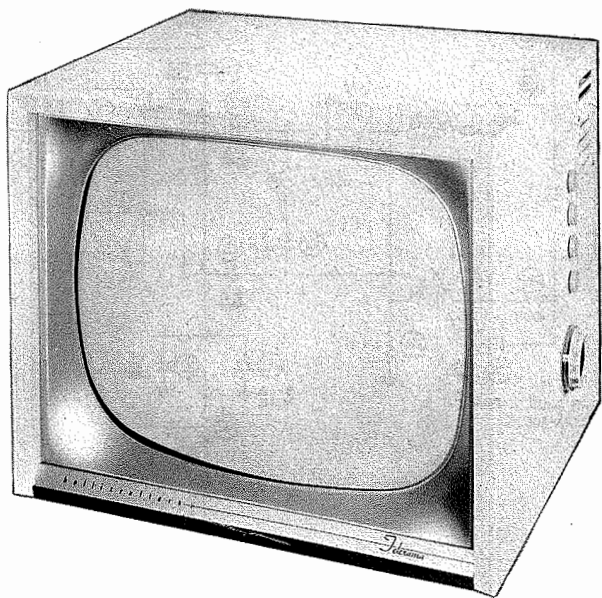




**DISASSEMBLY**  
**INSTRUCTIONS**

CABINET REMOVAL

- 1. Remove 6 push-on type control knobs from side panel of cabinet.
- 2. Remove 5 wood screws and 1 metal screw. Remove rear cover.
- 3. Disconnect speaker leads. Remove 2 speaker nuts. Remove speaker.
- 4. Remove picture tube socket, ion trap, HV lead, yoke plug assembly and ground strap.
- 5. Remove 2 wood screws holding antenna and interlock bracket.
- 6. Remove 2 wood screws from 2 brackets at the top rear of the cabinet.
- 7. Remove 3 chassis bolts. Remove chassis.



MODELS	CHASSIS
24TS610B, 24TS610M .....	C2001D
24TS611B, 24TS611M .....	D2001D

**SERVICING IN THE FIELD**

TUNER OSCILLATOR ADJUSTMENTS

Touch-up adjustments of the VHF tuner oscillator circuit may be accomplished by removal of the channel selector and fine tuning knobs. The adjustments are accessible, one at a time, thru the small hole in the cabinet to the right of the channel selector shaft.

PICTURE TUBE SAFETY GLASS CLEANING

Remove 5 wood screws holding plastic molding at the top edge of the safety glass. Remove plastic molding and safety glass. Use extreme caution when removing safety glass.

SERVICE ADJUSTMENT LOCATION

See tube placement chart on page 5.

HORIZONTAL OSCILLATOR FIELD ADJUSTMENT

For adjustment of the horizontal oscillator, it is necessary

to remove the rear cover and supply power to the set. Adjustment is located on tube side of the chassis. Set the horizontal hold control to the center of its range and adjust the horizontal frequency slug (L25) until the picture synchronizes horizontally.

SOUND IF DETECTOR BUZZ ADJUSTMENT

Adjust the buzz control located on the rear apron of the chassis for maximum volume and minimum buzz. If results are unsatisfactory, see "Sound IF Alignment" instructions on pages 6 and 7.

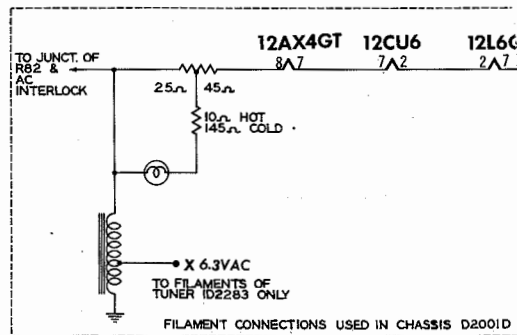
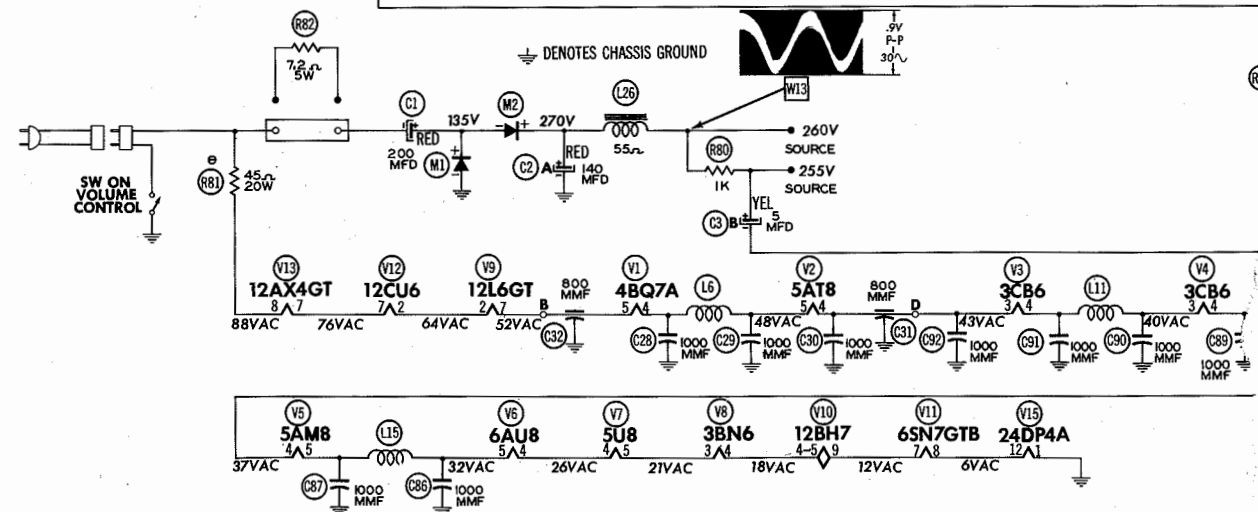
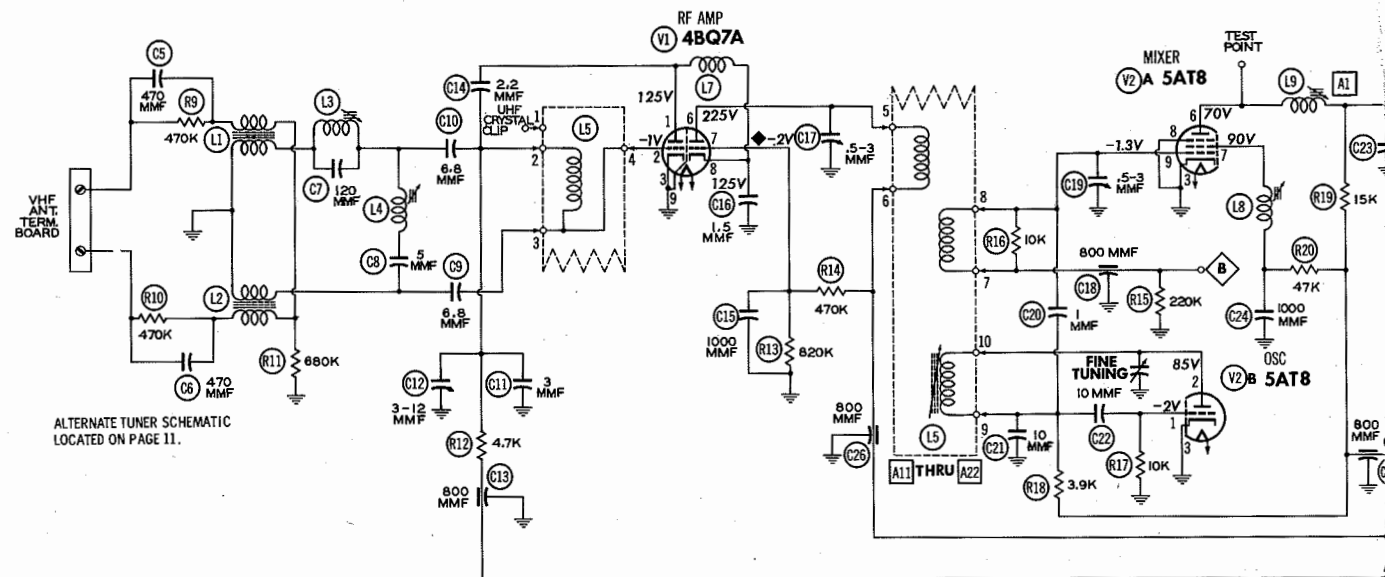
CENTERING

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

**HALLICRAFTERS MODELS**  
**24TS610B, M, 24TS611B, M**  
**(Ch. C2001D, D2001D)**

**HOWARD W. SAMS & CO., INC. • Indianapolis 5, Indiana**

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◆ MEASURED FROM PIN 8 OF V1.

● MEASURED FROM 145V LINE.

⊙ SEE PARTS LIST FOR ALTERNATE VALUE OR APPLICATION

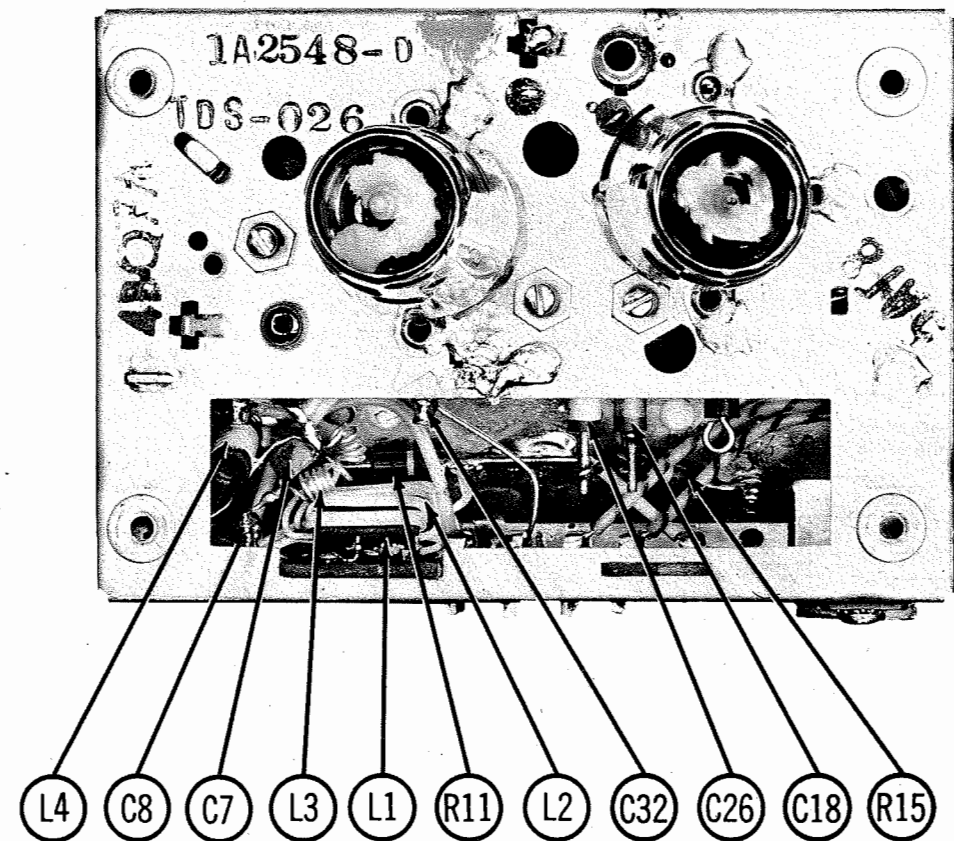
DC COIL RESISTANCE VALUES UNDER ONE OHM NOT SHOWN ON SCHEMATIC DIAGRAM. (SEE PARTS LIST)

ARROWS ON CONTROLS INDICATE CLOCKWISE ROTATION (CONTROL VIEWED FROM SHAFT END)

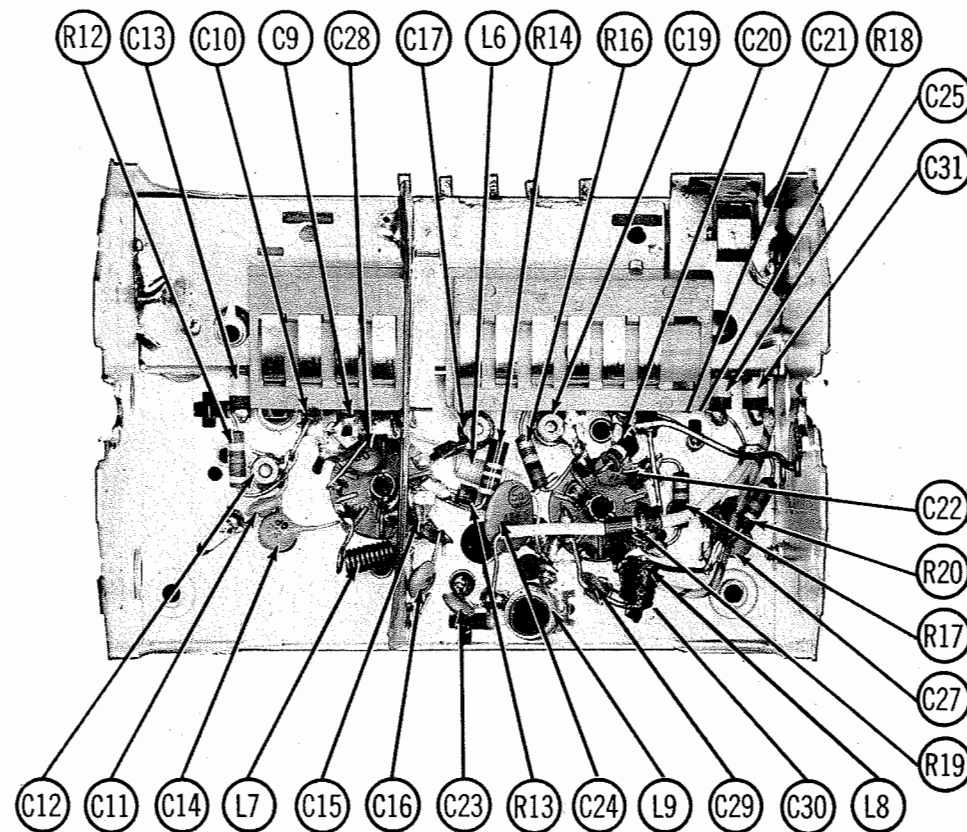
WAVE FORMS TAKEN WITH CONTROLS SET TO PRODUCE 50 VOLTS PEAK-TO-PEAK SIGNAL AT PICTURE TUBE

1. DC voltage measurements taken with vacuum tube voltmeter; AC voltage measured at 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.

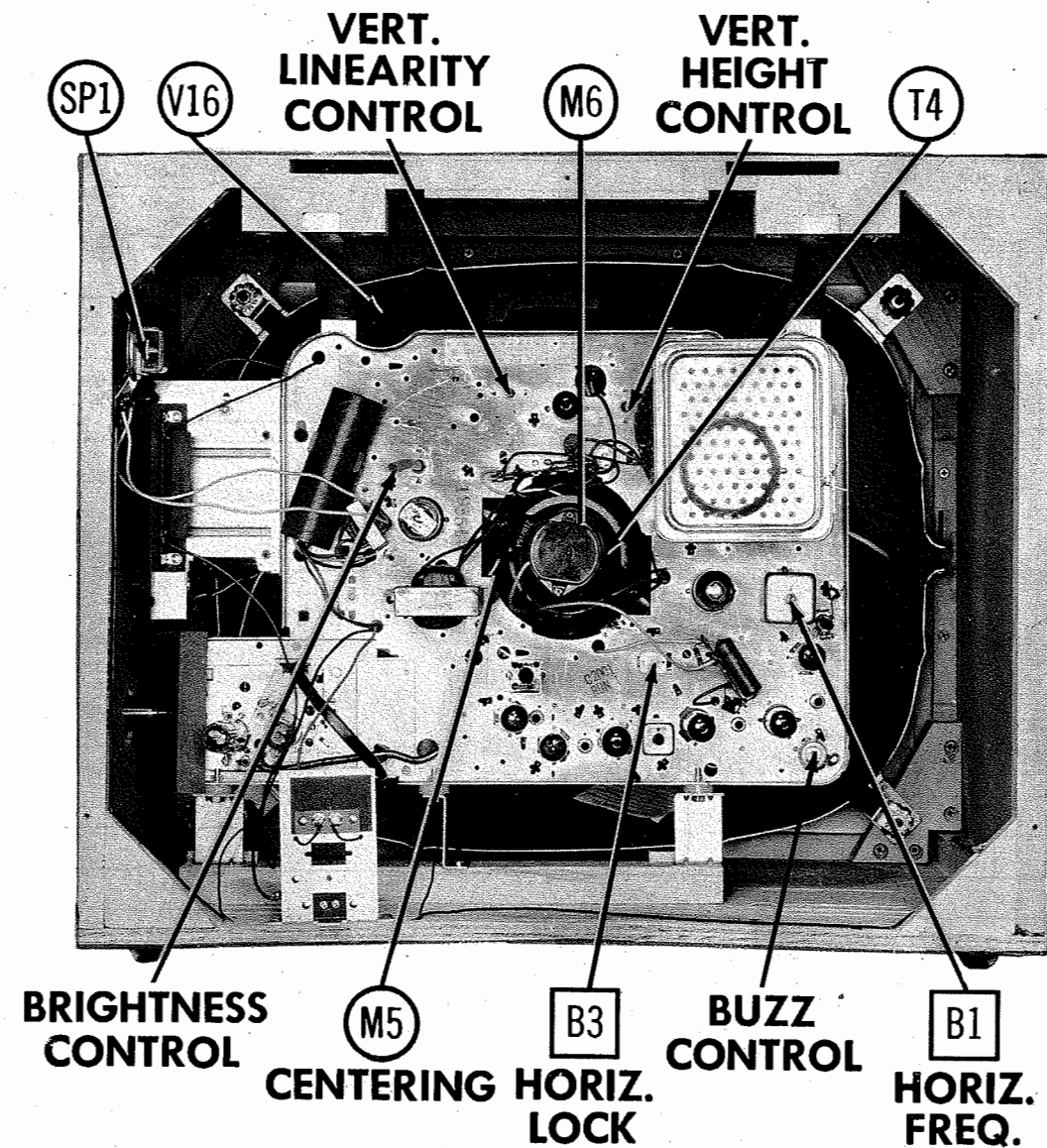
A PHOTOFAC STANDARD NOTATION SCHEMATIC  
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RF TUNER-TOP VIEW



RF TUNER-BOTTOM VIEW



CABINET-REAR VIEW

# HORIZONTAL SWEEP CIRCUIT ADJUSTMENTS

Turn the set on and tune in a TV station.

Set the horizontal hold control to the center of its range. If necessary, adjust the horizontal frequency slug (B1) to synchronize the picture horizontally.

Connect the vertical amplifier of an oscilloscope thru a 10MMF capacitor to point  $\odot$ . Low side to chassis. Adjust the horizontal waveform slug (B2) for a waveform similar to Fig. 6. If necessary, keep picture in sync during alignment with the horizontal hold control or B1.

Disconnect the scope. Turn the horizontal hold control fully counter clockwise. Turn B1 counter clockwise until the picture loses sync

with diagonal bars sloping down to the right.

Adjust B1 clockwise until the picture is just ready to fall into sync. Turn the horizontal hold control clockwise until the picture loses sync. If picture is still in sync at maximum clockwise rotation of the horizontal hold control, switch off channel and back again so that picture will fall out of sync. Turn the horizontal hold control slowly counter clockwise and note the number of diagonal bars appearing just before the picture falls into sync. If more than three bars are present, adjust the horizontal lock trimmer (B3) slightly clockwise. If less than 2 bars are present, adjust B3 slightly counter clockwise. Check horizontal hold control action. Picture should pull into sync with 60 degrees from full clockwise rotation of the horizontal hold control.

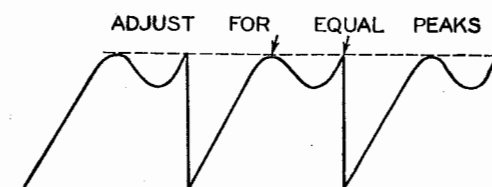
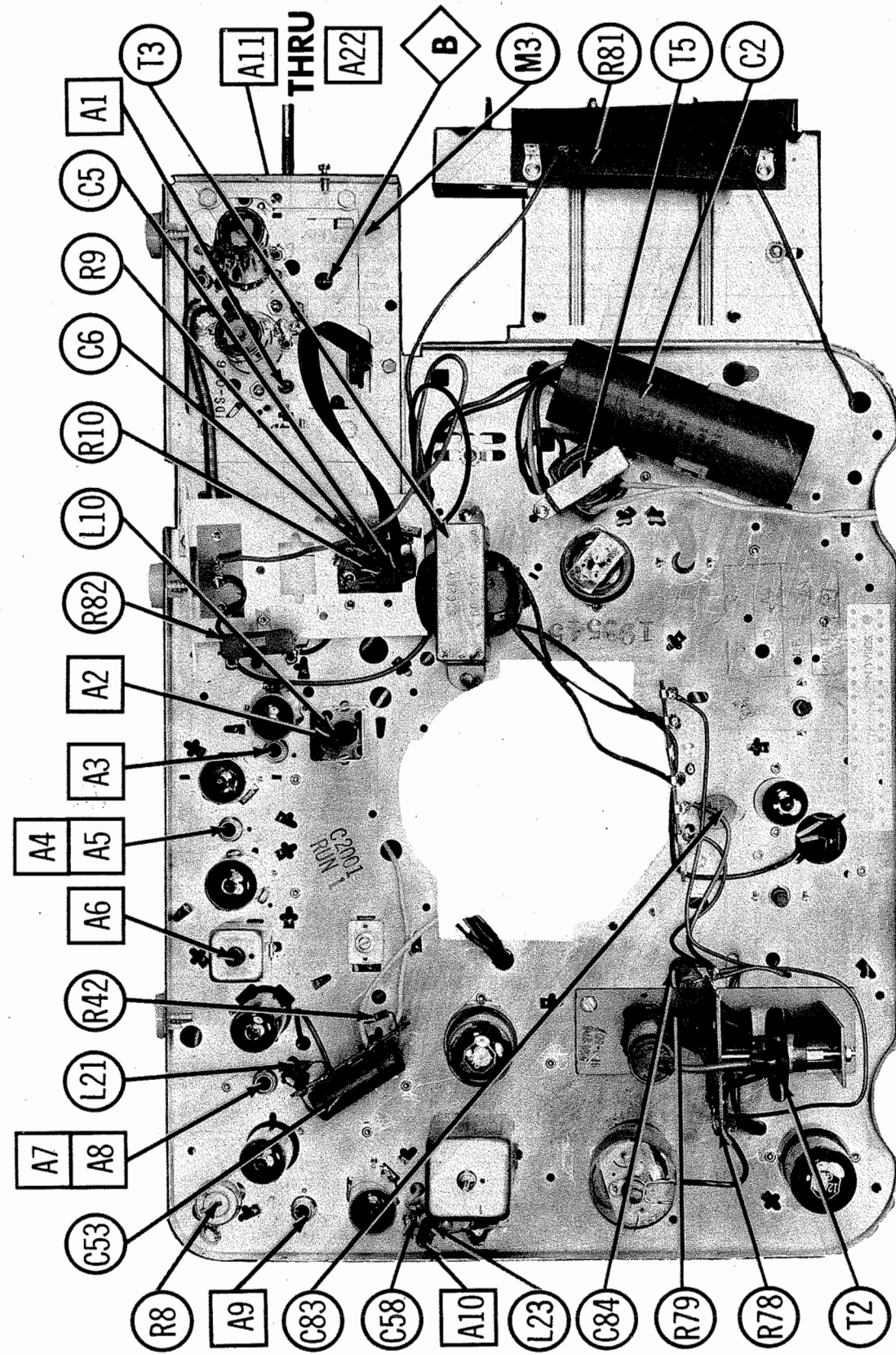


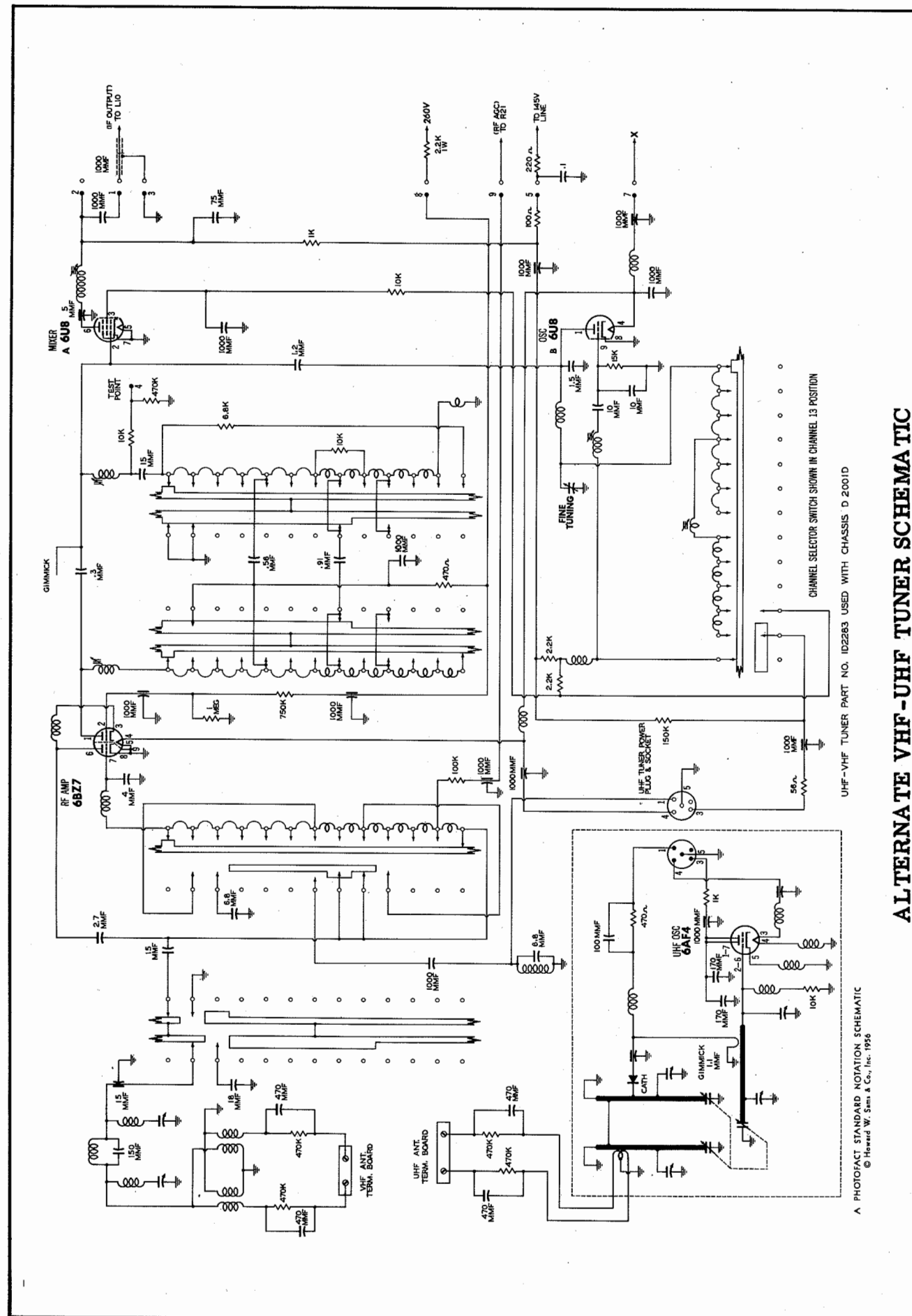
FIG. 6







CHASSIS TOP VIEW



A PHOTOCOPY STANDARD NOTATION SCHEMATIC  
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UHF-VHF TUNER PART NO. 1D2283 USED WITH CHASSIS D 2001D

CHANNEL SELECTOR SWITCH SHOWN IN CHANNEL 13 POSITION

**HALLICRAFTERS MODELS 24TS610B,  
M, 24TS611B, M (Ch. C2001D, D2001D)  
ALTERNATE UHF-VHF TUNER SCHEMATIC**

## TUBES (GENERAL ELECTRIC, SYLVANIA)

ITEM No.	USE	TYPE	NOTES	ITEM No.	USE	TYPE	NOTES
V1	RF Amplifier	4BQ7A		V8	Audio Detector	3BN6	
V2	Mixer-Oscillator	5A78		V9	Audio Output	12L6GT	
V3	1st. Video IF Amplifier	3CB6		V10	Vert. Osc. - Vert. Output	12BH7A	
V4	2nd. Video IF Amplifier	3CB6		V11	Horiz. AFC - Horiz. Osc.	6BN7GTB	
V5	3rd. Video IF Amplifier	5AM8		V12	Horiz. Output	12CU8	Note 1
V6	Video Detector	6AU8		V13	Damper	12AX4GT	
V7	Video Output-Sync Sep.	5U8		V14	HV Rectifier	1X2B	

Note 1. 12DQ6GT may be used in some versions.

## PICTURE TUBE

ITEM No.	REPLACEMENT DATA	NOTES
V15	24DP4A ①	① Aluminized ② Silver screen "85"

## ELECTROLYTIC CAPACITORS

ITEM No.	RATING		REPLACEMENT DATA						
	CAP.	VOLT.	Hallcrafters Part No.	AEROVOX Part No.	CORNELL-DUBILIER Part No.	MALLORY Part No.	PYRAMID Part No.	SANGAMO Part No.	SPRAGUE Part No.
C1	200	150	45B265	PR2-100	E210408	WS342	TD-200-200	S-110	R2108
C2A	140	300	45B263	PR4-100	E210401	WQ505	CDB-1008	Q-162	R1553
B	200	150							
C	5	300							
D	30	150							
C3A	200	200	45B312	E59B330	E290399	WD345	TD-200-200	D-100	R2063
B	5	200					TD-8-250	MT-2504	
C4	20	450	45B208	PRS450V20	BR2045	TC75	TD-20-450	FM-4520	TVA-1709

## FIXED CAPACITORS

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

ITEM No.	RATING		REPLACEMENT DATA							NOTES
	CAP.	VOLT	HALLICRAFTERS PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	MALLORY PART No.	SPRAGUE PART No.	
C5	470	500	47X20B471M	1468-00047	D6-471	SW5047	GP2K-471	MCK347	MS-347	
C6	470	500	47X20B471M	1468-00047	D6-471	SW5047	GP2K-471	MCK347	MS-347	
C7	120			NP0-D120	DD-121	T232	81L-121		5TCC-T12	
C8	5			NP0-D15	TCZ-4R7	T207	NP0A-050	ZT-555	5TCCB-V47	
C9	6.8			NP0-D18.8	TCZ-6R8	T208	NP0A-6R8	ZT-5568	5TCCB-V68	
C10	6.8			NP0-D18.8	TCZ-6R8	T208	NP0A-6R8	ZT-5568	5TCCB-V68	
C11	3			NP0-D13	TCZ-3R3	T206	NP0A-030	ZT-553	5TCCB-V33	
C12	3-12						3139-01-0R5	CT565A		
C13	800									
C14	2.2			NP0-S12.2	TCZ-2R2	T205	NP0A-2R2		5TCCB-V22	
C15	1000			BPD-001	DD-102	K069	801-001	DC-521	5HK-D1	
C16	1.5			NP0-S11.5	TCZ-1R5	T204	NP0A-1R5	ZT-5515	5TCCB-V15	
C17	5-3				829-3		3139-01-0R5	CT565A		
C18	800									
C19	5-3			NP0-S11	TCZ-1	T203	3139-01-0R5	CT565A	5TCCB-V1	
C20	1						NP0A-010	ZT-5515		
C21	10									
C22	10									
C23	43				TCZ-43	T221	NP0L-430			
C24	1000			BPD-001	DD-102	K069	801-001	DC-521	5HK-D1	
C25	800									
C26	800									
C27	1000			BPD-001	DD-102	K069	801-001	DC-521	5HK-D1	
C28	1000			BPD-001	DD-102	K069	801-001	DC-521	5HK-D1	
C29	1000			BPD-001	DD-102	K069	801-001	DC-521	5HK-D1	
C30	1000			BPD-001	DD-102	K069	801-001	DC-521	5HK-D1	
C31	800									
C32	800									
C33	5000		47A168	BPD-000033	DD-502	K080	81L-005	DC-525	5HK-D5	
C34	.1	400	46AU104J	P488N-1	DF-104	CUB4P1	PT401		4TM-P1	
C35	1000		47A230	BPD-001	DD-102	K069	801-001	DC-521	5HK-D1	
C36	24		47CA20A240J	NP0-S125	TCZ-24	T215	NP0L-240	ZT-5425	5TCC-Q25	
C37	5000		47A168	BPD-005	DD-502	K080	81L-005	DC-525	5HK-D5	
C38	1000		47A230	BPD-001	DD-102	K069	801-001	DC-521	5HK-D1	
C39	39			NP0-S139	TCZ-39	T220	NP0L-390	ZT-5425	5TCC-Q39	
C40	24		47CA20A240J	NP0-S125	TCZ-24	T215	NP0L-240	ZT-5425	5TCC-Q25	
C41	1000		47A230	BPD-001	DD-102	K069	801-001	DC-521	5HK-D1	
C42	1000		47A230	BPD-001	DD-102	K069	801-001	DC-521	5HK-D1	
C43	5000		47A168	BPD-005	DD-502	K080	81L-005	DC-525	5HK-D5	
C44	1000		47A230	BPD-001	DD-102	K069	801-001	DC-521	5HK-D1	
C45	10		47A160	N750-S10	TCN-10	TN01	N750A-100	NT-541	5TCU-Q1	
C46	.25	200	46AT254J	P288N-25		CUB2P25	PT4025		2TM-P25	
C47	.1	150	46A243	P288N-1	DF-104	CUB2P1	PT401		2TM-P1	
C48	68									
C49	20000		47A242	BPD-02	DD-203	K085	81T-02		5HK-S2	
C50	270		47CA20A271K	NP0-S1270	TCZ-270	T240	NP0-335-271		MS-327	
C51	.0082	200	46AU822E	1467-0082	DD-102	K069		PT1628	6TM-D8	
C52	500		47CA225	1469-00058	DF-503	IR5T58			MS-356	
C53	.1	400	46AU104J	P488N-1	DF-104	CUB4P1		PT401	4TM-P1	
C54	10		47CA20100F	S110	DF-100	TP09	GPIK-100	UC-541	5GA-Q1	
C55	33		47B478	NP80-S133	DD-502	K080	81L-005	DC-525	5HK-D5	
C56	33		47B478	NP80-S133	DD-502	K080	81L-005	DC-525	5HK-D5	
C57	5000		47A168	BPD-005	DD-502	K080	81L-005	DC-525	5HK-D5	
C58	15		47B480							
C59	5000		47A168	BPD-005	DD-502	K080	81L-005	DC-525	5HK-D5	
C60	.01	200	46AU103J	BPD-01	DD-103	CUB2S1	GP3-333-103	PT411	4TM-S1	
C61	1000		47A230	BPD-001	DD-102	K069	801-001	DC-521	5HK-D1	
C62	.02	200	46AU203J	BPD-02	DF-203	CUB2S2	81T-02	PT412	2TM-S2	
C63	.02	600	46A2203J	BPD-02	DF-203	CUB2S2	81T-02	PT412	6TM-S2	
C64A	270					G054	GP2K-271	UC-5327	5GA-T27	
C64B	10000		148A046	PA-553	PC-263	K082	GP3-333-103	DC-511	5HK-S1	
C65	.05	200	46AU503J	BPD-05	DF-503	CUB2S5	GPIK-250	UC-5425	5GA-Q25	
C66	33		47B478	S133	DF-330	TP27	GPIK-330	UC-5433	5GQ-Q33	
C67A	4700		46A044	PA-383-2	PC-106	K079	81L-0047	UC-5247	401C12	
C68	.01	400	46B103E4	BPD-01	DD-103	CUB4S1	81L-471	GP3-333-103	PT411	
C69	470		47CA20A471K	NP0-S1270	TCZ-270	T240			4TM-S47	
C70	.047	400	46BR473E4	BPD-05	DF-503	CUB4S47			5HK-D5	
C71	5000		47A168	BPD-005	DD-502	K080	81L-005	DC-525	5HK-D5	
C72	.02	200	46AU203J	NP0-S120	TCZ-20	T213	83L-200	ZT-542	5TCC-Q2	
C73	.02	200	46AU203J	BPD-02	DF-203	CUB2S5	81T-02	PT412	2TM-S2	
C74	.25	200	46A254J	P288N-25	DF-503	CUB2P25		PT4025	2TM-P25	
C75	.047	400	46BR473	BPD-05	DF-503	CUB4S47		PT4147	4TM-S47	
C76	33		47CA20A330M	N080-S133	DD-502	K080	81L-005	DC-525	5HK-D5	
C77	230	500	47X20B231K	1469-00022	TCZ-230	23R5T22	NP0-335-221		MS-322	

## PARTS LIST AND DESCRIPTIONS

### CAPACITORS (cont)

ITEM No.	RATING		REPLACEMENT DATA								NOTES
	CAP.	VOLT	Hallcrafters Part No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER Part No.	ERIE Part No.	MALLORY Part No.	SPRAGUE Part No.		
C78	.01	400	46C244	BPD-01	D6-103	CUB4S1	GP3-333-103	PT411	4TM-S1		
C79	20000		46BR2231A	BPD-02	DD-203	K085	817-02	PT412	5HK-S2		
C80	1300	500	47X30B132K	1464-0013		IR5D13			MS-213		
C81	.047	400	46BR4731A	BPD-05	DF-503	CUB4S47		PT4147	4TM-S47		
C82	10000		47A224	BPD-01	DD-103	DD-103	811-01	DC-511	5HK-S1		
C83	56	3000	47A555						30GA-Q6		
C84	.08	200	46A803F	P288N-075	DF-753	CUB2P1		PT401	2TM-P1		
C85	68	2000							20GA-Q68		
C86	1000		47A230	BPD-001	DD-102	K069	801-001	DC-521	5HK-D1		
C87	1000		47A230	BPD-001	DD-102	K069	801-001	DC-521	5HK-D1		
C88	1000		47A230	BPD-001	DD-102	K069	801-001	DC-521	5HK-D1		
C89	1000		47A230	BPD-001	DD-102	K069	801-001	DC-521	5HK-D1		
C90	1000		47A230	BPD-001	DD-102	K069	801-001	DC-521	5HK-D1		
C91	1000		47A230	BPD-001	DD-102	K069	801-001	DC-521	5HK-D1		
C92	1000		47A230	BPD-001	DD-102	K069	801-001	DC-521	5HK-D1		

† Items C64A, C64B, C64C, R52A and R52B are combined in one unit.

• Items C87A, C87B, R58A and R58B are combined in one unit.

### CONTROLS

ITEM No.	RATING		REPLACEMENT DATA				INSTALLATION NOTES	
	RESIST-ANCE	WATTS	Hallcrafters Part No.	CENTRALAB PART No.	CLAROSTAT PART No.	IRC PART No.		MALLORY PART No.
R1A	1.25Meg with 250K stop	1/2	25B1176	♦ B-69	♦A47-1Meg-S	♦ Q11-137	♦ TA16L	Vertical Hold
B	Shaft		Not Req.	Not Req.	FS-3	Not Req.	Not Req.	Attach to R1A.
R2A	145KΩ with 75KΩ stop	1/2	25B1100	† B-35	†A47-75K-S	† Q11-125	† U-43	Horizontal Hold
B	Shaft		Not Req.	Not Req.	FS-3	Not Req.	Not Req.	Attach to R2A.
R3A	330KΩ	1/2	25B1101	B-60-S	A47-500K-Z	Q13-132	TA334A	Volume
B	Shaft		Not Req.	Not Req.	FS-3	Not Req.	Not Req.	Attach to R3A.
C	Switch		Not Req.	Not Req.	SWE-12	78-1	US-26	Contrast tapped at 900Ω
R4	1000Ω	1/2	25B1098			Q17-141	PTA56R	Brightness
B	Shaft		Not Req.			TQ	Not Req.	Attach to R5A.
R6A	750Ω	1/2	25B1099	AB-5	A47-750-S	Q11-105	PTA751L	Vertical Linearity
B	Shaft		Not Req.	AK-19	RN-3	TQ	Not Req.	Attach to R6A.
R7A	5Meg with 1Meg stop	1/2	25B1098	■ AB-86	■A47-4Meg-S	■Q11-141	■ PTA355L	Height
B	Shaft		Not Req.	AK-19	RN-3	TQ	Not Req.	Attach to R7A.
R8	500Ω	2	25A1095		39-500			Buzz-Wire Wound

• Connect a 270KΩ resistor in series with the left hand terminal of the control and the lead connecting to the same terminal of the original control (control viewed from shaft end, terminals down).

† Connect a 68KΩ resistor in series with the right hand terminal of the control and the lead connecting to the same terminal of the original control (control viewed from shaft end, terminals down).

• Connect a 1Meg resistor in series with the right hand terminal of the control and the lead connecting to the same terminal of the original control (control viewed from shaft end, terminals down).

### RESISTORS

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

ITEM No.	RATING	REPLACEMENT DATA	NOTES
OHMS	WATT	HALLICRAFTERS PART No.	IRC PART No.
R9	470KΩ	23X20X474K	BTS-470K
R10	470KΩ	23X20X474K	BTS-470K
R11	680KΩ	23X20X680K	BTS-680K
R12	4700Ω	23X20X472K	BTS-4700
R13	820KΩ	23X20X820K	BTS-820K
R14	470KΩ	23X20X472K	BTS-470K
R15	220KΩ	23X20X220K	BTS-220K
R16	10KΩ	23X20X10K	BTS-10K
R17	10KΩ	23X20X10K	BTS-10K
R18	3900Ω	23X20X3900	BTS-3900
R19	15KΩ	23X20X15K	BTS-15K
R20	47KΩ	23X20X47K	BTS-47K
R21	1000Ω	23X20X1000	BTS-1000
R22	2200Ω	23X20X220K	BTA-2200
R23	4700Ω	23X20X472K	BTS-4700
R24	4700Ω	23X20X472K	BTS-4700
R25	1000Ω	23X20X1000	BTS-1000
R26	47Ω	23X20X470K	BTS-47
R27	220Ω	23X20X220K	BTS-220
R28	18KΩ	23X20X18K	BTS-18K
R29	1000Ω	23X20X1000	BTS-1000
R30	1000Ω	23X20X1000	BTS-1000
R31	47Ω	23X20X470K	BTS-47
R32	12KΩ	23X20X12K	BTS-12K
R33	1000Ω	23X20X1000	BTS-1000
R34	1000Ω	23X20X1000	BTS-1000
R35	180Ω	23X20X180K	BTS-180
R36	1Meg	23X20X105K	BTS-1Meg
R37	5600Ω	23X20X562K	BTS-5600
R38	1Meg	23X20X105K	BTS-1Meg
R39	7500Ω	24A1059	PWT-7500
R40	47KΩ	23X20X473K	BTA-47K
R41	56Ω	23X20X560K	BTS-56
R42	100KΩ	23X20X104K	BTS-100K
R43	390KΩ	23X20X394K	BTS-390K
R44	820KΩ	23X20X824K	BTS-820K
R45	18KΩ	23X20X183K	BTS-18K
R46	150Ω	23X20X151K	BTS-150

Note 1. Used in chassis A2001 and C2001 only.

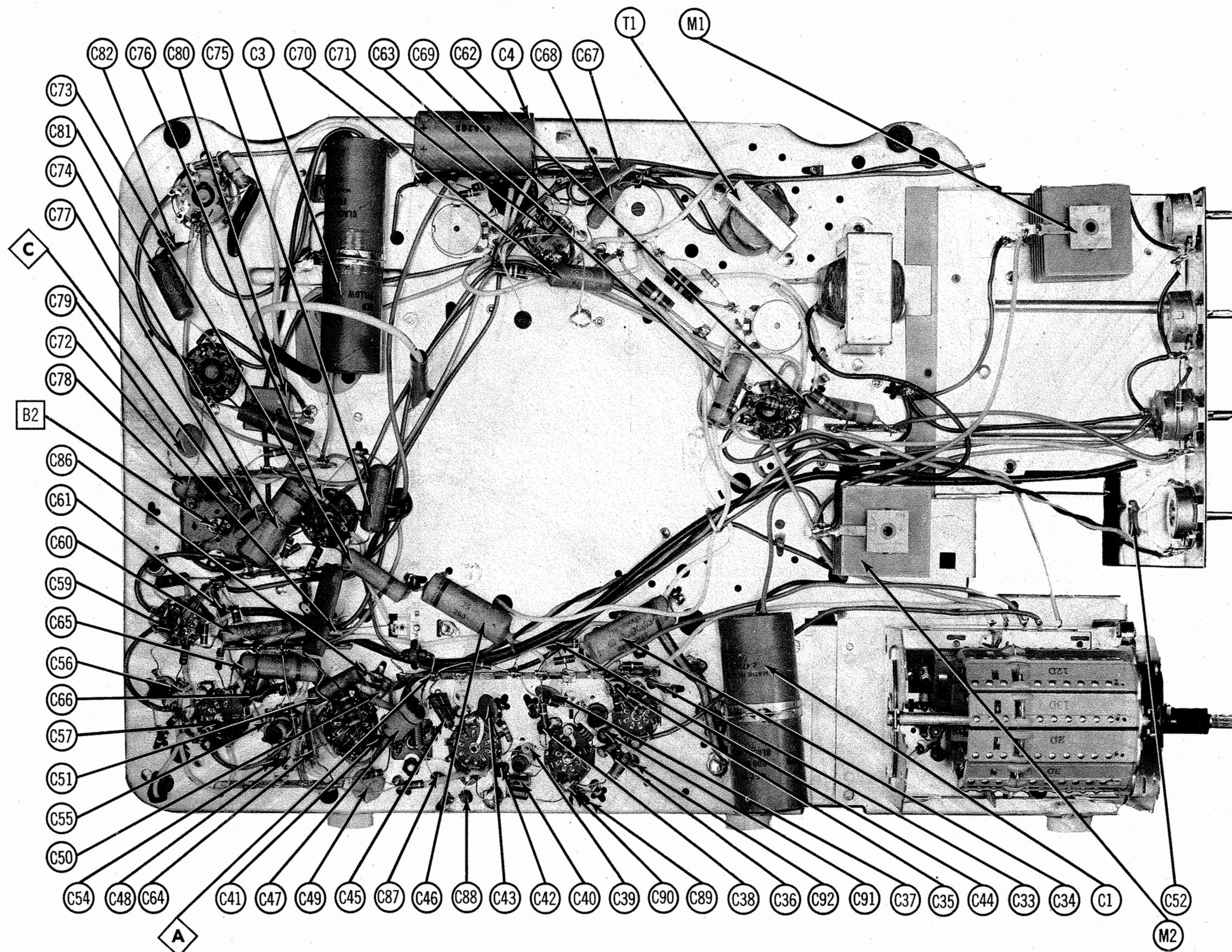
† Items R52A, R52B, C64A, C64B, C64C are combined in one unit.

• Items R58A, R58B, C87A, C87B are combined in one unit.

### TRANSFORMERS (SWEEP CIRCUITS)

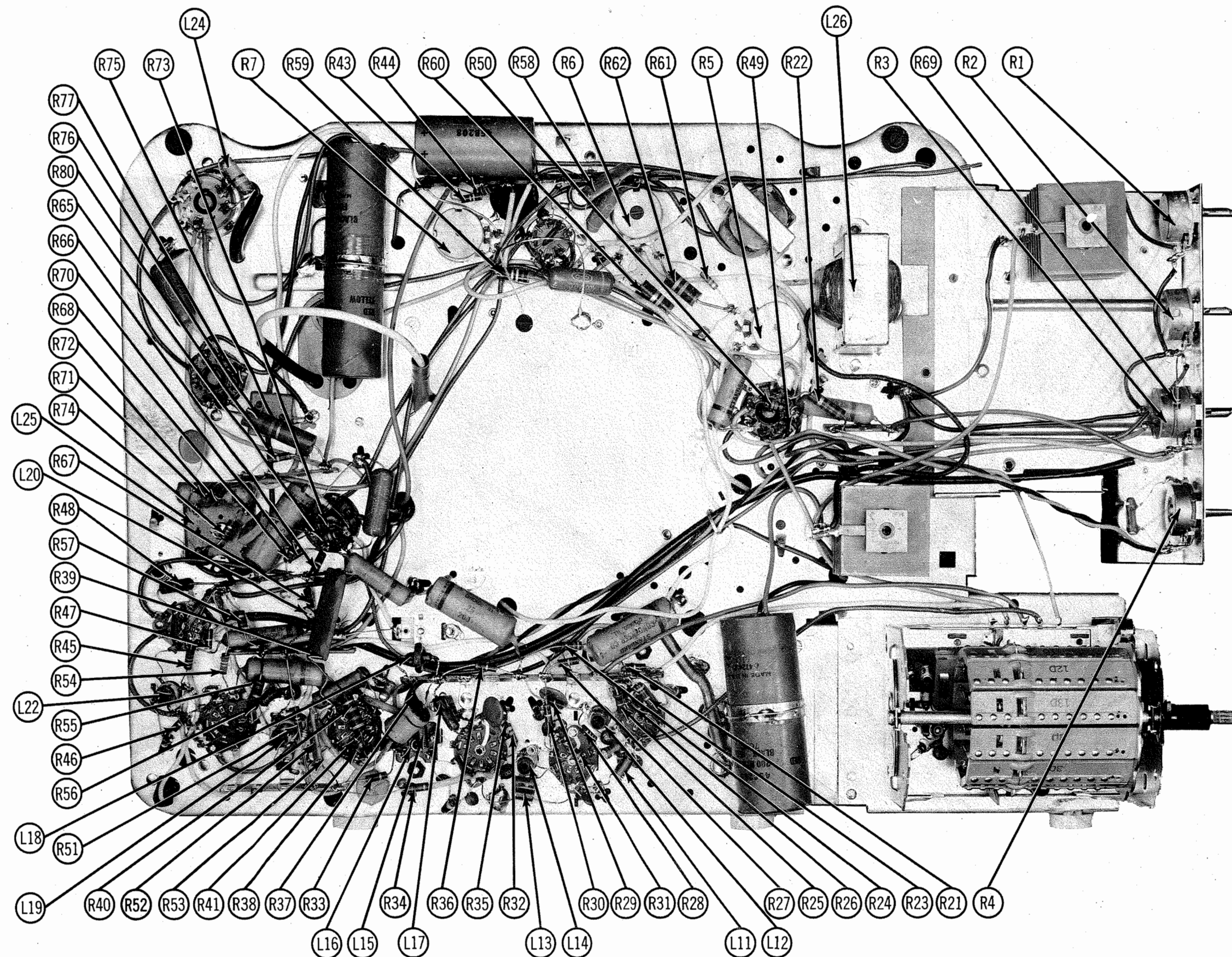
ITEM No.	USE	REPLACEMENT DATA							
		Hallcrafters Part No.	Hollidorsen Part No.	Merit Part No.	RCA Type No.	Ram Part No.	Stancor Part No.	Thordarson Part No.	Triad Part No.
T1	Vert. Osc. Trans.	55B250	B6704	A-3006	V405	A-8125	26A03	4-97X	
T2	Horiz. Output Trans.	55-274	FB418*	HV0-37*	X123*	A-8283*	FLY-25*	D-48*	
T3	Vert. Output Trans.	55C280	Z1807	A-2824	MDP-69①	235D1 ①	Y90F1/43	DY-16A ①	Y-16 ①
T4	Yoke 90° Horiz. (21MR)	53-364	DF507②						Y-41-1②
WB	Vert. G5MR		②						





CHASSIS BOTTOM VIEW-CAPACITOR AND ALIGNMENT IDENTIFICATION





CHASSIS BOTTOM VIEW-RESISTOR AND INDUCTOR IDENTIFICATION

HALICRAFTERS MODELS 24TS610B,  
M, 24TS611B, M (Ch. C2001D, D2001D)

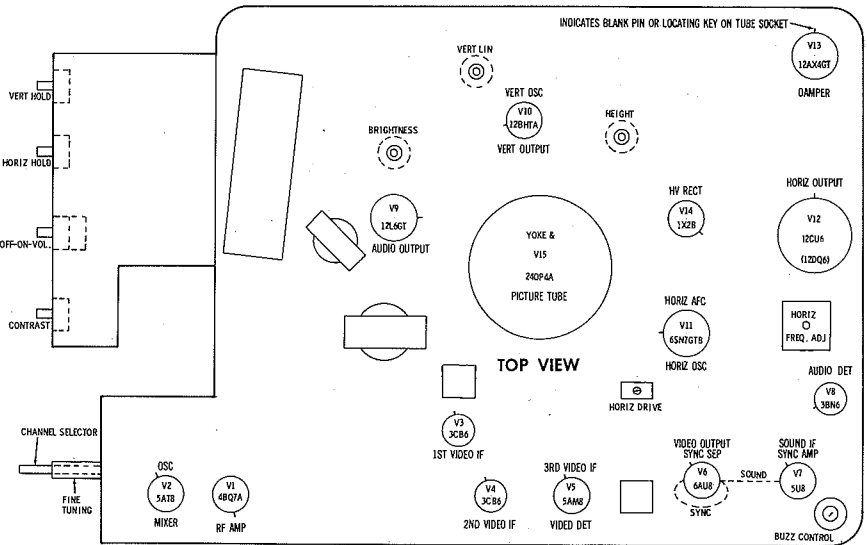


RESISTANCE MEASUREMENTS

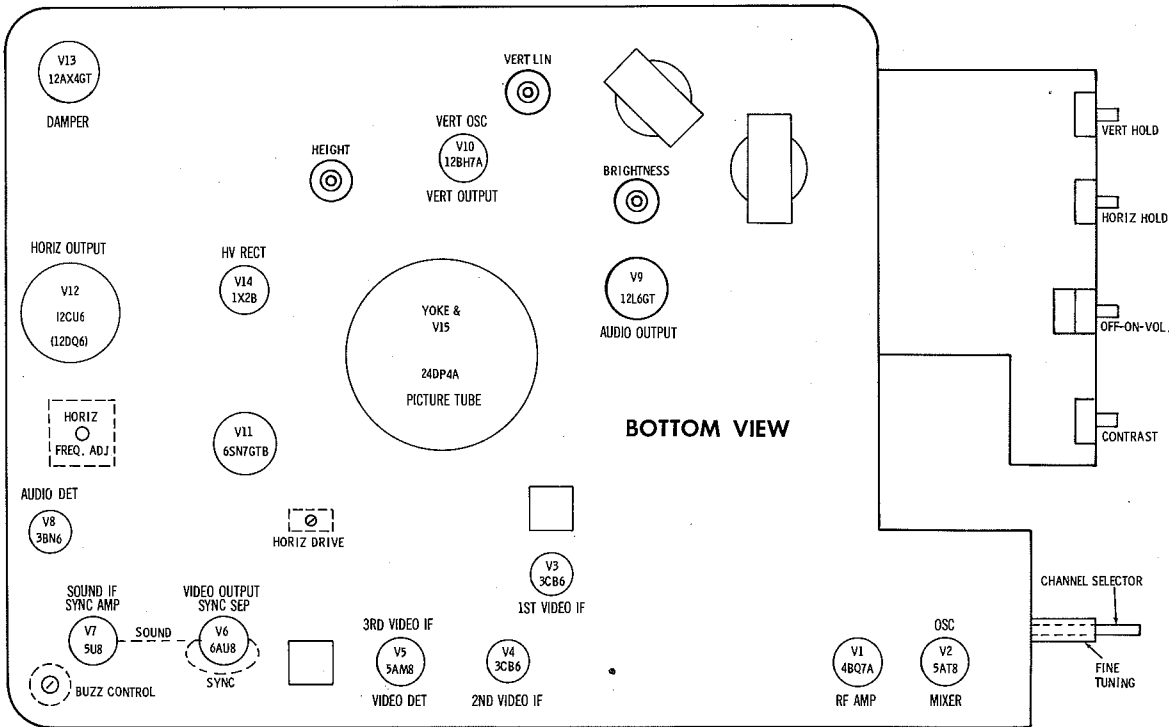
Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V 1	4BQ7A	INF	1Meg	0Ω	12Ω	13Ω	† 2.2KΩ	300KΩ	INF	0Ω
V 2	5AT8	10KΩ	■ 4KΩ	0Ω	11Ω	12Ω	■ 15KΩ	■ 47KΩ	0Ω	220KΩ
V 3	3CB6	1Meg	47Ω	11Ω	10Ω	■ 1.2KΩ	■ 1.2KΩ	0Ω		
V 4	3CB6	1Meg	47Ω	10Ω	9Ω	■ 1KΩ	■ 1KΩ	0Ω		
V 5	5AM8	180Ω	12KΩ	■ 1KΩ	9Ω	8Ω	■ 1KΩ	.2Ω	5.6KΩ	0Ω
V 6	6AU8	0Ω	2.2Meg	■ 1Meg	7Ω	8Ω	100Ω	1Meg	† 47KΩ	† 7.5KΩ
V 7	5U8	■ 12KΩ	2.9Ω	■ 18KΩ	7Ω	6Ω	■ 18KΩ	150Ω	0Ω	47KΩ
V 8	3BN6	300Ω	3.4Ω	6Ω	5Ω	■ 5.6KΩ	5.3Ω	† 330KΩ		
V 9	12L6GT	TP	15Ω	† 265Ω	† 55Ω	250KΩ	TP	13Ω	130KΩ	
V 10	12BH7A	■ 1.3KΩ	■ 2.5Meg	7KΩ	5Ω	5Ω	■ 2.5Meg	500KΩ	0Ω	3Ω
V 11	6SN7GTB	750KΩ	† 60KΩ	300KΩ	250KΩ	† 28KΩ	0Ω	3Ω	2Ω	
V 12	12CU6	TP	15Ω	NC	† 12KΩ	390KΩ	NC	18Ω	0Ω	TOP CAP ■ 22Ω
V 13	12AX4GT	NC	TP	250KΩ	NC	† 55Ω	NC	18Ω	22Ω	
V 14	1X2B		PINS	1-8	HAVE	INF	RESISTANCE			TOP CAP ■ 190Ω
V 15	24DP4A	0Ω	0Ω	PIN 6 130KΩ	PIN 10 ■ 390KΩ	PIN 11 ■ 300KΩ	PIN 12 2Ω			

† MEASURED FROM POSITIVE SIDE OF C3A.  
■ MEASURED FROM 145V LINE.  
▲ MEASURED FROM PIN 3 OF V13.  
TP-TIE POINT.  
NC-NO CONNECTION.

TUBE PLACEMENT CHART



HALICRAFTERS MODELS  
24TS610B, M, 24TS611B, M (Ch. C2001D, D2001D)



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.

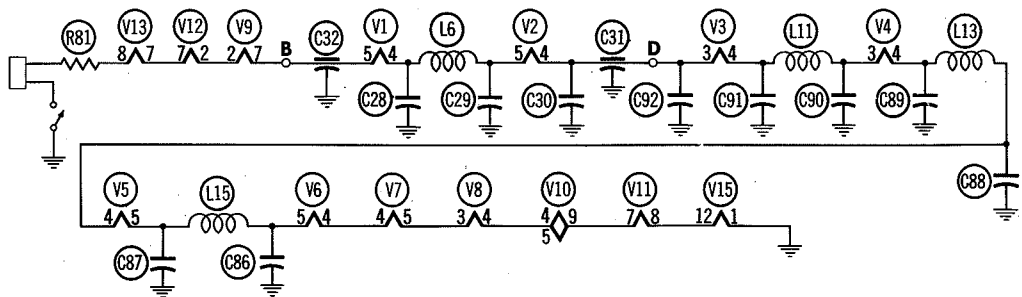
**POWER SUPPLY FAILURE**  
No raster, no sound - Selenium Rectifiers (M1 & M2)

**LOSS OF PICTURE OR SOUND**  
No pic, no sound, has raster - V2, V3, V4, V5, V6, V9  
No pic, no sound, has snow - V1, V2, V3  
No pic, has sound, has raster - V8, V15  
Has pic, no sound - V7, V8, V9

**SYNC FAILURE**  
No vert. sync - V7, V10  
No horiz. sync - V7, V11  
No vert. or horiz. sync - V8, V7

**SWEEP FAILURE**  
No raster, has sound - V11, V12, V13, V14, V15  
No vertical deflection - V10  
Poor vert. linearity or foldover - V10  
Poor horiz. linearity or foldover - V11, V12, V13  
Narrow picture - V11, V12, V13, V14, M1, M2  
Vert. off freq. - V7, V10  
Horiz. off freq. - V7, V11

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



ALIGNMENT INSTRUCTIONS

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

Use an isolation transformer to protect the test equipment.  
The high voltage lead should be securely taped away from chassis.

VIDEO IF ALIGNMENT

Connect the negative lead of a 3 volt bias supply to the ungrounded side of C46. Connect the positive lead to chassis. Two peaks may occur during alignment of the video IF coils. Use the peak with the slug entering the coil from the end nearest the chassis. The sound trap (A5) should be tuned with the slug entering the coil from the end away from the chassis. Use only enough sweep generator output to provide usable pattern on scope. If the sweep generator has no built-in marker, loosely couple a separate marker to the sweep generator output. Connect the synchronized sweep voltage from the sweep generator to the horizontal input of the oscilloscope for horizontal deflection.

DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
1. .01MFD	High side to point (B). Low side to chassis.	44MC (10MC Swp.)	41.25MC 45.75MC	Between any two channels.	Vert. amp. thru detector probe (Fig. 1) to pin 5 (plate) of 1st video IF amp. tube (V3). Low side to chassis.	A1, A2	Adjust A1 and A2 for response curve similar to Fig. 2 with markers in proper position. Remove scope and detector from pin 5 of V3.
2. "	"	"	41.25MC 42.5MC 45.75MC	"	Vert. amp. thru 3.3KΩ to point (A). Low side to chassis.	A3, A4, A5, A6	Adjust for response curve similar to Fig. 3. Adjust A5 for MINIMUM amplitude at 41.25MC. A3 affects the high frequency end of response curve and A4 affects the low frequency end. A6 affects the center of response curve. Adjust A6 for maximum amplitude and MINIMUM tilt.

4.5MC TRAP ALIGNMENT

DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
3. .001MFD	High side to point (A). Low side to chassis.	Not used	4.5MC (400% Mod.)	Between any two channels.	Vert. amp. thru detector (Fig. 4) to pin 11 (cathode) of picture tube. Low side to chassis.	A7	Turn contrast control fully clockwise. Adjust A8 completely out of coll. Then adjust A7 for MINIMUM 400% indication on scope.

SOUND IF ALIGNMENT

Set the volume control for normal volume. Use frequency modulated signal with 60% modulation and 450KC sweep. Use 120% sawtooth voltage in scope for horizontal deflection.

DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
4. .001MFD	High side to point (A). Low side to chassis.	4.5MC (400% Mod. 50KC Swp.)	4.5MC	Between any two channels	Across secondary of audio output trans. (T5).	A10	Set buzz control (R8) 90° from maximum clockwise rotation. Adjust A10 for maximum 400% indication on scope.
5. "	"	"	"	"	"	A8, A9	Attenuate generator output so that signal level is below limiting level of the 6BN6 as evidenced by background hiss and noise in the sound. Adjust A8 and A9 for maximum response on scope.
6. "	"	Not used	4.5MC (400% Mod.)	"	"	R8	Use high signal generator output and adjust R8 for MINIMUM 400% indication on scope.
7. "	"	4.5MC (400% Mod. 50KC Swp.)	4.5MC	"	"	A10	With volume control at low level, retouch A10 for maximum 400% indication on scope. Remove test equipment. Connect antenna and tune in the weakest station in that area and retouch R7 for MINIMUM buzz and hiss. Tune in strongest TV station in that area and adjust A10 for clearest sound.

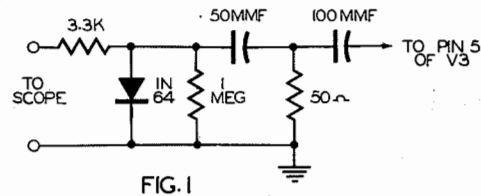


FIG. 1

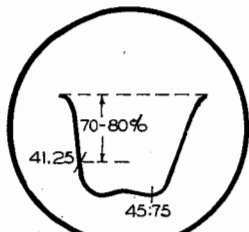


FIG. 2

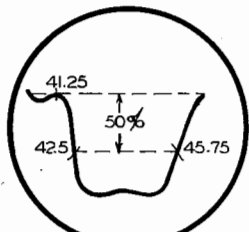


FIG. 3

ALIGNMENT INSTRUCTIONS (cont)

VHF OSCILLATOR ALIGNMENT FOR TUNER #D2548

Leave the bias connected as under "Video IF Alignment". The channel oscillator adjustment screws are reached through a hole just to the right of the channel switch shaft. The correct adjustment screw is accessible through this hole as the channel switch is turned to each channel. Connect the synchronized sweep voltage from the sweep generator to the horizontal input of the oscilloscope for horizontal deflection. The sweep generator output lead should be terminated with its characteristic impedance, usually 50 ohms. Set the fine tuning control to the mid-position of its range.

DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
8. Two 120Ω Carbon Resistors	Across antenna terminals with 120Ω in each lead.	213MC (10MC Swp.) 207MC (10MC Swp.) 201MC (10MC Swp.) 195MC (10MC Swp.) 189MC (10MC Swp.) 183MC (10MC Swp.) 177MC (10MC Swp.) 85MC (10MC Swp.) 79MC (10MC Swp.) 69MC (10MC Swp.) 63MC (10MC Swp.) 57MC (10MC Swp.)	211.25MC 215.75MC 209.75MC 199.25MC 203.75MC 193.25MC 197.75MC 187.25MC 191.75MC 185.75MC 175.25MC 179.75MC 83.25MC 87.75MC 81.75MC 71.75MC 61.25MC 65.75MC 55.25MC 59.75MC	13 12 11 10 9 8 7 6 5 4 3 2	Vert. amp. thru 3.3KΩ to point (A). Low side to chassis.	A11 A12 A13 A14 A15 A16 A17 A18 A19 A20 A21 A22	Adjust to place sound marker in trap as in Fig. 5. Video marker should be at 50%.

RF AND MIXER ALIGNMENT FOR TUNER #D2548

The RF and Mixer portion of this receiver has been properly aligned at the factory and is very stable. Alignment of this portion of the receiver should not be required in the field.

VHF TUNER ALIGNMENT FOR TUNER #D2283

The VHF portion of this receiver has been properly aligned at the factory and is very stable. Alignment of this portion of the receiver should not be required in the field.

UHF TUNER ALIGNMENT FOR TUNER #D2283

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

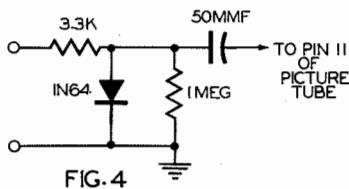


FIG. 4

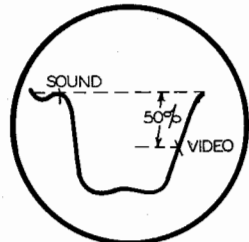


FIG. 5

24TS610B, M, 24TS611B, M (Ch. C2001D, D2001D)

HALICRAFTERS MODELS