



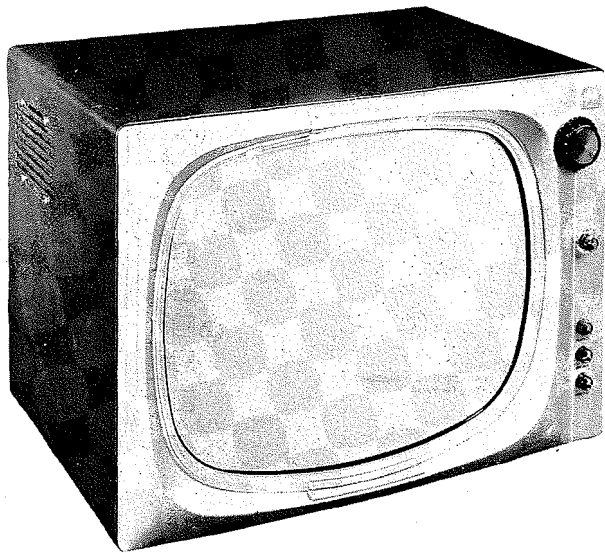
MOTOROLA MODELS Y21K38, B, Y21T25CH, PK, TN, 21K38, B, 21T25CH, PK, TN (Ch. TS-530, Y)

DISASSEMBLY INSTRUCTIONS

CABINET REMOVAL

1. Remove 1 metal screw. Remove rear cover.
2. Disconnect speaker plug.
3. Remove 1 metal screw from "L" shaped tie down strip at the upper rear portion of the chassis.
4. Remove 4 metal screws from safety glass retainer plates and remove safety glass.
5. Remove 2 metal screws from behind retainer plate.
6. Remove 6 metal screws holding bottom pan to cabinet.
7. Remove cabinet shell from chassis bottom pan.
8. Remove 4 speaker nuts. Remove speaker.

NOTE: If it is necessary to remove the chassis for servicing it is also necessary to remove the speaker. The speaker is the electro-magnetic type and must be connected for proper operation.



MODELS CHASSIS

Y21K38, Y21K38B, Y21T25CH, Y21T25PK, Y21T25TN	TS-530Y
21K38, 21K38B, 21T25CH, 21T25PK, 21T25TN	TS-530

MOTOROLA MODELS Y21K38, B, Y21T25CH, PK, TN, 21K38, B, 21T25CH, PK, TN (Ch. TS-530, Y)

SERVICING IN THE FIELD

TUNER OSCILLATOR ADJUSTMENTS

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

PICTURE TUBE SAFETY GLASS CLEANING

To clean safety glass remove 4 metal screws from glass retainers at the top and bottom edges of the safety glass. Remove retainer plates and safety glass. Use extreme caution when removing safety glass.

PICTURE TUBE REMOVAL

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

SERVICE ADJUSTMENT LOCATION

See tube placement chart on page 5.

HORIZONTAL OSCILLATOR FIELD ADJUSTMENT

Adjustment of the horizontal oscillator circuit can be made from the rear panel of the chassis. Set the horizontal hold control at the mid-position of its range and adjust the horizontal oscillator slug (L39) until the picture synchronizes horizontally.

SOUND IF DETECTOR BUZZ ADJUSTMENT

To eliminate sound IF detector buzz, adjust the ratio detector secondary (L34) located on top of chassis.

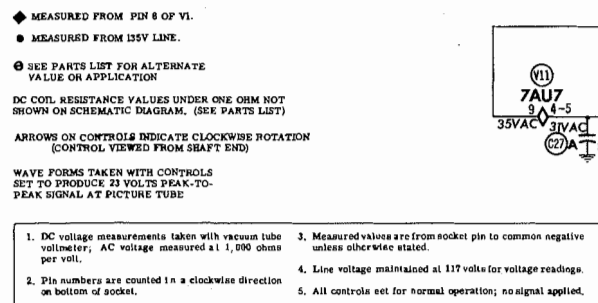
CENTERING

Centering is accomplished mechanically by adjusting two magnetic rings around the neck of the picture tube, located flush against the deflection yoke. Rotate the two rings around the neck of the tube until the picture is properly centered.

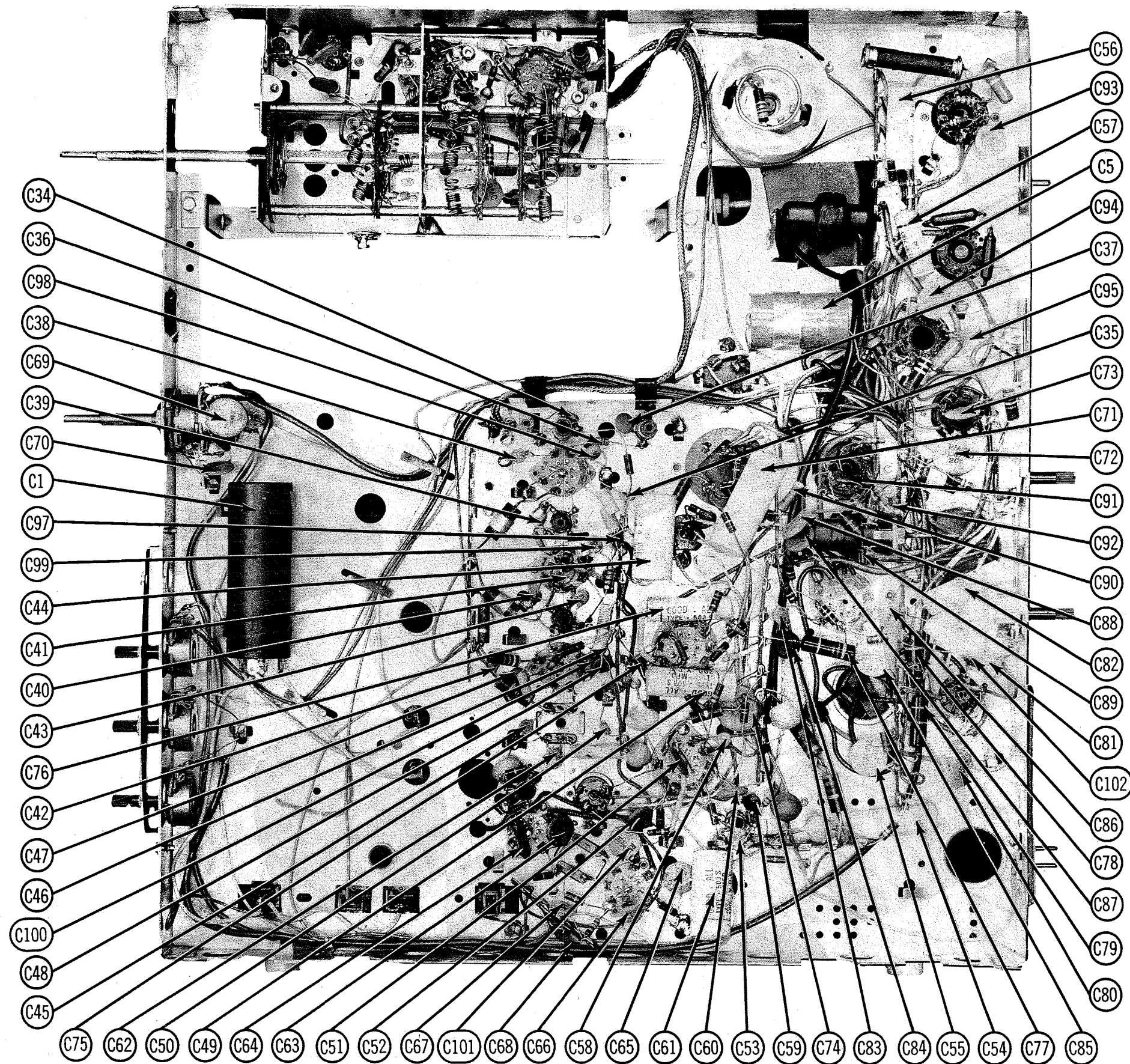
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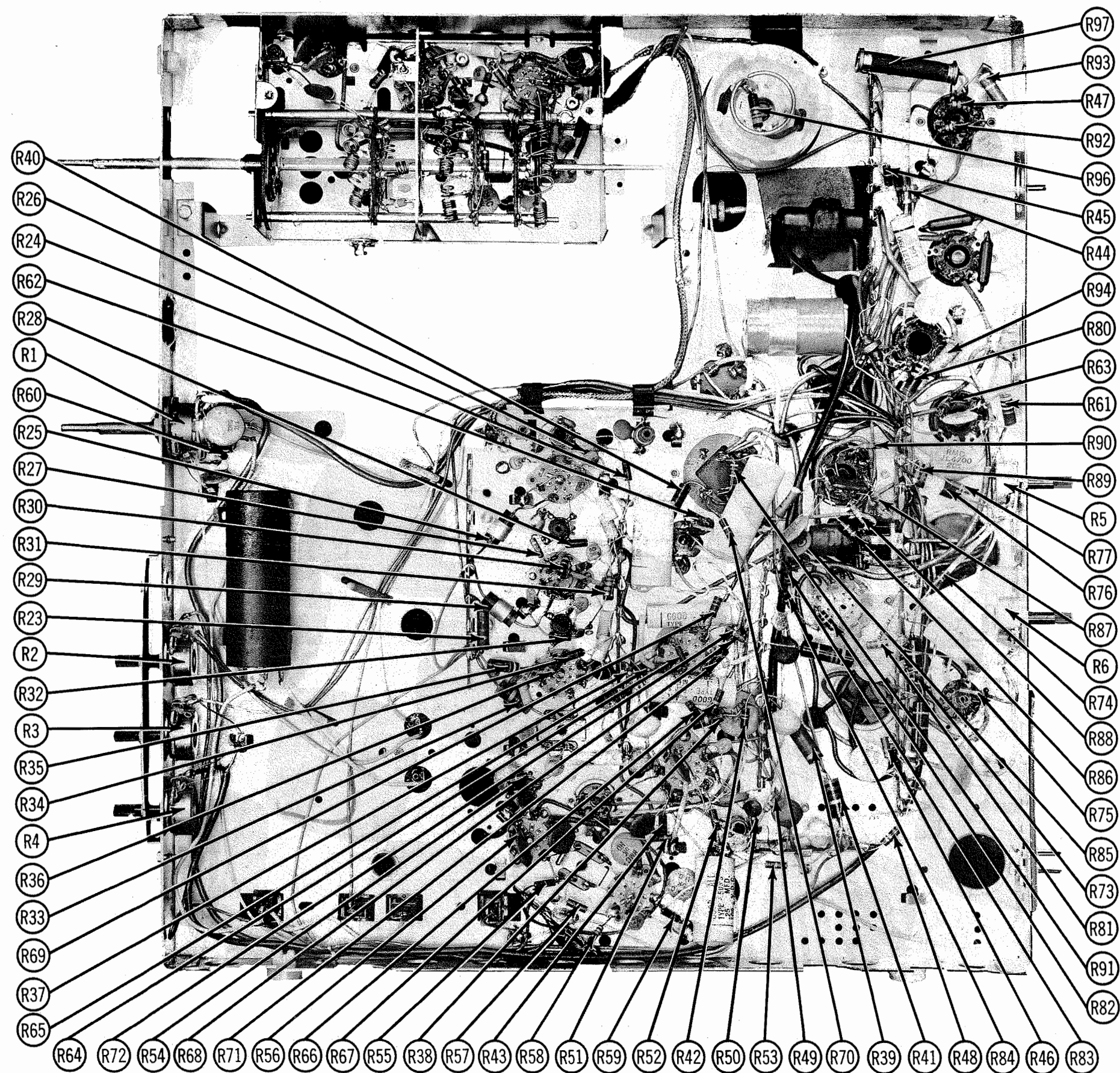


PAGE 2



CHASSIS BOTTOM VIEW-CAPACITOR IDENTIFICATION

MOTOROLA MODELS Y21K38, B, Y21T25CH, PK, TN,
21K38, B, 21T25CH, PK, TN (Ch. TS-530, Y)



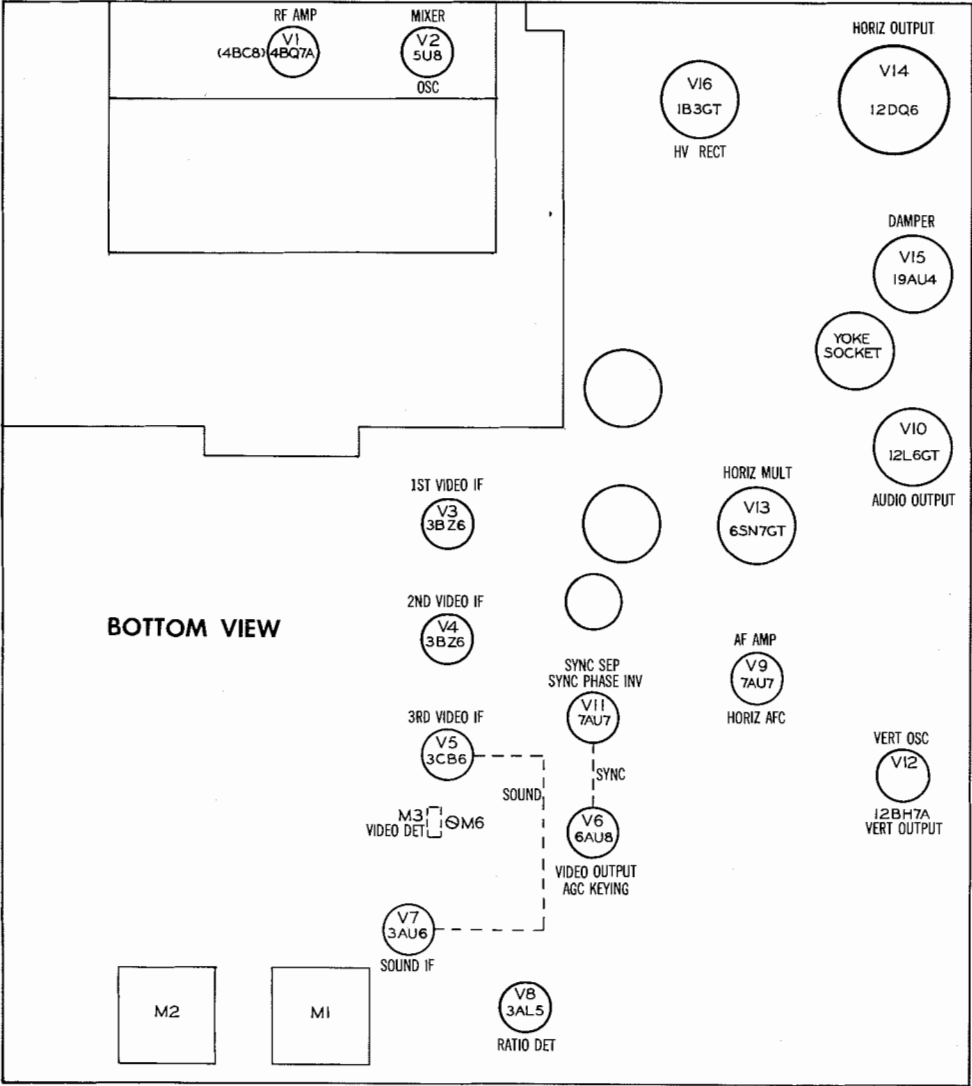
CHASSIS BOTTOM VIEW-RESISTOR IDENTIFICATION

MOTOROLA MODELS Y21K38, B, Y21T25CH, PK, TN,
21K38, B, 21T25CH, PK, TN (Ch. TS-530, Y)

RESISTANCE MEASUREMENTS

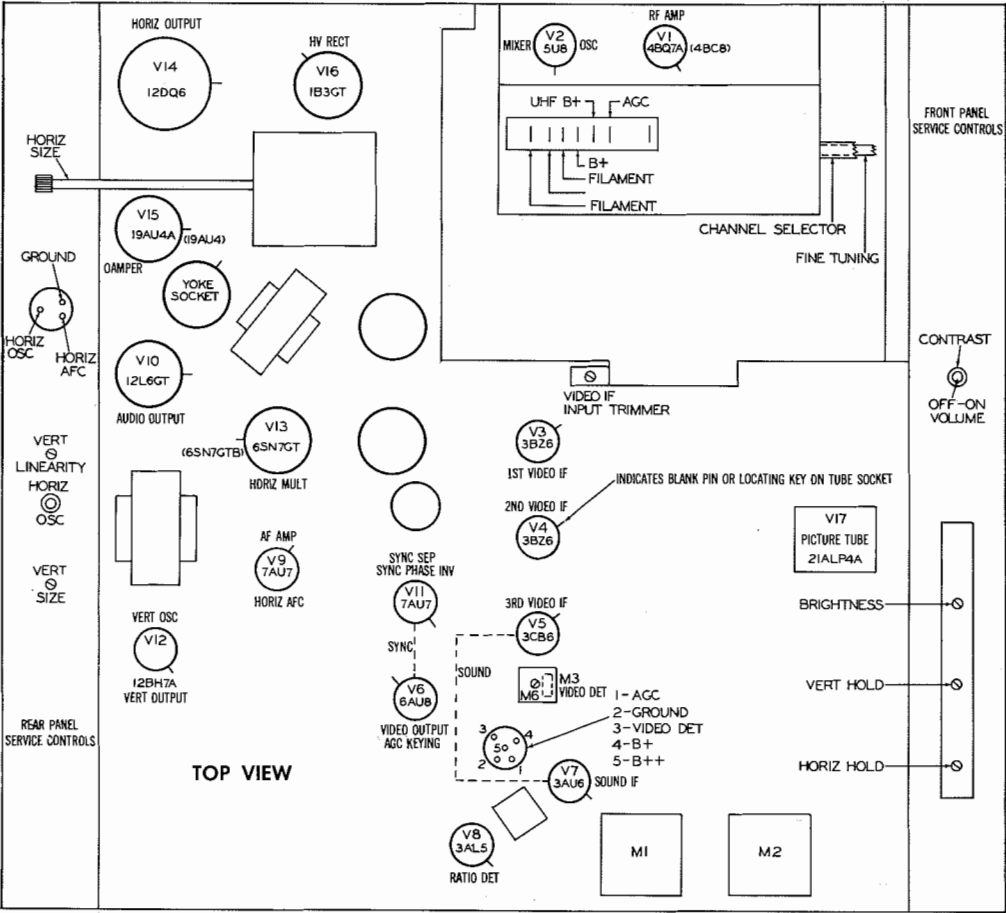
Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V 1	4BQ7A	INF	2Meg	0Ω	5Ω	6Ω	† 2.1KΩ	INF	INF	0Ω
V 2	5U8	■ 2KΩ	15KΩ	■ 220KΩ	7Ω	6Ω	■ 2KΩ	0Ω	0Ω	15KΩ
V 3	3BZ6	330KΩ	47Ω	14Ω	13Ω	† 6.8KΩ	† 6.8KΩ	0Ω		
V 4	3BZ6	330KΩ	47Ω	13Ω	12Ω	† 6.8KΩ	† 6.8KΩ	0Ω		
V 5	3CB6	1.2KΩ	120Ω	12Ω	11Ω	† 8.2KΩ	† 39KΩ	0Ω		
V 6	6AU8	60KΩ	■ 220KΩ	1.2Meg	8Ω	9Ω	5Ω	3.9KΩ	■ 1.5KΩ	■ 10KΩ
V 7	3AU6	2.2KΩ	0Ω	11Ω	10Ω	■ 2.2KΩ	■ 2.2KΩ	150Ω		
V 8	3AL5	INF	INF	10Ω	9Ω	22KΩ	0Ω	0Ω		
V 9	7AU7	† 33KΩ	300KΩ	1.5KΩ	0Ω	0Ω	22KΩ	300KΩ	120KΩ	1Ω
V 10	12L6GT	TP	17Ω	† 400Ω	† 82Ω	† 33KΩ	NC	14Ω	60KΩ	
V 11	7AU7	■ 1Meg	1.8Meg	5Ω	7Ω	7Ω	■ 9.5KΩ	22KΩ	2.2KΩ	8Ω
V 12	12BH7A	■ 900Ω	■ 2.7Meg	7.5KΩ	3Ω	3Ω	■ 2.7Meg	550KΩ	50Ω	5Ω
V 13	6SN7GT	120KΩ	† 75KΩ	1KΩ	5Meg	† 11KΩ	1KΩ	1Ω	2Ω	TOP CAP ■ 32Ω
V 14	12DQ6	TP	23Ω	TP	■ 470Ω	680KΩ	TP	20Ω	0Ω	
V 15	19AU4A	NC	TP	350KΩ	NC	† 85Ω	TP	17Ω	20Ω	
V 16	1B3GT		PINS	1-8	HAVE	INF	RESISTANCE			TOP CAP ■ 272Ω
V 17	21ALP4A	3Ω	■ 2.5Meg	PIN 6 ■ 20Ω	PIN 10 ■ 20Ω	PIN 11 ■ 120KΩ	PIN 12 2Ω			

† MEASURED FROM OUTPUT OF M1.
■ MEASURED FROM 135V LINE.
▲ MEASURED FROM PIN 3 OF V15.
TP-TIE POINT.
NC-NO CONNECTION.



TUBE PLACEMENT CHART

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.

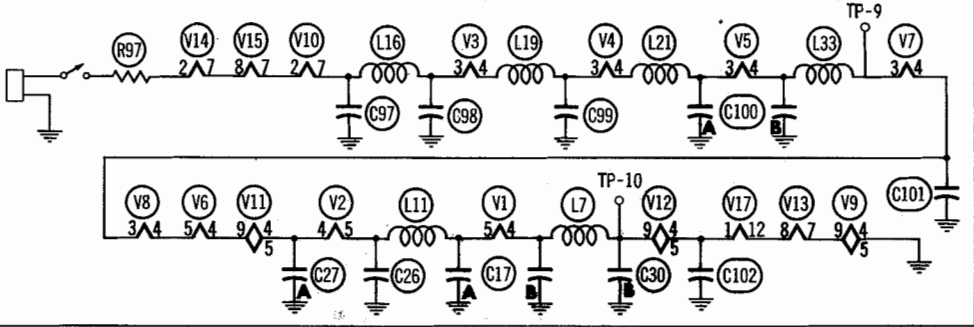
POWER SUPPLY FAILURE
No raster, no sound - Selenium Rectifiers (M1 & M2)

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

SYNC FAILURE
No vert, sync - V11, V12
No horiz, sync - V9, V11, V13
No vert, or horiz, sync - V11

SWEEP FAILURE
No raster, has sound - V13, V14, V15, V16, V17
No vertical deflection - V12
Poor vert, linearity or foldover - V12
Poor horiz, linearity or foldover - V13, V14, V15
Narrow picture - V13, V14, V15, V16, M1, M2
Vert. off freq. - V11, V12
Horiz. off freq. - V9, V11, V13

NOTE: Since this receiver employs tubes used in a series-parallel filament network, an open filament in any tube in series may cause the set to be inoperative. (See circuit below).



MOTOROLA MODELS Y21K38, B, Y21T25CH, PK, TN,
21K38, B, 21T25CH, PK, TN (Ch. TS-530, Y)

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

The high voltage shock hazard may be eliminated by disconnecting the yoke socket. The possibility of RF interference during alignment is also eliminated by this procedure. Connect a 2500Ω, 25 watt resistor from the positive side of C3A to chassis. Use an isolation transformer to protect the test equipment.

VIDEO IF ALIGNMENT

Connect the negative lead of a 6 volt bias supply to pin 1 of the test receptacle on the IF strip. Connect the positive lead to chassis. Local oscillator may be disabled by connecting a clip lead from pin 9 (grid) of the mixer - oscillator tube to chassis. If the sweep generator has no built-in marker, loosely couple the output of an accurately calibrated AM generator to high side of sweep generator output. Attenuate sweep generator output to maintain 3 to 5 volts peak to peak on the scope. Preset adjustment A7 maximum clockwise. The IF coils and traps have two points of resonance. The correct settings are with the cores away from the center of the coil forms so as not to effect coupling between coil and trap windings. Set area selector switch to its local position. Connect the synchronized sweep voltage from the sweep generator in the horizontal input of the oscilloscope for horizontal deflection.

DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
1. .001MFD	High side to pin 1 (grid) of first video IF amplifier tube (V3). Low side to chassis.	44MC (10MC Swp)	42.25MC	Any non-interfering channel	Vert. Amp. thru 47KΩ to point ⓐ. Low side to chassis.	A1	Adjust A1 to place 42.25marker in proper position on response curve as in Fig. 1. Core should be tuned for best position farthest from chassis.
2. "	"	"	45.75MC	"	"	A2, A3	Connect clip lead across R17. Adjust A2 to place 45.75MC marker on response curve as in Fig. 1. Correct adjustment is with core farthest from chassis end of coil. Adjust A3 to position center portion of curve for MINIMUM tilt and dip. Correct adjustment of A3 should be with core nearest chassis end of coil.
3. "	High side to point B. Low side to chassis.	"	41.25MC 42.25MC 45.75MC	"	"	A4, A5, A6	Adjust A4 and A5 to place markers (42.25 MC and 45.75MC) 30% down as shown in Fig. 2. Increase generator output to observe 41.25MC trap notch. Adjust A6 to place 41.25MC marker in trap notch as in Fig. 2.
4. "	"	"	"	"	"	A7	Adjust A7 for response curve similar to Fig. 3 with correct marker positions as shown in Fig. 3. Remove short from across R17.

SOUND IF ALIGNMENT USING AM SIGNAL GENERATOR AND VTVM

Set contrast control for maximum contrast before limiting. If a 4.5MC signal of crystal accuracy is not available, a TV station signal may be used. VTVM connections and adjustment of A8 and A9 should be made as outlined in step 5. Connect two matched 100KΩ (±1%) resistors in series from point ⓐ to chassis. The junction of these two resistors is alignment point ⓑ as shown on the schematic.

DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	CHANNEL	CONNECT VTVM	ADJUST	REMARKS
5. .005MFD	High side to point ⓐ. Low side to chassis.	4.5MC (400V Mod)	Any non-interfering channel	DC probe to point ⓐ. Common to chassis.	A8, A9	Adjust for maximum deflection with VTVM set to 5 volt scale. Attenuate generator as necessary.
6. "	"	"	"	DC probe to point ⓑ. Common to point ⓐ.	A10	Adjust for zero reading. A positive and negative reading will be obtained on either side of correct setting.

SOUND IF ALIGNMENT USING FM SIGNAL GENERATOR AND OSCILLOSCOPE

Use frequency modulated signal with 60V modulation and 450KC sweep. Use 120V sawtooth voltage in scope for horizontal deflection. Set contrast control for maximum contrast before limiting.

DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
5. .005MFD	High side to point ⓐ. Low side to chassis.	4.5MC (450KC Swp)	4.5MC	Any non-interfering channel	Vert. Amp. to point ⓐ. Low side to chassis.	A8, A9	Disconnect stabilizer capacitor (C4B). Adjust for curve of maximum amplitude and symmetry as in Fig. 4.
6. "	"	"	"	"	Vert. Amp. to point ⓑ. Low side to chassis.	A10	Reconnect C4B. Adjust A10 so that 4.5MC marker appears at center of crossover lines as in Fig. 5. SLIGHTLY retouch A9 for maximum amplitude and straightness of crossover lines.

4.5MC TRAP ALIGNMENT

Set contrast at maximum contrast position.

DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	CHANNEL	CONNECT VTVM	ADJUST	REMARKS
7. .005MFD	High side to point ⓐ. Low side to chassis.	4.5MC (Unmod)	Any non-interfering channel	DC probe thru detector (Fig. 6) to pin 11 (cathode) of picture tube. Low side to chassis.	A32	Adjust for MINIMUM deflection on VTVM.

ALTERNATE 4.5MC TRAP ALIGNMENT

Tune in a local TV station. Adjust the fine tuning control until a noticeable 4.5MC beat appears in the picture. Adjust A11 so that the core is approximately centered between the two points where the 4.5MC beat appears in the picture.

ALIGNMENT INSTRUCTIONS

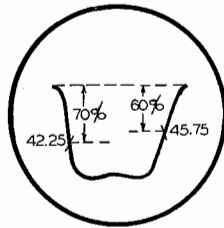


FIG. 1

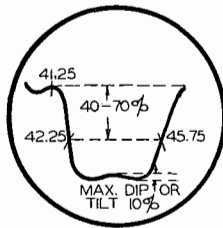


FIG. 2

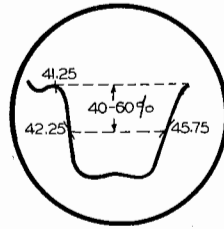


FIG. 3

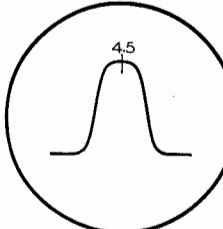


FIG. 4

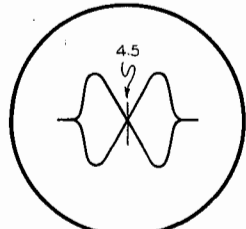


FIG. 5

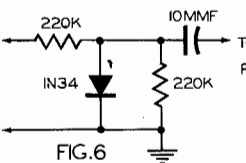


FIG. 6

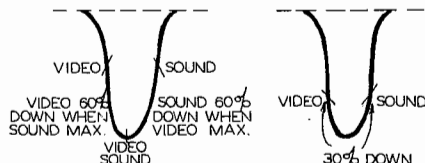


FIG. 7

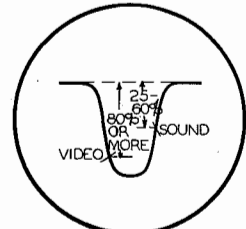


FIG. 8

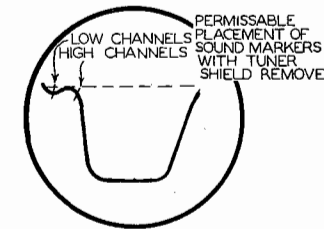


FIG. 9

VHF RF AND MIXER ALIGNMENT

Adjust the oscilloscope for a two inch deflection with 1/2 volt peak to peak signal. If sweep generator has no built in marker, loosely couple a separate marker generator to the antenna terminals. Adjustments A11, A12 and A14 thru A23 are adjusted by expanding or compressing coil turns. Ground RF AGC line by connecting clip lead from positive side of C12 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.

DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
8. Two 120Ω Carbon Resistors	Across antenna terminals with 120Ω in each lead.	213MC (10MC Swp)	211.25MC 215.75MC	13	Vert. Amp. thru 47KΩ to point ⓐ. Low side to chassis.	A11, A12	Adjust A11 and A12 for maximum amplitude and response curve similar to Fig. 7.
9. "	"	177MC (10MC Swp)	175.25MC 179.75MC	7	"	A13	Adjust for maximum amplitude, correct tilt and correct marker position as in Fig. 7.
10. "	"	207MC (10MC Swp)	205.25MC 209.75MC	12	"	"	Check response curve on each channel. If response is not within limits on each channel, repeat steps 8 and 9. If necessary, make compromise adjustments on A11, A12 and A13.
		201MC (10MC Swp)	199.25MC 203.75MC	11			
		195MC (10MC Swp)	193.25MC 197.75MC	10			
		189MC (10MC Swp)	187.25MC 191.75MC	9			
		183MC (10MC Swp)	181.25MC 185.75MC	8			
11. "	"	85MC (10MC Swp)	83.25MC 87.75MC	6	"	A14, A15	Adjust A14, then A15 for maximum gain, proper tilt and markers in proper position as in Fig. 8.
12. "	"	79MC (10MC Swp)	77.25MC 81.75MC	5	"	A16, A17	Adjust A16 and A17 in that order for maximum gain, proper tilt and correct marker positions as in Fig. 8.
13. "	"	69MC (10MC Swp)	67.25MC 71.75MC	4	"	A18, A19	Adjust for maximum gain, proper tilt and proper marker position.
14. "	"	63MC (10MC Swp)	61.25MC 65.75MC	3	"	A20, A21	Adjust for maximum amplitude, proper tilt and proper marker position.
15. "	"	57MC (10MC Swp)	55.25MC 59.75MC	2	"	A22, A23	Adjust for maximum amplitude, proper tilt and proper marker positions. Remove clip lead between positive side of C12 and chassis.

VHF OSCILLATOR ALIGNMENT

Replace the 6 volt bias as under "Video IF Alignment". Use only enough sweep generator output to produce useable pattern on scope. Connect the synchronized sweep voltage from the sweep generator to the horizontal input of the oscilloscope for horizontal deflection. The sweep generator output lead should be terminated with its characteristic impedance, usually 50 ohms. Set the fine tuning control to the mid-position of its range.

DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
16. Two 120Ω Carbon Resistors	Across antenna terminals with 120Ω in each lead.	195MC (10MC Swp)	197.75MC	10	Vert. Amp. thru 47KΩ to point ⓐ. Low side to chassis.	A24	Adjust A24 to place sound marker in sound trap as in Fig. 9.
17. "	"	213MC (10MC Swp)	215.75MC	13	"	A25	Check channels 7 thru 13 noting if sound marker for each channel falls just above the trap notch. If more than 40 degrees rotation of the fine tuning is required to place the sound marker in the proper position on any high band channel, set tuner sweep and marker generator for channel 13 frequencies and adjust A25 to place marker in proper position. Then set tuner, sweep generator and marker generator for channel 10 frequency and readjust A24 to place marker in proper position as in Fig. 9.
		207MC (10MC Swp)	209.75MC	12			
		201MC (10MC Swp)	203.75MC	11			
		195MC (10MC Swp)	197.75MC	10			
		189MC (10MC Swp)	191.75MC	9			
		183MC (10MC Swp)	185.75MC	8			
		177MC (10MC Swp)	179.75MC	7			
18. "	"	85MC (10MC Swp)	87.75MC	6	"	A26	Adjust to place sound marker in sound trap as seen in Fig. 9. A26 thru A30 are adjusted by compressing and expanding coil turns.
		79MC (10MC Swp)	81.75MC	5		A27	
		69MC (10MC Swp)	71.75MC	4		A28	
		63MC (10MC Swp)	65.75MC	3		A29	
		57MC (10MC Swp)	59.75MC	2		A30	

UHF TUNER ALIGNMENT FOR TUNER TT37

The UHF portion of this receiver has been properly aligned at the factory and is very stable. UHF tuner alignment is not recommended in the field.

45.0 MC TRAP ALIGNMENT

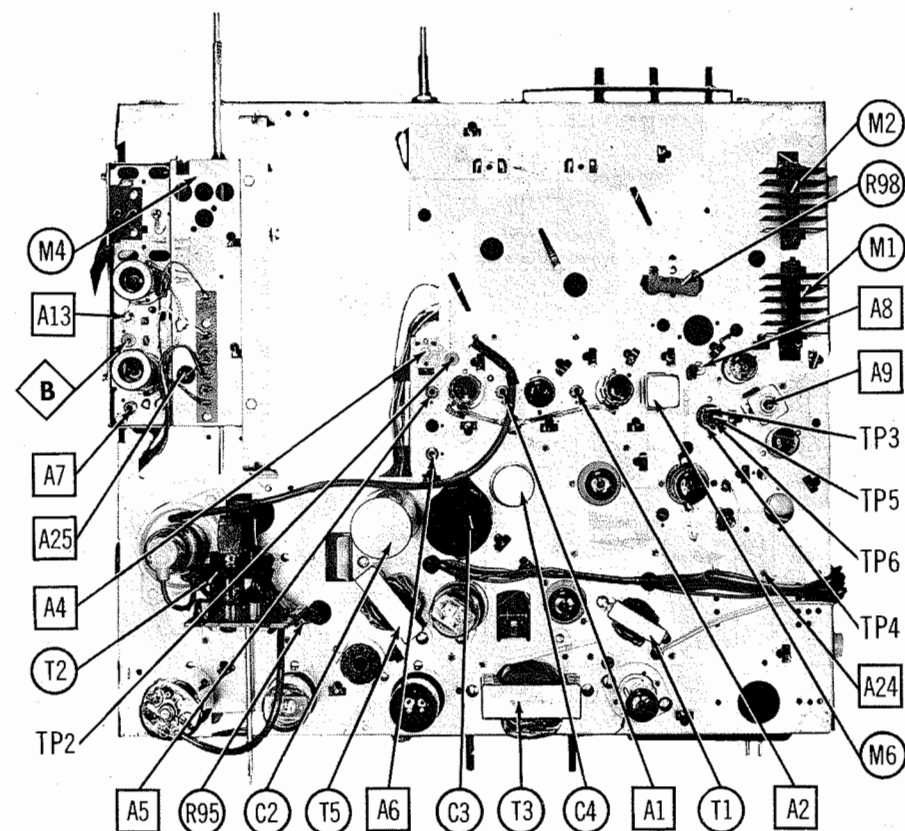
Connect the synchronized sweep voltage from the sweep generator to the horizontal input of the oscilloscope for horizontal deflection.

DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
19. Two 120Ω Carbon Resistors	Across antenna terminals with 120Ω in each lead.	45MC (10MC Swp)	45MC	2	Vert. Amp. thru 47KΩ to point ⓐ. Low side to chassis.	A31	Adjust A31 for MINIMUM response at 45MC marker.

IF SENSITIVITY MEASUREMENT

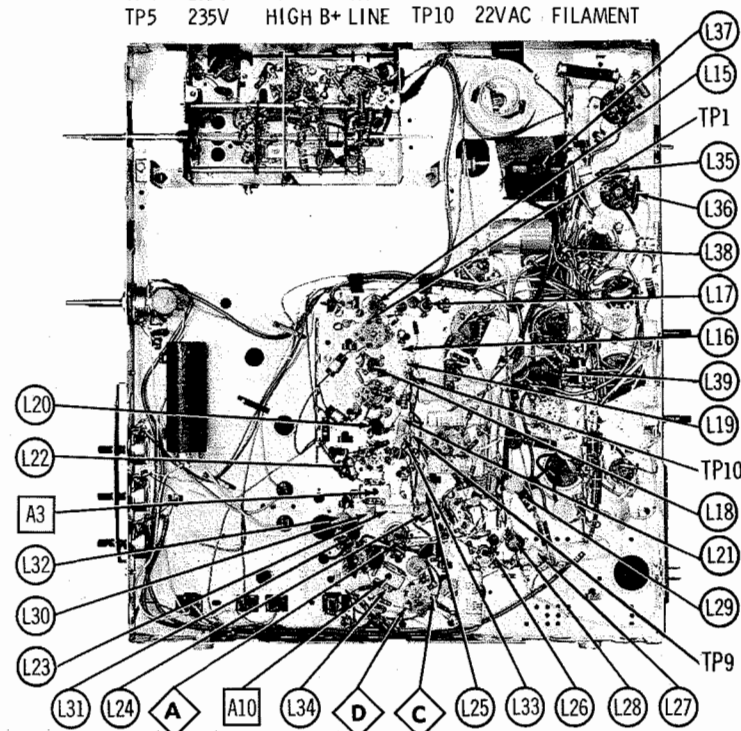
Set the contrast control for minimum contrast. Disable the horizontal sweep circuit as under "Pre - Alignment Instructions". Set channel selector to channel 13. Connect the high side of an AM signal generator thru a .001MFD capacitor to pin 1 (grid) of the first video IF amplifier tube (V3). Low side to chassis. Set signal generator to 45.0MC. Connect the DC probe of a VTVM to point ⓐ. Common to chassis. A signal of less than 400 microvolts from the generator should produce 1 volt on the VTVM. Short out R17 with a clip lead and move high side of signal generator to point ⓑ. Low side to chassis. A signal of less than 60 microvolts from the generator should produce 1 volt on the VTVM. Remove short from R17.

MOTOROLA MODELS Y21K38, B, Y21T25CH, PK, TN, 21K38, B, 21T25CH, PK, TN (Ch. TS-530, Y)

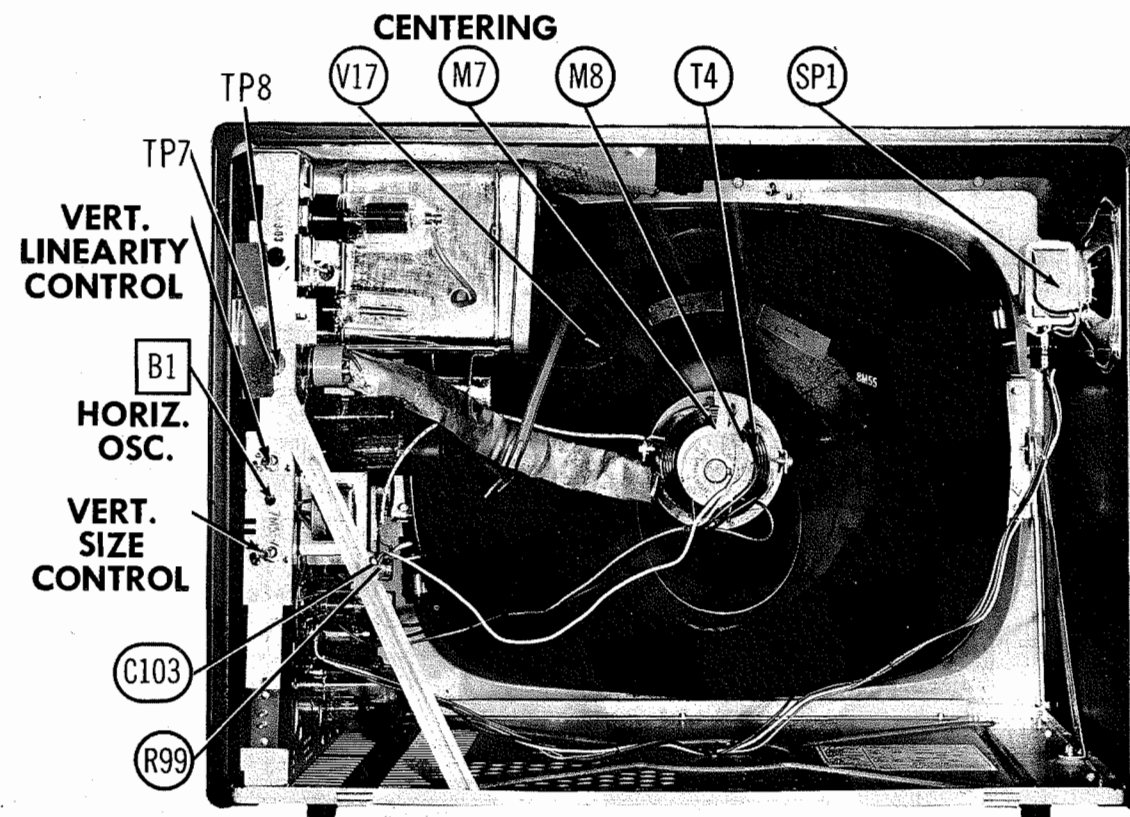


CHASSIS TOP VIEW

TP1	0V	IF AGC	TP6	0V	IF AGC
TP2	135V	B+V3 SCREEN	TP7	205V	B+(V13)
TP3	-.6V	VIDEO	TP8	-.5V	HORIZ AFC
TP4	135V	LOW B+ LINE	TP9	47VAC	FILAMENT
TP5	235V	HIGH B+ LINE	TP10	22VAC	FILAMENT



CHASSIS BOTTOM VIEW-TRANS., INDUCTOR AND ALIGNMENT IDENT.



CABINET-REAR VIEW

HORIZONTAL SWEEP CIRCUIT ADJUSTMENTS

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

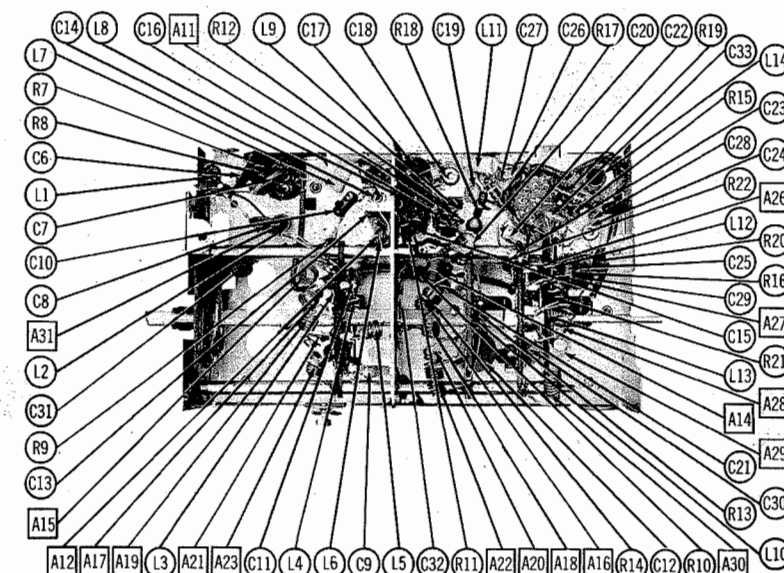
1. Short out the AFC voltage and shunt the horizontal oscillator coil (L39) to ground (chassis) with a .1MFD/400V capacitor. This may be done with the chassis in the cabinet by using the three pin sockets on the rear of chassis labeled "Test Receptacle".

2. Adjust the horizontal hold control to the point where the picture remains stable horizontally.

3. Remove the .1MFD capacitor from L39 and adjust the horizontal oscillator slug (B1) to the point where the picture remains stable horizontally.

4. Remove short from AFC voltage and adjust the horizontal hold control until picture remains in sync over approximately 30 degrees of its range while switching off channel and back again.

Adjust the horizontal size (located just above the left rear side of the chassis) for a picture slightly wider than necessary to fill the picture mask horizontally.



RF TUNER BOTTOM VIEW

PARTS LIST AND DESCRIPTIONS (Continued)
COILS (cont)

ITEM No.	USE	DC RES.		REPLACEMENT DATA				NOTES
		PRI.	SEC.	MOTOROLA PART No.	MEISSNER PART No.	MERIT PART No.	MILLER PART No.	
L37	Linearity Coil	200		24K731609	19-3300	TV-190	6132	Wound on .068MFD Cap. 340 Microhenries Core Part #46A760344
L38	RF Coil	8.8Ω		24R119889	19-1576	TV-163	6210	
L39	Horiz. Osc.	39Ω		1V737757				

Note 1. Alternate Part #24B736673.
* Parallel with 6.8KΩ resistor.
■ Parallel with 10KΩ resistor.
▲ Parallel with 1.8KΩ resistor.

SELENIUM RECTIFIER

ITEM No.	RATING CURRENT	REPLACEMENT DATA						NOTES
		MOTOROLA PART No.	FEDERAL PART No.	INTERNATIONAL PART No.	MALLORY PART No.	RADIO RECEPTOR PART No.	SARKES TARZIAN PART No.	
M1	.220ADC	48K122454	1236A	MR300	6S300	6Q4	300	
M2	.220ADC	48K122454	1236A	MR300	6S300	6Q4	300	

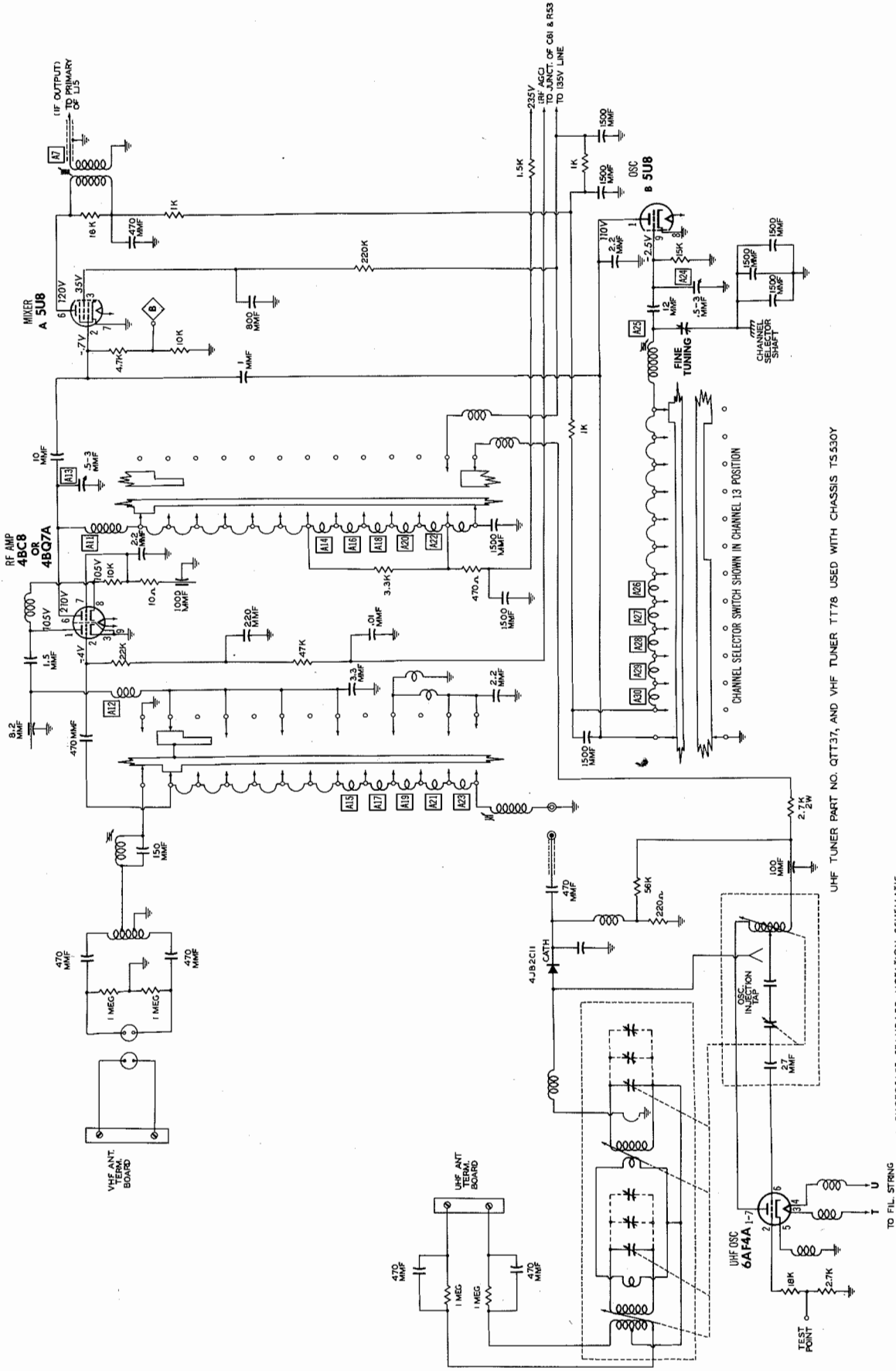
CRYSTAL DIODES

ITEM No.	ORIG. TYPE	REPLACEMENT DATA		NOTES
		MOTOROLA PART No.	SYLVANIA PART No.	
M3		48K733204 *	1N60	Video Det. (Pigtail)

* Alternate Part No. 48K722720.

MISCELLANEOUS

ITEM No.	PART NAME	PART No.	NOTES
M4	Tuner	1U736222	VHF-TT77-Chassis TS-530
M5	Tuner	1U736217	VHF-TT78-Chassis TS-530Y
M6	Video Det. Assy.	QTT-37	UHF-Chassis TS-530Y
M7	Centering Device	24C736478	Includes M3, Coils, & Capacitors
M8	Ion Trap	48A721145	Includes Deflection Yoke (T4) Rear Cover
A4	Trimmer Cap.	59K734028	
	Cabinet	20A736287	Video IF Input Trimmer (20-140MMF)
	Cabinet	16E736684	Models 21K38, Y21K38
	Cabinet	16K736685	Models 21K38B, Y21K38B
	Cabinet	16K737454	Models 21T25CH, Y21T25CH
	Cabinet	16K737452	Models 21T25PK, Y21T25PK
	Cabinet	16K737453	Models 21T25TN, Y21T25TN
	Knob	36B736235	Contrast- All Models
	Knob	36K736677	Fine Tuning-Models 21K38, B; Y21K38, B; 21T25TN, Y21T25TN
	Knob	36A736676	Fine Tuning-Models 21T25CH, Y21T25CH
	Knob	36K736677	Fine Tuning-Models 21T25TN, Y21T25TN
	Knob	36B736985	Horiz. Hold, Vert. Hold & Brightness-Models 21K38, B; Y21K38, B; 21T25TN, Y21T25TN
	Knob	36K736986	Horiz. Hold, BVert. Hold & Brightness-Models 21T25CH, Y21T25CH
	Knob	36K737376	Horiz. Hold, Vert. Hold & Brightness-Models 21T25PK, Y21T25PK
	Knob	36B736987	On-Off-Volume-Models 21K38, B; Y21K38, B; 21T25TN, Y21T25TN
	Knob	36K736988	On-Off-Volume-Models 21T25CH, Y21T25CH
	Knob	36K737375	On-Off-Volume-Models 21T25TN, Y21T25TN
	Knob	36K736246	VHF Channel Selector-Models 21K38, B; 21T25TN
	Knob	36K736245	VHF Channel Selector-Models Y21K38, B; Y21T25TN
	Knob	36K736248	VHF Channel Selector-Model 21T25CH
	Knob	36K736247	VHF Channel Selector-Model Y21T25CH
	Knob	36K736244	VHF Channel Selector-Model 21T25PK
	Knob	36K736243	VHF Channel Selector-Model Y21T25PK
	Scale	34C736236	UHF Dial-Models Y21K38, B; Y21T25CH, PK, TN
	Safety Glass	61C736658	Models 21K38, B; Y21K28, B;
	Safety Glass	61C736857	Models 21T25CH, PK, TN; Y21T25CH, PK, TN



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MOTOROLA MODELS Y21K38, B, Y21T25CH, PK, TN,
21K38, B, 21T25CH, PK, TN (Ch. TS-530, Y)
C1LW6HCS ENUL FHA-FHU ETARNELTY

TUBES (GENERAL ELECTRIC, SYLVANIA)

ITEM No.	USE	REPLACEMENT DATA		NOTES
		MOTOROLA PART No.	STANDARD REPLACEMENT	
V1	RF Amplifier	4BQ7A	4BQ7A	4BC8 may be used as an alternate
V2	Mixer-Oscillator	5U8	5U8	
V3	1st. Video IF Amplifier	3BZ6	3BZ6	
V4	2nd. Video IF Amplifier	3BZ6	3BZ6	
V5	3rd. Video IF Amplifier	3CB6	3CB6	
V6	Video Output-AGC Keying	6AU6	6AU6	
V7	Sound IF Amplifier	3AU6	3AU6	
V8	Ratio Detector	3AL5	3AL5	
V9	AF Amplifier-Horiz. AFC	7AU7	7AU7	
V10	Audio Output	12L6GT	12L6GT	
V11	Sync Separator-Sync Phase Inverter	7AU7	7AU7	
V12	Vert. Oscillator-Vert. Output	12BH7A	12BH7A	
V13	Horiz. Mult.	6SN7GT	6SN7GT	6SN7GTB may be used as an alternate
V14	Horiz. Output	12DQ6	12DQ6	
V15	Damper	18AU4A	18AU4A	
V16	HV Rectifier	183GT	183GT	18A4 may be used as an alternate

CATHODE-RAY TUBE

ITEM No.	REPLACEMENT DATA				NOTES
	MOTOROLA PART No.	CBS PART No.	GENERAL ELECTRIC PART No.	SYLVANIA PART No.	
V17	21ALP4A	21ALP4A ① 21ALP4B ①	21ALP4A ①	21ALP4A ② 21ALP4B ② 21ALP4A/B ② 21ALP4 ②	① Aluminized ② Silver screen "85"

ELECTROLYTIC CAPACITORS

ITEM No.	RATING		REPLACEMENT DATA						
	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	23B484097	AFH81-70	XA004	FP117	TM-140-150	T-055	TVL-1428
C2A	100	150	23B731820			FP326.3	TM-318	Q-162	
C2B	200	150							
C2C	80	150							
C3A	200	150	23B710941	AFH82-109	B078	FP216.1	TM-2029	D-088	TVL-2444
C4A	10	150	23B736969			FP231	TM-T10-300	D-200	TVL-2510
C4B	10	50				TC30		MT-1504	TVA-1303
C5	20	450	23K710687	PRS450V20	BR2045	TC75	TD-20-450	FM-4520	TVA-1709

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		REPLACEMENT DATA							NOTES
	CAP.	VOLT.	MOTOROLA PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	MALLORY PART No.	SPRAGUE PART No.	
C6	470	2000	21R121478	HVD-30-470	DD30-471	V2T47	3KV-471	DC30347	20GA-T47	
C7	470	2000	21R121478	HVD-30-470	DD30-471	V2T47	3KV-471	DC30347	20GA-T47	
C8	150		21R121478	NP0-D150	TCZ-150	N046	N750-337-151	5TCU-T15		
C9	3.3		21R15951	NP0-S13.3	TCZ-3R3	Z008	NP0A-3R3	5TCCB-V33		
C10	470		21R15856	SI470	DD-471	TP46	GP2K-471	UC-5347	5GA-T47	
C11	220		21R410115	DI-00022	DD-221	TP39	8K-221	UC-5322	5GA-T22	
C12	10000		21R482726	BPD-01	DD-103	K082	8K-101	DC-511	5HK-S1	
C13	1.5		21R15959	NP0-S11.5	TCZ-1R5	T204	NP0A-1R5	5TCCB-V15		
C14	8.2		21R122084	NP0-S12.2	TCZ-2R2	T205	NP0A-2R2	5TCCB-V22		
C15	2.2		21R15946	EF-001	MFT-1000			503C-D1		
C16	1000		21R120672	BPD-0008	DD2-102	K087	812-001	DCD-521	5GA-T8	
C17A	800		21R400943	BPD-0008	DD2-102	K087	812-001	DCD-521	5GA-T8	
C18	5-3		21R15985	BPD-0001	DD-102	K089	801-001	DC-521	5HK-D1	
C19	10		21R12114	BPD-0001	DD-102	K087	812-001	DCD-521	5GA-T8	
C20	1500		21R120100	BPD-0015	DD-152	K071	801-0015	DC-5215	5HK-D15	
C21	1500		21R120100	BPD-0015	DD-152	K071	801-0015	DC-5215	5HK-D15	
C22	1		21R14071	NP0-S11	TCZ-1	T203	NP0A-010	5TCCB-V1		
C23	2.2		21R15946	NP0-S12.2	TCZ-2R2	T205	NP0A-2R2	5TCCB-V22		
C24	5-3		21R15985	NP0-S12.2	TCZ-2R2	T205	NP0A-2R2	5TCCB-V22		
C25	12		21R12110	BPD-001	DD-102	K089	801-001	DC-521	5HK-D1	
C26	1000		21R15886	BPD-0008	DD2-102	K087	812-001	DCD-521	5GA-T8	
C27A	800		21R400943	BPD-0008	DD2-102	K087	812-001	DCD-521	5GA-T8	
C28	470		21R14554	BPD-00047	DD-471	K080	831-471	UC-5347	5GA-T47	
C29	1500		21A737425	BPD-0015	DD-152	K071	801-0015	DC-5215	5HK-D15	
C30A	1500		21R120098	BPD-2X004	DD2-152	DK071	812-0015	DCD-5215	5HK-2D15	
C31	1500		21A737425	BPD-0015	DD-152	K071	801-0015	DC-5215	5HK-D15	
C32	1500		21A737425	BPD-0015	DD-152	K071	801-0015	DC-5215	5HK-D15	
C33	1500		21A737425	BPD-0015	DD-152	K071	801-0015	DC-5215	5HK-D15	
C34	470		21R14554	BPD-00047	DD-471	K080	831-471	UC-5347	5GA-T47	
C35	470		21R14554	BPD-00047	DD-471	K080	831-471	UC-5347	5GA-T47	
C36	75		21K735623							
C37	22		21R120539							
C38	1000		21R122459							
C39	1000		21R15386	BPD-001	DD-102	K089	801-001	DC-521	5HK-D1	
C40	580		21R120936	DI-00058	DD-581	G083	811-581	UC-5358	5GA-T58	
C41	470		21R14554	BPD-00047	DD-471	K080	831-471	UC-5347	5GA-T47	
C42	470		21R14554	BPD-00047	DD-471	K080	831-471	UC-5347	5GA-T47	
C43	1000		21R15386	BPD-001	DD-102	K069	801-001	DC-521	5HK-D1	
C44	25	100	8K122045	P288N-25	CUB2P25			PT4025	2TM-P1	
C45	1000		21R15386	BPD-001	DD-102	K069	801-001	DC-521	5HK-D1	
C46	1000		21R15386	BPD-001	DD-102	K069	801-001	DC-521	5HK-D1	
C47	22		21R120539							
C48	22		21R120539							
C49	1	200	8R121573	P288N-1	DF-104	CUB2P1		PT401	2TM-P1	
C50	3.9		21R15953	BPD-005	DD-502	K080	811-005	DC-525	5HK-D5	
C51	5000		21R15312	BPD-000088	DD-680	G038	801-680	UC-5468	5GA-Q68	
C52	68		21R120930							
C53	27		21R19896	P288N-1	DF-104	CUB2P1		PT401	2TM-P1	
C54	1	200	8R121573							
C55	5000	2000	21R120930	BPD-005	DD-502	K080	811-005	DC-525	5HK-D5	
C56	05	400	8R121567	DI-00056	DD-561	G083	811-561	UC-5356	5GA-T56	
C57	01	1000	8R121002	P1088N-01	DD-103	CUB16S1		PT1611	10TM-S1	
C58	470		21R14554	BPD-00047	DD-471	K080	831-471	UC-5347	5GA-T47	
C59	3.9		21R122459							
C60	470	2000	21R121478	HVD-30-470	DD30-471	K080	3KV-471	DC30347	5GA-T47	
C61	25	100	8K122045	P288N-25	CUB2P25			PT4025	2TM-P25	

PARTS LIST AND DESCRIPTIONS
CAPACITORS (cont)

ITEM No.	RATING		REPLACEMENT DATA								NOTES
	CAP.	VOLT	MOTOROLA PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	MALLORY PART No.	SPRAGUE PART No.		
C62	18		21R120578								
C63	10000		21R482726	BPD-01	DD-103	K082	811-01	DC-511	5HK-S1		
C64	10000		21R482726	BPD-01	DD-103	K080	811-01	DC-511	5HK-S1		
C65	5000		21R15312	BPD-005	DD-502	K082	811-005	DC-525	5HK-D5		
C66	470		21R14554	BPD-00047	DD-471	K080	831-471	UC-5347	5GA-T47		
C67	1000		21R15386	BPD-001	DD-102	K089	801-001	DC-521	5HK-D1		
C68	5000		21R15312	BPD-005	DD-502		811-005	DC-525	5HK-D5		
C69	3300		21R120422	BPD-0033	DD-332	K077	811-0033	UC-5233	5HK-D33		
C70	5000		21R15312	BPD-005	DD-502	K080	811-005	DC-525	5HK-D5		
C71	15	400	6R121274	P488N-15		CUB4P15		PT4015	4TM-P15		
C72	4700		21R120149	BPD-0047	DD-472	K079	811-0047	DC-525	5HK-D47		Note 2
C73	10000	1000	21R122788	P1088N-01	DD-103	CUB16S1		PT1611	10HK-S1		
C74	4700		21R120149	BPD-0047	DD-472	K079	811-0047	DC-525	5HK-D47		
C75	220		21K122420	SI220	D6-221	TP39	GP2K-221	UC-5322	5GA-T22		
C76	.05	400	6R121567	BPD-05	DF-503	CUB4S5		PT415	4TM-S5		
C77	.0047	400	8K734634	BPD-0047	D6-472	CUB8D47	GP2-333-472	PT8247	6TM-D47		
C78	.0047	400	8K734634	BPD-0047	D6-472	CUB8D47	GP2-333-472	PT8247	6TM-D47		
C79	.01	400	8K734633	BPD-01	D6-103	CUB4S1	GP3-333-103	PT411	4TM-S1		
C80	4700		21R120149	BPD-0047	DD-472	K079	811-0047	DC-525	5HK-D47		
C81	.05	400	8R121567	BPD-05	DF-503	CUB4S5		PT415	4TM-S5		
C82	.05	400	8R121567	BPD-05	DF-503	CUB4S5		PT415	4TM-S5		
C83	470		21R14554	BPD-00047	DD-471	K080	831-471	UC-5347	5GA-T47		
C84	1000		21R15386	BPD-001	DD-102	K089	801-001	DC-521	5HK-D1		
C85	3300		21R120422	BPD-0033	D6-332	K077	811-0033	UC-5233	5HK-D33		
C86	.001	1000	8R122104	HVD-15-1000	DD-102	CUB18D1	1R5KV-102	PT1621	10TM-D1		
C87	3300		21R120422	BPD-0033	D6-332	K077	811-0033	UC-5233	5HK-D33		
C88	10000		21R482726	BPD-01	D6-103	K082	811-01	DC-511	5HK-S1		
C89	.0047	400	8K734634	1464-0047		1R5D47		MCB465	MS-247		
C90	100		21R400537	NP0-S1100	D6-101	T230	801-101	MCB235	5TCC-T1		
C91	390		21B735757		D6-391	5R5T39	811-391	MCB243	MS-339		
C92	390		21B735757		D6-391	5R5T39	811-391	MCB243	MS-339		
C93	5000		21R15312	BPD-005	DD-502	K080	811-005	DC-525	5HK-D5		
C94	150	2000	21R122755	HVD-30-150	DD30-151	V2T15	3KV-151	MCL315	20GA-T15		
C95	150	2000	21R122755	HVD-30-150	DD30-151	V2T15	3KV-151	MCL315	20GA-T15		
C96	82	2000	21R120150		DD30-820						
C97	470		21R14554	BPD-00047	DD-471	K080	831-471	UC-5347	5GA-T7		
C98	470		21R14554	BPD-00047	DD-471	K080	831-471	UC-5347	5GA-T47		
C99	470		21R14554	BPD-00047	DD-471	K080	831-471	UC-5347	5GA-T47		
C100A	800		21R400943	BPD-0008	DD2-102	K067	812-001	DCD-521	5GA-T8		
	800			BPD-0008		K067			5GA-T8		
C101	5000		21R15312	BPD-005	DD-502	K080	811-005	DC-525	5HK-D5		
C102	1500		21R120100	BPD-0015	DD-152	K071	801-0015	DC-5215	5HK-D15		
C103	470	2000	21R121478	HVD-30-470	DD30-471	V2D2	3KV-471	DC30347	20GA-T47		