

CABINET-REAR VIEW

HORIZONTAL SWEEP CIRCUIT ADJUSTMENTS

Tune in a TV signal and set the "Local-Distance" (AGC) Control fully counterclockwise.

Connect a clip lead across the Horizontal Stabilizer Coil (L19). Connect another clip lead from TP3 to chassis. Set Horizontal Hold to center of its range.

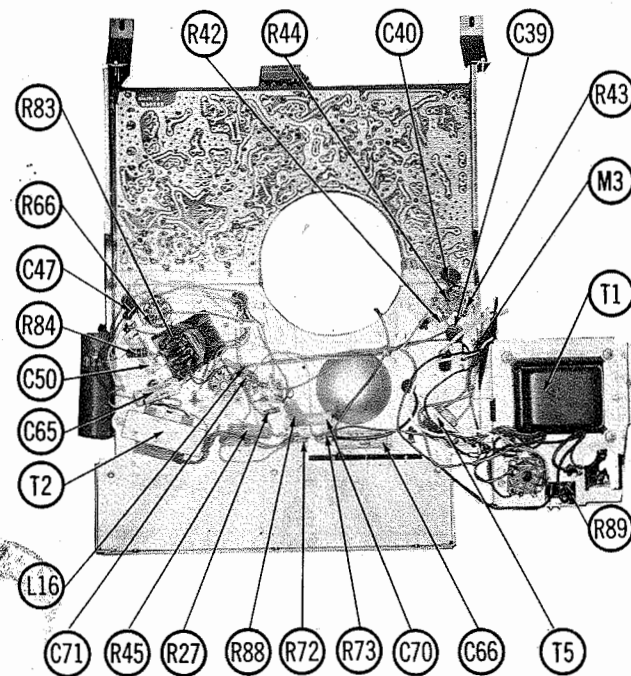
Adjust the Horizontal Mult. Trimmer (B1) until picture synchronizes horizontally. In most cases the picture will appear to float back and forth across the screen.)

Remove the clip lead from L19. Adjust the Horizontal Stabilizer Coil (Freq Slug B2) until the picture again synchronizes horizontally.

Remove the clip lead from TP3 and chassis. The picture should then lock in solid.

Set the Horizontal Drive as far counterclockwise as possible without the presence of a vertical white line (drive line) or compression near the center of the raster.

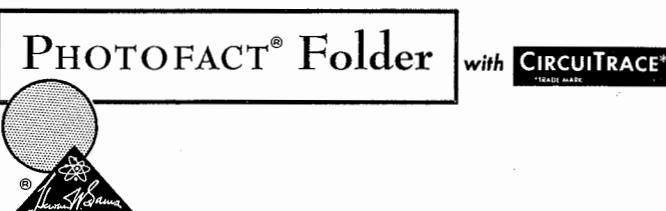
Insufficient width may be corrected by connecting a jumper across (R85).



TV CHASSIS-FRONT VIEW

SET 502 FOLDER 1

EMERSON CHASSIS 120517E, 120518F, 120519C, 120520D, 120525E, 120526C, 471235



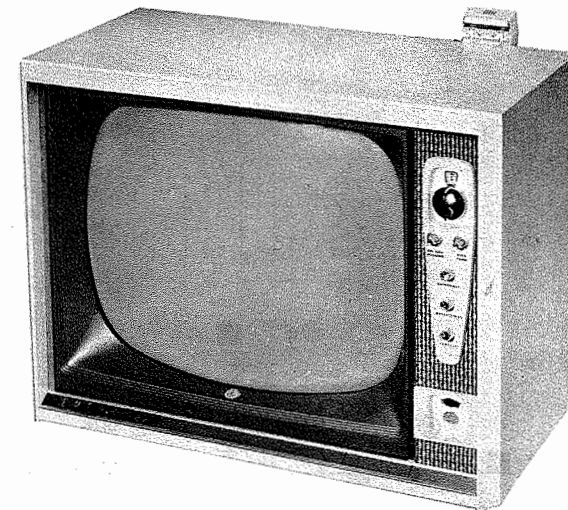
DISASSEMBLY INSTRUCTIONS

CHASSIS REMOVAL MODEL 1610

1. Remove 17 wood screws holding rear cover. Remove rear cover.
2. Remove 6 push-on type knobs at front of cabinet.
3. Remove 4 nuts holding tuner and control panel, and 2 nuts at back of set holding tuner.
4. Remove speaker leads, high voltage lead, picture tube socket, and yoke.
5. Remove 2 chassis bolts and 3 metal screws at bottom of cabinet. Remove 2 wood screws at top of cabinet holding chassis.
6. Remove chassis.

PICTURE TUBE REMOVAL

It is necessary to remove the chassis for picture tube removal. (See "Chassis Removal".)



MODEL 1610 (CH. 120526C)

TRADE NAME	EMERSON	MODELS	CHASSIS
		1600, 1604 .....	120517E
		1601, 1605 .....	120518F
		1608, 1612 .....	120519C
		1609, 1613 .....	120520D
		1602 .....	120525E
		(With Remote Control) .....	471235
		1610, 1614 .....	120526C
		(With Remote Control) .....	471235
MANUFACTURER	Emerson Radio & Phonograph Corp., 524 W. 23rd Street, New York 11, N. Y.		
TYPE SET	Television Receiver (Models 1602, 1610, and 1614 with Remote Control)		
TUBES	TV: VHF - Seventeen, UHF - Eighteen Remote Control Receiver: Five Remote Control Transmitter: Two		
TRANSISTOR	110-120 Volts AC, 60 Cycle		
POWER SUPPLY	RATING 245 Watts, 2.2 Amp. @ 117 Volts AC (While Tuning) 220 Watts, 1.9 Amp. @ 117 Volts AC (Not Tuning) 190 Watts, 1.7 Amp. @ 117 Volts AC (TV Only) 30 Watts, .2 Amp. @ 117 Volts AC (Remote Control Rec.)		
TUNING RANGE	Channels 2 thru 13 VHF, 14 thru 83 UHF, Video IF 45.75MC, Sound IF 41.25MC (Intercarrier)		

SERVICING IN THE FIELD

SAFETY GLASS REMOVAL

Remove 4 screws holding the trim strip at the top edge of the safety glass. Tilt glass out and remove.

FUSE

A fuse is used for low voltage supply protection. (For location, see "Tube Placement Chart".)

A fuse wire is used for filament protection. (For location, see M3 in photo "Chassis-Front View".)

TUNER OSCILLATOR ADJUSTMENT

To touchup VHF Oscillator, remove Channel Selector knob.

AGC

The AGC may be varied by means of a Local-Distance control. (For location, see "Tube Placement Chart".)

FOCUS

The focus may be varied by connecting the lead from pin 4

of the picture tube to various voltage points. (For location, see photo "Cabinet - Rear View".)

HORIZONTAL OSCILLATOR FIELD ADJUSTMENT

Coarse adjustment of the Horizontal Hold is accomplished by the proper setting of the Horiz. Mult. Trimmer. (For location, see "Cabinet-Rear View").

WIDTH

Some versions may use a jumper across R85 to increase width.

HORIZONTAL DRIVE

The horizontal drive may be varied by a Horizontal Drive Control. (For location, see "Tube Placement Chart".)

CENTERING

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

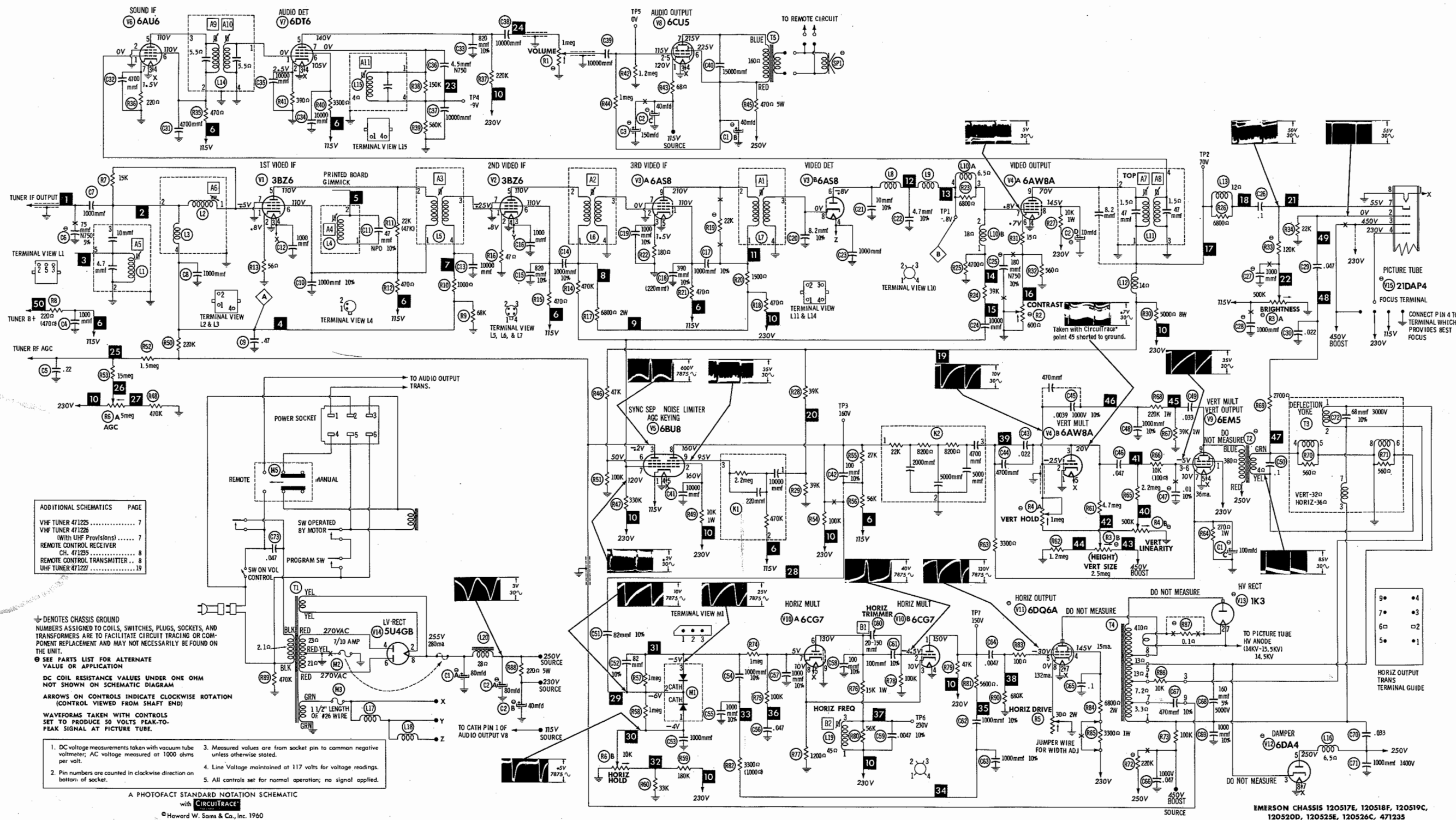
HOWARD W. SAMS & CO., INC. Indianapolis 6, Indiana

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EMERSON CHASSIS 120517E, 120518F, 120519C, 120520D, 120525E, 120526C, 471235

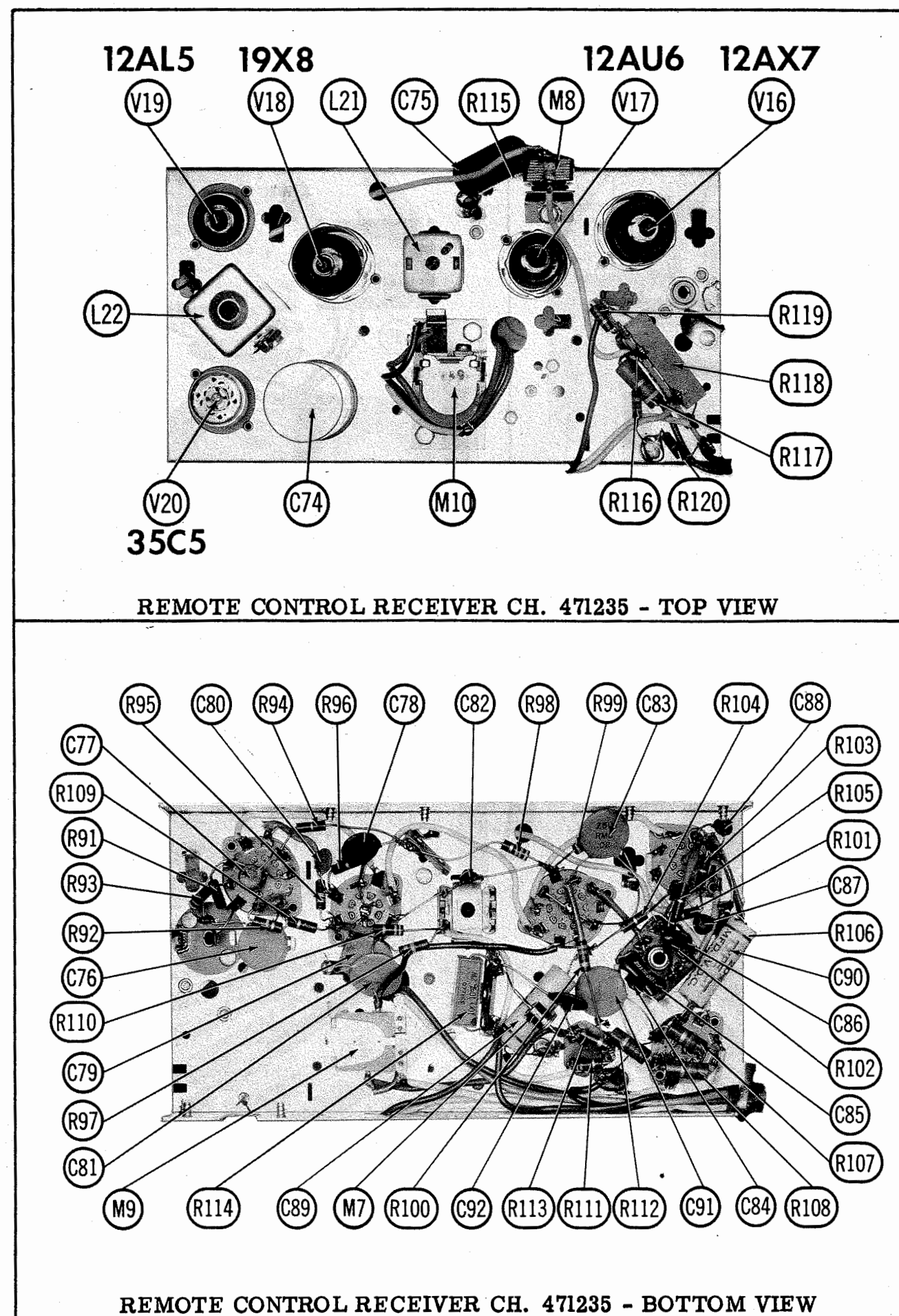
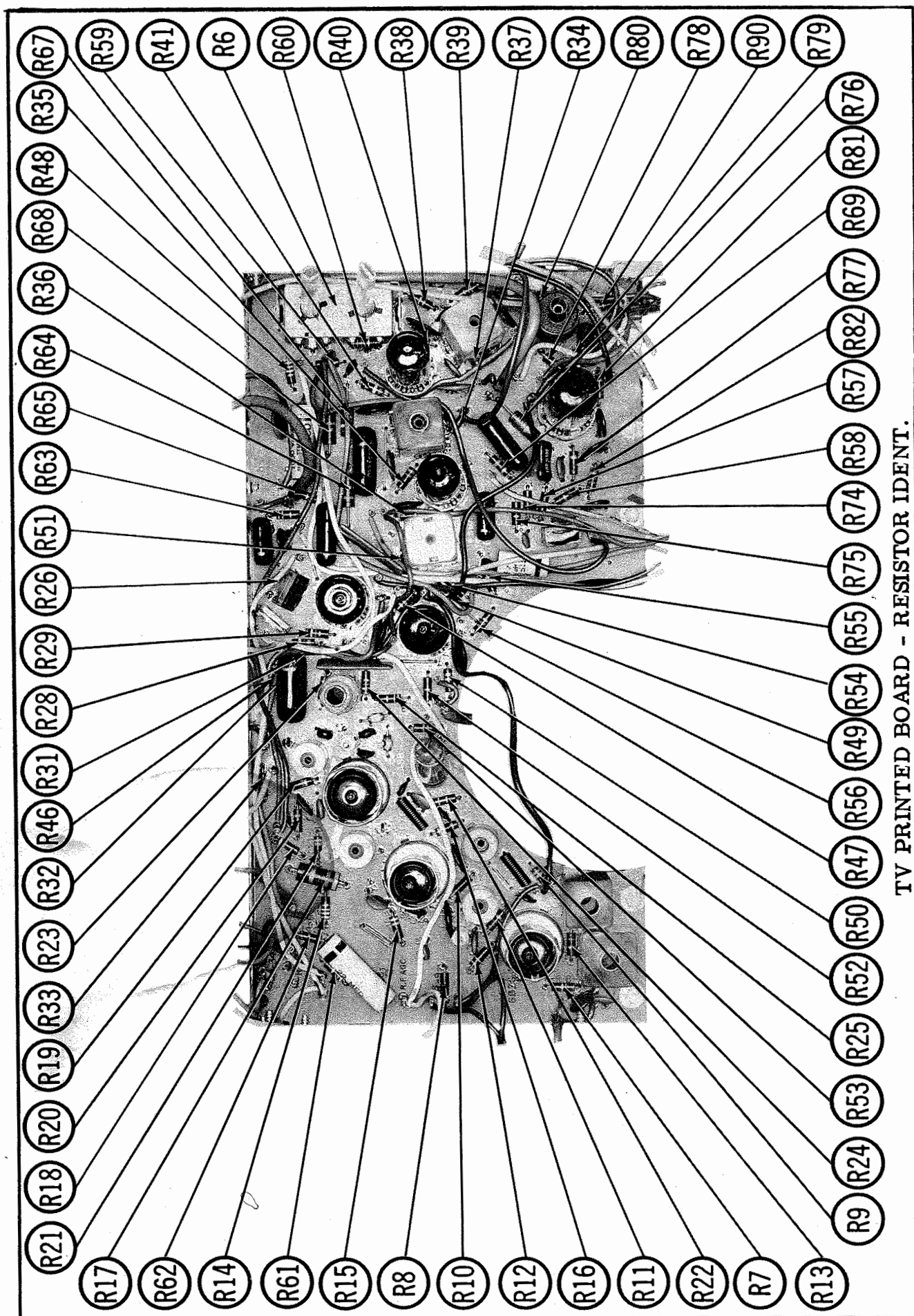
SET 502 FOLDER 1



EMERSON CHASSIS 120517E, 120518F, 120519C,  
 120520D, 120525E, 120526C, 471235

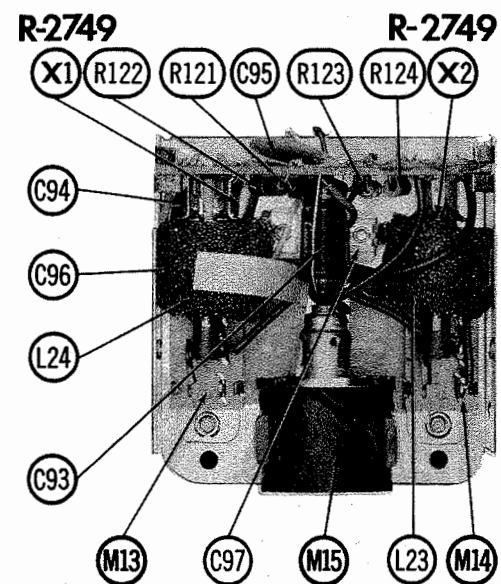
FOLDER 1



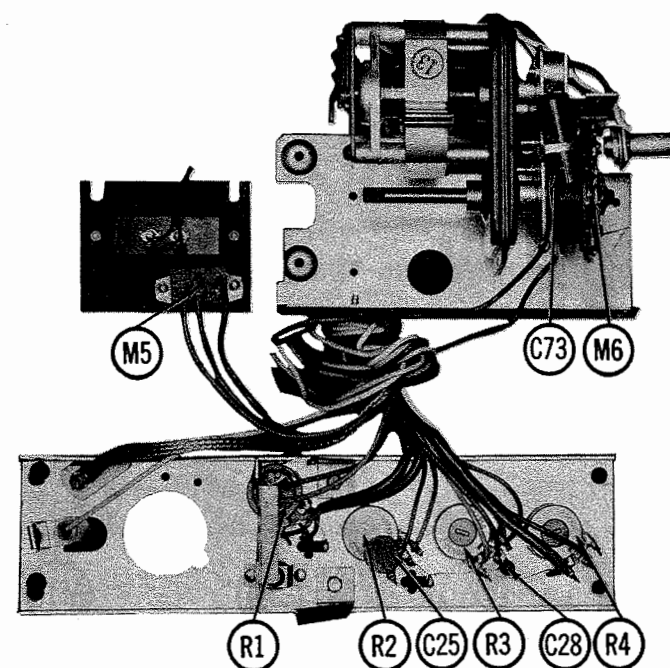


EMERSON CHASSIS 120517E, 120518F, 120519C,  
120520D, 120525E, 120526C, 471235

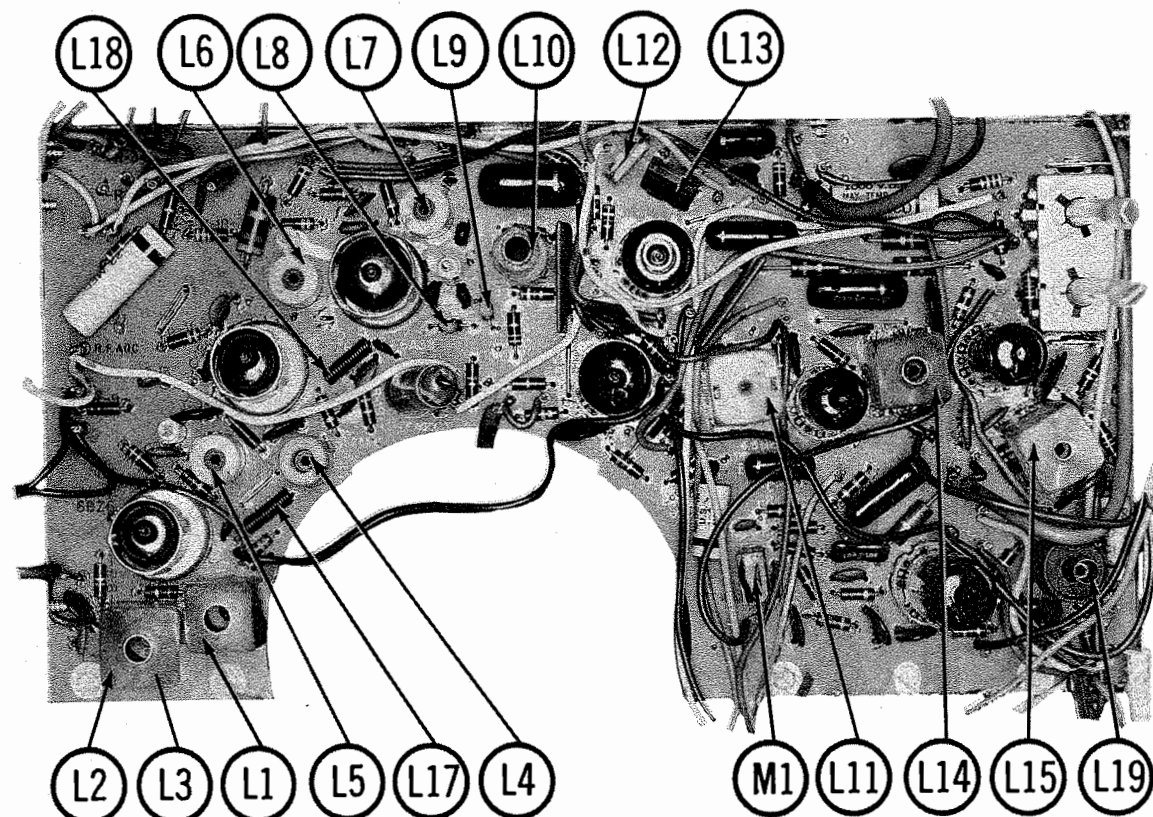
FOLDER 1



REMOTE  
CONTROL TRANSMITTER



CONTROL PANEL & POWER TUNING



TV PRINTED BOARD - INDUCTOR & MISC. IDENT.

## REMOTE CONTROL TRANSMITTER PARTS LIST AND DESCRIPTIONS

### TRANSISTORS

ITEM No.	ORIG. TYPE	USE	REPLACEMENT DATA				NOTES
			CBS PART No.	RCA PART No.	RAYTHEON PART No.	SYLVANIA PART No.	
X1	R-2749 *	Oscillator					PNP
X2	R-2749 *	Output					PNP

\* Alternate Type 2N408 (Pt. #815058B).

### ELECTROLYTIC CAPACITORS

ITEM No.	RATING		EMERSON PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SPRAGUE PART No.	NOTES
	CAP.	VOLT.							
C93	10	25		XPP-25010	NLW10-25	TC22	ML10-25	TE-1204	

### FIXED CAPACITORS

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

ITEM No.	RATING	REMARKS	REPLACEMENT DATA					
			AEROVOX PART No.	CORNELL-DUBILIER PART No.	ELMENDO PART No.	MALLORY PART No.	SPRAGUE PART No.	
C94	20000		BPD-02	DD-203	BYB652	CCD-203	B-120	5HK-520
C95	50000		C80V503AM	DDA-503	H-0555		TA-150	TG-550
C96	750	10%	1469-00075		5R5T75	CM-19B-751K 423		MS-375
C97	20-100							

### RESISTORS (IRC or EQUIVALENT)

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

ITEM No.	RATING	REMARKS	ITEM No.	RATING	REMARKS	ITEM No.	RATING	REMARKS
R121	6800Ω		R123	330Ω		R124	10Ω	
R122	150K							

### COILS (RF-IF)

ITEM No.	USE	REPLACEMENT DATA				NOTES
		EMERSON PART No.	Merit PART No.	Miller PART No.	Rom PART No.	
L23	Output Coil	738166				
L24	Osc. Coil	716133				

### BATTERIES

ITEM No.	VOLTAGE	EMERSON PART No.	REPLACEMENT DATA				NOTES
			BURGESS "A"	BURGESS "B"	EVEREADY "A"	EVEREADY "B"	
M12	9V			2U6		216	M-1604

### MISCELLANEOUS

ITEM No.	PART NAME	EMERSON PART No.	NOTES
M13	Switch	510171	Slide Type (Spring Return)
M14	Switch	510171	Slide Type (Spring Return)
M15	Transducer	825001	Transmitter

EMERSON CHASSIS 120517E, 120518F, 120519C,  
120520D, 120525E, 120526C, 471235

FOLDER 1



REMOTE CONTROL RECEIVER PARTS LIST AND DESCRIPTIONS

TUBES					
GENERAL ELECTRIC			RAYTHEON		
ITEM No.	USE	TYPE	ITEM No.	USE	TYPE
V16	40KC Amp.	12AX7	V19	Discriminator	12AL5
V17	40KC Amp.	12AU6	V20	Volume Relay Control	35C5
V18	40KC Amp. - Channel Sel. Relay Control	19X8			

ELECTROLYTIC CAPACITORS								
ITEM No.	RATING		REPLACEMENT DATA					
	CAP.	VOLT.	EMERSON PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SPRAGUE PART No.
C74A	80	175	925492	AFH3-13-70				TVL-2442.1
B	100	175						TVA-1420
C	40	160						
C75	25	50		PRSL340	BBR25-50	TC36	TD-25-50	TVA-1306

FIXED CAPACITORS								
Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.								
ITEM No.	RATING		REMARKS	REPLACEMENT DATA				
	CAP.	VOLT.		AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ELMENCOPART No.	MALLORY PART No.
C76	20000			BPD-02	DD-203	BYB6S2	CCD-203	B-120
C77	470			BPD-00047	DD-471	BYA10T47	CCD-471	B-347
C78	4700			BPD-0047	DD-473	BYA10D47M	CCD-473	B-247
C79	20000			BPD-02	DD-203	BYB6S2	CCD-203	B-120
C80	470			BPD-00047	DD-471	BYA10T47	CCD-471	B-347
C81	20000			BPD-02	DD-203	BYB6S2	CCD-203	B-120
C82	1000			BPD-001	DD-102	BYA10D1	CCD-103	B-210
C83	20000			BPD-02	DD-203	BYB6S2	CCD-203	B-120
C84	33	10%		DI-33	DD-330	LI0Q33	CCD-330	GP433
C85	100	10%		1469-0001	TCZ-100	22R5T1	CM-19B-101K	MCB235
C86	33	10%		DI-33	DD-330	LI0Q33	CCD-330	GP433
C87	1000			BPD-001	DD-102	BYA10D1	CCD-102	B-210
C88	1000			BPD-001	DD-102	BYA10D1	CCD-102	B-210
C89	.047	200V		P288N-047	DD-503	CUB2S47	4DP-3-473	GEM-4147
C90	.047	200V		P288N-047	DD-503	CUB2S47	4DP-3-473	GEM-4147
C91	20000			BPD-02	DD-203	BYB6S2	CCD-203	B-120
C92	1000			BPD-001	DD-102	BYA10D1	CCD-102	B-210

RESISTORS (IRC or EQUIVALENT)								
All wattages 1/2 watt, or less, unless otherwise listed.								
ITEM No.	RATING	REMARKS	ITEM No.	RATING	REMARKS	ITEM No.	RATING	REMARKS
R81	10K		R101	2.2meg		R111	470Ω	
R82	100K		R102	2.2meg		R112	1500Ω 1W	
R83	470Ω		R103	2.2meg		R113	220Ω	
R84	2.2meg		R104	1meg		R114	10Ω 2W	
R85	100K		R105	2.2meg		R115	33K	
R86	2.2meg		R106	2.2meg		R116	47K	
R87	100K		R107	10K 1W		R117	47K 1W	
R88	470K		R108	10K 1W		R118	175Ω 7W	
R89	470K		R109	2200Ω		R119	33K	
R100	47K		R110	470Ω	(1000Ω) *	R120	33K	

\* Alternate value.

COILS (RF-IF)					
ITEM No.	USE	REPLACEMENT DATA			
		EMERSON PART No.	Merit PART No.	Miller PART No.	Rom PART No.
L21	40KC IF Trans.	720359			
L22	Discriminator	708366			

RECTIFIERS						
ITEM No.	RATING		REPLACEMENT DATA			
	CURRENT (Measured)		EMERSON PART No.	ITT PART No.	SARKES TAZIAN PART No.	SYLVANIA PART No.
M7	.045A		817088 * or 817089	RE504	1N1764 *	2F4 *
M8	.001A		817084 *	1159 *		SR200 *

MISCELLANEOUS			
ITEM No.	PART NAME	EMERSON PART No.	NOTES
M9	Relay	515006 or 515005	Tuner
M10	Relay	515009 or 515012	Volume
M11	Transducer	825002 or 825003	Receiver

TV PARTS LIST AND DESCRIPTIONS

TUBES					
GENERAL ELECTRIC			RAYTHEON		
ITEM No.	USE	TYPE	ITEM No.	USE	TYPE
V1	1st Video IF Amp.	6BZ6	V7	Audio Det.	6DT6
V2	2nd Video IF Amp.	6BZ6	V8	Audio Output	6CU5
V3	3rd Video IF Amp. - Video Det.	6A88	V9	Vert. Mult. - Vert. Output	6EM5
V4	Video Output - Vert. Mult.	6AW8A	V10	Horiz. Mult.	6CG7
V5	AGC Keying - Sync Sep. - Noise Limiter	6BU8	V11	Horiz. Output	6DQ6A (6DQ6B) *
V6	Sound IF Amp.	6AU6	V12	Damper	6DA4 (6DE4) *
			V13	HV Rectifier	1K3 (1G3GT) *
			V14	LV Rectifier	5U4GB

\* Alternate

PICTURE TUBE					
ITEM No.	REPLACEMENT DATA				
	EMERSON PART No.	GENERAL ELECTRIC PART No.	RCA PART No.	RAYTHEON PART No.	SYLVANIA PART No.
V15	21DAP4	21DEP4 ①	21DAP4 ①	21DAP4 ①	21DAP4/21DEP4/21DEP4A ②
	17DTP4		17DTP4 ①		17DTP4 ②

ELECTROLYTIC CAPACITORS								
ITEM No.	RATING		REPLACEMENT DATA					
	CAP.	VOLT.	EMERSON PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SPRAGUE PART No.
C1A	80	300	925504	AFH3-114-80	C0890	FP333.2	TMT-3392	TVL-3639
B	40	300						
C2A	80	300	925503	AFH4-94-90	D0927	FP425.1	TMQ-4304	TVL-4635.7
B	40	300						
C	40	300						
D	10	300						
C3	150	200	925512	PR1-075	BBRD0334	W5427	TD-150-300	TVAS-1447 *

\* Not normally in distributor's stock. Available thru distributor on order to manufacturer.  
① Some versions may use 4 section for C1A (80mfd @ 300V), C1B (40mfd @ 300V), C1C (100mfd @ 50V), and C2B (40mfd @ 300V), Pt. #925513; 3 section for C2A (80mfd @ 300V), C2C (200mfd @ 200V), C2D (10mfd @ 300V), Pt. #925514. C3 not used when C2C is 200mfd @ 200V.

FIXED CAPACITORS								
Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.								
ITEM No.	RATING		REMARKS	REPLACEMENT DATA				
	CAP.	VOLT.		AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ELMENCOPART No.	MALLORY PART No.
C4	1000			BPD-001	DD-102	BYA10D1	CCD-102	B-210
C5	.22	200V		P288N-22		CUB2P22	2DP-4-224	GEM-2022
C6	75	N750 5%			DTN-75	C10Q75U		CN7-475
C7	1000		Note 1	BPD-001	DD-102	BYA10D1	CCD-102	B-110
C8	1000			BPD-001	DD-102	BYA10D1	CCD-102	B-110
C9	.47	200V		P288N-47		CUB2P47	2DP-5-474	GEM-2047
C10	1000	10%		DI-1000	DD-102	5R5D1	CCD-102	GP210
C11	47	NPO 10%		NPO-DI 47	DTZ-47	C10Q47C	CCD-102	CNO-447
C12	1000			BPD-001	DD-102	BYA10D1	CCD-102	B-210
C13	10000			BPD-01	DD-103	BYA10S1	CCD-103	B-110
C14	1000	10%		DI-1000	DD-102	5R5D1	CCD-102	GP210
C15	820	10%		DI-820	DD-821	5R5T82	CCD-821	GP382
C16	1000			BPD-001	DD-102	BYA10D1	CCD-102	B-210
C17	1000	10%		DI-1000	DD-102	BYA10D1	CCD-102	GP210
C18	390	10%	(220) †	DI-390	DD-391	LI0T39	CCD-391	GP339
C19	1000	10%		DI-1000	DD-102	BYA10D1	CCD-102	GP210
C20	8.2	10%		NPO-DI 8.2	DTZ-10	C10V82C	CCD-100	CNO-410
C21	10	10%		NPO-DI 10	DTZ-10	C10Q10C	CCD-4R7	CNO-547
C22	4.7	10%		NPO-DI 4.7	DTZ-4R7	C10V47C	CCD-102	B-210
C23	1000			BPD-001	DD-102	BYA10D1	CCD-102	B-110
C24	10000			BPD-01	DD-103	BYA10S1	CCD-103	B-110
C25	180	N750 10%	Note 1		TCN-180	C10T18U		CN7-318
C26	.1	400V		P488N-1	DF-104	CUB4P1	4DP-3-104	GEM-401
C27	1000		Note 2	BPD-001	DD-102	BYA10D1	CCD-102	B-210
C28	1000		Note 1	BPD-001	DD-102	BYA10D1	CCD-102	B-210
C29	.047	400V		P488N-047	DD-503	CUB4S47	4DP-3-473	GEM-4147
C30	.022	400V		P488N-022	DD-203	CUB4S22	4DP-2-223	GEM-4122
C31	4700			BPD-0047	DD-472	BYA10D47M	CCD-472	B-247
C32	4700			BPD-0047	DD-472	BYA10D47M	CCD-472	B-247
C33	820	10%		DI-820	DD-821	5R5T82	CCD-821	GP282
C34	10000			BPD-01	DD-103	BYA10S1	CCD-103	B-110
C35	10000			BPD-01	DD-103	BYA10S1	CCD-103	B-110
C36	4.5	N750						
C37	10000			BPD-01	DD-103	BYA10S1	CCD-103	B-110
C38	10000			BPD-01	DD-103	BYA10S1	CCD-103	B-110
C39	10000			BPD-01	DD-103	BYA10S1	CCD-103	B-110
C40	15000			BPD-015	DD-153	BYA10S15	CCD-153	B-150
C41	10000			BPD-01	DD-103	BYA10S1	CCD-103	B-110
C42	100	10%		DI-100	DD-101	LI0T10	CCD-101	GP310
C43	.022	400V		P488N-022	DD-203	CUB4S22	4DP-2-223	GEM-4122
C44	4700			BPD-0047	DD-472	BYA10D47M	CCD-472	B-247
C45	.0039	1000V 10%		P1084CM-0039		DPMS16D4	16DP-2-402	GP239
C46	.047	400V		P488N-047	DD-503	CUB4S47	4DP-3-473	GEM-4147
C47	.01	400V 10%	Note 1	V84C4S1-10%		PM4S1	4DP-1-103	GEM-1611
C48	1000	10%		DI-1000	DD-102	5R5T1	CCD-102	GP210
C49	.033	600V		P688N-033	DD-303	CUB6S33	6DP-3-333	GEM-6133
C50	.1	400V		P488N-1	DF-104	CUB4P1	4DP-3-104	GEM-401

EMERSON CHASSIS 120517E, 120518F, 120519C, 120520D, 120525E, 120526C, 471235

FOLDER 1

TV 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.
C51	82	10%	DL-82	DD-820	L10Q82	CCD-820	GP482	10TS-Q82
C52	82	10%	DL-82	DD-820	L10Q82	CCD-820	GP482	10TS-Q82
C53	1000		BPD-001	DD-102	BYA10D1	CCD-102	B-210	5HK-D10
C54	1000	10%	DL-1000	DD-102	SR5D1	CCD-102	GP210	10TS-D10
C55	1000	10%	DL-1000	DD-102	SR5D1	CCD-102	GP210	10TS-D10
C56	.047	200V	P288N-047	DD-503	CUB2847	4DP-3-473	GEM-4147	2TM-847
C57	1000	10%	DL-1000	DD-102	SR5D1	CCD-102	GP210	10TS-D10
C58	100	10%	1489-0001	TCZ-100	22R5T1	CM-10B-101K	MCB235	MS-31
C59	.0047	600V	V84C8D47-10%		PM5D47	8DP-1-472	GEM-16247	6TM-D47
C60	20-150	10%			424			
C61	100	10%	1489-0001	TCZ-100	22R5T1	CM-10B-101K	MCB235	MS-310
C62	1000	10%	DL-1000	DD-102	SR5D5	CCD-102	GP210	10TS-D10
C63	1000	10%	DL-1000	DD-102	SR5D5	CCD-102	GP210	10TS-D10
C64	.0047	400V	P488N-0047	D6-472	CUB6D47	6DP-1-472	GEM-6247	6TM-D47
C65	.1	400V	P488N-1	DF-104	CUB4P1	4DP-3-104	GEM-401	4TM-P10
C66	.047	1000V	P1088N-047		CUB10S47	10DP-5-473	GEM-10147	10TM-S47
C67	470	10%	DL-470	DD-471	SR5T47	CCD-471	GP347	10TS-T47
C68	160	5000V 5%						
C69	1000	10%	DL-1000	DD-102	SR5D1	CCD-102	GP210	10TS-D10
C70	.033	600V	P688N-033	DD-303	CUB6S33	6DP-3-333	GEM-6133	6TM-S33
C71	1000	1400V	DAC-2	DD16-102	HVB20D1	3CCD-102	UAC-210	BL-D10
C72	68	3000V 10%					3DY-468	
C73	.047	600V	P688N-047	DD-503	CUB6S47	6DP-3-472	GEM-6147	6TM-S47

Note 1. May not be used in some versions.

Note 2. Not used in 17" Models.

† Alternate Value.

CONTROLS

ITEM No.	RATING	REPLACEMENT DATA						INSTALLATION NOTES
		EMERSON PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	CTS-IRC PART No.	MALLORY PART No.		
R1A	1meg	390634	APL-70		PPQ13-137(SK3)	PPI6A		Volume Note 1
B	Shaft		AK-8		Not Req.	DS-37		
C	Switch		Not Req.		Not Req.	Not Req.		Push-Push Off-On
R2A	800Ω	390632	F3-2		† QJ-1295	FA62R		Contrast Note 2
B	Shaft		Not Req.		† QJ-1295	OSI625		
R3A	500K	390633	F1-40		† QJ-1297	UE4160		Brightness Note 3
B	2.5meg		R2-76		† QJ-1297	UE4160		Vert. Size (Height) Note 3
R4A	1meg	390634	F1-31		† QJ-1298	UE4161		Vert. Hold Note 4
B	500K		R2-40		† QJ-1298	UE4161		Vert. Linearity Note 4
R5	30Ω	390625		39-50				Horiz. Drive
R6A	5meg	390630						AGC (Local-Distance)
B	10K							Horiz. Hold

■ "STA-LOC" Equivalent: FA55L, RU255L, OSI625, IK825.

▲ "STA-LOC" Equivalent: FA16L, RU55L, OSI625, IK825.

† "Concentrik" Equivalent: K-6 Kit with Base Elements and Shafts: B17-105, P17-120

†† "Concentrik" Equivalent: K-6 Kit with Base Elements and Shafts: B11-133, P17-120 (Panel)

(Not available as a factory assembled unit).

†† "Concentrik" Equivalent: K-6 Kit with Base Elements and Shafts: B11-137, P17-120 (Panel)

(Not available as a factory assembled unit).

Note 1. Some versions may use Part #390628.

Note 2. Some versions may use Part #390627.

Note 3. Some versions may use Part #390628.

Note 4. Some versions may use Part #390629.

RESISTORS (IRC or EQUIVALENT)

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

ITEM No.	RATING	REMARKS	ITEM No.	RATING	REMARKS	ITEM No.	RATING	REMARKS
R7	15K		R35	470Ω		R63	3300Ω	
R8	220Ω	(470Ω) *	R36	220Ω		R64	270Ω 1W	
R9	68K		R37	220K		R65	2.2meg	
R10	1000Ω		R38	150K		R66	10K	(100Ω) *
R11	22K	(47K) *	R39	560K		R67	39K 1W	
R12	470Ω		R40	3300Ω		R68	220K 1W	
R13	56Ω		R41	390Ω		R69	2700Ω	
R14	470K		R42	1.2meg		R70	560Ω	
R15	470Ω		R43	68Ω		R71	560Ω	
R16	47Ω		R44	1meg		R72	220K	Note 3
R17	6800Ω 2W		R45	470Ω 5W	Pt. #397149	R73	100K	
R18	470Ω				IRC #PW5-470Ω	R74	1meg	
R19	22K	Note 1	R46	47K		R75	100K	
R20	1500Ω		R47	330K		R76	15K 1W	
R21	470Ω		R48	470K		R77	1200Ω	
R22	180Ω		R49	10K 1W		R78	100K	
R23	6800Ω		R50	220K		R79	47K	
R24	39K		R51	100K		R80	56K	
R25	4700Ω		R52	1.5meg		R81	5600Ω	
R26	6800Ω		R53	15meg		R82	3300Ω	(1000Ω) *
R27	10K 1W		R54	100K		R83	100Ω	
R28	39K		R55	27K		R84	6800Ω 2W	
R29	39K		R56	56K		R85	3300Ω 1W	
R30	5000Ω 8W	Pt. #394229	R57	1meg		R86	10K	
		IRC #PW10-5000Ω	R58	1meg		R87	0.1Ω	Note 1
R31	15Ω	Note 2	R59	180K		R88	220Ω 5W	Pt. #397135
R32	560Ω		R60	33K		R89	470K	IRC #PW5-220Ω
R33	120K		R61	4.7meg		R90	680K	
R34	22K		R62	1.2meg				

Note 1. May not be used in some versions.

Note 2. 17" Models use 100K in this application.

Note 3. Not used in 17" Models.

\* Alternate Value.

COMPONENT COMBINATIONS

ITEM No.	USE	DESCRIPTION	EMERSON PART No.	REPLACEMENT DATA
K1	Sync Sep. Screen	220mmf, 10000mmf, 470K, 2.2meg	923059	
K2	Vert. Integrator	2000mmf, 4700mmf, 5000mmf, 5000mmf, 8200Ω, 8200Ω, 22K	923158	

COILS (RF-IF)

ITEM No.	USE	REPLACEMENT DATA				NOTES
		EMERSON PART No.	Merit PART No.	Miller PART No.	Ram PART No.	
L1	47.25MC Trap	720317				
L2	1st Video IF	720316				
L3	RF Choke		SW-631	9310-28		5uh
L4	41.25MC Trap	720315				
L5	2nd Video IF	720318				
L6	3rd Video IF	720318				
L7	4th Video IF	720318				
L8	RF Choke		SW-631	9310-28		5uh
L9	RF Choke		SW-631	9310-26		5uh
L10A	Series Peaking Coil		TV-194	6112	VP-4	100uh
B	Shunt Peaking Coil		TV-206	6148		660uh
L11A	4.5MC Trap	720364				
B	1st Sound IF					
L12	Shunt Peaking Coil	708351	TV-202	6136	VP-8	440uh
L13	Series Peaking Coil	708370	TV-197	6154	VP-5	200uh
L14	2nd Sound IF Trans.	720337				
L15	Quadrature Coil	720336				
L16	RF Choke	①	BC-566	4612		10uh ① IRC Part #CL-1
L17	Fl. Choke		BC-561	4602	VP-9	1uh
L18	Fl. Choke		BC-561	4602	VP-9	1uh

COILS (SWEEP CIRCUITS)

ITEM No.	USE	REPLACEMENT DATA							
		EMERSON PART No.	Merit PART No.	Miller PART No.	Ram PART No.	Rogers PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.
L19	Horiz. Stabilizer	716136A						HS-11 ①	

① Trim mounting lugs.

FILTER CHOKE

ITEM No.	RATINGS		REPLACEMENT DATA						NOTES
	CURRENT (Measured)	DC RES.	INDUCTANCE (0 CURRENT 1000 ~)	EMERSON PART No.	Merit PART No.	Ram PART No.	Stancor PART No.	Thordarson PART No.	
L20	.280A	28Ω	.4 Hy.	737044			C-2343		C-27X

TRANSFORMER (POWER)

ITEM No.	RATING			REPLACEMENT DATA							NOTES
	PRI.	SEC. 1	SEC. 2	EMERSON PART No.	Merit PART No.	Ram PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.		
T1	117V @ 1.7A	540VCT @ .280A	5V @ 3A	730094						R-89BC	
	SEC. 3	SEC. 4	SEC. 5								
	8.3V @ 8.5A										

TRANSFORMERS (SWEEP CIRCUITS)

ITEM No.	USE	REPLACEMENT DATA							
		EMERSON PART No.	Merit PART No.	Ram PART No.	Rogers PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	
T2	Vert. Output	738171		V307	V034	A-8144	26S73 ①	A-108X	
T3	Alt. Vert. Output	738171							
T4	Yoke Horiz. (20MH) (110°) Vert. (51MH) Horiz. Output	708367					Y-53 ②	Y-62 & NW3 D-187 *	
		738163							

① Remove ground from yoke terminals #5 and #8; connect as autotransformer.

② Use original rear cover and centering device and damping network if necessary. Connect yoke terminal #2 to horizontal output transformer #5; yoke terminals #1 and #3 to Resistor R86; yoke terminal #7 to horizontal output transformer #1; connect terminals #6 and #8 to ground.

\* HORIZONTAL OUTPUT TRANSFORMER CONNECTION DATA

ORIGINAL TERMINAL CONNECTIONS	Merit Replacement Connections	Ram Replacement Connections	Rogers Replacement Connections	Stancor Replacement Connections	Thordarson Replacement Connections	Triad Replacement Connections
8						6
5						7
3						4
7						3
9						6
1						1

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE		REPLACEMENT DATA						NOTES
	PRI.	SEC.	EMERSON PART No.	Merit PART No.	Ram PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	
T5	2100Ω	3-4Ω	734195	A-3025	AU-805	A-3332	24S53	S-20X	

SPEAKER

ITEM No.	TYPE			REPLACEMENT DATA		NOTES
	SIZE	FIELD	V. C. IMP.	EMERSON PART No.	QUAM PART No.	
SP1	6" 4" 3" x 5"	PM PM PM	3-4Ω	180230 * 180228 † 180229 † 180227 †	6A1	* Used in Models 1808, 1809, 1810 † Used in Models 1812, 1813, 1814 * Used in Models 1800, 1801, 1802, 1804, 1805

RECTIFIERS

ITEM No.	RATING		REPLACEMENT DATA					NOTES
	CURRENT (Measured)		EMERSON PART No.	ITT PART No.	RCA PART No.	SARKES TARBAN PART No.	SYLVANIA PART No.	
M1			1610 *	K1615 *				* Dual Selenium Diode

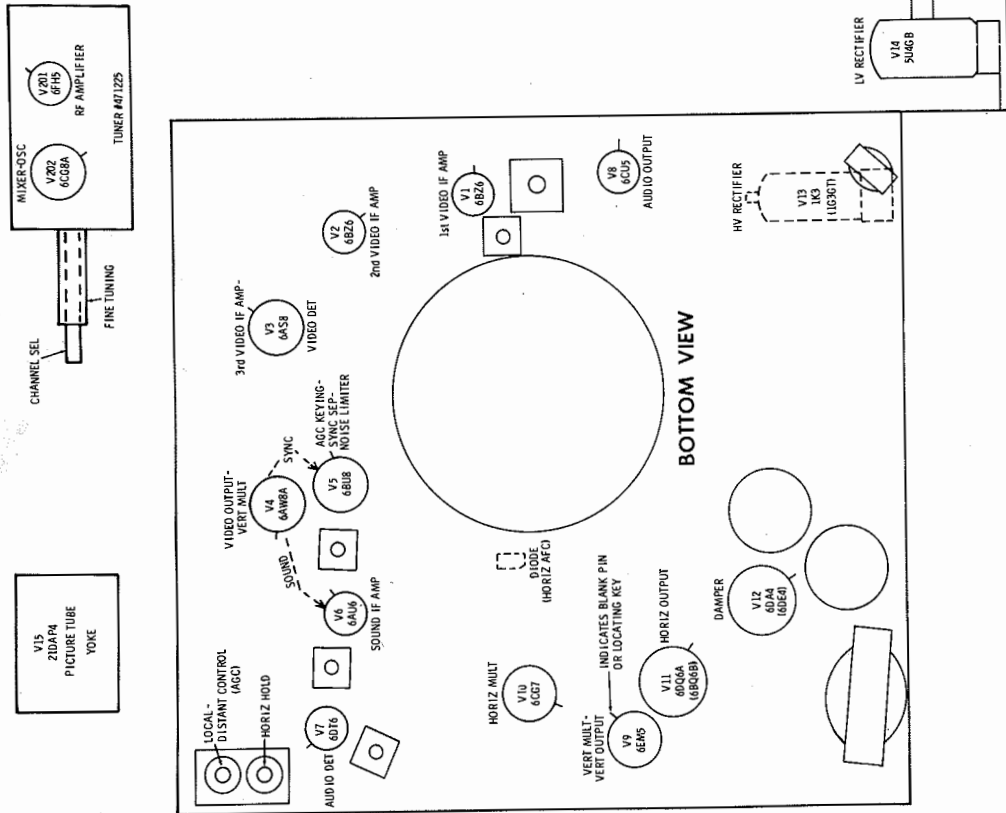
FUSES

ITEM No.	TYPE	RATING	REPLACEMENT DATA					
			EMERSON PART No.		LITTELFUSE PART No.		BUSS PART No.	
			FUSE	HOLDER	FUSE	HOLDER	FUSE	HOLDER
M2	N	7/10A 125V			333.750 (N 7/10A 125V)	348010	N 7/10	HN 1/2 to 3/4
M3		1 1/2" length	#26 Wire					

MISCELLANEOUS

ITEM No.	PART NAME	EMERSON PART No.	NOTES
M4	Tuner	471225	VHF, STANDARD COIL REPLACEMENT #GG-4220A, Chassis 120519C & 120526C
	Tuner	471228	VHF, Chassis 120517E & 120525E
	Tuner	471226	VHF with UHF Provisions, Chassis 120520D
	Tuner	471229	VHF with UHF Provisions, Chassis 120518F
	Tuner	471227	UHF, Chassis 120518F & 120520D
M5	Switch		Remote Off-On (DPDT Slide Type) Assembly
M6	Power Tuning Antenna	471237	Dipole, Models 1600, 1601
	Antenna	471247	Dipole, Model 1602

TUBE PLACEMENT CHART

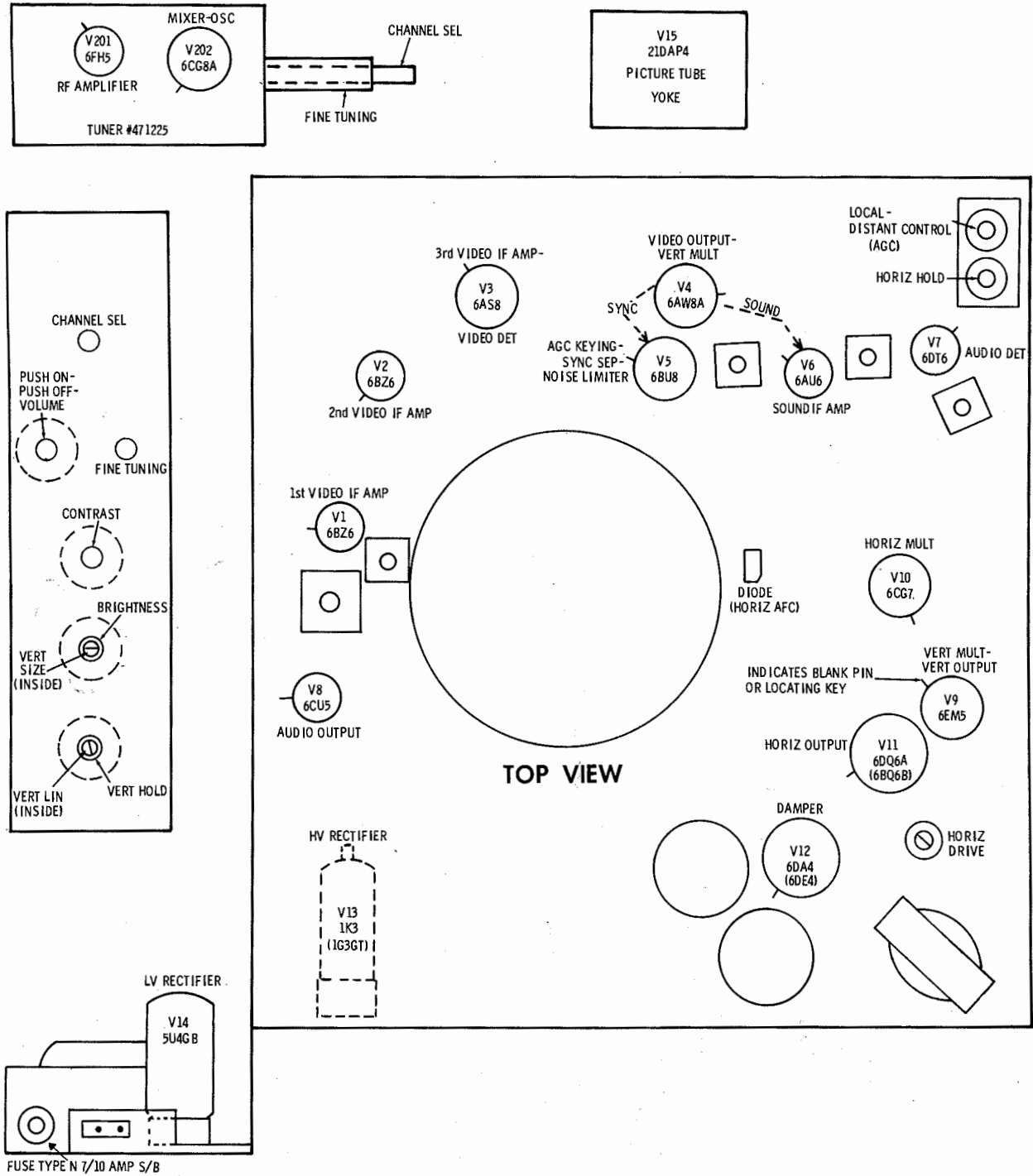


RESISTANCE MEASUREMENTS

ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V1	6BZ6	68K	56Ω	0Ω	.1Ω	470Ω	470Ω	0Ω		
V2	6BZ6	70K	47Ω	.1Ω	0Ω	7500Ω	470Ω	0Ω		
V3	6AS8	470Ω	.1Ω	180Ω	.1Ω	0Ω	4700Ω	0Ω	.1Ω	2200Ω
V4	6AW8A	0Ω	1.2meg	6.8meg	0Ω	.1Ω	200Ω	4700Ω	10K	5000Ω
V5	6BU8	0Ω	10K	290K	0Ω	.1Ω	40K	210K	100K	2.7meg
V6	6AU6	1.5Ω	0Ω	0Ω	.1Ω	470Ω	470Ω	220Ω		
V7	6DT6	5.5Ω	390Ω	0Ω	.1Ω	220K	3300Ω	500K		
V8	6CU5	9	500K	0Ω	.4Ω	NC	1548Ω	660Ω		
V9	6EM5	250Ω	TP	NC	.1Ω	0Ω	2.4meg	270Ω	NC	410Ω
V10	6CG7	47K	100K	1200Ω	0Ω	.1Ω	15K	3.5meg	1200Ω	0Ω
V11	6DQ6A	TP	0Ω	NC	7000Ω	680K	TP	.1Ω	0Ω	TOP CAP +13Ω
V12	6DA4	NC	NC	9	NC	30Ω	NC	.1Ω	0Ω	
V13	1K3	PINS 1 THRU 8 HAVE INFINITE RESISTANCE								
V14	5U4GB	NC	9	NC	23Ω	NC	21Ω	TP	9	
V15	21DAP4	.1Ω	22K	100K	250Ω	NC	NC	210K	0Ω	
V201	6FH5	0Ω	1.8meg	0Ω	.1Ω	1300Ω	0Ω	0Ω		
V202	6CG8A	4700Ω	5000Ω	0Ω	0Ω	.1Ω	1300Ω	300Ω	0Ω	225K
ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9

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 1 OF V8.  
MEASURED FROM PIN 8 OF V14.  
MEASURED FROM PIN 3 OF V12.  
NC NO CONNECTION  
TP TIE POINT

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 V14, Fuse (LV Supply)

**SWEEP FAILURE**  
No raster, has sound V10, V11, V12, V13, V14  
No vertical deflection V4, V9  
Poor vert. linearity or foldover V4, V9  
Poor horiz. linearity or foldover V10, V11, V12  
Narrow picture V10, V11, V12, V14  
Vert. off freq. V4, V9  
Horiz. off freq. Diodes (Horiz. AFC), V10

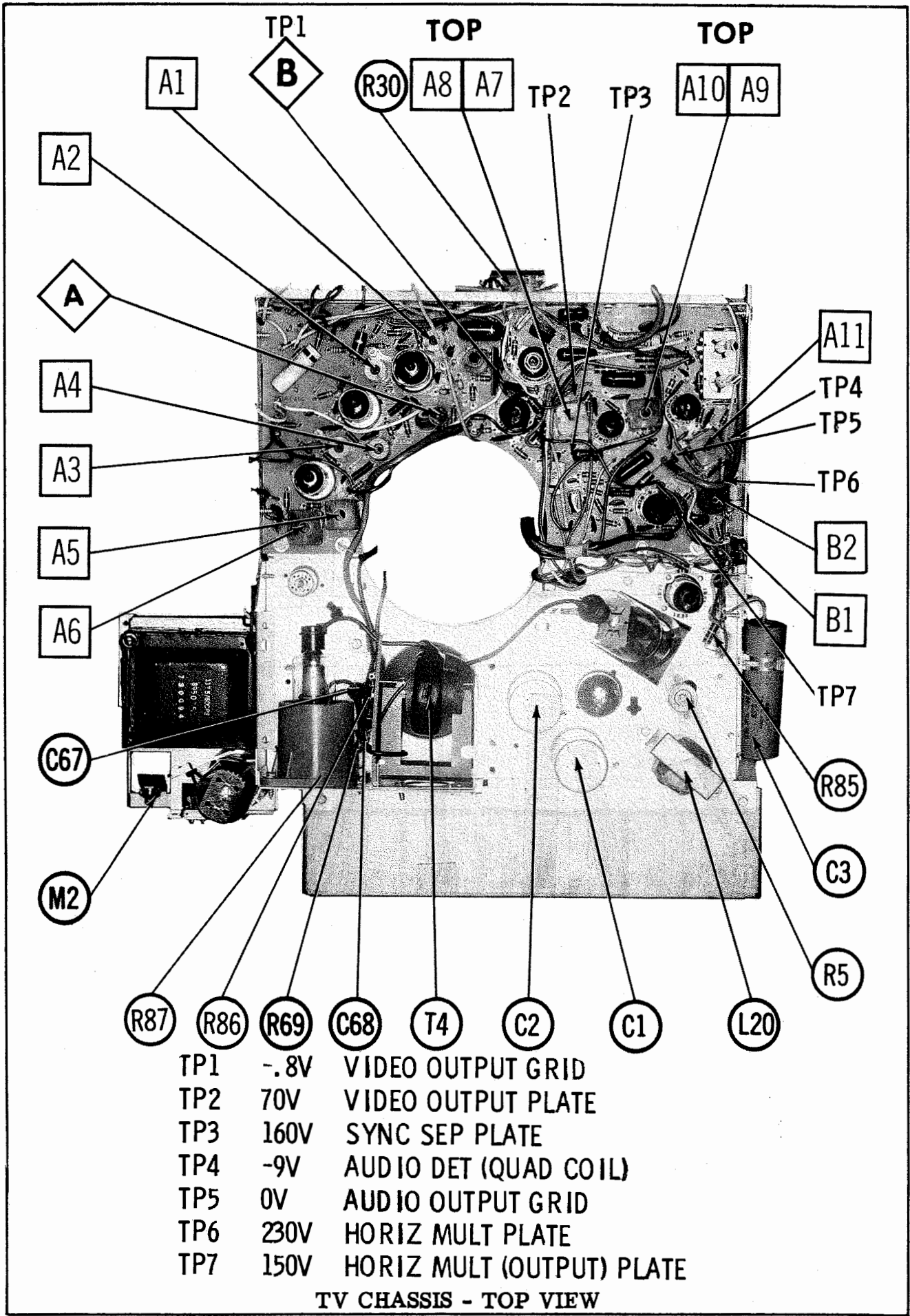
**LOSS OF PICTURE OR SOUND**  
No pic, no sound, has raster V1, V2, V3, V4  
No pic, no sound, has snow V201, V202, V1  
No pic, has sound, has raster V4, V15  
Has pic, no sound V6, V7, V8  
Overloaded picture V5

**SYNC FAILURE**  
No vert. sync V5  
No horiz. sync V5, (Diode, AFC)  
No vert. or horiz. sync V5









# 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 for all slugs (12) ..... General Cement #8282, 8606, 8606L or 9295.  
 Walsco #2543, 2544 or 2545

## VIDEO IF ALIGNMENT

Connect the negative lead of a 3 volt bias supply to point  $\diamond$ . Positive to chassis.  
 Set the "Local-Distance" fully counterclockwise.  
 Connect the synchronized sweep voltage from the sweep generator to the horizontal input of the oscilloscope for horizontal deflection.  
 The sweep generator output lead should be terminated with its characteristic impedance, usually 50 ohms.  
 Use only enough generator output to provide a usable indication on VTVM.  
 Use only enough sweep generator output to provide a usable pattern on scope.

DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
1. Direct	Place a thin insulated metal strip between the Mixer-Osc. tube (V202), and tube shield. Connect the high side of sweep generator to the metal strip. Low side to chassis.	Not used	44.25MC	Any non-interfering channel	USE VTVM. DC probe to point $\diamond$ . Common to chassis. (Across Video Det. load)	A1	Adjust for maximum deflection.
2. "	"	"	45.3MC	"	"	A2	"
3. "	"	"	42.6MC	"	"	A3	"
4. "	"	"	41.25MC	"	"	A4	Adjust for MINIMUM deflection.
5. "	"	"	47.25MC	"	"	A5	"
6. "	"	"	45.3MC	"	"	A6	"
7. "	"	"	45.3MC	"	"	Mixer Plate Coil	Adjust for maximum deflection.
8. "	"	"	43.1MC	"	"	A6	Readjust for maximum deflection.
9. "	"	45.0MC (10MC Swp)	45.75MC 47.25MC	"	USE SCOPE. Vert. Amp. thru 10K to point $\diamond$ . Low side to chassis.		Check for response similar to Fig. 1. If necessary, repeat steps 1 thru 8.

## 4.5MC TRAP ALIGNMENT

Tune in a strong TV signal and adjust the Fine Tuning so that a 4.5MC beat pattern is visible in the picture. Adjust A7 for MINIMUM beat interference in the picture.

## SOUND IF ALIGNMENT

Tune in a strong TV signal and adjust A8, A9 and A10 for maximum volume. Adjust A11 for maximum undistorted sound. If two peaks are obtained, use the one with the slug nearest the circuit board. With the antenna loosely coupled to the receiver to provide a weak signal, retouch A8, A9 and A10 for maximum undistorted sound.  
 Check sound on all available channels and if necessary, repeat sound alignment.

TUNER ALIGNMENT INSTRUCTIONS LOCATED ON PAGE 6.

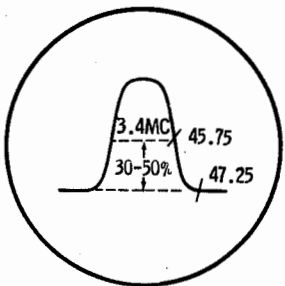


FIG. 1

EMERSON CHASSIS 120517E, 120518F, 120519C,  
 120520D, 120525E, 120526C, 471235

FOLDER 1

## TUNER ALIGNMENT INSTRUCTIONS

### PRE-ALIGNMENT INSTRUCTIONS

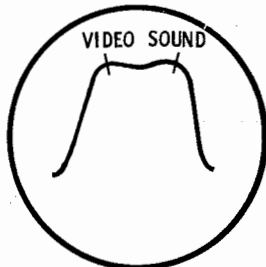
The High Voltage lead should be securely taped and kept away from the chassis.  
Allow a 20 minute warm-up period for the receiver and test equipment.

Suggested alignment tools:

A201, A202 and A203.....	GENERAL CEMENT #5000, 5003, 8276, 8290
	WALSCO #2512, 2525
A204 thru A215.....	GENERAL CEMENT #5009, 8195, 8274, 8275, 8728, 8729, 8987, 8988, 8989
	WALSCO #2515, 2531, 2532

## RF AND MIXER ALIGNMENT

Connect the negative lead of a 4.5 volt bias supply to point  $\textcircled{4}$ . 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.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
1.	Two 120Ω Carbon Resistors	Across antenna terminals with 120Ω in each lead.	195MC	193. 25MC 197. 75MC	10	Vert. Amp. thru 10K to point $\Phi$ . 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	"		Check for response similar to Fig. 201. If markers fall below 70% on any channel, make compromise adjustment of A201 and A202 with channel switch set to that channel. Check all other channels to see that they have not been seriously affected.  FIG. 201
			207MC	205. 25MC 209. 75MC	12			
			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			

### 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 120Ω Carbon Resistors	Across antenna terminals with 120Ω in each lead.	213MC	211. 25MC 215. 75MC	13	Vert. Amp. thru 47K across video det. load.	A204	Adjust to place sound marker in trap notch as in Fig. 202. Video marker should fall at 50%.
			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	

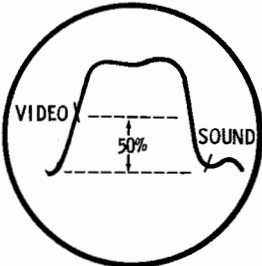


FIG. 202

## TUNER PARTS LIST AND DESCRIPTIONS

**471225  
TUBES**

* GENERAL ELECTRIC *			RAYTHEON *			SYLVANIA *		
ITEM No.	USE	TYPE		ITEM No.	USE	TYPE		
V201	RF Amp.	6FH5		V202	Mixer - Osc.	6CG8A		

## FIXED CAPACITORS

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

ITEM No.	RATING		REMARKS	REPLACEMENT DATA					
				AEROVOX PART No.	CENTRALAB PART No.	CORNELL DUBILIER PART No.	ELMENC0 PART No.	MALLORY PART No.	SPRAGUE PART No.
C201	120	N750 10%							
C202	15	N750 10%							
C203	30	7%							
C204	15	10%							
C205	1000								
C206	1.8-7.0								
C207	100	5%							
C208	.5-3.5								
C209	33								
C210	.5-3.5								
C211	2.2	10%							
C212	1000								
C213	18	N220 10%							
C214	6.8	± .25mmf							
C215	1000								
C216	1000								

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

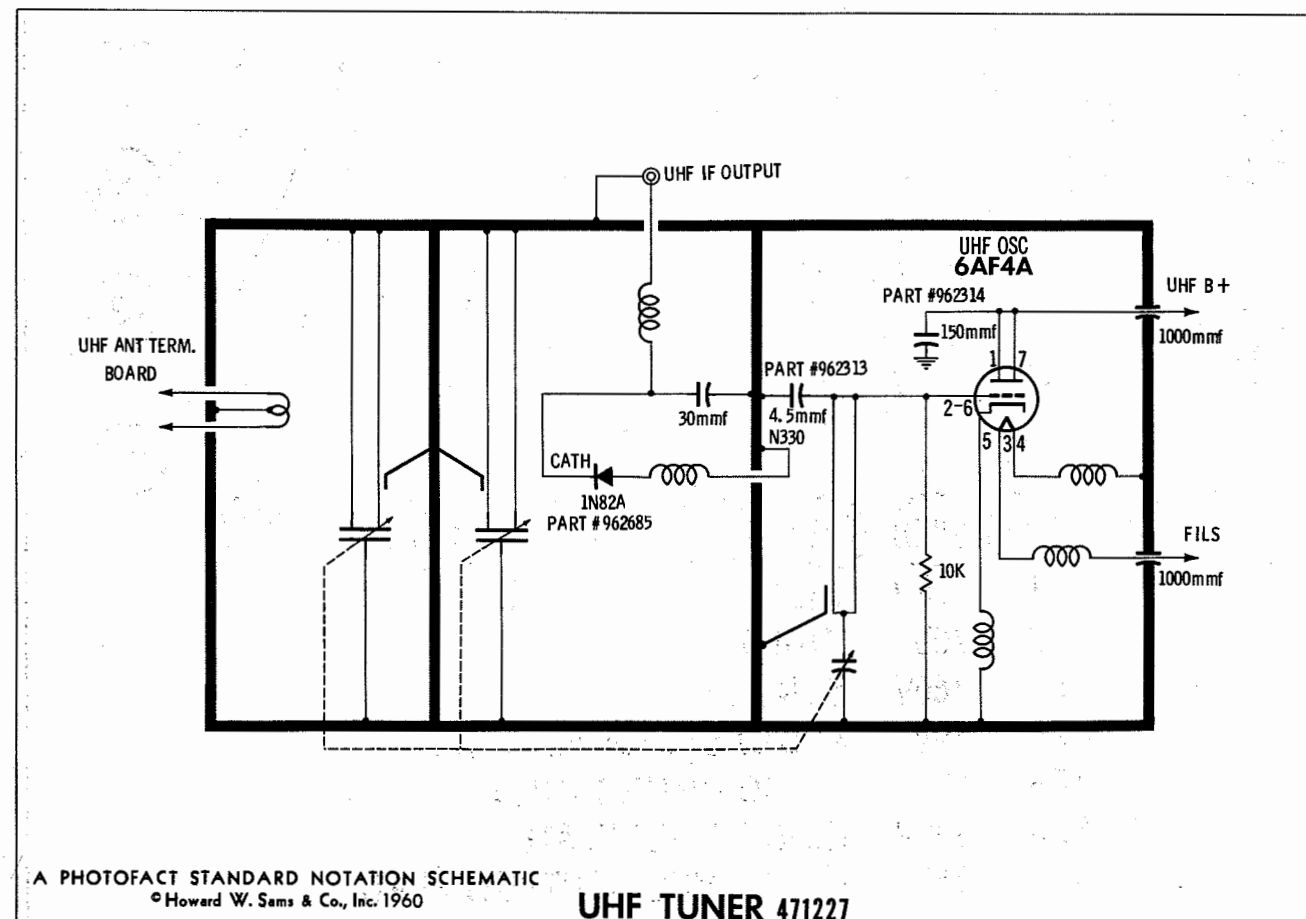
**RESISTORS (IRC or EQUIVALENT)**

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

ITEM No.	RATING	REMARKS
R201	47K	
R202	1000Ω	
R203	4700Ω	

ITEM No.	RATING	REMARKS
R204	220K	
R205	4700Ω	
R206	1000Ω	

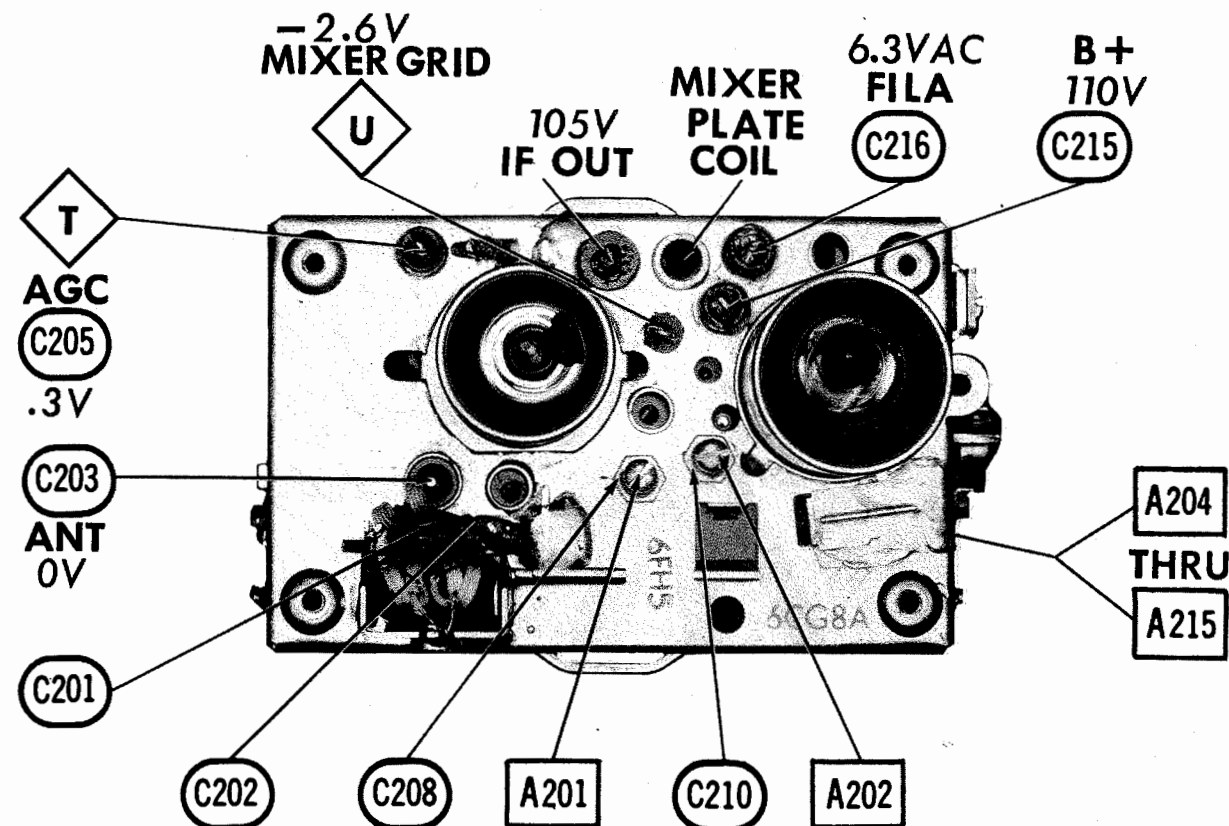
ITEM No.	RATING	REMARKS
R207	4700Ω	



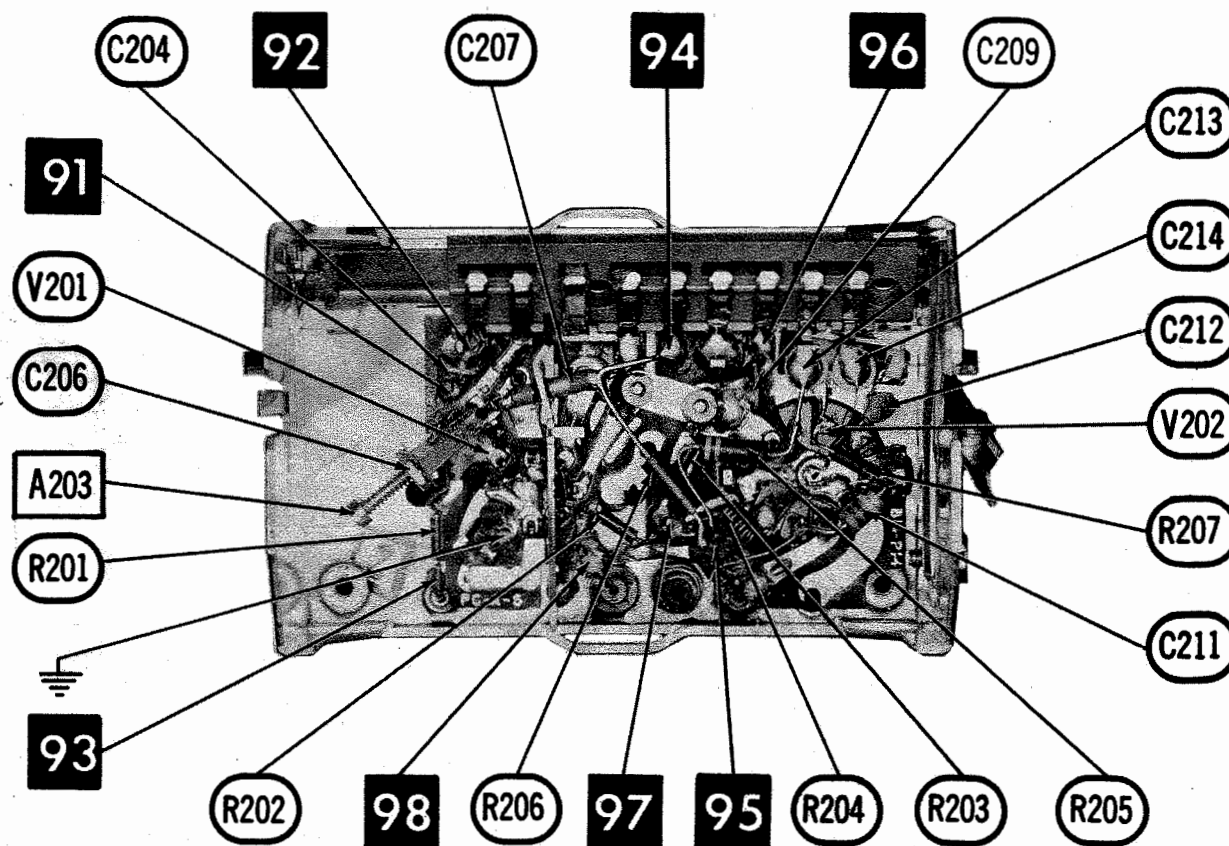
EMERSON CHASSIS 120517E, 120518F, 120519C,  
120520D, 120525E, 120526C, 471235

**FOLDER 1**





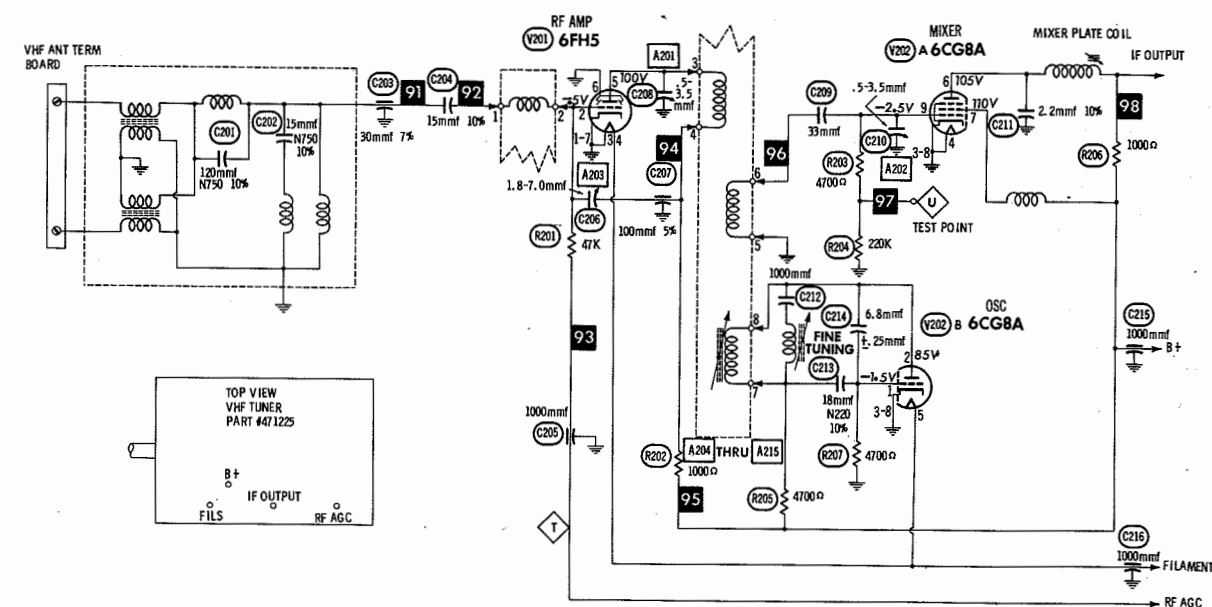
VHF TUNER 471225 - TOP VIEW



VHF TUNER 471225  
BOTTOM VIEW

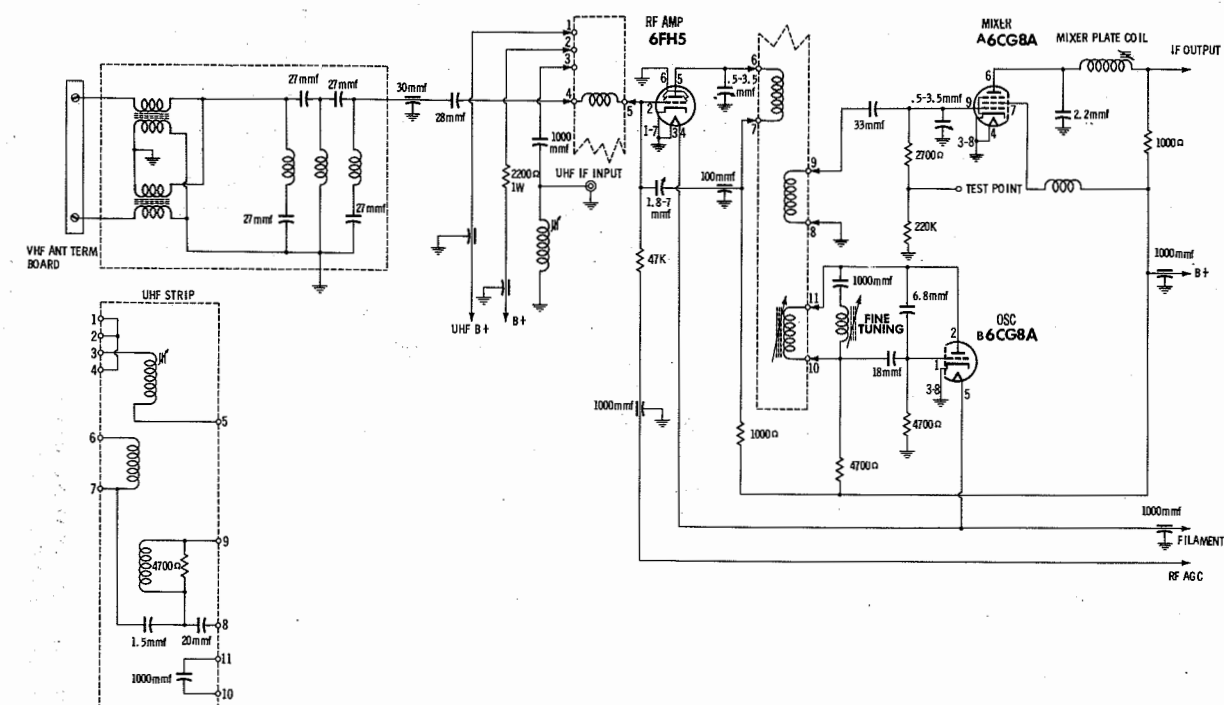
ARROWS INDICATING TUBE LOCATIONS ARE  
POINTING TO PIN 1 UNLESS OTHERWISE INDICATED

A Howard W. Sams CIRCUITRACE Photo



A PHOTOFAC STANDARD NOTATION SCHEMATIC  
with CIRCUITRACE  
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VHF TUNER 471225

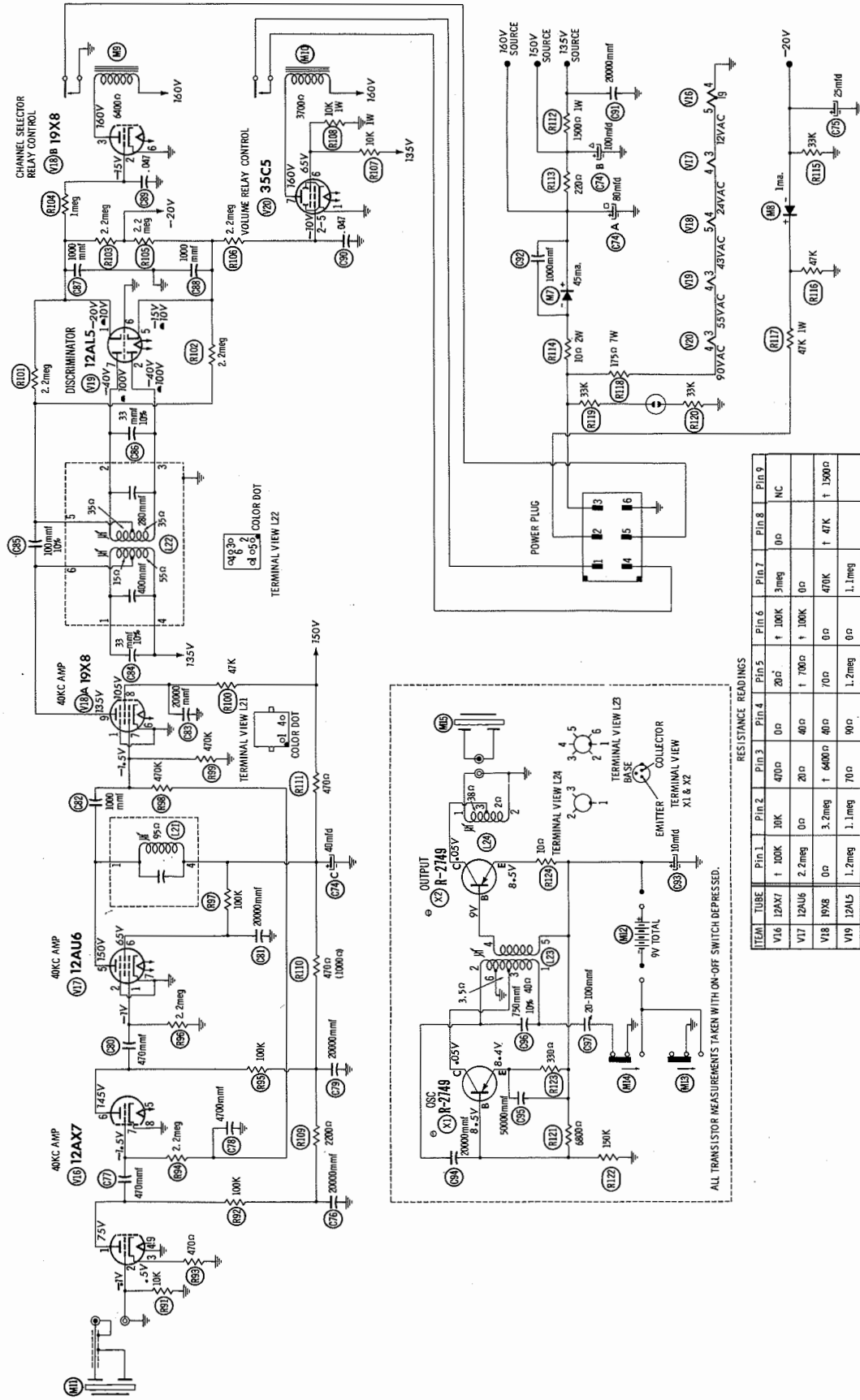


A PHOTOFAC STANDARD NOTATION SCHEMATIC  
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VHF TUNER with UHF Provisions - 471226  
SET 502 FOLDER 1

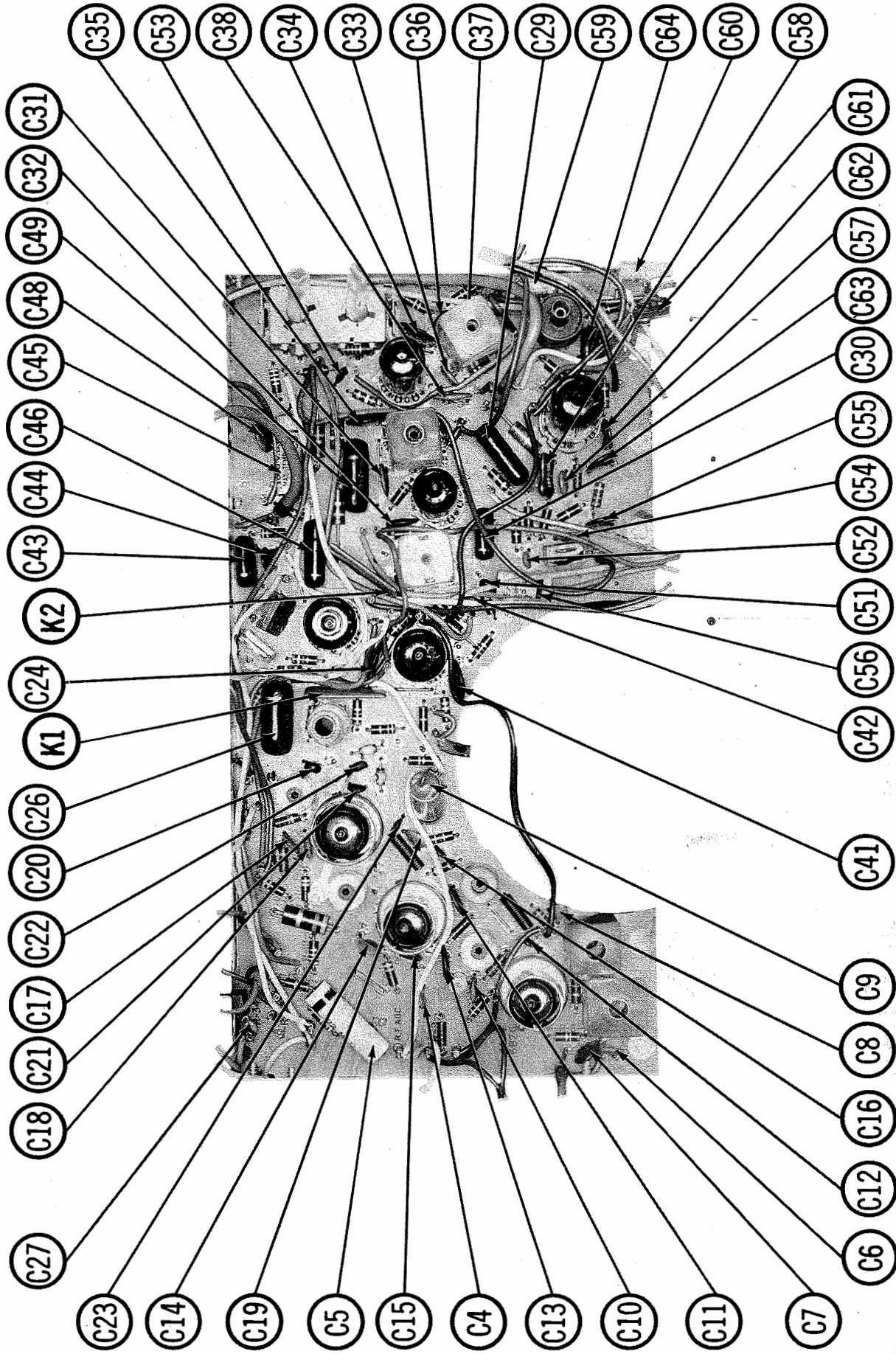
EMERSON CHASSIS 120517E, 120518F, 120519C,  
120520D, 120525E, 120526C, 471235

FOLDER 1



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## REMOTE CONTROL RECEIVER 471235 & TRANSMITTER



EMERSON CHASSIS 120517E, 120518F, 120519C,  
120520D, 120525E, 120526C, 471235