

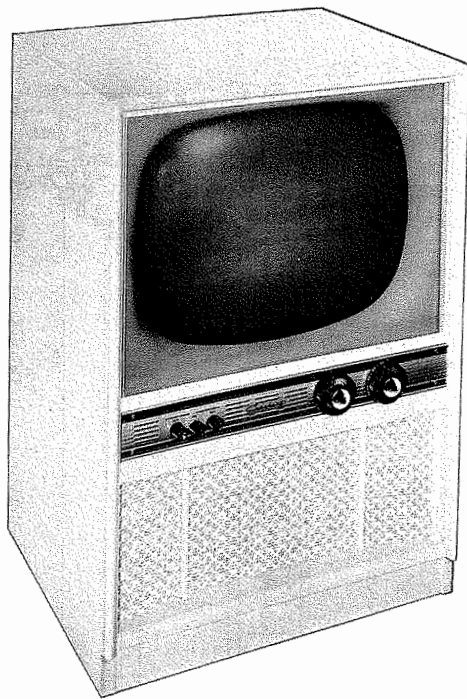


CAPEHART
CHASSIS CX-38S SERIES

DISASSEMBLY INSTRUCTIONS

CHASSIS REMOVAL

1. Remove 9 push-on type control knobs from front panel of cabinet.
2. Remove 7 wood screws and 1 metal screw. Remove rear cover.
3. Disconnect speaker plugs at speakers.
4. Loosen 2 wood screws holding antenna terminal bracket and remove.
5. Remove 2 wood screws from 2 top picture tube braces.
6. Remove 4 chassis bolts. Remove chassis.
7. Remove 8 speaker nuts. Remove 3 speakers.



MODEL CHASSIS
UC216BD-5..... CX-38S

SERVICING IN THE FIELD

TUNER OSCILLATOR ADJUSTMENTS

For touch-up adjustment of VHF tuner oscillator adjustments, it is necessary to remove the chassis from the cabinet. (See disassembly instructions).

PICTURE TUBE SAFETY GLASS CLEANING

Remove 4 wood screws holding wood 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.

SPECIAL ADJUSTMENTS

Picture Lock Adjustment :

Adjustment of the picture lock control is located on the rear panel of the chassis.
Tune in a TV station, preferably strongest in the area. Rotate the picture lock control (R7) to its maximum clockwise position. While observing the picture slowly rotate R7 counter clockwise until the picture starts to shift to the left. Rotate R7 back clockwise to the position just prior to the point where the picture starts to shift to the left. In extreme noisy and weak signal areas,

adjustment of R7 should be made along with other sync adjustments for stable horizontal and vertical sync.

HORIZONTAL OSCILLATOR FIELD ADJUSTMENT

Remove the rear cover and supply power the set. Set the horizontal hold control to the center of its range and adjust the horizontal oscillator ringing slug (L21) until the picture synchronizes horizontally.

SOUND IF DETECTOR BUZZ ADJUSTMENT

To eliminate sound IF detector buzz, adjust the noise rejection control (R6) located on the rear panel of the chassis for MINIMUM buzz.

FUSES

One fuse is used for LV power supply protection. (For location see tube placement chart).

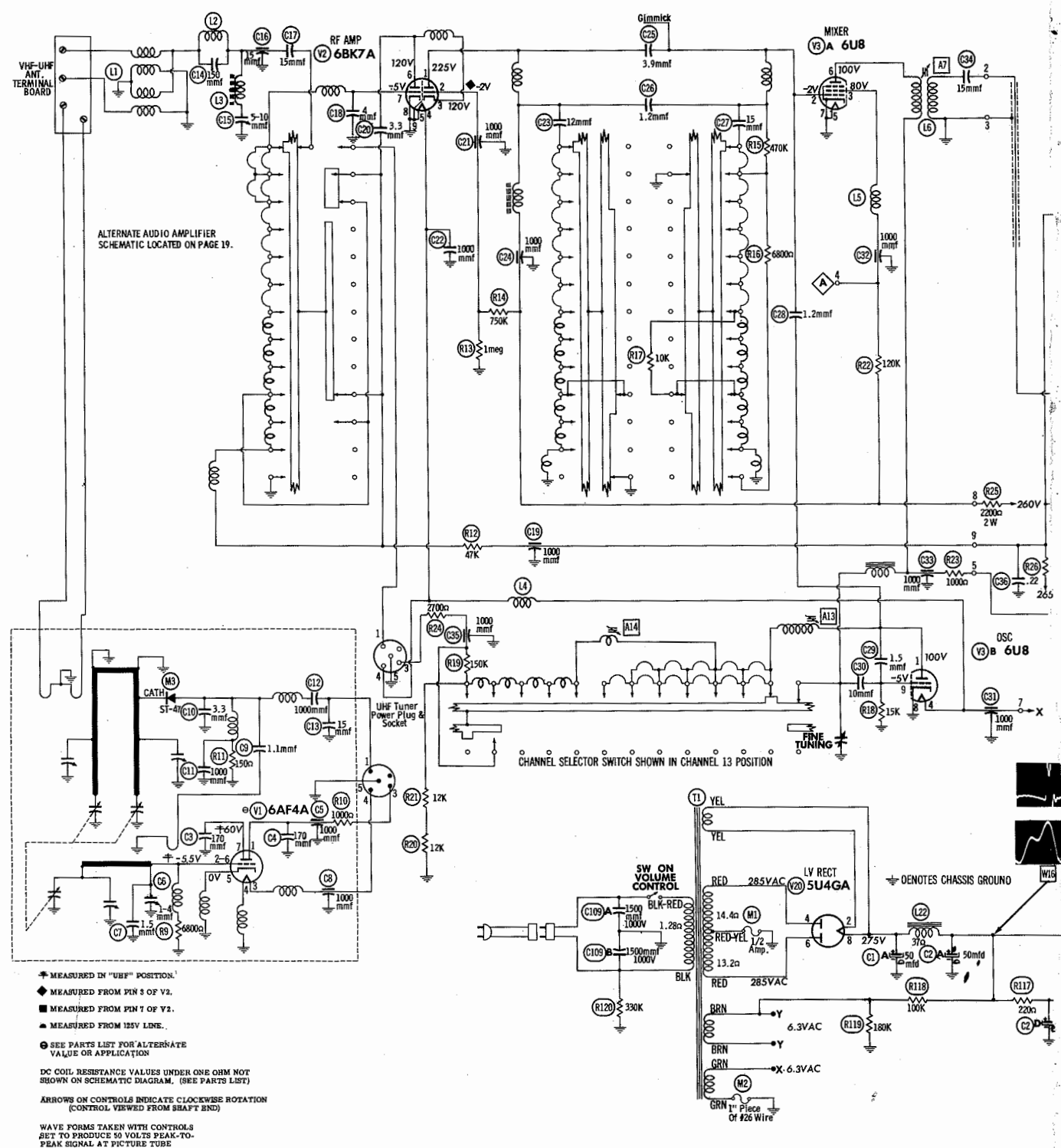
CENTERING

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.

CAPEHART
CHASSIS CX-38S SERIES

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

"The listing of any available replacement part herein does not constitute in any case a recommendation, warranty or guaranty by Howard W. Sams & Co., Inc., as to the quality and suitability of such replacement part. The numbers of these parts have been compiled from information furnished to Howard W. Sams & Co., Inc., by the manufacturers of the particular type of replacement part listed."
"Reproduction or use, without express permission, of editorial or pictorial content, in any manner, is prohibited. No patent liability is assumed with respect to the use of the information contained herein. Copyright 1956 by Howard W. Sams & Co., Inc., Indianapolis 5, Indiana, U. S. of America. Copyright under international Copyright Union. All rights reserved under Inter-American Copyright Union (1910) by Howard W. Sams & Co., Inc." Printed in U. S. of America



A PHOTOFAC STANDARD NOTATION SCHEMATIC
© Howard W. Sams & Co., Inc. 1956



A PHOTOFACT STANDARD NOTATION SCHEMATIC
© Howard W. Sams & Co., Inc. 1956

ALTERNATE AUDIO AMPLIFIER CIRCUIT SCHEMATIC



HORIZONTAL SWEEP CIRCUIT ADJUSTMENTS

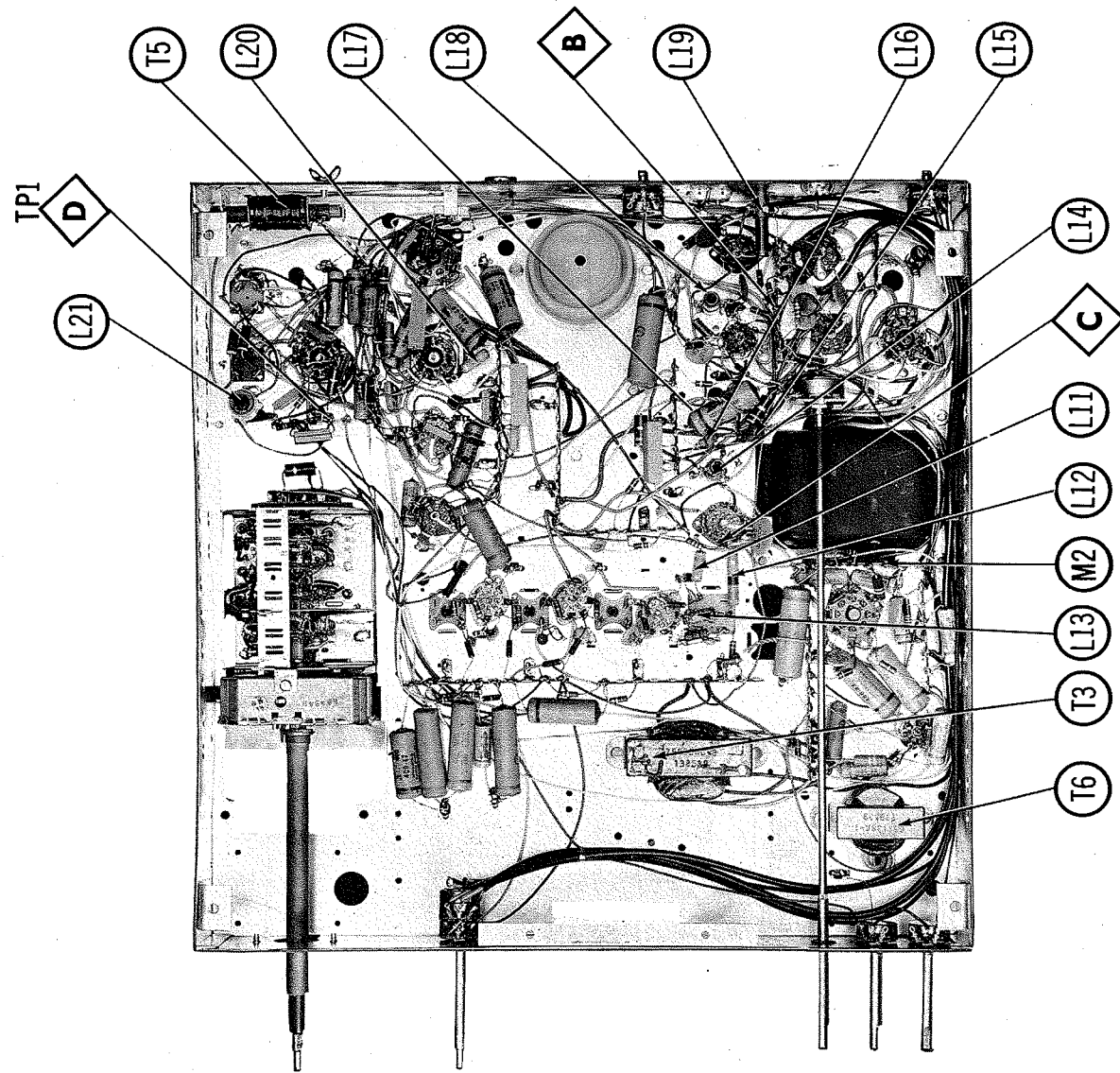
Turn the set on and tune in a TV station, preferably with a test pattern.

1. Connect a .01MFD 600 volt capacitor from point $\textcircled{4}$ to chassis.
2. Adjust the horizontal hold control until the picture synchronizes horizontally. Set the horizontal hold control so that approximately 1/4" appears between the right edge of the picture and the right edge of the raster. Turn the contrast control counter clockwise and move the picture off center to obtain this condition.
3. Remove the capacitor and adjust the horizontal oscillator ringing

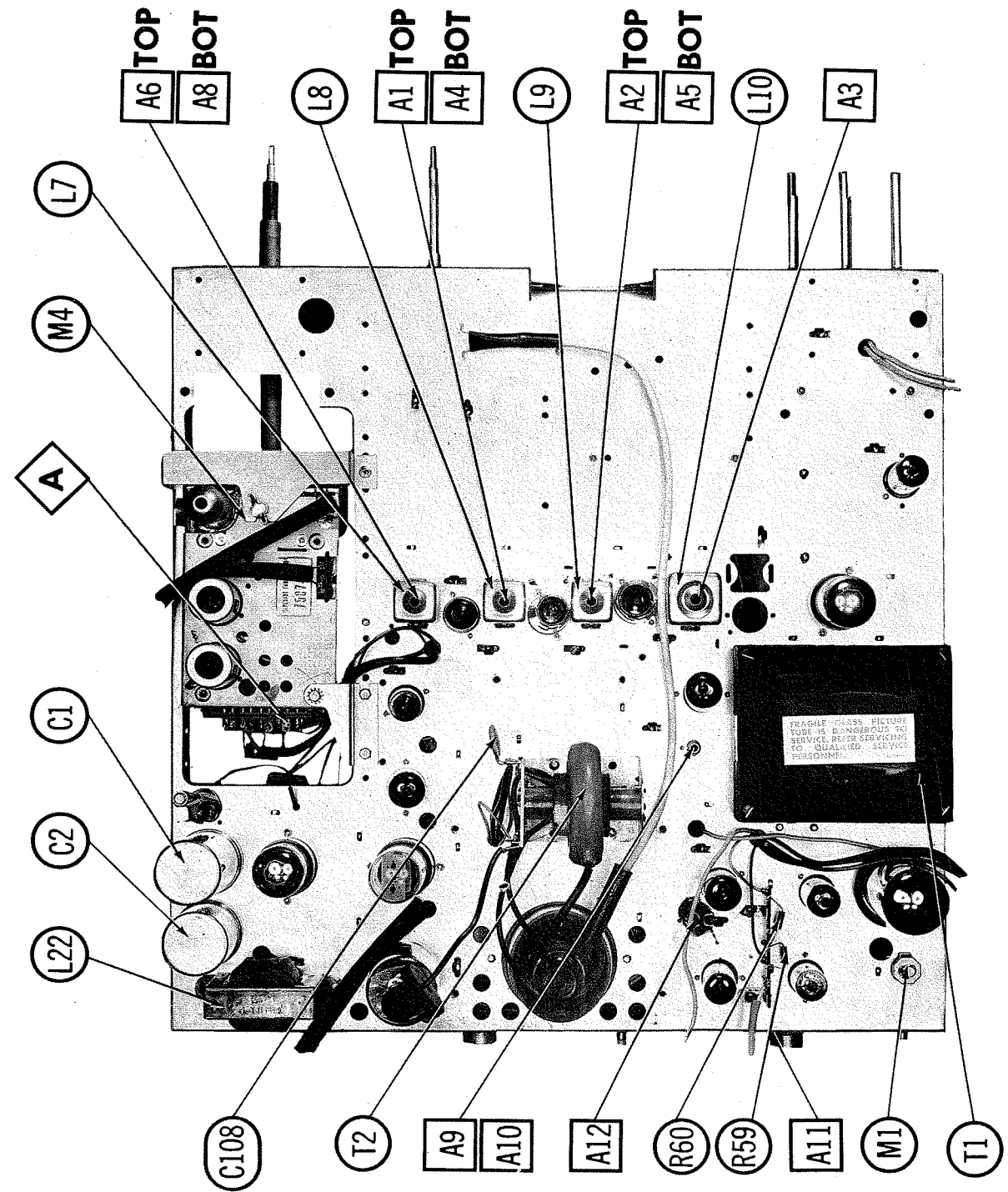
coil (B1) to again provide approximately 1/4" between the right edge of the raster and the right edge of the picture.

4. Switch off channel and back again. Picture should remain in sync. If necessary, repeat steps 1 thru 4 until proper horizontal sync is obtained. Recenter picture to normal position.

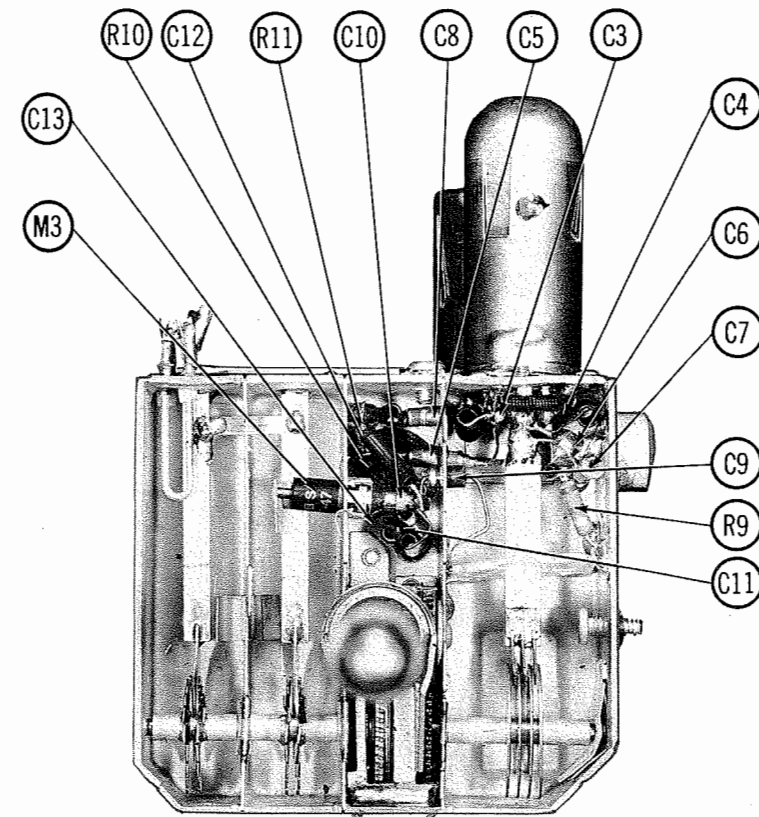
Adjust the horizontal drive trimmer (B2) counter clockwise as far as possible without the presence of white vertical lines or compression near the center of the picture. Adjust the horizontal width slug (B3) for a picture slightly wider than necessary to fill the picture mask horizontally.



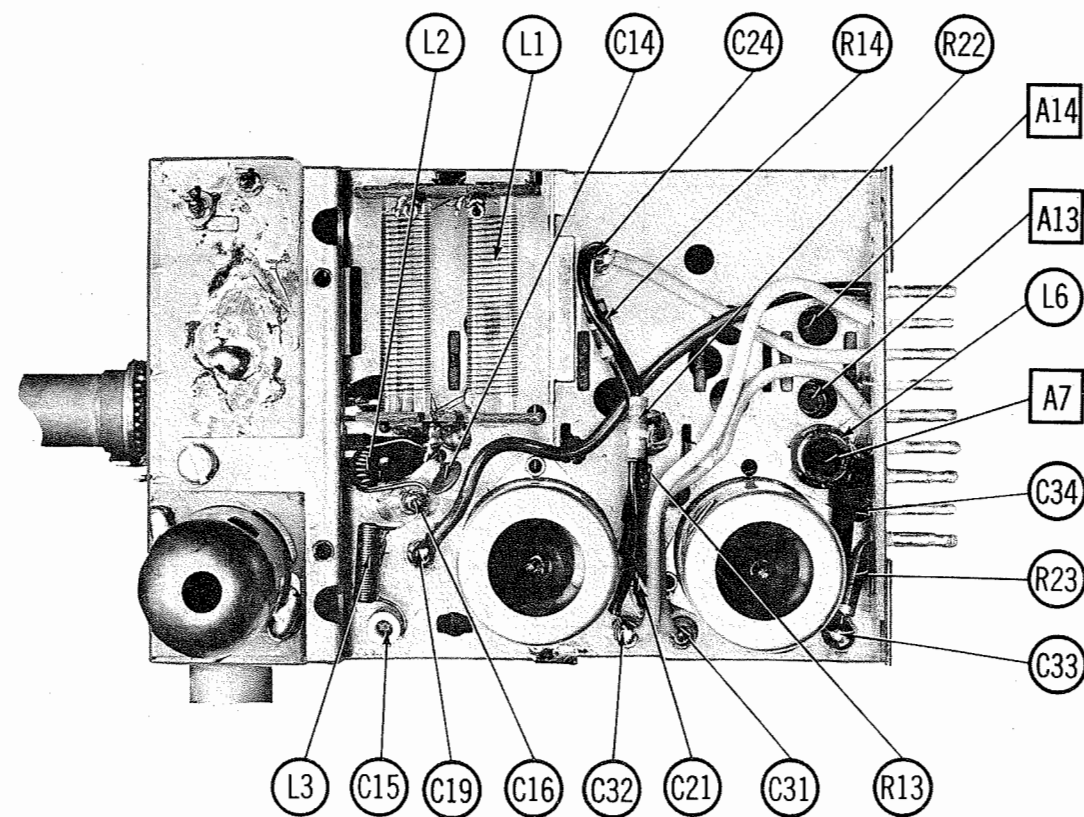
CHASSIS BOTTOM VIEW-TRANS., INDUCTOR AND ALIGNMENT IDENTIFICATION



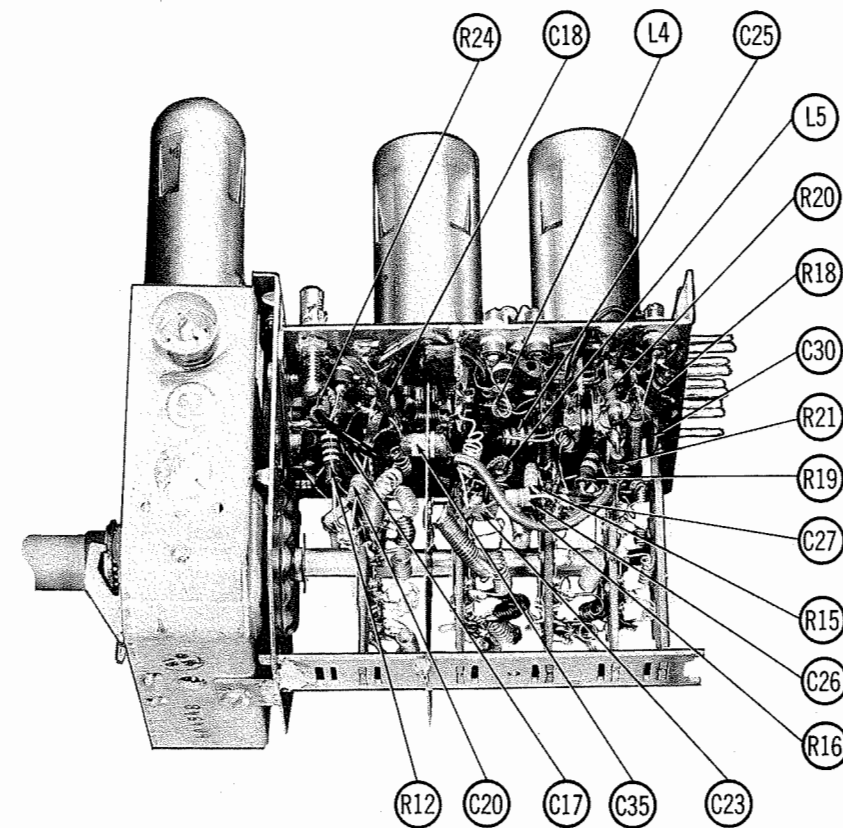
CAPEHART CHASSIS
CX-385 SERIES
WEIA TOP VIEW



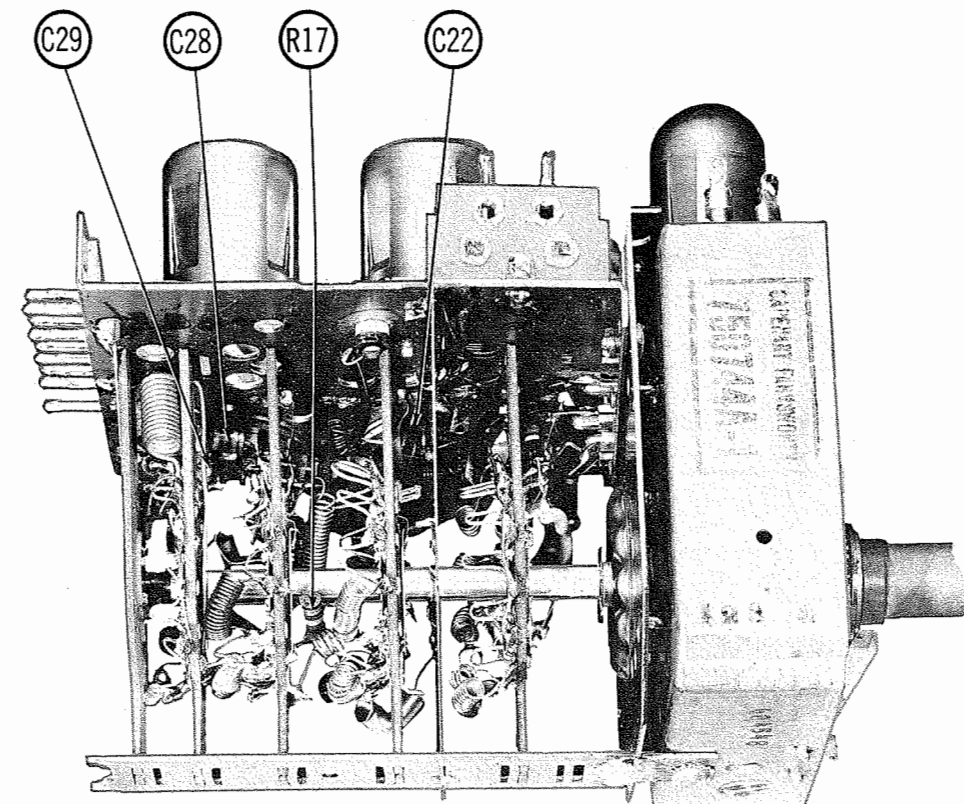
UHF TUNER FRONT VIEW



RF TUNER TOP VIEW



RF TUNER-RIGHT SIDE



RF TUNER-LEFT SIDE

PARTS LIST AND DESCRIPTIONS (Continued)
FUSES

ITEM No.	TYPE	RATING	REPLACEMENT DATA					
			CAPEHART PART No.		LITTELFUSE PART No.		BUSS PART No.	
			FUSE	HOLDER	FUSE	HOLDER	FUSE	HOLDER
M1	N	1A 125V	651137A-1		333.500 (N $\frac{1}{2}$ A)	348009	N $\frac{1}{2}$	HN 3/10-1/2
M2	1" piece #26 wire							

CRYSTAL DIODES

ITEM No.	ORIG. TYPE	REPLACEMENT DATA		NOTES
		CAPEHART PART No.	SYLVANIA PART No.	
M3	ST-47		1N82 or 1N82A	UHF Mixer (clip in). Used in models with suffix -5.

MISCELLANEOUS

ITEM No.	PART NAME	CAPEHART PART No.	NOTES
M4	Tuner	750745A-G1	VHF-UHF Combination - Used in models with suffix -5. Combination tuner consists of VHF tuner (part #850374A-1) & UHF tuner (part #750744A-1). VHF tuner only used in models with suffix -4. Part of deflection yoke (T4) rear cover.
M5	Centering Device	750724A-6	
M6	Ion Trap	450527B-1	
B2	Trimmer Cap.	651120A-1	Horiz. Drive (40-370MMF)
	Knob	651115A-1	Brightness
	Knob	651117B-1	VHF Fine Tuning & On-Off-Volume
	Knob	651118B-1	VHF Channel Selector (VHF models only)
	Knob	651119A-1	VHF Channel Selector (VHF-UHF models)
	Knob	651118A-1	UHF Dial
	Knob	651174A-1	UHF Tuning
	Safety Glass	850223A-14	Secondary - 3T & 11C models only.
	Mask	950319B-4	
	Mask	950341A-1	Perforated Decorative - 6T & 16C models only.

PARTS LIST AND DESCRIPTIONS
TUBES (GENERAL ELECTRIC, SYLVANIA)

ITEM No.	USE	TYPE	NOTES	ITEM No.	USE	TYPE	NOTES
V1	UHF Osc.	6AF4A	Note 1	V11	Audio Output	6AQ5	Note 2
V2	RF Amp.	6BK7A		V12	Sync Sep.	6CS6	
V3	Mixer-Osc.	6U8		V13	Sync Phase Inv. -		
V4	1st Video IF Amp.	6BZ6		V14	Horiz. AFC	12AU7	
V5	2nd Video IF Amp.	6BZ6		V15	Vert. Mult.	6SN7GTB	
V6	3rd Video IF Amp. -			V16	Vert. Output	6AQ5	
V7	Video Det.	6AM8		V17	Horiz. Mult.	6SN7GTB	
V8	Video Output	12BY7A		V18	Horiz. Output	6DQ6	
V9	AGC Keying -	6U8		V19	Damper	6AX4GT	
V10	Sound IF Amp.	6BN6		V20	HV Rectifier	1B3GT	
	Audio Det.	6AV6			LV Rectifier	5U4GA	
	AF Amp. -AGC Clamper						

Note 1. 6T4 may be used in some versions.
Note 2. 6CU6 may be used in some versions.

PICTURE TUBE

ITEM No.	CAPEHART PART No.	CBS PART No.	GENERAL ELECTRIC PART No.	SYLVANIA PART No.	NOTES
V21	21ALP4B ①	21ALP4B ①	21ALP4A/B ①	21ALP4A/B ②	① Aluminized ② Silver Screen "85"
	21ALP4 ①	21ALP4 ①	21ALP4 ①	21ATP4 ①	
	21ATP4 ①	21ATP4 ①	21ATP4 ①	21ATP4A ②	

ELECTROLYTIC CAPACITORS

ITEM No.	RATING		REPLACEMENT DATA						
	CAP.	VOLT.	CAPEHART PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SANGAMO PART No.	SPRAGUE PART No.
C1A	50	350	850352A-1	AFH4-56-05	D062	FP420.47	TMT-29	Q-415	R2178 *
B	20	350			BR4035		TD-100-50	FM-4520	
C	40	350							
D	100	50							
C2A	50	350	850352A-2	AFH4-96	D102	FP444.5	TMQ-114	Q-015	R2179 *
B	20	200				TC51		FM-2508	
C	40	250							
D	30	350							

* 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.	CAPEHART PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	MALLORY PART No.	SPRAGUE PART No.	
C3	170									
C4	170									
C5	1000			EF-001	MFT-1000				503C-D1	
C6	1-4									
C7	1.5			EF-001	MFT-1000				503C-D1	
C8	1000									
C9	1.1									
C10	3.3									
C11	1000			BPD-001	DD-102	K069	801-001	DC521	5HK-D1	
C12	1000			BPD-001	DD-102	K069	801-001	DC521	5HK-D1	
C13	15									
C14	150		471765A-1	NP0-D1150	TCZ-150	TZ34	NP0-334-151	ZT-5315	5TCC-T15	
C15	5-10		471766A-1		829-10					
C16	15									
C17	15		451759A-1	NP0-D115	TCZ-15	Z021	NP0K-150		5TCC-Q15	
C18	4		451758A-1							
C19	1000		451311A-1							
C20	3.3		650030A-5	NP0-S13.3	TCZ-3R3	TZ06	NP0A-3R3	ZT-5533	5TCCB-V33	
C21	1000		451311A-1							
C22	1000			BPD-001	DD-102	K069	801-001	DC521	5HK-D1	
C23	12		451764A-1		TCZ-12	TZ10	NP0K-120			
C24	1000									
C25	3.9									
C26	1.2		451760A-1	NP0-D115	TCZ-15	Z021	NP0K-150		5TCC-Q15	
C27	15		451759A-1							
C28	1.2		451760A-1							
C29	1.5		451762A-1							
C30	10		451063A-1							
C31	1000		451311A-1							
C32	1000		451311A-1							
C33	1000		451311A-1							
C34	15			NP0-D115	DD-102	Z021	NP0K-150		5TCC-Q15	
C35	1000		451311A-1							
C36	.22	200	2246-2240	P288N-22		CUB2P22		PT4022	2TM-P22	
C37	.22	200	2246-2240	P288N-22		CUB2P22		PT4022	2TM-P22	
C38	1000		450468A-5	BPD-001	DD-102	K069	801-001	DC521	5HK-D1	
C39	470		450468A-11	BPD-00047	DD-471	K060	811-471	UC-5347	5GA-T47	
C40A	470		650858A-1	BPD-00047	DD-471	K060	811-471	UC-5347	5GA-T47	
	470			BPD-0047	DD-471	K060	811-471	UC-5347	5GA-T47	
C41	1	400	2247-1040	P488N-1	DF-104	CUB4P1		PT401	4TM-P1	
C42	1000		450469A-5	BPD-001	DD-102	K069	801-001	DC521	5HK-D1	
C43	1000		450469A-5	BPD-001	DD-102	K069	801-001	DC521	5HK-D1	
C44	470		450469A-11	BPD-00047	DD-471	K060	811-471	UC-5347	5GA-T47	
C45	470		450469A-11	BPD-00047	DD-471	K060	811-471	UC-5347	5GA-T47	
C46	1000		450469A-5	BPD-001	DD-102	K069	801-001	DC521	5HK-D1	Note 1
C47	1000		450469A-5	BPD-001	DD-102	K069	801-001	DC521	5HK-D1	
C48	5		650030A-1	NP0-D15	TCZ-4R7	Z011	NP0A-050	ZT-555	5TCCB-V47	
C49	1000		450469A-5	BPD-001	DD-102	K069	801-001	DC521	5HK-D1	Note 2
C50	1000		450469A-5	BPD-001	DD-102	K069	801-001	DC521	5HK-D1	
C51	47		650030A-17	N750-S147	TCN-47	N033	N750K-470	NT-5447	5TCU-Q47	
C52	1000		450469A-5	BPD-001	DD-102	K069	801-001	DC521	5HK-D1	
C53	5000		450469A-12	BPD-005	DD-502	K080	811-005	DC525	5HK-D5	
C54	47		650030A-17	N750-S147	TCN-47	N033	N740K-470	NT-5447	5TCU-Q47	
C55	.1	400	2247-1040	P488N-1	DF-104	CUB4P1		PT401	4TM-P1	
C56	.1	400	2247-1040	P488N-1	DF-104	CUB4P1		PT401	4TM-P1	
C57	.0022	600	2248-2220	BPD-0022	D6-222	CUB6D22	GP2-333-222	PT6222	6TM-D22	

CAPACITORS (cont)

ITEM No.	RATING CAP.	VOLT	REPLACEMENT DATA							NOTES
			CAPEHART PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL DUBILIER PART No.	ERIE PART No.	MALLORY PART No.	SPRAGUE PART No.	
C88	.022	600	2246-2230	BPD-02	DF-203	CUB6S22		PT6122	6TM-S22	
C89	.0027	1000	2246-2729		DD30-272					
C90	.01	400	2246-1030	BPD-01	D6-103	CUB4S1	GP3-333-103	PT411	4TM-S1	
C91	.22	200	2246-2240	P28N-22		CUB2P22		PT4022	2TM-P22	
C92	3.3		650030A-5	NPO-S13.3	TCZ-3R3	Z008	NP0A-3R3	ZT-5533	5TCCB-V33	
C93	.47		650030A-17	N750-S147	TCN-47	N033	N750K-470	NT-5447	5TCU-Q47	
C94	3.9		650501A-31							
C95	10000		450489A-13	BPD-01	DD-103	K082	811-01	DC511	5HK-S1	
C96	10000		450489A-13	BPD-01	DD-103	K082	811-01	DC511	5HK-S1	
C97	10		450489A-18							
C98	10000		450489A-13	BPD-01	DD-103	K082	811-01	DC511	5HK-S1	
C99	10000		450489A-13	BPD-01	DD-103	K082	811-01	DC511	5HK-S1	
C100	1000		450489A-5	BPD-001	DD-102	K069	801-001	DC521	5HK-D1	
C101	10000		450489A-13	BPD-01	DD-103	K082	811-01	DC5H	5HK-S1	
C102	10000		450489A-13	BPD-01	DD-103	K082	811-01	DC511	5HK-S1	
C103	10000		450489A-13	BPD-01	DD-103	K082	811-01	DC511	5HK-S1	
C104	10000		450489A-13	BPD-01	DD-103	K082	811-01	DC511	5HK-S1	
C105	27		2271-9022		TCZ-27	Z027	NP0L-270			
C106	1500		600681A-5	BPD-0015	DD-152	K071	801-0015	DC5215	5HK-D15	
C107	.1	400	2247-1040	P488N-1	DF-104	CUB4P1		PT401	4TM-P1	
C108	.047	400	2247-1040	BPD-05	DF-503	CUB4S47		PT4147	4TM-S47	
C109	12000		†455214A-1	†PA-502	†PC-104			PT621	6TM-D1	
C110	.001	600	2248-1020	BPD-001	D6-102	CUB6D1	GP21-102	PT6115	4TM-S15	
C111	.015	200		BPD-015	DD16-153	CUB6S15	821-015	DC5115	4TM-S15	
C112	3300		450489A-14	BPD-0033	D6-332	K077	811-0033	UC-5233	5HK-D33	
C113	10000		450489A-13	BPD-01	DD-103	K082	811-01	DC511	5HK-S1	
C114	.1	600	2246-1040	P488N-1	DF-104	CUB4P1		PT601	6TM-P1	
C115	.1	400	2247-1040	P488N-1	DF-104	CUB4P1		PT401	4TM-P1	
C116	.1	400	2247-1040	P488N-1	DF-104	CUB4P1		PT401	4TM-P1	
C117	.0047	600	2248-4720	BPD-0047	D6-472	CUB6D47	GP2-333-472	PT6247	6TM-D47	
C118	.0047	600	2248-4720	BPD-0047	D6-472	CUB6D47	GP2-333-472	PT6247	6TM-D47	
C119	.022	400	2247-2230	BPD-02	DF-203	CUB4S22	817-02	PT4122	4TM-S22	
C120	270	500		NP0-S1270	D6-271	5R5T27	811-271	MS-327	MS-327	
C121	470	500	2272-21471	1464-00047	D6-471	5R5T47	811-471	MS-347	MS-347	
C122	470	500	2272-21471	1464-00047	D6-471	5R5T47	811-471	MS-347	MS-347	
C123	270	500	2272-21471	NP0-S1270	D6-271	5R5T27	811-271	MS-327	MS-327	
C124	.47	1000	2272-21470	BPD-015	DD16-153	CUB6S15	821-015	DC5115	4TM-S15	
C125	.001	500	2248-1020	BPD-0022	D6-222	CUB6D22	GP2-333-222	PT6222	6TM-D22	
C126	.0022	600	2248-2220	BPD-0022	D6-222	CUB6D22	GP2-333-222	PT6222	6TM-D22	
C127	.0022	600	2248-2220	BPD-0022	D6-222	CUB6D22	GP2-333-222	PT6222	6TM-D22	
C128	.022	200	2246-2230	BPD-02	DF-203	CUB4S22	817-02	PT4122	4TM-S22	
C129	100	500	2272-2101	NP0-S1100	D6-101	22R5T1	801-101	MCB235	MS-31	
C130	390	500	2272-23391		D6-391	5R5T39	811-391	MS-339	MS-339	
C131	4700	500	651133A-1	1464-0047	D6-471	5R5T47	811-471	MS-347	MS-347	
C132	330	500	2272-21331	1469-00033	D6-331	5R5T33	811-331	MS-333	MS-333	
C133	470	500	2272-21471	1464-00047	D6-471	5R5T47	811-471	MS-347	MS-347	
C134	.047	400	2247-4730	BPD-05	DF-503	CUB4S47		PT4147	4TM-S47	
C135	.1	600	2248-1040	P488N-1	DF-104	CUB4P1		PT401	4TM-P1	
C136	.1	400	2247-1040	P288N-1	DF-104	CUB4P1		PT6147	6TM-S47	
C137	.047	600	2248-4730	BPD-05	DF-503	CUB4S47				
C138	56	3000	450954A-9		DD30-560			DC30456	5HK-2D15	
C139A	1500	1000	453521A-4	BPD-2X0015	DD2-152	DK071		DCD5215		
C140	1500	1000								

† Items C79, R82A and R84B are combined in one unit.
 Note 1: Some versions may use 470MMF unit (part #450469A-1) in this application.
 Note 2: Not used in chassis coded R-2.
 Note 3: Chassis coded R-1 uses .01MFD unit (part #2248-1030) in this application.

CONTROLS

ITEM No.	RATING RESIST-ANCE	WATTS	REPLACEMENT DATA					INSTALLATION NOTES
			CAPEHART PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	IRC PART No.	MALLORY PART No.	
R1A	1.5Meg	1/2	850366A-1	F1-64			UF1551	Volume (Rear) Note 1
B	200K	1/2		R2-35			UR254A	Brightness (Panel)
C	Switch			KB-1			US-26	Attach to R1B
R2A	15K	1/2	850341A-10	ABT-154			Q17-118K	Contrast Tapped at 10K
B	Shaft			Not Req.			NQ	Attach to R2A
R3A	100K	1/2	850341A-31	B-40	A47-100K-S	Q11-128	U41	Horiz. Hold
B	Shaft			Not Req.			Not Req.	Attach to R3A
R4A	1.5Meg	1/2	850341A-15	AB-742	A47-1.5Meg-S	Q11-138	U155	Vert. Hold
B	Shaft			Not Req.			Not Req.	Attach to R4A
R5A	2.5Meg	1/2	650777A-1	BX-83	A47-2.5Meg-S	Q11-239	SU-565	Height
B	Shaft			Not Req.			Not Req.	Attach to R5A
R6	650K	2	650642A-12	Not Req.	FKS-1/4	Not Req.		Noise Rejection 1500 stop
B	Shaft				39-700-200			Wire-wound
R7A	2.5Meg	1/2	650777A-1	BX-83	A47-2.5Meg-S	Q11-239	SU-565	Picture Lock
B	Shaft			Not Req.			Not Req.	Attach to R7A
R8	1200K	2	650642A-14	Not Req.	FKS-1/4	Not Req.		Vert. Linearity 2500 stop
B	Shaft				†39-1500			Wire-wound

† Connect a 270K resistor in series with the lead connecting to the terminal of the control.
 R3 and R4 are replaced with a dual concentric control part no. 850366A-2 on the deluxe chassis.
 Note 1: Some versions will use an alternate control part no. 850366A-17 in this application.
 † Universal Replacement (Mallory exact duplicate part no. UE1289S)

RESISTORS

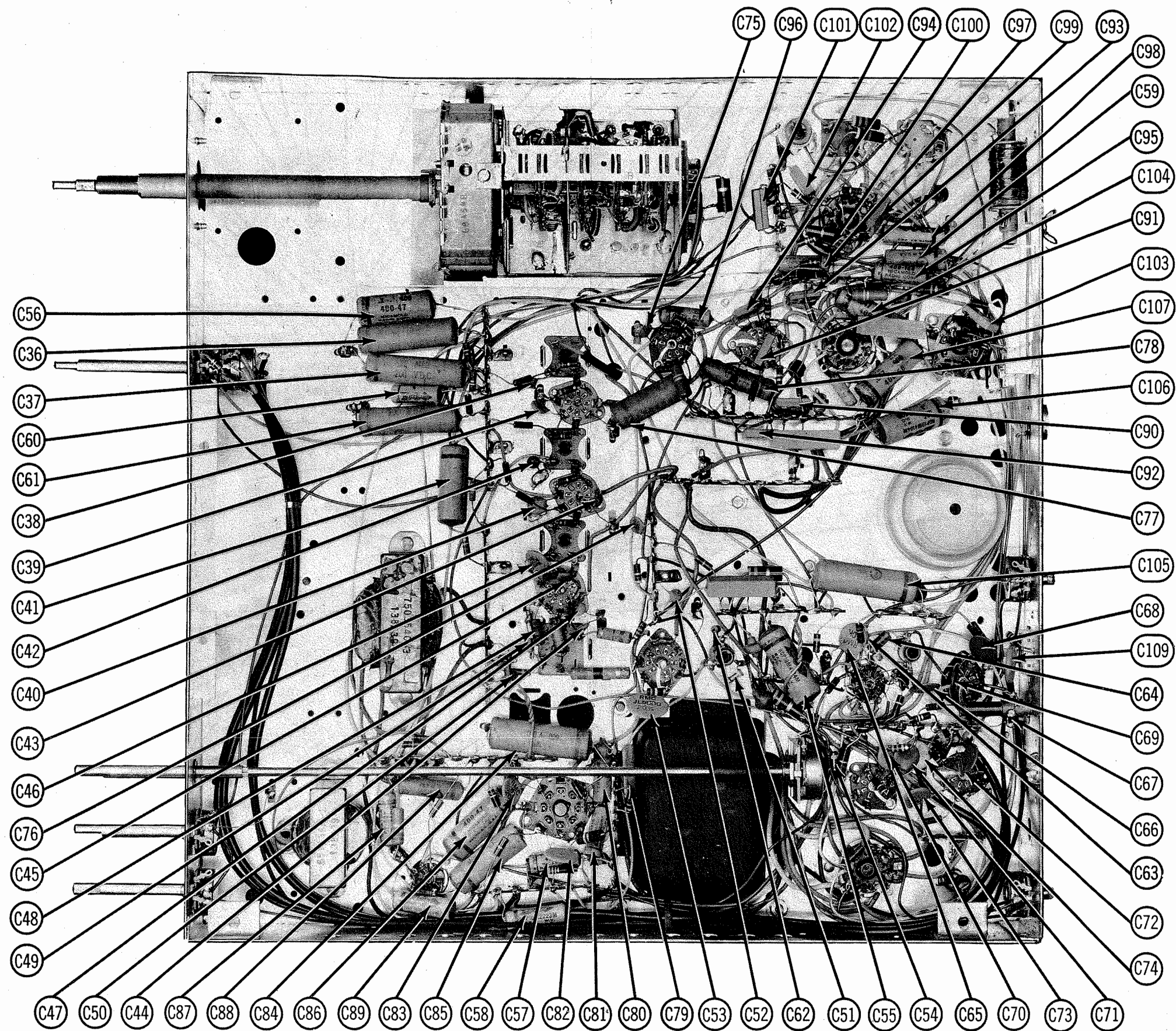
All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING OHMS	WATT	REPLACEMENT DATA		NOTES	ITEM No.	RATING OHMS	WATT	REPLACEMENT DATA		NOTES
			CAPEHART PART No.	IRC PART No.					CAPEHART PART No.	IRC PART No.	
R9	6800K			BTS-6800		R30	560K		3228-584	BTS-580K	
R10	1000K			BTS-1000		R31	500K		3228-583	BTS-500K	
R11	150K			BTS-150		R32	1000K		3229-102	BTS-1000	
R12	47K		3229-473	BTS-47K		R33	3300K		3229-332		
R13	1Meg		3229-105	BTS-1Meg		R34	18K		3229-183		
R14	750K		3229-754	BTS-750K 5%		R35	100K		3229-101	BTS-100	
R15	470K		3229-104	BTS-470K		R36	47K		3229-47	BTS-47	
R16	6800K 5%		3228-682	BTS-6800 5%		R37	220K 5%		3228-224	BTS-220K 5%	
R17	10K		3229-103	BTS-10K		R38	220K 5%		3228-224	BTS-220K 5%	
R18	15K		3229-153	BTS-15K		R39	22K		3229-223		
R19	150K		3229-154	BTS-150K		R40	100K		3229-101	BTS-100	
R20	12K			BTS-12K		R41	18K		3229-180	BTS-18	
R21	12K			BTS-12K		R42	1000K		3229-102	BTS-1000	
R22	120K		3229-142	BTS-120K		R43	100K		3229-101	BTS-100	
R23	1000K		3229-102	BTS-1000		R44	2900K		3229-102	PWT-3000	
R24	2700K		3229-272	BTS-2700		R45	470K		3229-471	BTS-470	
R25	2200K			BTS-2200		R46	1200K		3229-122	BTS-1200	
R26	4.7Meg 5%		3228-475	BTS-4.7Meg 5%		R47	270K		3229-274	BTS-270K	
R27	82K			BTA-82K		R48	27K			BTS-27K	
R28	10K		3232-823	BTA-10K		R49	820K		3229-821	BTS-820	
R29	820K 5%		3228-824	BTS-820K 5%		R50	39K		3229-390	BTS-39	
						R51	39K		3229-393	BTS-39K	

PARTS LIST AND DESCRIPTIONS (Continued)

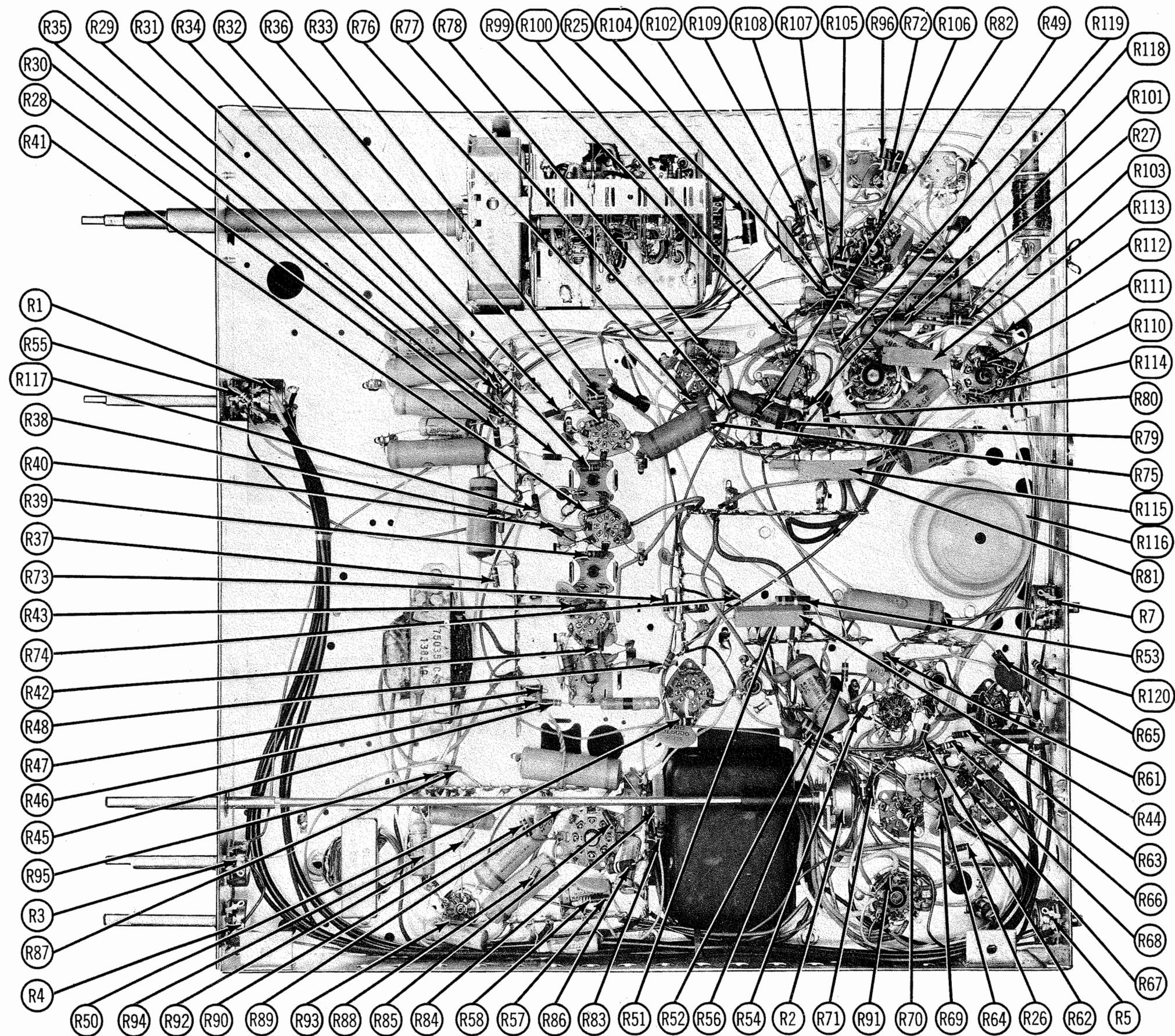
RESISTORS (cont)

ITEM No.	RATING		REPLACEMENT DATA		NOTES	ITEM No.	RATING		REPLACEMENT DATA		NOTES
	OHMS	WATT	CAPEHART PART No.	IRC PART No.			CAPEHART PART No.	IRC PART No.			
R52	3300K	2	650262A-7	BTB-3300		R87	1Meg		3229-105	BTS-1Meg	
R53	3300K	2	650262A-7	BTB-3300		R88	1.2Meg		3229-125	BTS-1.2Meg	
R54	2200K		3229-222	BTS-2200		R89	6800 5%		3228-681	BTS-680 5%	
R55	82K		3229-823	BTS-82K		R90	470K		3229-474	BTS-470K	
R56	220K		3229-224	BTS-220K		R91	1Meg		3229-105	BTS-1Meg	
R57	22K		3229-223	BTS-22K		R92	1Meg		3229-105	BTS-1Meg	
R58	33K		3229-333	BTS-33K		R93	2.2Meg		3229-225	BTS-2.2Meg	
R59	1Meg		3229-105	BTS-1Meg		R94	56K	1	3232-563	BTA-56K	
R60	1Meg		3229-105	BTS-1Meg		R95	1Meg		3229-105	BTS-1Meg	
R61	56K		3229-563	BTS-56K		R96	470K	1	3232-471	BTA-470	
R62	220K		3229-224	BTS-220K		R97	560K				
R63	680K 5%		3228-681	BTS-680 5%		R98	560K				
R64	330K		3229-334	BTS-330K		R99	82K		3229-823		
R65	22K	1	3232-223	BTA-22K		R100	82K		3229-823		
R66	50K		3229-504	BTS-50K		R101	22K		3229-223		
R67	56K		3229-563	BTS-56K		R102	180K		3229-184		
R68	10Meg		3229-106	BTS-10Meg		R103	82K	1	3232-823		
R69	330K		3229-334	BTS-330K		R104	2.2Meg		3229-225		
R70	470K		3229-474	BTS-470K		R105	8200K	1	3232-822		
R71	560K	1	3232-561	BTA-560		R106	1200K		3229-122		
R72	470K	1	3232-471	BTA-470		R107	47K		3229-473		
R73	470K		3229-474	BTS-470K		R108	120K		3229-124		
R74	10K		3229-103	BTS-10K		R109	10K		3229-103		
R75	22K		3232-223	BTA-22K		R110	820K 5%		3228-824		
R76	5.6Meg		3229-565	BTS-5.6Meg		R111	47K		3229-470		
R77	560K		3229-564	BTS-560K		R112	1Meg		3229-105		
R78	220K		3229-224	BTS-220K		R113	6000K	7	650101A-46	PW7-6000	
R79	2.2Meg		3229-225	BTS-2.2Meg		R114	22K		3229-223	BTS-22K	
R80	10K		3229-103	BTS-10K		R115	150K	7	650101A-47	PW7-150	
R81	3900K		3229-392	BTS-3900		R116	1.8K			BW $\frac{1}{2}$ -1.8	
R82	3900K		3229-392	BTS-3900		R117	220K		3229-221	BTS-220	
R83	22K		3229-223	BTS-22K		R118	100K		3229-104	BTS-100K	
R84A B		36K	†455214A-1			R119	180K		3229-184	BTS-180K	
	R85	1Meg				R120	330K		3229-334	BTS-330K	
R86	220K	1	3232-225	BTS-1Meg		R121	12K	2	3235-123	BTB-12K	Note 2
			3232-104	BTA-220K							



CHASSIS BOTTOM VIEW-CAPACITOR IDENTIFICATION

CAPEHART CHASSIS
CX-385 SERIES



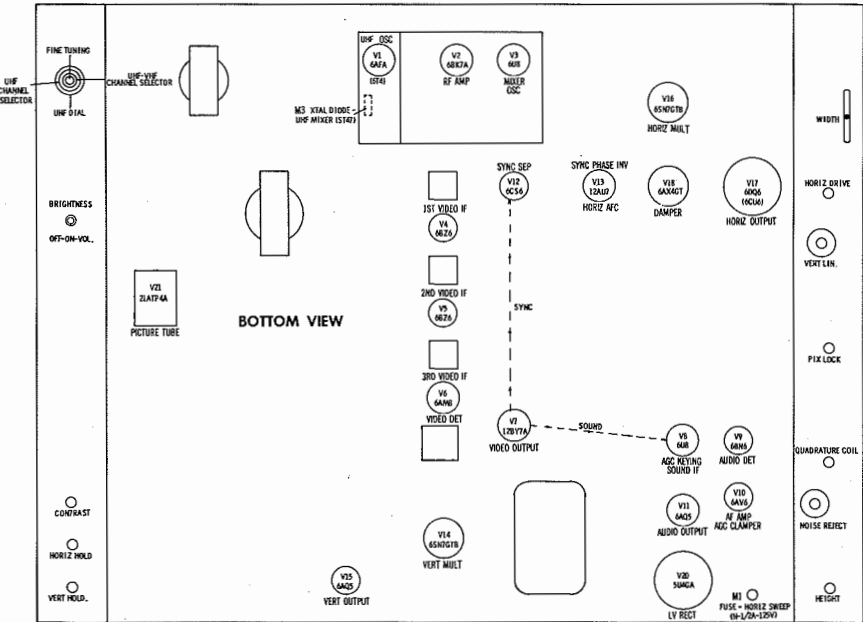
CHASSIS BOTTOM VIEW-RESISTOR IDENTIFICATION

CAPEHART CHASSIS
CX-385 SERIES

RESISTANCE MEASUREMENTS

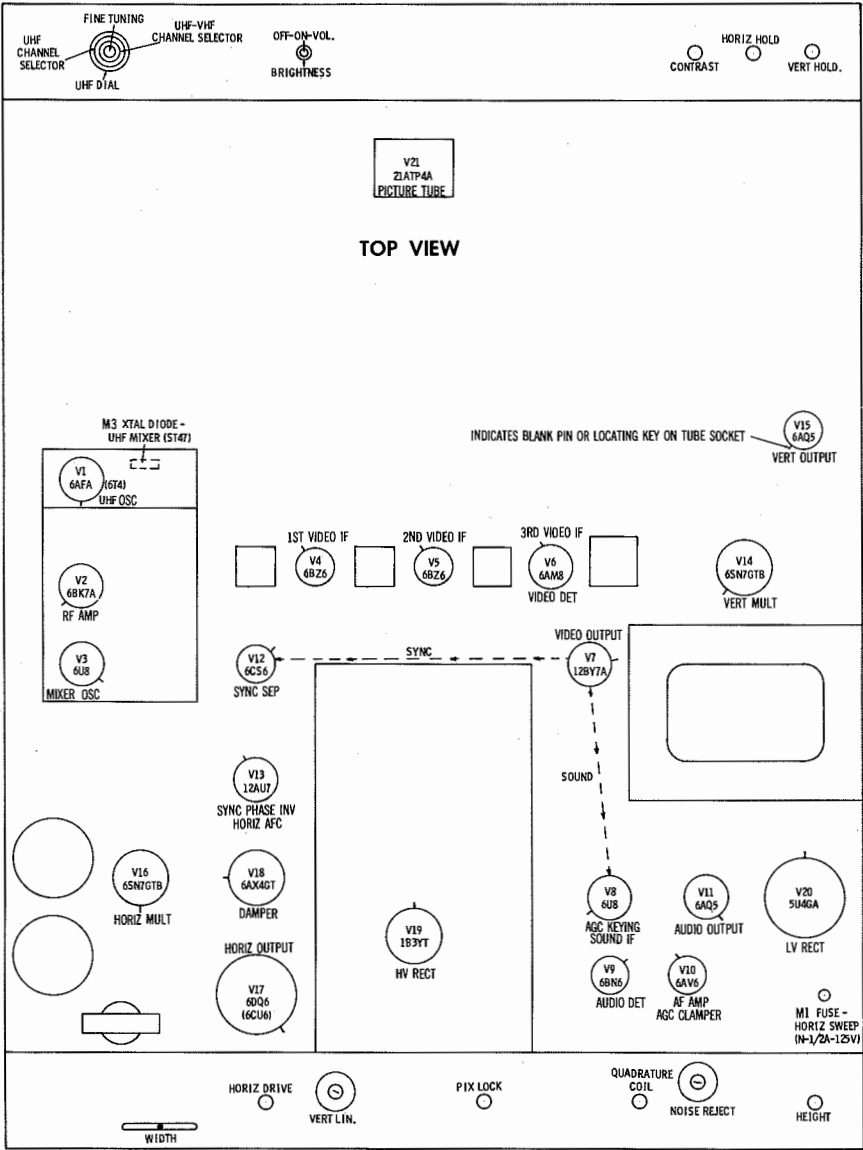
ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V1	6AF4A	■ *4700Ω	6800Ω	.1Ω	0Ω	0Ω	6800Ω	■ *4700Ω		
V2	6BK7A	† 2400Ω	400K	1NF	.1Ω	0Ω	1NF	1Meg	0Ω	0Ω
V3	6U8	■ 1000Ω	470K	† 120K	.1Ω	0Ω	■ 1000Ω	0Ω	0Ω	15K
V4	6BZ6	60K	47Ω	.1Ω	0Ω	▲ 100Ω	▲ 100Ω	0Ω		
V5	6BZ6	100K	▲ 18Ω	.1Ω	0Ω	† 135Ω	† 135Ω	1NF		
V6	6AM8	100Ω	.1Ω	† 400Ω	.1Ω	0Ω	† 2900Ω	1700Ω	6000Ω	0Ω
V7	12BY7A	39Ω	6000Ω	0Ω	.1Ω	.1Ω	0Ω	† 5000Ω	† 2900Ω	0Ω
V8	6U8	† 220K	† 40K	■ 22K	† 60K	† 60K	600K	† 37Ω	15K	70K
V9	6BN6	● 350Ω	3.5Ω	0Ω	.1Ω	■ 22K	7.5Ω	† 330K		
V10	6AV6	10Meg	0Ω	0Ω	.1Ω	1Meg	1Meg	† 330K		
V11	6AQ5	470K	560Ω	.1Ω	0Ω	† 1100Ω	† 500Ω	470K		
V12	6CS6	30K	0Ω	0Ω	.1Ω	■ 150K	■ 22K	5Meg		
V13	12AU7	22K	350K	180K	† 60K	† 60K	† 14K	† 2Meg	■ 3900Ω	† 60K
V14	6SN7GTB	1Meg	† 220K	680Ω	● 1.8Meg	● 1.5Meg	680Ω	.1Ω	0Ω	
V15	6AQ5	2.2Meg	● 450Ω	.1Ω	0Ω	† 1000Ω	† 500Ω	2.2Meg		
V16	6SN7GTB	2.2Meg	† 8200Ω	1200Ω	● 100K	† 120K	1200Ω	.1Ω	0Ω	
V17	6DQ6	TP	.1Ω	TP	† 6000Ω	1Meg	TP	0Ω	0Ω	Top Cap ▲ 10Ω
V18	6AX4GT	TP	NC	500K	NC	† 185Ω	TP	† 60K	† 60K	
V19	1B3GT		PINS 1 - 8	HAVE	INFINITE	RESISTANCE				Top Cap ▲ 350Ω
V20	5U4GA	TP	17K	TP	14Ω	TP	13Ω	TP	17K	
V21	21ALP4B	† 60K	■ 55K	Pin 6 0Ω	Pin 10 ▲ 22K	Pin 11 † 500K	Pin 12 † 60K			

- MEASURED IN "UHF" POSITION.
■ MEASURED FROM 125V LINE.
▲ MEASURED FROM PIN 7 OF V5.
† MEASURED FROM PIN 8 OF V20.
- MEASURED FROM PIN 3 OF V18.
● THIS READING WILL VARY.
● CONTROL SET FOR NORMAL OPERATION.
TP TIE POINT
NC NO CONNECTION



TUBE PLACEMENT CHART

TUBE PLACEMENT CHART



TUBE FAILURE CHECK CHART

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

POWER SUPPLY FAILURE
No raster, no sound - V20, Fuse (M1)

LOSS OF PICTURE OR SOUND
No pic, no sound, has raster - V3, V4, V5, V6, V7 (V1 UHF only)
No pic, no sound, has snow - V2, V3, V4
No pic, has sound, has raster - V7, V8, V21
Has pic, no sound - V8, V9, V10, V11
Overloaded picture - V8, V10

SYNC FAILURE
No vert. sync - V13, V14
No horiz. sync - V13, V18
No vert. or horiz. sync - V12, V13

SWEEP FAILURE
No raster, has sound - V18, V17, V18, V19, V21
No vertical deflection - V14, V15
Poor vert. linearity or foldover - V14, V15
Poor horiz. linearity or foldover - V18, V17, V18
Narrow picture - V18, V17, V18, V19, V20
Vert. off freq. - V13, V14
Horiz. off freq. - V13, V18

CAPEHART
CHASSIS CX-38S SERIES

ALIGNMENT INSTRUCTIONS

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT
The shock hazard may be eliminated by removing the horizontal output tube (V17).

VIDEO IF ALIGNMENT

Remove the AGC keying tube (V8) from its socket. Connect the negative lead of a 3 volt battery to the ungrounded side of C37. Positive to chassis. Connect a clip lead from pin 5 of V10 to chassis. Use high sweep generator output to make trap adjustment A1, A2, and A6 visible on scope. 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 thru .001MFD to pin 1 (grid) of 6BZ6 (V4). Low side to chassis.	44MC (10MC Swp)	41.25MC	Any	Vert. amp thru 10K to point \odot . Low side to chassis.	A1	Adjust for MINIMUM response at marker frequency.
2. "	"	"	47.25MC	"	"	A2	"
3. "	"	"	44.1MC	"	"	A3	Use only enough sweep generator output to provide usable pattern on scope. Adjust A3 for maximum marker amplitude with MINIMUM tilt.
4. "	"	"	42.9MC	"	"	A4	Adjust A4 to position 42.9MC marker within 50% of maximum amplitude on response curve.
5. "	"	"	45.3MC	"	"	A5	Adjust A5 to position 45.3MC marker within 50% of maximum amplitude on response curve. Repeat steps 1 thru 5.
6. "	High side thru .001MFD to point \odot (On back of tuner). Low side to chassis.	"	47.25MC	Any non-interfering channel.	"	A6	Adjust for MINIMUM response at 47.25MC marker.
7. Two 1200 carbon resistors	Across VHF antenna with 1200 in each lead.	189MC (10MC Swp)	187.25MC 191.75MC	9	"		Adjust fine tuning until sound marker falls in trap (Fig. 1).
8. "	"	"	"	"	Vert. amp thru detector (Fig. 3). to pins 5 & 6 of 6BZ6 (V4). Low side to chassis.	A7, A8	Adjust A7 and A8 for response curve similar to Fig. 1. Adjust for maximum amplitude and MINIMUM tilt to position of video marker.
9. Direct	High side to ungrounded tube shield floating over converter tube (V3). Low side to chassis.	44MC (10MC Swp)	41.25MC 42.25MC 45.75MC 47.25MC	Any non-interfering channel.	Vert. amp thru 10K to point \odot . Low side to chassis.		Check for response similar to Fig. 2. If necessary, SLIGHTLY retouch A3 thru A8 for desired response. A1 and A2 should not be retouched. Remove bias supply. Replace 6U8 (V8) and 6DQ8 (V17) in their sockets.

SOUND IF ALIGNMENT

Preset the noise rejection control (R8) 90° from maximum clockwise rotation. 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
10. .001MFD	High side to point \odot . Low side to chassis.	Not used.	4.5MC (400% 50% mod.)	Any	Vert. amp thru detector (Fig. 3). to pin 11 (cathode) of picture tube. Low side to chassis.	A9, A10	Connect a clip lead across terminals "C" and "D" of L8. Adjust A9 and A10 for MINIMUM 400% indication on scope.
11. "	"	"	4.5MC (25KC Swp) (400% Mod)	"	Vert. amp. to point \odot . Low side to chassis.	A11	Adjust for maximum 400% indication on scope. Two peaks will be present. Adjust for the peak having the greater amplitude.
12. "	"	"	"	"	"	A12, A10	Attenuate generator output so that the signal level is below the limiting level of the 6BN6 as evidenced by background hiss in the sound. Adjust A10 and A12 for maximum response on the scope.
13. "	"	Not used.	4.5MC (400% Mod)	"	"	R6	Use high signal generator output and adjust R6 for MINIMUM 400% indication on scope.
14. "	"	4.5MC (25KC Swp) (400% Mod)	4.5MC	"	"	A11	Retouch A11 for maximum 400% indication on scope. Use low generator output. Remove short from L8. Tune in the weakest station in the area and adjust R6 for MINIMUM buzz and hiss. Tune in the strongest station in the area and adjust A11 for clearest sound.

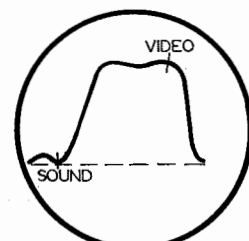


FIG. 1

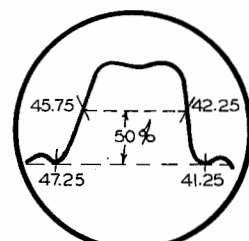


FIG. 2

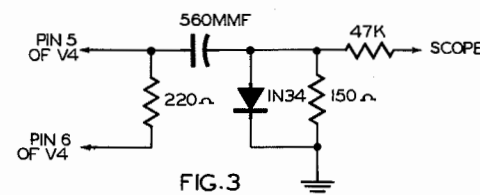


FIG. 3

ALIGNMENT INSTRUCTIONS (cont)

VHF OSCILLATOR ALIGNMENT

Leave bias connected as under "Video IF Alignment". Connect the synchronized sweep voltage from the sweep generator to the horizontal input of the oscilloscope for horizontal deflection. The sweep generator output lead should be terminated with its characteristic impedance, usually 50 ohms. Use only enough sweep generator output to provide usable pattern on scope.

DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
15. Two 1200 carbon resistors	Across antenna terminals with 1200 in each lead.	213MC (10MC Swp)	211.25MC 215.75MC	13	Vert. amp thru 10K to point \odot . Low side to chassis.	A13	Adjust A13 to properly position markers on the curve as in Fig. 5.
16. "	"	207MC (10MC Swp) 201MC (10MC Swp) 195MC (10MC Swp) 189MC (10MC Swp) 183MC (10MC Swp) 177MC (10MC Swp)	205.25MC 209.75MC 199.25MC 203.75MC 193.25MC 197.75MC 187.25MC 191.75MC 181.25MC 185.75MC 175.25MC 179.75MC	12 11 10 9 8 7	"		Check channels 12 thru 7 for proper marker locations as in Fig. 5. If necessary, SLIGHTLY retouch A13 for best compromise on all channels.
17. "	"	85MC (10MC Swp)	83.25MC 87.75MC	6	"	A14	Adjust A14 to properly position markers on the curve as shown in Fig. 5.
18. "	"	79MC (10MC Swp) 69MC (10MC Swp) 63MC (10MC Swp) 57MC (10MC Swp)	77.25MC 81.75MC 87.75MC 71.75MC 61.25MC 65.75MC 55.25MC 59.75MC	5 4 3 2	"		Check channels 5 thru 2 for proper marker position on the curve as in Fig. 5. If necessary, SLIGHTLY retouch A14 for best compromise on all channels.

VHF RF AND MIXER ALIGNMENT

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

UHF TUNER ALIGNMENT

In the event the UHF oscillator tube is replaced, it is recommended that several tubes be tried and the one which works best be used. Alignment of the UHF tuner should not be required in the field.

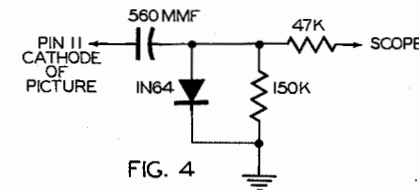


FIG. 4

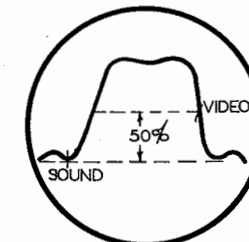


FIG. 5

CAPEHART
CHASSIS CX-385 SERIES