

CAPEHART MODELS 323M, 324M,
325F, 3011B, M, 3012B, M

CAPEHART MODEL 3012			
TRADE NAME	Capehart, Models 323M (Ch. CX-33F), 324M, 325F, 3011B, M, 3012B, M (Ch. CX-33)		
MANUFACTURER	Capehart - Farnsworth Corp., Fort Wayne (1), Indiana		
TYPE SET	Television Receiver		
TUBES	Twenty Four		
POWER SUPPLY	110 - 120 Volts AC - 60 cycles	RATING	2.4 Amp. at 117 Volts AC
TUNING RANGE-	Channels 2 thru 13		
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PARTS LIST AND DESCRIPTIONS (Continued)

TRANSFORMER (SWEEP CIRCUITS)

ITEM No.	RATING		REPLACEMENT DATA				NOTES
	DC RESISTANCE		CAPEHART PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	
	PRI.	SEC.					
T3	580Ω Tap 90Ω	0Ω	750163A-1				Hor. Output Trans.
T4	415Ω	.4Ω	650238A-1				Vert. Output Trans.
T5A	45Ω		750155A-G1				Hor. Deflection Coil
T6	.3Ω 480Ω		750149A-1				Vert. Deflection Coil Focus Coil

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	RATING				REPLACEMENT DATA				INSTALLATION NOTES
	IMPEDANCE		DC RES.		CAPEHART PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	
	PRI.	SEC.	PRI.	SEC.					
T7	5000Ω	4.1Ω	450Ω	.6Ω	650216A-1	A-3877 ①	A-3019	RO-9	

SPEAKER

ITEM No.	RATINGS		REPLACEMENT DATA			NOTES
	FIELD RES.	V. C. IMP.	CAPEHART	JENSEN	QUAM	
			PART No.	PART No.	PART No.	
SP1A	PM	4. 1Ω	650082A-1	ST-101 ①	12A4A	① Replace output transformer to match 6-8Ω voice coil.
B	PM		750151A-1	MOD. P12-T		
SP2A	CONE DIA.	V. C. DIA.				
B	11 3/4" 7 3/4"	1"				

FILTER CHOKE

ITEM No.	RATINGS		REPLACEMENT DATA				INSTALLATION NOTES
	TOTAL DIRECT CURRENT	D. C. RESISTANCE	INDUCTANCE (0 CURRENT 1000 μ)	CAPEHART PART No.	STANCOR PART No.	MERIT PART No.	
L1	.270ADC	68Ω	1 Henry	614215A-1	C-2326 ①	C-2996 ①	TR-3300 ① ① Drill one new mounting hole.

COILS (RF-IF)

ITEM No.	USE	DC RES.		REPLACEMENT DATA		NOTES
		PRI.	SEC.	CAPEHART PART No.	MEISSNER PART No.	
L2	Ant. Trans.	.1Ω	0Ω			Part of tuner, #850078D-1
L3	Fl. Choke	0Ω				Part of tuner, #850078D-1
L4	Fl. Choke	0Ω				Part of tuner, #850078D-1
L5	1st Video IF	.3Ω				Part of tuner, #850078D-1
L6	2nd Video IF	.5Ω	.5Ω	650218A-1		
L7	3rd Video IF	.5Ω	.5Ω	650218A-1		
L8	Fl. Choke	0Ω				
L9	4th Video IF	.5Ω	.5Ω	650218A-1		
L10	Peaking	5.5Ω		650219A-1	19-1921 ①	180 microhenries, wound on 39KΩ resistor.
L11	Peaking	11.5Ω		650220A-1	19-1923	500 microhenries
L12	Peaking	3.7Ω		650219A-3	19-1920 ②	98 microhenries, wound on 15KΩ resistor.
L13	Peaking	3.7Ω		650219A-3	19-1920 ②	98 microhenries, wound on 15KΩ resistor.
L14	Peaking	11.5Ω		650220A-3	19-1922	250 microhenries
L15	Sound IF	2.7Ω	2.7Ω	450518A-2		
L16	Ratio Det.					
L17	Trans.	2.8Ω	3Ω	650235A-1		
L18	Hor. Osc.	85Ω	11Ω	650230A-1		Terminal B to terminal C: 40Ω
L19	Hor. Lin.	22Ω		650221A-1		11 microhenries
		28Ω		450477A-1		4-27 microhenries

- ① Parallel with 39KΩ resistor.
② Parallel with 15KΩ resistor.

MISCELLANEOUS

ITEM No.	PART NAME	CAPEHART PART No.	NOTES
M1	RF Tuner	850078D-1	
M2	Fuse	48006	5A Not used in all models
M3	Fuse	450183A-1	.25A 250V Type 3AG
M4	Ion Trap	650101A-4	
	Knob	650210B-3	Channel selector
	Knob	650239A-3	Fine tuning
	Knob	650210B-4	Volume
	Knob	650239A-4	Contrast

FOR CO

VOL COI OFF SWI

BRIGHT COI

AG AD

TRADE NAME Cap
MANUFACTURER Cap
TYPE SET Tek
TUBES Two

POWER SUPPLY 110
TUNING RANGE- Cha

AGC Adjustment

Alignment Instruction

Disassembly Instructi

Fine Tuning Drive Co

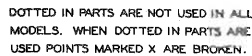
Horizontal Sweep Circ

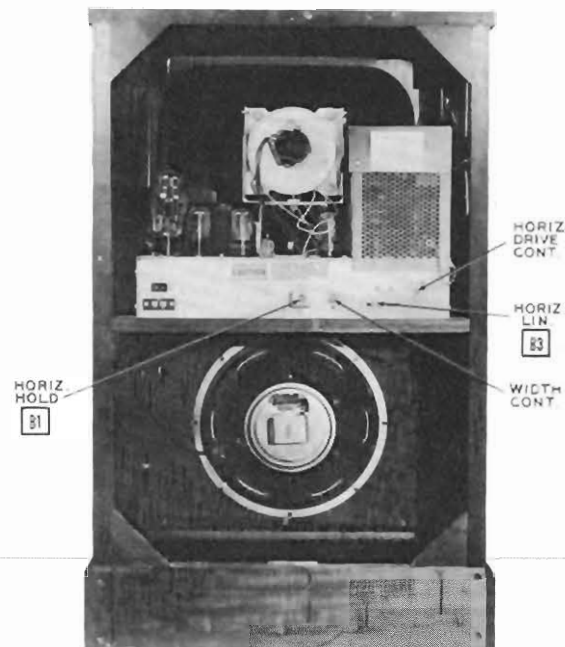
Parts List and Descr

Photos

Cabinet - Rear Vi

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case a recommendation, warra
as to the quality and suitability
parts have been compiled from
Inc., by the manufacturers of t
"Reproduction or use, without





CABINET-REAR VIEW

HORIZONTAL SWEEP CIRCUIT ADJUSTMENTS

HORIZONTAL OSCILLATOR ADJUSTMENT

Turn the set on and tune in a TV station, preferably a test pattern. Remove horizontal *SYNC. DISC.* tube (V17) from its socket and adjust the horizontal frequency slug (B1) until the picture synchronizes horizontally. The picture will move slowly back and forth with one vertical blanking bar present when properly adjusted.

Replace V17 and the picture should fall into "sync". If, after this adjustment has been made, the picture does not fall into synchronization, the AFC detector phasing may require adjustment. . . . Adjust the horizontal phasing slug (B2) until 1/4 inch of the blanking bar is visible at the right hand edge of the picture. If B2 has been changed a great amount, it may be necessary to readjust B1 for optimum results.

HORIZONTAL WIDTH, DRIVE, AND LINEARITY ADJUSTMENTS.

Turn the horizontal drive control clockwise as far as possible without crowding the right side of the picture. Adjust the width control until the picture fills the mask horizontally. Adjust the horizontal linearity slug (B3) for best linearity from left to right. A slight readjustment of the horizontal drive control may be necessary for optimum results.

AGC ADJUSTMENT

Turn the contrast control to the mid-position of its range.
Tune in a TV station, preferably a test pattern.
Adjust the AGC control for normal contrast in the picture.

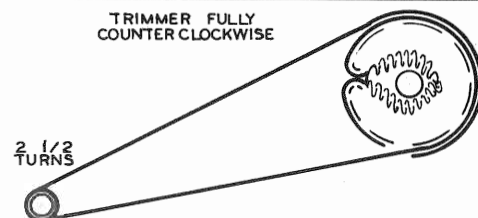
DISASSEMBLY INSTRUCTIONS

CHASSIS REMOVAL

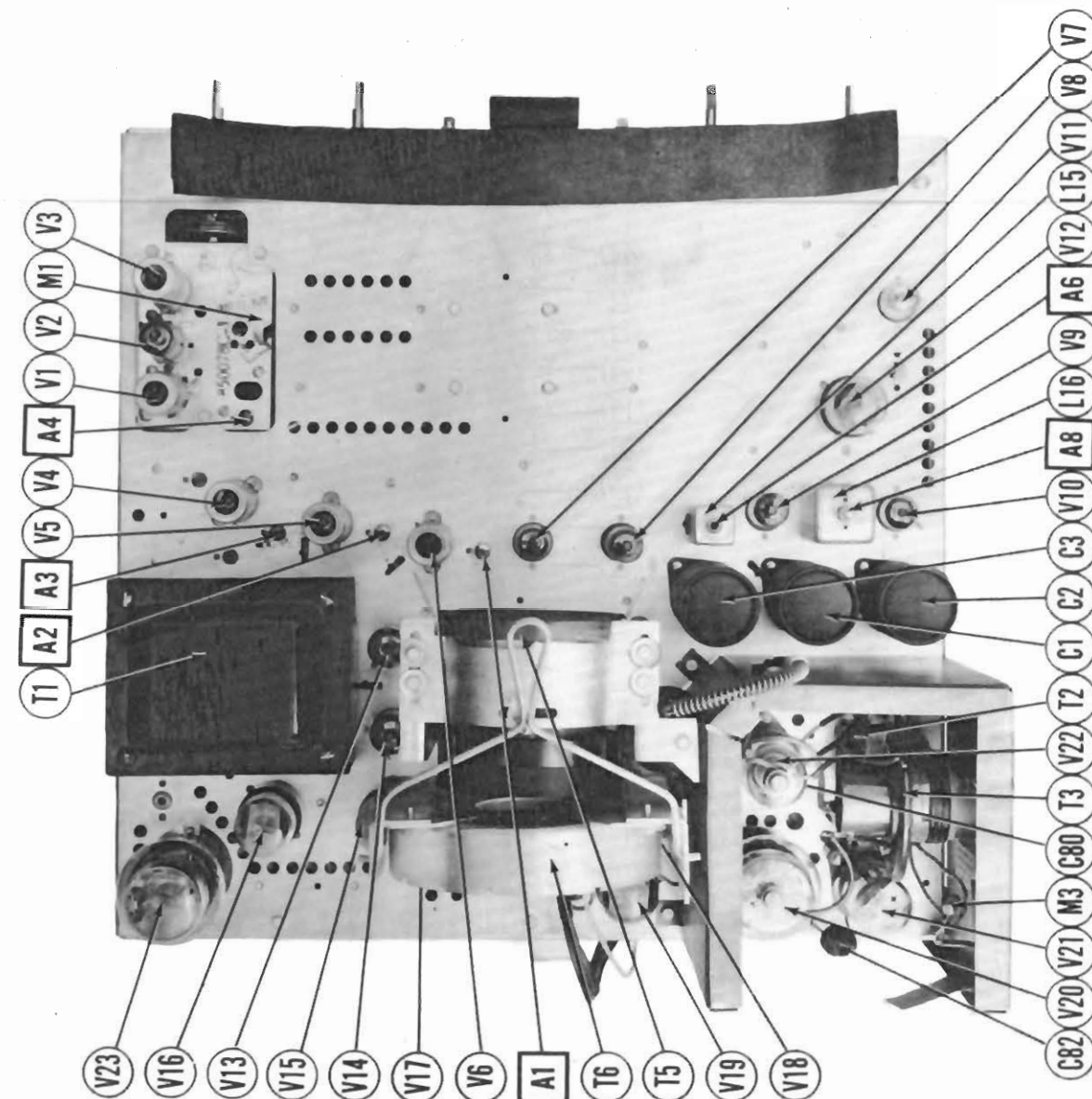
1. Remove four push-on type control knobs.
2. Remove three wood screws holding rear cover closed.
3. Disconnect built-in antenna.
4. Remove screws from hinges. Remove cover.
5. Disconnect speaker leads at chassis.
6. Remove four 5/16" hex head bolts holding chassis in cabinet. Remove chassis.
7. Remove four 3/8" hex nuts holding speaker in cabinet. Remove speaker.

PICTURE TUBE REMOVAL

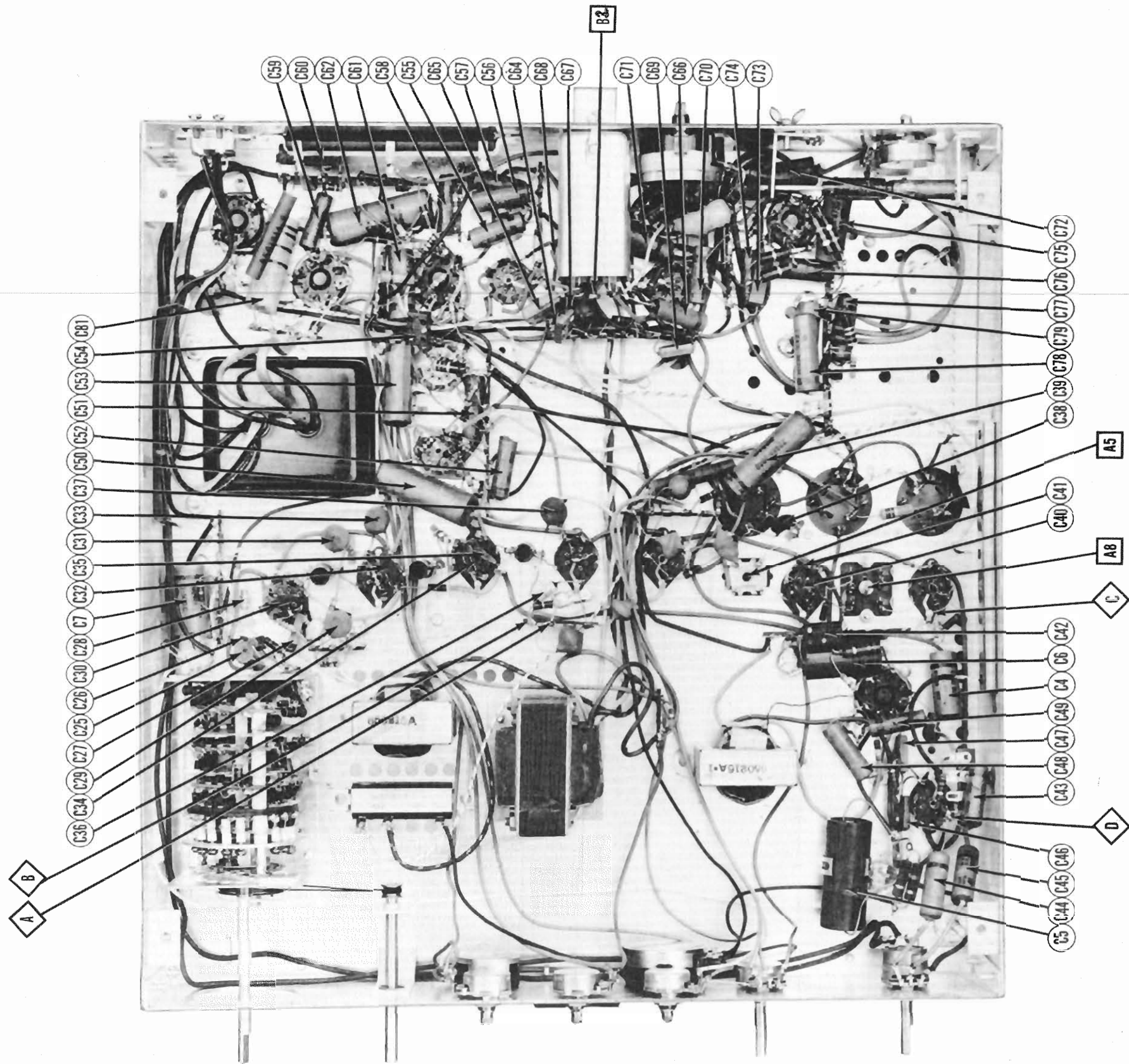
1. Remove four Phillips head screws located under front panel. (Two on either side of cabinet)
2. Remove two metal latches.
3. Remove guide from back of glass plate at side of cabinet. Remove glass plate.
4. Remove mask.
5. Remove rubber covered metal strap holding picture tube in place.
6. Remove ion trap and socket from base of tube.
7. Remove picture tube.



FINE TUNING DIAL CORD STRINGING



CAPEHART MODELS 323M, 324M,
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MAIN POL. SSSVHC



CHASSIS BOTTOM VIEW-CAPACITOR AND ALIGNMENT IDENTIFICATION

CAPEHART MODELS 323M, 324M,
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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	6CB6	-4VDC	0V	6.3VAC	0V	6.3VAC	0V	0V	0V	0V
V 2	6CB6	-1.2VDC	0V	0V	6.3VAC	6.3VAC	70VDC	0V	0V	0V
V 3	6AB4	170VDC	0V	0V	6.3VAC	6.3VAC	170VDC	0V	0V	0V
V 4	6AG5	-5.2VDC	0V	0V	6.3VAC	6.3VAC	145VDC	0V	0V	0V
V 5	6AG5	-5.6VDC	0V	0V	6.3VAC	6.3VAC	145VDC	0V	0V	0V
V 6	6AG5	0V	1.5VDC	0V	6.3VAC	6.3VAC	145VDC	0V	0V	0V
V 7	6AL5	-80VDC	-37VDC	0V	6.3VAC	6.3VAC	0V	-80VDC	0V	0V
V 8	6AB6	-80VDC	-80VDC	0V	6.3VAC	6.3VAC	37VDC	-80VDC	0V	0V
V 9	6AU6	0V	0V	0V	6.3VAC	6.3VAC	140VDC	1.2VDC	0V	0V
V 10	6AL5	-2VDC	-2VDC	6.3VAC	0V	0V	0V	-4VDC	0V	0V
V 11	6AV6	-5VDC	0V	0V	6.3VAC	6.3VAC	-7.8VDC	100VDC	0V	0V
V 12	6K6GT	0V	0V	190VDC	205VDC	6.3VAC	0V	6.3VAC	-65VDC	0V
V 13	12AU7	235VDC	25VDC	6.3VAC	6.3VAC	6.3VAC	215VDC	50VDC	60VDC	0V
V 14	12AU7	-30VDC	-85VDC	6.3VAC	6.3VAC	6.3VAC	-2VDC	-30VDC	-42VDC	0V
V 15	6SN7GT	-37VDC	225VDC	6.3VAC	6.3VAC	6.3VAC	145VDC	0V	6.3VAC	0V
V 16	6K6GT	0V	0V	260VDC	280VDC	6.3VAC	0V	6.3VAC	-80VDC	-85VDC
V 17	6AL5	8VDC	-25VDC	0V	0V	0V	0V	-25VDC	0V	0V
V 18	6AU6	5VDC	0V	0V	6.3VAC	6.3VAC	115VDC	3.8VDC	0V	0V
V 19	6SN7GT	-15VDC	200VDC	6.3VAC	6.3VAC	6.3VAC	-80VDC	0V	6.3VAC	0V
V 20	6BG6G	0V	0V	-65VDC	-70VDC	6.3VAC	0V	6.3VAC	170VDC	0V
V 21	6W4GT	0V	0V	250VDC	0V	6.3VAC	0V	0V	0V	0V
V 22	1B3GT	0V	0V	0V	0V	0V	0V	0V	0V	0V
V 23	5U4G	0V	320VDC	0V	300VAC	0V	0V	0V	320VDC	0V
V 24	1B0-AR	0V	-80VDC	440VDC	50VDC	6.3VAC	0V	0V	0V	0V

† TAKEN WITH VACUUM TUBE VOLTMETER.
‡ 6.3VAC MEASURED ACROSS FILAMENTS.
* DO NOT MEASURE.

RESISTANCE READINGS

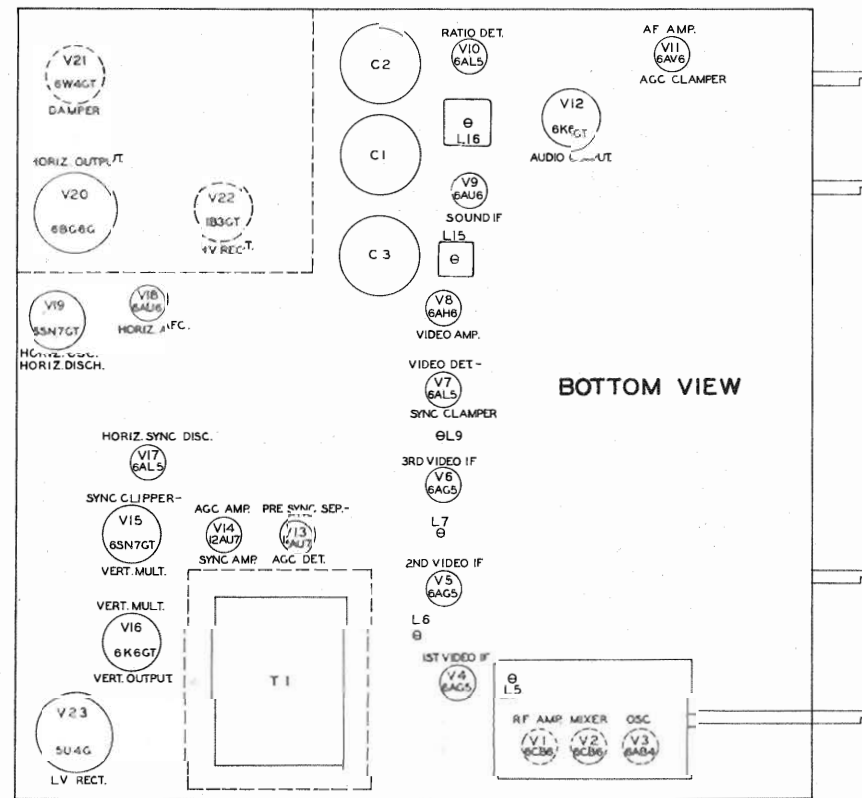
Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V 1	6CB6	100KΩ	0Ω	1Ω	0Ω	15KΩ	127KΩ	0Ω	0Ω	0Ω
V 2	6CB6	1 Meg.	0Ω	0Ω	1Ω	14KΩ	155KΩ	0Ω	0Ω	0Ω
V 3	6AB4	17KΩ	Inf.	0Ω	1Ω	17KΩ	22KΩ	470Ω	0Ω	0Ω
V 4	6AG5	23KΩ	15Ω	0Ω	1Ω	12.2KΩ	12.2KΩ	15Ω	0Ω	0Ω
V 5	6AG5	8.7KΩ	68Ω	0Ω	1Ω	12.1KΩ	12.1KΩ	68Ω	0Ω	0Ω
V 6	6AG5	.5Ω	150Ω	0Ω	1Ω	12KΩ	12KΩ	150Ω	0Ω	0Ω
V 7	6AL5	1.3KΩ	3.9 Meg.	0Ω	1Ω	0Ω	0Ω	4.6KΩ	0Ω	0Ω
V 8	6AB6	4.6KΩ	1.3KΩ	0Ω	1Ω	17KΩ	129KΩ	1.3KΩ	0Ω	0Ω
V 9	6AU6	2.7Ω	0Ω	0Ω	1Ω	12.2KΩ	12.2KΩ	150Ω	0Ω	0Ω
V 10	6AL5	Inf.	Inf.	1Ω	0Ω	0Ω	0Ω	12KΩ	0Ω	0Ω
V 11	6AV6	10 Meg.	0Ω	0Ω	1Ω	150KΩ	150KΩ	1220KΩ	0Ω	0Ω
V 12	6K6GT	Inf.	0Ω	12KΩ	11.6KΩ	470KΩ	Inf.	1Ω	1.8KΩ	0Ω
V 13	12AU7	133KΩ	125KΩ	980KΩ	1Ω	10KΩ	150KΩ	170KΩ	1 Meg.	0Ω
V 14	12AU7	124KΩ	1 Meg.	1.6KΩ	1Ω	30KΩ	30KΩ	5.1KΩ	0Ω	0Ω
V 15	6SN7GT	3.9 Meg.	1500Ω	7.4KΩ	1.6 Meg.	1470KΩ	140KΩ	12 Meg.	1.2KΩ	0Ω
V 16	6K6GT	Inf.	0Ω	12.8KΩ	12.8KΩ	2.3 Meg.	2.3 Meg.	2KΩ	0Ω	0Ω
V 17	6AL5	940KΩ	1.5 Meg.	1Ω	0Ω	0Ω	0Ω	1.5 Meg.	0Ω	0Ω
V 18	6AU6	1.4 Meg.	0Ω	0Ω	1Ω	1500Ω	12KΩ	10KΩ	0Ω	0Ω
V 19	6SN7GT	560KΩ	12.3KΩ	11Ω	2.2 Meg.	11.1 Meg.	1.2KΩ	0Ω	1Ω	0Ω
V 20	6BG6G	Inf.	0Ω	1.5KΩ	8.3KΩ	1 Meg.	Inf.	10KΩ	19KΩ	0Ω
V 21	6W4GT	Inf.	Inf.	600KΩ	Inf.	400Ω	Inf.	600KΩ	800KΩ	0Ω
V 22	1B3GT	Inf.	Inf.	Inf.	Inf.	Inf.	Inf.	Inf.	Inf.	0Ω
V 23	5U4G	Inf.	10KΩ	Inf.	1.3KΩ	Inf.	1.3KΩ	Inf.	10KΩ	0Ω
V 24	1B0-AR	0Ω	1.2KΩ	100KΩ	17KΩ	1Ω	1.3KΩ	Inf.	10KΩ	0Ω

FOCUS CONTROL SET FULLY COUNTERCLOCKWISE.
† MEASURED FROM PIN 2 OF V21.
‡ MEASURED FROM PIN 3 OF V21.

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 panel controls set at minimum.
6. Where readings may vary according to the setting of the service controls, both minimum and maximum readings are given.

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.

CAPEHART MODELS 323M, 324M,
325F, 3011B, M, 3012B, M



TUBE PLACEMENT CHART

ALIGNMENT INSTRUCTIONS

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

To eliminate the high voltage shock hazard remove the horizontal output tube V20 from its socket.

VIDEO IF ALIGNMENT

Remove the local oscillator tube V13 from its socket to eliminate erroneous indications.
Remove the AGC detector tube V13 and connect the negative terminal of a 3 volt battery to pin 6 of 12AU7 (V13) and positive terminal to chassis.
It should be noted that the common lead of the VTVM is at approximately -90 volts potential with respect to chassis. Avoid touching or grounding the VTVM case.

DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	CHANNEL	CONNECT VTVM	ADJUST	REMARKS
Direct	High side to ungrounded tube shield floating over mixer tube (V2). Low side to chassis.	26.1MC (Unmod.)	Any	DC Probe to Point \diamond Common to Point \diamond	A1	Adjust for maximum deflection.
Direct	"	25.9MC	"	"	A2	"
Direct	"	23.9MC	"	"	A3	"
Direct	"	23.5MC	"	"	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.

DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
Direct	High side to ungrounded tube shield floating over mixer tube (V2). Low side to chassis.	24MC (10MC SWP)	21.75MC 23.25MC 26.25MC	Any	Vert. Amp. to Point \diamond Low side to chassis.		Check for response curve similar to figure 1. The 26.25MC and 23.25MC should be at 50% of response. If necessary, SLIGHTLY retouch A1 thru A4 for proper response.

SOUND IF ALIGNMENT USING AM SIGNAL GENERATOR AND VTVM

Connect two matched 100K Ω (\pm 1%) resistors in series from point C to chassis. The junction of these two resistors is alignment point E as shown on the schematic.

DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	CHANNEL	CONNECT VTVM	ADJUST	REMARKS
1500MMF	High side to pin 1 (Grid) of 6AH6 (V8). Low side to chassis.	4.5MC (Unmod.)	Any	DC Probe to Point \diamond Common to chassis.	A5, A6 A7	Adjust for maximum deflection.
1500MMF	"	"	"	DC Probe to Point \diamond Common to Point \diamond	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
1500MMF	High side to pin 1 (Grid) of 6AH6 (V8). Low side to chassis.	4.5MC (450KC Sweep)	4.5MC	Any	Vert. Amp. to Point \diamond Low side to chassis.	A5, A6, A7	Disconnect stabilizer capacitor C4. Adjust for maximum amplitude and symmetry as per figure 2.
1500MMF	"	"	"	"	Vert. Amp. to Point \diamond Low side to chassis.	A8	Reconnect capacitor C4. Adjust A8 to place 4.5MC at center of crossover lines as per figure 3. SLIGHTLY retouch A7 for maximum and straightness of crossover lines.

OSCILLATOR ALIGNMENT

Replace the local oscillator tube (V13) in its socket.
Connect the 3 volt battery as in Video IF Alignment.
The sweep generator output lead should be terminated with its characteristic impedance, usually 50 ohms.
Set the fine tuning control to the mid-position of its range.

DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
Two 120 Ω carbon res.	Across antenna terminals with 120 Ω in each lead.	213MC (10MC SWP)	211.25MC 215.75MC	13	Vert. Amp. to Point \diamond Low side to chassis.	A9	Set channel 13 oscillator slug (A10) to center of its range. Adjust A9 to place video marker at 50% of response as shown in figure 4.
"	"	207MC (10MC SWP)	205.25MC	12	"	A11	Adjust for response curve similar to figure 4 with video marker at 50% of response, and sound marker as shown. If any individual channel adjustment does not have sufficient range a compromise adjustment of A9 will be required. If A9 is adjusted, the oscillator adjustments must be repeated.
		201MC (10MC SWP)	203.75MC	11	"	A12	
		195MC (10MC SWP)	193.25MC	10	"	A13	
		189MC (10MC SWP)	197.75MC	9	"	A14	
		183MC (10MC SWP)	187.25MC	8	"	A15	
		177MC (10MC SWP)	181.25MC	7	"	A16	
		171MC (10MC SWP)	175.25MC	6	"	A17	
		165MC (10MC SWP)	169.25MC	5	"	A18	
		159MC (10MC SWP)	163.25MC	4	"	A19	
		153MC (10MC SWP)	157.25MC	3	"	A20	
		147MC (10MC SWP)	151.25MC	2	"	A21	
		141MC (10MC SWP)	145.25MC				
		135MC (10MC SWP)	139.25MC				
		129MC (10MC SWP)	133.25MC				
		123MC (10MC SWP)	127.25MC				
		117MC (10MC SWP)	121.25MC				

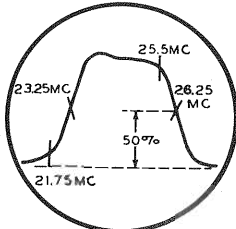


FIG. 1

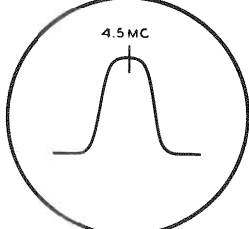


FIG. 2

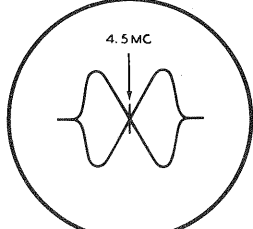


FIG. 3

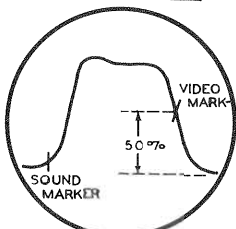
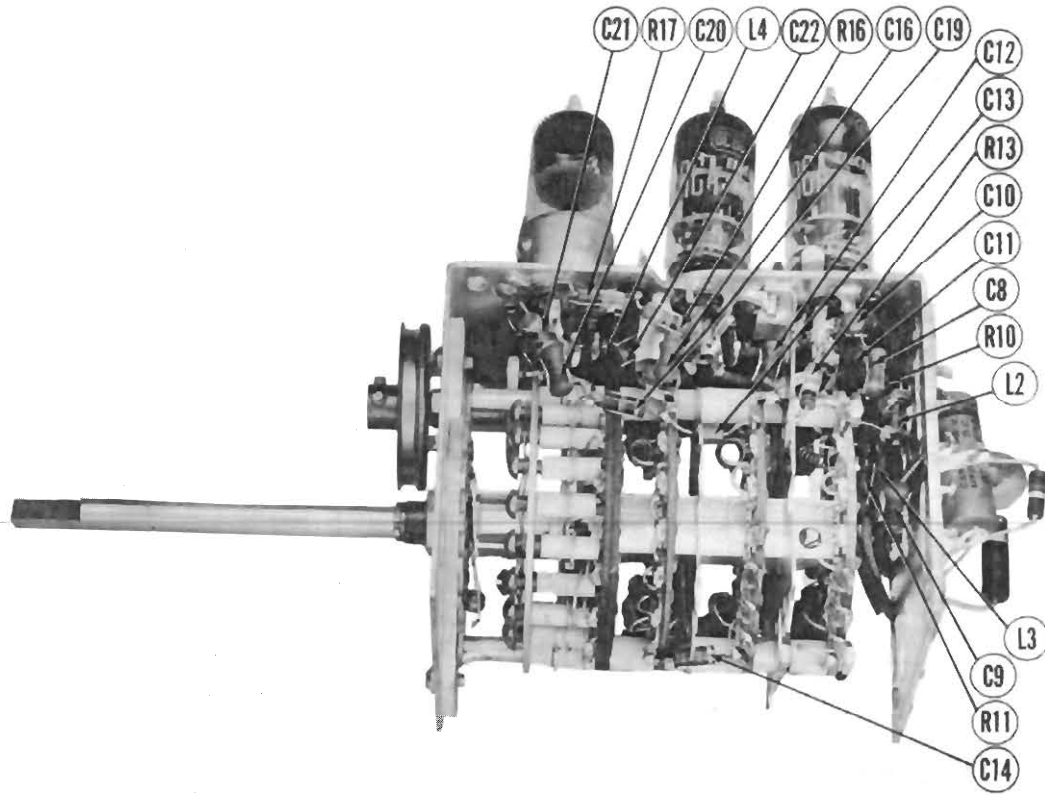
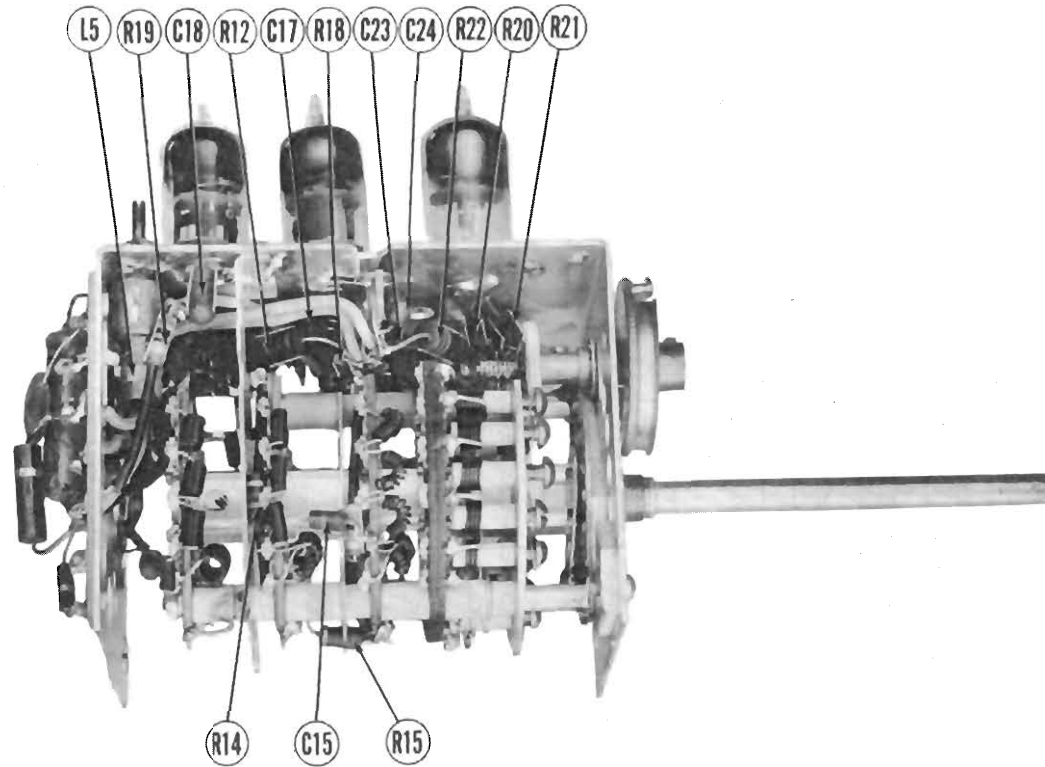


FIG. 4



RF TUNER-RIGHT SIDE

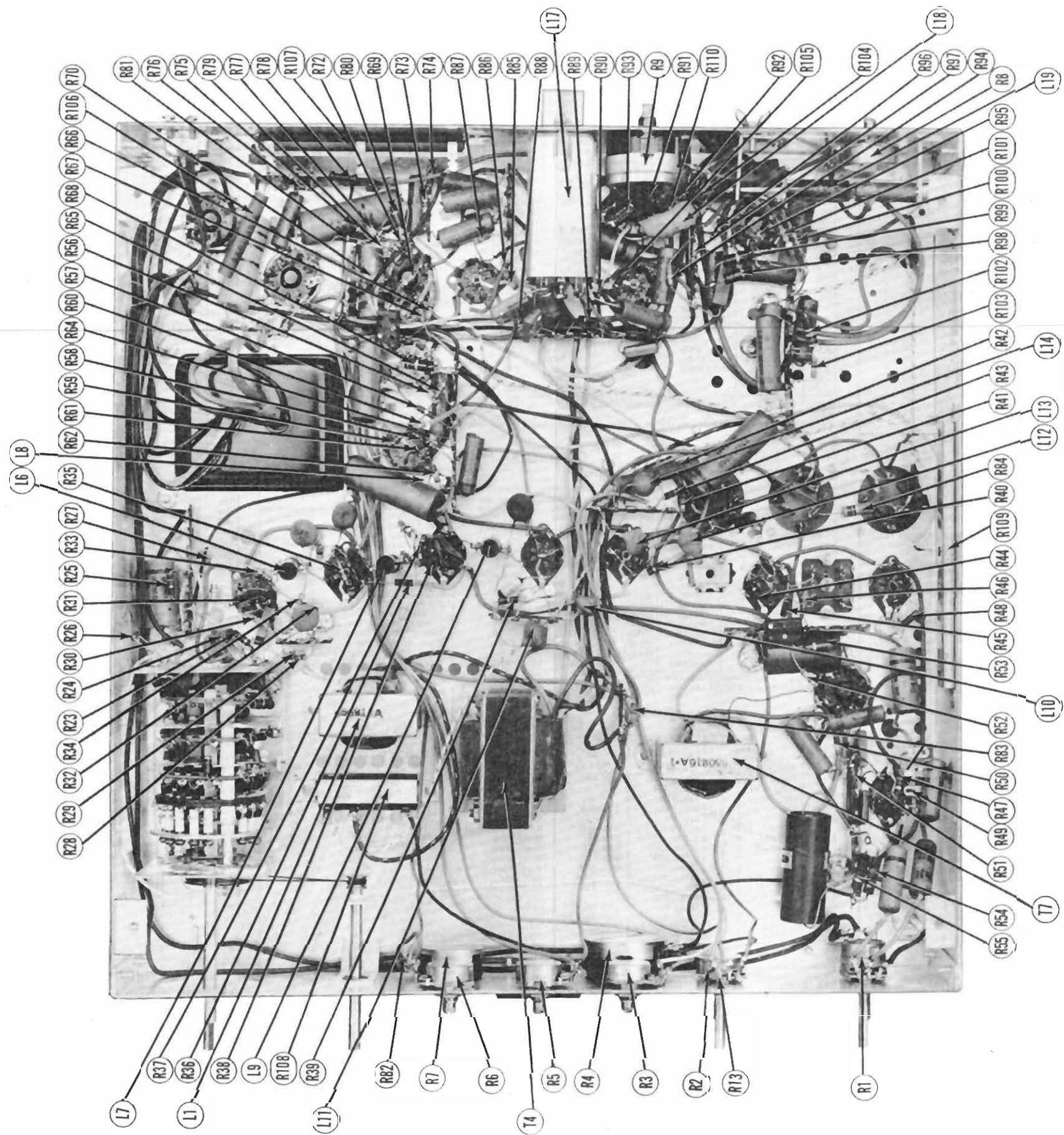


RF TUNER-LEFT SIDE

CAPEHART MODELS 323M, 324M,
325F, 3011B, M, 3012B, M

CAPEHART MODELS 32 3M, 324M
325F, 3011B, M, 3012B, M

CHASSIS BOTTOM VIEW-WEB RESISTOR AND INDUCTOR IDENTIFICATION



TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA			RMA BASE TYPE	NOTES
		CAPEHART PART No.	STANDARD REPLACEMENT			
V1	RF Amp.	6CB6	6CB6	6CK		
V2	Mixer	6CB6	6CB6	6CK		
V3	Oscillator	6AB4	6AB4	5CE		
V4	1st Video IF	6AG5	6AG5	7BD		
V5	2nd Video IF	6AG5	6AG5	7BD		
V6	3rd Video IF	6AG5	6AG5	7BD		
V7	Video Det. -Sync. Clamper	6AL5	6AL5	6BT		
V8	Video Amp.	6AH6	6AH6	7EK		
V9	Sound IF Amp.	6AU6	6AU6	7BK		
V10	Ratio Det.	6AL5	6AL5	6BT		
V11	AF Amp. -AGC Clamper	6AV6	6AV6	7BT		
V12	Audio Output	6K6GT	6K6GT	7S		
V13	AGC Det. -Pre-AGC	12AU7	12AU7	9A		
V14	AGC Sep. -AGC Amp. -Sync. Amp.	12AU7	12AU7	9A		
V15	Sync. Clipper-Vert. Mult.	6SN7GT	6SN7GT	8BD		
V16	Vert. Mult. -Output	6K6GT	6K6GT	7S		
V17	Hor. Sync. Disc.	6AL5	6AL5	6BT		
V18	Horiz. AFC	6AU6	6AU6	7BK		
V19	Horiz. Osc. -Horiz. Disc.	6SN7GT	6SN7GT	8BD		
V20	Hor. Output	6BG6G	6BG6G	5BT		
V21	Damper	6W4GT	6W4GT	4CG		
V22	BY Rect.	1B3GT	1B3GT	3C		
V23	LV Rect.	5U4G	5U4G	5T		
V24A	Picture Tube	16RPA	16RPA	12D		
B	Picture Tube	16RP4	16RP4	12D		
C	Picture Tube	16TP4	16TP4	12D		
E	Picture Tube	16KP4	16KP4	12D		
F	Picture Tube	16GP4	16GP4	12D		

CAPACITORS

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

ITEM No.	RATING	REPLACEMENT DATA			IDENTIFICATION CODES AND INSTALLATION NOTES
		CAPEHART PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	
C1A	40 475	750090B-12	AFH882J	UPT44150	TVL-3787
B	35 475				
C	10 475				
C2A	45 475	750090B-14	AFH88J	UPT44150	TVL-2830
B	40 475				
C3A	40 475	750090B-13	AFH88J8F10 D16B	UPT450-425V10 BR5015A	
B	40 250				
C	50 150				
D	80 50				
C4	4 50	650228A-4	PRS150/4	BBR4-50T	TVA-1303
C5	20 450	650228A-2	PRS450/20	BR2045A	TVA-1709
C6	20 150	650228A-1	PRS250/20	BR2015A	TVA-1410
C7	10 50	650228A-3	PRS150/10	BR105A	TVA-1304
C8	25 680				
C9	680				
C10	680				
C11	680				
C12	25				
C13	.25				
C14	1.5				
C15	.5				
C16	15				
C17	5000				
C18	680				
C19	1.5				
C20	680				
C21	3				
C22	680				
C23	680				
C24	680				
C25	.01				
C26	1500				
C27	270				
C28	3				
C29	1500				
C30	1500				
C31	1500				
C32	1500				
C33	1500				
C34	1500				
C35	1500				
C36	4				
C37	1500				
C38	5000				
C39	.1				
C40	5000				
C41	5000				
C42	500				
C43	.001				
C44	.01				
C45	.01				
C46	.01				
C47	470				
C48	.01				
C49	.0022				
C50	.1				
C51	.01				

PARTS LIST AND DESCRIPTIONS

CAPACITORS (CONT.)

ITEM No.	RATING	REPLACEMENT DATA			IDENTIFICATION CODES AND INSTALLATION NOTES
		CAPEHART PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	
C52	.001	2248A-1020	P688-001	D6-102	PTE6D1
C53	.047	2248A-4730	P688-047	D6-503	PTE6S5
C54	100	25188	1468-0001	D6-101	5W5T1
C55	.0047	2248A-4720	P688-0047	D6-472	PTE6D5
C56	.0047	2248A-4720	P688-0047	D6-472	PTE6D5
C57	.0047	2248A-4720	P688-0047	D6-472	PTE6D5
C58	.0047	2248A-4720	P688-0047	D6-472	PTE6D5
C59	.001	2248A-1020	P688-001	D6-102	PTE6D1
C60	.0047	2248A-4720	P688-0047	D6-472	PTE6D5
C61	.033	2248A-3330	P688-033	D6-333	PTE6S3
C62	.1	2248A-1040	P688-1	DF-104	PTE6P1
C63	470	1500	650182A-7		
C64	100	500	25188	D6-101	5W5T1
C65	5000	500	2247A-4725	D6-503	1467-005
C66	.015	400	2247A-1535	D6-503	PTE6S15
C67	.0047	2248A-4720	P688-0047	D6-472	PTE6D5
C68	.047	2248A-4730	P688-047	DF-503	PTE6S5
C69	100	500	25188	D6-101	5W5T1
C70	.0047	2248A-4720	P688-0047	D6-472	PTE6D5
C71	.01	2248A-1030	P688-01	D6-103	PTE6S1
C72	.047	2248A-4730	P688-047	DF-503	PTE6S5
C73	680	500	25503	D6-681	1W5T7
C74	.001	2248A-1020	P688-001	D6-102	PTE6D1
C75	.047	2248A-4730	P688-047	DF-503	PTE6S5
C76	.01	2248A-1030	P688-01	D6-103	PTE6S1
C77	.01	2248A-1030	P688-01	D6-103	PTE6S1
C78	.022	600	2248A-2230	P688-022	DF-203
C79	.022	600	2248A-2230	P688-022	DF-203
C80	500	20000	450153B-2	HV20C	TV3-502
C81	.22	200	2246A-2240	P488-22	
C82	30	6000			
C83	.1	200	P288-1	DF-104	PTE4P1

* Some models use .0022MMF in this application. Mgr's Part No. 2248A-2220.
† Not used in all models.
‡ Later production has C82 connected from plate of 6BG6G and chassis to increase width.

CONTROLS

ITEM No.	RATING	REPLACEMENT DATA			INSTALLATION NOTES
		CAPEHART PART No.	IRC PART No.	CLAROSTAT PART No.	
R1A	1 Meg.	450896B-1	Q13-137	AG-63-Z	Volume control
B	Shaft	Not Req.	Not Req.	FS-3	Attach to R1A per instructions
C	Switch	Not Req.	Not Req.	SWB	Attach to R1A per instructions
R2A	500KΩ	450896B-1	Q11-123	AG-44-S	Brightness control
B	Shaft	Not Req.	Not Req.	FS-3	Attach to R2A per instructions
R3A	500KΩ	450897A-1	Q11-133	AG-58-S	AGC control
B	Shaft	Not Req.	Not Req.	FKS-1/4	Attach to R3A per instructions
R4	4500Ω	450891A-1	RQ	RTV-106	Focus control-Wire Wound
R5A	1.5 Meg.	450892A-1	Q11-138	AG-83-S	Height control
B	Shaft	Not Req.	Not Req.	FKS-1/4	Attach to R5A per instructions
R6A	1.5 Meg.	450892A-1†	Q11-138	AG-83-S	Vert. hold control
B	Shaft	Not Req.	Not Req.	FKS-1/4	Attach to R6A per instructions
R7	5000Ω	450893A-1	W-5000 *	VK-135	Vert. linearity control-Wire Wound
R8A	1 Meg.	450894A-1	Q11-137	AM-61-S	Horiz. drive control
B	Shaft	Not Req.	Not Req.	FKS-1/4	Attach to R8A per instructions
R9	250Ω	450896A-1	RTV-60	SVP-984	Width control-Wire Wound

* File slot in end of shaft to duplicate original.
† Some models use a 500KΩ control. Part No. 450897A-1.

RESISTORS

ITEM No.	RATING	REPLACEMENT DATA			IDENTIFICATION CODES
		CAPEHART PART No.	IRC PART No.		
R10	1000Ω	3229A-102	BTS-1000	RF Amp. Grid	
R11	33KΩ 20%	3229A-333		RF Amp. Screen	
R12	10KΩ 20%	3232A-103		RF Amp. Plate Load	
R13	100KΩ	3229A-104	BTS-100K	Bleeder	
R14	18KΩ	3229A-183		RF Coil Shunt	
R15	4700Ω	3229A-472	BTS-4700	RF Coil Shunt	
R16	82KΩ	3229A-823	BTS-82K	Mixer Grid	
R17	1 Meg. 20%	3229A-105	BTS-1 Meg.	Mixer Grid	
R18	82KΩ	3229A-823	BTS-82K	Mixer Screen	
R19	1000Ω	3229A-102	BTS-1000	Mixer Plate Decoupling	
R20	22KΩ 20%	3229A-223		Osc. Grid	
R21	470Ω 20%	3229A-471	BTS-470	Osc. Cathode	
R22	6800Ω 20%	3229A-682		Osc. Plate Load	
R23	150Ω	3229A-151	BTS-150	Decoupling	
R24	2200Ω	3232A-222	BTA-2200	Voltage Divider	
R25	2.4 Meg. 5%	3228A-245		Voltage Divider	
R26	10KΩ	3229A-103		AGC Network	
R27	120KΩ 5%	3228A-124	BTS-120K-5%	AGC Network	
R28	24KΩ 5%	3228A-243		AGC Network	
R29	8200Ω	3229A-822	BTS-8200	AGC Network	
R30	15KΩ 20%	3229A-153	BTS-15K	1st Video IF Grid	
R31	15Ω	3229A-150		1st Video IF Cathode	
R32	100Ω	3229A-101	BTS-100	1st Video IF Decoupling	
R33	5600Ω	3229A-562	BTS-5600	2nd Video IF Transformer Shunt	
R34	470Ω	3229A-471	BTS-470	AGC Network	
R35	68Ω	3229A-680		2nd Video IF Cathode	
R36	100Ω	3229A-101	BTS-100	Decoupling	
R37	8200Ω	3229A-822	BTS-8200	3rd Video IF Transformer Shunt	
R38	150Ω	3229A-151	BTS-150	3rd Video IF Cathode	
R39	3300Ω	3229A-332	BTS-3300	Video Det. Diode Load	
R40	100	3229A-100	BW-1-10	Video Amp. Cathode	
R41	27KΩ	3229A-273	BTS-27K	Video Amp. Screen	
R42	5000Ω	650101A-8	1 3/4A-5000	Video Amp. Plate Load-Wire Wound	
R43	27KΩ	3229A-273	BTS-27K	Voltage Divider	
R44	150Ω	3229A-151	BTS-150	Sound IF Cathode	
R45	220Ω	3229A-221	BTS-220	Sound IF Decoupling	
R46	120Ω 20%	3229A-121	BTS-120	Balancing	

RESISTORS (CONT.)

ITEM No.	RATING	REPLACEMENT DATA			IDENTIFICATION CODES
		CAPEHART PART No.	IRC PART No.		
R47	68KΩ	3229A-683	BTS-68K	De-emphasis	
R48	12KΩ	3229A-123		Ratio Det. Diode Load	
R49	10 Meg.	3229A-106	BTS-10 Meg.	AF Amp. Grid	
R50	220KΩ	3229A-224	BTS-220K	AF Amp. Plate Load	
R51	1.5 Meg.	3229A-155	BTS-1.5 Meg.	Feedback	
R52	470KΩ	3229A-474	BTS-470K	Output Grid	
R53	560Ω	3232A-561	BTA-560	Output Cathode	
R54	1800Ω	3232A-182	BTA-1800	Output Decoupling	
R55	2200Ω	3232A-222	BTA-2200	Output Decoupling	
R56	470KΩ	3229A-474	BTS-470K	AGC Network	
R57	4700Ω	3229A-472	BTS-4700	AGC Amp. Cathode	
R58	18KΩ	3229A-183	BTS-18K	Isolation	
R59	47KΩ	3229A-473	BTS-47K	AGC Det. Cathode	
R60	1 Meg.	3229A-105	BTS-1 Meg.	AGC Det. Plate Load	
R61	27KΩ	3229A-273	BTS-27K	Voltage Divider	
R62	330KΩ	3229A-334	BTS-330K	Voltage Divider	
R63	150KΩ 5%	3228A-154	BTS-150K-5%	AGC Det. Plate Decoupling	
R64	27KΩ	3229A-273	BTS-27K	Sync. Sep. Plate Decoupling-See Note 1	
R65	33KΩ	3229A-333	BTS-33K	Sync. Amp. Grid	
R66	1 Meg.	3229A-105	BTS-1 Meg.	Sync. Amp. Cathode	
R67	330Ω	3229A-331	BTS-330	Sync. Amp. Plate Load -See Note 2	
R68	22KΩ	3232A-223	BTA-22K	Sync. Clipper Grid	
R69	3.9 Meg.	3929A-395	BTS-3.9 Meg.	Sync. Clipper Cathode	
R70	6800Ω	3232A-682	BTA-6800	Sync. Clipper Plate Load-See Note 3	
R71	2200Ω	3229A-222	BTS-2200	Integrator Network-See Note 4	
R72	47KΩ	3229A-473	BTS-47K	Integrator Network	