

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.

TEST JIG HOOKUP				
Function	Chek-A-Color Adapter No.	PC Board Plug No.	Pin	Color
CRT	B239	P Horiz	E4401	Red
Yoke	D4124		E4402	Blue
Yoke Setting	YP1A	P Vert	E4501	Yellow
Comments	Focus Tap		E4502	Green

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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SAFETY CHECKS – FIRE AND SHOCK HAZARD

Cold Leakage Checks for Receivers with Isolated Ground

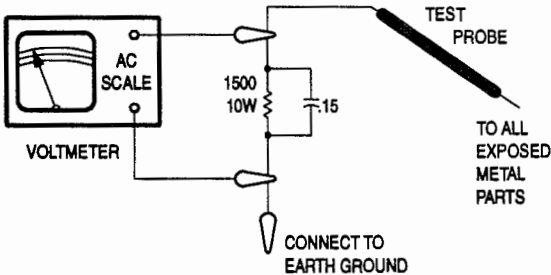
Unplug the AC cord, connect a jumper across the plug prongs, and turn the power switch on (if applicable). Use an ohmmeter to measure the resistance between the jumped AC plug and any exposed metal cabinet parts such as antenna screw heads, control shafts, or handle brackets. Exposed metal parts with 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.

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.



95PF02805



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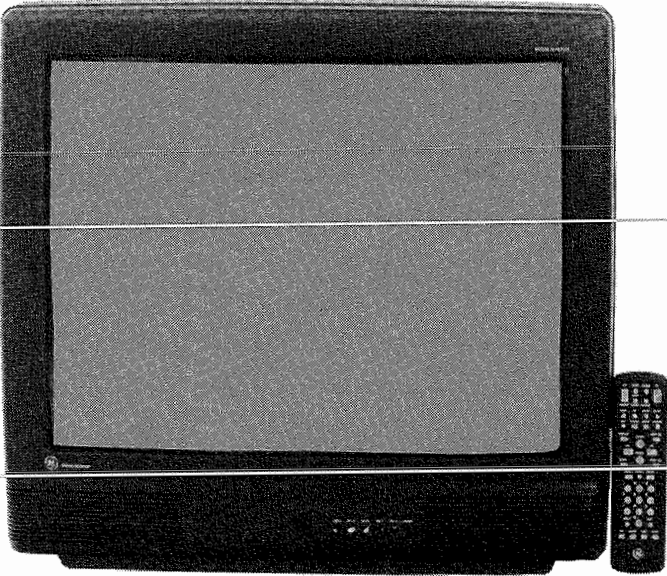
PHOTOFACT® Technical Service Data

SET 3478

MODEL 27GT613FE2 (CHASSIS CTC177BH2)

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GE  
Model 27GT613FE2 (Chassis CTC177BH2)



Complete coverage  
for servicing a television receiver...

- Schematics
- Component locations
- Parts list
- Troubleshooting guide

Coverage includes these additional models and chassis

MODEL  
27GT615FE1/JX1

CHASSIS  
CTC177BH2



HOWARD W. SAMS & COMPANY

APRIL 1995 SET 3478

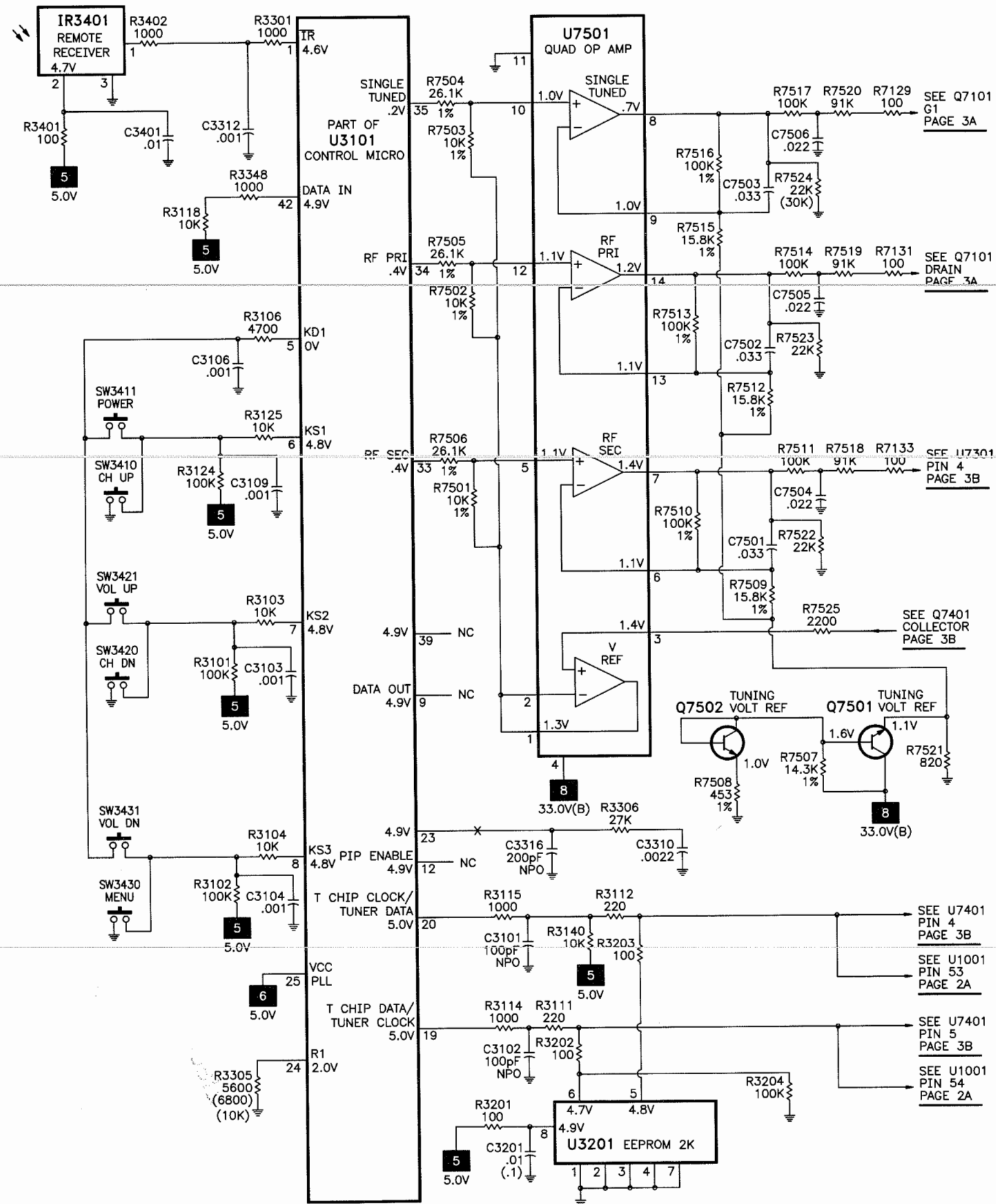
For Supplier Address,  
See PHOTOFACT Annual Index

GE

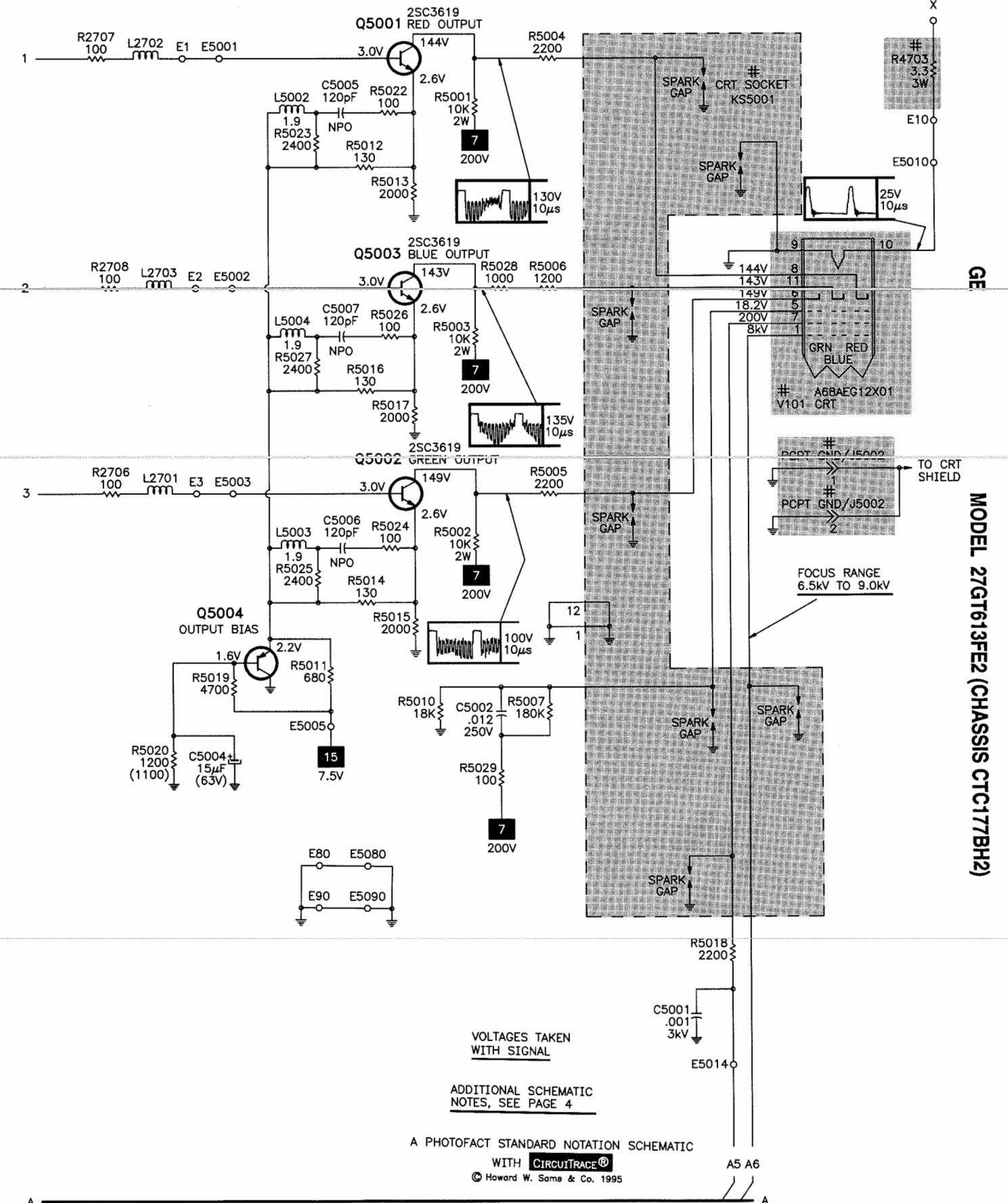
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## SYSTEM CONTROL SCHEMATIC



## CRT SCHEMATIC



ELECTRONIC TUNER ALIGNMENT

Use tuner service modulator, RCA stock no. 215568, and a VCR for signal source. Monitor RF AGC at the positive end of C2306 or at pin 12 of U1001, and adjust for minimum voltage at each parameter. The entire Electronic Tuner Alignment procedure, once started, must be completed in its entirety. Electronic Tuner Alignment is performed with top and bottom covers in place with bottom cover soldered.

Parameter No.	Parameter Name	Value Range	Parameter No.	Parameter Name	Value Range
25	Pass number for tuner alignment parameters	Must set to 78	127	Ch. 50 secondary	00-63
100	Ch. 2 secondary	00-63	128	Ch. 50 primary	00-63
101	Ch. 2 primary	00-63	129	Ch. 50 single	00-63
102	Ch. 2 single	00-63	130	Ch. 51 secondary	00-63
103	Ch. 6 secondary	00-63	131	Ch. 51 primary	00-63
104	Ch. 6 primary	00-63	132	Ch. 51 single	00-63
105	Ch. 6 single	00-63	133	Ch. 57 secondary	00-63
106	Ch. 14 secondary	00-63	134	Ch. 57 primary	00-63
107	Ch. 14 primary	00-63	135	Ch. 57 single	00-63
108	Ch. 14 single	00-63	136	Ch. 63 secondary	00-63
109	Ch. 17 secondary	00-63	137	Ch. 63 primary	00-63
110	Ch. 17 primary	00-63	138	Ch. 63 single	00-63
111	Ch. 17 single	00-63	139	Ch. 76 secondary	00-63
112	Ch. 18 secondary	00-63	140	Ch. 76 primary	00-63
113	Ch. 18 primary	00-63	141	Ch. 76 single	00-63
114	Ch. 18 single	00-63	142	Ch. 83 secondary	00-63
115	Ch. 13 secondary	00-63	143	Ch. 83 primary	00-63
116	Ch. 13 primary	00-63	144	Ch. 83 single	00-63
117	Ch. 13 single	00-63	145	Ch. 93 secondary	00-63
118	Ch. 34 secondary	00-63	146	Ch. 93 primary	00-63
119	Ch. 34 primary	00-63	147	Ch. 93 single	00-63
120	Ch. 34 single	00-63	148	Ch. 110 secondary	00-63
121	Ch. 37 secondary	00-63	149	Ch. 110 primary	00-63
122	Ch. 37 primary	00-63	150	Ch. 110 single	00-63
123	Ch. 37 single	00-63	151	Ch. 117 secondary	00-63
124	Ch. 48 secondary	00-63	152	Ch. 117 primary	00-63
125	Ch. 48 primary	00-63	153	Ch. 117 single	00-63
126	Ch. 48 single	00-63	154	Ch. 125 secondary	00-63
			155	Ch. 125 primary	00-63
			156	Ch. 125 single	00-63

MECHANICAL TUNER COIL ALIGNMENT

The tuner coil alignment is preset at the time of manufacture and should require no further adjustment. The following recommended procedure should be performed only in event a complete tuner alignment is necessary, which is unlikely. Use plastic or wooden tool to knife coils. This procedure is performed with top tuner cover removed and bottom tuner cover in place and soldered. Tuner service modulator RCA stock No. 215568 is used in this procedure.

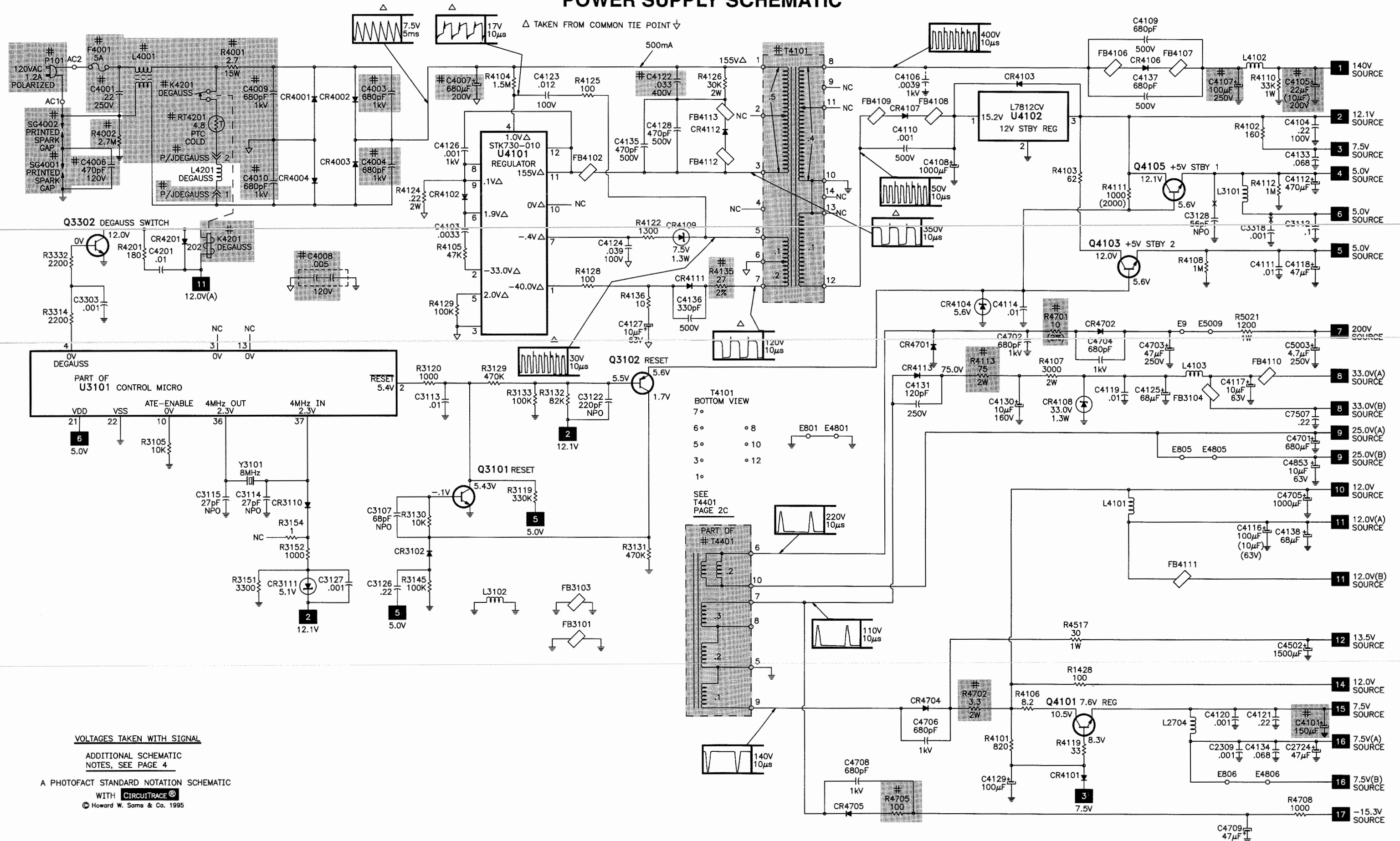
1. Manually tune the set and the tuner service modulator to channel 125 (band 3) and enter parameter 154.
2. Connect DVM to tuner side of R7525.
3. Check for voltage reading between 4.55V and 4.75V, if not expand or compress L7303 to set voltage within these limits.
4. Manually tune the set and the tuner service modulator to channel 50 (band 2) and enter parameter 127.
5. While DVM is still connected to R7525, check for voltage reading between 4.8V and 5.0V, if not expand or compress L7304 to set voltage within these limits.
6. Manually tune the set and the tuner service modulator to channel 17 (band 1) and enter parameter 109.
7. While DVM is still connected to R7525, check for voltage reading between 4.4V and 4.6V, if not expand or compress L7305 to set voltage within these limits.
8. Manually tune the set and the tuner service modulator to channel 125 (band 3) and enter parameter 154.
9. Connect DVM to positive side of C7503 (RF AGC to tuner)

10. Set parameter value range to 31.
11. Expand or compress L7105 for minimum RF AGC voltage.
12. Enter parameter 155 and set parameter value range to 31.
13. Expand or compress L7104 for minimum RF AGC voltage.
14. Enter parameter 156 and set parameter value range to 31.
15. Expand or compress L7102 for minimum RF AGC voltage.
16. Manually tune the set and the tuner service modulator to channel 50 (band 2) and enter parameter 127.
17. Set parameter value range to 31.
18. Expand or compress L7113 for minimum RF AGC voltage.
19. Enter parameter 128 and set parameter value range to 31.
20. Expand or compress L7111 for minimum RF AGC voltage.
21. Enter parameter 129 and set parameter value range to 31.
22. Expand or compress L7107 for minimum RF AGC voltage.
23. Manually tune the set and the tuner service modulator to channel 17 (band 1) and enter parameter 109.
24. Set parameter value range to 31.
25. Expand or compress L7114 for minimum RF AGC voltage.
26. Enter parameter 110 and set parameter value range to 31.
27. Expand or compress L7112 for minimum RF AGC voltage.
28. Enter parameter 111 and set parameter value range to 31.
29. Expand or compress L7106 for minimum RF AGC voltage.
30. Perform the entire Electronic Tuner Alignment.

GE  
MODEL 27GT613FE2 (CHASSIS CTC177BH2)



## POWER SUPPLY SCHEMATIC



## TROUBLESHOOTING

### POWER SUPPLY

Check F4001. If fuse is open, check CR4001 thru CR4004, C4001, C4003, C4004, C4007, C4009, C4010, Q4401, and U4101. Apply 120VAC and check for 140V at the cathode of CR4106. If voltage is missing, check U4101 and T4101. Confirm operation of U4101 by checking for -40.5V\* ± .5V at pin 1 of U4101 (voltage may be 4 or 5 volts higher in standby mode). If the voltage is incorrect, U4101 may be defective or there may be an abnormal load. If voltage at the cathode of CR4106 measures approximately 30.0V, check for a short at pin 1 of U4101. If the voltage at the cathode of CR4106 is over 200V, check for an open at pin 1 of U4101. If the outputs are shorted, the power supply will shut down until short is removed. Check voltages associated with Q4103 and Q4105. If voltages are incorrect, check Q3101, Q3102, Q4103, Q4105, U4102, and pin 2 of U3101. If voltages are correct, refer to the "Horizontal" section of this Troubleshooting guide.

\* Taken from common tie point.

### HIGH VOLTAGE SHUTDOWN TEST

Apply 120VAC. Use remote transmitter to set customer controls for normal operation. Momentary short pin XRP1 to XPR2. The set should lose raster and sound, and then restart. If set does not shut down, the shutdown circuit should be repaired.

### HIGH VOLTAGE SHUTDOWN

**CAUTION:** When defeating the high voltage shutdown circuit, do not exceed the maximum high voltage specified on the schematic, as this may cause excessive X-radiation and damage to the CRT and associated components. Monitor the high voltage while troubleshooting.

NOTE: The X-ray protection circuit latches on a fault detection and resets during the on to off cycle of the on/off control signal. U3101 counts the number of resets and after 3 resets U3101 will not attempt to restart the receiver.

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. Voltage at emitter of Q4901 will increase and turn on Q4901. Voltage at pin 26 of U1001 will increase, which will cause the set to shut down. To troubleshoot, disconnect one end of CR4902, check Q4901, CR4901, and CR4902.

#### Voltages Taken With TV In Shutdown

Q4901		U1001
E	0 V	Pin 25 2.6 V
B	0 V	Pin 26 .1 V
C	.1 V	

### HORIZONTAL

To determine if the set is in shutdown, refer to the "High Voltage Shutdown" section of this Troubleshooting guide. If set is not in

shutdown, inject a horizontal signal at the base of Q4401. If horizontal deflection is now present, check Q4301, Q4302, and U1001 pins 20 thru 27. If there is no horizontal sweep, check Q4401, T4401, CR4702, CR4113, CR4701, CR4705, CR4704, and Q4101. The high voltage rectifier is part of T4401 and if defective will affect the operation of the horizontal circuits. Horizontal linearity or foldover may be caused by C4402, C4406, C4407, or L4402 being defective.

### VIDEO/CHROMA

Inject a video signal at pin 48 of U1001, and check for video on the CRT. If video is now present, check Q2704 and refer to the "IF-AGC" section of this Troubleshooting guide. Check for the proper waveforms at pins 36, 37, and 38 of U1001. If the waveforms are missing, check U1001. If the waveforms are present at pins 36, 37, and 38 of U1001, refer to the "Raster" section of this Troubleshooting guide.

### VERTICAL

Check for 25.5V at pin 6 of U4501, if 25.5V is missing, check R4511. If open, replace R4511 and check U4501 for internal short. Check pin 17 of U1001 for 2.0Vp-p vertical ramp signal. If the vertical ramp signal is present, check U4501 by substitution. If the vertical ramp signal is missing, check for 7.5V at pin 32 of U1001, and check for 2.8V at pin 18 of U1001. If 2.8V is missing, check C4501, C4503, and U1001.

### RASTER

Check the CRT and CRT voltages. If red is missing, check pin 8 of V101 and Q5001. If green is missing, check pin 6 of V101 and Q5002. If blue is missing, check pin 11 of V101 and Q5003.

### AUDIO

Select an active TV channel, and check for an audio waveform at pin 3 of U1001. If audio waveform is missing, check pins 55, 58, 57, and 3 of U1001. Check for audio waveforms at pins 13, and 14 of U1701. If audio waveforms are missing, check pins 28 and 32 of U3101 and U1701. If audio waveforms are present at pins 13 and 14 of U1701, check for audio waveforms at pins 59 and 60 of U1001. If audio waveforms are missing at pins 59 and 60 of U1001, check pins 4, 5, 7, 8, 59, and 60 of U1001. If audio waveforms are present, check U1901, Q1903, and pin 29 of U3101.

### IF-AGC

Inject a video IF signal at pin 11 of U1001, and check for video on the CRT. If video is present on the CRT, check the tuner circuit. Check for a video waveform at pin 51 of U1001, if present, refer to the "Video" section of this Troubleshooting guide. If video waveform is missing, apply AGC bias to pin 12 of U1001. If video is now present, check Q2301 and pins 6, 12, 13, and 14 of U1001. If video waveform is still missing, check U1001.

## SERVICE TIPS

### NO STEREO

Symptom: The set fails to enter stereo mode and on screen stereo display does not appear when a stereo signal is received and stereo mode is selected.

Cause: C1707 is open. C1707 couples the audio signal to the stereo pilot detector in U1701.

Solution: Replace C1707, part number 205230.

### TUNER LOCAL OSCILLATOR DROPOUT ON BAND 2

Symptom: When the local oscillator drops out, the tuning voltage drops to 0V and the set locks up on all VHF high band channels.

Cause: When IC TSA5515 is used for U7401 the tuning voltage may drop to 0V.

Solution: Replace C7311 with 6pF capacitor, part number 194906, and perform tuner alignment.

### BLACK RASTER AND NO ON SCREEN DISPLAY

Cause: The on screen display information is mixed with the video before the brightness and contrast customer controls. The customer controls do not reset when AC power is removed from the set. If the brightness and contrast customer controls are set to minimum the screen will be black.

Solution: Increase screen level until on screen display is visible. Use picture reset to restore customer settings and then reduce screen level to normal setting.

### DEAD SET OR INTERMITTENT SHUTDOWN

Cause: T4101, with date codes 3266, 3272, and 3273, was manufactured with an incorrect wire.

Solution: Replace T4101, part number 215538.

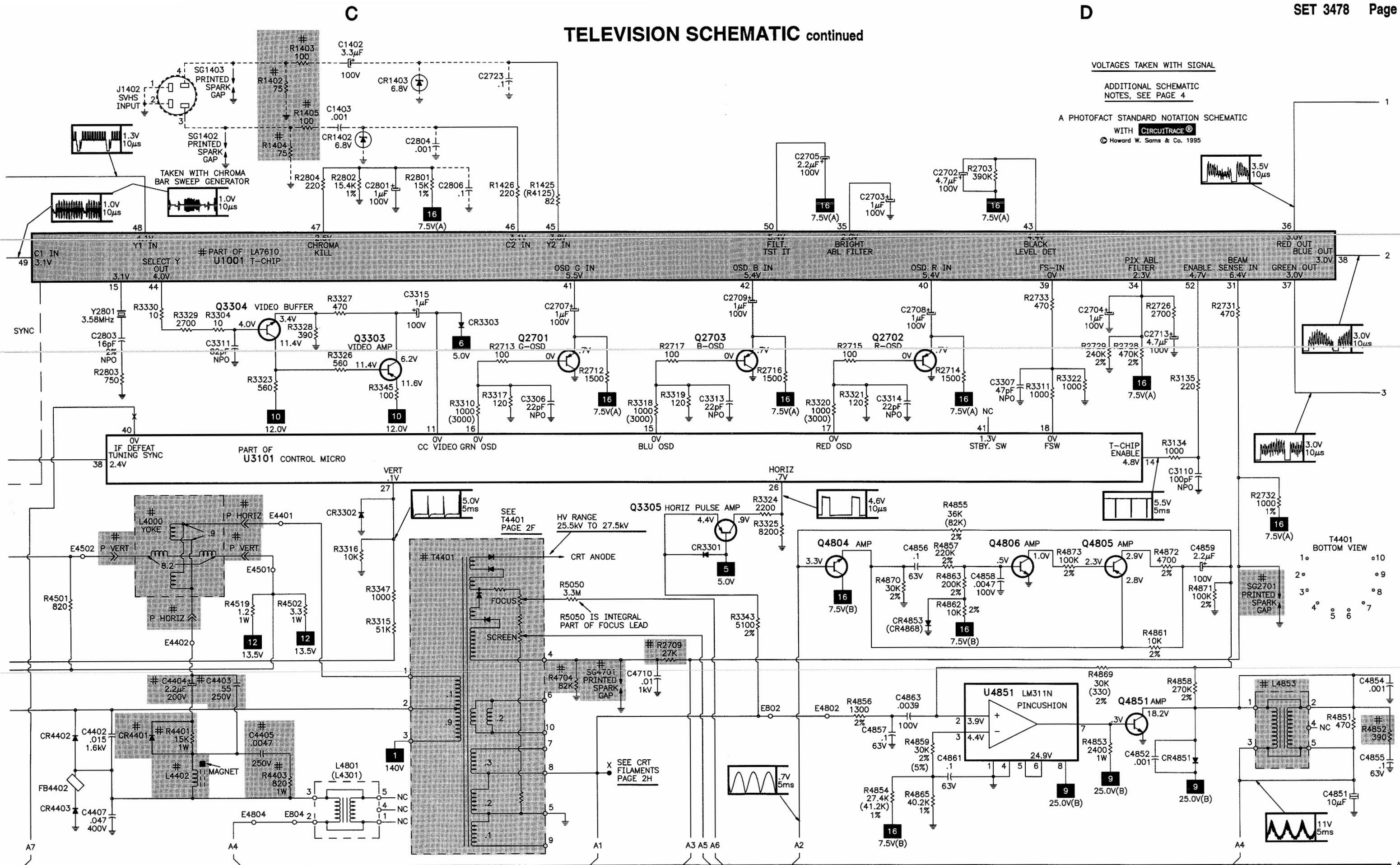
### OPEN GROUND CONNECTIONS ON MICROCOMPUTER SHIELD

Symptom: Loss of audio, loss of video, noisy picture, inability to tune above channel 4, and intermittent shutdown.

Cause: Open ground connections on microcomputer shield.

Solution: Check shield for loose ground tabs and resolder if necessary.

# TELEVISION SCHEMATIC continued



MISCELLANOUS ADJUSTMENTS

PRETUNING

NOTE: All procedures require an antenna connected and power applied to the set.

Auto Program

- 1. Press the program button to select autoprogram.
- 2. Press the + button. All available channels are scanned and stored in memory.
- 3. Press display to clear menu.

Channel Memory

- 1. Press the program button to select channel memory.
- 2. Select channel with number buttons or channel up and down buttons.
- 3. Press + button to add a channel or - button to erase a channel.
- 4. Repeat steps 2 and 3 to add or erase other channels.
- 5. When finished, press done to save selections.

SERVICE MENU

The following adjustment and alignment procedures are accessed thru a service menu using buttons on the receiver. To access the service menu, turn the set on, press the menu button and hold it down while pressing the power button. While holding down the menu button, release the power button and press the volume + button. The screen will display a one line menu, on the left the parameter P 00, and on the right the value of that parameter V 00. Release buttons. Adjustments are made by selecting the proper parameter and changing the value of that parameter. To change the parameter number use channel up and down buttons. To adjust the current value of that parameter use volume + and - buttons. The three main groups of parameters are, the service adjustment parameters, the chassis alignment parameters, and the tuner alignment parameters. To access and change any of the adjustments, the proper parameter pass number and value must be entered. This information is listed at the beginning of each alignment. When these parameters are modified, the T-Chip and the corresponding EEPROM are updated. All service adjustments are bus controlled, except focus and screen.

**WARNING:** When adjusting the horizontal frequency be careful not to exceed the value range, or the set will go into shutdown, and replacement of U3101 may be required. In case the set goes into shutdown loop connect a capacitor across C4402 with the same value, redo horizontal frequency adjustment, then remove the capacitor. It may be necessary to readjust the horizontal frequency again.

SERVICE ADJUSTMENT PARAMETERS

Parameter No.	Parameter Name	Value Range	Comment
00	Pass number for service adjustment parameters	Must set to 76	May not advance until value set.
01	Horizontal frequency (See warning)	00 - 63	Adjust for stable or slowly moving horizontal lines.
02	Horizontal phase	00 - 15	Adjust to center picture left to right.
03	EW DC (Width)	00 - 15	Adjust for 1/2 inch overscan.
04	EW amplitude	00 - 07	Tune in a crosshatch pattern and adjust for straight vertical lines on left and right of screen.
05	Vertical DC	00 - 15	Adjust to center picture top to bottom.
06	Vertical size	00 - 31	Adjust to 1/4" overscan top and bottom of screen.
07	Red bias	00 - 127	Press menu button on the TV set for setup line.
08	Green bias	00 - 127	Press menu button on the TV set for setup line.
09	Blue bias	00 - 127	Press menu button on the TV set for setup line.
10	Red drive	00 - 63	Press menu button on the TV set for setup line.
11	Green drive	00 - 63	Press menu button on the TV set for setup line.
12	Blue drive	00 - 63	Press menu button on the TV set for setup line.

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 25.5kV to 27.5kV.

COLOR TEMPERATURE

NOTE: See Service Adjustment Parameters to change drive and bias values.

Press menu button on the TV set for collapsed raster service line. Set the TV to S-Video with no video signal. Preset the red, green, and blue drive values to 32. Preset the red, green, and blue bias values to provide 170VDC at the collector of the respective output transistors. Adjust screen control for a service line that is just visible. Adjust red, green, and blue drives to obtain a white raster. Check the low light to high light gray scale tracking. Repeat the procedure, if necessary, to obtain the best performance.

CHASSIS ALIGNMENT PARAMETERS

Parameter No.	Parameter Name	Value Range	Comment
13	Pass number for chassis alignment parameters	Must set to 77	May not advance to higher parameter until value is set.
14	PLL tuning	00 - 63	Apply 4.0V to pin 14 of U1001. Short junction of R7130 and R2313 to ground. Connect 41.25MHz (300mV) marker to pin 1 of SF2301. Connect an oscilloscope to pin 55 of U1001. Adjust value for .22µs sinewave.
15	4.5MHz trap	00 - 07	Short junction of R7130 and R2313 to ground. Apply 45.75MHz (300mV) and 41.25MHz (100mV) to pin 1 of SF2301. Connect an oscilloscope to pin 63 of U1001. Adjust value for minimum 4.5MHz sinewave.
16	Video level	00 - 07	Tune in a color bar pattern, 100% modulation, super pulse display. Connect oscilloscope to pin 63 of U1001. Adjust value range to produce 2.0Vp-p response.
17	FM level	00 - 15	Connect signal generator to pin 55 of U1001, inject 4.5MHz carrier, 1kHz modulation, with 25kHz deviation. Apply 4.0V to pin 14 of U1001. Connect oscilloscope to pin 3 of U1001. Adjust value range for 1.2Vp-p of 1kHz component.
18	B+ trim	00 - 15	CTC175 only.
19	RF AGC (1)	00 - 31	Manually tune channel 6.
20	D-PIP chroma	-	-
21	D-PIP tint	-	-
22	D-PIP brightness	-	-
23	D-PIP contrast	-	-
24	Factory tint	00 - 63	-

(1) RF AGC has been preset at time of manufacture for optimum operation over a wide range of RF signal input conditions. Readjustment should not be required unless the tuner has been repaired, U1001, U3101, or U3201 has been replaced, or unusual signal conditions exist. Use weakest local signal to adjust RF AGC parameter setting.



# TELEVISION SCHEMATIC

VIDEO INPUT

J1401

SC1401 PRINTED SPARK GAP

R1401 75Ω

R1422 22Ω

C1401 3.3μF

100V

CR1401 6.8V

C2722 .1

SEE U3101 PIN 20 PAGE 2G

SEE U3101 PIN 19 PAGE 2G

R1427 82Ω

R3143 1000Ω

CF1201 4.5MHz

FILTER

58

# PART OF LA7610 U1001 T-CHIP WBA 3.8V

57

C1201 1μF 100V

55

56

51

SEE U1701 PIN 5 PAGE 3C

TAKEN WITH BAR SWEEP GENERATOR

2.7V 10μs

2.5V 10μs

Q2704 VIDEO BUFFER

3.1V

2.4V

R2705 1000Ω

R2704 1000Ω

R2718 1000Ω

16

7.5V(A)

C2701 3.3μF 100V

C2805 120pF

C2802 .0056

R2805 750Ω (330)

Q2301 IF DEFEAT

R3117 10K

C3111 .001

R2302 10K

0V

11

12.0V(A)

R2301 620Ω

C2301 .01

R2313 10K

R2315 68K

R2314 200K

C2306 .22 63V

R7130 100Ω

RF AGC RANGE 4.5V TO 8.1V

AGC SEE Q7101 G2 PAGE 3A

4.8V CLOCK

4.7V DATA

1.6V AUX VIDEO IN

3.7V

3.7V

8.0V

AGC2 5.1V

AGC1 5.1V

IF GND

APC 3.4V

IF VCC 7.5V

6.7V

6.7V

TV VIDEO OUT 3.4V

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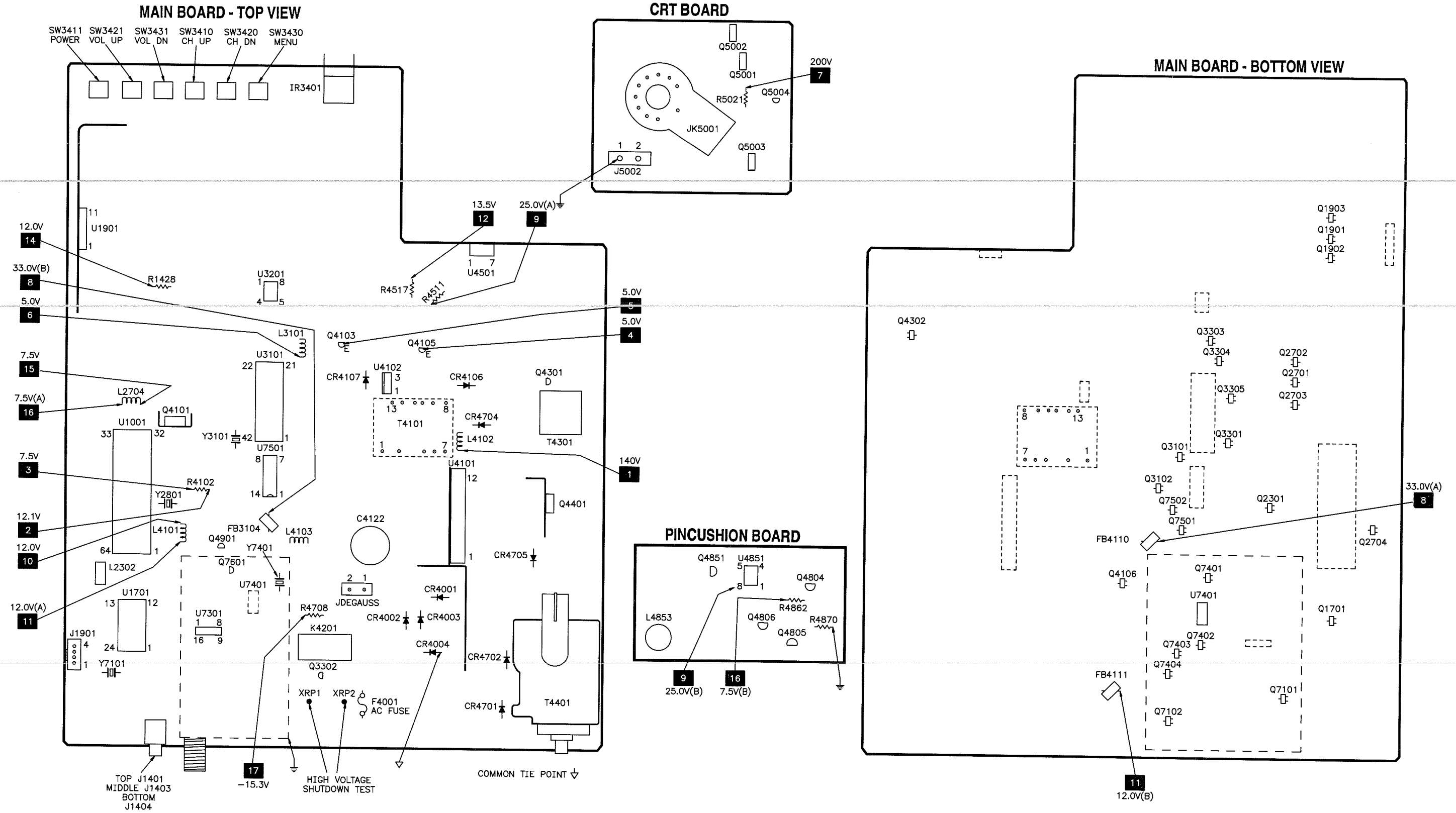
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## PLACEMENT CHART



## SCHEMATIC NOTES

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

\* Circuitry not used in some versions.

--- Circuitry used in some versions.

⏏ Ground

*mm* Chassis ground

▽ Common tie point

△ Taken from common tie point

**3** Schematic CIRCUITTRACE<sup>®</sup>: 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 1000 $\mu$ V 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.

## 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.
- Thomson Consumer Electronics, Inc. (SK, TCE)

## 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

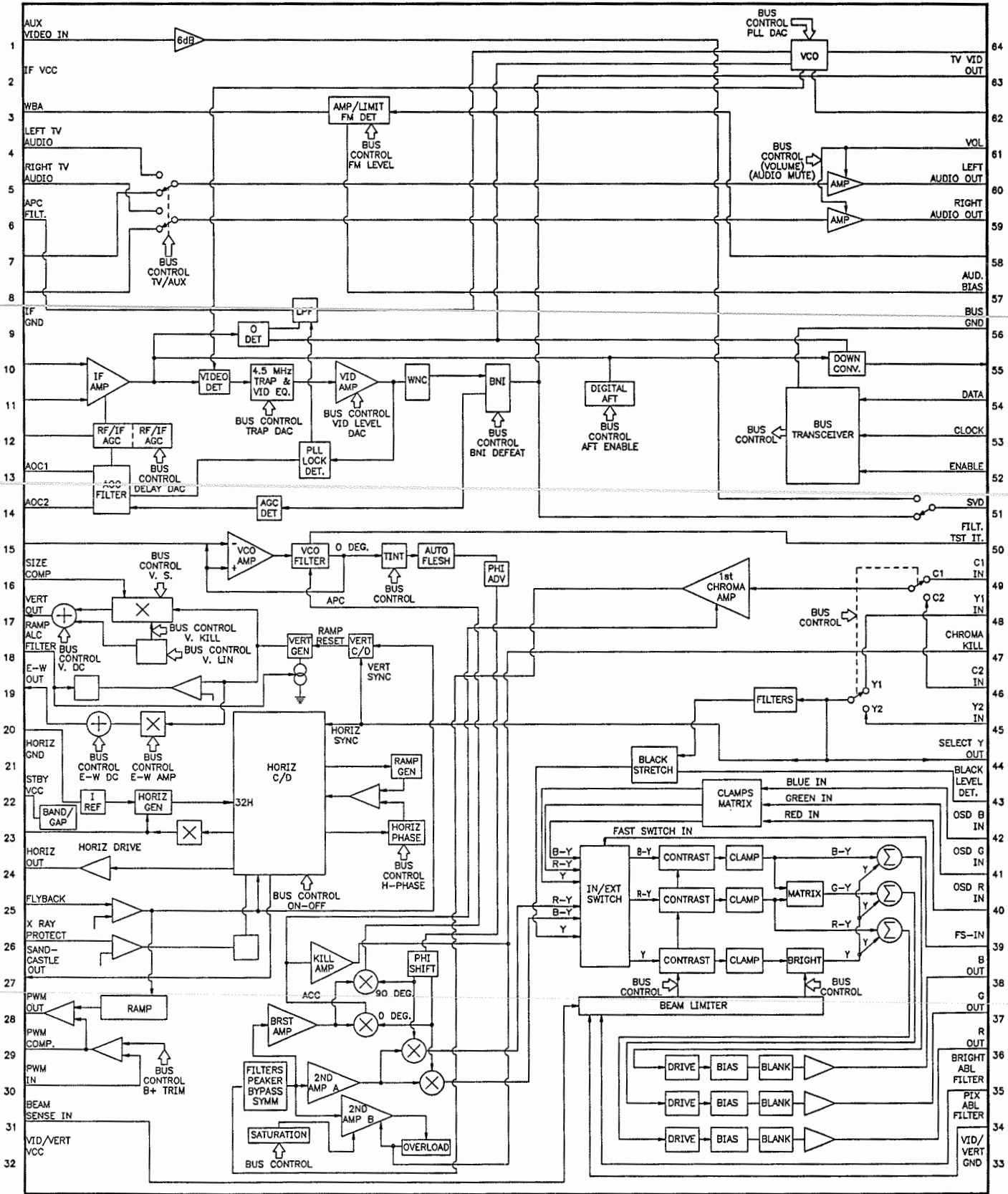


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employees of Howard W. Sams  
& Company.

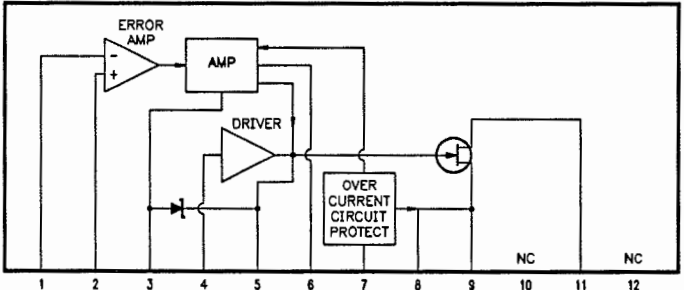
*J. Barker, N. Beck, B. Bryant,  
B. Buchanan, T. Clensy,  
D. Cobb, G. Farrell, B. Fink,  
M. Herkless, J. Kocha,  
F. Malek, B. Medaris,  
R. Raus, B. Skinner, J. Young*

IC FUNCTIONS

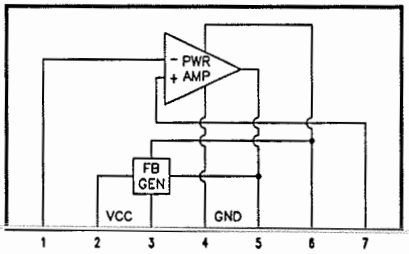
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LA7610



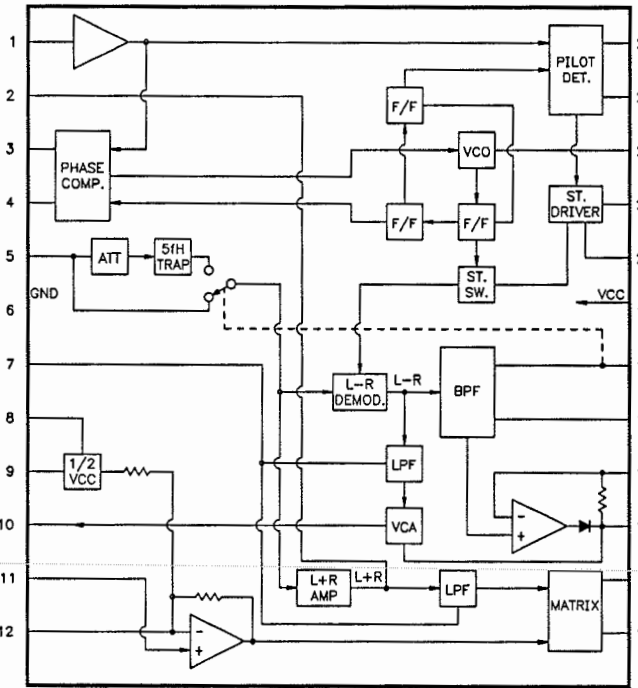
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STK730-010



U4501  
IDA8172



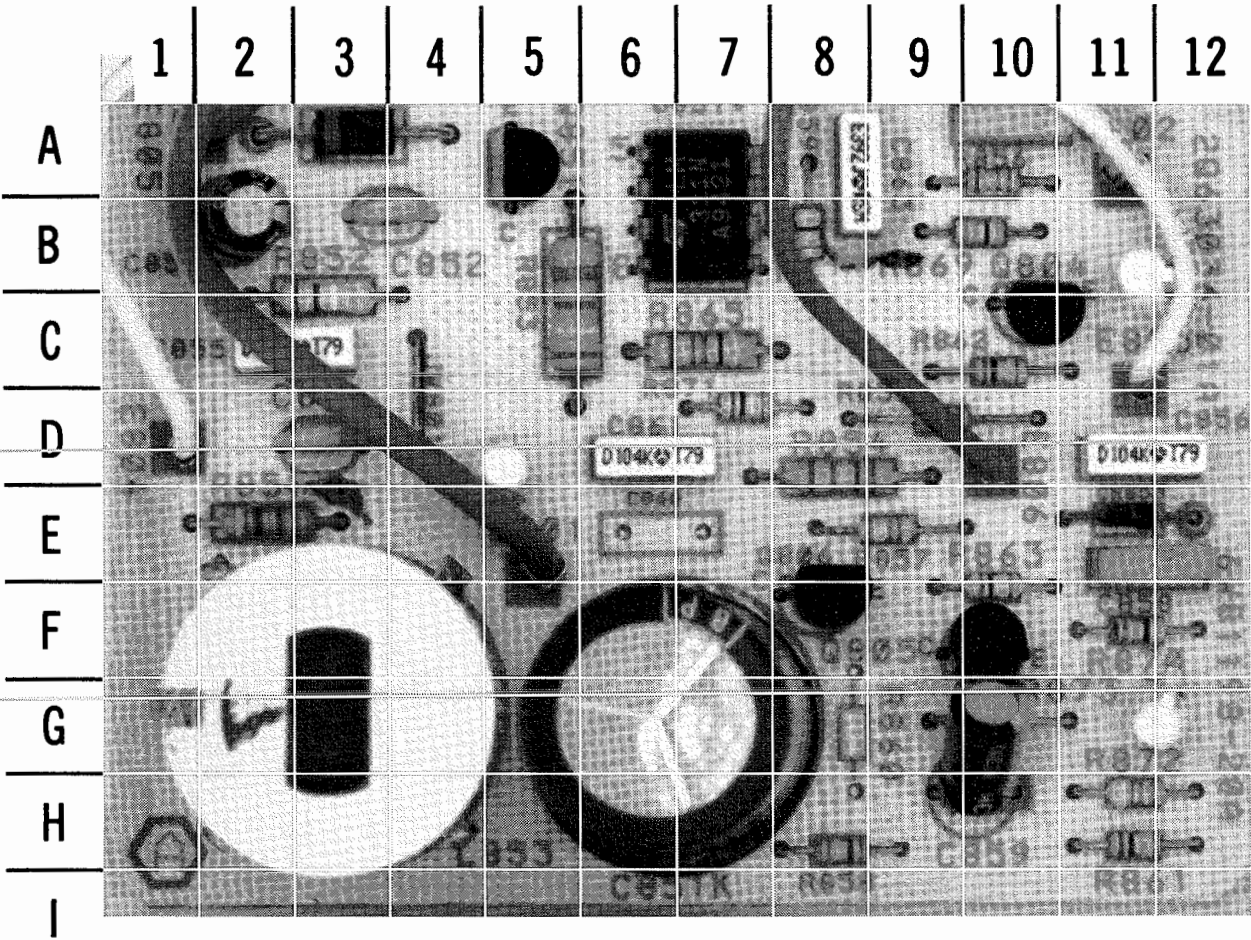
U1701  
LA7765



GE

MODEL 27GT613FE2 (CHASSIS CTC177BH2)

PINCUSHION BOARD



A HOWARD W. SAMS GRIDTRACE™ PHOTO

PINCUSHION BOARD, GRIDTRACE LOCATION GUIDE

C4851	G-6	C4859	H-10	Q4806	F-8	R4857	E-9	R4870	F-11
C4852	B-4	C4861	D-6	Q4851	A-5	R4858	H-8	R4871	D-7
C4853	B-2	C4863	A-8	R4851	E-2	R4859	B-8	R4872	H-11
C4854	D-3	CR4851	A-3	R4852	B-3	R4861	N-11	R4873	G-10
C4855	C-3	CR4853	E-11	R4853	C-5	R4862	C-10	U4851	B-7
C4856	D-11	L4853	G-3	R4854	D-8	R4863	F-10		
C4857	A-10	Q4804	C-10	R4855	D-9	R4865	C-7		
C4858	E-11	Q4805	F-10	R4856	A-10	R4869	B-10		

TUNER CIRCUIT VOLTAGE CHART

Pin No.	VHF Low Band	VHF High Band	UHF Band	Pin No.	VHF Low Band	VHF High Band	UHF Band	Pin No.	VHF Low Band	VHF High Band	UHF Band
U7301				U7401				U7501			
1	5.4V	5.4V	5.3V	1	1.7V	2.1V	1.7V	1	1.3V	1.7V	1.8V
2	2.9V	3.0V	3.2V	2	2.1V	2.1V	2.1V	2	1.3V	1.7V	1.8V
3	7.8V	7.7V	7.6V	3	2.1V	2.1V	2.1V	3	1.4V	1.6V	1.8V
4	3.0V	3.0V	3.2V	4	4.8V	4.8V	4.8V	4	33.0V	33.0V	33.0V
5	7.8V	7.7V	7.6V	5	4.7V	4.7V	4.7V	5	1.1V	1.5V	1.6V
6	0V	0V	0V	6	0V	0V	0V	6	1.1V	1.5V	1.6V
7	3.0V	3.0V	0V	7	1.3V	1.3V	1.3V	7	1.4V	4.0V	4.8V
8	9.0V	9.0V	8.8V	8	11.5V	0V	0V	8	.7V	3.5V	4.6V
9	3.0V	3.0V	3.3V	9	7.4V	7.4V	0V	9	1.0V	1.4V	1.5V
10	3.3V	3.2V	2.9V	10	4.8V	4.8V	4.8V	10	1.0V	1.4V	1.5V
11	4.9V	5.1V	9.7V	11	2.3V	2.3V	2.3V	11	0V	0V	0V
12	3.3V	3.2V	2.9V	12	2.3V	2.3V	2.3V	12	1.1V	1.4V	1.5V
13	0V	0V	0V	13	0V	0V	0V	13	1.1V	1.4V	1.5V
14	9.1V	9.0V	5.4V	14	.6V	.6V	.6V	14	1.2V	3.4V	4.4V
15	3.4V	3.4V	2.9V								
16	3.4V	3.4V	2.9V								

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

Pin No.	VHF Low Band	VHF High Band	UHF Band	Pin No.	VHF Low Band	VHF High Band	UHF Band	Pin No.	VHF Low Band	VHF High Band	UHF Band
Q7101				Q7401				Q7403			
G1	0V	0V	4.8V	E	0V	0V	0V	E	0V	0V	0V
G2	5.0V	6.5V	7.2V	B	.6V	.6V	.6V	B	.7V	.7V	0V
D	.2V	.2V	11.3V	C	2.1V	3.8V	17.8V	C	.1V	.1V	11.3V
S	.2V	.2V	4.8V								
Q7102				Q7402				Q7404			
G1	4.6V	4.6V	4.6V	E	11.4V	11.2V	11.3V	E	11.4V	11.2V	11.3V
G2	5.3V	6.8V	7.2V	B	11.3V	10.5V	10.6V	B	11.0V	11.9V	10.6V
D	11.3V	11.2V	11.4V	C	-14.9V	11.1V	11.2V	C	.1V	.1V	11.3V
S	4.1V	4.2V	11.3V								

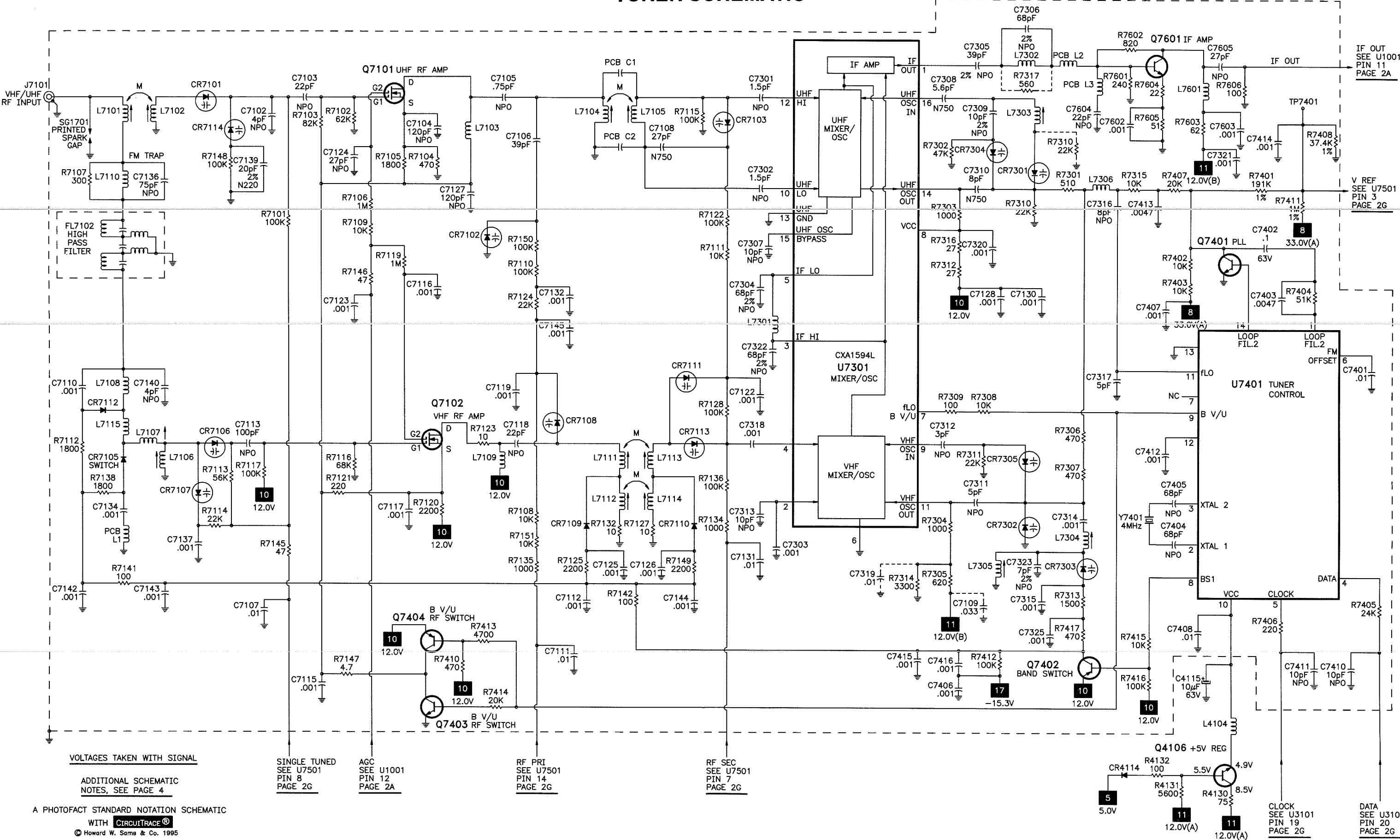
NOTE: Voltages taken without signal.  
VHF Low Band voltages taken on channel 2.  
VHF High Band voltages taken on channel 7.  
UHF Band voltages taken on channel 14.



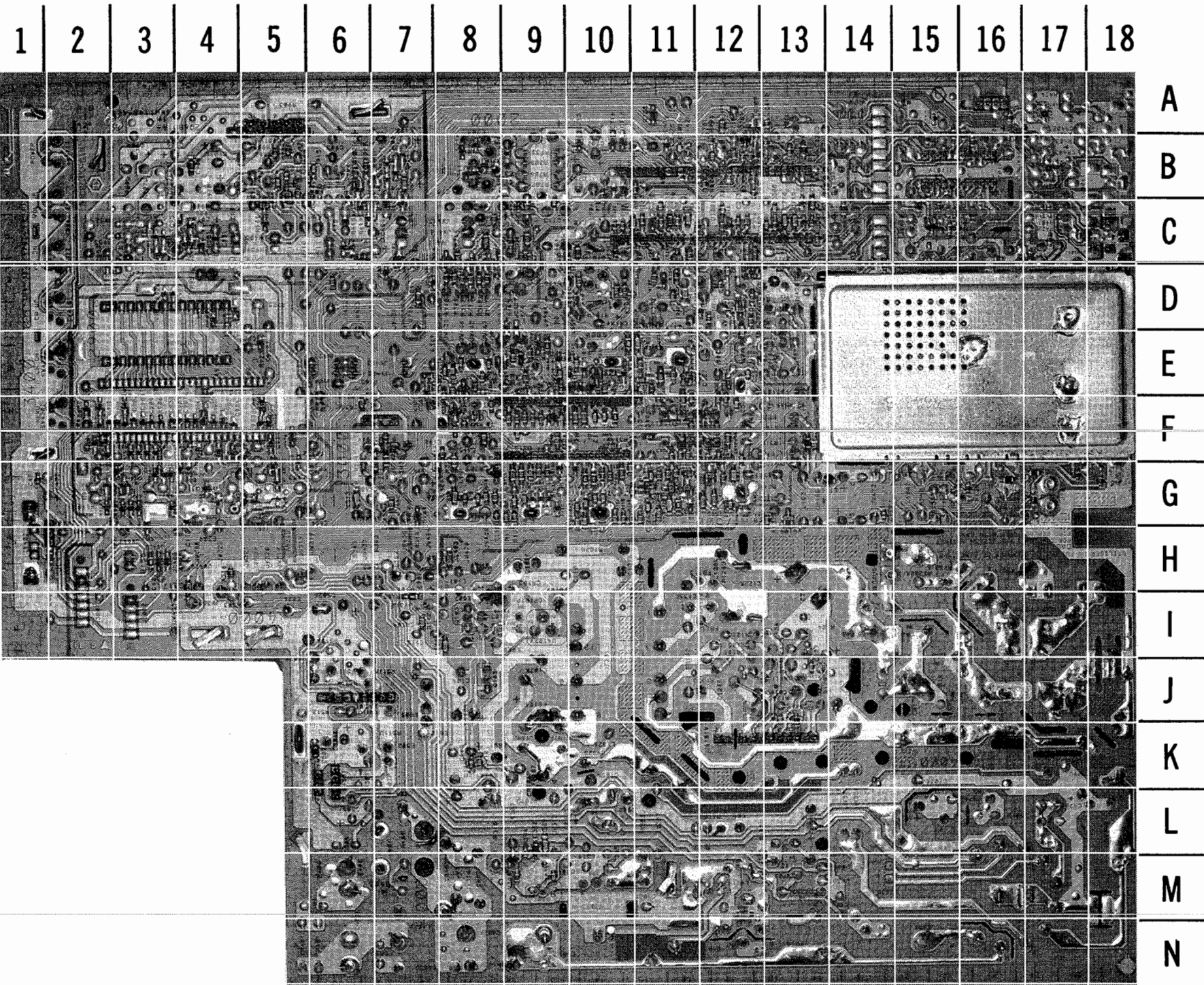
A

TUNER SCHEMATIC

B



MAIN BOARD - BOTTOM VIEW

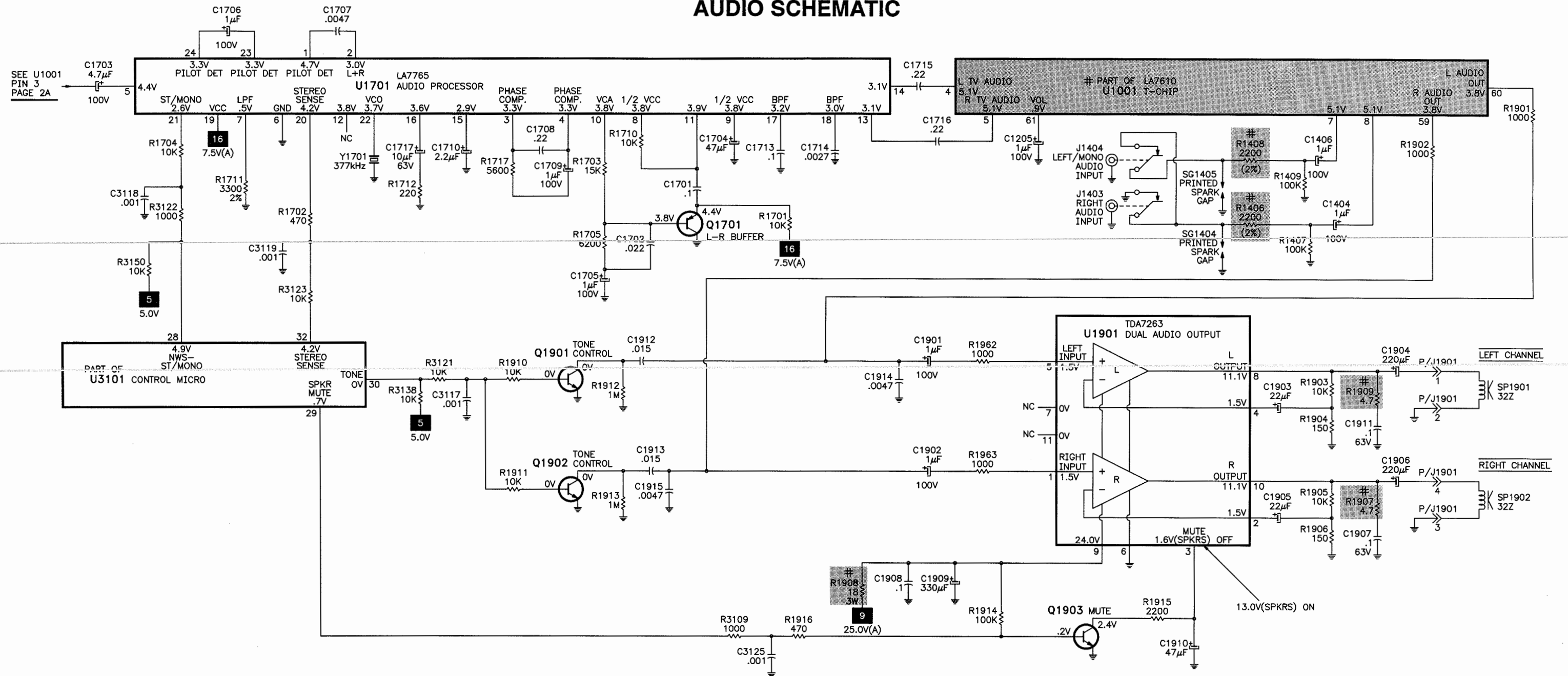


A HOWARD W. SAMS GRIDTRACE™ PHOTO

MAIN BOARD - BOTTOM VIEW, GRIDTRACE LOCATION GUIDE

C1405	C-17	C4121	C-10	R1913	B-6	R3302	F-10	R7517	F-11
C1701	B-15	C4133	D-12	R1962	B-5	R3303	E-11	R7521	G-12
C1702	C-16	C4134	C-9	R1963	B-5	R3304	E-7	R7522	F-11
C1708	C-16	C4201	G-17	R2301	D-12	R3305	F-9	R7523	F-12
C1713	B-15	C4302	L-9	R2302	D-12	R3306	F-9	R7524	F-11
C1714	B-16	C4303	M-9	R2312	C-12	R3310	G-9	SG1401	C-18
C1715	C-13	C4308	C-11	R2313	D-12	R3314	F-10	SG1404	C-18
C1716	C-13	C4309	L-9	R2314	C-12	R3316	F-9	SG1405	C-18
C1908	B-4	C4311	C-11	R2315	D-13	R3317	D-8	SG2701	K-14
C1912	B-5	C4313	G-6	R2316	C-13	R3318	G-9	SG4001	J-18
C1913	B-6	C4401	M-12	R2702	D-10	R3319	D-8	SG4002	J-18
C1914	B-5	C4501	C-10	R2703	C-9	R3320	G-8		
C1915	B-6	C4503	C-10	R2704	B-12	R3321	D-8		
C2301	C-12	C4507	K-6	R2705	B-12	R3322	E-8		
C2302	C-13	C4903	C-11	R2712	C-8	R3323	E-7		
C2307	C-12	C4904	E-12	R2713	D-8	R3324	E-9		
C2308	C-13	C7501	F-11	R2714	C-8	R3325	F-9		
C2309	C-14	C7502	F-12	R2715	D-8	R3326	E-8		
C2312	C-13	C7503	E-11	R2716	C-9	R3327	F-8		
C2313	C-12	C7504	F-12	R2717	D-8	R3328	F-8		
C2718	E-10	C7505	E-12	R2721	B-13	R3330	B-11		
C2723	A-17	C7506	F-12	R2726	B-10	R3331	E-10		
C2802	B-12	C7507	G-12	R2728	C-9	R3345	E-8		
C2803	D-12	CR3102	G-11	R2729	C-9	R3347	E-9		
C2804	A-16	CR3110	F-11	R2731	C-10	R3399	E-10		
C2805	B-11	CR3111	E-11	R2801	C-9	R4101	D-10		
C3101	G-8	CR3302	F-9	R2802	C-9	R4108	I-7		
C3102	G-9	CR3303	G-8	R2803	D-12	R4109	C-12		
C3103	G-10	CR4115	C-11	R2804	B-12	R4112	I-7		
C3104	G-10	FB4110	F-13	R2805	B-12	R4119	D-10		
C3106	G-10	FB4111	G-16	R3101	G-10	R4127	D-11		
C3107	G-11	Q1701	C-15	R3103	G-10	R4129	J-13		
C3109	G-10	Q1901	B-5	R3104	G-10	R4132	G-13		
C3110	G-9	Q1902	B-6	R3105	F-9	R4133	C-11		
C3111	E-11	Q1903	C-5	R3106	G-10	R4134	D-11		
C3112	F-8	Q2301	D-12	R3109	E-9	R4136	J-13		
C3113	G-11	Q2701	C-8	R3111	G-9	R4201	G-17		
C3114	F-10	Q2702	C-8	R3112	G-8	R4301	C-11		
C3115	F-10	Q2703	C-8	R3114	G-9	R4302	D-11		
C3117	E-8	Q2704	B-12	R3115	G-9	R4304	M-9		
C3118	E-8	Q3101	G-11	R3117	E-10	R4307	D-12		
C3119	E-9	Q3102	G-11	R3118	G-10	R4308	C-10		
C3122	G-11	Q3303	F-8	R3119	G-11	R4309	M-9		
C3125	E-8	Q3304	E-8	R3120	G-10	R4311	C-11		
C3126	G-11	Q3305	E-8	R3121	E-9	R4314	F-6		
C3127	E-11	Q4106	G-13	R3122	E-8	R4516	H-4		
C3128	G-8	Q4302	M-9	R3123	E-9	R4520	D-10		
C3201	G-7	Q7501	F-12	R3124	G-10	R4801	C-11		
C3301	E-10	Q7502	G-12	R3125	G-10	R7129	G-18		
C3303	G-12	R1201	B-13	R3129	G-11	R7130	G-17		
C3306	G-8	R1203	B-12	R3130	G-11	R7131	G-15		
C3307	E-8	R1407	C-17	R3131	G-11	R7133	G-16		
C3310	F-9	R1409	C-17	R3132	G-11	R7501	F-11		
C3311	F-8	R1427	C-13	R3133	G-11	R7502	F-12		
C3312	G-10	R1701	C-15	R3134	G-9	R7503	F-11		
C3313	G-8	R1702	B-15	R3135	G-9	R7504	F-10		
C3314	F-8	R1703	C-15	R3138	E-9	R7505	F-10		
C3316	F-9	R1704	B-16	R3140	G-8	R7506	F-10		
C3317	H-4	R1705	C-15	R3145	G-11	R7507	F-12		
C3318	F-8	R1710	C-15	R3150	E-9	R7508	G-12		
C3401	G-1	R1711	B-16	R3151	E-11	R7509	F-11		
C4103	J-13	R1712	A-12	R3152	E-11	R7510	F-11		
C4111	I-8	R1717	C-16	R3201	G-6	R7511	F-12		
C4114	K-8	R1901	B-6	R3202	F-7	R7513	F-12		
C4119	G-14	R1902	B-6	R3204	F-7	R7514	E-12		
C4120	C-10	R1912	B-5	R3301	G-10	R7516	F-11		

## AUDIO SCHEMATIC



VOLTAGES TAKEN WITH SIGNAL

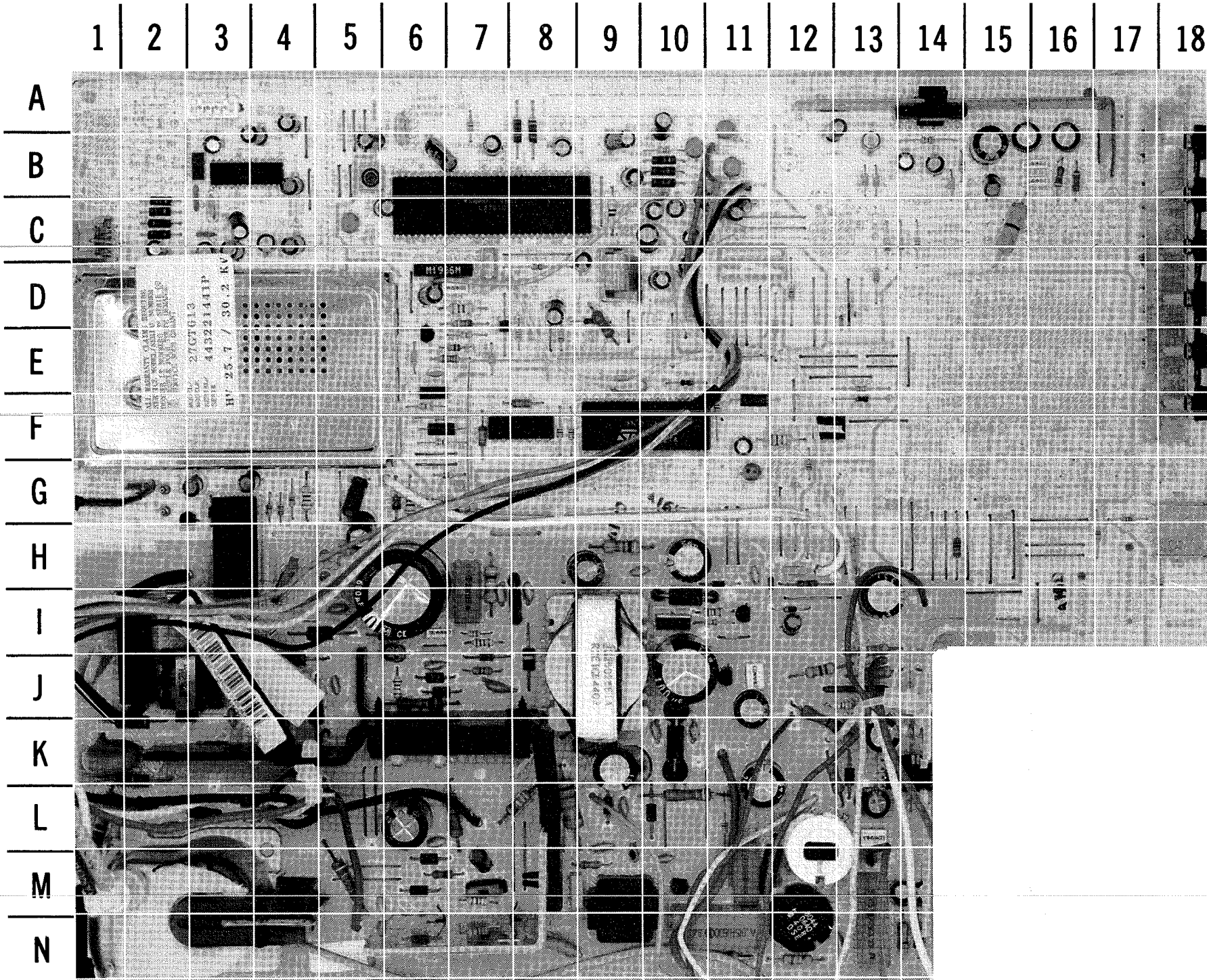
ADDITIONAL SCHEMATIC  
NOTES, SEE PAGE 4

### A PHOTOFACIT STANDARD NOTATION SCHEMATIC

WITH **CIRCUITRACE®**  
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MAIN BOARD - TOP VIEW



A HOWARD W. SAMS GRIDTRACE™ PHOTO

MAIN BOARD - TOP VIEW, GRIDTRACE LOCATION GUIDE

C1201	B-6	C4130	H-9	F4001	I-2	R2707	B-10	R7512	F-7
C1205	B-5	C4131	L-6	FB3101	F-11	R2708	B-10	R7515	F-8
C1401	C-2	C4135	I-8	FB3103	E-6	R2709	K-1	R7518	F-6
C1404	C-3	C4136	J-6	FB3104	F-6	R2711	D-12	R7519	F-6
C1406	C-3	C4137	K-10	FB4102	J-8	R2718	A-7	R7520	G-7
C1703	C-4	C4138	G-3	FB4106	J-10	R2732	H-14	R7525	F-6
C1704	B-4	C4304	M-10	FB4107	K-10	R2733	B-10	RN4501	J-12
C1705	C-4	C4305	M-9	FB4108	I-11	R3102	H-17	RT4201	H-4
C1706	B-3	C4306	M-9	FB4109	I-10	R3143	D-10	SF2301	D-6
C1707	C-3	C4307	D-8	FB4112	I-8	R3154	F-8	SG4701	M-18
C1709	C-3	C4310	M-9	FB4113	J-8	R3203	G-12	SW3410	D-18
C1710	A-4	C4402	N-11	FB4401	N-6	R3311	F-11	SW3411	B-18
C1717	B-4	C4403	N-13	FB4402	M-11	R3315	G-12	SW3420	E-1
C1901	B-14	C4404	M-14	FB4501	D-7	R3329	E-12	SW3421	B-18
C1902	B-14	C4405	N-13	IR3401	H-18	R3332	G-7	SW3430	F-18
C1903	A-13	C4406	N-8	J1401	C-1	R3343	H-13	SW3431	C-18
C1904	B-16	C4407	M-11	J1403	C-1	R3348	F-8	T4101	J-9
C1905	B-13	C4502	I-13	J1404	C-1	R3401	G-17	T4301	M-9
C1906	B-16	C4504	L-13	J1901	A-3	R3402	H-18	T4401	N-3
C1907	B-16	C4505	L-13	J4901	G-2	R4001	I-3	U1001	C-6
C1909	B-15	C4506	K-13	JDEGAUSS	H-5	R4002	K-2	U1701	B-3
C1910	B-15	C4701	L-6	K4201	H-3	R4102	E-8	U1901	A-14
C1911	B-16	C4702	L-2	L2302	B-5	R4103	I-11	U3101	F-9
C2306	D-7	C4703	L-4	L2304	C-5	R4104	I-6	U3201	F-13
C2311	C-6	C4704	L-3	L2701	B-10	R4105	J-6	U4101	K-6
C2701	B-7	C4705	L-11	L2702	B-11	R4106	D-9	U4102	I-10
C2702	C-10	C4706	L-9	L2703	A-11	R4107	H-9	U4501	K-14
C2703	B-9	C4708	M-5	L2704	C-9	R4110	L-8	U7501	F-8
C2704	C-10	C4709	M-7	L3101	G-11	R4111	I-11	XRP1	G-2
C2705	C-11	C4710	L-1	L3102	F-12	R4113	L-7	XRP2	G-2
C2706	D-9	C4901	H-11	L4001	J-2	R4122	I-7	Y1701	B-3
C2707	B-9	C4902	H-12	L4101	D-7	R4124	J-6	Y2801	D-7
C2708	A-10	C4905	E-6	L4102	K-9	R4125	I-7	Y3101	E-9
C2709	B-8	CF1201	A-6	L4103	G-6	R4126	H-7		
C2713	C-10	CR1401	D-2	L4104	G-4	R4128	J-6		
C2724	C-11	CR2702	D-10	L4401	M-7	R4130	G-4		
C2801	D-10	CR3301	E-10	L4402	N-12	R4131	G-4		
C3315	F-11	CR4001	J-4	L4801	M-12	R4135	J-7		
C4001	I-2	CR4002	I-5	Q3301	E-10	R4303	H-13		
C4003	J-5	CR4003	J-4	Q3302	G-2	R4305	L-8		
C4004	I-4	CR4004	J-4	Q4101	D-9	R4306	M-9		
C4006	J-1	CR4101	D-9	Q4103	I-11	R4310	L-11		
C4007	I-6	CR4102	J-6	Q4105	J-11	R4312	E-13		
C4008	K-1	CR4103	H-11	Q4301	M-10	R4401	N-14		
C4009	J-4	CR4104	I-12	Q4401	N-7	R4402	M-7		
C4010	J-3	CR4106	K-10	Q4901	E-6	R4403	N-12		
C4101	C-10	CR4107	I-10	R1401	C-2	R4501	J-13		
C4104	J-11	CR4108	G-6	R1406	C-2	R4502	I-13		
C4105	K-9	CR4109	J-7	R1408	C-2	R4507	K-12		
C4107	J-10	CR4111	J-6	R1422	C-2	R4511	K-12		
C4108	H-10	CR4112	I-8	R1425	A-8	R4517	J-12		
C4109	K-10	CR4113	M-6	R1426	A-8	R4519	J-13		
C4110	H-9	CR4114	G-7	R1428	D-13	R4523	D-8		
C4112	J-11	CR4201	G-3	R1903	A-14	R4701	L-3		
C4115	G-3	CR4302	F-13	R1904	B-13	R4702	L-10		
C4116	D-6	CR4303	L-10	R1905	B-14	R4703	M-5		
C4117	G-5	CR4401	N-14	R1906	B-13	R4704	L-1		
C4118	I-12	CR4402	N-11	R1907	B-16	R4705	M-6		
C4122	I-7	CR4403	M-11	R1908	C-15	R4708	G-4		
C4123	I-6	CR4501	K-13	R1909	B-16	R4901	H-12		
C4124	I-6	CR4701	L-2	R1910	C-14	R4902	E-7		
C4125	H-5	CR4702	L-3	R1911	C-13	R4903	D-7		
C4126	J-7	CR4704	L-9	R1914	B-14	R4904	E-8		
C4127	J-6	CR4705	M-6	R1915	B-14	R4905	E-6		
C4128	I-7	CR4901	H-12	R1916	C-14	R4906	E-7		
C4129	D-10	CR4902	E-7	R2706	B-10	R4907	E-7		



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, 02, 03	-	215487	-	-	-
CR2702	-	164717	NTE519	ECG519	SK3100
CR3102, 10	-	201133	-	-	-
CR3111	-	218987	-	-	-
CR3301	-	164717	NTE519	ECG519	SK3100
CR3302	-	201133	-	-	-
CR3303	-	201133	-	-	-
CR4001 Thru	-				
CR4004	-	147015	NTE125	ECG125	SK5010A
CR4101	-	164874	NTE177	ECG177	SK9091
CR4102	-	176296	NTE125	ECG125	SK5010A
CR4103	-	164717	NTE519	ECG519	SK3100
CR4104	-	215488	-	-	-
CR4106	-	164589	NTE558	ECG558	SK3998
CR4107	-	164590	NTE580	ECG580	SK5036
CR4108	-	217306	-	-	-
CR4109	-	215490	-	-	-
CR4111	-	176296	NTE125	ECG125	SK5010A
CR4112	-	140971	NTE552	ECG552	SK9000
CR4113	-	176296	NTE125	ECG125	SK5010A
CR4114	-	164874	NTE177	ECG177	SK9091
CR4115	-	215491	-	-	-
CR4201	-	164717	NTE519	ECG519	SK3100
CR4302	-	164717	NTE519	ECG519	SK3100
CR4303	-	176296	NTE125	ECG125	SK5010A
# CR4401	-	140971	NTE552	ECG552	SK9000
CR4402	-	198596	-	-	-
CR4403	-	164589	NTE558	ECG558	SK3998
CR4501	-	147015	NTE125	ECG125	SK5010A
CR4701	-	207878	-	-	-
CR4702	-	176296	NTE125	ECG125	SK5010A
CR4704	-	207878	-	-	-
CR4705	-	176296	NTE125	ECG125	SK5010A
CR4851	-	176296	NTE125	ECG125	SK5010A
CR4853	-	164874	NTE177	ECG177	SK9091
# CR4901	-	157301	NTE177	ECG177	SK9091
# CR4902	-	159429	NTE5019T1	ECG5019T1	SK9970
CR7101	-	215492	-	-	-
CR7102, 03 (1)	-	-	-	-	-
CR7105	-	215493	-	-	-
CR7106	-	215494	-	-	-
CR7107, 08 (2)	-	-	-	-	-
CR7109, 10	-	215493	-	-	-
CR7111 (2)	-	-	-	-	-
CR7112	-	215493	-	-	-
CR7113 (2)	-	-	-	-	-
CR7114 (1)	-	-	-	-	-
CR7301 (1)	-	-	-	-	-
CR7302 (2)	-	-	-	-	-
CR7303	-	215493	-	-	-
# For SAFETY use only equivalent replacement part.					
(1) Part of CR7101.					
(2) Part of CR7106.					

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.
CR7304 (1)	-	-	-	-	-
CR7305 (2)	-	-	-	-	-
Q1701	-	215496	-	-	-
Q1901, 02, 03	-	215495	-	-	-
Q2301	-	215495	-	-	-
Q2701 Thru	-				
Q2704	-	215496	-	-	-
Q3101	-	215495	-	-	-
Q3102	-	215496	-	-	-
Q3301	-	215496	-	-	-
Q3302	-	223704	-	-	-
Q3303	-	215496	-	-	-
Q3304	-	215495	-	-	-
Q3305	-	215496	-	-	-
Q4101	-	157627	NTE54	ECG54	SK9366
Q4103, 05	-	223704	-	-	-
Q4106	-	215495	-	-	-
Q4301	-	146851	NTE287	ECG287	SK3433
Q4302	-	215495	-	-	-
Q4401	-	191142	NTE2331	ECG2331	SK10088
	-	200167	NTE2324%	ECG2324%	SK10136
Q4804	-	223704	-	-	-
Q4805	-	219025	-	-	-
Q4806	-	223704	-	-	-
Q4851	-	200168	-	-	-
# Q4901	-	147665	NTE159	ECG159	SK3466
Q5001 Thru	-				
Q5003	2SC3619	215497	NTE157	ECG157	SK3747
Q5004	-	143806	NTE159	ECG159	SK3466
Q7101, 02	-	200566	-	-	-
Q7401	-	215495	-	-	-
Q7402	-	215496	-	-	-
Q7403	-	215495	-	-	-
Q7404	-	215496	-	-	-
Q7501, 02	-	215495	-	-	-
Q7601	-	146848	NTE229*	ECG229*	SK3246A*
# U1001	LA7610	215524	-	-	-
U1701	LA7765	215525	-	-	-
U1901	TDA7263	215526	-	-	-
U3101	-	222394	-	-	-
U3201	-	224281	-	-	-
U4101	STK730-010	215530	-	-	-
U4102	L7812CV	162394	NTE966	ECG966	SK3592
U4501	TDA8172	215531	NTE1788	ECG1788	SK9875
U4851	LM311N	200420	NTE922M	ECG922M	SK3668
U7301	CXA1594L	215532	-	-	-
U7401	-	215533	-	-	-
U7501	-	215534	-	-	-
# For SAFETY use only equivalent replacement part.					
* Lead configuration may vary from original.					
% Use Insulating hardware supplied with replacement.					
(1) Part of CR7101.					
(2) Part of CR7106.					

PARTS LIST continued

CAPACITORS & ELECTROLYTICS		
Item No.	Rating	Mfr. Part No.
C2302	470pF 5% 50V NPO SMT	214732
C2718	220pF 5% 50V NPO SMT	205551
C2803	16pF 2% 50V NPO SMT	214736
C2805	120pF 5% 50V NPO SMT	194902
C3101, 02	100pF 5% 50V NPO SMT	193340
C3107	68pF 5% 50V NPO SMT	193339
C3110	100pF 5% 50V NPO SMT	193340
C3114, 15	27pF 5% 50V NPO SMT	197604
C3122	220pF 5% 50V NPO SMT	178188
C3128	56pF 10% 50V NPO SMT	222396
C3306	22pF 5% 50V NPO SMT	194903
C3307	47pF 5% 50V NPO SMT	210689
C3311	82pF 5% 50V NPO SMT	192049
C3313, 14	22pF 5% 50V NPO SMT	194903
C3316	200pF 5% 50V NPO SMT	218986
# C4001	.22 20% 250V	214067
# C4003, 04	680pF 20% 1kV	190538
# C4006	470pF 20% 120V	250102
# C4007	680µF 20% 200V	190560
# C4008	.005 20% 120V	195697
# C4009, 10	680pF 20% 1kV	190538
# C4101	150µF 20% 16V	161027
# C4105	22µF 200V	-
	10µF 20% 200V	214743
# C4107	100µF +30% -10% 250V	218374
# C4122	.033 5% 400V	214747
C4126	.001 10% 1kV	160461
C4303	470pF 5% 50V NPO SMT	214732
C4310	15pF 1% 250V NPO	223899
C4311	47pF 5% 50V NPO SMT	210689
C4313	220pF 5% 50V NPO SMT	178188
C4401	470pF 5% 50V NPO SMT	195918
# C4402	.015 1.6kV	206007
# C4403	.55 5% 250V	214753
# C4404	2.2µF 20% 200V	196050
# C4405	.0047 10% 250V	190534
# C4406	470pF 5% 1.kV N1500	143242
# For SAFETY use only equivalent replacement part.		

CAPACITORS & ELECTROLYTICS continued		
Item No.	Rating	Mfr. Part No.
C4702	680pF 20% 1kV	190538
C4704, 06, 08	680pF 20% 1kV	190538
C4710	.01 20% 1kV	137583
C4851	10µF 20% 50V NP	196060
# C4904	.22 +80% -20% 25V	214739
C5001	.001 3kV 10%	120696
C5005 Thru		
C5007	120pF 5% 50V NPO SMT	174414
C7102	4pF ±.25pF 50V NPO SMT	214757
C7103	22pF 5% 50V NPO SMT	194903
C7104	120pF 5% 50V NPO SMT	194902
C7105	.75pF ±.25pF 50V NPO SMT	214758
C7108	27pF 5% 50V N750 SMT	214760
C7113	100pF 5% 50V NPO SMT	193340
C7118	22pF 5% 50V NPO SMT	194903
C7124	27pF 5% 50V NPO SMT	197604
C7127	120pF 5% 50V NPO SMT	194902
C7136	75pF 5% 50V NPO SMT	192061
C7139	20pF 2% 50V N220 SMT	214761
C7140	4pF ±.5pF 50V NPO SMT	194901
C7301, 02	1.5pF ±.1pF 50V NPO SMT	223146
C7304	68pF 2% 50V NPO SMT	214762
C7305	39pF 2% 50V NPO SMT	215556
C7306	68pF 2% 50V NPO SMT	214762
C7307	10pF 5% 50V NPO SMY	
C7308	5.6pF ±.25pF 50V N750 SMT	214764
C7309	10pF 2% 50V NPO SMT	214765
C7310	8pF ±.5pF 50V N750 SMT	214766
C7311 (1)	5pF ±.5pF 50V NPO SMT	193917
C7312	3pF ±.5pF 50V NPO SMT	214767
C7313	10pF 5% 50V NPO SMT	214740
C7316	8pF ±.5pF 50V NPO SMT	194909
C7322	68pF 2% 50V NPO SMT	214762
C7323	7pF 2% 50V NPO SMT	214768
C7404, 05	68pF 5% 50V NPO SMT	193339
C7410, 11	10pF 5% 50V NPO SMT	214740
C7604	22pF 5% 50V NPO SMT	194903
C7605	27pF 5% 50V NPO SMT	197604
# For SAFETY use only equivalent replacement part.		
(1) See Service Tips on page 1.		

MISCELLANEOUS			
Item No.	Description	Mfr. Part No.	Notes
CF1201	Filter	195702	4.5MHz
# F4001	Fuse	175425	5Amp, 125V, Fast Acting
IR3401	Receiver	198606	Remote
J1401, 03, 04	Jack	215544	Assembly
# K4201	Relay	190490	Degaussing
# KS5001	Socket	189986	CRT
# P101	Line Cord	215576	AC, Polarized
SE2301	Filter	217318	S.A.W.
SP1901, 02	Speaker	193192	2 1/4" X 5", 32 Ohms
SW3410	Switch	215500	Channel Up
SW3411	Switch	215500	Power
SW3420	Switch	215500	Channel Down
SW3421	Switch	215500	Volume Up
SW3430	Switch	215500	Menu
SW3431	Switch	215500	Volume Down
# V101	CRT	A68AEG121	A68AEG12X01
Y1701	Resonator	215501	377kHz
Y2801	Crystal	161235	3.58MHz
Y3101	Crystal	217322	8MHz
Y7401	Crystal	182839	4MHz
	Magnet	179806	Beam Bender
	PC Board (1)	221945	CRT
	PC Board (1)	223943	Pincushion
	Transmitter	221110	Remote (CRK64A1)
	Transmitter	212688	Remote (CRK72B2)
# For SAFETY use only equivalent replacement part.			
(1) Contact PTS Electronics Corporation for replacement; order by manufacturer's part number.			

PARTS LIST continued

CONTROLS & RESISTORS			
Item No.	Function/Rating	Mfr. Part No.	NTE Part No.
# R1401, 02	75 5% 1/4W	175756	QW075
# R1403	100 5% 1/4W	149602	QW110
# R1404	75 5% 1/4W	175756	QW075
# R1405	100 5% 1/4W	149602	QW110
# R1406	2200 5% 1/4W	-	QW222
	2200 2% 1/4W Nonflammable	829222	QW222
# R1408	2200 5% 1/4W	-	QW222
	2200 2% 1/4W Nonflammable	829222	QW222
# R1422	22 5% 1/4W	-	QW022
	22 5% 1/4W Nonflammable	829022	QW022
R1711	3300 2% 1/10W SMT	195938	-
# R1907	4.7 5% 1/4W	200197	QW4D7
# R1908	18 5% 3W	181234	3W018
# R1909	4.7 5% 1/4W	200197	QW4D7
R2704, 05	1000 2% 1/10W SMT	197638	-
# R2709	27K 5% 1/2W	206037	HW327
R2728	470K 2% 1/10W SMT	205381	-
R2729	240K 2% 1/8W SMT	215687	-
R2732	1000 1% 1/4W	179753	-
R2801	15K 1% 1/10W SMT	215198	-
R2802	15.8K 1% 1/10W SMT	215199	-
R3343	5100 2% 1/4W	175417	-
# R4001	2.7 10% 15W Wirewound	190487	-
# R4002	2.7M 10% 1/2W	217662	HW527
# R4113	75 5% 2W Wirewound	205066	-
# R4135	27 2% 1/2W	830027	HW027
R4303	5100 2% 1/4W	175417	QW251
R4305	5600 5% 3W	-	3W256
	5600 2% 3W	179251	3W256
	6200 5% 3W	179252	3W262
# R4401	15K 5% 1W	190557	1W315
R4402	36 5% 1/2W	830036	HW036
	27 2% 1/2W	830027	HW027
	27 5% 1/2W	-	-
# R4403	820 5% 1W	175349	1W182
# R4507	1.5 5% 1W	178619	1W1D5
# R4511	1 10% 2W Wirewound	215577	-
# R4701	10 5% 1/2W	-	HW010
	10 2% 1/2W Nonflammable	830010	HW010
# R4702	3.3 5% 2W Wirewound	217315	-
# R4703	3.3 5% 3W Wirewound	195730	-
# R4704	82K 5% 1/2W	830382	HW382
# R4705	100 5% 1/4W	829110	QW110
# R4852	390 5% 1/2W	175769	HW139
R4854	27.4K 1% 1/4W	-	-
	41.2K 1% 1/4W	-	-
R4855	36K 2% 1/4W	-	QW336
	82K 5% 1/4W	175419	QW382
R4856	1300 2% 1/4W	203745	QW213
R4857	220K 2% 1/4W	179963	QW422
R4858	270K 5% 1/4W	179958	QW427
	270K 2% 1/4W	-	QW427
# For SAFETY use only equivalent replacement part.			

CONTROLS & RESISTORS continued			
Item No.	Function/Rating	Mfr. Part No.	NTE Part No.
R4859	30K 2% 1/4W	-	QW330
	330 5% 1/4W	175046	QW133
R4861, 62	10K 2% 1/4W	175317	QW310
R4863	200K 2% 1/4W	181226	QW420
R4865	40.2K 1% 1/4W	219026	-
R4869, 70	30K 2% 1/4W	175046	QW330
R4871	100K 2% 1/4W	175044	QW410
R4872	4700 2% 1/4W	175413	QW247
R4873	100K 2% 1/4W	175044	QW410
# R4901	100 5% 1/4W	829110	QW110
# R4902	26.7K 1% 1/4W	196081	-
# R4903	39.2K 1% 1/4W	190469	-
# R4904	10K 5% 1/4W	175317	QW310
# R4905	5100 2% 1/4W	175417	QW251
R5001	10K 5% 2W Nonflammable	176656	2W310
R5002	10K 5% 2W Nonflammable	176656	2W310
R5003	10K 5% 2W Nonflammable	176656	2W310
R7401	191K 1% 1/10W SMT	215214	-
R7408	37.4K 1% 1/10W SMT	215215	-
R7411	1M 1% 1/10W SMT	215216	-
R7501 Thru			
R7503	10K 1% 1/10W SMT	215217	-
R7504 Thru			
R7506	26.1K 1% 1/8W SMT	215218	-
R7507	14.3K 1% 1/10W SMT	215219	-
R7508	453 1% 1/8W SMT	215220	-
R7509	15.8K 1% 1/10W SMT	215199	-
R7510	100K 1% 1/10W SMT	215221	-
R7512	15.8K 1% 1/4W	181121	-
R7513	100K 1% 1/10W SMT	215221	-
R7515	15.8K 1% 1/4W	181121	-
R7516	100K 1% 1/10W SMT	215221	-
RN4501	Resistor Network	215499	-
# RT4201	4.8 Cold PTC	207768	-
# For SAFETY use only equivalent replacement part.			

GE

MODEL 27GT613FE2 (CHASSIS CTC177BH2)

PARTS LIST continued

COILS & TRANSFORMERS			
Item No.	Function/Rating	Mfr. Part No.	On-Unit No.
FB3101	Ferrite Bead	153328	-
FB3103, 04	Ferrite Bead	153328	-
FB4102	Ferrite Bead	161237	-
FB4106, 07	Ferrite Bead	154322	-
FB4108, 09	Ferrite Bead	154042	-
FB4110, 11	Ferrite Bead	215546	-
FB4112, 13	Ferrite Bead	154042	-
FB4401	Ferrite Bead	161237	-
FB4402	Ferrite Bead	206390	-
FB4501	Ferrite Bead	215547	-
FL7102	Filter, High Pass	181470	-
L2302	-	215502	-
L2304	2.2μH	197616	-
L2701 Thru			
L2703	2.2μH	197616	-
L2704	10μH	175409	-
L3101	10μH	161243	-
L3102	100μH	160186	-
# L4000 (1)	Yoke 110° Horiz .95mH Vert 21mH	-	-
# L4001	Line Choke	190507	20480440
L4101	10μH	175409	-
L4102	22μH	215504	-
L4103, 04	10μH	175409	-
L4201	Degaussing	212229	-
L4401	4μH	215505	-
# L4402	Horizontal Linearity, 29μH	196064	-
L4801	360μH	215506	-
# L4853	820μH	215536	-
L5002 Thru			
L5004	56μH	196107	-
L7101	-	215507	-
L7102	-	215508	-
L7103	-	223929	-
L7104, 05	-	223917	-
L7106	-	215509	-
L7107	-	215510	-
L7108	-	215511	-
L7109	3.9μH	200559	-
L7110	-	223288	-
L7111	-	215512	-
L7112	-	215513	-
L7113	-	215514	-
L7114	-	215513	-
L7115	-	215515	-
L7301	-	223928	-
L7302	-	223930	-
L7303	-	215516	-
L7304	-	223920	-
L7305	-	215517	-
L7306	-	215554	-
# For SAFETY use only equivalent replacement part.			
(1) Bonded part of CRT.			

COILS & TRANSFORMERS continued			
Item No.	Function/Rating	Mfr. Part No.	On-Unit No.
L7601	.0068μH	195708	-
# T4101 (2)	Regulator SMT	221948	2G25025-B1A
# T4301	Horizontal Driver	215541	30949060
# T4401 (3)	Horizontal Output	215540	2G25027-A2F
# For SAFETY use only equivalent replacement part.			
(2) See Service Tips on page 1.			
(3) Focus and screen controls are part of T4401.			

CABINET PARTS	
Item No.	Mfr. Part No.
Model 27GT613FE2	
Button	217332
# Cabinet Back	BK1458
# Mask	MK1457
Models 27GT615FE1/JX1	
Button	217324
# Cabinet Back	BK1458
# Mask	MK1705
Remote Transmitter (CRK64A1)	
Battery Door	217651
Remote Transmitter (CRK72B2)	
Battery Door	216451
# For SAFETY use only equivalent replacement part.	

GE

MODEL 27GT613FE2 (CHASSIS CTC177BH2)