

CABINET-REAR VIEW

DISASSEMBLY INSTRUCTIONS

CHASSIS REMOVAL

Disconnect antenna leads and remove six screws holding cabinet back. Remove all knobs from the set.

NOTE: Most components can be serviced without chassis removal.

Disconnect picture tube socket, deflection yoke plug, convergence plug, control assembly plug, pre-set plug, degaussing coil wires, speaker leads, ground wires and AFT wires.

Lay set face down on a soft protective surface and remove three screws on bottom of cabinet. Remove two screws on each side of handle bracket and two screws holding pre-set switch on

side of chassis. Remove 1 screw holding ON-OFF switch and four screws holding control assembly. Remove chassis from the cabinet.

PICTURE TUBE REMOVAL

Follow "Chassis Removal" procedure and lay set face down on a soft protective surface.

Remove blue lateral and purity magnet, convergence yoke, deflection yoke and bracket from the picture tube neck.

Remove four springs holding degaussing shield and four screws holding picture tube and remove tube. Do not lift picture tube by the neck.

Item	MODEL Part No.	WP548HW	HP562HW	WP457GN	WP464GW	WP467GWA	WP475HU	WP553GN	WP554GW	WP563GWA
Knob, VHF Channel Selector	36070047A01	X						X		
Knob, VHF Channel Selector	36070167A03			X	X				X	
Knob, VHF Channel Selector	36070047A05		X							X
Knob, UHF Channel Selector	36070047A02	X						X	X	
Knob, UHF Channel Selector	36070047A06		X							X
Knob, UHF Channel Selector	36070167A04			X	X					X
Knob, VHF Fine Tuning	36070048A03	X	X		X					
Knob, VHF Fine Tuning	36070166A01			X	X			X	X	
Knob, VHF Fine Tuning	36070048A01									
Knob, UHF Fine Tuning	36070048A02	X						X	X	
Knob, UHF Fine Tuning	36070048A04		X							X
Knob, UHF Fine Tuning	36070166A02			X	X					
Knob, Volume	36068493A35	X	X						X	
Knob, Volume	36068493A25							X	X	
Knob, Volume	36068493A26				X					
Knob, Volume	36068493A30			X						
Knob, Brightness/Contrast/ Hold	36070057A01	X	X					X	X	
Knob, Brightness/Contrast/ Hold	36070024A04									X
Knob, Brightness/Contrast/ Hold	36070012A01	X		X	X					
Knob, Hue/Intensity	36070056A01							X	X	
Knob, Hue/Intensity	36070058B01			X	X					
Knob, Pushbutton	36070491A07		X							
Knob, Pushbutton	36070491A03				X					X
Knob, Pushbutton	36070491A05									
Handle	55D70024A05									
Handle	55D70024A02			X						
Handle	55D70024A01		X		X			X	X	
Window, VHF/UHF Light	61B70030A01	X	X							
Window, VHF/UHF Light	61D70147A01				X					
Cabinet Front Assembly	16P65176A47	X								
Cabinet Front Assembly	16P65176A42		X							
Cabinet Front Assembly	16P65175A46			X						
Cabinet Front Assembly	16P65175A48				X					
Cabinet Front Assembly	16P65175A51							X		
Cabinet Front Assembly	16P65175A52									X
Cabinet Front Assembly	16P65175A53									
Cabinet Front Assembly	16P65175A86									
Cabinet Front Assembly	16P65175A47									



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. 1PB233

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

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DATE 11 -71

SET 1 207 FOLDER 2

MOTOROLA CHASSIS 16TS-/E16TS-929, 18TS-/F18TS-/G18TS-929

SET 1 207 FOLDER 2

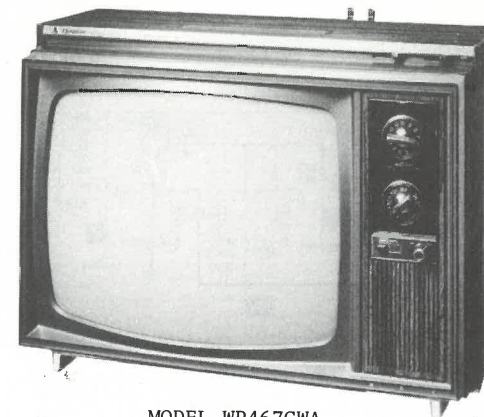
PHOTOFACT® Folder

with CIRCUITRACE®

For Supplier Address See PHOTOFACT Index

MODEL	CHASSIS
HP548HW	H18TS-929
HP562HW	G18TS-929
WP457GN	16TS-929
WP464GW	16TS-929
WP467GWA	E16TS-929
WP475HU	E16TS-929
WP553GN	18TS-929
WP554GW	18TS-929
WP563GWA	F18TS-929

Covering Chassis Codes B-00 thru B-30 and B-44.



MODEL WP467GWA

MOTOROLA CHASSIS 16TS-/E16TS-929, 18TS-/F18TS-/G18TS-929

COLOR TV

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.

CAUTION: One side of AC line connected to chassis. Use isolation transformer for servicing. Make certain isolation networks are in place and exposed metal is safe to touch before returning set to customer.

SERVICING IN THE FIELD

CRT IMPLOSION PROTECTION AND CLEANING

Implosion protection is an integral part of the picture tube, cleaning accomplished without CRT removal.

FUSE OR FUSE DEVICE

A 3.5-amp circuit breaker is used for AC line protection. (See Cabinet-Rear View photo.)

A .5-amp fuse is used for horizontal sweep protection. (See Chassis-Bottom View photo.)

A 1-inch #31 fuse wire is used for filament protection.

VHF TUNER

The fine tuning mechanically engages oscillator slug for adjustment (one slug for each channel).

HORIZONTAL OSCILLATOR

Adjustment of the horizontal hold is accomplished by the proper setting of the horizontal hold coil. (See photo Cabinet-Rear View.)

FOCUS

The focus may be varied by connecting the lead from Pin 9 of CRT to various voltage points. (See Cabinet-Rear View photo.)

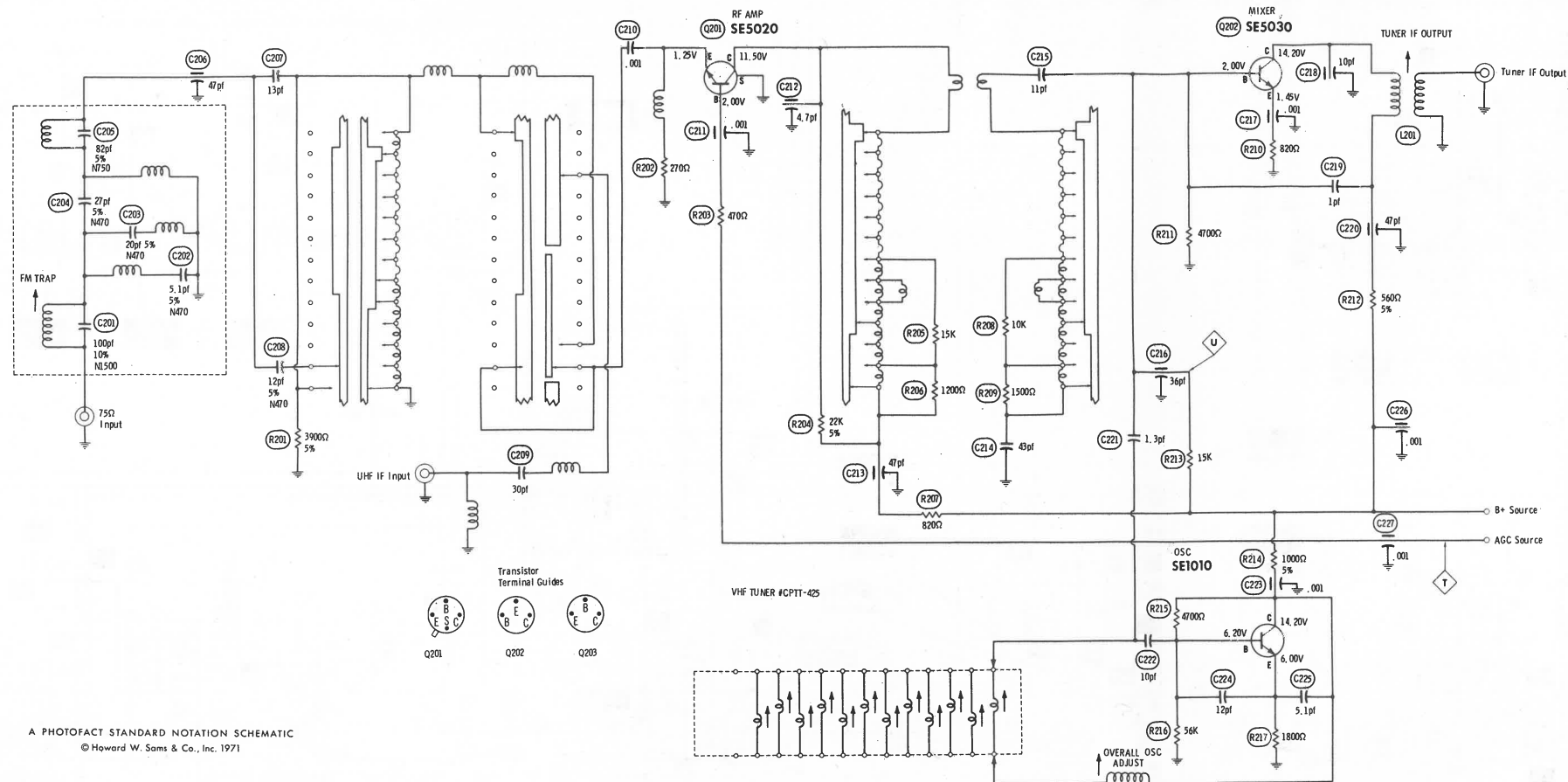
AGC

The AGC may be varied by means of an AGC control.

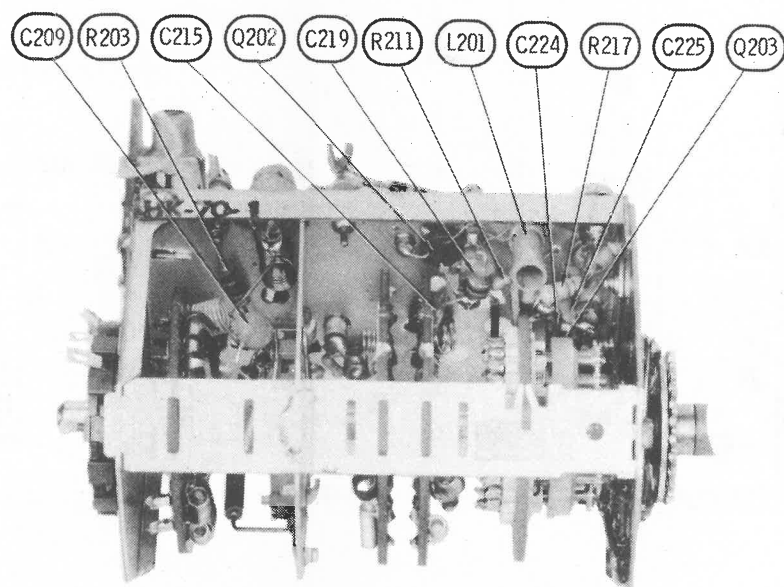
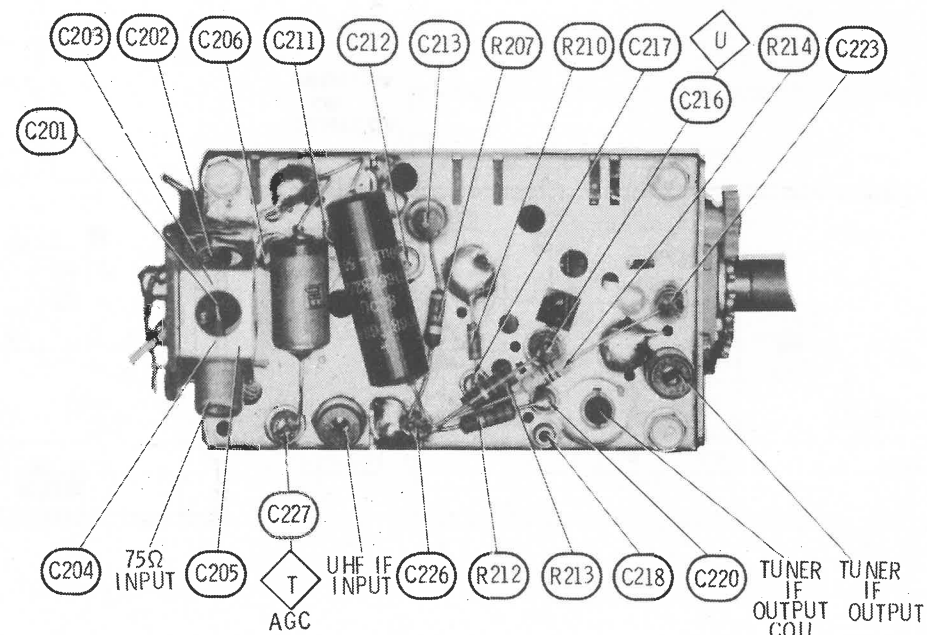
REMEMBER TO ASK— "What else needs fixing?"

MOTOROLA CHASSIS 16TS-/E16TS-929, 18TS-/F18TS-/G18TS-929

SET 1 207 FOLDER 2



A PHOTOFACT STANDARD NOTATION SCHEMATIC
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VHF TUNER CPTT-425

VHF TUNER ALIGNMENT INSTRUCTIONS

OSCILLATOR ADJUSTMENTS CPTT-424, CPTT-425

The oscillator slug for each channel is preset with the fine tuning control. Adjust the fine tuning for best picture and sound.

RF AND MIXER ADJUSTMENTS

Connect the sweep generator across antenna terminals with 120-ohm carbon resistor in each lead. Refer to chart below for generator frequencies. Connect the synchronized sweep voltage from the sweep generator to the horizontal input of the scope 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 showing no overload.

CHANNEL	CONNECT SCOPE	REMARKS
13	Vertical 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.
12 thru 2	Vertical input to Point U, low side to ground.	Check all channels and make compromise adjustments by expanding or compressing appropriate coils if necessary.

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

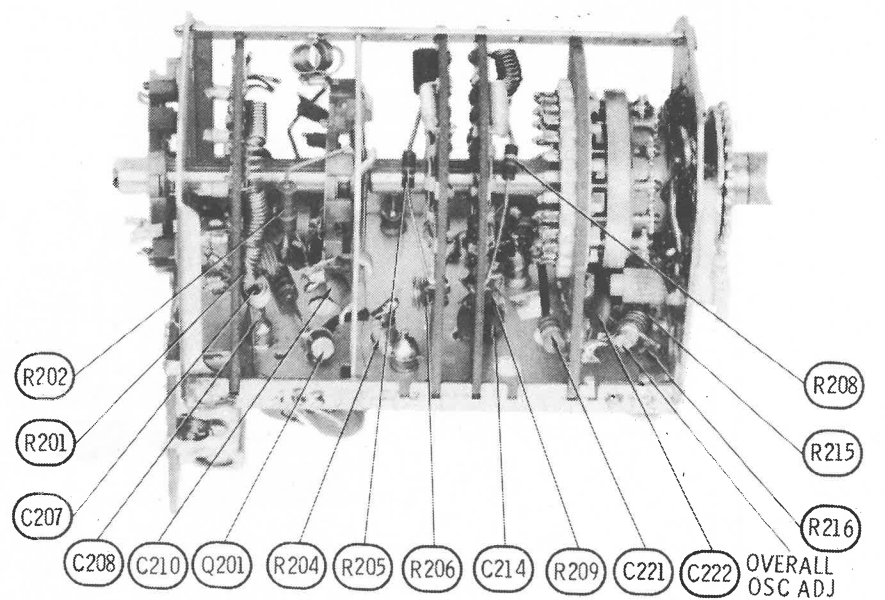
FIG. 201

SOUND VIDEO

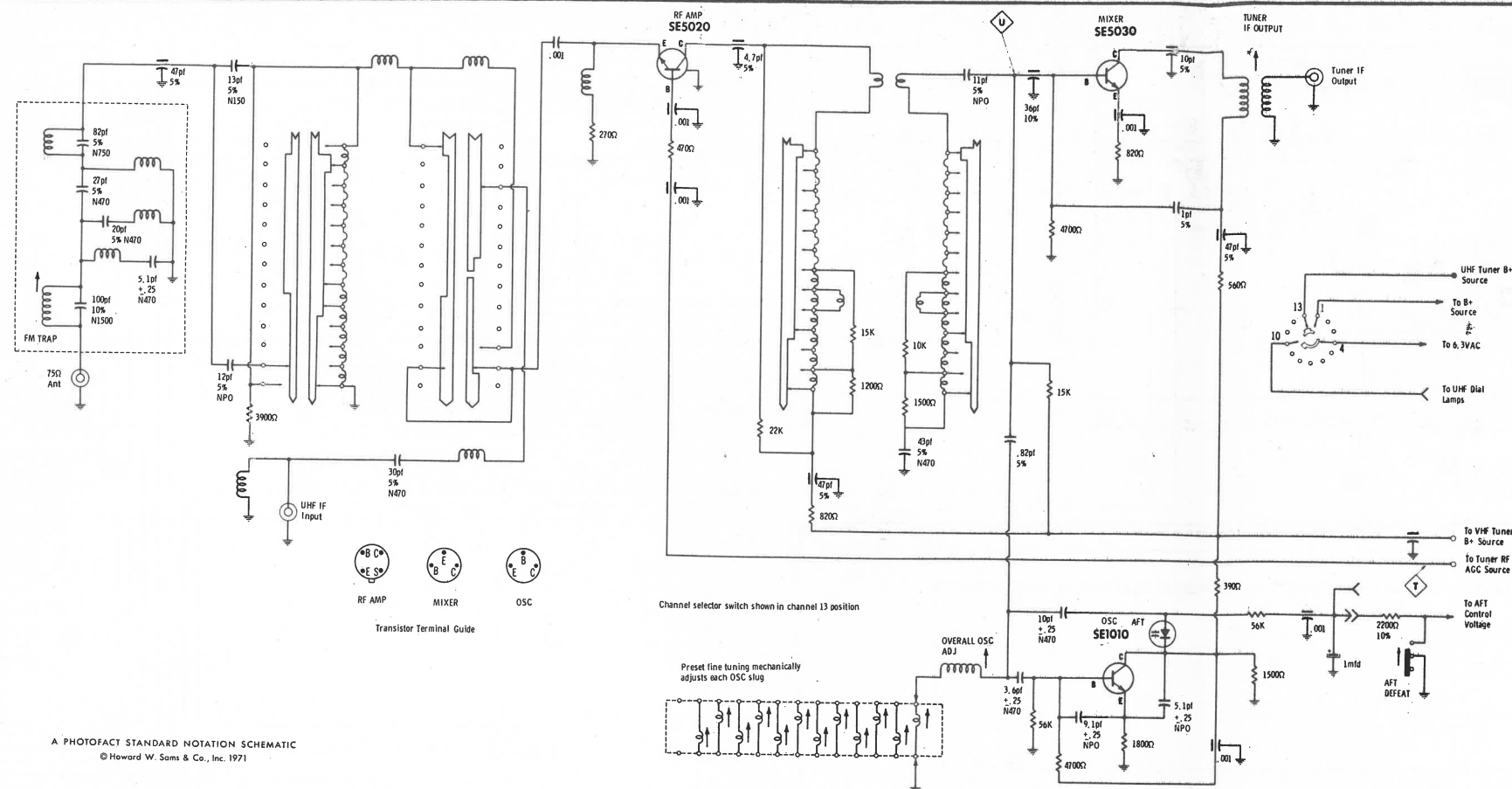


UHF TUNER ALIGNMENT INSTRUCTIONS

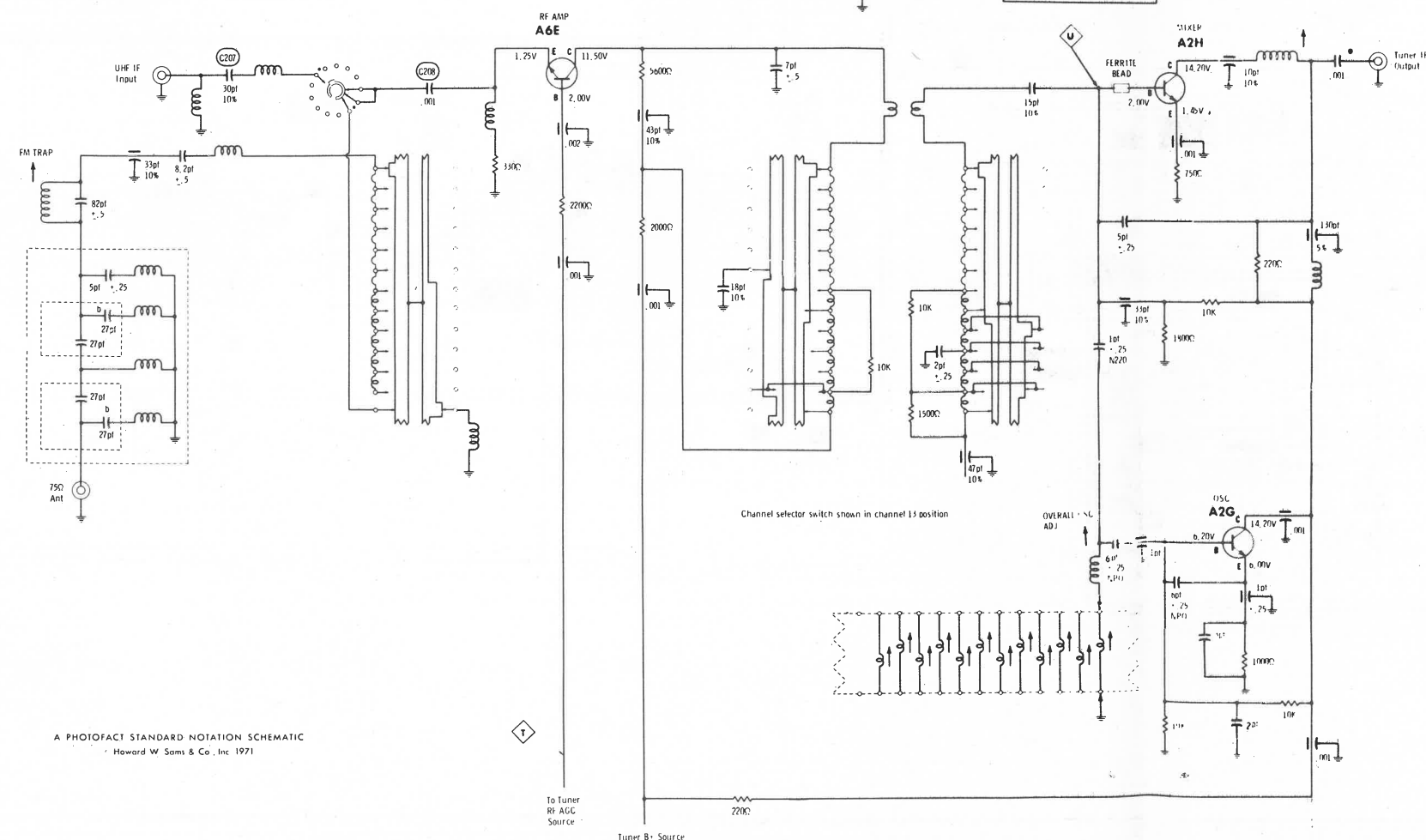
Select the lowest active UHF channel. Adjust the UHF oscillator trimmer for best picture and sound.



VHF TUNER CPTT-429



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VHF TUNER CPTT-424

VHF TUNER ALIGNMENT INSTRUCTIONS

OSCILLATOR ADJUSTMENTS TUNER CPTT-430

The oscillator slug for each channel is preset with the fine tuning control. Switch AFT to Off position. Adjust the fine tuning for best picture and sound. Switch AFT switch to On position.

OSCILLATOR ADJUSTMENTS TUNER CPTT-429

The oscillator slug for each channel is preset with the fine tuning control. Switch AFT to Off position. Adjust the fine tuning for best picture and sound. If necessary, adjust the overall oscillator adjustment. Recheck. Switch AFT switch to On position.

RF AND MIXER ADJUSTMENTS

Connect the sweep generator across antenna terminals with 120-ohm carbon resistor in each lead. Refer to chart below for generator frequencies. Connect the synchronized sweep voltage from the sweep generator to the horizontal input of the scope for horizontal deflection. Use 10MC sweep unless otherwise noted. Connect a variable bias to the RF AGC line at Point 1. Adjust bias to obtain response curve showing no overload.

CHANNEL	CONNECT SCOPE	REMARKS
13	Vertical input to Point 1, low side to ground.	Expand or compress appropriate coils for maximum gain and symmetry of response similar to Fig. 201 with markers as shown.
12 thru 2	Vertical input to Point 1, low side to ground.	Check all channels and make compromise adjustments by expanding or compressing appropriate coils if necessary.

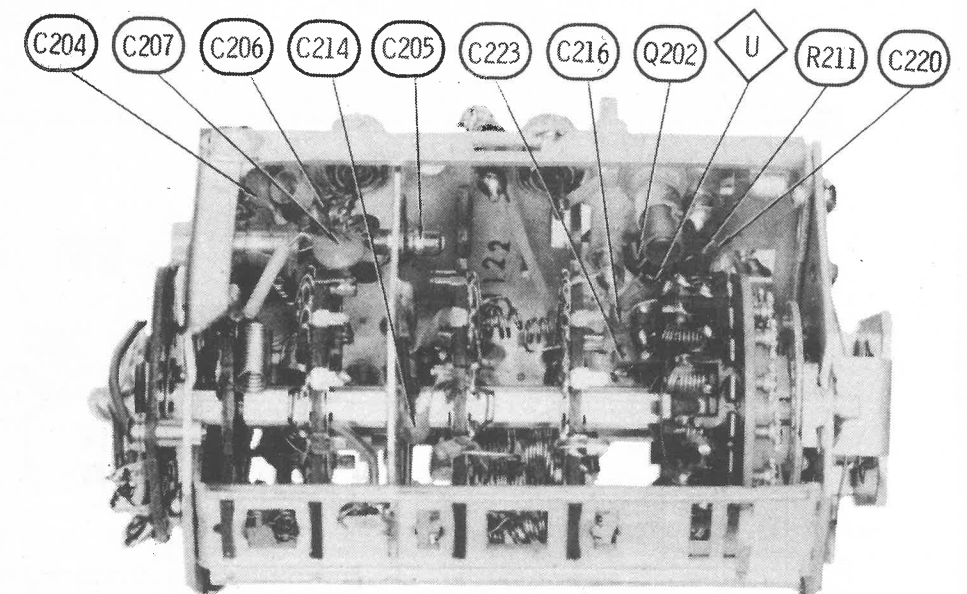
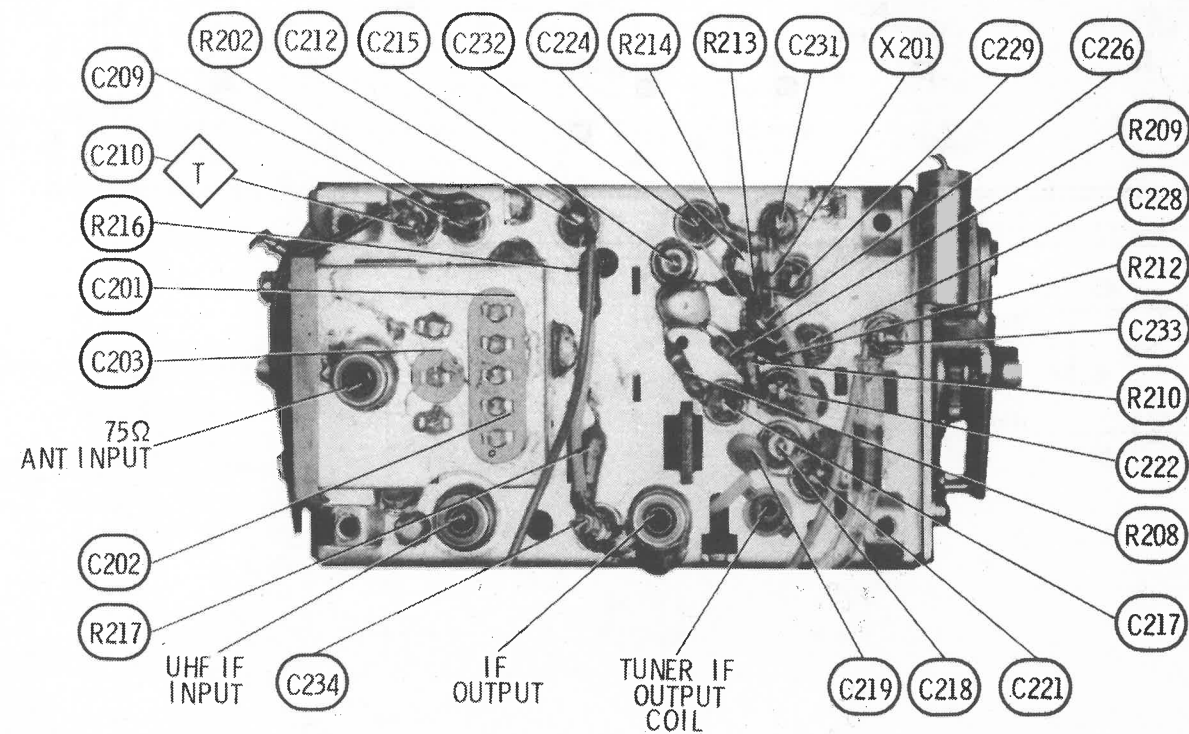
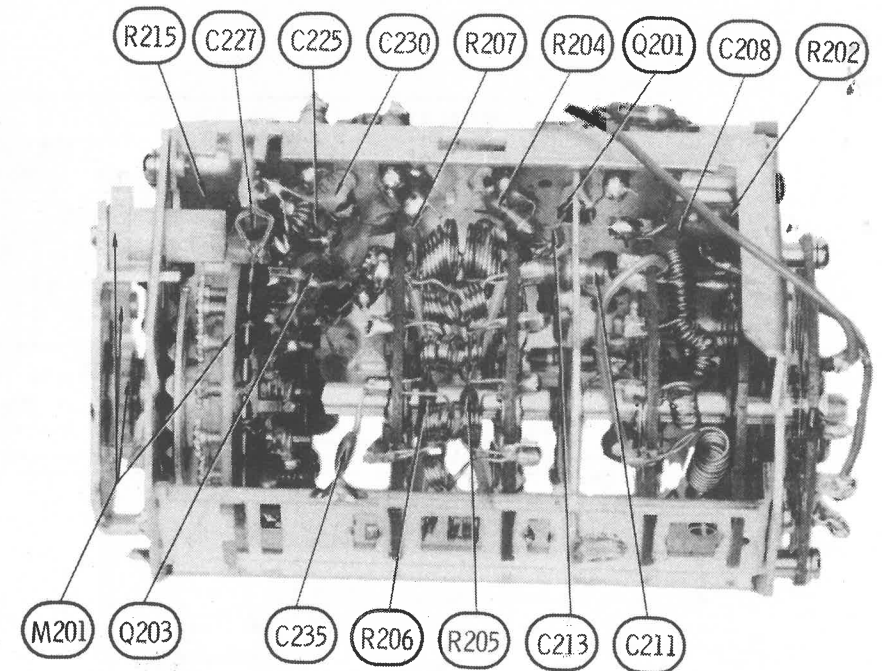
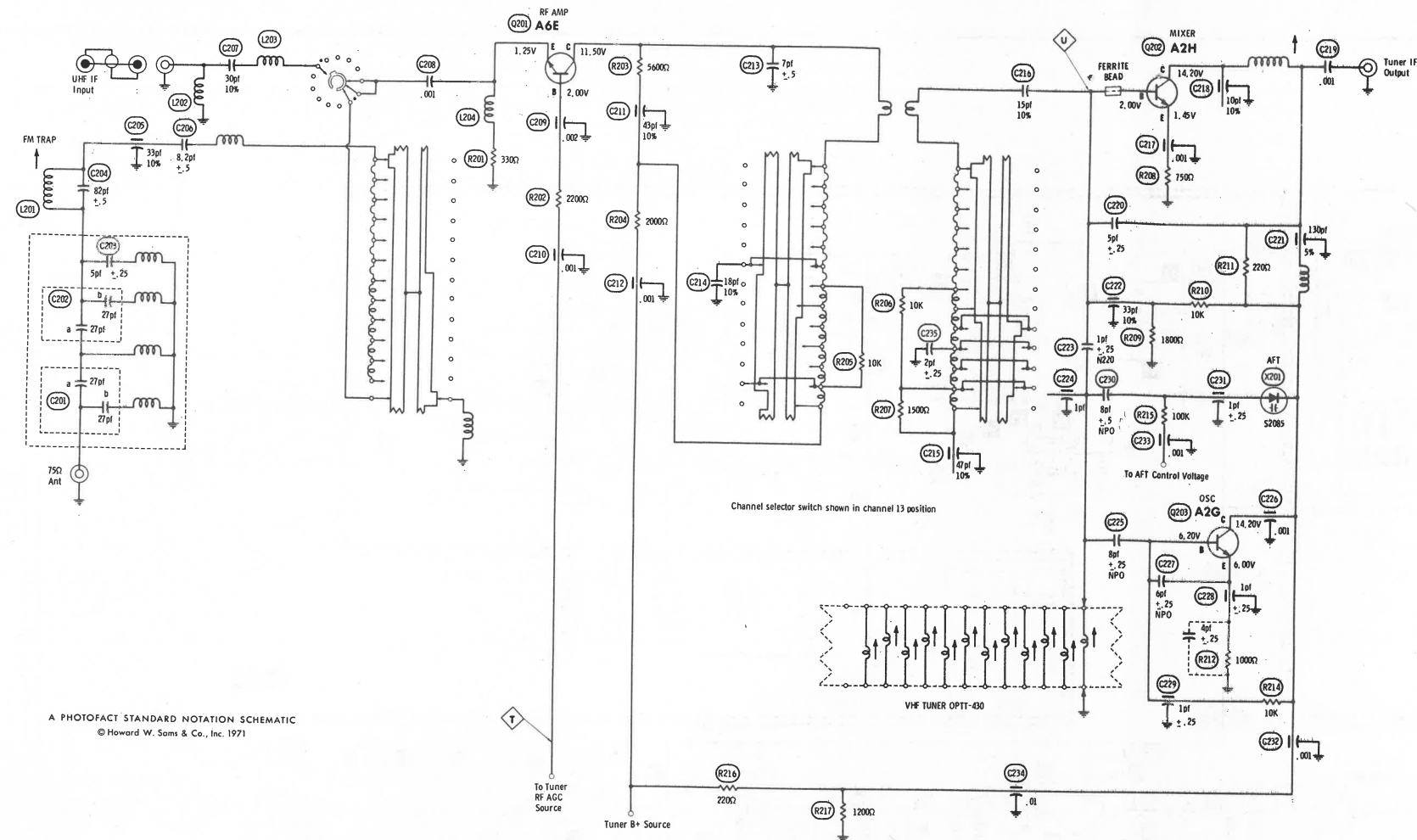
GENERATOR FREQUENCY Numbers in () indicate channel number					
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	81.75MC		191.75MC		215.75MC

FIG. 201

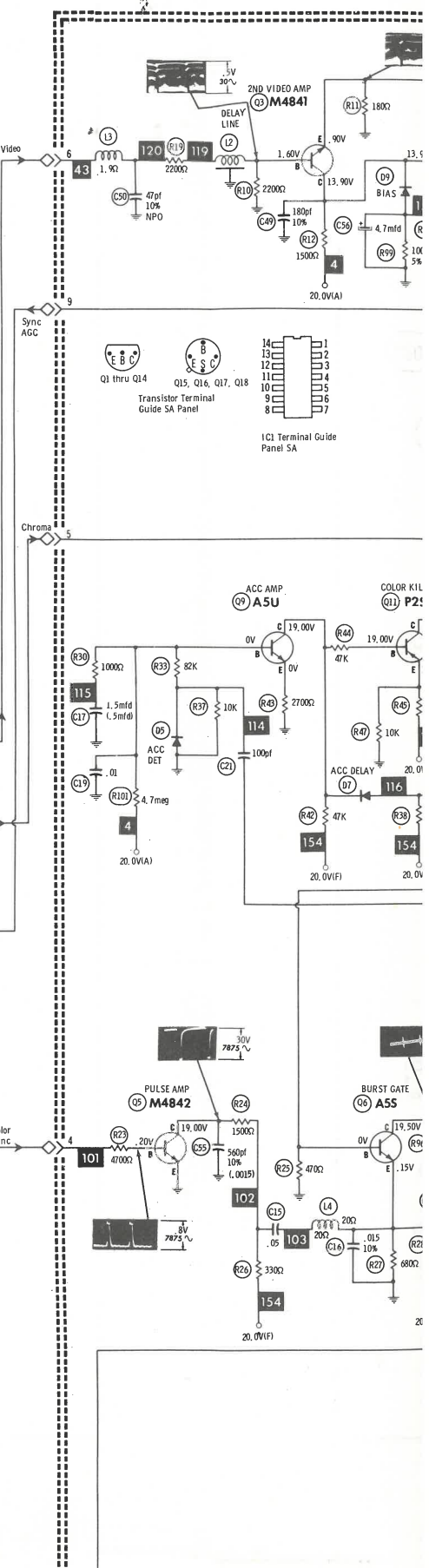
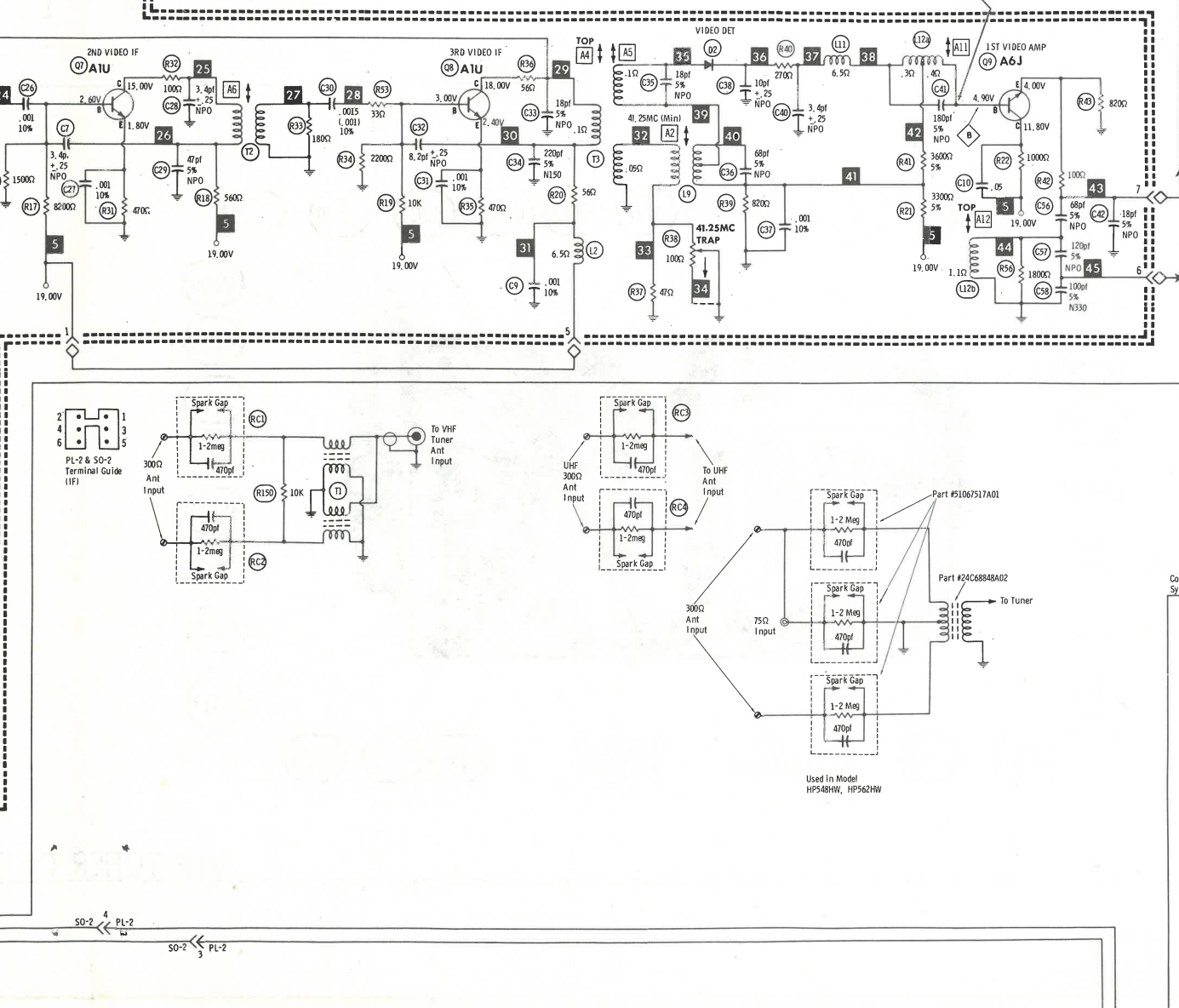
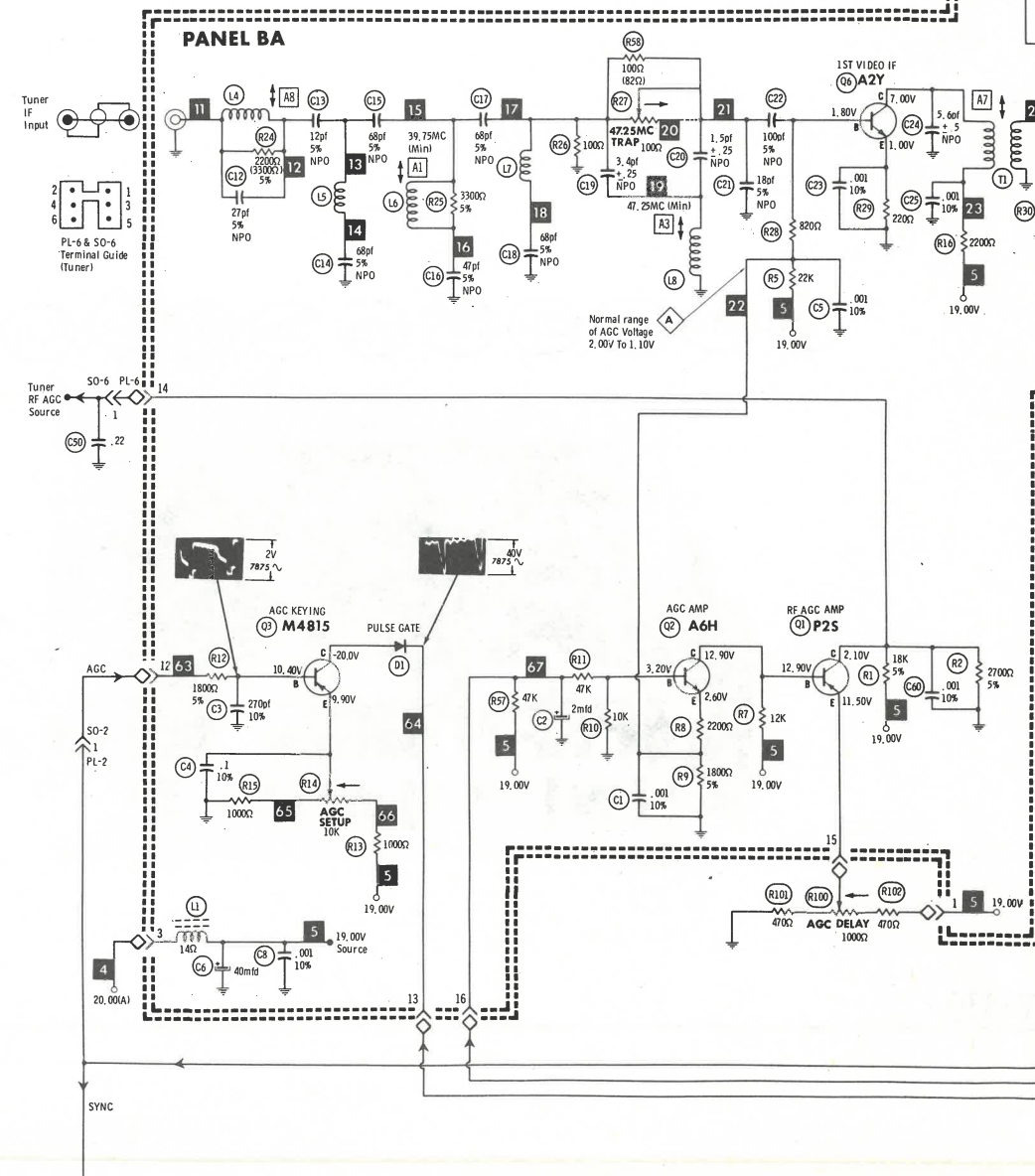
SOUND VIDEO

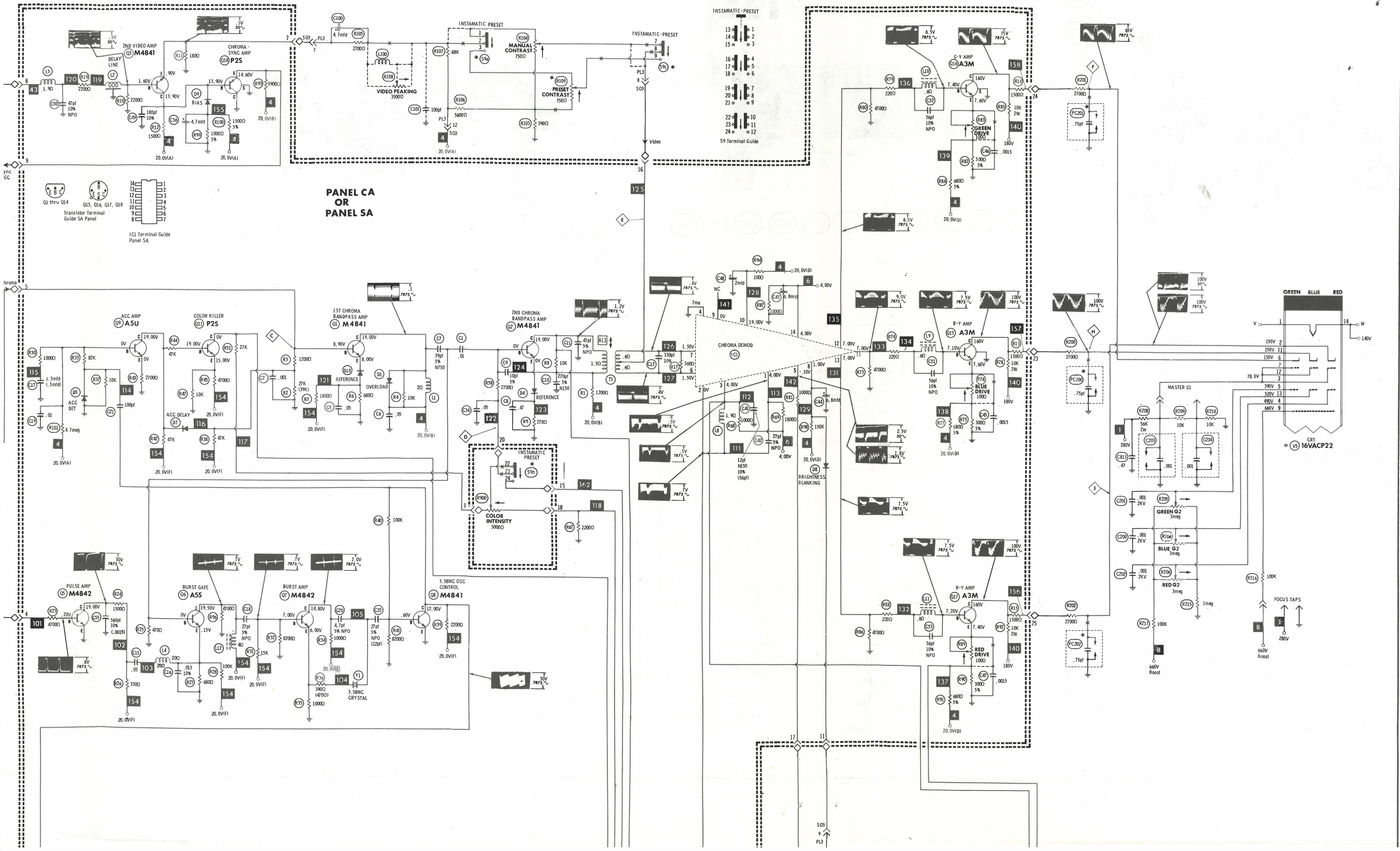
UHF TUNER ALIGNMENT INSTRUCTIONS

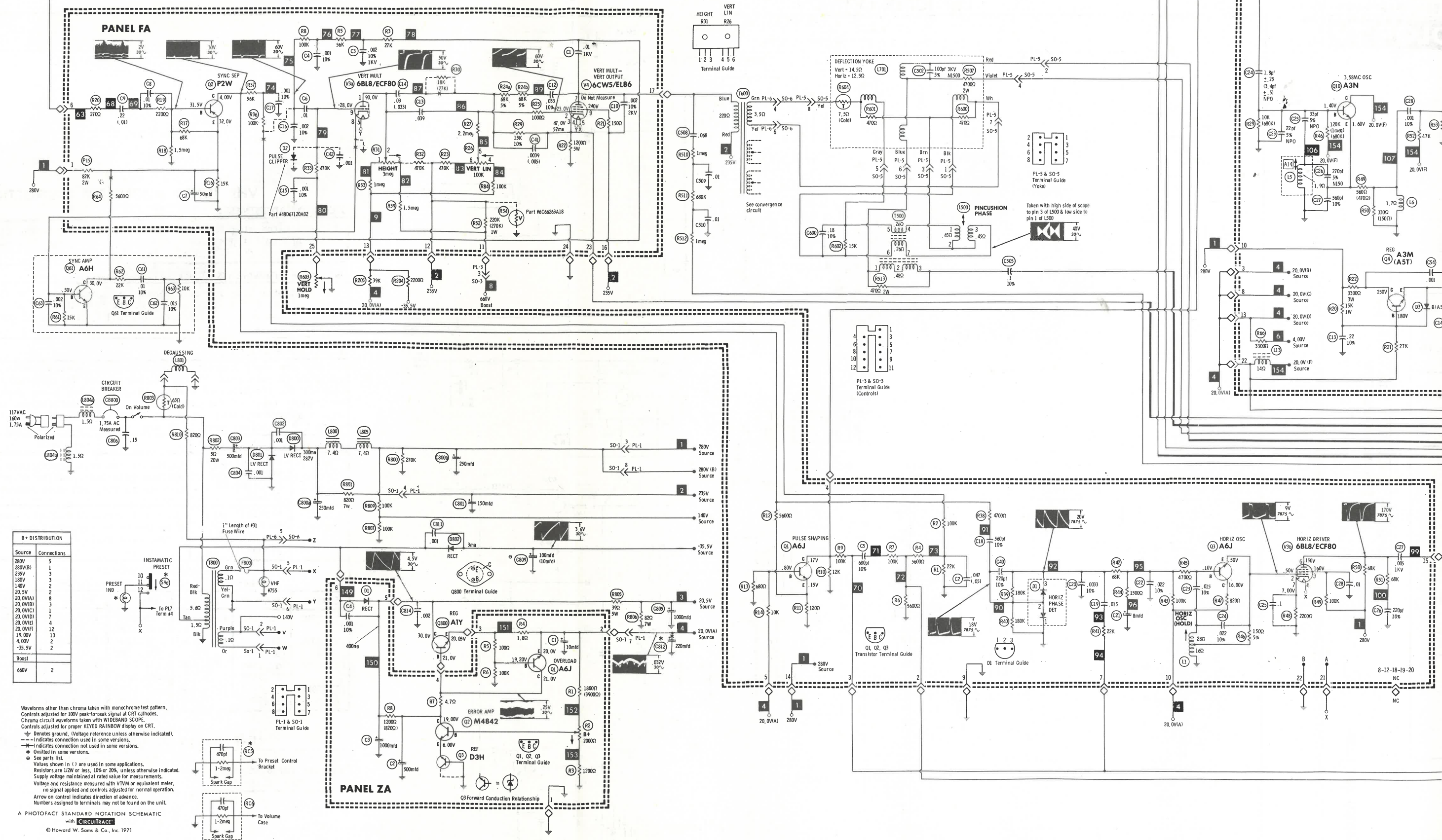
Select the lowest active UHF channel. Adjust the UHF low-channel oscillator trimmer for best picture and sound. Select the highest active UHF channel. Adjust the UHF high-channel oscillator trimmer for best picture and sound.

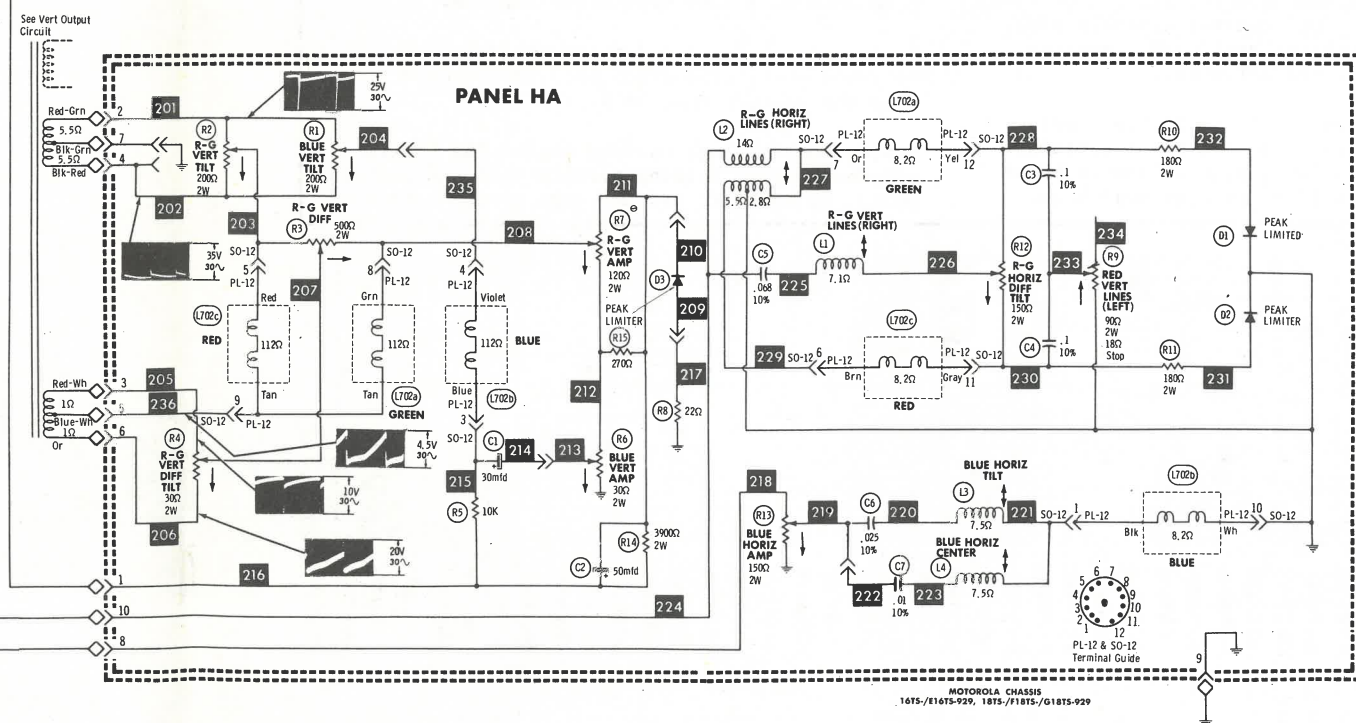
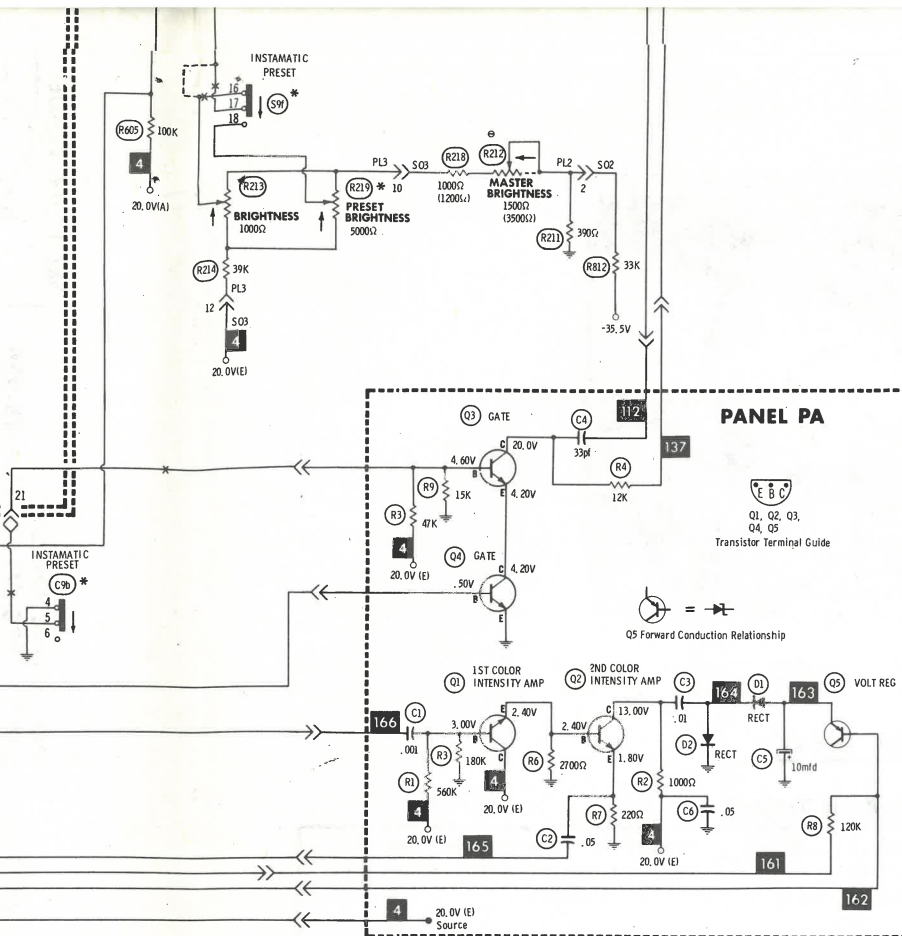


VHF TUNER CPTT-430









RESISTANCE MEASUREMENTS

ITEM	PIN 1	PIN 2	PIN 3	PIN 4	PIN 5	PIN 6	PIN 7	PIN 8	PIN 9	PIN 10	PIN 11	PIN 12	PIN 13	
V1	FIL	0Ω	4700Ω †	NC	10meg	NC	NC	TP	NC	0Ω	NC	FIL		TOP CAP 4.3Ω †
V2	NC	15.8Ω †	NC	FIL	FIL	NC	NC	NC	800K					
V3	1meg	150Ω	100K †	FIL	FIL	68K †	2200Ω	10K	900K					
V4	NC	3meg	1200Ω	FIL	FIL	TP	7000Ω †	NC	970Ω †					
V5	FIL	*	20K	1meg	1meg	*	20K	NC	35meg	NC	*	20K	1meg	PIN 14 FIL
V6														TOP CAP 550Ω †

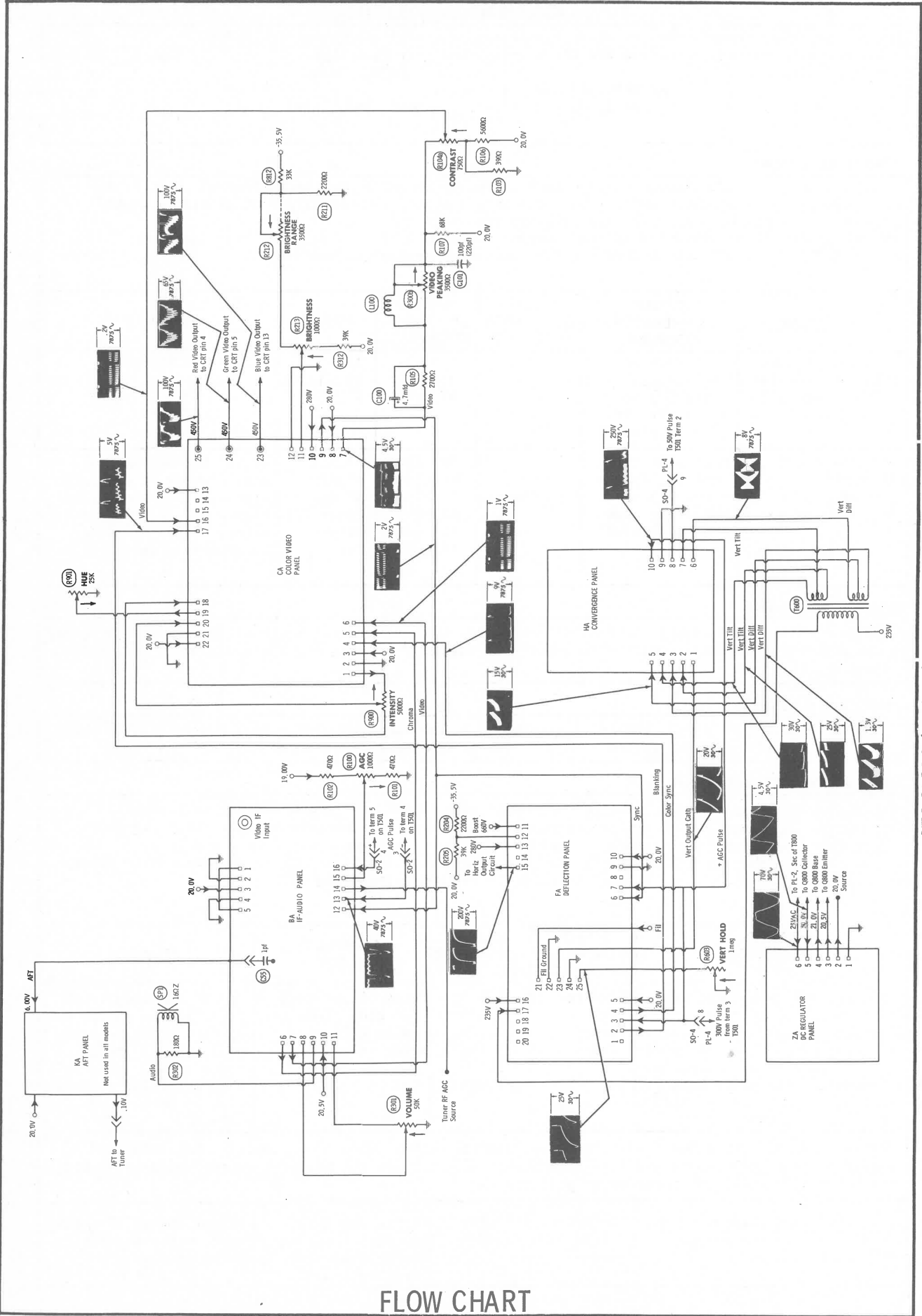
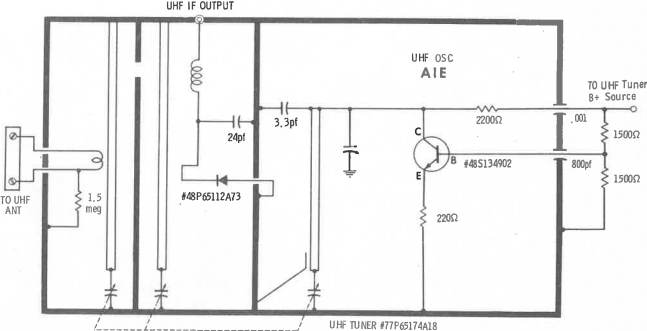
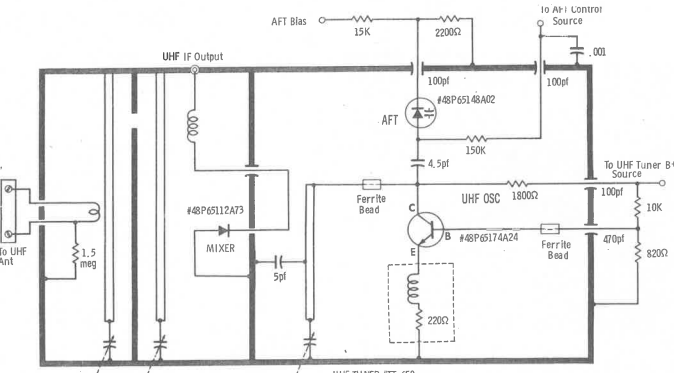
PINS 1 THRU 12 HAVE INFINITE RESISTANCE

MEASUREMENTS BELOW TAKEN WITH METER HAVING .08V MAX BETWEEN PROBE TIPS

ITEM	E	B	C		ITEM	E	B	C		ITEM	E	B	C	
BA Q1	400Ω	10K	2200Ω		CA Q7	1000Ω	5000Ω	1200Ω		KA Q1	1000Ω	5000Ω	1200Ω	
Q2	3800Ω	8000Ω	12K		Q8	0Ω	8200Ω	2200Ω		Q2	1000Ω	1000Ω	1200Ω	
Q3	3500Ω	5800Ω	*		Q9	2700Ω	100K	47K		PA Q1	2200Ω	180K	180Ω	
Q4	80Ω	1NF	*		Q10	550Ω	10K	180Ω		Q2	220Ω	2700Ω	1200Ω	
Q5	4000Ω	*	80Ω		Q11	3000Ω	100K	30K		Q3	1NF	10K	12K	
Q6	220Ω	2400Ω	2200Ω		Q12	470Ω	7000Ω	600Ω		Q4	0Ω	2000Ω	1NF	
Q7	470Ω	1200Ω	800Ω		Q13	1000Ω	18K	2200Ω		ZA Q1	180Ω	260Ω	1200Ω	
Q8	470Ω	1800Ω	300Ω		Q14	0Ω	2.7meg	22K		Q2	*	1200Ω	1200Ω	
Q9	650Ω	3800Ω	1000Ω		Q15	220Ω	4800Ω	*		Q3	*	0Ω		
Q10	470Ω	1000Ω	1NF		Q16	220Ω	4800Ω	*		Q800	180Ω	1200Ω	120Ω	
Q11	4000Ω	1000Ω	0Ω		Q17	220Ω	4800Ω	*						
CA Q1	500Ω *	22K	180Ω		Q18	3600Ω	1600Ω	0Ω		TUNERS				
Q2	*	1300Ω	1300Ω		FA Panel					VHF Q201	270Ω	2800Ω	1000Ω	
Q3	180Ω	1300Ω	1800Ω		Q1	110Ω	600Ω	10K		Q202	820Ω	3500Ω	750Ω	
Q4	*	20K	22K		Q2	12K	76K	5200Ω		Q203	1800Ω	5000Ω	1200Ω	
Q5	0Ω	15K	2000Ω		Q3	160Ω	80K	1000Ω						
Q6	680Ω	470Ω	200Ω		Q61	0Ω	12K	15K		UHF Q301	220Ω	1500Ω	2400Ω	

* READING DEPENDS UPON POLARITY OF METER CONNECTIONS.
NC NO CONNECTION TP TIE POINT

† MEASURED FROM CATHODE OF D800.
‡ MEASURED FROM PIN 9 OF V2.



MOTOROLA CHASSIS
16TS-/E16TS-929, 18TS-/F18TS-/G18TS-929

FOLDER 2

TV ALIGNMENT INSTRUCTIONS

Use an isolation transformer, or observe polarity, and maintain voltage at 117VAC.
Allow a 20-minute warm-up period for the receiver and test equipment.
Suggested Alignment Tools:

GENERAL CEMENT
A1 thru A17 and
Tuner IF Output Coil 8606, 8869, 9302

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 to provide a usable indication. Note: Response may vary slightly from that shown.
Use 6MC sweep unless otherwise noted. Connect a variable bias supply to the IF AGC line (Point A). Set AGC Set-up Control, R14, to center mechanical position.

INDICATOR	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	ADJUST	REMARKS
DC probe of VTVM thru 47K to Point B, common to ground.	High side thru .001mfd Cap. to Point U on VHF tuner, low side to ground.		39.75MC 41.25MC 47.25MC	A1 A2,R38 A3,R27	Adjust for MINIMUM.
Vertical input of scope to Point B, low side to ground.	High side thru .001mfd Cap. to Point U on VHF tuner, low side to ground.	44MC (10MC Sweep)	39.75MC 41.25MC 42.17MC 44.00MC 45.75MC 47.25MC	A4,A5, A6,A7, A8 and Tuner IF Output Coil	Adjust for maximum gain and symmetry of response with markers as shown in Figure 1. To obtain a proper response, it may be necessary to slightly retouch.

SOUND IF ALIGNMENT

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

4.5MC 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 A11 for MINIMUM beat interference.

CHROMA BANDPASS ALIGNMENT

The following alignment will require the use of an RF Modulator (RCA WG304B or equivalent). Set AGC Set-up Control, R14, to center mechanical position. Connect a variable bias supply to Point A, negative lead to ground. Adjust bias and signal generator output for response as shown in Fig. 2 or Fig. 3. Use only enough signal to give a response which shows no signs of overload. Turn channel selector to any non-interfering channel.

SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CONNECT SCOPE	REMARKS
High side of sweep generator to video sweep input of RF modulator. High side of signal gen. (set at 45.75MC) to picture carrier input. Output of RF modulator to mixer base test point on tuner, point U, low side to ground.	3MC to 6MC Sweep Width	42.67MC (3.08MC 42.17MC (3.58MC 41.67MC (4.08MC)	Vert. input thru detector probe to point C, low side to ground.	Adjust A12 (top core) slug from an almost out of form position to a peak, Fig. 2 and continue turning slug inward until 1/2 original peak is obtained as in Fig. 3.
Remove Vertical Output Tube, V4. Remove Horizontal Output Tube, V1. Connect a variable bias supply to Point D, negative lead to ground. Adjust Point D bias for approximately 1.8 volts. Set Contrast control to center range position.				
High side thru .1mfd to Point B, low side to ground.	3.58MC (3-5MC Sweep)	3.08MC 4.08MC	Vert. amp thru detector probe to Point E, low side to ground.	Adjust A13 which should center the response shown in Fig. 4.

UHF TUNER PARTS LIST AND DESCRIPTION
(When ordering parts, state Model, Part Number, and Description.)

TRANSISTORS

TT-640

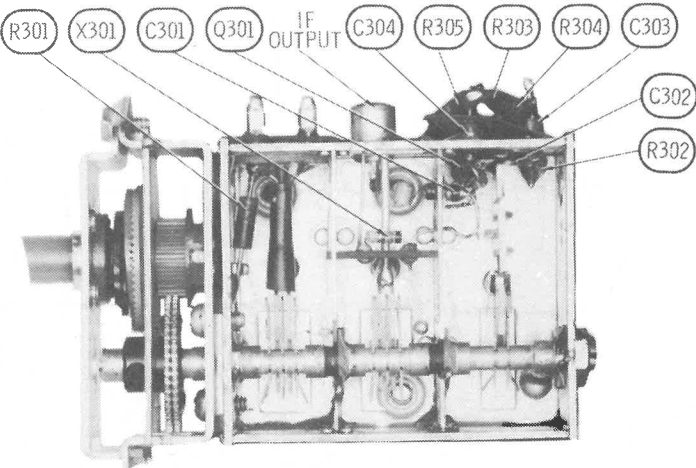
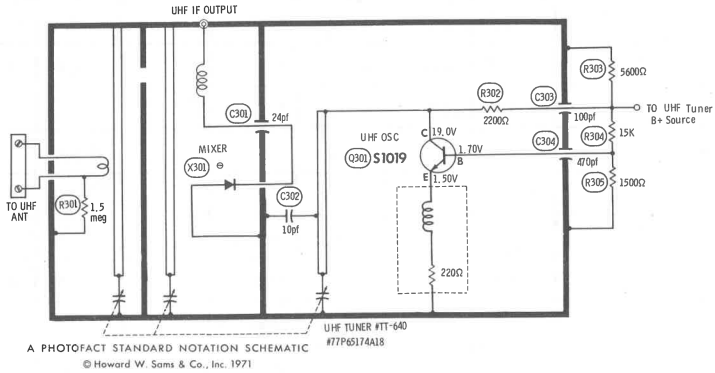
ITEM No.	TYPE No.	FUNCTION	REPLACEMENT DATA					
			MFGR. PART No.	GENERAL ELECTRIC PART No.	INTERNATIONAL RECTIFIER PART No.	MOTOROLA PART No.	RCA PART No.	SYLVANIA PART No.
Q301	S1019	Oscillator	48P65144A72	GE-11	TR-22	HEP56	SK3019	ECG 108

POWER RECTIFIERS & SIGNAL DIODES

ITEM No.	MFGR. PART OR TYPE No.	REPLACEMENT DATA				NOTES
		GENERAL ELECTRIC PART No.	INTERNATIONAL RECTIFIER PART No.	RCA PART No.	SYLVANIA PART No.	
X301	48P65112A73	1N82A	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	24pf		NP0-DI 10	TCZ-24 DTZ-10	NP010	CCT0-240 CCT0-100	CN0410	10TCC-Q10
C302	10pf							
C303	100pf							
C304	470pf							



UHF TUNER TT - 640

MISCELLANEOUS ADJUSTMENTS

HORIZONTAL SWEEP CIRCUIT ADJUSTMENTS

Tune in a TV station and set all controls for normal operation. Adjust Horizontal Hold to a point where it is virtually impossible to lose horizontal sync while switching from channel to channel.

Connect a VTVM through a high voltage probe to the picture-tube anode connector, common lead to chassis ground. Adjust Horizontal Bias control for 27KV with Brightness control set fully counterclockwise (zero beam current).

LOW VOLTAGE SUPPLY ADJUSTMENT

Adjust variable resistor, R2, on ZA Panel for 20 volts at Pin 2 on ZA Panel.

BRIGHTNESS RANGE CONTROL SETTING (GENERAL)

Turn brightness control fully clockwise. Turn brightness range master control until slight blooming is obtained. Adjust brightness control for normal brightness. (See "Gray Scale Adjustment".)

AGC SETUP ADJUSTMENT (R14) ON BA PANEL

With AFT switch to Off position, tune in a strong TV station and advance the AGC control until instability appears in the picture (pulling, jitter, overload, etc.). Reduce the control to the point just below the instability and check all available stations for proper AGC action. Readjust if needed.

RF AGC DELAY ADJUSTMENT

Tune in a medium or weak station. Turn RF AGC Delay control clockwise (as viewed from front of the set) for a snowy picture. Then back off control until video noise disappears. If interference appears, turn to the most favorable adjustment. If control has no effect on picture, set the control fully clockwise.

COLOR AFC ALIGNMENT

Switch instamatic switch to manual position. Tune receiver to a weak color program. Adjust all controls for normal reception. Adjust A14 for stable color sync. Connect a color bar generator to the antenna terminals. Adjust receiver for normal color reception. Move Hue (Tint) control to center position.

Connect the vertical input of a scope to Point J. Check for proper waveform with the color-bar generator being used. See waveform on schematic for pattern obtained from a standard keyed rainbow generator. Check the range of the Hue (Tint) control. The bars should move 30° either side of proper signal. If necessary, retouch A15 for proper range of control.

Check for proper waveform at G-Y and B-Y outputs: Points F and H. Tune in a weak signal or reduce the signal at the antenna terminals to obtain a snowy picture. Adjust the Killer control

to eliminate the color in the snow. Check with a color signal to make sure the killer is not eliminating picture coloring. Push instamatic switch to On position and set controls (located behind speaker) for desired color station.

PURITY ADJUSTMENTS

Perform Step 1 of "Convergence Adjustments". If the picture tube appears to be magnetized, use a degaussing coil to demagnetize tube and mounting brackets.

Turn brightness control to MINIMUM brightness level. Turn contrast control fully counterclockwise.

Set channel selector between channels (snow-free raster). The red, blue and green screen controls are accessible through brightness, contrast and vertical-hold-control shafts respectively.

Turn the blue and green screens fully counterclockwise. Loosen the deflection yoke and move it rearward against the convergence assembly.

Adjust the tabs on the purity magnet and rotate it until a red spot appears at the center of the picture tube. Slide the deflection yoke forward to obtain a uniform red over the entire picture-tube face. A low-power microscope is useful to observe beam landings. Refer to "Gray Scale Adjustments".

GRAY SCALE ADJUSTMENTS

Tune in a black and white picture or a color picture with the Color (Intensity) control set to MINIMUM. Set channel selector between channels. Red, Blue and Green screen controls are obtainable through Brightness, Contrast and Vertical Hold control shafts respectively.

Set screen controls to MINIMUM and Hue (Tint) control to midposition, Contrast to center range.

Turn Brightness control and all three drive controls (located on CA Panel) to maximum position. Adjust brightness range master to point of high-light blooming. Turn brightness control for a low-brightness level. Increase one or two screen controls as needed for a gray raster, predominant color at MINIMUM.

Tune in a station with Brightness control at maximum, and reduce Red, Blue and Green Drive controls to eliminate coloring in the dark and bright areas of the picture. Leave drive control of weakest color at maximum. Check for gray scale tracking at low and high brightness settings and readjust as needed.

PINCUSHION ADJUSTMENTS

Connect a crosshatch generator to the antenna terminals. Adjust the set for a normal crosshatch pattern. Reduce the brightness until the raster is just visible. Adjust pincushion coil for straight horizontal lines at the top of the screen. Repeat if necessary.


TV ALIGNMENT INSTRUCTIONS (Continued)

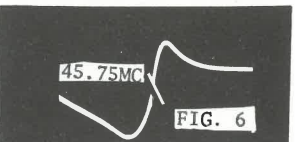
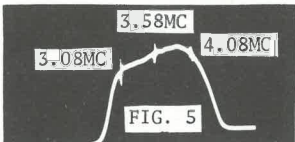
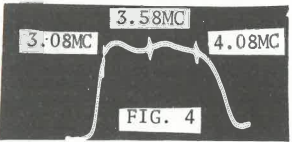
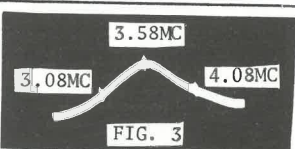
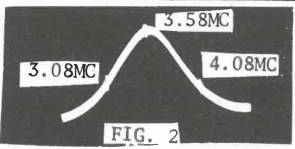
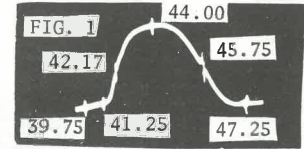
Turn Contrast control fully counterclockwise. Bias must be correct.				
High side of sweep generator to video sweep input of RF modulator. High side of signal gen. (set at 45.75MC) to picture carrier input. Output of RF modulator to mixer base test point on tuner, point U, low side to ground.	3MC to 6MC Sweep Width	42.67MC (3.08MC) 42.17MC (3.58MC) 41.67MC (4.08MC)	Vert. input thru detector probe to Point E, low side to ground.	Adjust A13 if necessary. Overall response should be as shown in Fig. 5.

AFT ALIGNMENT (SCOPE METHOD)

Connect a variable bias supply to the IF AGC line (Point A) and adjust to obtain a usable "S" curve, AFT switch in On position. Set the channel selector to any non-interfering channel.				
GENERATOR COUPLING	GENERATOR FREQUENCY	CONNECT SCOPE	ADJUST	REMARKS
High side thru .001mfd to Point U on VHF tuner, low side to ground.	45.75MC (2-3MC Sweep)	High side to Point K, low side to ground.	A16, A17	Adjust for maximum gain and symmetry of response with marker centered as in Fig.6.

AFT ALIGNMENT (VTVM METHOD)

Fine tune for best picture with AFT off; turn AFT on. Set VTVM for zero center scale. Adjust A16 and A17 cores to extreme outer end positions (away from center).				
GENERATOR COUPLING	GENERATOR FREQUENCY	CONNECT VTVM	ADJUST	REMARKS
Local reception.	Medium Strength	High side to Point  , low side to ground.	A16	Adjust for peak reading.
Local reception.	Medium Strength		A17	Adjust for zero center scale Remove VTVM.
Check AFT action while switching AFT On and Off. Repeat above alignment if needed.				

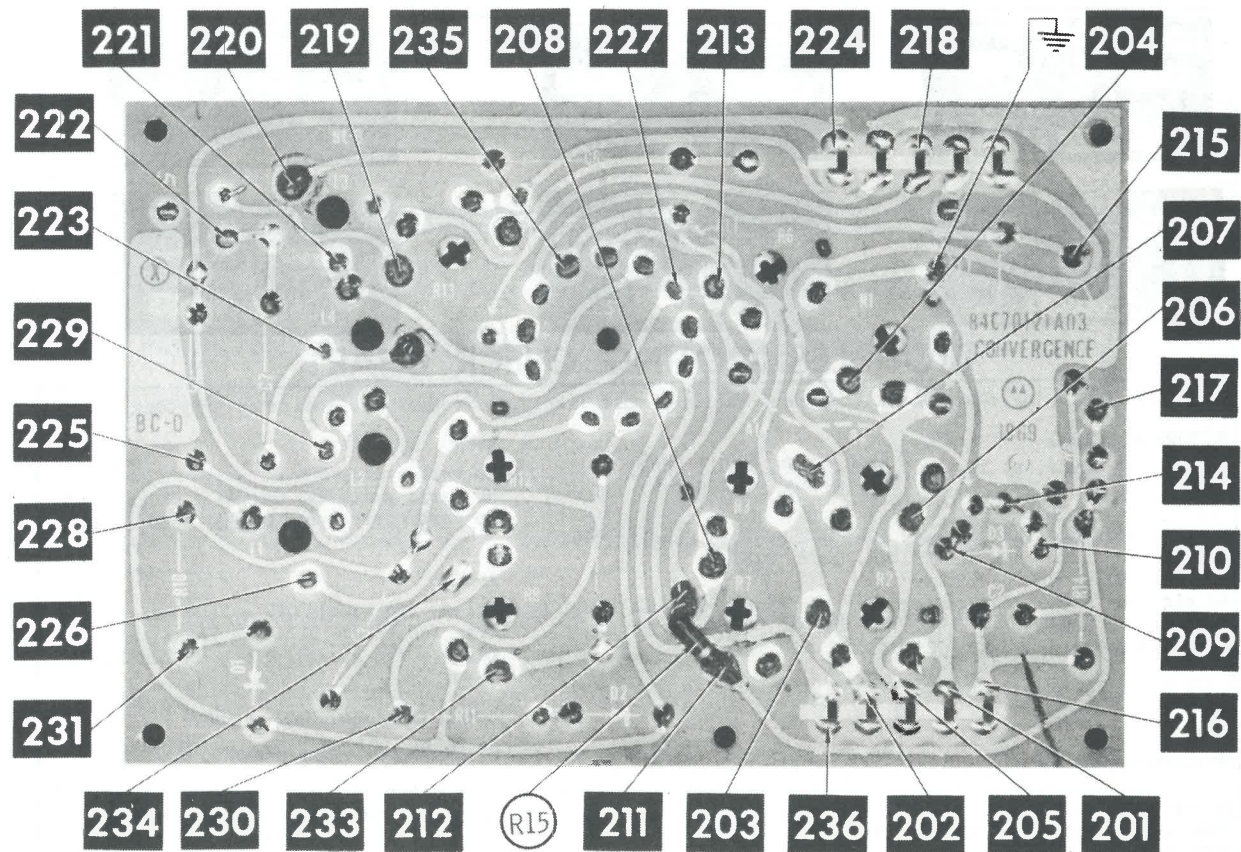
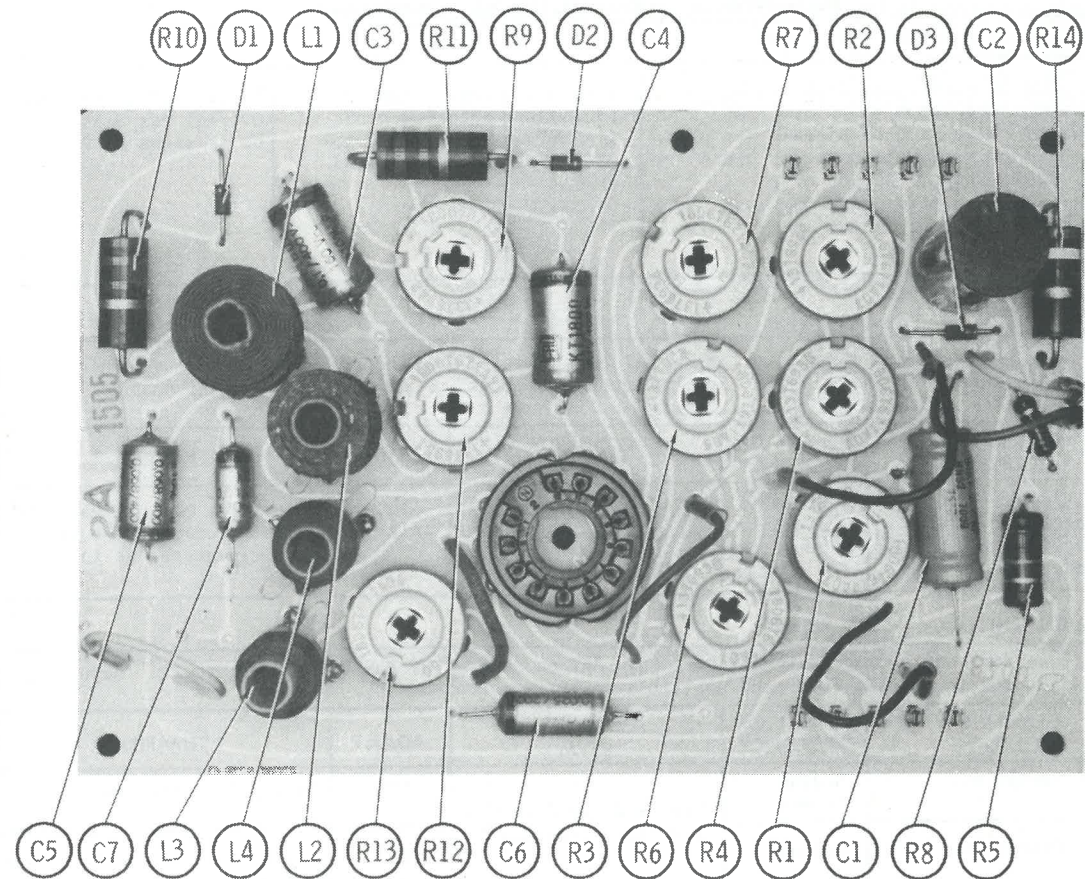


TROUBLESHOOTING CHECK CHART

The following chart lists component failures most likely to produce the indicated symptoms.	
PICTURE or SOUND No pic, no sound, no raster: CB800, D800, D801, Q800; (D1, Q1, Q2 - ZA Panel) No pic, no sound, has raster: (Q6, Q7, Q8 - BA Panel); Q202 No pic, no sound, has snow: Q201, Q202, Q203 No pic, has sound, no raster: V5 No pic, has sound, has raster: Q9 - BA Panel; Q3 - CA Panel Has pic, no sound: D3, IC1, Q4, Q5, Q10, Q11 - BA Panel Overloaded picture: Q1, Q2, Q3, D2 - BA Panel	SYNC No vert sync: V3 No horiz sync: D1, Q3, V3 - FA Panel No vert/horiz sync: Q2, Q4 - FA Panel RASTER Yellow (no blue): Q15 - CA Panel; V5 Cyan (no red): Q17 - CA Panel, V5 Magenta (no green): Q16 - CA Panel, V5 COLOR (B/W operating normally) No color: Q1, Q2, Q6, Q7, Q11 - CA Panel Weak color: Q1, Q2 - CA Panel No color sync: Q6, Q7, Q8, Q10, Q12, Q13, Q14 - CA Panel No blue: IC1, Q15 - CA Panel No red: IC1, Q17 - CA Panel Incorrect hue (tint): IC1, Q6, Q7, Q12, Q13, Q14 - CA Panel
SWEEP No raster, has sound: Q3, V3 - FA Panel, V1, V2, V5, V6 No vert deflection: V3, V4 Poor vert lin or foldover: V3, V4 Poor horiz lin or foldover: V1, V2 Narrow picture: D800, D801, Q800 (D1, Q1, Q2 - ZA Panel) (Q3, V3 - FA Panel) V1, V2. Vert off frequency: V3 Horiz off frequency: D1, Q3, V3 - FA Panel	

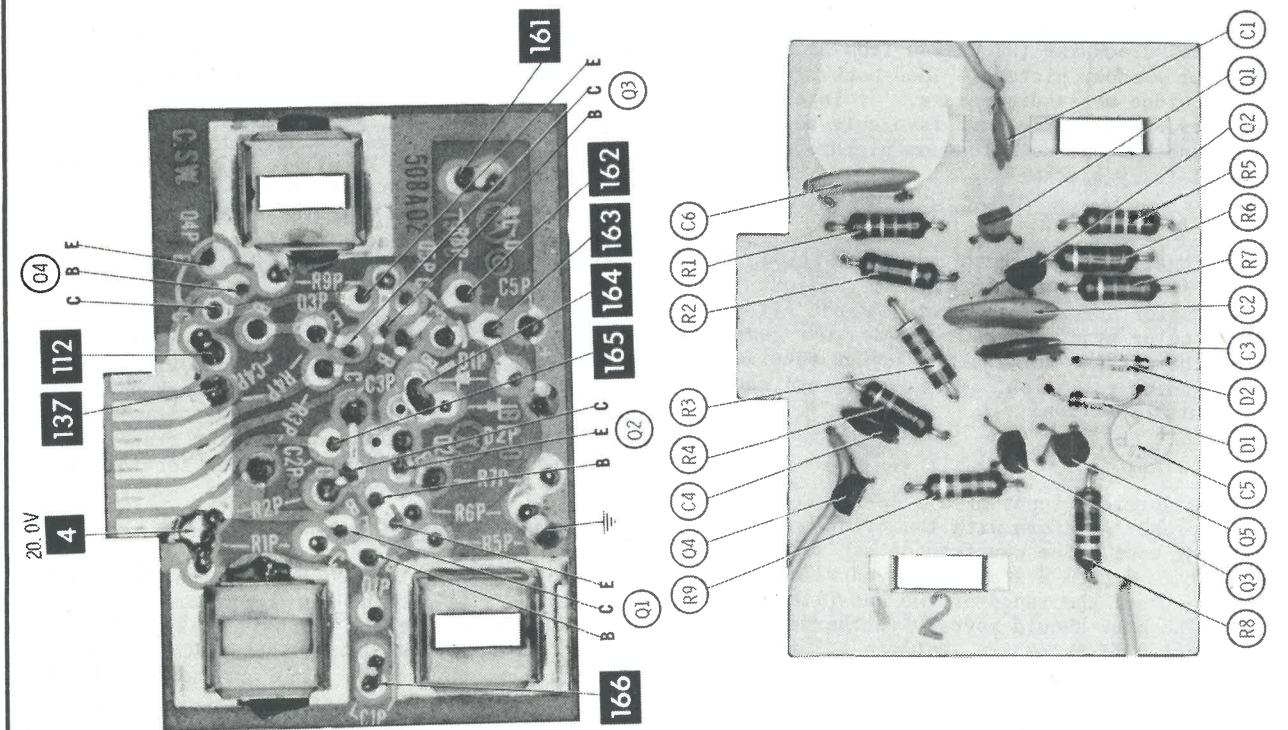
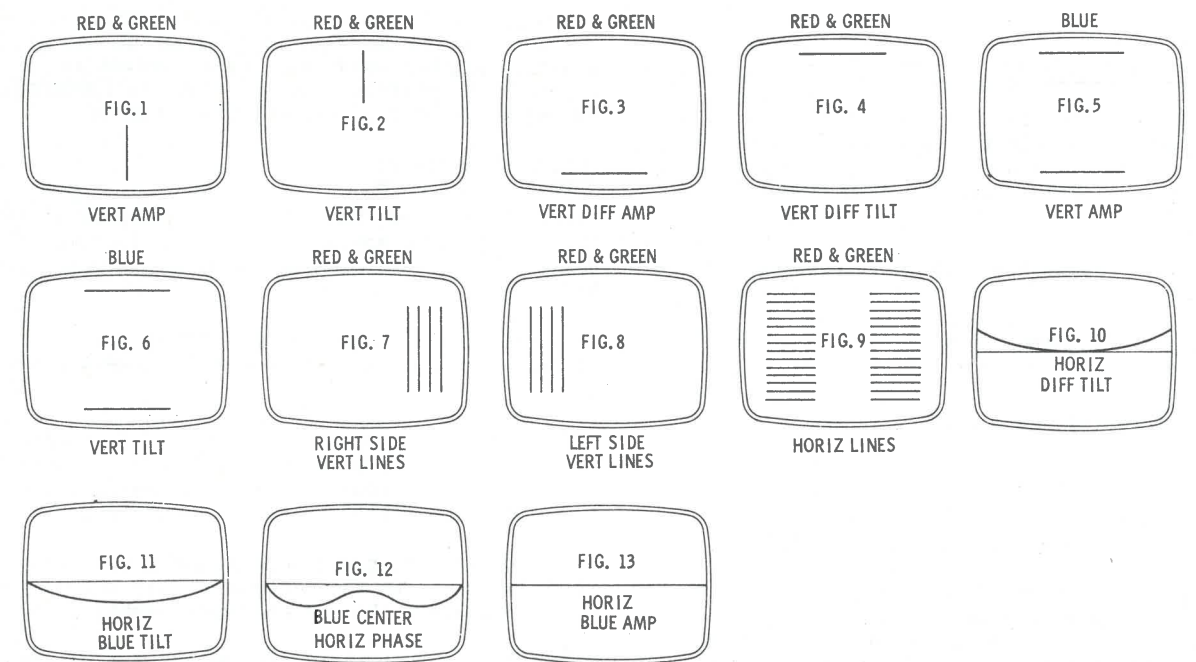
MOTOROLA CHASSIS
16TS-/E16TS-929, 18TS-/F18TS-/G18TS-929

FOLDER 2



A Howard W. Sams CIRCUITRACE™ Photo

HA PANEL



PA PANEL

A Howard W. Sams CIRCUITRACE™ Photo

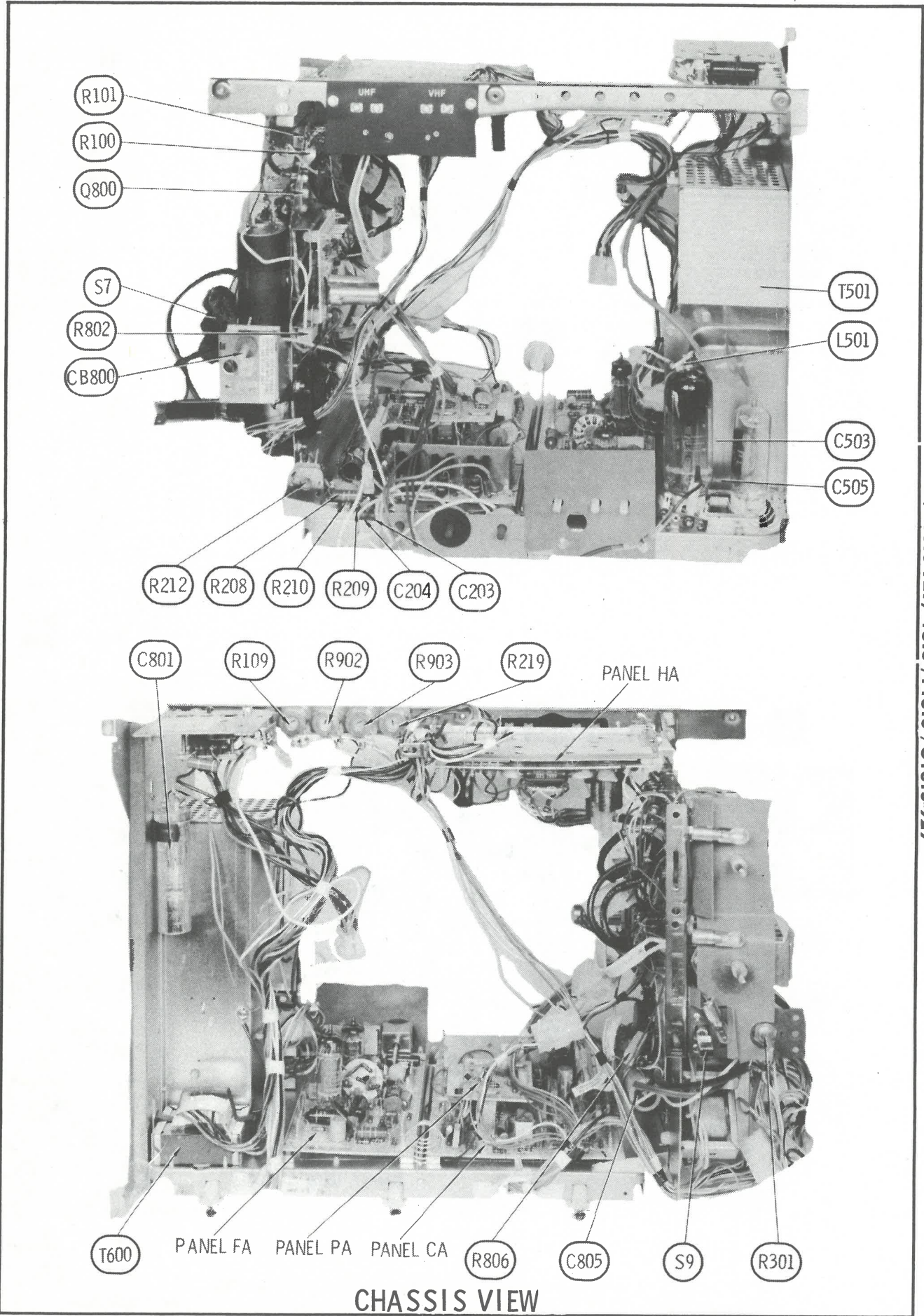
Switch manual-preset
switch to preset position.

CONVERGENCE ADJUSTMENTS

Tune receiver to a white corsshatch and adjust for best picture. Recheck center of screen focus, picture size, linearity and centering; correct if necessary. Have Hue (Tint) control at center range.

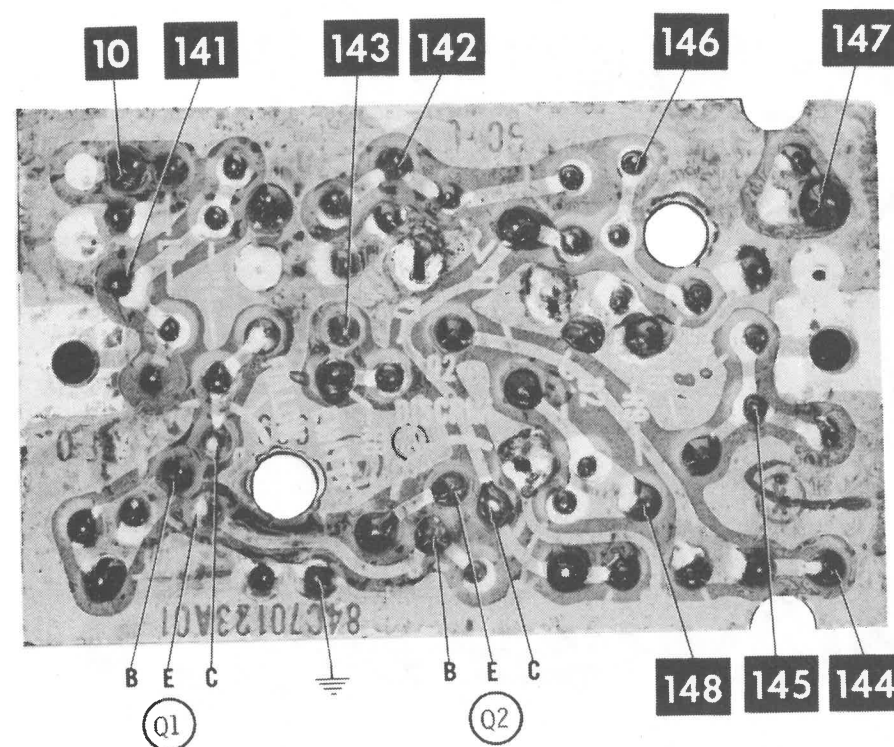
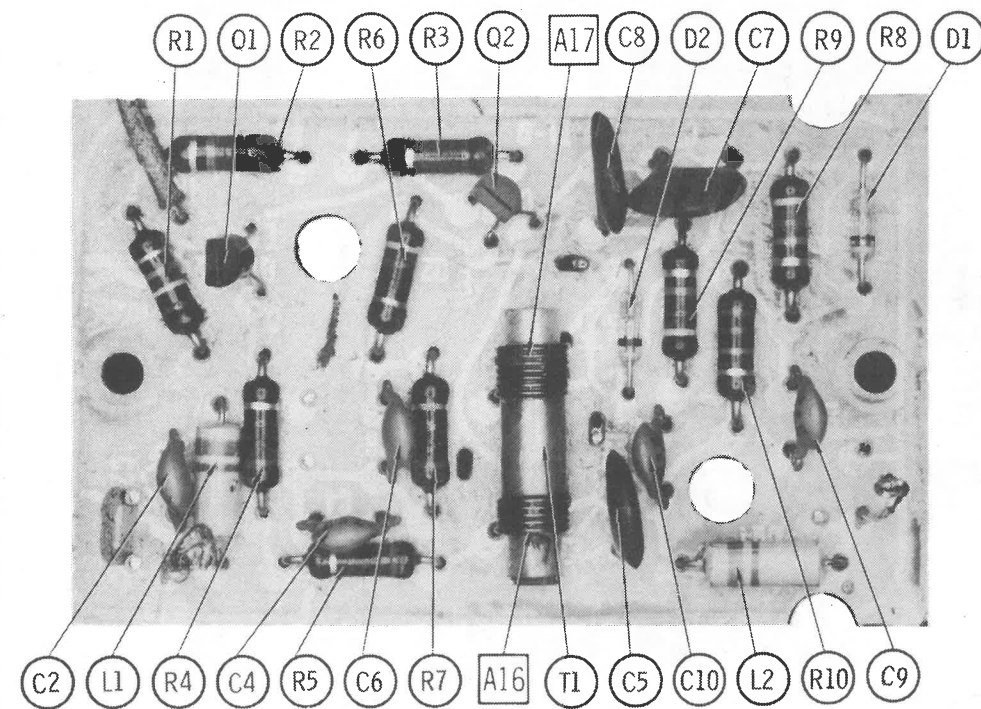
VERTICAL DYNAMIC CONVERGENCE			
Step	Control	Use to Converge (or Straighten)	Remarks
1.			Perform center dot convergence using the disc magnets and the blue lateral magnet.
2.	R-G Vert. Tilt R2	Red and Green vertical lines at top of screen.	If desired turn blue screen to MINIMUM to obtain a red-green raster. Touch up both controls for best convergence from top to bottom along vertical center line (Figs. 1 and 2). Increased range can be obtained by reconnecting black jumper connector.
3.	R-G Vert. Amp. R7	Red and Green vertical lines at bottom of screen.	
4.	R-G Vert. Diff.Tilt R4	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 and 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 and 3) for center vertical lines, if necessary.
5.	R-G Vert. Diff.Amp R3	Red and Green horizontal lines at bottom of screen.	
6.	Blue Vert. Amp. R6	Blue horizontal lines at top and bottom of screen.	Turn up blue screen control. Adjust to produce displacement in same direction of the blue horizontal lines at top and bottom of screen (Fig. 5). Increased range can be obtained by reversing blue and brown jumper connections.
7.	Blue Vert. Tilt R1	Blue horizontal lines at top and bottom of screen.	Adjust to produce equal displacement in the same direction of 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 blue horizontal lines from top to bottom of screen along center of screen for equal displacement to permit convergence with disc magnets.
8.	Right side R-G Vert. lines, L1	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 Vert. lines R9	Vertical lines Left side	Adjust to converge vertical lines from center to left side of screen (Fig. 8).
10.	R-G Horiz. lines L2	Red and Green horizontal lines at right and left sides of screen.	Adjust to converge horizontal red and green lines at right and left sides 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 Horiz. Diff.Tilt R12	Red and Green horizontal lines at center of screen.	Adjust to converge red and green lines in center of screen (Fig. 10).
12.	Blue Horiz. Amp R13 Blue Horiz. Tilt L3	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 blue line is in center of screen (Fig. 11).
13.	Blue Horiz. Phase L4 (If included)	Blue horizontal line in center of screen.	Adjust until the droop in blue line is forced upward (Fig. 12). (Not in all sets) Connect and adjust properly if included.
14.	Blue Horiz. Amp R13	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.

Diode D3 Polarity Reversal jumpers must be properly connected.

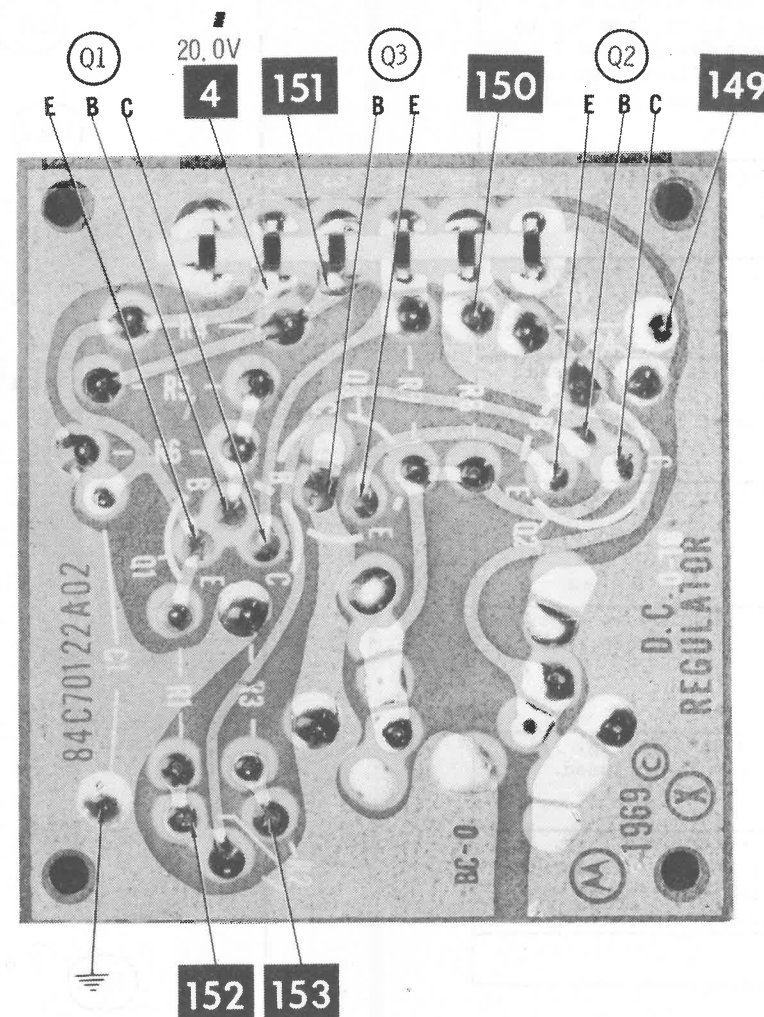
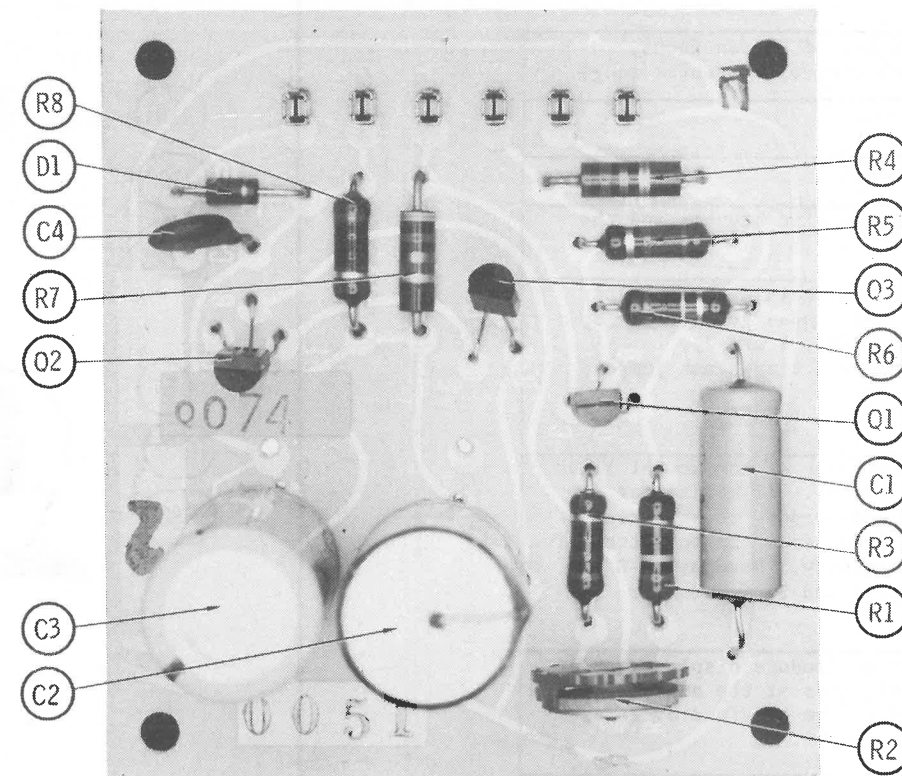


MOTOROLA CHASSIS
16TS-/E16TS-929, 18TS-/F18TS-/G18TS-929

FOLDER 2

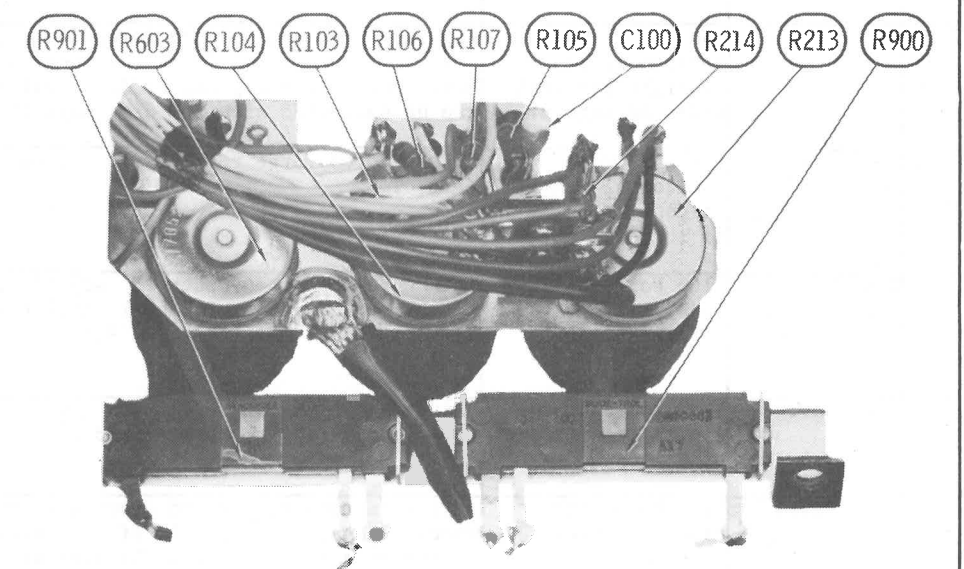
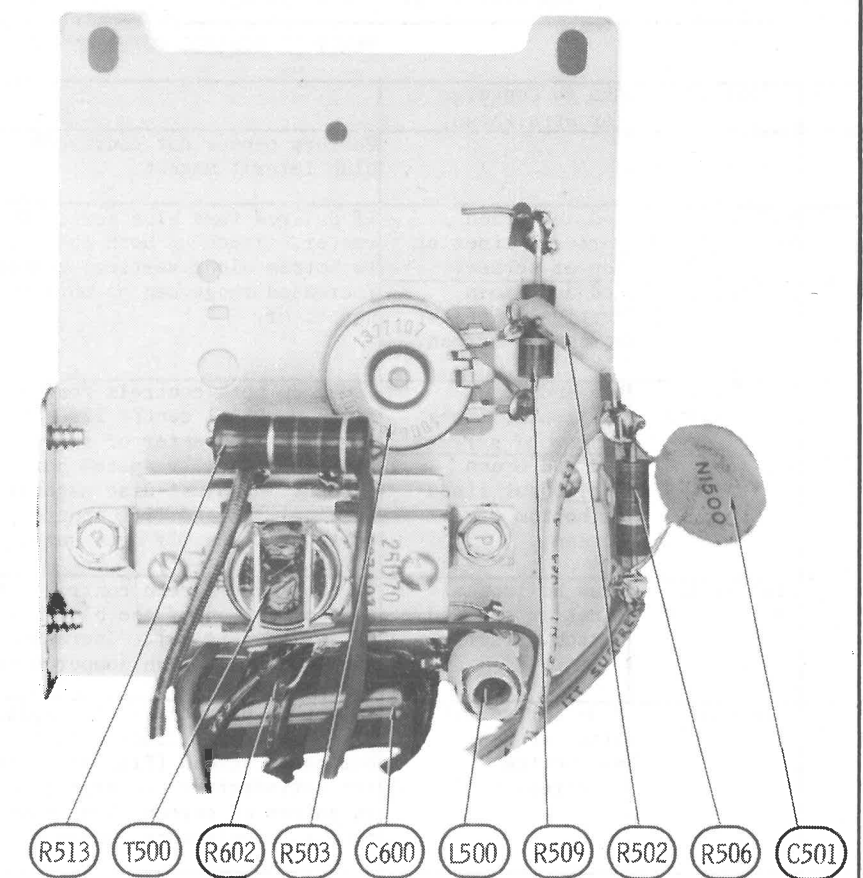


KA PANEL

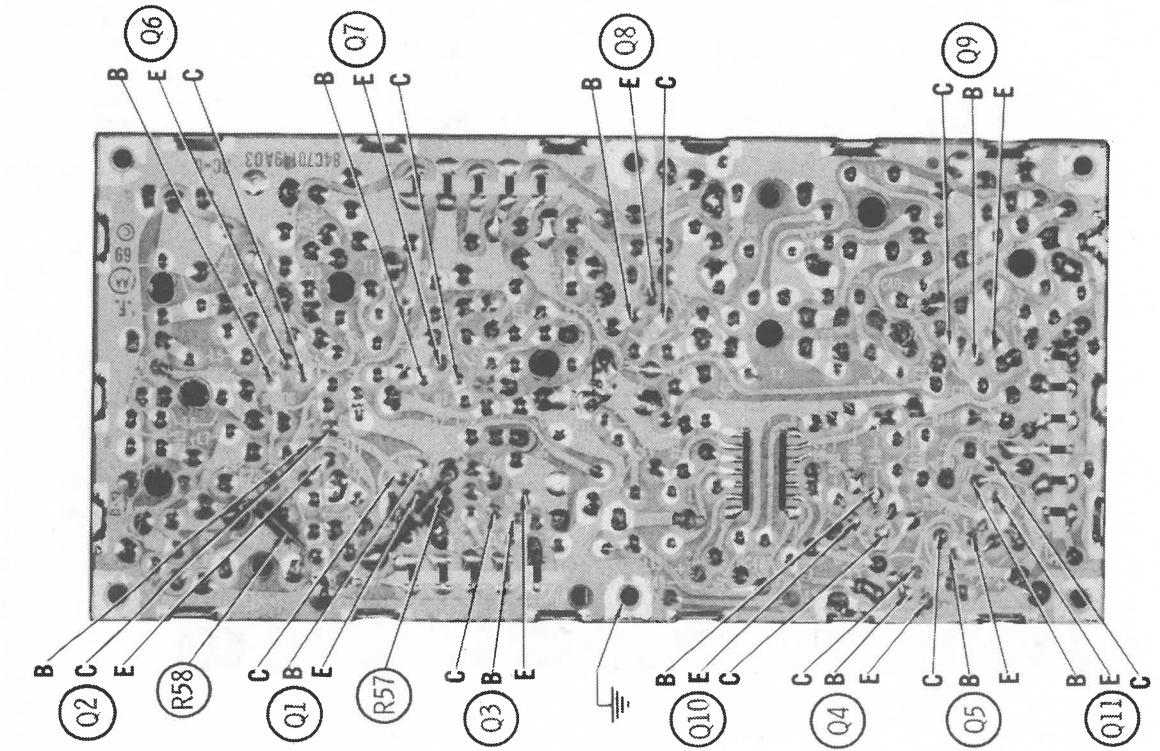
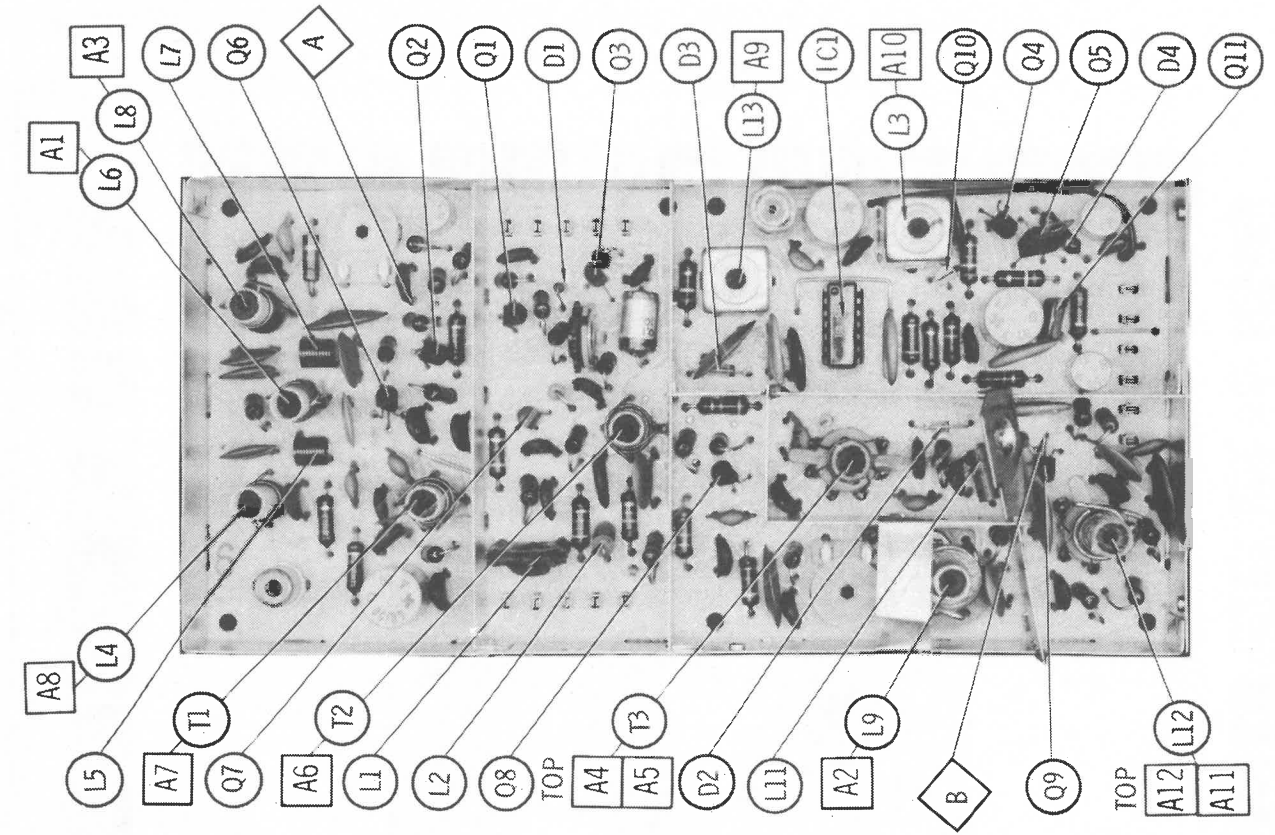
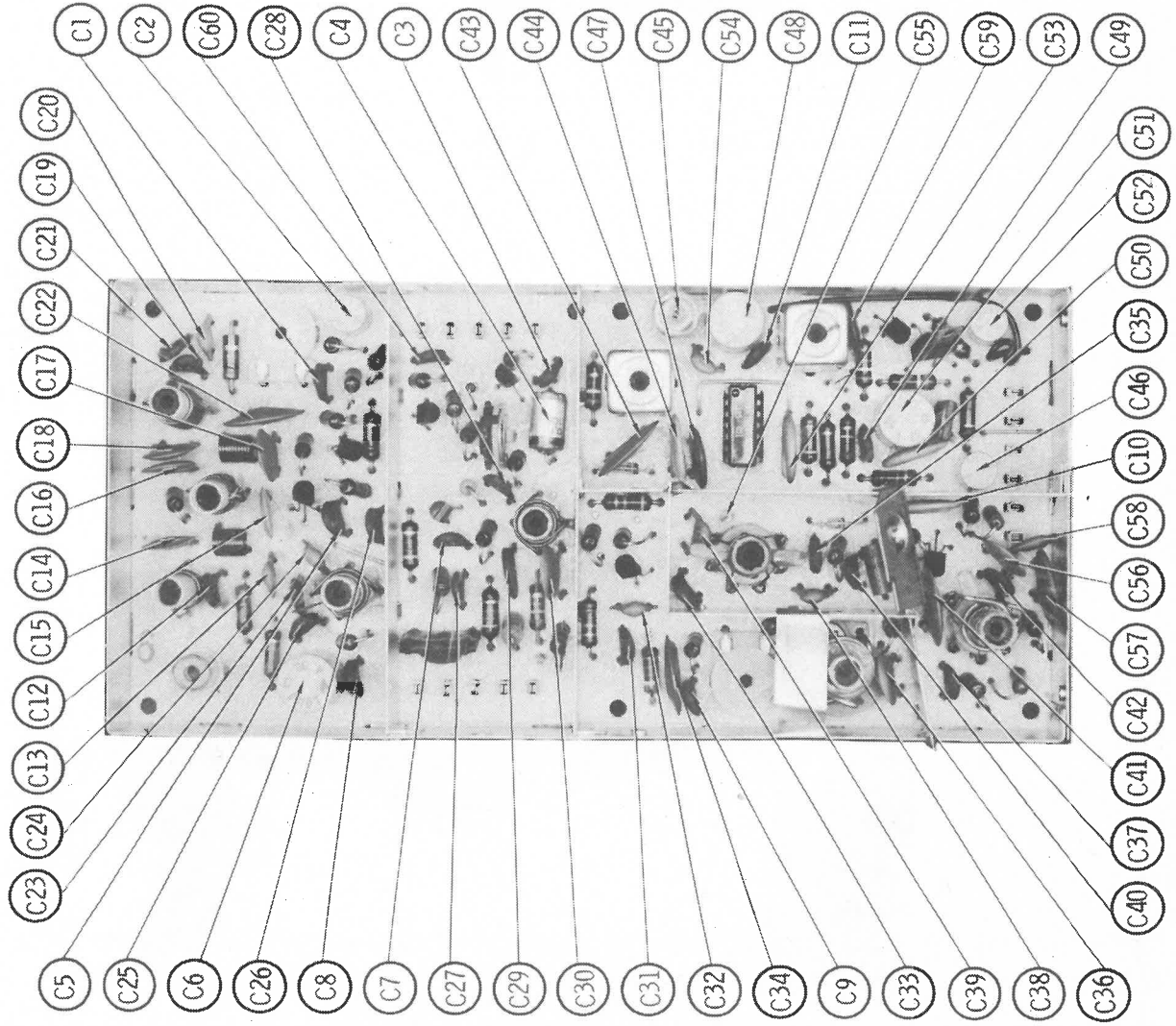
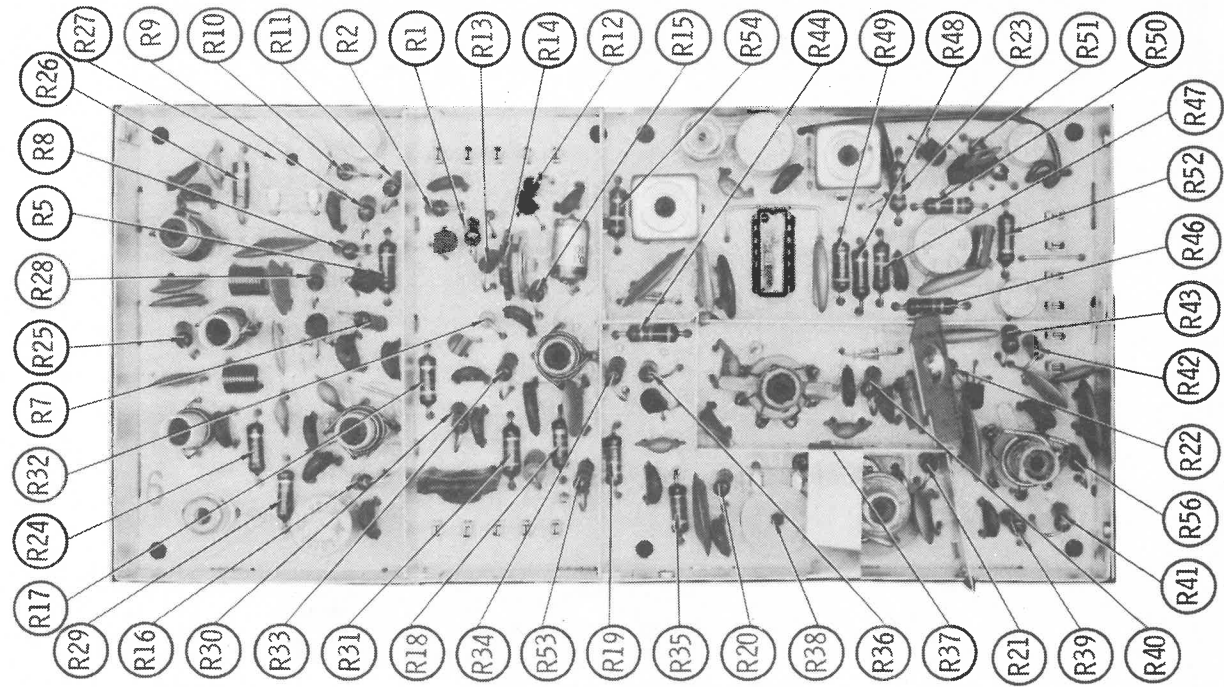


ZA PANEL

PINCUSHION



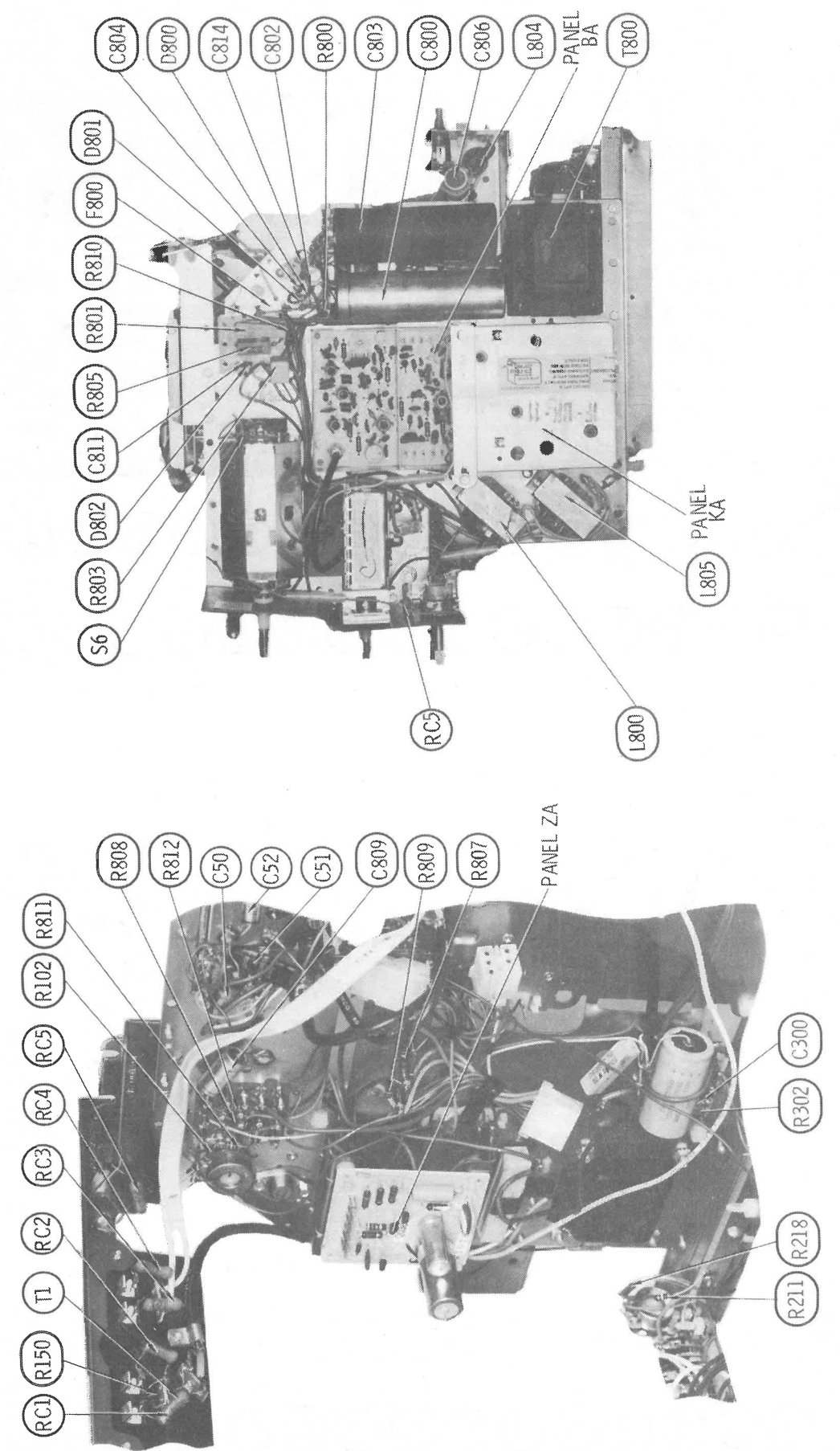
CONTROLS



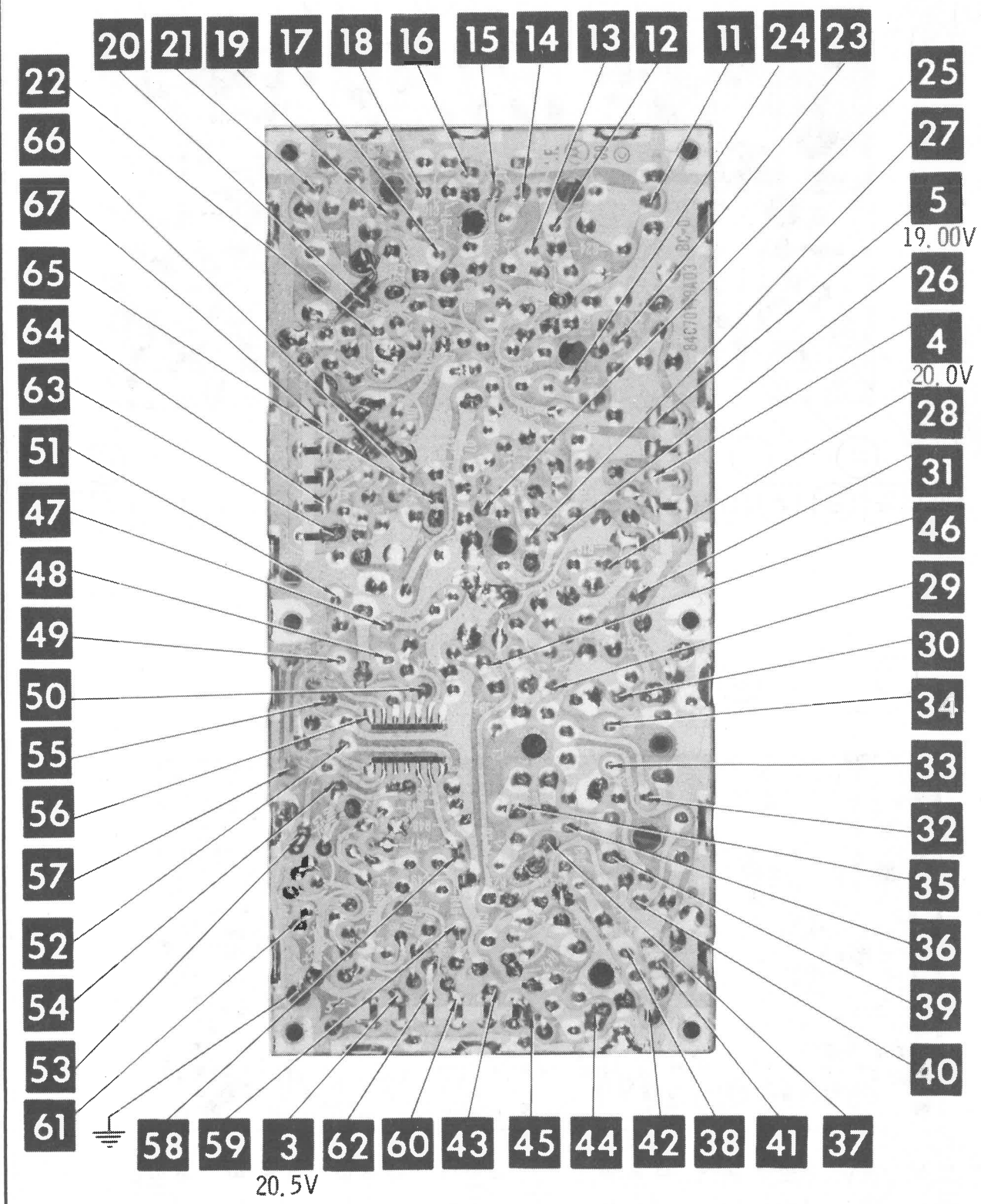
BA PANEL

MOTOROLA CHASSIS
16TS-/E16TS-929, 18TS-/F18TS-/G18TS-929

FOLDER 2



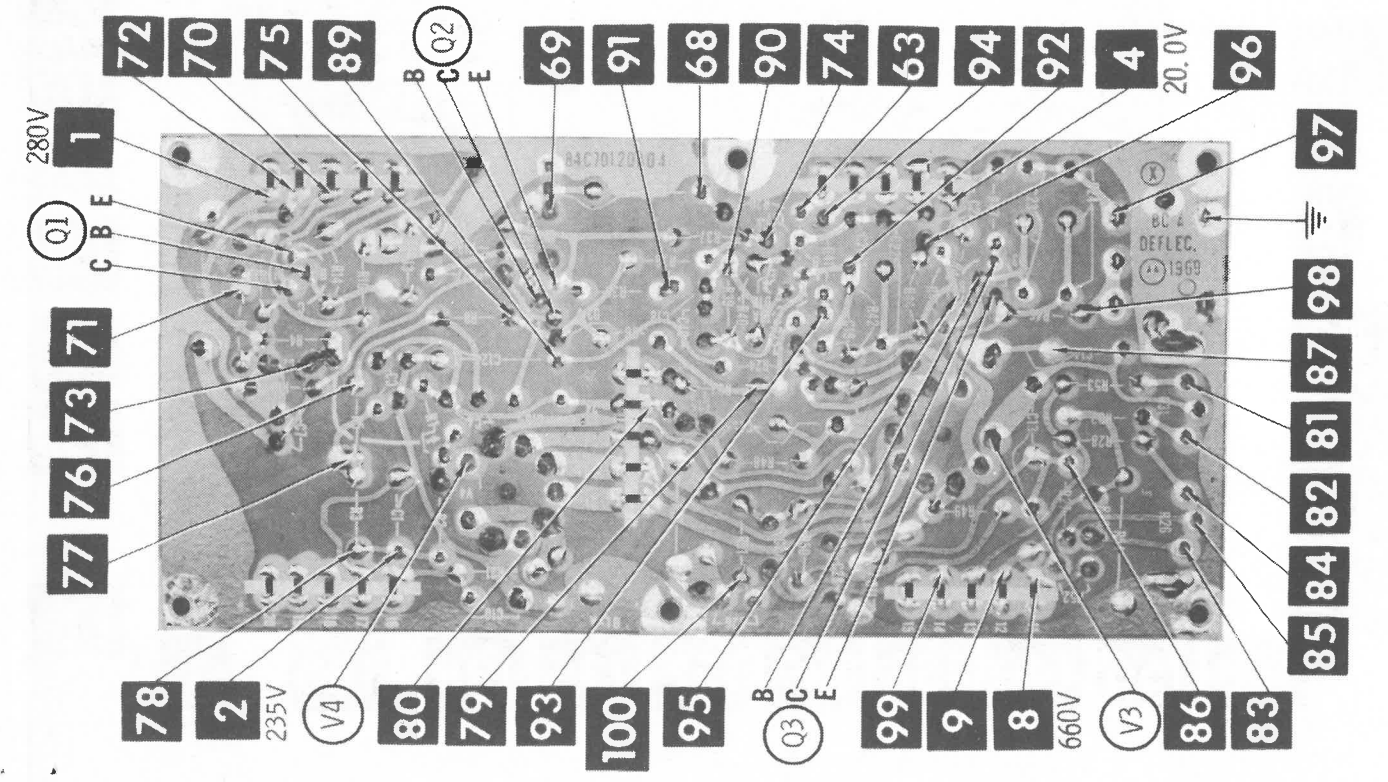
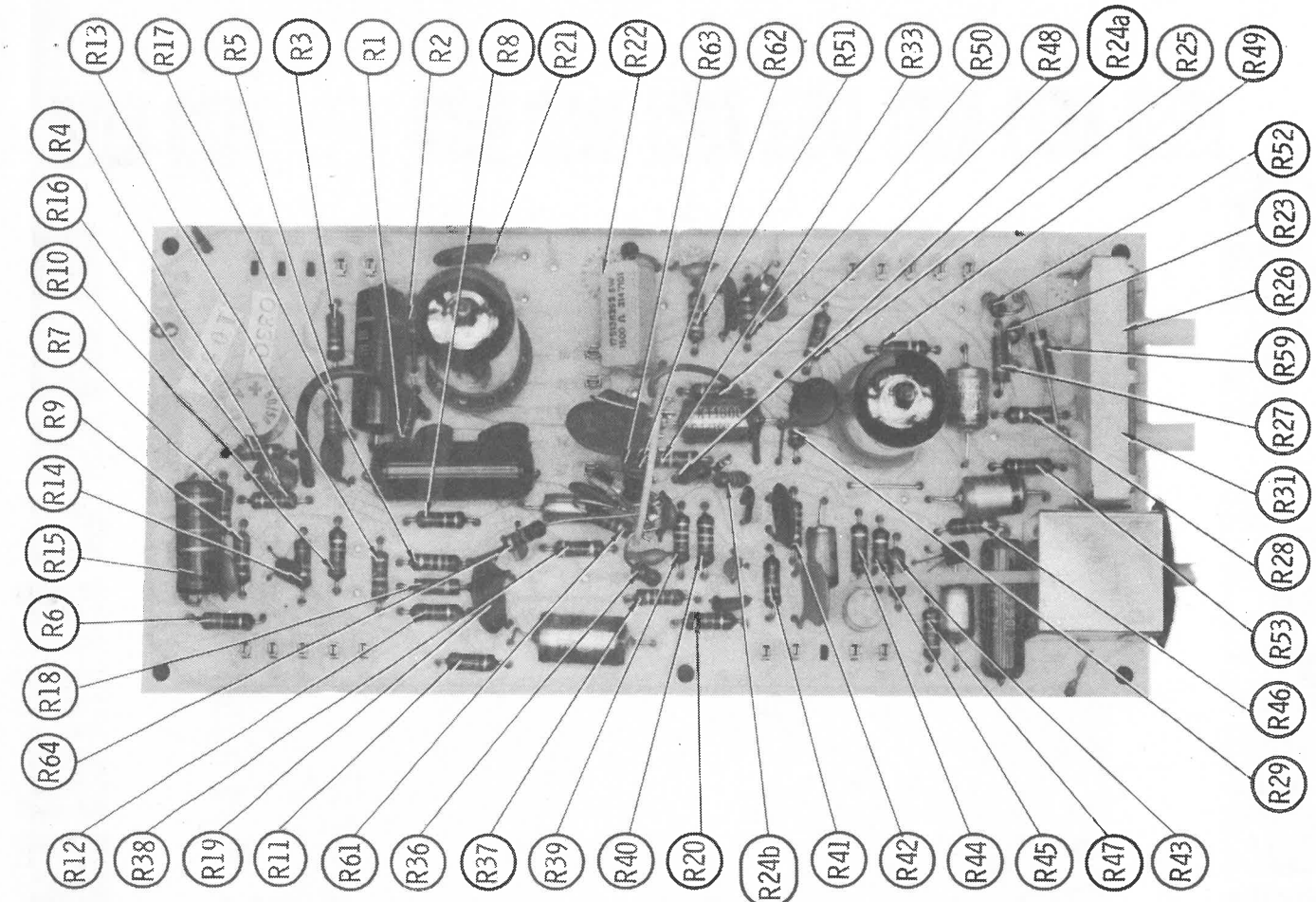
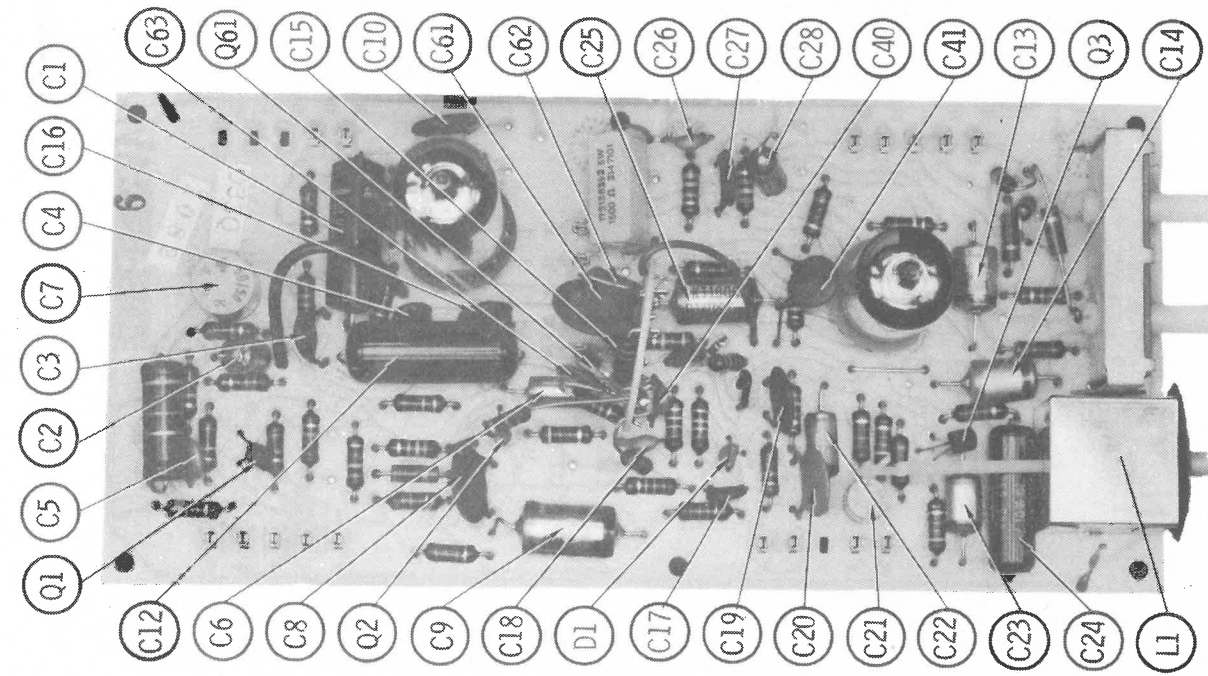
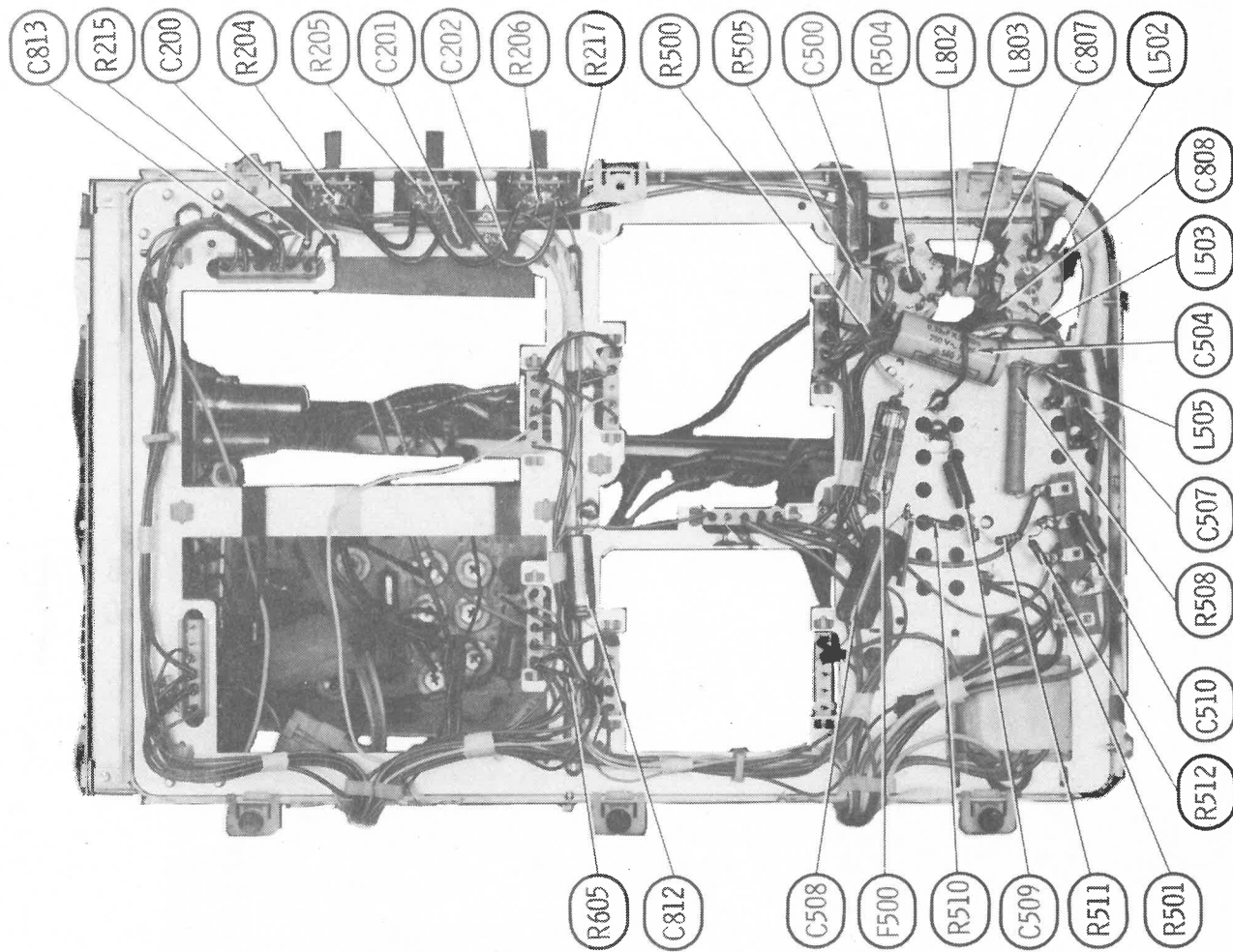
CHASSIS VIEW



BA PANEL

A Howard W. Sams CIRCUITRACE Photo

CHASSIS BOTTOM VIEW



FA PANEL

A Howard W. Sams CIRCUITRACE Photo

MOTOROLA CHASSIS
16TS-/E16TS-929, 18TS-/F18TS-/G18TS-929

FOLDER 2

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		
V1	Horiz. Output		6LX6 (6LF6)*			V3	Vert Mult - Horiz Drive		6BL8/ECF80		
V2	Damper		6CH3 (6CJ3)*			V4	Vert Mult - Vert Output		6CW5/EL86		

* Alternate.

PICTURE TUBE

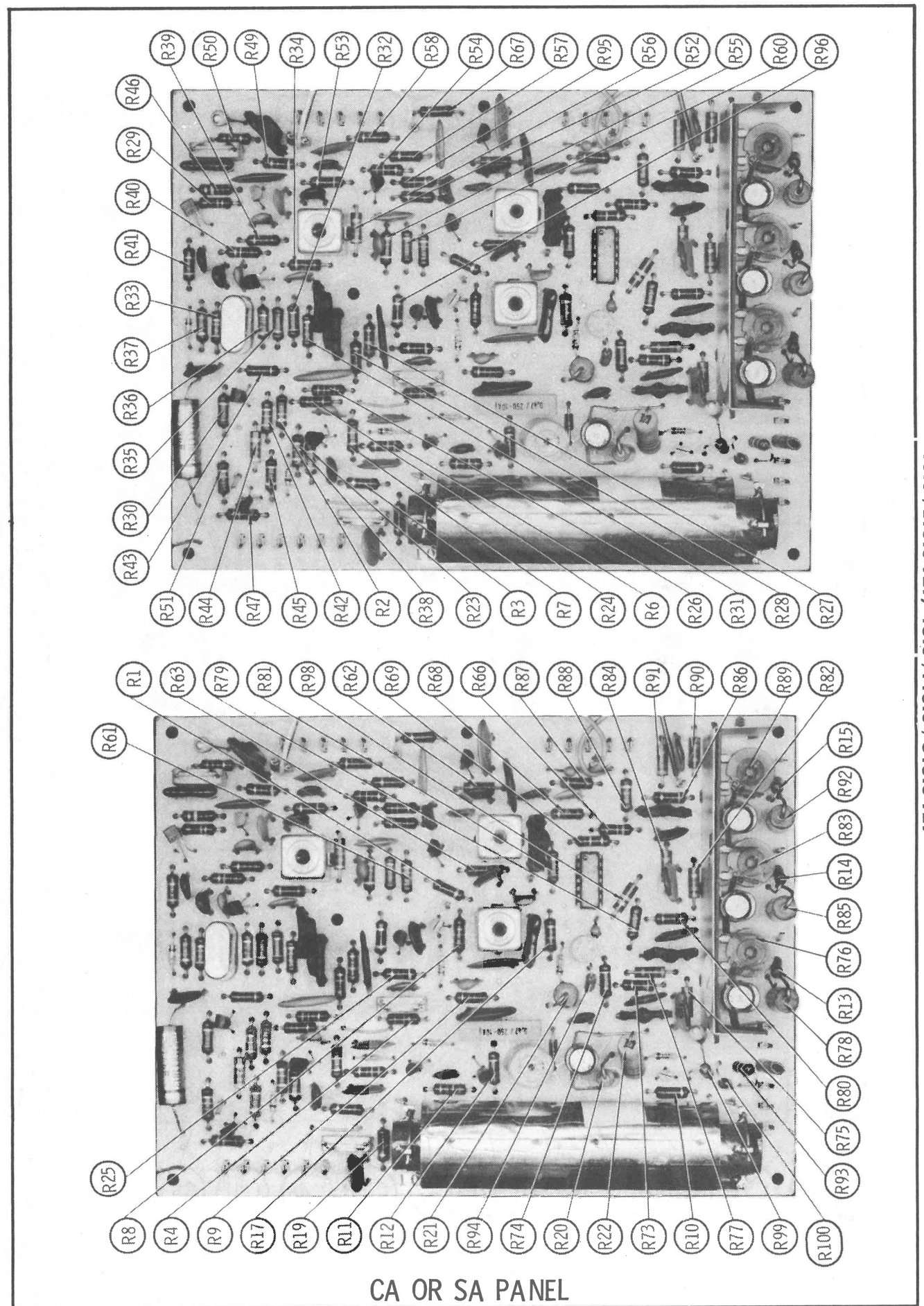
ITEM No.	REPLACEMENT DATA				NOTES
	MFGR. PART No.	GENERAL ELECTRIC PART No.	RCA PART No.	SYLVANIA PART No.	
V5	16VACP22		H-16VABP22 (1) H-16VACP22 (1) H-16VABP22 (1)	XR16VACP22 (2) XR16VABP22 (2) XR16VAHP22 (2) XR18VAFP22 (2) XR18VAFP22 (2) XR19VAUP22 (2)	(1) Hi-Lite (2) Color Bright

TRANSISTORS

TRANSISTORS			REPLACEMENT DATA					
ITEM No.	TYPE No.	FUNCTION						
			MFGR. PART No.	GENERAL ELECTRIC PART No.	INTERNATIONAL RECTIFIER PART No.	MOTOROLA PART No.	RCA PART No.	SYLVANIA PART No.
BA								
Q1	P2S	RF AGC Amp	48S137127	GE-21	TR-19	HEP715	SK3025	ECG 159
Q2	A6H (A1V)	AGC Amp	48S137171 (48S134933)	GE-20	TR-21	HEP735	SK3020	ECG 123A
Q3	M4815	AGC Keying	48S134815 (1)	GE-21	TR-19	HEP715	SK3025	ECG 159
Q4	P2S	2nd AF Amp	48S137127	GE-21	TR-19	HEP715	SK3025	ECG 159
Q5	A6G	Audio Output	48S137169	GE-28	IRTR-55	HEPS3023		ECG 188
Q6	A2Y	1st Video IF	48S134981 (2)			HEP709		
Q7	A1U	2nd Video IF	48S134932			HEP718		
Q8	A1U	3rd Video IF	48S134932			HEP718		
Q9	A6J	1st Video Amp	48S137172	GE-17	TR-25	HEP738	SK3040	ECG 123A
Q10	A5M	1st AF Amp	48S137107	GE-18	TR-25	HEP738	SK3040	ECG 123A
Q11	P2V	Audio Output	48S137168	GE-29	IRTR-56	HEPS3027		ECG 189
CA								
Q1	M4841	1st Chroma Bandpass Amp	48S134841	GE-20	TR-21	HEP728	SK3020	ECG 123A
Q2	M4841	2nd Chroma Bandpass Amp	48S134841	GE-20	TR-21	HEP728	SK3020	ECG 123A
Q3	M4841	2nd Video Amp	48S134841	GE-20	TR-21	HEP728	SK3020	ECG 123A
Q4	A3M (A5T)	Regulator	48S137002 (48S137113)	GE-27	IRTR-60	HEP706	SK3044	ECG 154
Q5	M4842	Pulse Amp	48S134842 (48S134992)	GE-20	TR-21	HEP728	SK3020	ECG 123A
Q6	A5S	Burst Gate	48S137111	GE-20	TR-21	HEP728	SK3020	ECG 123A
Q7	M4842	Burst Amp	48S134842 (48S134992)	GE-20	TR-21	HEP728	SK3020	ECG 123A
Q8	M4841	3.58MC Osc. Control	48S134841	GE-20	TR-21	HEP728	SK3020	ECG 123A
Q9	A5U	ACC Amp	48S137115	GE-20	TR-21	HEP728	SK3020	ECG 123A
Q10	A3N	3.58MC Oscillator	48S137003	GE-20	TR-21	HEP735	SK3020	ECG 123A
Q11	P2S	Color Killer	48S137127	GE-21	TR-19	HEP715	SK3025	ECG 159
Q12	A2T	3.58MC Phase Splitter	48S134970	GE-17	TR-22	HEP738	SK3018	ECG 108
Q13	M4841	Phase Shifter	48S134841	GE-20	TR-21	HEP728	SK3020	ECG 123A
Q14	A1L	3.58MC Limiter	48S134918	GE-10	TR-21	HEP728	SK3020	ECG 123A
Q15	A3M	B-Y Amp	48S137002	GE-27		HEP706	SK3044	ECG 154
Q16	A3M	G-Y Amp	48S137002	GE-27		HEP706	SK3044	ECG 154
Q17	A3M	R-Y Amp	48S137002	GE-27		HEP706	SK3044	ECG 154
Q18	P2S	Chroma Sync Amp	48S137127	GE-21	TR-19	HEP715	SK3025	ECG 159
FA								
Q1	A6J	Pulse Shaping	48S137172	GE-20	TR-21	HEP738	SK3018	ECG 123A
Q2	P2W	Sync Separator	48S137173	GE-21	TR-19	HEP716	SK3025	ECG 159
Q3	A6J	Horiz. Oscillator	48S137172	GE-20	TR-21	HEP738	SK3018	ECG 123A
Q61	A6H	Sync Amp	48S137171	GE-20	TR-21	HEP728	SK3020	ECG 123A
KA								
Q1	A1Z	AFT Amp	48S134937	GE-17	TR-22	HEP718	SK3018	ECG 108
Q2	A1U	AFT Amp	48S134932	GE-17	TR-24	HEP56	SK3018	ECG 108
PA (Not used in non-instantatic versions)								
Q1	A6J	1st Color Intensity Amp	48S137172	GE-20	TR-21	HEP738	SK3018	ECG 123A
Q2	A6J	2nd Color Intensity Amp	48S137172	GE-20	TR-21	HEP738	SK3018	ECG 123A
Q3	A6J	Gate	48S137172	GE-20	TR-21	HEP738	SK3018	ECG 123A
Q4	A6J	Gate	48S137172	GE-20	TR-21	HEP738	SK3018	ECG 123A
SA (Refer to CA Panel)								
ZA								
Q1	A6J	Overload Error Amp	48S137172	GE-20	TR-21	HEP738	SK3020	ECG 123A
Q2	M4842	Error Amp	48S134842 (3)	GE-20	TR-21	HEP728	SK3020	ECG 123A
CHASSIS								
Q800	A1Y	Voltage Regulator	48S134936	GE-23	IRTR-57	HEP703	SK3026	ECG 175

(1) Manufacturer suggests using #48-134910. (2) Manufacturer suggests using #48-134904. (3) Manufacturer suggests using #48-134992.

BOLD LISTING INDICATES LOCATION OF PART

MOTOROLA CHASSIS
16TS-/E16TS-929, 18TS-/F18TS-/G18TS-929

FOLDER 2

VHF TUNER PARTS LIST AND DESCRIPTION

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

TRANSISTORS

CPTT-430

ITEM No.	TYPE No.	FUNCTION	REPLACEMENT DATA					NOTES
			GENERAL ELECTRIC PART No.	MFG. PART No.	INTERNATIONAL RECTIFIER PART No.	MOTOROLA PART No.	SYLVANIA PART No.	
Q201	A6E	RF Amp	48S137158	3	GE-11	HEP56	SK3018	ECG 108
Q202	A2H	Mixer	48S134950	3	GE-11	HEP723	SK3018	ECG 108
Q203	A2E	Oscillator	48S134949	3	GE-11	HEP720	SK3018	ECG 108

POWER RECTIFIERS & SIGNAL DIODES

ITEM No.	MFG. PART OR TYPE No.	FUNCTION	REPLACEMENT DATA			NOTES
			GENERAL ELECTRIC PART No.	INTERNATIONAL RECTIFIER PART No.	SYLVANIA PART No.	
X201	48X9023A008					Varactor

CAPACITORS

ITEM No.	RATING	REMARKS	REPLACEMENT DATA					SPRAGUE PART No.
			AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ELMENDO PART No.	MALLORY PART No.	
C201a	27pf	#21X9026A428			NP027	CCTO-270		
C202a	27pf	#21X9026A428			NP027	CCTO-270		
C203	27pf	#21X9026A428			NP027	CCTO-270		
C204	82pf	#21X9026A431			NP082	CCTO-820		
C205	33	#21X9026A431			NP082	CCTO-820		
C206	8.2pf	#21X9026A434			NP082	CCTO-300		
C207	30pf	#21X9026A434			NP082	CCTO-300		
C208	.001	#21X9026A435			GP1000	CCD-102		
C209	.001	#21X9026A435			GP1000	CCD-102		
C210	.001	#21X9026A435			GP1000	CCD-102		
C211	.001	#21X9026A435			GP1000	CCD-102		
C212	.001	#21X9026A435			GP1000	CCD-102		
C213	7pf	#21X9026A439			NP07	CCTO-180		
C214	18pf	#21X9026A440			NP018	CCTO-150		
C215	47	#21X9026A442			NP015	CCTO-150		
C216	10pf	#21X9026A451			NP005	CCD-102		
C217	.001	#21X9026A451			NP005	CCD-102		
C218	.001	#21X9026A451			NP005	CCD-102		
C219	.001	#21X9026A451			NP005	CCD-102		
C220	5pf	#21X9026A450			NP082	CCTO-180		
C221	130pf	#21X9026A445			NP082	CCTO-180		
C222	33pf	#21X9026A446			NP082	CCTO-180		
C223	15	#21X9026A446			NP082	CCTO-180		
C224	8pf	#21X9026A444			NP082	CCTO-180		
C225	8pf	#21X9026A444			NP082	CCTO-180		
C226	6pf	#21X9026A442			NP082	CCTO-180		
C227	1pf	#21X9026A445			NP082	CCTO-180		
C228	1pf	#21X9026A445			NP082	CCTO-180		
C229	8pf	#21X9026A453			NP082	CCTO-180		
C230	8pf	#21X9026A453			NP082	CCTO-180		
C231	1pf	#21X9026A442			NP082	CCTO-180		
C232	.001	#21X9026A442			NP082	CCTO-180		
C233	.001	#21X9026A442			NP082	CCTO-180		
C234	.001	#21X9026A442			NP082	CCTO-180		
C235	2pf	#21X9026A454			NP02P2	CCTO-270		

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

COILS (RF-IF)

ITEM No.	USE	MFG. PART No.	NOTES
L201	FM Trap	#24X90243A34	
L202	UHf Input	#24X90243A32	Includes C204

COILS (RF-IF)

ITEM No.	USE	MFG. PART No.	NOTES
L201	Tuner IF Output	24P65173A82	

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

MISCELLANEOUS

ITEM No.	PART NAME	PART No.	NOTES
M201	Front Plate Assembly (Complete)	47X90276106	Includes channel selector shaft, fine tuning shaft, cam assembly, preset screw and coil assembly.

TRANSISTORS

VHF TUNER PARTS LIST AND DESCRIPTION

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

CPTT-425

ITEM No.	TYPE No.	FUNCTION	REPLACEMENT DATA				
			MFG. PART No.	GENERAL ELECTRIC PART No.	INTERNATIONAL RECTIFIER PART No.	MOTOROLA PART No.	SYLVANIA PART No.
Q201	SE5070	RF Amp	48P65146A61	GE-11	TR-22	HEP729	SK3018
Q202	SE5030	Mixer	48P65173A78	GE-11	TR-22	HEP729	SK3018
Q203	SE1010	Oscillator	48P65146A63	GE-11	TR-22	HEP720	SK3018

CAPACITORS

ITEM No.	RATING	REMARKS	REPLACEMENT DATA					SPRAGUE PART No.
			AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ELMENDO PART No.	MALLORY PART No.	
C201	100pf	#21S180A13			HW3-100			
C202	5.1pf	#21S180D47			HW3-100			
C203	20pf	#21S180D35			HW3-100			
C204	27pf	#21S120A96			HW3-100			
C205	82pf	#21S120A96			HW3-100			
C206	33	#21P65173A67			HW3-100			
C207	13pf	#21P65173A67			HW3-100			
C208	12pf	#21S131104			HW3-100			
C209	30pf	#21P65173A65			HW3-100			
C210	.001	#21P65173A73			HW3-100			
C211	.001	#21P65173A69			HW3-100			
C212	4.7pf	#21S134221			HW3-100			
C213	43pf	#21S180C26			HW3-100			
C214	43pf	#21P65173A66			HW3-100			
C215	11pf	#21P65173A66			HW3-100			
C216	36pf	#21S136108			HW3-100			
C217	.001	#21P65173A70			HW3-100			
C218	10pf	#21P65173A73			HW3-100			
C219	1pf	#21P65173A95			HW3-100			
C220	1.5pf	#21P65173A93			HW3-100			
C221	1.5pf	#21S132925			HW3-100			
C222	10pf	#21P65173A95			HW3-100			
C223	.001	#21S132925			HW3-100			
C224	12pf	#21P65173A95			HW3-100			
C225	5.1pf	#21P65173A94			HW3-100			
C226	.001	#21S132925			HW3-100			
C227	.001	#21S132925			HW3-100			

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

COILS (RF-IF)

ITEM No.	USE	MFG. PART No.	NOTES
L201	Tuner IF Output	24P65173A82	

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.

INTEGRATED CIRCUITS

ITEM No.	FUNCTION	MFG. PART No.	REMARKS
BA			
IC1	Sound IF-DET AF Amp	51D70177A02	MOTOROLA Replacement HEPC6060P
CA			
IC1	Chroma Demodulator	51D70177A01	MOTOROLA Replacement HEPC6066P

POWER RECTIFIERS & SIGNAL DIODES

ITEM No.	MFG. PART OR TYPE No.	REPLACEMENT DATA				NOTES
		GENERAL ELECTRIC PART No.	INTERNATIONAL RECTIFIER PART No.	RCA PART No.	SYLVANIA PART No.	
BA						
D1	48D67120A13 (48D67120A02)*	GE-300			ECG 177	
D2	48C65837A02	1N60	1N60	1N60	ECG 109	
D3	48C65837A02	1N60	1N60	1N60	ECG 109	
D4	48S137133 (D3A)	GE-300			ECG 177	
CA						
D1	48G10346A02	1N34AS	1N34A	1N34A	ECG 109	
D3	48S191A04 (48S191A07)	GE-504A	8D4 or 5A4D	SK3030 or SK3031	ECG 116 or	
D4	48S137133 (D3A)	GE-300			ECG 177	
D5	48G10346A01	GE-300			ECG 177	
D7	48D67120A11 (48D67120A11)	GE-300			ECG 177	
D8	48S137133 (D3A)	GE-300	1N34A	1N34A	ECG 177	
D9	48G10346A02 (A02)	1N34AS			ECG 109	
D10	48S137133 (D3A)	GE-300			ECG 177	
FA						
D1	48S137167 (D3G)	6GX1	D006		ECG 178MP	
HA						
D1	48S191A08	GE-504A			ECG 506	
D2	48S191A08	GE-504A	8D4 or 5A4D	SK3030 or SK3031	ECG 506	
D3	48S10062A01 (48S191A08)	GE-504A	8D4 or 5A4D	SK3030 or SK3031	ECG 506	
KA						
D1	48C65837A02	1N60	1N60	1N60	ECG 110 (6)	(6) Matched pair.
D2	48C65837A02	1N60	1N60	1N60	ECG 110 (6)	
PA	(Not used in non-instantatic versions)					
D1	48G10346A02 (A02)	1N34AS	1N34A	1N34A	ECG 109	
D2	48G10346A02 (A02)	1N34AS	1N34A	1N34A	ECG 109	
Q5	48S137021 (D1U)					
SA	(Refer to CA Panel)					
ZA						
D1	48S191A05 (48S191A07)	GE-504A	8D6 or 5A6D	SK3017A or SK3032	ECG 116 or	
Q3	48S137170 (D3H)	GEZD-6.2	Z1104	SK3058	ECG 117	
CHASSIS						
D800	48S191A05 (48S191A07)	GE-504A	8D6 or 5A6D	SK3017A or SK3032	ECG 116 or	
D801	48S191A05 (48S191A07)	GE-504A	8D6 or 5A6D	SK3017A or SK3032	ECG 116 or	
D802	48D67120A02	GE-504A	8D4 or 5A4D	SK3030 or SK3031	ECG 116 or	

* Used in Panel BA-7 and later.

ELECTROLYTIC CAPACITORS

ITEM No.	RATING	REPLACEMENT DATA					
		MOTOROLA PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	GENERAL ELECTRIC PART No.	SPRAGUE PART No.
BA							
C2	2	23C66135A35	MCD-30	EP50-2	WBR2-50	MT1-1	TE-1301
C6	40	23C66135A30	MCD-140	EP50-50	WBR60-50	MT1-17	TE-1307
C46	5	23C66135A33	MCD-50	EP6-5	WBR5-50	MT1-3	TL-1052.2
C48	150	23C66135A22 (21-66135A08)	MCD-200	EAT5-250	WBR150-50	MT1-23	TE-1164
C51	150	23G10294A18	PRS1370	EA30-150	WBR150-35	QT1-28	TE-1212
C52	150	23C66135A22	MCD-90	EP30-25	WBR25-25	MT1-13.5	TE-1206
CA							
C30	4.7	23S10218A13					
C43	4.7	23S10294A05					
C44	6.8	23G10294A12					
C48	6.8	23G10294A12					
C48	2	23C66135A35	MCD-30	EP50-2	WBR2-50	MT1-1	TE-1301
C56	4.7	23S10218A13					

BOLD LISTING INDICATES LOCATION OF PART SET 12 07 FOLDER 2

MOTOROLA CHASSIS 16T5-/E16T5-929, 18T5-/F18T5-/G18T5-929

FOLDER 2

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.

ELECTROLYTIC CAPACITORS (cont)

ITEM No.	RATING	REPLACEMENT DATA						
		PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	GENERAL ELECTRIC PART No.	MALLORY PART No.	SPRAGUE PART No.
FA								
C7	50 50V	23C66135A29 (23-66135A19)	MCD-140	EP50-50	WBR60-50	MT1-17	MTV50DB50	TE-1307
C21	8 50V 8 15V	23C66135A36	MCD-70 MCD-70	EP50-10 EP15-10	WBR8-150 WBR10-25	MT1-5 MT1-5	MTV8CB50 MTV8CB50	TE-1303.3 TE-1154
HA								
C1	30 NP 20V	23D65282A23	PRS7330		BRNP50-50	NPQT-5	TCN1540	TVAN-1306.2
C2	50 150V	23C68466A01	PRS1480		WBR50-150	QTI-15.5	TC49A	TVA-1414
PA		(Not used in non-instamatic versions)						
C5	10 16V	23S10255A57	MCD-70	EP15-10	WBR10-25	MT1-5	MTV10CB50	TE-1155
SA		(Refer to CA Panel)						
ZA								
C1	10 25V	23D65282A42	MCD-70	EP30-10	WBR10-25	MT1-5	MTV10CB50	TE-1204
C2	470 25V	23G10294A10	PRS1290	EA30-500	WBR500-35	QTI-30A	TC2505B	TL-1217
C3	1000 35V	23G10294A11 (23S10255A16)	PRS1395	EA50-1000	WBR1000-35		TC50100A	TL-1317
CHASSIS								
C51	50 50V	23D65282A41	CRE767A	EA50-50	WBR60-50	MT1-17	MTA50E50	TE-1307
C100	4.7 20V	23S10218A04					TDC475MD35FL	196D475X0035FB
C800a	4.7 25V	23C65807A36						
b	250 350V	23C65807A37			DD0052A			TVL-2645.6
C801	150 350V	23C65891A09	AFH1-43-20		AA0415A	XC1-18	FP140.6A	
C803	500 175V	23C65807A36	AFH1-25-95		DD0014.7A	XC1-25.2	WP123A	TVL-1642
C805	1000 25V	23S10255A35	PRS1295	EA30-1000	WBR1000-25		TC2510	TVL-1490
C809	100 63V	23S10255A60	PRS1510		WBR100-150	QTI-25	MTA100G100	TL-1218
	10 50V	23C65808A37	CRE757A	EA50-10	WBR10-50	MT1-6	MTA100D50	TVA-1420
C812	220 20V	23C65808A23	PRS1280	EA30-250	WBR250-25	QTI-28	MTA250F20	TE-1304 TE-1213

CAPACITORS

ITEM No.	RATING	REMARKS	REPLACEMENT DATA					
			AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ELMENC0 PART No.	MALLORY PART No.	SPRAGUE PART No.
BA								
C1	.001 500V 10%		GPD X5F102K	DD-102	GP1000	CCD-102	GP210	10TS-D10
C3	270 100V 10%		GPD X5F271K	DD-271	GP270	CCD-271	GP327	10TS-T27
C4	.1 100V 10%		DBE2P1		DPMS2P1	1DP-2-104	PVC101	225P10491WD3
C5	.001 500V 10%		GPD X5F102K	DD-102	GP1000	CCD-102	GP210	10TS-D10
C7	3.4 NPO 500V +.25		NPO-DI 3.3	DTZ-3R3	NP03P3	CCD-102	GP210	10TCC-V33
C8	.001 500V 10%		GPD X5F102K	DD-102	GP1000	CCD-102	GP210	10TS-D10
C9	.001 500V 10%		GPD X5F102K	DD-102	GP1000	CCD-503	TA150	TGL-S50
C10	.05 100V		TTP-05	CK-503	MGP05	CCT0-180	CN0418	10TCC-Q18
C11	18 NPO 500V 5%			TCZ-18	NP018	CCT0-300		10TCC-Q30
C12	27 NPO 500V 5%			TCZ-30		CCT0-150	CN0415	10TCC-Q15
C13	12 NPO 500V 5%		NPO-DI 15	DTZ-15	NP015		CN0468	10TCC-Q68
C14	68 NPO 500V 5%			DTZ-68			CN0468	10TCC-Q68
C15	68 NPO 500V 5%		NPO-DI 47	DTZ-47	NP047	CCT0-470	CN0447	10TCC-Q47
C16	47 NPO 500V 5%			DTZ-68			CN0468	10TCC-Q68
C17	68 NPO 500V 5%			DTZ-68			CN0468	10TCC-Q68
C18	68 NPO 500V 5%			DTZ-68			CN0533	10TCC-V33
C19	3.4 NPO 500V		NPO-DI 3.3	DTZ-3R3	NP03P3		CN0515	10TCC-V15
C20	1.5 NPO 500V		NPO-DI 1.5	DTZ-1R5	NP01P5		CN0418	10TCC-Q18
C21	18 NPO 500V 5%			TCZ-18	NP018	CCT0-180	CN0310	10TCC-T10
C22	100 NPO 500V 5%		NPO-DI 100	DTZ-100	NP0100	CCT0-101	GP210	10TS-D10
C23	.001 500V 10%		GPD X5F102K	DD-102	GP1000	CCD-102		10TCC-V56
C24	5.6 NPO 100V							10TS-D10
C25	.001 500V 10%		GPD X5F102K	DD-102	GP1000	CCD-102	GP210	10TS-D10
C26	.001 500V 10%		GPD X5F102K	DD-102	GP1000	CCD-102	GP210	10TS-D10
C27	.001 500V 10%		GPD X5F102K	DD-102	GP1000	CCD-102	CN0533	10TCC-V33
C28	3.4 NPO 500V		NPO-DI 3.3	DTZ-3R3	NP03P3	CCT0-470	CN0447	10TCC-Q47
C29	47 NPO 500V 5%		NPO-DI 47	DTZ-47	NP047	CCD-152	GP215	10TS-D15
C30	.0015 500V 10%		GPD X5F152K	DD-152		CCD-102	GP210	10TS-D10
C31	.001 500V 10%		GPD X5F102K	DD-102	GP1000			10TCC-V82
C32	8.2 NPO 500V		NPO-DI 8.2	TCZ-18	NP018	CCT0-180	CN0418	10TCC-Q18
C33	18 NPO 500V 5%			TCZ-18	NP018	CCT0-180	CN0418	10TCC-Q18
C34	220 N150/500V 5%	#21S180D05		DTZ-68	GP1000	CCD-102	GP210	10TS-D10
C35	18 NPO 500V 5%			DTZ-10	NP010	CCT0-100	CN0410	10TCC-Q10
C36	68 NPO 500V 5%		GPD X5F102K	DTZ-68	GP1000	CCD-102	GP210	10TCC-V30
C37	.001 500V 10%		NPO-DI 10	DTZ-10	NP010		CN0533	10TCC-V33
C38	10 NPO 500V		NPO-DI 3.0	DTZ-3R3	NP03P3	CCD-181	GP318	10TS-T18
C39	2.7 NPO 500V		NPO-DI 3.3	DTZ-18	GP180	CCT0-180	CN0418	10TCC-Q18
C40	3.4 NPO 500V		GPD X5F181K		NP018	*	*	10TCP-T27
C41	180 NPO 500V 5%							
C42	18 NPO 500V 5%							
C43	270 N150/100V 5%	#21S180E62						
C44	.05 100V		TTP-05	CK-503	MGP05	CCD-503	TA150	TGL-S50
C45	.22 160V 10%		DBE6P22		DPMS4P22	4DP-5-224	PVC4022	4PS-P22
C47	.02 200V		GPD Z5U203P	DD-203		CCD-203	GP120	10TS-S20
C49	470 500V		GPD X5F471K	DD-471	GP470	CCD-471	GP347	10TS-T47
C50	.05 100V		TTP-05	CK-503	MGP05	CCD-503	TA150	TGL-S50
C53	.05 100V		TTP-05	CK-503	MGP05	CCD-503	TA150	TGL-S50
C54	.01 25V		GPD X5F102K	DD-102	GP1000	CCD-102	GP210	10TS-D10
C55	1 500V 10%		NPO-DI 1.0	TCZ-1			CN0510	10TCC-V10
C56	68 NPO 500V 5%			DTZ-68			CN0468	10TCC-Q68
C57	120 NPO 100V 5%		GPD X5F101K	DD-101	GP100	CCD-101	GP310	10TS-T10
C58	100 N330/100V 5%	#21S180B58		TCA-100		*	*	10TCC-T10
C59	150 NPO 100V 5%		GPD X5F151K	DD-151	GP150	CCD-151	GP315	10TS-T15
C60	.001 500V 10%		GPD X5F102K	DD-102	GP1000	CCD-102	GP210	10TS-D10

BOLD LISTING INDICATES LOCATION OF PART

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.

TRANSFORMERS (Sweep Circuits)

ITEM No.	USE	REPLACEMENT DATA				NOTES
		MFGR. PART No.	STANCOR PART No.	THORDARSON PART No.	TRIAD PART No.	
T500	Pincushion Correction	25D70067A01				(1) Horizontal Output Transformer Coil + Cap and 12-pin plug only.
T501	Horiz Output	24P65174A25 (1) (AT2084/01, PT0480)				
T600	Horiz Output Assembly	1V68635A12 (2)				(2) Wired complete; includes bracket, shield, cover, V6 tube and socket assembly, 2nd anode lead 12-pin plug and V1 cap assembly.
L701	Vertical Output	25D66761A11				
	Vertical Output-Alternate	25V68634A90				
	Yoke (Horiz 12mh) 92° (Vert 37mh)	24G10250A11				

SPEAKER

ITEM No.	TYPE	REPLACEMENT DATA		NOTES
		MFGR. PART No.	QUAM PART No.	
SP1	4" PM, 16 ohms 3" x 5" PM, 16 ohms	50D68384A02 50D69062A04	4A1Z16 35A05Z16	MODELS: WP457GN, WP464GW, WP467GWA & WP475HU. MODELS: HP548HW, HP562HW, WP553GN, WP554GW & WP563GWA.

FUSE DEVICES

ITEM No.	DESCRIPTION	REPLACEMENT DATA					
		PART No.		BUSS PART No.		LITTELFUSE PART No.	
		DEVICE	HOLDER	DEVICE	HOLDER	DEVICE	HOLDER
CB800	Circuit Breaker Break Current 3.5 Amp Hold Current 2.2 Amp	80C66390A20				815004	
F500	.5 Amp, 125V S10-B10			MDL 1/2	3823-1	313.500	
F800	1" Length #31 Fuse Wire	65S132920				357001	

MISCELLANEOUS

ITEM No.	PART NAME	PART No.	NOTES
CA-SA			
L2 Y1	Delay Line Crystal	24D68852A03 48C66865A04	3.58MC
CHASSIS			
L801	VHF Antenna UHF Antenna VHF Tuner VHF Tuner VHF Tuner VHF Tuner UHF Tuner UHF Tuner UHF Tuner Degaussing Coil Degaussing Coil	85D70023A02 85D67625A06 CPTT-424 CPTT-425 CPTT-429 CPTT-430(A) TT-640 TT-646 TT-647 TT-650 24V68639A28 24V68636A12	JFD Replacement TA503 JFD Replacement TA545 Chassis 16TS-/E16TS-929 Chassis 18TS-/F18TS-929 .75pf, spark gap (CRT Cathode) .75pf, spark gap (CRT Cathode) .75pf, spark gap (CRT Cathode) 1-2meg, 470pf, spark gap (VHF Antenna Isolation) 1-2meg, 470pf, spark gap (VHF Antenna Isolation) 1-2meg, 470pf, spark gap (UHF Antenna Isolation) 1-2meg, 470pf, spark gap (UHF Antenna Isolation) 1-2meg, 470pf, spark gap (Preset Controls Bracket Isolation) 1-2meg, 470pf, spark gap (Preset Controls Bracket Isolation) UHF Lamps (Used with VHF Tuners CPTT424 & CPTT430) UHF Lamps (Used with VHF Tuners CPTT425 & CPTT429) AFT Defeat, Chassis F18TS-929 AFT Defeat, Chassis E16TS-929 Instamatic Color, Preset, Chassis E16TS-929 Instamatic Color, Preset, Chassis F18TS-929 Instamatic Color, Preset, Chassis G18TS-929 Blue Lateral & Purity Radial, less knob, convergence yoke IF-Audio (BA Panel Complete) Color-Video, CA Panel (Specify CA Panel) Color-Video, SA Panel Complete (Specify SA Panel) Deflection (FA Panel Complete) Convergence (HA Panel Complete) AFC (KA Panel Complete) DC Regulator (ZA Panel Complete)
PC200	Spark Gap		
PC201	Spark Gap		
PC202	Spark Gap		
RC1	Component Combination	51C67517A01 (RC11045)	
RC2	Component Combination	51C67517A01 (RC11045)	
RC3	Component Combination	51C67517A01 (RC11045)	
RC4	Component Combination	51C67517A01 (RC11045)	
RC5	Component Combination	51C67517A01 (RC11045)	
RC6	Component Combination	51C67517A01 (RC11045)	
S6	Switch	40P65149A66	
	Switch	40P65173A79	
S7	Switch	1V68635A63	
	Switch	1V68639A38	
S9	Switch	1V68646A49	
	Switch	1V68646A63	
	Switch	40D70484A04	
	Magnet	59G10296A01	
	Magnet	76D66816A02	
	Printed Circuit Board	1Y68662A57	
	Printed Circuit Board	1Y68662A59	
	Printed Circuit Board	1Y68662A59	
	Printed Circuit Board	1Y68662A56	
	Printed Circuit Board	1Y68662A55	
	Printed Circuit Board	1Y68662A60	
	Printed Circuit Board	1Y68662A58	

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
300-Ohm Tuner Input Lead	Use BELDEN No. 8225
300-Ohm 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

BOLD LISTING INDICATES LOCATION OF PART

PARTS LIST AND DESCRIPTION (CONTINUED)

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

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Have your local distributor check Sams COUNTER FACTS® for the most up-to-date replacement.

COILS (RF-IF)

ITEM No.	USE	REPLACEMENT DATA			
		PART No.	MEISSNER PART No.	MILLER PART No.	WORKMAN PART No.
BA					
L1	RF Choke (450uh)	24D68801A02	19-2015	74F474AP	T323
L2	RF Choke (7.5uh)	24D66772A12		74F826AP	T822
L3	Quadrature	24D68517A20			
L4	IF Input	24D68501A19			
L5	RF Choke (10 Turns)	24D69707A13			
L6	39.75MC Trap	24D68501A19	19-2015		
L7	RF Choke (10 Turns)	24D69707A13			
L8	47.25MC Trap	24D68501A18			
L9	41.25MC Trap	24D68501A16			
L11	RF Choke (7.5uh)	24D66772A12		74F826AP	T822
L12	4.5MC Trap/Chroma Take-off	24D68588A05			
L13	4.5MC Sound Take-off	24D68517A19			
T1	1st Video IF	24D68501A17			
T2	2nd Video IF	24D68501A20			
T3	3rd Video IF	24D68588A04			
CA					
L1	Peaking (47uh)	24D69708A02	19-7047	72F475AP	T954
L3	Peaking (47uh)	24D69708A02	19-7047	72F475AP	T954
L4	Peaking (800uh)	24D68801A46		6156	T328
L5	3.58MC Oscillator	24D68517A12	19-1008		
L6	RF Choke (5.6uh)	24D68002A98		74F566AP	T820
L7	Hue Range	24D68517A21			
L8	RF Choke (47uh)	24D68801A50		72F475AP	T954
L9	RF Choke (8.2uh)	24D68801A48		4611	T960
L10	RF Choke (8.2uh)	24D68801A48	19-2015	4611	T960
L11	RF Choke (8.2uh)	24D68801A48	19-2015	4611	T960
L12	Peaking (100uh)	24D68801A03	19-2024	4642	T305
L13	Peaking (450uh)	24D68801A02		74F474AP	T323
T1	Chroma Bandpass	24D68517A18			
KA					
L1	RF Choke (7.5uh)	24D66772A12	19-2015	74F826AP	T822
L2	RF Choke (7.5uh)	24D66772A12	19-2015	74F826AP	T822
T1	AFT Discriminator	24D68501A24			
SA	(See CA Panel)				
CHASSIS					
L501	RF Choke (6.6uh)	24D66772A03	19-2014	74F686AP	T821
L502	RF Choke (6.6uh)	24D66772A03	19-2014	74F686AP	T821
L503	RF Choke (6.6uh)	24D66772A03	19-2014	74F476AP	T819
L505	RF Choke (6.6uh)	24D66772A03	19-2014	74F686AP	T821
L804a	Line Choke (125uh)	24C68976A02			
L804b	Line Choke (125uh)				
T1	Balun	24C68848A02			

* Includes Plate Cap. Choke and Wire.

COILS (Sweep Circuits)

ITEM No.	FUNCTION	REPLACEMENT DATA					
		MFGR. PART No.	MILLER PART No.	STANCOR PART No.	THORDARSON MEISSNER PART No.	TRIAD PART No.	WORKMAN PART No.
FA							
L1	Horiz. Oscillator (HoId)	24D68778A01					
HA							
L1	Right R/G Vert Lines	24V68609A47	6077				
L2	Right R/G Horiz Lines	24D67682A06	6075				
L3	Blue Horiz Tilt	24D67682A03 (1)	6076				
L4	Blue Center Horiz Lines	24D67682A03	6076				
CHASSIS							
L500	Pincushion Phase	24C70169A01					
L702	Convergence Yoke Assembly	24D68717A06					
a	Green Section	24P65146A78					
b	Blue Section	24P65146A78					
c	Red Section	24P65146A78					

(1) Manufacturer suggests using Part #24-6782A11.

FILTER CHOKE

ITEM No.	RATINGS			REPLACEMENT DATA				NOTES
	CURRENT (Measured)	DC RES.	INDUCTANCE (0 CURRENT 1000~)	MFGR. PART No.	STANCOR PART No.	THORDARSON PART No.	TRIAD PART No.	
L800	.210A DC	7.4	.230 H	25D67554A16	C2708	26C81	C-40X	
L805	.210A DC	7.4	.230 H	25D67554A16	C2708	26C81	C-40X	

TRANSFORMER (Power)

ITEM No.	RATING		REPLACEMENT DATA				NOTES
	PRI.	SEC. 1	MFGR. PART No.	STANCOR PART No.	THORDARSON PART No.	TRIAD PART No.	
T800	117VAC @ 1.75A AC Tap @ 28VAC @ .400A DC	6.3VAC @ 1A AC SEC. 2 6.3VAC @ 5A AC	25D68580A05				

BOLD LISTING INDICATES LOCATION OF PART

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 (cont)

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.	
CA									
C1	.01 100V	10%	GPD X5S103K	DD-103	GP10000	CCD-103	JF110	10TS-S10	
C2	.001 500V		GPD X5F102K	DD-102	GP1000	CCD-102	GP210	10TS-D10	
C3	.01 100V		GPD X5S103K	DD-103	GP10000	CCD-103	JF110	10TS-S10	
C5	.05 100V		TTP-05	CK-503	MGPO5	CCD-503	TA150	TGL-S50	
C6	.05 100V		TTP-05	CK-503	MGPO5	CCD-503	TA150	TGL-S50	
C7	39 N750/500V		5%	TCN-39			CN7433	10TCU-Q33	
C8	.47 12V			TCZ-1			CN0510	10TCC-V10	
C9	10 NPO 100V		5%	NPO-DI 1.0	DTZ-10	NP010	CCTO-100	CN0410	10TCC-Q10
C10	270 N150/500V	5%	NPO-DI 10			*	*	10TCP-T27	
C11	47 NPO 500V	5%	NPO-DI 47	DTZ-47	NP047	CCTO-470	CN0447	10TCC-Q47	
C12	330 500V	10%	GPD X5F331K	DD-331	GP330	CCD-331	GP333	10TS-T33	
C13	.22 400V	10%	DBE6P22		DPMS4P22	4DP-5-224	PVC4022	4PS-P22	
C14	.47 250V	10%	V1616P47		WMF6P47	6DP-6-474	PVC6047		
C15	.05 100V		TTP-05	CK-503	MGPO5	CCD-503	TA150	TGL-S50	
C16	.015 100V		GPD Z5U153P	DD-153		CCD-153	GP115	10TSS-S15	
C17	1.5mfd 100V								
C18	27 NPO 100V	5%		TCZ-30		CCTO-300		10TCC-Q30	
C19	.01 500V		GPD X5F102K	DD-102	GP1000	CCD-102	GP210	10TS-D10	
C20	4.7 NPO 100V	5%	NPO-DI 4.7	DTZ-4R7	NP04P7		CN0547	10TCC-V47	
C21	100 500V		GPD X5F101K	DD-101	GP100	CCD-101	GP310	10TS-T10	
C22	27 NPO 100V	5%		TCZ-30		CCTO-300		10TCC-Q30	
C23	22 NPO 500V	5%	NPO-DI 25	DTZ-25	NP02P2		CN0425	10TCC-Q25	
C24	1.8 NPO 100V		NPO-DI 2.2	DTZ-2R2	NP033		CN0522	10TCC-V22	
C25	33 N150/100V	5%	NPO-DI 33	DTZ-33		CCTO-330	CN0433	10TCC-Q33	
C26	270 N150/500V	5%				*	*	10TCP-T27	
C27	560 500V	10%	GPD X5F561K	DD-561	GP560	CCD-561	GP356	10TS-T56	
C28	.001 500V	10%	GPD X5F102K	DD-102	GP1000	CCD-102	GP210	10TS-D10	
C29	.001 500V	10%	GPD X5F102K	DD-102	GP1000	CCD-102	GP210	10TS-D10	
C31	.05 100V		TTP-05	CK-503	MGPO5	CCD-503	TA150	TGL-S50	
C32	220 N750/500V	10%	N750-DI 220		N33	CCTN-271			
C33	33 N750/100V	10%	N750-DI 33		N33	CCTN-330			
C34	.05 100V		TTP-05	CK-503	MGPO5	CCD-503	TA150	TGL-S50	
C35	.001 500V	10%	GPD X5F102K	DD-102	GP1000	CCD-102	GP210	10TS-D10	
C36	56 NPO 100V	5%		TCZ-56			CN0456	10TCC-Q56	
C37	.01 500V	10%	GPD X5S103K	DD-103	GP10000	CCD-103	JF110	10TS-S10	
C40	270 N150/500V	5%				*	*	10TCP-T27	
C41	12 N150/500V	10%	GPD X5F560K	DD-560		CCD-560	GP456	10TS-Q56	
C42	27 NPO 100V	5%		TCZ-30		CCTO-300		10TCC-Q30	
C45	.0015 500V	10%	GPD X5F152K	DD-152		CCD-152	GP215	10TS-D15	
C46	.0015 500V	10%	GPD X5F152K	DD-152		CCD-152	GP215	10TS-D15	
C47	.0015 500V	10%	GPD X5F152K	DD-152		CCD-152	GP215	10TS-D15	
C49	180 100V	10%	GPD X5F181K	DD-181	GP180	CCD-181	GP318	10TS-T18	
C50	47 NPO 500V	10%	NPO-DI 47	DTZ-47	NP047	CCTO-470	CN0447	10TCC-Q47	
C51	56 NPO 500V	10%		TCZ-56			CN0456	10TCC-Q56	
C52	56 NPO 500V	10%		TCZ-56			CN0456	10TCC-Q56	
C53	56 NPO 500V	10%		TCZ-56			CN0456	10TCC-Q56	
C54	.001 10%	10%	GPD X5F102K	DD-102	GP1000	CCD-102	GP210	10TS-D10	
C55	560 500V	10%	GPD X5F561K	DD-561	GP560	CCD-561	GP356	10TS-T56	
FA									
C1	.01 1KV	10%	V1614S1	CPR-10000J	DPMS6S1	4DP-1-103	PVC411	4PS-S10	
C2	.047 100V		TTP-05	CK-503	MGPO5	CCD-503	TA150	TGL-S50	
C3	.002 1KV		10%	GPD X5F202K	DD-202	GP2000	CCD-202	GP220	10TS-D20
C4	.001 500V		10%	GPD X5F102K	DD-102	GP1000	CCD-102	GP210	10TS-D10
C5	680 500V		10%	GPD X5F681K	DD-681	GP680	CCD-681	GP368	10TS-T68
C6	.01 400V				CPR-10000J		DM-30-103	SX110	MS-11
C8	.01 500V				DD-103		CCD-103	JF110	10TS-S10
C9	.22 160V		10%	GPD X5S103K		GP10000	4DP-5-224	PVC4022	4PS-P22
C10	.002 2KV		10%	DBE6P22		DPMS4P22	CCD-103	JF110	10TS-S10
C12	.033 600V		10%	GPD X5S103K	DD-103	GP10000	4DP-2-333	PVC6133	4PS-S33
C13	.039 400V		DBE6S33		DPMS6S33	6DP-3-393	PVC6139	6PS-S39	
C14	.03 160V	10%	DBE6S39		DPMS6S39	4DP-2-333	PVC6133	4PS-S33	
C15	.001 500V	10%	GPD X5F102K	DD-102	GP1000	CCD-102	GP210	10TS-D10	
C16	.002 500V	10%	GPD X5F202K	DD-202	GP2000	CCD-202	GP210	10TS-D20	
C17	.001 500V	10%	GPD X5F102K	DD-102	GP1000	CCD-102	GP210	10TS-D10	
C18	560 500V	10%	GPD X5F561K	DD-561	GP560	CCD-561	GP356	10TS-T56	
C19	.015 500V	10%				DM-30-153			
C20	.0033 500V	10%	DBE6D33		DMF6D33	6DP-1-332	PVC6233	6PS-D33	
C22	.022 160V	10%	GPD Z5U203P	DD-203		CCD-203	GP120	10TS-S20	
C23	.015 100V	10%				DM-30-153			
C24	.022 100V	10%	V1612S22		DPMS6S22	1DP-1-223	PVC1122	225P22391WD3	
C25	.1 160V		DBE4P1		DPMS4P1	4DP-3-104	PVC401	4PS-P10	
C26	220 500V	10%	GPD X5F221K	DD-221	GP220	CCD-221	GP322	10TS-T22	
C27	.005 1KV		GPD X5R502K	DD-502	GP5000	CCD-502	JF250	10TS-D50	
C28	.01 400V			CPR-10000J		DM-30-103	SX110	MS-11	
C40	220 500V	10%	GPD X5F221K	DD-221	GP220	CCD-221	GP322	10TS-T22	
C41	.0039		GPD X5R392K	DD-392		CCD-392	JF239	10TS-D39	
HA									
C3	.1 400V	10%	DBE4P1		DPMS4P1	4DP-3-104	PVC401	4PS-P10	
C4	.1 400V	10%	DBE4P1		DPMS4P1	4DP-3-104	PVC401	4PS-P10	
C5	.068 400V	10%	DBE4S68		DPMS6S68	4DP-3-683	PVC6168	4PS-S68	
C6	.025 200V	10%	DBE6S25		DPMS6S25	6DP-2-253	PVC6125	6PS-S25	
C7	.01 200V	10%	DBE6S1	CPR-10000J	DPMS6S1	4DP-1-103	PVC211	2TM-S10	
KA									
C1	.001 500V	#21 S13650	GPD X5F152K	DD-152		CCD-152	GP215	10TS-D15	
C2	.0015 500V		GPD X5F152K	DD-152		CCD-152	GP215	10TS-D15	
C4	.0015 500V		GPD X5F560K	DD-560		CCD-560	GP456	10TS-Q56	
C5	62 NPO 100V	5%	GPD X5F152K	DD-152		CCD-152	GP215	10TS-D15	
C6	.0015 500V					*	*	10TCC-Q56	
C7	56 N150/100V	5%	#21 S180E80			*	*	10TCC-Q56	
C8	56 N150/100V	5%	#21 S180E80			*	*	10TCC-Q56	
C9	.0015 500V		GPD X5F152K	DD-152		CCD-152	GP215	10TS-D15	
C10	.0015 500V		GPD X5F152K	DD-152		CCD-152	GP215	10TS-D15	
C11	.001 500V	#21 S136501							

PARTS LIST AND DESCRIPTION (CONTINUED)

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

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CAPACITORS (cont)

ITEM No.	RATING	REMARKS	REPLACEMENT DATA				
			AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ELMENCO PART No.	MALLORY PART No.
PA	(Not used on non-instatamic versions)						
C1	.001 500V		GPD X5F102K	DD-102	GP1000	CCD-102	GP210
C2	.05 100V		TTP-05	CK-503	MGPO5	CCD-503	TA150
C3	.01 100V		GPD X5S103K	DD-103	GP10000	CCD-103	JF110
C4	33 N470/500V 10%	#21S180E16				*	*
C6	.05 100V		TTP-05	CK-503	MGPO5	CCD-503	TA150
SAZA	(Refer to CA Panel)						
C4	.001 500V 10%		GPD X5F102K	DD-102	GP1000	CCD-102	GP210
CHASSIS							
C50	.22 100V 10%		DBE6P22		DPMS4P22	4DP-5-224	PVC4022
C52	1mfd 100V 10%						
C61	.01 10%		GPD X5S103K	DD-103	GP10000	CCD-103	JF110
C62	.015 10%		TTP-02	CK-203	MGPO2	CCD-203	TA120
C63	.002 10%		GPD X5F202K	DD-202	GP2000	CCD-202	GP220
C200	.001 2KV		HVD-301000	DD30-102	HV3-1000	3CCD-102	3HV210
C201	.001 2KV		HVD-301000	DD30-102	HV3-1000	3CCD-102	3HV210
C202	.001 2KV		HVD-301000	DD30-102	HV3-1000	3CCD-102	3HV210
C203	.001 1KV						
C204	.001 1KV						
C300	470 500V		GPD X5F471K	DD-471	GP470	CCD-471	GP347
C500	1mfd 400V 10%						
C501	330 N1500 2KV 10%	#21P65133A34				*	*
C502	100 N1500 3KV 5%	#21S180A47					
C503	180 N1500 5KV 10%						
C504	33 630V						
C505	.1 600V						
C507	1mfd	#8S10212B13					
C508	.068 600V		DBE4S68		DPMS6S68	4DP-3-683	PVC6168
C509	.01 400V 10%		V1614S1	CPR-10000J	DPMS6S1	4DP-1-103	PVC411
C510	.01 400V 10%		V1614S1	CPR-10000J	DPMS6S1	4DP-1-103	PVC411
C600	.18 40 400V 10%		DBE6P22		DPMS4P22	4DP-5-224	PVC4022
C802	.001 500V		GPD X5F102K	DD-102	GP1000	CCD-102	GP210
C804	.001 500V		GPD X5F102K	DD-102	GP1000	CCD-102	GP210
C806	.15 400V		DBE6P15		DPMS4P15	4DP-4-154	PVC6015
C807	.001 500V		GPD X5F102K	DD-102	GP1000	CCD-102	GP210
C808	.001 500V		GPD X5F102K	DD-102	GP1000	CCD-102	GP210
C811	.001 500V		GPD X5F102K	DD-102	GP1000	CCD-102	GP210
C813	.47 400V		V1614P47		DPMS4P47	4DP-6-674	PVC4047
C814	.002 500V		GPD X5F202K	DD-202	GP2000	CCD-202	GP220

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

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.
BA							
R14	AGC Setup	10K	18D66401A36	TSV-10K or T-10K		X201R103B	MTC14L1
R27	47.25MC	100	18D66401A22	TSV-100 (1) or T-100 (1)		U201R101B	MTC12L4
R38	41.25MC Trap	100	18D66401A22	TSV-100 (1) or T-100 (1)		U201R101E	MTC12L4
CA							
R76	Blue Drive	100	18D66401A42	TSV-100 (1) or T-100 (1)		U201R101B	MTC12L4
R83	Green Drive	100	18D66401A41	TSV-100 (1) or T-100 (1)		U201R101B	MTC12L4
R89	Red Drive	100	18D66401A40	TSV-100 (1) or T-100 (1)		U201R101B	MTC12L4
FA							
R26	Vert Linearity	100K "b"	18D67678A11			H4(2) [A-E22,A1]	
R31	Height	3meg "a"	(4)			[B-E12,A1]	
HA							
R1	Blue Vert Tilt	200 2W	18D67671A07	V-200	U39-200	110-300	
R2	R-G Vert Tilt	200 2W	18D67671A07	V-200	U39-200	110-300	
R3	R-G Vert Diff. Amp	500 2W	18D67671A05	V-500 or WP-600	U39-500	110-600	MR600P
R4	R-G Vert Diff. Tilt	30 2W	18D67671A01	WCP-30 or V-30	U39-50	110C30	MRC30P
R6	Blue Vertical Amp	30 2W	18D67671A01	WCP-30 or V-30	U39-50	110C30	MRC30P
R7	R-G Vertical Amp	120 2W	18D67671A09	WCP-120 or V-120	U39-120	110C120	MRC120P
	R-G Vertical Amp	200 2W	18D67671A07	V-200	U39-200	110-300	
R9	R-G Vertical Lines (Left)	90 2W, 18 Stop	18D67671A14				
R12	R-G Horiz Diff. Tilt	150 2W	18D67671A11	WCP-150 or V-150	U39-150	10C150	MRC150P
R13	Blue Horizontal Amp	150 2W	18D67671A04	WCP-150 or V-150	U39-150	110C150	MRC150P

BOLD LISTING INDICATES LOCATION OF PART

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.

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

ITEM No.	FUNCTION	RESIST-ANCE	REPLACEMENT DATA				
			MFGR. PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	CTS-IRC PART No.	MALLORY PART No.
SAZA	(Refer to CA Panel)						
R2	20-Volt B+ Adjust	2000	18D66401A33	TSV-2.5K or T-2500		X201R252B	MTC23L1
CHASSIS							
R100	AGC Delay	1000	18D67858A06	F1-1000, SNK010	B47-1000-S or [NP-1000-S, NML-A-300,TT-2]	B11-108,TM4 or [BU11,CF6,SS6A] *	RU13L,SL37,SN281 or [UA13L,SN281]
R104	Contrast	750	18D68222A16	F1-750, SN100	A47-750-S,FS-3 or [NP-750-S, UP-B-400]	Q11-105 or [BU1,CF5,SS1,DC1] *	RU751L,SL38,SN1125 [P751L,3014,SF3000] or [UA13L,SN1125]
R109	Preset Contrast	750	18D67858A19 (6)	TT-411 or [F1-750, SNK010]	B47-750-S or [NP-750-S, NML-A-300,TT-2]	B11-105,TM4 or [BU11,CF5,SS6A] *	PTA751L or [RU751L,SL37,SN281] or TA751L
R204	Blue G2	3meg	18D67559A49	F1-3meg, SNK104,AK-38	NP-3meg-S, NML-A-300,TT-2	HLC3	RU36L,SL37,SN1000
R205	Green G2	3meg	18D67559A50	F1-3meg, SNK104,AK-38	NP-3meg-S, NML-A-300,TT-2	HLC3	RU36L,SL37,SN1000
R206	Red G2	3meg	18D67559A51	F1-3meg, SNK104,AK-38	NP-3meg-S, NML-A-300,TT-2	HLC3	RU36L,SL37,SN1000
R212	Master Brightness	1500	18D67858A21 (8)	TT-511 or [F1-1500, SNK010]	B47-1500-S or [NP-1500-S, NML-A-300,TT-2]	B11-109,TM4 or [BU11,CF7,SS6A] *	PTA152L or [RU152L,SL37,SN281] or [UA152L,SN281]
	Master Brightness	3500	18D67502B24 (5)	F1-5000 (3), SNK010	A47-4000-S (3), RN-3 or [NP-4000-S (3), NML-A-300]	B11-114,TM4 (3) or [BU11,CF8,SS6A] *	PTA53L (3) or [RU53L (3),SN281] or [UA53L (3),SN281]
R213	Brightness	1000	18D68222A17	F1-1000, SN100	A47-1000-S,FS-3 or [NP-1000-S, UP-B-400]	Q11-108 or [BU1,CF6,SS1,DC1] *	UA13L,SN1125 or [RU13L,SL38,SN1125] or [P13L,3014,SF3000]
R219	Preset Brightness	5000	18D67858A17 (6)	TT-10 or [F1-5000, SNK010]	B47-5000-S or [NP-5000-S, NML-A-300,TT-2]	B11-114,TM4 or [BU11,CF8,SS6A] *	PTA53L or [RU53L,SL37,SN281] or [UA53L,SN281]
R301	Volume/Switch	50K	18D68021A14	F2-50K, SPU304,KR-8FR	NP-50K-S, UPP-B-400, PPAP,NWG-18	B13-123,SK7 or [BU1,CF63,SS10,K] *	RUP54A,SL35,SL250 or [P54A,3014,FPP-1,SL250]
	Volume/Switch	100K	18D68021A29 (7)				
	Volume/Limiter	100K	18D67502A25 (7)				
R503	High Voltage Bias (Horiz Bias)	180K	18D67858A08	TT-46 or [F1-200K, SNK010]	B47-200K-S or [NP-200K-S, NML-A-300,TT-2]	B11-129,TM4 or [BU11,CF14,SS6A] *	RU25L,SL37,SN281 or [UA25L,SN281]
R603	Vert Hold	1meg	18D68222A18	F1-1meg, SN100	A47-1meg-S,FS-3 or [NP-1meg-S, UP-B-400]	Q11-137 or [BU1,CF17,SS1,DC1] *	UA16L,SN1125 or [RU16L,SL38,SN1125] or [P16L,3014,SF3000]
R900	Color Intensity	5000	18D68443A17				
	Color Intensity	5000	18D68443A21 (7)				
R901	Hue (Tint)	25K	18D68443A16				
	Hue (Tint)	25K	18D68443A20				
R902	Preset Intensity	750	18D67858A19 (6)	TT-411 or [F1-750, SNK010]	B47-750-S or [NP-750-S, NML-A-300,TT-2]	B11-105,TM4 or [BU11,CF5,SS6A] *	PTA751L or [RU751L,SL37,SN281] or TA751L
R903	Preset Hue (Tint)	25K	18D67858A18 (6)	F3-25K, SNK010	A47-25K-V, RN-3,TT-2	B17-120,TM4 or [BU11,CF91,SS6A] *	RU253R,SL37,SN281 or [UA253R,SN281]

- (1) For horizontal mounting, bend the two outside terminals to fit PC board. Use jumper to connect center terminal to PC board.
(2) To establish section identification of side-by-side controls, view controls with shaft ends facing you, terminals down.
On 3-section controls, left-hand section is "A", middle section is "B", right-hand section is "C".
On 2-section controls, left-hand section is "A", right-hand section is "B".
(3) Use original nylon tab mount.
(4) Includes R26 and R31.
(5) Used in some versions; replace with 120-ohm control and remove parallel 270-ohm resistor.
(6) Used only in models using Chassis E16TS-/F18TS-/G18TS-929.
(7) Chassis G18TS-929.
(8) Chassis E16TS-/F18TS-/G18TS-/H18TS-929.
* "SNAPTROL"

RESISTORS (Power and Special)

ITEM No.	RATING	REPLACEMENT DATA	
		WORKMAN PART No.	MFGR. PART No.
CA			
R22	3300 3W	3G-3.3K	17S753312
FA			
R22	1200 5W	5WSQ-1.25K	17S136197
SAZA	(See CA Panel)		
R4	1.8 1/2W	WS-1.8	6S10053J04
R7	4.7 1/2W	WS-4.7	6S132036

* Voltage Dependent Resistor.

BOLD LISTING INDICATES LOCATION OF PART

ITEM No.	RATING	REPLACEMENT DATA	
		WORKMAN PART No.	MFGR. PART No.
CHASSIS			
R502	VDR *		6C66263A19
R505	4700 5W	5G-4.7K	17S136889
R508	39K 7W	10W-SQ-40	17S10354A04
R604	Thermistor (7.5 Cold)	FR5-8	6P65147A39
R801	820 7W	7G-820	17S134152
R802	5 20W	20W-SQ-5	17S136973
R803	Posistor (65 Cold)		6C69177A01
R805	39 5W	5W-SQ-40	17S136060
R806	82 7W		17S136877