

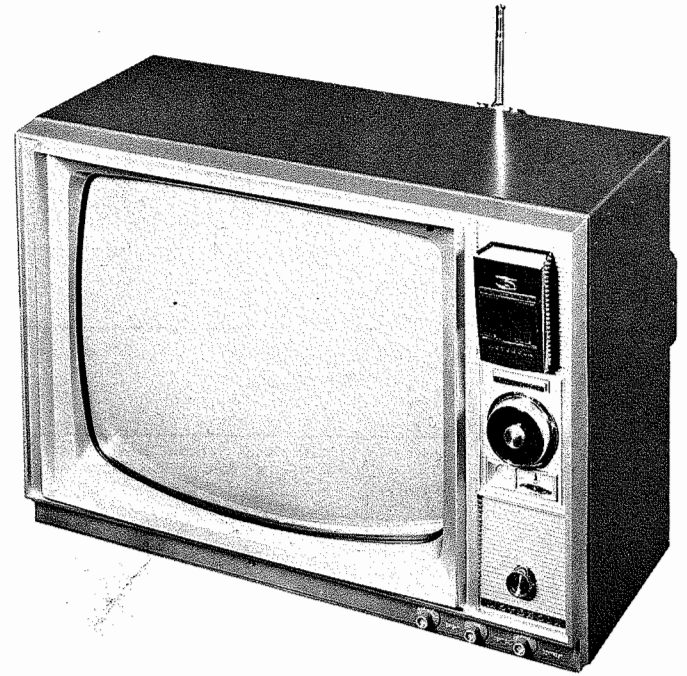
SET 561 FOLDER 2

MOTOROLA CHASSIS QTS/RTS/STS/  
TS/WTS-436, QTS/STS/TS-436Y

PHOTOFACT® Folder



MOTOROLA CHASSIS QTS/RTS/STS/  
TS/WTS-436, QTS/STS/TS-436Y



MODEL A19T8CH

MOTOROLA CHASSIS QTS/RTS/STS/  
TS/WTS-436, QTS/STS/TS-436Y

TRADE NAME	MOTOROLA	MODELS	TV Chassis	Remote Control	VHF Tuner	UHF Tuner
	19T11CH, CHA, WD		QTS-436		TT-300	
	Y19T11CH, CHA		QTS-436Y		TT-305Y	STT-601
	19T7-3A; 19T7-4A;					
	19T14CWD, CWF; 19T14WD, WF		RTS-436		TT-306	
	19T5CH, CHD; 19T12-1, -1A; 19T12-2, -2A		STS-436		TT-300	
	Y19T5CH, CHD; Y19T12-1, -1A; Y19T12-2, -2A		STS-436Y		TT-305Y	STT-601
	19T7-1, -1D; 19T-2, -2D; 19T7-3; 19T7-4;					
	19T13-1, -1A; 19T13-2, -2A;					
	19T14CW, CWA; 19T14W, WA		TS-436		TT-305	
	Y19T7-1, -1D; Y19T7-2, -2D; Y19T7-3, -4;					
	Y19T13-1, -1A; Y19T13-2, -2A;					
	Y19T14CW, CWA, W, WA		TS-436Y		TT-305Y	STT-601
	A19T8-1, -1A, -1D; A19T8-2, -2A, -2D;					
	A19T8-3, -3A; A19T8-4, -4A; A19T8CH, CHA		WTS-436	TR-10	BTT-302	

CHASSIS CODES

TV: A-00, A-01, A-02, A-03, B-00, B-01, B-02, B-03, B-04

Remote Control Receiver: A-00, A-01, B-00, B-01

MANUFACTURER	Motorola Inc., 4545 W. Augusta Blvd., Chicago 51, Illinois
TYPE SET	Television Receiver (WTS-436 Chassis With Remote Control)
TUBES	TV (With VHF Tuner): Seventeen TV (With VHF & UHF Tuner: Eighteen
POWER SUPPLY RATING	110-120 Volts AC, 60 Cycle TV With Remote: 220 Watts, 2 Amp. @ 117 Volts AC (237 Watts While Tuning) TV: 195 Watts, 1.7 Amp. @ 117 Volts AC
TUNING RANGE	Channels 2 thru 13 VHF, 14 thru 83 UHF, Video IF 45.75MC, Sound IF 41.25MC (Intercarrier)

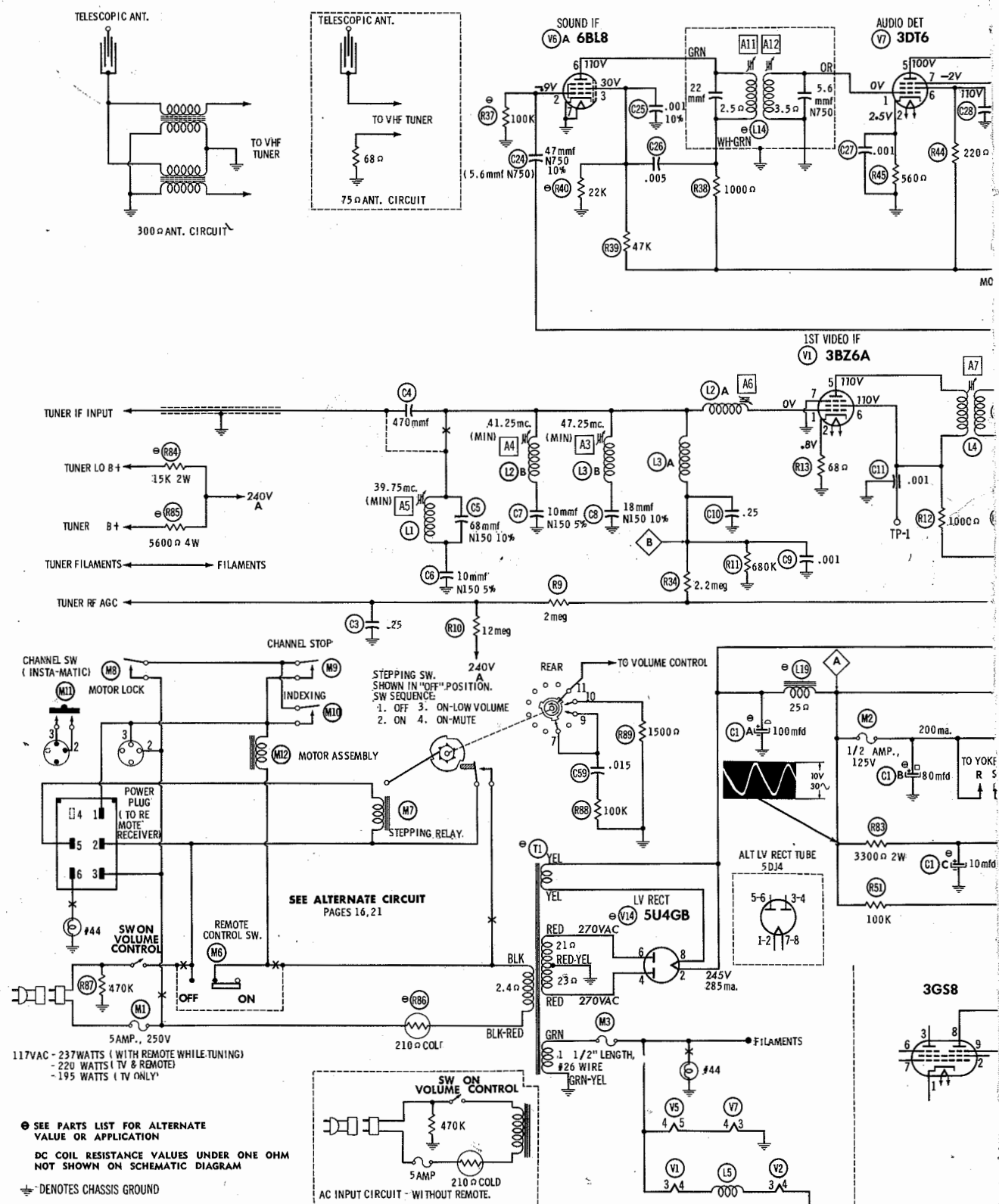
SERVICING IN THE FIELD - PAGE 3

HOWARD W. SAMS & CO., INC. Indianapolis 6, Indiana

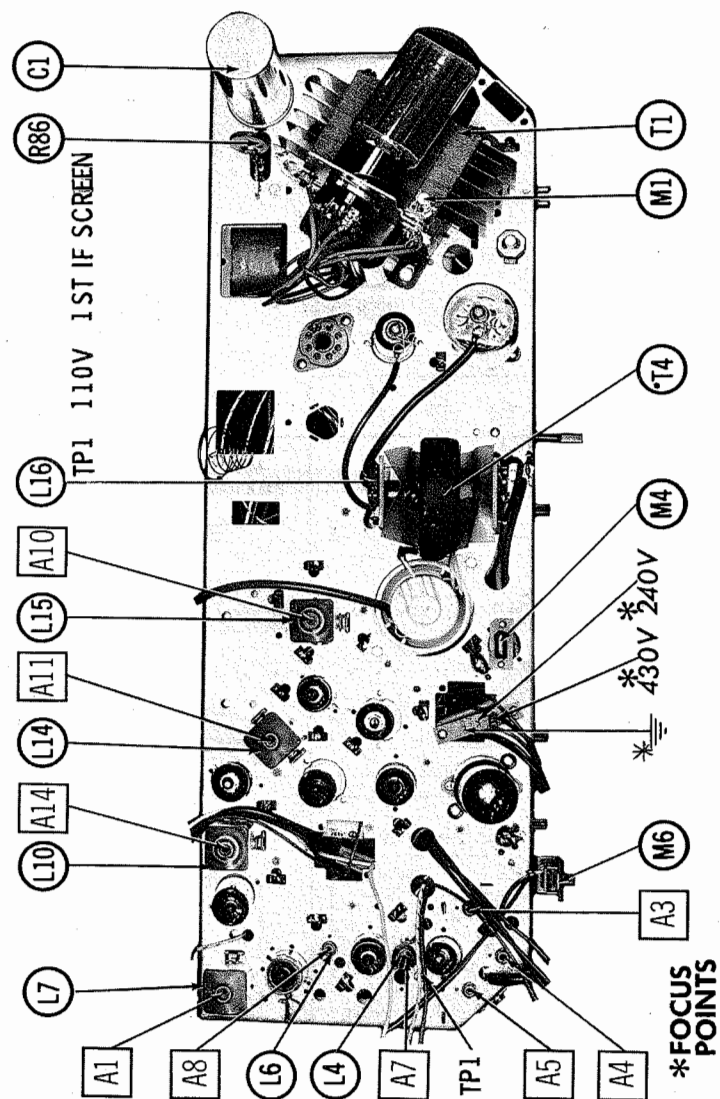
The listing of any available replacement part herein does not constitute in any case a recommendation, warranty or guaranty by Howard W. Sams & Co., Inc., as to the quality and suitability of such replacement part. The numbers of these parts have been compiled from information furnished to Howard W.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

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SET 561 FOLDER 2

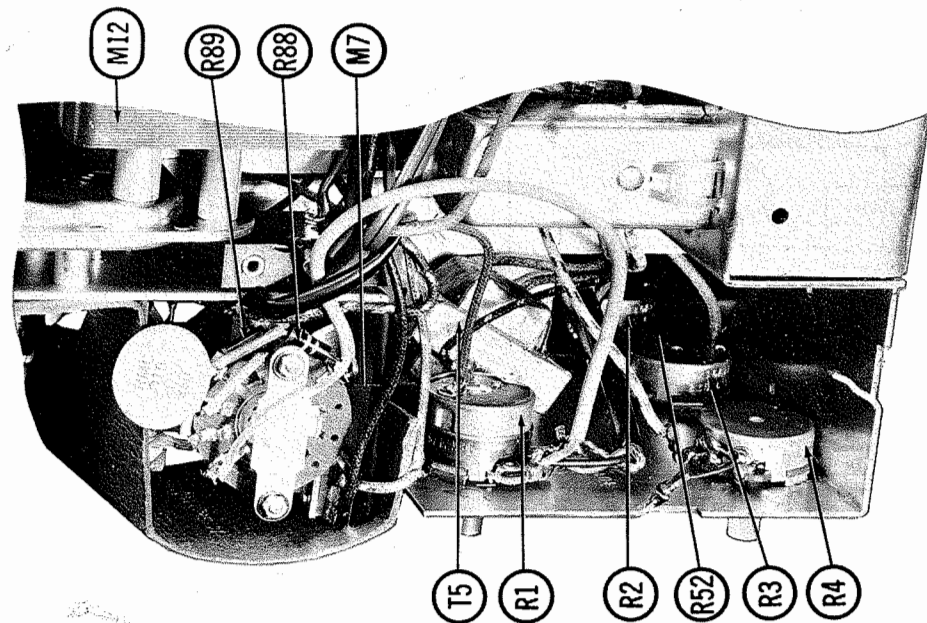


TV SCHEMATIC, POWER TUNING CIRCUIT FO



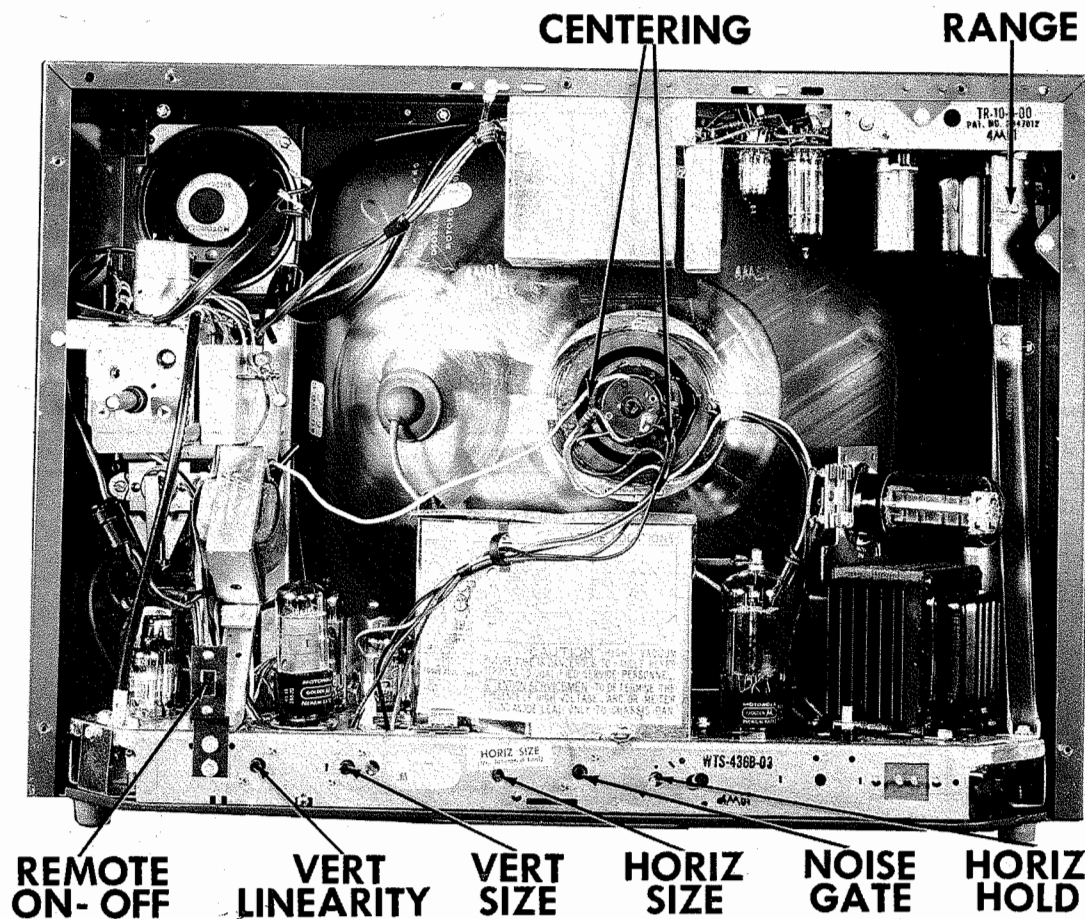
TV CHASSIS - TOP VIEW

MOTOROLA CHASSIS QTS/RTS/STS/  
TS/WTS-436, QTS/STS/TS-436Y



TV CHASSIS CONTROL PANEL

FOLDER 2



CABINET-REAR VIEW

## HORIZONTAL SWEEP CIRCUIT ADJUSTMENTS

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

Set the Brightness and Contrast for a normal picture.

Turn the Horizontal Hold (Freq. Slug) clockwise until the picture loses sync. It may be necessary to switch off channel and back again for picture to lose sync.

### WIDTH

The width may be varied by a Horizontal Size Control.

Turn the Horizontal Hold slowly counterclockwise until the picture just falls into sync.

Adjust Horizontal Size for a picture slightly wider than necessary to fill picture mask horizontally.

### HORIZONTAL OSCILLATOR FIELD ADJUSTMENT

The Horizontal Frequency Slug is used for the Horizontal Hold.

## DISASSEMBLY INSTRUCTIONS

### CHASSIS AND PICTURE TUBE ASSEMBLY REMOVAL (MODELS WITH REMOTE CONTROL)

1. Remove 4 push-on type knobs and channel selector knob from front.
2. Remove rear cover (7 screws).
3. Remove 4 chassis bolts from bottom.
4. Remove remote control chassis (3 screws, disconnect microphone cable and power plug).
5. Remove 3 bracket holding screws (2 at top, 1 on left side) from rear of chassis and unplug wire from channel selector bar.
6. Disconnect speaker wires and remove chassis and picture tube assembly.

### PICTURE TUBE REMOVAL

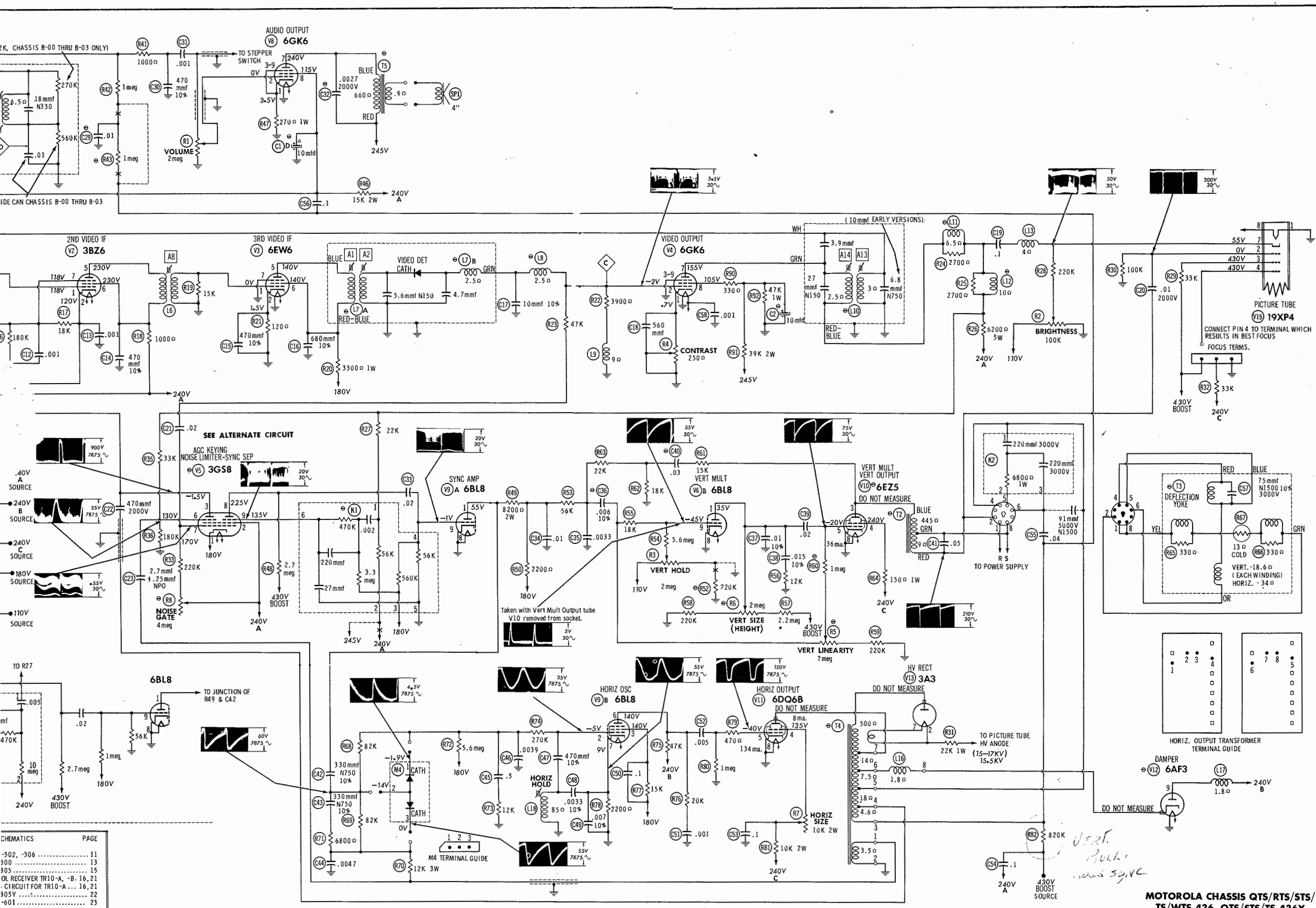
It is necessary to remove chassis for picture tube removal.

### CHASSIS REMOVAL (MODELS WITHOUT REMOTE CONTROL)

1. Remove channel selector and control knobs.
2. Remove rear cover.
3. Remove screws in mounting braces (top rear) and 1 screw from VHF Tuner brace (left rear).
4. On UHF Models, remove UHF Tuner (1 screw in mounting bracket, inside at top of cabinet) and move tuner to rear of cabinet.
5. Remove chassis.

### SAFETY GLASS REMOVAL

For picture tube and safety glass cleaning, it is necessary to remove the chassis. (See "Disassembly Instructions".)



REMOTE CONTROL RECEIVER TR10-B (POWER TUNING CIRCUIT FOR TR10-A, PAGES 16, 21)

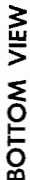
MOTOROLA CHASSIS QTS/RTS/STS/  
 TS/WTS-436, QTS/STS/TS-436Y



**PAGE 10**

**PAGE 10**

THIS READING WILL VARY DEPENDING UPON THE CONDITION OF THE ELECTROLYTIC IN THE CIRCUIT.



## SERVICING IN THE FIELD

## POWER SUPPLY FAILURE

No raster, no sound Fuse (Line), V14

## SWEEP FAILURE

No raster, has sound V9, V11, V12, V13, V15

No vertical deflection V6, V10

Poor vert. linearity or foldover V8, V10

Poor horiz. linearity or foldover  
Narrow picture V9 V11 V12 V14

Vert. off freq. V6, V10

Horiz. off freq. Diode (Horiz. AFC), V8

### LOSS OF PICTURE OR SOUND

No pic, no sound, has raster V1, V2, V3, Diode (Video Det.), V4

No plc, no sound, has snow. V201, V202, VI

No plc, has sound, has raster V4, V15  
Has plc, no sound, has raster V4, V15, V16

Has pic, no sound V6, V7, V8  
Overloaded picture V5

Overloaded picture 93

### SYNC FAILURE

No vert. sync V5, V9

No horiz. sync V5, V9

No vert. or horiz. sync V5, V9

### TUNER OSCILLATOR ADJUSTMENTS

VHF Oscillator adjustments are accessible thru rear cover (next to Fine Tuning) on models with Power Tuning. On all other models, remove channel selector and fine tuning knobs (also pilot lamp window mask in some versions).

## FOCUS

The focus may be varied by connecting the lead from pin 4 of the picture tube to various voltage points. (For location, see photo "Chassis - Top View".)

## CENTERING

Centering is accomplished by 2 magnetic rings, located behind the yoke, on the neck of the picture tube.

## FOLDER 2

TV ALIGNMENT INSTRUCTIONS

ALIGNMENT IDENTIFICATION PHOTOS - PAGE 9, 27

PRE-ALIGNMENT INSTRUCTIONS

The High Voltage lead should be securely taped and kept away from the chassis.  
Allow a 20 minute warm-up period for the receiver and test equipment.  
Suggested Alignment Tools: GENERAL CEMENT #9050L, 9150  
WALSCO #2521

VIDEO IF ALIGNMENT

Remove the yoke plug to eliminate RF interference from the horizontal sweep circuit. Connect a 1500Ω 50 watt resistor from point ⬠ to chassis. (CAUTION: Point ⬠ has B plus voltage on it.)  
Disable the tuner oscillator by grounding the grid (pin 9) of oscillator.  
Set the Noise Gate Control fully counterclockwise.  
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.  
Connect the negative lead of a 6 volt bias supply to point ⬢. Positive to chassis.  
Maintain between 2 and 5 volts peak to peak on the scope except where otherwise noted in the procedure.

DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
1. .001mfd	High side to 3rd Video IF Grid (V3, pin 1). Low side to chassis.	44.0MC (10MC Swp.)	45.75MC	13	Vert. Amp. thru 47K to point ⬢. Low side to chassis. (Across Video Detector load).	A1, A2	Adjust for maximum gain and symmetry of response similar to Fig. 1 with markers as shown.
2. Direct	High side to ungrounded tube shield floating over Mixer-Osc. tube (V202). Low side to chassis.	"	47.25MC	"	"	A3	Increase scope gain. Remove bias if necessary. Adjust to place marker in trap notch as in Fig. 2. Tune slug at end of coil away from chassis.
3. "	"	"	41.25MC	"	"	A4	Adjust to place marker in trap notch as in Fig. 2. Tune slug at end of coil nearest chassis.
4. "	"	"	39.75MC	"	"	A5	Adjust to place marker in trap notch as in Fig. 2. Tune slug at end of coil away from chassis.
5. "	"	"	39.75MC 41.25MC 44.0MC 45.75MC 47.25MC	"	Vert. Amp. to TP-1. Low side to chassis.	Mixer Plate Coil & A6	Set scope for 3 volts peak to peak. Restore 6 volt bias. Adjust for maximum gain and symmetry of response similar to Fig. 3 with markers as shown. The Mixer Plate Coil affects the center peak and A6 affects the two outside peaks. Tune slugs at end of coils away from chassis. If a suckout (trap effect) occurs, detune A7 to remove.
6. "	"	"	42.25MC 45.75MC	"	Vert. Amp. thru 47K to point ⬢. Low side to chassis. (Across Video Detector load).	A7, A8	Adjust A7 to place 42.25MC marker at 50% on curve as in Fig. 4. Adjust A8 to place 45.75MC marker at 50% on other side. Tune slugs to end of coil nearest chassis. If necessary, retouch Mixer Plate Coil to correct tilt. Retouch A7 and A8 for correct response.

SOUND IF ALIGNMENT

Tune in a strong TV signal and adjust all controls for normal picture and sound.  
Connect the DC probe of a VTVM to point ⬢. Common to chassis. Adjust A9 for maximum deflection, choosing the one of two peaks that produces the highest voltage. While listening to the sound, retouch A9 for maximum sound with MINIMUM distortion.  
The top slug A10 is a preset slug which is set near the top of the coil form and left there.  
Change to a very weak signal (this may be done by loosely coupling the antenna lead to the antenna terminals) that produces a hiss in the sound. Adjust A11 and A12 for maximum sound and MINIMUM distortion. Adjust A13 for maximum undistorted sound. If sound is not clear at this point, repeat the above procedure as necessary.

4.5MC TRAP ALIGNMENT

Tune in a strong TV signal and turn the Contrast fully clockwise.  
Adjust the Fine Tuning until a strong 4.5MC beat pattern is visible.  
Adjust A14 to find the two points at which the beat pattern is just noticeable on the screen. Tune the slug to the center of these two points. (Use the MINIMUM amount of inductance that will result in no apparent beat pattern.)

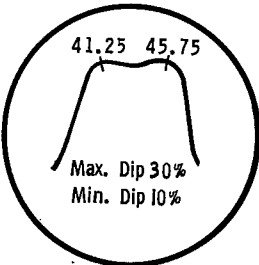


FIG. 1

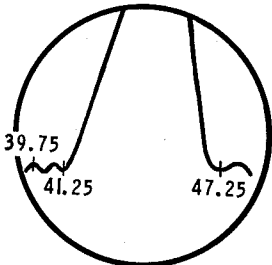


FIG. 2

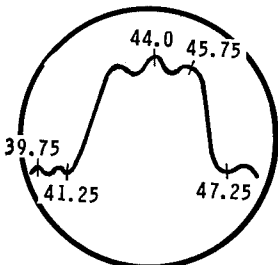


FIG. 3

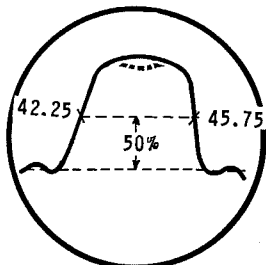
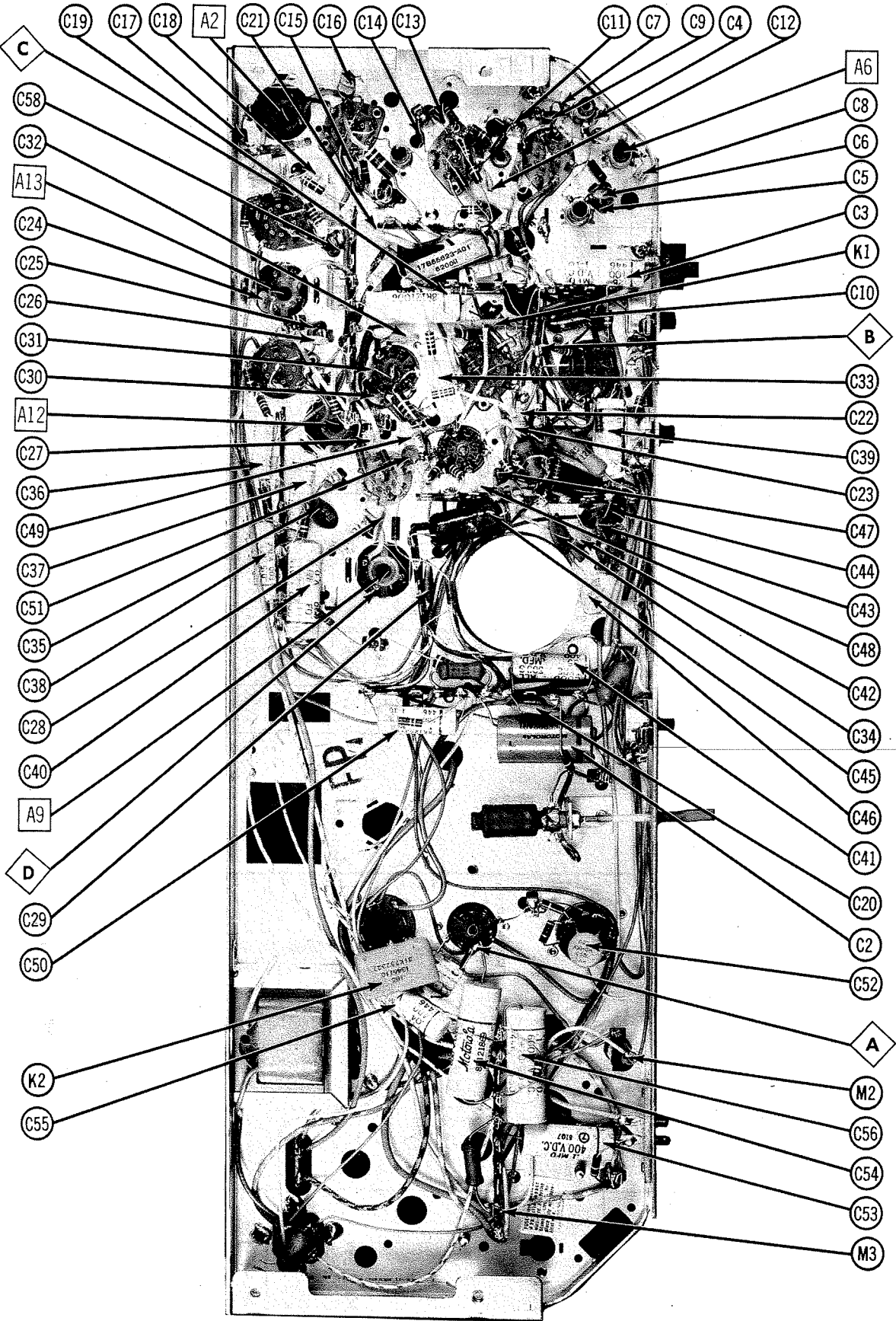


FIG. 4



TV CHASSIS BOTTOM VIEW - ALIGN., CAPACITOR, MISC. IDENT.

MOTOROLA CHASSIS QTS/RTS/STS/  
TS/WTS-436, QTS/STS/TS-436Y

FOLDER 2

TV PARTS LIST AND DESCRIPTIONS (Continued)

MISCELLANEOUS (cont)

ITEM No.	PART NAME	MOTOROLA PART No.	NOTES
M7	Relay	80C85738A01	AC Stepping, Includes Audio Level, Mute, Wafer Switch #1C85754A01, Off-On Switch #40C85838A01
M8	Switch	1D65489A02	Motor Lock (On Motor)
M9	Switch	1C85995A01	Channel Stop (On Front Tuner Bracket)
M10	Switch	1P65119A04	Indexing (On Rear of Tuner)
M11	Switch	40C8552LA02	Channel Change
M12	Motor Assembly	1D65889A01	Includes Gear Box, Motor Lock Switch (#1D65489A02)
	Antenna	1B742795	JFD REPLACEMENT #TA-379, Used in all models except those with suffix letter "A" or "F" in the model number
	Antenna	1C86120A01	JFD REPLACEMENT #TA-415, Used in all models with suffix letters "A" or "F" in the model number

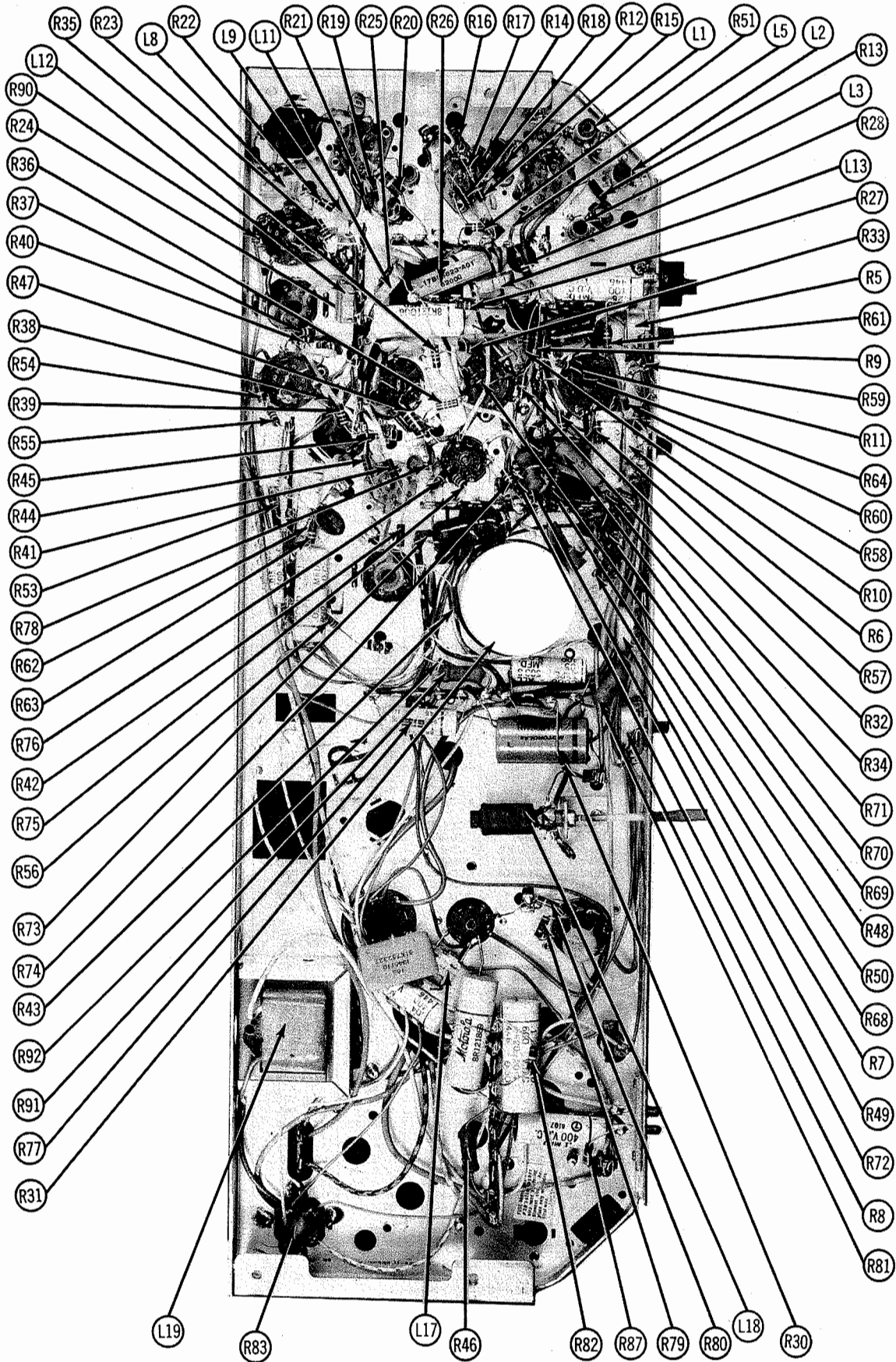
WIRING DATA

High Voltage Lead .....	Use Belden No. 8869
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 Ten Colors 8524 (Stranded) Available in Ten Colors
Power Cord (Interlock Type) .....	Use Belden No. 8874
3000 $\Omega$ Tuner Input Lead .....	Use Belden No. 8225
3000 $\Omega$ Antenna Lead-In .....	Use Belden No. 8230 or 8275
Antenna Rotor Cable .....	Use Belden No. 8464 (Flat) or 8484 (Round) - 4 Conductor 8485 (Round) - 5 Conductor 8488 (Round) - 8 Conductor

CABINETS & CABINET PARTS

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

DESCRIPTION	PART NO.	MODELS												MODEL NO.	CABINET PART NO.	MODEL NO.	CABINET PART NO.
		A19T8 Series	Y19T5 Series	Y19T5 Series	Y19T7 Series	Y19T7 Series	Y19T11 Series	Y19T11 Series	Y19T12 Series	Y19T12 Series	Y19T13 Series	Y19T13 Series	Y19T14 Series				
Safety Glass (Tinted)	61C65692A01	X	X	X	X	X	X	X	X	X	X	X	X	A19T8-1	16F65717A05	Y19T11CHA	16F65717A27
Indicator Window (VHF)	36C65874A01				X	X					X	X	X	A19T8-1A	16F65717A25	Y19T11CHA	16F65717A29
Indicator Window (VHF)	36C66024A01	X												A19T8-1D	16F65717A25	Y19T11WD	16F65717A13
Dial-UHF Channel Indicator	34C65710A01			X	X		X		X		X		X	A19T8-2	16F65717A15	Y19T12-1	16F65717A32
Knob-UHF Channel Selector	36D65708A01			X	X		X		X		X		X	A19T8-2A	16F65717A26	Y19T12-1A	16F65717A33
Knob-VHF Channel Selector	36D65709A01		X	X					X	X				A19T8-3	16F65717A16	Y19T12-2	16F65717A32
Knob- "	36D65875A01				X	X					X	X	X	A19T8-3A	16F65717A16	Y19T12-1A	16F65717A32
Knob- "	36D65709A03						X	X						A19T8-4	16F65717A17	Y19T12-2A	16F65717A33
Knob- "	36D65994A01	X												A19T8-4A	16F65717A17	Y19T12-2A	16F65717A34
Pushbar-VHF Channel Sel.	38C66005A01	X												A19T8CH	16F65717A31	Y19T12-2A	16F65717A35
Knob-Fine Tune	36C65712A01		X	X					X	X				A19T8CHA	16F65717A31	Y19T13-1	16F65717A35
Knob- "	36C65871A01				X	X					X	X	X	19T5CH	16F65717A01	Y19T13-1A	16F65717A21
Knob- "	36C66021A01	X												Y19T5CH	16F65717A01	Y19T13-1A	16F65717A21
Knob- "	36C65712A02						X	X						19T5CHD	16F65717A27	Y19T13-1A	16F65717A22
Knob-On-Off-Volume	36C65711A01	X	X	X	X	X			X	X	X	X	X	Y19T5CHD	16F65717A29	Y19T13-2	16F65717A22
Knob- "	36C65711A02						X	X						19T7-1	16F65717A07	Y19T13-2	16F65717A23
Knob-Contrast, V. Hold, Brt.	36C65713A01	X	X	X	X	X			X	X	X	X	X	Y19T7-1	16F65717A08	Y19T13-2A	16F65717A24
Knob- "	36C65713A02						X	X						19T7-1D	16F65717A21	Y19T14CW	16F65717A24
Handle-Carrying	55C65631A15		X	X			X	X						Y19T7-2	16F65717A22	Y19T14CWA	16F65717A11
Handle- "	55C65631A21	MODELS	19T12-1, -1A, & Y											Y19T7-2D	16F65717A23	Y19T14CWA	16F65717A12
Handle- "	55C65631A23	MODELS	19T12-2, -2A & Y											Y19T7-3	16F65717A24	Y19T14CW	16F65717A12
Handle- "	55C65631A17	MODELS	19T13-1, -1A & Y											Y19T7-4	16F65717A11	Y19T14CWA	16F65717A13
Handle- "	55C65631A19	MODELS	19T13-2, -2A & Y											Y19T7-4A	16F65717A12	Y19T14WA	16F65717A14
														Y19T7-4	16F65717A13	Y19T14WA	16F65717A14
														Y19T7-4	16F65717A14	Y19T14CWD	16F65717A11
														Y19T7-3A	16F65717A11	Y19T14CWF	16F65717A11
														Y19T7-4A	16F65717A13	Y19T14WD	16F65717A13
														Y19T11CH	16F65717A27	Y19T14WF	16F65717A13
														Y19T11CH	16F65717A29		



TV CHASSIS BOTTOM VIEW - RESISTOR, INDUCTOR IDENT.

SET 561 FOLDER 2

MOTOROLA CHASSIS QTS/RTS/STS/  
TS/WTS-436, QTS/STS/TS-436Y

FOLDER 2



## TV PARTS LIST AND DESCRIPTIONS

### CONTROLS (cont)

ITEM No.	RATING		REPLACEMENT DATA					INSTALLATION NOTES
	RESIST- ANCE	WATTS	MOTOROLA PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	CTS -IRC PART No.	MALLORY PART No.	
R2A	100K	$\frac{1}{2}$	18D65216A10	B-40	B47-100K-S	BU-128	TA15L	Brightness
B	Shaft			Not Req.	Not Req.	TM4	Not Req.	
R3A	2meg	$\frac{1}{2}$	18D65216A11	B-75	B47-2meg-S	HLC-1	TA28L	Vert. Hold Contrast
R4A	250Ω	$\frac{1}{2}$	18D65216A09	B-2		BU-201	RU22L	
B	Shaft			Not Req.		TM4	SL3500	
B	Bushing			Not Req.		Not Req.	SL38	
R5	2meg	$\frac{1}{2}$	18D65216A14*	TT-75	B47-2meg-S	HLC-1	PTA26L	Vert. Linearity Vert. Size (Height) Horiz. Size Noise Gate (Sync Stab.)
R6	2meg	$\frac{1}{2}$	18D65216A14*	TT-75	B47-2meg-S	HLC-1	PTA26L	
R7	10K	2(WW)	17D65220A03					
R8	4meg	$\frac{1}{2}$	18D65216A15†	TT-86	B47-5meg-S	HLC-4	PTA56A	

\* Some versions may use Part #18K743523. (Same replacements as above).  
† Some versions may use Part #18K740694.

### RESISTORS

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

ITEM No.	RATING	REPLACEMENT DATA			ITEM No.	RATING	REPLACEMENT DATA		
		IRC PART No.	WORKMAN TV PART No.	REMARKS			IRC PART No.	WORKMAN TV PART No.	REMARKS
R9	2meg 5%				R51	100K			
R10	12meg 5%				R52	220K			
R11	600K				R53	56K			
R12	1000Ω				R54	5.6meg			
R13	60Ω				R55	18K			
R14	15K				R56	12K			
R15	220K				R57	2.2meg			
R16	180K				R58	220K			
R17	18K				R59	220K			
R18	1000Ω				R60	1meg			
R19	15K				R61	15K			
R20	3300Ω 1W				R62	18K			
R21	120Ω				R63	22K			
R22	3000Ω				R64	1500 1W			
R23	47K				R65	330Ω			
R24	2700Ω				R66	330Ω			
R25	2700Ω				R67	18Ω (Cold)			
R26	6200Ω 5W	PW5-6200	5W-SQ-6200		R68	82K			
R27	22K				R69	92K			
R28	220K				R70	12K 3W			
R29	33K				R71	6800Ω			
R30	100K				R72	5.6meg			
R31	22K 1W				R73	12K			
R32	33K				R74	270K			
R33	220K				R75	47K			
R34	2.2meg				R76	20K 5%			
R35	33K				R77	15K			
R36	180K				R78	2200Ω			
R37	100K				R79	470Ω			
R38	1000Ω				R80	1meg			
R39	47K				R81	10K 2W			
R40	22K				R82	820K			
R41	1000Ω				R83	3300Ω 2W			
R42	1meg				R84	15K 2W			
R43	1meg				R85	5600Ω 4W			
R44	220Ω				R86	210Ω (Cold)			
R45	560Ω				R87	470K			
R46	15K 2W				R88	100K			
R47	270Ω 1W				R89	1500Ω			
R48	2.7meg				R90	330Ω			
R49	8200Ω 2W				R91	39K 2W			
R50	2200Ω				R92	47K 1W			

① Value used in Chassis coded A-00 thru A-03.  
② 12K (3W) in Chassis TS, QTS, STS-436 & Y, Codes A-00 & A-01.  
③ 10K (3W) in Chassis TS, QTS, STS-436 & Y, Codes A-02 & later.  
④ Used in Chassis coded A-01 and later only.  
⑤ Value used in TS, QTS, & STS-436 & Y.  
⑥ Value used in Chassis coded A-00 thru A-02, A-03.  
⑦ Not used in Chassis QTS-436.  
\* Motorola Part Number

### COMPONENT COMBINATIONS

ITEM No.	USE	DESCRIPTION	MOTOROLA PART No.	REPLACEMENT DATA
K1	Sync Sep. - Sync Amp. Grid	27mmf, 220mmf, .002mfd, 56K, 56K, 470K, 560K, 3.3meg	51B747893 Note 1	Centralab PC-358 Sprague BN-5
K2	Yoke Coupling	220mmf (3000V), 220mmf (3000V), 6800Ω (1 watt)	51K752327	

Note 1: Component combination for Sync Sep. Grid, V5B Pt. #51D65239A01 with individual components in grid circuit of Sync Amp. (V8A) used in Chassis coded A-00 thru B-02.

### COILS (RF-IF)

ITEM No.	USE	REPLACEMENT DATA					NOTES
		MOTOROLA PART No.	Merit PART No.	Miller PART No.	Stancor PART No.	Workman TV PART No.	
L1	39.75MC Trap	24K754048	TV-152	6225	RTC-8556	T218	① Includes Complete Ass'y Part #1V6581A52 (Ch. Coded A-00 thru A-03). ② Part #24C65828A01 (Ch. Coded A-00 thru A-03). ③ Part #24D65950A01 (Ch. Coded A-00 thru A-03). ④ Includes 2700Ω Resistor. ⑤ Part #1V66241A48 (Ch. Coded B-04 and later - Recommended replacement Part #24D65949A01 (Ch. Coded A-00 thru A-03). ⑥ Part #1V66099A99 (Ch. Coded B-04 and later - Recommended replacement Part #24D65949A01 (Ch. Coded A-00 thru A-03). ⑦ Shunt with 2700Ω Resistor.
L2A	1st Video IF	24K750637				TE285	
L3A	41.25MC Trap						
L4	RF Choke	24D65866A05					
L5	47.25MC Trap	24K747587	TV-130	6219	RTC-8551	T217	① Includes Complete Ass'y Part #1V6581A52 (Ch. Coded A-00 thru A-03). ② Part #24C65828A01 (Ch. Coded A-00 thru A-03). ③ Part #24D65950A01 (Ch. Coded A-00 thru A-03). ④ Includes 2700Ω Resistor. ⑤ Part #1V66241A48 (Ch. Coded B-04 and later - Recommended replacement Part #24D65949A01 (Ch. Coded A-00 thru A-03). ⑥ Part #1V66099A99 (Ch. Coded B-04 and later - Recommended replacement Part #24D65949A01 (Ch. Coded A-00 thru A-03). ⑦ Shunt with 2700Ω Resistor.
L6	2nd Video IF	24K721274	BC-562	4604	RTC-8516	T856	
L7A	3rd Video IF	24K751248	TV-130	6219	RTC-8551	T217	
L8	4th Video IF	1V6581A97 ①					
L9	RF Choke (8.8uh)	24C65828A09 ②	BC-568	4611	RTC-8521	T960	① Includes Complete Ass'y Part #1V6581A52 (Ch. Coded A-00 thru A-03). ② Part #24C65828A01 (Ch. Coded A-00 thru A-03). ③ Part #24D65950A01 (Ch. Coded A-00 thru A-03). ④ Includes 2700Ω Resistor. ⑤ Part #1V66241A48 (Ch. Coded B-04 and later - Recommended replacement Part #24D65949A01 (Ch. Coded A-00 thru A-03). ⑥ Part #1V66099A99 (Ch. Coded B-04 and later - Recommended replacement Part #24D65949A01 (Ch. Coded A-00 thru A-03). ⑦ Shunt with 2700Ω Resistor.
L10	RF Choke (8.8uh)	24C65828A09 ②	BC-568	4611	RTC-8521	T960	
L11	Peaking (390uh)	24K749873	TV-201	6134	RTC-8578	T350	
L12A	4.5MC Trap	24D65950A02 ③					
L13	Sound Takeoff	24K752963 ④	TV-185	6181	RTC-8598	T346	① Includes Complete Ass'y Part #1V6581A52 (Ch. Coded A-00 thru A-03). ② Part #24C65828A01 (Ch. Coded A-00 thru A-03). ③ Part #24D65950A01 (Ch. Coded A-00 thru A-03). ④ Includes 2700Ω Resistor. ⑤ Part #1V66241A48 (Ch. Coded B-04 and later - Recommended replacement Part #24D65949A01 (Ch. Coded A-00 thru A-03). ⑥ Part #1V66099A99 (Ch. Coded B-04 and later - Recommended replacement Part #24D65949A01 (Ch. Coded A-00 thru A-03). ⑦ Shunt with 2700Ω Resistor.
L14	Peaking (240uh)	24C65828A07 ⑤	TV-188	6174	RTC-8592	T353	
L15	Peaking (500uh)	24K750835	TV-194	6112	RTC-8574	T341	
L16	Peaking (100uh)	24D65949A02 ⑥	TV-113	6203	RTC-8545	T235	
L17	Sound IF	24D65948A01 ⑦					① Includes Complete Ass'y Part #1V6581A52 (Ch. Coded A-00 thru A-03). ② Part #24C65828A01 (Ch. Coded A-00 thru A-03). ③ Part #24D65950A01 (Ch. Coded A-00 thru A-03). ④ Includes 2700Ω Resistor. ⑤ Part #1V66241A48 (Ch. Coded B-04 and later - Recommended replacement Part #24D65949A01 (Ch. Coded A-00 thru A-03). ⑥ Part #1V66099A99 (Ch. Coded B-04 and later - Recommended replacement Part #24D65949A01 (Ch. Coded A-00 thru A-03). ⑦ Shunt with 2700Ω Resistor.
L18	Quadrature	24D65948A01 ⑦					
L19	RF Choke (7.5uh)	24C65828A08	BC-565	4611	RTC-8521	T821	
L20	RF Choke (7.5uh)	24C65828A08	BC-565	4611	RTC-8521	T821	

### TUBES

GENERAL ELECTRIC			RAYTHEON			SYLVANIA		
ITEM No.	USE	TYPE	ITEM No.	USE	TYPE	ITEM No.	USE	TYPE
V1	1st Video IF Amp.	3BZ8A	V7	Audio Detector	3DT6	V10	Sync Amp. - Horiz. Osc.	8B18
V2	2nd Video IF Amp.	3BZ8	V8	Audio Output	6GK6	V11	Vert. Mult. - Vert. Output	8FZ5 (8FY8) *
V3	3rd Video IF Amp.	6EW8	V9	Sync Amp. - Horiz. Osc.	8B18	V12	Horiz. Output	6DQ6B
V4	Video Output	6GK6	V10	Vert. Mult. - Vert. Output	8B18	V13	Damper	6AF3 (6AL3) *
V5	AGC Keying - Sync Sep. - Noise Limiter	3GS8 (3BU8) *	V11	Horiz. Output	6DQ6B	V14	HV Rectifier	3A3
V6	Sound IF Amp. - Vert. Mult.	6BL8	V12	Damper	6AF3 (6AL3) *			5U4GB (5DJ4) *

\* Alternate

### PICTURE TUBE

ITEM No.	REPLACEMENT DATA					NOTES
	MOTOROLA PART No.	GENERAL ELECTRIC PART No.	RCA PART No.	RAYTHEON PART No.	SYLVANIA PART No.	
V15	19XP4	19AVP4/XP4 ①	19XP4 ①		19XP4 ②	① Aluminized ② Silver Screen "85"

### ELECTROLYTIC CAPACITORS

ITEM No.	CAP.	VOLT.	REPLACEMENT DATA						
			MOTOROLA PART No.	AEROVOX PART No.	CORNELL-DUBIER PART No.	GENERAL ELECTRIC PART No.	MALLORY PART No.	PYRAMID PART No.	SPRAGUE PART No.
C1A	100	400	23C65807A03 ①	AFB4-08-25	C0239	XC4-42	FP389.1	TMT-3805	TVL-1718
C1B	10	400		BR8045			TC80	TD-80-450	TVA-1718
C1C	10	400							
C1D	10	400							
C2	10	400	23C65808A01 ②	PRSL720	BR1045	QTI-6	TC72	TD-10-450	TVA-1705

① Chassis A-00 thru B-01 use 4 section: 100mfd @ 400V, 80mfd @ 400V, 10mfd @ 400V, 10mfd @ 200V (Pt. #23C65807A01).  
Some versions use 10mfd @ 400V (Pt. #23C65808A01) for C1C.  
② Some versions use 5mfd @ 300V (Pt. #23C65808A03).

### FIXED CAPACITORS

ITEM No.	RATING	REMARKS	REPLACEMENT DATA					
			AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBIER PART No.	ELMENCOR PART No.	MALLORY PART No.	SPRAGUE PART No.
C3	.25 100V		P288N-25		CUB2P25	1DP-3-254	GEM-2025	2TM-P22
C4	470		DI-470	DD-471	BYA10T47	CCD-471	B-347	10TS-T47
C5	68 N150 10%	#21R131236				*		
C6	10 N150 5%	#21R125698				*		
C7	10 N150 5%	#21R125698				*		
C8	18 N150 10%	#21R125698				*		
C9	.001		BPD-001	DD-102	BYA10D1	CCD-102	B-210	5HK-D10
C10	.25 50V		P288N-25		CUB2P25	1DP-3-254	GEM-2025	2TM-P10
C11	.001		EF-001	MFT-1000		CCF-102	CT280A	
C12	.001		BPD-001	DD-102	BYA10D1	CCD-102	B-210	5HK-D10
C13	.001		BPD-001	DD-102	BYA10D1	CCD-102	B-210	5HK-D10
C14	470 10%		DI-470	DD-471	5R5T47	CCD-471	GP347	10TS-T47
C15	470 10%		DI-470	DD-471	5R5T47	CCD-471	GP347	10TS-T47
C16	680 10%		DI-680	DD-681	5R5T68	CCD-681	GP368	10TS-T68
C17	10 10%		NPO-SI 10	TCZ-10	CIQIC	CCTO-100	CN0-410	10TC-Q410
C18	560		DI-560	DD-561	L10T56	CCD-561	B-356	10TS-T56
C19	.1 400V		P468N-1	DF-104	CUB4P1	4DP-3-104	GEM-401	4TM-P10
C20	.01 2000V	#21R131733					2EV-110	BL-S10
C21	.02		BPD-02	DD-203	BYB6S2	CCD-203	B-120	5HK-S20
C22	470 2000V		HYD-20-470	DD30-471	HVB20T47	3CCD-471	2EV-347	30GA-T47
C23	2.7 NPO ±.25mmf		NPO-DI 3.0		CI0V3C			10TC-Q47
C24	47 N750 10%	(5.6mmf) ①	N750-DI 47	DTN-47	CIQ47C	CCTN-470	CN7-447	10TCU-V27
C25	.001 10%		DI-1000	DD-102	5R5D1	CCD-102	GP210	10TS-D10
C26	.005		BPD-005	DD-502	BYA10D5	CCD-502	B-250	5HK-D50
C27	.001		BPD-001	DD-102	BYA10D1	CCD-102	B-210	5HK-D10
C28	.005		BPD-005	DD-502	BYA10D5	CCD-502	B-250	5HK-D50
C29	.01	②	BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C30	470 10%		DI-470	DD-471	5R5T47	CCD-471	GP347	10TS-T47
C31	.001		BPD-001	DD-102	BYA10D1	CCD-102	B-210	5HK-D10
C32	.0027 2000V	(.001 or .005)③		DD30-272				
C33	.02 600V		P688N-02	DD-203	CUB6S2	6DP-2-203	GEM-612	6TM-S20
C34	.01		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C35	.0033		BPD-0033	DD-332	BYA10D33	CCD-332	B-233	5HK-D33
C36	.006 600V 10%	(.0047) ④			PM6D6	6DP-2-103	GEM-1626	6TM-D60
C37	.01 800V 10%		V84C6S1-10%		PM6S1	6DP-2-103	GEM-1611	6TM-S10
C38	.015 800V 10%		V84C6S15-10%		PM6S15	6DP-2-153		6TM-S15
C39	.02 800V		P688N-02	DD-203	CUB6S2	6DP-2-203	GEM-612	6TM-S20
C40	.03 800V	(.02) ⑤	P688N-03	DD-203	CUB6S3	6DP-3-303	GEM-613	6TM-S30
C41	.05 400V		P468N-05	DD-503	CUB4S5	4DP-3-503	GEM-415	4TM-S50
C42	330 N750 10%		N750-DI 330	DTN-330	CCTN-330	CCN-333	CN7-333	10TCU-T33
C43	330 N750 10%		N750-DI 330	DTN-330	C10T33U	CCTN-330	CN7-333	10TCU-T33
C44	.0047		BPD-0047	DD-472	BYA10D47M	CCD-471	B-247	5HK-D47
C45	.5 100V		P288N-5		CUB2P5	1DP-4-504	GEM-205	2TM-P50
C46	.0039		DI-4000	DD-392	LI0D39	CCD-392	GP239	10TS-D39
C47	470 10%		DI-470	DD-471	5R5T47	CCD-471	GP347	10TS-T47
C48	.0033 400V 10%		V84C4D33-10%		PM6D33	6DP-1-332	JL-123	6TM-D33
C49	.007 400V 10%		V84C4D68-10%		PM6D68	6DP-1-682	GEM-1627	6TM-D68
C50	.1 200V		P288N-1	DF-104	CUB2P1	2DP-3-104	GEM-201	2TM-P10
C51	.001		BPD-001	DD-102	BYA10D1	CCD-102	B-210	5HK-D10
C52	.005		BPD-005	DD-502	BYA10D5	CCD-502	B-250	5HK-D50
C53	.1 400V		P468N-1	DF-104	CUB4P1	4DP-3-104	GEM-401	4TM-P10
C54	.1 800V		P688N-1	DF-104	CUB6P1	6DP-4-104	GEM-601	6TM-P10
C55	.04 400V		P468N-04	DD-403	CUB4S4	4DP-3-403	GEM-414	4TM-S40
C56	.1 600V		P688N-1	DF-104	CUB6P1	6DP-4-104	GEM-601	6TM-P10
C57	75 3000V N1500 10%							
C58	.001		BPD-001	DD-102	BYA10D1	CCD-102	B-210	5HK-D10
C59	.015		BPD-015	DD-153	BYA10S15	CCD-153	B-115	5HK-S15



VHF TUNER PARTS LIST AND DESCRIPTIONS

BTT-302,-306

TUBES

GENERAL ELECTRIC			RAYTHEON			SYLVANIA		
ITEM No.	USE	TYPE	ITEM No.	USE	TYPE	ITEM No.	USE	TYPE
V201	RF Amp.	6FY5	V202	Mixer - Osc.	6CG8A			

FIXED 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.
C201A	27 N750 10%	#21P65119A06	N750-DI 15	TCN-27	C10Q27U	CCTN-270	CN7-427	10TCU-Q27
B	27 N750 10%		N750-DI 25	TCN-27	C10Q27U	CCTN-270	CN7-427	10TCU-Q27
C202A	27 N750 10%		N750-DI 25	TCN-27	C10Q27U	CCTN-270	CN7-427	10TCU-Q27
B	27 N750 10%		N750-DI 25	TCN-27	C10Q27U	CCTN-270	CN7-427	10TCU-Q27
C203	30 7.5% 5%	#1P65119A09						
C204	20 5%							
C205	.001		EF-001	DTZ-20	C10Q2C	CCTO-200	CNO-422	10TCC-Q20
C206	1.8-7		EF-0001	MFT-1000		CCF-102	CT280A	
C207	100	#21P65119A11		829-7				
C208	.5-3			MFT-100				
C209	33		NPO-SI 33	829-3	C10Q33C	CV-1	CT565	10TCC-Q33
C210	40			TCZ-33		CCTO-330	CNO-433	
C211	.5-3	#21P65119A16		829-3		CV-1	CT565	
C212	33 N150 10%		BPD-001	DD-102	BYA10DI	*		10TCP-Q33
C213	.001					CCD-102	B-210	5HK-D10
C214	7.25 +.5-.25mmf					*		10TCR-Q18
C215	18 N220 10%	#21P65119A14						
C216	.001		EF-001	MFT-1000		CCF-102	CT280A	
C217	.001		EF-001	MFT-1000		CCF-102	CT280A	
C218	.001		EF-001	MFT-1000		CCF-102	CT280A	

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

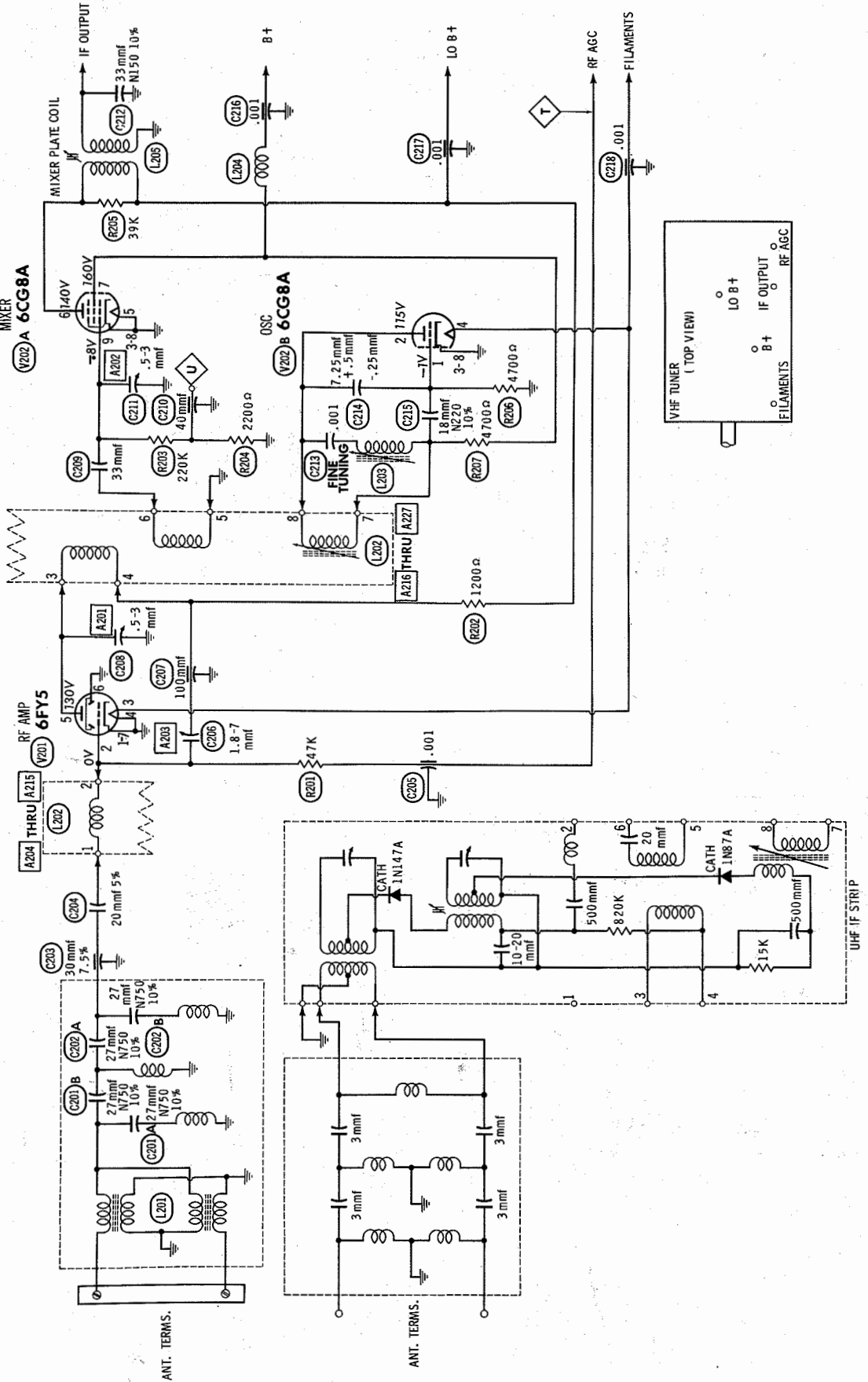
RESISTORS

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

ITEM No.	RATING	REPLACEMENT DATA			ITEM No.	RATING	REPLACEMENT DATA		
		IRC PART No.	WORKMAN TV PART No.	REMARKS			IRC PART No.	WORKMAN TV PART No.	REMARKS
R201	47K				R205	39K			
R202	1200Ω				R206	4700Ω			
R203	220K				R207	4700Ω			
R204	2200Ω								

COILS (RF-IF)

ITEM No.	USE	MOTOROLA PART No.	NOTES	ITEM No.	USE	MOTOROLA PART No.	NOTES
L201	Ant.	IP65119A17	Complete Ass'y	L202H	Ant., RF, Mixer & Osc.	1D66142A09	Channel 9
L202A	Ant., RF, Mixer & Osc.	1D66142A02	Channel 2	J	"	1D66142A10	Channel 10
B	"	1D66142A03	Channel 3	K	"	1D66142A11	Channel 11
C	"	1D66142A04	Channel 4	L	"	1D66142A12	Channel 12
D	"	1D66142A05	Channel 5	M	"	1D66142A13	Channel 13
E	"	1D66142A06	Channel 6				
F	"	1D66142A07	Channel 7	L203	Fine Tuning	24P65119A22	
G	"	1D66142A08	Channel 8	L204	RF Choke	24P65119A21	
				L205	Mixer Plate	24P65119A23	



MOTOROLA CHASSIS QTS/RTS/STS/  
TS/WT-436, QTS/STS/TS-436Y

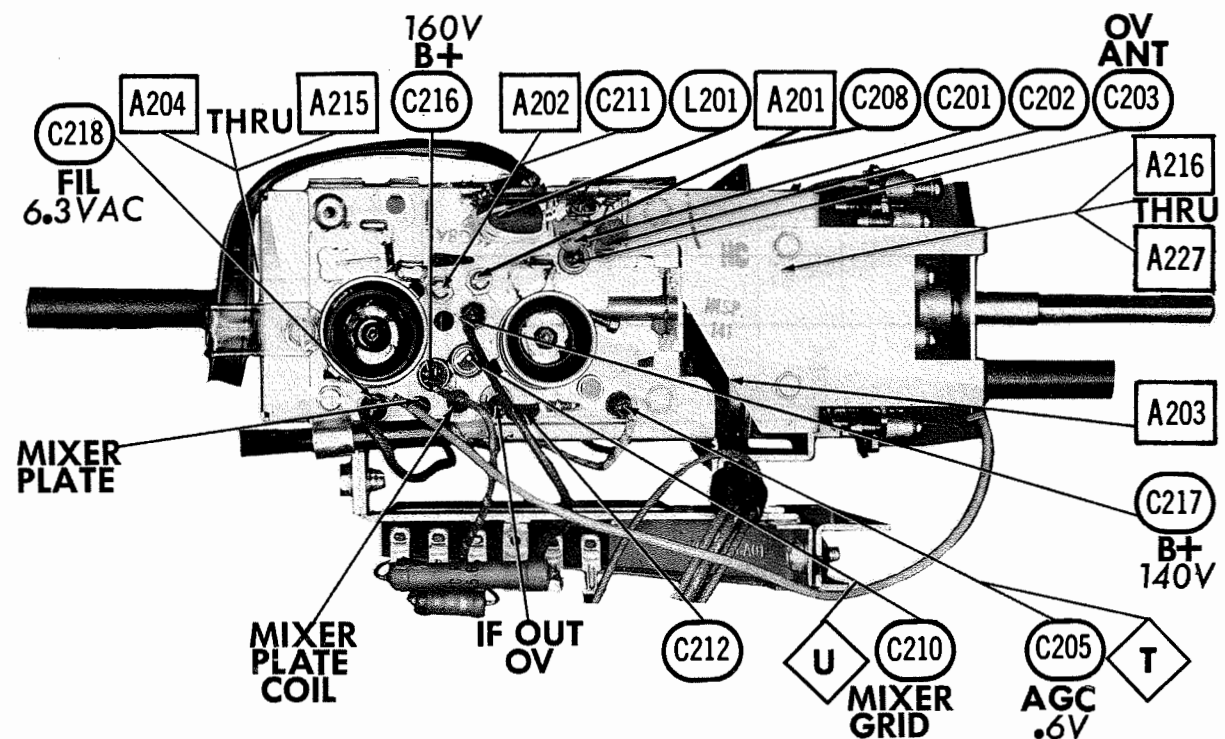
VHF TUNER BTT-302, -306

A PHOTOFACT STANDARD NOTATION SCHEMATIC  
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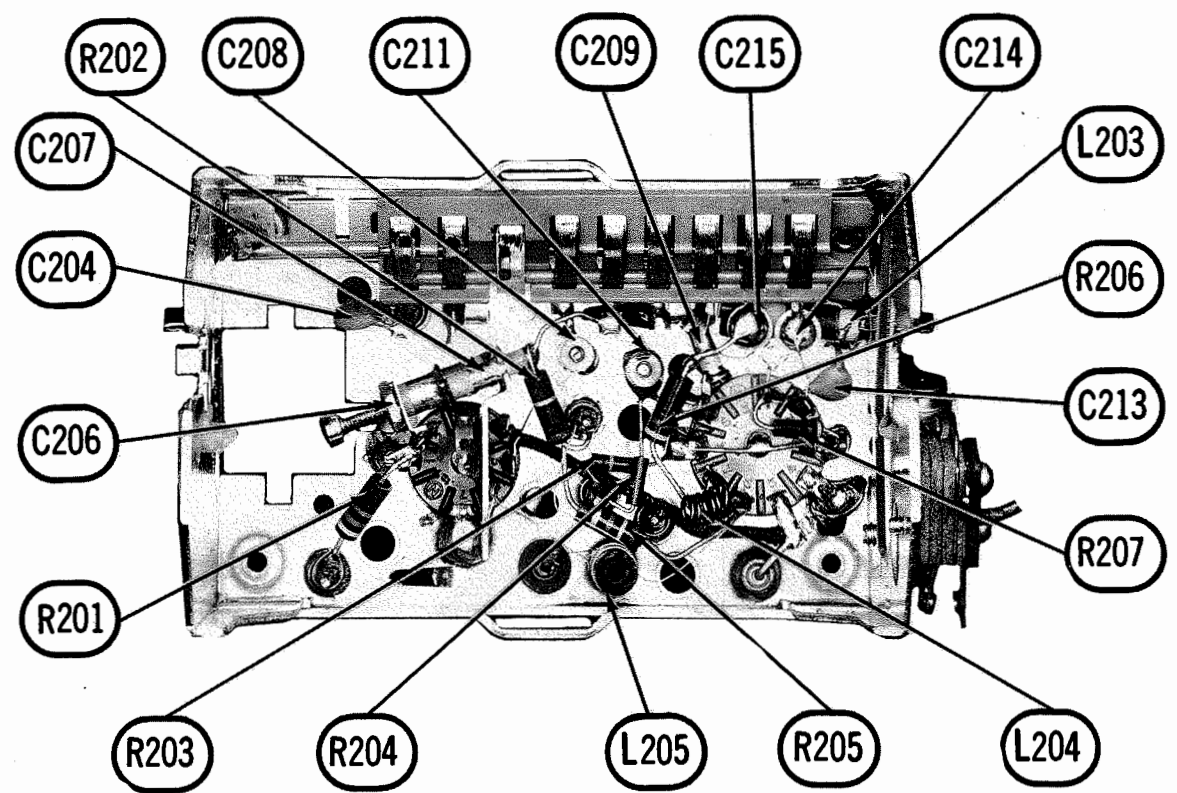
FOLDER 2

VHF TUNER ALIGNMENT INSTRUCTIONS

BTT-302, -306



VHF TUNER BTT-302 - TOP VIEW



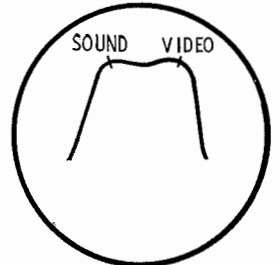
VHF TUNER BTT-302 - BOTTOM VIEW

PRE-ALIGNMENT INSTRUCTIONS

The High Voltage lead should be securely taped and kept away from the chassis. Allow a 20 minute warm-up period for the receiver and test equipment. Suggested Alignment Tools: A201 thru A203 ..... GENERAL CEMENT #5000, 5003, 5014, 5015, 5016, 8276, 8290 WALSCO #2512, 2515, 2522, 2523, 2525, 2537 A216 thru A227 ..... GENERAL CEMENT #5009, 8195, 8274, 8275, 8728, 8987 WALSCO #2531 A204 thru A215 ..... None Required

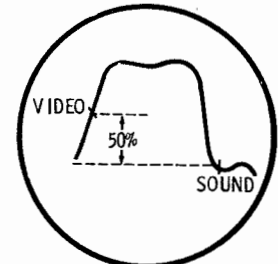
VHF RF AND MIXER ALIGNMENT

Connect the synchronized sweep voltage from the sweep generator to the horizontal input of the oscilloscope for horizontal deflection. The generator output lead should be terminated with its characteristic impedance, usually 50 ohms. Connect the negative lead of a 4.5 volt bias supply to point ①. Positive to chassis. Use only enough sweep generator output to provide a usable pattern on scope. Coils not containing adjustable cores are adjusted by expanding or compressing coil turns. Use 10MC sweep unless otherwise noted.

SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
1. Across antenna terminals with 120Ω in each lead.	195MC	193. 25MC 197. 75MC	10	Vert. Amp. thru 10K to point ①. Low side to chassis.	A201, A202, A203	Adjust A201 and A202 for maximum amplitude and symmetry with markers as shown in Fig. 201. Increase bias for MINIMUM amplitude of response curve. Without changing the bias adjust A203 to obtain MINIMUM response on the scope.
2. "	213MC	211. 25MC 215. 75MC	13	"	A204	Adjust for maximum amplitude of response similar to Fig. 201. Adjust by expanding or compressing coil turns.  FIG. 201
	207MC	205. 25MC 209. 75MC	12		A205	
	201MC	199. 25MC 203. 75MC	11		A206	
	195MC	193. 25MC 197. 75MC	10		A207	
	189MC	187. 25MC 191. 75MC	9		A208	
	183MC	181. 25MC 185. 75MC	8		A209	
	177MC	175. 25MC 179. 75MC	7		A210	
	85MC	83. 25MC 87. 75MC	6		A211	
	79MC	77. 25MC 81. 75MC	5		A212	
	69MC	67. 25MC 71. 75MC	4		A213	
	63MC	61. 25MC 65. 75MC	3		A214	
	57MC	55. 25MC 59. 75MC	2		A215	

VHF OSCILLATOR ALIGNMENT

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

SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
3. Across antenna terminals with 120Ω in each lead.	213MC	211. 25MC 215. 75MC	13	Vert. Amp. thru 47K across Video Det. load.	A216	Adjust to place sound marker in trap notch as in Fig. 202. Video marker should fall at 50%.  FIG. 202
	207MC	205. 25MC 209. 75MC	12		A217	
	201MC	199. 25MC 203. 75MC	11		A218	
	195MC	193. 25MC 197. 75MC	10		A219	
	189MC	187. 25MC 191. 75MC	9		A220	
	183MC	181. 25MC 185. 75MC	8		A221	
	177MC	175. 25MC 179. 75MC	7		A222	
	85MC	83. 25MC 87. 75MC	6		A223	
	79MC	77. 25MC 81. 75MC	5		A224	
	69MC	67. 25MC 71. 75MC	4		A225	
	63MC	61. 25MC 65. 75MC	3		A226	
	57MC	55. 25MC 59. 75MC	2		A227	

MOTOROLA CHASSIS QTS/RTS/STS/TS/WTS-436, QTS/STS/TS-436Y

FOLDER 2

## TT-300

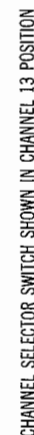
The High Voltage lead should be securely taped and kept away from the chassis. Allow a 20 minute warm-up period for the receiver and test equipment.

Connect DC probe of VTVM to point ④. Common to chassis.  
Voltage should be approximately -4 volts. If voltage is excessively high or low, correct by replacing Mixer-Osc. tube if necessary.  
Short point ④ to chassis.  
Do not remove tuner shield; make adjustment of coils thru holes provided.  
Maintain 1.0 volts peak to peak on scope.  
Connect the synchronized sweep voltage from the sweep generator to the horizontal input of the oscilloscope for horizontal deflection.  
The generator output lead should be terminated with its characteristic impedance, usually 50 ohms.  
Use 10MC sweep unless otherwise noted.  
Coils not containing adjustable cores are adjusted by expanding or compressing coil turns.

Connect the synchronized sweep voltage from the sweep generator to the horizontal input of the oscilloscope for horizontal deflection. The generator output lead should be terminated with its characteristic impedance, usually 50 ohms.

Connect variable bias to IF AGC line. Adjust bias to obtain response curve which shows no indication of overloading.

Use 10MC sweep unless otherwise noted.



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# VHF TUNER ALIGNMENT INSTRUCTIONS

## TT-305, -305Y

### PRE-ALIGNMENT INSTRUCTIONS

The High Voltage lead should be securely taped and kept away from the chassis.  
Allow a 20 minute warm-up period for the receiver and test equipment.  
Suggested Alignment Tools: GENERAL CEMENT #8607, 9291, 9294  
WALSCO #2520, 2522, 2523, 2524, 2534, 2537

### VHF RF AND MIXER ALIGNMENT

Connect the synchronized sweep voltage from the sweep generator to the horizontal input of the oscilloscope for horizontal deflection.  
Connect the negative lead of a 2.5 volt bias supply to point  $\diamond$ . Positive to chassis.  
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.  
Before proceeding with alignment, measure Oscillator to Mixer Grid injection voltage at point  $\diamond$  with a VTVM.  
It should measure approximately -3 to -4 volts.

	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
1.	Across antenna terminals with 150 $\Omega$ in each lead.	213MC	211.25MC 215.75MC	13	Vert. Amp. thru 10K to point $\diamond$ . Low side to chassis.	A201, A202	Adjust for maximum gain and symmetry of response similar to Fig. 201 with markers as shown.
2.	"	"	"	"	"	A203, A204	Adjust (with respect to each other) for proper bandwidth as in Fig. 201.
3.	"	"	"	"	"	A205	Adjust for maximum amplitude and MINIMUM tilt.
4.	"	177MC	175.25MC 179.75MC	7	"	A201, A202	Retouch for proper marker position as in Fig. 202.
5.	"	213MC	211.25MC 215.75MC	13	"	A206	If necessary, adjust for proper marker placement as in Fig. 201.
6.	"	"	"	"	"	A207	Adjust for proper marker placement and tilt as in Fig. 201. Repeat steps 1 thru 6. If the proper response curve cannot be obtained, perform step 13, then repeat steps 1 thru 6.
7.	"	85MC	83.25MC 87.75MC	6	"	A208, A209, A210	Adjust for maximum gain and symmetry of response similar to Fig. 201 with markers as shown.
8.	"	79MC	77.25MC 81.75MC	5	"	A211, A212, A213	"
9.	"	69MC	67.25MC 71.75MC	4	"	A214, A215, A216	"
10.	"	63MC	61.25MC 65.75MC	3	"	A217, A218, A219	"
11.	"	57MC	55.25MC 59.75MC	2	"	A220, A221, A222	"
12.	"	"	"	"	"	A223	Adjust to sharpen the slope of response curve adjacent to Video marker and to a point where the Video marker just begins to fall into the skirt of response curve. Check on channel 3 and if necessary, make compromise.
13.	"	201MC	199.25MC 203.75MC	"	"	A224	Increase bias at point $\diamond$ until the RF Amplifier is cut off, then increase generator output until some response can be seen on the scope. Adjust A224 for zero or MINIMUM response on scope. Remove the bias from point $\diamond$ . If the RF Amplifier breaks into oscillation, back off A224 until oscillation stops. NOTE: An excessive tilt of the response curve that increases slowly when the bias is removed indicates oscillation. Recheck steps 1 thru 12.
14.	"	44MC	45.5MC	2	Across Video Detector load thru 10K	A225, A226	Set generator output as high as possible. Detune A227 without removing core. Adjust A225 and A226 for MINIMUM response at 45.5MC marker.
15.	"	"	43.5MC	"	"	A227	Adjust for MINIMUM response at 43.5MC marker. Increase generator output and decrease bias, then readjust A225, A226 and A227 for MINIMUM response. Repeat as necessary.

CONTINUED PAGE 23

# VHF TUNER TT-305, -305Y ALIGNMENT INSTRUCTIONS (cont)

### VHF OSCILLATOR ALIGNMENT

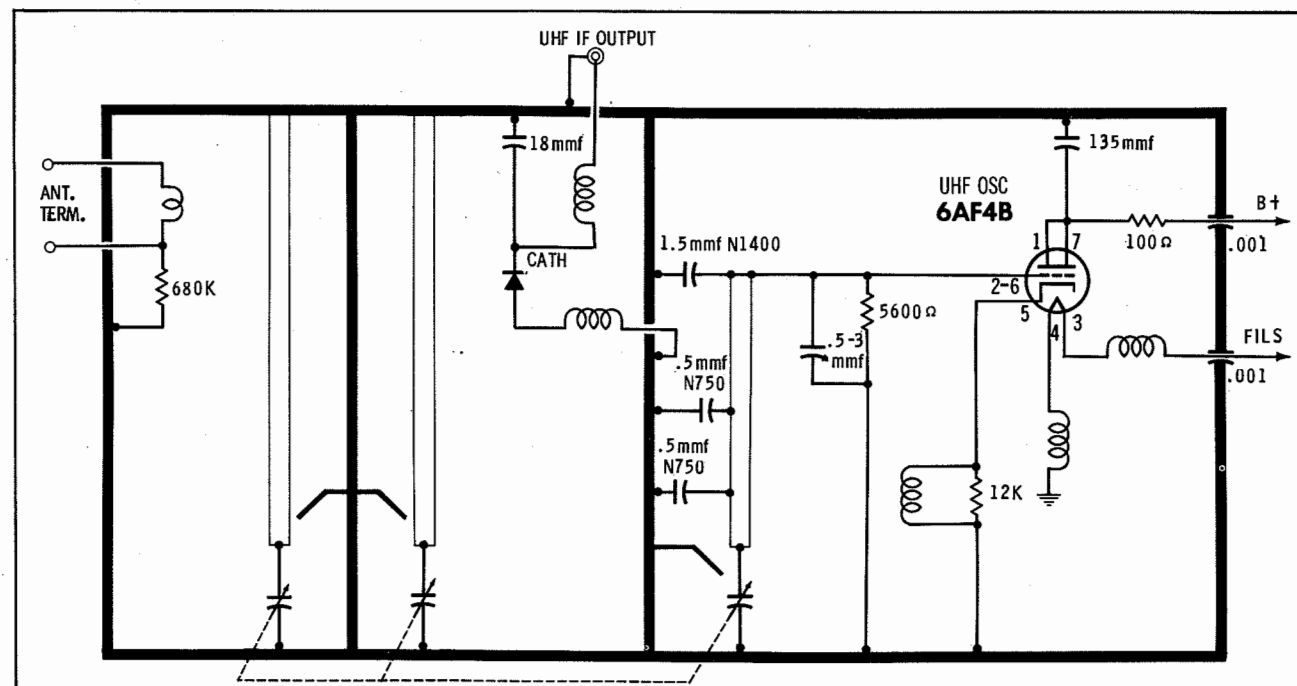
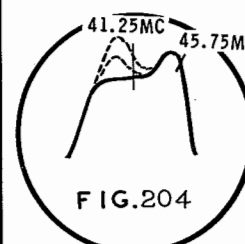
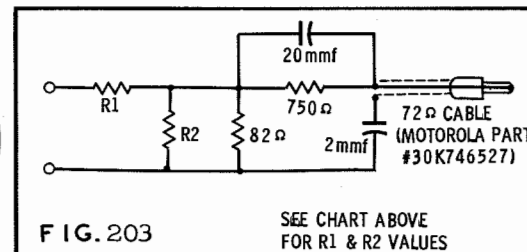
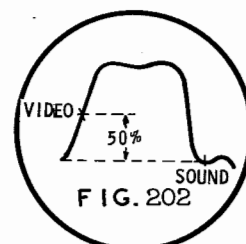
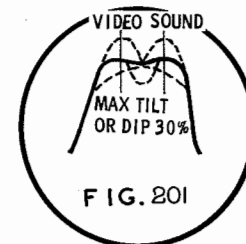
Connect the synchronized sweep voltage from the sweep generator to the horizontal input of the oscilloscope for horizontal deflection.  
Set the Fine Tuning to the center of its range.  
Use only enough sweep generator output to provide a usable pattern on scope.  
Use 10MC sweep unless otherwise noted.  
Connect variable bias to IF AGC line. Adjust bias to obtain response curve which shows no indication of overloading.

	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS															
10.	Across antenna terminals with 150Ω in each lead.	213MC	211. 25MC	13	Vert. Amp. thru 47K across Video Detector load.	A228	Adjust to place sound marker in trap notch as in Fig. 202. Video marker should fall at 50%.															
		207MC	215. 75MC	12		A229																
		201MC	205. 25MC	11		A230																
		195MC	209. 75MC	10		A231																
		189MC	199. 25MC	9		A232																
		183MC	203. 75MC	8		A233																
		177MC	193. 25MC	7		A234																
		85MC	197. 75MC	6		A235																
		79MC	187. 25MC	5		A236																
		69MC	191. 75MC	4		A237																
		63MC	181. 25MC	3		A238																
		57MC	185. 75MC	2		A239																
											SEE FIG. 203 BELOW											
							<table><tr><td>GEN. IMPEDANCE</td><td>R1</td><td>R2</td></tr><tr><td>50 Ω</td><td>25 Ω</td><td>NONE</td></tr><tr><td>75 Ω</td><td>NONE</td><td>NONE</td></tr><tr><td>150 Ω</td><td>100 Ω</td><td>75 Ω</td></tr><tr><td>300 Ω</td><td>240 Ω</td><td>75 Ω</td></tr></table>	GEN. IMPEDANCE	R1	R2	50 Ω	25 Ω	NONE	75 Ω	NONE	NONE	150 Ω	100 Ω	75 Ω	300 Ω	240 Ω	75 Ω
GEN. IMPEDANCE	R1	R2																				
50 Ω	25 Ω	NONE																				
75 Ω	NONE	NONE																				
150 Ω	100 Ω	75 Ω																				
300 Ω	240 Ω	75 Ω																				

### UHF IF ALIGNMENT (TT-305Y)

Short point  $\diamond$  to chassis. Do not remove tuner shield.

	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
17.	Across UHF Input receptacle of VHF tuner thru network in Fig. 203.	44MC	41.25MC 45.75MC	UHF	Vert. Amp. thru 47K to point $\diamond$ . Low side to chassis.	A240, A241	Adjust for maximum gain and symmetry of response similar to Fig. 204 with markers as shown.



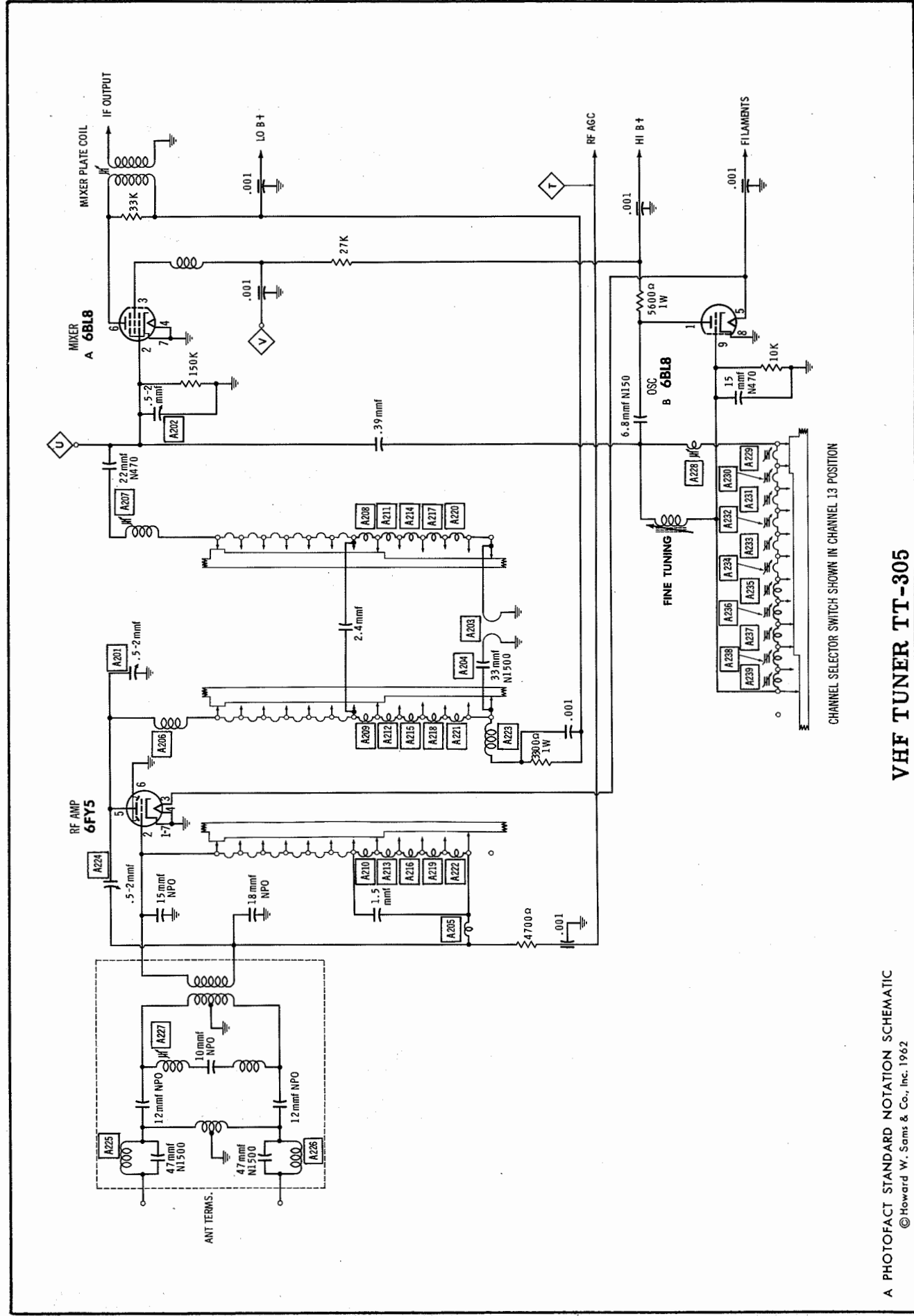
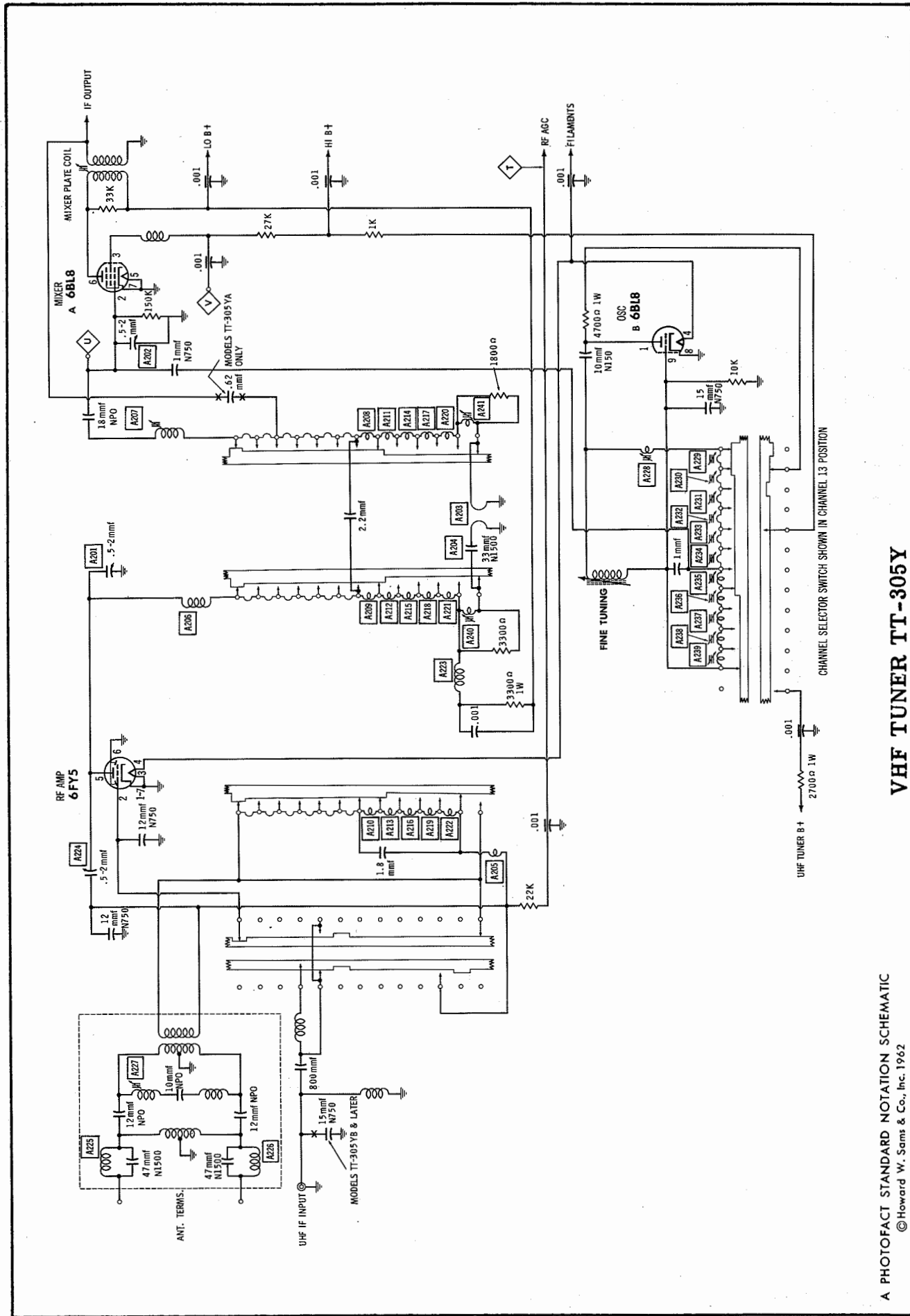
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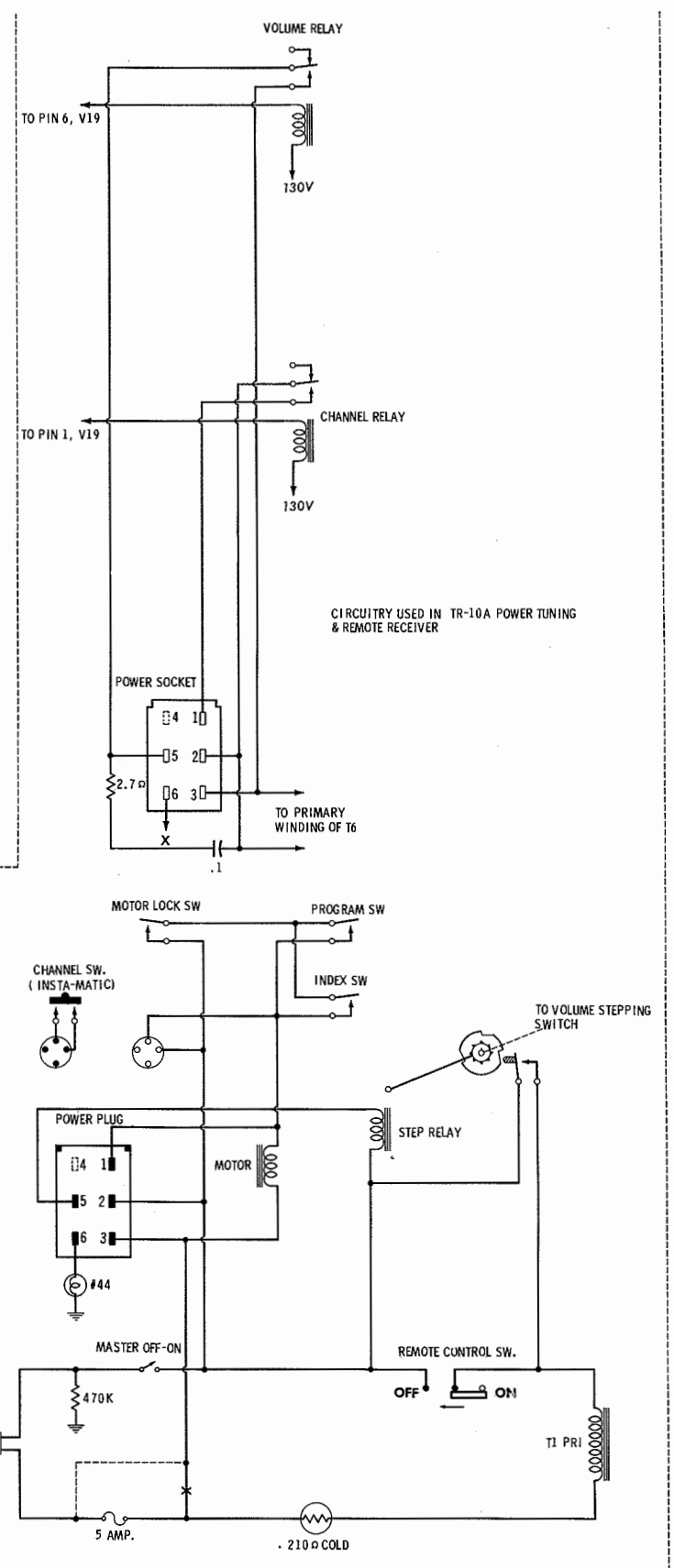
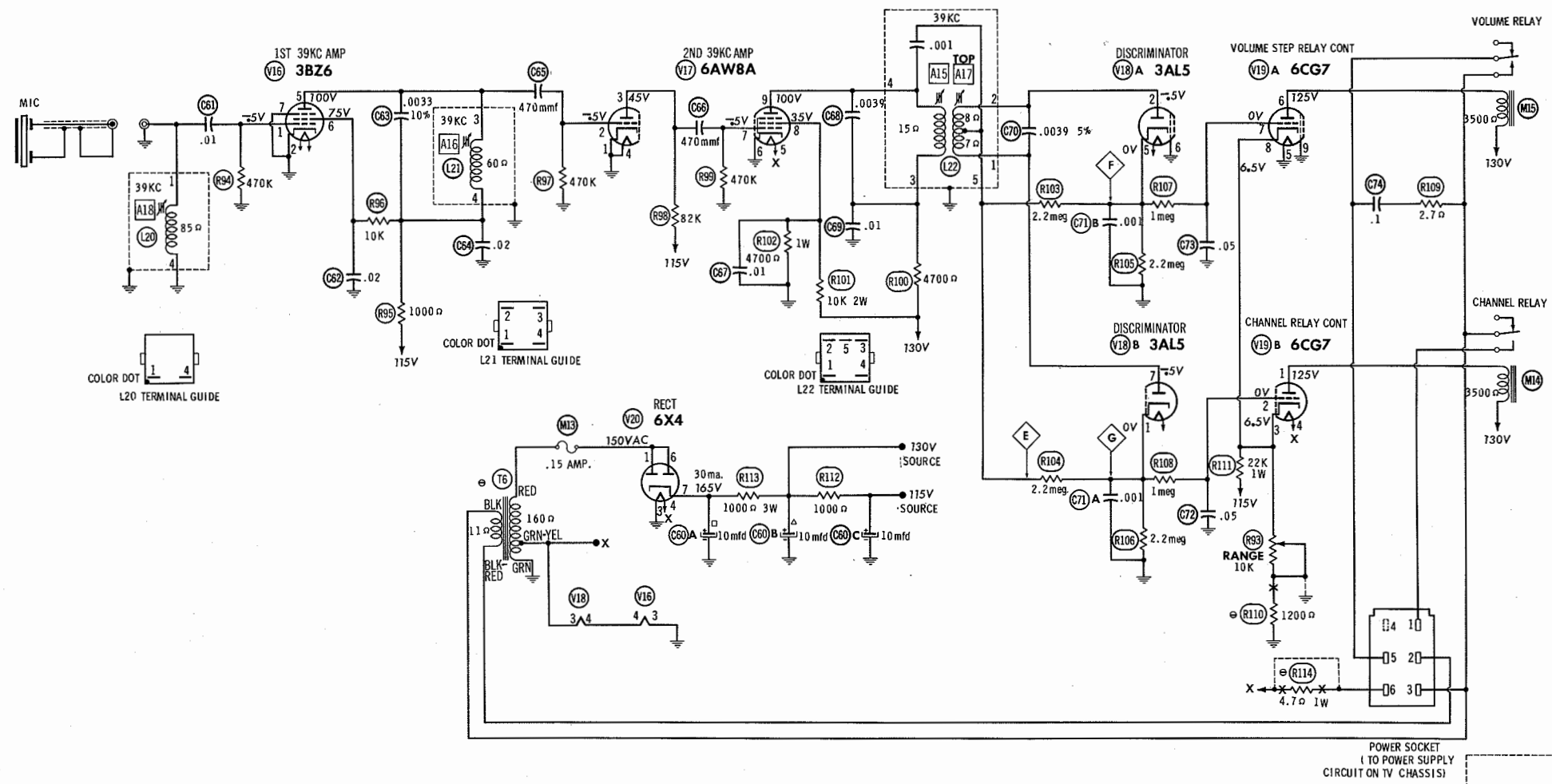
UHF TUNER STT-601

MOTOROLA CHASSIS QTS/RTS/STS/  
TS/WTS-436, QTS/STS/TS-436Y

FOLDER 2







MOTOROLA CHASSIS QTS/RTS/STS/  
TS/WTS-436, QTS/STS/TS-436Y

FOLDER 2

POWER TUNING CIRCUIT FOR TR10-B - PAGE 2  
ALIGNMENT & RANGE CONTROL ADJUSTMENTS - PAGE 20

REMOTE CONTROL RECEIVER TR10-A, -B - POWER TUNING CIRCUIT TR10-A

ALIGNMENT INSTRUCTIONS

TR10-A,-B

REMOTE CONTROL RECEIVER ALIGNMENT

	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	CONNECT VTVM	ADJUST	REMARKS
1.	Across microphone receptacle.	39 KC	DC probe thru 100K to point $\diamond$ . Common to chassis.	A15, A16	Adjust for maximum deflection. Reduce signal input to provide no more than -60 volts DC on VTVM.
2.	"	"	DC probe to point $\diamond$ . Common to point $\diamond$ .	A17	Adjust for zero reading. A positive and negative reading will be obtained on either side of the correct setting.
3.	Use a properly aligned transmitter or a signal source.	Alternately depress the two buttons	DC probe thru 100K to point $\diamond$ . Common to chassis.	A18	While alternately depressing the two buttons. Adjust A18 for maximum and balanced deflection.

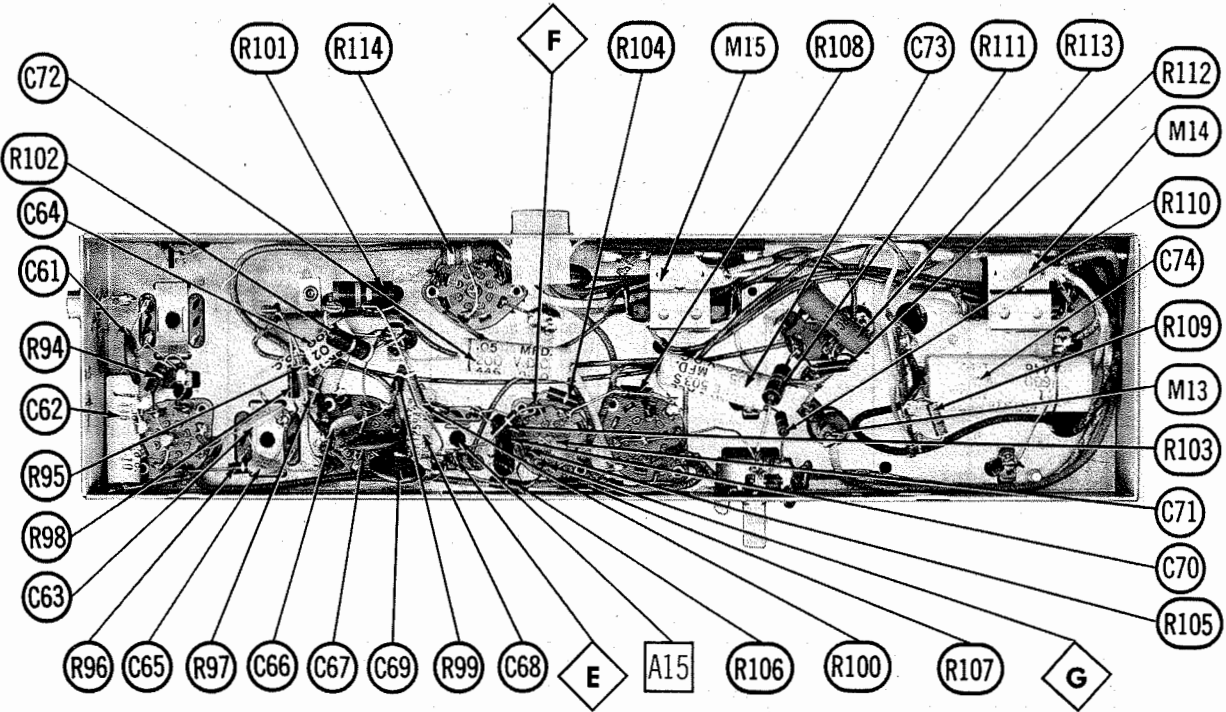
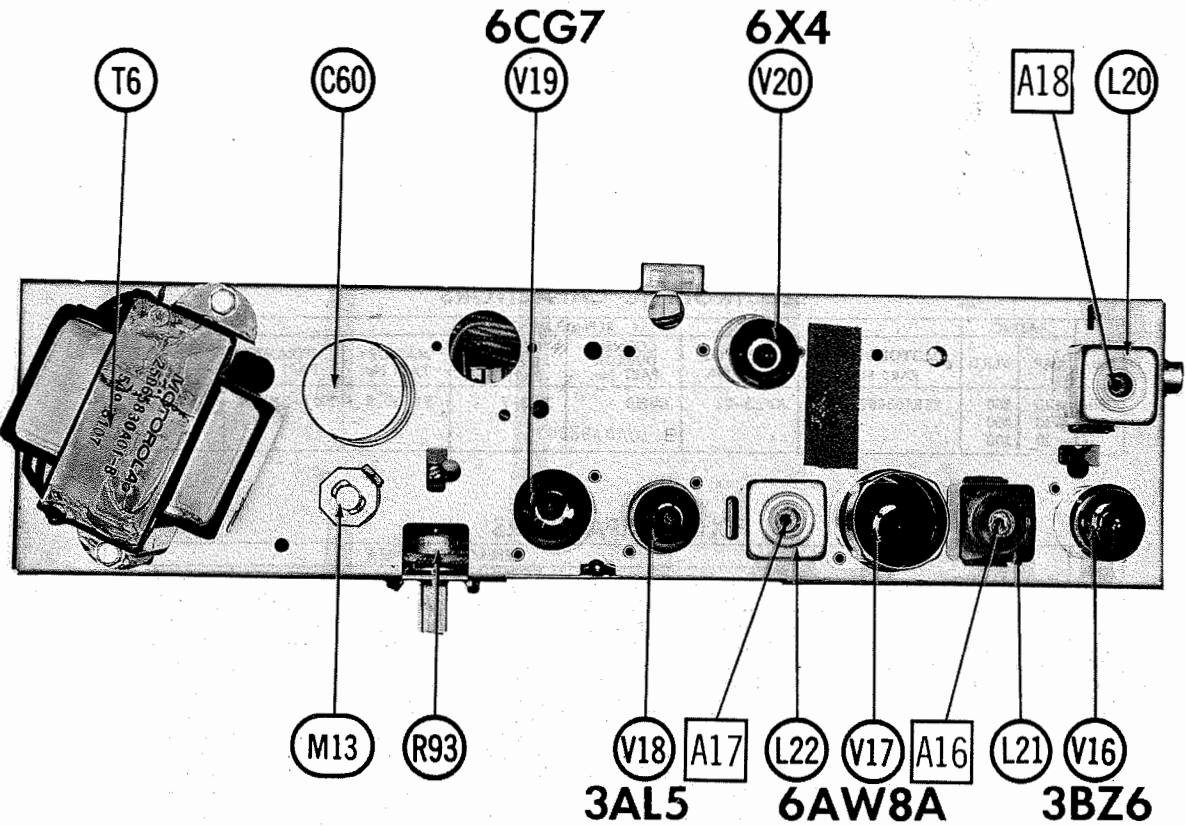
REMOTE CONTROL RANGE ADJUSTMENT

Set Remote Range Control to center of its range. Move to the normal viewing area of the room and operate the Remote Control Transmitter. If the functions operate properly, leave control at this setting. If not, turn control clockwise until all functions operate satisfactorily from the viewing area.

RESISTANCE READINGS

ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V16	3BZ6	470K	0 $\Omega$	FIL	FIL	$\dagger\dagger$ 3000 $\Omega$	$\dagger\dagger$ 13K	0 $\Omega$		
V17	6AW8A	0 $\Omega$	470K	$\dagger\dagger$ 84K	FIL	FIL	0 $\Omega$	470K	$\dagger\dagger$ 10K	$\dagger\dagger$ 5700 $\Omega$
V18	3AL5	1.8 meg	2.2 meg	FIL	FIL	1.8 meg	0 $\Omega$	2.2 meg		
V19	6CG7	$\dagger\dagger$ 4500 $\Omega$	2.8 meg	1300 $\Omega$	FIL	FIL	$\dagger\dagger$ 4500 $\Omega$	2.8 meg	1300 $\Omega$	NC
V20	6X4	160 $\Omega$	NC	FIL	FIL	NC	160 $\Omega$	$\dagger$ 10K		

$\dagger$  THIS READING WILL VARY DEPENDING UPON THE CONDITION OF THE ELECTROLYTIC IN THE CIRCUIT.  
 $\dagger\dagger$  MEASURED FROM PIN 7 OF V20. NC NO CONNECTION



REMOTE CONTROL RECEIVER TR10-B

SET 561 FOLDER 2

MOTOROLA CHASSIS QTS/RTS/STS/  
TS/WTS-436, QTS/STS/TS-436Y

FOLDER 2

REMOTE CONTROL RECEIVER PARTS LIST AND DESCRIPTIONS

TR10-A,-B

TUBES

GENERAL ELECTRIC			RAYTHEON		SYLVANIA	
ITEM No.	USE	TYPE	ITEM No.	USE	TYPE	
V16	1st 39KC Amp.	3BZ6	V19	Channel Selector -		
V17	2nd 39KC Amp.	6AW8A		Volume Relay Control	6CG7	
V18	Discriminator	3AL5	V20	Rectifier	6X4	

ELECTROLYTIC CAPACITORS

ITEM No.	RATING		REPLACEMENT DATA						
	CAP.	VOLT.	MOTOROLA PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	GENERAL ELECTRIC PART No.	MALLORY PART No.	PYRAMID PART No.	SPRAGUE PART No.
C80A	10	200	23K753669	AFH3-22	C0210	XC3-7	FP330.5	TMT-3292	TVL-3580
B	10	200							
C	10	200							

FIXED 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.	
C81	.01			BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10	
C82	.02	200V		P288N-02	DD-203	CUB2S2	4DP-2-203	GEM-412	2TM-S20	
C83	.0033		10%	DI-3300		IR5D33	CCD-332	JL-233	10TS-D33	
C84	.02	200V		P288N-02	DD-203	CUB2S2	4DP-2-203	GEM-412	2TM-S20	
C85	.470			DI-470	DD-471	BYA10T47	CCD-471	B-347	10TS-T47	
C86	.470			DI-470	DD-471	BYA10T47	CCD-471	B-347	10TS-T47	
C87	.01			BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10	
C88	.0039	400V		P884CM-0039	D6-402	DPMS8D39	6DP-1-392	GP239	6PS-D39	
C89	.01			BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10	
C70	.0039		5%	1464-0039		IR5D39	CM-20B-392J	MCJ462.5	MS-239	
C71A	.001			BPD-2X001	DD3-102	BYD8DD1	CCD-102	B2X210	5HK-2D10	
B	.001						CCD-102			
C72	.05	200V		P288N-05	DD-503	CUB2S5	4DP-3-503	GEM-415	2TM-S50	
C73	.05	200V		P288N-05	DD-503	CUB2S5	4DP-3-503	GEM-415	2TM-S50	
C74	.1	600V		P688N-1	DF-104	CUB6P1	6DP-4-103	GEM-601	6TM-P10	

CONTROLS

ITEM No.	RATING		REPLACEMENT DATA					INSTALLATION NOTES
	RESIST-ANCE	WATTS	MOTOROLA PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	CTS - IRC PART No.	MALLORY PART No.	
R93A B	10K Shaft	$\frac{1}{2}$	18D65216A07	TT-14 Not Req.	B47-10K-S Not Req.	B11-116 TM4	TA14L Not Req.	Range

RESISTORS

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

ITEM No.	RATING	REPLACEMENT DATA			ITEM No.	RATING	REPLACEMENT DATA		
		IRC PART No.	WORKMAN TV PART No.	REMARKS			IRC PART No.	WORKMAN TV PART No.	REMARKS
R94	470K				R105	2.2meg			
R95	1000Ω				R106	2.2meg			
R96	10K				R107	1meg			
R97	470K				R108	1meg			
R98	82K				R109	2.7Ω			
R99	470K				R110	1200Ω			Note 1
R100	4700Ω				R111	22K 1W			
R101	10K 2W				R112	1000Ω			
R102	4700Ω 1W				R113	1000Ω 3W	PW3-1000	3G-1000	Note 2
R103	2.2meg				R114	4.7Ω 1W			
R104	2.2meg								

Note 1. Used in Chassis coded A-01 and later only.

Note 2. Used in Chassis coded B-00 and later only.

COILS (RF-IF)

ITEM No.	USE	REPLACEMENT DATA					NOTES
		MOTOROLA PART No.	Merit PART No.	Miller PART No.	Stancor PART No.	Workman TV PART No.	
L20	Input	24K752483					
L21	39KC IF	24C745791				TB654	
L22	Discriminator	24C750085				TE286	

REMOTE CONTROL RECEIVER

PARTS LIST AND DESCRIPTIONS (Continued)

TRANSFORMER (POWER)

ITEM No.	RATING		REPLACEMENT DATA					NOTES
	PRI.	SEC. 1	MOTOROLA PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	
T6	117V @ .29A	150V @ .030A Tap @ 6.3V @ 2.3A	25D65830A01B ①					① Alternate Part #25D65830A01

FUSES

ITEM No.	TYPE	RATING	REPLACEMENT DATA					
			MOTOROLA PART No.		LITTELFUSE PART No.		BUSS PART No.	
			FUSE	HOLDER	FUSE	HOLDER	FUSE	HOLDER
M13	N	.15A 125V S/B	65K749181	9K743152	313.150 (N 15/100 125V S/B)	346008	N 15/100	HNO - 3/10

MISCELLANEOUS

ITEM No.	PART NAME	MOTOROLA PART No.	NOTES
M14	Relay	80K753598	
M15	Relay	80K753598	Channel Change, Momentary Type
	Microphone	50C66208A01	Volume Stepping Relay Actuator, Momentary Type

WIRING DATA

General-use Unshielded Hook-up Wire .....	Use BELDEN No. 8530 (Solid) Available in Ten Colors
	8524 (Stranded) Available in Ten Colors
Low-Loss Shielded Lead (Interconnecting) .....	Use BELDEN No. 8401

REMOTE CONTROL TRANSMITTER

PARTS LIST AND DESCRIPTIONS

MISCELLANEOUS

ITEM No.	PART NAME	MOTOROLA PART No.	NOTES
	Transmitter	1V65811A40	
	Tuning Rod	47B748542	Complete
	Tuning Rod	47K52165	Transducer (38.5KC Channel Sel.)
	Spring	41A65081A01	Transducer (39.5KC Volume)
	Lever Assembly	1D65273A04	Pushbutton
	Lever Assembly	1D65273A02	Includes Sound Activator Stud (Channel Sel.)
	Cover	15D65271A01	Includes Sound Activator Stud (Volume)
	Housing	15D65272A03	Plastic, Black
	Pushbutton	38B65058A01	