

SAFETY PRECAUTIONS

SERVICE WARNING

Only qualified service technicians who are familiar with safety checks and guidelines should perform service work. Before replacing parts, disconnect power source to protect electrostatically sensitive parts. Do not attempt to modify any circuit unless so recommended by the manufacturer. When servicing the receiver, use an isolation transformer between the line cord and power receptacle.

SERVICING THE HIGH VOLTAGE AND CRT

Use EXTREME CAUTION when servicing the high voltage circuits. To discharge static high voltage, connect a 10K ohms resistor in series with a test lead between the receiver and CRT anode lead. DO NOT lift the CRT by the neck. Always wear shatterproof goggles when handling the CRT to protect eyes in case of implosion.

X-RAY RADIATION AND HIGH VOLTAGE LIMITS

Be aware of the instructions and procedures covering X-ray radiation. In solid-state receivers and monitors, the CRT is the only potential source of X-rays. Keep an accurate high voltage meter available at all times. Check meter calibration periodically. Whenever servicing a receiver, check the high voltage at various brightness levels to be sure it is regulating properly. Keep high voltage at rated value, NO HIGHER. Excessive high voltage may cause X-ray radiation or failure of associated components. DO NOT depend on protection circuits to keep voltage at rated value. When troubleshooting a receiver with excessive high voltage, avoid close contact with the CRT. DO NOT operate the receiver longer than necessary. To locate the cause of excessive high voltage, use a variable AC transformer to regulate voltage. In present receivers, many electrical and mechanical components have safety related characteristics which are not detectable by visual inspection. Such components are identified by a # on both the schematic and the parts list. For SAFETY, use only equivalent replacement parts when replacing these components.

GENERAL GUIDELINES

Perform a final SAFETY CHECK before returning receiver to customer. Check repaired area for poorly soldered connections, and check entire circuit board for solder splashes. Check inner board wiring for pinched wires or wires contacting any high wattage resistors. Check that all control knobs, shields, covers, grounds, and mounting hardware have been replaced. Be sure to replace all insulators and restore proper lead dress.

TEST JIG HOOKUP

Function	Chek-A-Color Adapter No.	PC Board Plug No.	Pin	Color
CRT	B239	YOKE-H	1	Red
Yoke	D4124		2	Blue
Yoke Setting	YP1	YOKE-V	1	Green
Comments	Focus Tap		2	Yellow

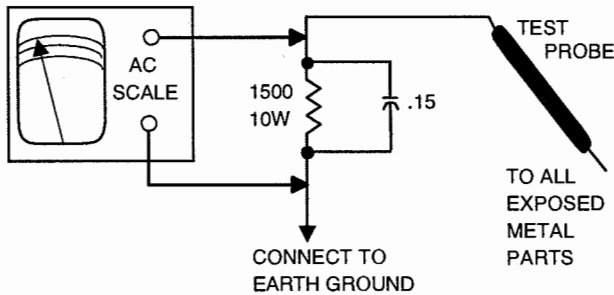
SAFETY CHECKS -- FIRE AND SHOCK HAZARD

Cold Leakage Checks for Receivers with Isolated Ground

Unplug the AC cord, connect a jumper across the plug prongs, and turn the power switch on (if applicable). Use an ohmmeter to measure the resistance between the jumped AC plug and any exposed metal cabinet parts such as antenna screw heads, control shafts, or handle brackets. Exposed metal parts with a return path should measure between 1M ohms and 5.2M ohms. Parts without a return path must measure infinity.

Hot Leakage Current Check

Plug the AC cord directly into an AC outlet. DO NOT use an isolation transformer. Use a 1500 ohms, 10W resistor in parallel with a .15µF capacitor to connect between any exposed metal parts on the receiver and a good earth ground. (See figure below.) Use an AC voltmeter with at least 5000 ohms per volt sensitivity to measure the voltage across the resistor. Check all exposed metal parts and measure voltage at each point. Voltage measurements should not exceed .75VAC, 500µA. Any value exceeding this limit constitutes a potential shock hazard and must be corrected. If the AC plug is not polarized, reverse the AC plug and repeat exposed metal part voltage measurement at each point.



HIGH VOLTAGE SHUTDOWN TEST

Apply 120VAC to set. Turn set on and adjust for normal operation. Momentarily short XRP-1 to XRP-2. Set should lose raster and sound for about 2 seconds then resume normal operation. If the set does not lose raster and sound, the shutdown circuit should be repaired. To resume normal operation, remove AC power, wait for 2 seconds, then turn set on.

The listing of any available replacement part herein in no case constitutes a recommendation, warranty, or guarantee by Howard W. Sams & Company as to the quality and suitability of such replacement part. The numbers of the listed parts have been compiled from information furnished to Howard W. Sams & Company by the manufacturers of the specific type of replacement part listed.

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Page 1 SET 3919



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PHOTOFACT® Technical Service Data

SET 3919

MODEL 27GT610FE1 (CHASSIS CTC167R)

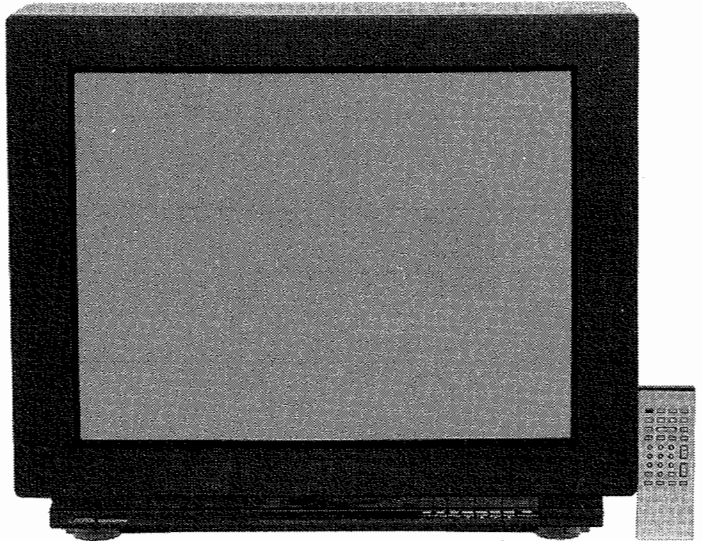
GE

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GE

Model 27GT610FE1 (Chassis CTC167R)



Representative Model

Complete coverage
for servicing a television receiver...

- Schematics
- Component locations
- Parts list
- Troubleshooting guide

Coverage includes these additional models and chassis:

MODELS	CHASSIS
27GC802KF1/KF2/MF1/MF2	CTC167R
27GC804MF1	CTC167R
27GT612FE1/NE1	CTC167R



HOWARD W. SAMS & COMPANY

DECEMBER 1997 SET 3919

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TROUBLESHOOTING

POWER SUPPLY

Check F4001. If F4001 is open, check CR4001 thru CR4004, C4001 thru C4005, C4007, and T4601. Apply 120VAC and check for 12.0V at the emitter of Q4161. If 12.0V is missing, check L4001, T4601, CR4601 thru CR4604, and Q4161. If 12.0V is present, check for 150V* at the cathode of D4002. If 150V* is missing, check CR4001 thru CR4004 and R4001. If 150V* is present at the cathode of CR4002, check for 129V* at the cathode of SCR4101. If 129V* is missing, check SCR4101, Q4103, Q4104, Q4101, and Q4102. If 129V* is present, refer to the "Horizontal" section of this troubleshooting guide.

* Taken from common tie point.

AUDIO

Select an active TV channel and check for audio waveforms at pins 4 and 5 of U1701. If waveforms are missing, Check pins 33 thru 36 of U1001, Q1702, and U1701. If waveforms are present at pins 4 and 5 of U1701, check for audio waveforms at pins 4 and 6 of U1801. If waveforms are missing, check U1702, U1402, and Q1703 thru Q1705. If audio waveforms are present, check U1801 and U1900. Check the voltage at pin 8 of U1801, it should measure 0V at mute and 5.6V at maximum volume.

VIDEO

Inject a video signal at the base of Q2305 and check for video on the CRT. If video is present, refer to the "IF-AGC" section of this Troubleshooting guide. Check for a video waveform at the emitter of Q1403. If video is missing, check U1401, Q2305, Q2302, Q1402, and Q1403. If video is present, check pins 8, 14, 15, 17, 51, 52, and 53 of U1001, Q2901, Q2703, and Q2706.

IF-AGC

Inject an IF signal at the base of Q2301 and check for video on the CRT. If video is present, check the tuner, tuner control circuits, and tuner AFT circuits. If there is no video on the CRT, check for a video waveform at pin 47 of U1001. If waveform is present, refer to the "Video" section of this Troubleshooting guide. If waveform is missing, apply AGC bias to pin 22 of U1001. If waveform at pin 47 of U1001 is now present, check pins 18, 22, and 46 of U1001. If waveform at pin 47 of U1001 is still missing, check Q2301 and U1001.

CHROMA

Check for a chroma waveform at pin 49 of U1001. If chroma waveform is missing, refer to the "Video" section of this Troubleshooting guide. Check waveforms at pins 9, 10, and 11 of U1001. If these waveforms are missing, check pins 2 thru 7, 9 thru 12, 48, and 49 of U1001. Check the 3.58MHz oscillator at pins 4 and 6 of U1001. If the proper chroma waveforms are present at pins 9, 10, and 11 of U1001, refer to the "Raster" section of this Troubleshooting guide.

HORIZONTAL

Determine if the receiver is shutdown, refer to the "High Voltage Shutdown" section of this troubleshooting guide. If the receiver is not in shutdown, inject a horizontal drive signal at the base of Q4401. If horizontal deflection is now present, check pins 57 thru 63 of U1001, Q4301, and Q4302. If there is still no horizontal deflection, check Q4401, T4401, and CR4702 thru CR4705. The high voltage rectifier is part of T4401 and if defective will affect the performance of the horizontal circuits. Horizontal linearity or foldover problems may be caused by C4402, C4403, C4405, C4406, and L4402 being defective.

HIGH VOLTAGE SHUTDOWN

NOTE: Care should be taken in defeating the high voltage shutdown circuit, as this may cause excessive X-radiation and damage to the CRT, T4401, and the associated components. Monitor the high voltage and troubleshoot. The high voltage is monitored by CR4901 rectifying pulses from T4401. Should the high voltage increase, the rectified voltage at the cathode of CR4901 will also increase and trigger CR4902 into conduction which shuts down the set. After 2 seconds the set will reset and turn on again. If the fault is still present, the high voltage will increase until shutdown again occurs. This process will continue until the fault is removed or the set is turned off. To troubleshoot, remove CR4901 from the circuit and use a variable AC transformer for power. Start at 90VAC and increase as necessary to locate and repair the defect. Return CR4901 to the circuit.

VERTICAL

Inject a vertical drive signal at pin 6 of U4501. If vertical deflection is now present, check Q4501 thru Q4503. If there is still no vertical deflection, check U4501. Vertical linearity or foldover problems may be caused by vertical feedback and bias circuits, check C4502, C4503, C4505, and C4507 for defects.

RASTER

Check the CRT and CRT voltages. If there is no red, check pin 9 of U1001 and Q5001. If there is no green, check pin 10 of U1001 and Q5002. If there is no blue, check pin 11 of U1001 and Q5003. If the raster has a keystone shape, check the Deflection Yoke. If the raster has height or width problems, refer to the "Vertical", "Horizontal", and "Power Supply" sections of this Troubleshooting guide.

MISCELLANEOUS ADJUSTMENTS

B+ CHECK

Tune in a picture. Set brightness, contrast, and color to minimum. Connect a DC voltmeter to the cathode of SCR4101. With 120VAC line input, B+ should read 129V ±1V. R4117 is factory sealed, and adjustment is not recommended.

HIGH VOLTAGE CHECK

Tune in a picture. Set brightness, contrast, and color to minimum. Connect a high voltage probe to the CRT anode. High voltage should measure 26.0kV to 27.5kV.

RF AGC

Tune in a picture. Adjust R2314 counterclockwise until snow appears in picture and then clockwise until snow disappears.

CONTRAST PRESET

Tune in a picture. Set brightness and color to minimum, and contrast to midrange. Adjust R2719 to a point where highlights are visible.

TINT PRESET

Tune in a color bar pattern. Connect an oscilloscope to pin 8 of V101. Adjust R3316 to balance the 3rd and 4th bars of waveform.

HORIZONTAL CENTERING

Adjust R4321 to center the picture horizontally.

PINCUSHION AMPLITUDE

Tune in a crosshatch pattern. Adjust R4803 for straight vertical lines at the left and right sides of the screen.

HORIZONTAL WIDTH

Tune in a crosshatch pattern. Adjust R4805 for a slight overscan at the left and right sides of the screen.

COLOR TEMPERATURE

Tune in a crosshatch pattern. Set color, contrast, R2903, R2923, R2915, and screen control to minimum. Set R2907, R2913, and brightness to midrange. To obtain a service line, remove power, then press and hold the setup button while restoring power. Advance screen control until a line of one predominate color is just visible. Adjust R2903, R2923, and R2915 to obtain a white line. Set brightness and contrast to maximum. Adjust R2907 and R2913 for best black and white picture. Check tracking at low and high brightness.

COLOR PURITY AND CONVERGENCE

Yoke is a bonded part of the CRT and adjustment is not recommended.

STEREO ADJUSTMENTS

NOTE: Adjustments were made using a TV/stereo generator connected to the antenna terminals. Unless otherwise noted set generator for pilot, 1kHz audio frequency, and L-R modulating signal. Set receiver to stereo mode.

Input Level


Connect an oscilloscope to pin 2 of U1701. Adjust R1726 for 250mVp-p.

Stereo Oscillator

Set generator for an unmodulated audio carrier (Pilot off). Connect an oscilloscope to pin 12 of U1701. Adjust R1741 for 15734Hz ±150Hz.

Expander Gain

Select 300Hz audio frequency, and left modulating signal on generator. Connect a DC voltmeter to the base of Q1705. Adjust R1758 for 4.75V ±0.5V.



Created with pride by the employees
of Howard W. Sams & Company.

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R. Raus, B. Skinner*

SCHEMATIC NOTES

For SAFETY use only equivalent replacement part, see parts list.

✕ Circuitry not used in some versions.

--- Circuitry used in some versions.

⏏ Ground

⏏ Chassis ground

▽ Common tie point

△ Taken from common tie point

3 Schematic **CIRCUITTRACE**® Voltage source tie point.

A Cabling: Heavy lines reduce use of multiple lines.

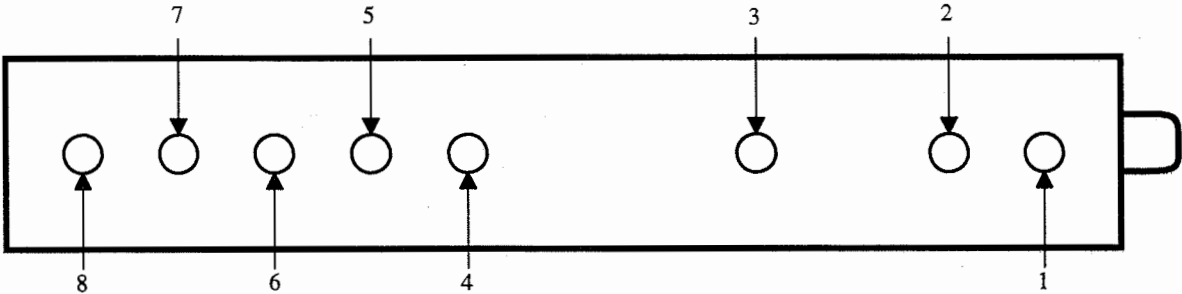
Waveforms and voltages are taken from ground, unless noted otherwise.
Waveforms taken with triggered scope and colorbar signal. Waveform voltage is peak to peak. Timebase is per division. Waveforms shown at 10 divisions.
Supply voltages maintained as seen at input.
Voltages measured with digital meter and a 1000μV RF signal, with colorbar pattern, applied to antenna terminal.
Controls adjusted for normal operation.
Capacitors are 50 volts or less, 5% or greater unless noted.
Electrolytic capacitors are 50 volts or less, 20% or greater unless noted.
Resistors are 1/2W or less, 5% or greater unless noted.
Value in () used in some versions.
Measurements with switching as shown, unless noted.
Rated voltage shown on zener diodes.

TUNER INFORMATION

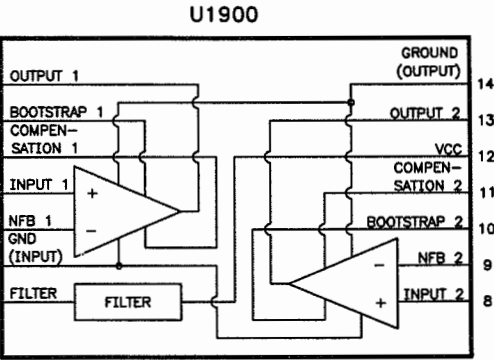
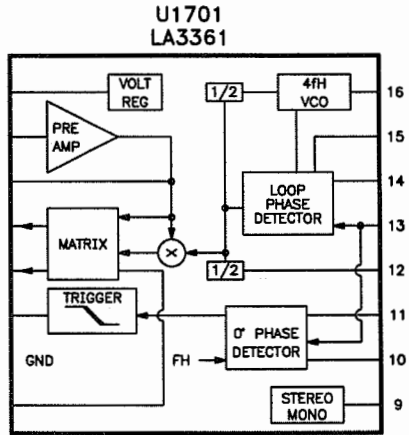
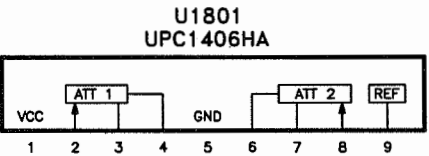
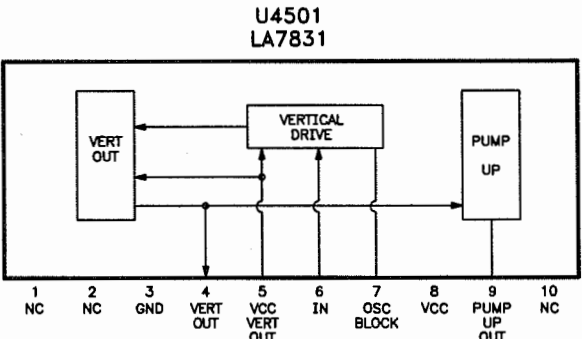
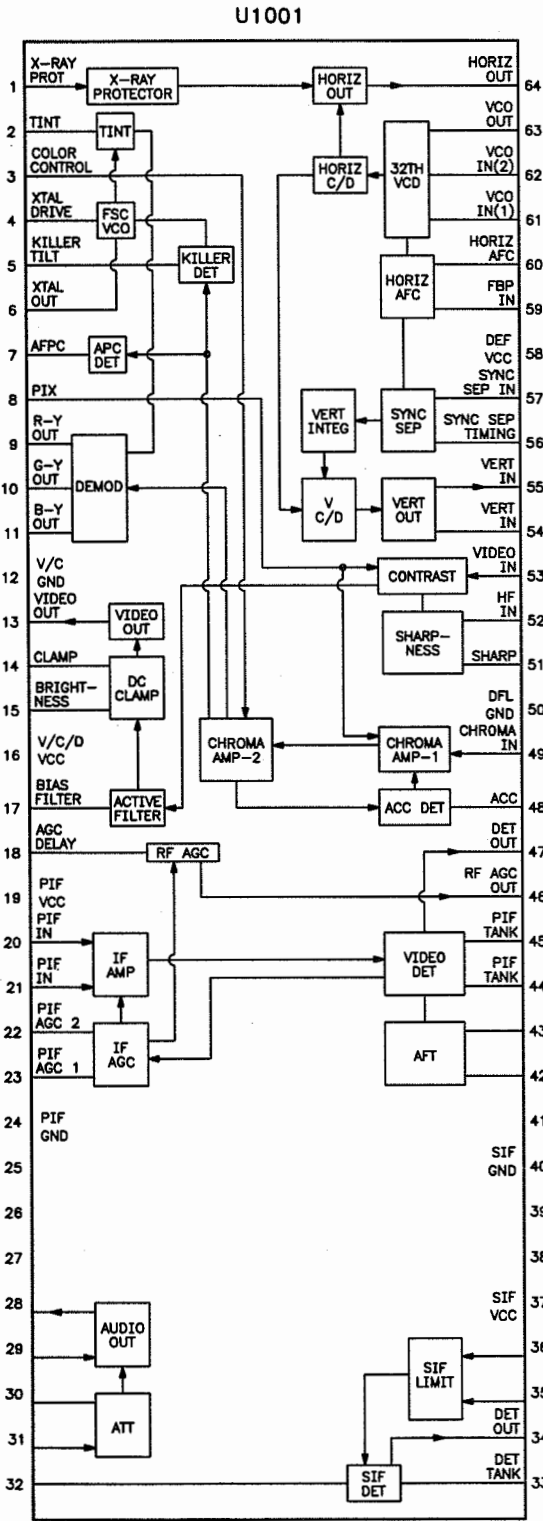
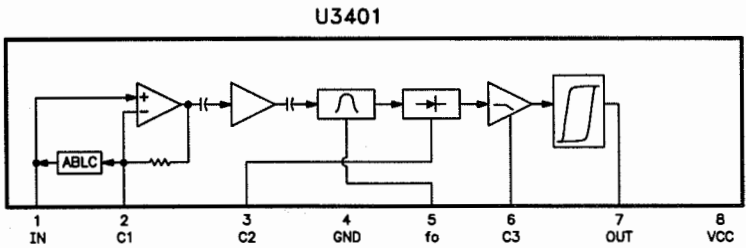
TUNER VOLTAGE CHART			
Pin	VHF Low Band	VHF High Band	UHF Band
1	4.3V	4.1V	4.8V
2	11.5V	11.5V	11.5V
3	11.4V	11.4V	11.4V
4	31.5V	31.5V	31.5V
5	-12.0V	-12.0V	-12.0V
6	5.0V	5.0V	5.0V
7	4.9V	4.9V	4.9V
8	4.9V	4.9V	4.9V

NOTE: VHF Low Band voltages taken on channel 2.
VHF High Band voltages taken on channel 7.
UHF Band voltages taken on channel 14.

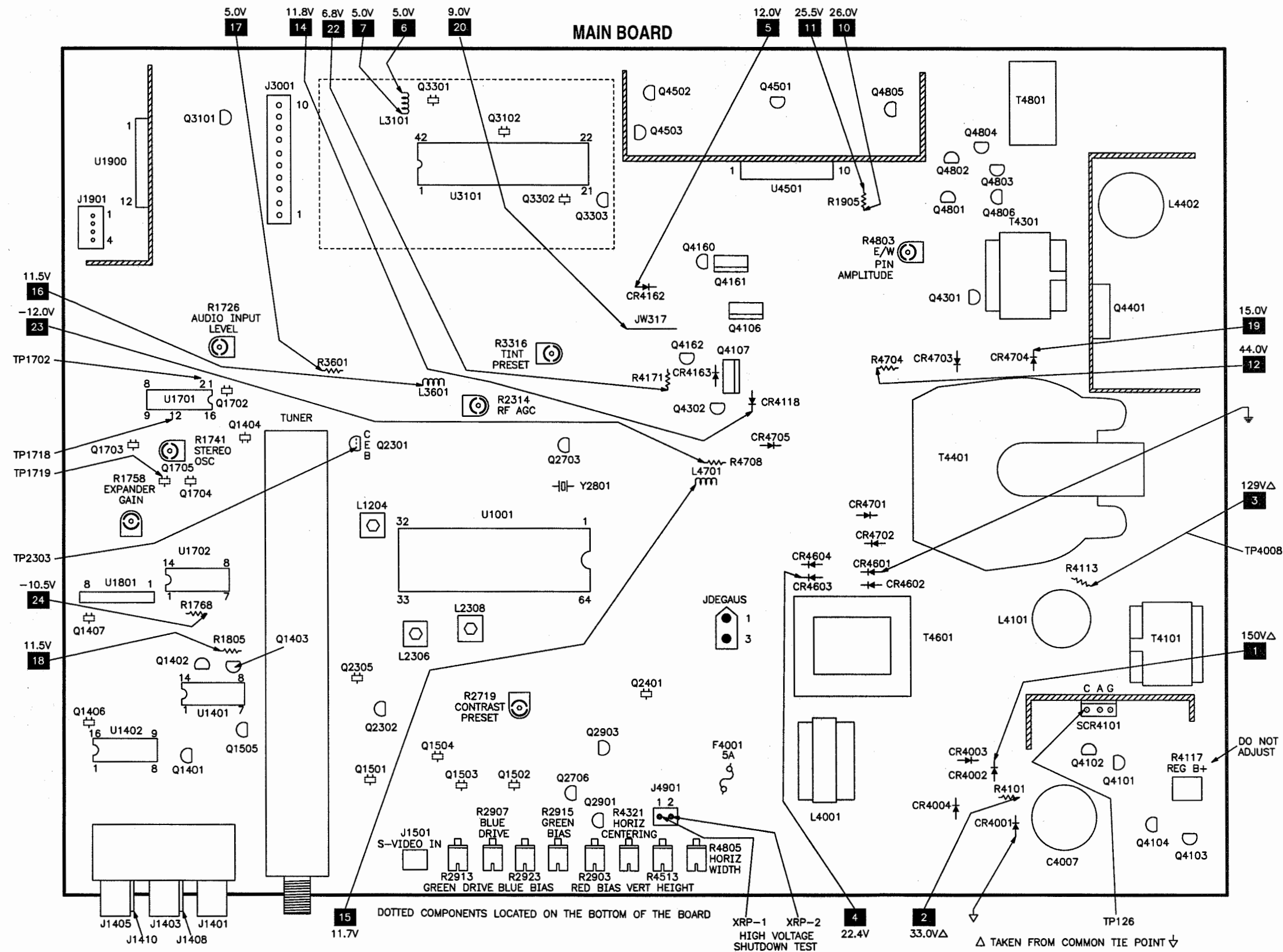
TUNER TERMINAL GUIDE



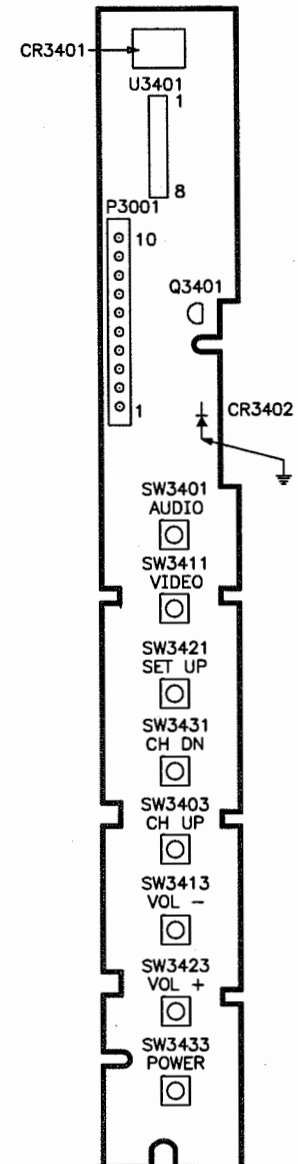
IC FUNCTIONS



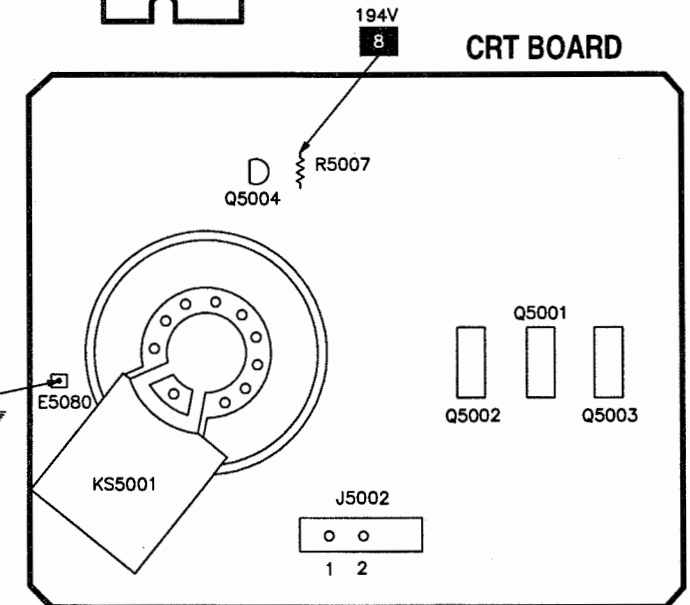
PLACEMENT CHART



FRONT PANEL BOARD



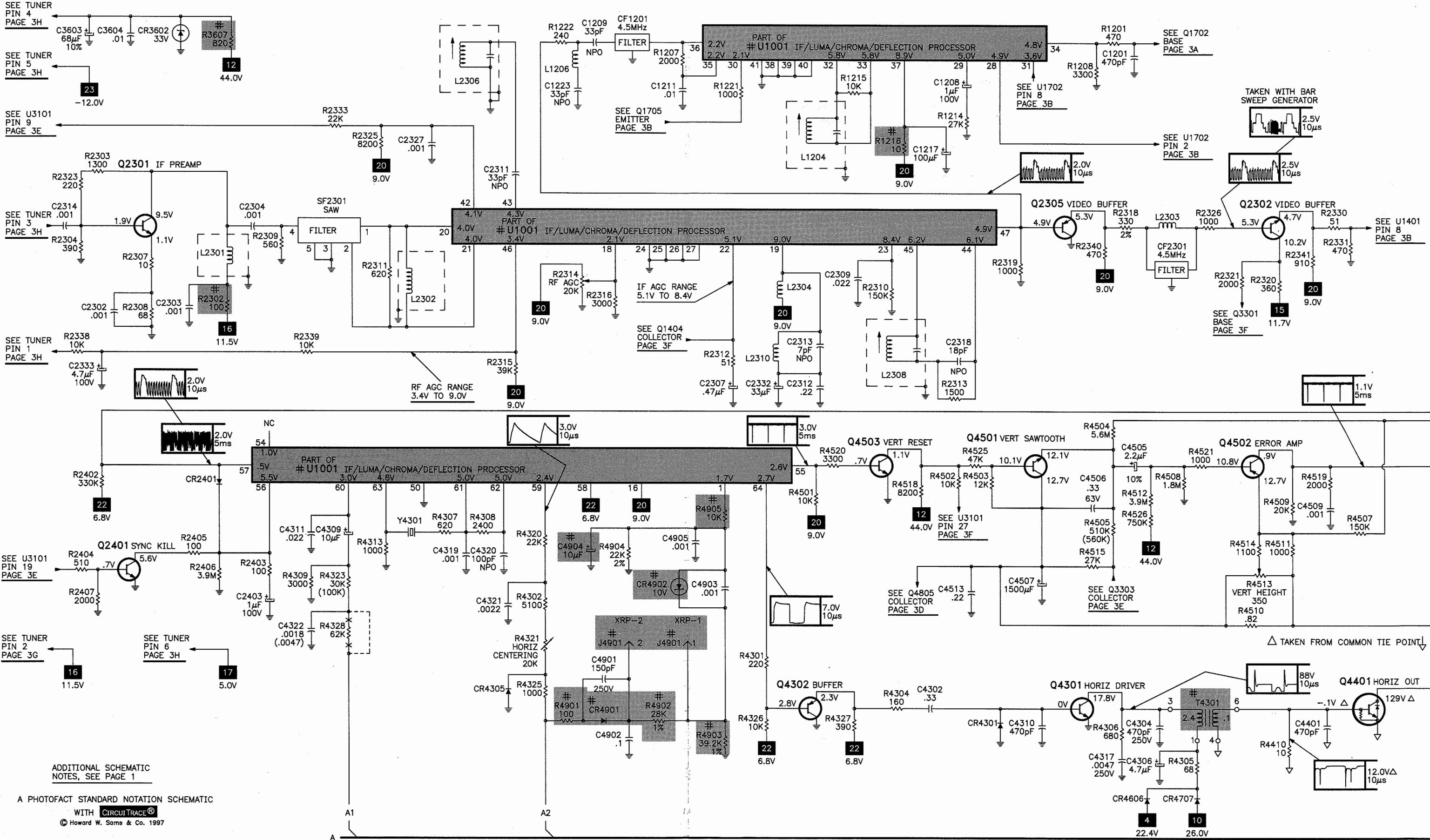
CRT BOARD

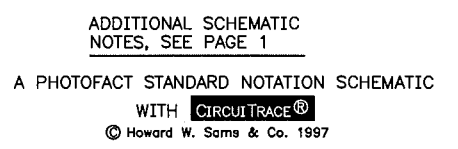


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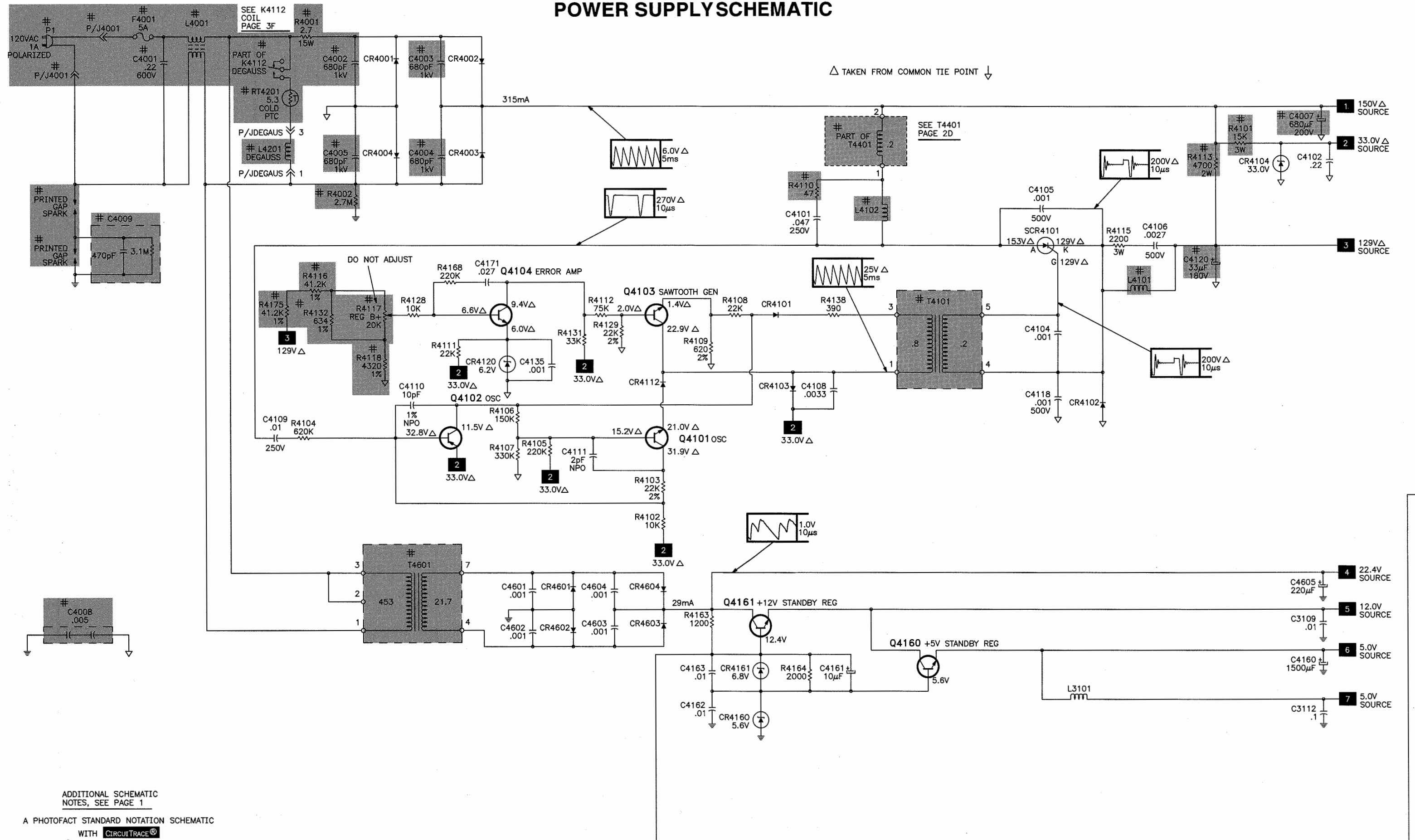
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TELEVISION SCHEMATIC





POWER SUPPLY SCHEMATIC



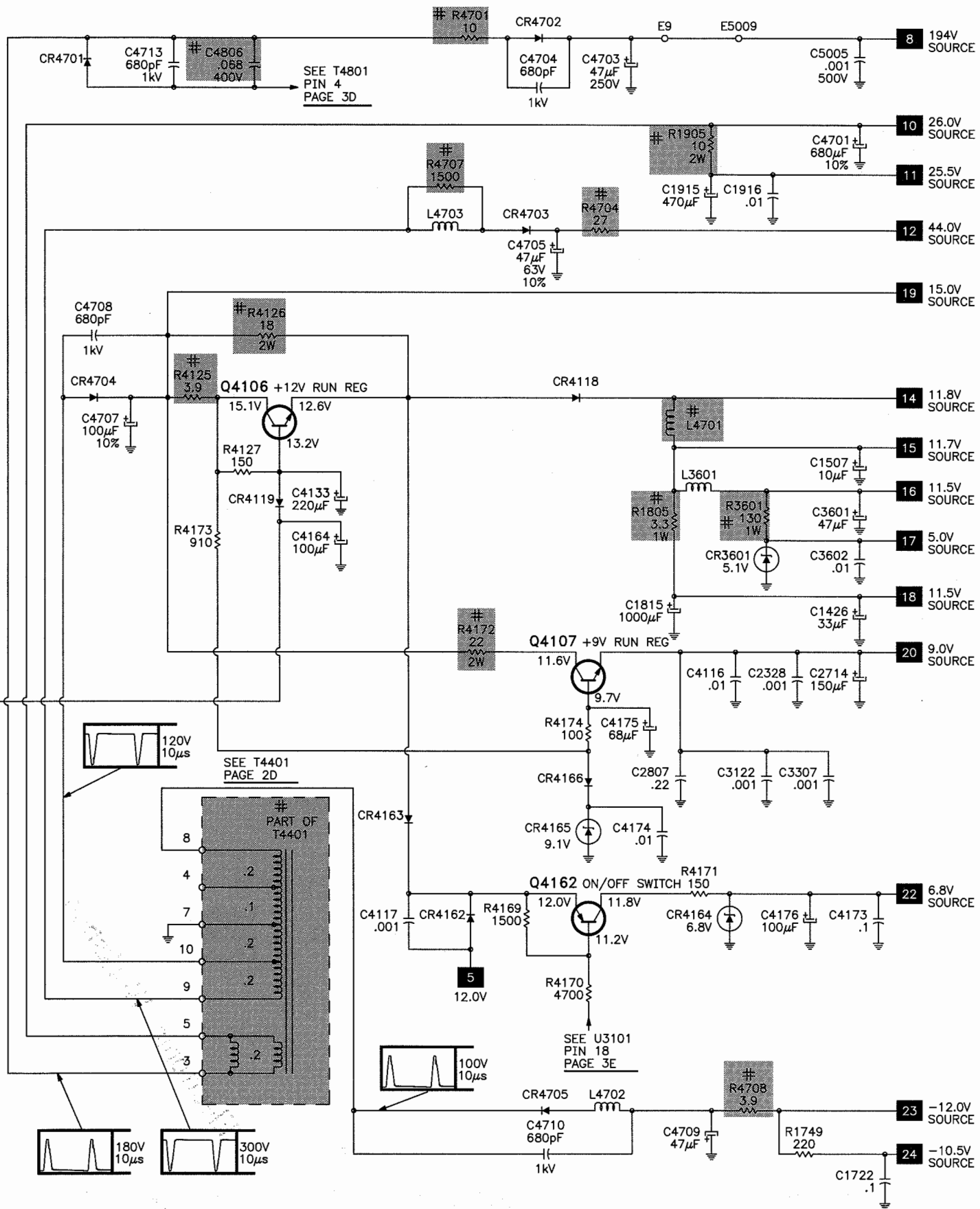
ADDITIONAL SCHEMATIC
NOTES, SEE PAGE 1

A PHOTOFAC STANDARD NOTATION SCHEMATIC

WITH CIRCUITTRACE®

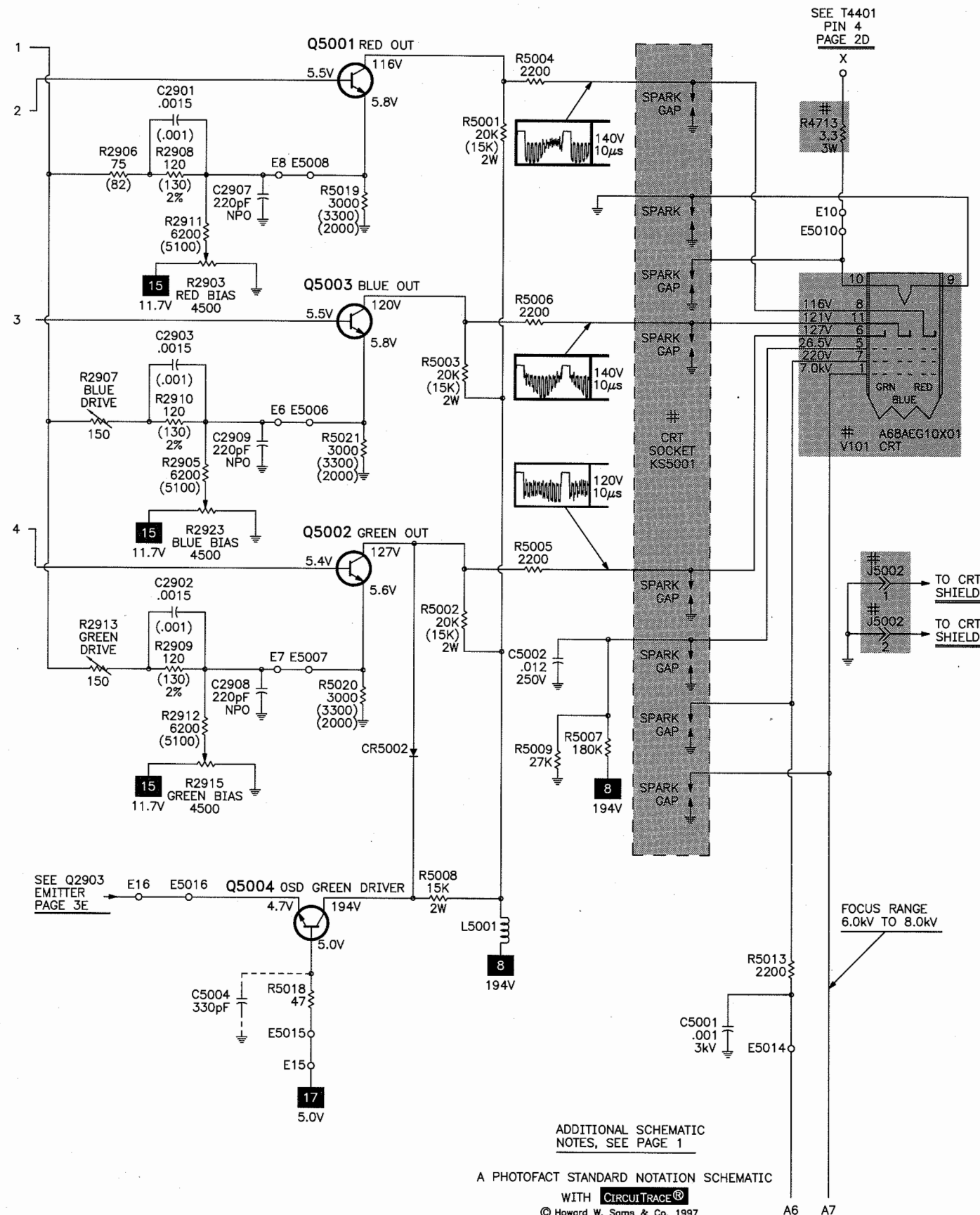
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POWER SUPPLY SCHEMATIC continued



G

CRT SCHEMATIC



ADDITIONAL SCHEMATIC
NOTES, SEE PAGE 1

A PHOTOFACIT STANDARD NOTATION SCHEMATIC
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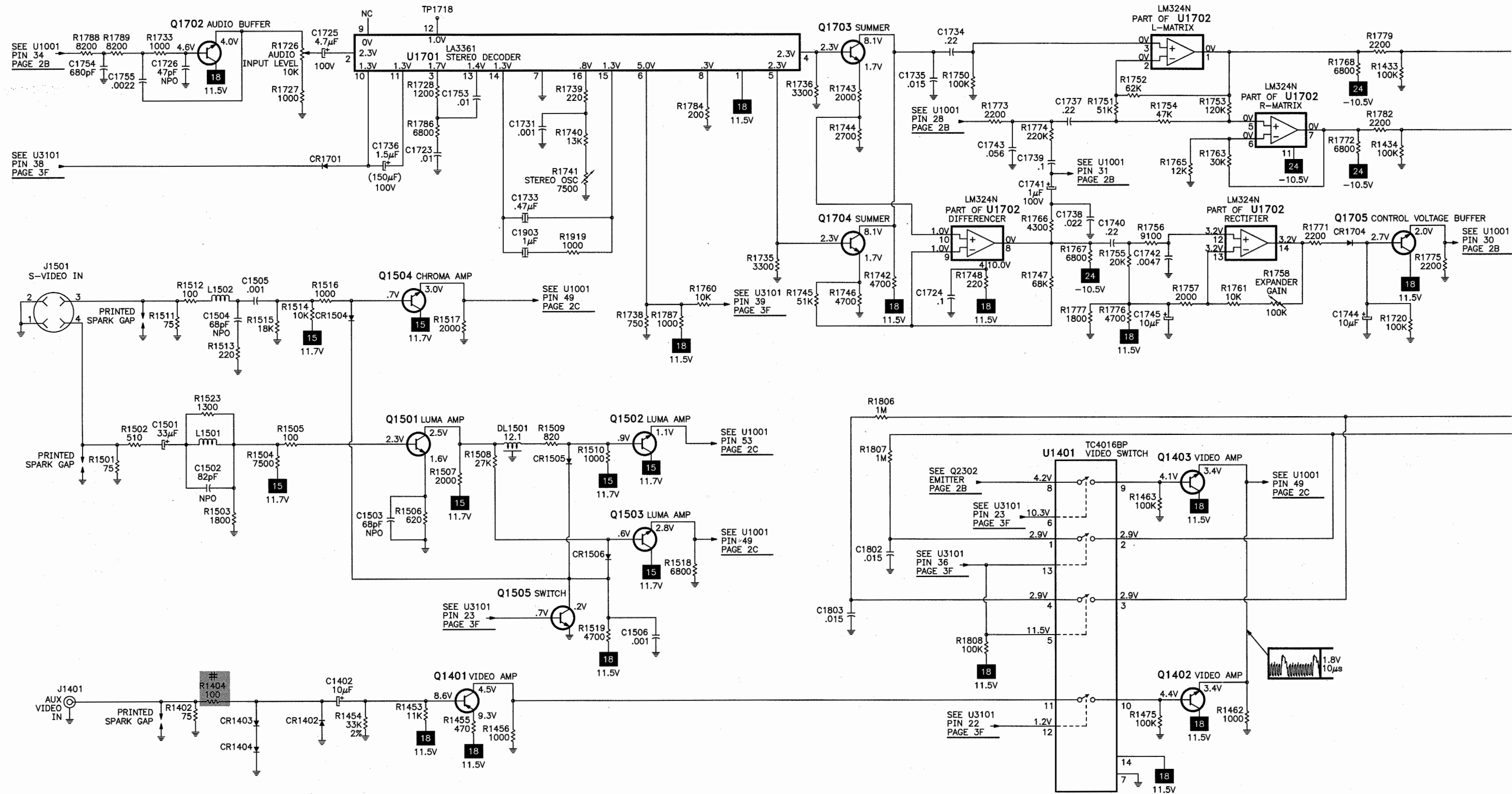


MODEL 27GT610FE1 (CHASSIS CTC167R)

A

AUDIO SCHEMATIC

B

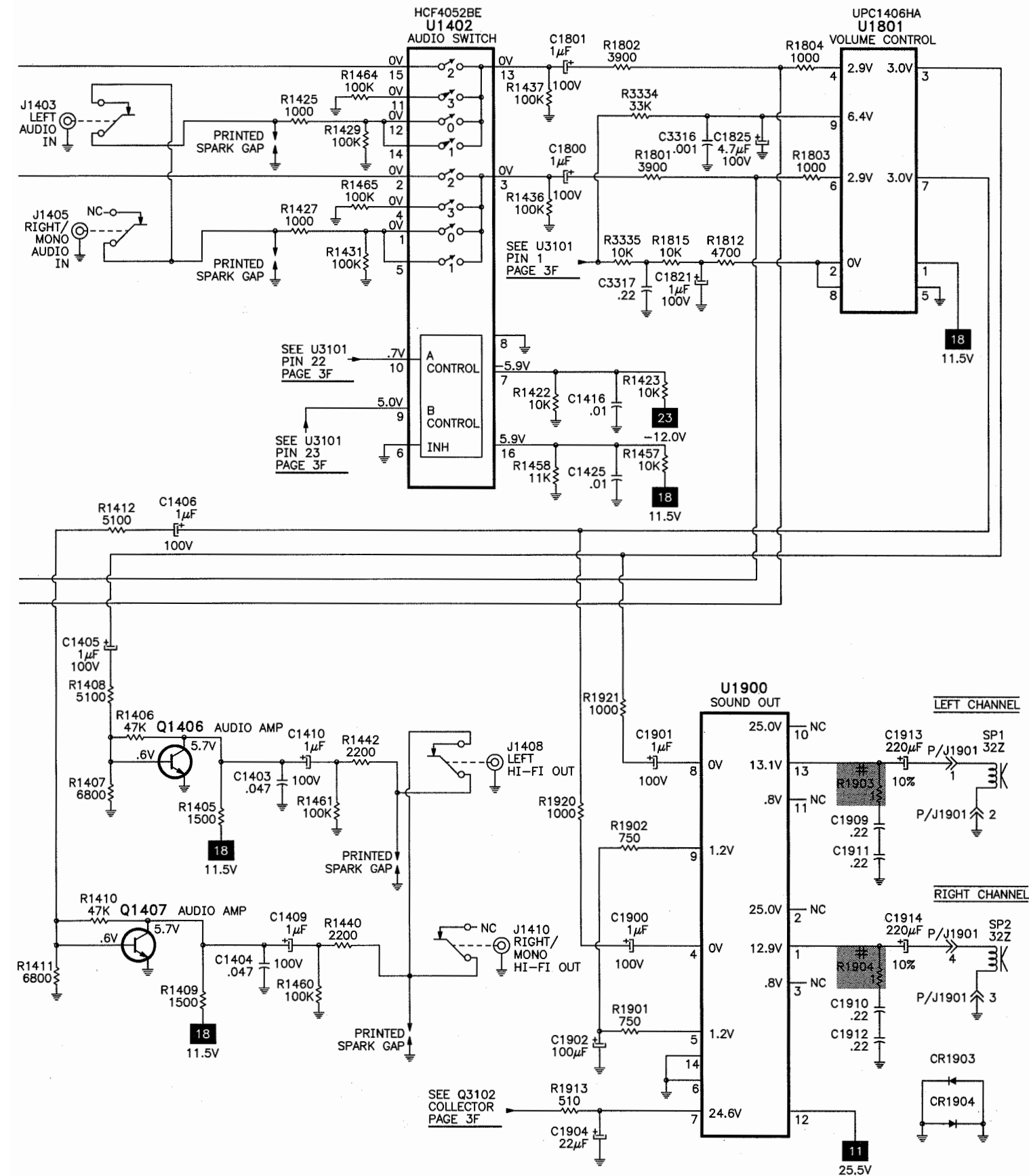


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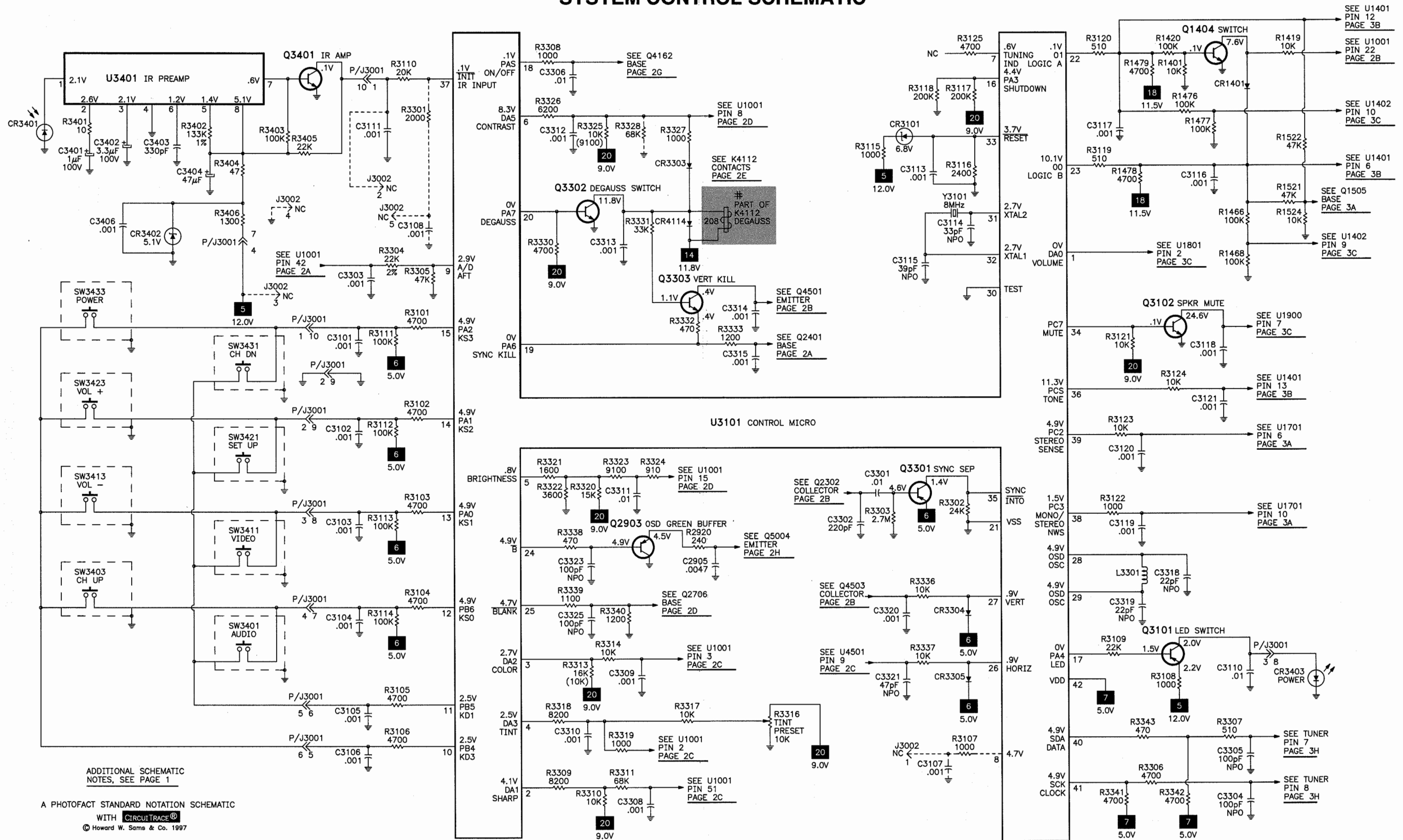
AUDIO SCHEMATIC continued

D

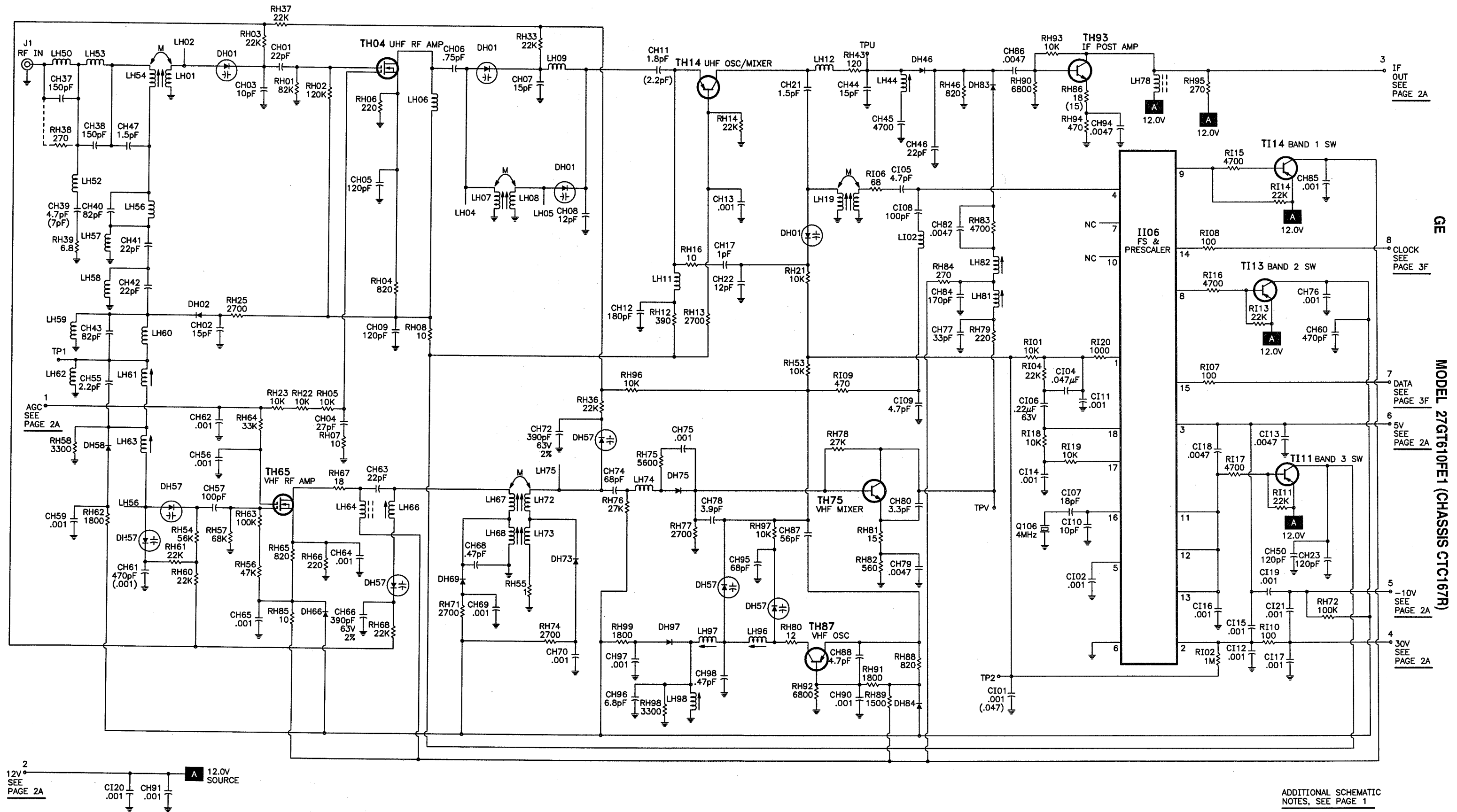
PINCUSHION SCHEMATIC



SYSTEM CONTROL SCHEMATIC



TUNER SCHEMATIC

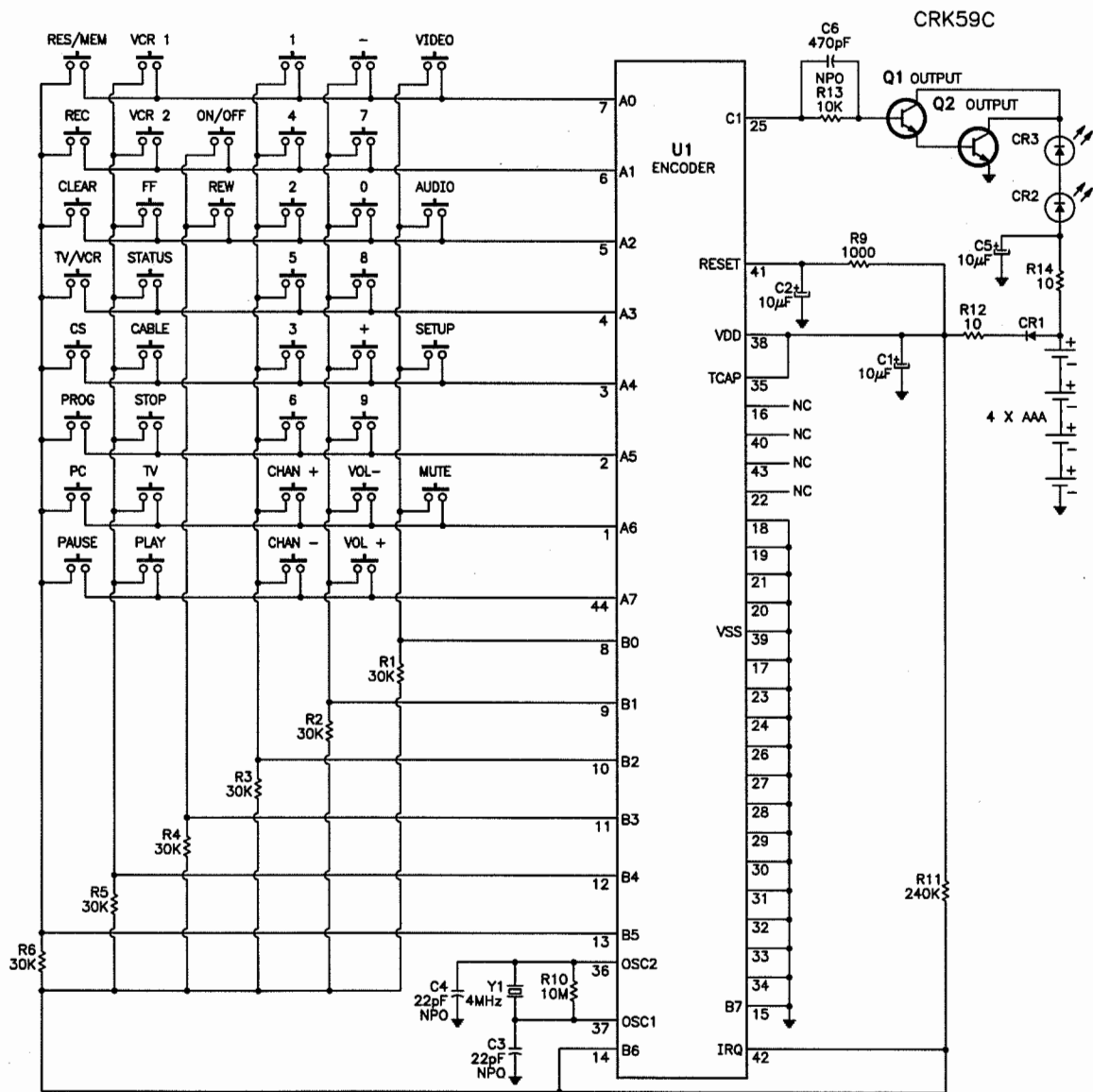
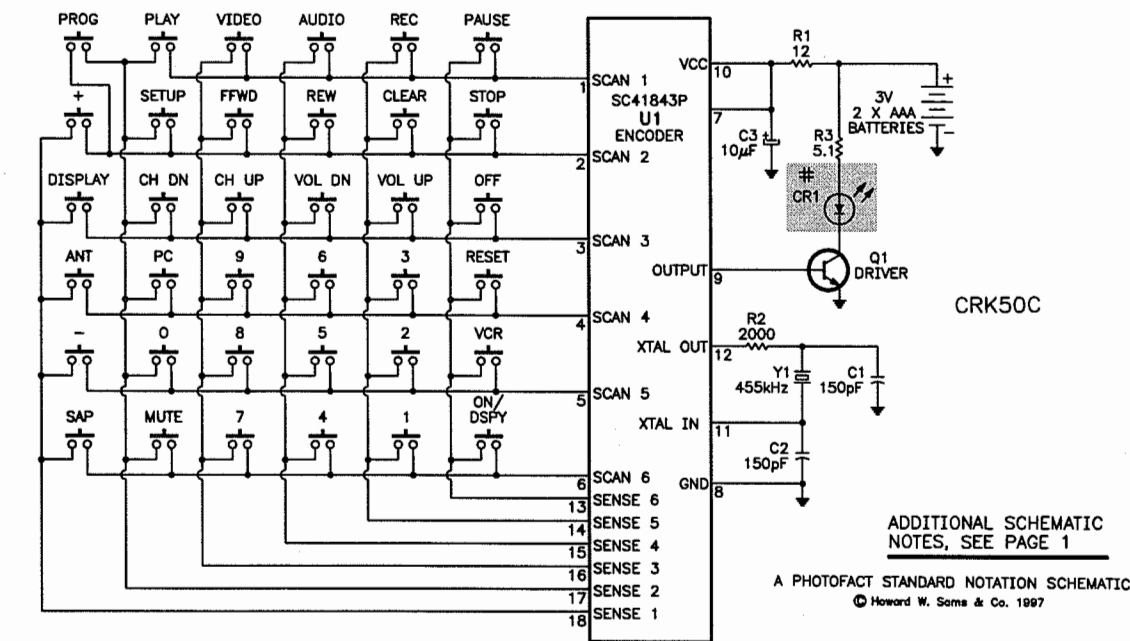


ADDITIONAL SCHEMATIC
NOTES, SEE PAGE 1

A PHOTOFACIT STANDARD NOTATION SCHEMATIC

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REMOTE TRANSMITTER SCHEMATIC



TEST EQUIPMENT

Test equipment listed by participating manufacturer illustrates typical or equivalent equipment used by Sams engineers to obtain measurements. This equipment is compatible with most types used by field service technicians.

Equipment	Sencore No.	Equipment	Sencore No.
Oscilloscope	SC3100	Isolation Transformer	PR57
Generators		Capacitance Analyzer	LC101, LC102
RGB	CM2000	CRT Analyzer	CR70
Multiburst Signal	VG91	AC Leakage Tester	PR57
Color Bar	VG91	Inductance Analyzer	LC101, LC102
TV Stereo	VG91	Flyback Yoke Tester	TVA92
Digital VOM	SC3100	TV Stereo Power Monitor	SR68, PA81
Frequency Meter	SC3100	Field Strength Meter	SL750
Hi-Voltage Probe	HP200	Transistor Tester	TF46
Accessory Probes	TP212	Video Analyzer	VG91, TVA92

Important Parts Information

- The parts listed here are those not usually available from a well-stocked supply cabinet or bin.
- Where items may be replaced with equivalent parts, several alternates are shown from participating vendors.
- On the parts lists, safety items are marked with a # to remind you that only exact replacements are recommended for these items.
- When ordering parts, state the model number, part number, and description.

Obtaining Parts

Many of these parts are available from your local Sams authorized distributor or the manufacturer of the equipment. Call Sams for the name of your nearest distributor:

800-428-7267

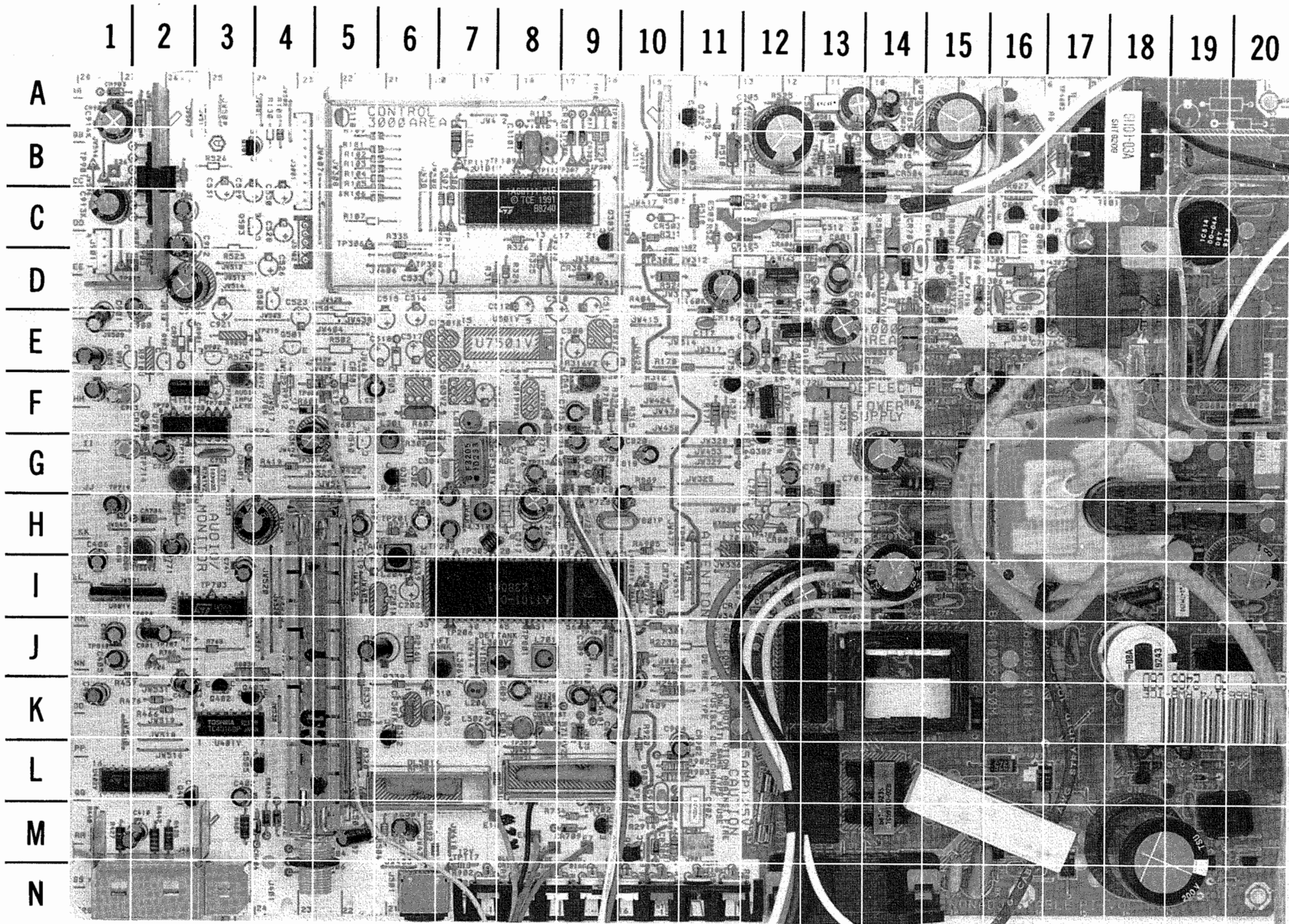
Or consult the Sams *Annual Index* for the address of the original equipment manufacturer.

Participating Vendors

Information on test equipment and replacement parts is listed in these pages for the following participating vendors. Consult the Sams *Annual Index* for their current address.

- Custom Components Corporation (Chek-A-Color)
- NTE Electronics, Inc. (NTE)
- Philips ECG Company (ECG)
- PTS Electronics Corporation (PTS)
- Sencore, Inc.
- Terrell & Nobis (TNI Electronics)
- Thomson Consumer Electronics, Inc. (SK, TCE)

MAIN BOARD - TOP VIEW

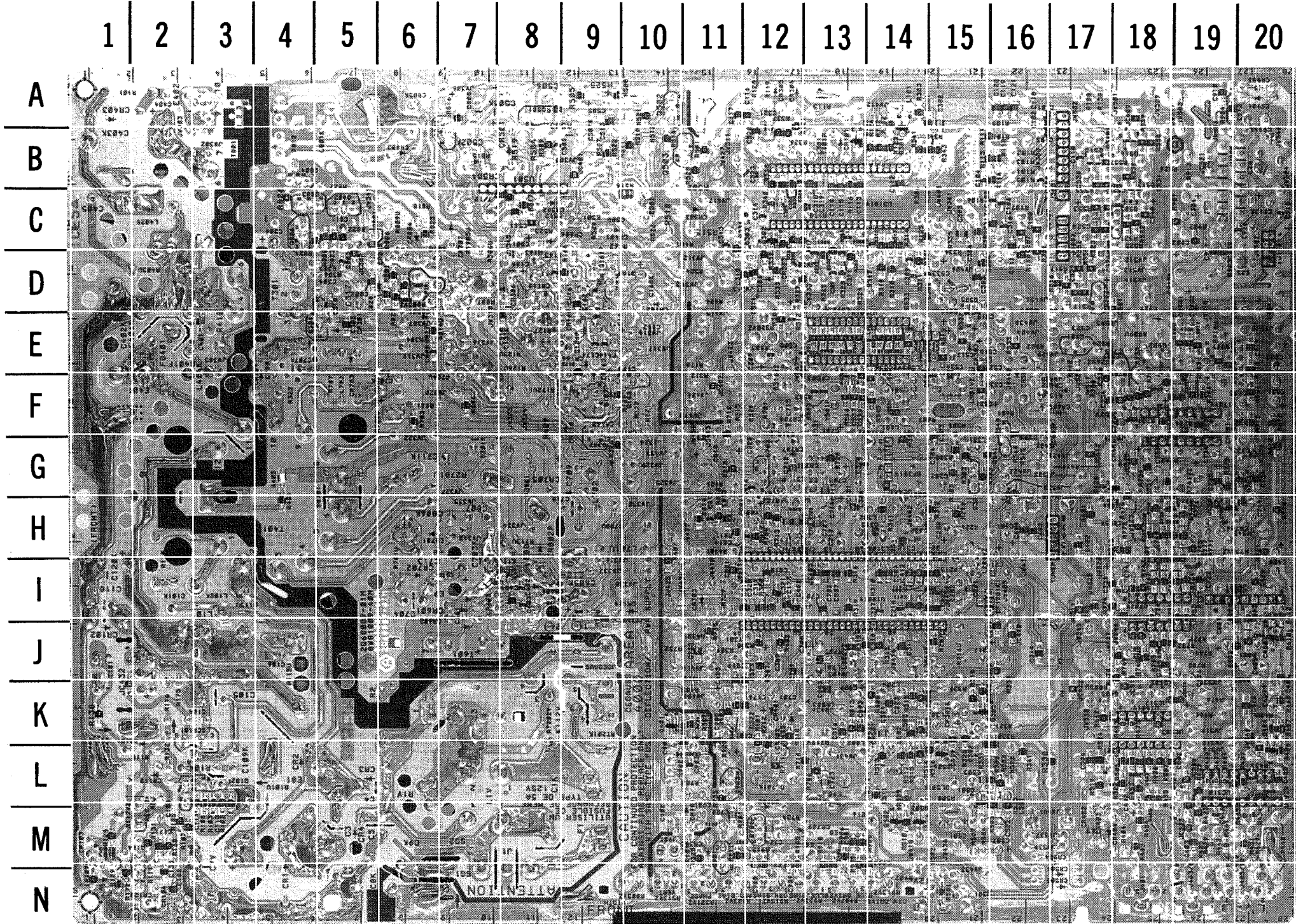


A HOWARD W. SAMS GridTrace™ PHOTO

MAIN BOARD - TOP VIEW, GRIDTRACE LOCATION GUIDE

C1208	H-6	C4175	E-12	CR4104	N-19	L4701	H-11	R2404	D-10	R4321	N-10
C1217	J-5	C4176	K-9	CR4112	L-19	L4702	G-12	R2405	K-10	R4322	F-12
C1402	L-3	C4304	D-16	CR4114	I-12	L4703	F-16	R2701	F-9	R4327	F-12
C1405	J-1	C4306	C-17	CR4118	F-12	L4801	B-16	R2719	L-8	R4328	J-10
C1406	I-1	C4309	J-9	CR4119	D-13	Q1401	L-2	R2722	H-9	R4403	D-19
C1409	K-1	C4317	D-16	CR4120	N-20	Q1402	K-3	R2724	H-9	R4407	C-10
C1410	M-2	C4402	E-20	CR4160	E-12	Q1403	K-3	R2726	H-8	R4409	F-13
C1426	K-2	C4403	B-20	CR4161	D-12	Q1505	L-4	R2729	I-10	R4410	E-18
C1501	M-6	C4405	C-20	CR4162	D-11	Q2301	G-6	R2731	F-8	R4502	C-10
C1507	M-5	C4406	E-19	CR4163	F-12	Q2302	K-6	R2734	M-9	R4504	B-13
C1725	F-2	C4502	B-14	CR4164	G-11	Q2703	G-9	R2781	G-14	R4506	D-14
C1731	G-3	C4503	A-13	CR4165	E-12	Q2706	M-9	R2809	G-10	R4510	B-11
C1733	G-1	C4505	A-12	CR4166	E-12	Q2901	M-10	R2901	M-10	R4512	A-11
C1736	G-2	C4506	A-13	CR4301	E-16	Q2903	L-10	R2902	N-7	R4513	N-11
C1741	I-3	C4507	B-12	CR4305	M-10	Q3101	B-3	R2903	N-10	R4515	C-10
C1744	H-1	C4508	C-12	CR4405	C-12	Q3303	C-9	R2907	N-8	R4516	C-11
C1745	H-2	C4512	C-13	CR4501	B-13	Q4101	L-19	R2913	N-7	R4518	C-11
C1753	G-3	C4605	I-T	CR4502	C-13	Q4102	L-18	R2914	M-10	R4519	B-13
C1800	J-1	C4701	G-14	CR4504	B-14	Q4103	L-20	R2915	N-9	R4524	D-10
C1801	J-2	C4703	I-14	CR4506	D-13	Q4104	M-19	R2920	L-10	R4525	A-12
C1815	H-3	C4704	I-15	CR4601	I-14	Q4106	E-12	R2923	N-9	R4526	C-11
C1821	F-1	C4705	F-15	CR4602	I-14	Q4107	F-12	R3101	B-6	R4528	C-12
C1825	E-1	C4707	E-17	CR4603	I-13	Q4160	D-12	R3102	B-6	R4701	I-15
C1900	D-1	C4708	E-17	CR4604	I-13	Q4161	D-12	R3103	B-6	R4702	G-15
C1901	E-1	C4709	G-12	CR4606	C-13	Q4162	F-11	R3104	B-6	R4704	F-15
C1902	C-2	C4710	H-12	CR4701	H-15	Q4301	E-16	R3105	B-6	R4707	F-16
C1903	F-1	C4711	G-15	CR4702	I-15	Q4302	E-15	R3106	C-6	R4708	H-12
C1904	C-2	C4713	H-15	CR4703	F-16	Q4401	E-19	R3108	B-4	R4713	H-13
C1913	C-1	C4801	C-13	CR4704	F-17	Q4501	A-13	R3109	B-6	R4803	D-15
C1914	A-1	C4805	A-15	CR4705	G-12	Q4502	A-11	R3115	A-8	R4805	N-11
C1915	D-2	C4806	H-15	CR4707	D-14	Q4503	B-10	R3119	B-9	R4806	C-15
C2302	G-6	C4807	H-14	CR4801	E-15	Q4801	C-16	R3120	B-9	R4807	D-14
C2304	G-6	C4808	A-14	CR4802	H-13	Q4802	C-16	R3306	C-7	R4809	C-15
C2307	H-7	C4810	D-14	CR4803	B-15	Q4803	C-17	R3307	C-7	R4812	B-17
C2332	H-7	C4901	L-10	CR4804	C-15	Q4804	B-17	R3312	F-10	R4814	E-14
C2333	F-5	C4902	M-11	CR4805	D-15	Q4805	B-14	R3315	F-10	R4815	B-14
C2401	K-9	C4904	L-11	CR4901	M-10	Q4806	C-17	R3316	F-9	R4818	C-15
C2403	K-10	CF1201	I-6	CR4902	L-10	R1216	J-6	R3317	D-7	R4821	F-15
C2701	K-9	CF2301	K-6	DL1501	L-6	R1221	H-6	R3324	D-8	R4827	C-16
C2705	G-8	CR1401	G-3	DL2701	L-9	R1404	M-3	R3325	D-8	R4901	M-10
C2706	F-8	CR1402	M-4	F4001	M-12	R1419	G-4	R3326	C-8	R4902	L-10
C2714	H-8	CR1403	M-4	FB4401	E-19	R1425	M-2	R3329	F-9	R4903	L-10
C2715	F-9	CR1404	M-4	FB4801	G-13	R1427	M-1	R3334	D-6	R4905	H-10
C2717	H-8	CR1501	K-7	J1401	N-3	R1440	M-1	R3335	C-6	RT4201	K-12
C2718	G-9	CR1502	K-9	J1403	N-2	R1442	M-2	R3601	F-5	SCR4101	L-18
C2809	K-8	CR1503	K-8	J1405	N-1	R1457	J-2	R3607	F-6	SF2301	G-7
C2811	G-10	CR1504	M-5	J1408	N-2	R1466	K-2	R4001	M-16	T4101	J-20
C2818	G-10	CR1505	N-5	J1410	N-1	R1476	K-2	R4002	K-15	T4301	D-17
C2820	G-9	CR1506	N-5	J1501	N-6	R1502	M-6	R4101	L-17	T4601	J-14
C3118	A-5	CR1701	F-2	J1901	D-1	R1504	M-6	R4104	L-18	T4801	B-18
C3601	H-5	CR1704	H-2	J3001	B-4	R1507	M-6	R4108	M-20	TP126	L-18
C3603	G-4	CR1903	A-1	J4901	M-11	R1508	L-6	R4110	H-19	TP1702	F-3
C4001	L-13	CR1904	A-1	K4112	J-13	R1512	L-7	R4111	M-19	TP1718	G-2
C4002	N-16	CR2401	K-9	L1204	I-6	R1726	F-3	R4113	I-18	TP1719	G-1
C4003	M-16	CR2701	G-9	L1206	K-7	R1741	G-2	R4115	J-17	TP2303	G-6
C4004	L-15	CR2702	M-9	L1501	L-5	R1758	H-2	R4116	K-20	TP4008	J-18
C4005	M-16	CR2703	I-10	L1502	K-7	R1768	J-3	R4117	M-20	U1001	I-8
C4007	M-18	CR2707	G-9	L2301	G-6	R1771	H-2	R4118	L-19	U1401	K-3
C4008	N-15	CR2708	F-9	L2302	H-7	R1776	H-2	R4125	E-13	U1402	L-2
C4009	N-15	CR2709	M-9	L2303	K-6	R1779	J-2	R4126	E-13	U1701	F-3
C4101	I-19	CR3101	B-8	L2304	H-8	R1782	J-2	R4127	E-13	U1702	I-3
C4104	K-18	CR3303	D-9	L2306	J-7	R1788	F-4	R4132	L-19	U1801	I-1
C4105	K-18	CR3304	B-9	L2308	J-8	R1805	J-3	R4163	D-13	U1900	B-2
C4106	J-17	CR3305	B-9	L2310	H-7	R1903	D-2	R4170	E-11	U3101	C-8
C4108	L-19	CR3601	F-4	L2701	J-8	R1904	A-2	R4171	F-11	U4501	B-13
C4109	L-18	CR3602	F-5	L2802	K-8	R1905	C-14	R4172	F-13	XRP-1	M-11
C4117	E-11	CR4001	M-17	L3101	B-7	R1913	B-2	R4173	E-12	XRP-2	M-11
C4118	I-20	CR4002	L-17	L3301	B-8	R2302	F-6	R4175	J-19	Y2801	H-9
C4120	I-20	CR4003	L-16	L3601	F-7	R2314	F-8	R4301	J-10	Y3101	B-8
C4133	E-13	CR4004	M-16	L4001	L-14	R2320	L-5	R4304	F-11	Y4301	J-10
C4160	D-11	CR4101	L-19	L4101	J-18	R2321	K-5	R4305	D-16		
C4161	E-12	CR4102	J-20	L4102	I-18	R2333	K-5	R4306	D-16		
C4164	D-13	CR4103	M-20	L4402	C-19	R2339	K-6	R4309	J-10		

MAIN BOARD - BOTTOM VIEW



MAIN BOARD - BOTTOM VIEW, GRIDTRACE LOCATION GUIDE

C1209	J-16	C3101	A-16	C4903	L-11	R1521	L-18	R2326	K-15	R3339	B-12
C1211	I-14	C3102	A-16	C4905	L-11	R1522	L-18	R2330	L-16	R3340	C-12
C1223	K-14	C3103	B-16	Q1404	G-18	R1523	M-16	R2331	L-15	R3341	B-14
C1403	M-19	C3104	B-15	Q1406	L-20	R1524	L-17	R2338	L-17	R3342	B-15
C1404	J-20	C3105	C-16	Q1407	J-20	R1720	H-20	R2340	K-15	R3343	B-15
C1416	M-19	C3106	C-16	Q1501	M-15	R1727	F-18	R2341	L-16	R4102	M-3
C1425	L-20	C3109	B-16	Q1502	M-14	R1728	F-18	R2401	L-12	R4103	M-3
C1502	M-16	C3110	B-17	Q1503	M-14	R1733	F-18	R2402	J-12	R4105	M-2
C1503	L-15	C3111	C-16	Q1504	L-15	R1735	F-19	R2403	K-11	R4106	M-3
C1504	K-14	C3112	B-14	Q1702	F-18	R1736	F-19	R2406	K-11	R4107	M-2
C1505	K-14	C3113	B-13	Q1703	G-20	R1738	F-19	R2407	I-10	R4109	N-1
C1506	L-17	C3114	B-13	Q1704	H-18	R1739	G-18	R2705	J-13	R4112	N-1
C1722	I-19	C3115	B-13	Q1705	H-19	R1740	G-18	R2706	L-13	R4128	M-1
C1723	F-19	C3116	A-12	Q2305	K-15	R1742	H-18	R2708	H-12	R4129	N-1
C1724	J-18	C3117	A-11	Q2401	K-10	R1743	H-19	R2711	L-12	R4131	M-2
C1726	F-18	C3119	A-16	Q3102	B-13	R1744	H-19	R2712	L-12	R4138	K-1
C1734	G-20	C3120	A-16	Q3301	B-14	R1745	H-18	R2713	H-12	R4164	D-9
C1735	G-19	C3121	A-16	Q3302	C-12	R1746	H-19	R2716	L-12	R4168	M-2
C1737	I-18	C3122	H-17	R1201	I-14	R1747	I-18	R2718	F-11	R4169	F-9
C1738	H-18	C3301	A-15	R1207	J-15	R1748	J-18	R2720	G-13	R4174	E-9
C1739	I-18	C3302	A-15	R1208	I-14	R1749	J-18	R2733	L-11	R4302	L-11
C1740	I-18	C3303	D-15	R1214	H-15	R1750	J-18	R2735	J-11	R4307	J-12
C1742	I-19	C3304	C-15	R1215	I-15	R1751	I-19	R2808	K-14	R4308	J-12
C1743	I-17	C3305	C-15	R1222	K-14	R1752	J-19	R2810	H-11	R4313	I-13
C1754	F-17	C3306	D-12	R1401	H-17	R1753	I-19	R2811	H-11	R4320	I-12
C1755	F-18	C3307	D-13	R1402	M-18	R1754	I-18	R2812	H-12	R4323	K-11
C1802	L-18	C3308	D-15	R1405	L-18	R1755	I-19	R2813	K-13	R4325	M-11
C1803	L-18	C3309	D-14	R1406	L-20	R1756	I-18	R2814	H-11	R4326	G-9
C1909	D-19	C3310	C-14	R1407	K-20	R1757	I-19	R2815	G-11	R4404	H-4
C1910	A-19	C3311	D-13	R1408	K-20	R1760	F-19	R2905	N-12	R4405	G-4
C1911	D-19	C3312	D-13	R1409	I-20	R1761	I-19	R2906	M-13	R4501	B-11
C1912	A-19	C3313	C-11	R1410	J-20	R1763	J-18	R2908	M-13	R4503	A-8
C1916	C-20	C3314	C-12	R1411	I-20	R1765	J-18	R2909	N-13	R4505	A-9
C2303	G-15	C3315	D-12	R1412	I-20	R1766	I-18	R2910	N-13	R4507	B-9
C2309	I-14	C3316	C-16	R1420	G-17	R1767	I-18	R2911	M-11	R4508	A-9
C2311	J-14	C3317	C-16	R1422	L-19	R1772	J-18	R2912	N-12	R4509	B-8
C2312	H-14	C3318	B-13	R1423	M-19	R1773	H-18	R3110	D-16	R4511	B-10
C2313	H-14	C3319	B-13	R1429	M-19	R1774	I-18	R3111	B-16	R4514	B-10
C2314	J-16	C3320	B-12	R1431	M-20	R1775	G-19	R3112	B-16	R4517	C-8
C2318	J-13	C3321	B-12	R1433	L-20	R1777	H-19	R3113	B-16	R4520	B-11
C2327	I-14	C3323	B-12	R1434	M-20	R1784	F-19	R3114	B-16	R4521	A-10
C2328	G-13	C3325	C-12	R1436	L-20	R1786	F-19	R3116	B-13	R4527	C-8
C2402	I-12	C3602	H-16	R1437	L-20	R1787	F-18	R3117	C-13	R4703	F-6
C2707	I-13	C3604	H-16	R1453	L-18	R1789	F-17	R3118	C-13	R4801	D-6
C2708	J-13	C4102	N-2	R1454	M-18	R1801	J-20	R3121	A-12	R4802	D-6
C2709	J-12	C4110	M-3	R1455	L-18	R1802	J-20	R3122	B-14	R4804	F-7
C2711	H-12	C4111	M-3	R1456	M-19	R1803	J-20	R3123	B-14	R4808	C-5
C2712	G-12	C4116	E-9	R1458	L-20	R1804	J-20	R3124	B-14	R4816	A-7
C2713	G-13	C4135	N-2	R1460	K-20	R1806	L-18	R3125	C-14	R4817	E-6
C2720	M-11	C4162	D-9	R1461	M-19	R1807	L-18	R3302	A-14	R4822	C-5
C2722	J-11	C4163	D-8	R1462	K-17	R1808	L-18	R3303	A-14	R4823	C-5
C2723	L-13	C4171	M-2	R1463	K-18	R1812	G-20	R3304	D-15	R4824	C-5
C2724	M-12	C4173	I-12	R1464	L-19	R1815	F-20	R3305	C-15	R4825	C-6
C2725	H-12	C4174	E-9	R1465	M-20	R1901	C-19	R3308	C-12	R4826	C-4
C2726	H-13	C4302	E-5	R1468	L-19	R1902	C-19	R3309	D-14	R4828	D-6
C2727	H-13	C4310	D-5	R1475	K-18	R1919	F-20	R3310	D-14	R4829	D-6
C2803	K-13	C4311	I-12	R1477	L-19	R1920	H-20	R3311	D-14	R4904	K-11
C2805	K-13	C4319	K-11	R1478	H-18	R1921	H-20	R3313	C-14		
C2807	I-13	C4320	I-12	R1479	J-18	R2303	G-15	R3314	C-14		
C2810	I-12	C4321	I-12	R1501	N-15	R2304	G-16	R3318	C-14		
C2812	G-12	C4322	K-11	R1503	L-6	R2307	G-15	R3319	D-14		
C2813	H-11	C4401	E-3	R1505	M-16	R2308	G-15	R3320	D-13		
C2814	H-12	C4509	B-8	R1506	L-16	R2309	G-14	R3321	D-13		
C2816	K-13	C4510	E-8	R1509	L-14	R2310	I-14	R3322	D-13		
C2817	H-11	C4511	C-8	R1510	M-14	R2311	H-14	R3323	D-13		
C2821	I-11	C4513	A-9	R1511	L-14	R2312	H-15	R3327	D-12		
C2901	M-13	C4601	I-7	R1513	L-14	R2313	J-14	R3330	C-12		
C2902	N-14	C4602	I-8	R1514	L-14	R2315	K-14	R3331	C-11		
C2903	N-13	C4603	I-8	R1515	L-14	R2316	I-13	R3332	D-12		
C2905	K-11	C4604	I-8	R1516	L-15	R2318	K-15	R3333	D-12		
C2907	M-12	C4802	D-5	R1517	L-14	R2319	I-13	R3336	B-12		
C2908	N-12	C4803	D-5	R1518	K-12	R2323	G-15	R3337	B-12		
C2909	N-12	C4809	E-6	R1519	L-17	R2325	J-16	R3338	B-12		

PARTS LIST

SEMICONDUCTORS

(Select the replacement that gives the best results.)

Item No.	Type No.	Mfr. Part No.	NTE Part No.	ECG Part No.	TCE Part No.
CR1401 Thru					
CR1404	-	164717	NTE519	ECG519	SK3100
CR1501 Thru					
CR1506	-	164717	NTE519	ECG519	SK3100
CR1701	-	164874	NTE177	ECG177	SK9091
CR1704	-	164717	NTE519	ECG519	SK3100
CR1903, 04	-	164717	NTE519	ECG519	SK3100
CR2401	-	164874	NTE177	ECG177	SK9091
CR2701 Thru					
CR2703	-	164717	NTE519	ECG519	SK3100
CR2707 Thru					
CR2709	-	164717	NTE519	ECG519	SK3100
CR3101	-	132616	NTE5071A	ECG5071A	SK6V8
CR3303 Thru					
CR3305	-	164874	NTE177	ECG177	SK9091
CR3401	-	150711	-	-	-
CR3402	-	182827	NTE5010A	ECG5010A	SK5A1
CR3403	-	175393	-	-	-
CR3601	-	146320	NTE135A	ECG135A	SK5V1
CR3602	-	200155	-	-	-
CR4001 Thru					
CR4004	-	147015	NTE125	ECG125	SK5010A
CR4101	-	164717	NTE519	ECG519	SK3100
CR4102	-	176296	NTE125	ECG125	SK5010A
CR4103	-	164717	NTE519	ECG519	SK3100
CR4104	-	142670	NTE147A	ECG147A	SK33V
CR4112, 14	-	164717	NTE519	ECG519	SK3100
CR4118	-	147015	NTE125	ECG125	SK5010A
CR4119	-	164717	NTE519	ECG519	SK3100
CR4120	-	195881	NTE5013T1	ECG5013T1	SK9969
CR4160	-	176746	NTE5011A	ECG5011A	SK5A6
CR4161	-	132616	NTE5071A	ECG5071A	SK6V8
CR4162, 63	-	164717	NTE519	ECG519	SK3100
CR4164	-	132616	NTE5071A	ECG5071A	SK6V8
CR4165	-	192848	NTE5018A	ECG5018A	SK9A1
CR4166	-	164874	NTE177	ECG177	SK9091
CR4301	-	176296	NTE125	ECG125	SK5010A
CR4305	-	164717	NTE519	ECG519	SK3100
CR4405	-	164717	NTE519	ECG519	SK3100
CR4501	-	147015	NTE125	ECG125	SK5010A
CR4502	-	139706	NTE177	ECG177	SK9091
CR4503	-	164717	NTE519	ECG519	SK3100
CR4504	-	147015	NTE125	ECG125	SK5010A
CR4506	-	139706	NTE177	ECG177	SK9091
CR4601 Thru					
CR4604	-	147015	NTE125	ECG125	SK5010A
CR4606	-	147015	NTE125	ECG125	SK5010A
CR4701	-	153672	NTE552	ECG552	SK9000
CR4702	-	176296	NTE125	ECG125	SK5010A
CR4703	-	140971	NTE552	ECG552	SK9000
CR4704	-	153672	NTE552	ECG552	SK9000
CR4705	-	176296	NTE125	ECG125	SK5010A
CR4707	-	147015	NTE125	ECG125	SK5010A
CR4801	-	176746	NTE5011A	ECG5011A	SK5A6

SEMICONDUCTORS continued

(Select the replacement that gives the best results.)

Item No.	Type No.	Mfr. Part No.	NTE Part No.	ECG Part No.	TCE Part No.
CR4802	-	164589	NTE558	ECG558	SK3998
CR4803	-	164717	NTE519	ECG519	SK3100
CR4804	-	153672	NTE552	ECG552	SK9000
CR4805	-	164874	NTE177	ECG177	SK9091
# CR4901	-	157301	NTE177	ECG177	SK9091
# CR4902	-	159429	NTE5019T1	ECG5019T1	SK9970
CR5002	-	139706	NTE177	ECG177	SK9091
Q1401	-	145410	NTE159	ECG159	SK3466
Q1402, 03	-	146847	NTE123AP	ECG123AP	SK3854
Q1404, 06, 07	-	179740	NTE2406*	ECG2406*	SK10097*
Q1501, 02, 03, 04	-	179740	NTE2406*	ECG2406*	SK10097*
Q1505	-	146847	NTE123AP	ECG123AP	SK3854
Q1702, 03, 04, 05	-	179740	NTE2406*	ECG2406*	SK10097*
Q2301	-	146848	NTE229*	ECG229*	SK3246A*
Q2302	-	146847	NTE123AP	ECG123AP	SK3854
Q2305	-	179741	NTE2407*	ECG2407*	SK10098*
Q2401	-	179740	NTE2406*	ECG2406*	SK10097*
Q2703	-	143806	NTE159	ECG159	SK3466
Q2706	-	146847	NTE123AP	ECG123AP	SK3854
Q2901, 03	-	143806	NTE159	ECG159	SK3466
Q3101	-	145410	NTE159	ECG159	SK3466
Q3102	-	179740	NTE2406*	ECG2406*	SK10097*
Q3301	-	179741	NTE2407*	ECG2407*	SK10098*
Q3302	-	179740	NTE2406*	ECG2406*	SK10097*
Q3303	-	146847	NTE123AP	ECG123AP	SK3854
Q3401	-	146847	NTE123AP	ECG123AP	SK3854
Q4101	-	146847	NTE123AP	ECG123AP	SK3854
Q4102	-	142839	NTE159	ECG159	SK3466
Q4103, 04	-	146847	NTE123AP	ECG123AP	SK3854
Q4106, 07	-	157627	NTE54	ECG54	SK9366
Q4160	-	146847	NTE123AP	ECG123AP	SK3854
Q4161	-	157627	NTE54	ECG54	SK9366
Q4162	-	146850	NTE159	ECG159	SK3466
Q4301	-	190482	-	-	-
Q4302	-	145410	NTE159	ECG159	SK3466
Q4401	-	190483	NTE2331	ECG2331	SK10088
Q4501	-	146847	NTE123AP	ECG123AP	SK3854
Q4502	-	142839	NTE159	ECG159	SK3466
Q4503	-	146847	NTE123AP	ECG123AP	SK3854
Q4801, 02	-	142839	NTE159	ECG159	SK3466
Q4803	-	145395	NTE123AP	ECG123AP	SK3854
Q4804	-	190482	-	-	-
Q4805	-	145410	NTE159	ECG159	SK3466
Q4806	-	143804	NTE123AP	ECG123AP	SK3854
Q5001 Thru					
Q5003	-	146826	NTE171	ECG171	SK3201
	-	153677	NTE255	ECG255	SK9412
Q5004	-	146851	NTE287	ECG287	SK3433
SCR4101	-	197591	NTE7472	ECG7472	SK7472
# U1001	-	193082	NTE1790	ECG1790	SK9850
U1401	TC4016BP	154027	NTE4066B	ECG4066B	SK4066B

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

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MODEL 27GT610FE1 (CHASSIS CTC167R)

PARTS LIST continued

SEMICONDUCTORS continued

(Select the replacement that gives the best results.)

Item No.	Type No.	Mfr. Part No.	NTE Part No.	ECG Part No.	TCE Part No.
U1402	HCF4052BE	161079	NTE4052B	ECG4052B	SK4052B
U1701	LA3361	196121	NTE1248	ECG1248	SK3497
U1702	LM324N	149018	NTE987	ECG987	SK3643
U1801	UPC1406HA	196122	NTE1792	ECG1792	SK9877
U1900	-	181836	-	-	-
U3101	-	207084	-	-	-
U3401	-	195885	-	-	-
U4501	LA7831	176853	NTE1797	ECG1797	SK9753
Remote Transmitter, CRK50C					
# CR1	-	148056	-	-	-
Q1	-	148996	NTE123AP	ECG123AP	SK3854
U1	SC41843P	181039	-	-	-
Remote Transmitter, CRK59C					
CR1	-	164717	NTE519	ECG519	SK3100
CR2, CR3	-	148056	-	-	-
Q1, Q2	-	148996	NTE123AP	ECG123AP	SK3854
U1	-	250062	-	-	-
	-	203811	-	-	-
Tuner					
DH01	-	200553	-	-	-
DH02	-	200471	-	-	-
DH46	-	200472	-	-	-
DH57	-	200554	-	-	-
DH58	-	200471	-	-	-
DH66	-	200472	-	-	-
DH69	-	200471	-	-	-
DH73	-	200471	-	-	-
DH75	-	200555	-	-	-
DH83, 84	-	200472	-	-	-
DH97	-	200471	-	-	-
II06	-	200558	-	-	-
TH04	-	200566	-	-	-
TH14	-	200567	-	-	-
TH65	-	200566	-	-	-
TH75	-	200557	-	-	-
TH87	-	200574	-	-	-
TH93	-	200557	-	-	-
TI11, 13, 14	-	200556	-	-	-

For SAFETY use only equivalent replacement part.

CONTROLS & RESISTORS

Item No.	Function/Rating	Mfr. Part No.	NTE Part No.
# R1216	10 5% 1/4W Nonflammable	829010	QW010
# R1404	100 5% 1/4W	190466	QW110
R1454	33K 2% 1/8W	176813	-
R1726	10K Audio Input Level	181107	-
R1741	7500 Stereo Oscillator	196112	-
R1758	100K Expander Gain	181108	-
# R1805	3.3 5% 1W Nonflammable	190554	1W3D3
# R1903	1 5% 1/4W	829A10	QW1D0
# R1904	1 5% 1/4W	829A10	QW1D0
# R1905	10 5% 2W Nonflammable	179284	2W010
# R2302	100 5% 1/4W Nonflammable	829110	QW110
R2314	20K RF AGC	191389	-
R2318	330 2% 1/8W	181488	-
R2701	31.6K 1% 1/4W	196114	-
R2719	300 Contrast Preset	190525	-
# R2781	27K 5% 1/2W	206037	HW327
R2903	4500 Red Bias	190533	-
R2907	150 Blue Drive	193062	-
R2908, 09, 10	120 2% 1/8W	181485	-
	130 5% 1/8W	181049	-
R2909	120 2% 1/8W	181485	-
R2910	120 2% 1/8W	181485	-
R2913	150 Green Drive	193062	-
# R2914	10 5% 1/4W	175753	QW010
R2915	4500 Green Bias	190533	-
R2923	4500 Blue Bias	190533	-
R3304	22K 2% 1/8W	174367	-
R3316	10K Tint Preset	181107	-
R3402	133K 1% 1/4W	195752	-
# R3601	130 5% 1W Nonflammable	175783	1W113
# R3607	820 5% 1/2W Nonflammable	193065	HW182
# R4001	2.7 10% 15W Wirewound	190487	-
# R4002	2.7M 5% 1/2W	183127	HW527
# R4101	15K 5% 3W Nonflammable	182374	3W315
R4103	22K 2% 1/8W	174367	-
R4109	620 2% 1/8W	181493	-
# R4110	47 10% 1/2W	190473	HW047
# R4113	4700 5% 2W Nonflammable	195722	2W247
R4115	2200 5% 3W Nonflammable	190559	3W222
# R4116	41.2K 1% 1/4W	176500	-
# R4117 (1)	20K Regulator B+	-	-
# R4118	4320 1% 1/4W	196070	-
# R4125	3.9 5% 1/4W Nonflammable	829A39	QW3D9
# R4126	18 5% 2W Nonflammable	174939	2W018
R4129	22K 2% 1/8W	174367	-
# R4132	634 1% 1/4W	196069	-
# R4172	22 5% 2W Nonflammable	179786	2W022
# R4175	41.2K 1% 1/4W	176500	-
R4321	20K Horizontal Centering	195727	-
# R4403	220 5% 1W Nonflammable	190555	1W122
# R4506	3.3 5% 1W Nonflammable	190554	1W3D3
R4513	350 Vertical Height	190532	-

For SAFETY use only equivalent replacement part.

(1) Part of CR4120 diode kit.

PARTS LIST continued

CONTROLS & RESISTORS continued

Item No.	Function/Rating	Mfr. Part No.	NTE Part No.
# R4516	47 5% 1/4W	175040	QW047
# R4701	10 5% 1/2W Nonflammable	830010	HW010
# R4702	82K 5% 1/2W	830382	HW382
# R4704	27 5% 1/4W Nonflammable	829027	QW027
# R4705	Focus/Screen	196072	-
# R4707	1500 5% 1/2W Nonflammable	830215	HW215
# R4708	3.9 5% 1/4W Nonflammable	829A39	QW3D9
# R4713	3.3 5% 3W Wirewound	195730	-
R4803	1000 E/W Pin Amplitude	181106	-
R4805	1500 Horizontal Width	196075	-
# R4809	470 5% 1W Nonflammable	831147	1W147
# R4814	47 5% 3W	196076	3W047
# R4901	100 5% 1/4W Nonflammable	829110	QW110
# R4902	28K 1% 1/4W	195731	-
# R4903	39.2K 1% 1/4W	190469	-
R4904	22K 2% 1/8W	174367	-
# R4905	10K 5% 1/4W	175317	QW310
# R5015	3.3M 10% 1/2W	-	HW533
# RT4201	5.3 Cold PTC	190002	-

For SAFETY use only equivalent replacement part.

COILS & TRANSFORMERS

Item No.	Function/Rating	Mfr. Part No
# DY1 (1)	Yoke Horiz 1.28mH Vert 18.0mH	
FB4401	Ferrite Bead	161237
FB4801	Ferrite Bead	154052
L1204	SIF	190504
L1206	56µH	196107
L1501	120µH	206045
L1502	47µH	206046
L2301	.68µH	195708
L2302	1µH	195709
L2303	10µH	196108
L2304	2.2µH	190553
L2306	-	190506
L2308	-	190503
L2310	-	206035
L2701	68µH	149167
L2802	8.2µH	149170
L3101	10µH	175409
L3301	-	196107
L3601	-	195714
# L4001	Line Filter	190507
# L4101	280µH	195715
# L4102	6.8µH	191141
# L4201	Degaussing	250050
# L4402	Horizontal Linearity	196064
# L4701	10µH	175409
L4702, 03	220µH	175411
L4801	300µH	196063
L5001	330µH	196125
# T4101	SCR Driver	196119
# T4301	Horizontal Drive	195734
# T4401	Horizontal Output	196082
# T4601	Standby Power	190508
# T4801	Pincushion	196084
Tuner		
LH64	3.9µH	200559
LH78	1.2µH	200481

For SAFETY use only equivalent replacement part.
(1) Bonded part of CRT.

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MODEL 27GT610FE1 (CHASSIS CTC167R)

PARTS LIST
continued

CAPACITORS & ELECTROLYTICS		
Item No.	Rating	Mfr. Part No.
C1209	33pF 5% 50V NPO	174408
C1223	33pF 5% 50V NPO	174408
C1502	82pF 5% 50V NPO	176828
C1503	68pF 5% 50V NPO	174410
C1504	68pF 5% 50V NPO	174410
C1726	47pF 5% 50V NPO	174409
C1733	.47μF 20% 50V NP	189983
C1903	1μF 20% 50V NP	196641
C1913	220μF 10% 35V	190493
C1914	220μF 10% 35V	190493
C2311	33pF 5% 50V NPO	174408
C2313	7pF ±.5pF 50V NPO	174401
C2318	18pF 10% 50V NPO	181455
C2701	10μF 20% 25V NP	146256
C2709	82pF 5% 50V NPO	176828
C2720	68pF 5% 50V NPO	174410
C2722	12pF 5% 50V NPO	174403
C2723	22pF 5% 50V NPO	174406
C2724	220pF 5% 50V NPO	178188
C2803	56pF 5% 50V NPO	190542
C2805	33pF 5% 50V NPO	174408
C2813	10pF 1% 50V NPO	174402
C2816	150pF 5% 50V NPO	181091
C2821	39pF 5% 50V NPO	181090
C2907	220pF 5% 50V NPO	178188
C2908	220pF 5% 50V NPO	178188
C2909	220pF 5% 50V NPO	178188
C3114	33pF 5% 50V NPO	174408
C3115	39pF 5% 50V NPO	181090
C3304	100pF 10% 50V NPO	175399
C3305	100pF 10% 50V NPO	175399
C3318	22pF 5% 50V NPO	174406
C3319	22pF 5% 50V NPO	174406
C3321	47pF 5% 50V NPO	174409
C3323	100pF 10% 50V NPO	175399
C3325	100pF 5% 50V NPO	193340
C3603	68μF 10% 50V	191144
# C4001	.22 20% 600V	175604
# C4002	680pF 20% 1kV	190538
# C4003	680pF 20% 1kV	190538
# C4004	680pF 20% 1kV	190538
# C4005	680pF 20% 1kV	190538
# C4007	680μF 10% 200V	190560
# C4008	.005 20% 25V	195697
C4110	10pF 1% 50V NPO	174402
C4111	2pF ±.5pF 50V NPO	206032
# C4120	33μF 20% 180V	179554
C4320	100pF 5% 50V NPO	174412
# C4402	.0145 3.5% 1.6kV	195700
# C4403	.56 5% 250V	196049
# C4405	.0047 10% 250V	190534
# C4406	470pF 5% 1.5kV N1500	143242
# For SAFETY use only equivalent replacement part.		

CAPACITORS & ELECTROLYTICS continued		
Item No.	Rating	Mfr. Part No.
C4505	2.2μF 10% 50V	192315
C4701	680μF 10% 50V	190497
C4704	680pF 20% 1kV	190538
C4705	47μF 10% 63V	190498
C4707	100μF 10% 35V	190501
C4708	680pF 20% 1kV	190538
C4710	680pF 20% 1kV	190538
C4711	.01 20% 1kV	137583
C4713	680pF 20% 1kV	190538
# C4806	.068 5% 400V	196061
C4807	680pF 20% 1kV	190538
# C4904	10μF 20% 50V	189981
C5001	.001 10% 3kV	120696
Remote Transmitter, CRK59C		
C3	22pF 10% 50V NPO	194903
C4	22pF 10% 50V NPO	194903
C6	470pF 10% 50V NPO	192040
Tuner		
CH66	390pF 2% 63V	200480
CH72	390pF 2% 63V	200480
# For SAFETY use only equivalent replacement part.		

PARTS LIST continued

MISCELLANEOUS

Item No.	Description	Mfr. Part No.	Notes
# C4009	Capristor	250102	470pF, 3.1M
CF1201	Filter	195702	4.5MHz
CF2301	Filter	160140	4.5MHz
	Filter	209740	4.5MHz
DL1501	Delay Line	195704	-
DL2701	Delay Line	177795	-
# F4001	Fuse	175425	5Amp, 125V, Fast Acting
J1401	Jack	190514	Aux Video In
J1403	Jack	190516	Left Audio In
J1405	Jack	190515	Right/Mono Audio In
J1408	Jack	190516	Left HI-FI Out
J1410	Jack	190515	Right/Mono HI-FI Out
J1501	Jack	195705	S-Video In
# K4112	Relay	190490	Degaussing
# KS5001	Socket	189986	CRT
# P1	Line Cord	187802	AC, Polarized
SF2301	Filter	176852	SAW
SP1, SP2	Speaker	183165	3" X 8", 32 Ohms, 3.5W
SW3401	Switch	181724	Audio
SW3403	Switch	181724	Channel Up
SW3411	Switch	181724	Video
SW3413	Switch	181724	Volume -
SW3421	Switch	181724	Set-Up
SW3423	Switch	181724	Volume +
SW3431	Switch	181724	Channel Down
SW3433	Switch	181724	Power
# V101	CRT	A68AEG101	A68AEG10X01
Y2801	Crystal	161235	3.58MHz
Y3101	Crystal	196028	8MHz
	Crystal	209856	8MHz
Y4301	Crystal	179267	-
	Fuse Clip	176642	For F4001 (2 Used)
	Magnet	179806	Beam Bender
#	Panel	206054	Jack
	PC Board (1)	206060	CRT (PW5000)
	PC Board (1)	250109	Front Panel Assembly (PW3400)
	Transmitter (3)	179742	Remote, CRK50C
	Transmitter	204936	Remote, CRK59C
	Tuner (1)(2)	200075	M-2016
Remote Transmitter, CRK50C			
Y1	Crystal	157804	455KHz
	PC Board (1)	184901	Remote Transmitter (PW1000)
Remote Transmitter, CRK59C			
Y1	Crystal	196001	4MHz
	PC Board (1)	250057	Remote Transmitter (PW1000)
Tuner			
Q106	Crystal	200560	4MHz

For SAFETY use only equivalent replacement part.
(1) Contact PTS Electronics Corporation for replacement; order by manufacturer's part number.
(2) Contact TNI Electronics for replacement; order by part number on tuner.
(3) Used in model 27GT610FE1.

CABINET PARTS

Item	Part No.
Models 27GC802KF1, MF1	
# Cabinet Back	BK1168
# Mask, with Buttons	MK1167
Models 27GC802KF2, MF2	
# Cabinet Back	BK1369
# Mask, with Buttons	MK1167
Model 27GC804MF1	
# Cabinet Back	BK1285
# Mask, with Buttons	MK1167
Model 27GT610FE1	
# Cabinet Back	BK1251
# Cabinet Wrap	207137
# Mask, Cabinet Front	MK1252
Models 27GT612FE1, NE1	
# Cabinet Back	BK1251
# Cabinet Wrap	207138
# Mask, Cabinet Front	MK1253
Remote Transmitter, CRK50C	
Battery Door	192038
Buttons	192035
Case Bottom	192033
Case Top	192034
Remote Transmitter, CRK59C	
Battery Door	191570
Buttons	207092
Case Bottom	191568
Case Top	191567
# For SAFETY use only equivalent replacement part.	

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MODEL 27GT610FE1 (CHASSIS CTC167R)