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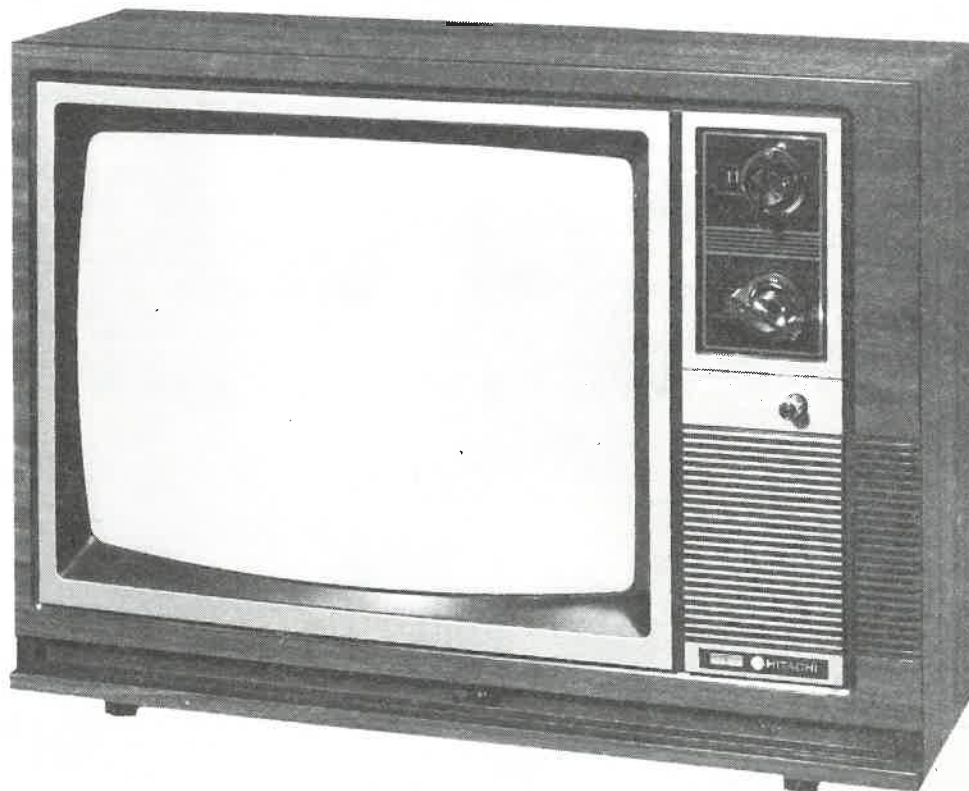
with CIRCUITRACE™

For Supplier Address See PHOTOFACT® Index

HITACHI MODELS
CT1900A, CT1910A, CT1912A

COLOR TV

HITACHI MODELS
CT1900A, CT1910A, CT1912A



HITACHI MODELS
CT1900A, CT1910A, CT1912A

Model CT1912A

SAFETY PRECAUTIONS

See pages 27, 28.

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HOWARD W. SAMS & CO., INC. Indianapolis, Indiana 46206

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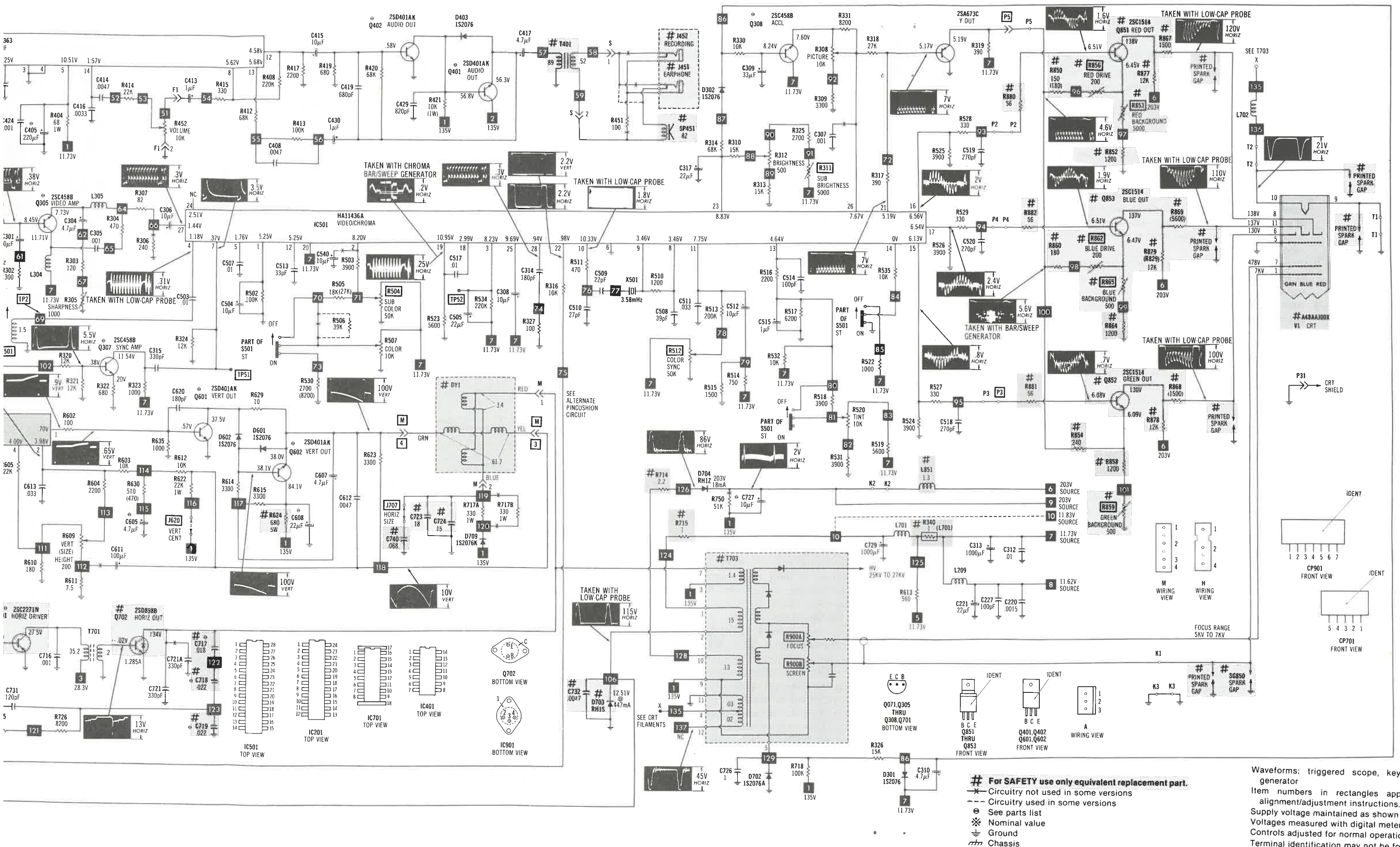
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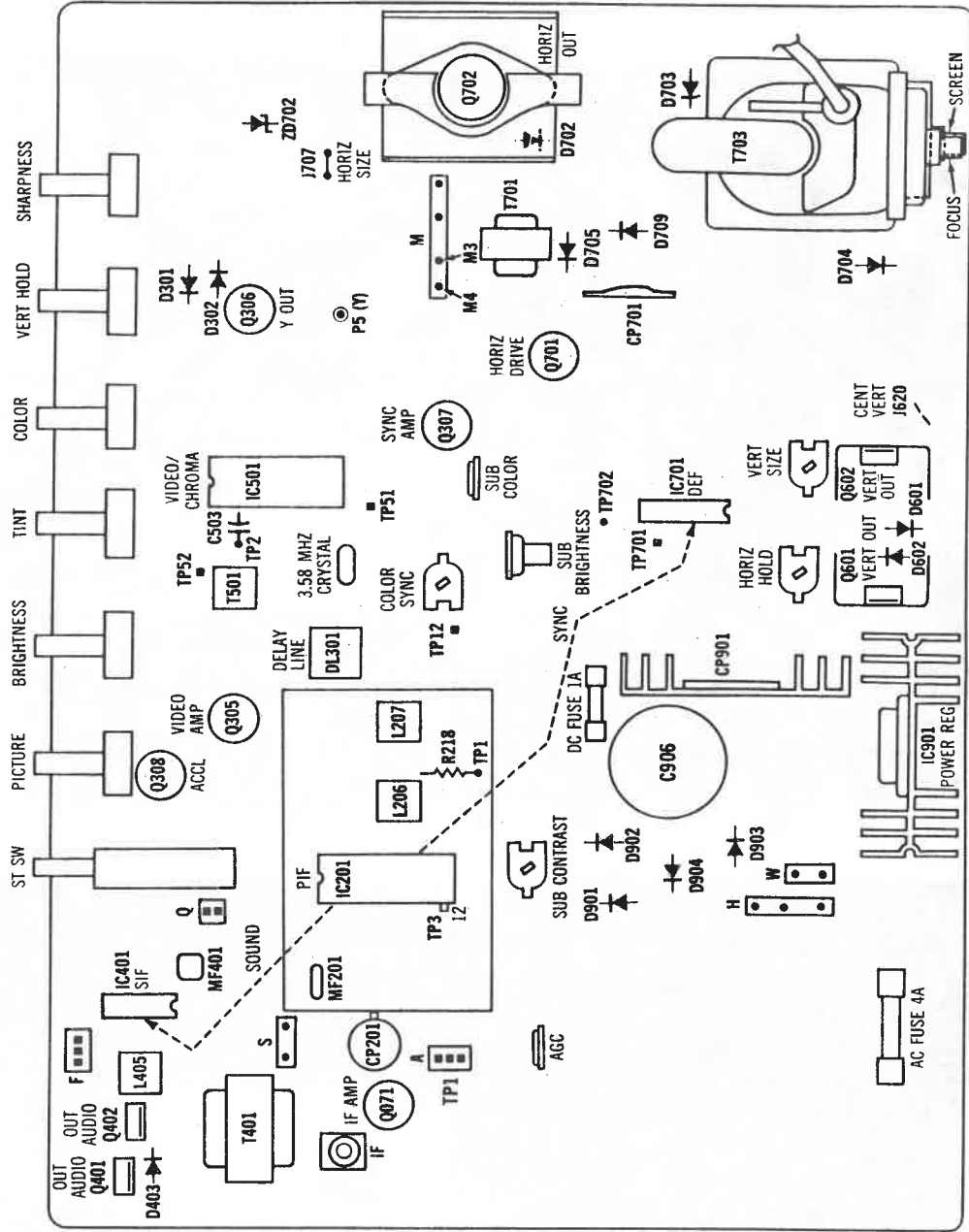
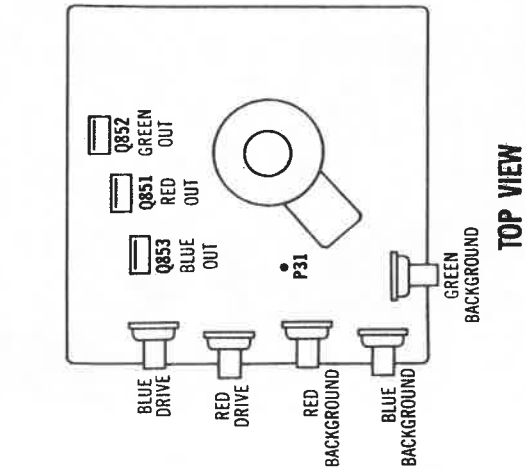
SET 2200 FOLDER 1



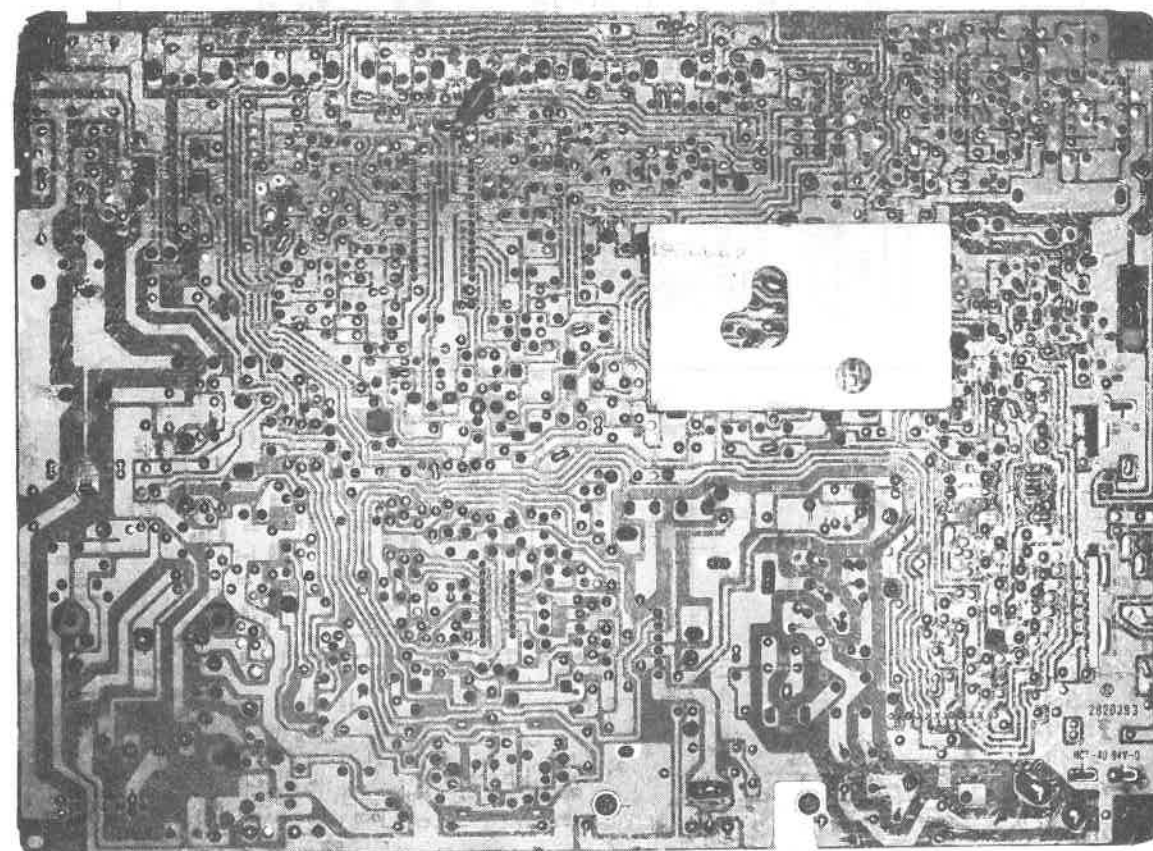
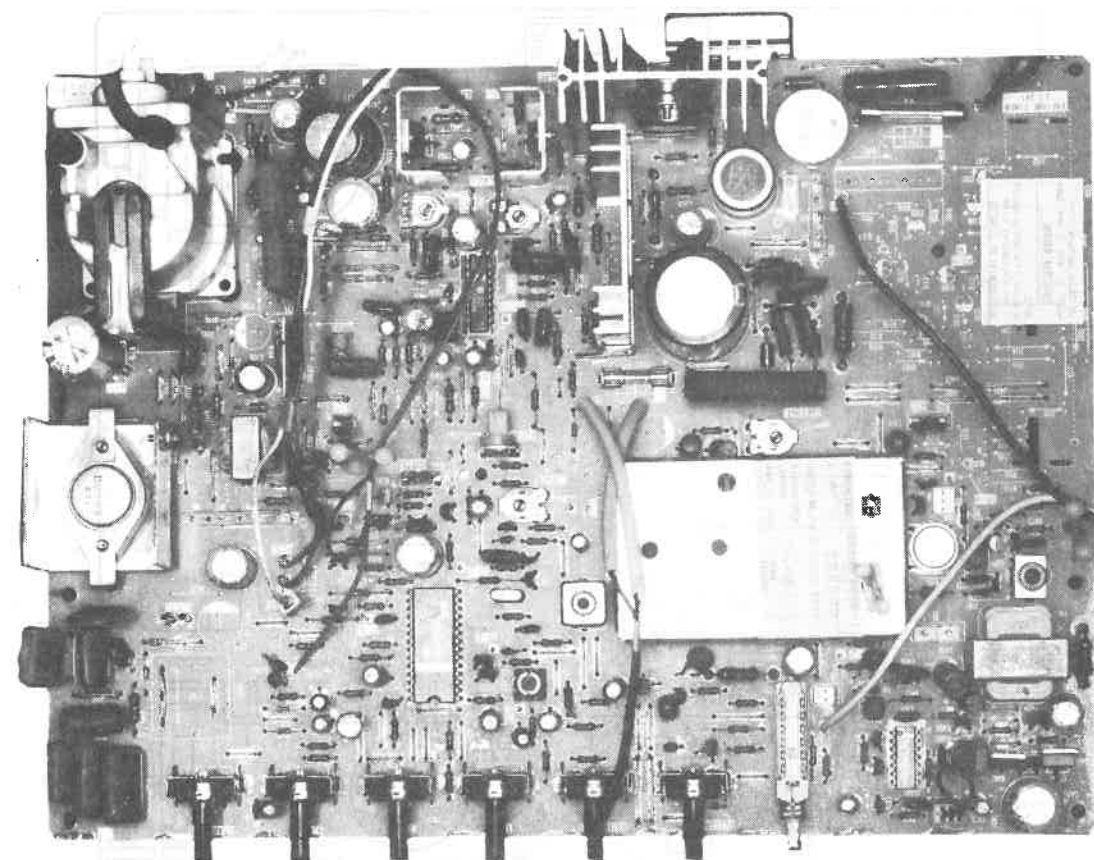


RESISTANCE MEASUREMENTS

MEASUREMENTS TAKEN WITH LOW POWER OHMS METER														
ITEM	PIN 1	PIN 2	PIN 3	PIN 4	PIN 5	PIN 6	PIN 7	PIN 8	PIN 9	PIN 10	PIN 11	PIN 12	PIN 13	PIN 14
CP701	44K	4480	2780	INF	130									
CP901	6220	5870	6300	5730	11K	2600								
IC201	INF	1487	1668	1029	6060	7900	7860	6030	451	605	0	9620	2940	2900
					PIN 15	PIN 16	PIN 17	PIN 18	PIN 19	PIN 20	PIN 21	PIN 22	PIN 23	PIN 24
IC401	INF	INF	0	0	369	0	8350	10K	6030	17K	299	12K	1170	2740
IC501	100K	12K	224K	4930	INF	0	12K	14K	13K	6030	INF	1840	5370	124K
	PIN 15	PIN 16	PIN 17	PIN 18	PIN 19	PIN 20	PIN 21	PIN 22	PIN 23	PIN 24	PIN 25	PIN 26	PIN 27	PIN 28
	3970	3970	3950	6250	3800	299	33K	INF	18K	5940	INF	5780	11K	810
IC701	818	2340	INF	23K	765	4030	44K	2850	83K	3070	INF	84K	15K	3190
											PIN 15	PIN 16	PIN 17	PIN 18
IC901	6220	6300	0	9500							INF	2780	INF	0
V1	INF	NC	NC	NC	0	71K	7.5M	71K	FIL	FIL	71K			
ITEM	E	B	C		ITEM	E	B	C		ITEM	E	B	C	
Q071	170	923	484		Q401	68K	17K	5730		Q702	0	.20	6300	
Q305	329	4050	303		Q402	0	680	17K		Q851	674	4360	69K	
Q306	460	33K	0		Q601	0	768	13K		Q852	584	4350	69K	
Q307	680	6780	1350		Q602	13K	12K	6985		Q853	673	4340	69K	
Q308	5770	124K	302		Q701	0	INF	11K						



PLACEMENT CHART



SHIELD LOCATIONS-CHASSIS TOP/BOTTOM VIEWS

TROUBLESHOOTING (Continued)

VIDEO

Check voltages and waveforms on the CRT and check the CRT. Inject a video signal at the base of the Video Amp Transistor (Q305) and check for information on the CRT. If there is no video on the CRT, check for a video waveform at pin 27 of the Video/Chroma IC (IC501). If the video waveform is absent, check voltages, waveforms and components associated with Transistor Q305. If the video waveform is present, check for a video waveform at pins 15, 16, 17, 19, 21, 24 and 28 of IC501. If any of these waveforms are not present, check the voltages, components and circuitry associated with these pins of IC501. If the picture is dark, check voltages and components associated with ACCL Transistor (Q308) and Diode D302. Check voltages on CRT cathodes. If they are lower than 120V, check CRT, CRT socket board, Horizontal Output Transformer (T703), Diodes D702, D704 and voltages, waveforms and components associated with pin 23, 27 and 28 of IC501. Check for the blanking waveforms at pins 3 and 7 of IC501.

SYNC

Check voltages, waveforms and components associated with pins 8, 9 and 10 of the Deflection IC (IC701), Sync Amp Transistor (Q307) and associated circuitry. Check for the proper vertical waveform at pin 3 of IC701. Check for the proper horizontal waveform at pins 11 and 12 of IC701. If the color is out of sync, refer to the "Chroma" section of this Troubleshooting guide.

VERTICAL

Inject a vertical signal at pin 2 of the Deflection IC (IC701). If the vertical deflection returns, check voltages, waveforms and components associated with pins 3 thru 7 of

IC701. If the vertical deflection doesn't return, check voltages and waveforms on Vertical Output Transistors (Q601 and Q602), Electrolytic C611, Diodes D601 and D602, the vertical winding on the yoke and associated circuitry. For vertical foldover and vertical linearity, check the vertical feedback and bias circuits, Electrolytics C602, C605, C607, C608 and C611, Diodes D601, D602 and associated circuitry.

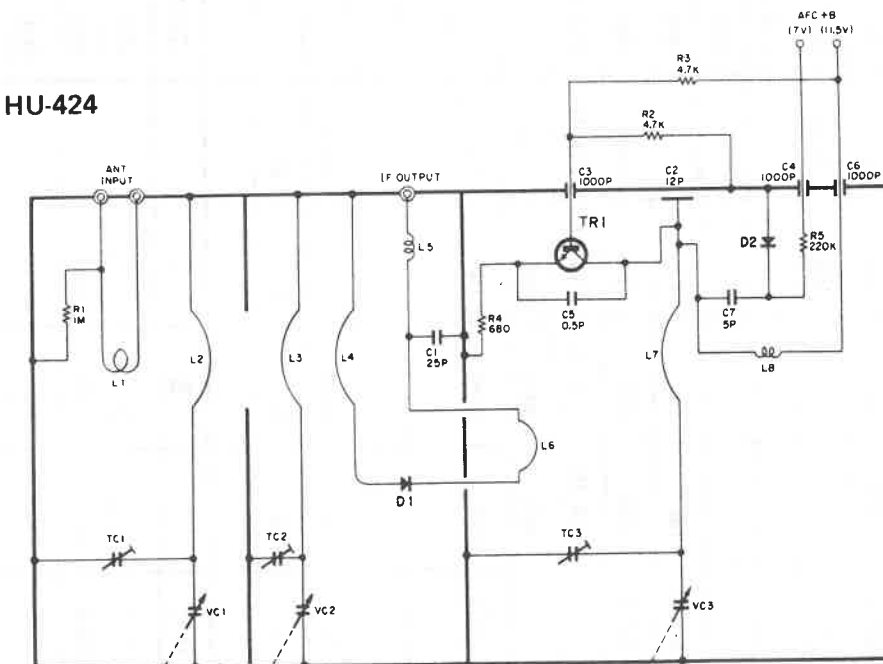
RASTER

If there is a missing color or the B & W cannot be set up, check CRT and CRT voltages and waveforms. Check the voltages and waveforms on Blue, Green and Red Output Transistors (Q851, Q852 and Q853) and at pins 15, 16 and 17 of the Video/Chroma IC (IC501). No blue, check voltages and waveforms on pin 17 of IC501, pin 11 on the CRT socket and Transistor Q853. No green, check voltages and waveforms on pin 15 of IC501, pin 6 on the CRT socket and Transistor Q852. No red, check voltages and waveforms on pin 16 of IC501, pin 8 on the CRT socket and Transistor Q851.

CHROMA

If there is no color or weak color, check voltages, waveforms and components associated with pins 2, 4, 7, 10, 19 and 20 of the Video/Chroma IC (IC501). Connect a 27K resistor between pin 3 of IC501 and ground. If color returns, check voltages and waveforms at pins 2, 7, 9, 10, 19 and 25 of IC501 and check associated circuitry. If there is no color sync, check the adjustment of the Color Sync Control (R512). Check voltages and waveforms at pins 5, 7, 8, 9 and 10 of IC501 and check 3.58MHz Crystal (X501). For wrong color or incorrect hue (tint), check voltages at pins 12, 13, 14, 15, 17 and 18 of IC501 and associated components.

HU-424



Courtesy of the Manufacturer

UHF TUNER SCHEMATIC

TEST JIG HOOKUP

FUNCTION	Chek-A-Color ADAPTER NO.	RCA / TeleMatic ADAPTER NO.	ZENITH ADAPTER NO.
CRT YOKE YOKE SETTING	B239 D4134 (1) YP2A, V508/V509-- 100uH toward chassis, Focus tap	10J683 Horiz 3=0, Vert 34, FVS-3950 Focus Supply	852-422 852-431 (2), (3) Horiz 1.8, Vert 34, Focus tap

(P.C. Board)				
	PIN M1	PIN M2	PIN M3	PIN M4
(1)	Blue	Red	Orange	Yellow
(2)	Red	Blue	Yellow	Green
(3)	Add a .01uF capacitor from pin M3 to M4			

TROUBLESHOOTING

POWER SUPPLY

Check the AC Line Fuse (F901). If the fuse is bad, check Diodes D901 thru D904, Capacitors C902 thru C905, Electrolytic C906, Resistor R902 and Fuse F902. If Fuse F902 is bad, check Power Regulator IC (IC901), Horizontal Output Transistor (Q702) and the Horizontal Output Transformer (T703). Replace defective parts and check for short to ground from the collector of Transistor Q702. If no short is found, apply 120V AC and turn the set On. Check for 159V on both ends of Fuse F902, check voltages on resistor network CP901. Check the B+ sources that are developed from Transformer T703 and rectified by Diodes D702 thru D705. Measure the voltage at pin 16 of the Deflection IC (IC701). If it is .70V or more, shutdown circuit is activated. If the set does not shutdown, check the condition of Module CP701.

HORIZONTAL

Check for 133.8V at the collector of the Horizontal Output Transistor (Q702). Check for a horizontal waveform at the base of Transistor Q702. If no signal, inject a horizontal signal at the base of Transistor Q702. If high voltage returns, check the Horizontal Drive Transistor (Q701), voltages on pins 11 thru 16 of the Deflection IC (IC701). Check the hold down circuit, it may be activated, check voltage at pin 16 of IC701. If high voltage is still not present, check Transistor Q702, Capacitors C717 thru C719 and C721. If these components check out as normal, check the Horizontal Output Transformer (T703). The HV rectifier is part of Transformer T703 and may be defective. Check for shorted sources rectified by Diodes D702 thru D705. Poor horizontal linearity or foldover may be caused by the condition of Capacitors C717 thru C719 and C721 and associated components.

NOTE: In case of a TV shutdown by excessive high voltage, care should be taken by using an isolation transformer with stepdown control for AC power supply. Monitor the high voltage while doing this procedure of trouble shooting.

IF-AGC

Inject an IF signal at IF Input (J701) and check for picture information on the CRT. If picture is present, check Tuner, Tuner AGC circuit and B+ on the tuner. If picture is not present, check voltages and components associated with IF Amp Transistor (Q071). Check for 11.96V at pin 21 of PIF IC (IC201). Check for a video waveform at pin 2 of IC201. If video waveform is present, refer to the "Video" section of this Troubleshooting guide. If video waveform is not present, inject the IF signal at pin 6 of IC201. If a video waveform is now present at pin 2 of IC201, check voltages and components associated with Transistor Q071. If the video waveform is still absent, apply AGC bias at pin 12 of IC201. If the video waveform doesn't return, check voltages, waveforms and components associated with pins 5 thru 23 of IC201. A defective AGC circuit can cause an overloaded picture, excessive snow or loss of picture and sound. See AGC voltage chart for AGC voltages with signal.

AGC VOLTAGE CHART						
Note: Voltages measured while using a Keyed-Rainbow generator for signal.						
IC201						
Pin 10	Pin 12	Pin 16	Pin 17	Pin 22	Pin 23	
2.00V	6.10V	2.10V	3.00V	2.90V	9.10V	

AUDIO

Inject an audio signal at pin 12 of SIF IC (IC401). If sound is not present at the speaker, check the speaker (SP451), Earphone Jack (J451), Plug S and the Audio Output Transformer (T401). Check voltages and components associated with the Audio Output Transistors (Q401 and Q402). If sound is present at the speaker with the audio signal injected at pin 12 of IC401, check voltages and components associated with IC401.

MISCELLANEOUS ADJUSTMENTS

HIGH VOLTAGE CHECK

Tune in a TV station and turn Brightness and Picture Controls to MINIMUM. Connect a high voltage meter to the high voltage anode of the CRT, low side to ground. High voltage should measure less than 31KV.

AGC ADJUSTMENT

Tune in a strong TV station. Adjust AGC Control (R210) fully clockwise, then turn counter-clockwise until snow just disappears from the picture.

HORIZONTAL SYNC ADJUSTMENT

Tune in a TV station. Connect a jumper from TP701 to TP702. Adjust Horizontal Hold Control (R707) until picture stops or slowly floats across the screen.

SUB COLOR ADJUSTMENT

Tune in a TV station transmitting color. Set Color Control to midrange and Signal Tracker Switch (S501) to On position. Adjust Sub Color Control (R504) for desired intensity or color saturation.

SUB BRIGHTNESS ADJUSTMENT

See Color Temperature Adjustments.

(Color Sync) APC ADJUSTMENT

Connect a color bar generator to the antenna terminals and tune in a color bar pattern. Connect a jumper from TP51 to ground. Connect a 27K-ohm resistor from TP52 to ground. Adjust Color Sync Control (R512) until color bars stop or slowly float across the screen. Remove jumper and 27K-ohm resistor.

SUB CONTRAST ADJUSTMENT

Tune in a TV station. Connect an oscilloscope to TP12, low side to ground. Adjust Sub Contrast Control (R223) for 1.25V p-p \pm .05V p-p waveform.

PURITY ADJUSTMENT

Turn TV on and allow 20 minutes warm-up time. Degauss the set if necessary. Connect a jumper from P3 (CRT Board) to Emitter Q852 to produce a magenta raster. Loosen yoke and move it back against the convergence assembly. Adjust the purity tabs to produce a magenta bar in the center of the screen. Push the deflection yoke forward to obtain a uniform magenta raster. Remove jumper.

HORIZONTAL SIZE ADJUSTMENT

Connect or disconnect jumper J707 for proper horizontal size. NOTE: If high voltage is higher than 31KV, connect jumper J707 and confirm that high voltage is lower than 31KV.

VERTICAL CENTERING

Connect or disconnect Jumper J620 for best vertical centering.

DELAY LINE ADJUSTMENT

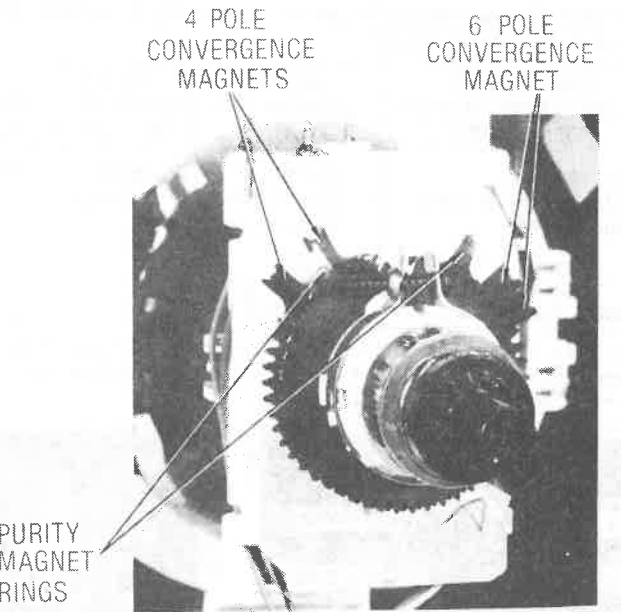
Delay Line (DL301) is factory adjusted.

CONVERGENCE ADJUSTMENTS

Connect a color bar generator to the antenna terminals and tune in a dot pattern. Adjust Four-pole Convergence Magnets to converge the red and blue dots at the center of the screen. Adjust Six-pole Convergence Magnets to converge the red/blue dots over the green dots at the center of the screen. Tune in a crosshatch pattern. Remove the rubber wedges between the deflection yoke and CRT. Tilt the deflection yoke up or down to converge the vertical lines at the top and bottom of the screen and the horizontal lines at the right and left sides of the screen. Tilt the deflection yoke to the right or left to converge the horizontal lines at the top and bottom of the screen and the vertical lines at the right and left sides of the screen. Repeat convergence procedure if necessary to obtain the best overall convergence. Replace the rubber wedges.

COLOR TEMPERATURE ADJUSTMENTS

Turn TV set on and allow 10 minutes for warm up. Turn off Signal Tracker Switch, set Picture and Brightness Controls to midrange. Place Red (R856) and Blue (R862) Drive Controls to midrange. Turn Red (R853), Blue (R865), Green (R859) Background Controls and Screen Control (R900B) fully counterclockwise. Disconnect P5 (on Main PC Board). Connect a jumper from M3 to M4. Turn Screen Control (R900B) until one of the colors just appears. Adjust the Background Controls for the two remaining colors to produce a white line. Connect P5, and remove jumper. Adjust Sub Brightness Control (R311) to suitable brightness level. Adjust Red (R856) and Blue (R862) Drive Controls for high brightness level and adjust Background Controls for low brightness level to maintain proper white balance.



CRT NECK ASSEMBLY

TV ALIGNMENT INSTRUCTIONS

Use an isolation transformer, or observe polarity, and maintain line voltage at 120VAC. Allow a 20-minute warm-up period for receiver and test equipment.
Suggested Alignment Tools: GC ELECTRONICS
VHF Tuner IF Output Coil.....9440
L206, L207, T501.....9296, 9297, 9300
L405.....9293, 9294

PRELIMINARY INSTRUCTIONS

Set the channel selector to the highest unused channel. Set scope sweep to external. Connect scope vertical input to scope vertical input on sweep/marker generator. Connect scope external horizontal input to scope horizontal input on sweep/marker generator. Ground test equipment to TV chassis unless specified otherwise. Use only enough generator output to provide a usable indication.
Note: Response may vary slightly from that shown.
Connect a +7.60V bias to TP3.
Connect a 50-ohm resistor across L205.

VIDEO IF ALIGNMENT (SWEEP MARKER GENERATOR)

DIRECT PROBE FROM SWEEP/MARKER GENERATOR	SWEEP GENERATOR OUTPUT	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	REMARKS
To TP12	To TP (On Tuner P.C. Board)	44MHz (10MHz Sweep)	41.25MHz 42.17MHz 44.00MHz 45.75MHz 47.25MHz	Adjust VHF Tuner IF Output Coil for Maximum gain and symmetry of response. VHF Tuner IF Output Coil affects overall response. Remove 50-ohm resistor. See Figure 1.
"	"		45.75MHz (Modulated)	Adjust L206 for Maximum gain of response. See Figure 2.

VIDEO IF ALIGNMENT (BAR SWEEP GENERATOR)

BAR SWEEP GENERATOR	SCOPE INPUT	REMARKS
To TP on Tuner	To TP12	Perform Video IF Adjustments per SWEEP/MARKER GENERATOR instructions above. See Figure 3.

AUTOMATIC FINE TUNING ALIGNMENT

Connect as explained in preliminary instructions unless specified otherwise. Remove 50-ohm resistor.

DIRECT PROBE FROM SWEEP/MARKER GENERATOR	SWEEP GENERATOR OUTPUT	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	REMARKS
To TP1 (Junction of R218 and C216)	To TP (on Tuner P.C. Board)	44MHz (10MHz)	45.75MHz	Adjust L207 to place 45.75MHz marker at crossover as shown. See Figure 4.

SOUND IF ALIGNMENT

Tune in a station and adjust L405 for maximum sound. Reduce signal strength at the antenna terminals until distortion appears. Continue to reduce the signal while aligning for undistorted output by adjusting L405.

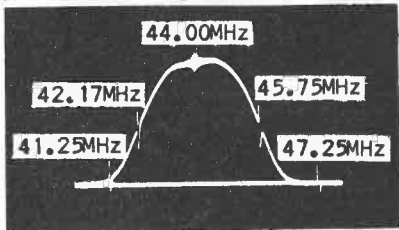


Figure 1

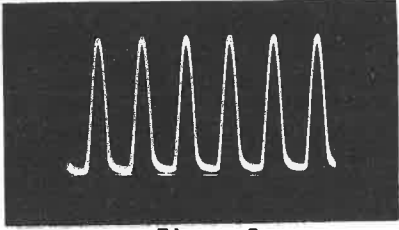


Figure 2

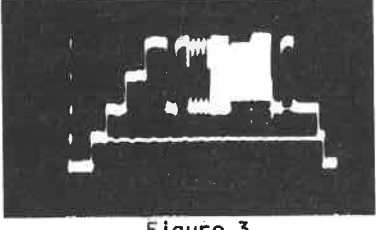


Figure 3

TROUBLESHOOTING AID

Note: Waveforms taken with triggered scope, Keyed-Rainbow generator. Schematic voltages measured with digital meter, no signal. Controls adjusted for normal operation.

PICTURE or SOUND

NO PIC, NO SOUND, NO RASTER: Check AC power supply and sources generated from Horizontal Output Transformer (T703). Refer to "Troubleshooting" Power Supply and Horizontal circuits.

NO PIC, NO SOUND, HAS RASTER: Check IF-AGC and supply sources from Horizontal Output Transformer (T703). Refer to "Troubleshooting" IF-AGC and Horizontal circuits.

NO PIC, HAS SOUND, NO RASTER: Check Horizontal Output Transformer (T703) sources and Video circuit. Refer to "Troubleshooting" Horizontal and Video circuits.

NO PIC, HAS SOUND, HAS RASTER: Refer to "Troubleshooting" Video circuit.

HAS PIC, NO SOUND: Refer to "Troubleshooting" Audio circuit.

OVERLOADED PICTURE: Refer to "Troubleshooting" IF-AGC circuit.

LOW OR EXCESSIVE BRIGHTNESS: Check Video and Luminance circuits. Refer to "Troubleshooting" Video circuit.

SWEEP

NO RASTER, HAS SOUND: Check HV rectifier, Part of Horizontal Output Transformer (T703). Refer to "Troubleshooting" Horizontal circuit.

NO RASTER, NO SOUND: Refer to "Troubleshooting" Horizontal circuit.

NO VERT DEFLECTION: Refer to "Troubleshooting" Vertical circuit.

POOR VERT LIN OR FOLDOVER: Refer to "Troubleshooting" Vertical circuit.

POOR HORIZ LIN OR FOLDOVER: Refer to "Troubleshooting" Horizontal circuit.

NARROW PICTURE: Refer to "Troubleshooting" Horizontal circuit.

VERT OFF FREQUENCY: Refer to "Troubleshooting" Vertical circuit.

HORIZ OFF FREQUENCY: Refer to "Troubleshooting" Horizontal circuit.

SYNC

NO VERT/HORIZ SYNC: Refer to "Troubleshooting" Sync circuit.

RASTER

YELLOW (NO BLUE): Check Chroma and Blue Output circuits. Refer to "Troubleshooting" Raster circuit.

CYAN (NO RED): Check Chroma and Red Output circuits. Refer to "Troubleshooting" Raster circuit.

MAGENTA (NO GREEN): Check Chroma and Green Output circuits. Refer to "Troubleshooting" Raster circuit.

COLOR (B/W operating normally)

NO COLOR: Refer to "Troubleshooting" Chroma circuit.

WEAK COLOR: Refer to "Troubleshooting" Chroma circuit.

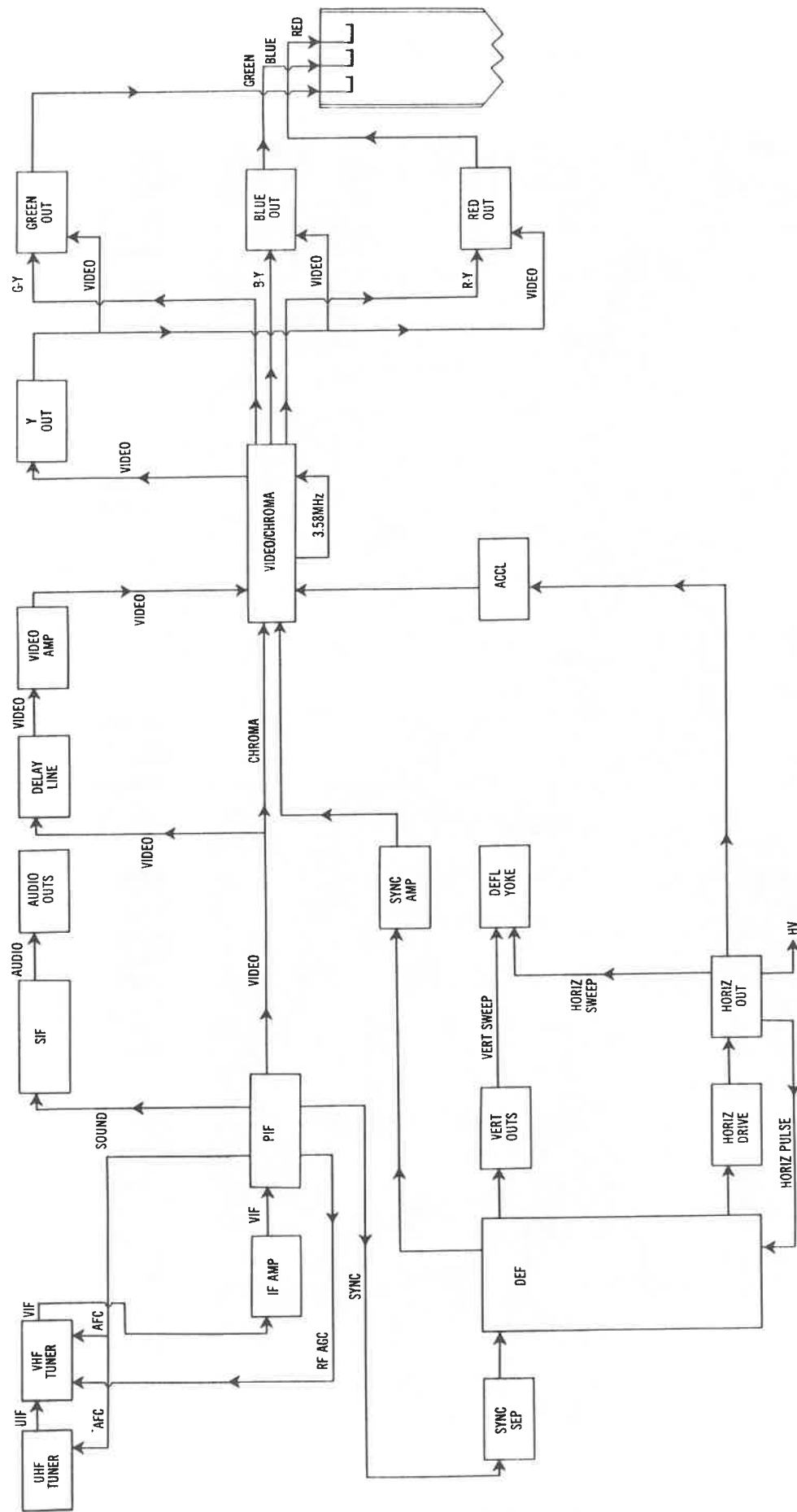
NO COLOR SYNC: Refer to "Troubleshooting" Chroma circuit.

NO GREEN: Check Chroma and Green Output circuits. Refer to "Troubleshooting" Raster circuit.

NO BLUE: Check Chroma and Blue Output circuits. Refer to "Troubleshooting" Raster circuit.

NO RED: Check Chroma and Red Output circuits. Refer to "Troubleshooting" Raster circuit.

INCORRECT HUE (TINT): Refer to "Troubleshooting" Chroma circuit.



TV ALIGNMENT INSTRUCTIONS (Continued)

CHROMA BANDPASS ALIGNMENT (SWEEP MARKER GENERATOR)

Connect as explained in preliminary instructions. Set color control to maximum, tint control to midrange, and color killer fully counterclockwise.

Connect as explained in preliminary instructions. Set color control to Maximum, tint control to midrange.

DETECTOR PROBE FROM SWEEP/MARKER GENERATOR	SWEEP GENERATOR OUTPUT	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	REMARKS
To TP2 (Junction C503 and T501)	To TP (On Tuner P.C. Board)	44MHz 10MHz Sweep	3.08MHz 3.58MHz 4.08MHz	Adjust T501 for Maximum gain and symmetry of response. See Figure 5.

CHROMA BANDPASS ALIGNMENT (BAR SWEEP GENERATOR)

BAR SWEEP GENERATOR	SCOPE INPUT	REMARKS
To TP (on Tuner P.C. Board)	To TP2	Perform CHROMA BANDPASS Adjustments per SWEEP/MARKER GENERATOR instructions above. See Figure 6.

After completing Chroma Bandpass Alignment, reset color killer. Refer to Miscellaneous Adjustments.

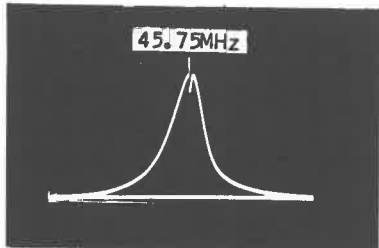


Figure 4

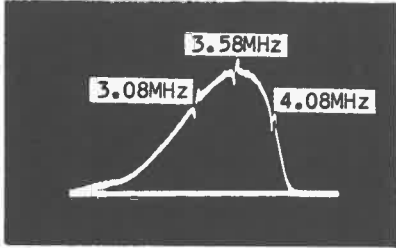


Figure 5

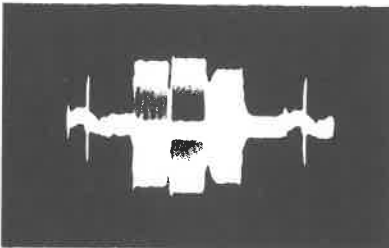
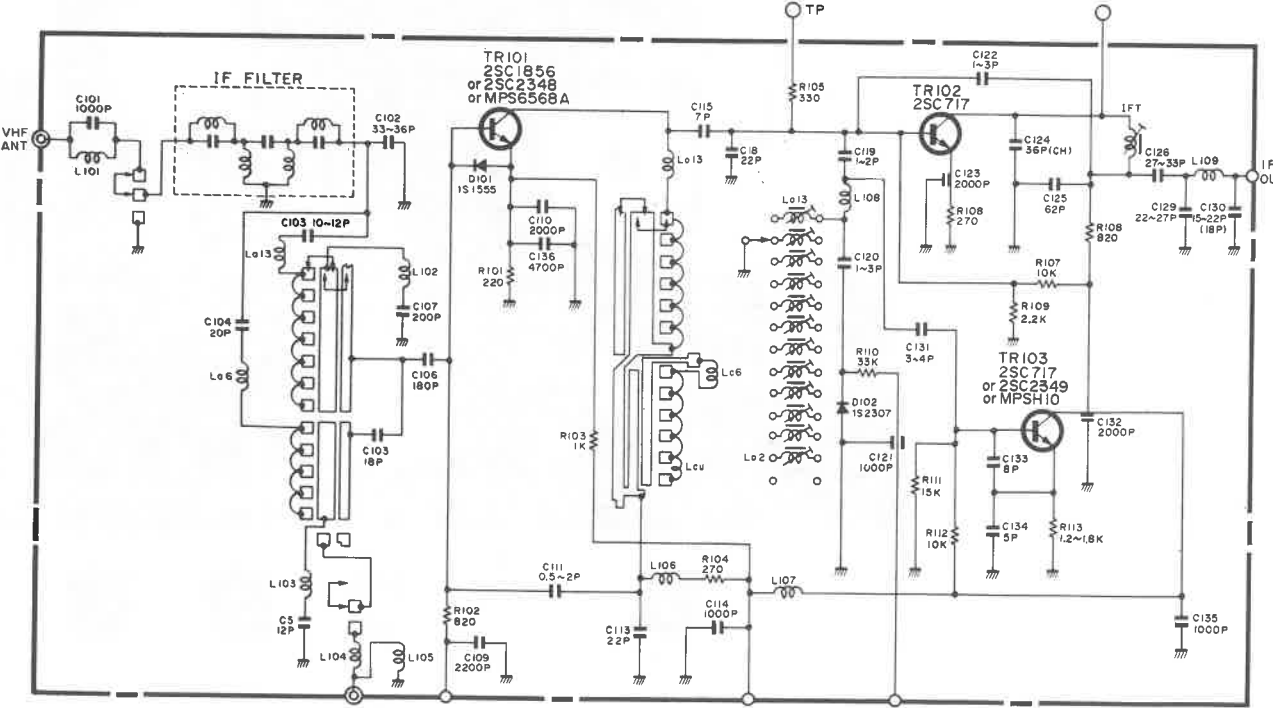


Figure 6

HT-457B



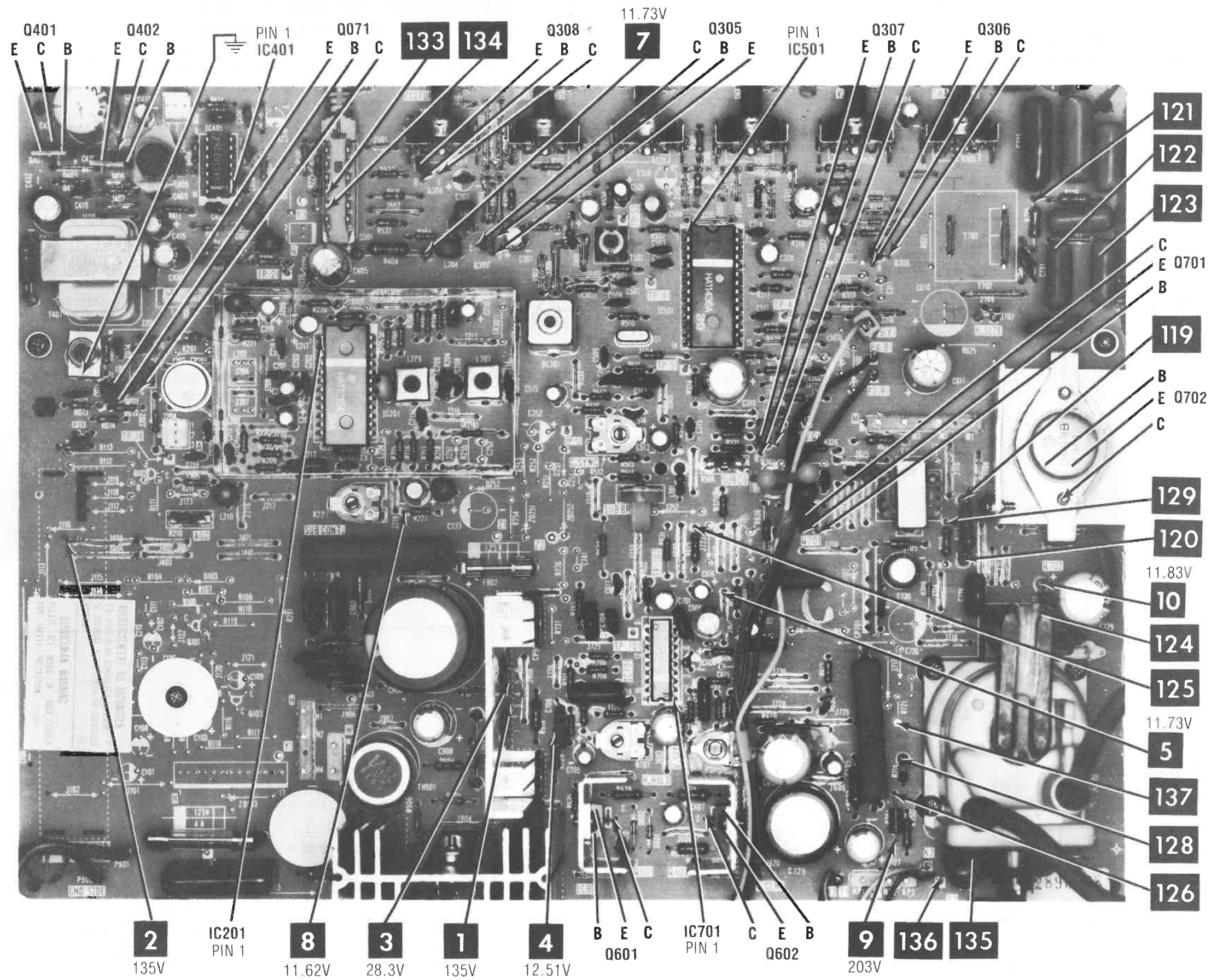
Courtesy of the Manufacturer

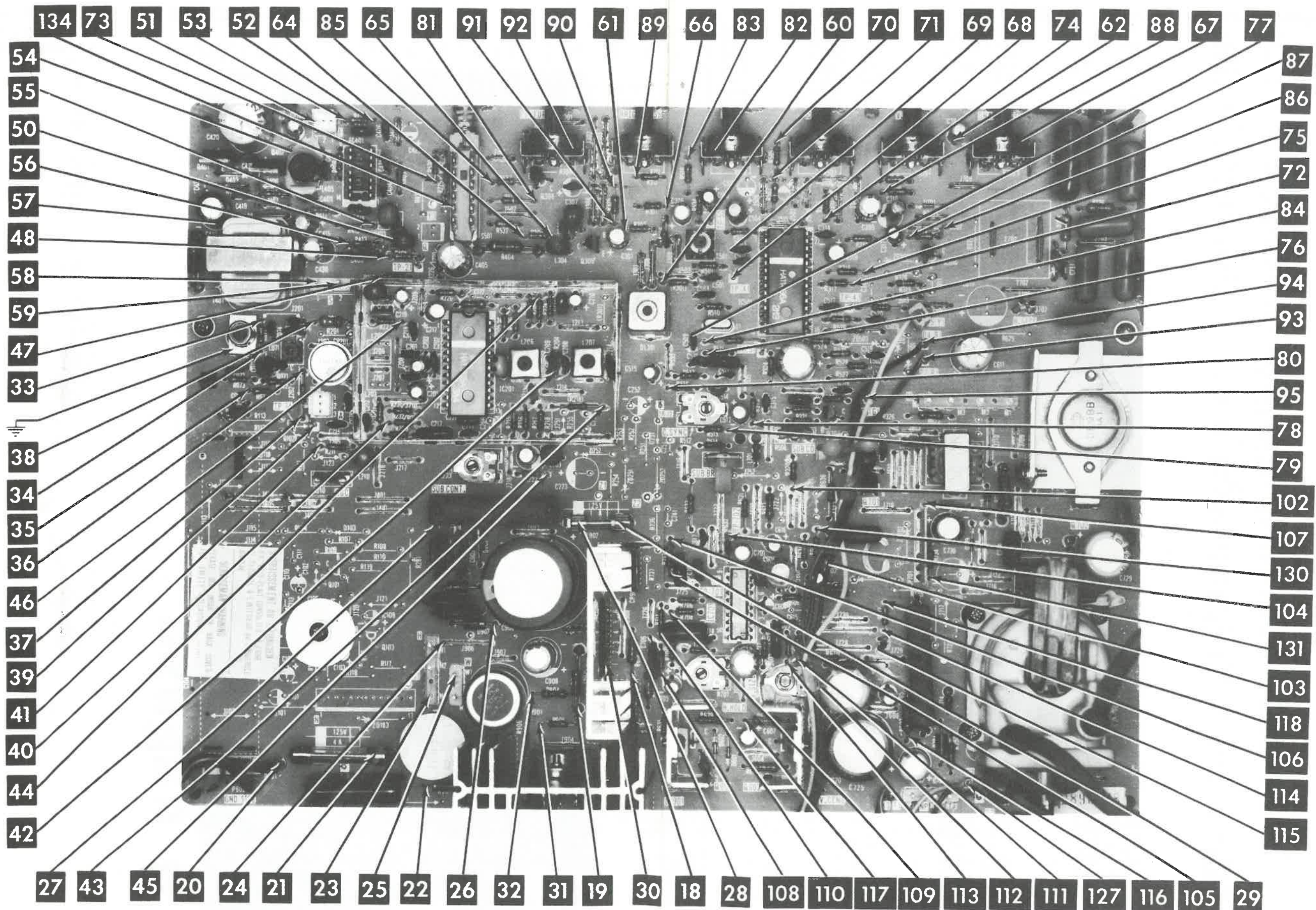
VHF TUNER SCHEMATIC

SET 2200 FOLDER 1

HITACHI MODELS
CT1900A, CT1910A, CT1912A

FOLDER 1





HITACHI MODELS
CT1900A, CT1910A, CT1912A

FOLDER 1

MAIN BOARD

A Howard W. Sams CIRCUITRACE® Photo

A Howard W. Sams CIRCUITRACE® Photo

MAIN BOARD

MAIN BOARD GridTrace LOCATION GUIDE

A	I-4	C540*	C-17	IC901	S-11	R309	B-11	R614	R-17
C071	H-2	C601	N-18	J071	G-2	R310	C-20	R615	Q-17
C072	H-2	C602	M-18	J620	S-18	R311	J-15	R618	O-13
C073	I-2	C604	N-16	J707	F-24	R312	B-13	R622	Q-20
C074	G-3	C605	Q-20	L071	G-3	R313	B-13	R623	I-21
C076	G-4	C606	M-17	L201	G-5	R314	D-21	R624	P-21
C077	F-3	C607	R-16	L205	H-9	R316	E-19	R626	B-20
C078	I-5	C608	P-19	L206	H-10	R317	E-18	R629	Q-15
C201	G-7	C611	G-22	L207	H-12	R318	D-19	R630	O-20
C202	H-7	C612	J-20	L208	F-6	R319	E-20	R631	L-16
C203	H-7	C613	Q-17	L209	J-11	R320	K-17	R632	M-15
C204	H-7	C615	M-16	L210	J-5	R321	I-17	R633	K-14
C205	H-7	C616	L-17	L304	E-11	R322	I-17	R634	M-18
C208	H-11	C617	L-15	L305	D-11	R323	I-18	R635	R-14
C209	H-11	C620	S-15	L404	D-6	R324	H-17	R636	K-18
C210	F-11	C701	M-16	L405	B-4	R325	C-12	R705	P-14
C211	F-11	C705	P-14	L701	J-19	R326	I-19	R706	N-14
C212	I-7	C706	O-13	L702	S-23	R327	C-18	R707	P-15
C213	I-5	C708	O-14	L901	R-8	R330	B-20	R708	N-14
C214	H-12	C709	M-15	M3	I-21	R331	A-10	R709	O-14
C215	H-10	C710	M-14	M4	I-21	R340	J-16	R710	O-15
C216	I-5	C711	P-16	MF201	F-6	R401	E-6	R711	O-14
C217	F-7	C713	L-19	MF401	D-6	R403	C-6	R713	M-14
C218	G-7	C714	O-15	NP	S-21	R404	C-9	R714	Q-21
C219	F-6	C716	J-20	P5	F-21	R408	B-5	R715	M-25
C220	I-8	C717	E-25	Q071	H-3	R412	D-5	R717B	K-23
C221	J-10	C718	D-26	Q305	D-12	R413	D-5	R717A	K-23
C227	J-8	C719	E-26	Q306	D-21	R414	A-5	R718	K-22
C301	D-12	C721	F-25	Q307	I-18	R415	B-4	R725	D-25
C304	A-21	C721A	L-26	Q308	C-10	R417	C-4	R726	C-25
C305	D-11	C723	B-25	Q401	B-1	R419	C-3	R728	P-13
C306	C-14	C724	B-26	Q402	B-3	R420	C-2	R734	M-21
C307	C-11	C725	R-19	Q601	R-14	R421	E-1	R750	R-22
C308	E-18	C726	M-23	Q602	R-17	R501	E-15	R900	S-24
C309	C-19	C727	S-21	Q701	K-19	R502	D-16	R901	S-8
C310	C-20	C729	M-26	Q702	I-25	R503	C-17	R902	L-9
C312	H-17	C730	L-22	R071	G-3	R504	I-17	R903	P-11
C313	H-17	C731	E-24	R072	H-3	R505	B-17	R904	Q-11
C314	D-18	C732	N-26	R073	H-2	R507	B-18	R905	Q-11
C315	I-16	C740	B-26	R074	H-3	R510	F-15	R906	R-10
C317	D-20	C901	S-5	R075	I-2	R511	G-15	S	E-4
C403	D-6	C902	M-8	R076	H-4	R512	I-15	S501	C-8
C404	C-6	C903	M-8	R202	F-8	R513	I-16	T401	E-2
C405	E-8	C904	O-8	R204	H-11	R514	J-15	T501	D-15
C406	A-6	C905	N-8	R205	G-9	R515	I-15	T701	J-22
C408	E-5	C906	N-10	R206	F-10	R516	H-14	T703	P-25
C409	C-4	C908	P-10	R207	F-10	R517	H-14	TH901	Q-9
C410	B-4	CP201	H-5	R208	F-10	R518	C-9	TP1	I-4
C413	A-3	CP701	M-21	R209	I-7	R519	B-14	TP2	D-15
C414	A-5	CP901	O-12	R210	K-5	R520	B-16	TP3	I-8
C415	D-4	D301	C-21	R211	J-5	R522	C-9	TP12	I-13
C416	C-5	D302	D-21	R212	I-7	R523	F-20	TP51	G-16
C417	C-1	D403	B-2	R213	I-6	R524	G-18	TP52	D-15
C419	C-2	D601	R-15	R214	J-6	R525	G-19	TP701	N-15
C420	A-2	D602	R-15	R215	I-10	R526	F-18	TP702	L-16
C424	B-6	D702	J-24	R216	I-10	R527	H-19	W	P-8
C429	B-2	D703	N-26	R217	I-10	R528	G-19	X501	G-15
C430	D-4	D704	R-21	R218	I-11	R529	B-7	ZD702	E-24
C501	E-15	D705	K-21	R219	E-6	R530			
C503	D-16	D709	L-22	R220	F-8	R531	B-16		
C504	C-16	D901	M-7	R221	F-6	R532	D-9		
C505	C-15	D902	L-9	R222	K-10	R534	C-15		
C507	E-16	D903	O-9	R223	J-8	R535	G-16		
C508	F-15	D904	N-8	R224	F-10	R601	M-18		
C509	G-14	DL301	F-13	R225	B-7	R602	O-16		
C510	G-15	F	A-4	R226	E-7	R603	O-17		
C511	H-15	F901	R-5	R232	I-7	R604	O-17		
C512	I-16	F902	L-12	R301	E-14	R605	O-17		
C513	H-15	FB071	H-3	R302	D-13	R606	N-17		
C514	H-15	FB072	H-3	R303	A-23	R607	M-18		
C515	H-13	H	P-7	R304	D-10	R609	P-17		
C517	F-18	IC201	H-8	R305	B-23	R610	O-18		
C518	H-18	IC401	B-5	R306	D-14	R611	Q-18		
C519	G-19	IC501	E-17	R307	C-13	R612	N-20		
C520	F-19	IC701	N-16	R308	B-11	R613	K-17		

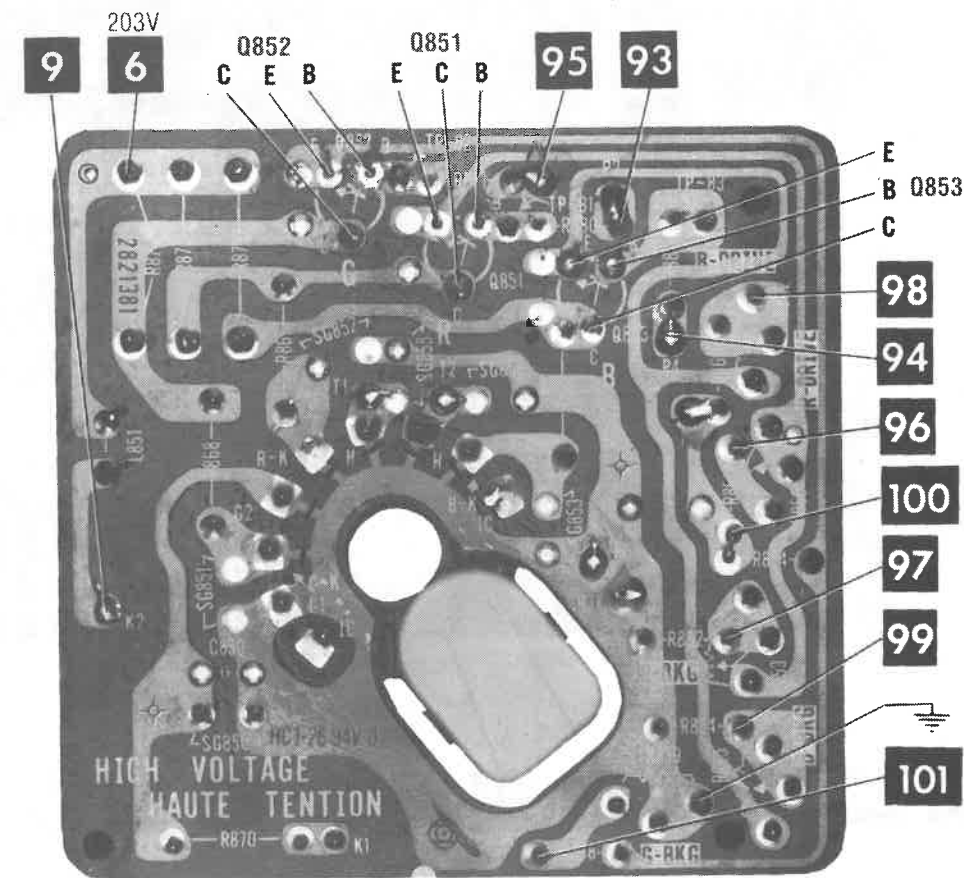
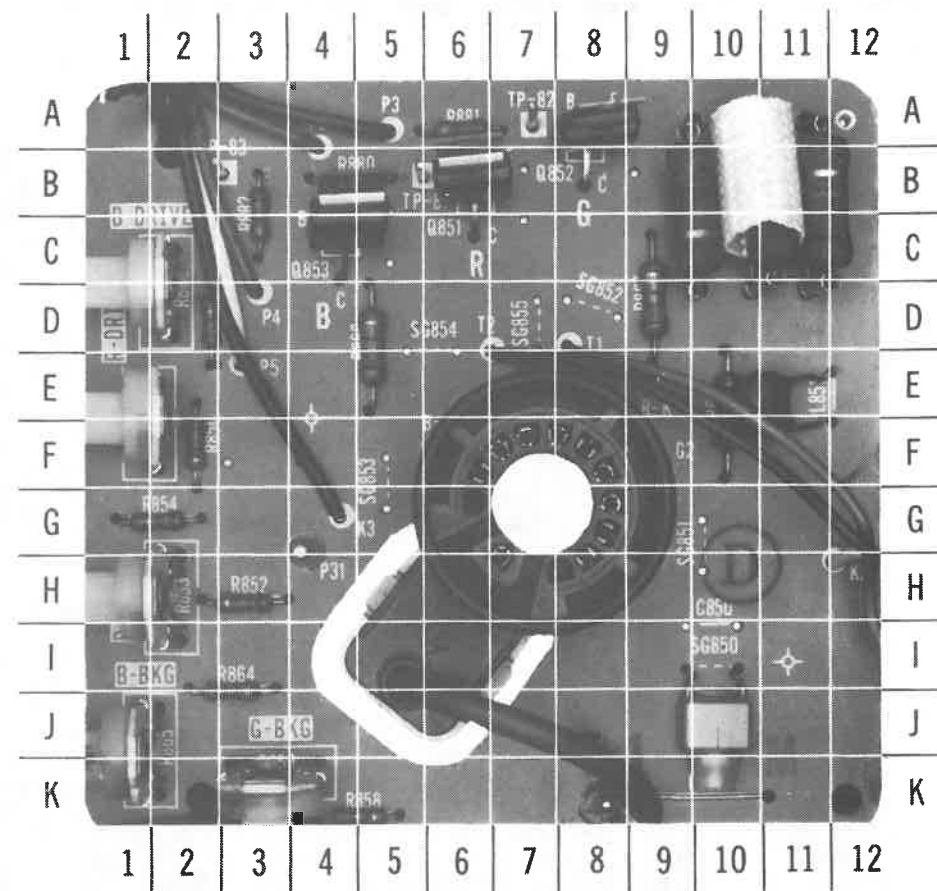
* Located on other side of board.

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CRT SOCKET BOARD

GridTrace LOCATION GUIDE

L851	E-11
P3	A-5
P31	G-4
Q851	B-6
Q852	A-8
Q853	C-4
R850	F-2
R852	H-3
R853	H-1
R854	G-2
R856	E-1
R858	K-4
R859	K-3
R860	D-2
R862	C-1
R864	I-3
R865	J-1
R867	D-9
R868	E-10
R869	D-5
R877	B-11
R878	B-11
R879	B-10
R880	B-4
R881	A-6
R882	B-3
SG850	J-10

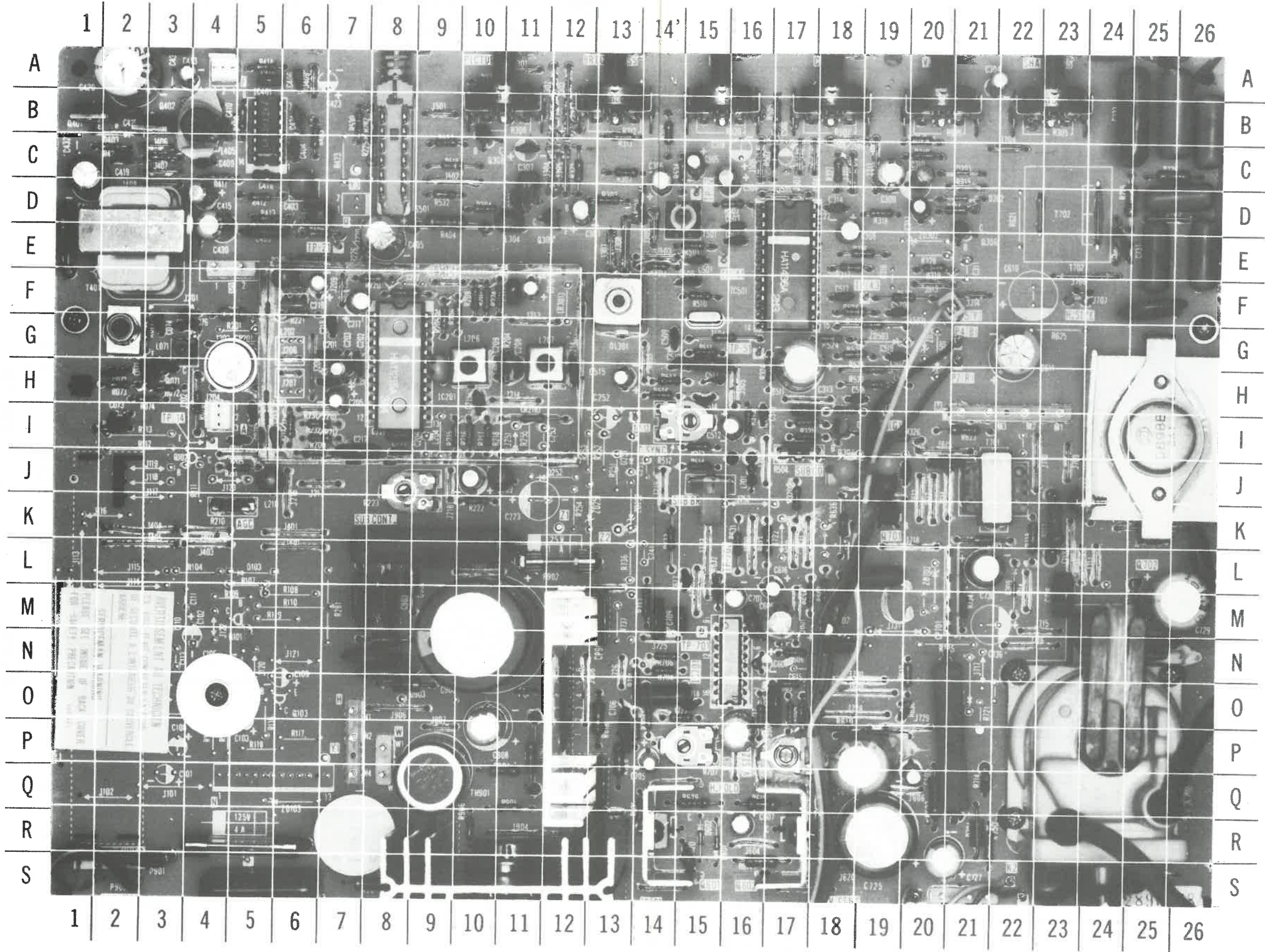


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CRT SOCKET BOARD

HITACHI MODELS
CT1900A, CT1910A, CT1912A

FOLDER 1



PARTS LIST AND DESCRIPTION
(When ordering parts, state Model, Part Number, and Description.)
Replacement parts shown may be superseded by the availability of newly introduced replacements.
Have your local distributor check Sams COUNTER FACTS for the most up-to-date replacement.

SEMICONDUCTORS (select replacement transistor for best results)

REPLACEMENT DATA									
ITEM No.	TYPE No.	MFGR. PART No.	ECG PART No.	GENERAL ELECTRIC PART No.	MOTOROLA PART No.	NTE PART No. (Formerly TCG)	RCA PART No.	WORKMAN PART No.	ZENITH PART No.
D301,2 D403 D601,2 D702 D703	1S2076 1S2076 1S2076 1S2076A RH-1S	2330351 2330351 2330351 2330352 2332251	ECG519 ECG519 ECG519 ECG519 ECG552	GE-514 GE-514 GE-514 GE-514 GE-511	1N4935 1N4935 1N4935 1N4935	NTE519 NTE519 NTE519 NTE519 NTE552	SK3100/519 SK3100/519 SK3100/519 SK3100/519 SK9000/552	WEP925/519 WEP925/519 WEP925/519 WEP925/519 WEP172/506	103-131 103-131 103-131 103-131 103-287
D704 D705 D709 D901 Thru D904	RH-1Z EH-1Z 1S2076A R02A	2332141 2332851 2330352 2331991	ECG552 ECG552 ECG519 ECG125	GE-511 GE-511 GE-514 GE-510	1N4935 1N4007	NTE552 NTE552 NTE519 NTE125	SK9000/552 SK9000/552 SK3100/519 SK3081/125	WEP172/506 WEP172/506 WEP925/519 WEP170/125	103-287 103-287 103-131 212-Z9000
IC201 IC401 IC501	HA11215A LA1363W HA1124D HA11436A HA11436	2360782 2360501 2365062	ECG1469 ECG712 ECG712	GE IC-2 GE IC-2	MC1358P MC1358P	NTE1469 NTE712 NTE712	SK9356/1469 SK3072/712 SK3072/712	WEP507/712 WEP507/712	221-48 221-48
IC701 IC901 Q071 Q305	HA11423 STR384A 2SC717 2SC717TM 2SC458B 2SC458C,D	2364181 2364134 2320143 0573480	ECG1471 ECG107 ECG107 ECG85 ECG85	GE-17* GE-17* GE-210 GE-210	MPSH34* MPSH34* 2N4401* 2N4401*	NTE107 NTE107 NTE85 NTE85	SK3293/107 SK3293/107 SK3124A/289A SK3124A/289A	WEP1717 WEP1717 WEP910/289 WEP910/289	121-522* 121-522* 121-972* 121-972*
Q306 Q307,8 Q401,2 Q601,2	2SA673C,D 2SC458B 2SC458C,D 2SD401AK 2SD401AK,L 2SD401/A	2320637 0573480 2321591 2321306	ECG290A ECG85 ECG85 ECG375 ECG375 ECG375	GE-269 GE-210 GE-210 GE-375 GE-375 GE-375	2N4403* 2N4401* 2N4401*	NTE290A NTE85 NTE85 NTE375 NTE375 NTE375	SK9132 SK3124A/289A SK3124A/289A SK9118/375 SK9118/375 SK9118/375	WEP911/290A WEP910/289 WEP910/289 WEP763/375 WEP763/375 WEP763/375	121-Z9003* 121-972* 121-972* 121-29106 121-29106 121-29106
Q701 Q702 Q851 Thru Q853 ZD702	2SC2271M,N 2SC8988 2SC1514 HZ-11A,B,C	2321992 2323021 2321221 2331161	ECG599 ECG89 ECG376 ECG5020A	GE-222	MPSA42 BU208D 1N5241B	NTE399 NTE89 NTE376	SK9352/399 SK9119/89 SK9362/376	WEP68/287 WEP89/89	121-Z9045 121-Z9112 121-Z9107

For SAFETY use only equivalent replacement part.
* Lead configuration may vary from original.

PARTS LIST AND DESCRIPTION (CONTINUED)

(When ordering parts, state Model, Part Number, and Description.)
Replacement parts shown may be superseded by the availability of newly introduced replacements.
Have your local distributor check Sams COUNTER FACTS for the most up-to-date replacement.

MISCELLANEOUS (cont)

ITEM No.	PART NAME	MFGR. PART No.	NOTES
# V1 X501	CRT Crystal Antenna Antenna Assembly Antenna Rod Antenna Adaptor CRT Socket Earphone Magnet UHF Tuner VHF Tuner	A48AAJ00X 510UJB22 2790441 2750341 2750243 0043209 2760523 2687951 2658893 2730063 2771981 2422384 (HU-424) 2424332 (HU-457B)	Models CT1910A, CT1912A Model CT1900A 3.58MHz UHF RUSSELL Replacement Antenna BOW-4H which clips to VHF Antenna Rod. VHF VHF RUSSELL Replacement Rod Assembly COM-14H (Two Required) UHF, with Feeder VHF Antenna Model CT1900A C-F Model CT1900A PTS Part No. 2422384 (HU-424) PTS Part No. 2424332 (HU-457B)

For SAFETY use only equivalent replacement part.

CABINETS & CABINET PARTS (When ordering specify model, chassis & color)

ITEM	PART No.	PART No.	PART No.	PART No.
Model CT1900A Cabinet Front Cabinet Rear Knob-VHF Channel Indicator VHF Channel Selector VHF Fine Tuning UHF Channel Indicator UHF Channel Selector UHF Fine Tuning Volume ST (Signal Tracking) Brightness, Picture, Sharpness, Color, V Hold, Tint	Model CT1910A 3453036 3221082 3262511 3259372 3262521 3262512 3259831 3262412 3262783 3263562	Model CT1912A 3134514 3455636 3221082 3262511 3259372 3262521 3262512 3259831 3262411 3262341 3263562	3134511 3455636 3221081 3259411 3259372 3262523 3259413 3259831 3262411 3262341 3263561	

WIRING DATA

High Voltage Lead	Use BELDEN No. 9867 (30 KV)
Shielded Hook-up Wire	Use BELDEN No. 8401 or 8421 (Single-Conductor) 8208 (Two-Conductor)
General-use Unshielded Hook-up Wire	Use BELDEN No. 8529 (Solid) Available in 13 Colors 8522 (Stranded) Available in 13 Colors 17106 (Polarized Cord)
300-Ohm Tuner Input Lead	Use BELDEN No. 8225
75-Ohm Tuner Input Lead	Use BELDEN No. 8241
300-Ohm Antenna Lead-in	Use BELDEN No. 8275 (Foam Core) or 8285 (Foam Jacketed)
Antenna Rotor Cable	Use BELDEN No. 8464 (Flat) or 8484 (Round) 4-Conductor 8485 (Round) 5-Conductor 8488 (Round) 8-Conductor

PARTS LIST AND DESCRIPTION (CONTINUED)

(When ordering parts, state Model, Part Number, and Description.)
Replacement parts shown may be superseded by the availability of newly introduced replacements.
Have your local distributor check Sams COUNTER FACTS for the most up-to-date replacement.

TRANSFORMER (Audio Output)

ITEM No.	IMPEDANCE		REPLACEMENT DATA		NOTES
			MFGR. PART No.	THORDARSON PART No.	
	PRI.	SEC.			
T401	800	8	2250359 VTDIT (1)		(1) Number on unit.

SPEAKER

ITEM No.	TYPE	REPLACEMENT DATA		NOTES
		MFGR. PART No.	QUAM PART No.	
# SP451	3" X 4 3/4" 8 Ohm	2411291		

For SAFETY use only equivalent replacement part.

FUSE DEVICES

ITEM No.	DESCRIPTION	REPLACEMENT DATA				NOTES
		MFR. PART No.		BUSS PART No.		
		DEVICE	HOLDER	DEVICE	HOLDER	
F901	4A @ 125V Pigtall	2720587		MDV4		
F902	1A @ 125V Slow Blow	2720811	2720221	GDC1		

For SAFETY use only equivalent replacement part.

MISCELLANEOUS

ITEM No.	PART NAME	MFGR. PART No.	NOTES
CP201	Filter	2300073	(HW2063) SAW (HM7101HD) Reference-Voltage Voltage Divider (HM9044)
CP701	Module	2370152	
CP901	Voltage Divider	2370424	
FB071	Ferrite Bead	2771891	
FB072	Ferrite Bead	2771891	Earphone Models CT1910A, CT1912A
J451	Jack	2670292	
L902	Degaussing Coil	2162416	
MO51	Component Combination		
MF201	Filter	2142241	Antenna Isolation Ceramic, 4.5MHz
MF401	Filter	2140631	
NE001	Neon Bulb	2760474	
NE002	Neon Bulb	2760474	
NE003	Neon Bulb	2760474	UHF Indicator Models CT1910A, CT1912A VHF Indicator Models CT1910A, CT1912A
NE004	Neon Bulb	2760474	
P900	AC Power Cord	2742553	
S501	Switch	2630771	
S901	Switch	2610498	ST (Signal Tracker) Power On-Off, includes volume control
SG850	Spark Gap	2340038	

PARTS LIST AND DESCRIPTION (CONTINUED)

(When ordering parts, state Model, Part Number, and Description.)
Replacement parts shown may be superseded by the availability of newly introduced replacements.
Have your local distributor check Sams COUNTER FACTS for the most up-to-date replacement.

ELECTROLYTIC CAPACITORS

ITEM No.	RATING	MFGR. PART No.
C051	10 25V	0252621
C052	22 25V	
	220 25V	0252622
C053	1 50V	0252811
C054	3.3 25V	0252613
C203	2.2 50V	0252817
C205	2.2 50V	0252817
C210	1 50V	0252811
C217	4.7 50V	
	5 50V	0252815
C219	1 50V	0252811
C221	22 15V	
	20 15V	0252522
C301	10 25V	0252621
C304	4.7 25V	0252615
C306	10 25V	0252621
C308	10 25V	0252621
C309	33 16V	
	30 16V	0252523
C310	4.7 25V	0252615
C313	1000 16V	0253054
C317	.22 50V	0252806
C405	220 16V	
	200 16V	0252532
C413	1 50V	0252811
C415	10 25V	0252621
C417	4.7 160V	0257537
C420	22 160V	0258585
C430	1 160V	0257535

For SAFETY use only equivalent replacement part.
(1) Used in Model CT1900A
(2) Used in Models C1910A, C1912A

CAPACITORS

ITEM No.	RATING	MFGR. PART No.
C071	.0015 50V 10%	0244103
C072	56 NPO 50V 5%	0246458
C073	.0022 50V 10%	0244105
C074	18 NPO 50V 5%	0246446
C076	82 NPO 50V 10%	0246462
C077	10 NPO 50V ±.5	0246420
C078	.0015 50V 10%	0244103
C201	.0022 50V 10%	0244105
C202	.0022 50V 10%	0244105
C204	.0022 50V 10%	0244105
C208	12 NPO 50V 5%	0246442
C209	91 NPO 50V 5%	0246463
C211	.0068 50V 10%	0274761
C212	.033 50V 10%	0277019
C213	.0015 50V 10%	0244103
C214	91 NPO 50V 5%	0246463
C215	.0015 50V 10%	0244103
C216	.0015 50V 10%	0244103
C218	.0015 50V 10%	0244103
C220	.0015 50V 10%	0274753
C227	100 50V 5%	0248684
C305	.001 50V 10%	0244139

ITEM No.	RATING	MFGR. PART No.
C504	10 25V	0252621
C505	.22 50V	0252806
C512	10 25V	0252621
C515	1 50V	0252811
C521	10 25V	0252621
C540	10 25V	0252621
C602	1 50V	0252811
C604	1 25V 10%	
C605	4.7 25V	0252615 (2)
	10 25V	0252621 (1)
C606	220 16V	
	200 16V	0252532
C607	4.7 50V	
	5 50V	0252815
C608	22 160V	0258585 (2)
	10 160V	0258584 (1)
C610	470 16V	0252565 (1)
C611	100 50V	0252861
C616	3.3 25V	0252613
C701	10 25V	0252621
C705	1 50V	0252811
C711	220 10V	
	200 10V	0252332
C725	100 160V	0259857
C727	10 160V	0258584
C729	1000 16V	0252536
C730	4.7 160V	0257537
C906	420 200V	0259855
C908	10 160V	0258584

HITACHI MODELS
CT1900A, CT1910A, CT1912A

FOLDER 1

PARTS LIST AND DESCRIPTION (CONTINUED)

(When ordering parts, state Model, Part Number, and Description.)

Replacement parts shown may be superseded by the availability of newly introduced replacements. Have your local distributor check Sams COUNTER FACTS for the most up-to-date replacement.

CAPACITORS (cont)

ITEM No.	RATING	MFGR. PART No.	ITEM No.	RATING	MFGR. PART No.
C513	33 50V 5%	0248672	# C716	.001 500V 10%	0244501
C514	100 50V 5%	0248684	# C717	.018 630V 5%	0299993 (1)
C517	.01 50V	0244171	# C718	.022 630V 5%	0299994 (2)
C518	270 50V		# C719	.022 630V 5%	0299994
	.0027 50V 10%	0244136	# C721	330 N1500 2.5KV 10%	0243837
C519	270 50V				
	.0027 50V 10%	0244136	C721A	330 N1500 2.5KV 10%	0243837
C520	270 50V				
	.0027 50V 10%	0244136	# C723	.18 200V 10%	0299929
C601	.033 50V 10%	0277019	# C724	.15 200V 10%	0299928
C612	.0047 500V 10%	0244565	C726	.1 200V 10%	0277025
C613	.033 50V 10%	0277019	C731	120 500V 5%	
C615	.022 50V 10%	0277017		120 500 10%	0247856
C617	.0015 50V 10%	0244103	# C732	.0047 500V	0244565
C620	180 500V 10%	0243504	# C740	.068 200V 10%	0299924
C706	.0068 50V 10%	0244111	# C901	.1 125V 10%	0279744
C708	.0056 630V 5%	0299978	# C902	.0047 125VAC	0249150
C709	.015 50V 10%	0277015	# C903	.0047 125VAC	0249150
C710	.047 50V 10%	0277021	# C904	.0047 125VAC	0249150
C713	.022 200V 10%	0299918	# C905	.0047 125VAC	0249150
C714	270 50V				
	.0027 50V 10%	0244136			

For SAFETY use only equivalent replacement part.
(1) Used In Models CT1910A, CT1912A
(2) Used In Model CT1900A

CONTROLS (All wattages 1/2 watt, or less, unless listed)

ITEM NO.	FUNCTION	RESISTANCE	MFGR. PART NO.	NOTES
R210	AGC	5000	0151254	
R223	Sub Contrast	5000	0151187	
R305	Sharpness	1000	0159751	
R308	Picture	10K	0159704	
R311	Sub Brightness	5000	0151338	
R312	Brightness	500	0159553	
# R452	Detent @	50%		
	Volume/Switch	10K	2610498	
R504	Sub Color	50K	0151257	
R507	Color	10K	0159557	
	Detent @	50%		
R512	Color Sync	50K	0151297	
R520	Tint	10K	0159557	
	Detent @	50%		
R609	Vert Height (Size)	200	0151279	
R626	Vert Hold	5000	0159568	
# R707	Horiz Hold	5000	0151187	
R853	Red Background	5000	0151338	
R856	Red Drive	200	0151334	
R859	Green Background	5000	0151338	
R862	Blue Drive	200	0151334	
R865	Blue Background	5000	0151338	
# R900A	Focus		(18)	
# R900B	Screen			

For SAFETY use only equivalent replacement part.
(18) R900A and R900B are part of Horizontal Output Transformer.

PARTS LIST AND DESCRIPTION (CONTINUED)

(When ordering parts, state Model, Part Number, and Description.)

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RESISTORS (Power and Special)

ITEM No.	RATING	REPLACEMENT DATA		
		MFGR. PART No.	WORKMAN PART No.	REMARKS
# R340	1 5% 1/4W Metal Oxide	0119512		
# R624	680 5% 5W WW	0111772		
# R708	5600 5% 1/8W Carbon Film	0100083	22-1114	
R711	5600 5% 1/8W Carbon Film	0100083	22-1114	
R714	2.2 5% 1/4W Fusible	0119505	22-1032	
# R715	1 5% 1W Metal Oxide	0119512		
R734	130 5% 1/8W Carbon Film	0100044		
# R850	150 5% 1/8W Carbon Film	0100045	22-1076	
	180 5% 1/8W Carbon Film	0100047 (1)	22-1078	
# R852	1200 5% 1/8W Carbon Film	0100067	22-1098	
# R854	240 5% 1/8W Carbon Film	0100050		
# R858	1200 5% 1/8W Carbon Film	0100067	22-1098	
# R860	180 5% 1/8W Carbon Film	0100047	22-1078	
	200 5% 1/8W Carbon Film	0100048 (1)		
# R864	1200 5% 1/8W Carbon Film	0100067	22-1098	
# R867	1500 5% 1/2W Carbon Film	0113754	22-2100	
# R868	2700 5% 1/2W Carbon Film	0113760	22-2106	
	1500 5% 1/2W Carbon Film	0113754 (1)	22-2100	
# R869	1500 5% 1/2W Carbon Film	0113754	22-2100	
	5600 5% 1/2W Carbon Film	0113768 (1)	22-2114	
# R877	12K 5% 2W Metal Oxide	0110271	22-4122	
# R878	12K 5% 2W Metal Oxide	0110271	22-4122	
# R879	12K 5% 2W Metal Oxide	0110271	22-4122	
# R880	56 5% 1/8W Carbon Film	0100035	22-1066	
# R881	56 5% 1/8W Carbon Film	0100035	22-1066	
# R882	56 5% 1/8W Carbon Film	0100035	22-1066	
# R901	1M 10% 1/2W Carbon Film	0139015	22-2168	
R902	2.7 5% 8W WW	0141066		
TH901	PTC 7.5 Cold	2340263	FR605	

For SAFETY use only equivalent replacement part.
(1) Used In Model CT1900A.

COILS (RF-IF)

ITEM No.	FUNCTION	MFGR. PART No.	ITEM No.	FUNCTION	MFGR. PART No.
DL301	Delay Line	2162294	L305	Peaking	2121699
L071	Peaking	2141776	L404	Peaking	2121698
L201	Peaking	2122301	L405	Sound IF	2141012
L205	Peaking	2120079	L701	RF Choke	2120482
L206	Video IF	2142015	L702	Filament Choke	2122213
L207	AFT	2142015	L851	RF Choke	2121708
L208	Peaking	2121693	# L901	AC Line Filter	2121672
L209	RF Choke	2120482	T501	Bandpass	2141533
L210	RF Choke	2120482	T702	Pincushion	2270521 (1)
L304	RF Choke	2121702			

For SAFETY use only equivalent replacement part.
(1) Model CT1900A only.

COILS & TRANSFORMERS (Sweep Circuits)

ITEM No.	FUNCTION	REPLACEMENT DATA		
		MFGR. PART No.	OTHER IDENTIFICATION	THORDARSON PART No.
# DY1	Yoke Horiz 2.74mH 90° Vert 125mH	2441558		
		2441872 (1)		
T701	Yoke Horiz Driver	2260021		
# T703	Horiz Output	2432811		

For SAFETY use only equivalent replacement part.
(1) Used In Model CT1900A

SAFETY PRECAUTIONS

NOTICE: Comply with all cautions and safety related notes located on or inside the cabinet and on the chassis or picture tube.

WARNING: Since the chassis of this receiver is connected to one side of AC power supply during operation, whenever the receiver is plugged in, service should not be attempted by anyone unfamiliar with the precautions necessary when working on this type of receiver.

The following precautions should be observed:

1. Do not install, remove, or handle the picture tube in any manner unless shatterproof goggles are worn. People not so equipped should be kept away while picture tubes are handled. Keep picture tube away from the body while handling.
2. When service is required, an isolation transformer should be inserted between power line and the receiver before any service is performed on a "HOT" chassis receiver.
3. When replacing a chassis in the receiver, all the protective devices must be put back in place, such as barriers, non-metallic knobs, adjustment and compartment cover-shields, isolation resistor-capacitor, etc.
4. When service is required, observe the original lead dress. Extra precaution should be taken to assure correct lead dress in the high voltage circuitry area.
5. Always use the manufacturer's replacement components. Especially critical components as indicated on the circuit diagram should not be replaced by other manufacture's. Furthermore where a short circuit has occurred, replace those components that indicate evidence of overheating.
6. Before returning a serviced receiver to the customer, the service technician must thoroughly test the unit to be certain that it is completely safe to operate without danger of electrical shock, and be sure that no protective device built into the receiver by the manufacturer has become defective, or inadvertently defeated during servicing.

Therefore, the following checks should be performed for the continued protection of the customer and service technician.

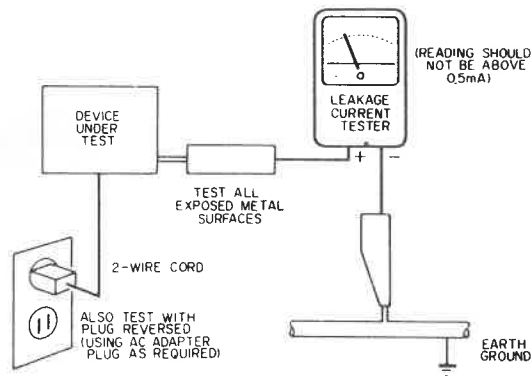
Leakage Current Cold Check

With the AC plug removed from the 120V AC 60Hz source, place a jumper across the two plug prongs. Turn the AC power switch on. Using an insulation tester (DC 500V), connect one lead to the jumpered AC plug and touch the other lead to each exposed metal part (antennas, screwheads, metal overlays, control shafts, etc.), particularly any exposed metal part having a return path to the chassis. Exposed metal parts having a return path to the chassis should have a minimum resistor reading of 0.3MΩ and a maximum resistor reading of 5MΩ. Any resistor value below or above this range indicates an abnormality which requires corrective action. Exposed metal parts not having a return path to the chassis will indicate an open circuit.

SAFETY PRECAUTIONS (Continued)

Leakage Current Hot Check

Plug the AC line cord directly into a 120V AC 60Hz outlet (do not use an isolation transformer for this check). Turn the AC power switch on. Using a "leakage Current Tester (Simpson Model 229 equivalent)", measure for current from all exposed metal parts of the cabinet (antennas, screwheads, metal overlays, control shaft, etc.), particularly any exposed metal part having a return path to the chassis, to a known earth ground (water pipe, conduit, etc.). Any current measured must not exceed 0.5mA.



AC Leakage Test

ANY MEASUREMENTS NOT WITHIN THE LIMITS OUTLINED ABOVE ARE INDICATIVE OF A POTENTIAL SHOCK HAZARD AND MUST BE CORRECTED BEFORE RETURNING THE RECEIVER TO THE CUSTOMER.

PRODUCT SAFETY NOTICE

Many electrical and mechanical parts in HITACHI television receiver have special safety-related characteristics. These are often not evident from visual inspection nor can the protection afforded by them necessarily be obtained by using replacement components rated for higher voltage, wattage, etc. Replacement parts which have these special safety characteristics are identified in this Service Manual.

Electrical components having such features are identified by marking with a ⚡ on the schematics and on the parts list in this Service Manual.

The use of a substitute replacement component which does not have the same safety characteristics as the HITACHI recommended replacement one, shown in the parts list in this Service Manual, may create shock, fire, X-radiation, or other hazards.

Product Safety is continuously under review and new instructions are issued from time to time.

High Voltage

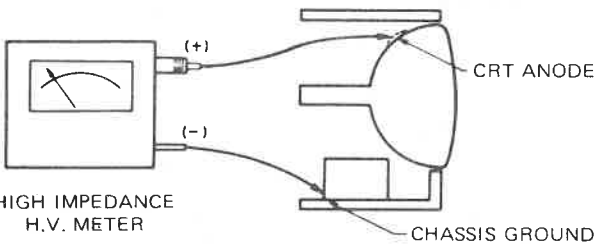
This receiver is provided with a hold down circuit for clearly indicating that voltage has increased in excess of a predetermined value. Comply with all notes described in this Service Manual regarding this hold down circuit when servicing, so that this hold down circuit may correctly be operated.

Serviceman warning

With minimum Brightness and Picture, operating high voltage in this receiver is lower than 31.0KV. In case any component having influence on high voltage is replaced, confirm that high voltage with minimum Brightness and Picture is lower than 31.0KV. (If the high voltage is higher than 31.0KV, reconnect size adjustment 1P plug in MAIN P.W.B. from S terminal to L terminal (H.OUT PWB) and reconfirm that the high voltage is lower than 31.0KV.)

To measure H.V. use a high impedance H.V. meter. Connect (-) to chassis earth and (+) to the CRT anode button. (See the following connection diagram).

NOTE: Turn power switch off without fail before the connection with Anode button is made.



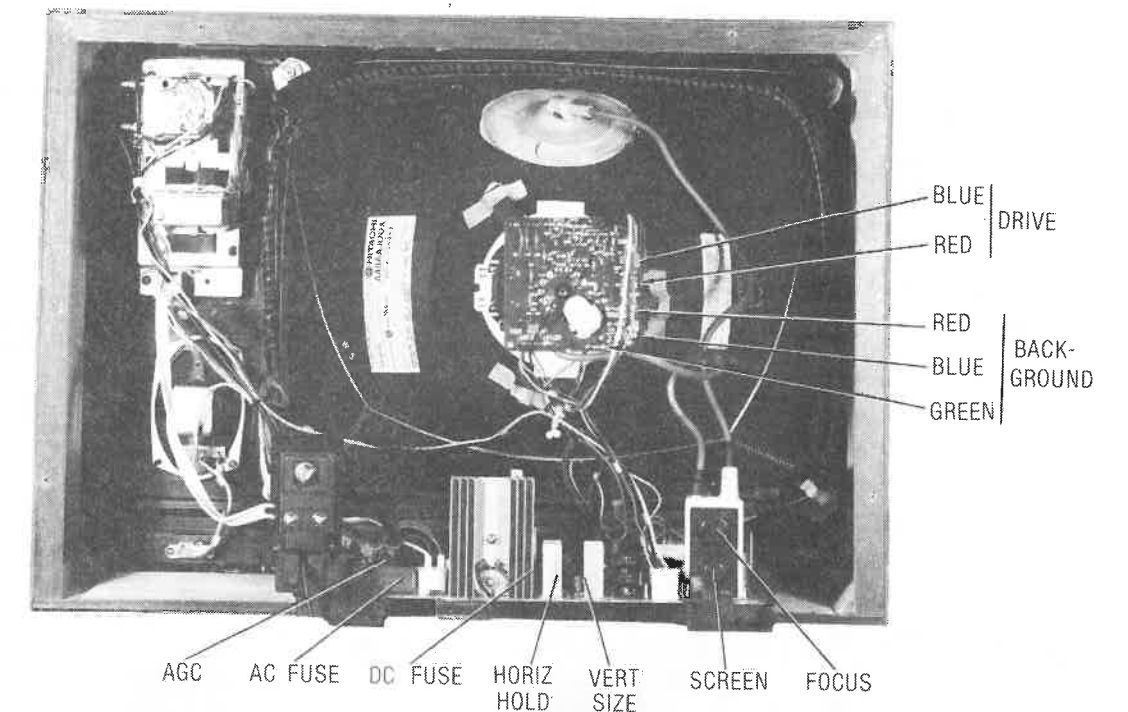
X-radiation

TUBE: The primary source of X radiation in this receiver is the picture tube. The tube utilized for the above mentioned function in this chassis is specially constructed to limit X radiation emissions.

For continued X radiation protection, the replacement tube must be the same type as the original, HITACHI approved type.

When trouble shooting and making test measurements in a receiver with a problem of excessive high voltage, avoid being unnecessarily close to the picture tube and the high voltage component.

Do not operate the chassis longer than is necessary to locate the cause excessive voltage.



CABINET-REAR VIEW

DISASSEMBLY INSTRUCTIONS

CHASSIS REMOVAL

Remove knobs from cabinet front; remove seven screws holding cabinet back and remove back. Disconnect HV anode, CRT socket, deflection yoke connector, degaussing coil connector, speaker connector and ground leads. Remove three screws holding tuner assembly to cabinet front and remove assembly from cabinet. Release latches holding main chassis frame to cabinet bottom and slide main chassis out of cabinet.

CRT REMOVAL

Follow chassis removal procedure and lay set facedown on a soft protective surface. Loosen and remove CRT neck assemblies; remove four screws holding CRT to cabinet front and lift CRT out of cabinet. DO NOT lift CRT by the neck.

SERVICING IN THE FIELD

CRT IMPLOSION PROTECTION AND CLEANING

Implosion protection is an integral part of the picture tube, cleaning accomplished without CRT removal.

A 1-amp fuse is used for low-voltage power-supply protection. (See Placement Chart.)

A 4-amp fuse is used for AC line protection. (See photo, Cabinet-Rear View.)

LAMP ACCESSIBILITY

Tuner assembly must be removed. See Disassembly Instructions.

VHF TUNER

The fine tuning mechanically engages oscillator slug for adjustment (one slug for each channel).

UHF TUNER

The UHF tuner employs a detent mechanism for

channel selection. Fine tuning is adjusted by rotating the fine tuning knob.

HORIZONTAL OSCILLATOR

Adjustment of the horizontal hold is accomplished by the proper setting of the Horiz Hold Control R707

WIDTH

The width may be varied by connecting or disconnecting the width capacitor C740 the width. (See Placement Chart.)

The focus may be varied by a focus control. (See photo, Cabinet-Rear View.)

AGC

The AGC may be varied by an AGC control. (See Placement Chart.)