

CABINET—REAR VIEW

HORIZONTAL SWEEP CIRCUIT ADJUSTMENTS

- Turn the set on and tune in a TV station, preferably with a test pattern. Allow the receiver a few minutes to warm up.
1. Tune the receiver properly and the contrast for a picture below an excessive contrast condition.
 2. Place a clip lead across the Horiz. Frequency coil (L20).
 3. Place a clip lead from point \diamond to chassis.
 4. Adjust the horizontal hold control (R5) until a single picture is attained.
 5. Remove the short from L20. Adjust the horizontal frequency slug (B1) with the slug entering the coil from the chassis side until a single picture is attained, then turn B1 1/4 turn counter clockwise for final setting of the coil.
 6. Remove the short from point \diamond , and the picture should snap into sync.
 7. Turn the horizontal hold control fully clockwise, then turn slowly counter clockwise until the picture falls into sync. With this setting of the horizontal hold control, the picture will remain in sync regardless of the signal level.
 8. Measure the DC voltage between point \diamond and chassis. It should measure 1 to 2 volt positive if the circuit is operating properly.

PHOTOFACT* Folder



DISASSEMBLY INSTRUCTIONS

CHASSIS REMOVAL

1. Remove 2 push-on type control knobs (channel selector and off/on volume) from side panel of cabinet. Remove 2 wood screws holding escutcheon panel and remove 4 small control knobs.
2. Remove 8 wood screws. Remove rear cover.
3. Disconnect speaker leads.
4. Remove 4 chassis mounting board bolts. Remove chassis with mounting board.
5. Remove 4 speaker nuts. Remove speaker.

CAUTION NOTE

ONE SIDE OF AC LINE CONNECTED TO CHASSIS

Care should be exercised when connecting test equipment or physically contacting chassis.

MODEL
721CW

SERVICING IN THE FIELD

TUNER OSCILLATOR ADJUSTMENTS

Touch-up adjustments of the VHF tuner oscillator circuit may be accomplished by removing the channel selector and fine tuning knobs.

PICTURE TUBE SAFETY GLASS CLEANING

Remove 4 wood screws holding metal molding at the top edge of the safety glass. Remove 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

Remove the rear cover and supply power to the set. Set the horizontal hold control to its mid-range position and adjust

the horizontal frequency slug (B1) until the picture synchronizes horizontally.

SOUND IF DETECTOR BUZZ ADJUSTMENT

Adjust the discriminator secondary (A1) located on top of the chassis.

FOCUS ADJUSTMENT

Focus may be varied by means of a jumper on picture tube base. This jumper may be connected between pins y and 2 or 6 and 10. The 10a trap should again be adjusted for maximum brightness consistent with best focus.

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.

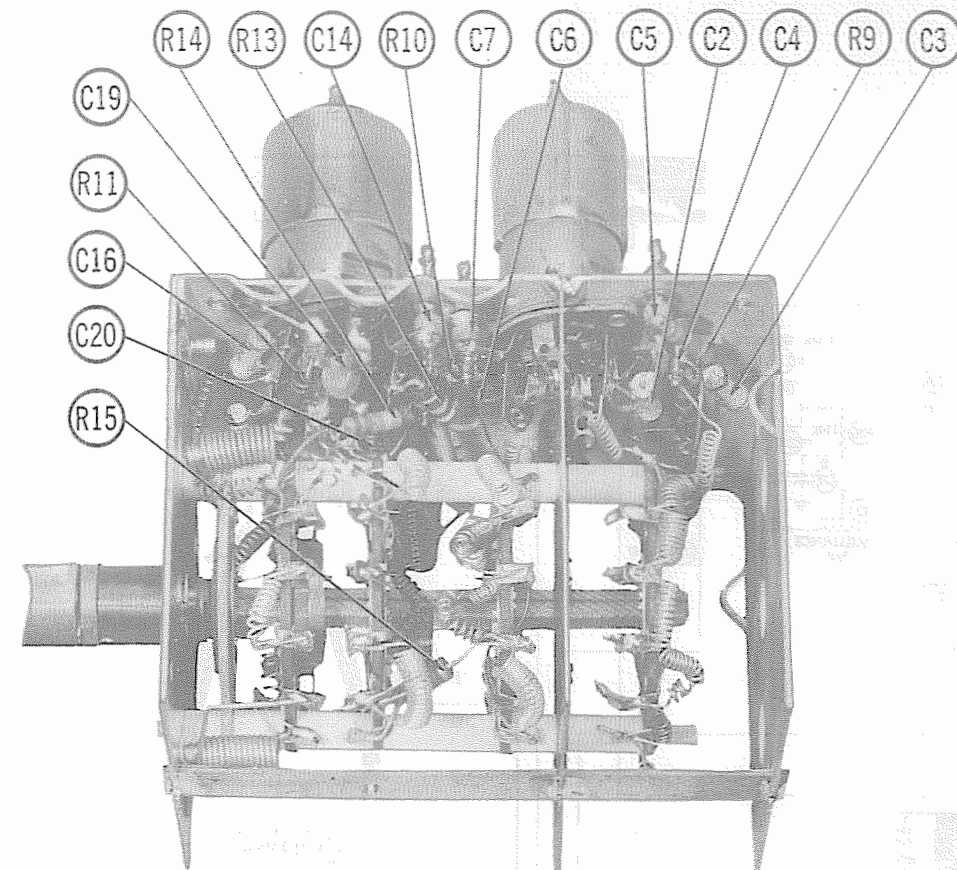
HOWARD W. SAMS & CO., INC. • Indianapolis 5, Indiana

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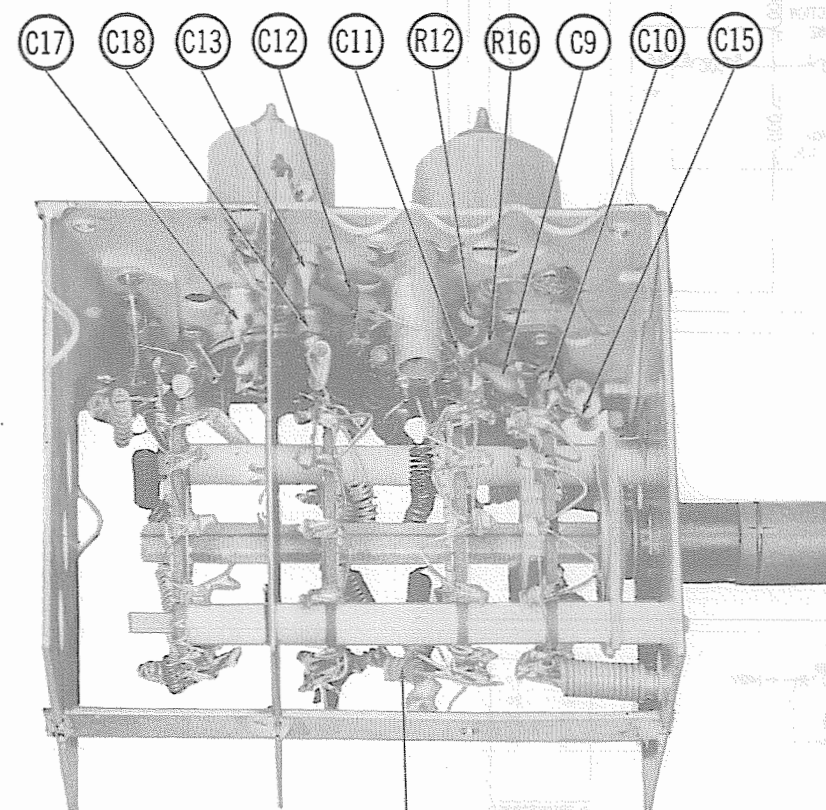
DATE 3-57

SET 352 FOLDER 12

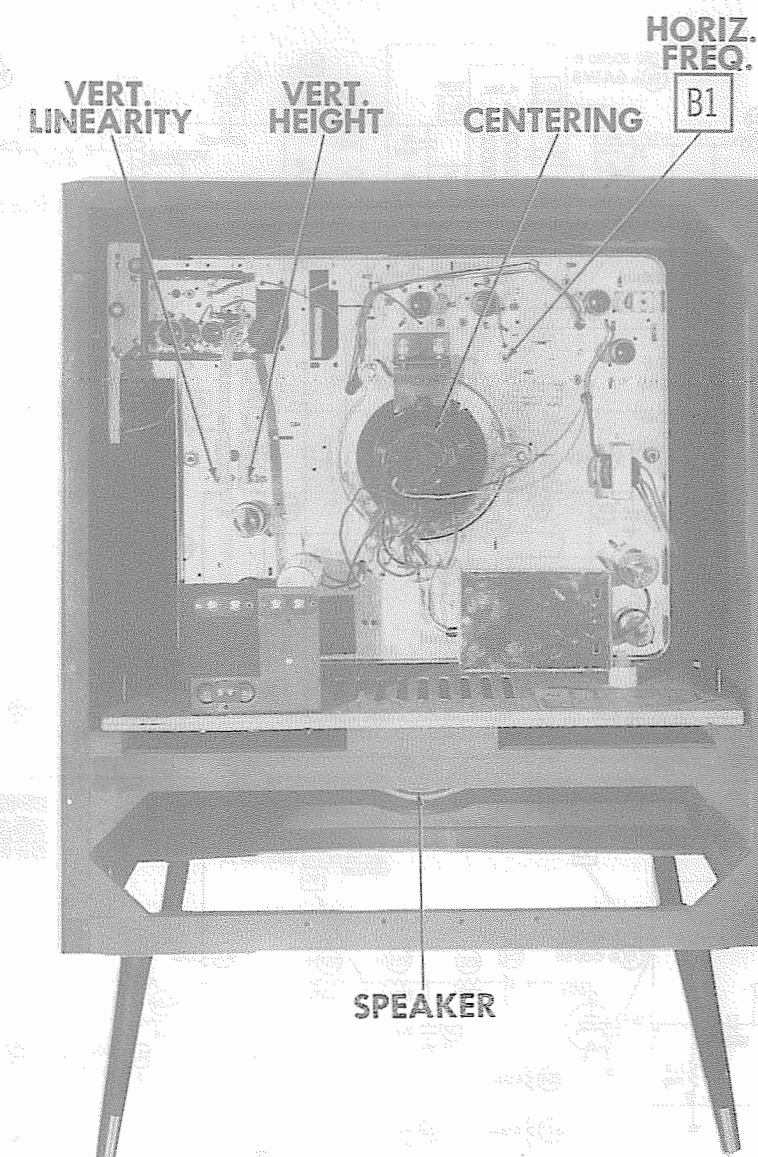
MUNIZ MODELS 721CDB, CBD/82, CBS, CBS/82, CEA, CEA/82, CMD, CMD/82, CMS, CMS/82, CPB, CPB/82, CPM, CPM/82, CW, CW/82, LIT-B, LIT-B/82, LIT-M, LIT-M/82, TB, TB/82, TM, TM/82, TS, TS/82, TSP-BK, TSP-BK/82, TSP-DL, TSP-DL/82, TSP-RD, TSP-RD/82, TSP-WH, TSP-WH/82



RF TUNER-LEFT SIDE



RF TUNER-RIGHT SIDE



CABINET-REAR VIEW

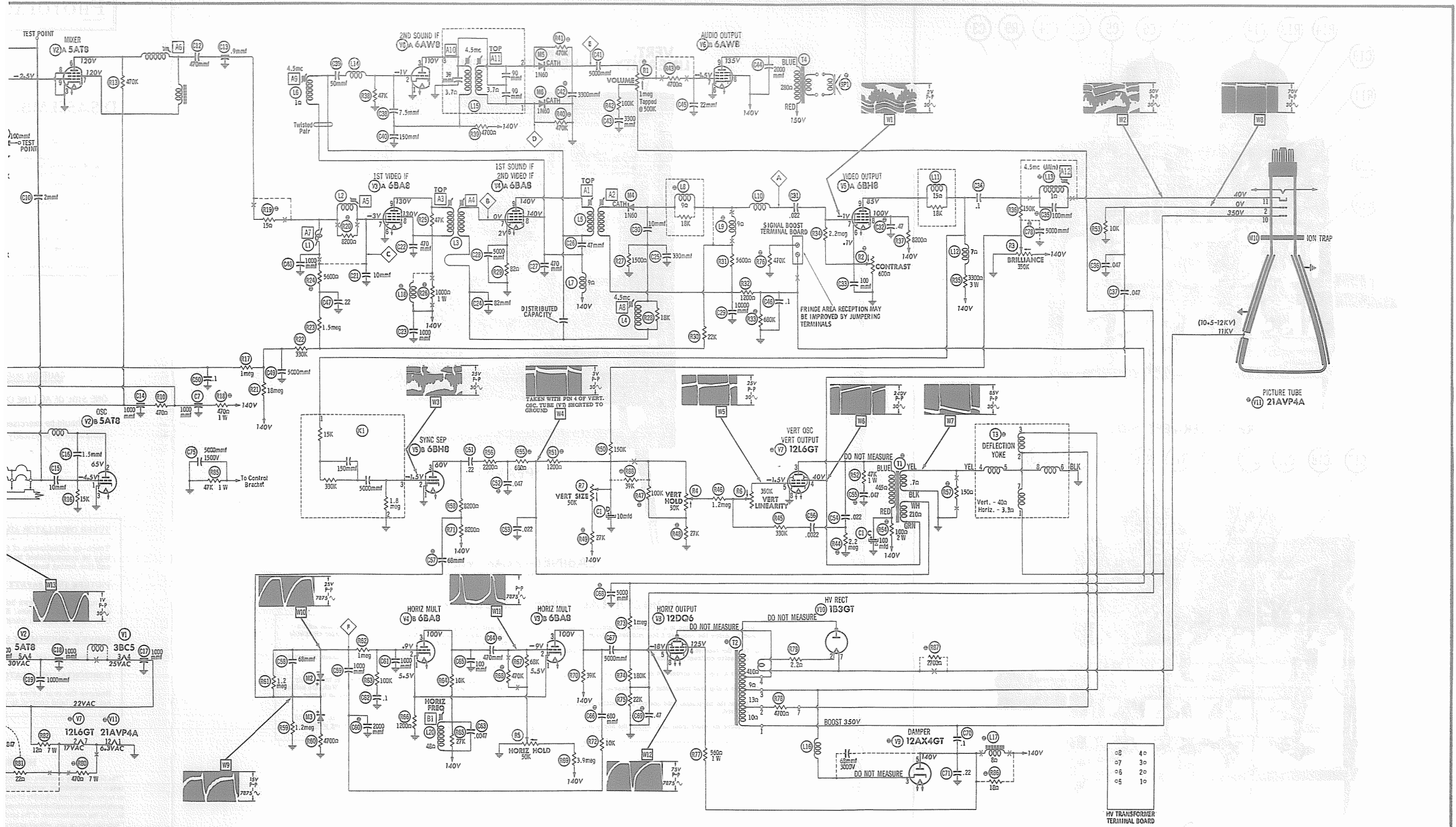
HORIZONTAL SWEEP CIRCUIT ADJUSTMENTS

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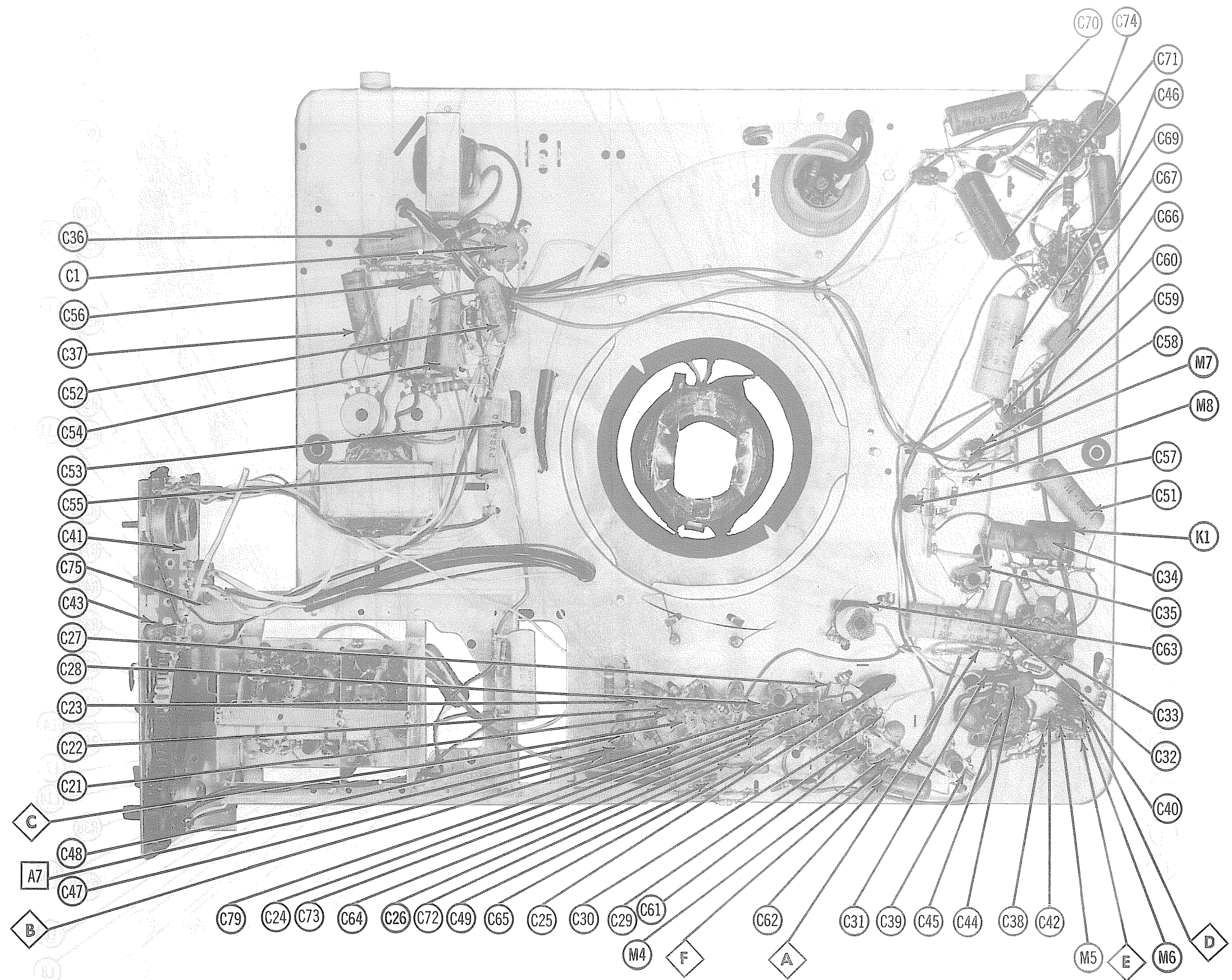
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MUNTZ MODELS 721CBD, CBD/82, CBS, CBS/82, CEA, CEA/82, CMD, CMD/82, CMS, CMS/82, CPB, CPB/82, CPM, CPM/82, CW, CW/82, LTS-B, LTS-B/82, LTS-M, LTS-M/82, TB, TB/82, TM, TM/82, TS, TS/82, TSP-BK, TSP-BK/82, TSP-BL, TSP-BL/82, TSP-RD, TSP-RD/82, TSP-WH, TSP-WH/82



MUNIZ MODELS 721CBD, CBD/82, CBS, CBS/82, CEA, CEA/82, CMD, CMD/82, CMS, CMS/82, CPB, CPB/82, CPM, CPM/82, CW, CW/82, LTS-B, LTS-B/82, LTS-M, LTS-M/82, TB, TB/82, TM, TM/82, TS, TS/82, TSP-BK, TSP-BK/82, TSP-BL, TSP-BL/82, TSP-RD, TSP-RD/82, TSP-WH, TSP-WH/82

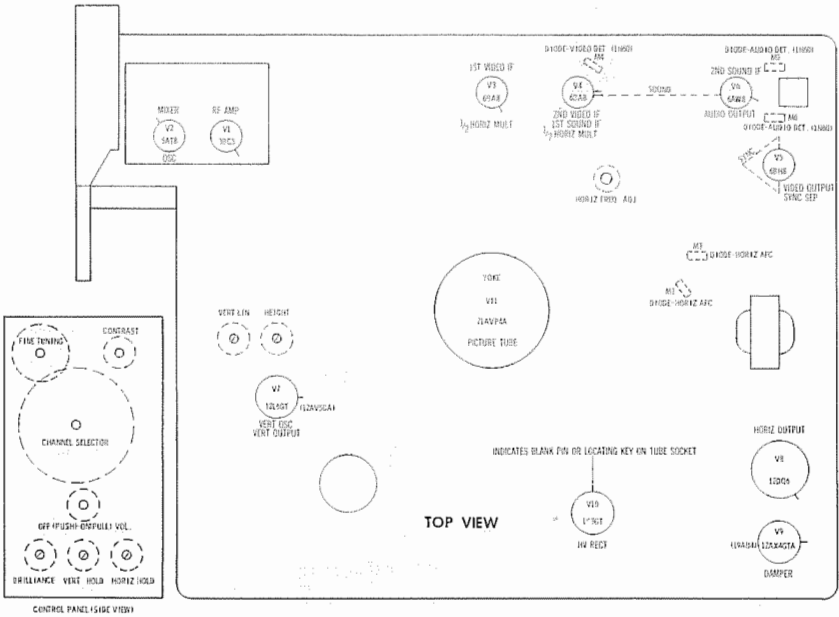
CHASSIS BOTTOM VIEW-CAPACITOR AND ALIGNMENT IDENTIFICATION

RESISTANCE MEASUREMENTS

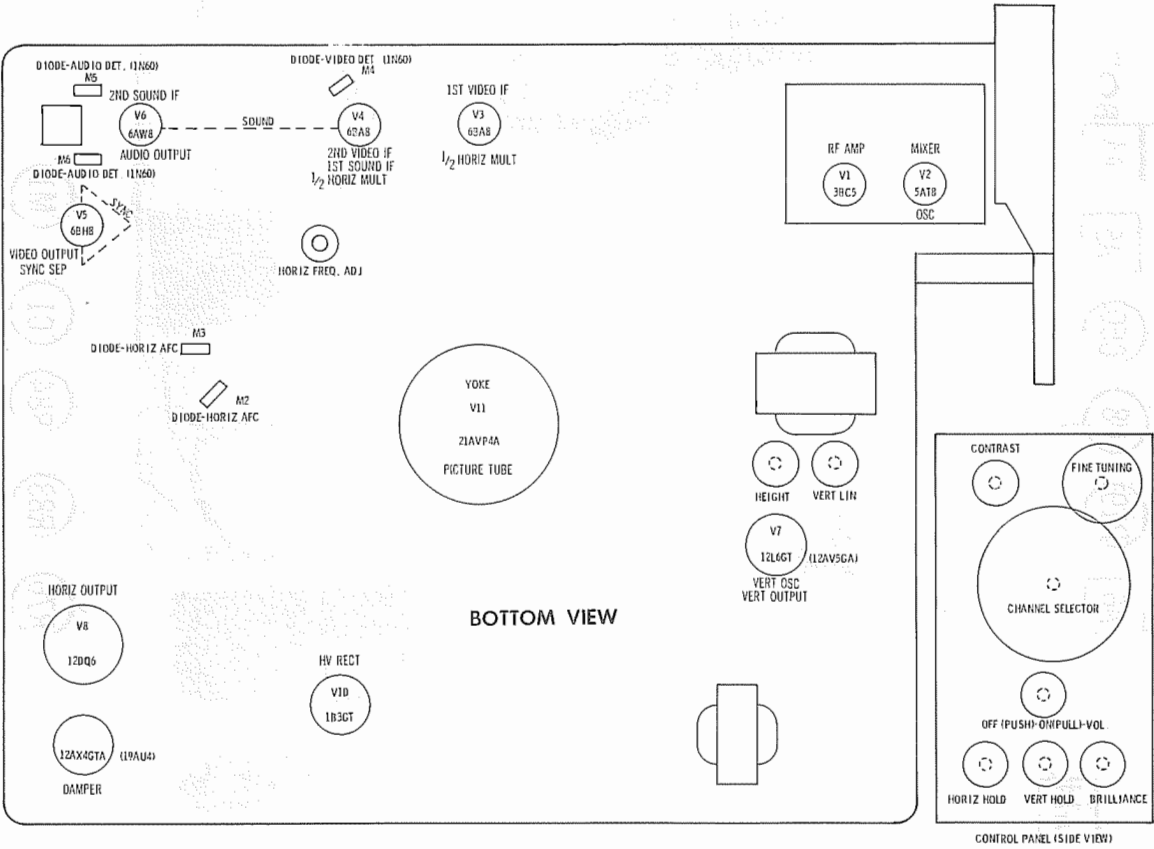
ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V1	3BC5	1.6Meg	0Ω	11Ω	12Ω	† 500Ω	† 500Ω	0Ω		
V2	5AT8	15K	† 6000Ω	0Ω	12Ω	13.5Ω	† 1000Ω	† 1000Ω	0Ω	235K
V3	6BA8	1200Ω	⊙ 80K	† 39K	15Ω	13.5Ω	0Ω	1.7Meg	† 1000Ω	† 1000Ω
V4	6BA8	1200Ω	2.2Meg	† 10K	17Ω	15Ω	82Ω	1500Ω	† 30Ω	† 30Ω
V5	6BH8	0Ω	1.8Meg	† 16K	20Ω	19Ω	⊙ 5Ω	2.2Meg	† 8200Ω	† 3300Ω
V6	6AW8	0Ω	47K	† 4700Ω	17Ω	19Ω	0Ω	⊙ 25K	† 22Ω	† 280Ω
V7	12L6GT	TP	4Ω	† 580Ω	⊙ † 27K	⊙ 1.3Meg	TP	1.5Ω	0Ω	
V8	12DQ6	TP	20Ω	TP	590Ω	200K	TP	23Ω	0Ω	TOP CAP * 9Ω
V9	12AX4GT	TP	NC	1NF	NC	† 30Ω	TP	26Ω	23Ω	
V10	1B3GT	PINS 1 THRU 8 HAVE INFINITE RESISTANCE								TOP CAP * 419Ω
V11	21AVP4A	0Ω	10Ω	Pin 10 * 0Ω	Pin 11 ⊙ † 190K	Pin 12 1.5Ω				

† MEASURED FROM OUTPUT OF M1.
* MEASURED FROM PIN 3 OF V9.
⊙ THIS READING WILL VARY. CONTROL SET FOR NORMAL OPERATION.
TP TIE POINT
NC NO CONNECTION

TUBE PLACEMENT CHART



MUNIZ MODELS 721CBD, CBD/82, CBS, CBS/82, CEA, CEA/82, CMD, CMD/82, CMS, CMS/82, CPB, CPB/82, CPM, CPM/82, CW, CW/82, LTS-B, LTS-B/82, LTS-M, LTS-M/82, TB, TB/82, TM, TM/82, TS, TS/82, TSP-BK, TSP-BK/82, TSP-BL, TSP-BL/82, TSP-RD, TSP-RD/82, TSP-WH, TSP-WH/82



TUBE FAILURE CHECK CHART

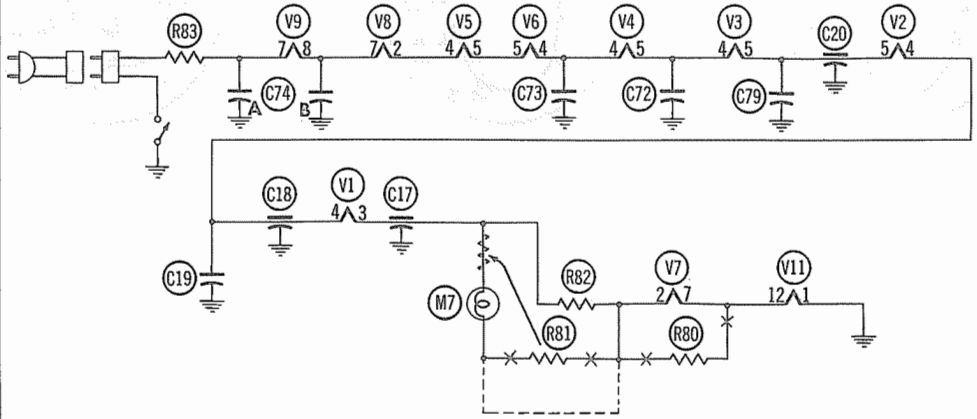
The following chart lists tubes whose failures are most likely to produce the indicated symptoms. Refer to tube placement chart for location and type of tube.

- POWER SUPPLY FAILURE**
No raster, no sound - Rectifier (M1)
- LOSS OF PICTURE OR SOUND**
No pic, no sound, has raster - V2, V3, V4
No pic, no sound, has snow - V1, V2, V3
No pic, has sound, has raster - V5, V11
Has pic, no sound - V4, V6

- SYNC FAILURE**
No vert. sync - V5, V7
No horiz. sync - V3, V4, V5
No vert. or horiz. sync - V5

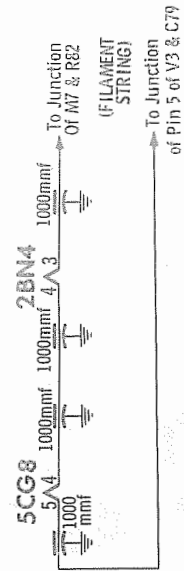
- SWEEP FAILURE**
No raster, has sound - V3, V4, V8, V9, V10
No vertical deflection - V7
Poor vert. linearity or foldover - V7
Poor horiz. linearity or foldover - V3, V4, V8, V9
Narrow picture - V3, V4, V8, V9, M1
Vert. off freq. - V5, V7
Horiz. off freq. - V3, V4, V5

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



TUBE PLACEMENT CHART

ALTERNATE VHF TUNER SCHEMATIC



ALTERNATE VHF TUNER SCHEMATIC

VHF Tuner Part No. PR-0268

MUNIZTE MODELS 721 CBD, CBD/82, CB5, CB5/82, CEA, CEA/82, CMD, CMD/82, CM5, CM5/82, CPB, CPB/82, CPA, CPA/82, CW, CW/82, L15-B, L15-B/82, L15-A, L15-A/82, TB, TB/82, TM, TM/82, TS, TS/82, TSP-BK, TSP-BK/82, TSP-BL, TSP-BL/82, TSP-RD, TSP-RD/82, TSP-WH, TSP-WH/82

PARTS LIST AND DESCRIPTIONS (Continued)

COMPONENT COMBINATIONS

ITEM No.	USE	DESCRIPTION	MUNTZ PART No.	REPLACEMENT DATA
K1	Sync Take-off	150MMF, 5000MMF, 330K, 15K 1.8Meg	PAK-0100	

RECTIFIERS

ITEM No.	RATING	REPLACEMENT DATA						
	CURRENT (Measured)	MUNTZ PART No.	FEDERAL PART No.	GENERAL ELECTRIC PART No.	INTERNATIONAL PART No.	MALLORY PART No.	RADIO RECEPTOR PART No.	SARKIS TARZIAN PART No.
M1	.270A	CX-0033 ① SR-0008 ③	1236AH ③	1N1007 ④	RS300SL ⑤	6S300 ③	6Q4 ③	300 ③
M2		SR-0005 ②	1236AH ③	1N1007 ④	RS300SL ⑤	6S300 ③	6Q4 ③	300 ③
M3		SR-0004 ③ ⑤ SR-0004 ③ ⑤			1T1 ③ 1T1 ③			

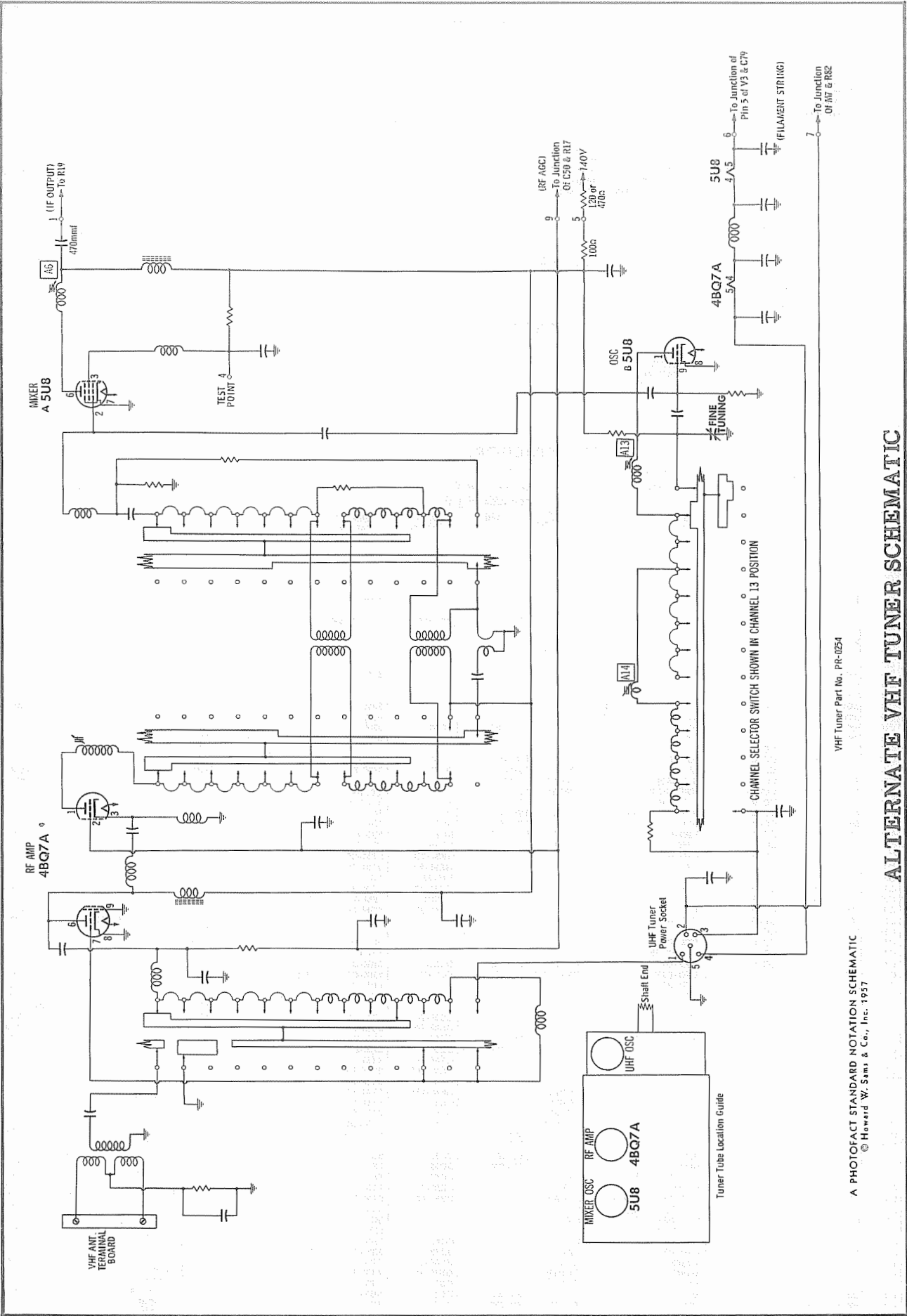
- ① Germanium type used in later versions of 721C, T, LTS, TSP series models.
② Selenium type used in earlier versions of 721C, T, LTS, TSP series models and all versions of 721TS series models.
③ Selenium type.
④ Germanium type.
⑤ Matched pair.

CRYSTAL DIODES

ITEM No.	ORIG. TYPE	REPLACEMENT DATA		NOTES
		MUNTZ PART No.	SYLVANIA PART No.	
M4	1N60	CX-0031	1N60	Video Det. (Pigtail)
M5	1N60	CX-0031	1N60	Discriminator (Pigtail) (Matched pair)
M6	1N60	CX-0031	1N60	Discriminator (Pigtail) (Matched pair)

MISCELLANEOUS

ITEM No.	PART NAME	MUNTZ PART No.	NOTES
M7	Pilot Lamp	LS-0004-3	Type #1847
M8	Tuner	PR-0264	VHF
	Tuner	PR-0254	UHF-VHF
	Tuner	PR-0263	UHF-VHF
	Tuner	PR-0253	UHF-VHF
	Tuner	PR-0276	UHF-VHF
	Tuner	PR-0268	VHF
M9	Centering Device	PR-0229	
M10	Ion Trap	PR-0229	
	Cabinet	CW-0066	Table-Metal (Pebble Tan) Models 721TS, 721TS/82.
	Cabinet	CW-0079	Table-Metal (Specify Color) Models 721TSP, 721TSP/82.
	Cabinet	CW-0060	Table-Metal (Pebble Tan) Models 721LTS, 721LTS/82.
	Cabinet	CW-0074	Table-Wood (Mahogany) Models 721TM, 721TM/82.
	Cabinet	CW-0074-2	Table-Wood (Blonde) Models 721TB, 721TB/82.
	Cabinet	CW-0072-2	Console (Mahogany) Models 721CMS, 721CMS/82.
	Cabinet	CW-0072-2D	Console (Mahogany) Models 721CMD, 721CMD/82.
	Cabinet	CW-0072-4	Console (Blonde) Models 721CBS, 721CBS/82.
	Cabinet	CW-0072-4D	Console (Blonde) Models 721CBD, 721CBD/82.
	Knob	KB-0055-3	Fine Tuning (Tan) Models 721LTS, 721TS
	Knob	KB-0056-3	Channel Selector (Tan) Models 721LTS, 721TS.
	Knob	KB-0058-3	On/Off-Volume (Tan) Models 721LTS, 721LTS/82, 721TS, 721TS/82.
	Knob	KB-0060-3	UHF Selector -VHF Fine Tuning (Tan) Models 721TS/82, 721LTS/82.
	Knob	KB-0061-3	VHF Channel Selector (Tan) Models 721LTS/82, 721TS/82.
	Knob	KB-0062-3	VHF Fine Tuning (Tan) Models 721LTS/82, 721TS/82.
	Knob	KB-0063-3	Contrast (Tan) Models 721LTS, 721LTS/82, 721TS, 721TS/82.
	Knob	KB-0064-3	Horiz. Hold, Vert. Hold and Brightness (Tan) Models 721LTS, 721LTS/82, 721TS, 721TS/82.
	Knob	KB-0086-3	UHF Channel Selector (Tan) Models 721C/82, 721LTS/82, 721T/82, 721TS/82, 721TSP/82.
	Knob	KB-0067-3	Channel Selector, 13 Position (Tan) Models 721C/82, 721LTS/82, 721T/82, 721TS/82, 721TSP/82.
	Knob	KB-0068-3	Fine Tuning; Models 721LTS/82, 721TS/82, 721TSP/82.
	Knob	KB-0069-3	Horiz. Hold, Vert. Hold and Brightness; Models 721C, 721C/82, 721T, 721T/82, 721TSP, 721TSP/82.
	Knob	KB-0071-3	VHF Channel Selector; Models 721C, 721T.
	Knob	KB-0071-4	VHF Channel Selector; Models 721C, 721T, 721TSP.
	Knob	KB-0072-3	On/Off-Volume; Models 721C, 721C/82, 721T, 721T/82, 721TSP, 721TSP/82.
	Knob	KB-0073-3	Fine Tuning, Contrast; Models 721C, 721C/82, 721T, 721T/82, 721TSP, 721TSP/82.
	Safety Glass	WG-0019	Models 721TS, 721TS/82, 721TSP, 721TSP/82.
	Safety Glass	WG-0019-1	Models 721LTS, 721LTS/82.
	Safety Glass	WG-0019-2	Models 721C, 721C/82, 721T, 721T/82.
	Safety Glass	WG-0020-2	(Tinted) Models 721CMD, 721CMD/82, 721CBD, 721CBD/82.
	Mask	ES-0066	(Green) Models 721TS, 721TS/82.
	Mask	ES-0066-1	(Gold) Models 721TSP, 721TSP/82.
	Mask	ES-0057	(Green) Models 721LTS, 721LTS/82.
	Mask	ES-0068	(Gold) Models 721C, 721C/82, 721T, 721T/82.



TUBES (GENERAL ELECTRIC, SYLVANIA)

ITEM# No.	USE	TYPE	NOTES	ITEM# No.	USE	TYPE	NOTES
V1	RF Amp.	3BC5	Note 3	V5	Video Output-Sync Sep.	6BH8	
V2	Mixer-Osc.	5AT8		V6	2nd Sound IF Amp. -		
V3	1st Video IF Amp. -				Audio Output	6AW8	
V4	Horiz. Mult.	6BA8		V7	Vert. Osc. - Vert. Output	12L6GT	Note 1
	2nd Video IF Amp. -			V8	Horiz. Output	12DQ6	Note 2
	1st Video IF Amp. -			V9	Dumper	12AX-4GT	
	Horiz. Mult.	6BA8		V10	HY Rectifier	1B3GT	

Note 1: Type 12AV5GA used in chassis above serial no. 196019, except TS Models
 Note 2: Some versions use 19AU4 in this application.
 Note 3: According to tuners used on pages 12, 13, 17, 18

PICTURE TUBE

ITEM No.	REPLACEMENT DATA				NOTES
	MUNTZ PART No.	CB5 PART No.	GENERAL ELECTRIC PART No.	SYLVANIA PART No.	
V12	21AVP4A	21AVP4A ①	21AVP4A ① 21AVP4A/B ①	21AVP4A/B ②	① Aluminized ② Silver Screen "85"
	21XP4A	21AVP4 21XP4A ① 21XP4	21AVP4 21XP4A ① 21XP4	21AVP4 21XP4A ② 21XP4	

ELECTROLYTIC CAPACITORS

ITEM No.	RATING		REPLACEMENT DATA						
	CAP.	VOLT.	MUNT'Z PART No.	AEROVOX PART No.	CORNELL DUBLIER PART No.	MALLORY PART No.	PYRAMID PART No.	SANGAMO PART No.	SPRAGUE PART No.
CIA	200	150	CE-0042	AFHS4-38-95		FP411.8		D-095 T-055	R2326*
B	200	150							
C	100	150							
D	10	75							

* Non catalog item.

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	MUNTZ PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	MALLORY PART No.	SPRAGUE PART No.		
C2	8										
C3	8										
C4	9										
C5	1000			EF-001	MFT-1000				503C-D1		
C6	.27										
C7	1000			EF-001	MFT-1000				503C-D1		
C8	.68				TCZ-R68						
C9	5.8			NPO-S16.8	TCZ-GR8	C10V68C	TCO-.68 TCO-6.8	ZT-5568	5TCCB-V68		
C10	2										
C11	100			BPD-00047	DD-471	BYA10T47	ED-470	UC-5347	5GA-T47		
C12	470										
C13	.9			EF-001	MFT-1000				503C-D1		
C14	1000			NPO-S110	TCZ-10	C101QC	TCO-10	ZT-541	5TCC-Q1		
C15	10										
C16	1.5										
C17	1000	500	CC-0131	EF-001	MFT-1000				503C-D1		
C18	1000	500	CC-0131	EF-001	MFT-1000				503C-D1		
C19	1000	500	CC-0131	BPD-001	DD-102	BYA6D1	ED-1000	DC521	5HK-D1		
C20	1000	500	CC-0131	EF-001	MFT-1000				503C-D1		
C21	10	500	CC-0123								
C22	470	500	CC-0159	BPD-00047	DD-471	BYA10T47	ED-470	UC-5347	5GA-T47		
C23	1000	500	CC-0131	BPD-001	DD-102	BYA6D1	ED-1000	DC521	5HK-D1		
C24	82	500	CC-0157	N750-S182	TCN-82	C10Q82U	TC7-82				
C25	330	500	CC-0140	N750-S1330	TCN-330	C10T33U	TC7-330		5TCU-T33		
C26	47	500	CC-0156	N750-S147	TCN-47	C10Q47U	TC7-47	NT-5447	5TCU-Q47		
C27	470	500	CC-0159	BPD-00047	DD-471	BYA10T47	ED-470	UC-5347	5GA-T47		
C28	5000	500	CC-0000	BPD-005	DD-502	BYA6D5	GP-5000	DC525	5HK-D5		
C29	10000	500	CC-0107	BPD-01	DD-103	BYA6S1	GP-10000	DC511	5HK-D1		
C30	10	500	CC-0154	N750-S110	TCZ-10	C101QC	TCO-10	ZT-541	5TCC-Q1		
C31	.022	200	CP-0052	P288N-02	DF-203	CUBS22		GEM-2122	2TM-S22		
C32	.47	200	CP-0045	P288N-47		CUB2P47		GEM-2047	2TM-P47		
C33	100	500	CC-0162	BPD-0001	DD-101	L10T1	ED-100	UC-531	5GA-T1	Note 3	
C34	.1	400	CP-0034	P488N-1	DF-104	CUB-4P1		GEM-401	4TM-P1		
C35	100	500	CM-0054	1468-0001		5W5T1		MC230	1FM-S1	Note 4	
C36	.047	200	CP-0068	BPD-005	DF-503	CUB2S47		GEM-2147	2TM-S47		
C37	.047	600	CP-0064	BPD-05	DF-503	CUB6S47		GEM-6147	6TM-S47		
C38	7.5	500	CC-0153			C10V7C					
C39	50	500	CC-0124	BPD-00005	DD-500	L10Q5	ED-50	UC-545	5GA-Q5		
C40	150	500	CC-0158	N750-S1150	TC7-150	C10T15U	TC7-150		5TCU-T15		
C41	5000	500	CC-0060	BPD-005	DD-502	BYA10D5	GP-5000	DC525	5HK-D5		
C42	3300	500	CC-0068	BPD-0033	D6-332	BYA10D33	GP-3300	UC-5233	5HK-D33	Note 9	
C43	3300	500	CC-0068	BPD-0033	D6-332	BYA10D33	GP-3300	UC-5233	5HK-D33		
C44	2000	500	CC-0146	BPD-002	DD-202	BYA10D2	GP-2000	DC522	5HK-D2		
C45	22	500	CC-0155								
C46	.1	200	CP-0026	P288N-1	DF-104	CUB2P1		GEM-201	2TM-P1		
C47	.22	200	CP-0055	P288N-22		CUB2P22		GEM-2022	2TM-P22		
C48	1000	500	CC-0131	BPD-001	DD-102	BYA6D1	ED-1000	DC521	5HK-D1		
C49	5000	500	CC-0060	BPD-005	DD-502	BYA10D5	CP-5000	DC525	5HK-D5		
C50	.1	200	CP-0026	P288N-1	DF-104	CUB2P1		GEM-201	2TM-P1		
C51	.22	200	CP-0055	P288N-22		CUB2P22		GEM-2022	2TM-P22		
C52	.047	200	CP-0068	BPD-05	DF-503	CUB2S47		GEM-2147	2TM-S47		
C53	.022	600	CP-0053	BPD-02	DF-203	CUBS22		GEM-2122	2TM-S22	Note 11	
C54	.022	600	CP-0053	BPD-02	DF-203	CUBS22		GEM-2122	2TM-S22		
C55	.047	600	CP-0064	BPD-05	DF-503	CUB6S47		GEM-6147	6TM-S47	Note 8	
C56	.0022	800	CP-0100	BPD-0022	DD-222	CUB2P22		GEM-6222	6TM-D22		
C57	.68	500	CC-0146	NPO-S16.8	TCZ-.68	C10Q58C	TCO-.68 TCO-.68		5TCC-Q68	Note 10	
C58	68	500	CC-0146	NPO-S16.8	TCZ-.68	C10Q58C	TCO-.68 TCO-.68		5TCC-Q68		
C59	1000	500	CC-0117	BPD-001	DD-102	BYA6D1	ED-1000	DC521	5HK-D1		
C60	2000	500	CC-0160	BPD-002	DD-202	BYA10D2	GP-2000	DC522	5HK-D2	Note 6	
C61	1000	500	CC-0117	BPD-001	DD-102	BYA6D1	ED-1000	DC521	5HK-D1		
C62	.1	200	CP-0026	P288N-1	DF-104	CUB2P1		GEM-201	2TM-P1		
C63	.0047	600	CPM-0113	BPD-0047	DD-472	CUB6D47		GEM-6247	0TM-D47		
C64	470	500	CM-0048	BPD-00047	DD-471	BYA10T47	ED-470	UC-5347	5GA-T47	Note 1	
C65	100	500	CC-0163	BPD-0001	DD-101	L10T1	ED-100	UC-531	5GA-T1		
C66	680	500	CM-0049	1467-00068		5W5T68			1FM-368	Note 7	
C67	5000	500	CC-0060	BPD-005	DD-502	BYA10D5	GP-5000	DC525	5HK-D5		
C68	5000	500	CC-0060	BPD-005	DD-502	BYA10D5	GP-5000	DC525	5HK-D5	Note 5	
C69	.47	200	CP-0045	P288N-47		CUB2P47		GEM-2047	2TM-P47	Note 3	
C70	.1	400	CP-0034	P488N-1		CUB4P1		GEM-401	4TM-P1		
C71	.22	200	CP-0055	P288N-22		CUB2P22		GEM-2022	2TM-P22		
C72	1000	500	CC-0131	BPD-001	DD-102	BYA6D1	ED-1000	DC521	5HK-D1		
C73	1000	500	CC-0131	BPD-001	DD-102	BYA6D1	ED-1000	DC521	5HK-D1		

ITEM No.	RATING		MUNTZ PART No.	AEROVOX PART No.	CENTRALAB PART No.	REPLACEMENT DATA					NOTES
	CAP.	VOLT.				CORNELL-DUBILIER PART No.	ERIE PART No.	MALLORY PART No.	SPAGUE PART No.		
C74A	5000	500		BPD-2X005	DDM-502	BYC6DD5	ED-005	DC525	} 5HK-2D47	Note 2	
B	5000	500					ED-005	DC525			
C75	5000	1500	CC-0133	BPD-005	DD-502	BYA0D5	GP-5000	DC525	5HK-D5		
C76	5000	500	CP-0013	PF68T-1	DF-104	CUBP1		DC525	5HK-D1	Note 5	
C77	1000	500	CC-0131	BFD-001	DD-102	BYA6D1	ED-1000	DC521	5HK-D1	Note 5	
C78	5000	500	CC-0060	BPD-005	DD-502	BYA0D5	ED-005	DC525	5HK-D5	Note 5	
C79	1000	500	CC-0131	BFD-01	DD-102	BYA6D1	ED-1000	DC521	5HK-D1		

Note 1: Some versions use 420MMF in this application.
 Note 2: Some versions use 2 single 5000MMF (Part #CC-0080) in this application.
 Note 3: In model 721TS above serial #190216 a .22MFD is used in this application.
 Note 4: Not used in model 721TS with serial number above 190216.
 Note 5: Use only in chassis with serial #199458 and above.
 Note 6: In chassis with serial #196787 and above a 5000MMF is used in this application. (Part #CC-0060)
 Note 7: In chassis with serial #196287 and above a 5000MMF is used in this application. (Part #CC-0060)
 Note 8: In chassis with serial #196287 and above a .1MFD is used in this application. (Part #CP-0013)
 Note 9: A 5000MMF is used in Late Productions.
 Note 10: Later productions may use a .0023MMF or a .0033MMF in this application.
 Note 11: In chassis beginning with serial #190400 a .022MMF is used in this application. (Part #CP-0052)

CONTROLS

ITEM No.	RATING		REPLACEMENT DATA					INSTALLATION NOTES
	RESIST-ANCE	WATTS	MUNTZ Part No.	CENTRALAB Part No.	CLAROSTAT Part No.	IRC Part No.	MALLOY Part No.	
R1A	1Meg	$\frac{1}{2}$	VC-0063	BT-71	A47F5-1Meg	Q19-137X	UT-443	Volume-Trip @ 500K-Note 1, 2, 3 Attach to R1A
	B Shaft		Not Req.	Not Req.	KSS-3	Not Req.	Not Req.	
R2A	C Switch	$\frac{1}{2}$	Not Req.	KB-1	SWE-12	76-1	US-26	Attach to R1A
	6000		VC-0059	B-4	A47-750-S	Q1-105	U2	Contrast - Note 2 & 3
R3A	B Shaft	$\frac{1}{2}$	Not Req.	Not Req.	KSS-3	Not Req.	Not Req.	Attach to R2A
	350K		VC-0061	AB-69	A47-500K-S	Q1-132	U50	Brilliance
R4A	B Shaft	$\frac{1}{2}$	Not Req.	AK-4	KSS-3	Not Req.	Not Req.	Attach to R3A
	50K		VC-0062	B-11	A47-50K-S	Q1-123	U35	Vert. Hold
R5A	B Shaft	$\frac{1}{2}$	Not Req.	Not Req.	KSS-3	Not Req.	Not Req.	Attach to R4A
	50K		VC-0062	B-11	A47-50K-S	Q1-123	U35	Horiz. Hold
R6A	B Shaft	$\frac{1}{2}$	Not Req.	Not Req.	KSS-3	Not Req.	Not Req.	Attach to R5A
	350K		VC-0061	AB-69	A47-500K-S	Q1-132	U50	Vert. Lim.
R7A	B Shaft	$\frac{1}{2}$	Not Req.	AK-4	KSS-3	Not Req.	Not Req.	Attach to R6A
	60K		VC-0062	B-11	A47-50K-S	Q1-123	U35	Vert. Size
	B Shaft		Not Req.	Not Req.	KSS-3	Not Req.	Not Req.	Attach to R7A

Note 1: Alternate volume control part no. VC-0060 used in models 721TS, 721TS/82, 721C, 721C/82, 721T and 721T/82.
 Note 2: Alternate volume-contrast-switch control part no. VC-0056 used in models 721TS and 721TS/82.
 Note 3: Alternate volume-contrast-switch control part no. VC-0058 used in models 721LTS and 721LTS/82.

RESISTORS

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

ITEM No.	RATING		REPLACEMENT DATA		NOTES
	OHMS	WATT	MUNTZ PART No.	IRC PART No.	
R9	220K			BTS-220K	
R8	3000Ω			BTS-3000	
R10	175K			BTS-470	
R11	15K			BTS-15K	
R12	220K			BTS-220K	
R13	470K		RC-4703-10	BTS-470K	
R14	5600Ω		RC-5601-18	BTS-5600	
R15	15K			BTS-15K	
R16	15K			BTS-15K	
R17	1Meg		RC-1004-4		
R18	470Ω	1	RC-1203-11	BT A-470	Note 1
R19	15Ω		RC-015-18	BTS-15	Note 2
R20	8200Ω		RC-8201-18	BTS-8200	Note 3
R21	10Meg		RC-1005-18	BTS-10Meg	
R22	330K		RC-3303-4	BTS-330K	
R23	1.5Meg		RC-1504-18		
R24	5600Ω		RC-5601-18		Note 4
R25	47K		RC-4702-10	BTS-47K	
R26	1000Ω	1	RC-1000-11	BT A-1000	Note 5
R27	1500Ω		RC-1501-18	BTS-1500	
R28	10K		RC-1002-18		
R29	82K		RC-082-18	BTS-82	
R30	22K		RC-2202-18		
R31	5600Ω		RC-5601-18	BTS-5600	
R32	1200Ω		RC-1201-18	BTS-1200	
R33	680K		RC-6803-18	BTS-680K	
R34	2.2Meg	3	RC-2204-18	BTS-2.2Meg	Note 6
R35	3300Ω	3	RC-3301-12	BT B-3300	
R36	150K		RC-1503-18	BTS-150K	
R37	8200Ω		RC-8201-18	BTS-8200	
R38	47K		RC-4702-18	BTS-47K	
R39	4700Ω		RC-4701-18	BTS-4700	
R40	470K		RC-4703-18	BTS-470K	Note 21
R41	470K		RC-4703-18	BTS-470K	Note 21
R42	100K		RC-1003-18	BTS-100K	
R43	4700Ω		RC-4701-18	BTS-4700	Note 3
R44	2.2Meg		RC-2204-18	BTS-2.2Meg	Note 16
R45	330K		RC-3303-18	BTS-330K	
R46	1.2Meg		RC-1204-18	BTS-1.2Meg	
R47	100K		RC-1003-18	BTS-100K	Note 18

ITEM No.	RATING		REPLACEMENT DATA		NOTES
	OHMS	WATT	MUNTZ PART No.	IRC PART No.	
R48	27K		RC-2702-10	BTS-27K	Note 17
R49	27K		RC-2702-18	BTS-27K	Note 7
R50	150K		RC-1503-18	BTS-150K	
R51	1200Ω		RC-1201-18	BTS-1200	Note 10
R52	47K	1	RC-4702-11	BT A-47K	
R53	10K		RC-1002-18	BTS-10K	
R54	100Ω	2	RC-100-12	BT B-100	Note 22
R55	680Ω		RC-600-18	BTS-680	Note 8
R56	2200Ω		RC-2201-18	BTS-2200	
R57	150Ω		RC-150-18		Note 3
R58	8200Ω		RC-8201-18		
R59	1.2Meg		RC-1204-18		
R60	4700Ω		RC-4701-18		
R61	1.2Meg		RC-1204-18		
R62	1Meg		RC-1004-18		
R63	100K		RC-1003-18		
R64	10K		RC-1002-18	BTS-10K	
R65	27K		RC-2702-18		
R66	1200Ω		RC-1201-18		
R67	60K		RC-6802-18	BTS-68K	
R68	470K		RC-4703-18		Note 9
R69	3.9Meg		RC-3904-18	BTS-3.9Meg	
R70	39K		RC-3902-18		
R71	8200Ω		RC-8201-18		
R72	10K		RC-1002-18		
R73	10K		RC-1004-18		
R74	180K 5%		RC-1803-18		
R75	22K		RC-2202-18	BTS-22K	
R76	470K				Note 3,10,11
R77	560Ω	1	RC-560-11	BT A-560	
R78	4700Ω		RC-4701-18		
R79	2.2Ω		RW-002-18	BW ₂ -2.2	
R80	4700Ω	7	RW-470-17		Note 3
R81	22Ω		RC-022-18	BTS-22	
R82	12Ω	7	RW-012-17	PW7-15	
R83	50Ω	25			Note 11
R84	5Ω				Note 12
R85	47K	1	RC-4702-11	BT A-47K	
R86	100		RC-100-18	BTS-100	Note 13
R87	2700Ω		RC-2701-18	BTS-2700	Note 14
R88	39K		RC-3902-18	BTS-39K	Note 20

Note 1: A 120Ω resistor (Part #RC-1203-18) used in some early models with serial numbers before 190971.
 Note 2: Not used in some versions.
 Note 3: Not used in models 721TS and 721TS/82.
 Note 4: A 8200Ω resistor (Part #RC-8201-18) used in models 721TS and 721TS/82.
 Note 5: Not used in some early models with serial numbers before 190971.
 Note 6: A 470K resistor is used in models 721TS and 721TS/82 with serial numbers 190216 and above, also in models with serial numbers 196458 and above. (Part #RC-4703-18)
 Note 7: A 39K resistor (Part #RC-3902-19) used in models 721TS and 721TS/82.
 Note 8: A 2200Ω resistor (part #RC-2201-10) used in models 721TS, 721TS/82.
 Note 9: Due to the variations of the hertz. hold control the 470K resistor (R69) may be removed.
 Note 10: A 440K resistor used in some 721CW models.
 Note 11: A 54Ω ± 25W resistor used in early models using a 15AU4 diode pump tube.
 Note 12: This resistor is a continuous duty current 1, 35 amp, it blows on 2, 5 amp. in 1 minute or less.
 Note 13: Used in models 721TS and 721TS/82 only.
 Note 14: This resistor used in models with serial numbers 196458 and above.
 Note 15: A 330K resistor (Part #RC-330-18) used in all models with serial numbers 196458 and above except in 721TS models.
 Note 16: A 1.5Meg resistor (Part #RC-1504-18) used in all models with serial numbers 190287 and above.
 Note 17: A 10K resistor (Part #RC-1002-18) used in all models with serial numbers 196287 and above.
 Note 18: A 47K resistor (Part #RC-4702-18) used in all models with serial numbers 196287 and above.
 Note 19: 1000Ω resistor (Part #RC-100-18) used in all models with serial numbers 196287 and above.
 Note 20: This resistor used in models with serial numbers 196287 and above.
 Note 21: A 180K resistor used in late productions.
 Note 22: In chassis beginning with serial numbers 196400 a 1000Ω 1W resistor is used in this application. (Part #RC-1001-1)

TRANSFORMERS (SWEEP CIRCUITS)

ITEM No.	USE	REPLACEMENT DATA								
		MUNTZ PART No.	Halldorson PART No.	Merit PART No.	RCA TYPE No.	Ram PART No.	Stancor PART No.	Thordarson PART No.	Triod PART No.	
T1	Vert. Osc. & Output Trans.	TO-0045 TO-0051 ①								
T2	Horiz. Output Trans.	TO-0050 TO-0052 ②	FB419 ③ * ⑤	HV0-36 ③ * ⑤	235T1 ③ * ⑤	X094 ③ * ⑤	A-6291 ①	FLY-18 ③ * ⑤	D-50 ③ * ⑤	
T3A B	Yoke(70°) Horiz.(25MH) Vert(3.5MH)	LC-3062 L-1009 ② PR-0275 ⑤ PR-0234 ⑥	DF603 ⑦ ⑧	MD F-74 ⑤ ⑥	214D1 ⑦ ⑧	Y70F25/3 ⑦ ⑧	DY-10A ⑦ ⑧	Y-11 ⑦ ⑧	Y-20 ⑦ ⑧	

- ① Used in all models above serial no. 196019 except 721TS and 721TS/82.
- ② Used in model 721TS only.
- ③ Drill new mounting hole(s).
- ④ Alternate yoke.
- ⑤ Rear cover and centering device for LC-0082 yoke.
- ⑥ Rear cover and centering device for LC-0099 yoke.
- ⑦ Use original rear cover and centering device.
- ⑧ Use original yoke damping network.

* This part may be superseded by Parts Manufacturer's introduction of special unit for this application.

*HORIZONTAL OUTPUT TRANSFORMER CONNECTION DATA

Use Original Width Coil Unless Replacement Type Is Listed

	ORIGINAL TERMINAL CONNECTIONS	Holladson Replacement Connections	Merit Replacement Connections	RCA Replacement Connections	Ram Replacement Connections	Stancor Replacement Connections	Thordarson Replacement Connections	Triod Replacement Connections
	4	9	9	9	9	7	9	9
	3	7 NC See Note ④	7 NC See Note ④	7 NC See Note ④	7 NC See Note ④	4	7 NC See Note ④	7 NC See Note ④
	2					T		
	1	1	1	1	1	1	1	1
Special Notes →		①	①	①	②		③	④

⑨ Install new damping network consisting of 50-100MMF @ 2KV and 1000Ω $\frac{1}{2}$ watt connected in series across horiz. yoke terms #3 and #7.

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE		REPLACEMENT DATA						NOTES
			MUNTZ PART No.		Halldorson PART No.	Merit PART No.	Stonor PART No.	Thordarson PART No.	
	PRI.	SEC.							
T4	6K	3-4Ω	TC-0049-1	Z1007	A-3019	A-3877①	20S49	S-5Z	

① Drill one new mounting hole

SPEAKER

ITEM No.	RATINGS			REPLACEMENT DATA			NOTES
	SIZE	FIELD	V. C. IMP.	MUNTZ PART No.	QUAM PART No.		
SPI	6"	PM	3-4Ω	SK-0026 ①	6A1		① Used in 721C series models. ② Used in 721T series models. ③ Used in 721TS, LTS, TSP series models.
	5"	PM	3-4Ω	SK-0025-1	52A1		
	4"	PM	3-4Ω	SK-0022-3 ③			

COILS (RF-IF)

ITEM No.	USE	DC RES.		REPLACEMENT DATA				NOTES
		PRI.	SEC.	MUNTZ PART No.	MEISSNER PART No.	MERIT PART No.	MILLER PART No.	
L1	1st IF Coupling Coil	0Ω	0Ω	LC-0006	19-3100	TV-181	6112	100 Microhenries
L2	1st Video IF	0Ω		LC-0087				
L3	2nd Video IF	0Ω		LC-0089				
L4	1st Sound IF	.9Ω		LC-0095				
L5	3rd Video IF	.2Ω		LC-0090				
L6	2nd Sound IF	1Ω		LC-0095-1				
L7	RF Choke	9Ω		LC-0057-11				
L8	Series Peaking Coil	9Ω		LC-0101-1				
L9	Shunt Peaking Coil	9Ω		LC-0101-1				
L10	Series Peaking Coil	.5Ω		LC-0091				
L11	Series Peaking Coil	15Ω	LC-0101-2					
L12	Shunt Peaking Coil	7Ω	LC-0101-1					
L13	4.5MC Trap	1Ω	LC-0095-1					
L14	RF Choke	.5Ω	LC-0091					
L15	Discriminator	3.7Ω	LO-0076					
L16	RF Choke	.9Ω	LC-0098					
L17	RF Choke	8Ω	LC-0097					
L18	RF Choke		LC-0094					
L19	RF Choke		LC-0080				1 Microhenry - Note 2	

Note 1: In 721TS and 721TS/82 models with serial numbers 190216 and above, L8 is 270 Microhenries, paralleled with a 10K resistor (Part #LC-001-2).

Note 2: Not used in 721TS and 721TS/82 models with serial numbers 190216 and above.

Note 3: Not used in some versions.

Note 4: L19 is used in models with serial numbers 196458 and above.

* Paralleled with 10K resistor.

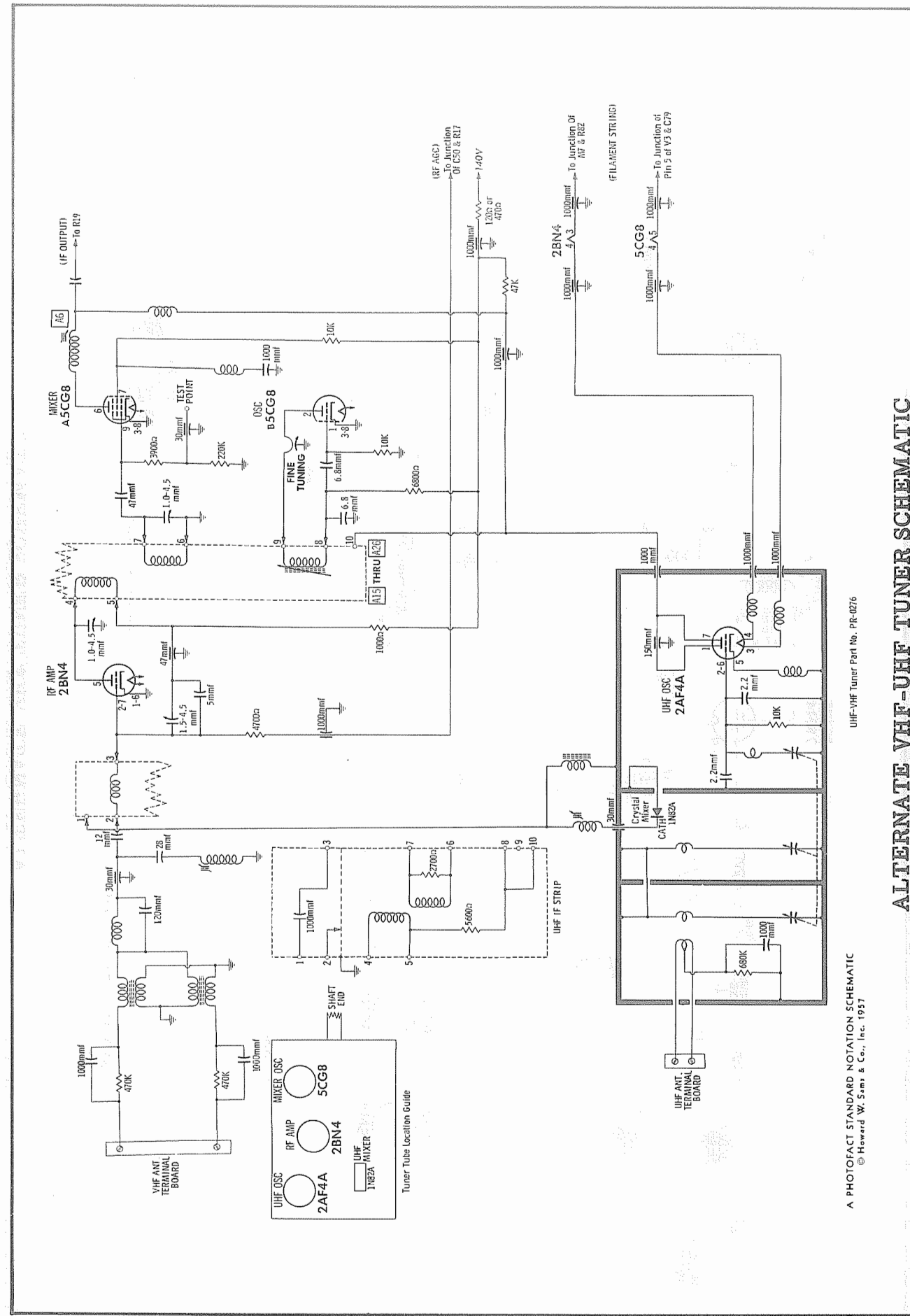
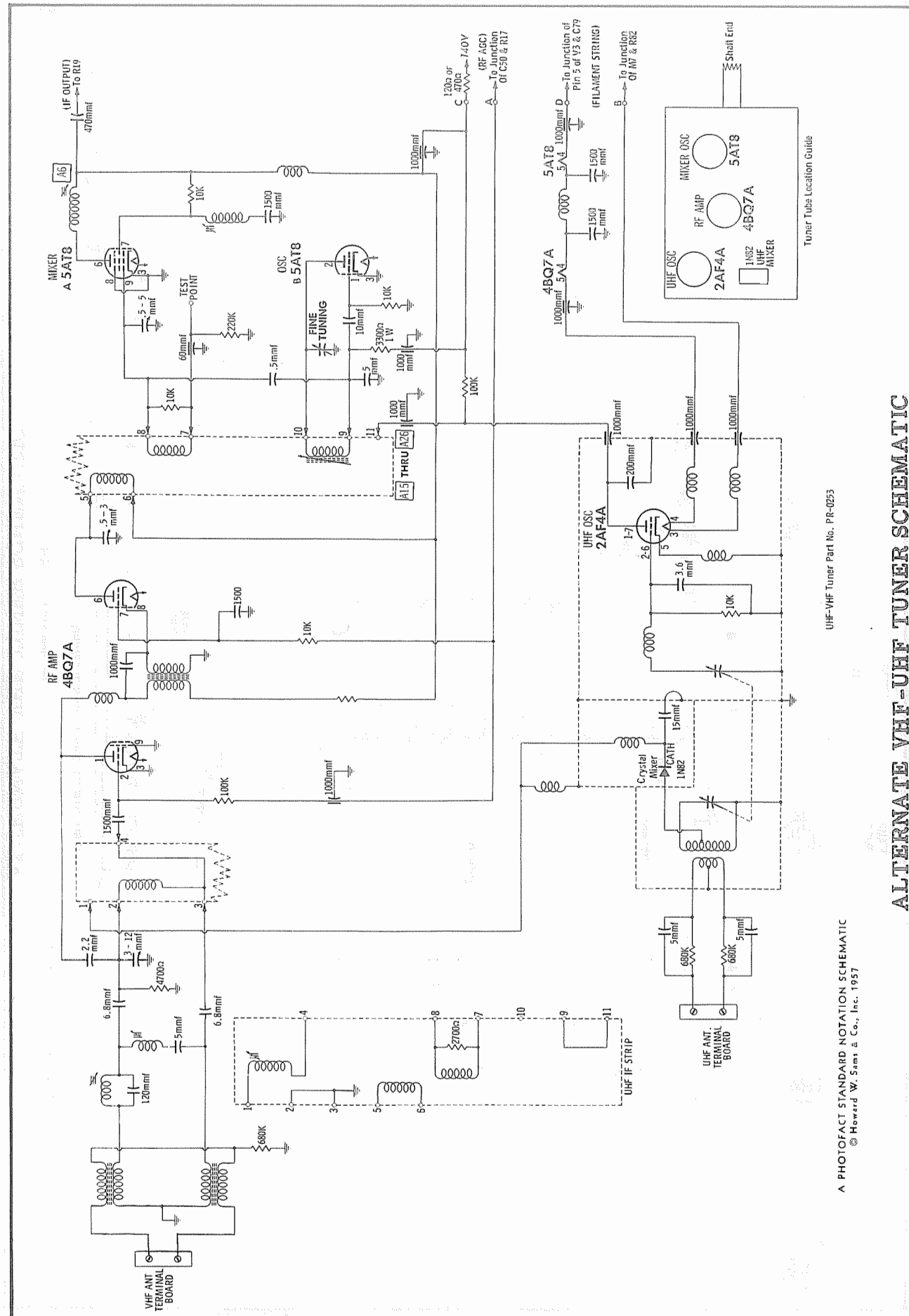
TRANSFORMER (HORIZ. OSC.)

ITEM No.	DC RES.		REPLACEMENT DATA							NOTES
			MUNTZ PART No.	MEISSNER PART No.	MERIT PART No.	MILLER PART No.	RCA TYPE No.	Ram PART No.	Thordarson PART No.	
	PRI.	SEC.								
L20	48Ω		LO-0077	19-1576	TV-163	6210			HS-5	14-32 Millihenries

FILTER CHOKE

ITEM No.	RATINGS			REPLACEMENT DATA					
	TOTAL DIRECT CURRENT	D. C. RESISTANCE	INDUCTANCE (0 CURRENT 1000 \sim)	MUNTZ PART No.	Halldorson PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.
L21	.270A	22.5 Ω	.75HY	LC-0081	C5041 ①		C-2328 ①		

① Drill new mounting hole.



ALIGNMENT INSTRUCTIONS

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

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

VIDEO IF ALIGNMENT

Connect the negative lead of a 5.5 volt bias supply to the ungrounded side of C47. Connect the positive lead to chassis. 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.	.001MFD	High side to point \textcircled{B} . Low side to chassis.	44MC (10MC Swp)	41.25MC 42.5MC 43.0MC 44.75MC 45.75MC 47.25MC	Any unused channel.	Vert. amp. thru 15K to point \textcircled{B} . Low side to chassis.	A1, A2	Adjust for response curve similar to Fig. 1 peaking at approximately 44.25MC.
2.	"	High side to point \textcircled{C} . Low side to chassis.	"	"	"	"	A3, A4	Adjust for response similar to Fig. 2.
3.	Direct	High side to an ungrounded tube shield floating over converter tube. Low side to chassis.	"	"	"	"	A5	Adjust for response similar to Fig. 2 peaking at approximately 44.5MC.
4.	"	"	"	"	"	"	A6, A7	Adjust A6 to control steepness of low frequency side of response curve. Adjust A7 for maximum amplitude of response curve similar to Fig. 3. If necessary, retouch A5 to obtain proper response curve.

SOUND IF ALIGNMENT USING AM SIGNAL GENERATOR AND VTVM

DUMMY ANTENNA		SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	ALIGNMENT CHANNEL	CONNECT VTVM	ADJUST	REMARKS
5.	.01MFD	High side to point \textcircled{A} . Low side to chassis.	4.5MC (unmod)	Any unused channel.	DC probe to point \textcircled{A} thru 10K. Low side to chassis.	A8, A9, A10	Adjust for maximum deflection.
6.	"	"	"	"	DC probe to point \textcircled{B} thru 10K. Low side to chassis.	All	Adjust for zero reading. A positive and negative reading will be obtained on either side of the correct setting.

ALTERNATE SOUND IF ALIGNMENT USING TV SIGNAL

Tune in a weak TV station and adjust for a normal picture. Adjust A8, A9 and A10 for maximum volume and minimum noise. Tune in a strong station and adjust A11 for maximum volume. Repeat adjustment of A8, A9 and A10 for optimum performance and elimination of buzz and distortion.

4.5MC TRAP ALIGNMENT

Tune in a strong TV signal (black and white, not color) and adjust the fine tuning until a 4.5MC beat pattern can be seen in the picture. Adjust A12 for MINIMUM beat interference. Adjust carefully as this is a critical adjustment.

OSCILLATOR ALIGNMENT FOR TUNERS #PR-0254, PR-0264 AND PR-0268

Turn the set on and tune in the highest channel of channels 7 to 13 operating in the vicinity. Set the fine tuning control to its mid-range position. (On PR-0254 the knob plug of the center shaft should be parallel with the chassis, on PR-0264 and PR-0266 the flat portion on the large gear must be perpendicular to the chassis). Adjust the high band oscillator slug (A13) for the best picture and sound. Leaving the fine tuning in its mid-range position, tune in the highest low band (2 to 6) channel operating in the vicinity and adjust (A14) for the best picture and sound.

OSCILLATOR ALIGNMENT FOR TUNERS #PR-0253, PR-0263 AND PR-0276

The individual channel oscillator adjustment screws (A15 thru A26) are reached through a hole behind the channel selector and fine tuning knobs. Set the fine tuning to the center of its range and adjust each channel (operating in the vicinity) for best picture and sound.

UHF TUNER ALIGNMENT

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

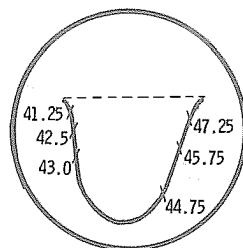


FIG. 1

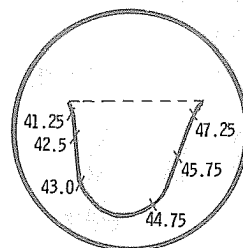


FIG. 2

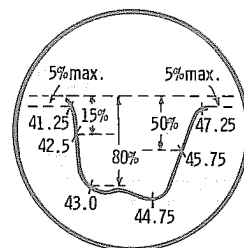
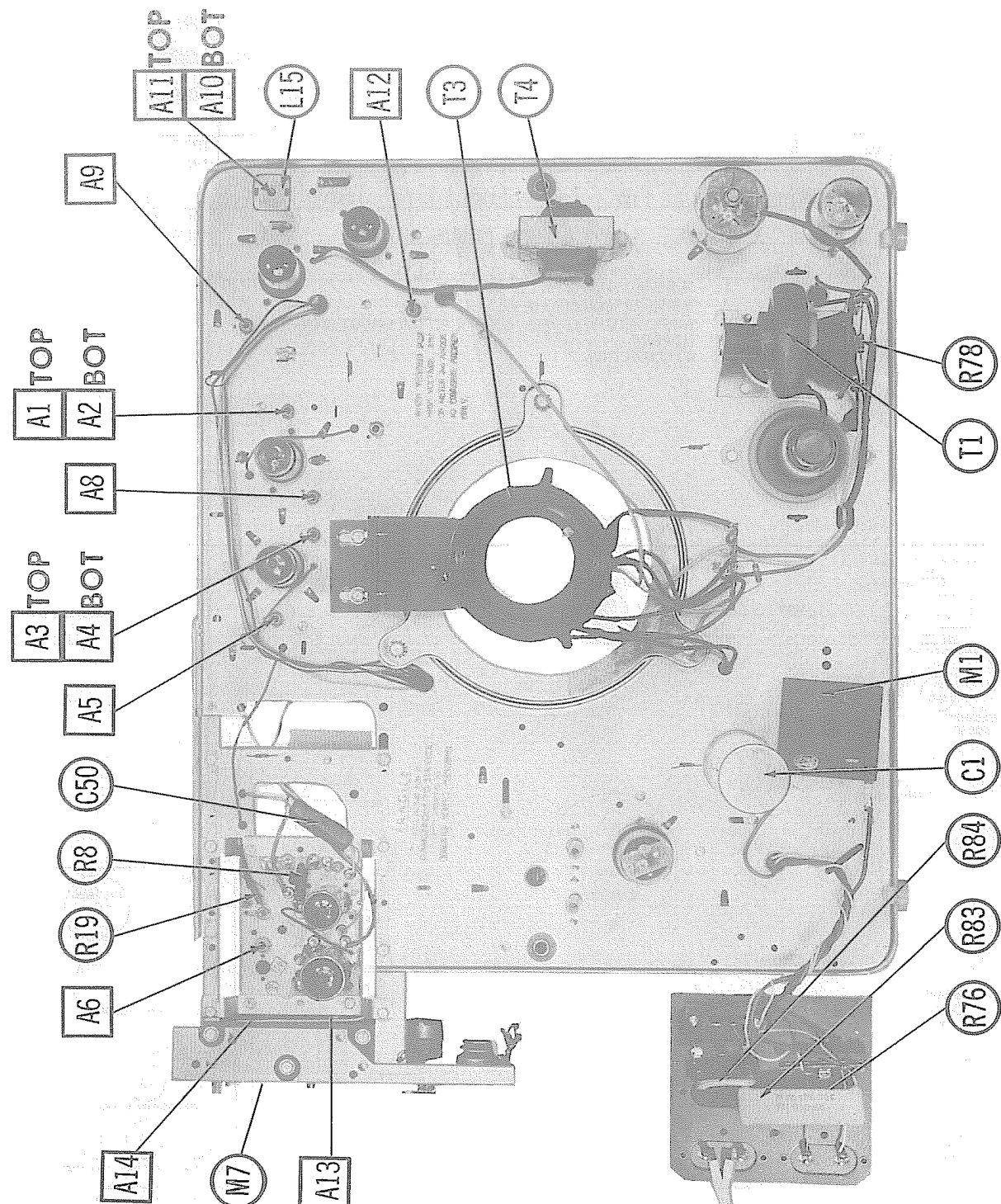
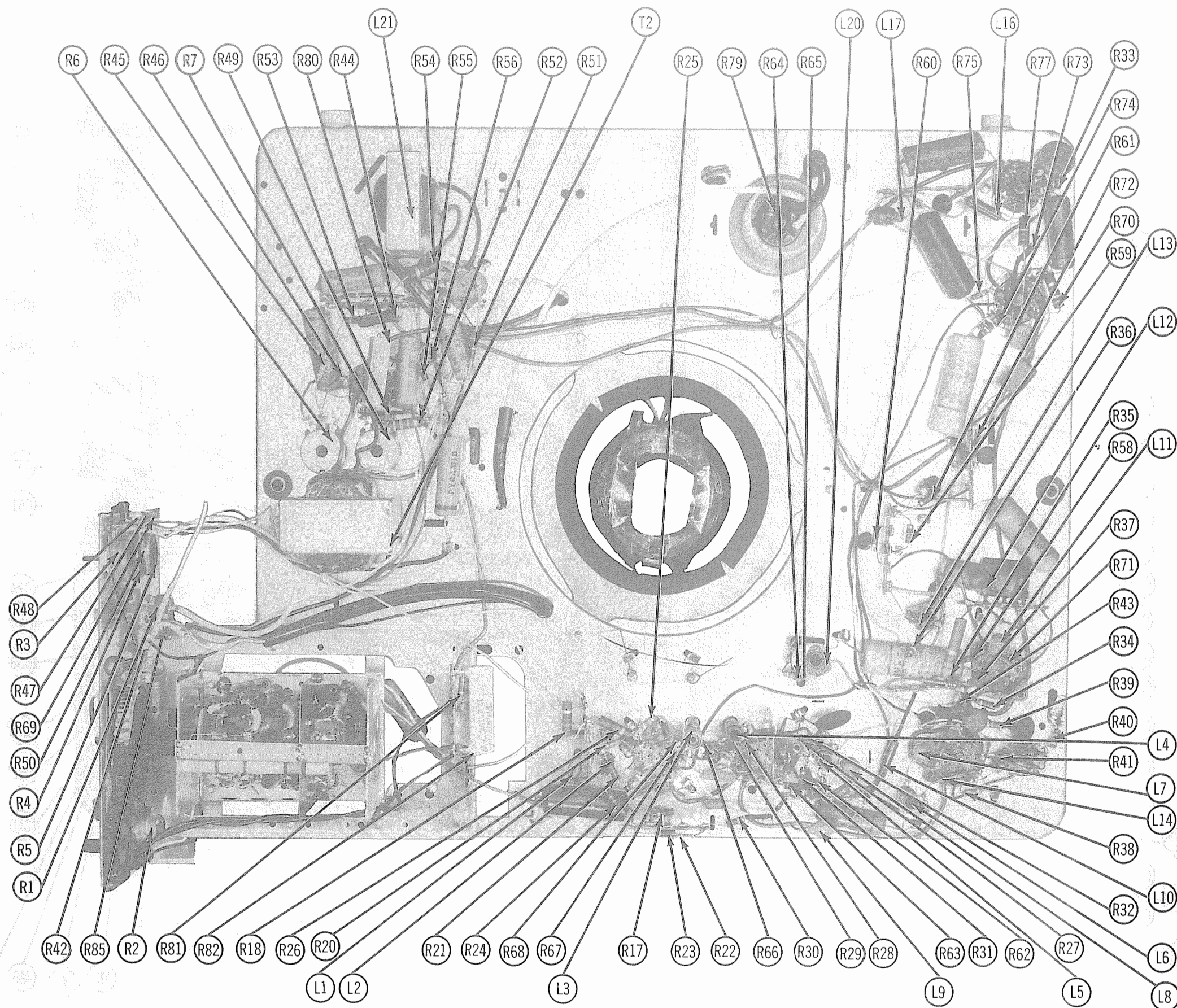


FIG. 3



CHASSIS TOP VIEW

MUNZT MODELS 721CBD, CBD/82, CBS, CBS/82, CEA, CEA/82, CMD, CMD/82, CMS, CMS/82, CPB, CPB/82, CPM, CPM/82, CW, CW/82, L15-B, L15-B/82, L15-W, L15-W/82, TB, TB/82, TM, TM/82, TS, TS/82, TSP-BK, TSP-BK/82, TSP-BL, TSP-BL/82, TSP-RD, TSP-RD/82, TSP-WH, TSP-WH/82



CHASSIS BOTTOM VIEW-RESISTOR AND INDUCTOR IDENTIFICATION

MUNIZ MODELS 721 CBD, CBD/82, CBS, CBS/82, CEA, CEA/82, CMD, CMD/82, CMS, CMS/82, CPB, CPB/82, CPM, CPM/82, CW, CW/82, L15-B, L15-B/82, L15-M, L15-M/82, L15-TB, L15-TB/82, L15-TM, L15-TM/82, L15-TS, L15-TS/82, TSP-BK, TSP-BK/82, TSP-BL, TSP-BL/82, TSP-RD, TSP-RD/82, TSP-WH, TSP-WH/82.