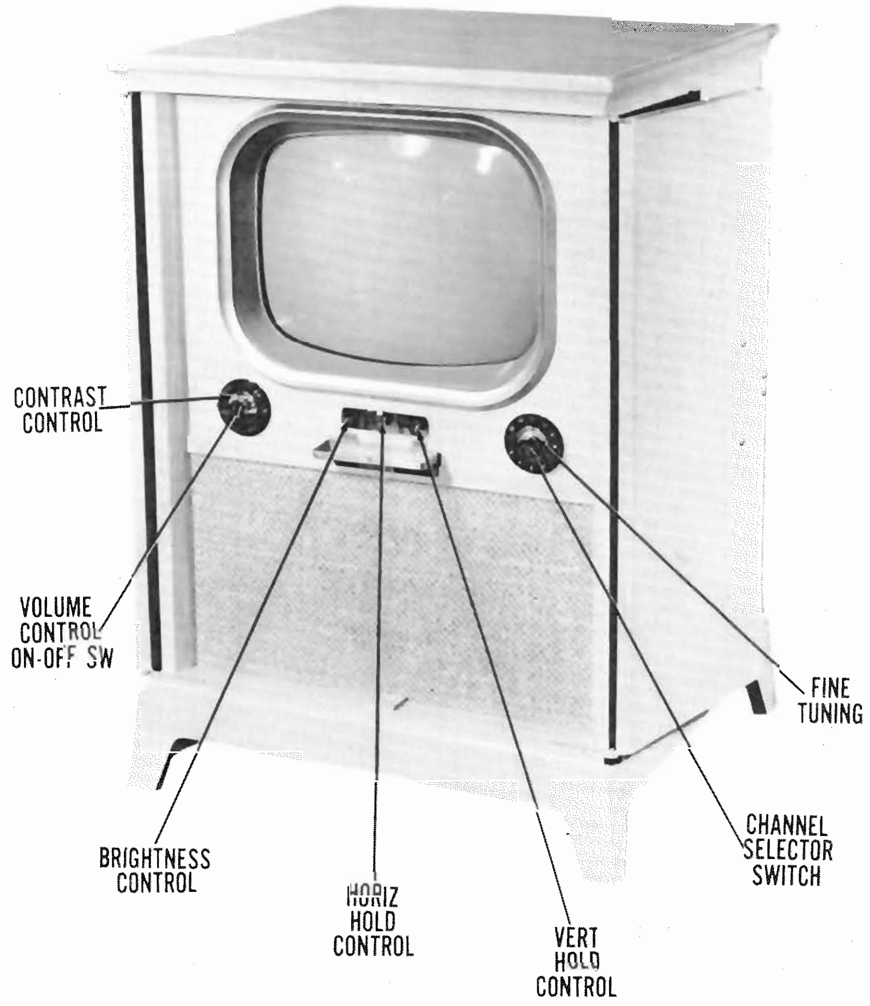
PHOTOFACT* Folder

STARRETT MODELS 17BM1, 20BM1, 27BM1, 29AM1, 37BB1, 37BM1, 39AM1

STARRETT MODELS 17BM1, 20BM1, 27BM1, 29AM1, 37BB1, 37BM1, 39AM1



STARRETT MODEL 37BB1

TRADE NAME	Starrett, Models 17BM1 (Ch. 12S1), 20BM1 (Ch. 15S1), 27BM1 (Ch. 12S1), 29AM1 (Ch. 14S1), 30BM1 (Ch. 15S1), 37BB1, 37BM1 (Ch. 12S1), 39AM1 (Ch. 14S1)
MANUFACTURER	Starrett Television Corp., 601 W. 26th. St., New York, N. Y.
TYPE SET	Television Receiver
TUBES	Twenty
POWER SUPPLY	105-125 Volts AC 60 Cycle
RATING	1.7 Amp. at 117 Volts AC
TUNING RANGE—CHANNELS	2 thru 13

INDEX

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

DATE 11 -51 SET 149 FOLDER 13

PARTS LIST AND DESCRIPTIONS (Continued)

SPEAKER

ITEM No.	RATINGS		REPLACEMENT DATA			NOTES
	FIELD RES.	V. C. IMP.	STARRETT PART No.	JENSEN PART No.	QUAM PART No.	
SP1	PM	4Ω		ST115 Model P8-V	8A31	
	CONE DIA.	V. C. DIA.				
SP2	7 3/4"	9/16"				

FILTER CHOKE

ITEM No.	RATINGS			REPLACEMENT DATA				INSTALLATION NOTES
	TOTAL DIRECT CURRENT	D. C. RESISTANCE	INDUCTANCE (0 CURRENT 1000 ∿)	STARRETT PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	
L1	.190A	69Ω	3.5Henries		C-2325 ①	C-2974	TR4200①	① Drill one new mounting hole.

COILS (RF-IF)

ITEM No.	USE	DC RES.		REPLACEMENT DATA		NOTES
		PRI.	SEC.	STARRETT PART No.	IRC PART No.	
L2	Ant. Coil	0Ω	0Ω			
L3	Ant. Coil	0Ω	0Ω			
L4	RF Coil	0Ω				
L5	Mixer Grid Coil	0Ω				
L6	Osc. Coil	0Ω				
L7	Osc. Coil	0Ω				
L8	Fil. Choke	.2Ω			CLA	.47 Microhenries
L9	1st. Video IF	.5Ω				
L10	Fil. Choke	0Ω				
L11	2nd. Video IF	.4Ω				
L12	Fil. Choke	0Ω				
L13	RF Choke	2.6Ω				
L14	3rd. Video IF	.2Ω				
L15	Fil. Choke	0Ω				
L16	RF Choke	2.8Ω				
L17	4th. Video IF	.4Ω				
L18	Peaking	8Ω				120 Microhenries (yellow dot)
L19	Peaking	18Ω				600 Microhenries (red dot)
L20	Peaking	12Ω				240 Microhenries wound on 18KΩ resistor (green dot)
L21	Peaking	15Ω				380 Microhenries (blue dot)
L22	Sound IF	1.7Ω	1.4Ω			
L23	Ratio Det. Trans.	6.8Ω	.2Ω			Tap .5Ω
L24	Horiz. Osc.	55Ω				
L25	Horiz. Size	.7Ω				
L26	Horiz. Lin.	38Ω				

FUSES

ITEM No.	TYPE	RATING	REPLACEMENT DATA				REMARKS
			STARRETT PART No.		LITTELFUSE PART No.		
			FUSE	HOLDER	FUSE	HOLDER	
M1	3AG Pigtail	.250A			318.250		

MISCELLANEOUS

ITEM No.	PART NAME	STARRETT PART No.	NOTES
M2	RF Tuner		
M3	Switch		(TV-Phono)
M4	Focus Magnet		
M5	Ion Trap		
B2	Trimmer		Horiz. Drive 25-290 MMF.

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TRADE NAME Sta
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MANUFACTURER Sta
TYPE SET Te
TUBES Tw

POWER SUPPLY 105
TUNING RANGE—CHA

Alignment Instruct
Disassembly Instru
Horizontal Sweep C
Parts List and Des
Photographs
Cabinet - Rear
Capacitor and

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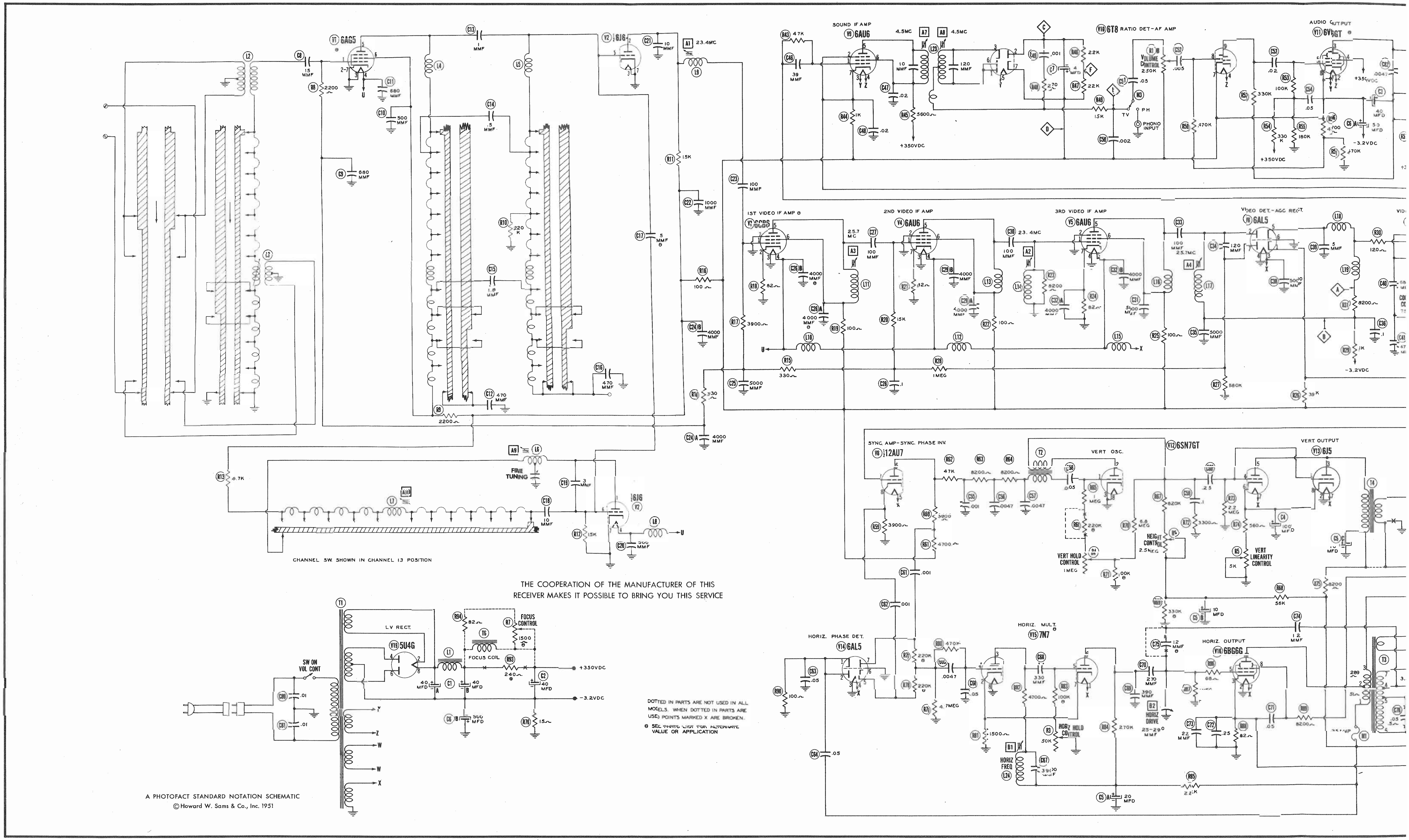
Inc., by the manufacturers of
"Reproduction or use, withou

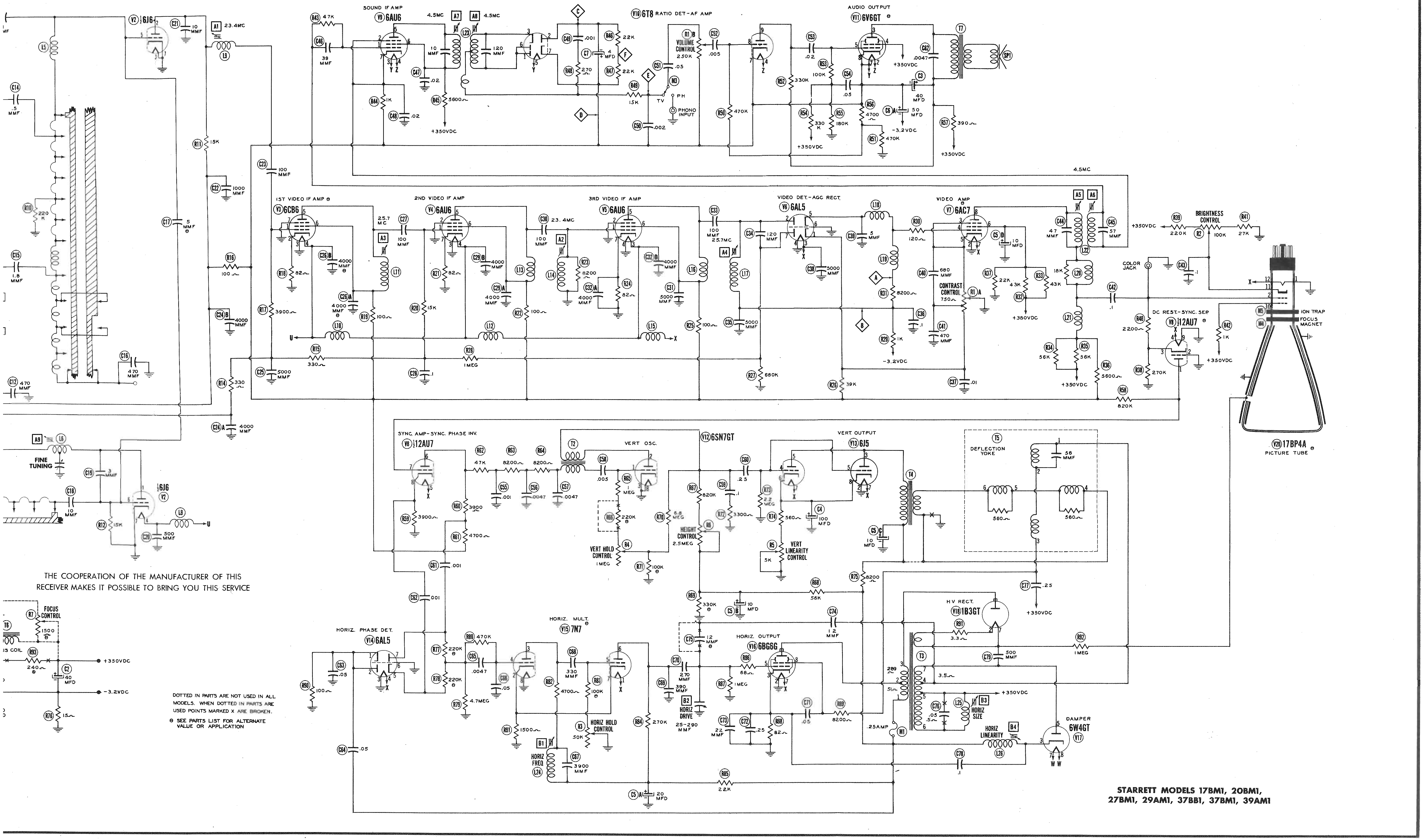


THE COOPERATION OF THE MANUFACTURER OF THIS
RECEIVER MAKES IT POSSIBLE TO BRING YOU THIS SERVICE

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

⊖ SEE PARTS LIST FOR ALTERNATE VALUE OR APPLICATION

A PHOTOFACT STANDARD NOTATION SCHEMATIC



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

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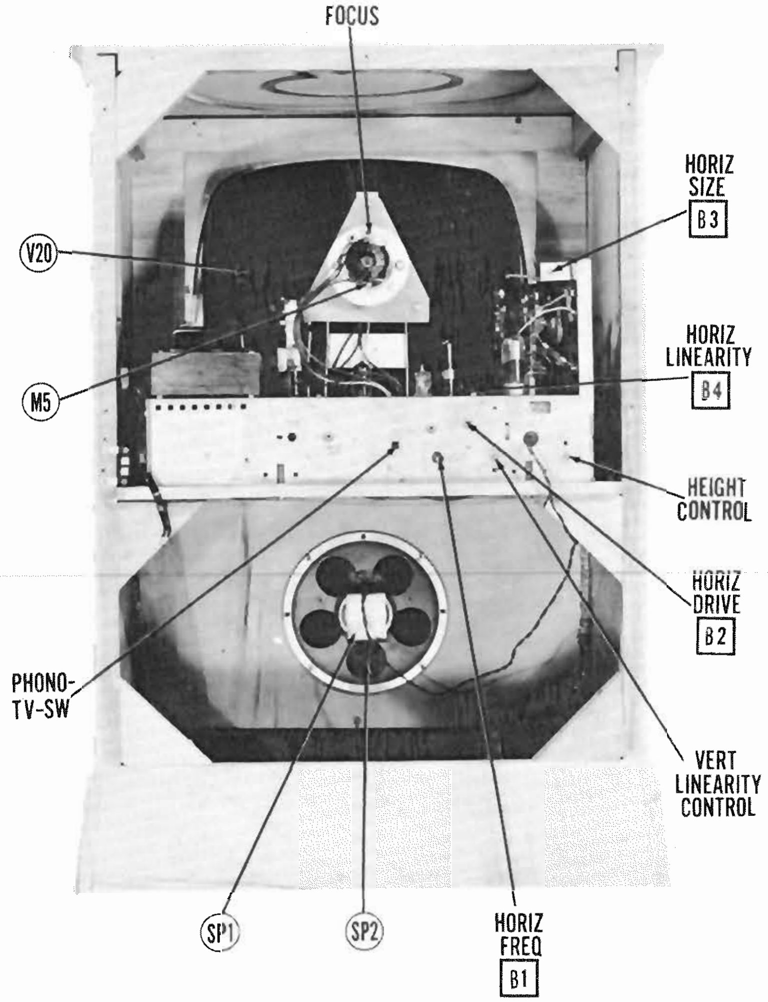
STARRETT MODELS 17BM1, 20BM1, 27BM1, 29AM1, 37BB1, 37BM1, 39AM1



CABINET-REAR VIEW

HORIZONTAL SWEEP CIRCUIT ADJUSTMENTS

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

Turn the horizontal hold control to the mid-position of its range.

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

Adjust the horizontal drive trimmer, (B2), counter-clockwise until white beaded vertical lines appear in the raster, and then clockwise just enough to remove the lines.

Adjust the horizontal size slug, (B3), until the picture is slightly wider than necessary to fill the mask horizontally.

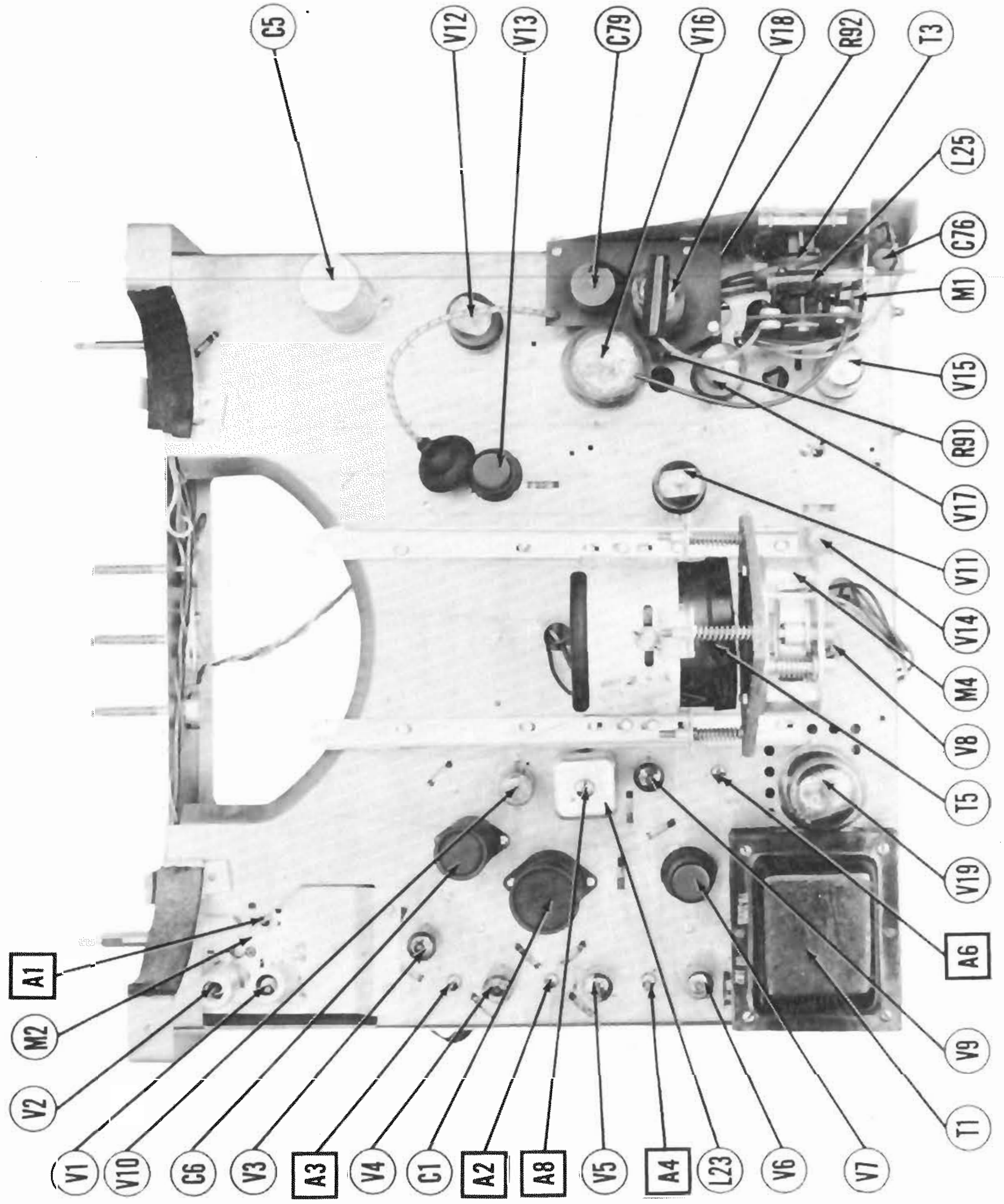
Adjust the horizontal linearity slug, (B4), until the picture is symmetrical from left to right.

DISASSEMBLY INSTRUCTIONS

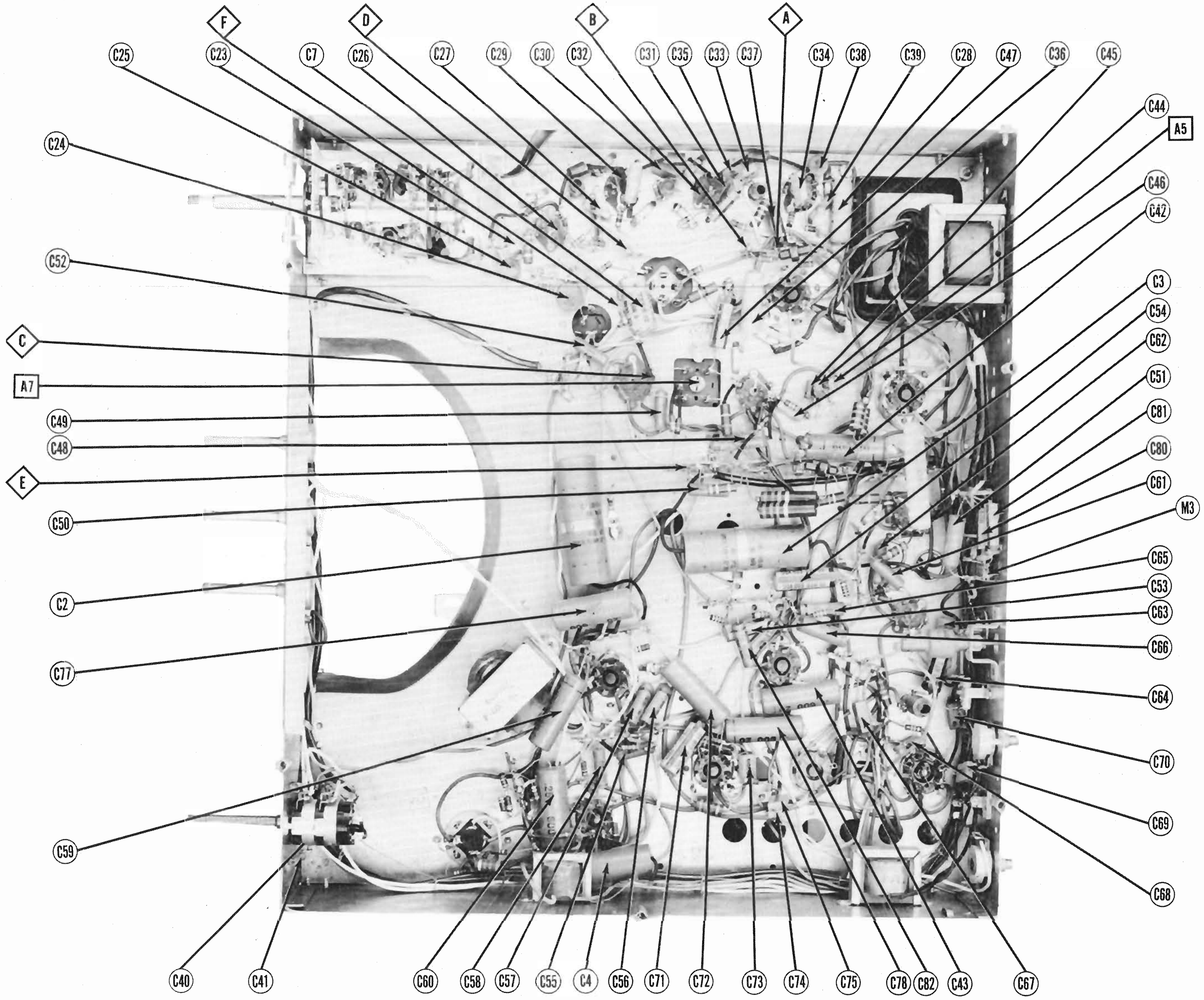
1. Remove four push-on type control knobs.
2. Remove nine wood screws from rear cover. Remove rear cover.
3. Disconnect built-in antenna.
4. Remove antenna terminal strip.
5. Disconnect speaker.
6. Remove five 5/16" hex head bolts from chassis. Remove chassis.
7. Remove four 11/32" hex nuts from speaker. Remove speaker.

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

STARRETT MODELS 17BM1, 20BM1, 27BM1, 29AM1, 37BB1, 37BM1, 39AM1



CHASSIS TOP VIEW



CHASSIS BOTTOM VIEW-CAPACITOR AND ALIGNMENT IDENTIFICATION

VOLTAGE AND RESISTANCE MEASUREMENTS

VOLTAGE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V 1	6AG5	-.6VDC	0V	6.3VAC	0V	105VDC	105VDC	0V		
V 2	6J6	100VDC	85VDC	0V	6.3VAC	-1.2VDC	§-3.1VDC	0V		
V 3	6CB6	-.3VDC	.9VDC	0V	6.2VAC	140VDC	140VDC	0V		
V 4	6AU6	-.3VDC	0V	0V	6.2VAC	140VDC	140VDC	.8VDC		
V 5	6AU6	0V	0V	6.2VAC	0V	140VDC	140VDC	.9VDC		
V 6	6AL5	0V	-3VDC	6.3VAC	0V	-2.4VDC	0V	- 1.2VDC		
V 7	6AC7	0V	0V	1VDC	-2.4VDC	1VDC	170VDC	6.3VAC	170VDC	
V 8	12AU7	28VDC	0V	2.5VDC	6.3VAC	6.3VAC	85VDC	28VDC	28VDC	0V
V 9	6AU6	¶8.8VDC	¶13VDC	¶0V	¶6.3VAC	¶125VDC	¶125VDC	¶13VDC		
V 10	6T8	¶-.6VDC	¶-.5VDC	¶-.6VDC	¶6.3VAC	¶0V	¶-.6VDC	¶0V	¶-.7VDC	¶185VDC
V 11	6V6GT	0V	¶6.3VAC	¶170VDC	¶205VDC	¶-8VDC	0V	¶0V	¶0V	
V 12	6SN7GT	§-60VDC §-80VDC	145VDC 290VDC	0V	§0V §-7.6VDC	380VDC	8VDC 32VDC	6.3VAC	0V	
V 13	6J5	0V	0V	390VDC	0V	0V -2.8VDC	0V	6.3VAC	8VDC 32VDC	
V 14	6AL5	0V	0V	0V	6.3VAC	8VDC	0V	-11.8VDC		
V 15	7N7	6.3VAC	12VDC	310VDC	§-2.4VDC	§-7.4VDC §-10VDC	115VDC	12VDC	0V	
V 16	6BG6G	0V	0V	7.6VDC	7.6VDC	-8.7VDC	350VDC	6.3VAC	265VDC	Top Cap *
V 17	6W4GT	0V	0V	530VDC	0V	350VDC	0V	▲6.3VAC	▲6.3VAC	
V 18	1B3GT	* DO NOT MEASURE								Top Cap *
V 19	5U4GT	0V	400VDC	0V	360VAC	0V	360VAC	350VDC	400VDC	
V 20	17BP4A	0V	2.6VDC	PIN 10 340VDC	PIN 11 30VDC 120VDC	PIN 12 6.3VAC	H. V. CONNECTOR ** 11K.V.			

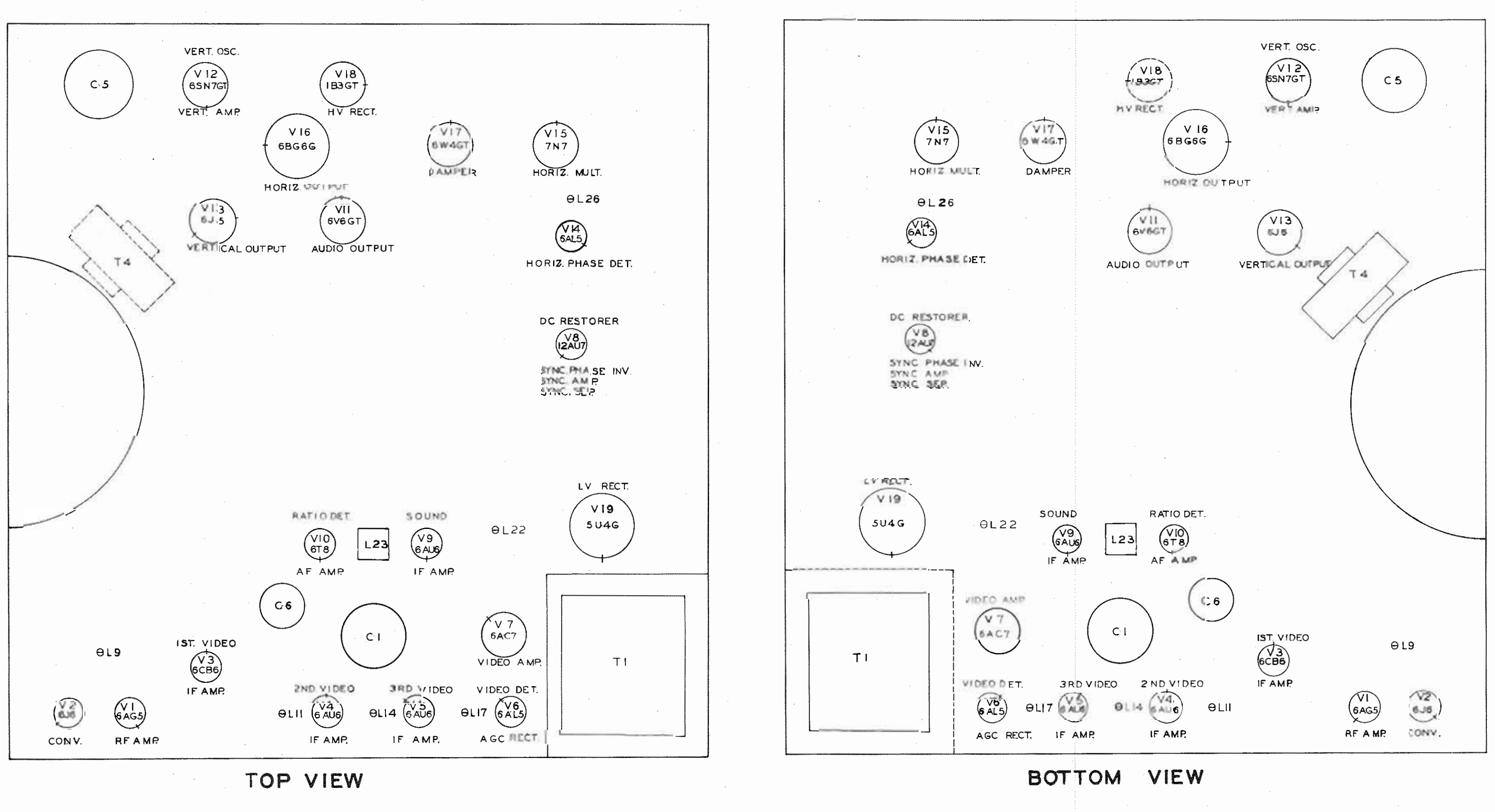
ALL MEASUREMENTS TAKEN WITH PICTURE TUBE REMOVED
¶ MEASURED FROM PIN 8 OF V11
▲ MEASURED ACROSS FILAMENTS
* DO NOT MEASURE
§ TAKEN WITH VACUUM TUBE VOLTMETER
** USE EXTREME CAUTION WHEN MEASURING THIS VOLTAGE

RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V 1	6AG5	1.6Meg	0Ω	.1Ω	0Ω	¶2.3KΩ	¶2.3KΩ	0Ω		
V 2	6J6	¶4.8KΩ	¶15KΩ	0Ω	.2Ω	220KΩ	15KΩ	0Ω		
V 3	6CB6	1.6Meg	82Ω	0Ω	.1Ω	¶100Ω	¶100Ω	0Ω		
V 4	6AU6	1.7Meg	0Ω	0Ω	.1Ω	¶100Ω	¶100Ω	82Ω		
V 5	6AU6	.2Ω	0Ω	.1Ω	0Ω	¶100Ω	¶100Ω	82Ω		
V 6	6AL5	0Ω	1KΩ	.1Ω	0Ω	9.2KΩ	0Ω	680KΩ		
V 7	6AC7	0Ω	0Ω	750Ω	9.3KΩ	750Ω	†16KΩ	.1Ω	†15KΩ	
V 8	12AU7	¶820KΩ	0Ω	270KΩ	.1Ω	.1Ω	¶8.5KΩ	¶820KΩ	3.9KΩ	0Ω
V 9	6AU6	¶47KΩ	¶1KΩ	¶0Ω	¶.1Ω	†5.8KΩ	†5.8KΩ	¶1KΩ		
V 10	6T8	¶Inf.	¶44KΩ	¶Inf.	¶.1Ω	¶0Ω	¶Inf.	¶0Ω	¶470KΩ	†330KΩ
V 11	6V6GT	Inf.	¶.1Ω	†1KΩ	†300Ω	†240KΩ	Inf.	¶0Ω	¶0Ω	
V 12	6SN7GT	2.3Meg 1.3Meg	#2Meg #800KΩ	0Ω	2.2Meg	#9.5KΩ	1.5KΩ 560KΩ	.1Ω	0Ω	
V 13	6J6	0Ω	0Ω	#9.5KΩ	Inf.	2.2Meg	Inf.	.1Ω	1.5KΩ 560Ω	
V 14	6AL5	100Ω	100Ω	0Ω	.1Ω	4.8Meg	0Ω	4.8Meg		
V 15	7N7	.1Ω	1.5KΩ	#26KΩ	5.1Meg	150KΩ †100KΩ	#290KΩ	1.5KΩ	0Ω	
V 16	6BG6G	Inf.	0Ω	82Ω	82Ω	1Meg	†300Ω	.1Ω	†8.5KΩ	Top Cap #90Ω
V 17	6W4GT	Inf.	Inf.	180KΩ	Inf.	†300Ω	Inf.	▲.1Ω	▲.1Ω	
V 18	1B3GT	PINS 1-8 HAVE INF. RESISTANCE								Top Cap #340Ω
V 19	5U4G	Inf.	22KΩ	Inf.	75Ω	Inf.	73Ω	†300Ω	22KΩ	
V 20	17BP4A	0Ω	270KΩ	PIN 10 †1.2KΩ	PIN 11 †100KΩ †40KΩ	PIN 12 .1Ω				

ALL MEASUREMENTS TAKEN WITH PICTURE TUBE REMOVED
† MEASURED FROM PIN 8 OF V19
# MEASURED FROM PIN 3 OF V17
¶ MEASURED FROM PIN 8 OF V11
▲ MEASURED ACROSS FILAMENTS

1. DC Voltage measurements are at 20,000 ohms per volt; AC Voltage measured at 1,000 ohms.
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. Front panels controls set at minimum.
6. Where readings may vary according to the setting of the service controls, both minimum and maximum readings are given.



TUBE PLACEMENT CHART

STARRETT MODELS 17BM1, 20BM1, 27BM1, 29AM1, 37BB1, 37BM1, 39AM1

ALIGNMENT INSTRUCTIONS

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

The high voltage shock hazard may be eliminated by removing the horizontal oscillator tube, (V15), from the socket.

VIDEO IF ALIGNMENT

Remove the converter tube, (V2), and replace it with a 6J6 which has pin 1 removed, this will disable the local oscillator and prevent the possibility of erroneous indications.
During video IF alignment the common lead of the VTVM is connected to approximately 2½ volts with respect to chassis. Avoid grounding the VTVM case.
Connect a short across C28.

	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, (V2). Low side to chassis.	23.4MC (unmod.)	Any	DC probe to Point A. Common to Point B.	A1, A2	Adjust for maximum deflection. Attenuate signal generator to maintain 2 volt reading.
2.	"	"	25.7MC	"	"	A3, A4	"

OVERALL VIDEO IF RESPONSE CHECK

Connect the synchronized sweep voltage from the signal generator to the horizontal input of the oscilloscope for horizontal deflection.
Remove the short from C28.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
3.	Direct	High side to an ungrounded tube shield floating over dummy converter tube, (V2). Low side to chassis.	24MC (10MC SWP)	21.6MC 26.1MC	Any	Vert. Amp. to Point A. Low side to chassis.		Check for response curve similar to fig. 1. If necessary retouch A1 thru A4 for proper response.

SOUND IF ALIGNMENT USING AM SIGNAL GENERATOR AND VTVM

During sound IF alignment the common lead of the VTVM is connected to approximately 140 volts with respect to chassis.
Avoid touching or grounding the VTVM case.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	CHANNEL	CONNECT VTVM	ADJUST	REMARKS
4.	.001MFD	High side to pin 4 (Grid), of 6AC7, (V7). Low side to chassis.	4.5MC (unmod.)	Any	DC probe to Point C. Common to Point D.	A5, A6, A7	Adjust for maximum deflection.
5.	"	"	"	"	DC probe to Point E. Common to Point F.	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
4.	.001MFD.	High side to pin 4, (grid) of 6AC7, (V7). Low side to chassis.	4.5MC (450KC SWP)	4.5MC	Any	Vert. Amp. to Point C. Low side to chassis.	A5, A6, A7	Disconnect stabilizer capacitor C7. Adjust for maximum amplitude and symmetry as per fig. 2.
5.	"	"	"	"	"	Vert. Amp. to Point E. Low side to chassis.	A8	Reconnect capacitor C7. Adjust A8 so 4.5MC occurs at center of crossover lines as per fig. 3. SLIGHTLY retouch A7 for maximum amplitude and straightness of crossover lines.

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.
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	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
6.	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.	A9	Adjust to place sound marker as shown in fig. 4. The video marker should be at 50%.
7.	"	"	207MC (10MC SWP)	205.25MC 209.75MC	12	"		Check all high band channels to see that the markers can be properly placed well within the range of the fine tuning control. If not make compromise adjustment of A9.
			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			
8.	"	"	85MC (10MC SWP)	83.25MC 87.75MC	6	"	A10	Adjust to place sound marker as shown in fig. 4. The video marker should be at 50%.
9,	"	"	79MC (10MC SWP)	77.25MC 81.75MC	5	"		Check all low band channels to see that the markers can be properly placed well within the range of the fine tuning control. If not make compromise adjustment of A10.
			69MC (10MC SWP)	67.25MC 71.75MC	4			
			63MC (10MC SWP)	61.25MC 65.75MC	3			
			57MC (10MC SWP)	55.25MC 59.75MC	2			

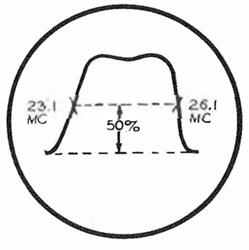


FIG.1

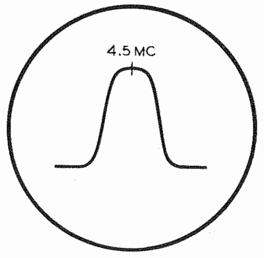


FIG.2

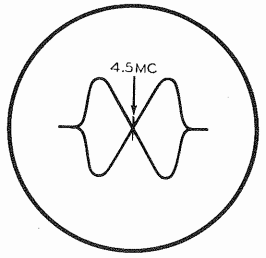


FIG.3

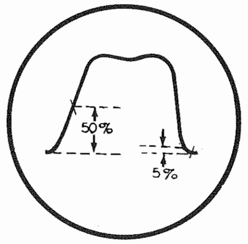
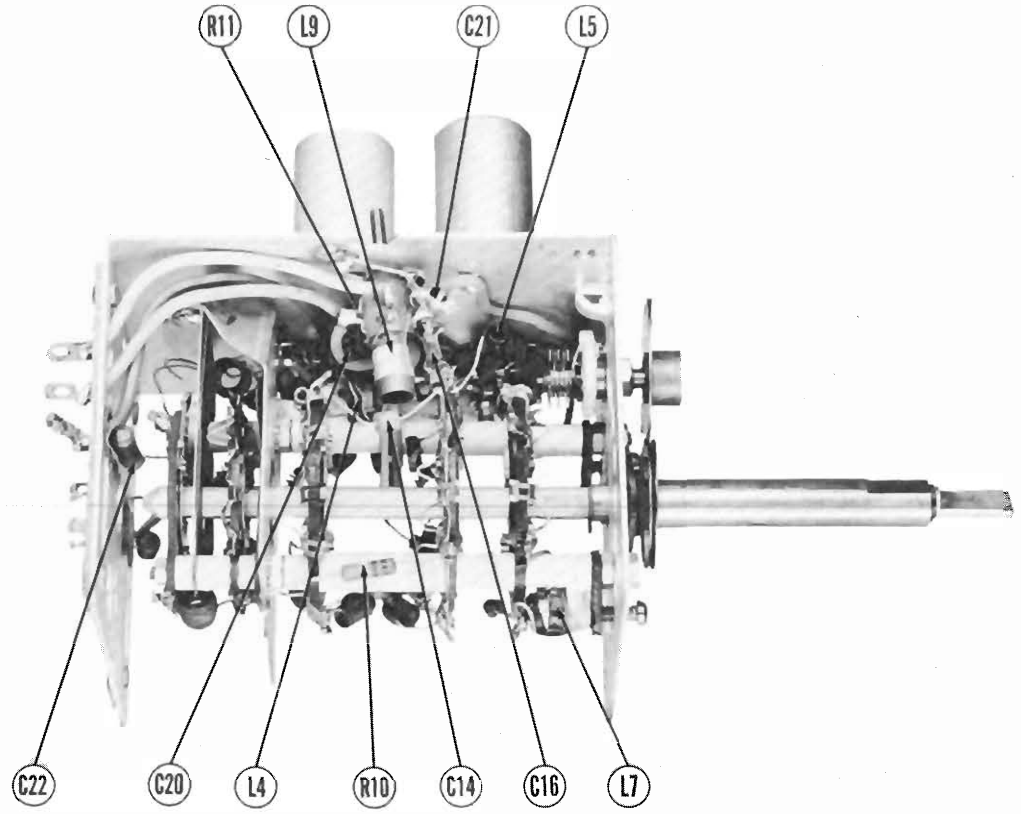
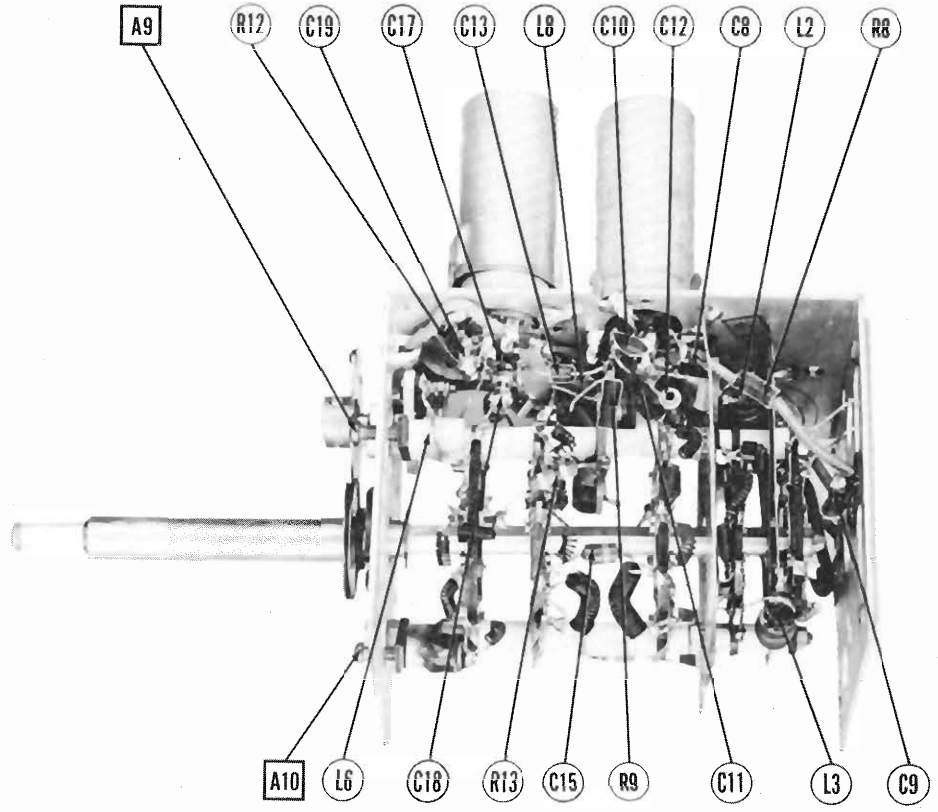


FIG.4

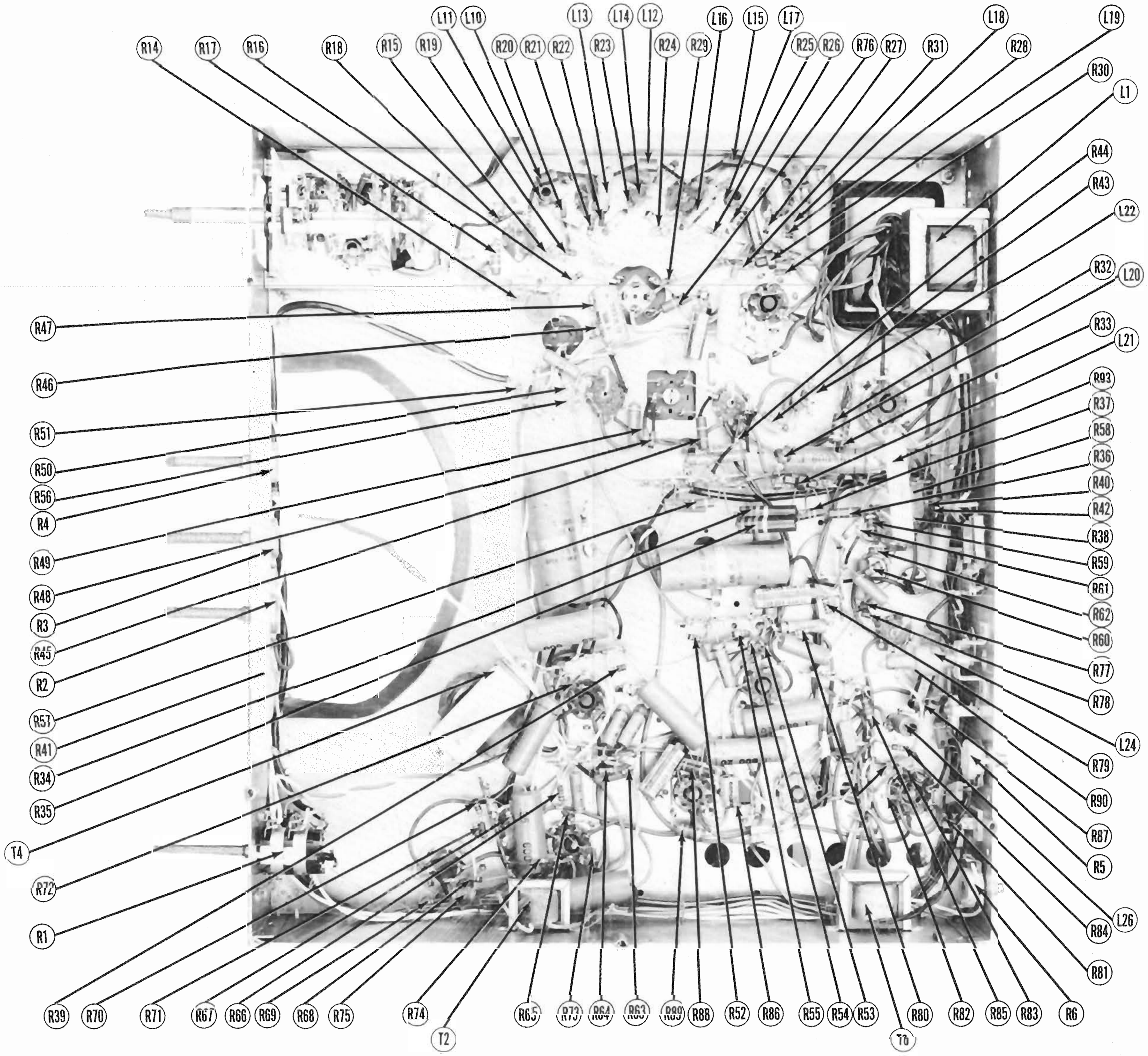
STARRETT MODELS 17BM1, 20BM1, 27BM1, 29AM1, 37BB1, 37BM1, 39AM1



RF TUNER-LEFT SIDE



RF TUNER-RIGHT SIDE



CHASSIS BOTTOM VIEW-RESISTOR AND INDUCTOR IDENTIFICATION

PARTS LIST AND DESCRIPTIONS

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA STARRETT PART No.	ANDARD REPLACEMENT	RMA BASE TYPE	NOTES
V1A	RF Amplifier	6AG5	6AG5	7BD	
B	RF Amplifier	6BC5	6BC5	7BD	
V2	Converter	6J6	6J6	7BF	
V3A	1st. Video IF Amp.	6CB6	6CB6	7CM	
B	1st. Video IF Amp.	6BC5	6BC5	7BD	
V4	2nd. Video IF Amp.	6AU6	6AU6	7BK	
V5	3rd. Video IF Amp.	6AU6	6AU6	7BK	
V6	Video Detector - AGC Rectifier	6AL5	6AL5	6BT	
V7A	Video Amplifier	6AC7	6AC7	8N	
B	Video Amplifier	6AH6	6AH6	7BK	
V8A	DC Restorer - Sync. Separator - Sync. Amplifier - Sync. Phase Inverter	12AU7	12AU7	9A	
B	DC Restorer - Sync. Separator - Sync. Amplifier - Sync. Phase Inverter	12AV7	12AV7	9A	
C	DC Restorer - Sync. Separator - Sync. Amplifier - Sync. Phase Inverter	12AZ7	12AZ7		
V9	Sound IF Amp.	6AU6	6AU6	7BK	
V10	Ratio Detector - AF Amplifier	6T8	6T8	9E	
V11A	Audio Output	6V6GT	6V6GT	7AC	
B	Audio Output	6AQ5	6AQ5	7BZ	
C	Audio Output	6K6GT	6K6GT	7S	
V12	Vert. Oscillator - Vert. Amplifier	6SN7GT	6SN7GT	8BD	
V13	Vertical Output	6J5	6J5	6Q	
V14	Horiz. Phase Det.	6AL5	6AL5	6BT	
V15A	Horiz. Mult.	7N7	7N7	8AC	
B	Horiz. Mult.	6SN7GT	6SN7GT	8BD	Used in some models.
V16	Horiz. Output	6BG6G	6BG6G	5BT	
V17	Damper	6W4GT	6W4GT	4CG	
V18	HV Rectifier	1B3GT	1B3GT	3C	
V19	LV Rectifier	5U4G	5U4G	5T	

CATHODE-RAY TUBE

ITEM No.	REPLACEMENT DATA STARRETT PART No.	SYLVANIA PART No.	THOMAS PART No.	RTMA BASE TYPE	NOTES
V20A	17BP4A	17BP4A	17BP4	12D	Chassis 12S1
B	19AP4	19AP4		12D	Chassis 14S1
C	20CP4	20CP4	20CP4	12D	Chassis 15S1
D	20DP4	20DP4		12D	Chassis 15S1

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	STARRETT PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	SPRAGUE PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
C1A	40	450		AFH2-57		UP4445		TVL-2764	● Filter
B	40	450							■ Filter
C2	40	450		PRS450/40		BR4045A		TVA-1712	Filter
C3	40	450		PRS450/40		BR4045A		TVA-1712	Audio Output Dec.
C4	100	25		PRS25/100		BRH251A		TVA-1207	Vert. Amp. Cathode
C5A	20	450		AFH4-13		UPT21145		TVL-4826	● Horiz. MV Dec.
B	10	450							■ Vert. Osc. Dec.
C	10	450							▲ Vert. Amp. Dec.
D	10	150							Video Amp. Screen
C6A	50	150		AFH1-18		UP5015		TVL-1415	■ Decoupling
B	500	5		PRS6/500		BRH605A		TVA-1103	▲ Bias Filter
C7	4	25		PRS150/4		BR550		TVA-1203	Stabilizing Cap.
C8	15			SI15	D6-150		GP1K-150	5GA-Q15	RF Coupling
C9	680			SI680	D6-681		GP2K-681	5GA-T68	AGC Filter
C10	500			SI500	D6-501		GP2K-501	5GA-T5	RF Amp. Dec.
C11	680			SI680	D6-681		GP2K-681	5GA-T68	RF Amp. Fil.
C12	470			SI470	D6-470		GP2K-471	5GA-T47	RF Amp. Plate
C13	1				TCZ-1		NP0K-010		RF Coupling
C14	.5				TCZ-.5		NP0K-R50		RF Coupling
C15	1.8						NP0K-1R8		RF Coupling
C16	470			SI470	D6-470		GP2K-471	5GA-T47	Mixer Grid Filter
C17	5			SI5NP0	TCZ-4.7		NP0K-050		Osc. Coupling
C18	10			SI10NP0	TCZ-10		NP0K-100	5TCC-Q1	Osc. Grid Cap.
C19	3						N333K-030		Osc. Feedback
C20	500			SI500	D6-501		GP2K-501	5GA-T5	Conv. Fil.
C21	10			SI10NP0	TCZ-10		NP0K-100	5TCC-Q1	Fixed Trimmer
C22	1000			BPD-001	DD-102		801-001	5HK-D1	RF Bypass
C23	100	500		1468-0001	D6-101	5W5T1	GP1K-101	1FM-31	IF Coupling
C24A	4000			BPD-2X004	D6-402	1D5D4	822-004	5HK-2D4	AGC Filter
B	4000				D6-402	1D5D4			RF Bypass
C25	5000			BPD-005	DD-502	1D5D5	811-005	5HK-D5	AGC Filter
C26A	4000			BPD-2X004	D6-402	1D5D4	822-004	5HK-2D4	1st. Video IF Dec. †
B	4000				D6-402	1D5D4			1st. Video IF Fil. †
C27	100	500		1468-0001	D6-101	5W5T1	GP1K-101	1FM-31	IF Coupling
C28	.1	200		P288-1	DF-104	PTE4P1		2TM-P1	AGC Filter
C29A	4000			BPD-2X004	D6-402	1D5D4	822-004	5HK-2D4	2nd. Video IF Dec.
B	4000				D6-402	1D5D4			2nd. Video IF Fil.
C30	100	500		1468-0001	D6-101	5W5T1	GP1K-101	1FM-31	IF Coupling
C31	5000			BPD-005	DD-502	1D5D5	811-005	5HK-D5	3rd. Video IF Dec.
C32A	4000			BPD-2X004	D6-402	1D5D4	822-004	5HK-2D4	3rd. Video IF Cathode
B	4000				D6-402	1D5D4			3rd. Video IF Cathode
C33	100	500		1468-0001	D6-101	5W5T1	GP1K-101	1FM-31	IF Coupling
C34	120	500		1468-00015	D6-121	5W5T15	GP2K-121	1FM-315	IF Coupling
C35	5000			BPD-005	DD-502	1D5D5	811-005	5HK-D5	RF Bypass
C36	.1	200		P288-1	DF-104	PTE4P1		2TM-P1	Bias Filter
C37	.01	400		P488-01	D6-103	PTE4S1	GP2-333-103	4TM-S1	RF Bypass
C38	5000			BPD-005	DD-502	1D5D5	811-005	5HK-D5	Video Det. Fil.

CAPACITORS (CONT.)

ITEM No.	RATING CAP.	RATING VOLT	STARRETT PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	SPRAGUE PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
C39	5	500		1469-000005	TCZ-4.7	5R5V5	NP0K-050	MS-55	Video Det. Filter
C40	680			SI680	D6-681	1W5T47	GP2K-681	5GA-T68	Contrast Contr. Shunt
C41	470			SI470	D6-471	5W5T5	GP2K-471	5GA-T47	Video Amp. Cathode
C42	.1	600		P688-1	DF-104	PTE6P1		6TM-P1	Video Coupling
C43	.1	600		P688-1	DF-104	PTE6P1		6TM-P1	Picture Tube Cathode
C44	47			SI47N750	TCN-47		N750K-470	5TCU-Q47	Fixed Trimmer
C45	57				TCN-56		N570K-570		Fixed Trimmer
C46	39	500		1468-00004	D6-390	5W5Q4	GP1K-390	1FM-44	Sound IF Coupling
C47	.02	600		P688-02	DF-203	PTE6S2		6TM-S2	Sound IF Decoupling
C48	.02	600		P688-02	DF-203	PTE6S5		6TM-S2	Sound IF Cathode
C49	.001	600		P688-001	D6-102	PTE6D1	GP2L-102	6TM-D1	RF Bypass
C50	.002	600		P688-002	D6-202	PTE6D2	GP2-333-202	6TM-D2	De-emphasis
C51	.05	200		P288-05	DF-503	PTE4S5		2TM-S5	Audio Coupling
C52	.005	600		P688-005	D6-502	PTE6D5	GP2-333-502	6TM-D5	Audio Coupling
C53	.02	600		P688-02	DF-203	PTE6S2		6TM-S2	Audio Coupling
C54	.05	600		P688-05	DF-503	PTE6S5		6TM-S5	Audio Output Grid Dec.
C55	.001	600		P688-001	D6-102	PTE6D1	GP2L-102	5TM-D1	Vert. Integrator Net.
C56	.0047	600		P688-0047	D6-472	PTE6D5	GP2-333-472	6TM-D47	Vert. Integrator Net.
C57	.0047	600		P688-0047	D6-472	PTE6D5	GP2-333-472	6TM-D47	Vert. Integrator Net.
C58	.005	600		P688-005	D6-502	PTE6D5	GP2-333-502	6TM-D5	Vert. Osc. Grid
C59	.1	600		P688-1	DF-104	PTE6P1		6TM-P1	Vert. Discharge
C60	.25	600		684-25		GP6P25		6TM-P25	Vert. Sweep Coupling
C61	.001	600		P688-001	D6-102	PTE6D1	GP2L-102	6TM-D1	Horiz. Sync. Coupling
C62	.001	600		P688-001	D6-102	PTE6D1	GP2L-102	6TM-D1	Horiz. Sync. Coupling
C63	.05	200		P288-05	DF-503	PTE4S5		2TM-S5	AFC Filter
C64	.05	600		P688-05	DF-503	PTE6S5		6TM-S5	Horiz. Sweep Coupling
C65	.0047	600		P688-0047	D6-472	PTE6D5	GP2-333-472	6TM-D47	AFC Filter
C66	.05	200		P288-05	DF-503	PTE4S5		2TM-S5	Horiz. MV Grid
C67	3900	500		1464-004		1DR5D4			Fixed Trimmer
C68	330	500		1468-00035	D6-331		GP2K-331	1FM-335	Horiz. MV Feedback
C69	390	500		1468-0004	D6-391	5W5T4	GP2K-391	1FM-34	Horiz. Discharge
C70	270	500		1468-0003	D6-271	5W5T3	GP2K-271	MS-33	Horiz. Sweep Coupling
C71	.05	600		P688-05	DF-503	PTE6S5		6TM-S5	Horiz. Output Screen
C72	.25	200		P488-25		GT2P25		2TM-P25	Horiz. Output Cathode
C73	22	500		1468-00025	D6-220	5W5Q25	GP1K-220	MS-425	Horiz. Output Cathode
C74	12	1500							Horiz. Feedback
C75	12	1500							Horiz. Feedback *
C76	.05	600		P688-05	DF-503	PTE6S5		6TM-S5	Fixed Trimmer
C77	.25	600		684-25		GP6P25		6TM-P25	Horiz. Sweep Coupling
C78	.1	600		P688-1	DF-104	PTE6P1		6TM-P1	Damper Filter
C79	500	20000		HV-20C	TV3-502				HV Filter
C80	.01	600		P688-01	D6-103	PTE6S1	GP2-333-103	6TM-S1	Line Filter
C81	.01	600		P688-01	D6-103	PTE6S1	GP2-333-103	6TM-S1	Line Filter
C82	.0047	600		P688-0047	D6-472	PTE6D5	GP2-333-472	6TM-D47	Audio Output Plate

* Not used in all models.

† Some models use 5000MMF. in this application.

CONTROLS

ITEM No.	RATING RESISTANCE	RATING WATTS	STARRETT PART No.	IRC PART No.	CLAROSTAT PART No.	CENTRALAB PART No.	INSTALLATION NOTES
R1A	750Ω	2	PT-1002		RTV-252		Contrast Control - Tapped at 500Ω - Wire Wound - Front
B	250KΩ	½					Volume Control and SW - Rear
R2A	100KΩ	½	PT-1007	Q11-128	AG-49-S	AN-40	Brightness Control
B	Shaft		Not req.	Not req.	KSS-3	AK-4	Attach to R2A per instructions
R3A	50KΩ	½	PT-1009	Q11-123	AG-44-S	AN-31	Horiz. Hold Control
B	Shaft		Not req.	Not req.	KSS-3	AK-4	Attach to R3A per instructions
R4A	1Meg	½	PT-1008	Q11-137	AG-61-S	AN-69	Vert. Hold Control
B	Shaft		Not req.	Not req.	KSS-3	AK-4	Attach to R4A per instructions
R5A	5000Ω	½	PT-1004	Q11-114	AG-19-S	AN-10	Vert. Linearity Control
B	Shaft		Not req.	Not req.	FKS-1/4	AK-1	Attach to R5A per instructions
R6A	2.5Meg	½	PT-1005	Q11-239	AG-84-S	AN-83	Height Control
B	Shaft		Not req.	Not req.	FKS-1/4	AK-1	Attach to R6A per instructions
R7	1500Ω	4					Focus Control - Wire Wound - See Note 1

Note 1 Not used in all models.

RESISTORS

ITEM No.	RATING RESISTANCE	RATING WATTS	STARRETT PART No.	IRC PART No.	IDENTIFICATION CODES ALL RESISTORS ± 10% UNLESS OTHERWISE SPECIFIED
R8	2200Ω 20%	½		BTS-2200	RF Amp. Grid
R9	2200Ω 20%	½		BTS-2200	RF Amp. Decoupling
R10	220KΩ 20%	½		BTS-220K	Mixer Grid
R11	15KΩ 20%	½		BTS-15K	Mixer Plate
R12	15KΩ 20%	½			Osc. Grid
R13	4700Ω	½		BTS-4700	Osc. Plate
R14	330Ω	½		BTS-330	AGC Network
R15	330Ω	½		BTS-330	AGC Network
R16	100Ω	½		BTS-100	Decoupling
R17	3900Ω	½		BTS-3900	1st. Video IF Amp. Grid - See Note 3
R18	82Ω	½		BTS-82	1st. Video IF Amp. Cathode
R19	100Ω	½		BTS-100	1st. Video IF Amp. Decoupling
R20	15KΩ	½			2nd. Video IF Amp. Grid
R21	82Ω	½		BTS-82	2nd. Video IF Amp. Cathode
R22	100Ω	½		BTS-100	2nd. Video IF Amp. Decoupling
R23	8200Ω	½		BTS-8200	3rd. Video IF Transformer Shunt
R24	82Ω	½		BTS-82	3rd. Video IF Amp. Cathode
R25	100Ω	½		BTS-100	3rd. Video IF Amp. Decoupling
R26	39KΩ	1		BTA-39K	Voltage Divider
R27	680KΩ	½		BTS-680K	AGC Load
R28	1Meg	½		BTS-1Meg	AGC Network
R29	1000Ω	½		BTS-1000	Bias Network
R30	120Ω	½			Parasitic Suppressor
R31	8200Ω	½		BTS-8200	Video Det. Diode Load
R32	43KΩ 5%	2			Video Amp. Screen
R33	43KΩ 5%	2			Video Amp. Screen
R34	56KΩ	2		BTB-56K	Video Amp. Plate
R35	56KΩ	2		BTB-56K	Video Amp. Plate
R36	5600Ω	1		BTA-5600	Voltage Divider
R37	22KΩ	1		BTA-22K	Voltage Divider
R38	270KΩ	½		BTS-270K	DC Restorer Diode Load
R39	220KΩ	½		BTS-220K	Voltage Divider

RESISTORS (CONT.)

ITEM No.	RATING RESISTANCE	RATING WATTS	STARRETT PART No.	IRC PART No.	IDENTIFICATION CODES
R40	2200Ω	½		BTS-2200	Picture Tube Grid
R41	27KΩ 20%	½		BTS-27K	Picture Tube Cathode
R42	1000Ω	½		BTS-1000	Acc. Anode Load
R43	47KΩ 20%	½		BTS-47K	Sound IF Amp. Grid
R44	1000Ω	½		BTS-1000	Sound IF Amp. Cathode
R45	5600Ω	1		BTA-5600	Sound IF Amp. Decoupling
R46	22KΩ	½		BTS-22K	Ratio Det. Diode Load
R47	22KΩ	½		BTS-22K	Ratio Det. Diode Load
R48	270Ω 20%	½		BTS-270	Balancing
R49	15KΩ	½		BTS-15K	De-emphasis
R50	470KΩ	½		BTS-470K	AF Amp. Grid
R51	470KΩ	½		BTS-470K	AF Amp. Grid
R52	330KΩ	½		BTS-330K	AF Amp. Plate
R53	100KΩ 20%	½		BTS-100KΩ	Output Grid
R54	330KΩ 5%	½		BTS-330K-5%	Bias Network
R55	180KΩ 5%	½		BTS-180K-5%	Bias Network
R56	4700Ω 20%	½		BTS-4700	Bias Network
R57	390Ω	1		BTA-390	Decoupling
R58	820KΩ	½		BTS-820K	Sync. Sep. Plate
R59	3900Ω	½		BTS-3900	Sync. Phase Inv. Cathode
R60	3900Ω	½		BTS-3900	Sync. Phase Inv. Plate
R61	4700Ω 20%	½		BTS-4700	Sync. Phase Inv. Plate
R62	47KΩ 20%	½		BTS-47K	Integrator
R63	8200Ω	½		BTS-8200	Integrator
R64	8200Ω	½		BTS-8200	Integrator
R65	1Meg	½		BTS-1Meg	Vert. Osc. Grid
R66	220KΩ	½		BTS-220K	Vert. Osc. Grid - See Note 2
R67	820KΩ	½		BTS-820K	Vert. Osc. Plate
R68	56KΩ	½		BTS-56K	Vert. Osc. Decoupling
R69	330KΩ	1		BTB-330K	Voltage Divider - See Note 6
R70	6.8Meg	½		BTS-6.8Meg	Voltage Divider
R71	100KΩ	½		BTS-100K	Voltage Divider - See Note 6
R72	3300Ω	½		BTS-3300	Vert. Peaking
R73	2.2Meg	½		BTS-2.2Meg	Vert. Amp. Grid
R74	560Ω	½		BTS-560	Vert. Amp. Cathode
R75	8200Ω	2		BTB-8200	Vert. Amp. Decoupling
R76	15Ω	1		BW-1-15	Bias Network
R77	220KΩ	½		BTS-220K	Horiz. Phase Det. Diode Load - See Note 4
R78	220KΩ	½		BTS-220K	Horiz. Phase Det. Diode Load - See Note 4
R79	4.7Meg	½		BTS-4.7Meg	Horiz. Phase Det. Diode Load -
R80	470KΩ	½		BTS-470K	Horiz. AFC Filter
R81	1500Ω	½		BTS-1500	Horiz. MV Cathode
R82	4700Ω 20%	½		BTS-4700	Horiz. MV Plate
R83	100KΩ	½		BTS-100K	Horiz. MV Grid - See Note 6
R84	270KΩ	½		BTS-270K	Horiz. MV Plate
R85	22KΩ	1		BTA-22K	Horiz. MV Decoupling
R85	68Ω	½			Parasitic Suppressor
R87	1Meg	½		BTS-1Meg	Horiz. Output Grid
R88	82Ω	1		BW-1-82	Horiz. Output Cathode
R89	8200Ω	2		BTB-8200	Horiz. Output Screen
R90	100Ω 20%	½			Horiz. Feedback
R91	3.3Ω	1			HV Rectifier Filament - Wire Wound
R92	1Meg	1			HV Filter
R93	240Ω	15		2D-250	Filter - Wire Wound - See Note 5
R94	82Ω	2		BW-2-82	Focus Coil Shunt

Note 2 Not used in all models.
Note 3 Some models use 8200Ω resistor in this application.
Note 4 Some models use 100KΩ resistor in this application.
Note 5 Some models use 280Ω resistor in this application.
Note 6 Some models use parallel resistors in this application to obtain desired value.

TRANSFORMER (POWER)

ITEM No.	RATING PRI.	RATING SEC. 1	RATING SEC. 2	RATING SEC. 3	STARRETT PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.
T1	117VAC @ 1.7A	720VCT ,190ADC	5VAC @ 3A	6.3VAC @ 1.2A SEC. 4 6.3VAC @ 1.2A SEC. 5 6.3VAC @ 5.6A			P-3066 ②	

② 12.6V Winding used for SEC. 4 and 5.

TRANSFORMER (SWEEP CIRCUITS)

ITEM No.	RATING DC RESISTANCE PRI.	RATING DC RESISTANCE SEC.	STARRETT PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	NOTES
T2	165Ω	900Ω		A-8111 ①	A-3000 ①	TBO-1 ①	Vert. Block Osc. Trans.
T3	340Ω Tap 51Ω	10.5Ω Taps .5Ω and 7Ω SEC. 2 0Ω		A-8130	HVO-7		Horiz. Output Trans.
T4	1.3KΩ	10Ω		A-8112	A-3036	TSO-5 ①	Vert. Output Trans.
T5A	14Ω			DY-9	MDF-70		Horiz. Deflection Coils
B	62Ω						Vert. Deflection Coils.
T6							Focus Coil

① Drill one new mounting hole.

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	RATING IMPEDANCE PRI.	RATING IMPEDANCE SEC.	RATING DC RES. PRI.	RATING DC RES. SEC.	STARRETT PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	INSTALLATION NOTES
T7	4.4KΩ	4Ω	370Ω	.5Ω		A-3877	A-2930	RO-9 ①	① Drill one new mounting hole.

PARTS LIST CONTINUED ON PAGE 15