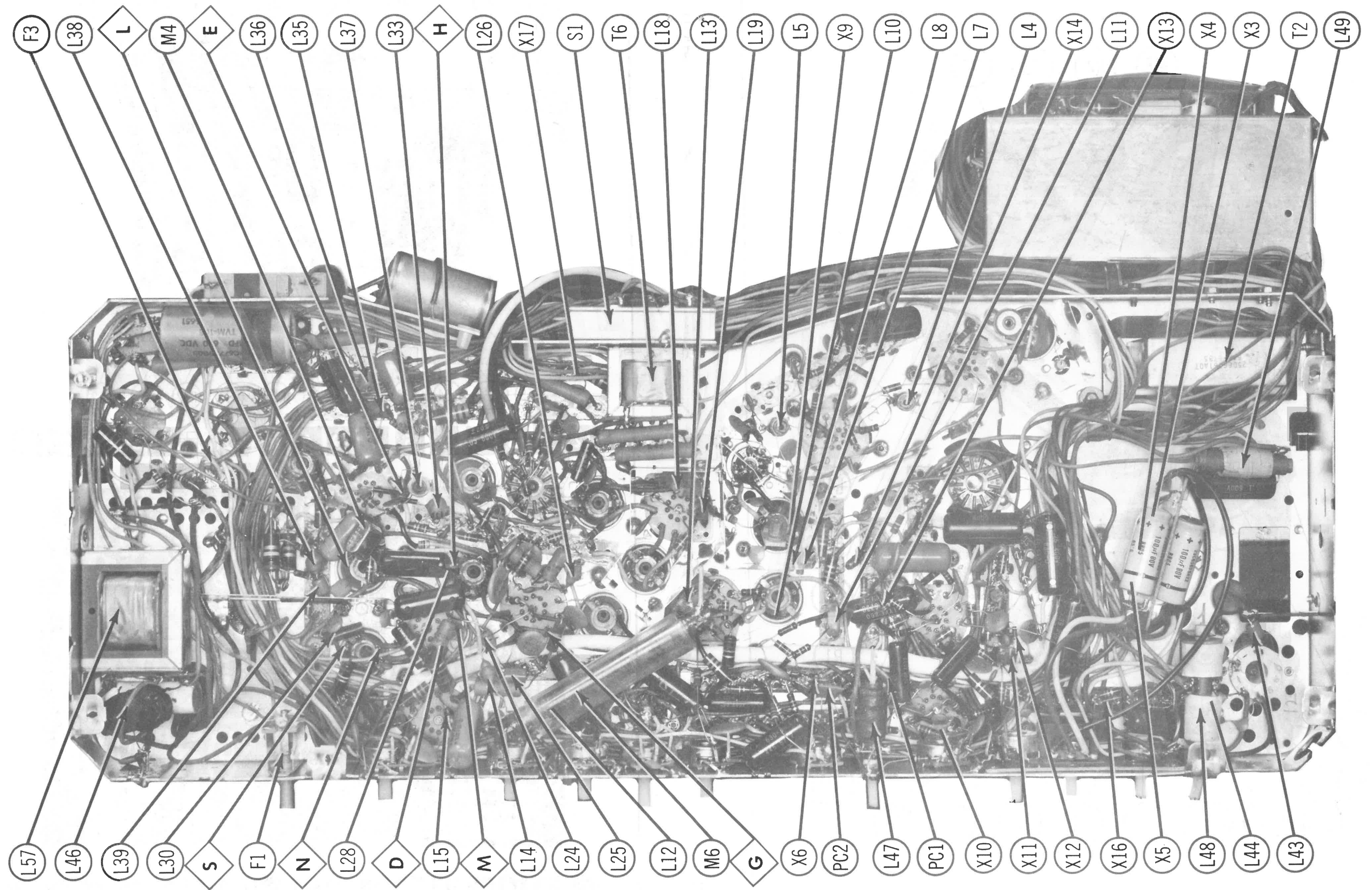


TUNER MOUNTING ASSY.

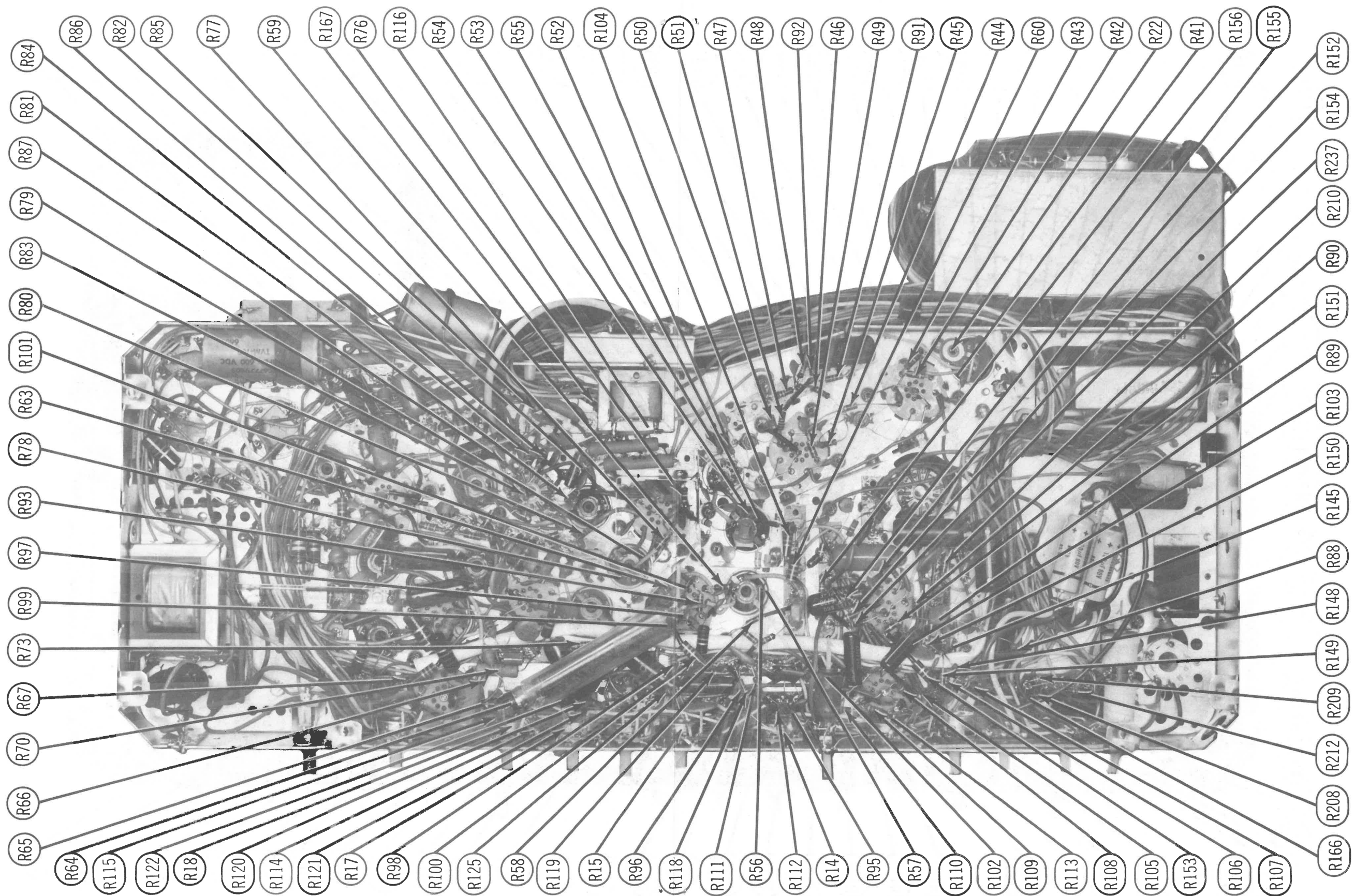


CONVERGENCE BOARD

A Howard W. Sams CIRCUITRACE Photo



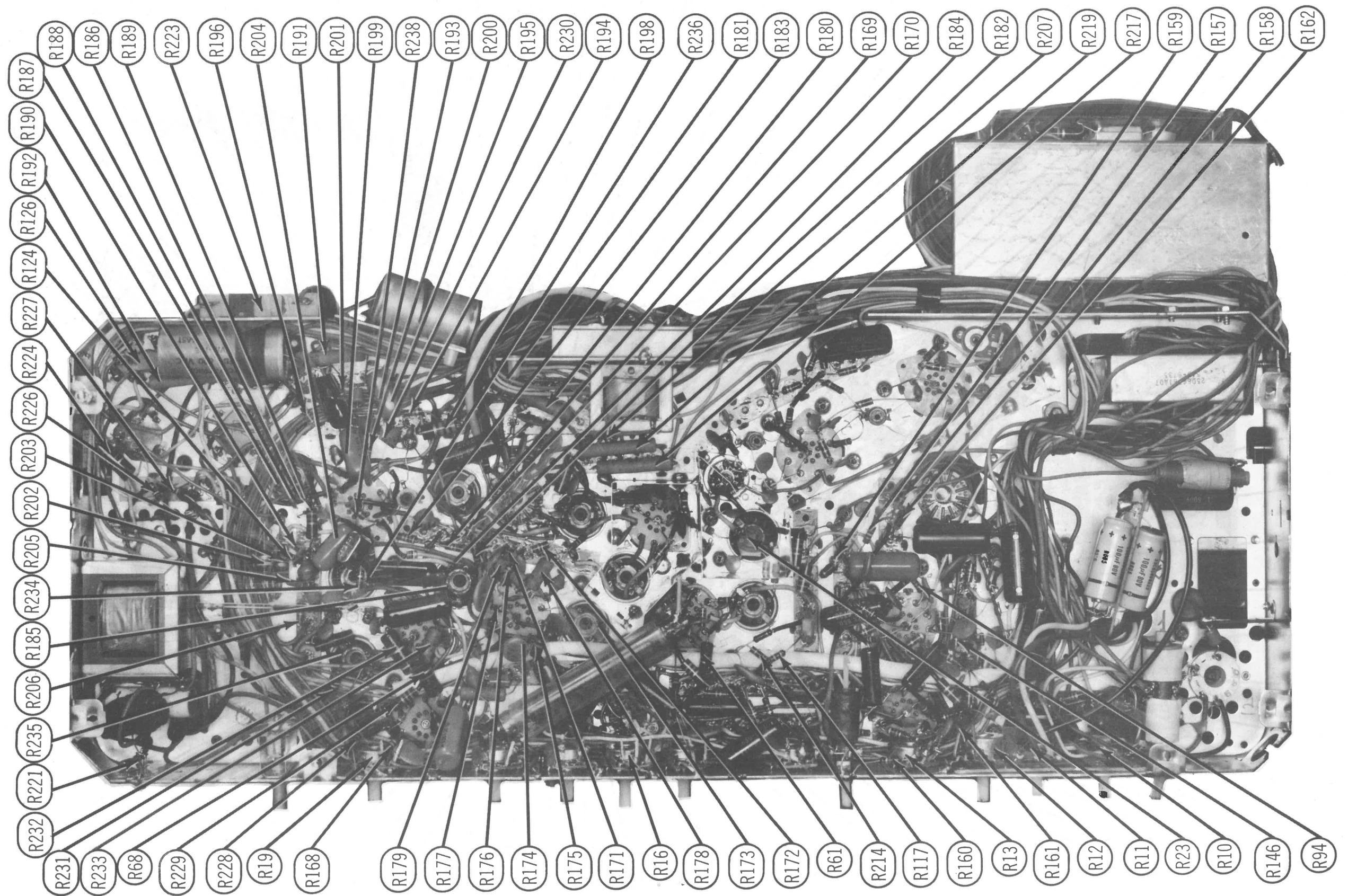
CHASSIS - BOTTOM VIEW



CHASSIS - BOTTOM VIEW

MOTOROLA CHASSIS A20TS-
921B/C, AF/AH/E/F/H/K/L23TS-921B/C

FOLDER 1





CHASSIS - BOTTOM VIEW



ALIGNMENT INSTRUCTIONS

Use an isolation transformer and maintain voltage at 117 volts. Allow a 20-minute warm-up period for the receiver and test equipment.

Suggested Alignment Tools: AI thru A20.... GENERAL CEMENT #8806, 8806L, 8869... WALSCO #2543, 2544, 2588
Mixer Plate Coil...GENERAL CEMENT #9296, 9297, 9300... WALSCO #2510, 2546, 2547

VIDEO IF ALIGNMENT

Connect the synchronized sweep voltage from the sweep generator to the horizontal input of the oscilloscope for horizontal deflection. Use only enough generator output for a small indication. Note: Response may vary slightly from that shown. Remove Horizontal Output tube. Connect a variable bias supply to the IF AGC line (point ) and adjust to obtain a response curve which shows no indication of overload. Ground point , off pin 7 of V4. Disable VHF Tuner oscillator section of Mixer-Osc. Set the Channel Selector to any non-interfering channel.

	INDICATOR	GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	ADJUST	REMARKS
1.	Connect DC probe of a VTVM thru a 47K resistor to point  . Common to ground.	Connect high side to ungrounded tube shield over Mixer-Osc. Low side to ground.		39.75MC 41.25MC 47.25MC	A1 A2, R23 A3, R22	Adjust for MINIMUM.
2.	Connect vertical input of a scope to point  . Low side to ground.	Connect high side to ungrounded tube shield over Mixer-Osc. Low side to ground.	44MC (10MC Sweep)	39.75MC 41.25MC 42.17MC 44.00MC 46.75MC 47.25MC	A4, A5, A6, A7, Mixer Plate Coil	Adjust for maximum gain and symmetry of response with markers as shown in Figure 1.





4.5 MC TRAP ALIGNMENT



Tune in a strong TV signal and set the Contrast at maximum. Adjust the Fine Tuning until a beat pattern is visible on the screen. Adjust A12 for MINIMUM beat interference.

SOUND IF ALIGNMENT

Tune in a station and adjust A8 for maximum sound. Reduce signal strength at the antenna terminals until distortion appears. Continue to reduce signal while aligning for undistorted output by adjusting A9, A10 and A11.

CHROMA BANDPASS ALIGNMENT

Remove V11 (Horiz. Output), V9 (Sync Sep. - Vert. Mult.), V8 (AGC Keying - Horiz. Osc.). Disconnect convergence panel plug. Connect a clip lead from point  off pin 1 of V8 to ground. Connect a -45VDC Bias supply to point , pin 9 of V16 (Burst Amp. - Chroma Sync Amp.) Connect a clip lead from point , off pin 8 of V15 (Chroma Demodulator) to ground. Connect a 1mfd disc capacitor from point , pin 3 of V15 (Chroma Demodulator) to ground. Disable oscillator section of V202 (Mixer-Oscillator) in tuner. Adjust Color Killer control maximum clockwise. Adjust Color Intensity control maximum counterclockwise. Adjust Noise Gate control maximum counterclockwise. Adjust Picture Peaking control maximum clockwise. Adjust Contrast control maximum clockwise. The following alignment will require the use of an RF Modulator (RCA WG304B or equivalent),

	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
3.	High side of sweep gen. to the video sweep input of RF demodulator, high side of signal generator (set @ 45.75MC) to picture carrier input, output of RF modulator to Mixer Grid test point on tuner, low side to ground.	3MC (0-5MC Sweep)	3.1MC 3.58MC 4.1MC		Vert. Input thru demodulator probe to point  , pin 3 of V14, low side to ground.	A13, A14	Adjust for response curve similar to Fig. 2.
4.	"	"	"		Vert. Input thru demodulator probe to point  , off pin 7 of V15, Chroma Demodulator, low side to ground.	A15, A16	Reset Color Intensity control to mid-position, then adjust A15 and A16 for response curve similar to Fig. 3.

DEMODULATOR TRAP ADJUSTMENT (COLOR AFC ALIGNMENT)

Connect a Color Bar generator to the antenna terminals. Turn the Color Intensity control fully counterclockwise. Connect a clip lead from point , pin 8 of V15 (Chroma Demodulator) to ground. This alignment requires the use of a trap detector (See Fig. 4.)

SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	CHANNEL	CONNECT VTVM	ADJUST	REMARKS
			Input of trap detector to pin 1 of V15 (Chroma Demodulator), DC probe to output of trap detector, common to ground.	A17	Adjust for MINIMUM.
			High side thru 5.6meg resistor to point Φ , pin 9 of V15 (Chroma Demodulator), low side to point Φ , pin 1 of V5, Color Killer.	A18	Remove clip lead from point Φ . Connect clip lead to point Φ at junction of L31 and M4 (3.58MC Crystal). Connect clip lead from point Φ , pin 8, V16 (Burst Amp.) and ground. Adjust for maximum.
			"	A19	Remove clip lead from point Φ . Starting with core at chassis end of coil adjust to second -3VDC reading.
			"	A18, A19	Advance Color Intensity control until color is just visible on picture tube. If color cannot be obtained, remove clip lead from point Φ and connect to point Φ pin 2 of V16 (Chroma Sync Amp.). Adjust A18 until color bars tend to float slowly across the screen or stand still. Adjust A18 and A19 until color bars tend to float or stand still and -3VDC reading is obtained simultaneously.
			High side of point Φ , off pin 2 of V16 (Chroma Sync Amp.), low side to ground.	A20	Remove all clip leads and set Color Intensity control to MINIMUM. Start with core at furthest point from chassis and adjust for maximum deflection at both ends of Hue control rotation.

FIG. 4

Connect the Vertical Input of a scope to point (Red grid of CRT). Check for proper waveform with color bar generator being used. See waveform on schematic for pattern obtained from a standard N.T.S.C. signal. Check the range of the Hue control. The bars should move 30° either side of proper signal. If necessary, retouch A20 for proper range of control. Also check Points and .

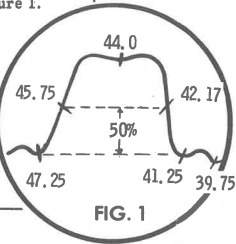


FIG.

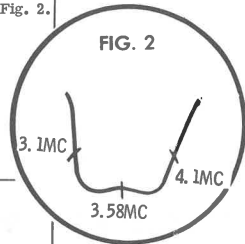


FIG. 2

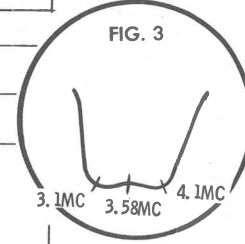
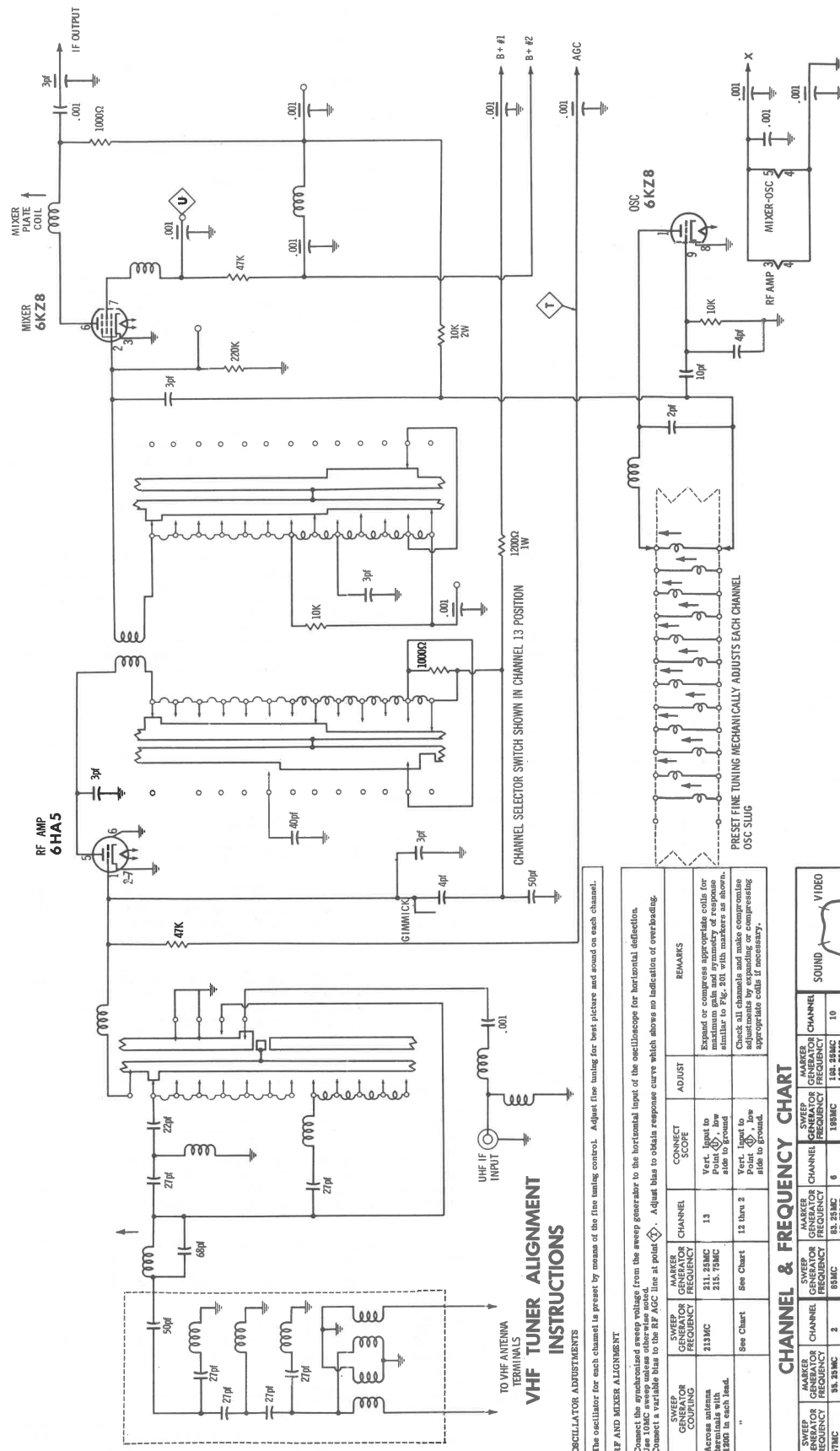


FIG.



A PHOTOFACT STANDARD NOTATION SCHEMATIC
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MOTOROLA CHASSIS A20TS-921B/C, AF/AH/E/F/H/K/L23TS-921B/C

FOLDER 1

VHF TUNER OPTT-407

MISCELLANEOUS ADJUSTMENTS

HORIZONTAL SWEEP CIRCUIT ADJUSTMENTS

Tune in a TV station and set all controls for normal operation. Allow a 15-minute warm-up period.

Adjust the Horizontal Oscillator coil (Hold) until picture is in proper sync and remains in sync when switching from channel to channel.

Turn Brightness control to MINIMUM (fully counterclockwise). Adjust Master Brightness control, R5B, if necessary, to extinguish raster. Connect a VTVM through a 50KV or higher voltage probe to picture tube anode lead. Adjust High Voltage Adjust control, R13, for 27KV on picture tube anode.

Adjust Focus, Horizontal Centering, Width, Vertical Centering, Height, and Vertical Linearity controls.

AGC AND NOISE GATE

Tune in the strongest available TV station. Turn the AGC control, R14, fully counterclockwise until the picture becomes unstable (rolls, tears, bends, etc.). Then turn clockwise until the picture returns to normal. Check all available channels. If any channel is unstable, continue turning control clockwise until the picture is normal on all channels.

Turn Noise Gate control, R15, clockwise until the picture becomes unstable. Then turn control counterclockwise until the picture just returns to normal. Check all available channels. If any are unstable, continue turning control counterclockwise until the picture is normal on all channels.

VIDEO PEAKING

The Video Peaking control, R16, should normally be set in maximum clockwise position for optimum video response. If high frequency background noise is visible on screen, turn Video Peaking control counterclockwise to eliminate the background noise.

COLOR KILLER

Set Color Killer control, R19, fully counterclockwise. Tune in a color signal and adjust Color Killer control clockwise until color just appears on the screen and is normal. Switch to a black and white signal and adjust for colorless noise.

DYNAMIC PINCUSHION ADJUSTMENTS

Adjust the Horizontal Pincushion Adjust control, R20, for straightest possible line on left side of picture. Observe right side of screen and make compromise adjustment of Horizontal Pincushion Adjust control.

If necessary, Top and Bottom Pincushion may be corrected by adjusting for straight horizontal lines at top and bottom of the screen. Attach a crosshatch generator to the antenna terminals and adjust the set for a

DYNAMIC PINCUSHION ADJUSTMENTS (CONTINUED)

normal crosshatch pattern. Adjust Pincushion Bottom Amp. control to MINIMUM (completely clockwise). Then adjust Pincushion Top Tilt coil for straightest possible line near the top of the screen.

Readjust Pincushion Bottom Amp. control for straightest possible line near the bottom of the screen.

PURITY ADJUSTMENTS

Connect a crosshatch generator to antenna terminals and fine tune for best picture. Check adjustment of Height and Linearity, Vertical Centering, Horizontal Centering, and Focus (center of screen) to obtain a pattern of proper focus, size, and location. Demagnetize receiver, using degaussing coil around front and all sides of CRT, or use built-in degausser. Perform step 1 of the "Convergence Adjustments". Set the Contrast control to MINIMUM, Brightness control to normal level, and Tint control to its mechanical center.

Turn Blue and Green screen controls to MINIMUM and Red screen control to maximum. Loosen Deflection Yoke retaining screw and move yoke as far back as possible without hitting the convergence yoke assembly. Adjust the tabs on the Purity ring and rotate the assembly to place the Red area at the center of the screen. Move the Deflection Yoke forward and position for best overall Red screen. Check purity of Blue and Green.

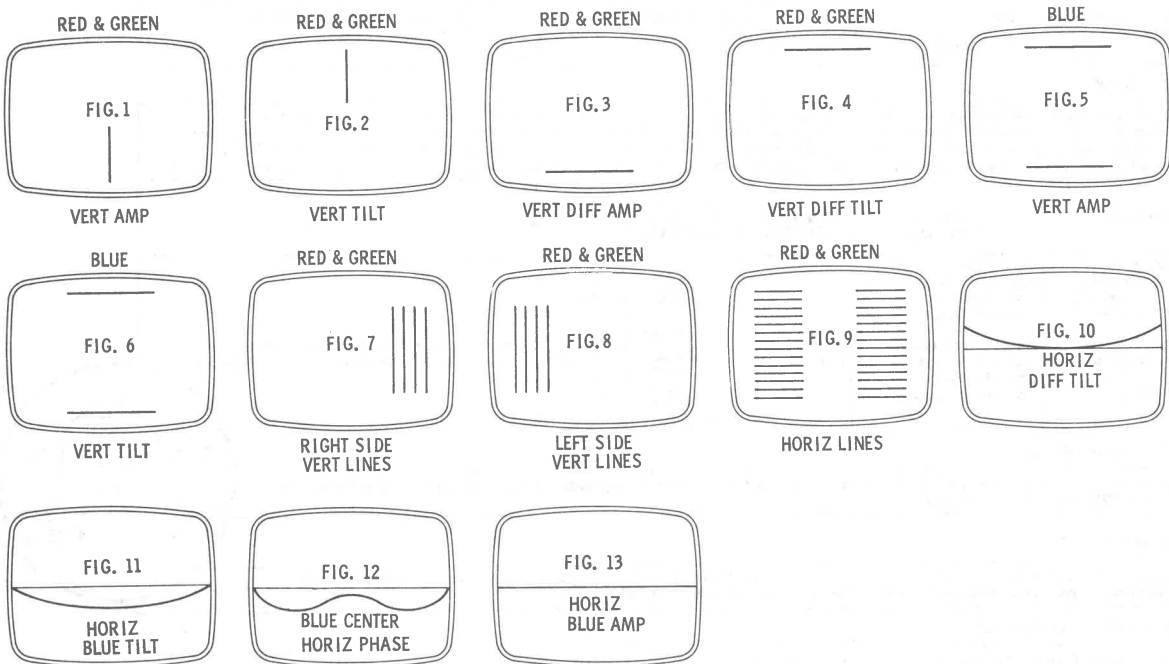
BACKGROUND ADJUSTMENTS

Set Red, Blue and Green Drive controls and Tint control to midposition. Set Master Brightness control, R5B, to MINIMUM (maximum counterclockwise.) Tune receiver to a blank channel. (For noise free raster, set tuner between channels.) Set Contrast control to MINIMUM and all screen controls to maximum. Adjust Brightness control until raster is just visible. (Adjust Master Brightness control, if necessary, to see raster.)

Observe color of raster and reduce screen controls of predominant colors. The screen control of the weakest color should be left at maximum. Adjust remaining two (2) screen controls to produce a gray raster. Set Brightness control to maximum position and Contrast control at MINIMUM. Starting with Master Brightness control in its maximum counterclockwise position, slowly rotate control in a clockwise direction until picture just starts to go out of focus, then turn control back approximately 45°. Reduce Brightness control to normal level. Touch up Red, Blue and Green Video Drive controls to produce a normal white raster and touch up screen controls if necessary.

CONVERGENCE ADJUSTMENTS

Tune Receiver to a White Crosshatch and adjust for best picture. Recheck center of screen focus, picture size, linearity and centering; correct if necessary.				
VERTICAL DYNAMIC CONVERGENCE				
Step	Control	Use to Converge (or Straighten)	Remarks	
1.			Perform center dot convergence using the disc magnets and the Blue Lateral magnet.	
2.	R-G Vertical Tilt R34	Red and Green Vertical lines at top of screen.	If desired turn Blue screen to MINIMUM to obtain a Red-Green raster. Touch up both controls for best convergence from top to bottom along vertical center line (Figs. 1 & 2). NOTE: If range of controls is inadequate, move Blue Range switch to opposite position.	
3.	R-G Vertical Amp. R31	Red and Green Vertical lines at bottom of screen.		
4.	R-G Vertical Diff. Tilt R35	Red and Green Horizontal lines at top of screen.	Touch up both controls for best convergence of Horizontal lines along vertical center line (Figs. 3 & 4). If Horizontal lines in the center of screen are misconverged, repeat steps 4 and 5 for equally spaced Horizontal lines from top to bottom of screen. Readjust Disc magnets if necessary. Readjust R-G Vertical Amp. and Tilt controls (steps 2 & 3) for center vertical lines, if necessary.	
5.	R-G Vertical Diff. Amp. R32	Red and Green Horizontal lines at top of screen.		
6.	Blue Vertical Amp. R33	Blue Horizontal lines at top and bottom of screen.	Turn up Blue screen control. Adjust to produce displacement in same direction as the Blue Horiz. lines at top and bottom of screen (Fig. 5).	
7.	Blue Vertical Tilt R36	Blue Horizontal lines at top and bottom of screen.	Adjust to produce equal displacement in the same direction as the Blue Horizontal lines with respect to Red and Green from top to bottom of screen (Fig. 6). Alternately repeat steps 6 and 7 for satisfactory convergence of the Blue Horizontal lines from top to bottom of screen along the center of screen for equal displacement to permit convergence with the Disc magnets. NOTE: If range of controls is inadequate, reverse positions of R-G Range switch to opposite position.	
8.	Right side R-G Vertical lines L52	Vertical lines Right side	Turn Blue screen to MINIMUM to obtain a Red-Green raster. Adjust to converge vertical lines from center to right side of screen (Fig. 7).	
9.	Left side R-G Vertical lines R28	Vertical lines Left side	Adjust to converge vertical lines from center to left side of screen (Fig. 8).	
10.	R-G Horizontal lines L53	Red and Green Horizontal lines at right and left side of screen.	Adjust to converge Horizontal Red and Green lines at the right and left side of screen (Fig. 9). Repeat steps 8, 9 and 10 for best overall convergence or for equal spacing of lines which can be corrected with the Disc magnets.	
11.	R-G Horizontal Diff. Tilt R29	Red and Green Horizontal lines at center of screen.	Adjust to converge Red and Green lines in center of screen (Fig. 10).	
12.	Blue Horizontal Amp. R30 Blue Horizontal Tilt L55	Blue Horizontal line in center of screen.	Turn up Blue screen control. Adjust Blue Horizontal Amp. control to maximum. Adjust Blue Horizontal Tilt until the droop in the Blue line is in the center of the screen (Fig. 11).	
13.	Blue Horizontal Phase L54	Blue Horizontal line in center of screen.	Adjust until the droop in the Blue line is forced upward (Fig. 12).	
14.	Blue Horizontal Amp. R30	Blue Horizontal line in center of screen.	Adjust to converge on Red-Green Horizontal center line (Fig. 13). Repeat steps 12, 13 and 14 if necessary to get a satisfactory convergence along a center horizontal line or to get equal displacement to permit correction with the Disc magnets.	



FTI ALIGNMENT INSTRUCTIONS

FINE TUNING INDICATOR (FTI) ADJUSTMENT

NOTE: AGC control must be adjusted properly before making any adjustment of FTI lamp. Tune in a Color TV program. Adjust Fine Tuning knob for best sound and picture and adjust Sensitivity control, R240, counterclockwise for MINIMUM brilliance of FTI lamp. Adjust A21 until lamp just goes out. Check all available channels. Lamp should be out for best sound and picture and remain out for not more than 180° turn of Fine Tuning knob. It may be necessary to readjust Sensitivity control for lamp to remain out.

TROUBLESHOOTING CHECK CHART

The following chart lists component failures most likely to produce indicated symptoms.

SWEEP

No raster, has sound X13, V8, V11, V12, V13
No vert. deflection X10, V9, V10
Poor vert. lin. or foldover V9, V10
Poor horiz. lin. or foldover V11, V12
Narrow picture X1, X2, V11, V12
Vert. off freq. V9, V10
Horiz. off freq. X11, X12, V8

RASTER

Yellow - No blue V15, V17
Cyan - No red V15, V17
Magenta - No green V15, V17

PICTURE OR SOUND

No pic, no sound, no raster F1, F2, X1, X2
No pic, no sound, has raster V1, V2, V3, V4, X9
No pic, no sound, has snow V201, V202
No pic, has sound, no raster V5, V17
No pic, has sound, has raster X9, V4
Has pic, no sound V6, V7
Overloaded picture V8
Low or excessive brightness V17

COLOR(B/W reception operating normally.)

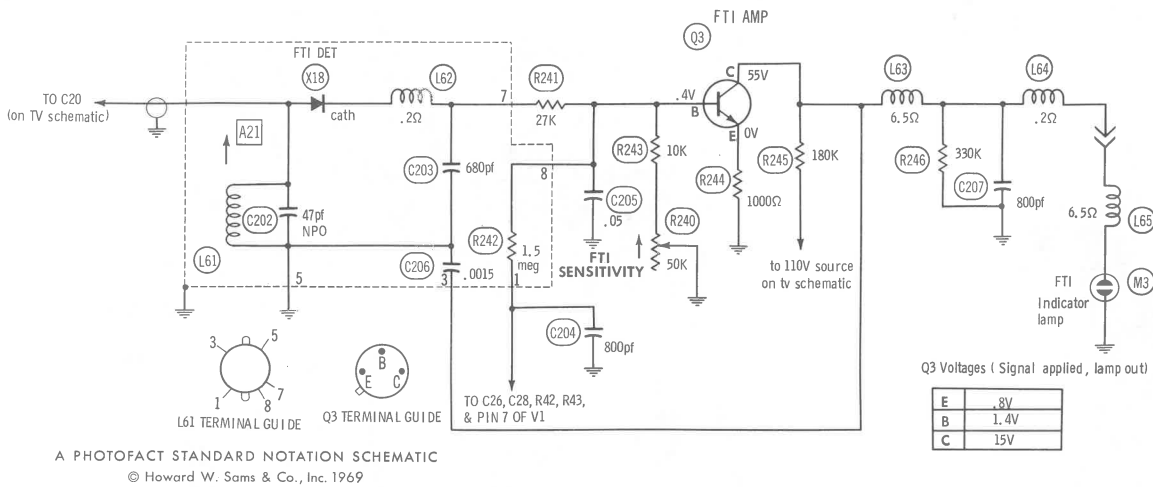
No color V5, V14
Weak color V14
No color sync V16
No blue V15
No red V15
Incorrect hue (tint) V15, V16

SYNC

No vert. sync V9
No horiz. sync X11, X12, V8
No vert. or horiz. sync V9

RESISTANCE MEASUREMENTS														
ITEM	TUBE	PIN 1	PIN 2	PIN 3	PIN 4	PIN 5	PIN 6	PIN 7	PIN 8	PIN 9	PIN 10	PIN 11	PIN 12	TOP CAP
V1	6BZ6	580K	860Ω	FIL	FIL	150Ω ▲	150Ω ▲	820Ω						
V2	6BZ6	88K	INFINITE	FIL	FIL	1850Ω †	1850Ω †	47Ω ▲						
V3	6EJ7/ EF184	100Ω	6800Ω	100Ω	FIL	FIL	0Ω	3300Ω †	3300Ω †	0Ω				
V4	6DX8/ ECL84	1.1meg	17K †	650Ω	FIL	FIL	6200Ω †	720Ω	2000Ω ✖	13K †				
V5	6LY8	1000Ω	500K	620Ω	FIL	FIL	550Ω	470K	8000Ω †	6600Ω †				
V6	6BL8	9500Ω	470K	160K †	FIL	FIL	160K †	0Ω	390Ω	1Ω				
V7	6T10	FIL	1380Ω	820Ω	0Ω	7Ω	17K †	1.2meg †	600K	180Ω	14K †	560Ω †	FIL	
V8	6GH8A	3.4meg	930K	90K †	FIL	FIL	350K †	2200Ω	42K	64K				
V9	6BL8/ ECF80	2.2meg	5meg	18K †	FIL	FIL	170Ω	0Ω	1200Ω ✖	710K				
V10	6CW5/ EL86	NC	250K	2200Ω	FIL	FIL	NC	12.5K †	NC	1200Ω †				
V11	6LF6	FIL	0Ω	4700Ω †	NC	600K	NC	NC	NC	NC	0Ω	NC	FIL	38Ω †
V12	6CL3	NC	NC	NC	FIL	FIL	NC	20Ω †	NC	520K				
V13	3AT2	160meg	NC	NC	TP	NC	NC	NC	NC	NC	NC	NC	160meg	600Ω †
V14	6DX8/ ECL84	4.8Ω	25K †	180Ω	FIL	FIL	10K †	100Ω	590K	8500Ω †				
V15	6LE8	23K †	14K	1000Ω	FIL	FIL	28K †	10.3K	15.5K †	48K				
V16	6BL8	100K †	330K	52K	FIL	FIL	23K †	0Ω	1.4Ω	150K				
V17	25ZP22	FIL	7500Ω †	200K †	850K	650K	5000Ω †	70K †	NC	30meg	NC	8200Ω †	160K	
												PIN 13 1meg †	PIN 14 FIL	
V201	6HA5	4.8meg	0Ω	FIL	FIL	12K †	0Ω	0Ω						
V202	6KZ8	16K †	150K	0Ω	FIL	FIL	11K †	35K †	1000Ω	11K				
ITEM	TUBE	PIN 1	PIN 2	PIN 3	PIN 4	PIN 5	PIN 6	PIN 7	PIN 8	PIN 9	PIN 10	PIN 11	PIN 12	TOP CAP

* READING DEPENDS ON POLARITY OF METER CONNECTIONS.
▲ MEASURED FROM PIN 2 OF V2.
† MEASURED FROM CATHODE OF X2.
‡ MEASURED FROM PIN 9 OF V12.
NC NO CONNECTION



FTI CIRCUIT

FTI PARTS LIST AND DESCRIPTION

TRANSISTORS

ITEM No.	TYPE No.	FUNCTION	REPLACEMENT DATA						
			MFGR. PART No.	DELCO PART No.	GENERAL ELECTRIC PART No.	INTERNATIONAL RECTIFIER PART No.	MOTOROLA PART No.	RCA PART No.	SYLVANIA PART No.
Q3		FTI Amp.	48S134941 (A2A)	DS-66	GE-18	TR-21	HEP713		ECG 123

POWER RECTIFIERS & SIGNAL DIODES

ITEM No.	MFGR. PART OR TYPE No.	REPLACEMENT RECTIFIERS & DIODES			REPLACEMENT RECTIFIERS	NOTES
		GENERAL ELECTRIC PART No.	INTERNATIONAL RECTIFIER PART No.	SYLVANIA PART No.	RCA PART No.	
X18	48C65837A02	1N60	1N60	ECG 109		

CAPACITORS

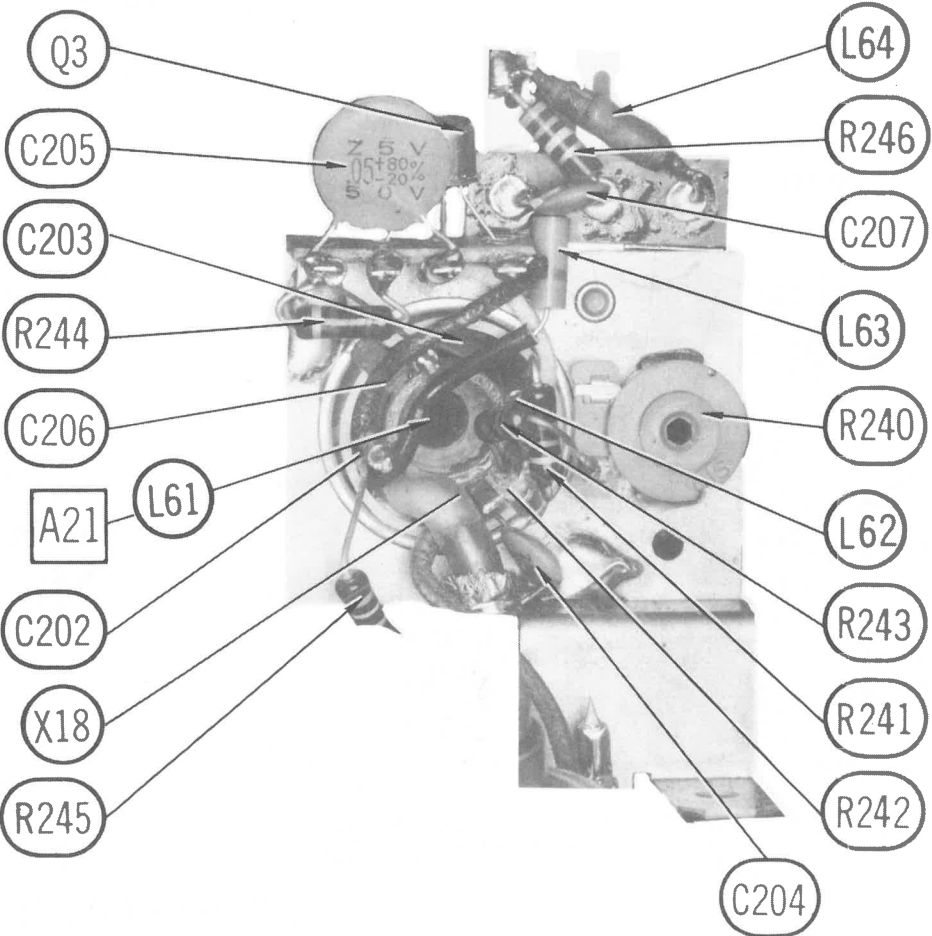
ITEM No.	RATING	REMARKS	REPLACEMENT DATA					
			AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ELMENCO PART No.	MALLORY PART No.	SPRAGUE PART No.
C202	47 NPO 5%		NPO-DI 47	DTZ-47	CX601CG470K	CCTO-470	CNO447	10TCC-Q47
C203	680 10%		GPD X5F681K	DD-681	JBY601YP681K	CCD-681	GP368	10TS-T68
C204	800 10%		GPD X5F821K	DD-801	JBY601YP821K	CCD-801	GP382	10TS-T82
C205	.05		GPD Z5V503P	DD-503			GP150	
C206	.0015		GPD X5F152K	DD-152			GP215	10TS-D15
C207	800 10%		GPD X5F821K	DD-801	JBY601YP821K	CCD-152 CCD-801	GP382	10TS-T82

CONTROLS (All wattages 1/2 watt, or less, unless listed)

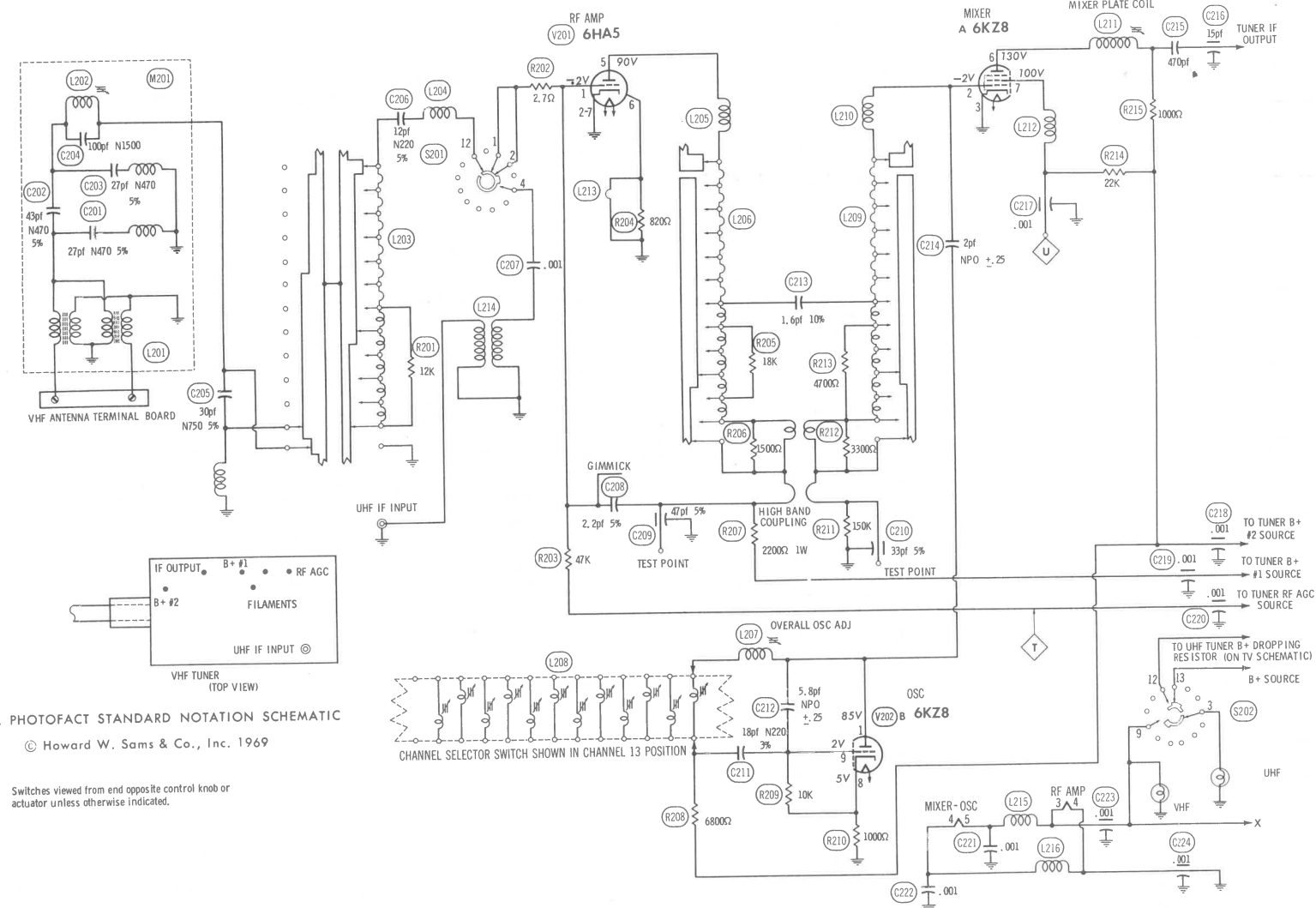
ITEM No.	FUNCTION	RESIST-ANCE	REPLACEMENT DATA				
			MFGR. PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	CTS-IRC PART No.	MALLORY PART No.
R240	FTI Sensitivity	50K	18D66401A31	T-50K		U201R503B	MTC54LI

COILS (RF-IF)

ITEM No.	USE	REPLACEMENT DATA			
		PART No.	MEISSNER PART No.	MILLER PART No.	WORKMAN PART No.
L61	Fine Tuning Indicator	24C66490A12			
L62	RF Choke (1.5uh)	24D66772A07	19-1001	74F156AP	T856
L63	RF Choke (7.5uh)	24D66772A12	19-2015	74F826AP	T822
L64	RF Choke (1.5uh)	24D66772A07	19-1001	74F156AP	T856
L65	RF Choke (7.5uh)	24D66772A12	19-2015	74F826AP	T822

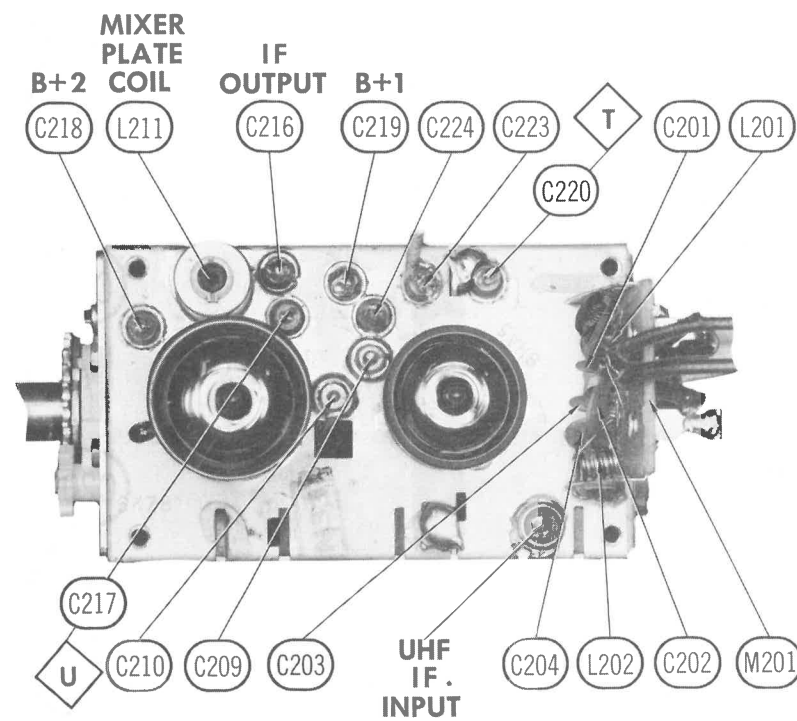
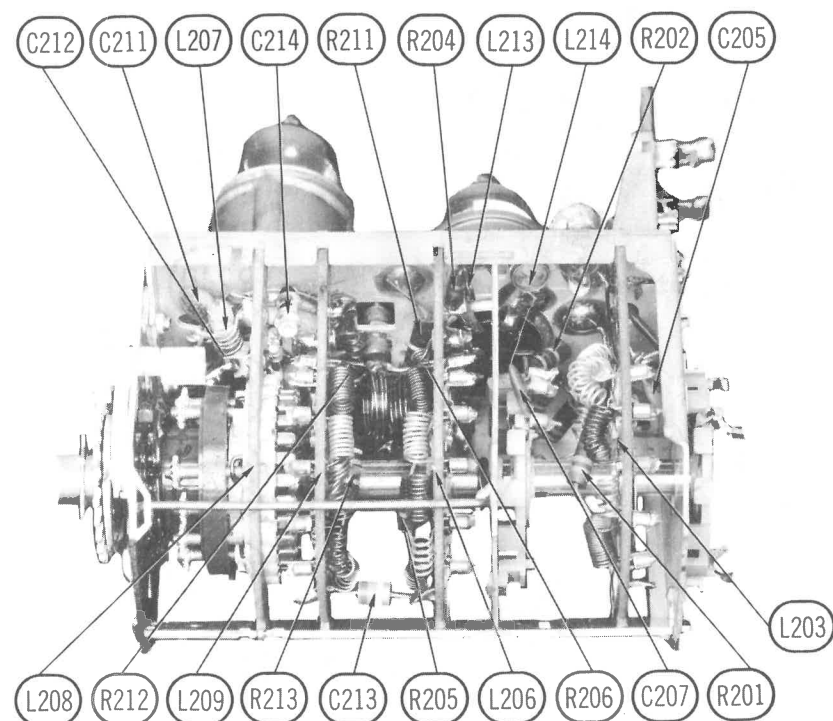


FTI CIRCUIT



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Switches viewed from end opposite control knob or actuator unless otherwise indicated.



VHF TUNER ALIGNMENT INSTRUCTIONS

OSCILLATOR ADJUSTMENTS

The oscillator for each channel is preset by means of the fine tuning control. Adjust fine tuning for best picture and sound on each channel. If any channel cannot be properly tuned in with the fine tuning, center fine tuning on Channel 13. Adjust overall oscillator adjustment and recheck all available channels.

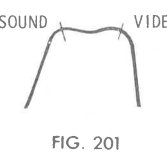
RF AND MIXER ALIGNMENT

Connect the synchronized sweep voltage from the sweep generator to the horizontal input of the oscilloscope for horizontal deflection. Use 10MC sweep unless otherwise noted. Connect a variable bias to the RF AGC line at point T. Adjust bias to obtain response curve which shows no indication of overloading.

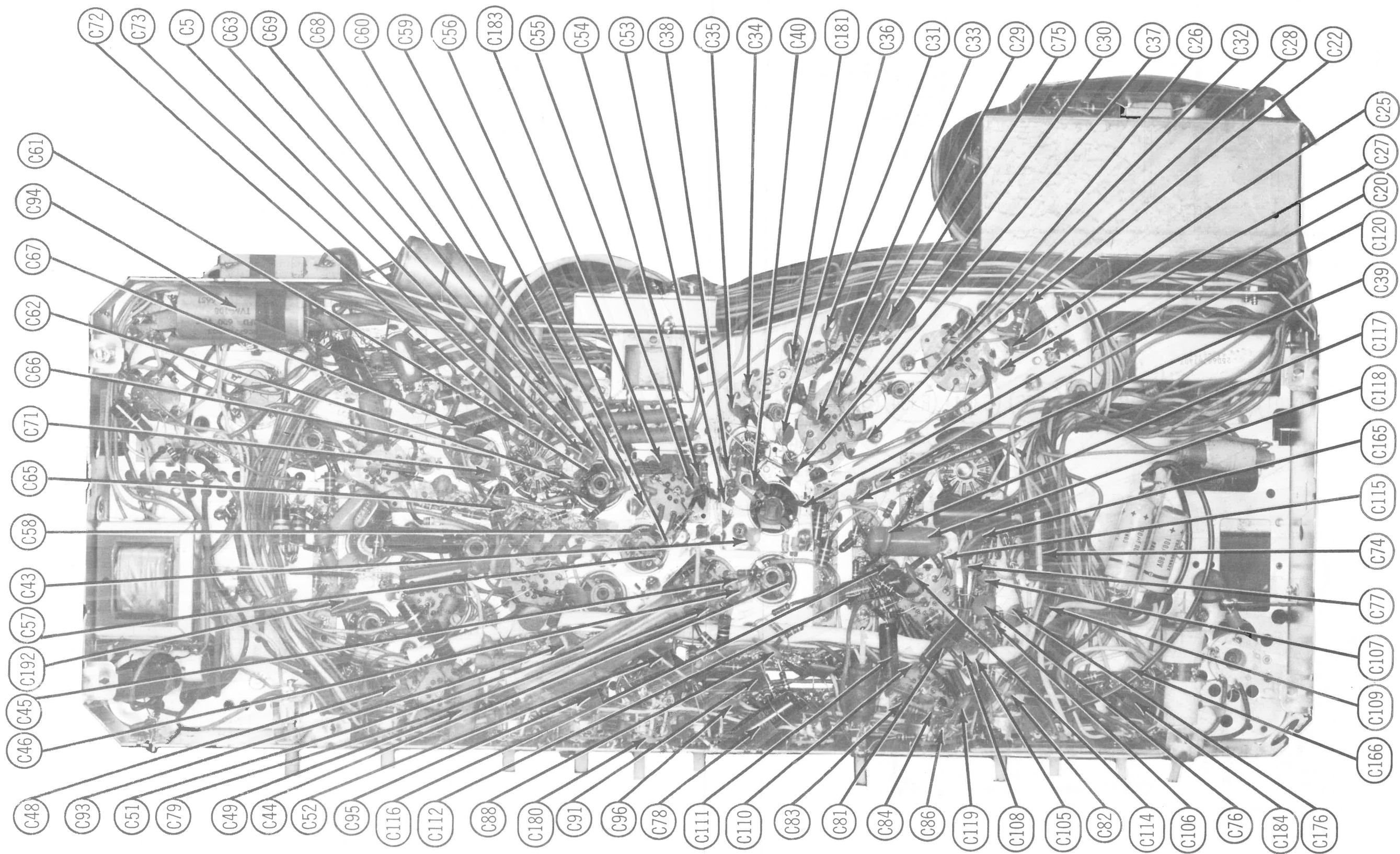
	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
1.	Across antenna terminals with 120Ω in each lead.	213MC	211.25MC 215.75MC	13	Vert. Input to Point U, low side to ground.		Expand or compress appropriate coils for maximum gain and symmetry of response similar to Fig. 201 with markers as shown.
2.	"	195MC	193.25MC 197.75MC	10	Across Video Det. load resistor.	Hi-Band Neutralizing Coil	Increase bias to -15 volts and adjust for MINIMUM amplitude of response.
3.	"	See Chart	See Chart	5	Across Video Det. load resistor.	Low Band Neutralizing Adj.	Increase bias to -15 volts and adjust for MINIMUM amplitude of response.
4.	"	See Chart	See Chart	12 thru 2	Vert. Input to Point U, low side to ground.		Check all channels and make compromise adjustments by expanding or compressing appropriate coils if necessary.

CHANNEL & FREQUENCY CHART

SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	SOUND	VIDEO
57MC	55.25MC 59.75MC	2	85MC	83.25MC 87.75MC	6	195MC	193.25MC 197.75MC	10		
63MC	61.25MC 65.75MC	3	177MC	175.25MC 179.75MC	7	201MC	199.25MC 203.75MC	11		
69MC	67.25MC 71.75MC	4	183MC	181.25MC 185.75MC	8	207MC	205.25MC 209.75MC	12		
79MC	77.25MC 81.75MC	5	189MC	187.25MC 191.75MC	9	213MC	211.25MC 215.75MC	13		



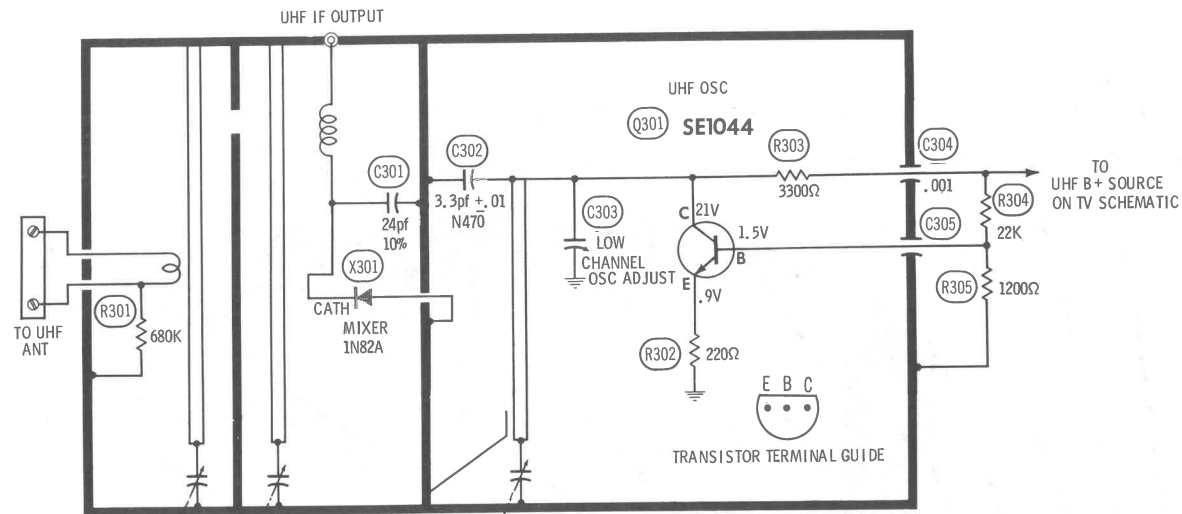
VHF TUNER AOPTT-399, AMOPTT-399A, LOPTT-399, OPTT-399



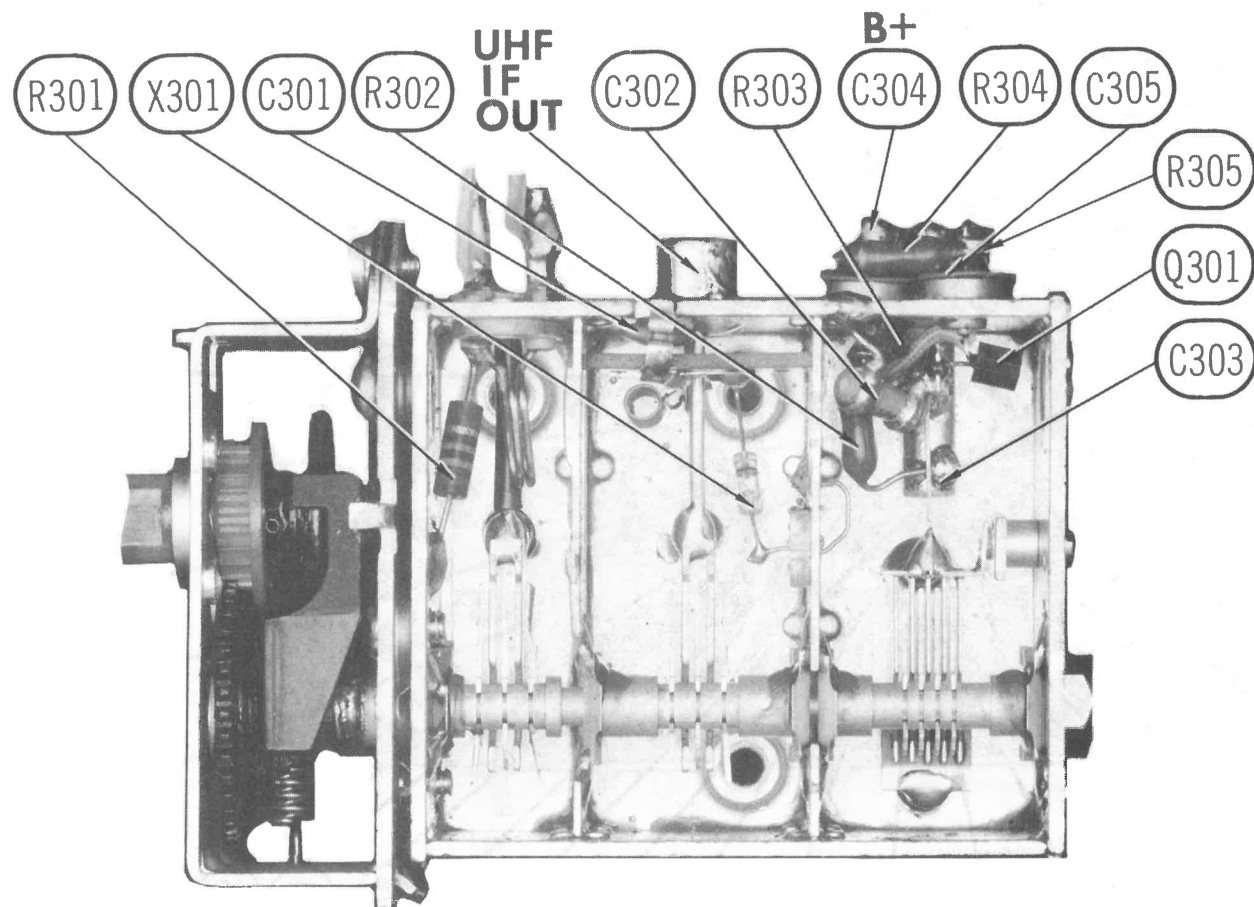
CHASSIS.- BOTTOM VIEW

MOTOROLA CHASSIS A20TS-
921B/C, AF/AH/E/F/H/K/L23TS-921B/C

FOLDER 1



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UHF TUNER KTT-622

VHF TUNER PARTS LIST

TUBES

AMPEREX		GENERAL ELECTRIC		RCA		SYLVANIA	
ITEM No.	USE	TYPE		ITEM No.	USE	TYPE	
V201	RF Amp.	6HA5		V202	Mixer - Oscillator	6KZ8	

CAPACITORS

ITEM No.	RATING	REMARKS	REPLACEMENT DATA					
			AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ELMENCO PART No.	MALLORY PART No.	SPRAGUE PART No.
C201	27 N470 5%	#21S124946				*	*	10TCT-Q27
C202	43 N470 5%	#21S180C26				*	*	10TCT-Q27
C203	27 N470 5%	#21S124946				*	*	10TCT-Q27
C204	100 N1500			TCL-100 TCN-30		*	2DY310	10TCU-Q30
C205	30 N750 5%							
C206	12 N220 5%	#21S131104						
C207	.001		DI-1000	DD-102	JBS601YP102K	CCD-102	GP210	10TS D10
C208	2.2		NPO-DI 2.2	DTZ-2R2	CZ601CJ2R2D	CCTO-2R2	CNO522	10TCC-V22
C209	47	#21S134221						
C210	33	#21S134220						
C211	18 N220 3%	#21S135751						
C212	5.8 NPO ±.25	#21S180A23						
C213	1.6		NPO-DI 1.5	DTZ-1R5			CNO515	10TCC-V15
C214	2 NPO ±.25		NPO-DI 2.2	DTZ-2R2	CZ601CJ2R2D	CCTO-2R2	CNO522	10TCC-V22
C215	470		DI-470	DD-471	JBZ601YP471K	CCD-471	GP347	10TS-T47
C216	15	#21S120656						
C217	.001							
C218	.001							
C219	.001							
C220	.001							
C221	.001		DI-1000	DD-102	JBS601YP102K	CCD-102	GP210	10TS-D10
C222	.001		DI-1000	DD-102	JBS601YP102K	CCD-102	GP210	10TS-D10
C223	.001							
C224	.001							

* Not normally in distributor's stock. Available thru distributor on order to manufacturer.
Motorola Part Number

COILS (RF-IF)

ITEM No.	USE	MFGR. PART No.	NOTES	ITEM No.	USE	MFGR. PART No.	NOTES
L201	Bahun	24P65118A90		L209	Mixer Grid Coils	40P65144A43	Wafer Assembly includes R212 and R213.
L202	FM Trap						
L203	Antenna Coils	40P65144A41	Wafer Assembly includes R201 Channel 13	R210	Mixer Grid	24P65114A35	Channel 13
L204	Antenna	24P65114A27	Channel 13	L211	Mixer Plate	24P65144A37	IF Output
L205	RF Plate	24P65115A76	Channel 13	L212	Mixer Screen	24P65144A39	8 Turns
L206	RF Plate Coils	40P65144A42	Wafer Assembly includes R206	L213	H1 Band Neut.	24P65116A92	Channels 7 - 13
L207	Overall Osc. Adj.	24P65118A81		L214	UHF Input	24P65144A38	
L208	Oscillator Coils	1P65121A40	Rotor Assembly (Coils only)	L215	Filament Choke		20 Turns
				L216	Filament Choke		20 Turns

MISCELLANEOUS

ITEM No.	PART NAME	PART No.	NOTES
M201	Antenna Input Filter Preset Screw Ass'y	24P65144A40 1P65144A46	Assembly - Includes L201, L202, C201, C203, C203 and C204. Oscillator - Includes Gear Head Screws, Spring and Holder.
S201	Oscillator Stator Ass'y	47P65118A44	Includes Contacts
S202	UHF Input Switch	40P65144A44	Includes C207 and L215.
	Switch	40P65144A45	UHF B+ and Dial Lamp

KTT-622

UHF TUNER PARTS LIST

TRANSISTORS

ITEM No.	TYPE No.	FUNCTION	REPLACEMENT DATA					
			MFGR. PART No.	DELCO PART No.	GENERAL ELECTRIC PART No.	INTERNATIONAL RECTIFIER PART No.	MOTOROLA PART No.	SYLVANIA PART No.
Q301	SE-1044	UHF Oscillator	48P65123A67		GE-11	TR-24	HEP56	SK3019

▲ Alternate Part #48P65144A72 (S1019).

POWER RECTIFIERS & SIGNAL DIODES

ITEM No.	MFGR. PART OR TYPE No.	REPLACEMENT RECTIFIERS & DIODES			REPLACEMENT RECTIFIERS	NOTES
		GENERAL ELECTRIC PART No.	INTERNATIONAL RECTIFIER PART No.	SYLVANIA PART No.	RCA PART No.	
X301	1N82A (48P65112A73)	1N82AG	1N82A	ECG 112		

CAPACITORS

ITEM No.	RATING	REMARKS	REPLACEMENT DATA					
			AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ELMENCO PART No.	MALLORY PART No.	SPRAGUE PART No.
C301	24							
C302	3.3 N470 ±.25	#21S121275		DD-240	CY601CG220K	CCTO-240	GP422	10TS-Q22
C303						*	*	
C304	.001							
C305								

* Not normally in distributor's stock. Available thru distributor on order to manufacturer.
Motorola Part Number

POWER RECTIFIERS & SIGNAL DIODES

ITEM No.	TYPE No.	FUNCTION	REPLACEMENT DATA							NOTES
			MFGR. PART No.	DELCO PART No.	GENERAL ELECTRIC PART No.	INTERNATIONAL RECTIFIER PART No.	MOTOROLA PART No.	RCA PART No.	SYLVANIA PART No.	
Q301	SE1 044	UHF Oscillator	48 P65123A95		GE-11	TR-24	HEP56	SK3019	ECG 108	

COILS (RF-IF)

ITEM No.

RATING

REMARKS

AEROVOX PART No.

CENTRALAB PART No.

CORNELL-DUBILIER PART No.

ELINCO PART No.

MALLORY PART No.

SPRAGUE PART No.

REPLACEMENT DATA

Q301	2.2 N470 ±.1	#21R134242				*	*	
C302	1-5							
C303	.001							
C304	.001							
C305	18 500V 10%		DJ-18	DD-180			CCD-180	GP418 107S-Q18

* Not normally in distributor's stock. Available thru distributor on order to manufacturer.

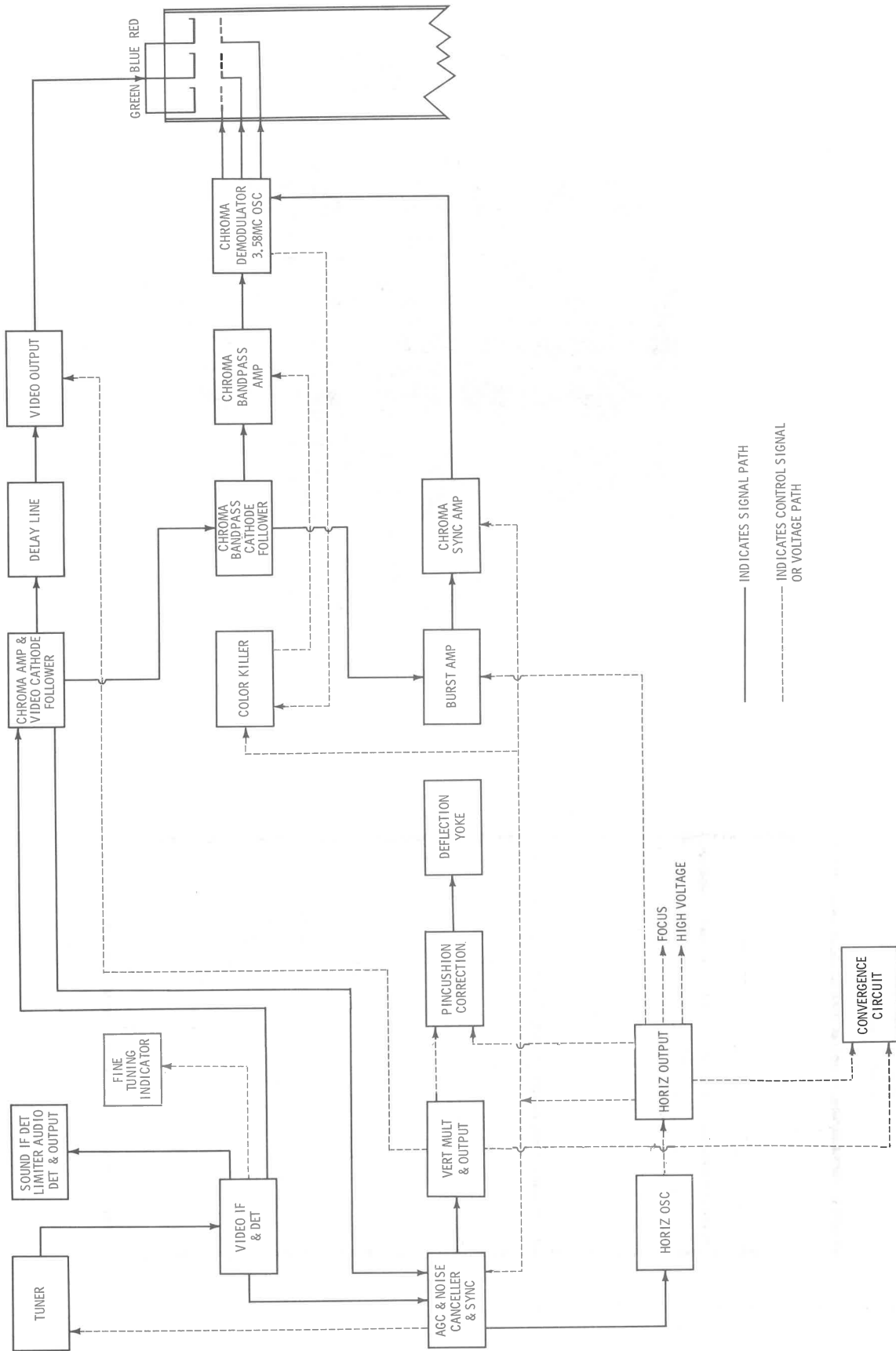
COILS (RF-IF)

ITEM No.	USE	MFGR. PART No.	NOTES
L301	Antenna Coupling	1 P65112A08	Includes terminals and R301.

ITEM No.	USE	MFGR. PART No.	NOTES
L302	UHF IF Output	24 P65112A11	



BLOCK DIAGRAM



PARTS LIST AND DESCRIPTION (CONTINUED)

(When ordering parts, state Model, Part Number, and Description.)
Replacement parts shown may be superseded by the availability of newly introduced replacements.
Have your local distributor check Sams COUNTER FACTS for the most up-to-date replacement.

FUSE DEVICES

ITEM No.	DESCRIPTION	REPLACEMENT DATA						
		PART No.		BUSS PART No.		LITTELFUSE PART No.		WORKMAN PART No.
		DEVICE	HOLDER	DEVICE	HOLDER	DEVICE	HOLDER	DEVICE
F1	Circuit Breaker	80C66390A13				8153.25		FA3,5
	Hold Current 2.2A							
F2	Break Current 3.5A							
	2" length of #31 fuse wire							
F3	1" length of #18 fuse wire							

MISCELLANEOUS

ITEM No.	PART NAME	PART No.	NOTES
	VHF Tuner	AMOPTT-399A	
	VHF Tuner	AOPTT-399	
	VHF Tuner	LOPTT-399	
	VHF Tuner	OPTT-399	
	VHF Tuner	OPTT-407	
	UHF Tuner	KTT-622	
	UHF Tuner	KTT-626	
	UHF Tuner	HTT-627	
	UHF Tuner	HTT-624	
	UHF Tuner	TT-625	
	VHF Antenna	1C67665A02	
	VHF Antenna	1C67665A02	
	UHF Antenna	85P65133A40	
	UHF Antenna	85D67625A03	
M1	Lamp	65S135685	JFD Replacement TA365 VHF Antenna (One used) Models CT812DN, CT813DN, CT814DW.
M2	Lamp	65S135685	JFD Replacement TA365 (Two required), Models RT606CN, RT802DN, RT813DN, CS806DM, CL810DW, CU866DW, CU867DS.
M3	Lamp	65S10081A06	JFD Replacement TA545, Model RT606CN.
	Lamp	65S10081A04	JFD Replacement TA545, Models CT812DN, CT813DN, CT814DW, RT802DN, RT813DN, CS806DM, CL810DW, CU866DW, CU867DS.
M4	Crystal	48C68665A03	VHF Dial
M5	Spark Gap	80C68147B03	UHF Dial
M6	Delay Line	24D68855B10	Fine Tuning Indicator (.3ma, 65-80V Neon)
M7	Degaussing Coil	24V68615A71	Color Indicator (Neon)
	Degaussing Coil	24V68615A74	3.58MC
	Degaussing Coil	24V68620A43	Focus Voltage
M8	Motor	59D68731A01	Used in Chassis E/F/AF/H/AH23TS-921.
S1	Switch	40P65143A39	Used in Chassis K/L23TS-921.
S2	Switch	40C65513A01	Used in Chassis A20TS-921.
S3	Switch	40C65513A05	Hue Control (Includes Hue control)
S4	Switch	1V68607A94	Thermal Degaussing
	Magnet	76D66816A06	R-G Range
	Magnet	59G10296A01	Blue Range
			Manual Remote
			Static Convergence
			Blue Lateral and Purity Ring

CABINETS & CABINET PARTS (When ordering specify model, chassis & color)

ITEM	PART No.	ITEM	PART No.
MODELS: CL807DS, CL808DF, CL809DC, CL811DW, CU815DM/DW, CU816DS, CU817DP, CU818DC.		KNOB: MODEL: RT606CU	
KNOB: VHF Channel Selector	36D68217A23	VHF Channel Selector	36D68217A07
UHF Channel Selector	36D68217A22	UHF Channel Selector	36D68217A08
Fine Tuning	36D68218B24	Fine Tuning	36D68420A04
Horizontal, Intensity, Brightness	36C63092A01	Hue, Intensity, Brightness	36C68236A03
On-Off Volume	36D68218A05	On-Off Volume	36D68420A03
Tone, Tint	36C67982A03		
Vertical, Contrast	36C66819A07	KNOB: MODEL: CT812DN	
MODELS: RT802DN, RT813DN, CS806DM/DW, CL810DW, CU866DW, CU867DS.		VHF Channel Selector	36D68217A24
KNOB: VHF Channel Selector	36D68217A07	UHF Channel Selector	36D68217A25
UHF Channel Selector	36D68217A08	Fine Tuning	36D68420A22
Fine Tuning	36D68420A08	Horizontal, Intensity, Brightness	36C68236A09
Horizontal, Intensity, Brightness	36D68236A04	On-Off Volume	36D68420A21
On-Off Volume	36D68420A07		
MODELS: CL890DW, CL893DM, CL895DS, CL896DF.		KNOB: MODEL: CT813DN	
KNOB: VHF Channel Selector	36D68277A01	VHF Channel Selector	36D68217A07
UHF Channel Selector	36D68426A17	UHF Channel Selector	36D68217A08
Fine Tuning	36D68420A02	Fine Tuning	36D68420A03
Hue, Intensity, Brightness	36C68235A03	Horizontal, Intensity, Brightness	36C68236A04
On-Off Volume	36D68420A17	On-Off Volume	36D68420A07

WIRING DATA

High Voltage Lead	Use BELDEN No. 8868 (25KV)
Shielded Hook-up Wire	Use BELDEN No. 8885 (Single Conductor)
	8738 (Two Conductor)
General-use Unshielded Hook-up Wire	Use BELDEN No. 8530 (Solid) Available in 12 Colors
	8524 (Stranded) Available in 12 Colors
300Ω Tuner Input Lead	Use BELDEN No. 8225
300Ω Antenna Lead-in	Use BELDEN No. 8275 (Foam Core) or 8285 (Foam Jacketed)
Antenna Rotor Cable	Use BELDEN No. 8464 (Flat) or 8484 (Round) - 4 Conductor
	8485 (Round) - 5 Conductor
	8488 (Round) - 8 Conductor

PARTS LIST AND DESCRIPTION (CONTINUED)

(When ordering parts, state Model, Part Number, and Description.)

Replacement parts shown may be superseded by the availability of newly introduced replacements. Have your local distributor check Sams COUNTER FACTS for the most up-to-date replacement.

COILS (RF-IF) (cont)

ITEM No.	USE	REPLACEMENT DATA				
		PART No.	MEISSNER PART No.	MILLER PART No.	WORKMAN PART No.	
L29	Burst Phase	24V66549A89				
L30	RF Choke (6uh)	24S135220				
L31	Chroma Oscillator Control	24V66549A91	19-2014	4610	T992	
L32	3.58MC Oscillator	24P65133A30 ②				
L33	Peaking (1000uh).	24D67676A05	19-2032 ▲	72F103AP ▲ 6138	T352	
L34	Peaking (450uh)	24D67324A07		72F474AP * 74F686AP	T323 *	
L35	B11-118, TM4 or (BU11, CF10, SS6) *	24D67676A08		4207	T859	
L36	RF Choke (6.6uh)	24C66772A03	19-1004	72F474AP * 74F686AP	T323 *	
L37	3.58MC Trap	24D66857A06	19-6821	74F396AP	T859	
L38	Peaking (45uh)	24D67676A08		4610	T859	
L39	RF Choke (6.8uh)	24C66772A03	19-1004	74F396AP	T859	
L40	RF Choke (4.1uh)	24D66772A02	19-1003	74F396AP	T818	
L41	RF Choke (4.1uh)	24C66772A02	19-1003	74F396AP	T818	
L42	RF Choke (6.2uh)	24S135059	19-1004	74F686AP	T859	
L43	RF Choke (6.6uh)	24C66772A03	19-1004	74F686AP	T859	
L44	RF Choke (6.6uh)	24C66772A03	19-1004	74F686AP	T859	
L46A	Line Choke (112uh)	24C67534A06				
B	Line Choke (112uh)					

* Shunt with 2700Ω Resistor.

◆ Shunt with 10K Resistor.

① Includes L1, L2 and L3.

② Some versions may use Part #24V68615A95 in this application.

† Shunt with 8.2K Resistor.

▲ Shunt with 3300Ω Resistor.

COILS (SWEEP CIRCUITS)

ITEM No.	USE	REPLACEMENT DATA						
		MOTOROLA PART No.	MERIT PART No.	MILLER PART No.	STANCOR PART No.	THORDARSON MEISSNER PART No.	TRIAD PART No.	WORKMAN PART No.
L47	Horiz. Hold (Osc.)	24D65853A12						
L48	Width	24D65698A13						
L49	Horiz. Efficiency	24D65853A13						
L50	Pincushion Modulator	24D66847A03						
L51	Top Tilt Pincushion Corrector	24D66857A05	MWC-4 †	6318	WC-7	WC-23	WLC-23	T124
L52	Right R/G Vert. lines	24D67682A08						
L53	Right R/G Horiz. lines	24D67682A06						
L54	Blue Center Horiz. Phase	24D67682A03		H-105				
L55	Blue Horiz. Tilt	24D67682A03		H-105				
L56	Convergence Yoke Assembly	24D66971A02						
A	Green Coil	24P65146A78						
B	Blue Coil	24P65146A78						
C	Red Coil	24P65146A78						

† Ignore Tap.

FILTER CHOKE

ITEM No.	RATINGS		REPLACEMENT DATA					NOTES
	CURRENT (Measured)	DC RES.	INDUCTANCE (10 CURRENT 1000~)	MOTOROLA PART No.	MERIT PART No.	STANCOR PART No.	THORDARSON PART No.	
L57	.44A DC	10.6Ω	.34 H	25C67554A04	C-4133	C-2708	26C81	C-40X

TRANSFORMER (POWER)

ITEM No.	RATING			REPLACEMENT DATA					NOTES
	PRI.	SEC. 1	SEC. 2	MOTOROLA PART No.	MERIT PART No.	STANCOR PART No.	THORDARSON PART No.	TRIAD PART No.	
T1	117VAC @ 2.85A AC	150VAC @ .44A DC	6.3VAC @ 9.2A AC	25D66841A16					
SEC. 3									
6.3VAC @ 1.3A AC									

TRANSFORMERS (Sweep Circuits)

ITEM No.	USE	REPLACEMENT DATA					NOTES
		MFR. PART No.	MERIT PART No.	STANCOR PART No.	THORDARSON PART No.	TRIAD PART No.	
T2	Vert. Output Yoke (Horiz. 12mh)	25D66781A07					
T3	92° (Vert. 23.5mh)	24D67822A09					
T4	Horiz. Output Primary-Secondary	24D67564A07					
T5	Winding only	24D67565A07 ▲					▲ Part of T4.
	Pulse Coil only	24D66875A12 ▲					
	Horiz. Saturable Reactor	24T66553A67					

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE		REPLACEMENT DATA					NOTES
	PRI.	SEC.	MOTOROLA PART No.	MERIT PART No.	STANCOR PART No.	THORDARSON PART No.	TRIAD PART No.	
T6	12, 300Ω	6-8Ω	25D67552A05	A-2900	A-3856	22S86	S-51X	

SPEAKER

ITEM No.	TYPE	REPLACEMENT DATA			NOTES
		MFR. PART No.	JENSEN PART No.	QUAM PART No.	
SP1	4" x 6" PM 8Ω	50D67337A02		46A1Z8	Models CL810DW, CS806DM, CU866DW, CU867DS, CT812DN, CT813DN, CT814DW, RT802DN, RT813DN.
	4"	PM 8Ω	50D68384A01	C4T8	4A1Z8
	4" x 6"	PM 8Ω	50D67337A01		Model RT606CN.
	6"	PM 8Ω	50D67952B04	C6T8	6A15MT
	5"	PM 8Ω	50D66921A06	C5T8	5A1Z8
	3" x 5" PM 8Ω	50D69062A02	P9X5X8	35A0Z8	Models CU815DW, CU816DS, CU817DP, CU818DC.

PARTS LIST AND DESCRIPTION

(When ordering parts, state Model, Part Number, and Description.)

Replacement parts shown may be superseded by the availability of newly introduced replacements. Have your local distributor check Sams COUNTER FACTS for the most up-to-date replacement.

TUBES

AMPEREX		GENERAL ELECTRIC		RCA		SYLVANIA	
ITEM No.	USE	TYPE		ITEM No.	USE	TYPE	
V201	RF Amp.	6HA5		V9	Sync Sep. - Vert. Mult.	6BL8/ECF80	
V202	Mixer - Oscillator	6KZ8		V10	Vert. Mult. - Vert. Output	6CW5/EL86	
V1	1st Video IF	6BZ6		V11	Horiz. Output	6LP6 (6BL6) *	
V2	2nd Video IF	6BZ6		V12	Damper	6CL3 (6CH3/6CJ3) *	
V3	3rd Video IF	6EJ7/EF184		V13	HV Rectifier	3AT2 (3BS2) *	
V4	Chorma Amp. - Noise Cancel- Video Cathode Follower	6DX8/ECL84		V14	Chroma Bandpass Follower - Chroma Bandpass Amp.	6DX8/ECL84	
V5	Video Output - Color Killer	6LV8		V15	Chroma Demodulator - 3.58MC Oscillator	6LE8	
V6	Sound IF Det. - Limiter	6BZ6/ECF80		V16	Burst Amp.		
V7	Audio Det. - Audio Out put	6T10			Chroma Sync Amp.	6BL8/ECF80	
V8	AGC Keying - Horiz. Osc.	6GH8A					

* Alternate

PICTURE TUBE

ITEM No.	REPLACEMENT DATA				NOTES
	MFR. PART No.	GENERAL ELECTRIC PART No.	RCA PART No.	SYLVANIA PART No.	
V17	25ZP22 or 25XP22 or 25AP22A or 25SP22 or 21GFP22 †	25HP22 ① 25AP22 ① 22AP22A ① 25SP22 ①	H25XP22 ② H25XP22 ② H25XP22 ② H25XP22 ②	RE25AP22A ③ RE25AP22A ③ RE25AP22A ③ RE25AP22A ③	① Aluminized ② Hi-Lite ③ Color Bright "85" † Model RT606CN.

TRANSISTORS

ITEM No.	TYPE No.	FUNCTION	REPLACEMENT DATA					
			MFR. PART No.	DELCO PART No.	GENERAL ELECTRIC PART No.	INTERNATIONAL RECTIFIER PART No.	MOTOROLA PART No.	SYLVANIA PART No.
Q301		UHF Oscillator	48P65123A87①	DS-66	GE-11	TR-24	HEP56	SK3019
Q1		Vert. Pincushion Corrector	48S134838	DS-66	GE-10	TR-21	HEP113	ECG 108
Q2		Horiz. Pincushion Corrector	48S134910	DS-83	GE-22	TR-19	HEP116	ECG 123

① Alternate Part #48P65144A72 (SI019).

POWER RECTIFIERS & SIGNAL DIODES

ITEM No.	MFR. PART OR TYPE No.	REPLACEMENT RECTIFIERS & DIODES			REPLACEMENT RECTIFIERS	NOTES
		GENERAL ELECTRIC PART No.	INTERNATIONAL RECTIFIER PART No.	SYLVANIA PART No.	RCA PART No.	
X1	48S191A06	GE-504A	8D6 or 9DD6A ①	ECG 116 or ECG 117	SK3017A or SK3032	① A single unit replacement for both rectifiers.
X2	48S191A06	GE-504A	8D6 or 9DD6A ①	ECG 116 or ECG 117	SK3017A or SK3032	
X3	48C67926A01	GE-504A	8D6 or 5A6-D	ECG 116 or ECG 117	SK3017A or SK3032	
X4	48C67926A01	GE-504A	8D6 or 5A6-D	ECG 116 or ECG 117	SK3017A or SK3032	
X5	48C67926A01	GE-504A	8D6 or 5A6-D	ECG 116 or ECG 117	SK3017A or SK3032	
X6	48C66229A02	GE-504A	8D4 or 5A4-D	ECG 116 or ECG 117	SK3017A or SK3032	
X7	48S191A08	GE-504A	8D4 or 5A4-D	ECG 116 or ECG 117		
X8	48S191A08	GE-504A	8D4 or 5A4-D	ECG 116 or ECG 117		
X9	48C65837A02	1N34AS	1N34A	ECG 109		
X10	48C65837A02	1N34AS	1N34A	ECG 109		
X11	48D67120A02	1N34AS	1N34A	ECG 110 ②		② Matched Pair
X12	48D67120A02	1N34AS	1N34A	ECG 110 ②		
X13	48D67120A06	GE-504A	8D6 or 5A6-D	ECG 116 or ECG 117		
X14	48D67120A07	GE-504A	8D6 or 5A6-D	ECG 116 or ECG 117		
X15	48S191A05	GE-504A	8D6 or 5A6-D	ECG 116 or ECG 117		
X16	48D67120A08	GE-504A	8D6 or 5A6-D	ECG 116 or ECG 117		
X17	48S191A06	GE-504A	8D6 or 5A6-D	ECG 116 or ECG 117		

ELECTROLYTIC CAPACITORS

ITEM No.	RATING	REPLACEMENT DATA					
		PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	GENERAL ELECTRIC PART No.	SPRAGUE PART No.
C1	160, 250V	23C67753A02	AFH1-31-81		AA0318	XC1-19	TVL-1541
C2A	▲160, 250V	23C67753A03	AFH4-117-92 ①		DD0818 & BR20-450 ①	XC3-17.1E QT1-19	TVL-3725.11
B	▲50 450V						
C	▲10 400V						
C3A	▲80 450V	23C67753A01	AFH3-154-90 & PRS1720		CC0370.5	XC3-36.1	FP375.75
B	▲20 400V						
C	▲80 450V						
C4	150, 25V	23C65808A13 ②	PTT124	EA30-250	BR250-25	QT1-25	MTA150F35
C5	10 15V	23D65282A03	CRE457A	EA15-10	NLW10-15	MT1-5	TL15X10
C6	5 3V	23D65282A34	CRE604A	EA15-5	NLW5-15	MT1-3	TL-1052.2
C7	20 25V	23D65282A35	CRE761A	EA30-25	NLW20-50	MT1-11	TL-1306
C8	100, 25V	23D65282A39	PRS1510	EA30-100	NLW100-25	MT1-20	TC493A
C9	100, 80V	23C65808A22	PRS1510		WBRI00-150	QT1-24	TC493A
C10	100, 80V	23C65808A22	PRS1510		BR50-150	QT1-17	TC49A
C11	50 150V	23C65808A06	PRS1480		BRNP00-50	NQPT-5	TCN1540
C12	30, 20VNF	23D65282A23	PRS5050		BR5-250	QT1-4	TC50XA
C13	5 200V	23C65808A30	PRS1550				TVA-1414

① Disregard unused section.

② Use Part #23C60119A15.

CONTROLS (All wattages 1/2 watt, or less, unless listed) (cont)

ITEM No.	FUNCTION	RESIST-ANCE	REPLACEMENT DATA				
			MFRG. PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	CTS—IRC PART No.	MALLORY PART No.
R21	Bottom Amp. Pincushion	10Ω, 2W	17D65820A16	V-10	U39-15	117R100A	MR15F
R22	47.25MC Trap	5000Ω	18D66401A18	T-5000		X201R502B	MTC53L1
R23	41.25MC Trap Adjust	200Ω	18D66401A15	T-200		X201R251B	MTC22L1
R25	Red Drive	15K	18D67637A58	F1-15K, SNK100	A47-15K-S, RN-3, TT-2 or (NP-15K-S, NML-A-300, TT-2)	B11-118, TM4 or (BU11, CF10, SS6) *	RU153L, SL37, SN1000 or (UA24L, SN1000)
R26	Blue Drive	15K	18D67637A59	F1-15K, SNK100	A47-15K-S, RN-3, TT-2 or (NP-15K-S, NML-A-300, TT-2)	B11-118, TM4 or (BU11, CF10, SS6) *	RU153L, SL37, SN1000 or (UA24L, SN1000)
R27	Green Drive	15K	18D67637A60	F1-15K, SNK100	A47-15K-S, RN-3, TT-2 or (NML-A-300, TT-2)	B11-118, TM4 or (BU11, CF10, SS6) *	RU153L, SL37, SN1000 or (UA24L, SN1000)
R28	R/G Vert. lines (Left)	90Ω, 2W 18Ω Stop	18D67671A14				
R29	R/G Horiz. Diff. Tilt	150Ω, 2W	18D67671A17	V-150	U39-150	110C150	MRC150P
R30	Horiz. Blue Amp.	150Ω, 2W	18D67671A04	V-150	U39-150	110C150	MRC150P
R31	R/G Vert. Amp.	200Ω, 2W	18D67671A07	V-200	U39-200	110-300	
R32	R/G Vert. Diff. Amp.	200Ω, 2W	18D67671A07	V-200	U39-200	110-300	
R33	Blue Vert. Amp.	30Ω, 2W	18D67671A01	V-30	U39-50	110C30	MRC30P
R34	R/G Vert. Tilt	200Ω, 2W	18D67671A07	V-200	U39-200	110-300	
R35	R/G Vert. Diff. Tilt	30Ω, 2W	18D67671A01	V-30	U39-50	110C30	MRC30P
R36	Blue Vert. Tilt	200Ω, 2W	18D67671A07	V-200	U39-200	110-300	

CAPACITORS

ITEM No.	RATING	REMARKS	REPLACEMENT DATA					
			AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ELMENCO PART No.	MALLORY PART No.	SPRAGUE PART No.
C20	.51pf	5%						
C21	68 NPO	5%						
C22	10 N750	±.5						
C23	51 NPO	5%						
C24	51 NPO	5%						
C25	.002	10%						
C26	.002	10%						
C27	.002	10%						
C28	.330	10%						
C29	.002	10%						
C30	.002	10%						
C31	.002	10%						
C32	.002	10%						
C33	.330	10%						
C34	.002	10%						
C35	.002	10%						
C36	.002	10%						
C37	.002	10%						
C38	.002	10%						
C39	.002	10%						
C40	.002	10%						
C41	100 NPO	5%						
C42	100 NPO	5%						
C43	18 NPO	5%						
C44	100 N150	5%						
C45	.001	10%						
C46	100	10%						
C47	.5	100V						
C48	.002	10%						
C49	.25	400V						
C50	.800	10%						
C51	.0068	10%						
C52	.033	600V						
C53	.1	10%						
C54	.002	10%						
C55	.002	10%						
C56	.47	NPO						
C57	.001	10%						
C58	10 NPO	10%						
C59	.0022	10%						
C60	22 NPO	5%						
C61	10 NPO	10%						
C62	.390							
C63	.005							
C64	.01							
C65	.005							
C66	.18	N150						
C67	.05	600V						
C68	.47	1KV						
C69	.01	1KV						
C70	.002	10%						
C71	.22	N150						
C72	.005							
C73	.001	2KV						
C74	.25	400V						
C75	.25	400V						
C76	.47	2KV						
C77	2.2	NPO ±.25						
C78	.15	200V						
C79	.005							
C80	.0015							
C81	.05	200V						
C82	100							
C83	.01							
C84	.001							
C85	.001							
C86	.005							
C87	.01	400V 10%						
C88	.002	2KV 10%						
C89	.01	1KV						
C90	.033	600V 10%						
C91	.056	200V						
C92	.039	600V 10%						
C93	.039	600V						
C94	.47	600V						
C95	.1	200V 10%						
C96	.002	2KV 10%						
C97	100 N1500/3KV/5%							
C98	.02	1KV 10%						
C99	.0022							
C100	.002	2KV 10%						
C101	.5	200V						
C102	.022	400V 10%						
C103	.22	200V						
C104	.047	200V 10%						
C105	100	10%						
C106	100	10%						
C107	27	N750						
C108	.0033	10%						
C109	.39	200V						
C110	.470	10%						
C111	.0068	400V 10%						
C112	.022	400V 10%						
C113	.05	400V						
C114	.50	N150						
C115	.005	1KV						
C116	.005	1KV						
C117	.005	1KV						
C118	.25	400V						
C119	.01							
C120	.001	10%						
C121	.1	600V						
C122	.47 N1500/6KV/10%							
C123	.001							
C124	.001							
C125	33 N150/2KV/10%							
C126	.001	2KV						
C127	.047	600V						
C128	.1	600V 10%						
C129	.1	600V 10%						
C130	.25	50V						
C131	1mfd	600V						
C132	.82	N1500						

PARTS LIST AND DESCRIPTION (CONTINUED)

(When ordering parts, state Model, Part Number, and Description.)

Replacement parts shown may be superseded by the availability of newly introduced replacements. Have your local distributor check Sams COUNTER FACTS for the most up-to-date replacement.

CAPACITORS

ITEM No.	RATING	REMARKS	REPLACEMENT DATA					
			AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ELMENCO PART No.	MALLORY PART No.	SPRAGUE PART No.
C133	120	10%						
C134	.05	100V						
C135	12	N150 10%						
C136	.01							
C137	.01							
C138	560	10%						
C139	.05	100V						
C140	.01							
C141	.1	10%						
C142	.05	100V						
C143	33	N150 5%						
C144	15	NPO 5%						
C145	15	NPO 5%						
C146	10	NPO ±.5						
C147	330	10%						
C148	.001							
C149	.001							
C150	.1	400V						
C151	100	10%						
C152	.75pf							
C153	8.2	NPO ±.5						
C154	8.2	NPO ±.5						
C155	.1	400V						
C156	.1	400V						
C157	.75pf							
C158	270							
C159	.15	NPO 5%						
C160	.1	400V						
C161	.75pf							
C162	.001	2KV						
C163	.001	2KV						
C164	.001	2KV						
C165	.005	2KV						
C166	.68	N750 10%						
C167	.01	200V 10%						
C168	.025	200V 10%						
C169	.056	200V 10%						
C170	.1	200V 10%						
C171	.1	200V 10%						
C172	.0015	1.4KV						
C173	.15	400V						
C174	.01							
C175	150	N150 10%						
C176	.002	10%						
C177	680	10%						
C178	.1	200V						
C179	.15	200V						
C180	.001	10%						
C181	.002	10%						
C182	560	10%						
C183	.002	10%						
C184	.05	600V						
C185	.15	200V						
C186	.34							
C187	.01							
C188	.001							
C189	.75							
C190	3.3							
C191	.01							
C192	.001	2KV						
C193	1mfd	600V						

* Not normally in distributor's stock. Available thru distributor on order to manufacturer.

Motorola Part Number

† Alternate Value

① Includes Spark Gap.

CONTROLS (All wattages 1/2 watt, or less, unless listed)

ITEM No.	FUNCTION	RESIST-ANCE	REPLACEMENT DATA				
			MFRG. PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	CTS—IRC PART No.	MALLORY PART No.
R1	Volume/Switch	2meg	18D68021A02	F1-2meg, SPU304, KR-8	C47S-2meg-S, FS-3 or (NP-2meg-S, UPP-B-400, PPAP, NWG-18)	B11-139, SK7 or (PPQ18-139X ①, SK7) or (BU1, CF19, SS10, K) *	PP26T16 ① or (RUP26T16 ①, SL35, SL250) or (P26A, 3014, FPP-1, SL250)
	Volume/Switch	2meg	18D68021A05	F7-2meg, SPU304, KR-8	C47S-2meg-S, FS-3 or (NP-2meg-S, UPP-B-400, PPAP, NWG-18)	B11-139, SK7 or (PPQ18-139X ①, SK7) or (BU2, CF19, SS10, K) *	PP26T16 ① or (RUP26T16 ①, SL35, SL250) or (P26A, 3038, FPP-1, SL250)
	Volume/Switch	2meg	18D68021A07	F7-2meg, SPU304, KR-8	C47S-2meg-S, FS-3 or (NP-2meg-S, UPP-B-400, PPAP, NWG-18)	B11-139, SK7 or (PPQ18-139X ①, SK7) or (BU2, CF19, SS10, K) *	PP26T16 ① or (RUP26T16 ①, SL35, SL250) or (P26A, 3038, FPP-1, SL250)
R2	Intensity (Color)	1500Ω	18D68222A03	F2-2500, SN100	Q13-111 or (BU1, CF82, SS1, DC1) *	Q13-111 or (BU1, CF82, SS1, DC1) *	RU252A, SL38, SN875 or (P152, 3014, SF3000)
	Intensity (Color)	1500Ω	18D68222A13	F1-1500, SF106	A47-1500-S, FS-3 or (NP-1500-S, UP-B-400)	Q11-109 or (BU2, CF7, SS1, DC1) *	UA152L, SN1375 or (RU152L, SL39, SN1375) or (U5L)
R3	Brightness	2700Ω	18D68222A04	F1-2500, SN100	A47-3000-S, FS-3 or (NP-3000-S, UP-B-400)	Q11-112 or (BU1, CF59, SS1, DC1) *	UA33L, SN875 or (RU252L, SL38, SN875) or (U19)
	Brightness	2700Ω	18D68222A14	F5-2500, SF106	NP-3000-V, UP-B-400	Q17-112 or (BU2, CF33, SS1, DC1) *	UA33R, SN1375 or (RU33R, SL39, SN1375)
R4	Hue (Motor Driven) Hue	7500Ω 7500Ω	18D68031A04 18D68222A01	F5-10K, SN100	A47-10K-V, FS-3 or (NP-10K-V, UP-B-400)	Q17-116 or (BU1, CF35, SS1, DC1) *	UA14R, SN875 or (RU14R, SL38, SN875) or (U19)
	Hue	7500Ω	18D68221A12				

CONTROLS (All wattages 1/2 watt, or less, unless listed)

ITEM No.	FUNCTION	RESIST-ANCE	REPLACEMENT DATA				
			MFRGR. PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	CTS—IRC PART No.	MALLORY PART No.
R5A B	Vert. Hold Master Brightness	750K 500K	18D68221A01	F1-750K, R1-500K, FK105	NP-750K-S, NR-500K-S, UPC-C-105, UR-D-006	† QJ-2311	PT54L, SLF37, RU55L, OX1312, IK625
	Vert. Hold	750K	18D67559A28				
	Tint	7meg	18D67834A04	F1-7.5meg, R1-750K, FFS102, RFS111	NP-7.5meg-S, NR-750K-S, UPC-B-101, UR-D-100	▲ QJ-2518	FA755L (PT755L, 3038 ③) R1754L, OX1062, IS1687
	Master G1	500K	18D67562A09	F1-500K, SNK104, AK-38	B47-500K-S or (NP-500K-S, NML-A-300, TT-2)	B11-133, TM4 or (BU11, CF16, SS6) *	PTA55L or (RU55L, SL37, SN1000) or (UA55L ②, SN1000)
	Master G1	500K	18D67637A24	TT-59 or (F1-500K, SNK100, AK-38)	B47-500K-S or (NP-500K-S, NML-A-300, TT-2)	B11-133, TM4 or (BU11, CF16, SS6) *	PTA55L or (RU55L, SL37, SN750) or (UA55L ②, SN750)
R6A B	Tint Red G-2 (Screen)	7meg 3meg	18D68221A05	F1-7.5meg, R1-3meg, FK105	NP-7.5meg-S, NR-3meg-S, UPC-C-105, UR-D-006	▲ QJ-2314	PT55L, SLF37, RU36L, OX1312, IK625
	Tint	7meg	18D67559A31				
	Red G-2 (Screen)	3meg	18D67562A09	F1-3meg, SNK104, AK-38	B47-3meg-S or (NP-3meg-S, NML-A-300, TT-2)	HLC3	HVC355L or (RU36L, SL37, SN1000) or (UA36L ②, SN1000)
	Red G-2 (Screen)	3meg	18D67637A16	TT-84 or (F1-3meg, SNK100, AK-38)	B47-3meg-S or (NP-3meg-S, NML-A-300, TT-2)	HLC3	HVC355L or (RU36L, SL37, SN1000) or (UA36L ②, SN1000)
R7A B	Contrast Blue G-2 (Screen)	200Ω 3meg	18D68221A03	F1-200, R1-3meg, FK105	NP-200-S, NR-3meg-S, UPC-C-105, UR-D-006	■ QJ-2312	P22L, SLF37, RU36L, OX1312, IK625
	Contrast	200Ω	18D67559A29				
	Tone Contrast	1meg 200Ω	18D67834A05	F2-1meg, R1-200, FFS102, RFS111	NP-1meg-Z, NR-200-S, UPC-B-101, UR-D-110	◆ QJ-2519	FA16A (P16A, 3038 ③) or RU22L, OX1062, IS1687
R8A B	Blue G-2 (Screen)	3meg	18D67637A14	TT-84 or (F1-3meg, SNK104, AK-38)	B47-3meg-S or (NP-3meg-S, NML-A-300, TT-2)	HLC3	HVC355L or (RU36L, SL37, SN1000) or (UA36L ②, SN1000)
	Tone Green G-2 (Screen)	1meg 3meg	18D68221A04	F2-1meg, R1-3meg, FK105	NP-1meg-Z, NR-3meg-S, UPC-C-105, UR-D-006	† QJ-2313	P16A, SLF37, RU36L, OX1312, IK625
	Tone	1meg	18D67559A30				
	Green G-2 (Screen)	3meg	18D67562A07	F1-3meg, SNK104, AK-38	B47-3meg-S or (NP-3meg-S, NML-A-300, TT-2)	HLC3	HVC355L or (RU36L, SL37, SN1000) or (UA36L ②, SN1000)
R10	Vert. Centering	10Ω, 2W	18D67311A02	WW-100 ② or (WN-100 ②)	A43-10, RN-3, TT-2 or (NPW-10, NML-A-300, TT-2)	P115R100A, P115-117-1 or (W11-010, SK5 ②) or (BU1 ②, W F16, SS6) *	MR107, MRS1250 or (R10L ②) or (VW10 ②)
	Horiz. Centering	60Ω, 2W	18D67311A06	WW-600 ② or (WN-600 ②)	A43-75, RN-3, TT-2 or (NPW-75, NML-A-300, TT-2)	W11-060, SK5 ② (P115R500A, P115-117-1) or (BU1 ②, W F18, SS6) *	VW60 ② or (R50L ②) or (C50P ②)
	Focus High Voltage Adjust	10meg 50K	18D67637A06 18D67637A04	TT-31 or (F1-50K, SNK010, AK-38)	B47-50K-S or (NP-50K-S, NML-A-300, TT-2)	B11-123, TM4 or (BU11, CF12, SS6) *	FCT17L PTA54L or (RU54L, SL37, SN281) or (UA53L ②, SN281)
R14	AGC	50K	18D67637A29	TT-31 or (F1-50K, SNK100, AK-38)	B47-50K-S or (NP-50K-S, NML-A-300, TT-2)	B11-123, TM4 or (BU11, CF12, SS6) *	PTA54L or (RU54L, SL37, SN1000) or (UA54L ②, SN1000)
R15	Noise Gate	2meg	18D67637A05	TT-75 or (F1-2meg, SNK100, AK-38)	B47-2meg-S or (NP-2meg-S, NML-A-300, TT-2)	B11-139, TM4 or (BU11, CF19, SS6) *	PTA26L or (RU26L, SL37, SN1000) or (UA26L ②, SN1000)
R16	Video Peaking	2000Ω	18D67637A02	F1-2500, SNK108, AK-38	B47-2500-S or (NP-2500-S, NML-A-300, TT-2)	B11-110, TM4 or (BU11, CF84, SS6) *	RU23L, SL37, SN2000 or (UA23L ②, SN2000) or (PTA25L)
R17	Vert. Linearity	250K	18D67637A35	TT-50 or (F1-250K, SNK100, AK-38)	B47-250K-S or (NP-250K-S, NML-A-300, TT-2)	B11-130, TM4 or (BU11, CF15, SS6) *	RU254L, SL37, SN2000 or (UA254L ②, SN1000) or (SU46 ②)
R18	Height	3meg	18D67637A35	TT-84 or (F1-3meg, SNK100, AK-38)	B47-3meg-S or (NP-3meg-S, NML-A-300, TT-2)	HLC3	RU36L, SL37, SN1000 or (UA36L ②, SN1000) or (SU59 ②)
R19	Color Killer	1meg	18D67637A17	TT-69 or (F1-1meg, SNK100, AK-38)	B47-1meg-S or (NP-1meg-S, NML-A-300, TT-2)	B11-137, TM4 or (BU11, CF17, SS6) *	TA16L or (RU16L, SL37, SN1000) or (UA16L ②, SN1000)
R20	Horiz. Pincushion Adjust	3000Ω	18D67559A16	F1-2500, SNK010	B47-3000-S or (NP-3000-S, NML-A-300, TT-2)	B11-112, TM4 or (BU11, CF59, SS6) *	UA33L, SN281 or (PTA352L) or (RU252L, SL37, SN281)

TRANSISTORS

ITEM No.	TYPE No.	FUNCTION	REPLACEMENT DATA				
			MFGR. PART No.	DELCO PART No.	GENERAL ELECTRIC PART No.	MOTOROLA PART No.	SYLVANIA PART No.
Q1	4734	1st Amp.	48S134734	DS-66	GE-10	TR-21	ECG 123
Q2	4854	2nd Amp.	48S134854	DS-66	GE-10	TR-21	ECG 123
Q3	4734	3rd Amp.	48S134734	DS-66	GE-10	TR-21	ECG 123
Q4	4854	Audio Step & Hue (Green)	48S134854	DS-66	GE-10	TR-21	ECG 123
Q5	4854	Mute Function	48S134854	DS-66	GE-10	TR-21	ECG 123
Q6	4854	Relay Control Channel & Hue (Red) Relay Cont.	48S134854	DS-66	GE-10	TR-21	ECG 123

REMOTE RECEIVER PARTS LIST

CONTROLS (All wattages 1/2 watt, or less, unless listed)

ITEM No.	FUNCTION	RESIST-ANCE	REPLACEMENT DATA		
			MFGR. PART No.	CENTRALAB PART No.	CTS-IRC PART No.
R16	Sensitivity (Noise Rejection)	10K, 2W	17D65920A02		P115R103A

COILS (RF-IF)

ITEM No.	USE	REPLACEMENT DATA		
		PART No.	MEISSNER PART No.	MILLER PART No.
L1	Audio & Hue (Green)	1D66132A03		
L2	Mute & Function	1D66132A03		
L3	Channel & Hue	1D66132A03		

POWER RECTIFIERS & SIGNAL DIODES

ITEM No.	MFGR. PART OR TYPE No.	REPLACEMENT RECTIFIERS & DIODES		NOTES
		GENERAL ELECTRIC PART No.	SYLVANIA PART No.	
E4	48S10062A01	GE-504A	ECG 116 or ECG 117	

ELECTROLYTIC CAPACITORS

ITEM No.	RATING	REPLACEMENT DATA		
		AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.
C12	100 3V	BCD3100		NLW100-3
C13	25 18V	BCD25025		NLW100-3
C14	25 18V	BCD25025		NLW25-25
C15	25 18V	BCD25025		NLW25-25
C16	100 18V	BCD18100		NLW100-25
C17	100 18V	BCD18100		NLW100-25

CAPACITORS

ITEM No.	RATING	REMARKS	REPLACEMENT DATA			
			AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ELMENDO PART No.
C1	.47 3V		TTP-05	UK-474	HCS3RDXR474P	CCD-503
C2	.05 50V			CE-503	HOV101ZV503Z	CCD-503
C3	.47 3V		TTP-05	UK-474	HCS3RDXR474P	CCD-503
C4	.05 50V			CE-503	HOV101ZV503Z	CCD-503
C5	.47 3V			UK-474	HCS3RDXR474P	CCD-503
C6	820 300V 5%		ADM-19-821	CPR-820J	CD19 F821J500	DM-19-821J
C7	820 100V 5%			CPR-820J	CD19 F821J500	DM-19-821J
C8	56 150V 5%					DM-19-821J
C9	56 150V 5%					DM-19-821J
C10	820 100V 5%		ADM-19-821	CPR-820J	CD19 F821J500	DM-19-821J
C11	.001		GPD X5FT02K	DM-102	JB5601YPI02K	CCD-102
C18	.0047		GPD X5FT02K	DM-102	JB5601YPI02K	CCD-102
C19	.0047		GPD X5FT02K	DM-102	JB5601YPI02K	CCD-102
C20	.0047		GPD X5FT02K	DM-102	JB5601YPI02K	CCD-102
C21	.15 400V		DBEP4P15	DD-472G	DMF4P15	4DP-4-154
C22	.15 400V		DBEP4P15	DD-472G	DMF4P15	4DP-4-154

* Not normally in distributor's stock. Available thru distributor on order to manufacturer.

MISCELLANEOUS

ITEM No.	PART NAME	PART No.	REPLACEMENT DATA			NOTES
			MFGR. PART No.	AMERIT PART No.	STANCOR THORDARSON PART No.	
E1	Relay	80D66087A02				Audio & Hue (Green)
E2	Relay	80D66087A02				Mute & Function
E3	Relay	80A66087A02				Channel & Hue (Red)
E5	Relay	80D65738A05				Mute & Function Selector (Includes Leaf Switch)
E6	Relay	80D65738A05				Audio Skip Relay (Includes Lead, Switch, Assembly)
M1	Transducer	50C66208A05				
M2	Motor	1D68120A02				Tuner Motor & Gear Box Assembly (Includes Switches)
S1	Motor	1D68120A01				Model RT606CN only
	Switch	1D65989A15				Actuated by Channel Change Motor Shaft
	Switch	40P65144A87				Channel Skip-Skid Switch (on UHF Tuner)

TRANSMITTER PARTS LIST

ITEM No.	ITEM	PART No.	ITEM	PART No.
	Transmitter, Complete	1D67894A01		
	Relay, 38.5KC (Audio & Hue, Red)	47K748542		
	Relay, 40.0KC (Mute & Function)	47K748544		
	Relay, 41.25KC (Audio & Hue, Green)	47K748546		
	Lever & Stud Assembly	1D66168A02		
	Lever & Stud Assembly (Audio & Hue, Green)	1D66168A02		
	Lever & Stud Assembly (Channel & Hue, Red)	1D66168A03		
	Lever & Stud Assembly (Mute & Function)	1D67894A02		



The listing of any available replacement part herein does not constitute in any case a recommendation, warranty or guaranty by Howard W. Sams & Co., Inc., as to the quality and suitability of such replacement part. The numbers of these parts have been compiled from information furnished to Howard W. Sams & Co., Inc., by the manufacturers of the particular type of replacement part listed. UB153

HOWARD W. SAMs & CO., INC. Indianapolis, Indiana 46206

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DATE 5-69 SET 1031 FOLDER 1-A

MOTOROLA REMOTE CONTROL
RECEIVER TRR-6, TRANSMITTER TRT-5

SET 1031 FOLDER 1-A



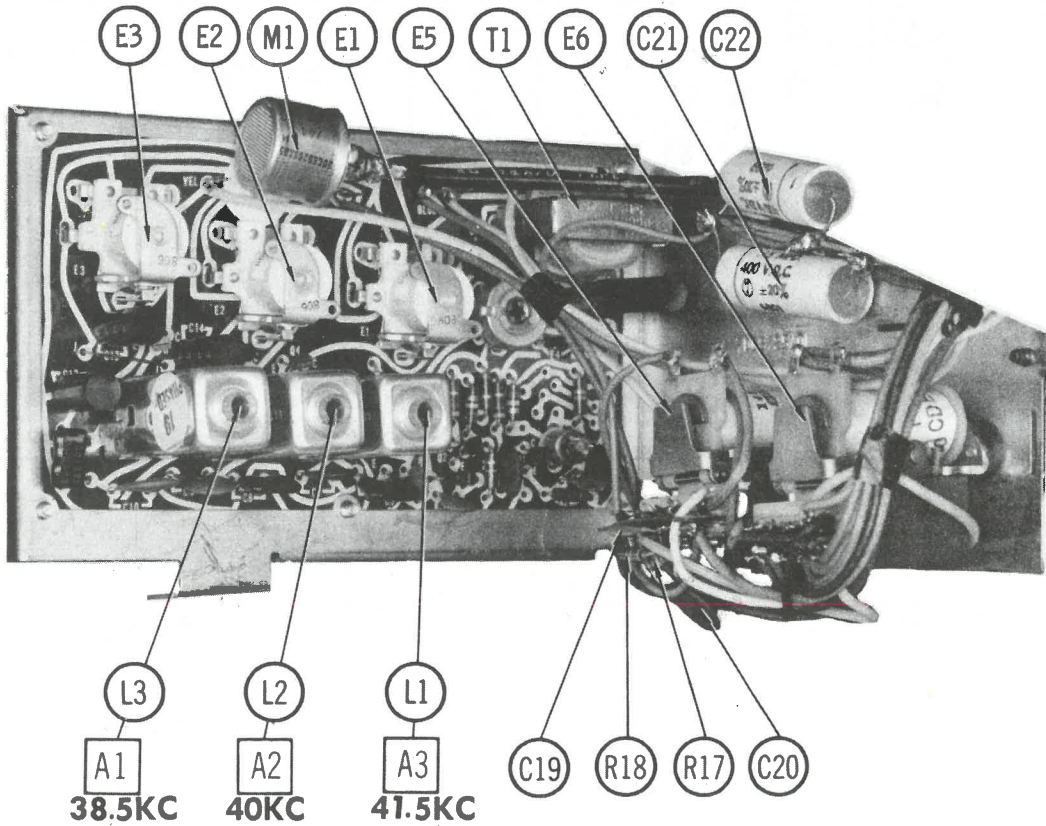
PHOTOFACT® Folder

with CIRCUITRACE™

For Supplier Address See PHOTOFACT Index

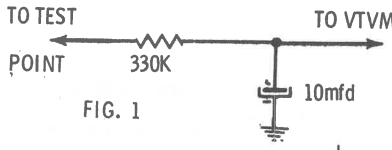
IMPORTANT FILING NOTICE

This PHOTOFACT Folder covers equipment used with the TV chassis covered in PHOTOFACT SET 1031 FOLDER 1. File this Folder with the TV Folder in the yellow filing jacket provided.

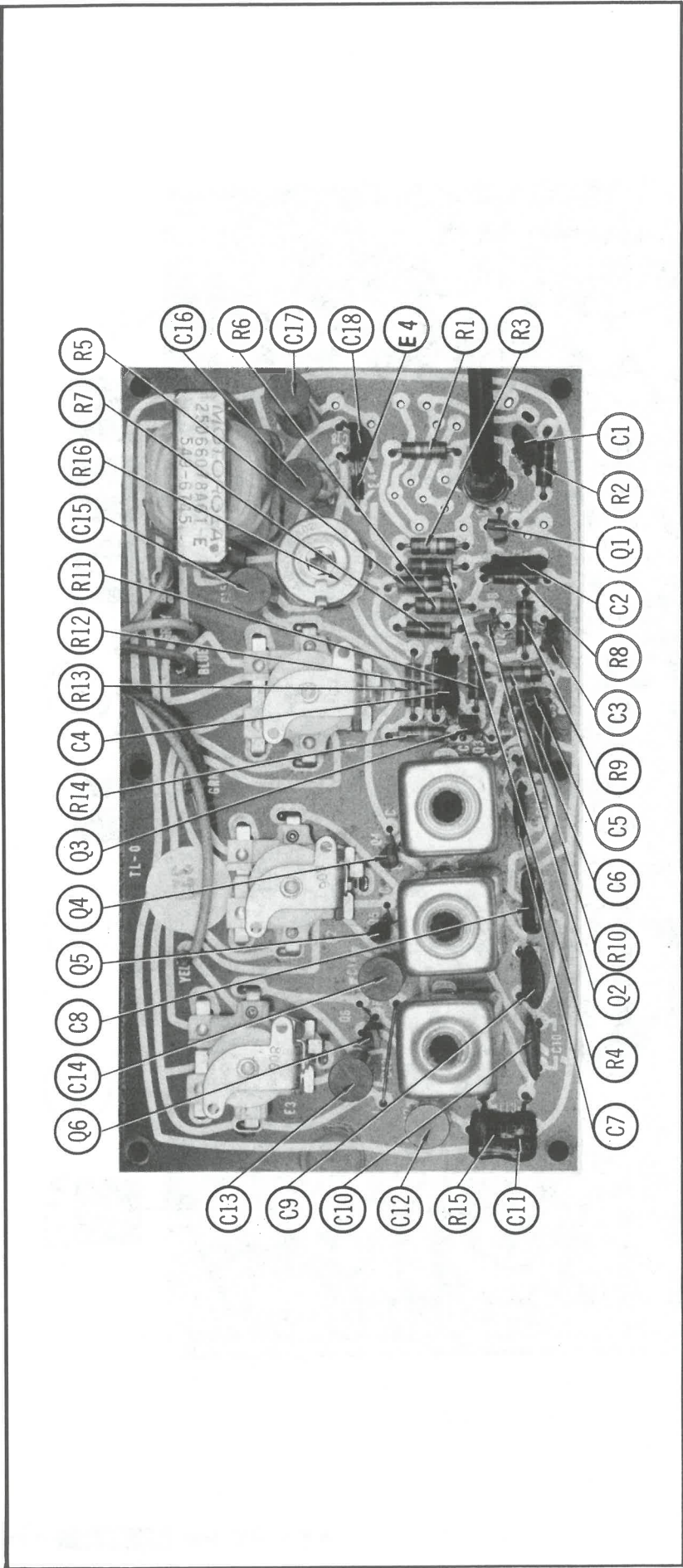


REMOTE RECEIVER ALIGNMENT

Signal source for this alignment procedure is a TRT-5 Motorola Remote Transmitter known to be working properly. Maintain adequate distance (6-8 inches) between transmitter and receiver to obtain a useable dip. The delay circuit shown will help maintain a stable VTVM reading.					
SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	CHANNEL	CONNECT VTVM	ADJUST	REMARKS
1. Depress channel switch on transmitter (approximately once per second).	38.5KC	Channel Selector (Hue)	High side thru delay circuit (Fig. 1) to Point A, low side to ground.	A1	Adjust for maximum dip on VTVM.
2. Depress mute switch on transmitter (approximately once per second).	40KC	Mute (Function)	High side thru delay circuit (Fig. 1) to Point B, low side to ground.	A2	"
3. Depress audio switch on transmitter (approximately once per second).	41.5KC	Audio (Hue)	High side thru delay circuit (Fig. 1) to Point C, low side to ground.	A3	"



REMEMBER TO ASK— "What else needs fixing?"



MOTOROLA REMOTE CONTROL
RECEIVER TRR-6, TRANSMITTER TRT-5

FOLDER 1-A

REMOTE RECEIVER PARTS LIST

TRANSISTORS

ITEM No.	TYPE	FUNCTION	REPLACEMENT DATA			
			MFGR. PART No.	DELCO PART No.	GENERAL ELECTRIC PART No.	SYLVANIA PART No.
Q1	4734	1st Amp.	48S134734	DS-66	GE-10	ECG 123
Q2	4854	2nd Amp.	48S134854	DS-66	GE-10	ECG 123
Q3	4734	3rd Amp.	48S134734	DS-66	GE-10	ECG 123
Q4	4854	Audio Step & Hue (Green)	48S134854	DS-66	GE-10	ECG 123
Q5	4854	Mute Function	48S134854	DS-66	GE-10	ECG 123
Q6	4854	Channel & Hue (Red) Relay Cont.	48S134854	DS-66	GE-10	ECG 123

POWER RECTIFIERS & SIGNAL DIODES

ITEM No.	MFGR. PART OR TYPE No.	REPLACEMENT RECTIFIERS & DIODES		REPLACEMENT RECTIFIERS	NOTES
		GENERAL ELECTRIC PART No.	SYLVANIA PART No.	RCA PART No.	
E4	48S10082A01	GE-504A	8D4 or 5A4-D	SK3080 or SK3091	

ELECTROLYTIC CAPACITORS

ITEM No.	RATING	REPLACEMENT DATA			
		AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	GENERAL ELECTRIC PART No.
C12	100 3V	BCD3100		NLW100-3	MTI-19
C13	25 18V	BCD25025		NLW25-25	MTI-11
C14	25 18V	BCD25025		NLW25-25	MTI-11
C15	25 18V	BCD25025		NLW25-25	MTI-11
C16	100 18V	BCD18100		NLW100-25	MTI-20
C17	100 18V	BCD18100		NLW100-25	MTI-20

CAPACITORS

ITEM No.	RATING	REMARKS	REPLACEMENT DATA			
			AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ELWENCO PART No.
C1	.47 3V		TTP-05	UK-474	HCS9RDXR474P	CCD-503
C2	.05 50V			CK-503	HOV10LZV503Z	CCD-503
C3	.47 3V		TTP-05	UK-474	HCS9RDXR474P	CCD-503
C4	.05 50V			CK-503	HOV10LZV503Z	CCD-503
C5	.47 3V			UK-474	HCS9RDXR474P	DM-19-821J
C6	820 300V 5%		ADM-19-821	CPR-820J	CD19 F821J500	MS-382
C7	56 150V 5%					MS-382
C8	820 100V 5%		ADM-19-821	CPR-820J	CD19 F821J500	MS-382
C9	56 150V 5%					MS-382
C10	820 100V 5%		ADM-19-821	CPR-820J	CD19 F821J500	MS-382
C11	.001		GPD X5F102K	DM-102	JB5601YPI02K	MS-382
C12	.001		GPD X5F102K	DM-102	JB5601YPI02K	MS-382
C13	.001		GPD X5F102K	DM-102	JB5601YPI02K	MS-382
C14	.001		GPD X5F102K	DM-102	JB5601YPI02K	MS-382
C15	.001		GPD X5F102K	DM-102	JB5601YPI02K	MS-382
C16	.001		GPD X5F102K	DM-102	JB5601YPI02K	MS-382
C17	.001		GPD X5F102K	DM-102	JB5601YPI02K	MS-382
C18	.001		GPD X5F102K	DM-102	JB5601YPI02K	MS-382
C19	.001		GPD X5F102K	DM-102	JB5601YPI02K	MS-382
C20	.001		GPD X5F102K	DM-102	JB5601YPI02K	MS-382
C21	.001		GPD X5F102K	DM-102	JB5601YPI02K	MS-382
C22	.001		GPD X5F102K	DM-102	JB5601YPI02K	MS-382

* Not normally in distributor's stock. Available thru distributor on order to manufacturer.

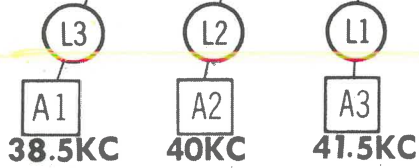


The listing of any available replacement part herein does not constitute any case a recommendation, warranty or guaranty by Howard W. Sams & Co., Inc., as to the quality and suitability of such replacement part. The number of these parts have been compiled from information furnished to Howard Sams & Co., Inc., by the manufacturers of the particular type of replacement part listed. UB153

HOWARD W. SAMS & CO.

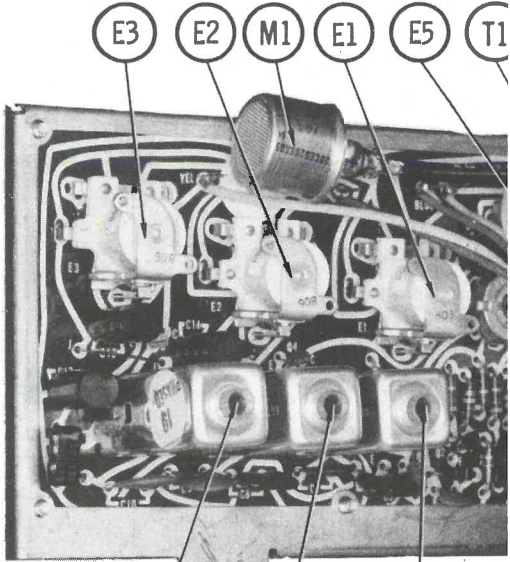
REMEMBER TO ASK-

Signal source for this alignment procedure is a TRT-5 Motorola Remote. Maintain adequate distance (6-8 inches) between transmitter and receiver. The delay circuit shown will help maintain a stable VTVM reading.			
SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	CHANNEL	CONNECT VTVM
1. Depress channel switch on transmitter (approximately once per second).	38.5KC	Channel Selector (Hue)	High side thru delay circuit (Fig. 1) to Point A, low side to ground.
2. Depress mute switch on transmitter (approximately once per second).	40KC	Mute (Function)	High side thru delay circuit (Fig. 1) to Point B, low side to ground.
3. Depress audio switch on transmitter (approximately once per second).	41.5KC	Audio (Hue)	High side thru delay circuit (Fig. 1) to Point C, low side to ground.



REMOTE RECEIVER

MOTOROLA REMOTE CONTROL RECEIVER TRR-6, TRANSMITTER TRT-5



SET 1031 FOLDER 1-A

PHOTOFACT® Folder with CIRCUITRACE

For Supplier Address See P1

IMPORTANT FILM

This PHOTOFACT Folder covers the TV chassis covered in FOLDER 1. File this Folder in the yellow filing jacket provided.

TRANSMITTER PARTS LIST

ITEM No.	PART NAME	PART No.	NOTES
E1	Relay	80D66087A02	Audio & Hue (Green)
E2	Relay	80D66087A02	Mute & Function
E3	Relay	80D66087A02	Channel & Hue (Red)
E4	Relay	80D66087A02	Mute & Function Selector (Includes Leaf Switch)
E5	Relay	80D66087A02	Audio Step Relay (Includes Lead, Switch, Assembly)
M1	Transducer	50C66020A05	Tuner Motor & Gear Box Assembly (Includes Switches)
M2	Motor	1D68120A01	Model RT606CN only
S1	Switch	1D68120A01	Actuated by Channel Change Motor Shaft
		40D65144A87	Channel Stop-Skid Switch (on UHF Tuner)

MISCELLANEOUS

ITEM No.	PART NAME	PART No.	NOTES
E1	Relay	80D66087A02	Audio & Hue (Green)
E2	Relay	80D66087A02	Mute & Function
E3	Relay	80D66087A02	Channel & Hue (Red)
E4	Relay	80D66087A02	Mute & Function Selector (Includes Leaf Switch)
E5	Relay	80D66087A02	Audio Step Relay (Includes Lead, Switch, Assembly)
M1	Transducer	50C66020A05	Tuner Motor & Gear Box Assembly (Includes Switches)
M2	Motor	1D68120A01	Model RT606CN only
S1	Switch	1D68120A01	Actuated by Channel Change Motor Shaft
		40D65144A87	Channel Stop-Skid Switch (on UHF Tuner)

TRANSFORMER (Power)

ITEM No.	RATING		REPLACEMENT DATA					NOTES
	PRI.	SEC. 1	MFGR. PART No.	MERIT PART No.	STANCOR PART No.	THORNDARSON PART No.	TRIAD PART No.	
T1	117VAC @ .012A AC.	9-8VAC @ .011A DC	25D66078A01					

TRANSFORMER (Power)

ITEM No.	USE	PART No.	MESSNER PART No.	MILLER PART No.	WORKMAN PART No.
L1	Audio & Hue (Green)	1D66132A03			
L2	Mute & Function	1D66132A03			
L3	Channel & Hue	1D66132A03			

COILS (RF-IF)

ITEM No.	FUNCTION	RESISTANCE	MFGR. PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	CTS-IRC PART No.	MALLORY PART No.
R16	Sensitivity (Noise Rejection)	10K, 2W	17D66820A02			PL15R103A	MR10KT

CONTROLS (All wattages 1/2 watt, or less, unless listed)

REMOTE RECEIVER PARTS LIST

TRANSISTORS

ITEM No.	TYPE	FUNCTION	REPLACEMENT DATA			
			MFGR. PART No.	DELCO PART No.	GENERAL ELECTRIC PART No.	SYLVANIA PART No.
Q1	4734	1st Amp.	48S134734	DS-66	GE-10	ECG 123
Q2	4854	2nd Amp.	48S134854	DS-66	GE-10	ECG 123
Q3	4734	3rd Amp.	48S134734	DS-66	GE-10	ECG 123
Q4	4854	Audio Step & Hue (Green)	48S134854	DS-66	GE-10	ECG 123
Q5	4854	Mute Function	48S134854	DS-66	GE-10	ECG 123
Q6	4854	Channel & Hue (Red) Relay Cont.	48S134854	DS-66	GE-10	ECG 123

POWER RECTIFIERS & SIGNAL DIODES

ITEM No.	MFGR. PART OR TYPE No.	REPLACEMENT RECTIFIERS & DIODES		REPLACEMENT RECTIFIERS	NOTES
		GENERAL ELECTRIC PART No.	SYLVANIA PART No.	RCA PART No.	
E4	48S10082A01	GE-504A	8D4 or 5A4-D	SK3080 or SK3091	

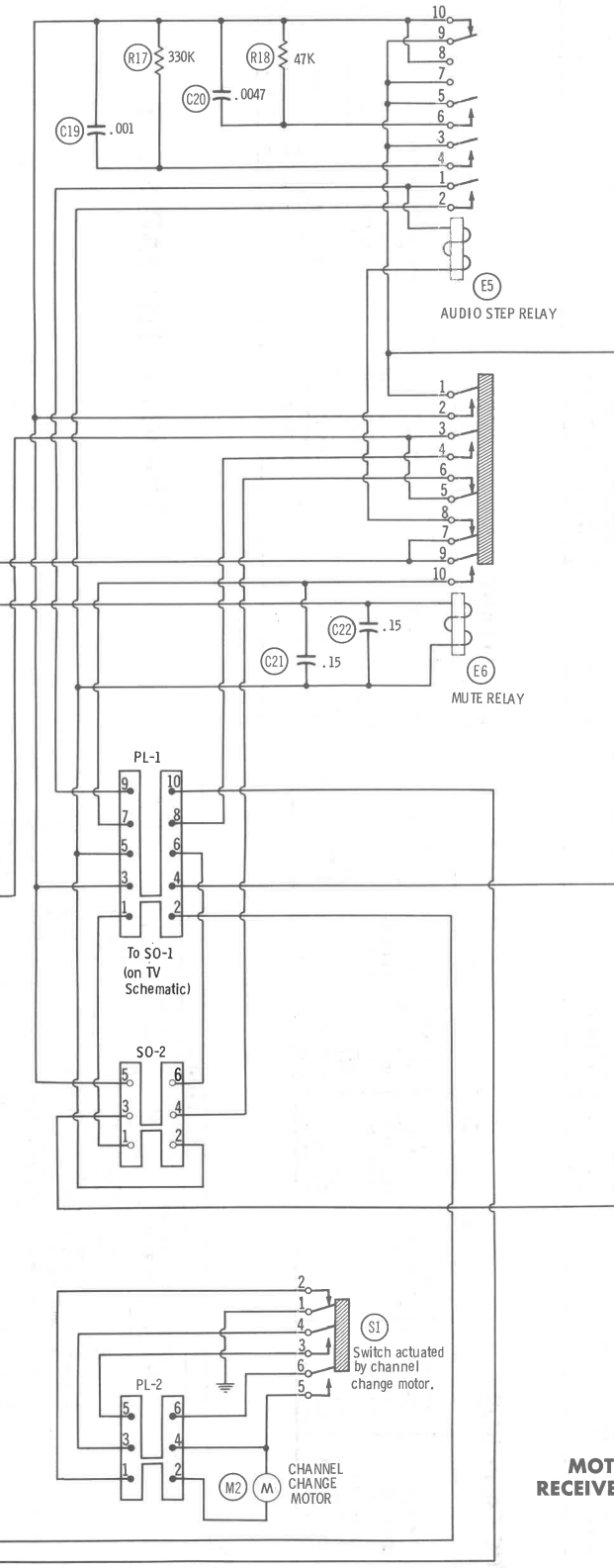
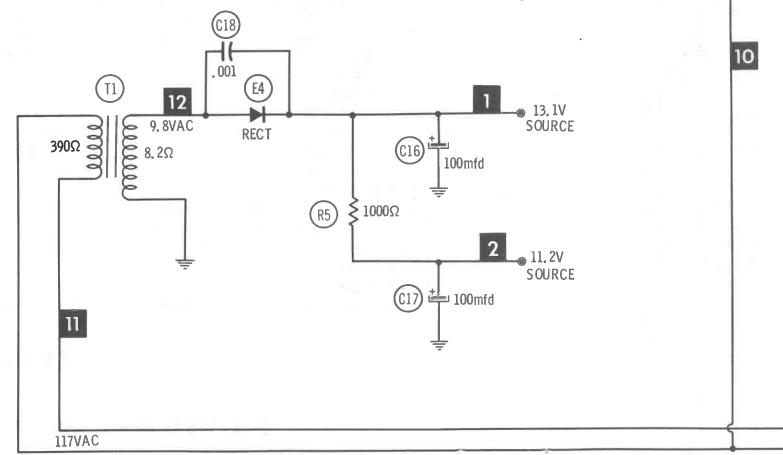
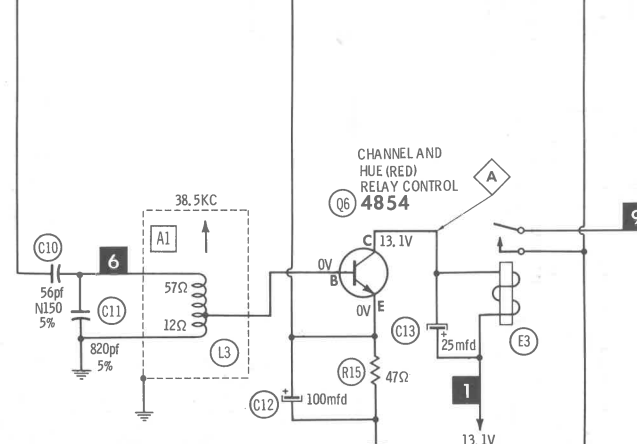
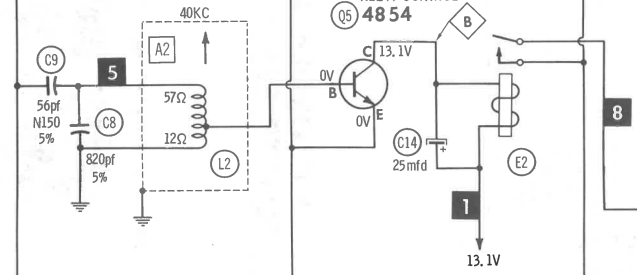
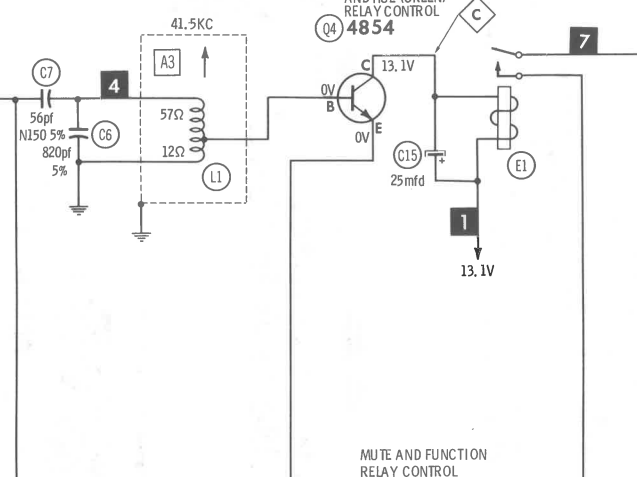
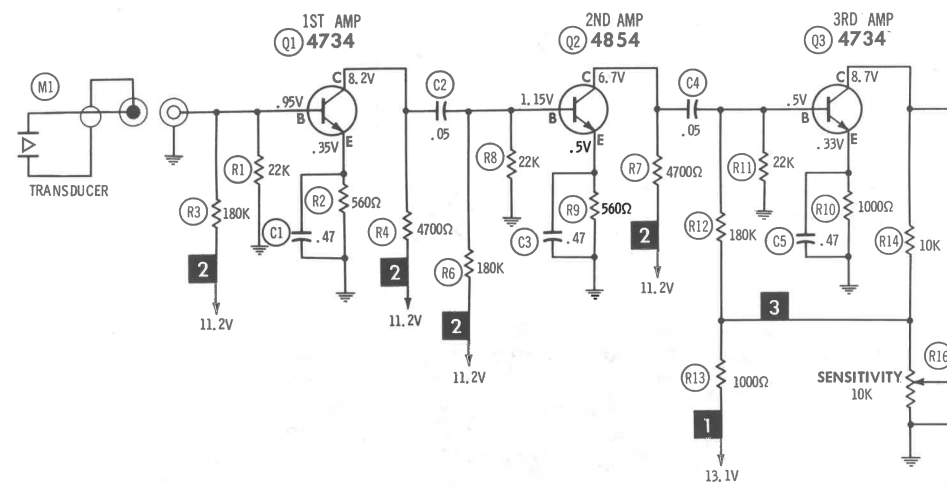
ELECTROLYTIC CAPACITORS

ITEM No.	RATING	REPLACEMENT DATA			
		AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	GENERAL ELECTRIC PART No.
C12	100 3V	BCD3100		NLW100-3	MTI-19
C13	25 18V	BCD25025		NLW25-25	MTI-11
C14	25 18V	BCD25025		NLW25-25	MTI-11
C15	25 18V	BCD25025		NLW25-25	MTI-11
C16	100 18V	BCD18100		NLW100-25	MTI-20
C17	100 18V	BCD18100		NLW100-25	MTI-20

CAPACITORS

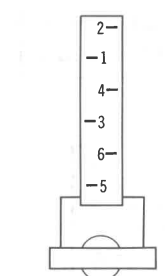
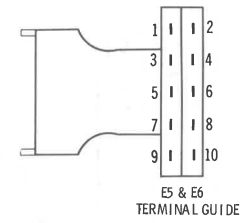
ITEM No.	RATING	REMARKS	REPLACEMENT DATA			
			AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ELWENCO PART No.
C1	.47 3V		TTP-05	UK-474	HCS9RDXR474P	CCD-503
C2	.05 50V			CK-503	HOV10LZV503Z	CCD-503
C3	.47 3V		TTP-05	UK-474	HCS9RDXR474P	CCD-503
C4	.05 50V			CK-503	HOV10LZV503Z	CCD-503
C5	.47 3V			UK-474	HCS9RDXR474P	DM-19-821J
C6	820 300V 5%		ADM-19-821	CPR-820J	CD19 F821J500	MS-382
C7	56 150V 5%					MS-382
C8	820 100V 5%		ADM-19-821	CPR-820J	CD19 F821J500	MS-382
C9	56 150V 5%					MS-382
C10	820 100V 5%		ADM-19-821	CPR-820J	CD19 F821J500	MS-382
C11	.001		GPD X5F102K	DM-102	JB5601YPI02K	MS-382
C12	.001		GPD X5F102K	DM-102	JB5601YPI02K	MS-382
C13	.001		GPD X5F102K	DM-102	JB5601YPI02K	MS-382
C14	.001		GPD X5F102K	DM-102	JB5601YPI02K	MS-382
C15	.001		GPD X5F102K	DM-102	JB5601YPI02K	MS-382
C16	.001		GPD X5F102K	DM-102	JB5601YPI02K	MS-382
C17	.001		GPD X5F102K	DM-102	JB5601YPI02K	MS-382
C18	.001		GPD X5F102K	DM-102	JB5601YPI02K	MS-382
C19	.001		GPD X5F102K	DM-102	JB5601YPI02K	MS-382
C20	.001		GPD X5F102K	DM-102	JB5601YPI02K	MS-382
C21	.001		GPD X5F102K	DM-102	JB5601YPI02K	MS-382
C22	.001		GPD X5F102K	DM-102	JB5601YPI02K	MS-382

* Not normally in distributor's stock. Available thru distributor on order to manufacturer.

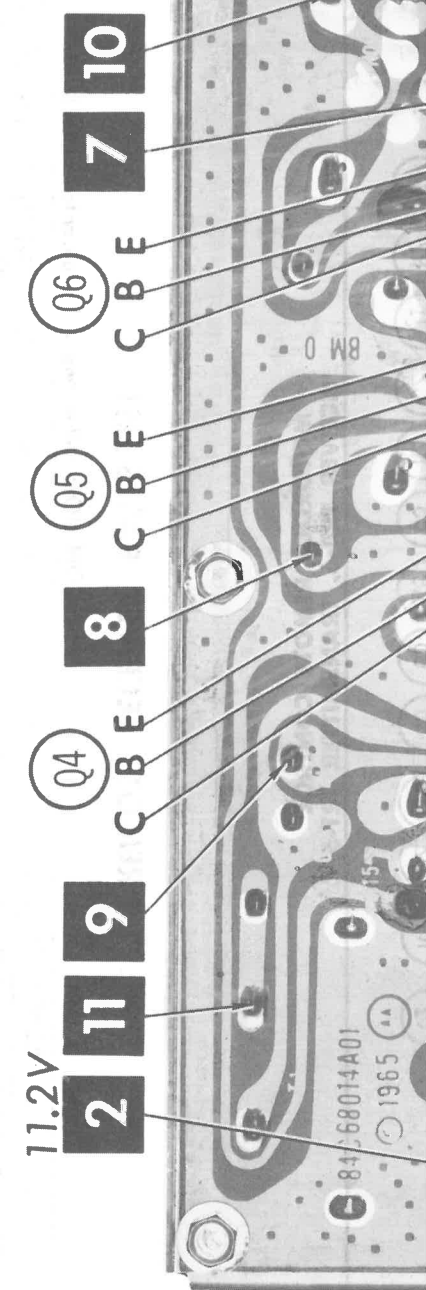


POSITION	CLOSED
OFF	
HIGH	1 & 2
MEDIUM	1 & 2 3 & 4
LOW	1 & 2 5 & 6

AUDIO STEP SWITCHING SEQUENCE SHOWN IN OFF POSITION

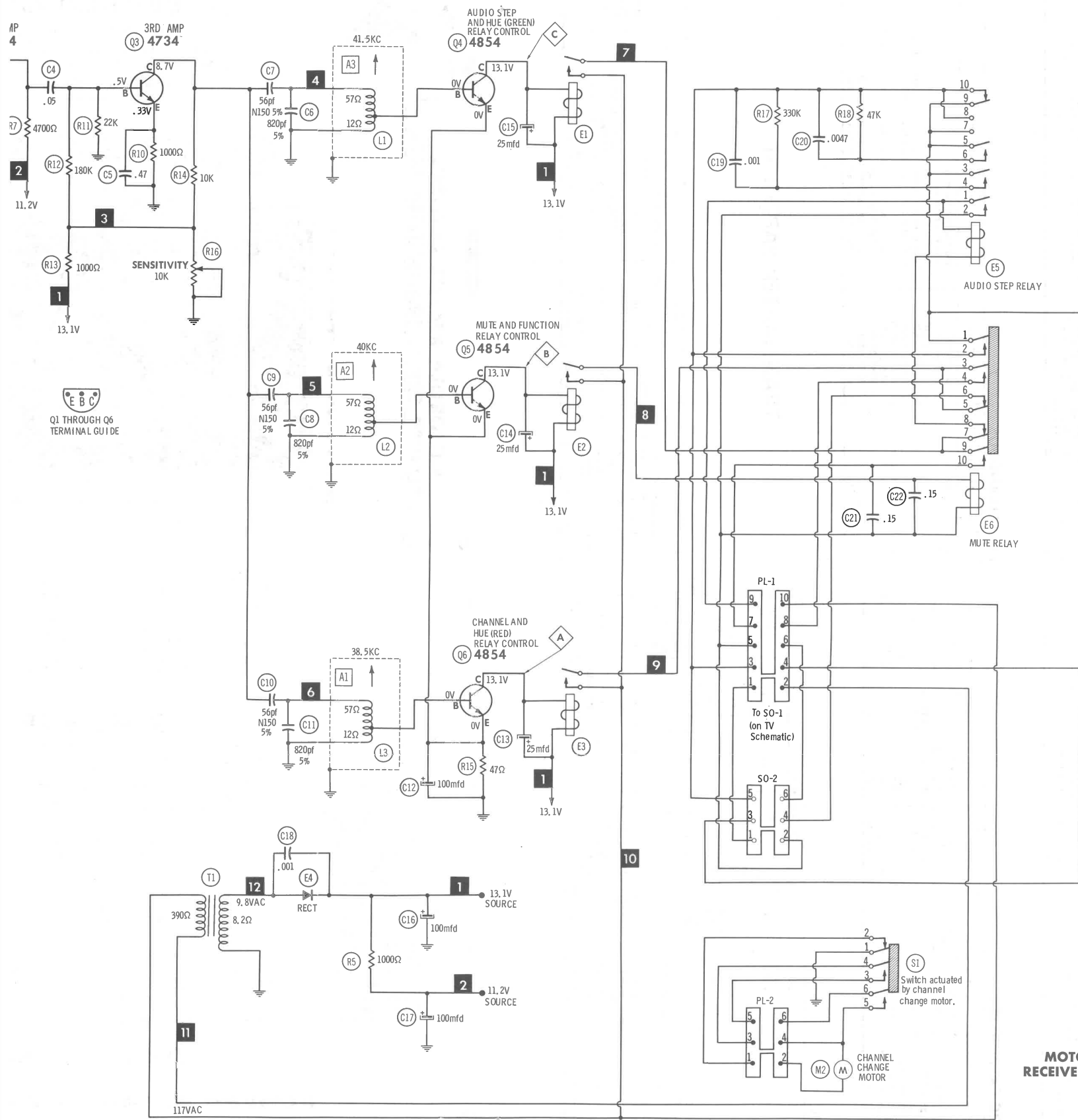


S1 TERMINAL GUIDE (LOCATED ON REAR OF MOTOR)



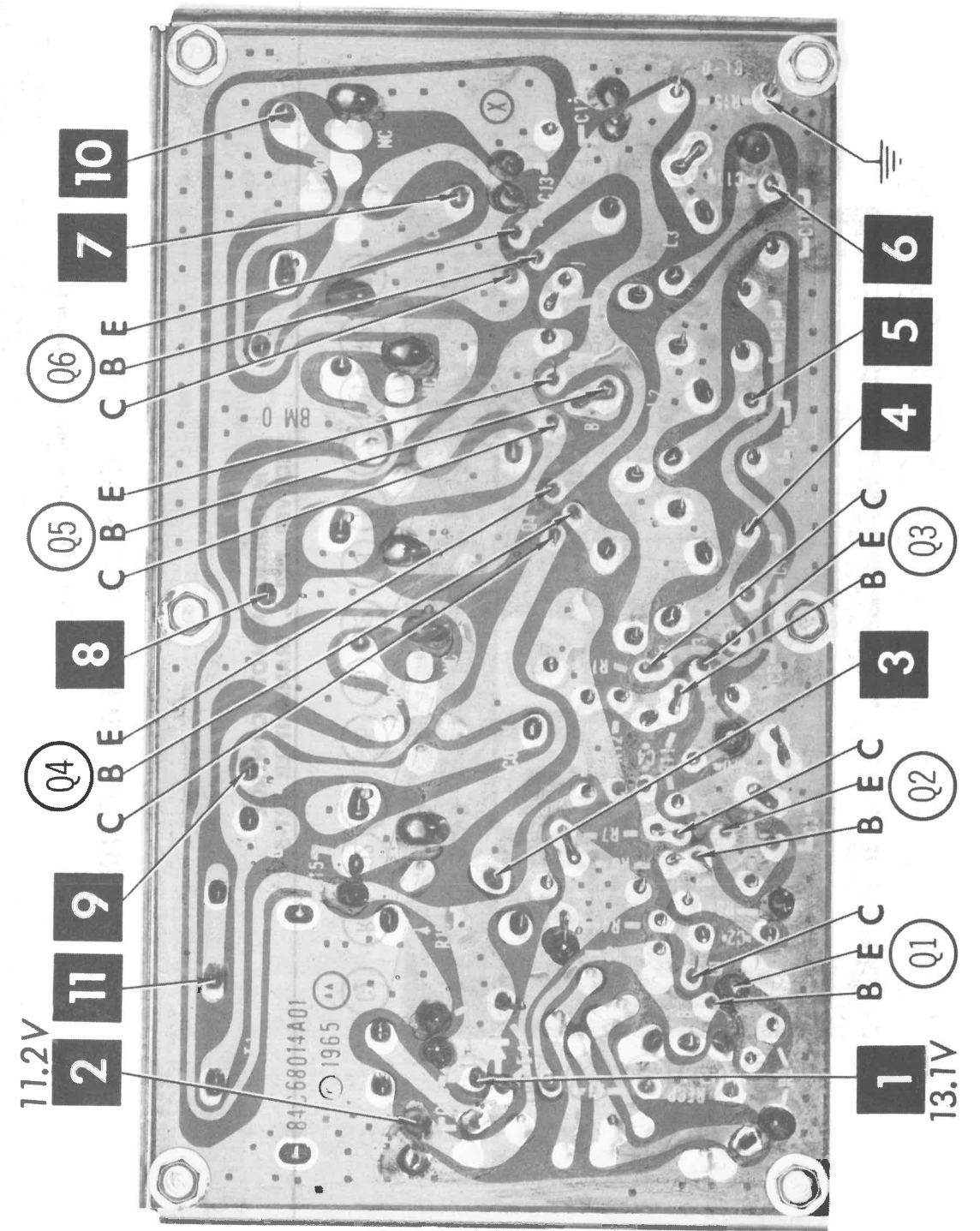
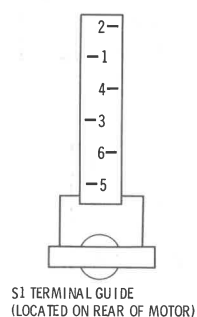
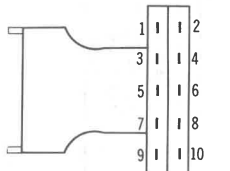
MOTOROLA REMOTE CONTROL RECEIVER TRR-6, TRANSMITTER TRT-5

⊥ Denotes ground (Measurement reference unless otherwise indicated)
Numbers assigned to terminals may not be found on the unit.
Transistor resistances vary widely. No resistance measurements taken.
Resistors are 1/2W or less, 10% or 20%, unless otherwise indicated.
Supply voltage maintained at rated value for measurements.
Voltage and resistance measured with VTVM or equivalent meter,
no signal applied and controls adjusted for normal operation.



POSITION	CLOSED
OFF	1 & 2
HIGH	1 & 2
MEDIUM	1 & 2
LOW	1 & 2

AUDIO STEP SWITCHING SEQUENCE SHOWN IN OFF POSITION



MOTOROLA REMOTE CONTROL RECEIVER TRR-6, TRANSMITTER TRT-5