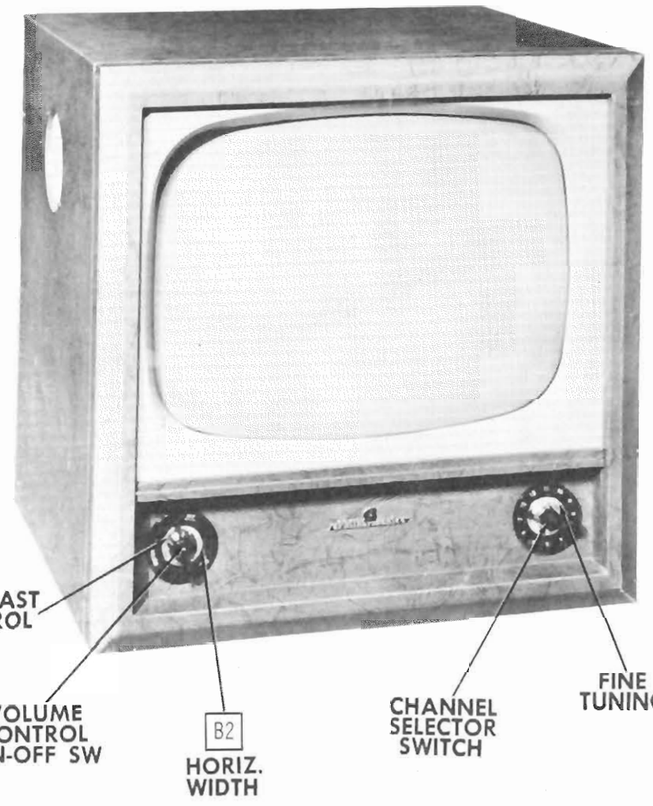
PHILHARMONIC MODELS 520, 620, 720, 724, 820, 824, 5820, 6120, 7120, 7820, 8120, 8820

PHILHARMONIC MODELS 520, 620, 720, 724, 820, 824, 5820, 6120, 7120, 7820, 8120, 8820



TRADE NAME	Philharmonic Models 520, 620, 720, 724, 820, 824, 5820, 6120, 7120, 7820, 8120, 8820
MANUFACTURER	Philharmonic Radio and Television Corp., 235 Jersey Ave., New Brunswick, New Jersey
TYPE SET	Television Receiver
TUBES	Nineteen
POWER SUPPLY	110-120 Volts AC-60 Cycle — RATING 1.94 Amp. @ 117 volts AC
TUNING RANGE	Channels 2 thru 13

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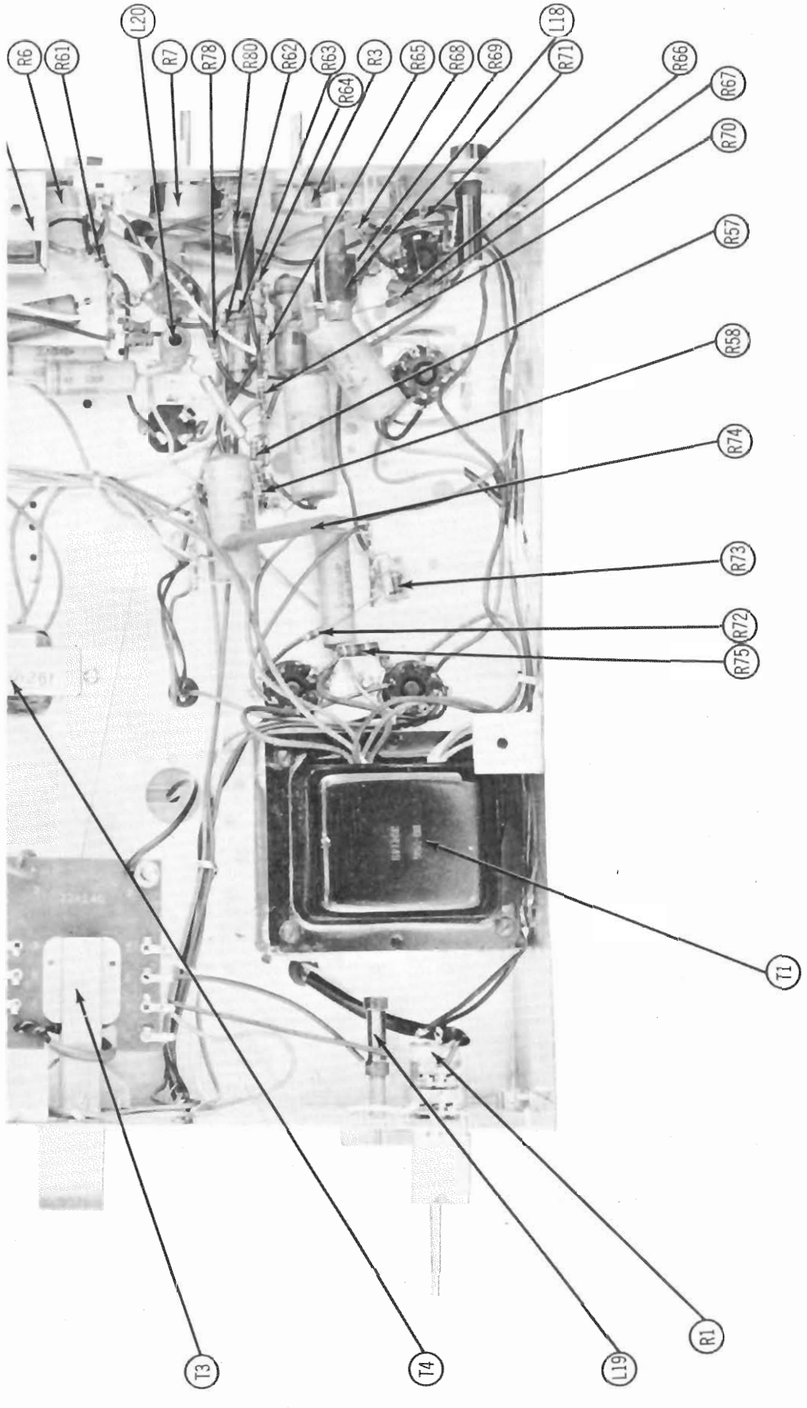
Tube Placement Charts 5

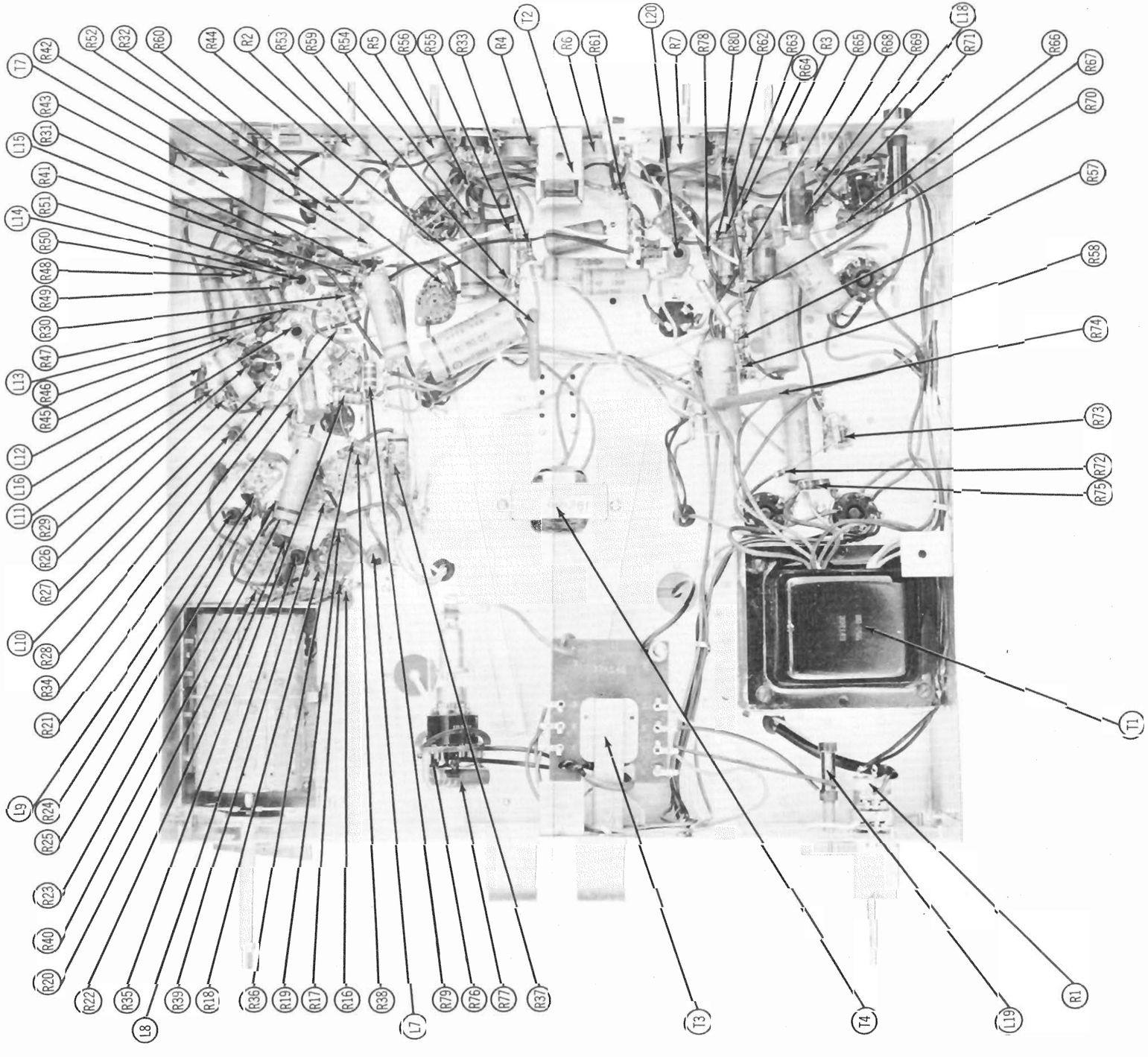
HOWARD W. SAMS & CO., INC. • Indianapolis 5, Indiana

DATE 7-52 SET 173 FOLDER 10

CHASSIS BOTTOM VIEW-RESISTOR AND INDUCTOR IDENTIFICATION



CHASSIS BOTTOM VIEW-RESISTOR AND INDUCTOR IDENTIFICATION



TRADE NAME	Philharmon
MANUFACTURER	Philharmon
TYPE SET	Television
TUBES	Nineteen
POWER SUPPLY	110-120 Volt
TUNING RANGE	–Channels 2 th

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

▲ MEASURED WITH VTVM

■ MEASURED FROM 135V LINE

Θ SEE PARTS LIST FOR ALTERNATE VALUE OR APPLICATION

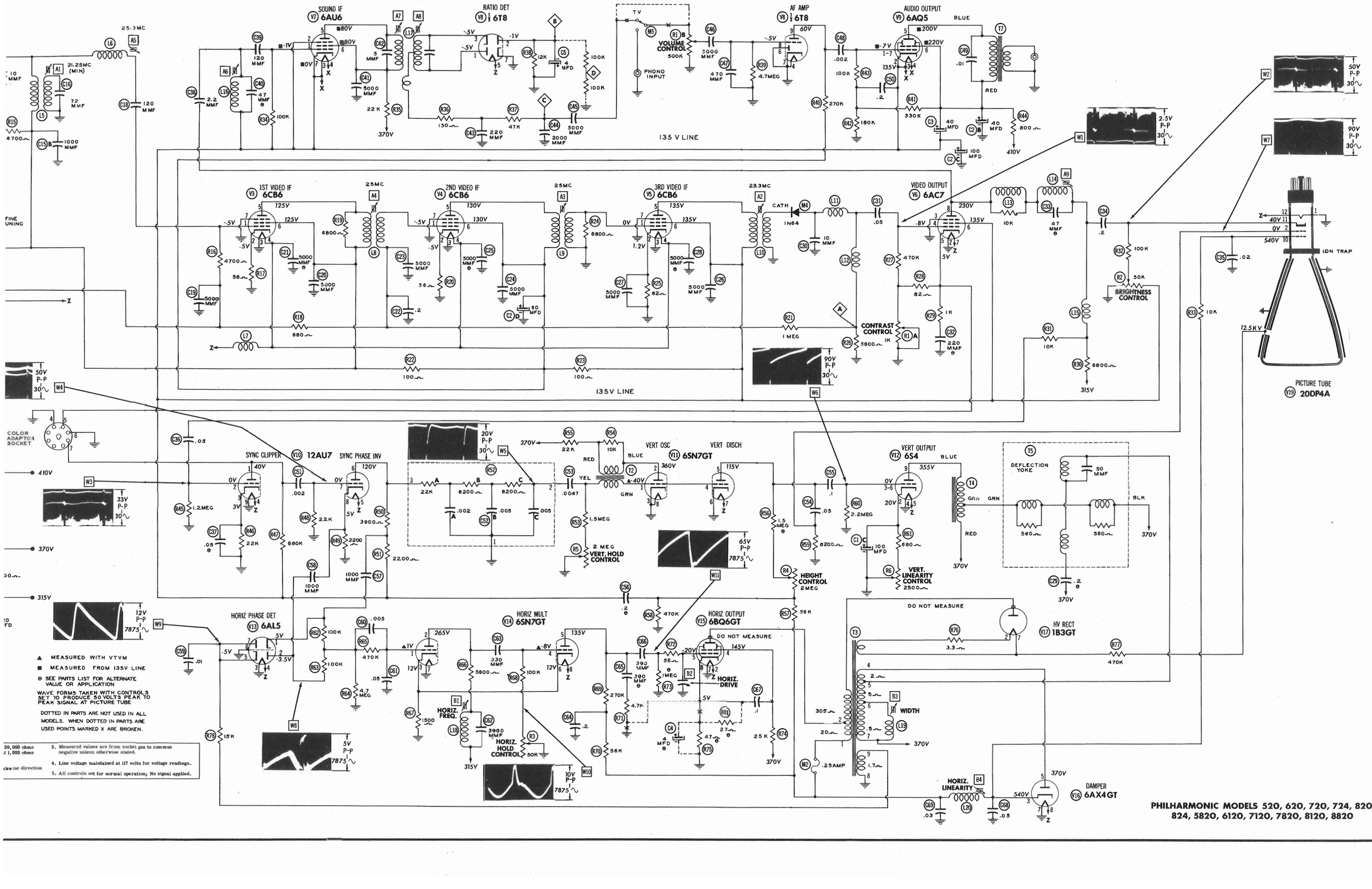
WAVE FORMS TAKEN WITH CONTROLS SET TO PRODUCE 50 VOLTS PEAK TO PEAK SIGNAL AT PICTURE TUBE

DOTTED IN PARTS ARE NOT USED IN ALL MODELS. WHEN DOTTED IN PARTS ARE USED POINTS MARKED X ARE BROKEN.

1. DC voltage measurements are at 20,000 ohms per volt; 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 PHOTOFACT STANDARD NOTATION SCHEMATIC

PHILHARMONIC MODELS 520, 620, 720, 724, 820, 824, 5820, 6120, 7120, 7820, 8120, 8820



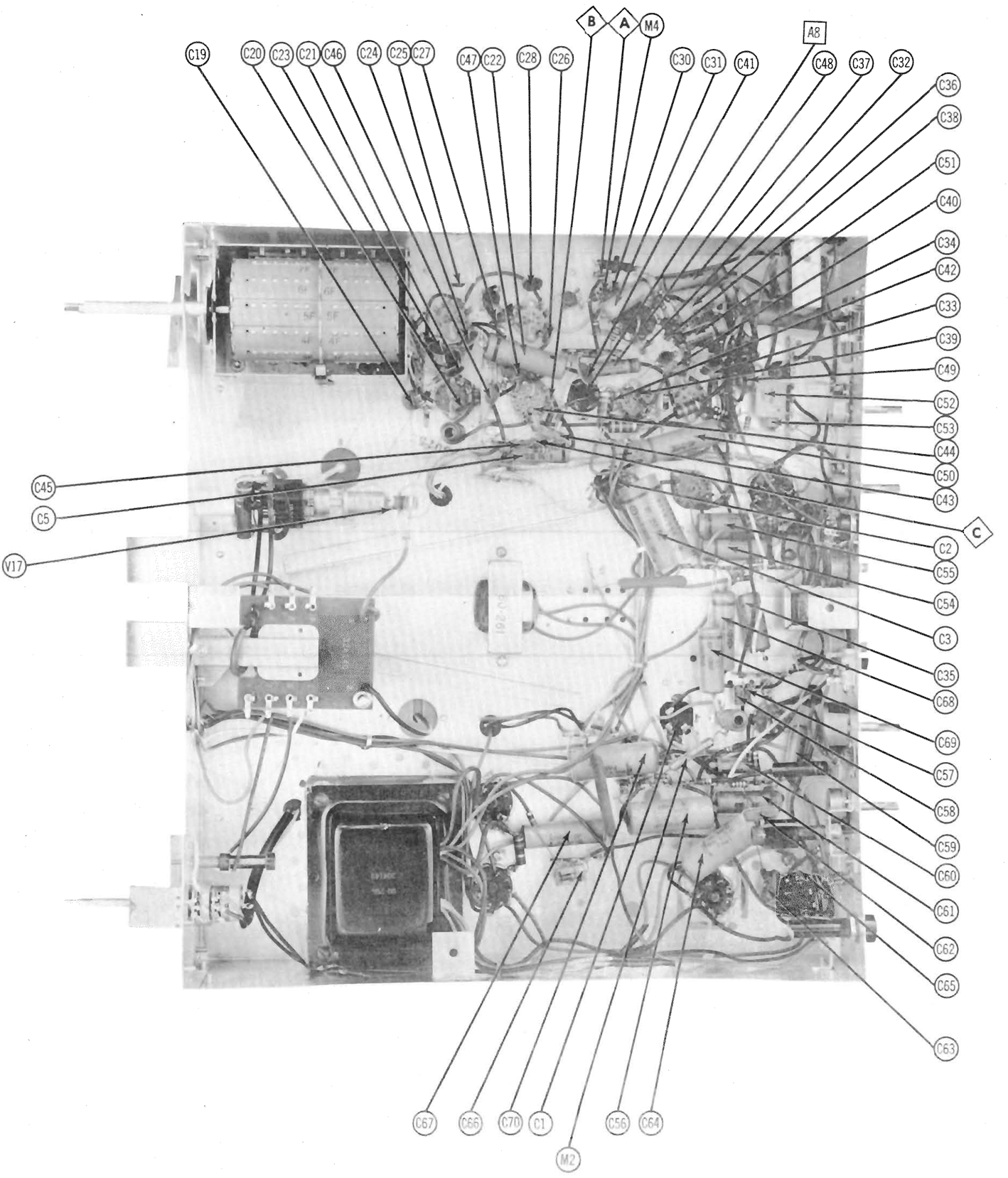
PHILHARMONIC MODELS 520, 620, 720, 724, 820, 824, 5820, 6120, 7120, 7820, 8120, 8820

RF TUNER-RIGHT SIDE

RF TUNER-BOTTOM VIEW

CHASSIS TOP VIEW

PHILHARMONIC MODELS 520, 620, 720, 724, 820, 824, 5820, 6120, 7120, 7820, 8120, 8820

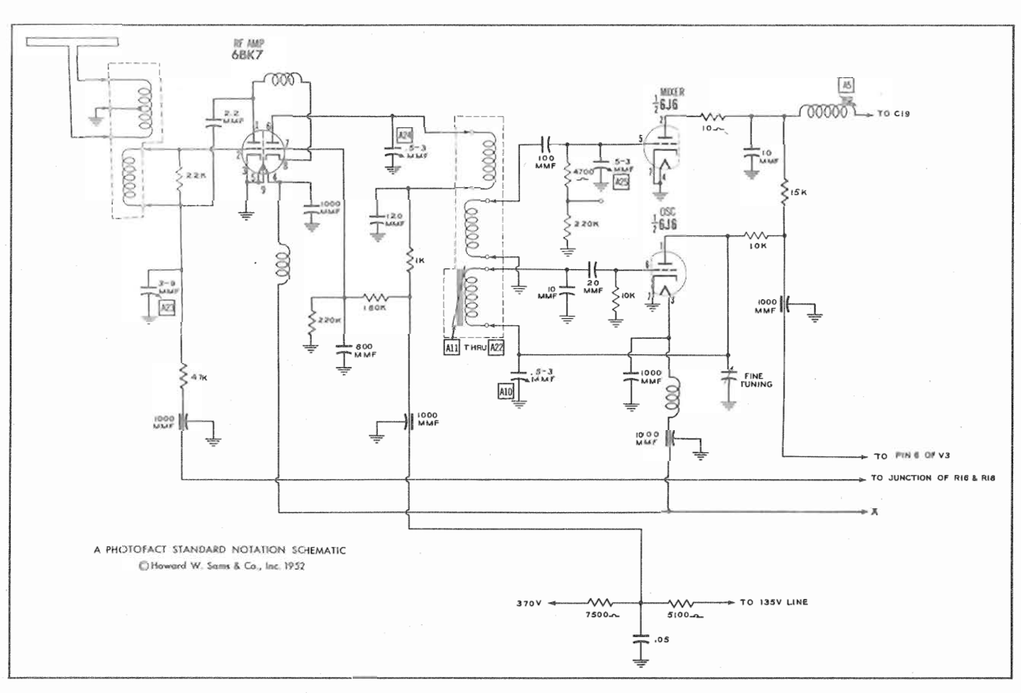


CHASSIS BOTTOM VIEW- CAPACITOR AND ALIGNMENT IDENTIFICATION

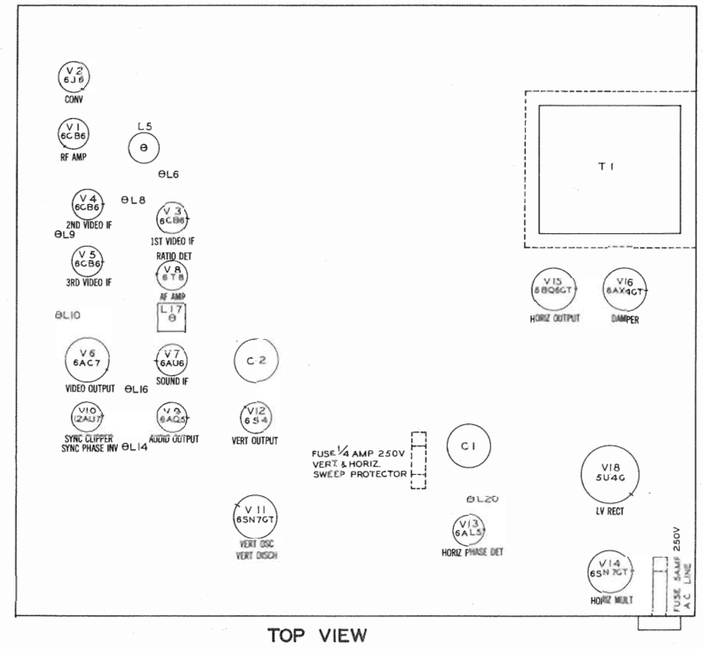
RESISTANCE MEASUREMENTS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V 1	6CB6	1Meg	0Ω	.1Ω	0Ω	■2.4KΩ	■2.4KΩ	0Ω		
V 2	6J6	■4.9KΩ	■200Ω	.1Ω	0Ω	220KΩ	10KΩ	0Ω		
V 3	6CB6	1Meg	56Ω	0Ω	.1Ω	■200Ω	■200Ω	0Ω		
V 4	6CB6	1Meg	56Ω	0Ω	.1Ω	■100Ω	■100Ω	0Ω		
V 5	6CB6	.2Ω	82Ω	0Ω	.1Ω	■0Ω	■0Ω	0Ω		
V 6	6AC7	0Ω	0Ω	0Ω	470KΩ	390Ω	■0Ω	.1Ω	†10KΩ	
V 7	6AU6	■100KΩ	■0Ω	■0Ω	■.1Ω	†22KΩ	†22KΩ	■0Ω		
V 8	6T8	INF	12KΩ	INF	0Ω	.1Ω	0Ω	0Ω	4.7MEG	■270KΩ
V 9	6AQ5	240KΩ	40KΩ	■0Ω	■.1Ω	†1.1KΩ	†800Ω	240KΩ		
V 10	12AU7	■680KΩ	1.2Meg	22KΩ	.1Ω	.1Ω	■6.1KΩ	22KΩ	2.2KΩ	0Ω
V 11	6SN7GT	2.8Meg	†22KΩ	0Ω	2.8Meg	#2.5Meg	0Ω	.1Ω	0Ω	
V 12	6S4	INF	1.6KΩ	2.2Meg	0Ω	.1Ω	2.2Meg	INF	INF	†1.4KΩ
V 13	6AL5	4.8Meg	4.8Meg	0Ω	.1Ω	15KΩ	0Ω	15KΩ		
V 14	6SN7GT	5.1Meg	†9.1KΩ	1.5KΩ	140KΩ	#325KΩ	1.5KΩ	0Ω	.1Ω	
V 15	6BQ6GT	INF	.1Ω	INF	†25KΩ	1Meg	INF	0Ω	47Ω	TOP CAP #42Ω
V 16	6AX4GT	†230Ω	INF	480KΩ	INF	†232Ω	**INF**	0Ω	.1Ω	
V 17	1B3GT	PINS	1 - 8	HAVE	INF	RESISTANCE				TOP CAP #347Ω
V 18	5U4G	INF	45KΩ	INF	28Ω	INF	**26Ω**	INF	45KΩ	
V 19	20DP4A	0Ω	8.2KΩ	PIN 10 #10KΩ	PIN 11 110KΩ	PIN 12 .1Ω				

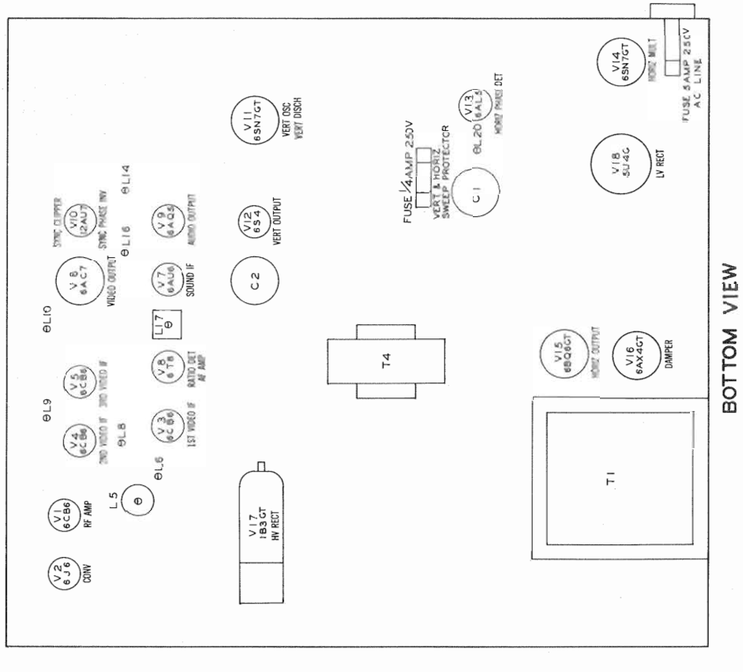
ALL CONTROLS SET FOR NORMAL OPERATION, NO SIGNAL APPLIED
† MEASURED FROM PIN 8 OF V18
■ MEASURED FROM 135 VDC LINE



ALTERNATE TUNER SCHEMATIC



TOP VIEW



BOTTOM VIEW

TUBE PLACEMENT CHART

PHILHARMONIC MODELS 520, 620, 720, 724, 820, 824, 5820, 6120, 7120, 7820, 8120, 8820

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 multivibrator tube to disable the high voltage.

VIDEO IF ALIGNMENT

Remove the converter tube (V2) from its socket and replace with a 6J6 which has pin 1 removed. This will disable the local oscillator and reduce the possibility of erroneous indications.
Connect the negative side of a 3 volt battery to the ungrounded side of C23. 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.	21.25MC	Any	DC probe to Point A. Low side to chassis.	A1	Adjust for MINIMUM deflection.
2.	"	"	23.3MC	"	"	A2	Adjust for maximum deflection.
3.	"	"	25MC	"	"	A3, A4	"
4.	"		25.3MC	"	"	A5	"

OVERALL VIDEO IF RESPONSE CHECK

Connect the synchronized sweep voltage from the signal generator to the horizontal input of the oscilloscope for horizontal deflection.
Leave the 3 volt battery connected as before.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
5.	Direct	High side to an ungrounded tube shield floating over dummy converter tube.	24MC (10MC swp.)	21.25MC 25.75MC	Any	Vert. amp. to Point A. Low side to chassis.		Check for response curve similar to fig. 1 with video marker at 50%. If necessary readjust A2 thru A5 for proper response.

SOUND IF ALIGNMENT USING AM SIGNAL GENERATOR AND VTVM

Connect two matched 100KΩ (±1%) resistors in series from Point B to chassis. The junction of these two resistors is alignment Point D as shown on the schematic.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	CHANNEL	CONNECT VTVM	ADJUST	REMARKS
6.	.01MFD	High side to Point A. Low side to chassis.	4.5MC (unmod.)	Any	DC probe to Point B. Common to chassis.	A6, A7	Adjust for maximum deflection.
7.	"	"	"	"	DC probe to Point C. Common to Point D.	A8	Adjust for zero reading. A positive and negative reading 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 120% sawtooth voltage in scope for horizontal deflection.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
6.	.01MFD	High side to Point A. Low side to chassis.	4.5MC (450KC swp.)	4.5MC	Any	Vert. amp. to Point B. Low side to chassis.	A6, A7	Disconnect stabilizor capacitor C5. Adjust for maximum amplitude and symmetry as per fig. 2.
7.	"	"	"	"	"	Vert. amp. to Point C. Low side to chassis.	A8	Reconnect capacitor C5. Adjust so that 4.5MC occurs at center of crossover lines as per fig. 3. SLIGHTLY retouch A7 for maximum amplitude and straightness of crossover lines.

4.5MC TRAP ADJUSTMENT

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	CHANNEL	CONNECT VTVM	ADJUST	REMARKS
8.	.01MFD	High side to Point A. Low side to chassis.	4.5MC (unmod.)	Any	DC probe thru crystal diode detector (fig.4) to pin 11 of picture tube. Common to chassis.	A9	Adjust for MINIMUM deflection.

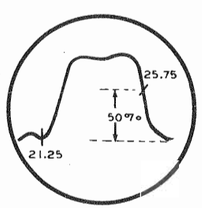


FIG. 1

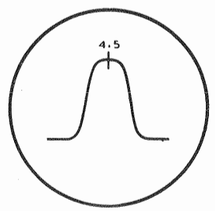


FIG. 2

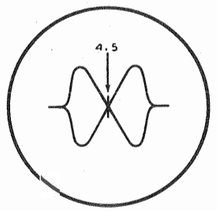


FIG. 3

ALIGNMENT INSTRUCTIONS (CONT.)

OSCILLATOR ALIGNMENT

Complete oscillator alignment may not be necessary. If the oscillator seems to be off frequency approximately the same amount for a majority of the channels it may be possible to correct them in one step using A10. It should be noted that this is an all channel oscillator circuit adjustment and should not be used to correct any individual channel. If adjustment of A10 will not bring all channels well within the range of the fine tuning control it will be necessary to adjust the channel strip adjustment for each channel that is off frequency. The channel 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 signal 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.
Remove the dummy converter tube and replace the original 6J6 in its socket.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
9.	Two 120Ω carbon resistors	Across antenna terminals with 120Ω in each lead.	213MC (10MC swp.)	211.25MC 215.75MC	13	Vert. amp. to Point A. Low side to chassis.	A11	Adjust to place sound marker in 21.25MC trap notch as in fig. 5. Video marker should be at 50% response.
			207MC (10MC swp.)	205.25MC 209.75MC	12		A12	
			201MC (10MC swp.)	199.25MC 203.75MC	11		A13	
			195MC (10MC swp.)	193.25MC 197.75MC	10		A14	
			189MC (10MC swp.)	187.25MC 191.75MC	9		A15	
			183MC (10MC swp.)	181.25MC 185.75MC	8		A16	
			177MC (10MC swp.)	175.25MC 179.75MC	7		A17	
			85MC (10MC swp.)	83.25MC 87.75MC	6		A18	
			79MC (10MC swp.)	77.25MC 81.75MC	5		A19	
			69MC (10MC swp.)	67.25MC 71.75MC	4		A20	
			63MC (10MC swp.)	61.25MC 65.75MC	3		A21	
			57MC (10MC swp.)	55.25MC 59.75MC	2		A22	

RF AND MIXER ALIGNMENT

Connect the synchronized sweep voltage from the signal 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.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
10.	Two 120Ω carbon resistors	Across antenna terminals with 120Ω in each lead.	207MC (10MC swp.)	205.25MC 209.75MC	12	Vert. amp. thru 47KΩ to Point B. Low side to chassis.	A23, A24 A25	Adjust for response curve of maximum amplitude and symmetry as per fig. 6 with markers above 90% response.
11.	"	"	213MC (10MC swp.)	211.25MC 215.75MC	13	"		Check all channels for proper response. If markers fall below 70% on any channel make slight compromise adjustments of A23, A24 and A25 on that channel then recheck all other channels to see that they have not been seriously affected.
			201MC (10MC swp.)	199.25MC 203.75MC	11			
			195MC (10MC swp.)	193.25MC 197.75MC	10			
			189MC (10MC swp.)	187.25MC 191.75MC	9			
			183MC (10MC swp.)	181.25MC 185.75MC	8			
			177MC (10MC swp.)	175.25MC 179.75MC	7			
			85MC (10MC swp.)	83.25MC 87.75MC	6			
			79MC (10MC swp.)	77.25MC 81.75MC	5			
			69MC (10MC swp.)	67.25MC 71.75MC	4			
			63MC (10MC swp.)	61.25MC 65.75MC	3			
			57MC (10MC swp.)	55.25MC 59.75MC	2			

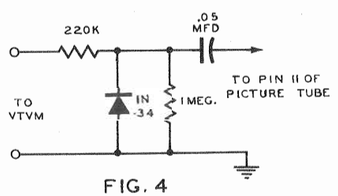


FIG. 4

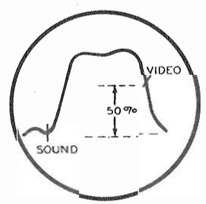


FIG. 5

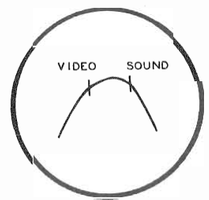


FIG. 6

PHILHARMONIC MODELS 520, 620, 720, 724, 820, 824, 5820, 6120, 7120, 7820, 8120, 8820

PARTS LIST AND DESCRIPTIONS (Continued)

COILS (RF-IF)

ITEM No.	USE	DC RES.		REPLACEMENT DATA		NOTES
		PRI.	SEC.	Philharmonic PART No.	MERIT PART No.	
L1	Ant. Coil	0Ω				
L2	Fil. Choke	0Ω				
L3	RF, Mixer Grid & Osc.	0Ω				
L4	Fil. Choke	0Ω				
L5	Conv. Plate & IF Trap	1.6Ω	0Ω			
L6	1st. Video IF	1Ω				
L7	Fil. Choke	0Ω				
L8	2nd. Video IF	.2Ω	.2Ω			
L9	3rd. Video IF	.2Ω	.2Ω			
L10	4th. Video IF	.2Ω	.2Ω			
L11	Peaking Coil	2.4Ω			TV-180	White, 36 Microhenries
L12	Peaking Coil	9.5Ω				Red, 375 Microhenries
L13	Peaking Coil	6.8Ω			*TV-185	Blue, 225 Microhenries, Wound on 10K resistor
L14	4.5MC Trap	1.8Ω			TV-151	
L15	Peaking Coil	11Ω				Green, 510 Microhenries
L16	Sound IF	1.8Ω			TV-151	
L17	Ratio Det.	4.2Ω	.2Ω		TV-110	Tertiary Winding .7Ω
L18	Horiz. Osc.	47Ω			TV-163	
L19	Width Coil	.45Ω				
L20	Horiz. Lin.	22Ω			MWC-1	

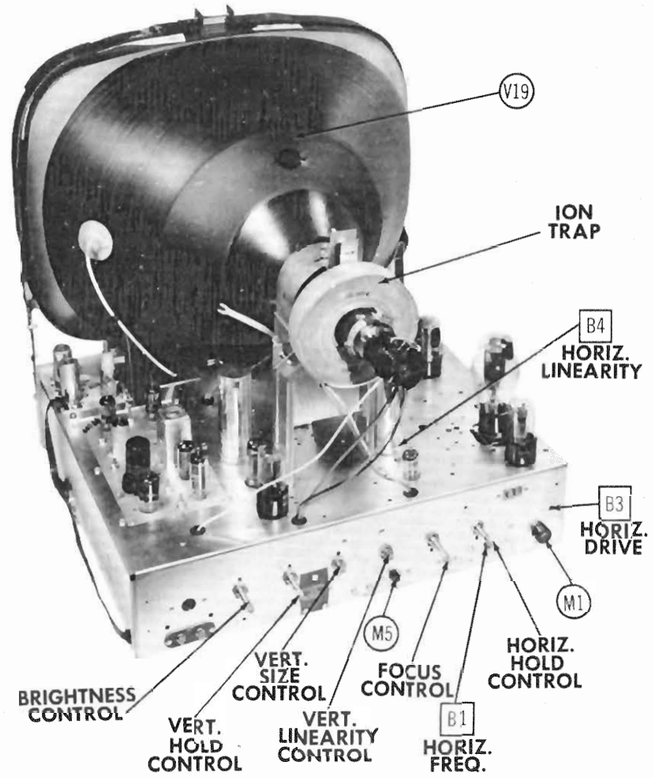
*Parallel with 10K resistor

FUSES

ITEM No.	TYPE	RATING	REPLACEMENT DATA					
			Philharmonic PART No.		LITTELFUSE PART No.		BUSS PART No.	
			FUSE	HOLDER	FUSE	HOLDER	FUSE	HOLDER
M1	3AG	5A. 250V.			312005	341001	MTH5	HKP
M2	3AG Pigtail	1/4A. 250V.			318.250		GJV 1/4	

MISCELLANEOUS

ITEM No.	PART NAME	Philharmonic PART No.	NOTES
M3	RF tuner		
M4	Crystal		IN64
M5	Switch		TV-Phono



CHASSIS-REAR VIEW

HORIZONTAL SWEEP CIRCUIT ADJUSTMENTS

HORIZONTAL SWEEP CIRCUIT ADJUSTMENTS

Turn the set on and tune in a TV station, preferably a test pattern.

Set the horizontal hold control at the center of its range and adjust the horizontal frequency slug (B1) until the picture synchronizes horizontally.

Adjust the horizontal drive trimmer (B3) counterclockwise to the point just before the picture starts to compress in the center.

Adjust the width slug (B2) for a picture slightly wider than enough to fill the picture mask.

Adjust the horizontal linearity slug (B4) for a picture that is symmetrical from left to right.

PARTS LIST AND DESCRIPTIONS

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA: Philharmonic PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RMA BASE TYPE	NOTES
V1A	RF Amplifier	6CB6	6CB6	7CH	
B	RF Amplifier	6AQ5	6AQ5	7BD	
C	RF Amplifier	6BC5	6BC5	7BD	
V2	Converter	6J6	6J6	7BF	
V3	1st. Video IF Amp	6CB6	6CB6	7CH	
V4	2nd. Video IF Amp.	6CB6	6CB6	7CH	
V5	3rd. Video IF Amp	6CB6	6CB6	7CH	
V6	Video Output	6AC7	6AC7	8N	
V7	Sound IF Amp.	6AU6	6AU6	7BK	
V8	Ratio Detector - AF Amp.	6T8	6T8	9E	
V9	Audio Output	6AQ5	6AQ5	7BZ	
V10	Sync Clipper - Sync Phase Inv. Vert. Oscillator	12AU7	12AU7	9A	
V11	Vert. Discharge	6SN7GT	6SN7GT	8BD	
V12	Vert. Output	6S4	6S4	9AC	
V13	Horiz. Phase Det.	6AL5	6AL5	6BT	
V14	Horiz. Mult.	6SN7GT	6SN7GT	8BD	
V15	Horiz. Output	6BQ6GT	6BQ6GT	6AM	
V16	Damper	6AX4GT	6AX4GT	4CG	
V17	HV Rectifier	1B3GT	1B3GT	3C	
V18	LV Rectifier	5U4G	5U4G	5T	

CATHODE-RAY TUBE

ITEM No.	REPLACEMENT DATA: Philharmonic PART No.	REPLACEMENT DATA: SYLVANIA PART No.	RTMA BASE TYPE	NOTES
V19A	20DP4A	20DP4A	12D	① Circuit changes necessary
		20DP4 ①	12D	② 3/8" shorter
		20CP4 ① ②	12D	
		20CP4A ① ②	12D	
		20HP4A ①	12C	
		20HP4A ①	12C	
V19B	24AP4, A	24AP4, A	12D	Used in Models 724 and 824

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: CAP.	RATING: VOLT	REPLACEMENT DATA: Philharmonic PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	SPRAGUE PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
C1A	80	450		AFH4-87		UPT62245		TVL-2777	▲ Filter †
B	20	450				BRH501		TVA-1310	■ Decoupling
C	100	50							▲ Vert. Output Cathode
C2A	40	450		AFH3-159				TVL-3764	▲ Decoupling
B	40	450		PRS200/30-30				TVA-1613	■ Audio Output Dec.
C	100	200							▲ Decoupling
D	60	200							Decoupling
C3	40	350		PRS450/40		BR4035		TVA-1611	Decoupling
C4	4	50		PRS150/4		BR550		TVA-1303	Horiz. Output Cathode *
C5	4	50		PRS150/4		BR550		TVA-1303	Stabilizing Cap.
C6	.5-3				829-3				Variable Trimmer
C7	.5-3				829-3				Variable Trimmer
C8	120			SI120	D6-121	TM5T12	GP2K-121	5GA-T12	RF Amp. Decoupling
C9	1000			SI1000	D6-102	TM5D1	GP2L-102	5HK-D1	RF Amp. Fil. Bypass
C10	100			SI100	D6-101	TM5T1	GP1K-101	5GA-T1	RF Coupling
C11	.5-3				829-3				Variable Trimmer
C12	20			SI20NP0	TCZ-20		NP0K-200		Osc. Grid Cap.
C13	10			SI10N750	TCN-10		N750K-100	5TCU-Q1	Fixed Trimmer
C14	.5-3				829-3				Variable Trimmer
C15A	1000		BPD-2X001		DD-2-102	TM5DD1	812-001	5HK-2D1	Conv. Fil. Bypass
B	1000								RF Bypass
C16	72	500		1469-000075					Fixed Trimmer
C17	10			SI10NP0	TCZ-10		NP0K-100	5TCC-Q1	Fixed Trimmer
C18	120	500		1469-00015		5R5T15			IF Coupling
C19	5000			BPD-005	DD-502	TM5D5	811-005	5HK-D5	AGC Filter
C20	5000			BPD-005	DD-502	TM5D5	811-005	5HK-D5	1st. Video IF Dec.
C21	5000			BPD-005	DD-502	TM5D5	811-005	5HK-D5	1st. Video IF Fil. *
C22	.2	400		684-2		PTE4P22		4TM-P22	AGC Filter
C23	5000			BPD-005	DD-502	TM5D5	811-005	5HK-D5	AGC Filter
C24	5000			BPD-005	DD-502	TM5D5	811-005	5HK-D5	2nd. Video IF Dec.
C25	5000			BPD-005	DD-502	TM5D5	811-005	5HK-D5	2nd. Video IF Fil. *
C26	5000			BPD-005	DD-502	TM5D5	811-005	5HK-D5	3rd. Video IF Dec.
C27	5000			BPD-005	DD-502	TM5D5	811-005	5HK-D5	3rd. Video IF Cathode
C28	5000			BPD-005	DD-502	TM5D5	811-005	5HK-D5	3rd. Video IF Fil. *
C29	.2	600		684-2					Horiz. Sweep Coupling
C30	10	500		1469-00001	TCZ-10	5R5Q1	NP0K-100	MS-41	Video Det. Filter
C31	.05	400		P488-05	DF-503	PTE4S5		4TM-S5	Video Coupling
C32	220			SI220	D6-221	5R5T25	GP2K-221	5GA-T22	Contrast Cont. Shunt *
C33	47			SI47	D6-470	5R5Q5	GP1K-470	5GA-Q47	Fixed Trimmer ‡
C34	.2	400		684-2		PTE4P22		4TM-P22	Video Coupling
C35	.02	1000		P1088-02		PTE16S2		MB-S2	Accelerating Anode Bypass
C36	.05	400		P488-05	DF-503	PTE4S5		4TM-S5	Video Coupling
C37	.05	400		P488-05	DF-503	PTE4S5		4TM-S5	DC Rest. Cathode ¶
C38	2.2				TCZ-2.2		NP0K-2R2		Sound IF Coupling
C39	120			SI120	D6-121	TM5T12	GP2K-121	5GA-T12	Sound IF Coupling
C40	47			SI47	D6-470	5R5Q5	GP1K-470	5GA-Q47	Fixed Trimmer ††
C41	5000			BPD-005	DD-502	TM5D5	811-005	5HK-D5	Sound IF Decoupling
C42	5	500		1469-000005		5R5V5		MS-55	Fixed Trimmer
C43	220	500		1468-00025	D6-221	5W5T25	GP2K-221	1FM-325	Diode Load Cap.
C44	2000			SI2000	D6-202	TM5D2	GP2-333-202	5HK-D2	De-emphasis
C45	5000			BPD-005	DD-502	TM5D5	811-005	5HK-D5	Audio Coupling
C46	5000			BPD-005	DD-502	TM5D5	811-005	5HK-D5	Audio Coupling
C47	470	500		1468-0005	D6-471	5W5T5	GP2K-471	1FM-35	RF Bypass
C48	.002	600		P688-002	D6-202	PTE6D2	GP2-333-202	6TM-D2	Audio Coupling
C49	.01	600		P688-01	D6-103	PTE6S1	GP2-333-103	6TM-S1	Audio Output Plate

CAPACITORS (CONT.)

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: Philharmonic PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	SPRAGUE PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
C50	.2	400		684-2		PTE4P22		4TM-P22	RF Bypass
C51	.002	600		P688-002	D6-202	PTE6D2	GP2-333-202	6TM-D2	Sync Coupling
C52A	.002			P688-002		PTE6D2	GP2-333-202		Vert. Integrator Net.
B	.005			P688-005	*PC-100	PTE6D5	GP2-333-502	*101C1	Vert. Integrator Net.
C	.005			P688-005		PTE6D5	GP2-333-502		Vert. Integrator Net.
C53	.0047	600		P688-0047	D6-472	PTE6D47	GP2-333-472	6TM-D47	Vert. Osc. Grid Cap.
C54	.05	600		P688-05	DF-503	PTE6S5		6TM-S5	Vert. Discharge
C55	.1	600		P688-1	DF-104	PTE6P1		6TM-P1	Vert. Sweep Coupling
C56	.2	600		684-2					Vert. Osc. Dec. *
C57	1000			SI1000	D6-102	TM5D1	GP2L-102	5HK-D1	Horiz. Sync Coupling
C58	1000			SI1000	D6-102	TM5D1	GP2L-102	5HK-D1	Horiz. Sync Coupling
C59	.01	600		P688-01	D6-103	PTE6S1	GP2-333-103	6TM-S1	Voltage Divider
C60	.005	600		P688-005	D6-502	PTE6D5	GP2-333-502	6TM-D5	Horiz. AFC Filter
C61	.05	600		P688-05	DF-503	PTE6S5		6TM-S5	Horiz. AFC Filter
C62	3900	500		1464-004		IDR5D4			Fixed Trimmer
C63	330	500		1469-00035					Horiz. MV Feedback
C64	.2	600		684-2					RF Bypass
C65	390	500		1469-0004		5R5T4		MS-34	Horiz. Discharge ††
C66	390	500		1469-0004		5R5T4		MS-34	Horiz. Sweep Coupling
C67	.1	600		P688-1	DF-104	PTE6P1		6TM-P1	Horiz. Output Screen
C68	.05	1000		P1088-05				MB-S5	Damper Filter
C69	.03	1000		P1088-03		PTE16S3		MB-S3	Damper Filter

* Not used in all models
† Some models use two 40MFD in this application
‡ Some models use 120MMF in this application
¶ Some models use 4MFD @ 50V in this application
†† Some models use 75MMF in this application
‡‡ Some models use 470MMF in this application
♦ Items C52A, C52B, C52C, R52A, R52B, R52C are combined in one unit.

CONTROLS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: Philharmonic PART No.	IRC PART No.	CLAROSTAT PART No.	CENTRALAB PART No.	INSTALLATION NOTES
R1A	100Ω		P24-190A	QJ-326 *			Contrast Control -Panel-See Note
B	500KΩ						Volume Control & SW.-Rear
R2A	50KΩ		P25-18	Q11-123	AG-44-S	AB-31	Brightness Control
B	Shaft		Not Req.	Not Req.	KSS-3	AK-4	Attach to R2A per instructions
R3A	50KΩ		P25-18	Q11-123	AG-44-S	AB-31	Horiz. Hold Control
B	Shaft		Not Req.	Not Req.	KSS-3	AK-4	Attach to R3A per instructions
R4A	2Meg	½	P26-15	Q11-139	AG-83-S	AB-75	Height Control
B	Shaft		Not Req.	Not Req.	FKS-1/4	AK-1	Attach to R4A per instructions
R5A	2Meg	½	P25-20	Q11-139	AG-83-S	AB-75	Vert. Hold Control
B	Shaft		Not Req.	Not Req.	KSS-3	AK-4	Attach to R5A per instructions
R6A	2500Ω	½	P25-13	Q11-112	AG-15-S	AB-7	Vert. Linearity Control
B	Shaft		Not Req.	Not Req.	FKS-1/4	AK-1	Attach to R6A per instructions
R7	2250Ω	4	P25-19		RTV-319		Focus - Wire Wound

Note. Connect 1800 ohm Resistor between center terminal and maximum clockwise terminal, (control viewed from shaft end, terminals down).
* CONCENTRIKIT EQUIVALENT-KIT K-2, BASE ELEMENTS AND SHAFTS, B17-110 & P1-224 (Panel), B13-133 & H2-306 (Rear) & SWITCH 76-1.

RESISTORS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: Philharmonic PART No.	IRC PART No.	IDENTIFICATION CODES ALL RESISTORS ± 10% UNLESS OTHERWISE NOTED
R8	3900Ω			BTS-3900	Antenna Coil Shunt
R9	47KΩ 20%				RF Amp. Grid
R10	2200Ω 20%			BTS-2200	RF Amp. Decoupling
R11	10KΩ				RF Coil Shunt
R12	4700Ω			BTS-4700	Mixer Grid
R13	220KΩ 20%				Mixer Grid
R14	10KΩ				Oscillator Grid
R15	4700Ω			BTS-4700	Oscillator Plate
R16	4700Ω			BTS-4700	1st. Video IF Grid
R17	56Ω				1st Video IF Cathode
R18	680Ω			BTS-680	AGC Network
R19	6800Ω				2nd. Video IF Coil Shunt
R20	56Ω				2nd. Video IF Cathode
R21	1Meg 20%			BTS-1Meg	AGC Network
R22	100Ω			BTS-100	Decoupling
R23	100Ω			BTS-100	Decoupling
R24	6800Ω				3rd. Video IF Coil Shunt
R25	82Ω			BTS-82	3rd. Video IF Cathode
R26	5600Ω			BTS-5600	Video Detector Diode Load
R27	470KΩ			BTS-470K	Video Output Grid
R28	82Ω			BTS-82	Video Output Cathode
R29	1000Ω			BTS-1000	Contrast Network
R30	6800Ω	2		BTB-6800	Video Output Plate
R31	10KΩ			BTS-10K	Isolation
R32	100KΩ			BTS-100K	Picture Tube Cathode
R33	10KΩ			BTS-10K	Acc. Anode Load
R34	100KΩ			BTS-100K	Sound IF Grid
R35	22KΩ	2		BTB-22K	Sound IF Decoupling
R36	150Ω			BTS-150	Balancing
R37	47KΩ 20%			BTS-47K	De-emphasis
R38	12KΩ			BTS-12K	Ratio Det. Diode Load
R39	4.7Meg			BTS-4.7Meg	AF Amp. Grid
R40	270KΩ			BTS-270K	AF Amp. Plate
R41	330KΩ 5%			BTS-330K 5%	Voltage Divider
R42	180KΩ 5%			BTS-180K 5%	Voltage Divider
R43	100KΩ			BTS-100K	AF Output Grid
R44	800Ω	5		1 3/4A-800	AF Output Decoupling - Wire Wound
R45	1.2Meg			BTS-1.2Meg	Sync Clipper Grid
R46	22KΩ			BTS-22K	Sync Clipper Cathode
R47	680KΩ			BTS-680 K	Sync Clipper Plate
R48	22KΩ			BTS-22K	Sync. Ph. Inv. Grid
R49	2200Ω			BTS-2200	Sync Ph. Inv. Cathode
R50	3900Ω			BTS-3900	Sync Ph. Inv. Plate
R51	2200Ω			BTS-2200	Sync Ph. Inv. Plate

RESISTORS (CONT.)

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: Philharmonic PART No.	IRC PART No.	IDENTIFICATION CODES
R52A	22KΩ			BTS-22K	Integrator Network
B	8200Ω		♦	BTS-8200	Integrator Network
C	8200Ω			BTS-8200	Integrator Network
R53	1.5Meg			BTS-1.5Meg	Vert. Osc. Grid
R54	10KΩ			BTS-10K	Vert. Osc. Trans. Shunt
R55	22KΩ			BTS-22K	Vert. Osc. Plate
R56	1.5 Meg			BTS-1.5Meg	Vert. Discharge Plate - See Note 1
R57	56KΩ			BTS-56K	Vert. Discharge Plate Decoupling
R58	470KΩ			BTS-470K	Voltage Divider
R59	8200Ω			BTS-8200	Vert. Peaking
R60	2.2Meg			BTS-2.2Meg	Vert. Output Grid
R61	680Ω			BTS-680	Vert. Output Cathode
R62	100KΩ			BTS-100K	Horiz. Ph. Det. Diode Load
R63	100KΩ			BTS-100K	Horiz. Ph. Det. Diode Load
R64	4.7Meg			BTS-4.7Meg	Horiz. Ph. Det. Diode Load
R65	470KΩ			BTS-470K	Horiz. AFC Filter
R66	5600Ω			BTS-5600	Horiz. M.V. Plate
R67	1500Ω			BTS-1500	Horiz. M.V. Cathode
R68	100KΩ			BTS-100K	Horiz. M.V. Grid
R69	270KΩ			BTS-270K	Horiz. M.V. Plate
R70	56KΩ			BTS-56K	Horiz. M.V. Plate Dec.
R71	4700Ω			BTS-4700	Horiz. Peaking
R72	56Ω				Parasitic Suppressor
R73	1Meg			BTS-1Meg	Horiz. Output Grid See Note 2
R74	25KΩ	10		1 1/4A-25K	Horiz. Output Screen - Wire Wound
R75	47Ω	1			Horiz. Output Cathode - See Note 3
R76	3.3Ω				H.V. Rect. Filament
R77	470KΩ	2			H.V. Filter
R78	15KΩ			BTS-15K	Horiz. Feedback
R79	3300Ω	2		BTB-3300	Voltage Divider
R80	330Ω 20%	2		BTB-330	Focus Coil Shunt
R81	27Ω	1			Horiz. Output Cathode - See Note 4

Note 1. Some Models may use a 2.7Meg Resistor in this application
♦ Items C52A, C52B, C52C, R52A, R52B and R52C are combined in one unit
Note 2. Some Models may use a 470KΩ Resistor in this application
Note 3. Some Models may use a 120Ω Resistor in this application
Note 4. Not used in all Models

TRANSFORMER (POWER)

ITEM No.	RATING: PRI.	RATING: SEC. 1	RATING: SEC. 2	RATING: SEC. 3	REPLACEMENT DATA: Philharmonic PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.
T1	117VAC @ 1.94A	800VCT @ 220ADC	5VAC @ 3A	6.3VAC @ 7.8A			P-3067	
				SEC. 4				
				6.3VAC @ .75A				

TRANSFORMER (SWEEP CIRCUITS)

ITEM No.	RATING: DC RESISTANCE PRI.	RATING: DC RESISTANCE SEC.	REPLACEMENT DATA: Philharmonic PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	NOTES
T2	170Ω	1000Ω		A-8111 ②	A-3000 ②	TB0-2 ②	Vert. Osc. Trans.
T3	325Ω	7.5Ω Tap @ Tap @ 20Ω 5Ω, 5.5Ω					Horiz. Output Trans.
		SEC. 2 1.7Ω					
		SEC. 3 0Ω					
T4	1230Ω Tap @ 10Ω			A-8123	A-3037	TS0-8	Vert. Output Trans.
T5A	8.5Ω			DY-8	MDF-70		Horiz. Deflection Coils
B	45Ω						Vert. Deflection Coils
T6	400Ω			FC-11			Focus Coil

② Drill one new mtg. hole

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	RATING: IMPEDANCE PRI.	RATING: IMPEDANCE SEC.	RATING: DC RES. PRI.	RATING: DC RES. SEC.	REPLACEMENT DATA: Philharmonic PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	INSTALLATION NOTES
T7	7.6KΩ	3.2Ω	365Ω	.7Ω		A-3849	A-3020	RO-201	

PHILHARMONIC MODELS 520, 620, 720, 724, 820, 824, 5820, 6120, 7120, 7820, 8120, 8820