

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

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.

## DISASSEMBLY INSTRUCTIONS

### CHASSIS REMOVAL

1. Remove rear cover (12 screws). Remove 10 knobs from top.
2. Remove 3 screws holding trim strip at front of control panel and 2 nuts located on bass and loudness controls. Lift panel to expose 4 screws holding controls and tuner bracket. Both control and tuner bracket can now be lowered into cabinet.
3. Remove 4 bolts at bottom holding chassis. Unplug cable to control panel.

4. Unplug yoke, picture tube socket, hi voltage anode lead and speaker cable.

5. Remove chassis.

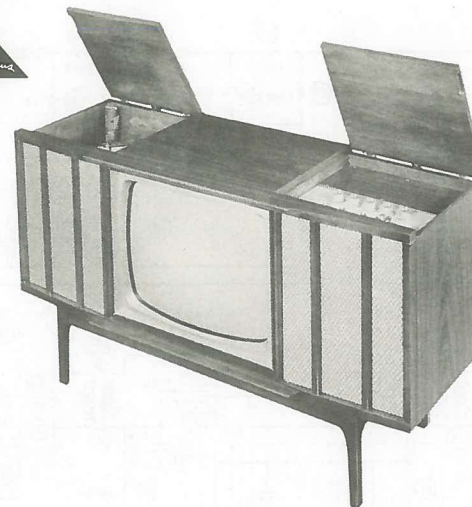
### PICTURE TUBE REMOVAL

To replace picture tube, chassis must be removed.

SET 596 FOLDER 1

MOTOROLA  
CHASSIS 579, 579Y SERIES

## PHOTOFACT® Folder



## MOTOROLA CHASSIS 579, 579Y SERIES

### IMPORTANT FILING NOTICE

Some models covered by this PHOTOFACT Folder employ chassis in addition to the TV chassis. PHOTOFACT Folders covering these additional chassis are packaged immediately behind this Folder and should be filed with this Folder in the yellow filing jacket provided. For specific coverage see index below.

### INDEX

Remote Control TRR-1, TRT-1 . SET 596, FOLDER 1-A  
AM-FM Ch. HS-1013 (HK-45-2) . SET 596, FOLDER 1-B

Preamp-Power Amp  
Ch. HS-979A . . . . . SET 596, FOLDER 1-C

Preamp Ch. HS-977 . . . . . SET 596, FOLDER 1-D

Power Amp. Ch. HS-909A . . . SET 596, FOLDER 1-E

MANUFACTURER	Motorola Inc., 4545 W. Augusta Blvd., Chicago 51, Illinois
TYPE SET	Television Receiver (with Remote, AM-FM Tuner, Stereo Power Amp.)
TUBES	TV, Fourteen
POWER SUPPLY	110-120 Volts AC, 60 Cycle
TUNING RANGE	Channels 2 thru 13 VHF, 14 thru 83 UHF, Video 45.75MC, Sound 41.25MC (Intercarrier)
RATING	180 Watts, 1.7 Amp. @ 117 Volts AC

FOR SERVICE INFORMATION ON RECORD CHANGER - SEE SIMILAR UNIT - PHOTOFACT SET 527 FOLDER 14

Models	TV Chassis	Remote Control
A23C11BWF/CWF/MF/WF, A23K67MF/WF, A23K68BWF/MF/WF . . . . .	ATS-579 . . . . .	TRR-1, TRT-1
A23T8CWF/MF/WF . . . . .	VATS-579 . . . . .	TRR-1, TRT-1

Models	TV Chassis	AM-FM Tuner	Preamp.	Power Amp.	Preamp-Power Amp.
Y23SF5MAFM/WAFM . . . . .	RTS-579Y . . . . .	HS-1013 *			HS-979A
Y23SF5MAFM/WAFM . . . . .	QTS-579 . . . . .	HS-1013 *			HS-979A
Y23SF6BWF/MF/WF, Y23SF7CWF/MF/WF, Y23SF8WAFM . . . . .	RTS-579Y . . . . .		HS-977		HS-909A
Y23SF6BWF/MF/WF, Y23SF7CWF/MF/WF, Y23SF8WAFM . . . . .	QTS-579 . . . . .		HS-977		HS-909A
Y23SF5MAFM/WAFM . . . . .	RTS-579Y . . . . .				HS-979A
Y23SF5MAFM/WAFM . . . . .	QTS-579 . . . . .				HS-979A
Y23SF6BWF/MF/WF, Y23SF7CWF/MF/WF, Y23SF8WAFM . . . . .	RTS-579Y . . . . .	HS-1013 *	HS-977		HS-909A
Y23SF6BWF/MF/WF, Y23SF7CWF/MF/WF, Y23SF8WAFM . . . . .	QTS-579 . . . . .	HS-1013 *	HS-977		HS-909A

TV Chassis Codes A-00 thru B-03

\* AM-FM Tuner Kit #HK-45-2

Models	TV Chassis	Models	TV Chassis
Y23C8BWF/MF/WF, Y23K50MF, Y23K52MF/WF . . . . .	TTS-579Y	23C8BWF/MF/WF, 23K50MF, 23K52MF/WF . . . . .	TTS-579
Y23C10BWF/CWF/MF/WF, Y23K60MF/WF, Y23K61CWF, Y23K62BF/BWF/MF/WF . . . . .	PTS-579Y	23C10BWF/CWF/MF/WF, 23K60MF/WF, 23K61CWF, 23K62BF/BWF/MF/WF . . . . .	PTS-579
Y23K55BA/CWA/MA/WA, Y23K56BA/BWA/CWA/MA/WA, Y23K57BA/MA/WA, Y23T12BRF . . . . .	TS-579Y	23K55BA/CWA/MA/WA, 23K56BA/BWA/CWA/MA/WA, 23K57BA/MA/WA, 23T12BRF . . . . .	TS-579
Y23K63BWF/MF/WF, Y23K64MF, Y23K65CWF, Y23K7MBF . . . . .	LTS-579Y	23K63BWF/MF/WF, 23K64MF, 23K65CWF, 23K7MBF . . . . .	KTS-579
Y23T13BF/BWF/CWF/MF/WF . . . . .	MTS-579Y	23T13BF/BWF/CWF/MF/WF . . . . .	MTS-579

VHF	VHF with UHF Provisions	UHF
TT-300, TT-305, TT-319, TT-320	TT-305Y, PTT-307, PTT-307Y, QTT-307Y, PTT-308, QTT-308, BTT-310, TT-320Y, PTT-322, PTT-322Y, QTT-322Y, PTT-323, QTT-323, STT-323	RTT-601, QTT-601, KTT-601

SERVICING IN THE FIELD - PAGE 3

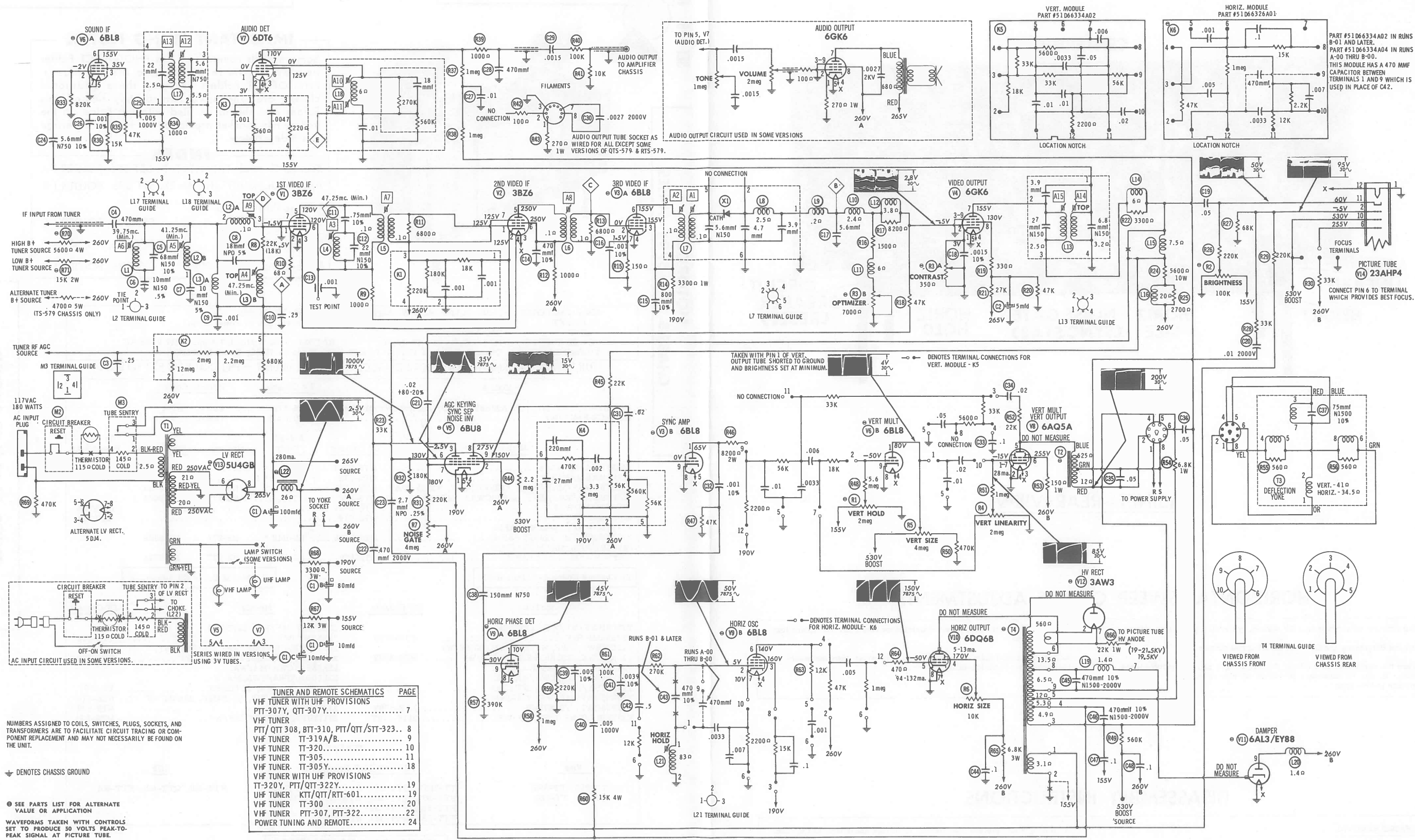
## HOWARD W. SAMS & CO., INC. Indianapolis 6, Indiana



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NUMBERS ASSIGNED TO COILS, SWITCHES, PLUGS, SOCKETS, AND TRANSFORMERS ARE TO FACILITATE CIRCUIT TRACING OR COMPONENT REPLACEMENT AND MAY NOT NECESSARILY BE FOUND ON THE UNIT.

⊕ DENOTES CHASSIS GROUND

⊕ SEE PARTS LIST FOR ALTERNATE VALUE OR APPLICATION

WAVEFORMS 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 1000 ohms per volt.
2. Pin numbers are counted in 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.

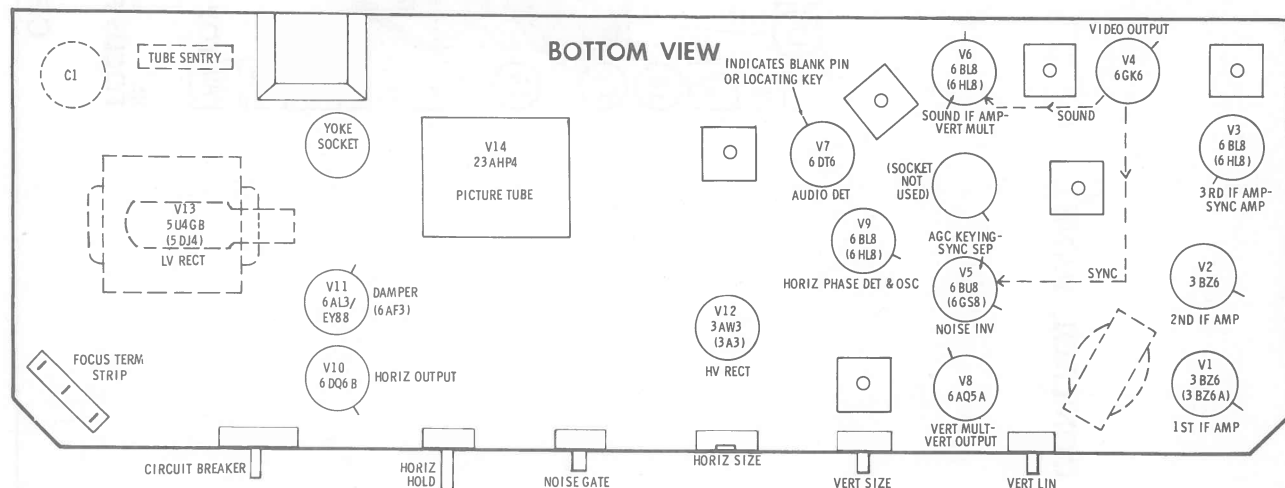
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## RESISTANCE MEASUREMENTS

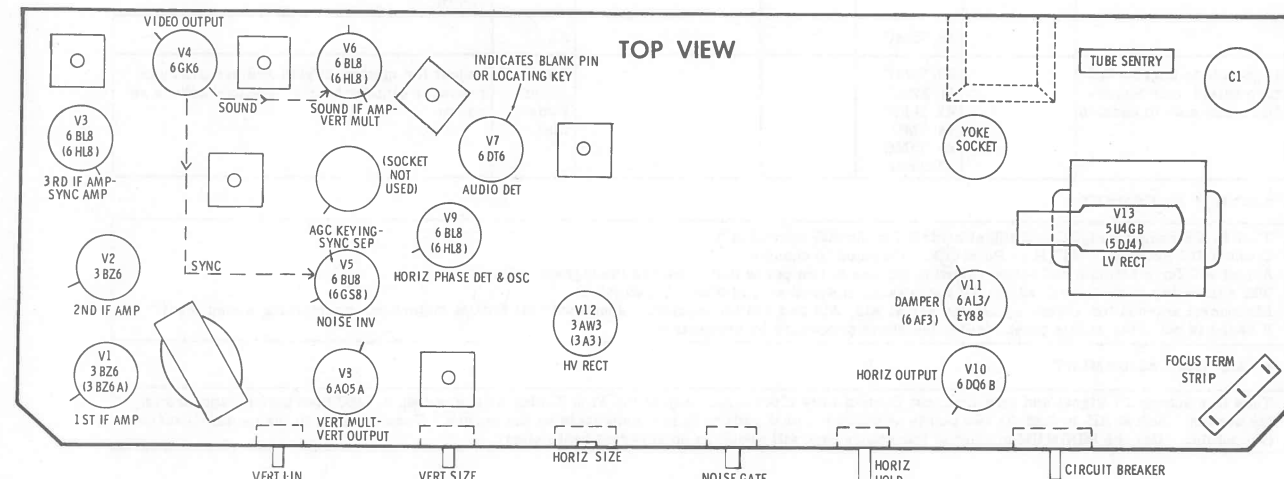
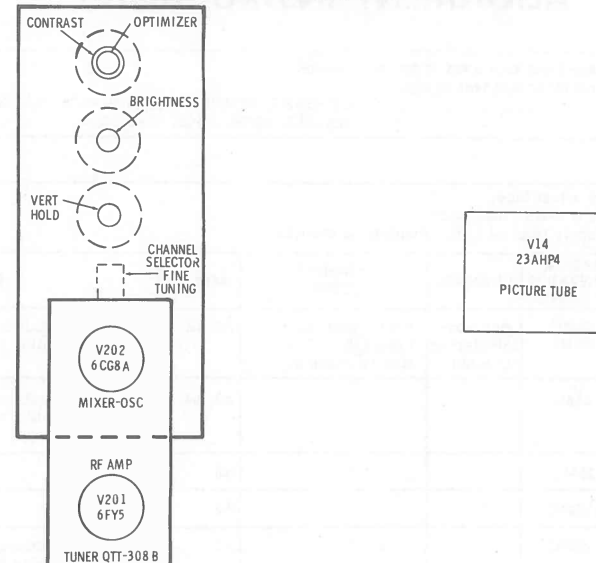
ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V1	3BZ6	620K	68Ω	FIL	.1Ω	*1000Ω	*1000Ω	0Ω		
V2	3BZ6	100K	120K	FIL	.1Ω	†1000Ω	†1000Ω	100K		
V3	6BL8	†14K	.1Ω	†6500Ω	FIL	FIL	†6500Ω	150Ω	0Ω	56K
V4	6GK6	○70Ω	○5000Ω	NC	FIL	FIL	NC	†4500Ω	†18K	0Ω
V5	6BU8	†3300Ω	†25Ω	2.3meg	FIL	FIL	†38K	○†1meg	†2.8meg	†4meg
V6	6BL8	○†2.6meg	820K	†59K	FIL	FIL	†13K	0Ω	0Ω	○1.6meg
V7	6DT6	6Ω	560Ω	FIL	FIL	†2meg	†12.2K	560K		
V8	6AQ5A	○1.6meg	0Ω	FIL	FIL	†600Ω	†160Ω	○1.6meg		
V9	6BL8	†200K	600K	†18.5K	FIL	FIL	†47K	2200Ω	0Ω	390K
V10	6DQ6B	NC	FIL	NC	○†10K	1meg	TP	FIL	0Ω	TOP CAP †15Ω
V11	6AL3 EV88	NC	NC	NC	FIL	FIL	NC	NC	NC	†26Ω
V12	3AW3	PINS 1 THRU 9 HAVE INFINITE RESISTANCE								
V13	5U4GB	INF	FIL	NC	20Ω	NC	21Ω	INF	FIL	
V14	23AHP4	FIL	57K	NC	NC	NC	†33K	NC	Pin 10 †560K	Pin 11 ○260K
V201	6FY5	0Ω	3.5meg	FIL	FIL	†7000Ω	0Ω	0Ω		
V202	6CG8A	4700Ω	†20K	0Ω	FIL	FIL	†5.8K	†15K	0Ω	220K

† THIS READING WILL VARY DEPENDING UPON THE CONDITION OF THE ELECTROLYTIC IN THE CIRCUIT.  
 ○ THIS READING WILL VARY, CONTROL SET FOR NORMAL OPERATION. NC NO CONNECTION  
 † MEASURED FROM THE JUNCTION OF L22 AND C1A. TP TIE POINT  
 \* MEASURED FROM PIN 2 OF V2.

## TUBE PLACEMENT CHART



## TUBE PLACEMENT CHART



## TUBE FAILURE CHECK CHART

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

### POWER SUPPLY FAILURE

No raster, no sound Circuit Breaker M2, Tube Sentry M3, V13

### SWEEP FAILURE

No raster, has sound V9, V10, V11, V12, V14  
 No vertical deflection V6, V8  
 Poor vert. linearity or foldover V6, V8  
 Poor horiz. linearity or foldover V9, V10, V11  
 Narrow picture V9, V10, V11, V13  
 Vert. off freq. V6, V8  
 Horiz. off freq. V9

### LOSS OF PICTURE OR SOUND

No pic, no sound, has raster V1, V2, V4, V1 (Video Det.)  
 No pic, no sound, has snow V201, V202, V1  
 No pic, has sound, has raster V4, V14  
 Has pic, no sound V6, V7  
 Overloaded picture V5

### SYNC FAILURE

No vert. sync V3, V5  
 No horiz. sync V3, V5, V9  
 No vert. or horiz. sync V3, V5

## SERVICING IN THE FIELD

### SAFETY GLASS REMOVAL

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

### FUSE DEVICE

A Circuit Breaker is used for low voltage power supply protection, and may be reset by depressing the reset button. (For location, see "Tube Placement Chart".)

### TUNER OSCILLATOR ADJUSTMENT

To touch up the VHF Oscillator, remove Channel Selector and Fine Tuning knobs.

### AGC

No provision is made to vary the AGC on this receiver.

### SYNC STABILITY

Sync stability may be varied by means of a noise gate control. (For location, see "Tube Placement Chart".)

### HORIZONTAL OSCILLATOR FIELD ADJUSTMENT

The Horizontal osc. coil Slug is used for the Horizontal Hold. (For location, see "Tube Placement Chart".)

### WIDTH

The width may be varied by a Horizontal Size Control. (See "Tube Placement Chart" for location.)

### CENTERING

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

TV ALIGNMENT INSTRUCTIONS

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: Al thru A15 ..... GENERAL CEMENT #8282, 8606, 8606L, 9295, 9440  
WALSCO #2526, 2543, 2544, 2545

VIDEO IF ALIGNMENT

Disable oscillator grid by removing a pin of a test tube.  
Use only enough generator output to provide a usable indication.  
Connect the negative lead of a 3 volt bias supply to point (A). Positive to chassis.

	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
1.	High side to Point (C). Low side to chassis.	44MC (10MC Sweep)	41.25MC 45.75MC	Any non-interfering channel	Vert. Amp. to Point (B). Low side to chassis.	A1, A2	Adjust for maximum gain and symmetry of response similar to Fig. 1 with markers as shown.
2.	High side to ungrounded tube shield over Mixer-Osc. Low side to chassis	"	47.25MC	"	"	A3, A4	Adjust for maximum gain and symmetry of response similar to Fig. 2 with markers as shown.
3.	"	"	41.25MC	"	"	A5	"
4.	"	"	39.75MC	"	"	A6	"
5.	High side to Point (D). Low side to chassis.	"	42.25MC	"	"	A7	Adjust for maximum gain and symmetry of response similar to Fig. 3 with markers as shown.
6.	"	"	45.75MC	"	"	A8	"
7.	High side to ungrounded tube shield over Mixer-Osc. Low side to chassis	"	39.75MC 41.25MC 42.25MC 44.0MC 45.75MC 47.25MC	"	"	A9, Mixer Plate Coil	Adjust for maximum gain and symmetry of response similar to Fig. 4 with markers as shown.

SOUND IF ALIGNMENT

Tune in a strong TV signal and adjust control for normal operation.  
Connect DC Probe of a VTVM to Point (E). Common to chassis.  
Adjust A10 for maximum deflection choosing the one of two peaks that produces the highest voltage.  
While listening to the sound, adjust A11 for maximum sound with MINIMUM distortion.  
Disconnect antenna for a weak signal and adjust A12, A13 and A14 for maximum sound with MINIMUM distortion, maintaining a hiss level.  
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 Contrast Control fully clockwise. Adjust the Fine Tuning until a strong 4.5MC beat pattern appears on the screen. Adjust A15 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.)

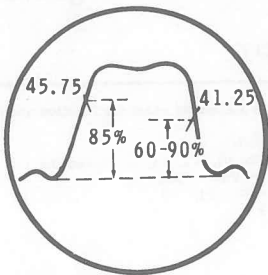


FIG 1

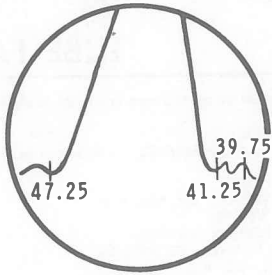


FIG 2

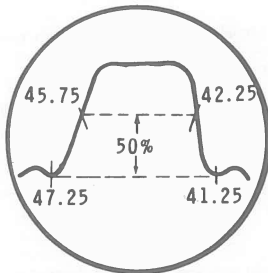


FIG 3

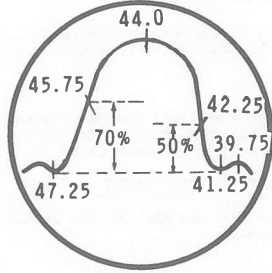
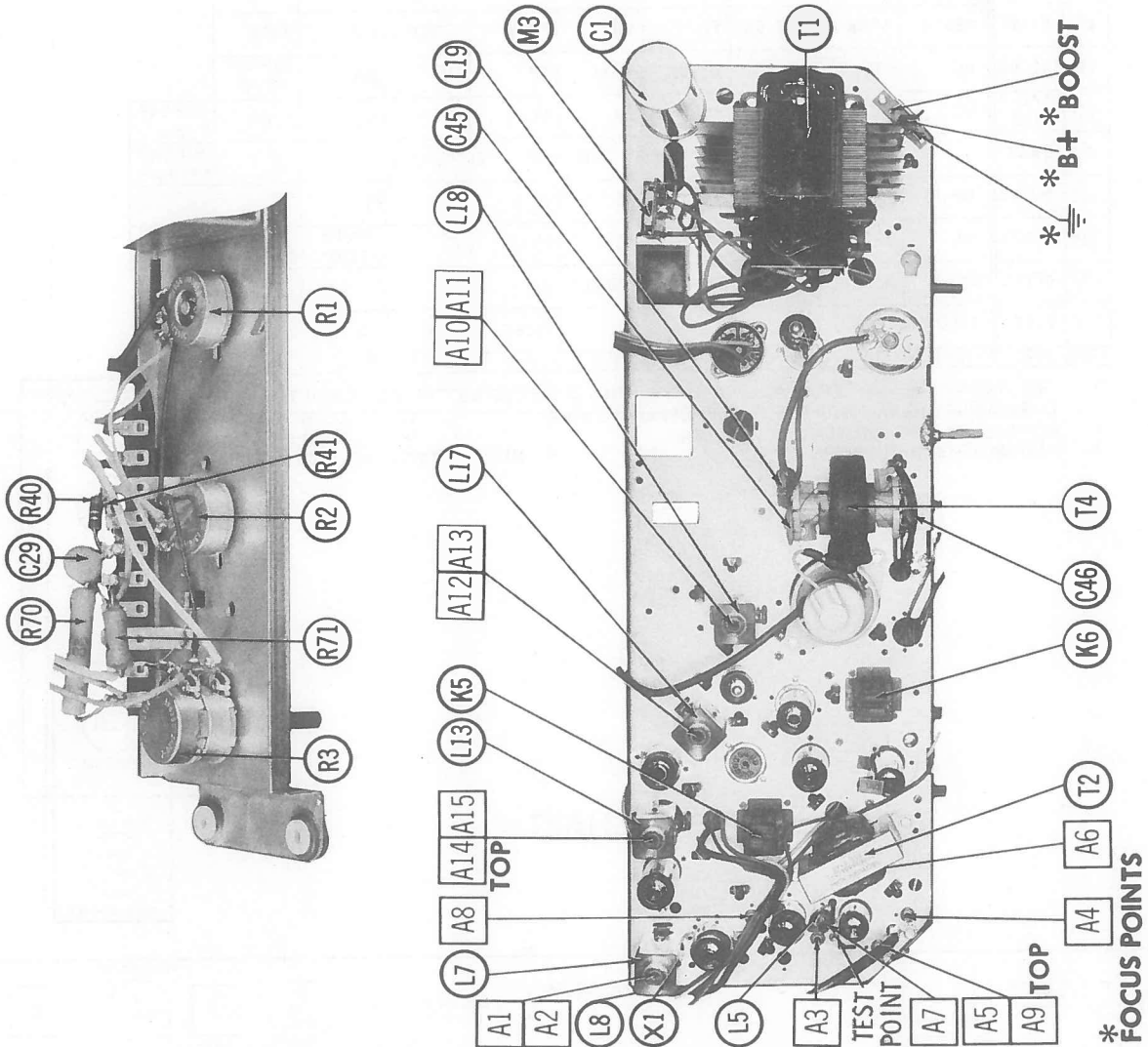


FIG 4



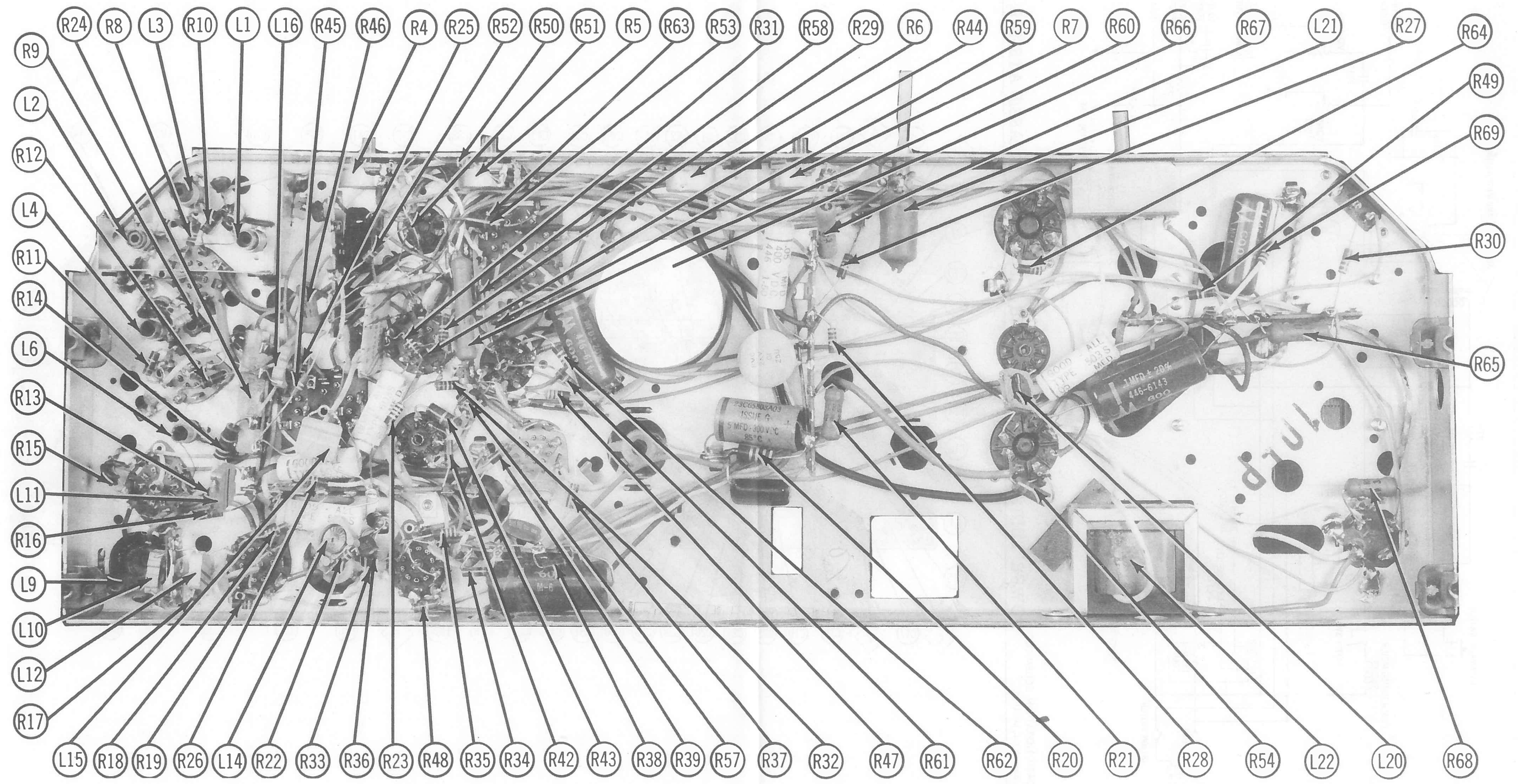
CONTROL PANEL

MOTOROLA  
CHASSIS 579, 579Y SERIES  
CHASSIS TOP VIEW, ALIGN., INDUCTOR, MISC. IDENT.





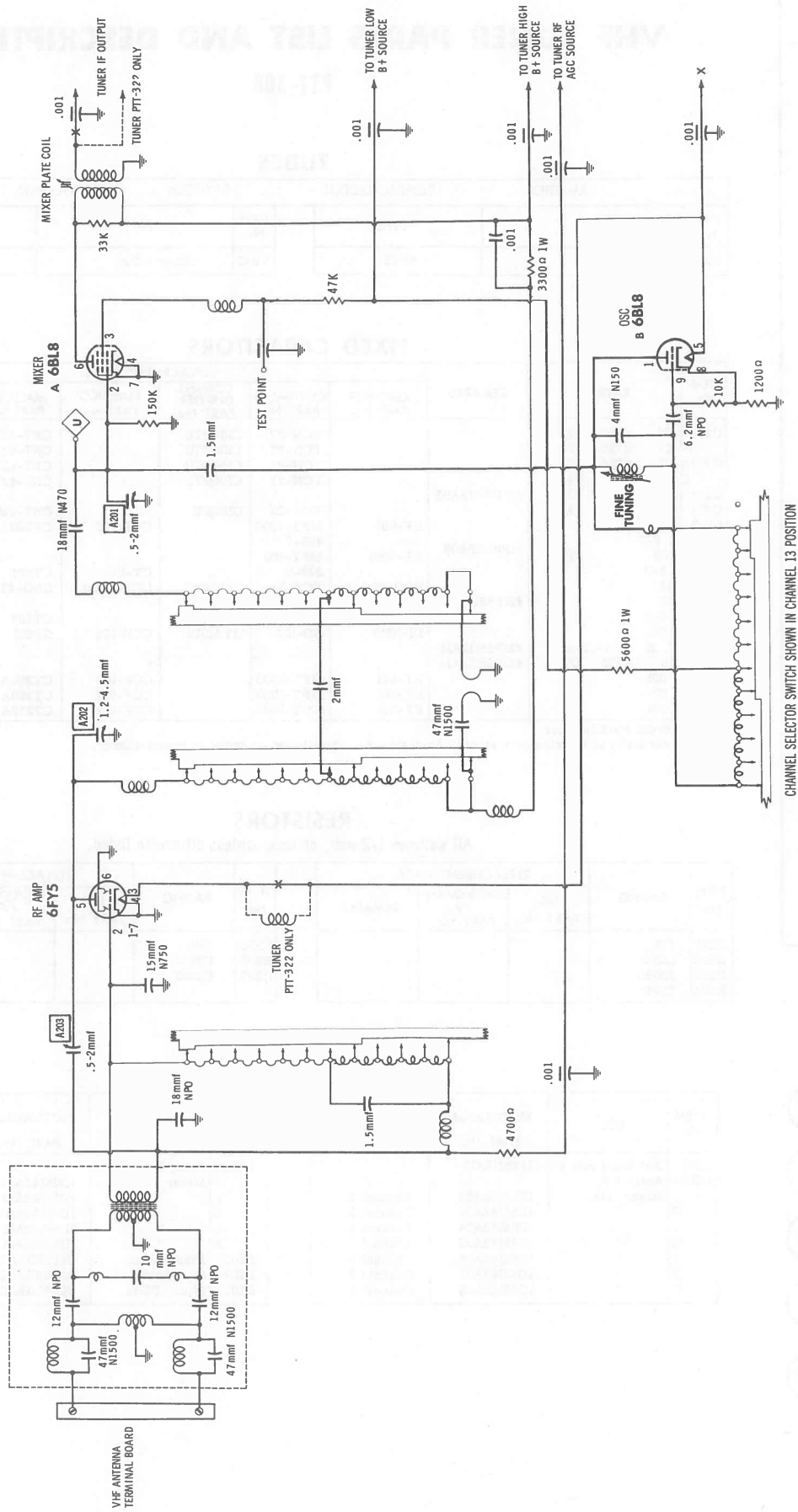




CHASSIS BOTTOM VIEW - RESISTOR, INDUCTOR IDENT.

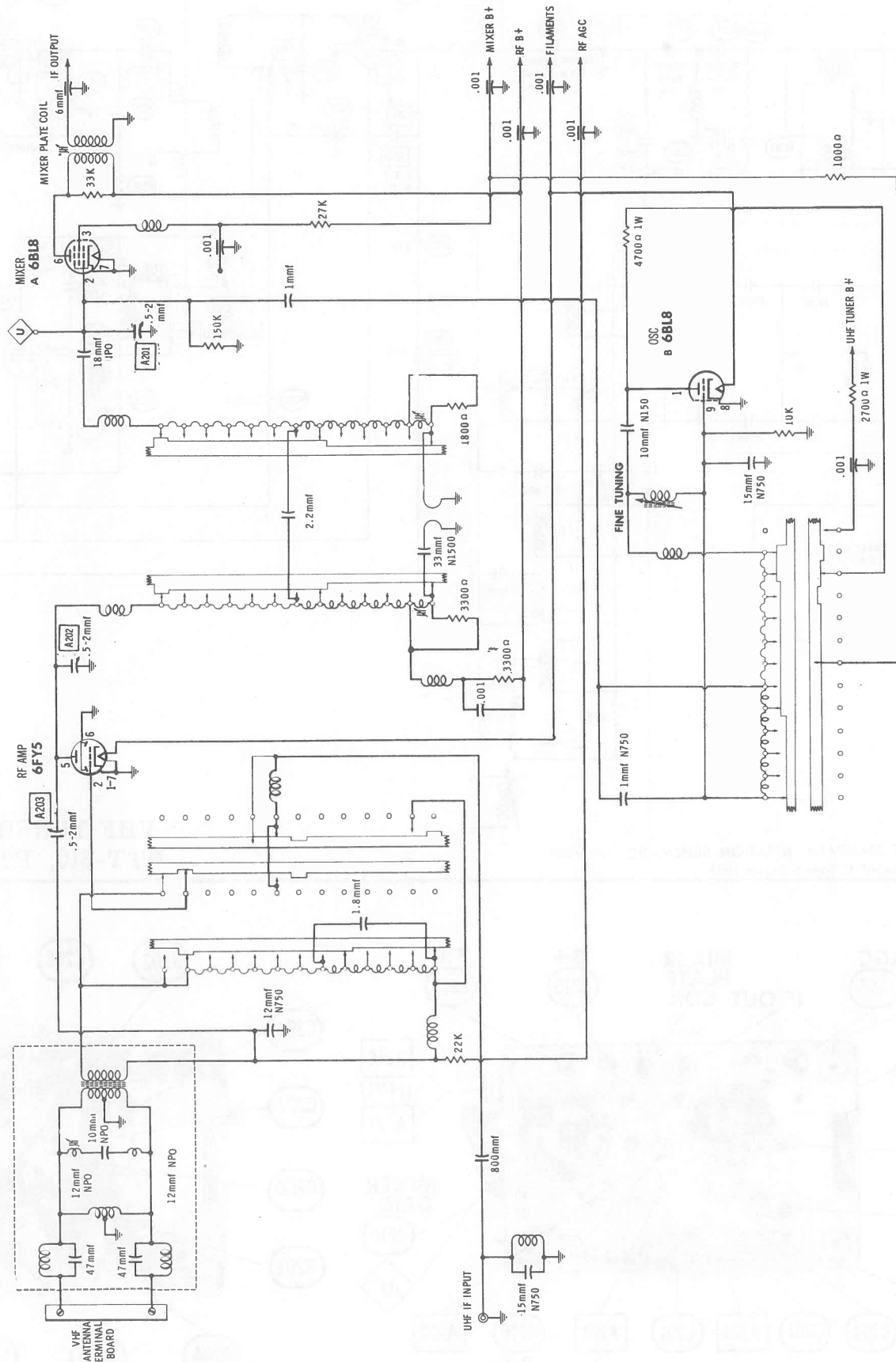


TUNER 307



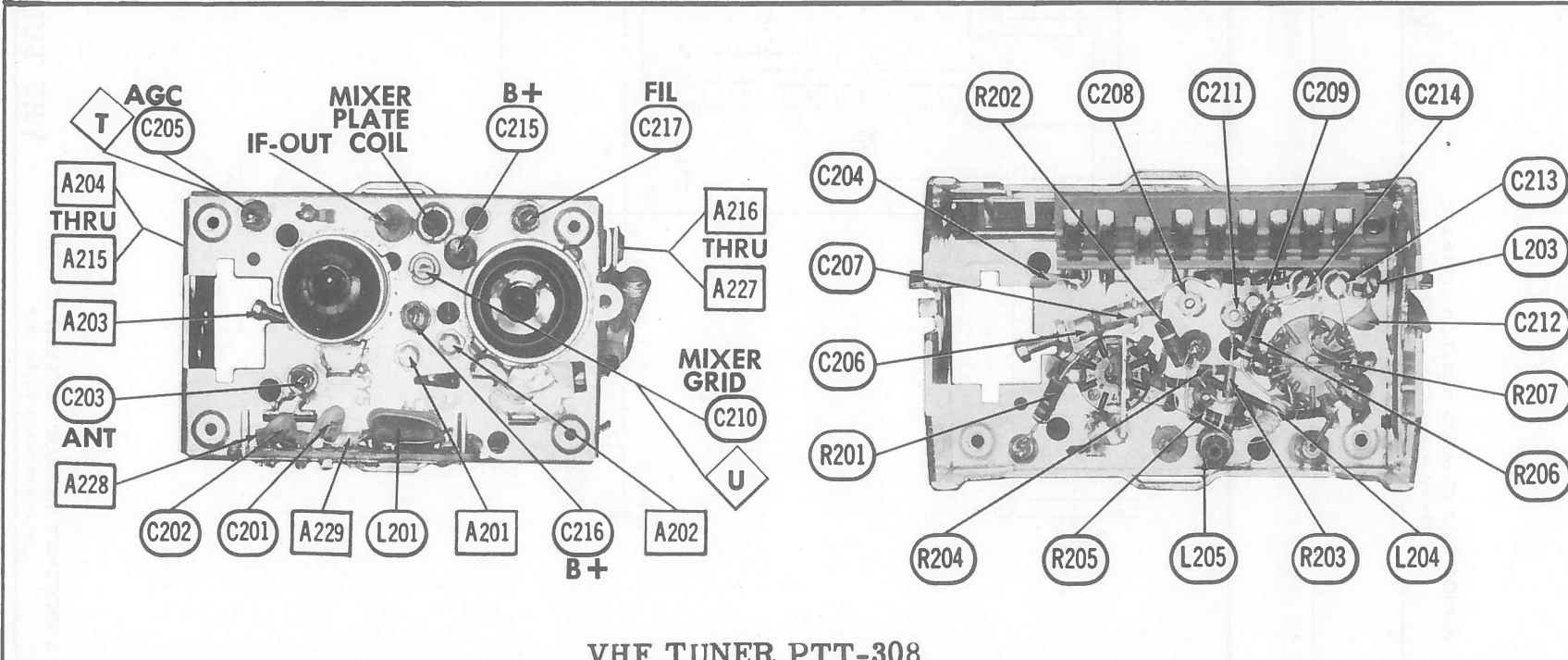
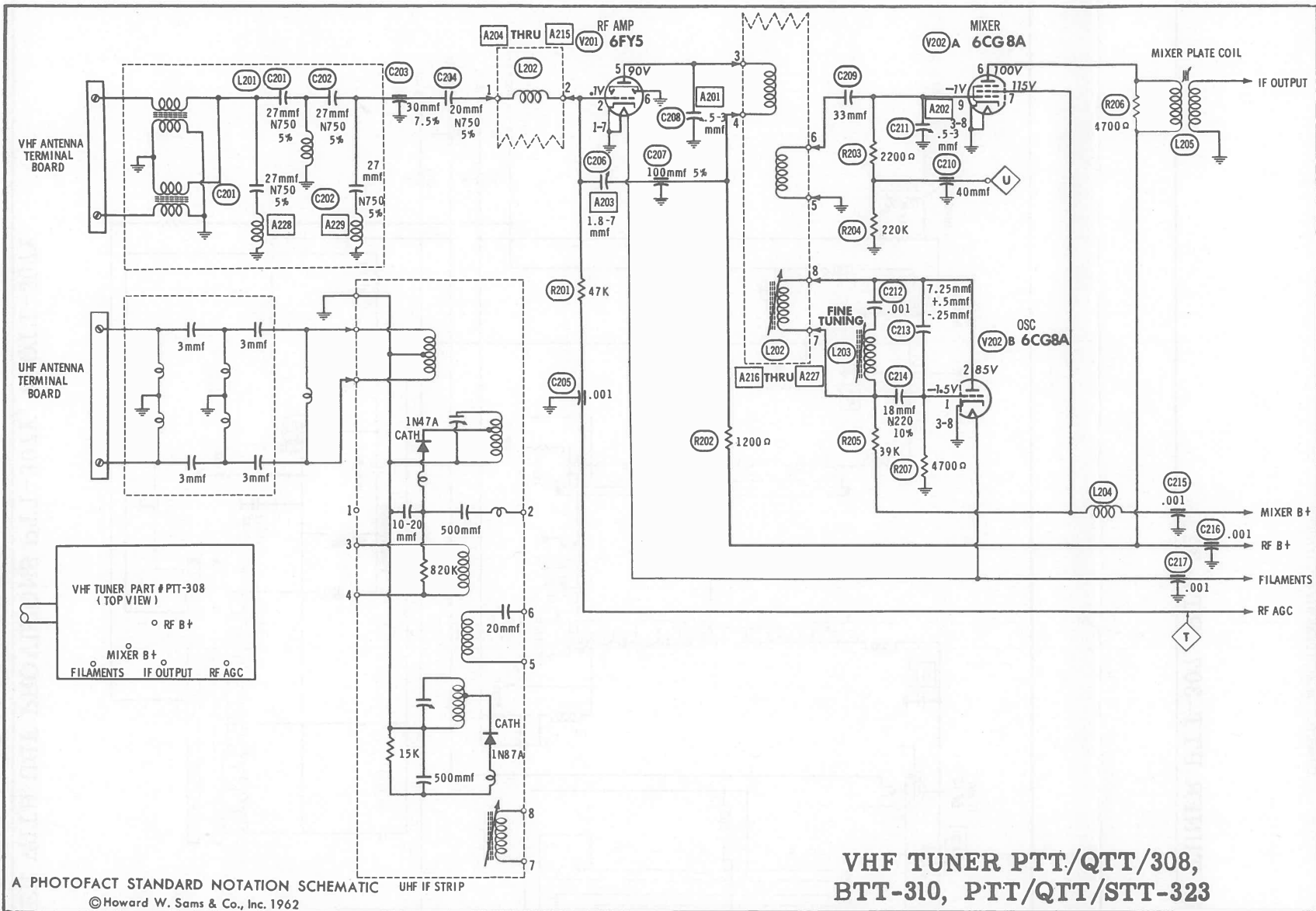
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VHF TUNER PTT-307, PTT-322



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VHF TUNER WITH UHF PROVISIONS PTT-307Y, & QTT-307Y



## VHF TUNER PARTS LIST AND DESCRIPTIONS

PTT-308

### TUBES

AMPEREX			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 5%	#21P65119A06		TCN-27	C10Q27U		CN7-427	10TCU-Q27
B	27 N750 5%			TCN-27	C10Q27U		CN7-427	10TCU-Q27
C202A	27 N750 5%			TCN-27	C10Q27U		CN7-427	10TCU-Q27
B	27 N750 5%			TCN-27	C10Q27U		CN7-427	10TCU-Q27
C203	30 7.5%	#1P65119A09		TCN-20	C10Q2U		CN7-420	10TCU-Q20
C204	20 N750 5%		EF-001	MFT-1000		CCF-102	CT280A	
C205	.001			829-7				
C206	1.8-7		EF-0001	MFT-100				
C207	100 5%	#21P65119A11		TCZ-33	C10Q33C		CT565	10TCC-Q33
C208	.5-3		NPO-SI 3.3	829-3		CV-1	CNO-433	10TCC-Q33
C209	33			DD-102	BYA10DI	CCD-102	CT565	10TCC-Q33
C210	40						GP210	10TCC-Q33
C211	.5-3	#21P65119A16	DI-1000					
C212	.001							
C213	7.25 +.5-.25mmf							
C214	18 N220 10%							
C215	.001	#21P65119A14	EF-001	MFT-1000		CCF-102	CT280A	10TCC-Q33
C216	.001		EF-001	MFT-1000		CCF-102	CT280A	10TCC-Q33
C217	.001		EF-001	MFT-1000		CCF-102	CT280A	10TCC-Q33

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

### RESISTORS

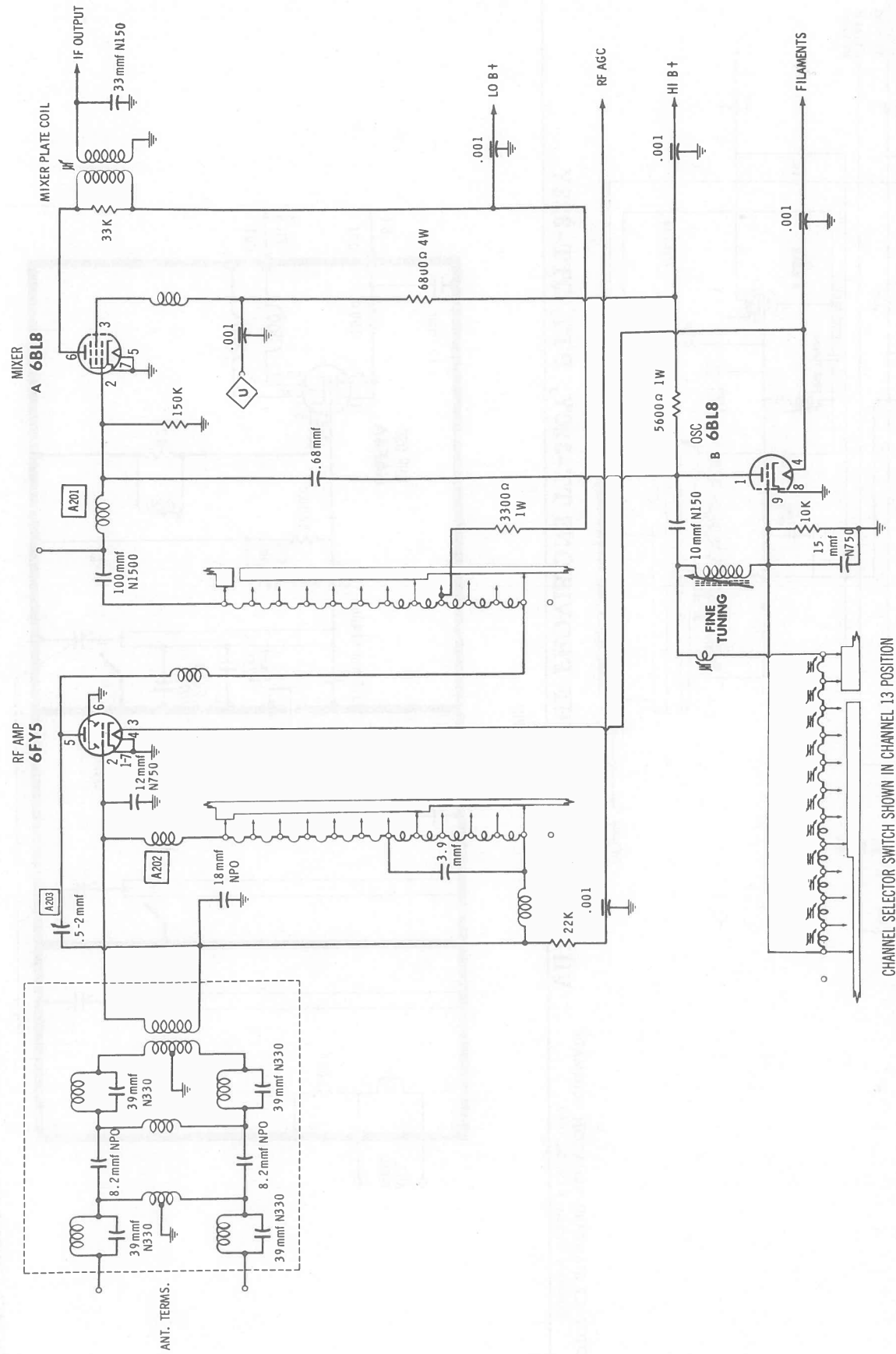
All wattages 1/2 watt, or less, unless otherwise listed.

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	2200Ω				R207	4700Ω			
R204	220K								

### COILS (RF-IF)

ITEM No.	USE	MOTOROLA PART No.	NOTES
L201	Ant. Input Ass'y	1P65119A17	
L202A	Ant., RF, Mixer, Osc.	1D66142A02	Channel 2
B	"	1D66142A03	Channel 3
C	"	1D66142A04	Channel 4
D	"	1D66142A05	Channel 5
E	"	1D66142A06	Channel 6
F	"	1D66142A07	Channel 7
G	"	1D66142A08	Channel 8
L202H	Ant., RF, Mixer, Osc.	1D66142A09	Channel 9
J	"	1D66142A10	Channel 10
K	"	1D66142A11	Channel 11
L	"	1D66142A12	Channel 12
M	"	1D66142A13	Channel 13
L203	Fine Tuning	24P65119A39	
L204	RF Choke	24P65119A21	
L205	Mixer Plate	24P65119A23	



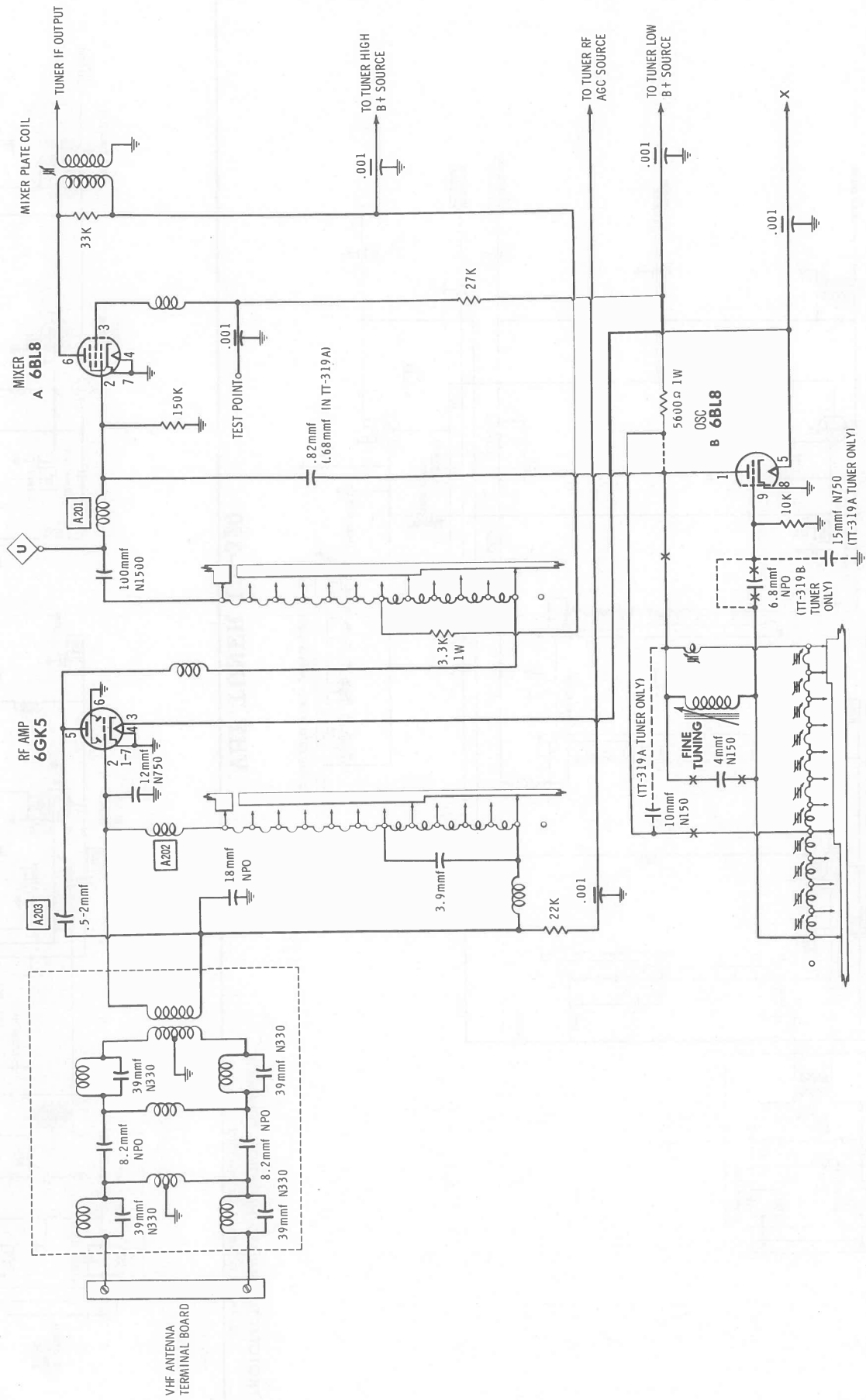


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### VHF TUNER TT-300

CHANNEL SELECTOR SWITCH SHOWN IN CHANNEL 13 POSITION

TUNER TT-319



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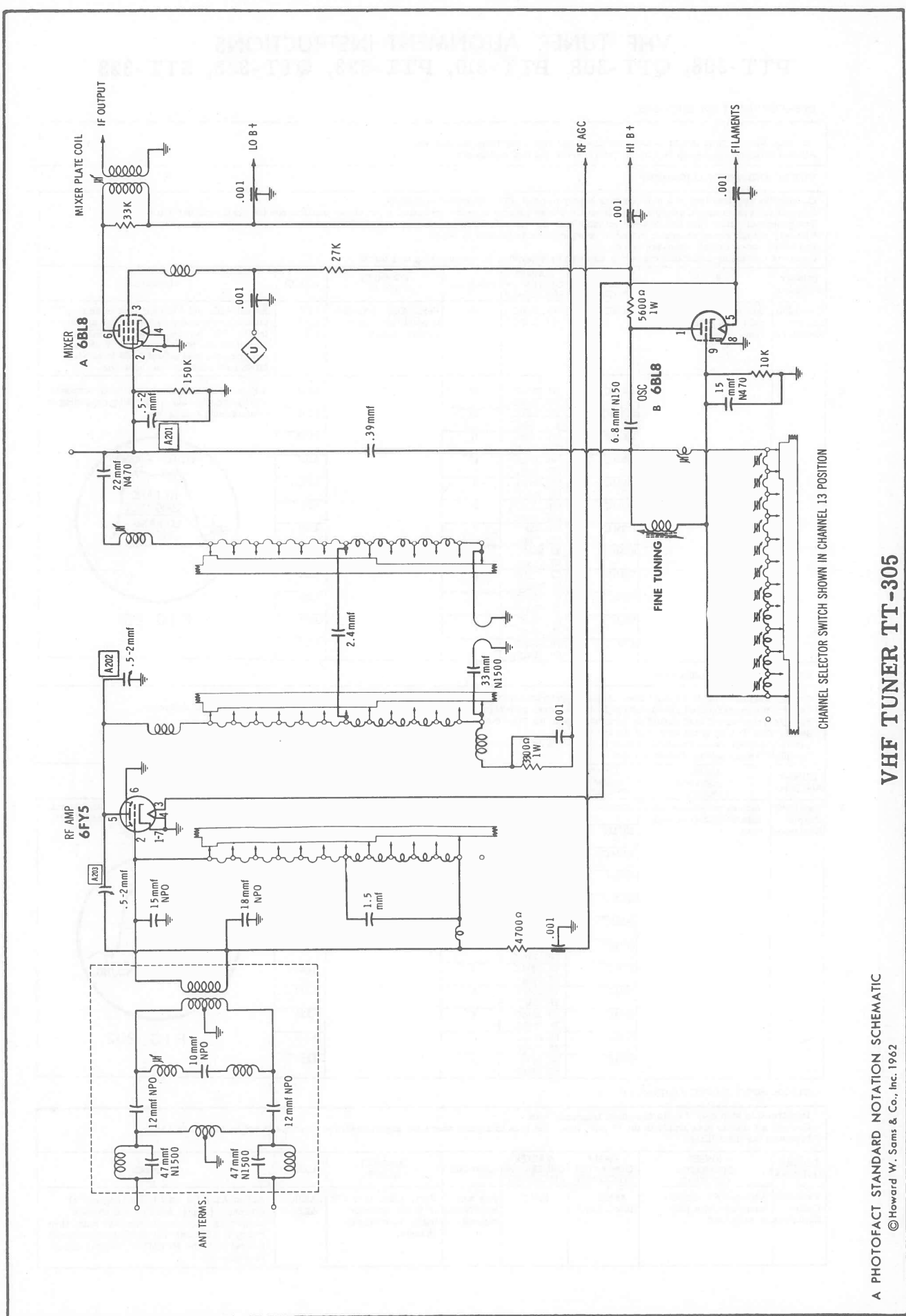
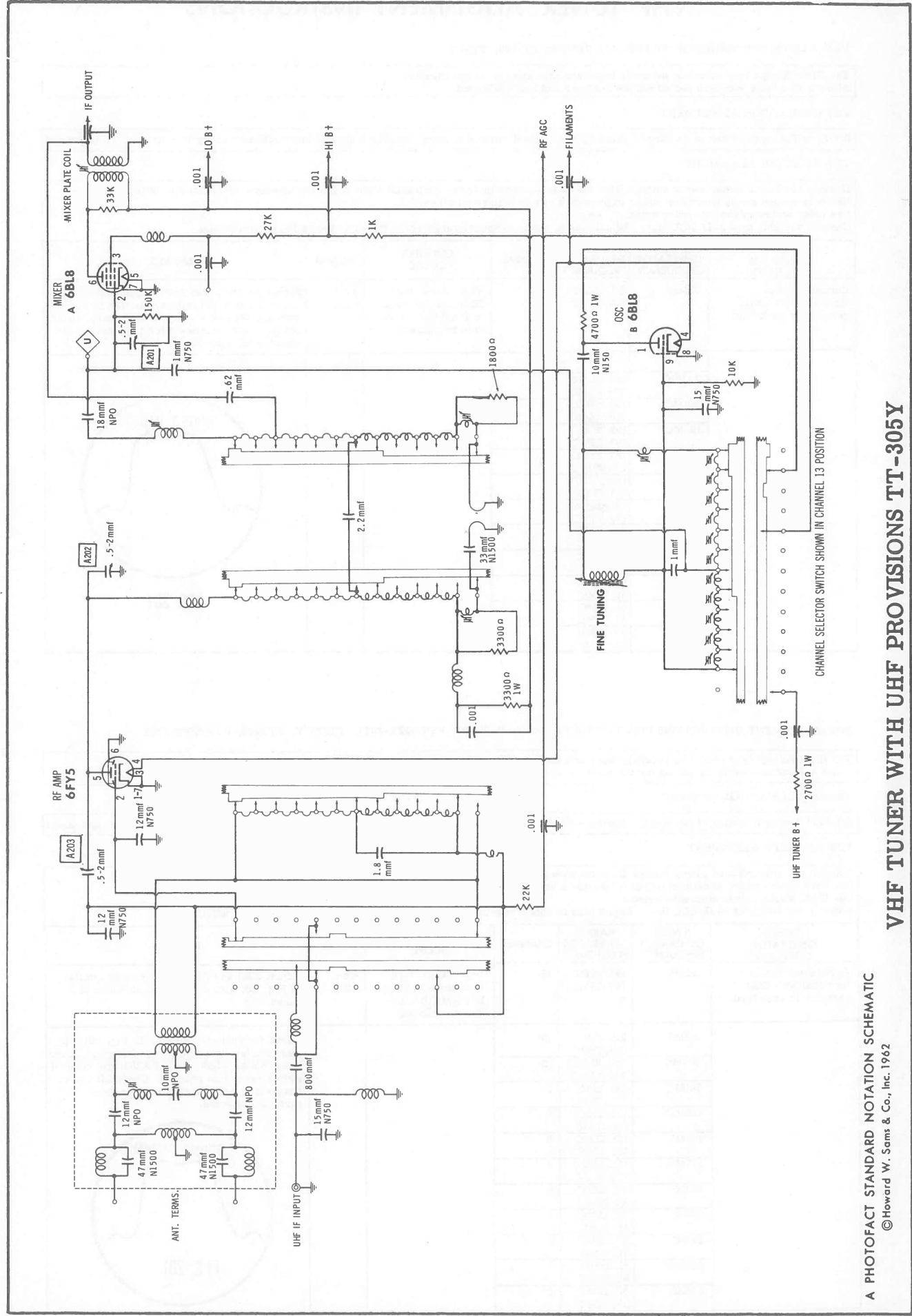
CHANNEL SELECTOR SWITCH SHOWN IN CHANNEL 13 POSITION

NOTE: BROKEN LINE CIRCUITRY USED IN TT-319A TUNER.

### MOTOROLA CHASSIS 579, 579Y SERIES TUNER TT-319A/B /613-TT-319A







# VHF TUNER ALIGNMENT INSTRUCTIONS

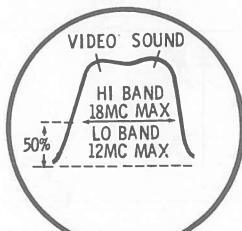
PTT-308, QTT-308, BTT-310, PTT-323, QTT-323, STT-323

## 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.

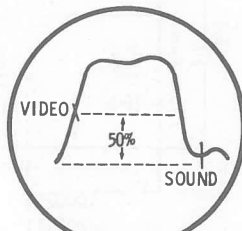
## VHF RF AND MIXER ALIGNMENT

Connect the negative lead of a 4.5 volt bias supply to point  $\diamond$ . Positive to chassis.  
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.  
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
1. Two 120 $\Omega$ Carbon Resistors	Across antenna terminals with 120 $\Omega$ in each lead.	195MC	193.25MC 197.75MC	10	Vert. Amp. thru 10K to point $\diamond$ . 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	 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 variable bias to IF AGC line. Adjust bias to obtain response curve which shows no indication of overloading.  
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.  
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
3. Two 120 $\Omega$ Carbon Resistors	Across antenna terminals with 120 $\Omega$ in each lead.	213MC	211.25MC 215.75MC	13	Vert. Amp. thru 47K across Video Det. load (point $\diamond$ ).	A216	 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		A227	
		69MC	67.25MC 71.75MC	4		A225	
		63MC	61.25MC 65.75MC	3		A226	
		57MC	55.25MC 59.75MC	2		A227	

## TUNER INPUT FILTER ALIGNMENT

Perform this step only if coils have been tampered with.  
Connect a variable bias supply to the IF AGC line. Set bias to a point where the signal observed on scope is not pickup which has bypassed the input filter.

DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
Two 120 $\Omega$ Carbon Resistors	Across VHF antenna terminals with 120 $\Omega$ in each lead.	45MC (10MC Swp.)	45MC	Any non-interfering channel.	Vert. Amp. thru 47K to Video Detector load. Low side to chassis.	A228, A229	Adjust A228 for MINIMUM response at marker. (Adjust A229 only if obvious tampering is evident.) Increase bias, then readjust A228 only for MINIMUM response. Repeat until the MINIMUM possible output is obtained.

# VHF TUNER ALIGNMENT INSTRUCTIONS

## PRE-ALIGNMENT INSTRUCTIONS FOR VHF TUNERS TT-300, TT-319

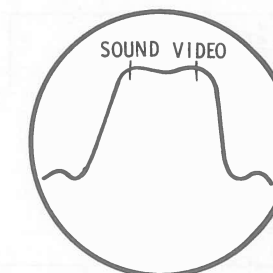
The High Voltage lead should be securely taped and kept away from the chassis.  
Allow a 20 minute warm-up period for the receiver and test equipment.

## VHF OSCILLATOR ADJUSTMENT

Set Fine Tuning to center of its range. Starting with highest channel in area, adjust the appropriate oscillator screw for best picture and sound.

## VHF RF MIXER ALIGNMENT

Connect the synchronized sweep voltage from the sweep generator to the horizontal input of the oscilloscope for horizontal deflection.  
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
1. Across antenna terminal with 120 $\Omega$ resistor in each lead.	213MC	211.25MC 215.75MC	13	Vert. Amp. thru Demodulator Probe to Point $\diamond$ . Low side to chassis.	A201, A202	Spread or compress coils for maximum gain and symmetry of response similar to Fig. 201 with markers as shown. If necessary, make compromise adjustment for best picture and sound in all channels.
2. "	"	"	"	"	A203	Adjust for MINIMUM response on scope.
	207MC	205.25MC 209.75MC	12			 FIG 201
	201MC	199.25MC 203.75MC	11			
	195MC	193.25MC 197.75MC	10			
	189MC	187.25MC 191.75MC	9			
	183MC	181.25MC 185.75MC	8			
	177MC	175.25MC 179.75MC	7			
	85MC	83.25MC 87.75MC	6			
	79MC	77.25MC 81.75MC	5			
	69MC	67.25MC 71.75MC	4			
	63MC	61.25MC 65.75MC	3			
	57MC	55.25MC 59.75MC	2			

## PRE-ALIGNMENT INSTRUCTIONS FOR TUNERS TT-305/Y, PTT-307, PTT/QTT-307Y, TT320/Y, PTT322, PTT/QTT-322Y

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.

## VHF OSCILLATOR ADJUSTMENT

Set Fine Tuning to center of its range. Starting with highest channel in area, adjust the appropriate oscillator screw for best picture and sound.

## VHF RF MIXER ALIGNMENT

Connect the synchronized sweep voltage from the sweep generator to the horizontal input of the oscilloscope for horizontal deflection.  
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
1. Across antenna terminal with 120 $\Omega$ resistor in each lead.	195MC	193.25MC 197.75MC	10	Vert. Amp. thru Demodulator Probe to Point $\diamond$ . Low side to chassis.	A201, A202	Adjust A201 and A202 for response similar to Fig. 201 with markers on shoulder of curve.
2. "	213MC	211.25MC 215.75MC	13	"		Check for response similar to Fig. 201. If markers fall below 70% on any channel, make compromise adjustment of A203 with channel switch set to that channel. Check all other channels to see that they have not been seriously affected.
	207MC	205.25MC 209.75MC	12			
	201MC	199.25MC 203.75MC	11			
	189MC	187.25MC 191.75MC	9			
	183MC	181.25MC 185.75MC	8			
	177MC	175.25MC 179.75MC	7			
	85MC	83.25MC 87.75MC	6			
	79MC	77.25MC 81.75MC	5			
	69MC	67.25MC 71.75MC	4			
	63MC	61.25MC 65.75MC	3			
	57MC	55.25MC 59.75MC	2			



PARTS LIST AND DESCRIPTIONS

add Pic  
Tube  
sheet

CABINETS & CABINET PARTS

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

DESCRIPTION	PART NO.	MODEL NO.	23C8 Series	23C10 Series	23C11 Series	23K55 Series	23K56 Series	23K57 Series	23K60 Series	23K61 Series	23K62 Series	23K63 Series	23K64 Series	23K65 Series	23K71 Series	23SF5 Series	23SF6 Series	23SF7 Series	23SF8 Series	23T12 Series
Knob-VHF Channel Selector	36 D65875A02		X																	
Knob "	36 D66072A03			X	X				X	X	X	X	X	X	X					
Knob "	36 D65709A02					X	X	X												X
Knob "	36 D66072A05															X	X	X	X	
Knob-UHF Channel Selector	36 D65906A01		X																	
Knob-UHF Channel Selector	36 D66072A01			X					X	X	X	X	X	X	X					
Knob "	36 D65906A02					X	X	X												X
Knob-UHF Channel Selector	36 C65264A03															X	X	X	X	
Knob-Fine Tuning	36 C65871A01		X			X	X	X												X
Knob-Optimize, Brightness	36 B65236A02		X						X											X
Knob-Optimize, Contrast	36 C66073A01			X	X				X	X	X	X	X	X	X					
Knob-Tone, Contrast	36 B65235A01		X																	X
Knob-Optimizer, Contrast	36 C66073A03			X					X	X	X	X	X	X	X					
Knob-Optimizer, Brightness	36 C66267A04															X	X	X	X	
Knob-On-Off-Vol., Brightn.	36 B65236A02					X	X													
Knob-On-Off-Selector	36 C66267A03																X	X	X	
Knob-On-Off-Selector	36 D60203A36															X				
Knob-Vert. Hold	36 C65237A02		X																	
Knob-Vert. Hold, Brightness	36 K754480			X	X				X	X	X	X	X	X	X					
Knob "	36 C66267A01															X	X	X	X	
Knob-Vert. Hold, Contrast	36 B65235A01					X	X	X												
Knob "	36 C266A01															X	X	X	X	
Knob-Contrast, Tone	36 C66075A01			X	X				X	X	X	X	X	X	X					
Knob-Tone	36 C66075A02			X	X				X	X	X	X	X	X	X					
Knob-AM FM Tuning	36 D60203A17																			X
Knob-AM FM Selector	36 D60203A19																			X
Knob-Balance	36 D60203A30																X	X	X	
Knob "	36 D60203A35																X			
Knob-Bass, Loudness	36 D60203A31																X	X	X	
Knob-Treble, Reverberation	36 D60203A34																X			
Spacer Shaft-Treble Control	43A61117A03																X	X	X	X

LEG PART NO.	MODEL	LEG PART NO.	MODEL	LEG PART NO.	MODEL
16E65930A10	23C8MF/MAF, Y23C8MF/MAF	16E66386A07	23K56WF, Y23K56WF	16E66327A04	23SF5MF, Y23SF5MF
16E65930A11	23C8WF, Y23C8WF	16E66386A05	23K56BWF, Y23K56BWF	16E66327A06	23SF5WF, Y23SF5WF
16E65930A12	23C8BWF, Y23C8BWF	16E65919A03	23K56CWF, Y23K56CWF	16E66285A04	23SF6MF, Y23SF6MF
16K74618	23C10, Y23C10, 23C11	16E66198A04	23K60MF, Y23K60MF	16E66285A05	23SF6MF, Y23SF6MF
16K754509	23C10, Y23C10, 23C11	16E66198A06	23K60WF, Y23K60WF	16E66285A06	23SF6WF, Y23SF6WF
16K747619	23C10, Y23C10, 23C11	16E66198A03	23K60MF, Y23K60MF	16E66285A07	23SF6WF, Y23SF6WF
16E65893A04	23K55CWF, Y23K55CWF	16E66198A05	23K60WF, Y23K60WF	16E66285A08	23SF6BWF, Y23SF6BWF
16E65894A05	23K55BF, Y23K55BF	16E66254A02	23K61, Y23K61	16E66285A09	23SF6BWF, Y23SF6BWF
16E65894A06	23K55BF, Y23K55BF	16E66254A03	23K61, Y23K61	16E66305A02	23SF7, Y23SF7
16E65894A04	23K55BF, Y23K55BF	16E66327A03	23SF5MF, Y23SF5MF	16E66305A09	23SF7, Y23SF7
16E65916A04	23K56BF, Y23K56BF	16E66327A05	23SF5WF, Y23SF5WF	16E66215A04	23SF8, Y23SF8
16E66386A06	23K56MF, Y23K56MF				

CABINET PART NO.	MODEL
16E65930A01	23C8MF, Y23CMF
16E65930A02	23CWF, Y23CWF
16E65930A03	23CBWF, Y23CBWF
16E66186A01	23C10MF, Y23C10MF
16E66186A02	23C10WF, Y23C10WF
16E66186A03	23C10BWF, Y23C10BWF
16E66186A04	23C10CWF, Y23C10CWF
16E66186A05	23C11MF
16E66186A06	23C11WF
16E66186A07	23C11BWF
16E66186A08	23C11CWF
16E66385A01	23K55MF, Y23K55MF
16E66385A02	23K55BF, Y23K55BF
16E66385A03	23K55WF, Y23K55WF
16E66385A05	23K55CWF, Y23K55CWF
16E66386A01	23K56MF, Y23K56MF
16E66386A02	23K56BF, Y23K56BF
16E66386A03	23K56WF, Y23K56WF
16E65919A04	23K56BWF, Y23K56BWF
16E65919A04	23K56CWF, Y23K56CWF
16E66387A02	23K57BF, Y23K57BF
16E66387A01	23K57MF, Y23K57MF
16E66198A01	23K60MF, Y23K60MF
16E66198A02	23K60WF, Y23K60WF
16E66254A01	23K61, Y23K61
16E66179A02	23K62BF, Y23K62BF
16E66179A04	23K62BWF, Y23K62BWF
16E66179A01	23K62MF, Y23K62MF
16E66179A03	23K62WF, Y23K62WF
16E66177A03	23K63BWF, Y23K63BWF
16E66177A01	23K63MF, Y23K63MF
16E66177A02	23K63WF, Y23K63WF
16E66298A01	23K64, Y23K64
16E66298A03	23K65, Y23K65
16E66167A01	23K71, Y23K71
16E66327A01	23SF5MF, Y23SF5MF
16E66327A02	23SF5WF, Y23SF5WF
16E66285A03	23SF6BWF, Y23SF6BWF
16E66285A01	23SF6MF, Y23SF6MF
16E66285A02	23SF6WF, Y23SF6WF
16E66305A01	23SF7CWF, Y23SF7CWF
16E66215A01	23SF8WF, Y23SF8WF

TUBES

AMPEREX			GENERAL ELECTRIC			RAYTHEON			SYLVANIA		
ITEM No.	USE	TYPE	ITEM No.	USE	TYPE	ITEM No.	USE	TYPE	ITEM No.	USE	TYPE
V1	1st Video IF Amp.	3BZ6 (3BZ6A) *	V7	Audio Detector	6DT6	V8	Vert. Mult. - Vert. Output	6AQ5A	V9	Horiz. Phase Det. & Osc.	6BL8 (6HL8) *
V2	2nd Video IF Amp.	3BZ6	V9	Horiz. Output	6DQ6B	V10	Horiz. Output	6AL3/EY88 (6AF3) *	V11	Damper	3AW3 (3A3) *
V3	3rd Video IF Amp. - Sync Amp.	6BL8 (6HL8) *	V11	H. V. Rectifier	5U4GB (5DJ4) *	V12	L. V. Rectifier		V13		
V4	Video Output	6GK6									
V5	AGC Keying - Sync Sep. - Noise Inverter	6BU8 (6G88) *									
V6	Sound IF Amp. - Vert. Mult.	6BL8 (6HL8) *									

\* Alternate

POWER RECTIFIERS & SIGNAL DIODES

ITEM No.	CURRENT RATING (Measured)	ORIGINAL Part or Type No.	RECTIFIERS		DIODES		NOTES
			RCA PART No.	SARKES TARZIAN PART No.	RAYTHEON PART No.		
X1		48C65837A01			1N60		Video Detector

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.
CLA	100	400	23C85807A03	AFH4-08-25	C0239	XC4-42	FP450.08	TMT-3805	TVL-3819
B	80	400			BR100-450		TC795	TD-80-450	TVA-1716
C	10	400							
D	10	400							
C2	5	300	23C85808A03	PRSI610	BR8-350	QTI-4	TC60	TD-8-350	TVA-1803

FIXED CAPACITORS

ITEM No.	RATING	REMARKS	REPLACEMENT DATA						
			AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ELMENDO PART No.	MALLORY PART No.	SPRAGUE PART No.	
C3	.25 50V		P288N-25	DD-471	CUB2P25	1DP-3-254	GEM-2025	2TM-P25	
C4	470		BPD-00047		BYA10T47	CCD-471	B-347	10TS-T47	
C5	68 N150 10%	#21R131238				*		10TCP-Q68	
C6	10 N150 .5%	#21R125698				*		10TCP-Q10	
C7	10 N150 5%	#21R125698				*		10TCP-Q10	
C8	18 NPO 5%				C10Q18C	CCTO-180	CNO-418	10TCC-Q10	
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-P25	
C11	.75 10%	#21K7355623				*		10TCP-Q22	
C12	22 N150 10%	#21R120539	EF-6-1000	MFT-1000		CCF-102	CT280A	BH-140	
C13	.001		DI-470	DD-471	LI0T47	CCD-471	GP347	10TS-T47	
C14	470 10%			DD-801	LI0T8	CCD-801		10TS-T80	
C15	800 10%			DD-102	LI0D1	CCD-102	GP210	10TS-D10	
C16	.001 10%		DI-1000					10TCC-V56	
C17	5.6	#21R12056				*		10TS-D15	
C18	.0015 10%	(.005) †				*		4TM-S50	
C19	.05 400V		DI-1500	DD-152	LI0D15	CCD-152	GP215	5HK-D50	
C20	.01 2000V		P488N-05	DD-503	CUB485	4DP-3-503	GEM-415	BL-S10	
C21	.02 +80 -20%		BPD-01	DD-103		CCD-103	B-120	5HK-S20	
C22	470 2000V		BPD-02	DD-203	BYB6S2	CCD-203	2HV-347		
C23	2.7 NPO .25%	#21R125699	HVD-30-470	DD30-471	HVB20T47	3CCD-471		10TCC-V27	
C24	5.6 N750 10%	#21K732738				*			
C25	.005 1000V					*			
C26	.001 10%		BPD-005	DD-502	BYA10D5	CCD-502	B-250	5HK-D50	
C27	.01		DI-1000	DD-102	LI0D1	CCD-102	GP210	10TS-D10	
C28	470		BPD-01	DD-103	BYA10S1	CCD-103	GP110	5HK-S10	
C29	.0015		BPD-00047	DD-471	BYA10T47	CCD-471	B-347	10TS-T47	
C30	.0027 2000V		BPD-0015	DD-152	BYA10D15	CCD-152	B-215	5HK-D15	
C31	.02 600V		HVD-30-3300	DD30-272			2HV-233	BL-D30	
C32	.001 10%		P688N-02	DD-203	CUB6S2	6DP-2-203	GEM-612	6TM-S20	
C33	.1 200V		DI-1000	DD-102	LI0D1	CCD-102	GP210	10TS-D10	
C34	.02		P288N-1		CUB2P1	2DP-3-104	GEM-201	2TM-P10	
C35	.05 400V		BPD-02	DD-203	BYB6S2	CCD-203	B-120	5HK-S20	
C36	.05 400V		P488N-05	DD-503	CUB485	4DP-3-503	GEM-415	4TM-S50	
C37	75 N1500 10%		P488N-05	DD-503	CUB485	4DP-3-503	GEM-415	4TM-S50	
C38	150 N750	#21R122236	N750-DI-150	DTN-150	C10T15U	CCTN-151	CN7-315	10TCU-T15	
C39	.005 10%		DI-5000	DD-502	LI0D5	CCD-502	GP250	10TS-D50	

SET 596 FOLDER 1



## PARTS LIST AND DESCRIPTIONS (Continued)

## FIXED CAPACITORS (cont)

ITEM No.	RATING	REMARKS	REPLACEMENT DATA					
			AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ELMENCOR PART No.	MALLORY PART No.	SPRAGUE PART No.
C40	.005 1000V		BPD-005	DD-502	BYA10D5	CCD-502	B-250	5HK-D60
C41	.0039 10%			DD-392	L10D39	CCD-392	GP239	10TS-D39
C42	.5 600V		P688N-5		STP5	8DP-5-504	GEM-605	6TM-P50
C43	.470 10%		DI-470	DD-471	L10T47	CCD-471	GP347	10TS-T47
C44	.1 600V		P688N-1		CUB6P1	8DP-4-104	GEM-601	6TM-P10
C45	470 N1500 2000V 10% #21R132090					*		
C46	470 N1500 2000V 10% #21R132090					*		
C47	.1 600V		P688N-1		CUB6P1	8DP-4-104	GEM-601	6TM-P10
C48	.1 600V		P688N-1		CUB6P1	8DP-4-104	GEM-601	6TM-P10

† Alternate Value

# Motorola Part Number

## CONTROLS

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

ITEM No.	USE	RESISTANCE	REPLACEMENT DATA				
			MOTOROLA PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	CTS-IRC PART No.	MALLORY PART No.
R1	Vertical Hold	2meg	18D65083A19	B-75, or (AB-75, AK-7)	A47-2meg-S, FS-3	Q11-139, or (BU2, CF19, S81, DC1) *	
	Vertical Hold	2meg	18D65083A18				
R2	Brightness	100K	18D65083A20	B-40, or (AB-40, AK-7)	A47-100K-S, FS-3	Q11-128, or (BU2, CF13, S81, DC1) *	U41, or (UAI5L, SF1000)
	Brightness	100K	18D65216A17	B-40, or (AB-40, AK-7)	A47-100K-S, KSS-3	B11-128, TM4	TA15L, or U41
	Brightness	100K	18D65082A12	F1-57, R2-31	RTV-714		UE-4149
	Vertical Hold	2meg	18D65082A02	F1-0, R2-25		FA351L, RU752L, OS937, OF1437	
R3A	Contrast Optimizer	350Ω	18D65082A20				
	Contrast Optimizer	7000Ω	18D65082A18				
	Contrast Optimizer	7000Ω	18D65082A21				
	Contrast Optimizer	7000Ω	18D65082A23				
	Optimizer	7000Ω	18D65216A24				
	Contrast Volume, Power On-Off Switch	350Ω	18D65082A16				
	Contrast Tone	350Ω	18D65082A10				
R4	Vertical Linearity	1meg	18D65216A14	TT-75, or (AB-75, AK-19)	B47-2meg-S	HLC-1	PTA26L, or (TA26L)
R5	Vertical Size	4meg	18D65216A16	TT-86	B47-5meg-S	HLC-4	PTA56L, or (TA56L)
R6	Horiz. Size	10K	17D65820A03				
R7	Noise Gate	4meg	18D65216A15	TT-86	B47-5meg-S	HLC-4	PTA56L, or (TA56L)
	Volume, Tone, Power On-Off Switch	2meg	18D65082A22	F1-52, R2-68	RTV-740		UE4280
	Volume, Tone, Power On-Off Switch	2meg	18D65082A01	F1-52, R2-68	RTV-715		
	Volume	2meg	18D65083A16				
	Tone	1meg	18D65216A23				

\* "CONCENTRIKIT" Equivalent: K-6 Kit with Base Elements and Shafts: B11-103, P23-100 (Panel), B17-116, R1-113 (Rear) "SNAPTROL" Equivalent: BU5, CF4, CR26, SF5, SR6, DC1.

† "CONCENTRIKIT" Equivalent: K-6 Kit with Base Elements and Shafts: B13-137, P22-103 (Panel), B13-139, R1-115 (Rear) "SNAPTROL" Equivalent: BU5, CF26, SF7, CR22, SR7, GC.

▲ "STA-LOC" Equivalent: FA16A, OS1062, RU26A, IS1750, US41.

\* "SNAPTROL"

- ① Used in Chassis #QTS-579. ⑦ Used in Chassis #ATS-579, LTS/PTS-579Y.  
② Used in Chassis #ATS/KTS/PTS-579, LTS/PTS-579Y. ⑧ Used in Chassis #KTS PTS-579.  
③ Used in Chassis #RTS-579Y. ⑨ Used in Chassis #TS-MTS/VATS-579, TS/MTS-579Y.  
④ Used in Chassis #TS/MTS/TTS/VATS-579, TS/MTS/TTS-579Y. ⑩ Used in Chassis #ATS-579.  
⑤ Used in Chassis #TS-579, TS-579Y. ⑪ Used in Chassis #MTS/VATS-579.

## 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 PART No.	REMARKS			IRC PART No.	WORKMAN PART No.	REMARKS
R8	22K			(18K) †	R24	5800Ω 10W			10G-5600
R9	1000Ω				R25	2700Ω			
R10	68Ω				R26	220K			
R11	6800Ω				R27	68K			
R12	1000Ω				R28	33K			
R13	6800Ω				R29	220K			
R14	3300Ω 1W				R30	33K			
R15	150Ω				R31	220K			
R16	1500Ω				R32	180K			
R17	8200Ω				R33	820K			
R18	47K				R34	1000Ω			
R19	330Ω				R35	47K			
R20	47K				R36	15K			
R21	27K				R37	1meg			
R22	3300Ω				R38	1meg			
R23	33K				R39	1000Ω			

## RESISTORS (cont)

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

ITEM No.	RATING	REPLACEMENT DATA			ITEM No.	RATING	REPLACEMENT DATA		
		IRC PART No.	WORKMAN PART No.	REMARKS			IRC PART No.	WORKMAN PART No.	REMARKS
R40	100K				R56	560Ω			
R41	10K				R57	390K			
R42	100Ω				R58	1meg			
R43	270Ω 1W				R59	15K			
R44	2.2meg				R60	15K 4W			
R45	22K				R61	100K			
R46	8200Ω 2W				R62	270K			
R47	47K				R63	12K			
R48	5.6meg				R64	470Ω			
R49	560K				R65	6800Ω 3W			
R50	470K				R66	22K 1W			
R51	1meg				R67	12K 3W			
R52	22K				R68	3300Ω 3W			
R53	150Ω 1W				R69	470K			
R54	6800Ω 1W				R70	5600Ω 4W			
R55	560Ω				R71	15K 2W			

† Alternate Value.

① In Chassis TS-579 only, one 47K 5W Component replaces R70 and R71.

## COMPONENT COMBINATIONS

ITEM No.	USE	DESCRIPTION	MOTOROLA PART No.	REPLACEMENT DATA
K1	2nd Video IF Cathode	1000mmf, 1000mmf, 18K, 180K, 220K	51D65239A10	
K2	AGC Network	680K, 2meg, 2.2meg, 12meg	51D65239A04	
K3	Audio Det. Cathode	1000mmf, 4700mmf, 220Ω, 560Ω	51D65239A06	
K4	Sync Network	27mmf, 220mmf, 2000mmf, 56K, 470K, 3.3meg	51B747693	Centralab PC-358 Sprague HN-5
K5	Vert. Sweep Module	3300mmf, 6000mmf, 14000mmf, 10000mmf, 20000mmf, 50000mmf, 2200Ω, 5600Ω, 18K, 33K, 33K, 56K, .001mf, .0033mf, .005mf, .007mf, .1mf, 2200Ω, 12K, 15K, 47K, 1meg	51D66334A02	
K6	Horiz. Sweep Module		51D66326A01 † 51D66326A04 *	† Used in Runs A-00 thru B-00. * Used in Runs B-01 and later.

## COILS (RF-IF)

ITEM No.	USE	REPLACEMENT DATA					NOTES
		MOTOROLA PART No.	Merit PART No.	Miller PART No.	Stancor PART No.	Workman PART No.	
L1	39.75MC Trap	24K754048			RTC-8556 †	T218	† Disregard Tap.
L2A	1st Video IF	24D65666A07			RTC-8556 †	T218	† Includes Trap.
B	41.25MC Trap				RTC-8556 †	T218	
L3A	RF Choke	24D65666A12					
B	47.25MC Trap				RTC-8556 †	T218 †	▲ Trap only. Drill mounting hole.
L4	47.25MC Trap	24K747585			RTC-8556 †	T218	
L5	2nd Video IF	24K747587			RTC-8555	T217A	
L6	3rd Video IF	24K751248			RTC-8555	T217A	
L7	4th Video IF	1V86244A26 ①					① Includes 5.6mmf, 4.7mmf, 3.9mmf, L8, L9 and X1.
L8	RF Choke (8.8uh)	24C85828A09 ②			RTC-8521	T960	② Part of L7.
L9	RF Choke (5uh)	24C85828A16 ②			RTC-8519	T977	③ Includes R17.
L10	RF Choke (8.8uh)	24C85828A09			RTC-8521	T960	④ Includes R22.
L11	Peaking (200uh)	24C85828A12			RTC-8586	T345	⑤ Includes R25.
L12	Peaking (100uh)	24K754220 ③			RTC-8574 *	T341 *	* Shunt with 8200Ω Resistor.
L13A	4.5MC Trap	1V86244A47					▲ Shunt with 3300Ω Resistor.
L14	Peaking (200uh)	24C85828A15 ④			RTC-8586	T345	† Shunt with 2700Ω Resistor.
L15	Peaking (240uh)	24C85828A14			RTC-8598	T346	
L16	Peaking (900uh)	24C85828A11 ⑤			RTC-8589 †	T358 †	
L17	Sound IF	1V86244A48					
L18	Quadrature	1V86244A27					
L19	RF Choke (6.8uh)	24C85828A17			RTC-8520	T859	
L20	RF Choke (6.8uh)	24C85828A17			RTC-8520	T859	

## COILS (SWEEP CIRCUITS)

ITEM No.	USE	REPLACEMENT DATA							NOTES
		MOTOROLA PART No.	Merit PART No.	Miller PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	Workman PART No.	
L21	Horiz. Osc.	24D65853A02		TV-165	6333 ①	RTC-8629	HS-7		T111

① Disregard Tap.

## FILTER CHOKE

ITEM No.	RATINGS		REPLACEMENT DATA						NOTES
	CURRENT (Measured)	DC RES.	INDUCTANCE (10 CURRENT 1000~)	MOTOROLA PART No.	MERIT PART No.	STANCOR PART No.	THORDARSON PART No.	TRIAD PART No.	
L22	.240A	26Ω	580 MH	25C85806A03 -H	C-4084	C-2843	26C77	C-28X	Alternate Part #25C85806A03.

## TRANSFORMER (POWER)

ITEM No.	RATING			REPLACEMENT DATA					NOTES
	PRI.	SEC. 1	SEC. 2	MOTOROLA PART No.	MERIT PART No.	STANCOR PART No.	THORDARSON PART No.	TRIAD PART No.	
T1	117VAC @ 1.7A	500VAC C/T @ 2.80A	5VAC @ 2.3A	25D65663A02-T Alternate Part #25D65663A02	P-2885 ①	P-8356 ①	26R53 ①	R-122A ①	① Drill new mounting hole(s).
	SEC. 3	SEC. 4	SEC. 5						
	6.3VAC @ 7.5A								

## \* TRANSFORMERS (SWEEP CIRCUITS)

ITEM No.	USE	REPLACEMENT DATA					NOTES
		MOTOROLA PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	
T2	Vert. Output	25D65840A02-1	A-2855	VO-108	26S24 ①	A-133X	① Drill new mounting hole(s).
T3	Alt. Vert. Output Yoke (Horiz. 24MH) 90° (Vert. 40MH) Rear cover and Centering device	25D65840A02 24K754518		DY-32A ②		Y-45-2 ②	② Use original rear cover and centering device.
T4	Horiz. Output Alt. Horiz. Output Pri. & Sec. Windings	59C721145 24D66258A03-C 24D66258A03 24D65958A05					

## \* COMPONENT CONNECTION DATA

ORIGINAL →	HV TRANSFORMER						VERTICAL OUTPUT						YOKE						YOKE PLUG									
REPLACEMENT ↓	Original Connections						Original Connections						Original Connections						1	2	3	4	5	6	7	8		
	1	2	3	4	5	6	Blue	Green	Red				1	2	3	4	5	6	7	8	TO YOKE TERMINAL							
MERIT							Blue	Red	Yel.																			
STANCOR							Blue	Yel.	Red				3	7	1	6	8	4	2	5	See Note Below †							
THORDARSON							Blue	Red	Yel.																			
TRIAD							Blue	Red	Yel.				1	2	3	4	5	6	7	8	See Note Below †							

† No wiring change necessary.

## MISCELLANEOUS

ITEM No.	PART NAME	MOTOROLA PART No.	NOTES
M1	VHF Tuner		
M2	Circuit Breaker	80C86390A01	
M3	Tube Sentry Unit	6C746780	
	Pilot Lamp	65R10867	#44
	Pilot Lamp	65K750515	#63
	Pilot Lamp	65R129290	#816

## PHONO CARTRIDGE &amp; NEEDLES

\*NEEDLE LISTINGS SHOWN ARE FOR RESPECTIVE REPLACEMENT CARTRIDGES ONLY.

ITEM No.	REPLACEMENT DATA							NOTES	
	MOTOROLA PART No.		ASTATIC PART No.		ELECTRO-VOICE PART No.		SONOTONE PART No.		
	CARTRIDGE	NEEDLE*	CARTRIDGE	NEEDLE*	CARTRIDGE	NEEDLE*	CARTRIDGE		NEEDLE*
	59C60337A02		17D	N-41SD	26D	2804D	9T-SD	N9T-SD	①Replacement for original stylus.
		59C60337A04		N678SD ①		2805			



## ELECTROLYTIC CAPACITORS

ITEM No.	RATING		REPLACEMENT DATA						
	CAP.	VOLT.	MOTOROLA Part No.	AEROVOX Part No.	CORNEILL-DUBILIER Part No.	GENERAL ELECTRIC Part No.	MALLORY Part No.	PYRAMID Part No.	SPRAGUE Part No.
C67	100	3	23C86135A01	BCD3100	ECPB17	MTI-18	TT6X100	MLV100-3	VL1061
C68	25	18	23C86135A03	BCD25025	ECPB611	MTI-11	TT25X25	MLV25-25	TE-1207
C69	25	18	23C86135A03	BCD25025	ECPB611	MTI-11	TT25X25	MLV25-25	TE-1207
C70	100	18	23C86135A02	BCD18100	ECPB617	MTI-20			TE-1211
C71	100	18	23C86135A02	BCD18100	ECPB617	MTI-20			TE-1211

## 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.
C73	lmfd 3V			UK-105				HY-135
C74	.05		BPD-05	DD-503	H-0585		BT-150	5HK-S50
C75	.05		BPD-05	DD-503	H-0585		BT-150	5HK-S50
C76	.05		BPD-05	DD-503	H-0585		BT-150	5HK-S50
C77	.05		BPD-05	DD-503	H-0585		BT-150	5HK-S50
C78	56 N150 5%	#21R131917				*		10TCP-Q56
C79	820 5%		CM-20D-82L		5R5T82	CM-19B-82LJ		MS-382
C80	56 N150 5%	#21R131917				*		10TCP-Q56
C81	820 5%		CM-20D-82L		5R5T82	CM-19B-82LJ		MS-382

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

## CONTROLS

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

ITEM No.	USE	RESISTANCE	REPLACEMENT DATA				
			MOTOROLA PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	CTS-IRC PART No.	MALLORY PART No.
R87	Range	210Ω 30Ω Stop	18A540698				

## 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 PART No.	REMARKS			IRC PART No.	WORKMAN PART No.	REMARKS
R88	4700Ω				R89	10K			

## 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.	
L23	Input	24D66131A01					
L24	41.5 KC	24D66131A02					
L25	38.5 KC	24D66131A02					

### TRANSFORMER (POWER)

ITEM No.	RATING			REPLACEMENT DATA					NOTES
				MOTOROLA PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	
	PRI.	SEC. 1	SEC. 2						
T6	117V @ .010A	11V @ .008A		25D66078A01					

## COMPONENT COMBINATIONS

ITEM No.	USE	DESCRIPTION	MOTOROLA PART No.	REPLACEMENT DATA
K4	Amp. - Limiter	.05mfd, .05mfd, .05mfd,	51D66176A01	
K5	Emitter Bypass	.05mfd		
K5	Amp. - Limiter	2700Ω, 3300Ω, 4700Ω, 4700Ω	51D66095A01	
K6	Emitter Bias			
K6	1st & 2nd Amp.	1500Ω, 3300Ω, 18K, 27K, 27K,	51D66095A02	
K7	Base Network	47K		
K7	3rd Amp. & Limiter	470Ω, 4700Ω, 8200Ω, 18K, 47K,	51D66095A03	
	Base Network	82K		

## MISCELLANEOUS

ITEM No.	PART NAME	MOTOROLA PART No.	NOTES
M11	Relay	80D66087A01	Channel Change
M12	Relay	80D66087A01	Volume
	Microphone	50C66208A01	Includes Cable and Plug
	Printed Board	84C66201A02	Less Components

## REMOTE CONTROL TRANSMITTER

## MISCELLANEOUS

ITEM No.	PART NAME	MOTOROLA PART No.	NOTES
	Transmitter Tuning Rod Tuning Rod Pushbutton Pushbutton	1V65816A99 47K748546 47B748542 38C6815A01 38C6815A02	Complete Transducer, 41.5KC (Channel Selector) Transducer, 38.5KC (On, Volume, Mute, Off) On, Volume, Mute, Off Channel Selector

**SET 596 FOLDER 1-A**

**MOTOROLA REMOTE CONTROL  
RECEIVER TRR-1, TRANSMITTER TRT-1**

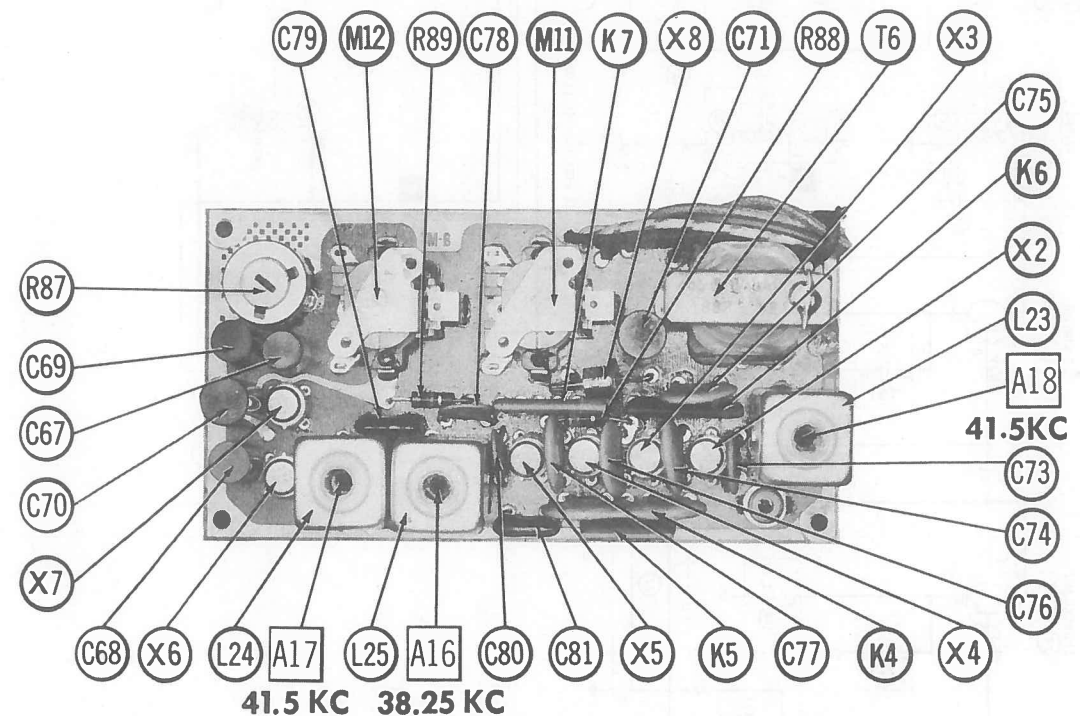
# PHOTOFACT® Folder

with **CIRCUITRACE<sup>®</sup>**

## MOTOROLA REMOTE CONTROL RECEIVER TRR-1, TRANSMITTER TRT-1

## IMPORTANT FILING NOTICE



This PHOTOFACT Folder covers equipment used with the TV chassis covered in PHOTOFACT SET 596 FOLDER 1 . File this Folder with the TV Folder in the yellow filing jacket provided.



## RECEIVER —TOP VIEW

TYPE SET	Remote Control Receiver with Mechanical Transmitter
TRANSISTORS	Six
POWER SUPPLY	110-120 Volts AC, 60 Cycle

## ALIGNMENT INSTRUCTIONS

	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	CONNECT VTVM	ADJUST	REMARKS
1.	Across Microphone Input with 100K in high side.	38.5KC (Unmod.)	DC probe to point  . Common to chassis.	A16	Set Range control to center of rotation. Adjust A16 for maximum dip on VTVM. Use only enough generator output to provide a sharp indication.
2.	"	41.5KC	DC probe to point  . Common to chassis.	A17	Adjust for maximum dip in VTVM reading.
3.	"	"	"	A18	Adjust generator output to produce -11 volts on VTVM. Adjust for maximum dip in VTVM reading.

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

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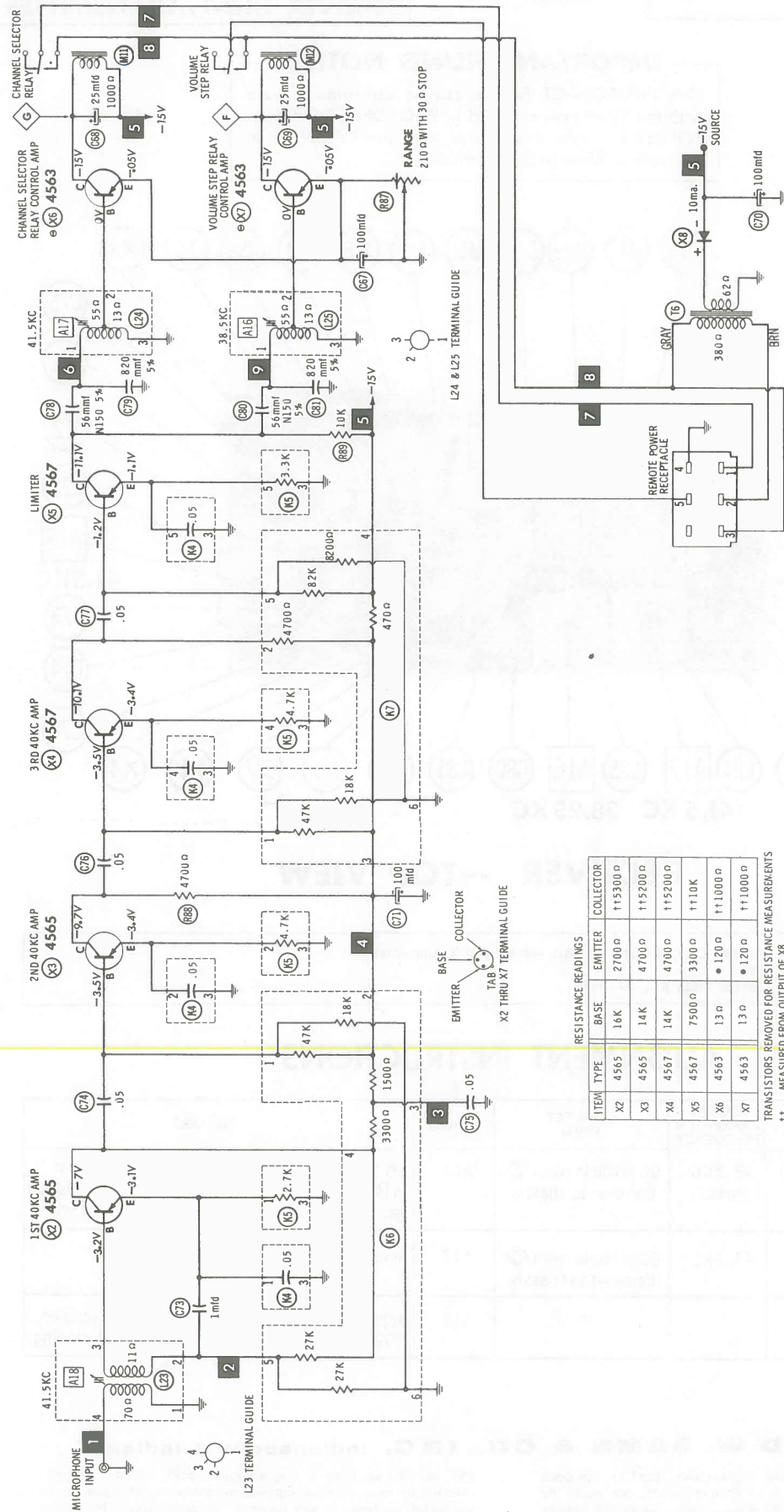
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DATE 9-62

**SET 596****FOLDER 1-A**

**MOTOROLA REMOTE CONTROL  
RECEIVER TRR-1, TRANSMITTER TRT-1**

**SET 596 FOLDER 1-A**



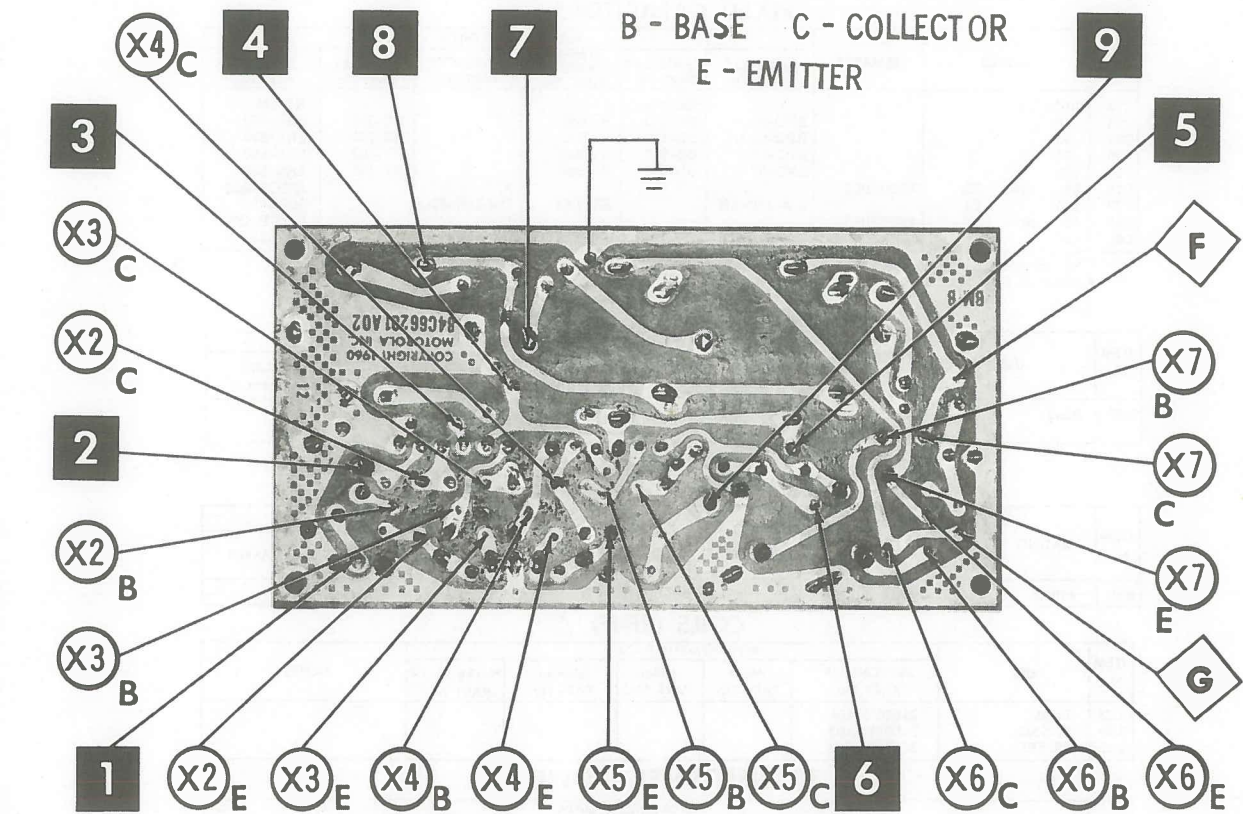
RESISTANCE READINGS

ITEM	TYPE	BASE	EMITTER	COLLECTOR
X2	4565	16K	2700 $\Omega$	115300 $\Omega$
X3	4565	14K	4700 $\Omega$	115200 $\Omega$
X4	4567	14K	4700 $\Omega$	115200 $\Omega$
X5	4567	7500 $\Omega$	3300 $\Omega$	1110K
X6	4563	13 $\Omega$	120 $\Omega$	111000 $\Omega$
X7	4563	13 $\Omega$	120 $\Omega$	111000 $\Omega$

TRANSISTORS REMOVED FOR RESISTANCE MEASUREMENTS  
 \* MEASURED FROM OUTPUT OF X8  
 \* THIS READING WILL VARY. CONTROL SET FOR NORMAL OPERATION.

A PHOTOFACT STANDARD NOTATION SCHEMATIC  
 with **CIRCUITRACE**  
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## REMOTE CONTROL RECEIVER TRR-1



A Howard W. Sams **CIRCUITRACE** Photo

## RECEIVER-BOTTOM VIEW REMOTE CONTROL RECEIVER PARTS LIST AND DESCRIPTIONS

ITEM No.	ORIG. TYPE	USE	REPLACEMENT DATA		NOTES
			RCA PART No.	RAYTHEON PART No.	
X2	4565	1st 40KC Amp.	2N410	2N485	PNP
X3	4565	2nd 40KC Amp.	2N410	2N485	PNP
X4	4567	3rd 40KC Amp.	2N410	2N485	PNP
X5	4567	Limiter	2N410	2N486	PNP
X6	4563	Channel Selector Relay Control Amp.	2N408	2N632	PNP
4562 *	"	"	"	"	PNP
4564 *	"	"	"	"	PNP
X7	4563	Volume Step Relay Control Amp.	2N408	2N632	PNP
4562 *	"	"	"	"	PNP
4564 *	"	"	"	"	PNP

\* Alternate

ITEM No.	CURRENT RATING (Measured)	ORIGINAL Part or Type No.	RECTIFIERS		DIODES		NOTES
			RCA PART No.	SARKES TARZIAN PART No.	GENERAL ELECTRIC PART No.	RAYTHEON PART No.	
X8		48C65581A02 (1N128)	1N1763	10H			Silicon Rectifier

MOTOROLA REMOTE CONTROL  
RECEIVER TRR-1, TRANSMITTER TRT-1

FOLDER 1-A



# ALIGNMENT INSTRUCTIONS

## ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

Use only enough generator output to provide a usable indication.

### AM ALIGNMENT - SELECTOR IN AM POSITION

SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	INDICATOR	ADJUST	REMARKS
1. High side thru .1 mfd to grid (pin 7) of AM Conv. Low side to chassis.	455KC (Unmod.)	(AM) Tuning gang fully open	Connect VTVM. DC probe to point (A). Common to chassis.	A1, A2, A3, A4	Adjust for maximum deflection.
2. Fashion loop of several turns of wire and radiate signal into loop of receiver	535KC	535KC	"	A5	"
3. "	600KC	600KC	"	A6	"
4. "	1620KC	1620KC	"	A7	"
5. "	1400KC	1400KC	"	A8	"
6. "	"	"	"	A9	"

### FM IF ALIGNMENT USING AM SIGNAL GENERATOR AND VTVM - SELECTOR IN FM POSITION

SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	INDICATOR	ADJUST	REMARKS
7. High side to ungrounded tube shield over FM Conv. Low side to chassis.	10.7MC (Unmod.)	(FM) Point of non-interference	Connect VTVM. DC probe to point (B). Common to chassis.	A10, A11, A12, A13, A14, A15, A16	Adjust for maximum deflection.
8. "	"	"	"	A17	Adjust for zero reading. A positive and negative reading will be obtained on either side of the correct setting.

### FM IF ALIGNMENT USING FM SIGNAL GENERATOR AND OSCILLOSCOPE - SELECTOR IN FM POSITION

Use frequency modulated signal with 60% modulation and 450MC sweep. Use 120% sawtooth voltage in scope for horizontal deflection.

SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	INDICATOR	ADJUST	REMARKS
7. High side to ungrounded tube shield over FM Conv. Low side to chassis.	10.7MC (10MC Sweep)	(FM) Point of non-interference	Connect SCOPE Vert. amp. to point (C). Low side to chassis.	A10, A11, A12, A13, A14, A15, A16	Adjust for maximum gain and symmetry of response similar to Fig. 1 with markers as shown. Disconnect Stabilizing Capacitor (8mfd).
8. "	"	"	"	A17	Connect Stabilizing Capacitor (8mfd). Adjust to place marker at the center of crossover lines similar to Fig. 2. SLIGHTLY retouch A10 for maximum amplitude and straightness of crossover lines.

### FM RF ALIGNMENT - SELECTOR IN FM POSITION

SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	INDICATOR	ADJUST	REMARKS
9. Across antenna terminal with 120Ω resistor in each lead.	108MC (Unmod.)	108MC	Connect VTVM DC probe to point (D). Common to chassis.	A18	Adjust for maximum deflection.
10. "	98MC	98MC	"	A19	"
11. "	"	"	"	A20	Adjust for maximum undistorted sound.
12. "	87.5MC	87.5MC	"	A21	Adjust for maximum deflection.
13. "	Sweep Scale	Sweep Scale	"	A22	Adjust until oscillation ceases.

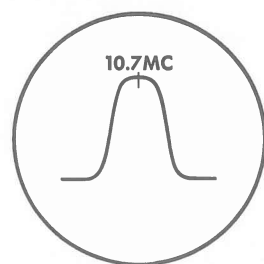


FIG. 1

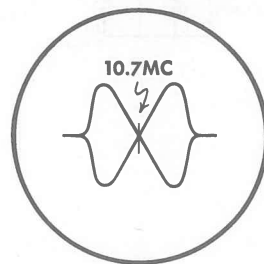


FIG. 2

FOLDER 1-B  
SET 596

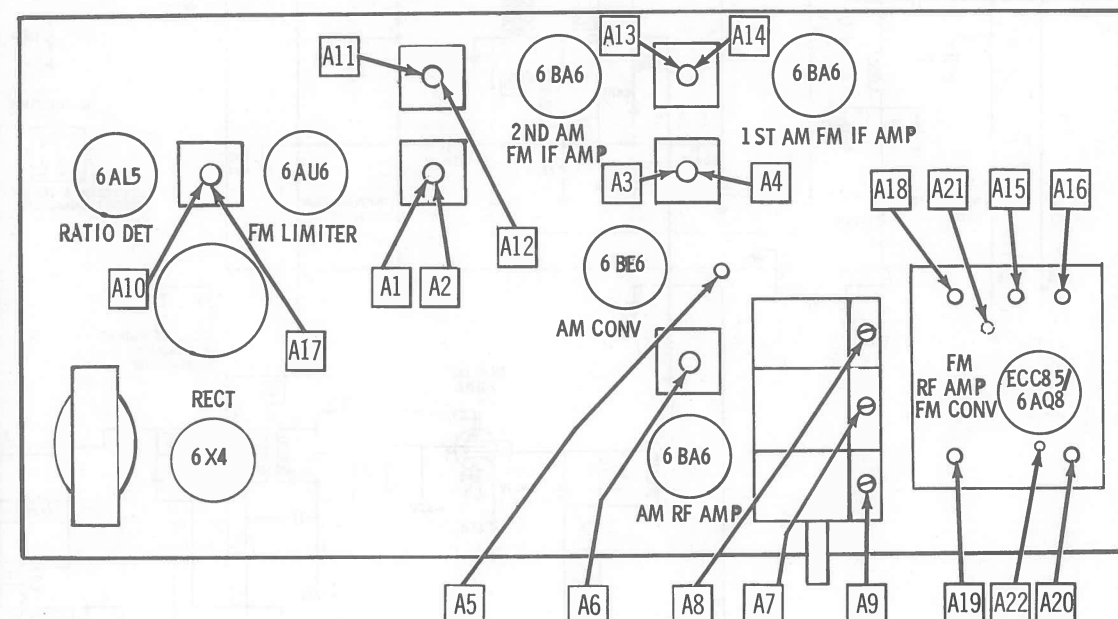
## PHOTOFACT® Folder



### IMPORTANT FILING NOTICE

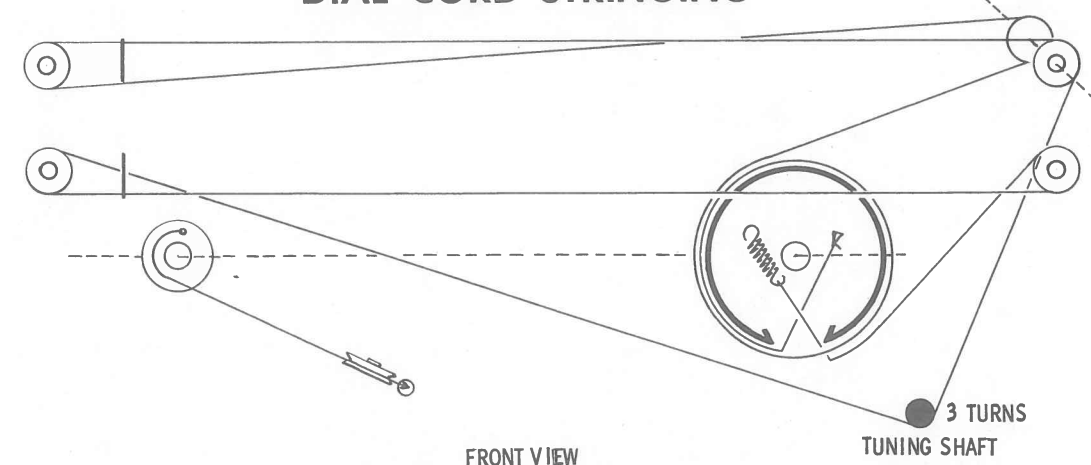
This PHOTOFACT Folder covers equipment used with the TV chassis covered in PHOTOFACT SET 596 FOLDER 1. File this Folder with the TV Folder in the yellow filing jacket provided.

MOTOROLA  
AM-FM CHASSIS HS-1013 (HK-45-2)



TYPE SET AM-FM Tuner  
TUBES Nine  
POWER SUPPLY 110-120 Volts AC, 60 Cycle  
TUNING RANGE AM 535KC-1620KC, IF Freq. 455KC FM 88MC-108MC, IF Freq. 10.7MC

## DIAL CORD STRINGING



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 LC617

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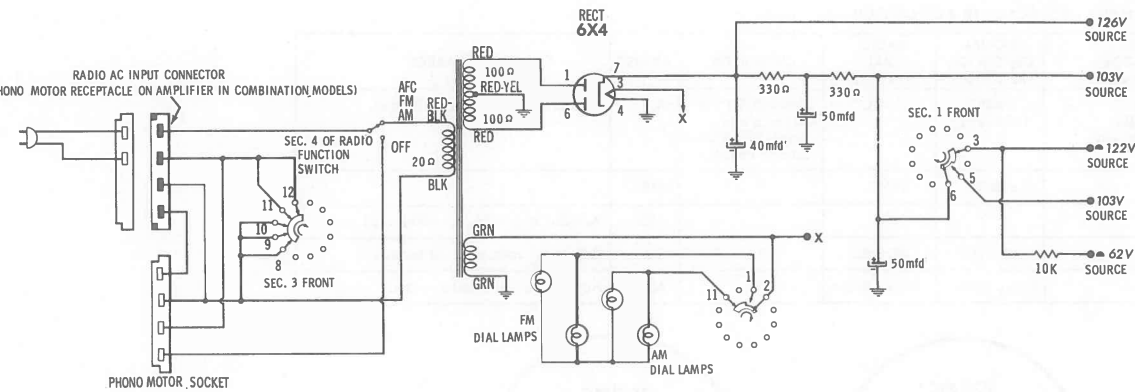
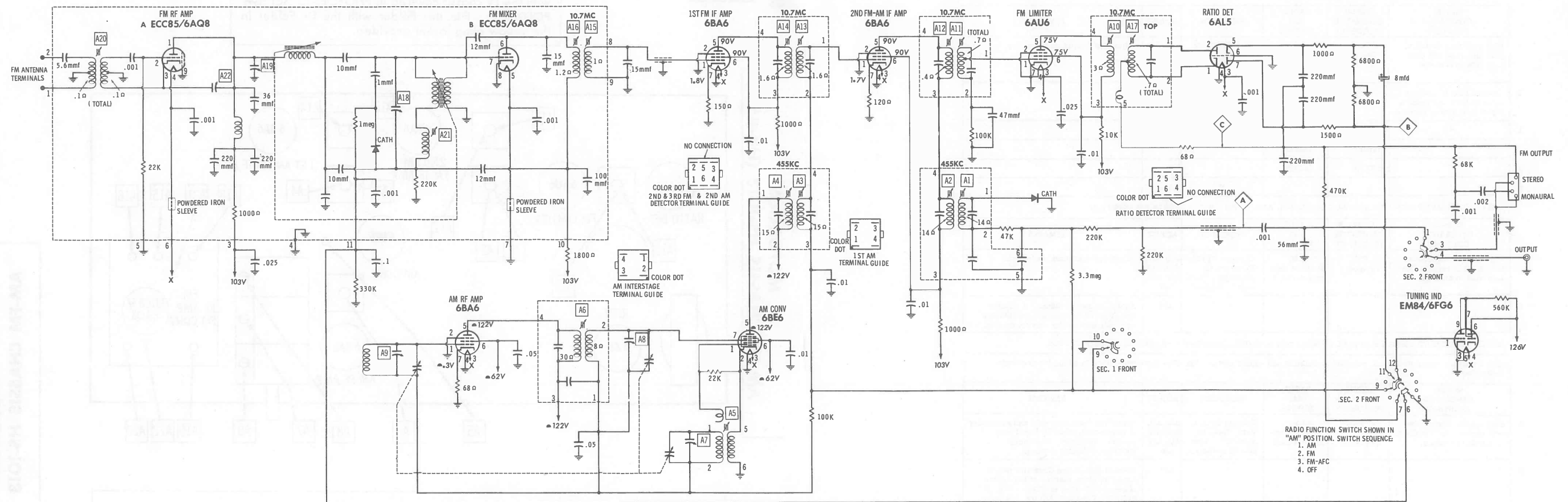
DATE 9-62

SET 596

FOLDER 1-B

MOTOROLA  
AM-FM CHASSIS HS-1013 (HK-45-2)

SET 596  
FOLDER 1-B

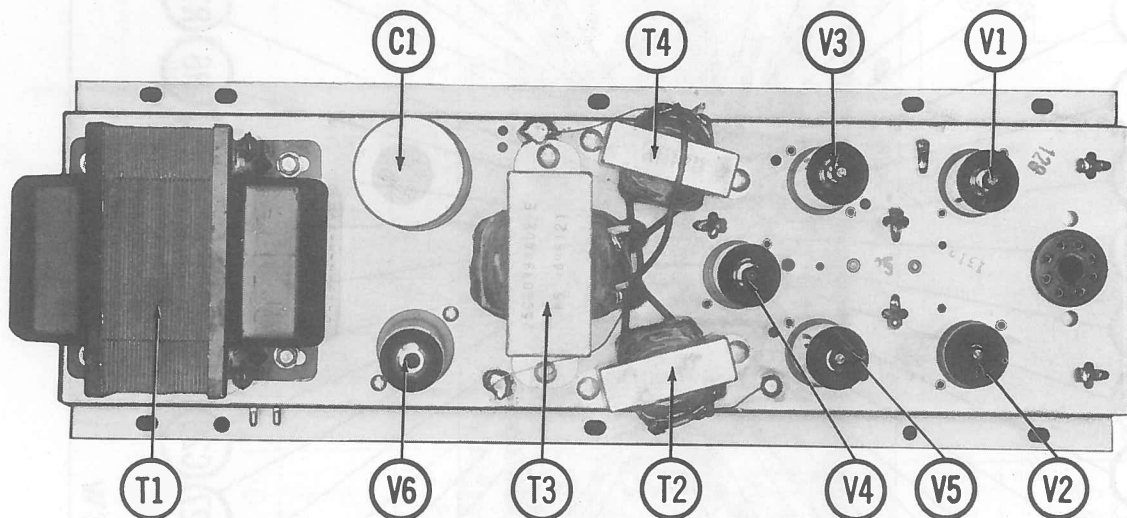




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MOTOROLA  
PREAMP-POWER AMP CHASSIS HS-979A



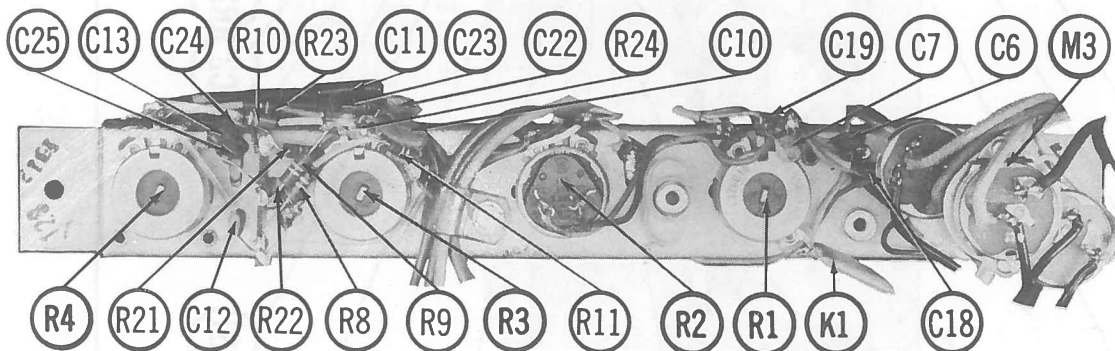
**TOP VIEW**

TYPE SET  
TUBES  
POWER SUPPLY

Preamplifier, Power Amplifier  
Six  
110-120 Volts AC, 60 Cycle

RATING 90 Watts, .78 Amp. @ 117 Volts AC

MOTOROLA  
PREAMP-POWER AMP CHASSIS HS-979A



**CONTROL PANEL**

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

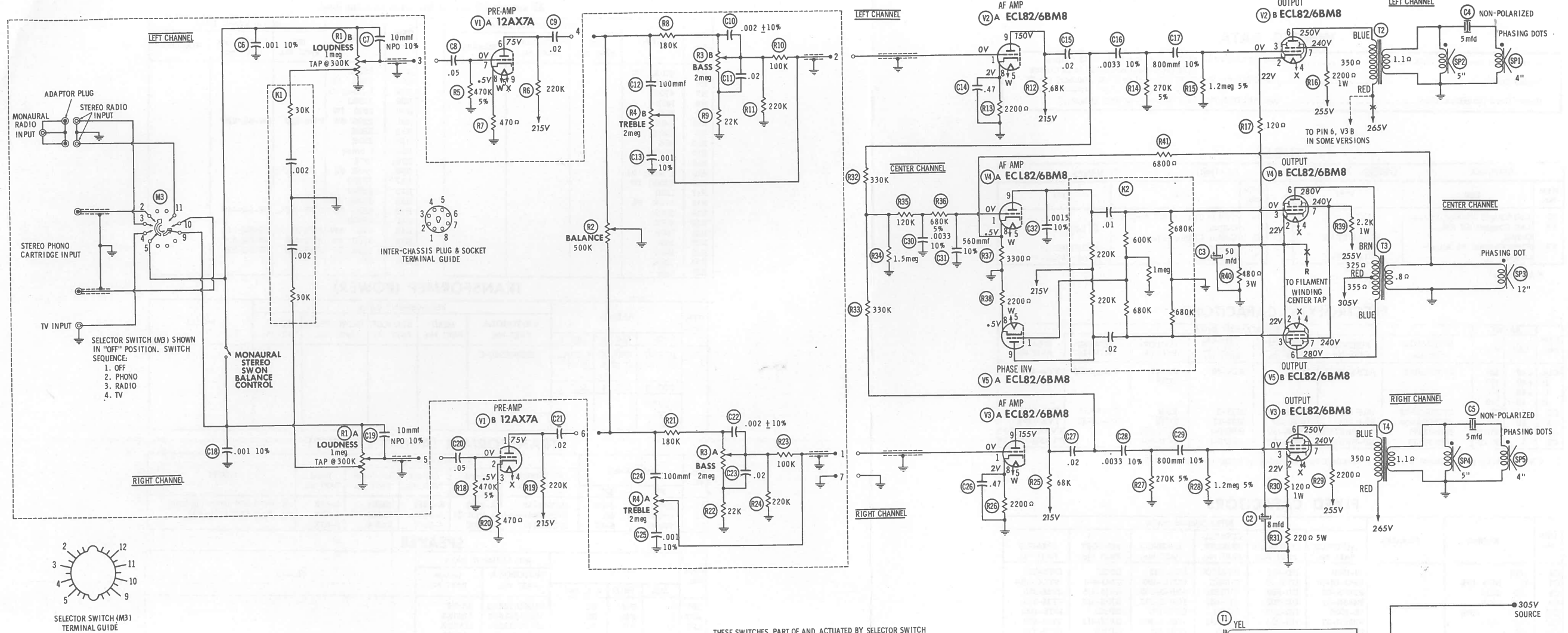
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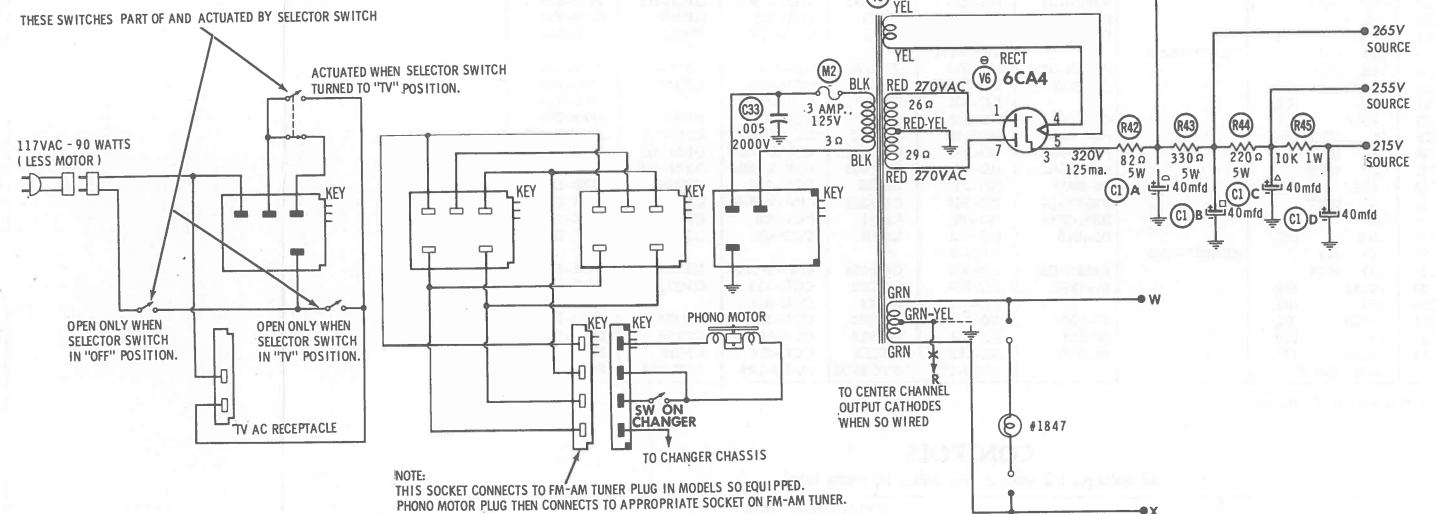




ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V1	12AX7A	†230K	470K	470Ω	FIL	FIL	†230K	470K	470Ω	FIL
V2	ECL82/6BM8	0200K	340Ω	1.2meg	FIL	FIL	†800Ω	†2800Ω	2200Ω	†80K
V3	ECL82/6BM8	0210K	340Ω	1.2meg	FIL	FIL	†800Ω	†2800Ω	2200Ω	†80K
V4	ECL82/6BM8	2.3meg	480Ω	400K	FIL	FIL	†400Ω	†2800Ω	2000Ω	†230K
V5	ECL82/6BM8	400K	480Ω	410K	FIL	FIL	†400Ω	†2800Ω	2200Ω	†230K
V6	6CA4	26Ω	NC	†500K	FIL	FIL	NC	29Ω	NC	NC

† THIS READING WILL VARY DEPENDING UPON THE CONDITION OF THE ELECTROLYTIC IN THE CIRCUIT.  
 ○ THIS READING WILL VARY, CONTROL SET FOR NORMAL OPERATION.  
 † MEASURED FROM PIN 3 OF V6.

NC NO CONNECTION



## PARTS LIST AND DESCRIPTIONS

## WIRING DATA

General-use Unshielded Hook-up Wire ..... Use BELDEN No. 8530 (Solid) Available in 12 Colors  
8524 (Stranded) Available in 12 Colors  
Power Cord ..... Use BELDEN No. 17106 (Plastic) or 17126 (Rubber) - 6 Ft.  
17109 (Plastic) or 17129 (Rubber) - 9 Ft.  
Power Cord (Interlock Type) ..... Use BELDEN No. 8874 (Rubber) or 8895 (Plastic)

## TUBES

AMPEREX			GENERAL ELECTRIC			RAYTHEON			SYLVANIA		
ITEM No.	USE	TYPE	ITEM No.	USE	TYPE	ITEM No.	USE	TYPE	ITEM No.	USE	TYPE
V1	Left & Right Channel Preamp.	12AX7A	V4	Center Channel AF Amp. - Output	ECL82/6BM8	V4	Center Channel AF Amp. - Output	ECL82/6BM8	V4	Center Channel AF Amp. - Output	ECL82/6BM8
V2	Left Channel AF Amp. - Output	ECL83/6BM8	V5	Center Channel Phase Inv. - Output	ECL82/6BM8	V5	Center Channel Phase Inv. - Output	ECL82/6BM8	V5	Center Channel Phase Inv. - Output	ECL82/6BM8
V3	Right Channel AF Amp. - Output	ECL83/6BM8	V6	Rectifier	6CA4 (EZ81) *	V6	Rectifier	6CA4 (EZ81) *	V6	Rectifier	6CA4 (EZ81) *

\* Alternate

## 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.
C1A	40	400	23D60190A01	AFH4-18-45	D0177	XC4-80	FP377 TC78	TMQ-4652	TVL-4775
C1B	40	400							
C1C	40	350							
C1D	40	350							
C2	8	25	23C60119A02	PRSI405	BBR8-150	MTI-5	TC41	TD-8-150	TVA-1405
C3	50	50	23C60119A06	PRSI350	BR50-50	MTI-17	TC39	TD-50-50	TVA-1308
C4	5	25NP	23B643970	NP-PR57550	BBR8-150	NPQT-1	TCN-505		TVANS-1303.1*
C5	5	25NP	23B643970	NP-PR57550	BBR8-150	NPQT-1	TCN-505		TVANS-1303.1*

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

## 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.	
C6	.001		DI-1000	DD-102	BYA10D1	CCD-102	GP210	10TS-D10	
C7	10 NPO 10%		NPO-DI-10	DTZ-10	C10Q1C	CCTO-100	CNO-410	10TCC-Q10	
C8	.05 200V		P288N-05	DD-503	CUB2S5	4DP-3-503	GEM-415	2TM-S50	
C9	.02 400V		P488N-02	DD-203	CUB4S2	4DP-2-203	GEM-412	4TM-S20	
C10	.002 ±10%		DI-2000	DD-202	L10D2	CCD-202	GP220	10TS-D20	
C11	.02 200V		P288N-02	DD-203	CUB2S2	4DP-2-203	GEM-412	2TM-S20	
C12	100		BPD-0001	DD-101	L10T1	CCD-101	GP310	10TS-T10	
C13	.001 10%		DI-1000	DD-102	L10D1	CCD-102	GP210	10TS-D10	
C14	.47 10V	#21A60776A01		UK10-474					
C15	.02 100V		P288N-02	DD-203	CUB2S2	1DP-1-203	GEM-412	2TM-S20	
C16	.0033 10%		DI-3300	DD-332	L10D33	CCD-332	GP233	10TS-D33	
C17	800 10%			DD-801	L10T8	CCD-801		10TS-T80	
C18	.001 10%		DI-1000	DD-102	L10D1	CCD-102	GP210	10TS-D10	
C19	10 NPO 10%		NPO-DI-10	DTZ-10	C10Q1C	CCTO-100	CNO-410	10TCC-Q10	
C20	.05 200V		P288N-05	DD-503	CUB2S5	4DP-3-503	GEM-415	2TM-S50	
C21	.02 400V		P488N-02	DD-203	CUB4S2	4DP-2-203	GEM-412	4TM-S20	
C22	.002 ±10%		DI-2000	DD-202	L10D2	CCD-202	GP220	10TS-D20	
C23	.02 200V		P288N-02	DD-203	CUB2S2	4DP-2-203	GEM-412	2TM-S20	
C24	100		BPD-0001	DD-101	L10T1	CCD-101	GP310	10TS-T10	
C25	.001 10%		DI-1000	DD-102	L10D1	CCD-102	GP210	10TS-D10	
C26	.47 10V	#21A60776A01		UK10-474					
C27	.02 400V		P488N-02	DD-203	CUB4S2	4DP-2-203	GEM-412	4TM-S20	
C28	.0033 10%		DI-3300	DD-332	L10D33	CCD-332	GP233	10TS-D33	
C29	800 10%			DD-801	L10T8	CCD-801		10TS-T80	
C30	.0033 10%		DI-3300	DD-332	L10D33	CCD-332	GP233	10TS-D33	
C31	560 10%		DI-560	DD-561	L10T56	CCD-561	GP356	10TS-T56	
C32	.0015 10%		DI-1500	DD-152	L10D15	CCD-152	GP215	10TS-D15	
C33	.005 2000V			DD30-502	HVC20D5	3CCD-502	2HV-268	BL-D50	

# Motorola Part Number

## CONTROLS

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

ITEM No.	USE	RESIST-ANCE	REPLACEMENT DATA				
			MOTOROLA PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	CTS-IRC PART No.	MALLORY PART No.
R1A	Loudness	1meg 300K Tap	18K646986	B-160, ♦			FA16T35, RUI6T35, CS3500
B	Loudness	1meg 300K Tap		STR-60 ♦			
R2	Balance	500K	18K646987	BPL-59	C47-500K-S, FS-3 & SWE	B11-137, SK7, or (PPQ11-137, SK7)	
R3A	Bass, Right Channel	2meg	18D60116A01	B-76, SR-76	AD47-2meg-Z, FS-3		FA26A, RU26A, CS3500
B	Bass, Left Channel	2meg					
R4A	Treble, Right Channel	2meg	18D60116A01	B-76, SR-76	AD47-2meg-Z, FS-3		FA26A, RU26A, CS3500
	Treble, Left Channel	2meg					

♦ Do not use #1 Tap.

## PARTS LIST AND DESCRIPTIONS (Continued)

## 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 PART No.	REMARKS			IRC PART No.	WORKMAN PART No.	REMARKS
R5	470K 5%				R26	2200Ω			
R6	220K				R27	270K 5%			
R7	470Ω				R28	1.2meg 5%			
R8	180K				R29	2200Ω			
R9	22K				R30	120Ω 1W			
R10	100K				R31	220Ω 5W	PW5-220	5W-SQ-220	
R11	220K				R32	330K			
R12	68K				R33	330K			
R13	2200Ω				R34	1.5meg			
R14	270K 5%				R35	120K			
R15	1.2meg 5%				R36	680K 5%			
R16	2200Ω 1W				R37	3300Ω			
R17	120Ω				R38	2200Ω			
R18	470K 5%				R39	2200Ω 1W			
R19	220K				R40	480Ω 3W	PW5-480	5W-SQ-480	
R20	470Ω				R41	6800Ω			
R21	180K				R42	82Ω 5W	PW5-82	5W-SQ-82	
R22	22K				R43	330Ω 5W	PW5-330	5W-SQ-330	
R23	100K				R44	220Ω 5W	PW5-220	5W-SQ-220	
R24	220K				R45	10K 1W			
R25	68K								

## TRANSFORMER (POWER)

ITEM No.	RATING			REPLACEMENT DATA					NOTES
	PRI.	SEC. 1	SEC. 2	MOTOROLA PART No.	MERIT PART No.	STANCOR PART No.	THORDARSON PART No.	TRIAD PART No.	
T1	117VAC @ .78A	530VAC @ .127A	6.3VAC @ 1A	25K646988-C					
	SEC. 3	SEC. 4	SEC. 5						
	6.3VAC C/T @ 3.4A								

## TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE		REPLACEMENT DATA					NOTES
	PRI.	SEC.	MOTOROLA PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	
T2	5200Ω	6-8Ω	25C645449	A-2900	A-3856	24S04	S-63X	① Drill new mounting hole.
T3	8000Ω C/T	8Ω	25C60394A02-B	A-2901 ①	A-3870	22S88	S-55X	Alt. Part #25C60394A02
T4	5200Ω	6-8Ω	25C645449	A-2900	A-3856	24S04	S-63X	

## SPEAKER

ITEM No.	TYPE			REPLACEMENT DATA		NOTES
	SIZE	FIELD	V. C. IMP.	MOTOROLA PART No.	QUAM PART No.	
SP1	4"	PM	8Ω	50D65072A02	4A1Z8	
SP2	5"	PM	8Ω	50D65265A03	52A1Z8	
SP3	12"	PM	8Ω	50D65633A01	12A6PA	
SP4	5"	PM	8Ω	50D65265A03	52A1Z8	
SP5	4"	PM	8Ω	50D65072A02	4A1Z8	

## COMPONENT COMBINATIONS

ITEM No.	USE	DESCRIPTION	MOTOROLA PART No.	REPLACEMENT DATA
K1	Volume Control Comp.	.002mfd, .002mfd, 30K, 30K	51K646985	
K2	Audio Couplate	.01mfd, .02mfd, 220K, 220K, 600K, 680K, 680K, 680K, 1meg	51B60422A01	

## PHONO CARTRIDGE &amp; NEEDLES

\*NEEDLE LISTINGS SHOWN ARE FOR RESPECTIVE REPLACEMENT CARTRIDGES ONLY.

ITEM No.	REPLACEMENT DATA								NOTES
	MOTOROLA PART No.		ASTATIC PART No.		ELECTRO-VOICE PART No.		SONOTONE PART No.		
	CARTRIDGE	NEEDLE*	CARTRIDGE	NEEDLE*	CARTRIDGE	NEEDLE*	CARTRIDGE	NEEDLE*	
M1	59C60337A02		17D	N-41SD N678SD ①	26D	2604D, 2605	9T-SD	N9T-SD	① Replacement for original stylus

## FUSES

ITEM No.	TYPE	RATING	REPLACEMENT DATA			
			MOTOROLA PART No.		LITTELFUSE PART No.	
			FUSE	HOLDER	FUSE	HOLDER
M2	3AG Pigtail	3A 125V Slo/Blo	65A646112		315003 (3AG 3A 125V S/B)	MDV3

## MISCELLANEOUS

ITEM No.	PART NAME	MOTOROLA PART No.	NOTES
M3	Switch Assembly Pilot Lamp 45RPM Spindle	40D66348A05 65R125595 47K642167	Complete, Function Selector #1847



# PHOTOFACT® Folder

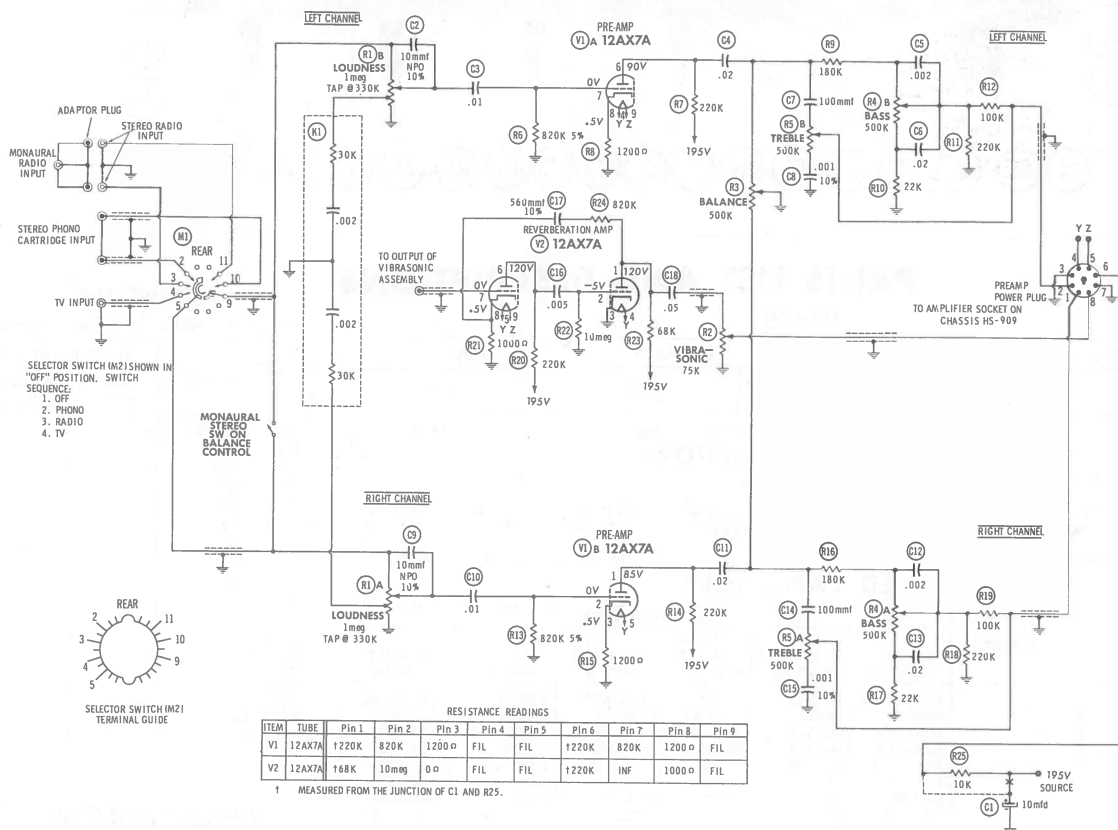


## MOTOROLA PREAMP CHASSIS HS-977

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## MOTOROLA PREAMP CHASSIS HS-977



A PHOTOFACT STANDARD NOTATION SCHEMATIC  
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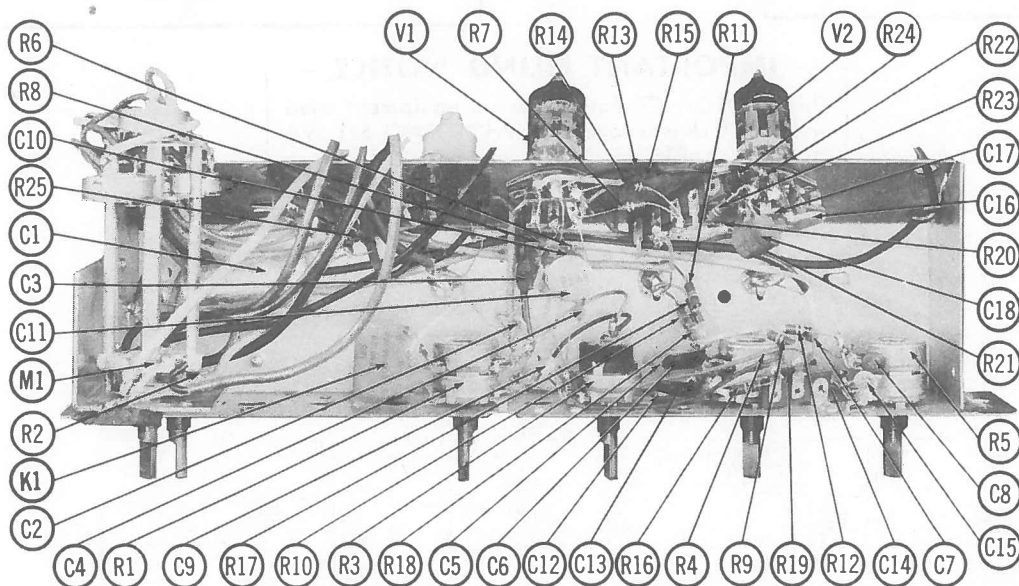
MOTOROLA  
PREAMP CHASSIS HS-977

TYPE SET      Preamplifier  
TUBES          Two  
POWER SUPPLY      Obtained from Power Amp. Chassis HS-909

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

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## PARTS LIST AND DESCRIPTIONS

### TUBES

ITEM No.	USE	TYPE	ITEM No.	USE	TYPE
V1	Preamp.	12AX7A	V2	Reverb. Amp.	12AX7A

### ELECTROLYTIC CAPACITORS

ITEM No.	RATING	MOTOROLA PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	GENERAL ELECTRIC PART No.	MALLORY PART No.	PYRAMID PART No.	SPRAGUE PART No.
C1	10 400	23C60119A04	PRS1720	BR10-450	QTI-6	TC72	TD-10-450	TVA-1705

### FIXED CAPACITORS

ITEM No.	RATING	REMARKS	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ELMENDO PART No.	MALLORY PART No.	SPRAGUE PART No.
C2	10 NPO 10%		NPO-DI-10	DTZ-10	C10QIC	CCTO-100	CNO-410	10TCC-Q10
C3	.01		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C4	.02		BPD-02	DD-203	BYB6S2	CCD-203	B-120	5HK-S20
C5	.002		BPD-002	DD-202	BYA10D2	CCD-202	B-220	5HK-D20
C6	.02 200V		P288N-02	DD-203	CUB2S2	4DP-2-203	GEM-412	2TM-S20
C7	100		BPD-0001	DD-101	L10T1	CCD-101	GP310	10TS-T10
C8	.001 10%		DI-1000	DD-102	L10D1	CCD-102	GP210	10TS-D10
C9	10 NPO 10%		NPO-DI-10	DTZ-10	C10QIC	CCTO-100	CNO-410	10TCC-Q10
C10	.01		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C11	.02		BPD-02	DD-203	BYB6S2	CCD-203	B-120	5HK-S20
C12	.002		BPD-002	DD-202	BYA10D2	CCD-202	B-220	5HK-D20
C13	.02 200V		P288N-02	DD-203	CUB2S2	4DP-2-203	GEM-412	2TM-S20
C14	100		BPD-0001	DD-101	L10T1	CCD-101	GP310	10TS-T10
C15	.001 10%		DI-1000	DD-102	L10D1	CCD-102	GP210	10TS-D10
C16	.005		BPD-005	DD-502	BYA10D5	CCD-502	B-250	5HK-D50
C17	560 10%		DI-560	DD561	L10T56	CCD-561	GP356	10TS-T56
C18	.05 400V		P488N-05	DD-503	CUB4S5	4DP-3-503	GEM-415	4TM-S50

### COMPONENT COMBINATIONS

ITEM No.	USE	DESCRIPTION	MOTOROLA PART No.	REPLACEMENT DATA
K1	Volume Control Comp.	.002mfd, .002mfd, 30K, 30K	51K646985	

### CONTROLS

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

ITEM No.	USE	RESISTANCE	MOTOROLA PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	CTS-IRC PART No.	MALLORY PART No.
R1A	Loudness, Right Channel	1meg, 330K Tap	18D60116A20				
B	Loudness, Left Channel	1meg, 330K Tap					
R2	Vibrasonic	75K	18D60116A17	B-35, or (AB-35, AK-7)	A47-75K-S, FS-3	Q11-125	RU753, SL38, SL3500
R3	Balance, Monaural, Stereo Switch	500K	18K646987		C47-500K-S, FS-3	B11-137, SK7, or (PPQ11-137, SK7)	
R4A	Bass, Right Channel	500K	18D60116A01	B-76, SR-76	AD47-2meg-Z, FS-3		FA26A, RU26A, CS3500
B	Bass, Left Channel	500K					
R5A	Treble, Right Channel	500K	18D60116A01	B-76, SR-76	AD47-2meg-Z, FS-3		FA26A, RU26A, CS3500
B	Treble, Left Channel	500K					

### RESISTORS

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

ITEM No.	RATING	REPLACEMENT DATA	
		IRC PART No.	WORKMAN PART No.
R6	820 K 5%		
R7	220 K		
R8	1200Ω		
R9	180 K		
R10	22 K		
R11	220 K		
R12	100 K		
R13	820 K 5%		
R14	220 K		
R15	1200Ω		
R16	180 K		
R17	22 K		
R18	220 K		
R19	100 K		
R20	220 K		
R21	1000Ω		
R22	10meg		
R23	68 K		
R24	820 K		
R25	10 K		

### MISCELLANEOUS

ITEM No.	PART NAME	MOTOROLA PART No.
M1	Switch Ass'y Function Selector (Complete handle)	40D66346A05 65R125595 47K642167

### WIRING DATA

General-use Unshielded Hook-up Wire ....

Use BELDEN No.

8530 (Solid) Available in 12 Colors

8524 (Stranded) Available in 12 Colors



PARTS LIST AND DESCRIPTIONS (Continued)

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE		REPLACEMENT DATA					NOTES
	PRI.	SEC.	MOTOROLA PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	
T2	5200Ω	6-8Ω	25C645449	A-2900	A-3856	24804	S-63X	① Drill new mounting hole. Alternate Part #25C60394A02
T3	8000Ω	8Ω	25C60394A02-E	A-2901 ①	A-3870	22888	S-55X	
T4	5200Ω	6-8Ω	25C645449	A-2900	A-3856	24804	S-63X	

SPEAKER

ITEM No.	TYPE			REPLACEMENT DATA		NOTES
	SIZE	FIELD	V. C. IMP.	MOTOROLA PART No.	QUAM PART No.	
SP1	4"	PM	8Ω	50D65072A02	4A1Z8	
SP2	5"	PM	8Ω	50D65265A03	52A1Z8	
SP3	5"	PM	8Ω	50D65265A03	52A1Z8	
SP4	12"	PM	8Ω	50D65633A01	12A6PA	
SP5	5"	PM	8Ω	50D65265A03	52A1Z8	
SP6	4"	PM	8Ω	50D65072A02	4A1Z8	

FUSES

ITEM No.	TYPE	RATING	REPLACEMENT DATA					
			MOTOROLA PART No.		LITTELFUSE PART No.		BUSS PART No.	
			FUSE	HOLDER	FUSE	HOLDER	FUSE	HOLDER
M1	3AG Pigtail	3A 125V Slo/Blo	65A646112		315003. (3AG 3A 125V S/B)		MDV3	

MISCELLANEOUS

ITEM No.	PART NAME	MOTOROLA PART No.	NOTES
M2	Vibrasonic Assembly Pilot Lamp	1D60455A01 65R125595	Less Bracket and Lamps #1847

WIRING DATA

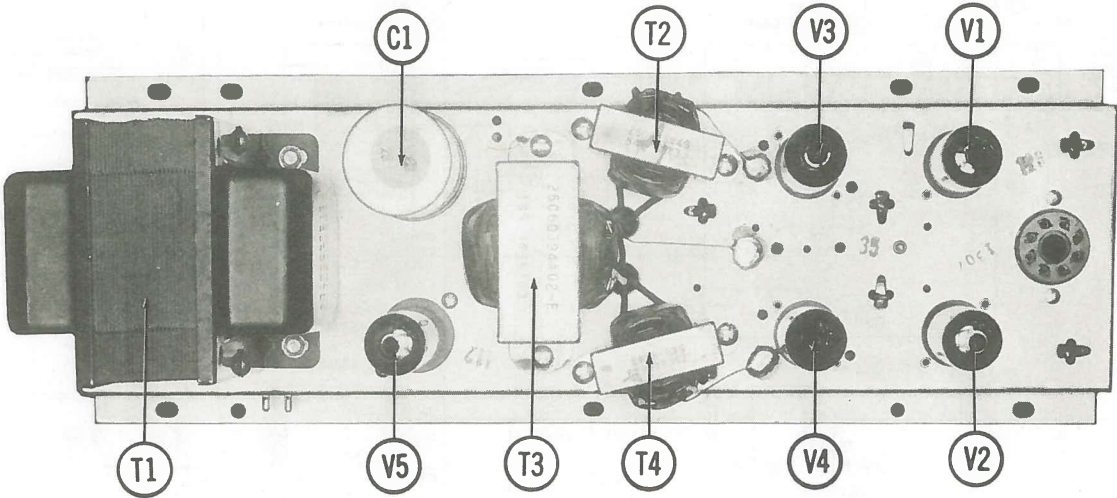
General-use Unshielded Hook-up Wire ..... Use BELDEN No. 8530 (Solid) Available in 12 Colors  
8524 (Stranded) Available in 12 Colors  
Power Cord ..... Use BELDEN No. 17106 (Plastic) or 17126 (Rubber) - 6 Ft.  
17109 (Plastic) or 17129 (Rubber) - 9 Ft.  
Power Cord (Interlock Type) ..... Use BELDEN No. 8874 (Rubber) or 8895 (Plastic)

PHOTOFACT® Folder

MOTOROLA  
POWER AMP CHASSIS HS-909A

IMPORTANT FILING NOTICE

This PHOTOFACT Folder covers equipment used with the TV chassis covered in PHOTOFACT SET 596 FOLDER 1 . File this Folder with the TV Folder in the yellow filing jacket provided.



TYPE SET Power Amplifier  
TUBES Five  
POWER SUPPLY 110-120 Volts AC, 60 Cycle RATING 90 Watts, .78 Amp. @ 117 Volts AC

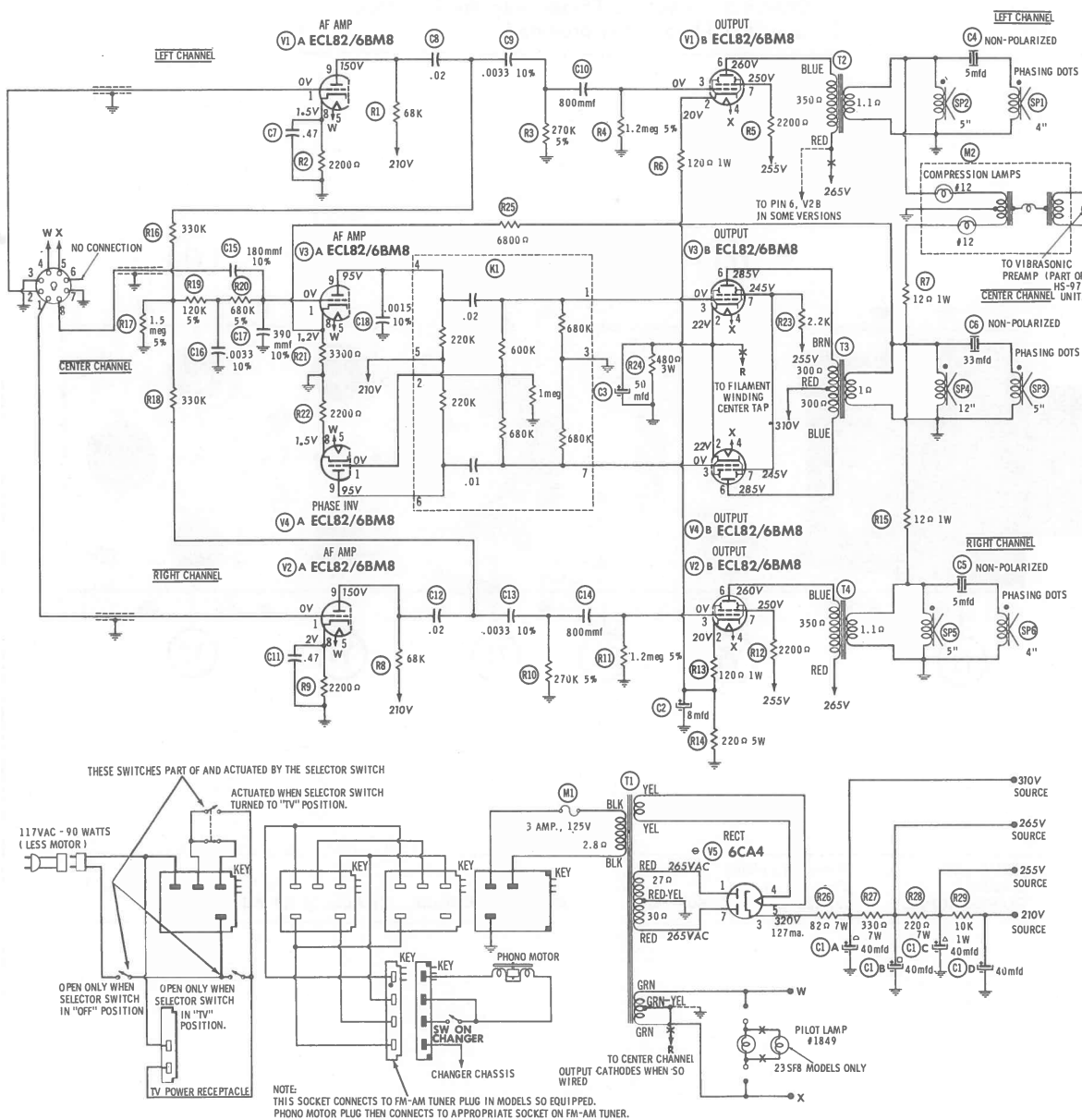
HOWARD W. SAMS & CO., INC. Indianapolis 6, Indiana

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MOTOROLA  
POWER AMP CHASSIS HS-909A

MOTOROLA  
POWER AMP CHASSIS HS-909A



ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V1	ECL82/6BM8	200K	340Ω	1.2meg	FIL	FIL	1770Ω	12700Ω	2200Ω	178K
V2	ECL82/6BM8	200K	340Ω	1.2meg	FIL	FIL	1770Ω	12700Ω	2200Ω	178K
V3	ECL82/6BM8	2.4meg	480Ω	420K	FIL	FIL	1420Ω	12800Ω	2400Ω	1220K
V4	ECL82/6BM8	400K	480Ω	420K	FIL	FIL	1410Ω	12800Ω	2200Ω	1220K
V5	6CA4	27Ω	NC	1900K	FIL	FIL	NC	29Ω	NC	NC

1 THIS READING WILL VARY DEPENDING UPON THE CONDITION OF THE ELECTROLYTIC IN THE CIRCUIT.  
 2 THIS READING WILL VARY, CONTROL SET FOR NORMAL OPERATION.  
 3 MEASURED FROM PIN 3 OF V5.

NC NO CONNECTION

A PHOTOFACT STANDARD NOTATION SCHEMATIC  
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MOTOROLA  
 POWER AMP CHASSIS HS-909A

## PARTS LIST AND DESCRIPTIONS

### TUBES

ITEM No.	USE	TYPE	ITEM No.	USE	TYPE
V1	Left Channel AF Amp. - Output	ECL82/6BM8	V3	Center Channel AF Amp. - Output	ECL82/6BM8
V2	Right Channel AF Amp. - Output	ECL82/6BM8	V4	Center Channel Phase Inv. - Output	ECL82/6BM8
			V5	Rectifier	6CA4 (EZ81) *

\* Alternate

### ELECTROLYTIC CAPACITORS

ITEM No.	RATING	MOTOROLA PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	GENERAL ELECTRIC PART No.	MALLORY PART No.	PYRAMID PART No.	SPRAGUE PART No.
C1A	40	23D60190A01	AFH4-18-45	D0177	XC4-80	FP377	TMQ-4652	TVL-4775
C1B	40					TC78		
C1C	40							
C1D	40							
C2	8	23C60119A02	PRSI405	BBR8-150	MT1-5	TC41	TD-8-150	TVA-1405
C3	50	23C60119A06	PRSI350	BR50-50	MT1-17	TC39	TD-50-50	TVA-1308
C4	5	23B643970	NP-PRS7550	BBR8-150	NPQT-1	TCN505		TVANS-1303.1*
C5	5	23B643970	NP-PRS7550	BBR8-150	NPQT-1	TCN505		TVANS-1303.1*
C6	33	23K754512	NP-PRS7450	BR40-150	NPQT-5.1	TCN1540		TVANS-1206.1*

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

### FIXED CAPACITORS

ITEM No.	RATING	REMARKS	AEROVOX PART No.	CORNELL-DUBILIER PART No.	ELMENCOR PART No.	MALLORY PART No.	SPRAGUE PART No.
C7	.47 10V	#21A60776A01	P488N-02	UK10-474	4DP-2-203	GEM-412	4TM-S20
C8	.02 400V		DI-3300	DD-203	CCD-332	GP233	10TS-D33
C9	.0033 10%		BPD-0008	DD-332	CCD-801	B-382	10TS-T80
C10	800			DD-801			
C11	.47 10V		P488N-02	UK10-474	4DP-2-203	GEM-412	4TM-S20
C12	.02 400V		DI-3300	DD-203	CCD-332	GP233	10TS-D33
C13	.0033 10%		BPD-0008	DD-332	CCD-801	B-382	10TS-T80
C14	800			DD-801			
C15	180		DI-180	DD-181	CCD-181	GP318	10TS-T18
C16	.0033 10%		DI-3300	DD-332	CCD-332	GP233	10TS-D33
C17	390		DI-390	DD-391	CCD-391	GP339	10TS-T39
C18	.0015 10%		DI-1500	DD-152	CCD-152	GP215	10TS-D15

# Motorola Part Number

### RESISTORS

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

ITEM No.	RATING	REPLACEMENT DATA	ITEM No.	RATING	REPLACEMENT DATA
R1	68K	IRC PART No. WORKMAN PART No. REMARKS	R16	330K	IRC PART No. WORKMAN PART No. REMARKS
R2	2200Ω		R17	1.5meg 5%	
R3	270K 5%		R18	330K	
R4	1.2meg 5%		R19	120K 5%	
R5	2200Ω		R20	680K 5%	
R6	120Ω 1W		R21	3300Ω	
R7	12Ω 1W		R22	2200Ω	
R8	68K		R23	2200Ω	
R9	2200Ω		R24	480Ω 3W	PW5-480 5W-SQ-480
R10	270K 5%		R25	6800Ω	
R11	1.2meg 5%		R26	82Ω 7W	PW7-82 7W-SQ-82
R12	2200Ω		R27	330Ω 7W	PW7-330 7W-SQ-330
R13	120Ω 1W		R28	220Ω 7W	PW7-220 7W-SQ-220
R14	220Ω 5W	PW5-220 5W-SQ-220	R29	10K 1W	
R15	12Ω 1W				

### COMPONENT COMBINATIONS

ITEM No.	USE	DESCRIPTION	MOTOROLA PART No.	REPLACEMENT DATA
K1	Audio Couplate	.01mfd, .02mfd, 220K, 220K, 600K, 680K, 680K, 680K, 1meg	51B60422A01	

### TRANSFORMER (POWER)

ITEM No.	RATING	REPLACEMENT DATA	NOTES
T1	PRI.	MOTOROLA PART No.	25K646988-C
	SEC. 1	MERIT PART No.	
	SEC. 2	STANCOR PART No.	
	SEC. 3	THORDARSON PART No.	
	SEC. 4	TRIAD PART No.	
	SEC. 5		
	6.3VAC C/T @ 3.4A		



# PHOTOFACT® Folder



V-M MODELS 1571,  
1572, 1586, 1587

V-M MODELS 1571,  
1572, 1586, 1587



MODEL 1586



MODEL 1587

V-M MODELS 1571,  
1572, 1586, 1587

## GENERAL INFORMATION

V-M Models 1571, 1572, 1586, and 1587 are basically alike in design and construction. Model 1571 is the basic record changer and Models 1572, 1586, and 1587 are variations thereof. Model 1571 is equipped with a 4-speed, 2-pole motor and a stereo cartridge with a .7 mil diamond stylus and a 3 mil sapphire stylus. Model 1572 is equipped with a 4-speed, 4-pole motor and a plug-in tone arm head for magnetic cartridges. Model 1586 is a Model 1571 mounted on a high-impact plastic base. Model 1587 is a Model 1572 mounted on a high-impact plastic base.

These changers are designed to play up to twelve 10-inch records, ten 12-inch records or fourteen 7-inch records, with 45 rpm spindle adaptor, in automatic sequence and shut off after playing the last record.

A velocity type trip, which requires a rapid acceleration of the tone arm to actuate the trip mechanism, is used in these changers.

Connect these changers to a 117V, 60 cycle, AC source only, unless otherwise specified.

Manufactured By:

V-M Corporation  
375 W. Main Street  
Benton Harbor, Michigan

**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 CQ456

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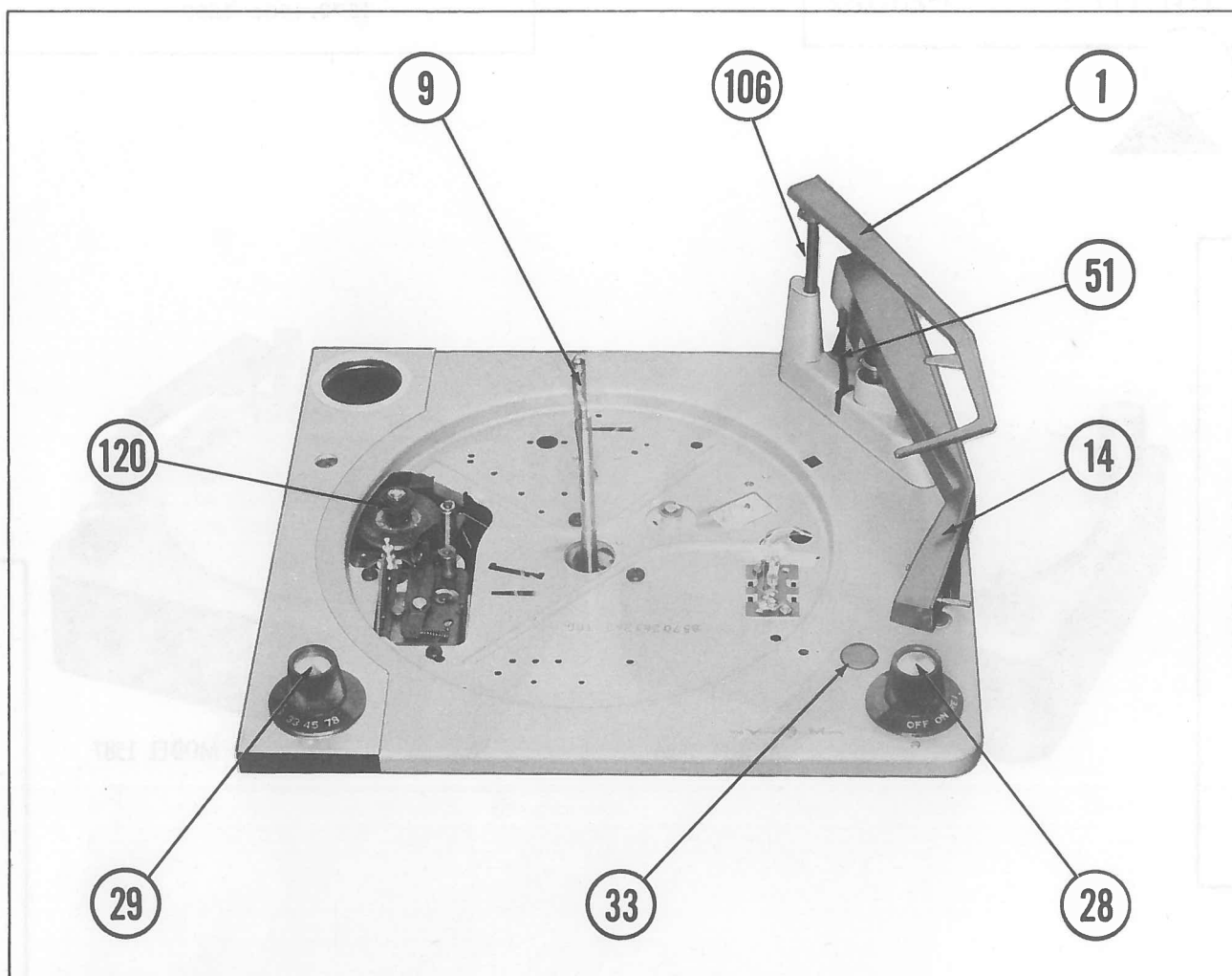


Fig. 1. Top View With Turntable Removed.

## OPERATING INSTRUCTIONS

### Loading

1. Pull record support arm (1) straight up until it clears the spindle and swing it to the right as far as it will go.

2. Place records on spindle so that bottom record rests on the spindle record shelf. Hold records in place and swing the record support back towards the spindle and lower it on top of records.

### Starting

1. Set speed control and stylus selector to the proper position for the records to be played.

2. Turn OFF-ON-REJ knob to "REJ" and release. The changer will now cycle and automatically play the records.

### Rejecting

To reject a record at any time while the changer is operating, turn the OFF-ON-REJ knob to "REJ" and release.

### Manual Operating

To play records manually - lift the record support clear of the center spindle and swing it to the right as far as it will go. Turn OFF-ON-REJ knob to "REJ" and release. This will cause the changer to cycle, however, the tone arm will drop onto the rest post. The changer is now ready for manual operation. Select proper speed and stylus, then place a single record on the turntable. Lift the tone arm from the rest post and place it on the record. When the record has finished playing, the changer will again cycle and return the tone arm to the rest post. The record can then be removed and another placed on the turntable.



TROUBLE CHART (Cont'd)

SYMPTOM	CAUSE	REMEDY
	5. Reset lever spring (84) broken.	Replace spring (84).
	6. 12" record selector spring (52) broken.	Replace spring (52).
	7. 12" record selector (51) binding.	The 12" record selector must be free to operate smoothly. Clean out dirt and straighten if bent, or replace.
	8. Bent tone arm return locator (61).	Straighten or replace.
	9. Bent trip finger cam (66).	Straighten or replace.
Needle does not set down on 7" record properly.	1. 7" set-down lever spring (86) broken or weak.	Replace.
	2. Tone arm not adjusted properly.	(See "Adjustments".)
	3. 7" set-down lever screw (88) loose.	Tighten.
	4. 7" set-down lever (87) hitting frame or base-plate where it goes through hole in frame.	Straighten or replace.
	5. Reset lever (83) bent.	Replace.
	6. 7" set-down lever (87) does not fall into opening in main gear.	
	7. Bent tone arm return locator (61).	Straighten or replace
	8. Bent trip finger cam (66).	Straighten or replace.
Changer does not cycle when record has been played.	1. No finishing trip groove on record.	Check record for eccentric trip groove in center of record. Some old records and home recordings do not have this eccentric trip groove.
	2. Needle jumps out of grooves in record.	(a) Check trip pressure; the lateral pressure should not exceed 3 grams, (if pressure is excessive, see "Changer Trips Before Needle Reaches End of Record").  (b) The record may be defective; the finishing groove is often too shallow. Check with a record that is known to be good.

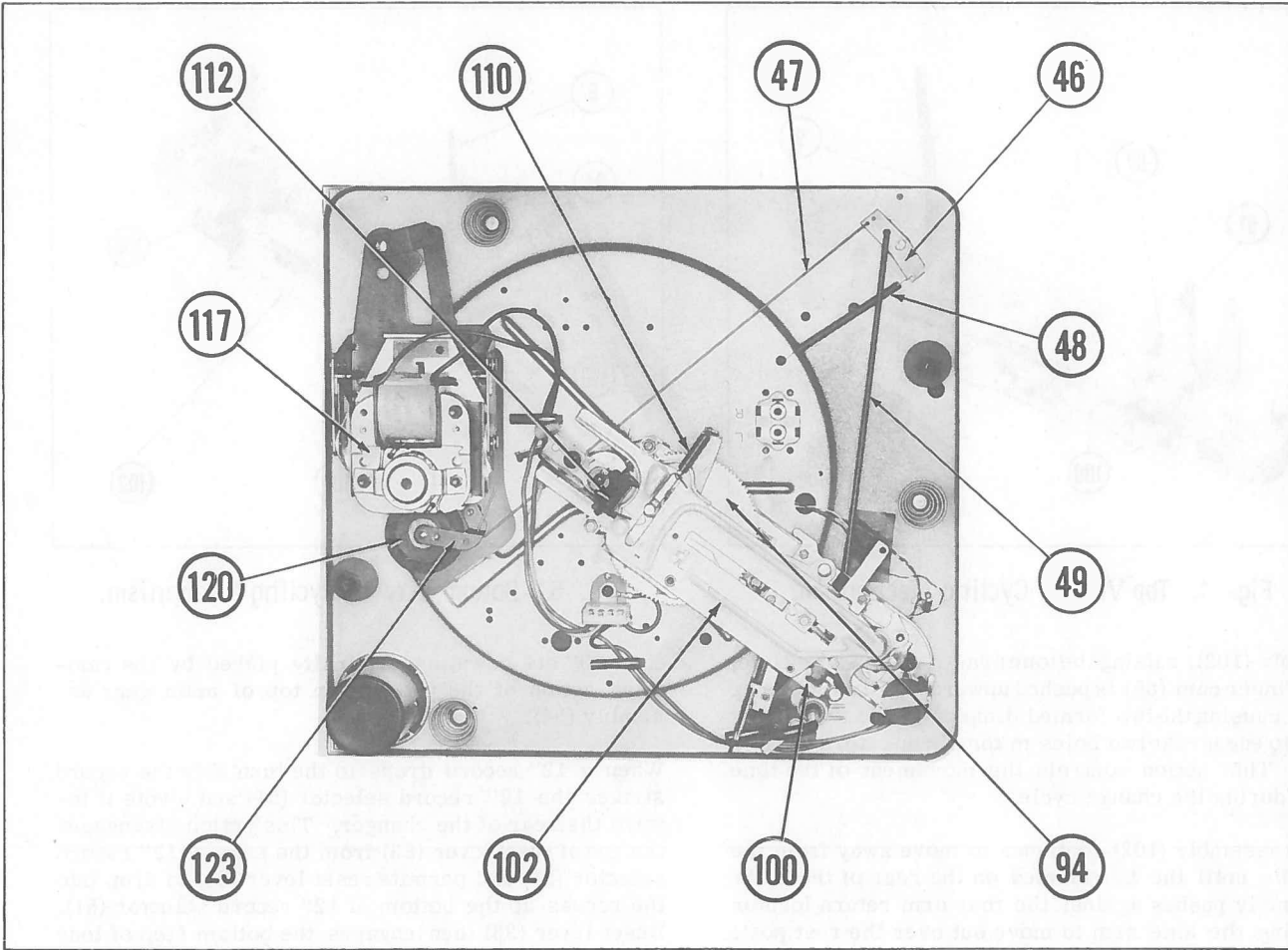


Fig. 2. Bottom View of Changer.

CHANGE CYCLE

Observe the change cycle operation while manually rotating the turntable. The following description can then be readily followed, and the function of each part more easily understood.

This changer has a velocity trip mechanism. The change cycle is started by the faster inward motion of the tone arm when the needle enters the trip grooves at the end of a record. Only records having fast finishing grooves will operate this trip.

The tone arm and trip finger cam and shaft assembly (66) are connected so that they move in unison. As the tone arm nears the end of a record, trip finger cam (66) pushes trip link (100), thus engaging and pivoting trip lever (99). As trip lever (99) pivots, pawl lever (97) pivots with it and carries the trip pawl toward the turntable hub. While a record is playing the small motions of the trip pawl are not sufficient to cycle the mechanism because, on each revolution of the turntable, the wiping contact by the hub projection moves the trip pawl back.

When the needle enters the lead out groove, the trip pawl is moved far enough to definitely engage the pro-

jection on the turntable hub. The contact between the trip pawl and the turntable hub projection gives the necessary push required to engage the teeth on main gear assembly (94) with the teeth on the turntable hub causing main gear (94) to rotate. This action starts the lateral travel of slide assembly (102). Slide assembly (102) is moved toward the rear by an eccentric mounted pin on main gear assembly (94). This pin rides in the cross slot in slide assembly (102).

As the slide assembly begins to move, lift pin (22) rides up the inclined surface on the rear of slide as-

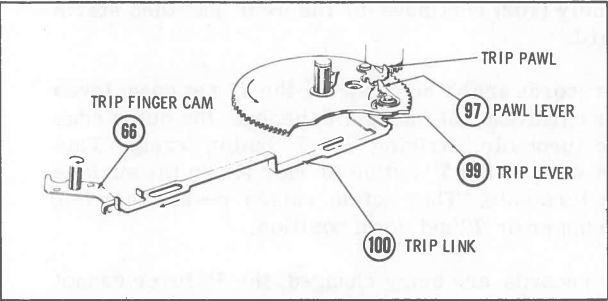


Fig. 3. Trip Mechanism Parts.

V-M MODELS 1571,  
1572, 1586, 1587

FOLDER 1A

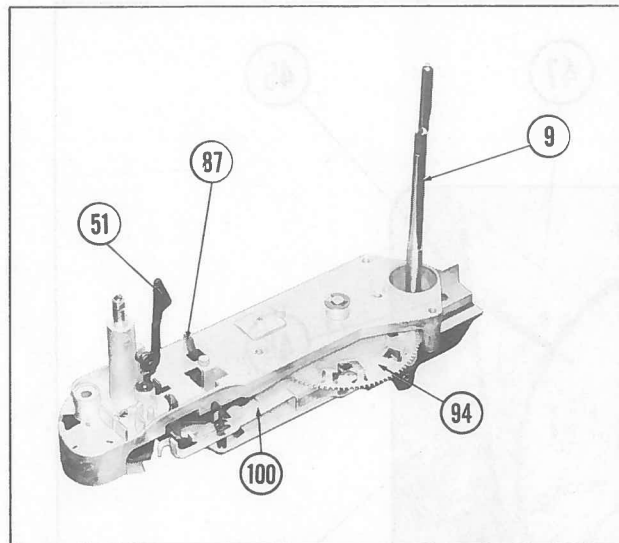


Fig. 4. Top View of Cycling Mechanism.

sembly (102), raising the tone arm. At the same time, trip finger cam (66) is pushed upward by lift pin spring (69), causing the two formed dimples in the trip finger cam to engage the two holes in tone arm return locator (61). This action controls the movement of the tone arm during the change cycle.

Slide assembly (102) continues to move away from the spindle until the tab formed on the rear of the slide assembly pushes against the tone arm return locator causing the tone arm to move out over the rest post.

A tab on the front of slide assembly (102) now comes in contact with the ejector bracket assembly, causing it to push spindle push rod (78) upward. This action causes the record pusher, in the spindle assembly, to drop the next record to the turntable.

Simultaneously, the trip pawl on top of main gear assembly (94) contacts and rides along the curved finger of retard assembly (91). After leaving the finger of retard assembly (91), the trip lever assembly comes in contact with the trip link guide rivet. This action cams the pawl into the trip position again; however, before the change cycle is completed the trip pawl is reset by a tab located near the cross slot in slide assembly (102).

At this time, the cam surface of the bracket on top of main gear assembly (94) moves reset lever (83) into its mid position (10" set down), where reset lever (83) is held by 12" selector (51). During this time slide assembly (102) continues to the rear and then starts forward.

If 7" records are being changed, the 7" set down lever comes up through the baseplate, beneath the outer edge of the turntable, striking the 7" button ramp. This action causes the 7" button to rise above the surface of the turntable. This action raises reset lever (83) to the upper or 7" set down position.

If 10" records are being changed, the 7" lever cannot rise sufficiently to allow 7" set down since the button on the turntable is held down by the 10" record. Consequently, reset lever (83) remains in the midposi-

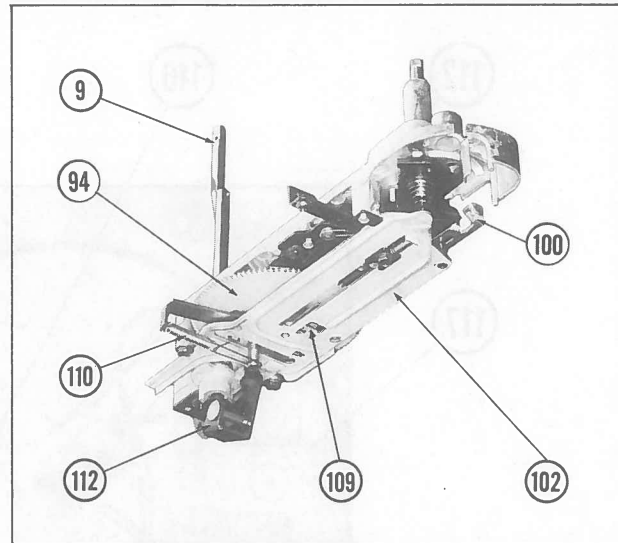


Fig. 5. Bottom View of Cycling Mechanism.

tion (10" set down) as originally placed by the camming action of the bracket on top of main gear assembly (94).

When a 12" record drops to the turntable the record strikes the 12" record selector (51) and pivots it toward the rear of the changer. This action disengages the end of reset lever (83) from the edge of 12" record selector (51) and permits reset lever (83) to drop into the recess at the bottom of 12" record selector (51). Reset lever (83) then engages the bottom step of tone arm return locator (61), positioning the tone arm for 12" set down.

As slide assembly (102) continues forward, the tab on the rear of the slide moves clear of tone arm return locator (61) and trip finger cam (66), which are still locked together. This action permits tone arm return spring (60) to move the tone arm inward until one of the three set down steps in tone arm locator (61) strikes reset lever (83), stopping the inward travel of the tone arm directly above the point of landing. The tone arm is then lowered to the lead in groove of the record as lift pin (22) rides down the incline on the rear of slide assembly (102). As pressure is released from lift pin spring (69), trip finger cam (66) and tone arm return locator (61) separate, permitting the tone arm to track freely across the record.

After the record has played and the mechanism trips, the preceding sequence of cycling and playing of records is again followed until only the last record of the stack remains on the spindle shelf.

As the last record of the stack drops to the turntable, record support (1) drops below the shelf on spindle assembly (9) and the lower end of record support shaft (106) contacts the stop arm on record support guide assembly (107). The stop arm in turn applies pressure to shut-off lever (90). At this moment, cycling slide (102) is in its outermost position (away from the spindle), and the end of shut-off lever (90) is forced against escape lever (102A), preventing shut-off lever (90) from lowering further.

## TROUBLE CHART (Cont'd)

SYMPTOM	CAUSE	REMEDY
		To insure that the record finger is all the way forward, push rod (78) should be raised high enough by the ejector lever to slightly compress the pusher spring. (See "Turntable Stalls During Cycle".) If the spring is compressed and the record finger does not move far enough forward to eject a record, the spindle (9) should be replaced. If a record is not pushed completely off the ledge it may hang on the spindle momentarily, then drop on the tone arm when it moves in over the turntable.
	3. Check that ball bearing (75) is not missing.	Replace.
Two records drop at once.	1. Hole in record too large.	Check the diameter of the hole in the record. An oversize hole will cause two records to drop at once.
	2. Spindle guide not fully down.	If the spindle guide is not all the way down, more than one record may drop at a time.  (a) Check the guide to be sure it is free and does not bind at any point. Clean out foreign matter or straighten if necessary. Do not oil.  (b) When records are placed on the spindle, be sure the guide is all the way down. The guide will normally raise as a record is being dropped, but it should return to place immediately, by gravity.
	3. Slight play in spindle.	Tighten spindle set screw (71).
Needle does not set down on 12" record in proper position.	1. Diameter of 12" record undersize.	The set-down position of the needle for 12" records is determined by the edge of the record striking the 12" record selector (51). If a 12" record has a diameter of less than the standard size of 11-7/8" plus or minus 1/32", it may fail to depress the 12" record selector far enough.
	2. Enlarged center hole in record.	An enlarged center hole might fail to set the 12" record selector because it could produce the same effect as a small record.
	3. Tone arm not adjusted properly.	(See "Adjustments".)
	4. Binding of tone arm shaft and sleeve (66).	Clean and polish shaft (66) and lubricate with light oil.



TROUBLE CHART (Cont'd)

SYMPTOM	CAUSE	REMEDY
	3. Shut-off bracket binding.	Check bracket and if bent, straighten.
	4. Shut off lever not engaging locator.	Adjust tab on slide that rotates the locator and trip finger.
Rough tone arm motion.	1. Horizontal defects.	(a) Check tone arm return locator (61) for tightness.  (b) Check that tone arm return spring (60) is not weak and is hooked up properly.
	2. Vertical defects.	(a) Lift pin (22) binding; clean out dirt and lubricate.  (b) Slide and cam (102) binds; check bearing points - clean and lubricate.  (c) Burrs in main slot in slide and cam (102) - remove with fine file.  (d) Ejector lever on ejector bracket assembly (112) binding. Straighten, remove burrs, and lubricate.  (e) Tone arm shaft and sleeve binding; clean and lubricate.
Noise during change cycle.	1. Tines on the forked end of the slide and cam assembly (102) bent.	Replace.
	2. Lack of lubrication. Grinding noise.	Lubricate ejector lever (112) where it contacts slower end of push rod (78).
Shuts of when last record drops.	1. Shut-off bracket (107) bent.	Straighten or replace.
	2. Record support bent.	Bend record support (1) until parallel with baseplate.
	3. Loose shut-off lever assembly (90).	Tighten.
	4. Escape lever spring (109) missing.	Replace.
Record does not drop when changer cycles.	1. Spindle push rod (78) broken, or bent.	Replace push rod (78).
	2. Record finger in spindle not moving far enough to eject a record.	The record finger should move forward until it has reached a point flush with, or a maximum of, .010 beyond the spindle body (9).

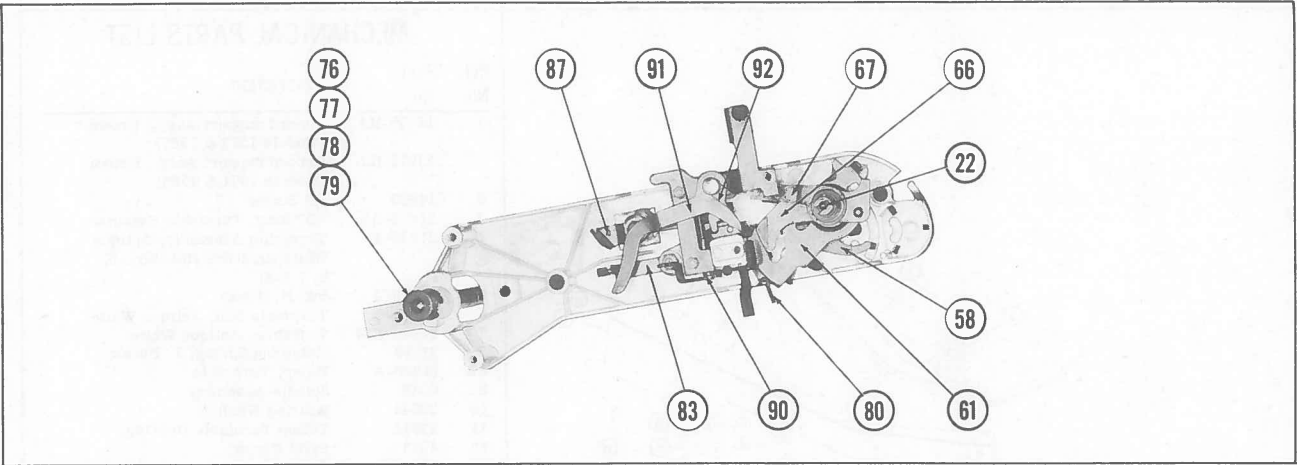


Fig. 6. Bottom View of Cycling Mechanism With Slide and Cam Gear Removed.

As the cycling slide returns to the out-of-cycle position, the end of shut-off lever (90) slides off escape lever (102A), permitting the end to extend down through the slot in the cycling slide. By this time, tone arm

locator (61), has rotated too far to be blocked by shut-off lever (90), and the tone arm is permitted to land on the record.

After the last record has played, the mechanism again goes into cycle. When cycling slide (102) has reached its outermost position, the force applied to shut-off lever (90) from record support shaft (106) causes the end of shut-off lever (90) to extend through the slot in cycling slide (102). The other end of shut-off lever (90) raises and prevents tone arm locator (61) from rotating. This action positions the tone arm directly over tone arm rest post (32).

As cycling slide (102) moves back toward the spindle, trip link (100) pushes control lever (58), actuating AC switch (57) and shutting off the power. As slide assembly (102) returns to out-of-cycle position, lift pin (22) rides down the inclined surface of the slide, lowering the tone arm to the rest post (32).

In manual play, when the record support is raised and rotated to the extreme right, it releases the pressure placed on shift lever (80) by the shift lever spring. When changer cycles, shift lever (80) is free to drop down far enough to keep locator plate (61) from turning; thus, each time the changer cycles, the tone arm will return to the rest post (as in automatic shut-off) but the motor will be left running.

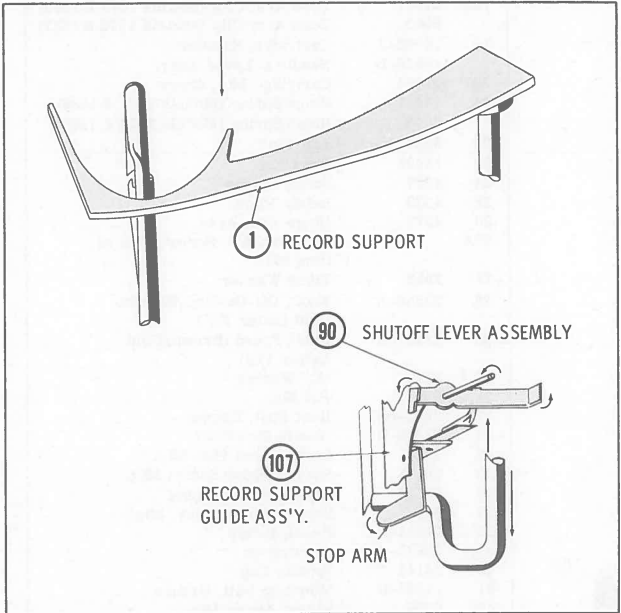


Fig. 7. Shutoff Mechanism Parts.

LUBRICATION

Additional lubrication should not be required for the life of the changer. However, if the changer has had extreme usage, or if parts are replaced, lubricate as follows:

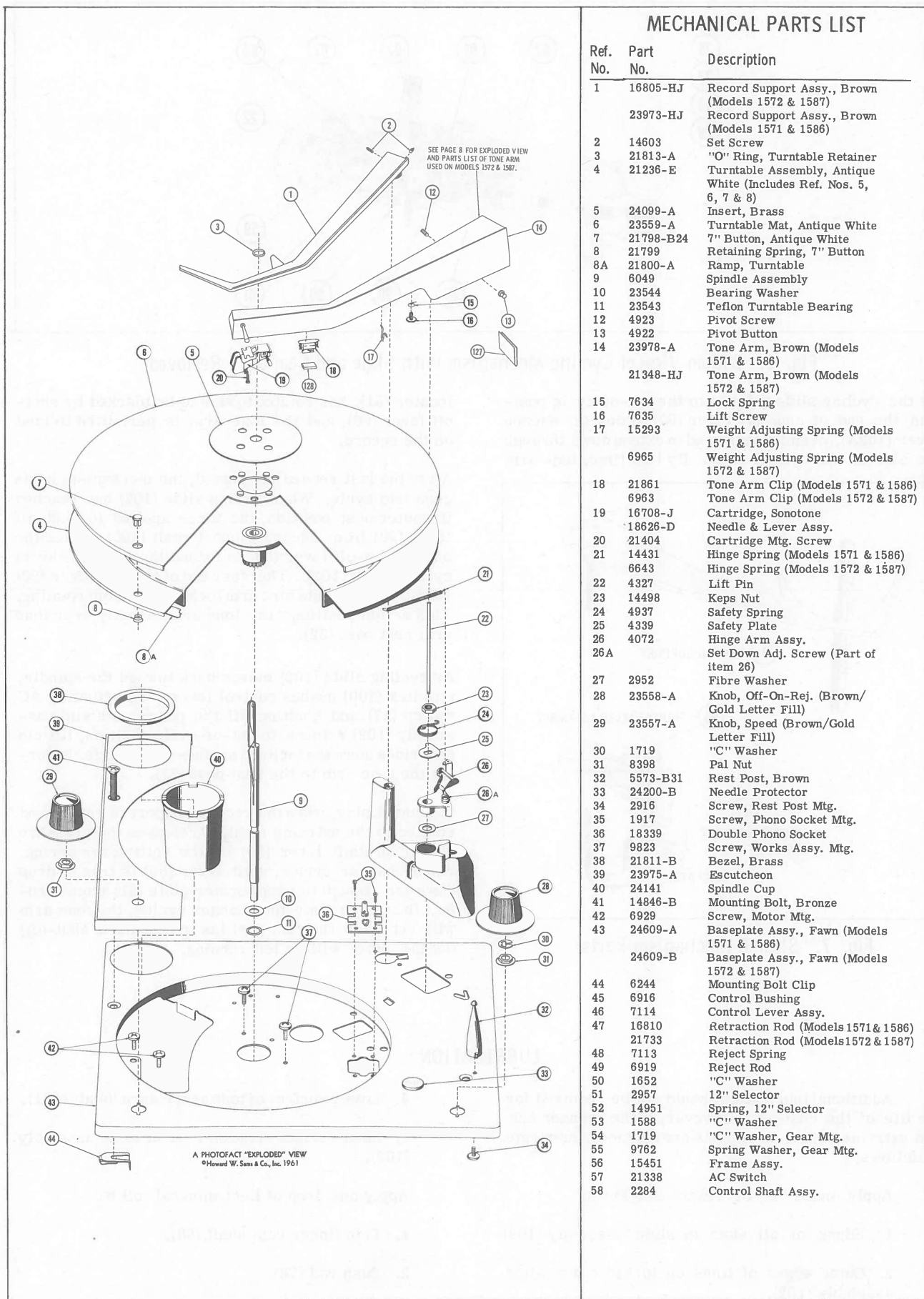
Apply Andok "B" or Texaco Sta-Put to:

1. Edges of all slots in slide assembly (102)
2. Outer edges of tines on forked end of slide assembly (102).
3. Lift pin cam surface on slide assembly (102).

4. Lower surface of tone arm return locator (61).
5. Inner surface of tab on rear of slide assembly (102).

Apply one drop of light mineral oil to:

1. Trip finger cam shaft (66).
2. Push rod (78).
3. Top and bottom motor bearings.



# MECHANICAL PARTS LIST

Ref. No.	Part No.	Description
1	16805-HJ	Record Support Assy., Brown (Models 1572 & 1587)
	23973-HJ	Record Support Assy., Brown (Models 1571 & 1586)
2	14603	Set Screw
3	21813-A	"O" Ring, Turntable Retainer
4	21236-E	Turntable Assembly, Antique White (Includes Ref. Nos. 5, 6, 7 & 8)
5	24099-A	Insert, Brass
6	23559-A	Turntable Mat, Antique White
7	21798-B24	7" Button, Antique White
8	21799	Retaining Spring, 7" Button
8A	21800-A	Ramp, Turntable
9	6049	Spindle Assembly
10	23544	Bearing Washer
11	23543	Teflon Turntable Bearing
12	4923	Pivot Screw
13	4922	Pivot Button
14	23978-A	Tone Arm, Brown (Models 1571 & 1586)
	21348-HJ	Tone Arm, Brown (Models 1572 & 1587)
15	7634	Lock Spring
16	7635	Lift Screw
17	15293	Weight Adjusting Spring (Models 1571 & 1586)
	6965	Weight Adjusting Spring (Models 1572 & 1587)
18	21861	Tone Arm Clip (Models 1571 & 1586)
	6963	Tone Arm Clip (Models 1572 & 1587)
19	16708-J	Cartridge, Sonotone
	18626-D	Needle & Lever Assy.
20	21404	Cartridge Mtg. Screw
21	14431	Hinge Spring (Models 1571 & 1586)
	6643	Hinge Spring (Models 1572 & 1587)
22	4327	Lift Pin
23	14498	Keps Nut
24	4937	Safety Spring
25	4339	Safety Plate
26	4072	Hinge Arm Assy.
26A		Set Down Adj. Screw (Part of item 26)
27	2952	Fibre Washer
28	23558-A	Knob, Off-On-Rej. (Brown/Gold Letter Fill)
29	23557-A	Knob, Speed (Brown/Gold Letter Fill)
30	1719	"C" Washer
31	8398	Pal Nut
32	5573-B31	Rest Post, Brown
33	24200-B	Needle Protector
34	2916	Screw, Rest Post Mtg.
35	1917	Screw, Phono Socket Mtg.
36	18339	Double Phono Socket
37	9823	Screw, Works Assy. Mtg.
38	21811-B	Bezel, Brass
39	23975-A	Escutcheon
40	24141	Spindle Cup
41	14846-B	Mounting Bolt, Bronze
42	6929	Screw, Motor Mtg.
43	24609-A	Baseplate Assy., Fawn (Models 1571 & 1586)
	24609-B	Baseplate Assy., Fawn (Models 1572 & 1587)
44	6244	Mounting Bolt Clip
45	6916	Control Bushing
46	7114	Control Lever Assy.
47	16810	Retraction Rod (Models 1571 & 1586)
	21733	Retraction Rod (Models 1572 & 1587)
48	7113	Reject Spring
49	6919	Reject Rod
50	1652	"C" Washer
51	2957	12" Selector
52	14951	Spring, 12" Selector
53	1588	"C" Washer
54	1719	"C" Washer, Gear Mtg.
55	9762	Spring Washer, Gear Mtg.
56	15451	Frame Assy.
57	21338	AC Switch
58	2284	Control Shaft Assy.

## TROUBLE CHART (Cont'd)

SYMPTOM	CAUSE	REMEDY
Changer continues to cycle.	Reject mechanism binding.	(a) Make certain trip link (100) is not frozen in the reject position.  (b) Make certain changer control lever (58) is not binding and that it actuates trip link (100) when the changer control knob (28) is turned to reject.  (c) Check for binding of trip pawl, trip lever (99) and pawl lever (97); these must be free to turn easily.  (d) Check the changer control linkage, (49) and (58).
Noise during playing of record.	1. Motor rumble.  2. Defective motor idler.	If a low-pitched rumbling sound comes from the loud speaker while a record is being played, check motor grommets to be sure the motor is freely suspended on them. The motor lead wires should have slack to allow the motor to float. Motor rumble may also come from an unbalanced motor rotor; in this case, replace the motor.  A rapid thumping sound while the motor is running may indicate a flat spot on the motor idler wheel. If this condition does not clear up after ten minutes of running time, remove the turntable and check the rubber tire on the idler. If the surface of the rubber tire is not smooth and even, replace the part. Should the bearing of the idler wheel show signs of excessive wear or be extremely wobbly, the idler wheel should be replaced.
	3. Turntable scrapes.	If a scraping sound occurs as the turntable revolves, check;  (a) Turntable warped, causing outer rim to rise and fall.  (b) Motor idler or mounting plate bent.
	4. Squeaks.	Squeaking sound as changer operates indicates lack of oil. Lubricate points indicated under "Lubrication".
Changer does not shut off after last record has been played.	1. Record support (1) binding.  2. Lever assembly (90) binding.	The record support must drop below the off-set shoulder of the spindle or the changer will not shut off.  Clean out dirt and make sure lever operates smoothly.

Fig. 8. Exploded View of Parts Above Baseplate.

TROUBLE CHART (Cont'd)

SYMPTOM	CAUSE	REMEDY
Control knob cannot be turned to "On" position.	1. Machine shut off during cycle.	Turn the turntable clockwise, by hand, until control knob (28) is free.
Tone arm strikes records on spindle when it raises, or tone arm rest when it moves out.	1. Tone arm height not adjusted properly.	(See instructions for adjusting tone arm height under "Adjustments".)
Turntable speed too slow (refer to exploded view).	1. Binding in turntable bearing.	Check the turntable bearing for freedom. Hold the motor idler wheel out of engagement with the turntable and spin the turntable, by hand, to see if it turns readily and coasts for a long time. If binding occurs, remove turntable, clean off foreign matter, and lubricate with light mineral oil.
	2. Line voltage too low.	The line voltage should not be less than 105 volts or the turntable may be too slow.
Turntable stalls or slows down during cycle; refer to exploded view.	1. Motor idler not engaging turntable.	(See "Turntable Does Not Revolve When Control Knob is Turned to "On Position").
	2. Binding in drive mechanism.	Hold idler away from turntable, or remove idler wheel. Cycle machine by turning turntable slowly by hand. The main gear should turn freely for the complete revolution without binding at any point.  (a) If binding occurs, check for foreign matter in the gear teeth, a bent gear bearing, or bent spindle bushing.  Straighten or replace. Clean and lubricate.
	3. Binding between pick-up arm lift pin (22) and lift pin cam surface on slide and cam assembly.	Lift pin should ride freely on cam surface without binding.
	4. Motor weak.	When everything checks all right, but the changer still stalls in cycle, the motor may be weak.
	5. Grease on idler wheel.	Wipe off idler wheel rubber tire, inner rim of turntable, and motor pulley, with naphtha or alcohol.
	6. Idler wheel tension spring weak.	Replace spring.

MECHANICAL PARTS LIST (Cont'd.)

Ref. No.	Part No.	Description	
59	24073	Screw, Works Mtg.	
60	9533	Return Spring	
61	6405	Locator & Bushing Assy.	
62	5828	Locator Ring	
63	21339	Fibre Insulating Strip	
64	2573	Switch Cover	
65	4212	Retainer, Switch Cover	
66	15450	Finger & Shaft Assy.	
67	9557	Retard Lever	
68	9510	Anti-Skate Spring	
69	9509	Lift Pin Spring	
70	1588	"C" Washer	
71	6955	Set Screw	
72	23548	Insulator, Amplok	
73	19800	Amplok Housing	
74	8686	Screw, Amplok Housing Mtg.	
75	6884	Spindle Ball	
76	5022	"C" Washer	
77	6885	Safety Spring	
78	6874	Push Rod	
79	6883	Thrust Washer	
80	16807	Shift Lever	
81	16808	Pin, Shift Lever	
82	6713	Screw, Shift Lever	
83	20886	Reset Lever	
84	24689	Spring, Reset Lever	
85	9849	Screw	
86	24021	Spring, 7" Lever	
87	21791	7" Lever	
88	9849	Screw	
89	9663	Spring, Shut-Off Lever	
90	6966	Shut-Off Lever Assy.	
91	19153	Retard Assy.	
92	16817	Spring, Retard Arm	
93	6713	Screw, Retard Assy. Mtg.	
94	19873	Gear Assy.	
95	1588	"C" Washer	
96	19872	Spring	
97	5339	Pawl Lever	
98	5338	Spring, Pawl Lever	
99	2569	Trip Lever Assembly	
100	4656	Trip Link	
101	1588	"C" Washer	
102	7121	Slide Assy.	
102A		Escape Lever	
103	2246	Spring, Slide Bearing	
104	2211	Slide Bearing	
105	9849	Screw, Slide Bearing	
106	6897	Record Support Shaft	
107	18462	Record Support Guide Assy.	
107A		Spring, Shift Lever Actuating	
107B		Spring, Shut-Off Lever Actuating	
108	4857	Screw, Record Support Guide Assy. Mtg.	
109	2585	Spring, Escape Lever	
110	7120	Detent Spring & Link Assy.	
111	9849	Screw	
112	14420	Ejector Bracket	
113	9823	Screw, Ejector Bracket Mtg.	
127	24865-A	Rubber Channel	
128	20994	Felt Pad	
129	1897	Lug	
Ref. No.	Part No.	Description	
	2-Pole Motor	4-Pole Motor	
114	21566	21651	Motor Assy., Complete
115	18398	21594	Motor Basket Assy.
116	5022	5022	"C" Washer
117	7434	6948	Counter Balance Spring
118	9134-B	21789	Motor
119	1652	1652	"C" Washer
120	2583	2583	Fibre Washer
121	19388	20834	Idler Wheel
122	1652	1652	"C" Washer
123	7437	6901	Idler Link
124	7438	21476	Idler Arm Assy.
125	7439	6949	Idler Spring
126	6631	6631	Motor Mounting Grommet
126	6947	6947	Detent Spring

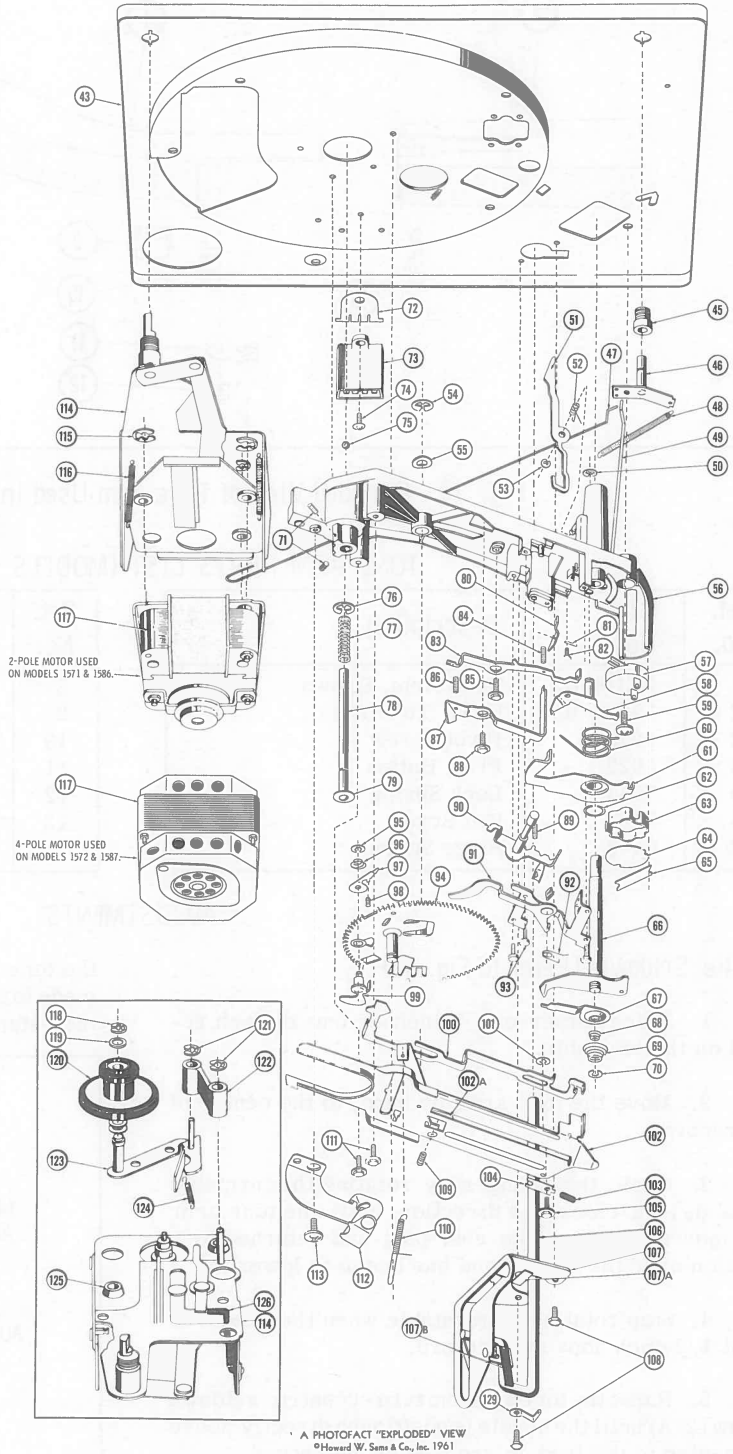


Fig. 9. Exploded View of Parts Below Baseplate.

V-M MODELS 1571,  
1572, 1586, 1587

FOLDER 14



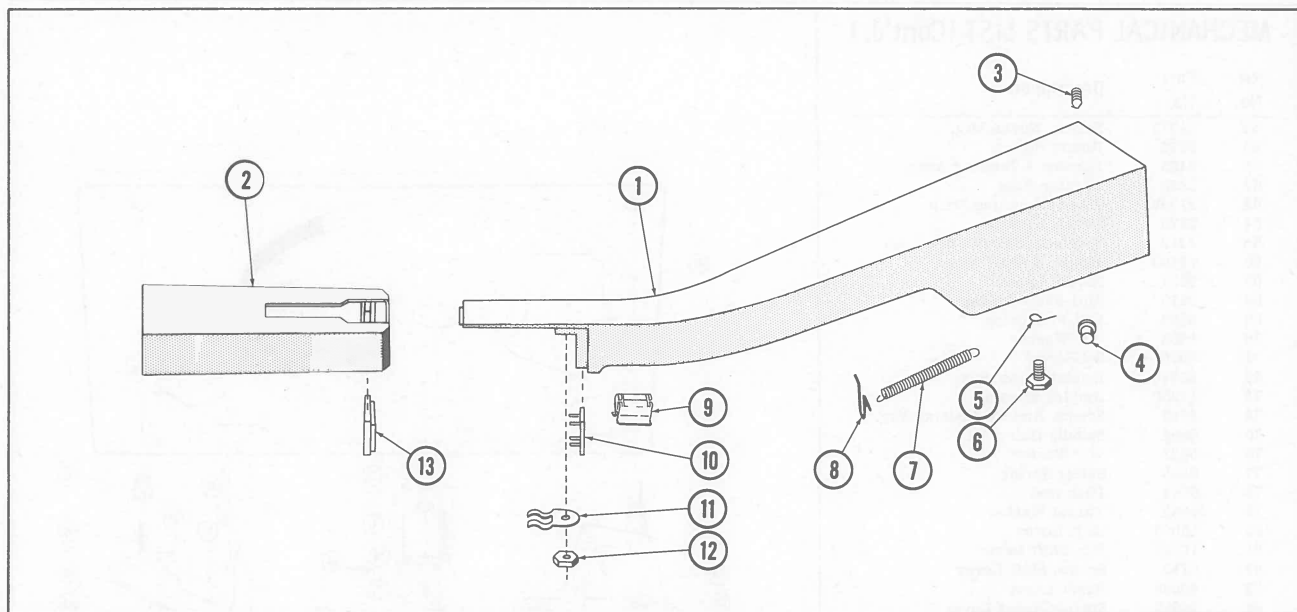


Fig. 10. Exploded View of Tone Arm Used in Models 1572 and 1587.

#### TONE ARM PARTS LIST (MODELS 1572 & 1587)

Ref. No.	Part No.	Description
1	21348-HJ	Tone Arm, Brown
2	15209-HJ	Head, Tone Arm
3	4923	Pivot Screw
4	4922	Pivot Button
5	7634	Lock Spring
6	7635	Lift Screw
7	6643	Hinge Spring

Ref. No.	Part No.	Description
8	6965	Weight Adjusting Spring
9	6963	Tone Arm Clip
10	21350	Plug, 4 Prong
11	21351	Retaining Spring
12	21473	Pal Nut
13	21349	Socket, 4 Prong

#### ADJUSTMENTS

##### Needle Setdown (Refer to Fig. 11)

- Place either one 7-inch or one 10-inch record on the turntable.
- Move the tone arm, by hand, to the center of the record.
- Cycle the changer by rotating the turntable by hand, in a clockwise direction, until the tone arm has moved out over the rest post and returned to a position over the record and has begun to lower.
- Stop rotating the turntable when the needle is about 1/2-inch above the record.
- Raise the tone arm and turn eccentric setdown screw (26A) until the needle is positioned directly above the center of the lead-in grooves of the record.
- Cycle changer automatically and check the needle landing point.

##### Tone Arm Height (Refer to Fig. 11)

The tone arm height is adjusted by means of height adjustment screw (16). To raise the tone arm height, turn this screw counterclockwise. To lower

the tone arm, turn clockwise. Adjustment should be made to that the tone arm lifts 1/4-inch above a 1 1/8-inch stack of records.

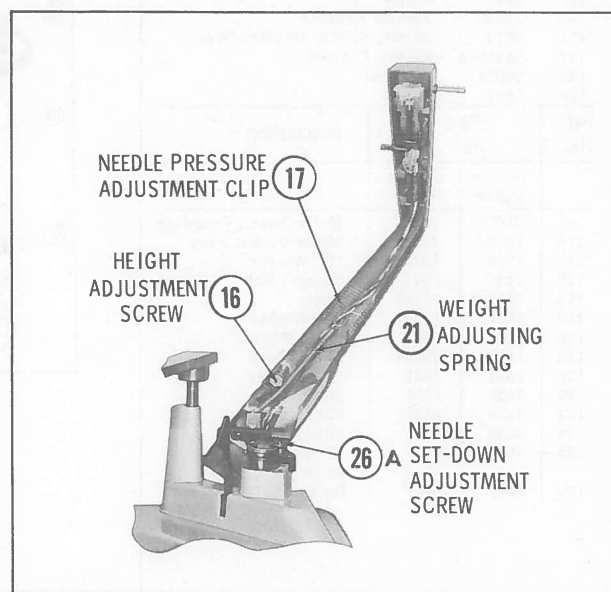


Fig. 11. Tone Arm Adjustment Points.

##### Needle Pressure (Refer to Fig. 11)

Lift weight adjusting spring (17) from the calibrated position (grooves in tone arm) and move to a higher numbered position for less needle pressure or to a lower numbered position for more needle pressure. The needle pressure should be checked with a gram scale and set for 5 to 7 grams.

##### Motor Care

To correct uneven speed (wow), stalling or stoppage of the turntable, clean the drive surfaces marked "X" in Figure . To expose these drive surfaces, remove "O" ring (3) from the spindle and lift the turntable straight up and off the spindle. Use a small amount of carbon tetrachloride on a clean cloth and wipe all drive surfaces clean. Caution: Do not soak parts in carbon tetrachloride.

When replacing the turntable, lift the record guide (located inside the top end of the spindle) up to permit the turntable to pass over the spindle.

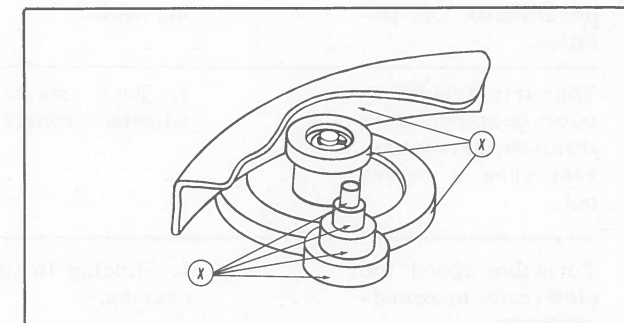


Fig. 12. Motor Drive Surfaces.

#### TROUBLE CHART

SYMPTOM	CAUSE	REMEDY
Turntable does not revolve when control is turned to "On" position.	1. No current at motor.	(a) Check that current is reaching AC leads of changer. (b) Check that switch is closing. (c) Check wiring and soldered terminals in the changer.
	2. Motor defective.	(a) Remove turntable to allow motor to operate without load. If current is reaching motor and drive spindle does not rotate, the motor is defective. Repair or replace.
	3. Motor idler wheel not engaging turntable rim.	If drive spindle is turning but turntable is not:  (a) Check motor idler assembly to determine if it is free to contact the drive spindle and turntable rim.  (b) Wipe off inside rim of turntable (4) to remove dust, or if oily, clean the turntable rim and rubber tire of the idler wheel with naphtha or alcohol.
Changer does not cycle when the control knob is turned to the "Rej." position.	1. The manual reject not actuating the trip.	(a) Turn control knob (28) to the reject position; hold and see that control shaft assembly (58) has moved trip link (100) to the rear. This should actuate the trip pawl on main gear (94) which will bring the spur on the trip pawl in contact with the gear on the turntable hub.  (b) Check for binding of pawl lever (97), trip lever assembly (99) and the trip pawl. If binding occurs, clean out all foreign matter and check for freedom.

TROUBLE CHART (Cont'd)

SYMPTOM	CAUSE	REMEDY
		(c) The needle point may be damaged or affected by an excessive accumulation of dust, lint, etc; check needle pressure as described under "Adjustments".
		(d) There may be binding in the tone arm shaft and sleeve assembly (66) or between the tone arm return locator (61) and the trip finger cam (66); (See "Needle Does Not Track Properly Across Record").
	3. Trip pawl binding on gear face.	The trip pawl must be free to move forward and engage the boss on the turntable hub when the trip lever releases it. Check for burrs or foreign matter lodged between the trip pawl and main gear (94). Do not oil as this might collect dirt and gum up the pawl.
	4. Trip finger cam (66) bent.	Straighten or replace.
	5. Trip link (100) bent.	Straighten or replace.
Changer trips before needle reaches end of record.	1. Hole in record too large.	If the hole in the record is too large, the groove may turn eccentric with the spindle and cause premature tripping.
	2. Binding of trip link (100).	With the trip link released, check the trip link for freedom of motion. It should be free to move without binding.
Record hits tone arm.	1. Record finger not moving far enough forward to eject record.	(See "Record Does Not Drop When Changer Cycles".)
	2. Record finger extending beyond outside diameter of spindle.	Cycle changer, by hand, until pusher shaft is at the top of its travel. Using new records as gauge, pass it over the spindle to see if it binds at any point. File off high points on record finger with a fine file, until record will pass freely over spindle.
	3. Tone arm not adjusted properly.	(See "Adjustments".)
Needle does not set down on 10" record in proper position.	1. Tone arm not adjusted properly.	(See "Adjustments".)
		(a) Loose nut (23) on pickup arm shaft and sleeve (66).
	2. Tone arm shaft and sleeve (66) binding.	File off burrs and rough surfaces. Polish and lubricate shaft.

TROUBLE CHART (Cont'd)

SYMPTOM	CAUSE	REMEDY
	3. 7" set-down lever (87) and 12" record selector (51) not operating properly.	Insure that proper operation and reset of 7" setdown lever (87) and 12" record selector (51) are not being interfered with.
	4. Needle bent.	Replace with new needle.
	5. Wire spring (52) broken.	12" record selector (51) does not cock; check for broken 12" record selector spring (52).
	6. Bent tone arm return locator (61).	Straighten or replace.
	7. Bent trip finger cam (66).	Straighten or replace.
Needle does not track across record properly.	1. Needle may be clogged by accumulation of lint, dirt, etc, or worn.	(a) Clean foreign material from around needle.  (b) Check needle to see if the tip is bent or broken. Replace if necessary.
	2. Trip finger cam (66) does not disengage from the tone arm return locator (61) when cycle is completed.	There should be a 1/32" gap between the trip finger cam (66) and the tone arm return locator (61) when the machine is not in cycle.
	3. Check the bearing in the tone arm post for binding.	(a) Check tone arm return locator (61) and trip finger cam (66) for binding (See 2 above).
	4. Pickup leads too tight.	Give the pickup leads enough slack to allow the tone arm to move freely across a record.
Tone arm returns to rest post when not set for manual play.	1. Broken shift lever spring (107A).	1. Replace record support guide assembly (107).
Changer repeats record when set for manual play.	1. Broken or bent shift lever (80) or shift lever pin (81).	1. Inspect, replace parts if bent or broken.
	2. Loose retaining screw (82).	2. Tighten (be careful not to strip threads).

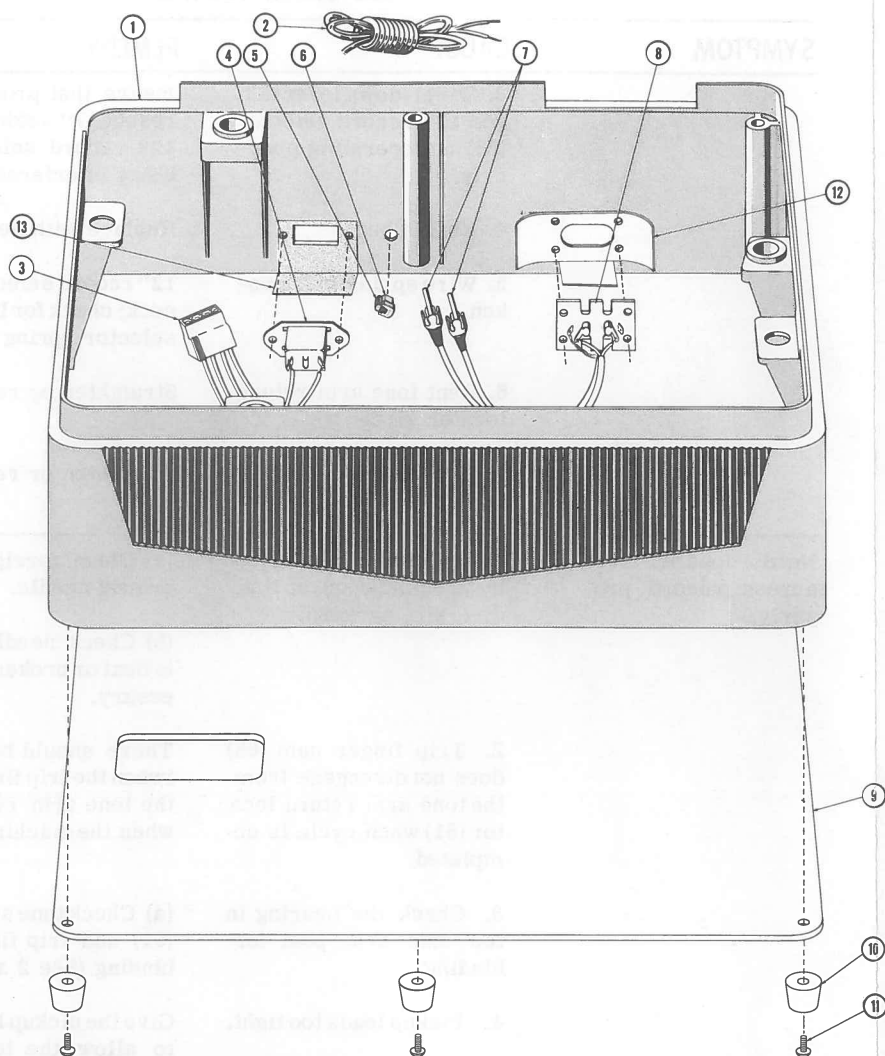


Fig. 13. Exploded View of Pan Used in Models 1586 and 1587.

PAN PARTS LIST (MODELS 1586 & 1587)

Ref. No.	Part No.	Description
1	16997-B31	Plastic Pan, Brown
2	14570	AC Cord
3	21942-8	Amplok Plug & Wire Ass'y.
4	4646	AC Outlet
5	19071	Heyco Bushing, Male
6	19072	Heyco Bushing, Female
7	644	Phono Plug
8	18339	Double Phono Socket
9	18353	Bottom Cover
10	19080-A	Bumper
11	19046	Screw, Bottom Cover
12	23981	Shield
13	19847	Insulator
PARTS NOT CALLED OUT		
	9920	Wire Nut
	21901-24	Wire & Plug Assy. (Models 1571 & 1572)

Part No.	Description
7911	Washers (Models 1571-1572)
19145	Screw (Models 1571-1572)
24142-48	Cable & Plug Assy. (Models 1571-1572)
24143-48	Cable & Plug Assy. (Models 1571-1572)
18751-48	Cable & Plug Assy. (Models 1586-1587)
18752-48	Cable & Plug Assy. (Models 1586-1587)
14539	Wire Nut (Models 1586-1587)
18663-18	Cable & Clip Assy., Tone Arm (Models 1571-1586)
18664-18	Cable & Clip Assy., Tone Arm (Models 1571-1586)
18621-18	Cable & Clip Assy., Tone Arm (Models 1572-1587)
18622-18	Cable & Clip Assy., Tone Arm (Models 1572-1587)