

CONTRAST CONTROL
VOLUME CONTROL
ON-OFF SWITCH
CHANNEL SELECTOR SWITCH
FINE TUNING

HALLICRAFTERS MODEL 1010P

TRADE NAME	Hallicrafters Models 1010P, 1012P (Ch. A1200D, K1200D or W1200D) 1013C (Ch. F1200D), 1021P, 1026P (Ch. D1200D, L1200D or X1200D), 1022C, 1027C (Ch. G1200D), 1111P, (Ch. A1200D) 1113P (Ch. D1200D).		
MANUFACTURER	Hallicrafters Co., 4401 W. 5 th. Ave., Chicago 24, Ill.,		
TYPE SET	Television Receiver		
TUBES	Eighteen		
POWER SUPPLY	110-120 Volts AC-60 Cycle	RATING	1.2 Amp. @ 117 Volts AC
TUNING RANGE	Channels 2 thru 13		

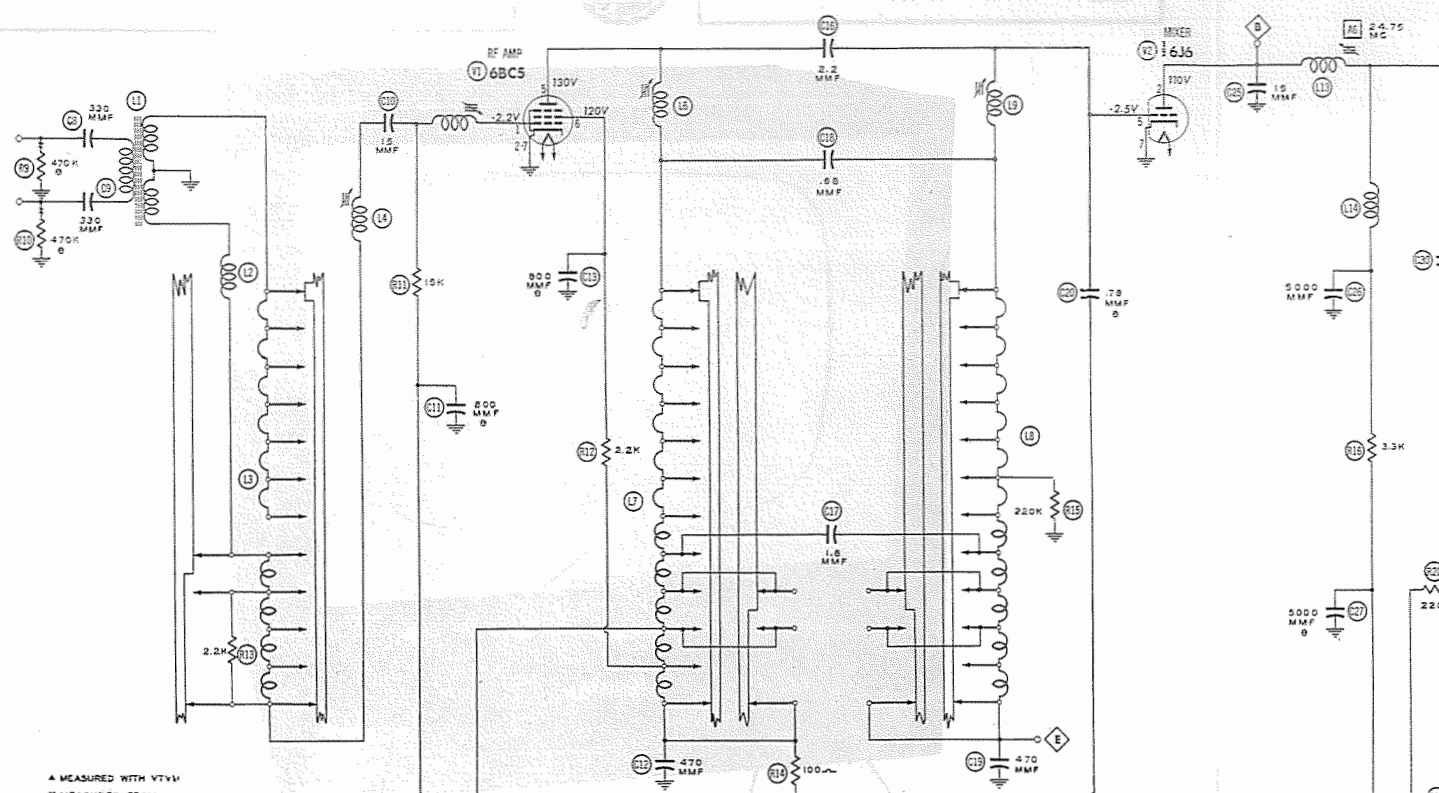
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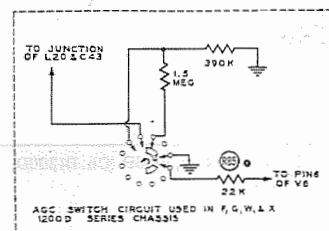
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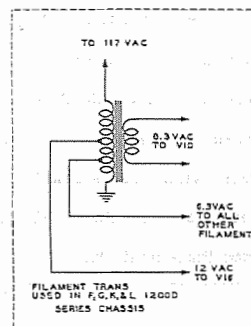


A MEASURED WITH VTVM
B MEASURED FROM
135V LINE
C SEE COMPARISON OF 12000 SERIES
CHASSIS ON PAGE 12 & 17

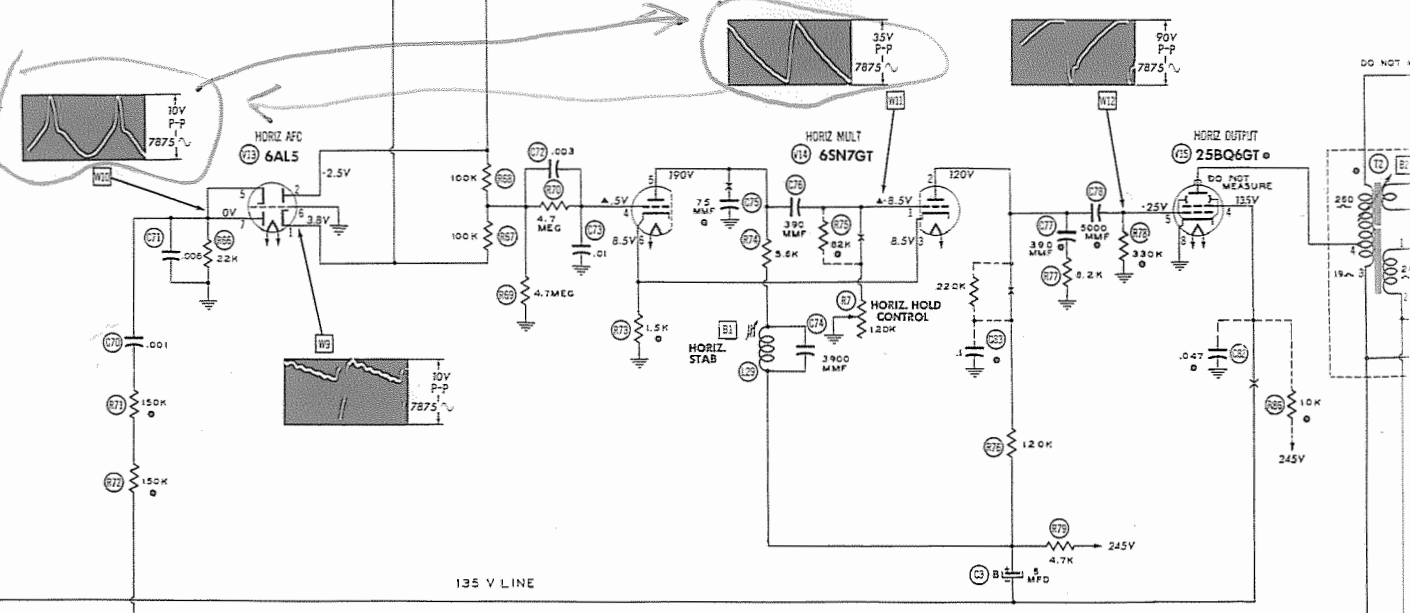
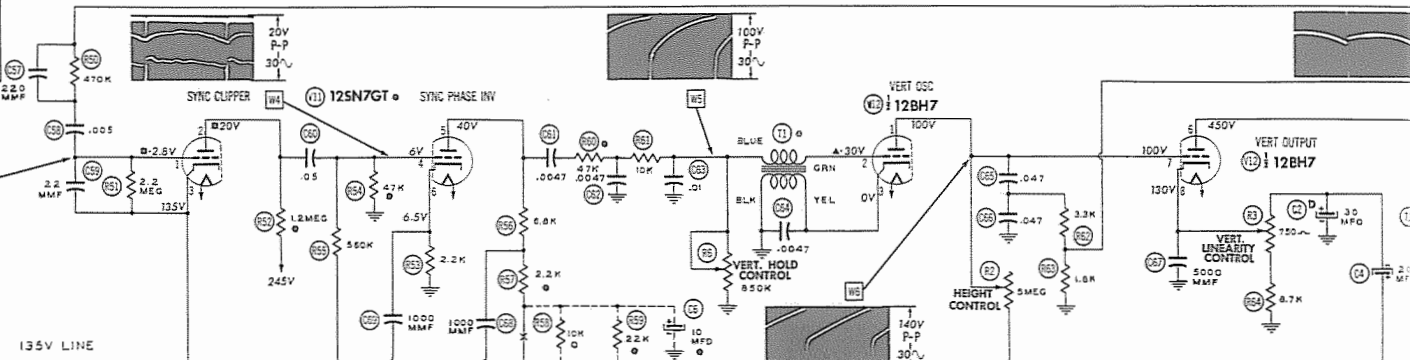
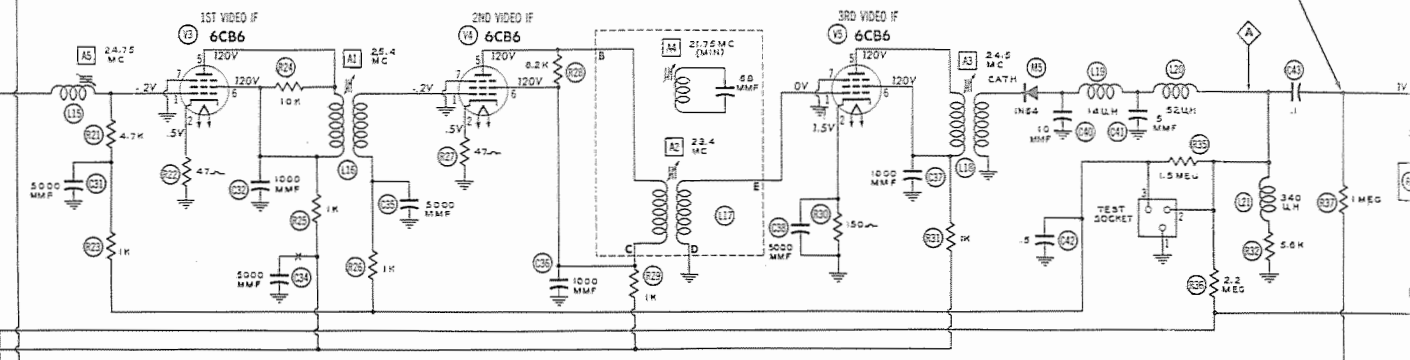
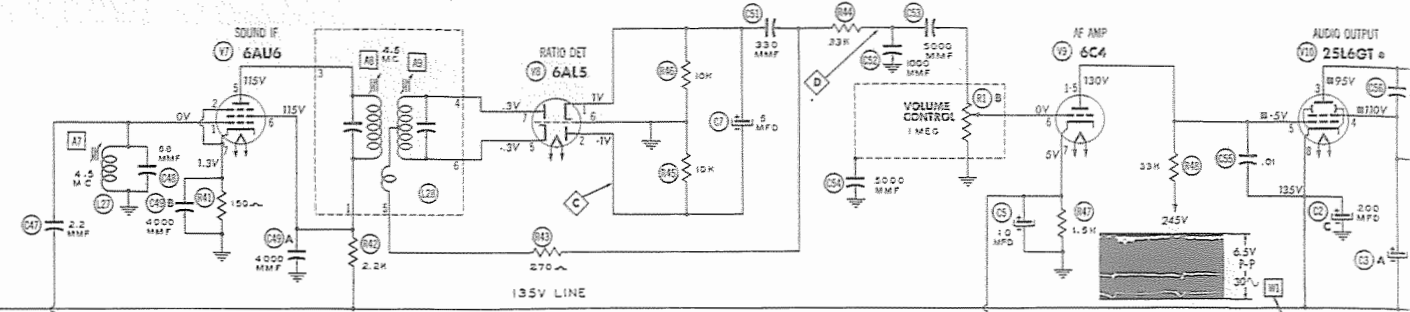
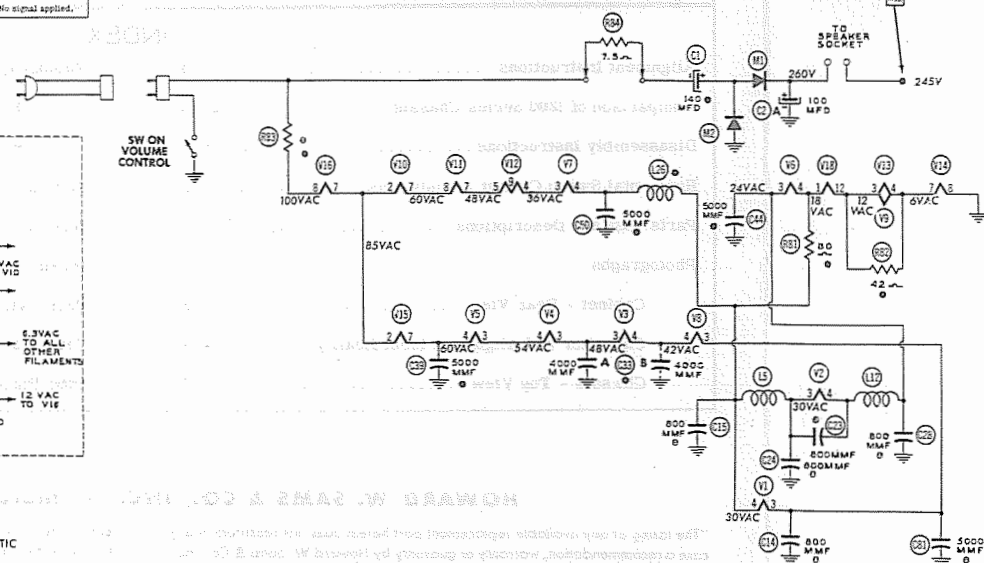


1. DC voltage measurements are at 20,000 ohms per volt. AC voltage measurements at 1,000 ohms per volt.
2. Pin numbers are counted in a clockwise direction on bottom of socket.
3. Measured values are from socket pin to common negative unless otherwise stated.
4. Line voltage maintained at 117 volts for voltage readings.
5. All controls set for normal operation. No signal applied.

D SEE PARTS LIST FOR ALTERNATE
VALUE OR APPLICATION
DOTTED IN PARTS ARE NOT USED IN ALL
MODELS. WHEN DOTTED IN PARTS ARE
USED POINTS MARKED X ARE BROKEN
WAVE FORMS TAKEN WITH CONTROLS
SET TO PRODUCE 50 VOLTS PEAK TO
PEAK SIGNAL AT PICTURE TUBE



THE COOPERATION OF THE MANUFACTURER OF THIS
RECEIVER MAKES IT POSSIBLE TO BRING YOU THIS SERVICE



OF THESE ARE PREPARED BY
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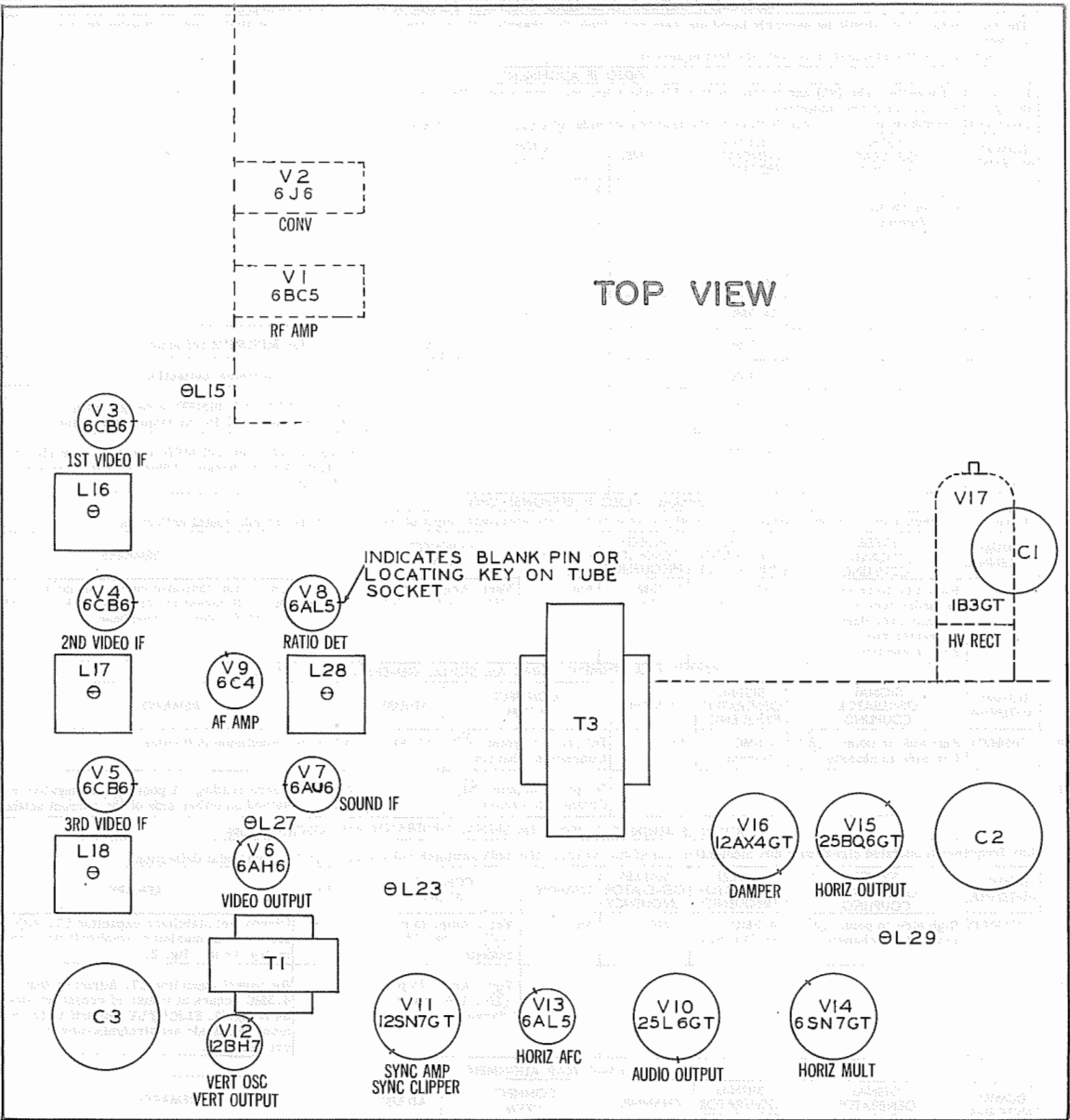
PAGE 3

RESISTANCE MEASUREMENTS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V 1	6BC5	2.3Meg	0Ω	13.8Ω	10.5Ω	320Ω	2.5KΩ	0Ω		
V 2	6J6	10KΩ	3.5KΩ	10.5Ω	9.2Ω	220KΩ	15KΩ	0Ω		
V 3	6CB6	1.5Meg	47Ω	19.8Ω	17.8Ω	1KΩ	1KΩ	0Ω		
V 4	6CB6	1.5Meg	47Ω	19.8Ω	21Ω	1KΩ	1KΩ	0Ω		
V 5	6CB6	.2Ω	150Ω	21Ω	23Ω	1KΩ	1KΩ	0Ω		
V 6	6AH6	1 Meg	290Ω	9.2Ω	6.5Ω	4.8KΩ	33KΩ	290Ω		
V 7	6AU6	1.2Ω	150Ω	14Ω	11.5Ω	2.2KΩ	2.2KΩ	150Ω		
V 8	6AL5	10KΩ	10KΩ	13.8Ω	17.8Ω	1NF	0Ω	1NF		
V 9	6C4	33KΩ	1NF	2.5Ω	4.8Ω	33KΩ	80KΩ	1.5KΩ		
V 10	25L6GT	1NF	26Ω	287Ω	87Ω	33KΩ	4.7Meg	23Ω	25KΩ	
V 11	12SN7GT	2.2Meg	1.2Meg	0Ω	47KΩ	17KΩ	2.2KΩ	20Ω	23Ω	
V 12	12BH7	2.7Meg	525KΩ	50Ω	14Ω	20Ω	775Ω	2.7Meg	9KΩ	17Ω
V 13	6AL5	4.8Meg	4.8Meg	4.8Ω	2.5Ω	22KΩ	0Ω	22KΩ		
V 14	6SN7GT	100KΩ	125KΩ	1.5KΩ	9.4Meg	10KΩ	1.5KΩ	2.5Ω	0Ω	
V 15	25BQ6GT	1NF	26Ω	125KΩ	0Ω	330KΩ	22KΩ	23Ω	0Ω	Top Cap #30Ω
V 16	12AX4GT	1NF	#20Ω	1.1Meg	1NF	87Ω	300KΩ	26Ω	28Ω	
V 17	1B3GT	PINS 1 - 8 HAVE 1NF RESISTANCE								Top Cap #290Ω
V 18	17HP4	6.5Ω	1.8KΩ	#300KΩ	#18Ω	#1 Meg	4.8Ω			

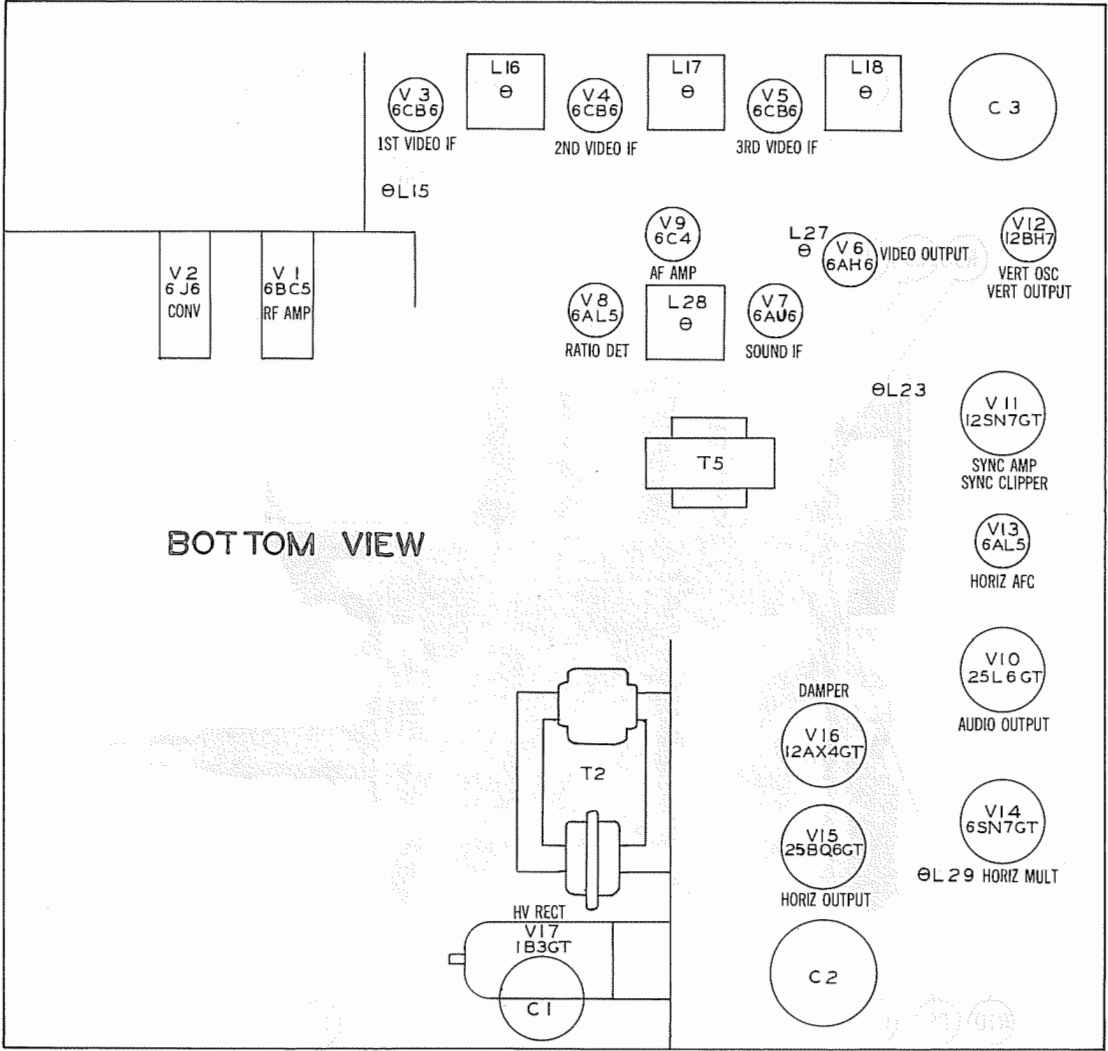
AGC SWITCH IN MAX. COUNTERCLOCKWISE POSITION
ALL CONTROLS SET FOR NORMAL OPERATION, NO SIGNAL APPLIED
† MEASURED FROM OUTPUT OF M1
MEASURED FROM PIN 3 OF V16
■ MEASURED FROM PIN 8 OF V10

TUBE PLACEMENT CHART



HALLICRAFTERS MODELS 1010P, 1012P, 1013C,
1021P, 1022C, 1026P, 1027C, 111P, 113P

BOTTOM VIEW



TUBE PLACEMENT CHART

TUBE FAILURE CHECK CHART

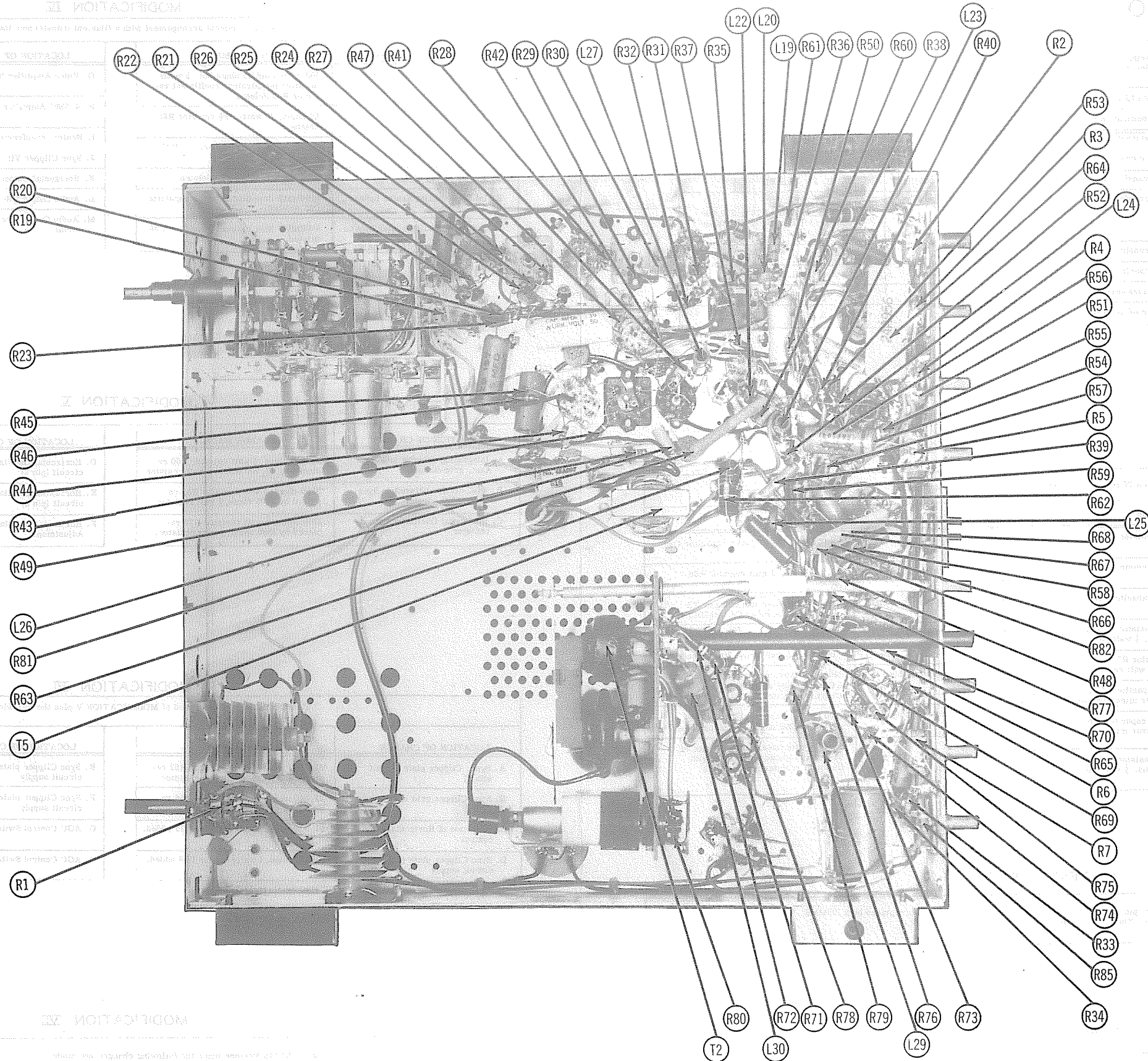
The following chart lists tubes whose failures are most likely to produce the indicated symptoms. Refer to tube placement chart for location and type of tube.

POWER SUPPLY FAILURE No raster, no sound-Selenium Rectifiers (M1, M2)	LOSS OF PICTURE OR SOUND No pic, no sound, has raster, -V2, V3, V4, V5, V6, V10 No pic, no sound, has snow-V1, V2, V3 No pic, has sound, has raster-V6, V18 Has pic, no sound-V7, V8, V9, V10
SYNC FAILURE No vert. sync-V11, V12 No horiz. sync-V11, V13, V14 No vert. or horiz. sync. -V11	SWEEP FAILURE No raster, has sound-V14, V15, V16, V17, V18 No vertical deflection-V12 Poor vert. linearity or foldover-V12 Poor horiz. linearity or foldover-V14, V15, V16 Narrow picture-V14, V15, V16, V17, M1, M2 Vert. off freq. -V11, V12 Horiz. off freq. -V11, V13, V14

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

HALLICRAFTERS MODELS 1010P, 1012P, 1013C,
1021P, 1022C, 1026P, 1027C, 1111P, 1113P

CHASSIS BOTTOM VIEW-RESISTOR AND INDUCTOR IDENTIFICATION



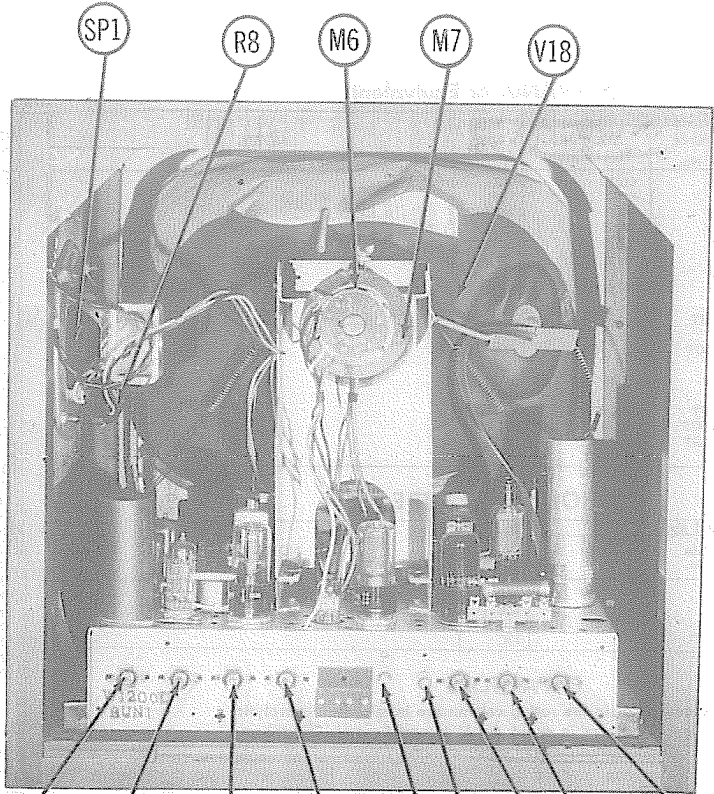
PARTS LIST AND DESCRIPTIONS (Continued)

SELENIUM RECTIFIER

ITEM No.	RATING		REPLACEMENT DATA				NOTES
	CURRENT		Hallcrafters PART No.	SYLVANIA PART No.	SELETRON PART No.	FEDERAL PART No.	
M1	.220		27A173	NF5	6Q4	1090A	
M2	.220		27A173	NF5	6Q4	1090A	

MISCELLANEOUS

ITEM No.	PART NAME	Hallcrafters PART No.	NOTES
M3 A	RF Tuner	IC1345	Models 1010P, 1012P, 1021P, 1026P, 111P, 1113P.
B	RF Tuner	IC1376	Models 1013C, 1022C, 1027C.
M4 A	Switch	60B500	AGC Control models 1012P, 1021P, 1026P, 111P, 1113P.
B	Switch	60B507	AGC Control models 1010P, 1013C, 1022C, 1027C.
M5	Crystal	19B1246	11N64 (Video Detector)
M6	Centering Magnet	21B138	All models.
M7 A	Ion Trap	21A145	Models 1010P, 1012P, 1013C, 111P.
B	Ion Trap	21A146	Models 1021P, 1022C, 1026P, 1027C, 1113P.
	Cabinet	78F863	Mahogany, model 1010P.
	Cabinet	78F864	Mahogany, model 1012P.
	Cabinet	78F867	Mahogany, model 1021P.
	Cabinet	78F869	Mahogany, model 1026P.
	Back Assembly	41A15309	Models 1010P, 1012P.
	Back Assembly	41A15311	Models 1021P, 1026P.
	Cabinet Bottom	8D1921	Models 1010P, 1012P.
	Cabinet Bottom	8D1920	Models 1021P, 1026P.
	Safety Glass	22D366	Models 1010P, 1012P.
	Safety Glass	22A370	Models 1021P, 1026P.
	Knob	15C518	Channel Selector-All models.
	Knob	15C517	Contrast Control-All models.
	Knob	15C492	Fine Tuning-All models.
	Knob	15C519	Off/On Volume-All models.
	Knob	15A520	AGC Control Switch (Not used on all models)
	Knob	15A530	Horizontal Hold Control (Not used on all models)
	Knob	15A530	Vertical Hold Control (Not used on all models)
	Mask	7D385	Models 1010P, 1012P.
	Mask	7D388	Models 1021P, 1026P.



CABINET-REAR VIEW

HORIZONTAL SWEEP CIRCUIT ADJUSTMENTS

Turn the set on and tune in a TV station, preferably a test pattern.
If the horizontal hold control fails to restore synchronization proceed as follows:

FOR CHASSIS A1200D and D1200D

1. Set brightness control for normal picture and turn contrast as low as possible with picture still visible on screen.
2. Turn the horizontal centering control fully clockwise so that right hand edge of raster is visible. If necessary reduce the picture width until the edge is visible.
3. Connect a .1MFD 600 V. capacitor from the junction of R74 and L29 to chassis.
4. Adjust the horizontal hold control for a single picture with its right edge approximately 1/4 inch to the left of the right edge of the raster.
5. Remove the .1MFD capacitor.
6. Adjust the horizontal stabilizer core (B1) until the right edge of the picture and raster are the same distance apart as they were in step 4.
7. Readjust the horizontal centering control and the width control for normal operation.

FOR CHASSIS F, G, K, L, W and X1200D

1. Set the horizontal hold control to the mechanical center of its range.
2. Adjust B1 until the picture synchronizes horizontally.
3. Rotate the horizontal hold control fully clockwise. If the picture remains in sync, switch momentarily to another channel and back again. Picture should be slightly out of sync.
4. Rotate horizontal hold control fully counter clockwise. If picture remains in sync, switch momentarily to another channel and picture should be slightly out of sync.

When B1 is properly adjusted results will be obtained as in steps 3 and 4. If correct results are not obtained repeat steps 2, 3 and 4 until they are.

WIDTH ADJUSTMENT
Adjust the width slug (B2) until picture is slightly wider than necessary to fill the picture mask horizontally.

DISASSEMBLY INSTRUCTIONS

- 1 Remove 4 push on type control knobs from front panel.
- 2 Remove built-in antenna & lead in wire from rear cover.
- 3 Remove 7 wood screws and 1 metal screw. Remove rear cover.
- 4 Disconnect speaker. Remove 4 nuts holding speaker. Remove speaker.
- 5 Remove 4 chassis bolts. Remove chassis.

NOTE: FOR PICTURE TUBE REMOVAL IT IS NECESSARY TO REMOVE CHASSIS AS OUTLINES ABOVE.

HALLCRAFTERS MODELS 1010P, 1012P, 1013C, 1021P, 1022C, 1026P, 1027C, 111P, 1113P

PARTS LIST AND DESCRIPTIONS

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA		RMA BASE TYPE	NOTES
		Hallcrafters PART No.	STANDARD REPLACEMENT		
V1	RF Amplifier	90X6BC5	6BC5	7BD	
V2	Converter	90X6J6	6J6	7BF	
V3	1st Video IF Amp.	90X6CB6	6CB6	7CM	
V4	2nd Video IF Amp.	90X6CB6	6CB6	7CM	
V5	3rd Video IF Amp.	90X6CB6	6CB6	7CM	
V6	Video Output	90X6AH6	6AH6	7BK	
V7	Sound IF Amp.	90X6AU6	6AU6	7BK	
V8	Ratio Detector	90X6AL5	6AL5	6BT	
V9	AF Amplifier	90X6C4	6C4	6BG	
V10	Audio Output	90X25L6CT	25L6CT	7AC	
V11	Sync Clipper - Sync Phase Inv.	90X12SN7GT	12SN7GT	8BD	
V12	Vert. Oscillator - Vert. Output	90X12BH7	12BH7	9A	
V13	Horiz. AFC	90X6AL5	6AL5	6BT	
V14	Horiz. Mult.	90X6SN7GT	6SN7GT	8BD	
V15	Horiz. Output	90X25BQ6GT	25BQ6GT	6AM	
V16	Damper	90X12AX4GT	12AX4GT	4CG	
V17	HV Rectifier	90X1B3CT	1B3CT	3C	

CATHODE-RAY TUBE

ITEM No.	USE	REPLACEMENT DATA		RTMA BASE TYPE	NOTES
		Hallcrafters PART No.	SYLVANIA PART No.		
V18.	17HP4	17HP4		12C	
B	20HP4	17RP4 20HP4 20HP4A ①		12C 12C 12C	① Circuit changes necessary.

CAPACITORS

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

ITEM No.	RATING	REPLACEMENT DATA						NOTES
		Hallcrafters PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL DUBINER PART No.	ERIE PART No.	MALLORY PART No.	
C1	140	45B207	AFH1-23		UPE10015		FP117	Note 1
C2A	100	45C209	E4D491		UPT436		FP419.4	
B	100							
C	200							
C3A	200							
B	150							
C	150							
C4	150							
C5	20	45B208	PRS450/20		BR415	TC75	TVA-1709	Note 2
C6	50	45B211	PRS50/10		BR2045A	TC32	TVA-1304	
C7	5	45B175	PRS150/12		BR105	TC42	TVA-1406	Note 2
C8	330	47B20331M5	PRS150/4		BR550	TC30	TVA-1303	
C9	330	47B20331M5	S1330	D6-331		GP2K-331	UC-5333	Note 3
C10	15		S1330	D6-331		UC-5333	5GA-T33	
C11	800		S115	D6-150		GP1K-150	5GA-Q15	Note 3
C12	470		BPD-0008	DD-801	TM5T8	DC-521	5HK-D1	
C13	800		S1470	DD-471	TM5T8	UC-5347	5GA-T47	Note 4
C14	800		BPD-0008	DD-801	TM5T8	DC-521	5HK-D1	
C15	800		BPD-0008	DD-801	TM5T8	DC-521	5HK-D1	Note 3
C16	2.2			TCZ-2.2		NPOK-2R2	5TCCB-V22	
C17	1.8							
C18	.68			TCZ-.68		NPOK-R68		
C19	470		S1470	D6-471	TM5T8	GP2K-471	UC-5347	Note 4
C20	.78							
C21	10		S110N750	TCN-10		N750K-100	NT-541	Note 3
C22	3					N150K-030		
C23	000		BPD-0008	DD-801	TM5T8	DC-525	5HK-D1	Note 3
C24	000		BPD-0008	DD-801	TM5T8	DC-525	5HK-D1	
C25	15		S115	D6-150		UC-5415	5GA-Q15	Note 5
C26	5000		BPD-0005	DD-502	TM5D5	DC-525	5HK-D5	
C27	5000		BPD-0005	DD-502	TM5D5	DC-525	5HK-D5	Note 3
C28	000		BPD-0008	DD-801	TM5T8	DC-521	5HK-D1	
C29	.05	46AU503J	P288-05	DF-503	P285	PT415	2TM-S5	Note 2
C30	330	47B20331M5	S1330	D6-331		GP2K-331	UC-5333	
C31	5000	47A168	BPD-005	DD-502	TM5D5	DC-525	5HK-D5	Note 2
C32	1000	47A230	BPD-001	DD-102	TM5D1	DC-521	5HK-D1	
C33A	4000	47A218						
B	4000							
C34	5000	47A168	BPD-005	DD-502	TM5D5	DC-525	5HK-D5	Note 2
C35	5000	47A168	BPD-005	DD-502	TM5D5	DC-525	5HK-D5	
C36	1000	47A230	BPD-001	DD-102	TM5D1	DC-521	5HK-D1	Note 2
C37	1000	47A230	BPD-001	DD-102	TM5D1	DC-521	5HK-D1	
C38	5000	47A168	BPD-005	DD-502	TM5D5	DC-525	5HK-D5	Note 2
C39	5000	47A168	BPD-005	DD-502	TM5D5	DC-525	5HK-D5	
C40	10	47B20100K5	S110	D6-100	5W5Q1	GP1K-100	UC-541	Note 2
C41	5	47A160-6	S15	TCZ-.4.7		GP1K-050	5GA-V5	
C42	.5	46A177						Note 2
C43	.1	46AU104J	P288-1	DF-104	PJ2P1	PT401	2TM-P1	
C44	5000	46A160	BPD-005	DD-502	TM5D5	DC-525	5HK-D5	Note 2
C45	30	47X20PG300K5						
C46	.1	46AV104J	P488-1	DF-104	PTE4P1	PT401	4TM-P1	Note 2
C47	2.2	47X20TH600K5		TCZ-2.2		NPOK-2R2	5TCCB-V22	
C48	60					N470L-60		
C49A	4000	47A218						
B	4000							
C50	5000	46A168	BPD-005	DD-502	TM5D5	DC-525	5HK-D5	Note 2
C51	330	47B20331M5	S1330	D6-331		GP2K-331	UC-5333	
C52	1000	47A230	BPD-001	DD-102	TM5D1	DC-521	5HK-D1	Note 2
C53	5000	47A168	BPD-005	DD-502	TM5D5	DC-525	5HK-D5	
C54	5000	47A168	BPD-005	DD-502	TM5D5	DC-525	5HK-D5	Note 2
C55	.01	46AW103J	P480-01	D6-103	PTE4S1	GP2-333-103	PT411	
C56	.02	46A2021K5	S1220	D6-221	5W5T25	GP2K-221	UC-5322	Note 2
C57	.02					PT625	6TM-D5	
C58	.005	46AY502J	P688-005	D6-502	PTE6D5	GP2-333-502	PT625	

CAPACITORS (CONT.)

ITEM No.	RATING	REPLACEMENT DATA						NOTES
		Hallcrafters PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL DUBINER PART No.	ERIE PART No.	MALLORY PART No.	
C59	22	47B20220M5	S122	D6-220	5W5Q25	GP1K-220	UC-5422	Note 2
C60	.05	46AW503J	P488-05	DF-503	PTE4S1	GP2-333-472	PT415	
C61	.0047	46BS472L4	P688-0047	D6-472	PTE6D47	GP2-333-472	PT6247	Note 2
C62	.0047	46BS472L4	P688-0047	D6-472	PTE6D47	GP2-333-472	PT6247	
C63	.01	46BS103L4	P488-01	D6-103	PTE4S1	GP2-333-103	PT411	Note 2
C64	.0047	46BS472L4	P688-0047	D6-472	PTE6D47	GP2-333-472	PT6247	
C65	.047	46BS473L4	P488-047	DF-503	PTE4S47	GP2-333-472	PT4147	Note 2
C66	.047	46BS473L4	P488-047	DF-503	PTE4S47	GP2-333-472	PT4147	
C67	5000	47A168	BPD-005	DD-502	TM5D5	DC-525	5HK-D5	Note 2
C68	1000	47B20A102M5	S11000	D6-102	TM5D1	GP2L-102	UC-521	
C69	1000	47B20A102M5	S11000	D6-102	TM5D1	GP2L-102	UC-521	Note 2
C70	.001	46BS102L10	P1088-001	D6-102	PTE16D1	GP2-333-102	PT621	
C71	.006	46AZ602F	P688-006	D6-102	PTE6D6	GP2-333-102	PT626	Note 2
C72	.003	46AW302J	P688-003	D6-302	PTE6D3	GP2-333-302	PT623	
C73	.01	46AW103J	P488-01	D6-103	PTE4S1	GP2-333-103	PT411	Note 2
C74	3900	47X30D392K	I464-004	D6-750	IDR5D4	GP1K-750	UC-5475	
C75	75	47B20750K5	S175					Note 2
C76	390	47X20D391K	I469-004		5R5T4			
C77	390	47X20D391K	I469-004		5R5T4			Note 6
C78	5000	47A168	BPD-005	DD-502	TM5D5	DC-525	5HK-D5	
C79	120	47A296						Note 8
C80	500	20000	47A216	TV3-502	MM-C20T5	413-501	20DK-75	
C81	5000		47A168	BPD-005	DD-502	TM5D5	5HK-D5	Note 2
C82	.047	600	47BS473L4	P688-047	DF-503	PTE6S47	6TM-D3	
C83	.1	600	46AY104J	P688-1	DF-104	PTE6P1	6TM-P1	

Note 1. Some Models use 20MFD in this application.
Note 2. Not used in all Models.
Note 3. Some Models use 500MMF in this application.
Note 4. Some Models use .39MMF in this application.
Note 5. Some Models use 470MMF in this application.
Note 6. Some Models use 470MMF in this application (Part #47X20D471K).
Note 7. Some Models use 500MMF in this application (Part #47X20D501K).
Note 8. Used only when picture tube does not have outer aquadag coating.

CONTROLS

ITEM No.	RATING	REPLACEMENT DATA						INSTALLATION NOTES
		Hallcrafters PART No.	IRC PART No.	CLAROSTAT PART No.	CENTRALAB PART No.	MALLORY PART No.		
RIA	25000	25B997	QJ-345 *	RTV-234	SBB-722-S	UF252L		Contrast-Panel Volume-Rear Attach to R1B
B	1 Meg					US-26		
C	Switch					U-65		Height-Note 1 Attach to R2A
R2A	5 Meg	25B996	Q11-141	AG-85-S	AB-87	U-65		
B	Shaft	Not Req.	Not Req.	KSS-3	AK-4	Not Req.		Vert. Linearity Attach to R3A
R3A	7500	25B999	Q11-105	AG-85-S	AB-5	U-4		
B	Shaft	Not Req.	Not Req.	KSS-3	AK-1	Not Req.		Focus-Note 2 Attach to R4A
R4A	1.5Meg	25B1003	Q11-138	AG-83-S	AB-75	U-155		
B	Shaft	Not Req.	Not Req.	KSS-3	AK-1	Not Req.		Brightness-Note 6 Attach to R5A
R5A	5 Meg	25B1000	Q11-141	AG-85-S	AB-69	U-54		
B	Shaft	Not Req.	Not Req.	KSS-3	AK-4	Not Req.		Vert. Hold-Note 3 Attach to R6A
R6A	500K	25B1001	Q11-133	AG-61-S	AB-46	U-43		
B	Shaft	Not Req.	Not Req.	KSS-3	AK-4	Not Req.		Horiz. Hold-Note 4 Attach to R7A
R7A	120K	25B1002	Q11-128	AG-52-S	AB-46	U-43		
B	Shaft	Not Req.	Not Req.	KSS-3	AK-4	Not Req.		Hun Balance-Wire Wound Note 5
R8	50							

* CONCENTRIK EQUIVALENT - KIT K-2, BASE ELEMENTS & SHAFTS B17-III & P1-100 (Panel)

Note 1. Add 1 Meg resistor in series with clockwise terminal & positive side of C4.
Note 2. Some models use alternate control (Part no. 25A1003).
Note 3. Add 330K resistor in series with clockwise terminal & Ground.
Note 4. Add 47K resistor in series with clockwise terminal & junction of C76 & R75.
Note 5. Not used in all models.
Note 6. Add 100K resistor in series with clockwise terminal & ground.

RESISTORS

ITEM No.	RATING	REPLACEMENT DATA		NOTES
		Hallcrafters PART No.	IRC PART No.	
R9	470K		BTS-470K	Note 1
R10	470K		BTS-470K	
R11	15K		BTS-15K	Note 1
R12	22000		BTS-2200	
R13	22000		BTS-2200	Note 1
R14	1000		BTS-100	
R15	220K		BTS-220K	Note 1
R16	33000		BTS-3300	
R17	15K		BTS-15K	Note 1
R18	10K		BTS-10K	
R19	100K		BTS-100K	Note 2
R20	2200	23X20X221K	BTS-220	
R21	47000	23X20X472K	BTS-4700	Note 3
R22	470	23X20X470K		
R23	10000	23X20X102K	BTS-1000	Note 4
R24	10K	23X20X103K		
R25	10000	23X20X102K	BTS-1000	Note 1
R26	10000	23X20X102K	BTS-1000	
R27	470	23X20X470K		Note 1
R28	02000	23X20X022K		
R29	10000	23X20X102K	BTS-1000	Note 1
R30	1500	23X20X151K	BTS-150	
R31	10000	23X20X102K	BTS-1000	Note 1
R32	56000	23X20X562K	BTS-5600	
R33	390K	23X20X394K	BTS-390K	Note 1
R34	1.5Meg	23X20X155K	BTS-1.5Meg	
R35	1.5Meg	23X20X155K	BTS-1.5Meg	Note 1
R36	2.2Meg	23X20X225K	BTS-2.2Meg	
R37	1Meg	23X20X105K	BTS-1Meg	Note 5
R38	33K	23X30X333K	BTA-33K	
R39	47000	23X40X472K	BTA-4700	Note 6
R40	10K	23X20X103K	BTS-10K	
R41	1500	23X20X151K	BTS-150	

ITEM No.	RATING	REPLACEMENT DATA		NOTES
		Hallcrafters PART No.	IRC PART No.	
R42	22000	23X20X222K	BTS-2200	Note 1
R43	270K	23X20X271K	BTS-270	
R44	330K	23X20X333K	BTS-33K	Note 1
R45	10K-5%	23X20X103J	BTS-10K-5%	
R46	10K0-5%	23X20X103J	BTS-10K-5%	Note 1
R47	15000	23X20X152K	BTS-1500	
R40	33K	23X20X333K	BTS-33K	Note 1
R49	470K	23X20X474K	BTS-470K	
R50	470K	23X20X474K	BTS-470K	Note 2
R51	2.2Meg	23X20X225K	BTS-2.2Meg	
R52	1.2Meg	23X20X125K	BTS-1.2Meg	Note 3
R53	22000	23X20X222K	BTS-2200	
R54	47K	23X20X473K	BTS-47K	Note 4
R55	5600K	23X30X564K	BTA-5600	
R50	68000	23X20X682K	BTS-6800	Note 1
R57	22000	23X20X222K	BTS-2200	
R58	10K	23X30X103K	BTA-10K	Note 1
R59	22K	23X30X223K	BTA-22K	
R60	47K	23X20X473K	BTS-47K	Note 3
R61	10K	23X20X103K	BTS-10K	
R62	33000	23X20X332K	BTS-3300	Note 1
R 63	18000	23X20X182K	BTS-1800	
R64	07000	24A956		Note 1
R65	120K	23X20X121K	BTS-120	
R66	22K	23X20X223K	BTS-22K	Note 1
R67	100K	23X20X104K	BTS-100K	
R68	100K	23X20X104K	BTS-100K	Note 1
R69	4.7Meg	23X20X475K	BTA-4.7Meg	
R70	4.7Meg	23X20X475K	BTS-4.7Meg	Note 5
R71	150K	23X30X154K	BTA-150K	
R72	150K	23X30X154K	BTA-150K	Note 6
R73	15000	23X20X152K	BTS-1500	
R74	5000	23X20X502K	BTS-5000	

COMPARISON OF 1200 SERIES CHASSIS

The A1200D may be considered the basic chassis in the series 1200 chassis. The D, F, G, K, L, W and X1200D chassis are all based on the A1200D chassis with any one or more of the modifications shown below. See chart below for modifications used in any particular chassis.				
CHASSIS	PIX TUBE SIZE See Modification I	HEATER CIRCUIT See Modification IV	TUNER TYPE See Modification VII	MODIFICATIONS USED and/or NOTES FOR RUN 1
A1200D	17" glass	Series-parallel	1C1345 Pentode	Basic 1200 series chassis.
D1200D	20" glass	Series-parallel	1C1345 Pentode	I except step D & II
F1200D	17" glass	Transformer	1C1376 Cascode	II, III, IV, VI & VII
G1200D	20" glass	Transformer	1C1376 Cascode	I, II, IV, VI & VII On some chassis, R78 is 270,000 ohms and R76 value is 100,000 or 120,000 ohms.
K1200D	17" glass	Transformer	1C1345 Pentode	IV & V
L1200D	20" glass	Transformer	1C1345 Pentode	I except D, II, IV & V
W1200D	17" glass	Series-parallel	1C1345 Pentode	II & VI
X1200D	20" glass	Series-parallel	1C1345 Pentode	I, II, & VI

MODIFICATION I

To change from a 17 inch to a 20 inch picture tube the following changes are made.			
LOCATION OF CHANGE	CHANGE MADE	LOCATION OF CHANGE	CHANGE MADE
A. High side of Horizontal Hold Control	82,000 ohms, 1/2 watt resistor added.	I. Horizontal Output stage screen bypass	.047 MFD, 400V. paper capacitor C82 added.
B. Plate (pin 2) circuit of Horizontal Oscillator to R76.	220,000 ohms, 1/2 watt resistor added.	J. Horizontal Output stage screen resistor	10,000 ohms, 2 watt resistor R86 added.
C. Plate supply decoupling of Horizontal Oscillator (pin 2)	.1MFD, 600 V. paper capacitor added.	K. Horizontal Output stage output transformer	Horizontal Output transformer T2 (55D193) replaced by Part #55D197.
D. Plate supply decoupling of Horizontal Oscillator (pin 2)	120,000 ohms, 1/2 watt resistor R76 replaced by 180,000 ohms, 1/2 watt resistor.	L. Servo Loop feedback from Horizontal Output to AGC tube	Two 150,000 ohms, 1 watt resistors R71 and R72 series connected replaced by 33,000 ohms, 1 watt resistor.
E. Plate (pin 2) circuit of Horizontal Oscillator	4700 ohms, 1/2 watt resistor R77 replaced by 8200 ohms, 1/2 watt resistor.	M. Series capacitor in doubler power supply	140MFD, 150V. electrolytic capacitor C1 replaced by 200MFD, 150V. electrolytic capacitor.
F. Plate (pin 2) circuit of Horizontal Oscillator	470MMF silver mica capacitor C77 replaced by 390MMF silver mica capacitor.	N. Audio output tube cathode resistor	1500 ohms, 1/2 watt resistor R47 replaced by 1200 ohms, 1/2 watt resistor.
G. Horizontal Output stage grid coupling	5000MMF disc ceramic capacitor C78 replaced by 560MMF silver mica capacitor.	O. Speaker	Speaker with field coil resistance of 85 ohms replaced by speaker with field coil resistance of 61 ohms.
H. Horizontal Output stage grid leak	330,000 ohms, 1/2 watt resistor R78 replaced by 390,000 ohms, 1/2 watt resistor.		

MODIFICATION II

The 75MMF, 500V. ceramic capacitor, C75, connected from plate pin 5 to ground of the horizontal Oscillator, V14, is replaced by a 100MMF, 500V. silver mica capacitor. Some chassis have neither of these capacitors. The 100MMF capacitor is the preferred capacitor.

MODIFICATION III

The horizontal integrating network in the grid circuit (pin 4) of the horizontal oscillator is changed as follows:

- A. 4.7 megohms, 1/2 watt resistor R70 is replaced by 470,000 ohms, 1/2 watt resistor.
B. .003MFD, 400V. paper capacitor C72 is replaced by .005MFD, 400V. paper capacitor.
C. .01MFD, 400V. paper capacitor C73 is replaced by .05MFD, 400V. paper capacitor.

MODIFICATION IV

To replace series parallel filament arrangement with a filament transformer the following changes are made:			
LOCATION OF CHANGE	CHANGE MADE	LOCATION OF CHANGE	CHANGE MADE
A. Between power line and Damper heater pin 8	190 ohms cold/19 ohms hot, 5 watts negative temperature coefficient resistor R83 deleted.	G. Video Amplifier heater bypass	5000MMF disc ceramic capacitor C44 deleted.
B. Heater string shunt	80 ohms, 10 watts, 5% resistor R81 deleted.	H. 4.5MC Amplifier heater bypass	5000MMF disc ceramic capacitor C50 deleted.
C. Heater string shunt	42 ohms, 3 watts, 5% resistor R82 deleted.	I. Heater transformer	Auto transformer 52C258 added.
D. Heater string choke	Air core RF choke L26 deleted.	J. Sync Clipper V11	125N7GT tube replaced by 65N7GT tube.
E. 1st.IF Amplifier heater bypass	4000MMF dual disc ceramic capacitor C33 deleted.	K. Horizontal Output V15	25BQ6GT tube replaced by 6BQ6GT tube.
F. 3rd.IF Amplifier heater bypass	5000MMF disc ceramic capacitor C39 deleted.	L. Audio Output V10	25L6GT tube replaced by 6W6 tube.
		M. Audio Output tube socket wiring	Cathode pin 8 connected directly to heater pin 7 to place both heater and cathode at the same potential.

MODIFICATION V

LOCATION OF CHANGE	CHANGE MADE	LOCATION OF CHANGE	CHANGE MADE
A. Integrating network in Vert. Osc. grid circuit.	22,000 ohms, 1/2 watt resistor R60 replaced by 47,000 ohms, 1/2 watt resistor.	D. Horizontal Oscillator plate circuit (pin 2)	4700 ohms, 1/2 watt resistor R77 replaced by 8200 ohms, 1/2 watt resistor.
B. AGC divider network in Sync Clip. Plate circuit	3300 ohms, 1/2 watt resistor R57 replaced by 2200 ohms, 1/2 watt resistor.	E. Horizontal Oscillator plate circuit (pin 2)	470MMF silver mica capacitor C77 replaced by 390MMF silver mica capacitor.
C. Horizontal Oscillator cathode resistor	1200 ohms, 1/2 watt resistor R73 replaced by 1500 ohms, 1/2 watt resistor.	F. Horizontal Oscillator Adjustment	Test point removed and the Horizontal Oscillator Adjustment procedure changed.

MODIFICATION VI

This modification is composed of MODIFICATION V plus the following changes:			
LOCATION OF CHANGE	CHANGE MADE	LOCATION OF CHANGE	CHANGE MADE
A. Sync. Clipper plate circuit (pin 2)	680,000 ohms, 1/2 watt resistor R52 replaced 1.2 megohms, 1/2 watt resistor.	E. Sync Clipper plate (pin 5) circuit supply	22,000 ohms, 1 watt resistor R59 added.
B. Sync Clipper grid leak (pin 4)	22,000 ohms, 1/2 watt resistor R54 replaced by 47,000 ohms, 1/2 watt resistor.	F. Sync Clipper plate (pin 5) circuit supply	10MFD, 150V. electrolytic capacitor C6 added.
C. High side of Horizontal Hold control	82,000 ohms, 1/2 watt resistor R75 added.	G. AGC Control Switch	Switch M4 (60B500) replaced by switch part #60B507.
D. Sync Clipper plate (pin 3) circuit supply	10,000 ohms, 1 watt resistor R58 added.	H. AGC Control Switching	22,000 ohms, 1 watt resistor R85 added.

MODIFICATION VII

To use a 1C1376 Cascode tuner in place of the 1C1345 Pentode tuner the following changes are made:

- A. The 1C1345 Pentode tuner is removed and replaced by the 1C1376 Cascode tuner. These two tuners do not have the same terminal connections. The 1C1376 Cascode tuner may be used only with chassis which have a filament transformer.
B. A wire to supply 260 volts DC is added between tuner terminal 4 of the Cascode tuner and the junction of R38 (33,000 ohms, 1 watt, the video amplifier screen resistor) and the 260 volt "B" supply.

ALIGNMENT INSTRUCTIONS

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

The high voltage lead should be securely taped and kept away from the chassis. Do not remove the horizontal oscillator tube to disable the high voltage. Use an isolation transformer to protect the test equipment.

VIDEO IF ALIGNMENT

Remove the converter tube (V2) and replace with a 6J6 which has pin 1 removed. This will disable the local oscillator and reduce the possibility of erroneous indication. Connect the negative side of a 3 volt battery to the ungrounded side of C42. Connect the positive lead to chassis.

DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	CHANNEL	CONNECT VTVM	ADJUST	REMARKS
1. Direct	High side to an ungrounded tube shield floating over dummy converter tube. Low side to chassis.	25.4MC	Any	DC probe to point A Common to chassis.	A1	Adjust for maximum deflection.
2. "	"	23.4MC	"	"	A2	"
3. "	"	24.5MC	"	"	A3	"
4. "	"	21.75MC	"	"	A4	Adjust for MINIMUM deflection.
5. "	"	23.4MC	"	"	A2	Adjust for maximum deflection.
6. "	"	24.75MC	"	"	A5	Connect 470Ω and .01MFD in series from point B to chassis. Adjust A5 for maximum deflection.
7. "	"	24.75MC	"	"	A6	Connect .470Ω and .01 MFD in series from pin 1 (grid) of 6CB6 (V3) to chassis. Adjust A6 for maximum deflection.

OVERALL VIDEO IF RESPONSE CHECK

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

DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
8. Direct	High side to an ungrounded tube shield floating over dummy converter tube. Low side to chassis.	24MC (10MC Swp)	21.75MC 26.25MC	Any	Vert. Amp. thru 10KΩ to point A.		Check for response curve similar to fig. 1. If necessary retouch A1, A2, A3, A5 and A6 for desired response.

SOUND IF ALIGNMENT USING AM SIGNAL GENERATOR AND VTVM

DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	CHANNEL	CONNECT VTVM	ADJUST	REMARKS
9. .005MFD	High side to point A Low side to chassis.	4.5MC (Unmod)	Any	DC probe to point C Common to chassis.	A7, A8	Adjust for maximum deflection.
10. "	"	"	"	DC probe to point D Common to chassis.	A9	Adjust for zero reading. A positive and negative read will be obtained on either side of the correct setting.

SOUND IF ALIGNMENT USING FM SIGNAL GENERATOR AND OSCILLOSCOPE

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

DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
9. .005MFD	High side to point A Low side to chassis.	4.5MC (450KC Swp)	4.5MC	Any	Vert. Amp. to point C Low side to chassis.	A7, A8	Disconnect stabilizer capacitor C7. Adjust for curve of maximum amplitude and symmetry as in fig. 2.
10. "	"	"	"	"	Vert. Amp. to point D Low side to chassis.	A9	Reconnect capacitor C7. Adjust so that 4.5MC occurs at center of crossover lines as in fig. 3. SLIGHTLY retouch A8 for maximum amplitude and straightness of crossover lines.

4.5MC TRAP ALIGNMENT

DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	CHANNEL	CONNECT VTVM	ADJUST	REMARKS
11. .005MFD	High side to point A Low side to chassis.	4.5MC (Unmod)	Any	DC probe thru detector (fig. 4) to pin 11 of picture tube. Common to chassis.	A10	Adjust for MINIMUM deflection.

OSCILLATOR ALIGNMENT

Remove the dummy converter tube and replace the original 6J6 in its socket. Connect the synchronized sweep voltage from the signal generator to the horizontal input of the oscilloscope for horizontal deflection. Set the fine tuning control to the mid-position of its range.

DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
12. Direct	Across antenna terminals	213MC (10MC Swp)	215.75MC	13	Vert. Amp. thru 10KΩ to point A Low side to chassis.	A11	Adjust to place sound marker in sound trap notch as in fig. 5.
13. "	"	85MC (10MC Swp)	87.75MC	6	"	A12	"

THE RF AND MIXER PORTION OF THIS TUNER HAS BEEN PROPERLY ALIGNED AT THE FACTORY AND IS VERY STABLE. ALIGNMENT OF THIS PORTION SHOULD NOT BE REQUIRED IN THE FIELD.

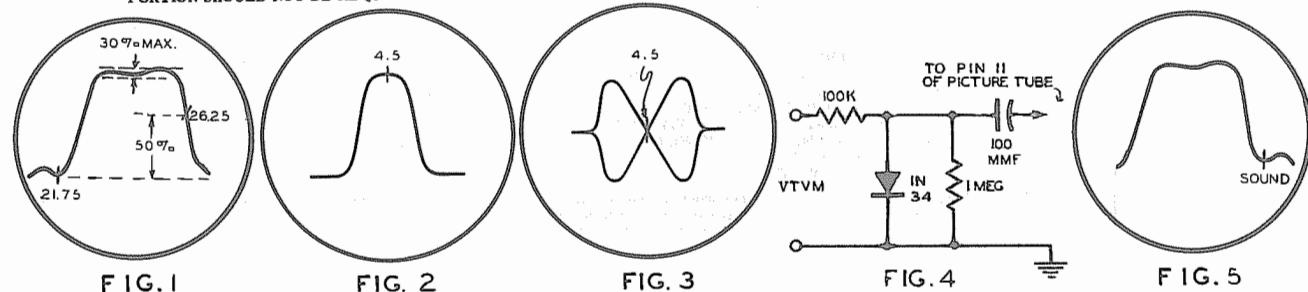


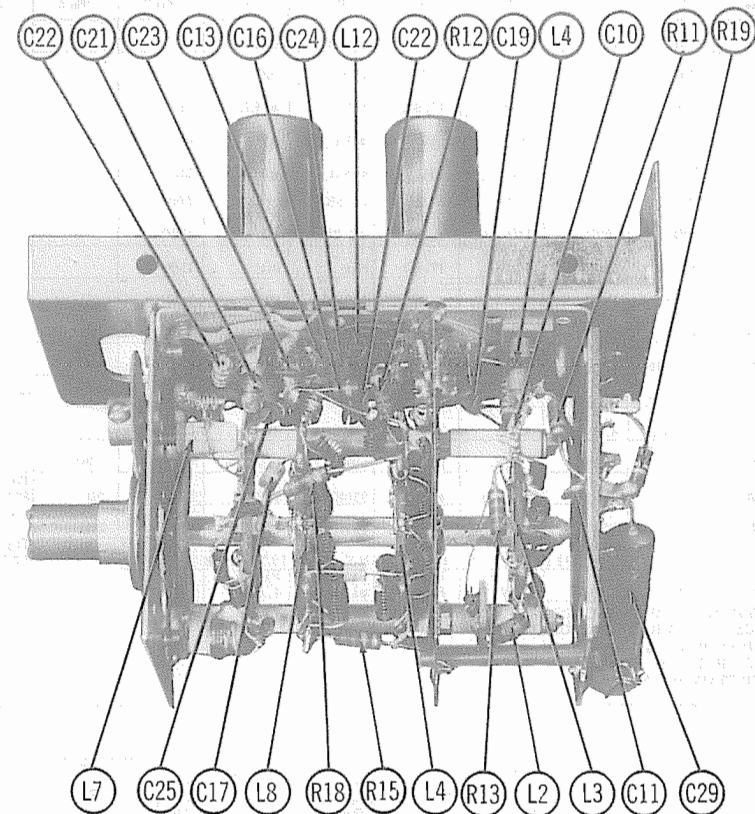
FIG. 1

FIG. 2

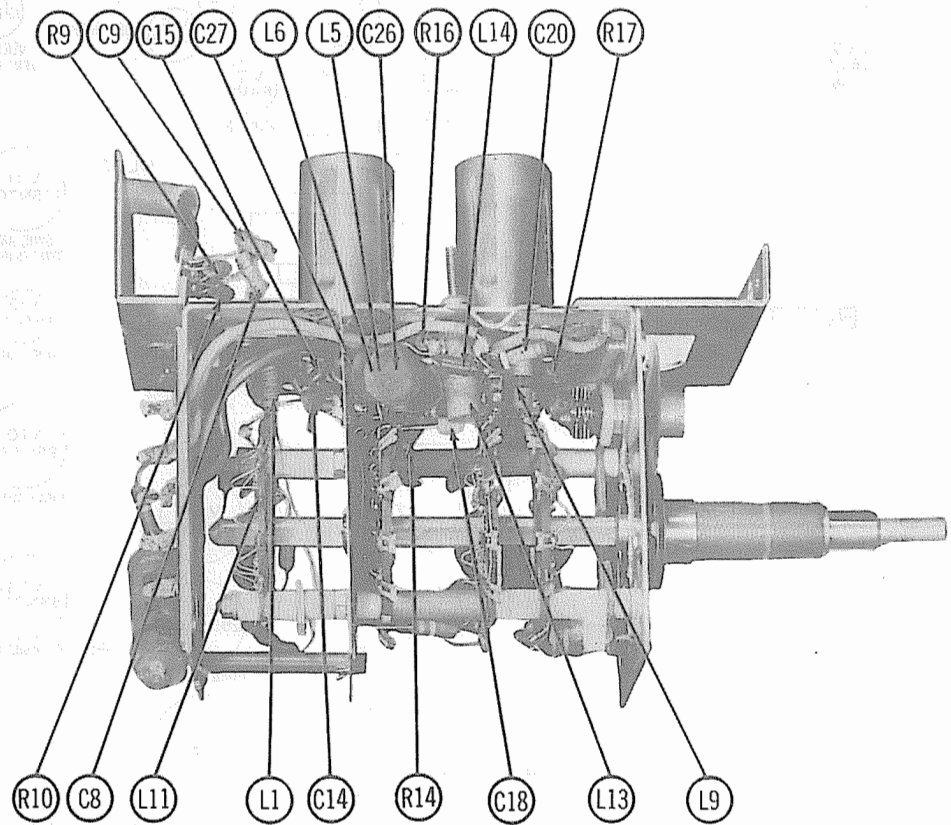
FIG. 3

FIG. 4

FIG. 5

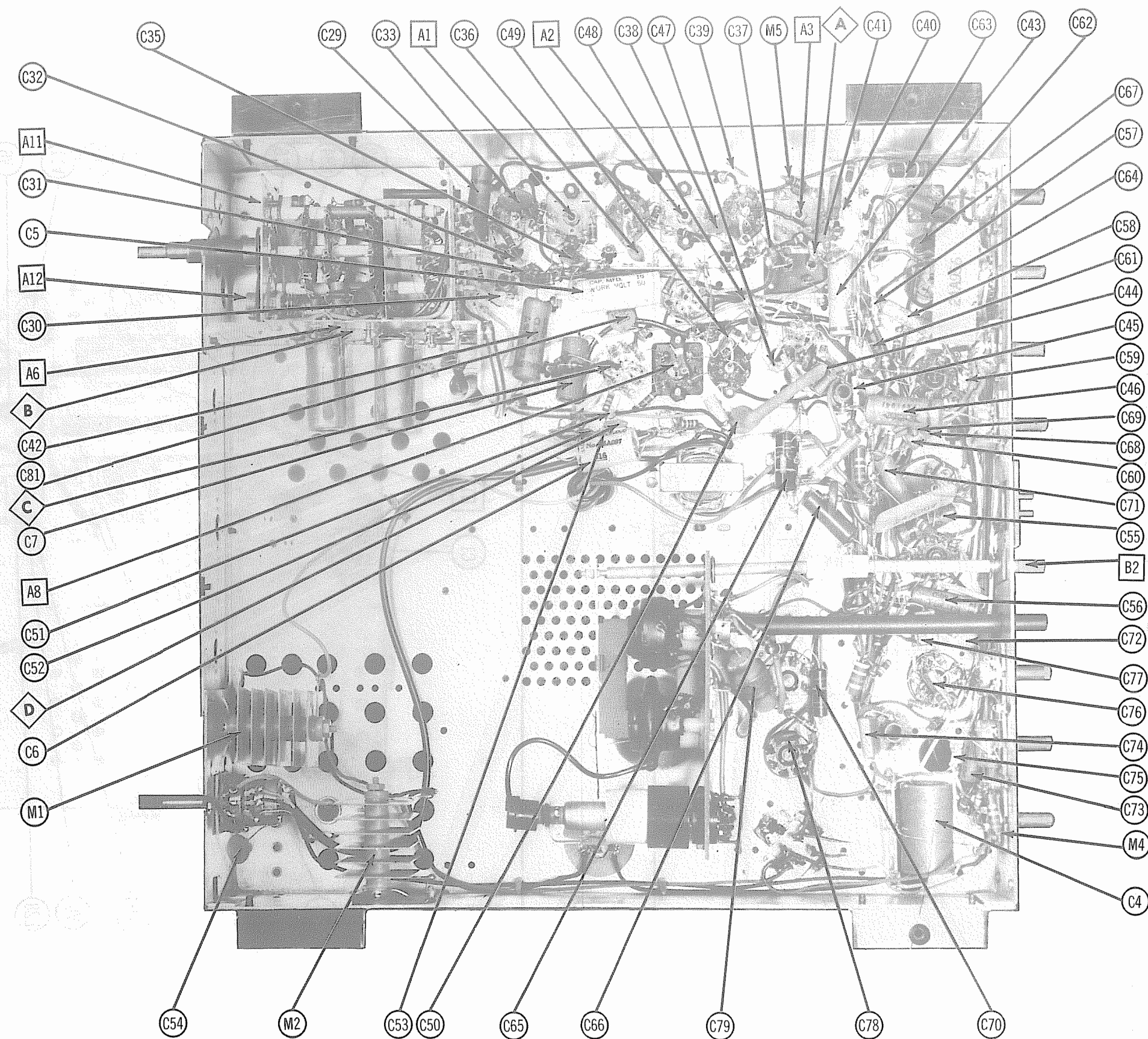


RF TUNER—RIGHT SIDE



RF TUNER—LEFT SIDE

HALLICRAFTERS MODELS 1010P, 1012P, 1013C, 1021P, 1022C, 1026P, 1027C, 1111P, 1113P



CHASSIS BOTTOM VIEW-CAPACITOR AND ALIGNMENT IDENTIFICATION

HALLCRAFTERS MODELS 1010P, 1012P, 1013C,
1021P, 1022C, 1026P, 1027C, 1111P, 1113P