PHOTOFACT* Folder

MOTOROLA MODELS Y17P1-1A, -2A, Y17P2-1A, Y17T30CHA, Y17T31GPA, 17P1-1, -2, 17P2-1, 17T30CH, 17T31GP (Ch. TS-426, Y, TS-428, Y)

DISASSEMBLY INSTRUCTIONS

CHASSIS REMOVAL

1. Remove 4 push-on type knobs from the top and 3 from the side.

2. Remove the rear cover by sliding the mounting clamps inward.

3. Remove the bonding strap between the tuner and chassis, the tuner leads, volume and contrast control leads, picture tube socket, yoke leads and HV lead.

4. Remove 4 chassis bolts from the bottom.

5. Partially remove the chassis and remove the speaker leads.

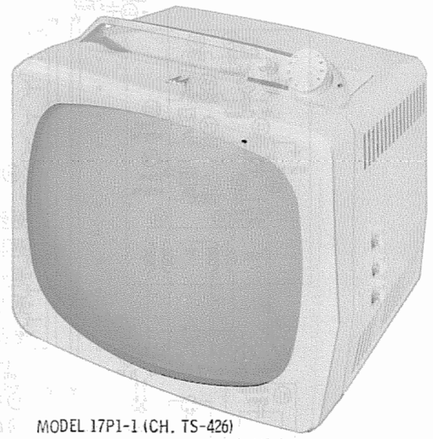
6. Remove the chassis.

7. Loosen the 2 metal screws holding the front tuner bracket.

8. Remove 2 metal screws holding the rear tuner bracket and remove the tuner and volume control.

9. Remove 2 nuts holding the speaker and remove the speaker.

NOTE: To operate speaker with earphone leads disconnected, jumper terminals 5S and 6S of the speaker terminal strip.



MODEL 17P1-1 (CH. TS-426)

CAUTION NOTE

ONE SIDE OF AC LINE CONNECTED TO CHASSIS
Care should be exercised when connecting test equipment or physically contacting the chassis.

TRADE NAME	Motorola	MODELS	CHASSIS
		Y17P1-1A, Y17P1-2A, Y17P2-1A	TS-426Y
		Y17T30CHA, Y17T31GPA	TS-428Y
		17P1-1, 17P1-2, 17P2-1	TS-426
		17T30CH, 17T31GP	TS-428
MANUFACTURER	Motorola, Inc., 4545 W. Augusta Blvd., Chicago 51, Illinois		
TYPE SET	Television Receiver		
TUBES	Eighteen		
POWER SUPPLY	110-120 Volts AC, 60 Cycle	RATING 165 Watts, 1.5 Amp. @ 117 Volts AC	
TUNING RANGE	Channels 2 thru 13 VHF, 14 thru 83 UHF, Video IF 45.75MC, Sound IF 41.25MC (Intercarrier)		

SERVICING IN THE FIELD

TUNER OSCILLATOR ADJUSTMENTS

For touch-up adjustment of the VHF oscillator it is necessary to remove the chassis from the cabinet. (See disassembly instructions).

PICTURE TUBE SAFETY GLASS CLEANING

Remove 2 metal screws from the bottom holding the front of the cabinet. Pull bottom of front out and lift up to remove.

SPECIAL ADJUSTMENTS

A. AGC
Observe the picture and advance the AGC control to a point where the picture distorts or a buzz is heard in the sound. Back off from this setting until the picture becomes stable with no noise in the sound.

B. Focus
The focus may be varied in steps by the position of a plug in the focus adjustment board. Readjust the ion trap for the best focus consistent with maximum brightness.

HORIZONTAL OSCILLATOR FIELD ADJUSTMENTS

For adjustment of the horizontal oscillator, it is necessary to remove the rear cover and supply power to set. Set the horizontal hold at the center of its range and adjust the horizontal frequency slug (B1) until the picture synchronizes horizontally. (For location, see tube placement chart).

SOUND IF DETECTOR BUZZ ADJUSTMENT

To eliminate sound IF detector buzz, adjust the ratio detector secondary (A10) located on top of chassis.

FUSE DEVICE

A 7.5Ω fusible resistor (R52) is used for LV power supply protection. (For location, see tube placement chart).

CENTERING

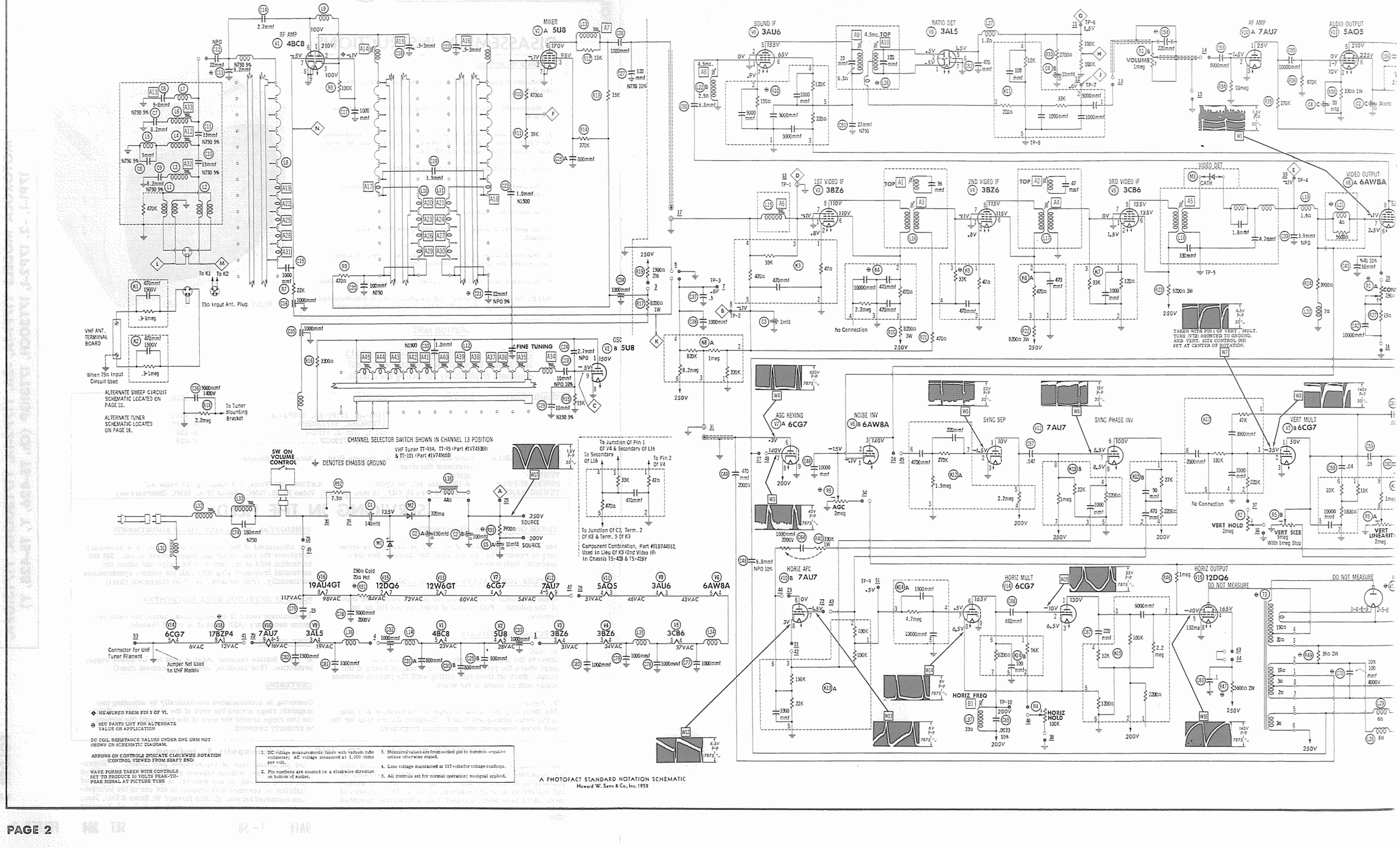
Centering is accomplished mechanically by adjusting two magnetic rings around the neck of the picture tube. Rotate the two rings around the neck of the tube until the picture is properly centered.

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

H286

DATE 1-58 SET 384 FOLDER 3

FOLDER 3


RF AMP 4BC8
MIXER V2A 5U8
OSC V2B 5U8
SOUND IF V8 3AU6
RATIO DET V9 3AL5
AF AMP V10A 7AU7
AUDIO OUTPUT V11 5AQ5
1ST VIDEO IF V3 3BZ6
2ND VIDEO IF V4 3BZ6
3RD VIDEO IF V5 3CB6
VIDEO DET
VIDEO OUTPUT V6A 6AW8A
AGC KEYING V7A 6CG7
NOISE INV V6B 6AW8A
SYNC SEP V10B 7AU7
SYNC PHASE INV V13 7AU7
VERT MULT V7B 6CG7
HORIZ AFC V10B 7AU7
HORIZ MULT V14 6CG7
HORIZ OUTPUT V15 12DQ6
19AU4GT
12DQ6
12W6GT
6CG7
7AU7
5AQ5
3AU6
6AW8A
6CG7
17BZP4
7AU7
3AL5
4BC8
5U8
3BZ6
3BZ6
3CB6
VOLUME 1meg
VERT HOLD 2meg
VERT SIZE 2meg With 1meg Stop
VERT LINEARITY 2meg
HORIZ FREQ
HORIZ HOLD 100K
FINE TUNING
VHF ANT. TERMINAL BOARD
75Ω Input Ant. Plug
When 75Ω Input Circuit Used
To K1
To K2
To Tuner Mounting Bracket
ALTERNATE SWEEP CIRCUIT SCHEMATIC LOCATED ON PAGE 10.
ALTERNATE TUNER SCHEMATIC LOCATED ON PAGE 18.
CHANNEL SELECTOR SWITCH SHOWN IN CHANNEL 13 POSITION
VHF Tuner TT-95A, TT-95 (Part #1V74530) & TT-101 (Part #1V74566)
DENOTES CHASSIS GROUND
5W ON VOLUME CONTROL
To Junction Of Pin 1 Of V4 & Secondary Of L16
To Pin 2 Of V4
To Secondary Of L16
To Junction Of C3, Term. 2 Of K8 & Term. 5 Of K3
Component Combination, Part #51B744612, Used In Lieu Of K9 (2nd Video IF) In Chassis TS-428 & TS-428Y
TAKEN WITH PIN 1 OF VERT. MULT. TUBE (V13) SHORTED TO GROUND, AND VERT. SIZE CONTROL (R6) SET AT CENTER OF ROTATION.
No Connection
Connector For UHF Tuner Filament
Jumper Not Used In UHF Models
DO NOT MEASURE
◆ MEASURED FROM PIN 3 OF V1.
⊖ SEE PARTS LIST FOR ALTERNATE VALUE OR APPLICATION
DC COIL RESISTANCE VALUES UNDER ONE OHM NOT SHOWN ON SCHEMATIC DIAGRAM.
ARROWS ON CONTROLS INDICATE CLOCKWISE ROTATION (CONTROL VIEWED FROM SHAFT END)
WAVE FORMS TAKEN WITH CONTROLS SET TO PRODUCE 50 VOLTS PEAK-TO-PEAK SIGNAL AT PICTURE TUBE
1. DC voltage measurements taken with vacuum tube voltmeter; AC voltage measured at 1,000 ohms per volt.
2. Pin numbers are counted in a clockwise direction on bottom of socket.
3. Measured values are from socket pin to common negative unless otherwise stated.
4. Line voltage maintained at 117 volts for voltage readings.
5. All controls set for normal operation; no signal applied.
A PHOTOFACT STANDARD NOTATION SCHEMATIC
Howard W. Sams & Co., Inc. 1958

SOUND IF V6 3AU6 · RATIO DET V9 3AL5 · AF AMP V10A 7AU7 · AUDIO OUTPUT V11 5AQ5 · Speaker Connection Term. Strip

1ST VIDEO IF V3 3BZ6 · 2ND VIDEO IF V4 3BZ6 · 3RD VIDEO IF V5 3CB6 · VIDEO DET · VIDEO OUTPUT V8A 6AW8A

Connect Focus Jumper From Pin 6 To Pins 1 or 10 For Best Focus · To Junction Of R28 & C44 · To Term. 3 Of K4 · In Picture Tube Socket · To Junction Of R41, C72 & R58 (Vert. Size Control) · PICTURE TUBE 17BJP4

Picture Tube Connections Used In Chassis TS-428 & TS-428Y

PICTURE TUBE V18 17BZP4 · ION TRAP · In Picture Tube Socket · 250V Connect To 1, 2 or 3 For Best Focus · (13-15KV) 14KV

BRIGHTNESS · CONTRAST 250Ω · VOLUME 1meg

TAKEN WITH PIN 1 OF VERT. MULT. TUBE (V7B) SHORTED TO GROUND, AND VERT. SIZE CONTROL (R6) SET AT CENTER OF ROTATION.

No Connection

AGC KEYING V7A 6CG7 · NOISE INV V6B 6AW8A · SYNC SEP · V12 7AU7 · SYNC PHASE INV · VERT MULT V7B 6CG7 · VERT MULT VERT OUTPUT V13 12W6GT

AGC 2meg · VERT HOLD 2meg · VERT SIZE 5meg With 1meg Stop · VERT LINEARITY 2meg

DEFLECTION YOKE T2 · RED · BLUE · GRN · YEL · Vert.-1ea Horiz.-35.5Ω · DO NOT MEASURE

HORIZ AFC V10B 7AU7 · HORIZ MULT V14 6CG7 · HORIZ OUTPUT V15 12DQ6 · DO NOT MEASURE · HV RECT V17 3A2 · 27K 1W

HORIZ FREQ · HORIZ HOLD 150K · WIDTH · BOOST 610V · DAMPER V16 19AU4GT · DO NOT MEASURE

HV TRANSFORMER TERMINAL BOARD

3AU6 · 6AW8A · 3CB6 · 46VAC · 43VAC · 37VAC

To Pin 2 Of V4 · To Term. 2 Of K3 · To Junction Of Pin 1 And Secondary Of L16

5U8

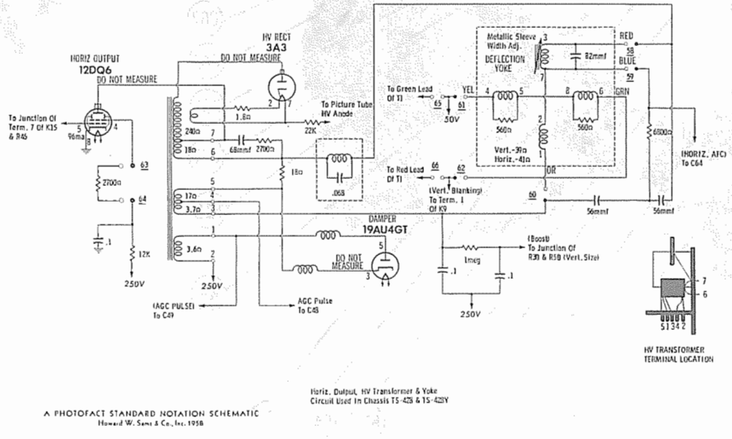
ROTATION SCHEMATIC

MOTOROLA MODELS Y17P1-1A, -2A, Y17P2-1A, Y17T30CHA, Y17T31GPA, 17P1-1, -2, 17P2-1, 17T30CH, 17T31GP (Ch. TS-426, Y, TS-428, Y)

RESISTANCE MEASUREMENTS

ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V1	4BC8	†2000Ω	INF	INF	5.5Ω	4.5Ω	INF	1.5Meg	0Ω	0Ω
V2	5U8	†12K	43K	†270K	5.5Ω	6.5Ω	†15K	0Ω	0Ω	15K
V3	3BZ6	240K	47Ω	6.5Ω	7Ω	†8700Ω	†8700Ω	0Ω		
V4	3BZ6	240K	47Ω	7Ω	7.5Ω	†8700Ω	†8700Ω	0Ω		
V5	3CB6	.1Ω	120Ω	7.5Ω	8.5Ω	†8200Ω	†8200Ω	0Ω		
V6	6AW8A	3900Ω	⊙ 780K	†80K	8.5Ω	10Ω	⊙ 90Ω	3900Ω	†10K	†5000Ω
V7	6CG7	⊙ †2.7Meg	⊙ 850K	0Ω	13.5Ω	12Ω	1Meg	†60K	†3900Ω	0Ω
V8	3AU6	2.5Ω	0Ω	10Ω	10.5Ω	†11K	†130K	150Ω		
V9	3AL5	INF	INF	3.5Ω	4.5Ω	12K	0Ω	0Ω		
V10	7AU7	†270K	10Meg	0Ω	3.5Ω	3.5Ω	22K	370K	170K	2.5Ω
V11	5AQ5	470K	330Ω	10.5Ω	11.5Ω	†900Ω	†470Ω	470K		
V12	7AU7	†2.2Meg	1.8Meg	0Ω	12Ω	12Ω	†32K	22K	2200Ω	11.5Ω
V13	12W6GT	NC	15.5Ω	†700Ω	†10K	⊙1.6Meg	NC	13.5Ω	0Ω	
V14	6CG7	†100K	⊙ 90K	1200Ω	1.5Ω	0Ω	†12K	5Meg	1200Ω	0Ω
V15	12DQ6A	TP	18Ω	TP	†8200Ω	⊙1.1Meg	NC	15.5Ω	0Ω	TOP CAP ‡65Ω
V16	19AU4	NC	NC	¶	NC	†9Ω	NC	196Ω	200Ω	
V17	3A2	PINS 1 THRU 9 HAVE INFINITE RESISTANCE								TOP CAP ‡210Ω
V18	17BZP4	2.5Ω	78K	‡1Meg	‡1Meg	‡1Meg	NC	⊙300K	1.5Ω	

¶ THIS READING CAN VARY GREATLY, (10K MINIMUM), DUE TO THE CONDITION OF THE ELECTROLYTIC CAPACITOR CONNECTED IN THE ASSOCIATED CIRCUIT.
⊙ THIS READING WILL VARY. CONTROL SET FOR NORMAL OPERATION.
† MEASURED FROM 250V SOURCE.
‡ MEASURED FROM PIN 3 OF V19.
NC NO CONNECTION.
TP TIE POINT.

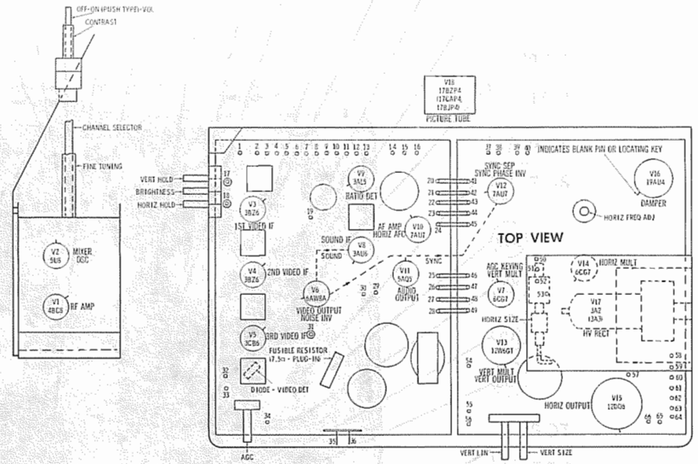


Horiz. Output, HV Transformer & Yoke Circuit Used In Chassis TS-425 & TS-425Y

A PHOTOFACT STANDARD NOTATION SCHEMATIC
Howard W. Sams & Co., Inc. 1958

ALTERNATE SWEEP CIRCUIT

TUBE PLACEMENT CHART



TUBE FAILURE CHECK CHART

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

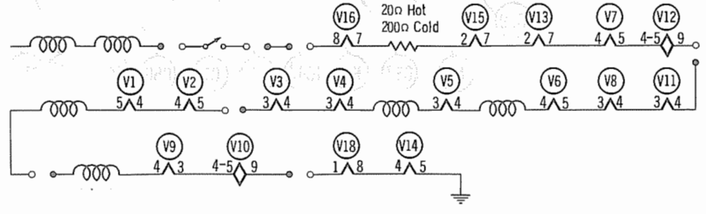
POWER SUPPLY FAILURE
No raster, no sound - **Fusible Resistor (R52), Rectifier (M1, M2)**

LOSS OF PICTURE OR SOUND
No pic, no sound, has raster - V3, V4, V5, Diode (M3), V6
No pic, no sound, has snow - V1, V2, V3
No pic, has sound, has raster - V6, V18
Has pic, no sound - V8, V9, V10, V11
Overloaded picture - V7

SYNC FAILURE
No vert. sync - V6, V12
No horiz. sync - V6, V12, V10
No vert. or horiz. sync - V6, V12

SWEEP FAILURE
No raster, has sound - V10, V14, V15, V16, V17, V18
No vertical deflection - V7, V13
Poor vert. linearity or foldover - V7, V13
Poor horiz. linearity or foldover - V14, V15, V16
Narrow picture - V14, V15, V16, M1, M2
Vert. off freq. - V7, V13
Horiz. off freq. - V14

This receiver employs tubes used in a series filament network, an open filament in any tube in the series will cause the set to be inoperative. (See circuit below.)



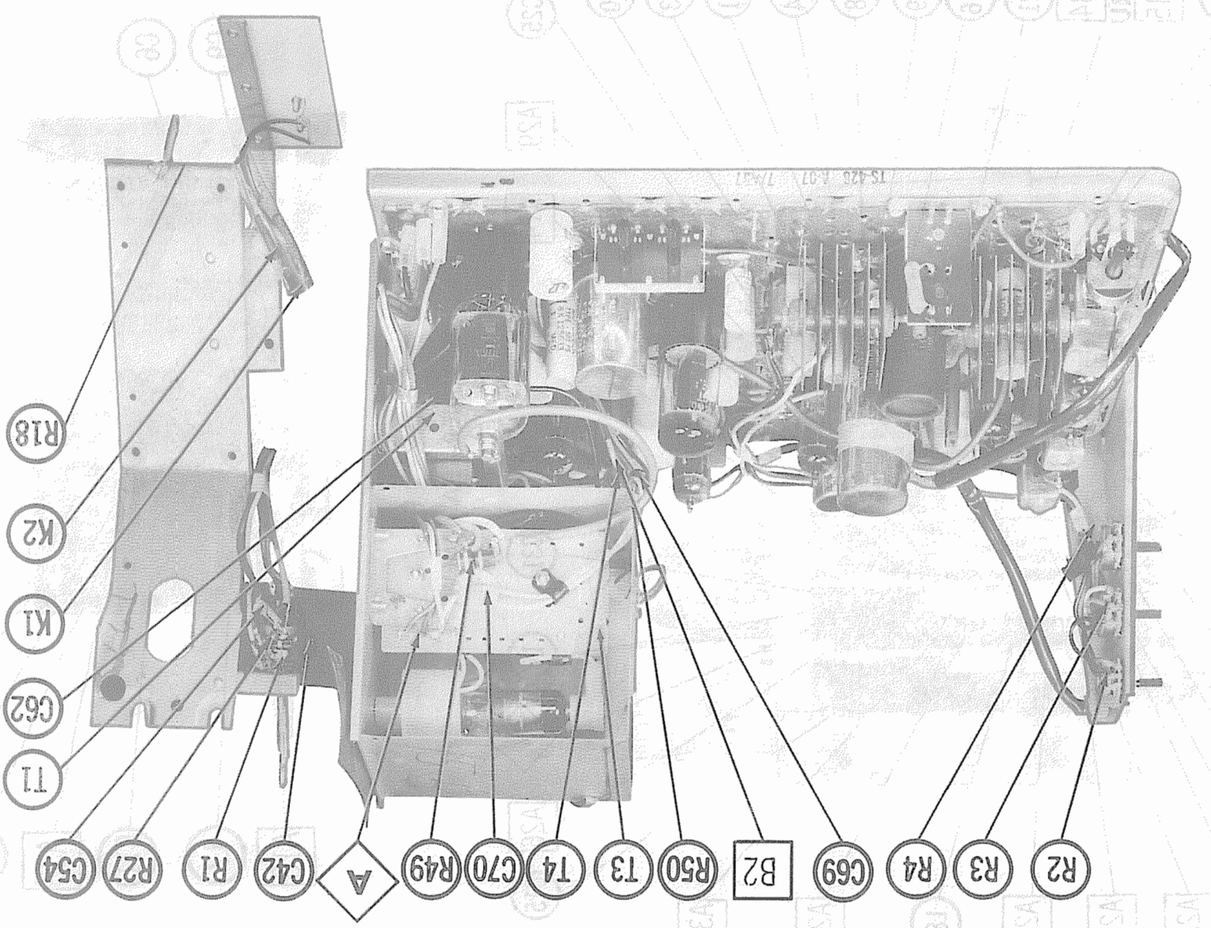
SET 304 FOLDER 3

MOTOROLA MODELS Y17P1-1A, -2A, Y17P2-1A, Y17T30CHA, Y17T31GPA, 17P1-1, -2, 17P2-1, 17T30CH, 17T31GP (Ch. TS-426, Y, TS-428, Y)

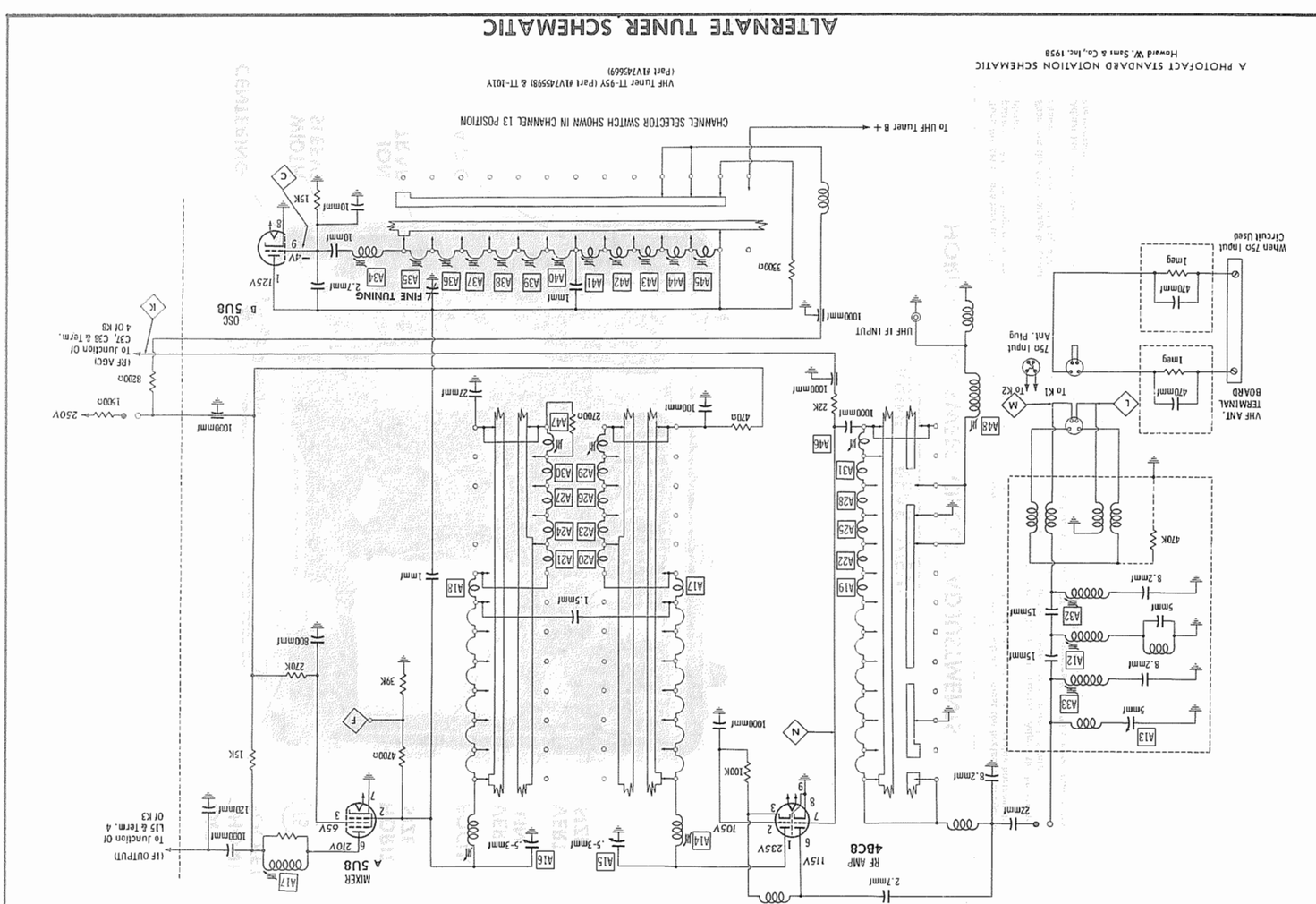
FOLDER 3

CHASSIS BOTTOM VIEW-RESISTOR AND INDUCTOR IDENTIFICATION

CHASSIS TOP VIEW



ALTERNATE TUNER SCHEMATIC



PARTS LIST AND DESCRIPTIONS (Continued)

COMPONENT COMBINATIONS (cont)

ITEM No.	USE	DESCRIPTION	MOTOROLA PART No.	REPLACEMENT DATA	
K11	Ratio Detector	1000MMF, 1000MMF, 5000MMF, 100MMF, 12K, 33K, 220Ω	51B745044	Sprague	R-9191
K12	Sync	4700MMF, 220MMF, 50MMF 470MMF, 1.5Meg, 270K, 2.2Meg, 27K, 2200Ω	51B743520		
K13	Horiz. AFC	1000MMF, 3300MMF, 100K, 100K, 150K, 22K, 2200Ω, 22K, 1Meg	51B743517		
K14	Horiz. Mult.	1500MMF, 10000MMF, 100MMF, 8200Ω, 4.7Meg, 56K	51B743344		
K15	Horiz. Mult. Output	5000MMF, 2200Ω, 100K, 2.2Meg, 12K, 1200Ω	51B743345		
K16	Yoke Ringing	150MMF, 150MMF, 6800Ω	51B738888 ④	Sprague	R-9196
K17	Vert. Integrator	2000MMF, 3000MMF, 1000MMF, 180K, 47K, 220K	51B743519		
K18	Vertical	10000MMF, 12K, 18K, 10K, 1800Ω, 1Meg	51B743521	Erie	709-06

① Alternate part #51B744739 with values of 470MMF, 470MMF, 1500MMF, 470Ω, 2.2Meg used in Ch. TS-428.
② Alternate part #51B744512 with values of 470MMF, 33K, 47Ω, 470Ω used in Ch. TS-428.
③ Alternate part #51B745279 with values of 5000MMF, 5000MMF, 5000MMF, 1000MMF, 120K, 220Ω, 270Ω used in Ch. TS-428.
④ Ch. TS-428 uses individual components of 56MMF, 56MMF, 6800Ω in this application.

RECTIFIERS

ITEM No.	RATING	REPLACEMENT DATA					NOTES
	CURRENT (Measured)	MOTOROLA PART No.	FEDERAL PART No.	GENERAL ELECTRIC PART No.	INTERNATIONAL PART No.	SARKES TARZIAN PART No.	
M1	.280A	48K25831 ①	1023A ①		RS350 ①	350A ①	① Selenium type.
M2	.280A	48K25831 ①	1023A ①		RS350 ①	350A ①	

CRYSTAL DIODES

ITEM No.	ORIG. TYPE	REPLACEMENT DATA			NOTES
		MOTOROLA PART No.	CBS PART No.	SYLVANIA PART No.	
M3		48C739300	1N60	1N60	Video Detector (Clip-in)

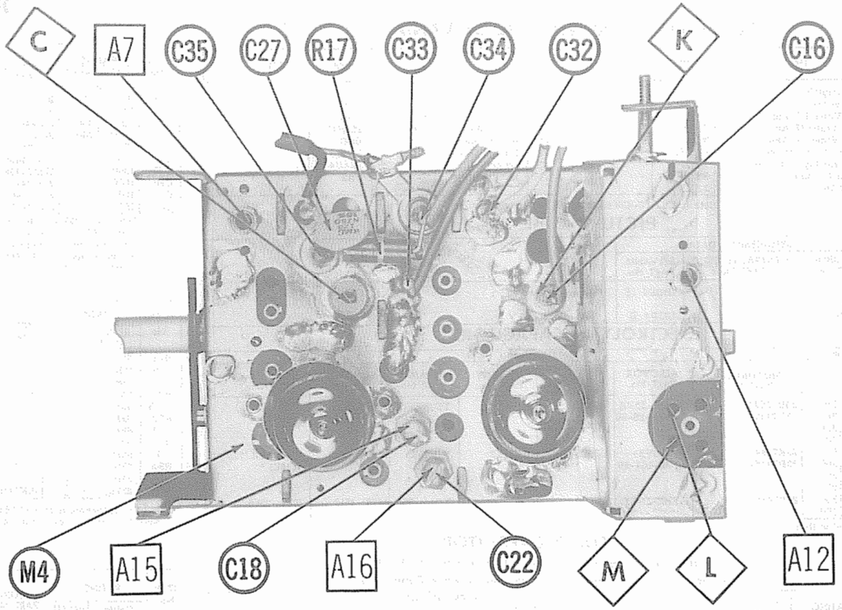
MISCELLANEOUS

ITEM No.	PART NAME	MOTOROLA PART No.	NOTES
M4	Tuner		VHF (TT-95A) - Ch. TS-426
	Tuner	1V745309	VHF (TT-95) - Ch. TS-426
	Tuner	1V745598	VHF (TT-95Y) - Ch. TS-426Y
	Tuner	1V745668	VHF (TT-101) - Ch. TS-428
	Tuner	1V745669	VHF (TT-101Y) - Ch. TS-428Y
	Tuner		UHF (VTT-89) - Ch. TS-426Y, TS-428Y
M5	Width Sleeve		
M6	Centering Device	15C742816	Includes yoke rear cover - Ch. TS-426
	Centering Device	48A743407	Includes yoke rear cover - Ch. TS-428
M7	Ion Trap	59A745187	

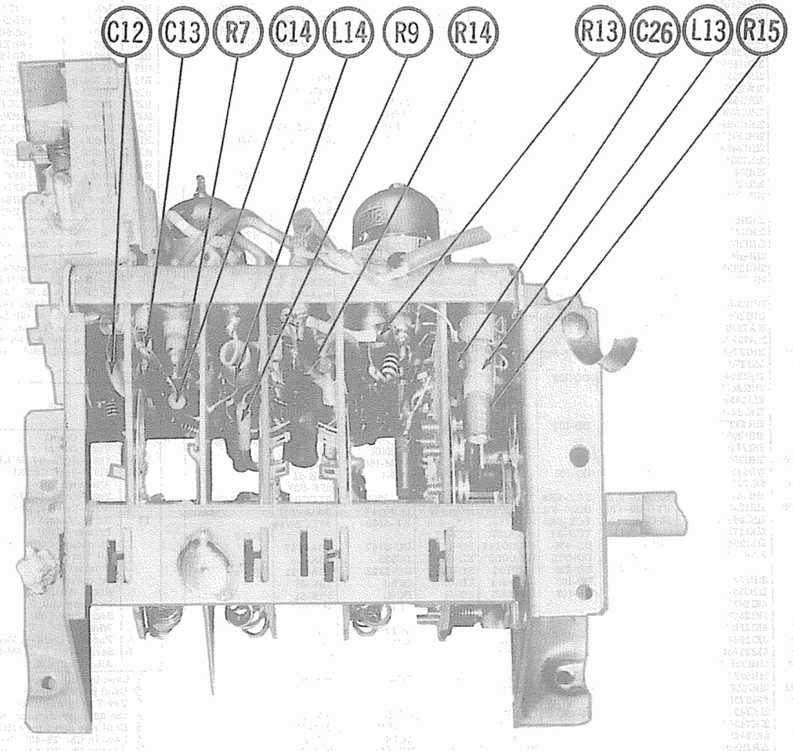
CABINETS & CABINET PARTS

(When Ordering Cabinets & Cabinet Parts, Specify Model, Chassis & Color)

NAME	PART NO.	DESCRIPTION
Safety Glass	61D742776	
Bezel	13E742771	Models 17P1-1, Y17P1-1A
Bezel	13K742772	Models 17P1-2, Y17P1-2A
Bezel	13K742773	Models 17P2-1, Y17P2-1A
Bezel	13K744979	Models 17T30CH, 17T31GP, Y17T30CHA, Y17T31GPA
Knob	36K742870	VHF Channel Selector (Model 17P1-1, 17P1-2, 17P2-1)
Knob	36K741110	VHF Channel Selector (Models 17T30CH, 17T31GP)
Knob	36C742869	VHF Channel Selector (Models Y17P1-1A, Y17P1-2A, Y17P2-1)
Knob	36C738681	VHF Channel Selector (Models Y17T30CHA, Y17T31GPA)
Knob	36B742691	Contrast (Models 17P1-1, -2, 17P2-1, Y17P1-1A, -2A, Y17P2-1A)
Knob	36B743435	Contrast (Models 17T30CH, 17T31GP, Y17T30CHA, Y17T31GPA)
Knob	36B742688	Brightness (Models 17P1-1, -2, 17P2-1, Y12P1-1A, -2A, Y17P2-1A)
Knob	36C738680	Fine Tuning (Models 17T30CH, 17T31GP, Y17T30CHA, Y17T31GPA)
Knob	36C742871	Fine Tuning (Models 17P1-1, -2, 17P2-1, Y17P1-1A, -2A, Y17P2-1A
Knob	36K744940	Horiz., Vert., Brightness (Models 17T30CH, 17T31GP, Y17T30CHA, Y17T31GPA)
Knob	36B744035	Horiz. Hold (Models 17P1-1, -2, 17P2-1, Y17P1-1A, -2A, Y17P2-1A
Knob	36B743434	On-off-volume (Models 17T30CH, 17T31GP, Y17T30CHA, Y17T31GPA)
Knob	36B742692	On-off-volume (Models 17P1-1, -2, 17P2-1, Y17P1-1A, -2A, Y17P2-1A)
Knob	36B744034	Vert. Hold (Models 17P1-1, -2, 17P2-1, Y17P1-1A, -2A, Y17P2-1A)
Dial	34K743565	UHF (Models Y17T30CHA, Y17T31GPA)
Dial	34K743564	UHF (Models Y17P1-1A, -2A, Y17P2-1A)
Cabinet	16F742803	Models 17P1-1, Y17P1-1A
Cabinet	16K742916	Models 17P1-2, Y17P1-2A
Cabinet	16K742917	Models 17P2-1, Y17P2-1A
Cabinet	16E739967	Models 17T30CH, Y17T30CHA
Cabinet	16K745160	Models 17T31GP, Y17T31GPA



RF TUNER-TOP VIEW



RF TUNER-LEFT SIDE

PARTS LIST AND DESCRIPTIONS

TUBES (GENERAL ELECTRIC, SYLVANIA)

ITEM No.	USE	TYPE	NOTES
V1	RF Amplifier	4BC8	
V2	Mixer- Osc.	5U8	
V3	1st. Video IF Amp.	3BZ6	
V4	2nd. Video IF Amp.	3BZ6	
V5	3rd. Video IF Amp.	3CB6	
V6	Video Output-Noise Inv.	6AW8A	
V7	AGC Keying-Vert. Mult.	6CG7	
V8	Sound IF Amp.	3AU6	
V9	Ratio Det.	3AL5	
V10	AF Amp.-Horiz. AFC	7AU7	
V11	Audio Output	5AQ5	
V12	Sync Sep.-Sync Phase Inv.	7AU7	
V13	Vert. Mult.-Vert. Output	12W6GT	
V14	Horiz. Mult.	6CG7	
V15	Horiz. Output	12DQ6	
V16	Damper	19AU4	
V17	HV Rectifier	3A2	Note 1

Note 1. Ch. TS-428 uses a 3A3 in this application.

PICTURE TUBE

ITEM No.	REPLACEMENT DATA: MOTOROLA PART No.	GENERAL ELECTRIC PART No.	SYLVANIA PART No.	NOTES
V16	17BZP4 17CAP4 17BJP4		17BZP4 ① 17BJP4 ①	① Silver screen "85"

ELECTROLYTIC CAPACITORS

ITEM No.	RATING: CAP.	VOLT.	MOTOROLA PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SANGAMO PART No.	SPRAGUE PART No.
C1	140	150	23B736832	AFHS1-23-0I	BR15015		TD-150-150	MT-15150	R2394 *
C2A	▲150	300	23B743544	AFHS3-26-50					R2494 *
B	▲100	300							
C	▲30	300							
C3	2	10	23K743442	PRS50V2	BBR2-50	TT12X2	TD-2-25	MT-0502	TVA-1201
C4A	▲10	300	23B743543	AFH3-164-50					R2493 *
B	▲10	50							
C	20	25							
C5A	▲10	300	23B743567	AFH2-31-02			TDLD-26	MTD-4510	TVL-2565
B	▲10	300							

* Non-catalog item.

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING: CAP.	VOLT	MOTOROLA PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	MALLORY PART No.	SPRAGUE PART No.	NOTES
C6	5-8		20A743920							
C7	8.2		21R125056							N750 5%
C8	5		21R125928	N750-SI 5	TCN-5				5TCUB-V5	N750 5%
C9	8.2		21R125856							N750 5%
C10	15		21R125929		TCN-15		TC7-15		5TCU-Q15	N750 5%
C11	15		21R125929		TCN-15		TC7-15		5TCU-Q15	N750 5%
C12	22		21R124554	NPO-SI 22	TCZ-22	C10Q22C	TCO-22		5TCU-Q22	NPO
C13	6.2		21R125856							N750 5% ①
C14	2.7		21R115950							
C15	1000		21R115386	BPD-001	DD-102	BYA6D1	ED-1000	DC521	5HK-D1	
C16	1000		21A739920	EF-001	MFT-1000				503C-D1	
C17	1000		21R115386	BPD-001	DD-102	BYA6D1	ED-1000	DC521	5HK-D1	
C18	.5-3		21K735985		829-3		3115-D	CT565A		
C19	1.5		21R115959	NPO-SI 1.5	TCZ-1R5	CTA6V15C	TCO-1.5	ZT-5515	5TCCB-V15	
C20	100		21R120577	N750-SI 100	TCN-100	CTA6TIC	TC7-100	NT-531	5TCU-T1	N750
C21	22		21R124554		TCZ-22		TCO-22		5TCC-Q22	NPO 5% ②
C22	.5-3		21K735985		829-3		3115-D	CT565A		
C23	1.0		21R114071							N1500
C24	2.7		21R125699							NPO
C25A	800		21R400943	BPD-0008	DD-801	L10T8	ED-0008		5GA-T8	
B	800			BPD-0008	DD-801	L10T8	ED-0008		5GA-T8	
C26	1000		21R115386	BPD-001	DD-102	BYA6D1	ED-1000	DC521	5HK-D1	
C27	120		21R115730	N750-SI 120	TCN-120	C10T12U	TC7-120			N750 10%
C28	10		21R125698	NPO-DI 10	TCZ-10	C10Q1C	TCO-10	ZT-541	5TCC-Q1	NPO 10%
C29	10		21R410063							N150 5%
C30	1.0		21R124552							N1500
C31A	800		21R400943	BPD-0008	DD-801	L10T8	ED-0008		5GA-T8	
B	800			BPD-0008	DD-801	L10T8	ED-0008		5GA-T8	
C32	1000		21R120672	EF-001	MFT-1000				503C-D1	
C33	1000		21R120672	EF-001	MFT-1000				503C-D1	
C34	1000		21A739920	EF-001	MFT-1000				503C-D1	
C35	1000		21A739920	EF-001	MFT-1000				503C-D1	
C36	5000	1400	21R127468	DAC-9	DD30-502	HVE16D5	HD15-4700	GEM-1625	MB-D5	
C37	.5	100	8K127007			BC2P47J			2SE-P47	
C38	1000		21K124469	BPD-001	DD-102	BYA6D1	ED-1000	DC521	5HK-D1	
C39	3.9		21K124550			C10V4C				NPO
C40	.047	400	8K124692			BC6S47J		ACE6147	4SE-S47	
C41	68		21K124467							N470 10%
C42	10000		21R482726	BPD-01	DD-103	BYA6S1	ED-01	DC511	5HK-S10	
C43	22		21R120539							N150 10%
C44	.1	400	8K124461			BC6P1J		ACE401	4SE-P10	
C45	10000	1400	21R125805	DAC-27		HVE16S1		GEM-1611	BL-S10	
C46	10000		21B533471	BPD-01	DD-103	BYA6S1	ED-01	DC511	5HK-S1	
C47	.03	200	8K122226			BC2S33J			2SE-S33	
C48	6.8		21B744415	NPO-DI 6.8	TCZ-6R8	C10V68C	TCO-6.8	ZT-5566	5TCCB-V68	NPO 10%
C49	470	2000	21R125803	HVD-30-470	DD30-471	HVB20T47	HD3-470	DC30347	20GA-T47	
C50	6.8		21R124609	NPO-SI 6.8	TCZ-6R8	C10V68C	TCO-6.8	ZT-5568	5TCCB-V68	
C51	27		21K127523		TCN-27	C10Q27U	TC7-27			N750
C52	470		21K125427	BPD-00047	DD-471	BYA10T47	ED-470	UC-5347	5GA-T47	
C53	5000		21K633232	BPD-005	DD-502	BYA10D5	ED-005	DC525	5HK-D5	
C54	220			BPD-00022	DD-221	L10T22	ED-220	UC-5322	5GA-T22	③
C55	10000		21B533471	BPD-01	DD-103	BYA6S1	ED-01	DC511	5HK-S1	
C56	10000		21B533471	BPD-01	DD-103	BYA6S1	ED-01	DC511	5HK-S1	
C57	.047	400	8K124573			BC6S47J		ACE6147	4SE-S47	
C58	.04	600	8K125708							
C59	.05	600	8K125139			BC6S47J		ACE615	6SE-S47	
C60	.05	200	8K120845			BC2S47J		ACE615	2SE-S47	
C61	.02	400	8K125862			BC6S22J		ACE612	4SE-S22	
C62	2000	2000	21R125899							10%
C63	10000		21B533471	BPD-01	DD-103	BYA6S1	ED-01	DC511	5HK-S1	
C64	1000	2000	21R125804	HVD-30-1000	DD30-102	HVB20D1	HD3-1000	DC3021	20GA-D1	10%
C65	.0033	400	8K127398							
C66	680		21K743440		1467-00088	D6-681	1W5T68	ED-680	UC-5368	1FM-368
C67	220		21K743441		1468-00022	D6-221	5W5T22	ED-220	UC-5322	1FM-322
C68	.1	400	8K124461				BC6P1J		ACE401	4SE-P10
C69	470		21R410121	BPD-00047	DD-471	BYA10T47	ED-470	UC-5347	5GA-T47	③
C70	100	4000	21R127589							10% ④
C71	.1	600	8K125633			BC6P1J		ACE601	6SE-P10	
C72	.1	600	8K125633			BC6P1J		ACE601	6SE-P10	

CAPACITORS (cont)

ITEM No.	RATING: CAP.	VOLT	MOTOROLA PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	MALLORY PART No.	SPRAGUE PART No.	NOTES
C73	91	2000	21A745631							⑤ N750
C74	180		21R124685		TCN-180	CTA6T18U	TC7-180			
C75	.25	600	8K124677			BC6P22J		ACE6022		
C76	5000	2000	21R124475		DD30-502	HVC20D5		GEM-3025	20HKB-D5	
C77	1000		21K124469	BPD-001	DD-102	BYA6D1	ED-1000	DC521	5HK-D1	
C78	1000		21K124469	BPD-001	DD-102	BYA6D1	ED-1000	DC521	5HK-D1	
C79	1000		21K124469	BPD-001	DD-102	BYA6D1	ED-1000	DC521	5HK-D1	
C80	1000		21K124469	BPD-001	DD-102	BYA6D1	ED-1000	DC521	5HK-D1	
C81	1000		21K124469	BPD-001	DD-102	BYA6D1	ED-1000	DC521	5HK-D1	
C82	1500		21K124470	BPD-0015	DD-152	BYA10D15	ED-1500	DC5215	5HK-D15	

① In Tuner TT-95Y this is a 6.8MMF (Part #21R124609).
② In Tuner TT-95Y this is a 27MMF (Part #21R722050).
③ Not used in some versions.
④ Some versions use a 120MMF ⓐ 4000V in this application (Part #21R125979). Not used in Ch. TS-428.
⑤ A 82MMF ⓐ 2000V (Part #21R120150) used in Ch. TS-428.

CONTROLS

ITEM No.	RATING: RESISTANCE	WATTS	MOTOROLA PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	IRC PART No.	MALLORY PART No.	INSTALLATION NOTES
R1A	250Ω	1/2	18C743549				UE115S	Contrast - Note 1
B	1Meg	1/2					Not Req.	Volume
C	Switch						Not Req.	
R2A	2Meg	1/2	18K742911	B-75	A47-2Meg-S	Q11-139	TA26L	Vert. Hold
B	Shaft			Not Req.	KSS-3	Not Req.	Not Req.	
R3A	100K	1/2	18K744119	B-40	A47-100K-S	Q11-128	TA15L	Brightness
B	Shaft			Not Req.	KSS-3	Not Req.	Not Req.	
R4A	100K	1/2	18K744119	B-40	A47-100K-S	Q11-128	TA15L	Horiz. Hold
B	Shaft			Not Req.	KSS-3	Not Req.	Not Req.	
R5A	2Meg	1/2	18K742787					Vert. Lin.
B	5Meg	1/2						Vert. Size with 1Meg stop
R6	2Meg	1/2	18K743956					AGC - Note 2

Note 1. Alternate part #18C744743 used in Ch. TS-428.
Note 2. Alternate part #18C743956 used in Ch. TS-428.

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING: OHMS	WATT	MOTOROLA PART No.	NOTES
R7	22K		6R6028	
R8	100K		6R6075	
R9	470Ω		6R3949	
R10	4700Ω		6R6039	
R11	39K		6R6487	
R12	18K		6K122848	
R13	15K		6R2119	
R14	270K		6R6144	
R15	15K		6R2119	
R16	33000Ω		6R5581	
R17	8200Ω	1	6K125033	
R18	2.2Meg		6R3927	
R19	1500Ω	2	6R2005	
R20	8200Ω	3	17K738283	
R21	470Ω		6R3949	Note 1
R22	8200Ω	3	17K738283	
R23	8200Ω	3	17K738283	
R24	3900Ω		6R5659	
R25	5000Ω	10	17K743550	
R26	10K	2	6K125087	
R27	15Ω		6R2034	
R28	220K		6R6407	
R29	100K		6R6031	

ITEM No.	RATING: OHMS	WATT	MOTOROLA PART No.	NOTES
R30	33K		6R6012	
R31	3900Ω			Note 2
R32	1000Ω			Note 3
R33	2700Ω		6R5577	
R34	10Meg		6R5622	
R35	270K		6R6414	
R36	470K		6R6377	
R37	470Ω	1	6R5593	
R38	3300Ω	1	6R6254	
R39	680Ω		6R3931	Note 4
R40	330K	1	6K125793	
R41	10K	2	6R6299	
R42	15K	2	6R5732	
R43	220Ω		6K127099	Note 5
R44	Note 6			Note 8
R45	220Ω		6K127099	Note 5
R46	1Meg		6R6064	
R47	5600Ω	2	6K122361	Note 7
R48	1Meg		6R6046	
R49	39Ω	2	6R488043	Note 8
R50	820Ω		6K127534	Note 9
R51	Note 10		6B738820	Note 10
R52	7.5Ω		17K738862	

Note 1. In Ch. TS-428 this is a part of a component combination (Part #51B744512).
Note 2. Some versions use a 2200Ω or 3300Ω in this application.
Note 3. Some versions use a 10K (Part #6R6430) in this application.
Note 4. Not used in Ch. TS-428.
Note 5. A 560Ω (part #6K122802) used in Ch. TS-428.
Note 6. 3.8Ω Cold, 2.0Ω Hot. Not used in Ch. TS-428.
Note 7. Some versions use a 8200Ω, 2W (Part #6R5725) in this application.
Note 8. An 18Ω (part #6K122847) used in Ch. TS-428.
Note 9. In some versions, C69 is not used and a 5000Ω, 5W (Part #17K745058) is used in this application.
Not used in chassis coded A-03 and higher.
Note 10. 250Ω Cold, 20Ω Hot.

TRANSFORMERS (SWEEP CIRCUITS)

ITEM No.	USE	MOTOROLA PART No.	Halldorson PART No.	Merit PART No.	Ram PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	NOTES
T1	Vert. Output	25C742828 ①							
	Vert. Output	25K744697 ②	Z1900 ③	A-2821	V316 ④	A-8148	26S73 ⑤	A-118X	
T2A	Yoke-Horiz.(17.6MH)	24D742835-D		MDF-107					
B	(110°)-Vert.(12MH)	⑥							
	Alternate Yoke	24D742835 ⑥							
A	Yoke-Horiz. (24MH)	24K745101 ⑦		MDF-108					
B	(90°)-Vert.(42MH)								
T3	Horiz. Output	24K745702 ⑧		HVO-164					
	Primary Coil	24K745703							
	Secondary Coil	24C744286							
	Alt. Horiz. Output	24C744406 ⑨							
	Primary Coil	24C744287							
	Secondary Coil	24C744286							
	Horiz. Output	24C745536 ⑩		HVO-165					
	Primary Coil	24K745533							
	Secondary Coil	24K745531							
T4	Width Coil	24C744936 ①							
A	Parallel Coil(1-6.5MH)								
B	Series Coil (3-6.5MH)								
	Alt. Width Coil	24K745704 ⑪							

① Used in Ch. TS-426.
② Used in Ch. TS-428.
③ Use 7 to 1 turns ratio.
④ Cut and tape blanking lead.
⑤ Drill new mounting hole(s).
⑥ Used in Ch. TS-426. Includes leads and plug. Does not include rear cover and centering device (Part #15C742818).
⑦ Used in Ch. TS-428. Includes leads and plug. Does not include rear cover and centering device (Part #48A743497).
⑧ Used in Ch. TS-426 coded A-03 and higher.
⑨ Used in Ch. TS-426. In chassis coded A-02-1, a red dot is included and should be replaced with an equivalent of part #24K745702. Includes HV rectifier socket.
⑩ Includes HV rectifier socket. Used in Ch. TS-428.
⑪ Used in Ch. TS-426 coded A-02-1 and higher.

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE: PRI.	SEC.	MOTOROLA PART No.	Halldorson PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	NOTES
T5	5000Ω	3-4Ω	25C743545 ①	Z1107 ②	A-2930 ②	A-3877 ②	24S51 ②	S-51X ②	① Alternate part #25B743545. ② Fabricate mounting.

SPEAKER

ITEM No.	TYPE: SIZE	FIELD	V. C. IMP.	REPLACEMENT DATA: MOTOROLA PART No.	QUAM PART No.	NOTES
SP1	4"	PM	3-4Ω	50D742820 ①	4A97	① Used in Model 17P1-1
	4"	PM	3-4Ω	50K743040 ②		② Used in Models 17P1-1, -2, 17P2-1, Y17P1-1A, -2A, Y17P2-1A
	4"	PM	3-4Ω	50K740428 ③		③ Used in Models 17T30CH, 17T3IGP, Y17T30CHA, Y17T3IGPA

COILS (RF-IF)

ITEM No.	USE	MOTOROLA PART No.	NOTES
L1	Ant. Matching Coil	24C744200	
L2	Ant. Matching Coil	24C744200	
L3	IF Trap Coil	1B743982	
L4	IF Trap Coil	1B743930	
L5	IF Trap Coil	24K743530	
L6	IF Trap Coil	1B743982	
L7	IF Trap Coil	24B743047	
L8	Ant. Coils	1V743693	Channel 2-13, wafer assy. includes C12, C13, C15
L9	Neut. Coil	24A739397	
L10	RF Coils	1V743447	Channel 2-13, wafer assy. includes C19, C20, R9
L11	Mixer Grid Coils	1V738859	Channel 2-13, wafer assy. Includes C21
L12	Osc. Coils	1V743191	Channel 2-13, wafer assy. includes C30, C28, R16
L13	Mixer Plate Coil	24B740435	
L14	Fil. Choke	24K743675	

ITEM No.	USE	REPLACEMENT DATA: MOTOROLA PART No.	MEISSNER PART No.	MERIT PART No.	MILLER PART No.	NOTES
L15	1st. Video IF	24K744323				Includes 41.25MC Trap
L16	2nd. Video IF	24B740285				Includes 47.25MC Trap
L17	3rd. Video IF	24K743317				Includes coils, caps and M3
L18	4th. Video IF	24K744416				
L19	RF Choke	24K740416	19-1005	BC-566	4812	10 Microhenries
L20	Shunt Peaking Coil	24K745113	19-4201	TV-197	6154	200 Microhenries
L21	Series Peaking Coil	24K745114	19-3093 *	TV-181 *	6177 *	91 Microhenries, wound on 5600Ω resistor - Note 1
L22A	4.5MC Trap	24B740282				
B	Sound IF					
L23	Shunt Peaking Coil	24K745111		TV-202	6136	430 Microhenries
L24	Shunt Peaking Coil	24K745110				3000 Microhenries, wound on 4700Ω resistor
L25	Series Peaking Coil	24K738803	19-3250 ▲	TV-184 ▲	6181 ▲	240 Microhenries, wound on 10K resistor Tertiary winding -1.5Ω -Note 2
L26	Ratio Det.	24B745163				7.8 Microhenries
L27	Resonant Choke	24A742728				
L28	RF Choke	24K791446	19-1005	BC-566	4612	10 Microhenries, IRC part #CL-1
L29	RF Choke	24K791446	19-1005	BC-566	4612	10 Microhenries, IRC part #CL-1
L30	RF Choke	1V738800				5.5 Microhenries, wound on .068MFD Cap. - Note 3
L31	Line Choke	24B742200				9MC
L32	Line Choke	24B742199				4.5MC
L33	Line Choke	24B740867				
L34	Fil. Choke	24B743552	19-1001	BC-562	4604	1.4 Microhenries
L35	Fil. Choke	24B743552	19-1001	BC-562	4604	1.4 Microhenries
L36	Fil. Choke	24B743552	19-1001	BC-562	4604	1.4 Microhenries

Note 1. Alternate part #24K745776, 91 microhenries wound on 15K resistor used in Ch. TS-428.
Note 2. Alternate part #24B740283 used in Ch. TS-428.
Note 3. Alternate part #1K740431 used in Ch. TS-428.
* Parallel with 5600Ω resistor.
▲ Parallel with 10K resistor.

TRANSFORMER (HORIZ. OSC.)

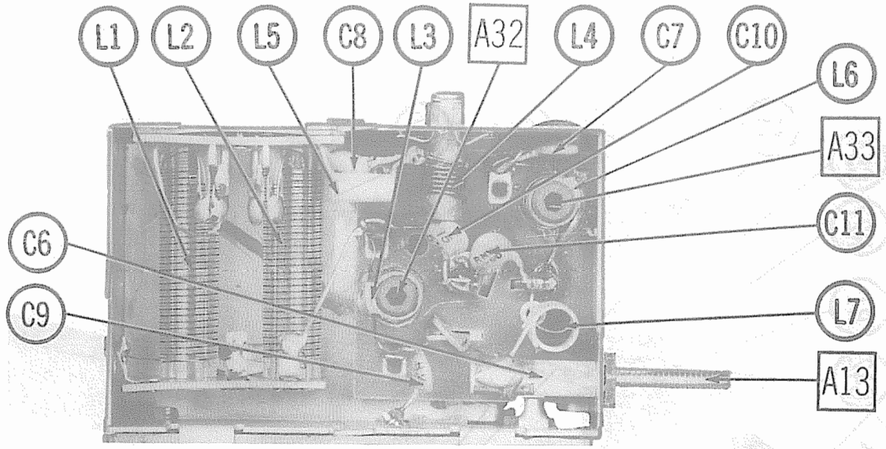
ITEM No.	DC RES.: PRI.	SEC.	MOTOROLA PART No.	Meissner PART No.	Merit PART No.	Miller PART No.	Ram PART No.	Thordarson PART No.	NOTES
L37	33Ω		24D738797						

FILTER CHOKE

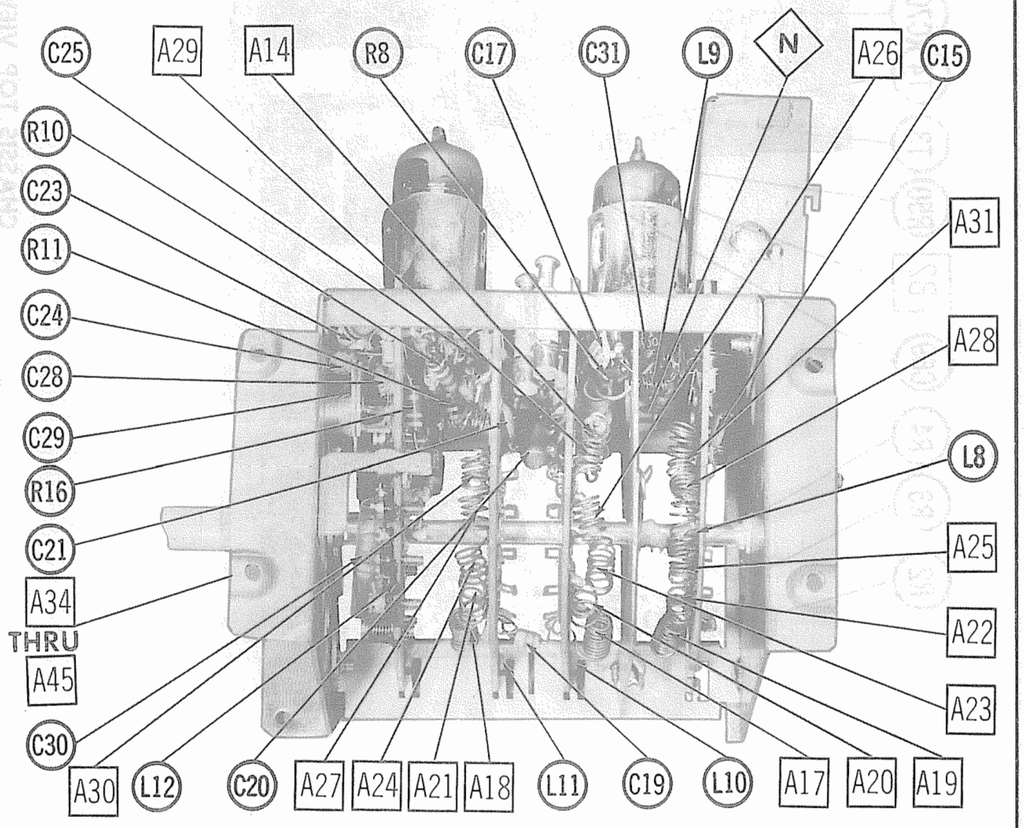
ITEM No.	RATINGS: TOTAL DIRECT CURRENT	D.C. RESISTANCE	INDUCTANCE (0 CURRENT 1000 ∿)	REPLACEMENT DATA: MOTOROLA PART No.	Halldorson PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.
L38	.310A	44Ω	1 HY.	25K743041				26C44	

COMPONENT COMBINATIONS

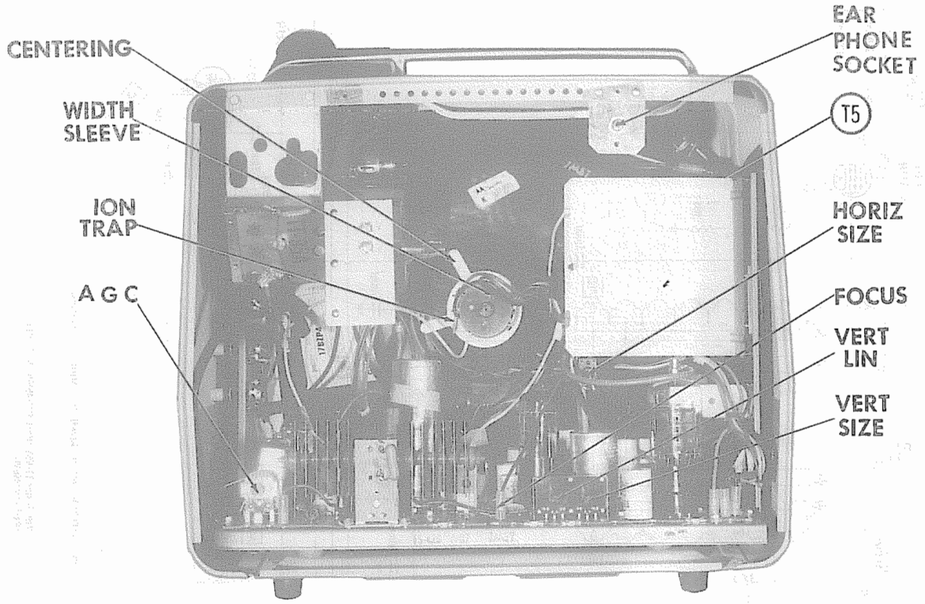
ITEM No.	USE	DESCRIPTION	MOTOROLA PART No.	REPLACEMENT DATA	
K1	Ant. Isolation	470MMF ⓐ 1500V, .3-1Meg	51B740235	Centralab Sprague	RC-471 R-9177
K2	Ant. Isolation	470MMF ⓐ 1500V, .3-1Meg	51B740235	Centralab Sprague	RC-471 R-9177
K3	1st. IF Grid	470MMF, 470Ω, 33K, 47Ω	51B738930	Sprague	R-9186
K4	1st. IF Screen	470MMF, 470MMF, 10000MMF, 470Ω, 2.2Meg	51B738889 ①	Sprague	R-9187
K5	2nd. IF Grid	470MMF, 33K, 47Ω	51B738912 ②	Sprague	R-9188
K6	2nd. IF Screen	470MMF, 5000MMF, 470Ω	51B738838	Sprague	R-9189
K7	3rd. IF Grid	1000MMF, 33K, 120Ω	51B738753		
K8	AGC	1000MMF, 330K, 1Meg, 820K, 8.2Meg, 33K, 10K, 68K	51B743957	Erie	709-07
K9	Vert. Blanking	5000MMF, 10000MMF, 10K, 68K	51B743518	Sprague	R-9190
K10	Sound IF	5000MMF, 5000MMF, 5000MMF, 1000MMF, 120K, 220Ω, 150Ω	51B745043 ③		



RF TUNER-REAR VIEW



RF TUNER-RIGHT SIDE



CABINET—REAR VIEW

HORIZONTAL SWEEP CIRCUIT ADJUSTMENTS

Turn the set on and tune in a TV station, preferably with a test pattern. Adjust the brightness and contrast controls for a normal picture.

Short out the AFC voltage by connecting a clip lead from TP-9 to chassis. Connect a .1MFD, 400 volt capacitor from TP-10 to chassis.

Adjust horizontal hold to the point where the picture is almost stable horizontally.

Remove the capacitor from TP-10 and adjust the horizontal frequency slug (B1) to the point where the picture is almost stable horizontally.

Remove the clip lead from TP-9 and chassis. Adjust the horizontal hold control until the picture is synchronized horizontally.

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

ALIGNMENT INSTRUCTIONS

PRE-ALIGNMENT INSTRUCTIONS

USE AN ISOLATION TRANSFORMER TO PROTECT THE TEST EQUIPMENT.
Remove deflection yoke plug from the chassis after removing the hex head screw. Connect a 2200Ω, 50 watt resistor from point (A) to chassis.

VIDEO IF ALIGNMENT

Connect the negative lead of a 6 volt bias supply to point (B). Positive to chassis.
Disable the local oscillator by connecting a clip lead from point (C) to chassis.
Connect the synchronized sweep voltage from the sweep generator to the horizontal input of the oscilloscope for horizontal deflection.
The sweep generator output lead should be terminated with its characteristic impedance, usually 50 ohms.
Use only enough sweep generator output to provide a usable pattern on scope.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
1.	.005MFD	High side to point (D). Low side to chassis.	44.0MC (10MC Swp)	41.25MC	Any non-interfering channel	Vert. Amp. thru 47K to point (E). Low side to chassis.	A1	Adjust to place marker in trap notch. (See Fig. 1).
2.	"	"	"	47.25MC	"	"	A2	"
3.	"	"	"	42.25MC	"	"	A3	Adjust to place marker at 70% on curve as in Fig. 1.
4.	"	"	"	45.75MC	"	"	A4	"
5.	"	"	"	42.25MC 45.75MC	"	"	A5	Adjust for maximum gain and symmetry of response similar to Fig. 1 with markers as shown.
6.	"	High side to point (F). Low side to chassis.	"	41.25MC 42.25MC 45.75MC 47.25MC	"	"	A6, A7	Adjust for maximum gain and symmetry of response similar to Fig. 2 with markers as shown. If necessary SLIGHTLY retouch A1 thru A7 for desired response.

SOUND IF ALIGNMENT

Turn contrast control fully clockwise.
Connect two matched 100K (±1%) resistors in series from point (G) to chassis. The junction of these two resistors is alignment point (H) as shown on the schematic.
Use only enough generator output to provide a usable indication on VTVM.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	CHANNEL	CONNECT VTVM	ADJUST	REMARKS
7.	.005MFD	High side to point (E). Low side to chassis.	4.5MC (Unmod)	Any non-interfering channel	DC probe to point (G). Common to chassis.	A8, A9	Adjust for maximum deflection.
8.	"	"	"	"	DC probe to point (J). Common to point (H).	A10	Adjust for zero reading. A positive and negative reading will be obtained on either side of the correct setting.

4.5MC TRAP ALIGNMENT

Tune the receiver to a local TV station and advance the contrast control. Adjust the fine tuning until there is a 4.5MC beat pattern in the picture. Adjust All for MINIMUM beat pattern in the picture between the two points of maximum beat pattern.

VHF RF AND MIXER ALIGNMENT

Unplug antenna lead in from tuner and connect short from point (L) to point (M). Connect a clip lead from point (K) to chassis in order to ground AGC.
Connect the synchronized sweep voltage from the sweep generator to the horizontal input of the oscilloscope for horizontal deflection.
The sweep generator output lead should be terminated with its characteristic impedance, usually 50ohms.
Use only enough sweep generator output to provide a usable pattern on scope.
Use 10MC sweep unless otherwise noted.
Coils not containing adjustable cores are adjusted by expanding or compressing coil turns.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
9.	Two 120Ω Carbon Resistors	Across antenna terminals with 120Ω in each lead.	Not used	159MC (400∿ 30% AM)	7	Vert. Amp. thru 47K to point (F). Low side to chassis.	A12	Adjust for MINIMUM 400∿ indication.
10.	"	"	"	112MC (400∿ 30% AM)	6	"	A13	"
11.	"	"	213MC	211.25MC 215.75MC	13	"	A14	Adjust for maximum gain and symmetry of response similar to Fig. 3 with markers as shown.
12.	"	"	177MC	175.25MC 179.75MC	7	"	A15, A16	Adjust for maximum gain and symmetry of response similar to Fig. 3 with markers as shown. Repeat steps 11 and 12, if necessary.
13.	"	"	85MC	83.25MC 87.75MC	6	"	A17, A18, A19	Adjust in numerical order for response similar to Fig. 4 with markers as shown. First two adjustments are for correct marker positions and the third adjustment is for maximum gain and proper tilt.
14.	"	"	79MC	77.25MC 81.75MC	5	"	A20, A21, A22	"
15.	"	"	69MC	67.25MC 71.75MC	4	"	A23, A24, A25	"
16.	"	"	63MC	61.25MC 65.75MC	3	"	A26, A27, A28	"
17.	"	"	57MC	55.25MC 59.75MC	2	"	A29, A30, A31	"
18.	"	"	"	42.5MC 44.5MC	"	"	A32, A33,	Adjust for MINIMUM gain with flat response A32 affects 42.5MC marker and A33 affects 44.5MC marker.

ALIGNMENT INSTRUCTIONS (cont)

VHF OSCILLATOR ALIGNMENT

Connect a clip lead from point (K) to chassis.
Connect the synchronized sweep voltage from the sweep generator to the horizontal input of the oscilloscope for horizontal deflection.
The sweep generator output lead should be terminated with its characteristic impedance, usually 50 ohms.
Set the fine tuning to the center of its range.
Use only enough sweep generator output to provide a usable pattern on scope.
Use 10MC sweep unless otherwise noted.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
19.	Two 120Ω Carbon Resistors	Across antenna terminals with 120Ω in each lead.	213MC	215.75MC	13	Vert. Amp. thru 47K to point (E). Low side to chassis.	A34	Adjust to place sound marker in trap notch as in Fig. 5.
			207MC	209.75MC	12		A35	
			201MC	203.75MC	11		A36	
			195MC	197.75MC	10		A37	
			189MC	191.75MC	9		A38	
			183MC	185.75MC	8		A39	
			177MC	179.75MC	7		A40	
			85MC	87.75MC	6		A41	
			79MC	81.75MC	5		A42	
			69MC	71.75MC	4		A43	
			63MC	65.75MC	3		A44	
			57MC	59.75MC	2		A45	

UHF INPUT ALIGNMENT

Connect the synchronized sweep voltage from the sweep generator to the horizontal input of the oscilloscope for horizontal deflection.
The sweep generator output lead should be terminated with its characteristic impedance, usually 50 ohms.
Use only enough sweep generator output to provide a usable pattern on scope.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
20.	50Ω Resistor	High side to point (N). Low side to chassis.	44MC (10MC Swp)	41.25MC 45.75MC	UHF	Vert. Amp. thru 47K to point (E). Low side to chassis.	A46, A47	Adjust for maximum gain and symmetry of response similar to Fig. 2 with markers as shown.
21.	Short Antenna Terminals	Not used	Not used	Not used	"	USE VTVM. DC probe to point (E). Common to chassis.	A48	Adjust for maximum DC noise voltage.

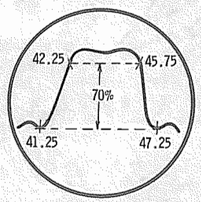


FIG. 1

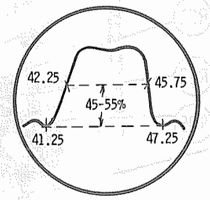


FIG. 2

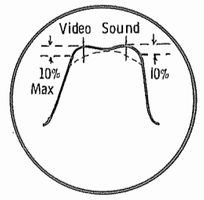


FIG. 3

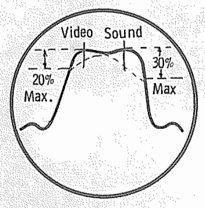


FIG. 4

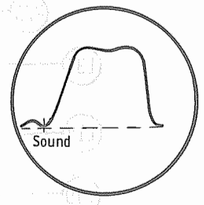
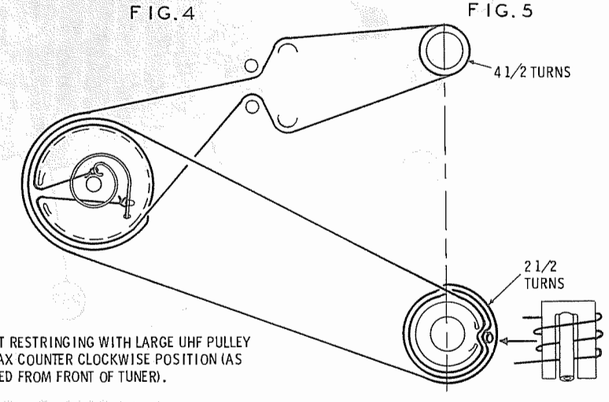


FIG. 5



START RESTRINGING WITH LARGE UHF PULLEY IN MAX COUNTER CLOCKWISE POSITION (AS VIEWED FROM FRONT OF TUNER).

UHF DRIVE CORD STRINGING

TP1	-.1V	1ST VIDEO IF GRID
TP2	-.1V	IF AGC
TP3	.6V	RF AGC
TP4	-.1V	VIDEO DET OUTPUT
TP5	0V	GROUND
TP6	1.3V	RATIO DETECTOR
TP7	.6V	AUDIO
TP8	0V	GROUND
TP9	-.2V	HORIZ AFC
TP10	205V	HORIZ OSC

CHASSIS BOTTOM VIEW-CAPACITOR AND ALIGNMENT IDENTIFICATION