

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.

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

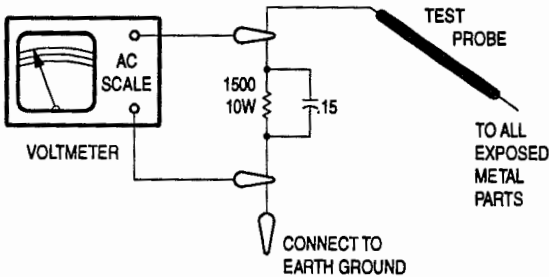
Unplug the AC cord, connect a jumper across the plug prongs, and turn the power switch on (if applicable). Use an ohmmeter to measure the resistance between the jumped AC plug and any exposed metal cabinet parts such as antenna screw heads, control shafts, or handle brackets. Exposed metal parts with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



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PHOTOFACT® Technical Service Data

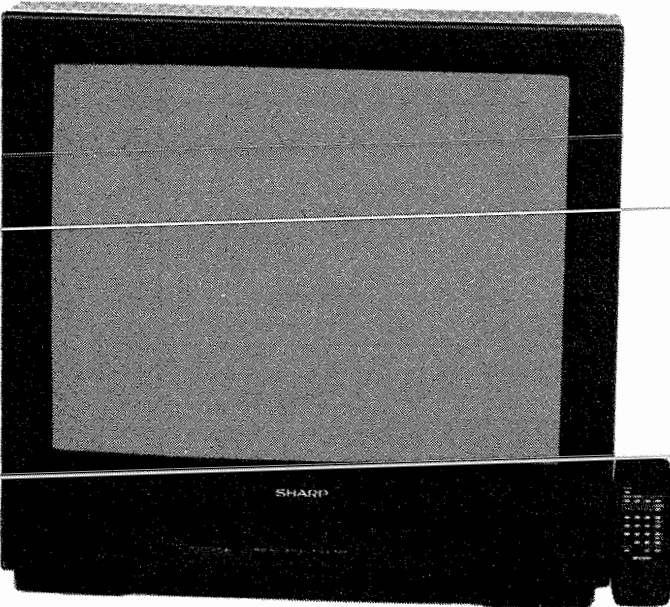
SET 3355

MODELS 27E-S50, 27E-S100, 27E-S120

SHARP

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SHARP
Models 27E-S50, 27E-S100, 27E-S120



Model 27E-S50
Complete coverage
for servicing a television receiver...

- Schematics
- Component locations
- Parts list
- Troubleshooting guide

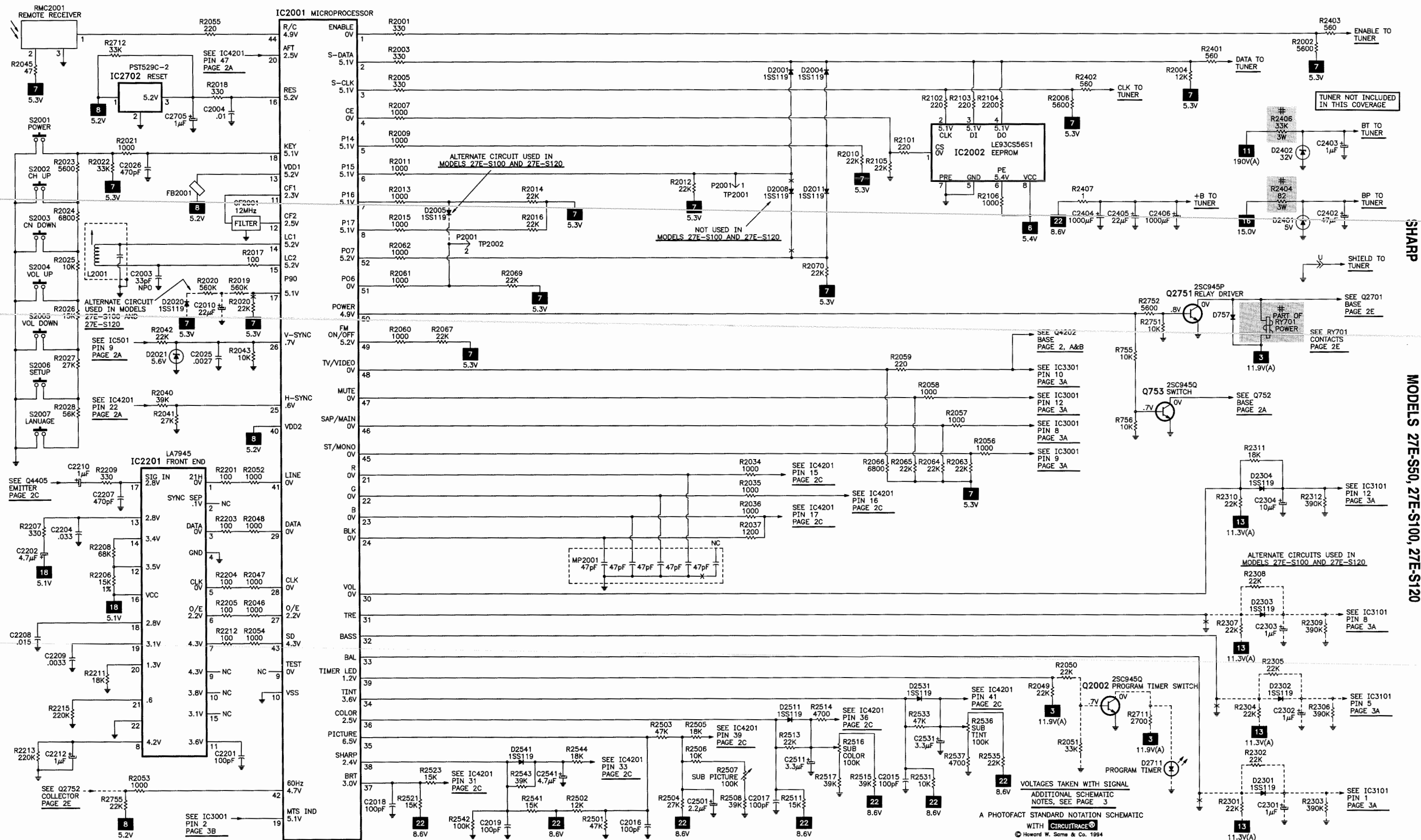


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JULY 1994 SET 3355

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See PHOTOFACT Annual Index

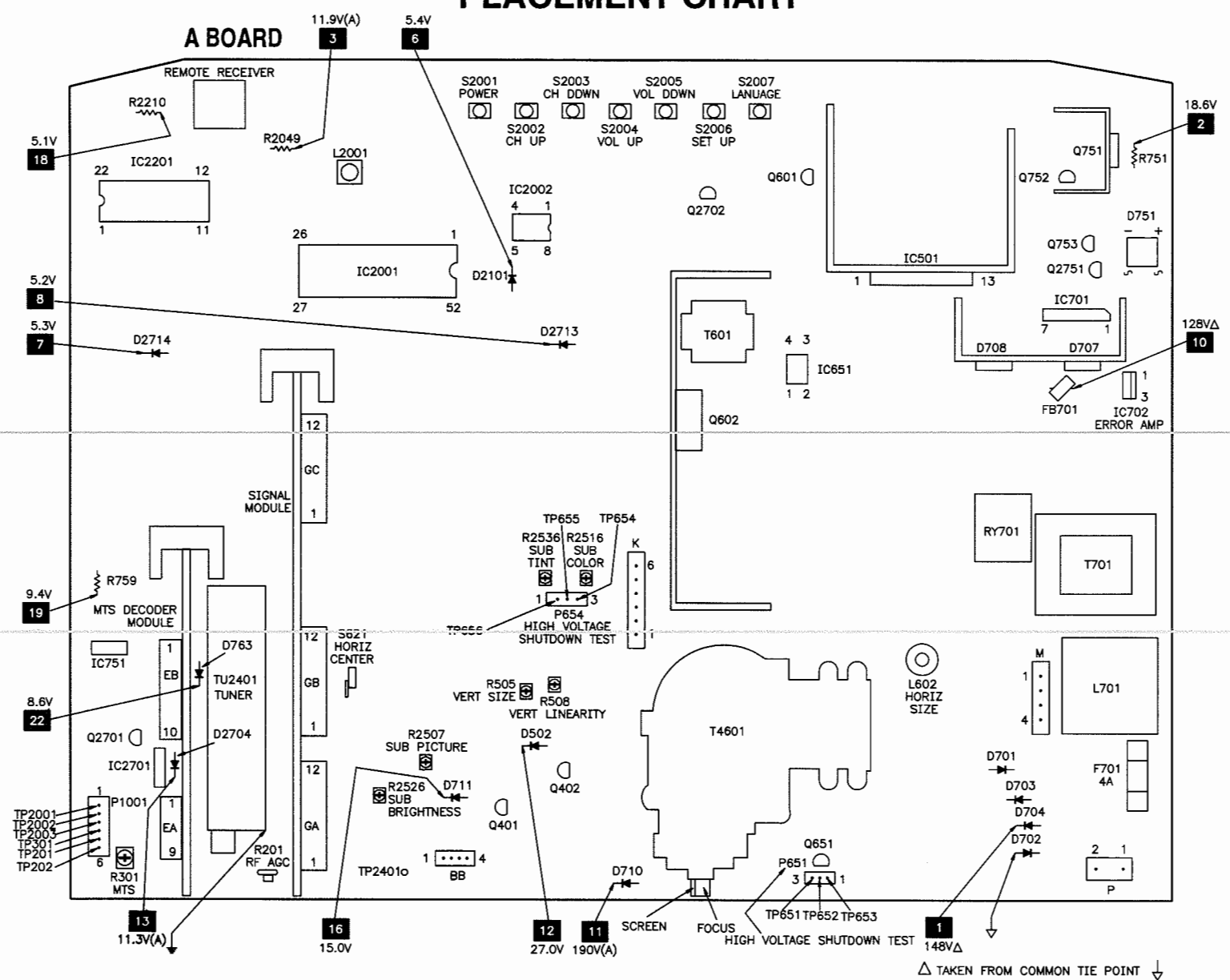
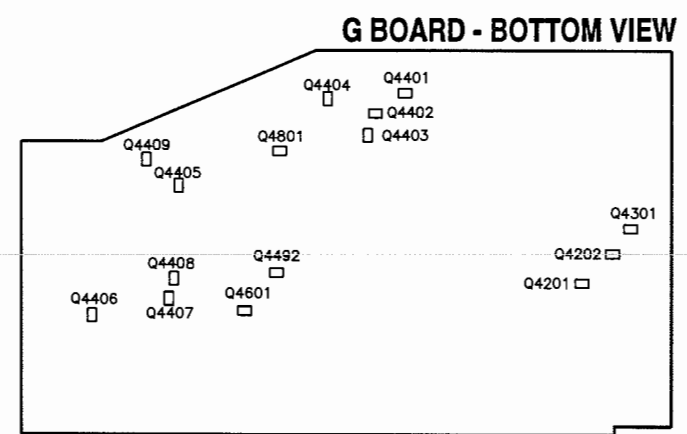
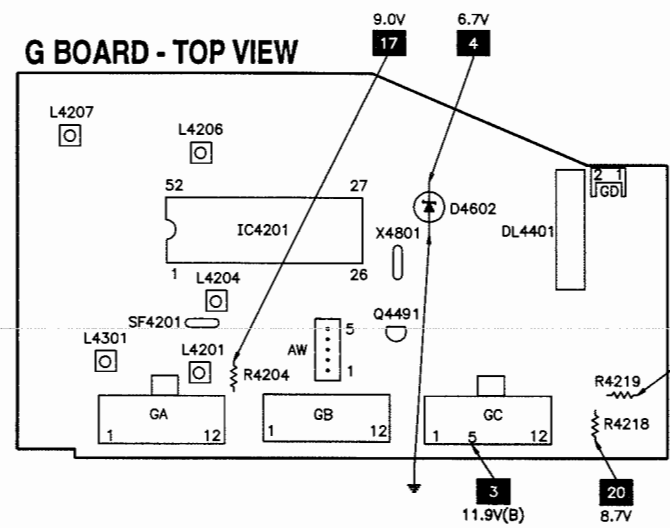
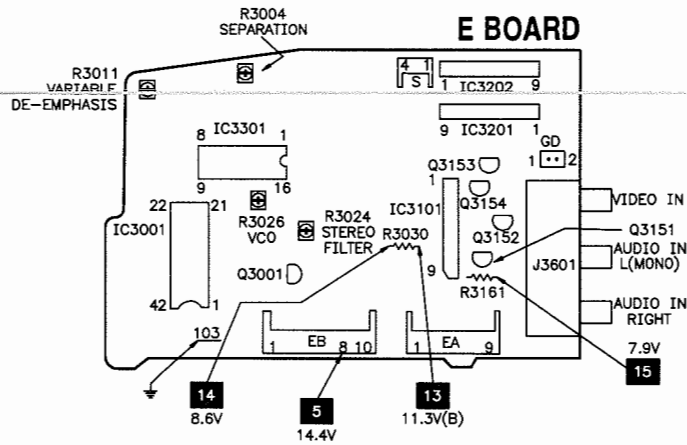
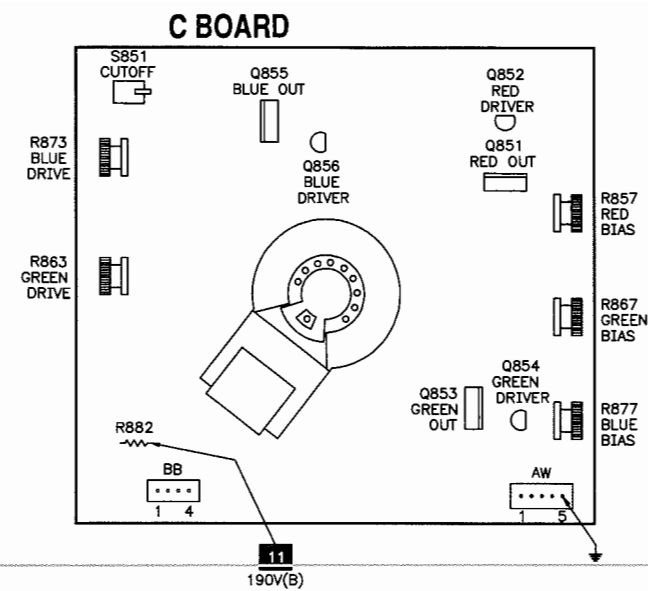
SYSTEM CONTROL SCHEMATIC



SHARP

MODELS 27E-S50, 27E-S100, 27E-S120

PLACEMENT CHART



TEST JIG HOOKUP

Function	Chek-A-Color Adapter No.	PC Board Plug No.	Pin	Color
CRT	B239	K	1	Red
Yoke	D4137		3	Blue
Yoke Setting	YP1A		5	Yellow
Comments	Focus Tap		6	Green

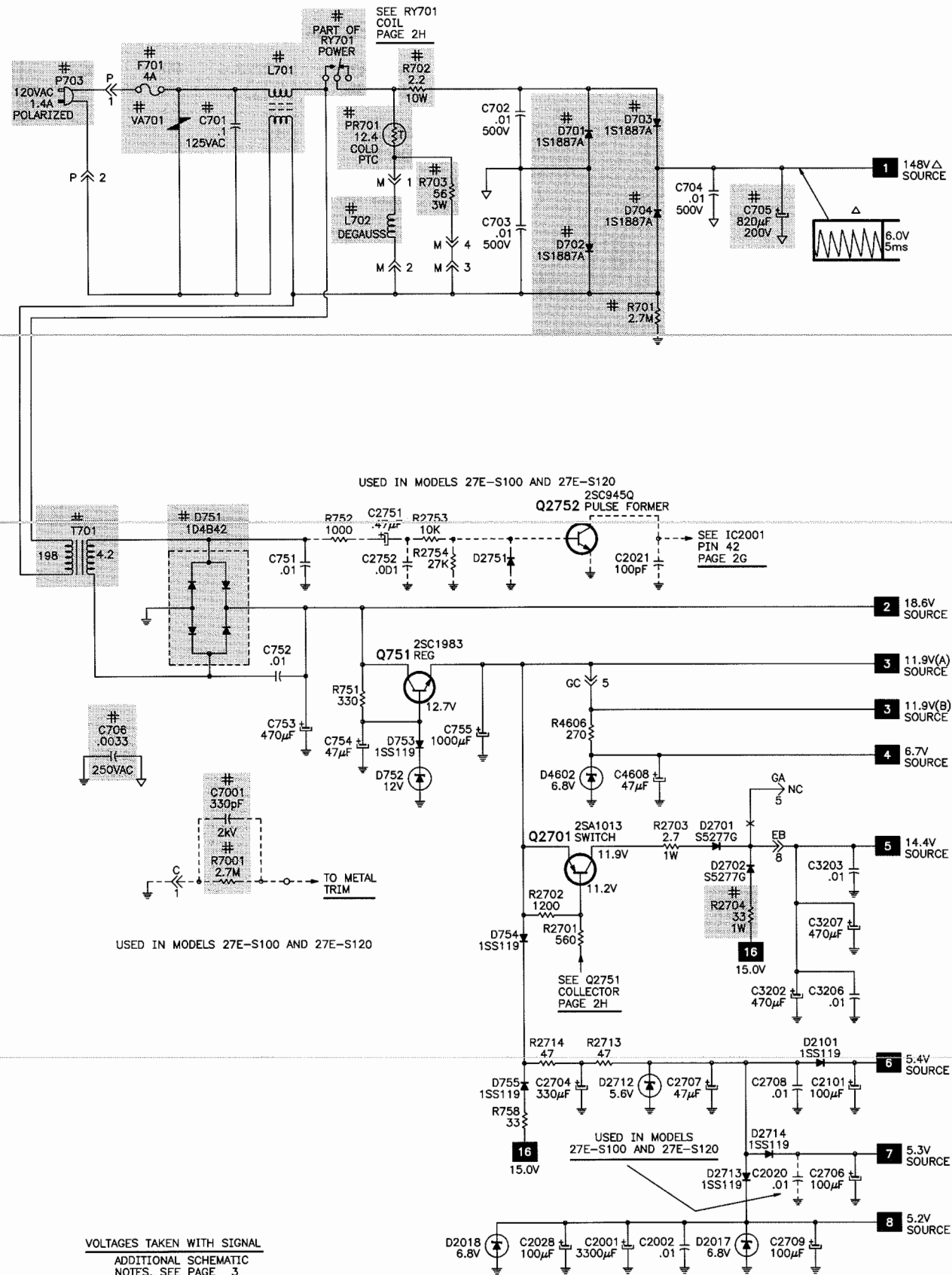
TEST EQUIPMENT

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

SHARP
MODELS 27E-S50, 27E-S100, 27E-S120

POWER SUPPLY SCHEMATIC



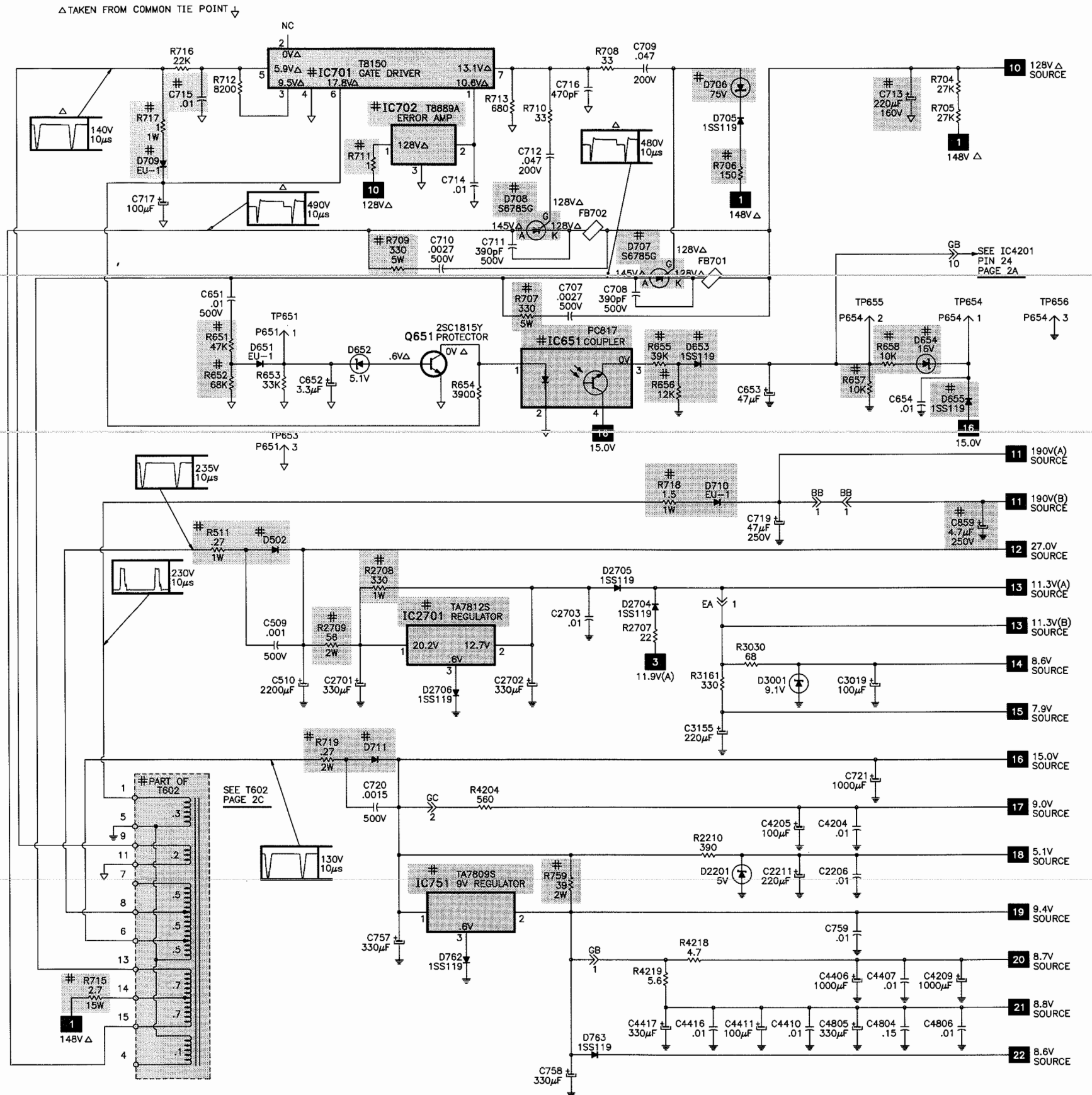
VOLTAGES TAKEN WITH SIGNAL

ADDITIONAL SCHEMATIC
NOTES, SEE PAGE 3

A PHOTOFACT STANDARD NOTATION SCHEMATIC
WITH **CIRCUITRACE[®]**
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F

TROUBLESHOOTING

POWER SUPPLY

Check F701. If open, check D701 thru D704, C701 thru C705, Q602, D751, and T602. Apply 120VAC and check for 18.6V at positive output of D751. If voltage is missing, check D751, Q751, and T701. Turn the set on and check RY701. If relay does not energize, check Q2751, pin 50 of IC2001, and RY701. Check for 128V* at cathode of D707. If B+ is missing, check IC701, IC702, D707, D708, and T602. If 128V* is present, refer to the "Horizontal" section of this Troubleshooting guide.

* Taken from common tie point.

HIGH VOLTAGE SHUTDOWN TEST

Connect a DC power supply, thru an isolation diode, to TP654. Increase DC voltage to 17.6V. The set should go into shutdown. Remove the DC power supply from TP654, and momentarily short TP655 to TP656. The set should resume normal operation. Short TP651 to TP653. The set should go into shutdown. Remove the short from TP651 and TP653, and momentarily short TP655 to TP656. The set should resume normal operation. If the set fails to go into shutdown during the above procedures, the high voltage shutdown circuit requires repair.

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. The high voltage is monitored by D651 rectifying pulses from T602. Should the high voltage increase, the rectified voltage at the cathode of D651 will also increase and trigger the X-Ray protector circuit Q651 and IC651. To troubleshoot, place a jumper between TP655 and ground. Use a variac for AC power, start at 90VAC and increase, as necessary, to isolate and correct the defect.

Voltages Taken With TV In Shutdown		
IC4201		
Pin 24	.7V	
D707		
Anode	161V*	
Cathode	84.0V*	
Gate	84.0V*	

* Taken from common tie point.

HORIZONTAL

To determine if the set is in shutdown, refer to the "High Voltage Shutdown" section of this Troubleshooting guide. If the set is not in shutdown, inject a horizontal signal at the base of Q602. If horizontal deflection is now present, check pins 22 thru 27 of IC4201, Q601, and Q4601. If there is no horizontal sweep, check Q602, T602, D502, D709, D710, and D711. The high voltage rectifier is part of T602 and if defective will affect the performance of the horizontal circuits. Width or foldover problems may be caused by C606 thru C612 being defective.

VIDEO/ CHROMA

Inject a video signal at pin 44 of IC4201 and check for video on the CRT. If video is now present, refer to the "IF-AGC" section of this Troubleshooting guide. If video is missing, check for a video waveform at pin 21 of IC4201. If video is missing, check Q4401 thru Q4408 and pins 21, 31 thru 36, and 38 thru 42 of IC4201. If waveform is present at pin 21 of IC4201, check Q4491 and Q4492. Check for the proper waveforms at pins 18, 19, and 20 of IC4201. If these waveforms are missing, check pins 12 thru 21 and 36 thru 42 of IC4201. Check the 3.58MHz oscillator at pin 13 of IC4201. If the proper waveforms are present at pins 18, 19, and 20 of IC4201. Refer to the "Raster" section of this Troubleshooting guide.

VERTICAL

Inject a vertical drive signal at pin 2 of IC501. If vertical deflection is now present, check pins 28 and 29 of IC4201. If vertical deflection is still missing, check IC501 and DY601. Vertical linearity or foldover problems may be caused by C503, C504, C508, and C507 being defective.

RASTER

Check the CRT and CRT voltages. If red is missing, check pin 18 of IC4201, Q851, and Q852. If green is missing, check pin 19 of IC4201, Q853, and Q854. If blue is missing, check pin 20 of IC4201, Q855, and Q856. 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.

AUDIO

Select an active TV channel and check for an audio waveform at pin 39 of IC3001. If audio waveform is missing, check Q4301 and pins 1, 4, 5, 6, and 48 of IC4201. If audio is present, check for audio waveforms at pins 17 and 18 of IC3001. If waveforms are missing, check Q3001 and IC3001. Check for audio waveforms at pins 3 and 10 of IC3101. If waveforms are missing, check IC3101 and IC3301. If audio waveforms are present, check IC3201, IC3202, and Q3151 thru Q3154.

IF-AGC

Inject a video IF signal at the IF input and check for video on the CRT. If video is present on the CRT, check the tuner, tuner control, and tuner AFT circuits. Check for a video waveform at pin 44 of IC4201. If video is present, refer to the "Video" section of this Troubleshooting guide. Apply AGC bias to pin 2 of IC4201. If video is now present at pin 44 of IC4201, check pins 2, 47, and 49 of IC4201. If there is still no video at pin 44 of IC4201, check Q4201 and IC4201. A defective AGC circuit can cause an overloaded picture, excessive snow, or loss of audio and video.

ON-SCREEN SOUND AND PICTURE LEVELS

If sound and picture levels only adjust to 0%, 50%, and 100%, replace IC2002.

MISCELLANEOUS ADJUSTMENTS

HIGH VOLTAGE CHECK

Tune in a picture. Connect a high voltage probe to CRT anode. High voltage should read 26.5KV to 29KV.

RF AGC

Tune in a picture. Turn R201 counterclockwise until snow (noise) appears in picture, then clockwise until snow disappears. Check all channels for proper operation.

SUB BRIGHTNESS

Tune in a crosshatch pattern. Set brightness and picture to minimum. Adjust R2526 to a point where highlights are just visible. Set brightness and picture to maximum and check for blooming.

SUB PICTURE

Tune in a picture. Set customer controls to standard setting mode. Adjust R2507 to achieve normal contrast.

SUB TINT AND SUB COLOR

Tune in a picture. Set customer controls to standard setting mode. Adjust R2516 for normal color. Adjust R2536 for normal flesh tone.

VERTICAL SIZE AND LINEARITY

Tune in a crosshatch pattern. Adjust R505 for approximately 3/16" overscan at top and bottom of the screen. Adjust R508 for best vertical linearity.

HORIZONTAL CENTERING

Tune in a crosshatch pattern. Adjust the horizontal centering switch S621 for the best centering on screen.

CAPTION BALANCE

Tune in a closed caption signal and set it to text mode. Set customer controls to standard setting mode. Adjust L2001 to center the text pattern on the screen.

COLOR PURITY

Operate the receiver for 15 minutes. Set picture and color to minimum. Set brightness for a visible raster. Use a degaussing coil to demagnetize the CRT and mounting brackets. Adjust R854 and R864 to obtain a green raster, advance R859 if necessary. Loosen

the deflection yoke clamp screw and slide the yoke backward to obtain a vertical green band. Rotate and spread the purity magnet tabs until the green band is centered on the screen. Move the deflection yoke forward until a uniform green screen is obtained.

GRAY SCALE

Tune in an active channel. Perform screen adjustment. Set color, brightness, and picture to minimum. Set R854, R859, and R864 to minimum. Set R855 and R872 to midrange. Set S851 to the center position. Advance brightness, if necessary, to obtain a barely visible line. Note the color of the line and adjust the two remaining bias controls to obtain the best white balance. Set S851 to the normal position. Set brightness and picture to maximum. Adjust the drive controls for best white in highlight areas. Check tracking at high and low brightness and touch up as necessary.

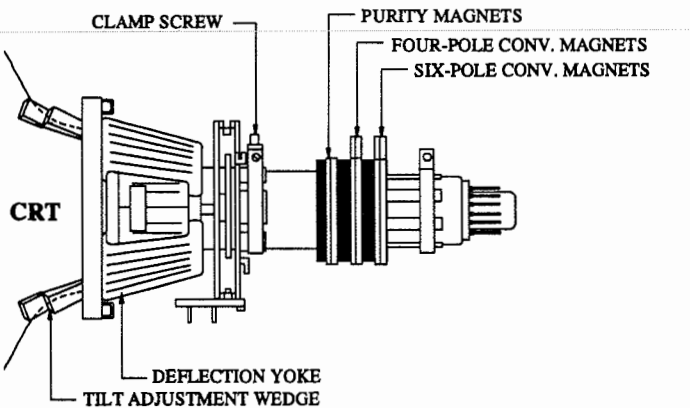
CONVERGENCE

Operate the receiver for 15 minutes. Connect a color bar generator to the antenna terminals and tune in a dot pattern. Adjust the 4-pole magnet tabs to converge the red and blue dots at the center of the screen. Adjust the 6-pole magnet tabs to converge the red/blue dots over the green dots at the center of the screen.

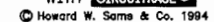
NOTE: Rotate the two tabs of each set of magnets equally and opposite to converge vertically and rotate both tabs in the same direction to converge horizontally. The 4-pole and 6-pole magnets interact, repeat adjustment until center convergence is correct.

Tune in a crosshatch pattern and remove the rubber wedges between the deflection yoke and the CRT. Tilt the deflection yoke up or down to converge the vertical lines at top and bottom of screen and the horizontal lines at the right and left sides of the screen. Tilt the deflection yoke right or left to converge horizontal lines at top and bottom of screen and the vertical lines at the right and left sides of the screen. Repeat convergence procedure if necessary to obtain best overall convergence. Apply adhesive to wedges and carefully replace on the CRT.

CRT NECK ASSEMBLY



D



STEREO ADJUSTMENTS

NOTE: All adjustments were performed with the controls set to normal listening levels. MTS/TV stereo generator connected to antenna terminals. Set generator for pilot, 1kHz audio frequency, and L-R modulating signal, unless otherwise indicated.

MTS LEVEL

Connect an oscilloscope to TP301. Adjust R301 for 300mVp-p.

VCO

Set volume to an audible level. Connect a DC voltmeter to pin 2 of IC3001. Set R3026 fully clockwise, then turn it counterclockwise to a point where the voltage drops to approximately .01V.

VARIABLE DE-EMPHASIS

Set the generator for pilot, 8kHz audio frequency, and left modulating signal. Connect an oscilloscope to the emitter of Q3152, adjust R3011 for 400mV p-p.

STEREO FILTER

Set the generator for pilot, 1kHz audio frequency, and L+R modulating signal. Connect an oscilloscope to pin 21 of IC3001, adjust R3024 for minimum.

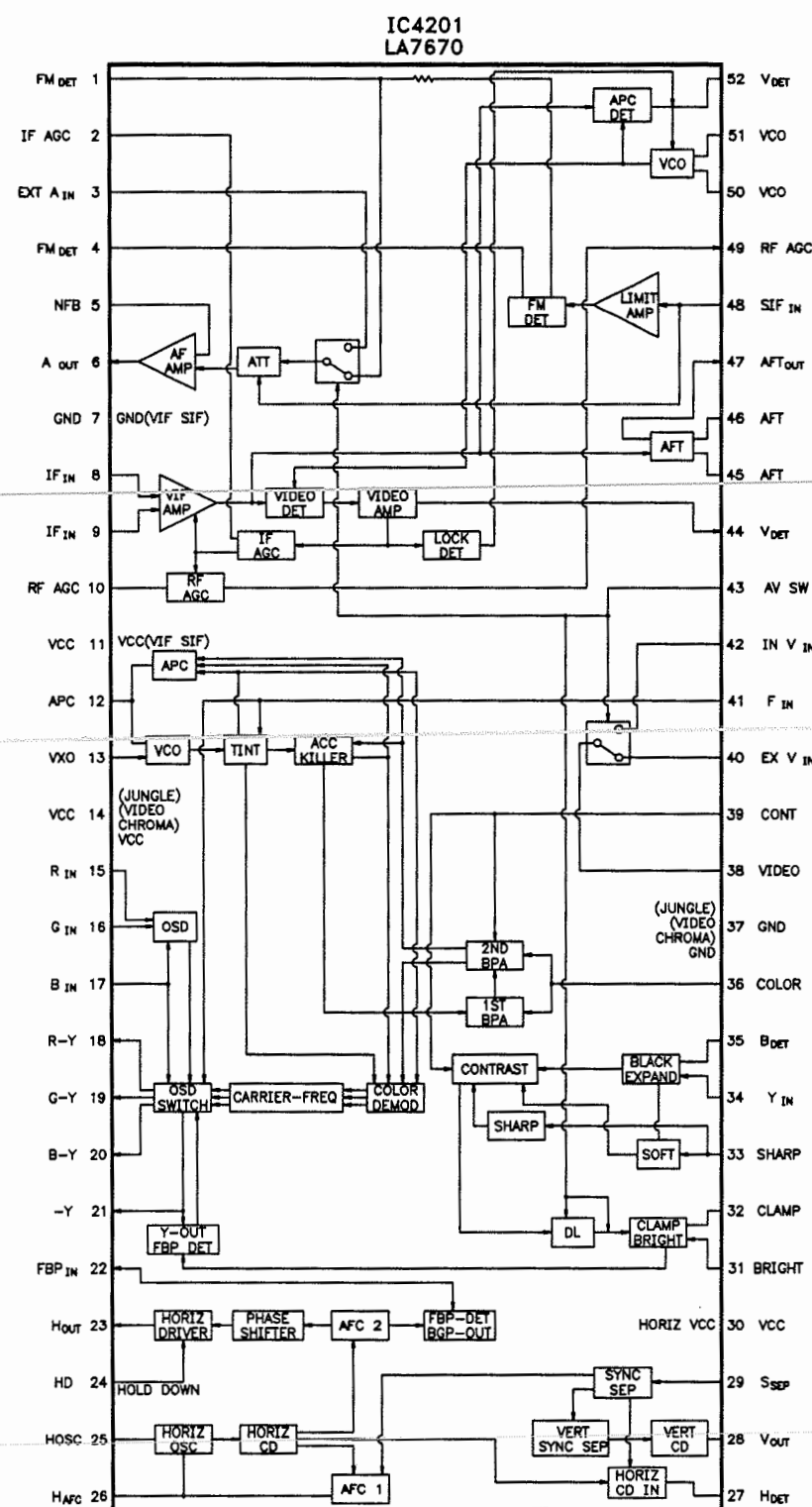
SEPARATION

Set the generator for pilot, 300Hz audio frequency, and left modulating signal. Connect an oscilloscope to the emitter of Q3152. Adjust R3004 for minimum.

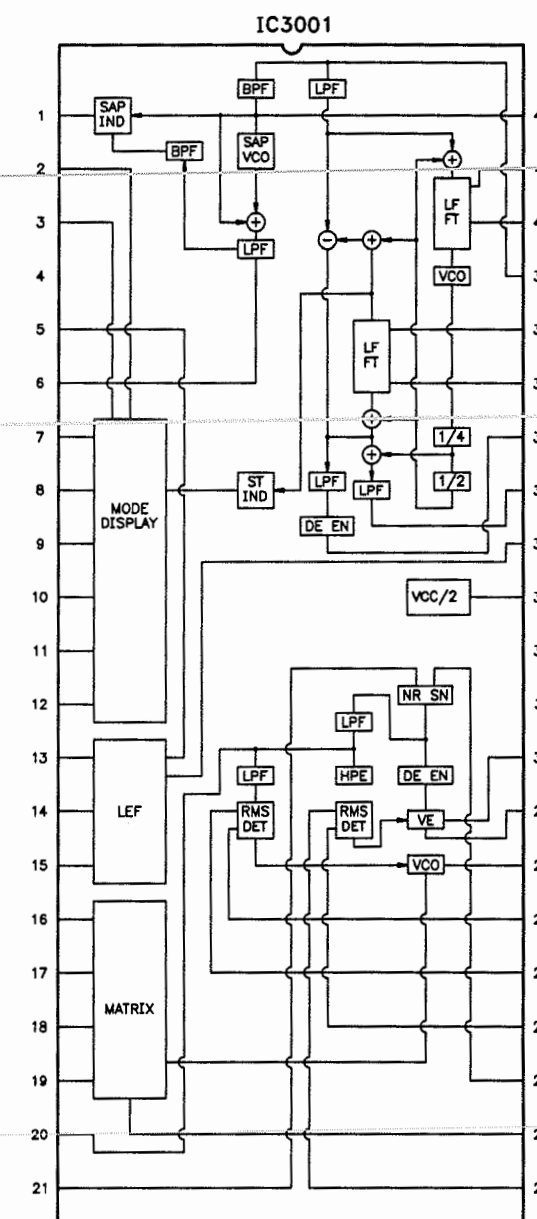
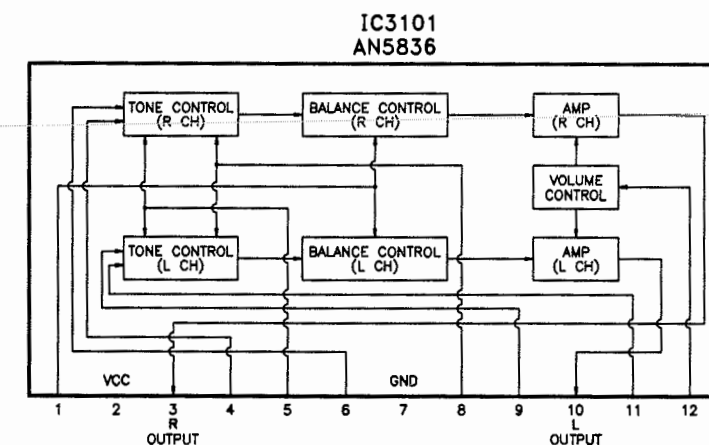
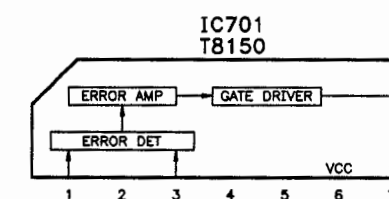
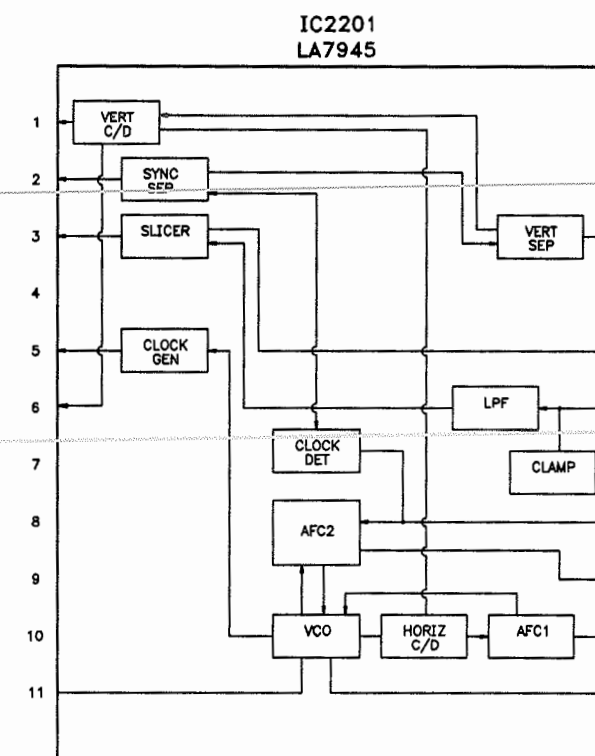
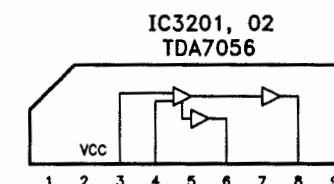
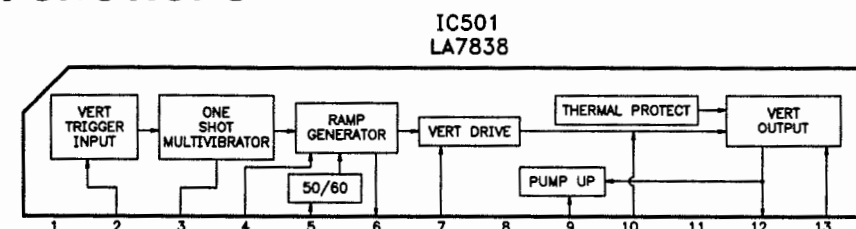


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IC FUNCTIONS



ANT/CABLE RF TO TUNER

SEE IC2001 PIN 20 PAGE 2G

TUNER NOT INCLUDED IN THIS COVERAGE

47.25MHz

IF TO TUNER

Q4201 2SC2735 IF PREAMP

SAW FILTER

IC4201 TV SIGNAL PROCESSOR

IF AGC RANGE 6.7V TO 8.5V

Q4401 2SC2462 BUFFER

Q4402 VIDEO AMP

Q4403 2SC2462 BUFFER

Q4404 2SC2462 BUFFER

LA7670 TV SIGNAL PROCESSOR

Q4202 2SC2462 VIDEO MUTE SWITCH

SEE IC2001 PIN 48 PAGE 2G

Q4601 2SC2462 HORIZ DRIVER

Q601 2SC2655Y HORIZ DRIVER

Q602 2SD2125 HORIZ OUT

Q752 2SA1013 HORIZ STARTER

Q753 2SD2125 HORIZ OUT

Q754 2SD2125 HORIZ OUT

Q755 2SD2125 HORIZ OUT

Q756 2SD2125 HORIZ OUT

Q757 2SD2125 HORIZ OUT

Q758 2SD2125 HORIZ OUT

Q759 2SD2125 HORIZ OUT

Q760 2SD2125 HORIZ OUT

Q761 2SD2125 HORIZ OUT

Q762 2SD2125 HORIZ OUT

Q763 2SD2125 HORIZ OUT

Q764 2SD2125 HORIZ OUT

Q765 2SD2125 HORIZ OUT

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Q913 2SD2125 HORIZ OUT

Q914 2SD2125 HORIZ OUT

Q915 2SD2125 HORIZ OUT

Q916 2SD2125 HORIZ OUT

Q917 2SD2125 HORIZ OUT

Q918 2SD2125 HORIZ OUT

Q919 2SD2125 HORIZ OUT

Q920 2SD2125 HORIZ OUT

Q921 2SD2125 HORIZ OUT

Q922 2SD2125 HORIZ OUT

Q923 2SD2125 HORIZ OUT

Q924 2SD2125 HORIZ OUT

Q925 2SD2125 HORIZ OUT

Q926 2SD2125 HORIZ OUT

Q927 2SD2125 HORIZ OUT

Q928 2SD2125 HORIZ OUT

Q929 2SD2125 HORIZ OUT

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Q931 2SD2125 HORIZ OUT

Q932 2SD2125 HORIZ OUT

Q933 2SD2125 HORIZ OUT

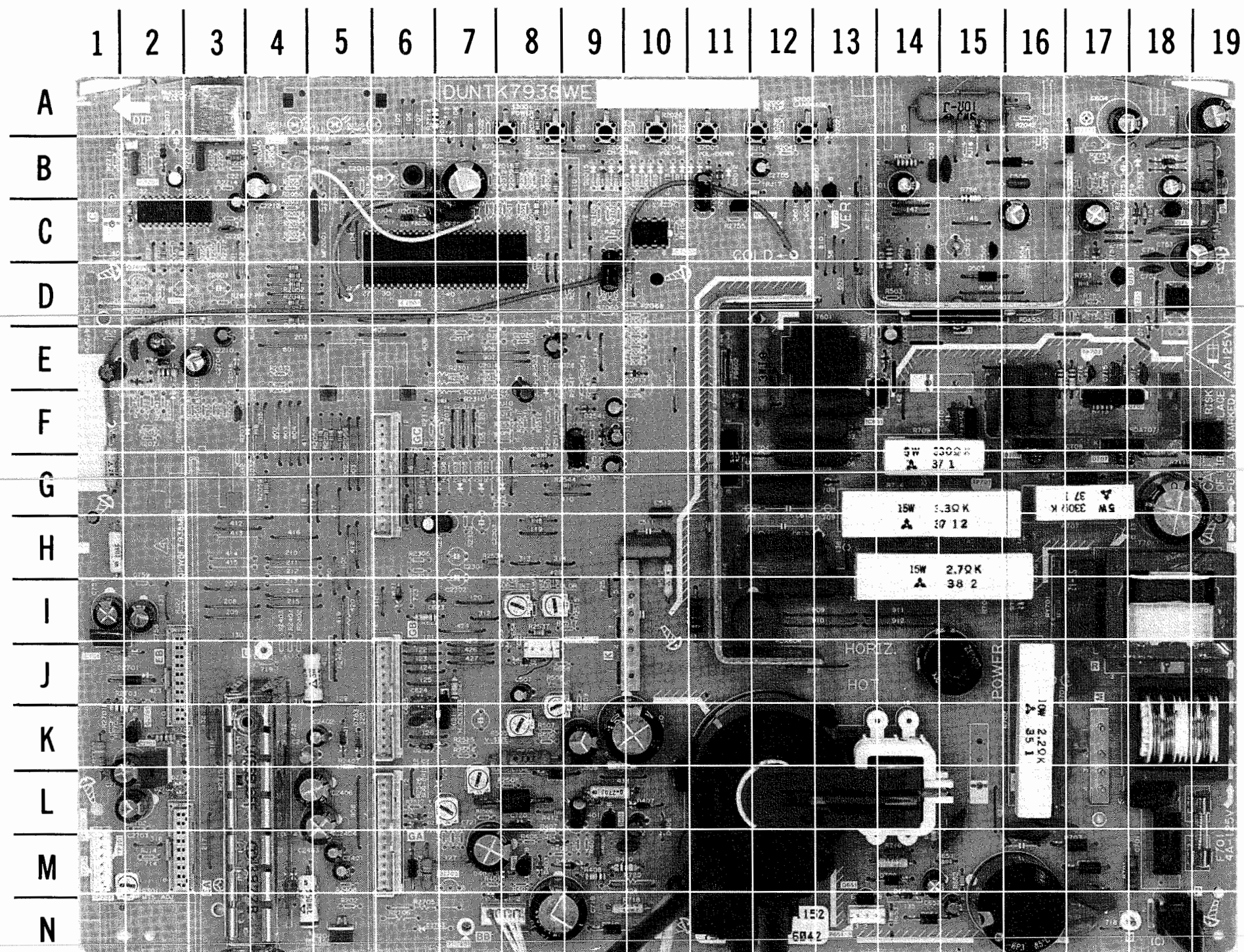
Q934 2SD2125 HORIZ OUT

Q935 2SD2125 HORIZ OUT

Q936 2SD2125 HORIZ OUT

Q937 2SD2125 HORIZ OUT

A BOARD - TOP VIEW



A HOWARD W. SAMS GRIDTRACE™ PHOTO

A BOARD - TOP VIEW, GRIDTRACE LOCATION GUIDE

BB	N-7	C2002	B-6	D754	A-16	P654	J-8	R2032	F-4
C401	L-9	C2003	B-6	D755	A-15	P1001	M-1	R2045	B-4
C402	L-10	C2004	C-6	D757	E-18	PR701	J-17	R2046	D-4
C403	M-10	C2026	C-5	D758	C-17	Q401	M-8	R2047	D-4
C501	B-14	C2027	F-3	D759	C-18	Q402	L-9	R2048	D-4
C502	C-14	C2028	E-8	D760	B-17	Q601	B-13	R2049	B-4
C503	C-15	C2101	D-9	D761	B-16	Q602	G-11	R2052	D-4
C504	C-16	C2201	C-3	D762	J-1	Q651	N-13	R2054	D-4
C505	C-15	C2202	B-2	D763	K-5	Q751	B-19	R2055	D-4
C506	B-16	C2204	B-3	D2001	B-11	Q752	C-18	R2056	F-5
C507	J-8	C2207	B-2	D2004	B-9	Q753	D-17	R2057	F-5
C508	K-9	C2210	E-3	D2008	B-11	Q2701	K-2	R2058	F-5
C509	K-9	C2211	B-4	D2011	B-9	Q2751	D-17	R2059	G-4
C510	K-10	C2212	C-3	D2016	E-3	R301	M-1	R2201	C-2
C511	H-10	C2304	H-7	D2017	C-6	R408	M-9	R2203	C-3
C512	G-10	C2401	M-5	D2018	E-9	R409	M-9	R2206	B-3
C601	B-12	C2402	K-5	D2021	A-13	R410	M-10	R2209	C-2
C602	B-12	C2403	M-1	D2101	D-10	R411	L-8	R2210	B-2
C603	B-14	C2404	L-5	D2201	B-2	R412	L-8	R2215	C-2
C604	A-18	C2405	K-4	D2304	G-7	R505	K-8	R2310	F-7
C605	B-14	C2406	L-4	D2401	K-5	R508	K-8	R2311	G-6
C606	E-12	C2501	G-9	D2402	M-4	R510	K-8	R2404	J-5
C607	I-12	C2511	F-9	D2511	F-9	R511	L-9	R2507	L-7
C608	G-12	C2521	F-8	D2522	K-6	R512	I-10	R2514	H-8
C609	G-12	C2531	G-9	D2523	L-6	R513	C-14	R2516	I-8
C610	F-12	C2541	F-9	D2524	L-6	R602	B-14	R2526	L-7
C611	F-13	C2701	L-1	D2525	L-6	R603	A-15	R2533	G-8
C612	H-12	C2702	L-2	D2531	G-8	R604	E-12	R2534	H-7
C613	H-11	C2704	E-3	D2541	F-9	R605	I-11	R2536	I-8
C614	H-11	C2705	B-12	D2701	J-2	R621	J-7	R2537	I-8
C623	I-6	C2706	E-1	D2702	M-6	R622	I-6	R2543	F-9
C624	J-6	C2707	E-2	D2704	K-2	R651	M-15	R2544	G-9
C625	K-6	C2708	E-2	D2705	L-2	R652	M-15	R2702	K-1
C626	K-6	C2709	B-11	D2706	L-2	R653	N-14	R2703	K-1
C651	M-15	CF2001	C-7	D2712	E-2	R654	M-14	R2704	M-6
C652	N-15	D401	N-7	D2713	E-10	R701	M-18	R2707	K-2
C653	E-14	D402	M-7	D2714	E-2	R702	K-16	R2708	K-1
C701	M-18	D403	M-8	EA	L-2	R703	K-16	R2709	G-1
C702	L-16	D404	M-8	EB	J-2	R704	H-16	R2712	B-12
C703	N-17	D405	M-9	F701	L-19	R705	I-15	R2713	E-2
C704	M-16	D406	L-10	FB601	F-11	R706	I-16	R2714	A-7
C705	N-16	D407	L-10	FB701	G-17	R707	G-17	RMC2001	A-3
C706	N-17	D408	L-9	FB702	F-15	R708	E-17	RY701	I-17
C707	G-17	D501	C-14	FB2001	C-6	R709	G-14	S621	K-7
C708	G-17	D502	L-8	GA	M-6	R710	E-16	S2001	A-8
C709	F-16	D503	D-15	GB	K-6	R711	G-18	S2002	A-8
C710	F-15	D621	I-6	GC	H-6	R712	E-17	S2003	A-9
C711	G-15	D651	N-14	IC501	D-14	R713	F-17	S2004	A-10
C712	F-16	D652	N-14	IC701	F-17	R714	H-14	S2005	A-11
C713	G-18	D653	E-14	IC702	F-19	R715	I-14	S2006	A-12
C714	E-18	D654	J-8	IC751	I-1	R716	M-14	S2007	A-12
C715	E-17	D655	I-8	IC2001	D-6	R717	M-14	T601	E-13
C716	E-17	D701	L-16	IC2002	C-10	R718	N-10	T602	L-12
C717	M-13	D702	M-17	IC2201	C-2	R719	L-9	T701	I-18
C719	N-8	D703	M-17	IC2701	L-2	R751	C-19	TP301	M-1
C720	L-8	D704	M-17	IC2702	C-11	R753	D-17	TP651	N-13
C721	M-7	D705	H-16	IC651	F-14	R754	C-17	TP653	N-13
C751	C-18	D706	G-18	K	J-10	R758	C-15	TP654	J-8
C752	D-18	D707	F-17	L601	I-12	R759	H-1	TP655	J-8
C753	C-19	D708	F-16	L602	J-15	R2002	B-8	TP656	J-8
C754	B-18	D709	M-14	L701	K-18	R2003	C-8	TUNER	M-3
C755	A-19	D710	N-9	L2001	B-6	R2009	B-8	VA701	L-18
C756	C-17	D711	L-8	M	L-15	R2020	B-5		
C757	I-1	D751	D-18	MP2001	C-5	R2021	B-5		
C758	I-2	D752	B-18	P	N-18	R2024	A-8		
C2001	B-7	D753	B-18	P651	N-13	R2031	F-4		

PARTS LIST continued

CAPACITORS & ELECTROLYTICS		
Item No.	Rating	Mfr. Part No.
C503	1µF 10% 16V Tantalum	VCSATA1CE105K
C505	10pF NPO	-
# C607 Thru		
# C611	.0033 5% 1.6kV	VCFP3CA332J
# C701	.1 125VAC	RC-FZ008SGEZZ
	.1 125VAC	RC-QZ002SCEZZ
# C705	820µF 200V	RC-EZ0334CEZZ
# C706	.0033 250VAC	RC-KZ0030CEZZ
# C713	220µF 20% 160V	VCEAGW2CW227M
# C715	.01 5% 50V	VCQYTA1HM103J
# C859	4.7µF 20% 250V	VCEAGA2EW475M
C860	.0047 2kV	VCKYPB3DE472Z
C2405	22µF 10% 16V Tantalum	VCSATA1CE226K
C3003	10µF 20% 16V NP	VCE9GA1CW106M
C3004	.47µF 20% 50V NP	VCE9GA1HW474M
C3009	10µF 10% 16V Tantalum	VCSATA1CE106K
C3011	3.3µF 10% 16V Tantalum	VCSATA1CE335K
C3016, 17	10µF 20% 16V NP	VCE9GA1CW106M
C3201, 05	10µF 20% 16V NP	VCE9GA1CW106M
C4409	10µF 20% 16V NP	VCE9GA1CW106M
C4419	1µF 20% 50V NP	VCE9GA1HW105MJ
# C7001	330pF 2kV	-
MP2001	47pF X 4 Network	RMPTE0088CEZZ
# For SAFETY use only equivalent replacement part.		

CABINET PARTS	
Item	Mfr. Part No.
MODEL 27E-S50	
Button Assembly	JBTD-1018MEKA
Cabinet Front	GCABA1116MEKB
Cabinet Front Assembly	CCABA1116MES1
Cabinet Rear	GCABB1073MEKA
MODEL 27E-S100	
Button Assembly	JBTD-1031MEKA
Cabinet Front	GCABA1155MEKA
Cabinet Front Assembly	CCABA1155MES0
Cabinet Rear	GCABB1073MEKA
MODEL 27E-S120	
Button Assembly	JBTD-1031MEKA
Cabinet Front	GCABA1156MEKA
Cabinet Front Assembly	CCABA1156MES0
Cabinet Rear	GCABB1073MEKA

CONTROLS & RESISTORS			
Item No.	Function/Rating	Mfr. Part No.	NTE Part No.
# PR701	12.4 Cold PTC	RMPTP0026CEZZ	-
R201	10K RF AGC	RVR-B5328CEZZ	-
R301	2200 MTS	RVR-M4330CEZZ	-
# R410	10K 5% 1/2W	VRS-RG2HC103J	HW310
R505	47K Vertical Size	RVR-M4338CEZZ	-
R508	4700 Vertical Linearity	RVR-M4332CEZZ	-
# R511	.27 5% 1W	VRN-RL3ABR27J	1WD27
# R603	10 5% 3W	VRS-SV3LB100J	3W010
# R604	.27 5% 3W	VRN-RV3LBR27J	-
# R651	47K 5% 1/8W	VRD-RA2BE473J	EW347
# R652	68K 5% 1/8W	VRD-RA2BE683J	EW368
# R655	39K 5% 1/8W SMT	VRD-MN2BE393J	-
# R656	12K 5% 1/8W SMT	VRD-MN2BE123J	-
# R657, 58	10K 5% 1/8W SMT	VRD-MN2BE103J	-
# R701	2.7M 10% 1/2W	VRC-UA2HG275K	HW527
# R702	2.2 10% 10W Wirewound	VRW-KQ4AC2R2K	10W2D2
# R703	56 5% 3W	VRS-VV3LB560J	3W056
# R706	150 5% 1/2W	VRS-RG2HC151J	HW115
# R707, 09	330 10% 5W Wirewound	VRW-KQ3HC331K	5W133
# R711	1 5% 1/4W	VRN-GA2EB1R0J	QW1D0
# R714	3.3 10% 15W Wirewound	VRW-KQ41C3R3K	-
# R715	2.7 10% 15W Wirewound	VRW-KQ41C2R7K	-
# R717	1 5% 1W	VRN-RL3AB1R0J	1W1D0
# R718	1.5 5% 1W	VRN-RL3AB1R5J	1W1D5
# R719	.27 5% 2W	VRN-VV3DBR27J	1WD27
# R759	39 5% 2W	VRS-RG3DB390J	2W039
R857	10K Red Bias	RVR-B5198CEZZ	-
# R858	10K 5% 3W	VRS-VV3LB103J	3W310
R863	200 Green Drive	RVR-B5464CEZZ	-
R867	10K Green Bias	RVR-B5198CEZZ	-
# R868	10K 5% 3W	VRS-VV3LB103J	3W310
R873	200 Blue Drive	RVR-B5464CEZZ	-
R877	10K Blue Bias	RVR-B5198CEZZ	-
# R878	10K 5% 3W	VRS-VV3LB103J	3W310
# R884	2.7 5% 2W	VRN-VV3AB2R7J	2W2D7
# R885	.82 5% 1W	VRN-VV3ABR82J	1WD82
R2206	15K 1% 1/8W	-	-
# R2404	82 5% 3W	VRS-RG3LB820J	3W082
# R2406	33K 5% 3W	VRS-RG3LB333J	3W333
R2507	100K Sub Picture	RVR-M4340CEZZ	-
R2516	100K Sub Color	RVR-M4340CEZZ	-
R2526	100K Sub Brightness	RVR-M4340CEZZ	-
R2536	100K Sub Tint	RVR-M4340CEZZ	-
# R2704	33 5% 1W	VRS-RG3AB330J	1W033
# R2708	330 5% 1W	VRS-VV3AB331J	1W133
# R2709	56 5% 2W	VRS-VV3DB560J	2W056
R3004	4700 Separation	RVR-M4332CEZZ	-
R3006	43K 1% 1/8W	VRN-RA2BK433F	-
R3011	4700 Variable De-Emphasis	RVR-M4332CEZZ	-
R3015	2700 1% 1/8W	VRN-RA2BK272F	-
R3016	7500 1% 1/8W	VRN-RA2BK752F	-
R3022, 23	47K 1% 1/8W	VRN-RA2BK473F	-
R3024	22K Stereo Filter	RVR-M4336CEZZ	-
R3026	33K VCO	RVR-M4337CEZZ	-
# R7001	2.7M	-	-
# For SAFETY use only equivalent replacement part.			

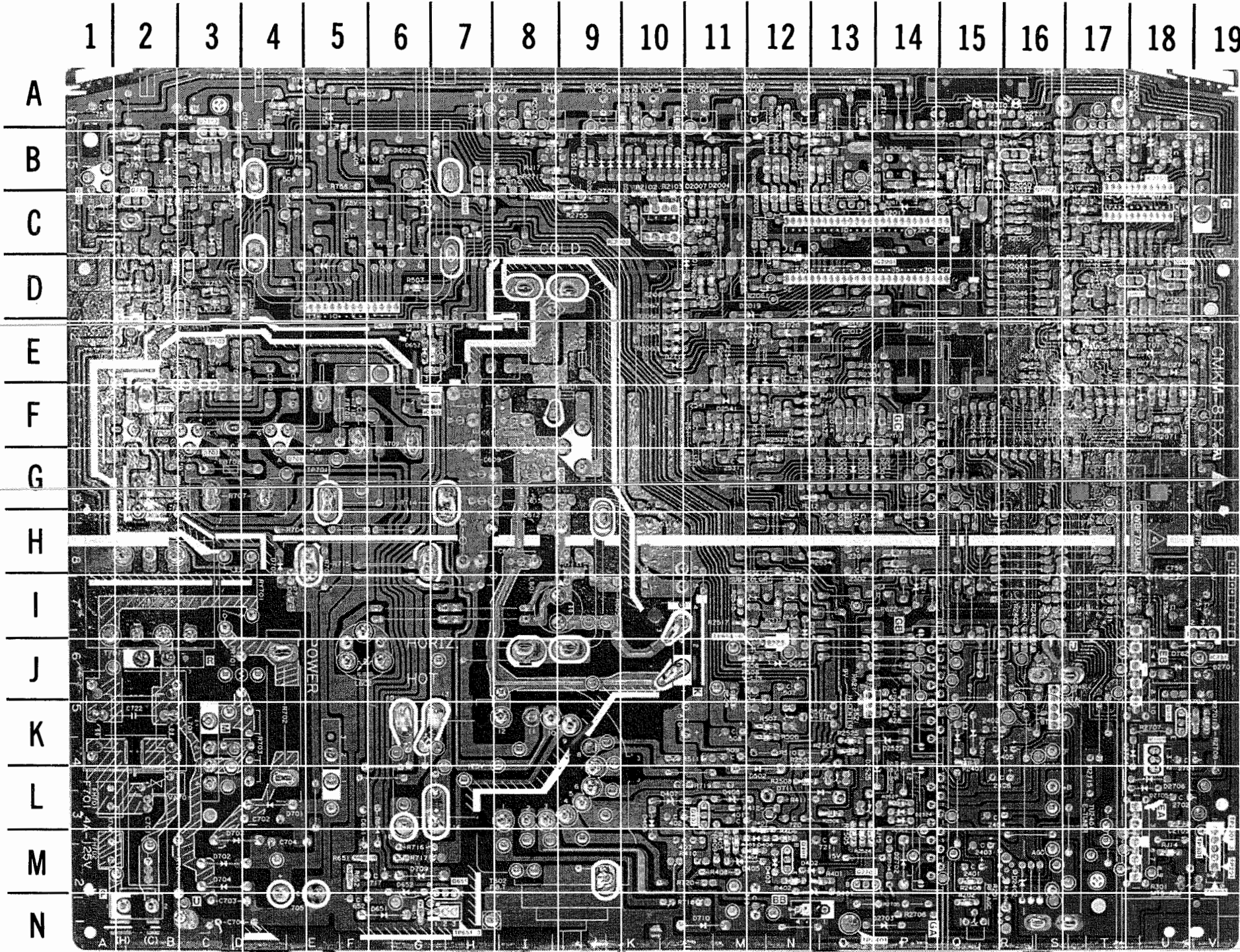
COILS & TRANSFORMERS		
Item No.	Function/Rating	Mfr. Part No.
# DY601 (1)	Yoke 90° Horiz 1.08mH Vert 14.25mH	RCILH0051MEZZ
# DY601 (2)	Yoke	RCILH0057MEZZ
FB601	Ferrite Bead	RBLN-0037CEZZ
FB701, 02	Ferrite Bead	RBLN-0037CEZZ
FB2001	Ferrite Bead	RBLN-0020CEZZ
L601	Horizontal Linearity	RCILZ0621CEZZ
L602	Horizontal Size	RCILZ0620CEZZ
# L701	Line Filter	RCILF0090CEZZ
# L702	Degaussing	RCILG0018MEZZ
L852, 54, 56	120µH	VP-MK121K0000
L2001	Sign Position	RCILB0085CEZZ
L4201	Trap, 47.25MHz	RCILi0559CEZZ
L4202, 03	.56µH	VP-RFR56K0000
L4204	IF	RCILi0576CEZZ
L4205	.56µH	VP-MKR56M0000
L4206	AFT	RCILi0547CEZZ
L4207	PIF	RCILi0546CEZZ
L4301	Sound	RCILi0374CEZZ
L4401	6.8µH	VP-MK6R8J0000
L4402, 03	10µH	VP-MK100K0000
L4404	3.9µH	VP-MK3R9K0000
L4407	47µH	VP-MK470K0000
L4801	10µH	VP-MK100K0000
# T601	Horizontal Driver	RTRNZ0168CEZZ
# T602 (3)	Horizontal Output	RTRNF0007MEZZ
# T701	Power	RTRNP0416CEZZ
# T2701	Power	RTRNP0416CEZZ
# For SAFETY use only equivalent replacement part.		
(1) Used With CRT VB68AFW01X/*S and VB68AFW02X/Z*S.		
(2) Used With CRT VB68KRQ80X/*S and VB68KRQ88X/*S.		
(3) Focus and screen controls are part of T602.		

MISCELLANEOUS			
Item No.	Description	Mfr. Part No.	Notes
CF2001	Filter	RFILA0077CEZZ	12MHz
CF4401	Filter, Sound Take Off	RFILC0001AJZZ	4.5MHz
CF4402	Filter	RFILC0267CEZZ	4.5MHz
CF4403	Trap	RFILC0002AJZZ	4.5MHz
CF4601	Crystal	RFILA0059CEZZ	503kHz
DL4401	Comb Filter	RCILZ0742CEZZ	-
DL4402	Delay Line	RCILZ0750CEZZ	-
# F701	Fuse	QFS-B4023CEZZ	4Amp, 125VAC, Slow Blow
	Fuse	QFS-B4021GEZZ	4Amp, 125VAC, Slow Blow
FH701	Fuse Holder	QFSDH1009CEZZ	-
FH702	Fuse Holder	QFSDH1010CEZZ	-
J3601	Jack	OTANJ0314CEZZ	Left Mono Audio In, Right
J3601	Jack	QTANJ0518CEZZ	Audio In, Video In.
J3601	Jack	QTANJ0518CEZZ	Left Mono Audio In, Right
J3601	Jack	QTANJ0518CEZZ	Audio In, Video In, Line
J3601	Jack	QTANJ0518CEZZ	Out Left, Line Out Right,
J3601	Jack	QTANJ0518CEZZ	Models 27E-S100/120.
# P703	Line Cord	QACCD3024CESA	AC, Polarized
RMC2001	Receiver	RRMCU0208CEZZ	Remote
# RY701	Relay	RRLYU0028CEZZ	Power
S621	Switch	QSW-B0015CEZZ	Horizontal Centering
S851	Switch	QSW-B0015CEZZ	Cutoff
S2001	Switch	QSW-K0090CEZZ	Power
S2002	Switch	QSW-K0090CEZZ	Channel Up
S2003	Switch	QSW-K0090CEZZ	Channel Down
S2004	Switch	QSW-K0090CEZZ	Volume Up
S2005	Switch	QSW-K0090CEZZ	Volume Down
S2006	Switch	QSW-K0090CEZZ	Setup
S2007	Switch	QSW-K0090CEZZ	Language
SC851	Socket	QSOCV0916CEZZ	CRT
SF4201	Filter	RFILC0236CEZZ	SAW
SP1, SP2	Speaker	VSP1206PB21YR	2.5" X 5", 32 Ohm, 2W
# TU2401	Tuner (1)	VTUVTSS6USFF/	UHF/VHF
# V101	CRT	VB68AFW01X/*S	Model 27E-S50
# V101	CRT	VB68KRQ80X/*S	Model 27E-S50
# V101	CRT	VB68AFW02X/Z*S	Models 27E-S100/120
# V101	CRT	VB68KRQ88X/*S	Models 27E-S100/120
X4801	Crystal	RCRSB0001PEZZ	3.58MHz
X4801	Magnet	PMAGF3001MEZZ	Purity & Convergence
	PC Board (1)	DUNTK7938WEK3	Assembly
	PC Board (1)	DUNTK7938WEK4	A, Model 27E-S50
	PC Board (1)	DUNTK7102WEL7	A, Models 27E-S100/120
	PC Board (1)	DUNTK7940WEK3	C
	PC Board (1)	DUNTK7940WEK3	E, Model 27E-S50
	PC Board (1)	DUNTK7949WEK4	E, Models 27E-S100/120
	PC Board (1)	DUNTK7939WEK3	G
	Remote Transmitter	RRMCG0962CESA	Model 27E-S50
	Remote Transmitter	RRMCG0948CESA	Models 27E-S100/120
	Wedges	PSPAG0012MEZZ	Yoke Positioning
# For SAFETY use only equivalent replacement part.			
(1) Contact PTS Electronics Corporation for replacement; order by manufacturer's part number.			

SHARP

MODELS 27E-S50, 27E-S100, 27E-S120

A BOARD - BOTTOM VIEW



A BOARD - BOTTOM VIEW, GRIDTRACE LOCATION GUIDE

C654	I-12	R506	K-12	R2023	A-12	R2070	D-11	R2505	M-13
C759	I-18	R507	K-12	R2025	A-10	R2071	F-18	R2506	L-13
C2005	F-17	R509	J-11	R2026	A-10	R2101	C-11	R2508	L-12
C2015	E-13	R601	B-8	R2027	A-10	R2102	B-10	R2511	F-12
C2016	E-13	R655	E-7	R2028	I-8	R2103	B-10	R2513	F-11
C2017	E-13	R656	E-6	R2029	E-16	R2104	C-11	R2515	I-11
C2018	D-13	R657	E-7	R2030	F-18	R2105	C-11	R2517	I-11
C2019	D-13	R658	J-12	R2033	E-16	R2106	C-10	R2521	E-12
C2025	A-4	R755	D-3	R2034	C-16	R2204	C-17	R2523	E-12
C2206	B-16	R756	D-3	R2035	C-16	R2205	C-17	R2524	M-13
C2208	B-18	R757	C-3	R2036	C-16	R2207	B-17	R2525	K-13
C2209	B-19	R2001	C-12	R2037	C-16	R2208	B-17	R2527	L-14
C2703	L-18	R2004	B-12	R2040	F-18	R2211	B-19	R2531	F-12
R201	N-5	R2005	C-12	R2041	F-18	R2212	C-17	R2535	I-12
R202	N-15	R2006	B-12	R2042	A-4	R2213	C-17	R2541	E-11
R401	M-13	R2007	C-12	R2043	B-8	R2312	H-14	R2542	E-11
R402	M-12	R2010	B-13	R2053	C-12	R2401	J-16	R2701	K-19
R403	M-12	R2011	C-12	R2060	D-11	R2402	J-16	R2751	D-3
R404	M-11	R2012	B-13	R2061	D-12	R2403	J-16	R2752	D-3
R405	M-11	R2013	C-13	R2062	D-11	R2406	N-4	R2755	C-9
R406	M-12	R2014	B-13	R2063	E-10	R2407	K-15		
R407	M-12	R2015	C-13	R2064	E-10	R2408	M-15		
R501	C-6	R2016	B-13	R2065	E-10	R2501	F-12		
R502	C-6	R2017	C-14	R2066	D-10	R2502	F-12		
R503	D-6	R2018	B-14	R2067	D-10	R2503	F-11		
R504	C-4	R2022	A-13	R2069	D-11	R2504	K-13		

SHARP

MODELS 27E-S50, 27E-S100, 27E-S120

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PARTS LIST

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.

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.

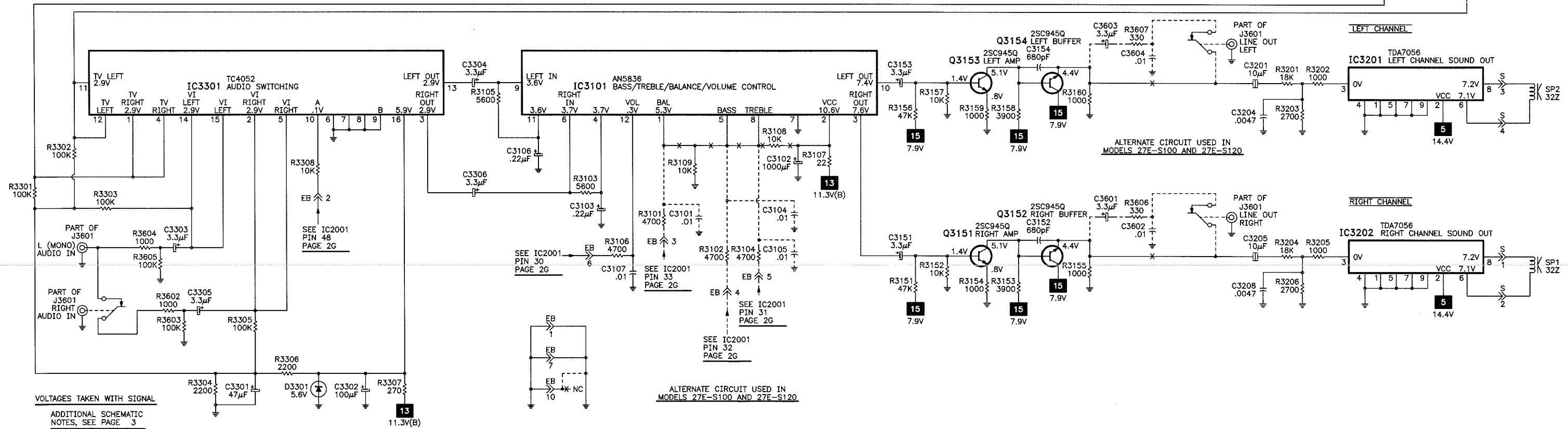
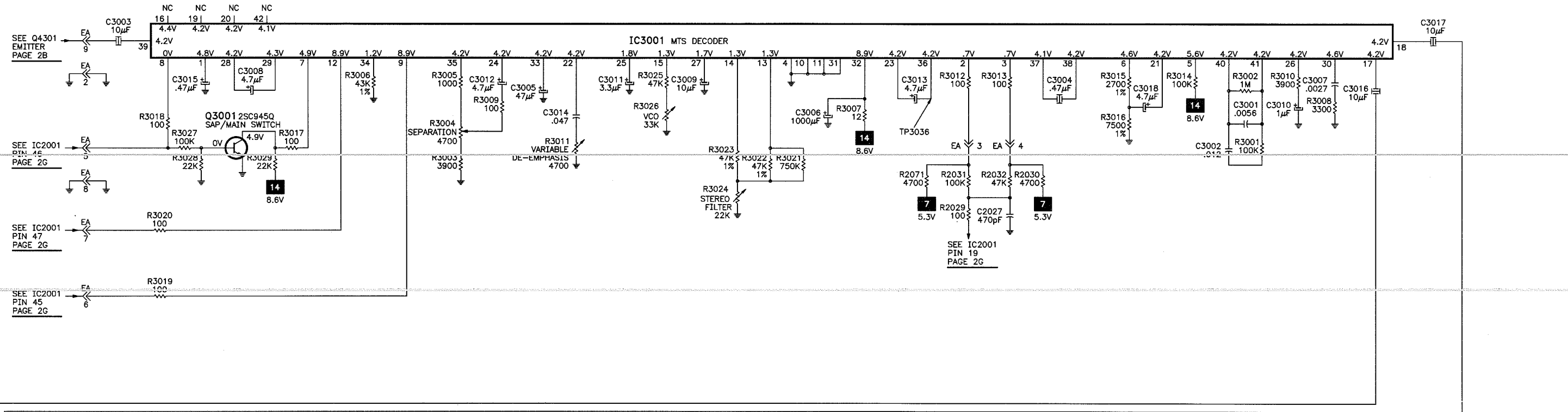
Participating Vendors

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)

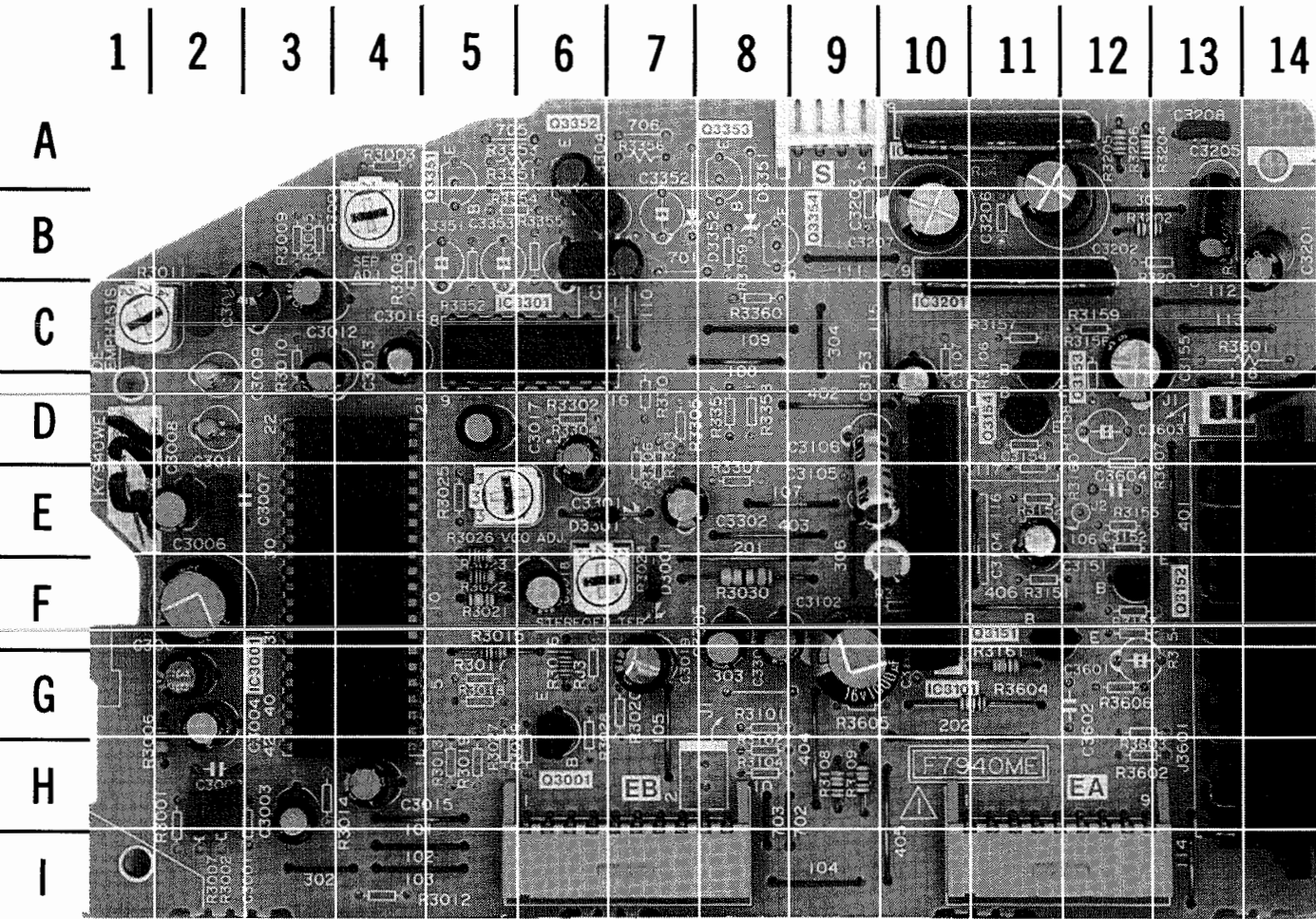
SEMICONDUCTORS					
(Select the replacement that gives the best results.)					
Item No.	Type No.	Mfr. Part No.	NTE Part No.	ECG Part No.	TCE Part No.
D401	-	RH-EX0145CEZZ	-	-	-
D402, 03, 04	1SS119 1N4148	VHD1SS119/-1 RH-DX0045GEZZ	NTE519 NTE519	ECG519 ECG519	SK3100 SK3100
D405	-	RH-EX0103CEZZ	NTE5011A	ECG5011A	SK5A6
D406	1SS119 1N4148	VHD1SS119/-1 RH-DX0045GEZZ	NTE519 NTE519	ECG519 ECG519	SK3100 SK3100
D407, 08	-	RH-EX0217CEZZ	NTE5023A	ECG5023A	SK14A
D501	-	RH-EX0021TAZZ	NTE5020A	ECG5020A	SK11A
# D502	-	RH-DX0302CEZZ	-	-	-
D503	S5277G	RH-DX0110CEZZ	NTE116	ECG116	SK3312
D621	-	RH-EX0193CEZZ	NTE5020A	ECG5020A	SK11A
D651	EU-1	RH-DX0131CEZZ	NTE552	ECG552	SK9000
D652	-	RH-EX0131CEZZ	NTE5010A	ECG5010A	SK5A1
# D653	1SS119 1N4148	VHD1SS119/-1 RH-DX0045GEZZ	NTE519 NTE519	ECG519 ECG519	SK3100 SK3100
# D654	-	RH-EX0419GEZZ	-	-	-
# D655	1SS119 1N4148	VHD1SS119/-1 RH-DX0045GEZZ	NTE519 NTE519	ECG519 ECG519	SK3100 SK3100
# D701, 02, 03, 04	1S1887A	RH-DX0154CEZZ	NTE552	ECG552	SK9000
D705	1SS119 1N4148	VHD1SS119/-1 RH-DX0045GEZZ	NTE519 NTE519	ECG519 ECG519	SK3100 SK3100
# D706	-	RH-EX0238CEZZ	-	-	-
# D707, 08	S6785G	VHSS6785GLB1E	-	-	-
# D709, 10	EU-1	RH-DX0131CEZZ	NTE552	ECG552	SK9000
# D711	-	RH-DX0229CEZZ	NTE506	ECG506	SK3925
# D751	1D4B42	RH-DX0200CEZZ	NTE5332	ECG5332	SK9232
D752	-	RH-EX0002AEZZ	NTE5021T1	ECG5021T1	-
D753, 54, 55	1SS119 1N4148	VHD1SS119/-1 RH-DX0045GEZZ	NTE519 NTE519	ECG519 ECG519	SK3100 SK3100
D757, 58, 59	1SS119 1N4148	VHD1SS119/-1 RH-DX0045GEZZ	NTE519 NTE519	ECG519 ECG519	SK3100 SK3100
D760, 61	S5277G	RH-DX0110CEZZ	NTE116	ECG116	SK3312
D762, 63	1SS119 1N4148	VHD1SS119/-1 RH-DX0045GEZZ	NTE519 NTE519	ECG519 ECG519	SK3100 SK3100
D2001, 04, 05	1SS119 1N4148	VHD1SS119/-1 RH-DX0045GEZZ	NTE519 NTE519	ECG519 ECG519	SK3100 SK3100
D2008, 11, 16	1SS119 1N4148	VHD1SS119/-1 RH-DX0045GEZZ	NTE519 NTE519	ECG519 ECG519	SK3100 SK3100
D2017, 18	-	RH-EX0138CEZZ	NTE5014A	ECG5014A	SK6A8
D2020	1SS119 1N4148	VHD1SS119/-1 RH-DX0045GEZZ	NTE519 NTE519	ECG519 ECG519	SK3100 SK3100
D2021	-	RH-EX0043TAZZ	NTE5010A	ECG5010A	SK5A1
D2101	1SS119 1N4148	VHD1SS119/-1 RH-DX0045GEZZ	NTE519 NTE519	ECG519 ECG519	SK3100 SK3100
D2201	-	RH-EX0131CEZZ	NTE5010A	ECG5010A	SK5A1
D2301, 02, 03, 04	1SS119 1N4148	VHD1SS119/-1 RH-DX0045GEZZ	NTE519 NTE519	ECG519 ECG519	SK3100 SK3100
D2401	-	RH-EX0131CEZZ	NTE5010A	ECG5010A	SK5A1
D2402	-	RH-EX0198GEZZ	-	-	-
D2511	1SS119 1N4148	VHD1SS119/-1 RH-DX0045GEZZ	NTE519 NTE519	ECG519 ECG519	SK3100 SK3100
D2522	-	RH-EX0092CEZZ	NTE5006A	ECG5006A	SK3A6
D2523, 24	1SS119 1N4148	VHD1SS119/-1 RH-DX0045GEZZ	NTE519 NTE519	ECG519 ECG519	SK3100 SK3100
D2525	-	RH-EX0092CEZZ	NTE5006A	ECG5006A	SK3A6
D2531, 41, 71	1SS119 1N4148	VHD1SS119/-1 RH-DX0045GEZZ	NTE519 NTE519	ECG519 ECG519	SK3100 SK3100
D2701, 02	S5277G	RH-DX0110CEZZ	-	-	-
D2704, 05, 06	1SS119 1N4148	VHD1SS119/-1 RH-DX0045GEZZ	NTE519 NTE519	ECG519 ECG519	SK3100 SK3100
D2711	-	RH-PX0265CEZZ	-	-	-
D2712	-	RH-EX0103CEZZ	NTE5011A	ECG5011A	SK5A6
D2713, 14	1SS119 1N4148	VHD1SS119/-1 RH-DX0045GEZZ	NTE519 NTE519	ECG519 ECG519	SK3100 SK3100
# For SAFETY use only equivalent replacement part.					

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.
D2751	-	-	-	-	-
D3001	-	RH-EX0041TAZZ	NTE5014A	ECG5014A	SK6A8
D3301	-	RH-EX0103CEZZ	NTE5011A	ECG5011A	SK5A6
D4491	1SS119	VHD1SS119/-1	NTE519	ECG519	SK3100
D4492	-	RH-EX0161CEZZ	NTE5015A	ECG5015A	SK7A5
D4493	1SS119	VHD1SS119/-1	NTE519	ECG519	SK3100
D4601	1SS119	VHD1SS119/-1	NTE519	ECG519	SK3100
D4602	-	RH-EX0116GEZZ	NTE5014A	ECG5014A	SK6A8
# IC501	LA7838	VHILA7838/-1	NTE7039	ECG7039	-
# IC651	PC817	RH-FX0007CEZZ	NTE3098	ECG3098	SK9763
# IC701	T8150	RH-IX0758CEZZ	-	-	-
# IC702	T8889A	VHIT8889A/-1	-	-	-
# IC751	TA7809S	VHITA7809S/-1	-	-	-
IC2001	-	RH-IX2157CEN1	-	-	-
-	-	RH-IX2157CEN2	-	-	-
-	-	RH-IX2157CEN3	-	-	-
IC2002	LE93CS56S1	RH-IX2281CEZZ	-	-	-
IC2201	LA7945	VHILA7945/-1	-	-	-
# IC2701	TA7812S	VHITA7812S/-1	-	-	-
IC2702	PST529C-2	VHIST529C-2	-	-	-
IC3001	-	RH-IX1535CEZZ	-	-	-
IC3101	AN5836	VHIAN5836/-1	NTE1780	ECG1780	SK9731
IC3201, 02	TDA7056	VHITDA7056/-1	NTE7052	ECG7052	-
IC3301	TC4052	VHITC4052BP-1	NTE4052B	ECG4052B	SK4052B
# IC4201	LA7670	RH-IX2169CENA	NTE7054	ECG7054	-
Q401	2SA1015Y	VS2SA1015Y/1E	NTE290A	ECG290A	SK9132
Q402	2SC945AQ	VS2SC945AQ/-1	NTE85	ECG85	SK3124A
-	2SC1815Y	VS2SC1815YW-1	NTE85	ECG85	SK3124A
Q601	2SC2655Y	VS2SC2655Y/-1	NTE293	ECG293	SK3849
# Q602	2SD2125	VS2SD2125/1E	NTE2331	ECG2331	SK10088
Q651	2SC1815Y	VS2SC1815YW-1	NTE85	ECG85	SK3124A
Q751	2SC1983	VS2SC1983/-2	NTE56	ECG56	SK3929
Q752	2SA1013	VS2SA1013/1E	NTE32	ECG32	SK3867A
Q753	2SC945AQ	VS2SC945AQ/-1	NTE85	ECG85	SK3124A
-	2SC1815Y	VS2SC1815YW-1	NTE85	ECG85	SK3124A
Q851	2SC4544	VS2SC4544LB2E	NTE376%	ECG376%	SK9362A%
Q852	2SC945AQ	VS2SC945AQ/-1	NTE85	ECG85	SK3124A
Q853	2SC4544	VS2SC4544LB2E	NTE376%	ECG376%	SK9362A%
Q854	2SC945AQ	VS2SC945AQ/-1	NTE85	ECG85	SK3124A
Q855	2SC4544	VS2SC4544LB2E	NTE376%	ECG376%	SK9362A%
Q856	2SC945AQ	VS2SC945AQ/-1	NTE85	ECG85	SK3124A
Q2002	2SC945AQ	VS2SC945AQ/-1	NTE85	ECG85	SK3124A
-	2SC1815Y	VS2SC1815YW-1	NTE85	ECG85	SK3124A
Q2701	2SA1013	VS2SA1013/1E	NTE32	ECG32	SK3867A
Q2751	2SC945AP	VS2SC945AP/-1	NTE85	ECG85	SK3124A
-	2SC1815GR	VS2SC1815GW-1	NTE85	ECG85	SK3124A
Q2752	2SC945AQ	VS2SC945AQ/-1	NTE85	ECG85	SK3124A
-	2SC1815Y	VS2SC1815YW-1	NTE85	ECG85	SK3124A
Q3001	2SC945AQ	VS2SC945AQ/-1	NTE85	ECG85	SK3124A
-	2SC1815Y	VS2SC1815YW-1	NTE85	ECG85	SK3124A
Q3151, 52, 53, 54	2SC945AQ	VS2SC945AQ/-1	NTE85	ECG85	SK3124A
-	2SC1815Y	VS2SC1815YW-1	NTE85	ECG85	SK3124A
Q4201	2SC2735	VS2SC2735/1E	NTE2402	ECG2402	SK10095
Q4202	2SC2462	VS2SC2462-C-1	NTE2408	ECG2408	SK10099
Q4301	2SC2462	VS2SC2462-C-1	NTE2408	ECG2408	SK10099
Q4401 Thru Q4409	2SC2462	VS2SC2462-C-1	NTE2408	ECG2408	SK10099
Q4491	2SA562TO	VS2SA562TO/-1	NTE20A	ECG290A	SK3114A
-	2SA854Q	VS2SA854-Q/1E	NTE290A	ECG290A	SK3841
Q4492	2SC2462	VS2SC2462-C-1	NTE2408	ECG2408	SK10099
Q4601	2SC2462	VS2SC2462-C-1	NTE2408	ECG2408	SK10099
Q4801	2SC2462	VS2SC2462-C-1	NTE2408	ECG2408	SK10099
# VA701	-	RH-VX0035CEZZ	-	-	-
# For SAFETY use only equivalent replacement part.					
% Use Insulating hardware supplied with replacement.					



A PHOTOFACT STANDARD NOTATION SCHEMATIC
WITH **CIRCUITRACE®**
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E BOARD - TOP VIEW



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E BOARD - BOTTOM VIEW



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E BOARD - TOP VIEW, GRIDTRACE LOCATION GUIDE

C3002	H-2	C3014	C-2	C3201	B-14	D3001	F-7	Q3151	F-11	R3024	F-6
C3003	H-3	C3015	H-4	C3202	B-11	D3301	E-6	Q3152	F-12	R3026	E-5
C3004	G-2	C3016	C-4	C3204	B-13	EA	I-11	Q3153	C-11	R3030	F-8
C3005	G-2	C3017	D-5	C3205	B-13	EB	I-6	Q3154	D-11	R3108	H-9
C3006	F-2	C3018	F-6	C3207	B-10	IC3001	G-4	R3004	B-4	R3109	H-9
C3007	E-2	C3019	G-7	C3208	A-31	IC3101	F-10	R3006	H-2	R3161	G-11
C3008	E-2	C3102	G-9	C3301	D-6	IC3201	B-11	R3011	C-1	R3202	B-12
C3009	C-2	C3103	F-10	C3302	E-7	IC3202	A-11	R3015	G-5	R3204	A-12
C3010	C-3	C3106	E-10	C3303	G-8	IC3301	C-6	R3016	G-6	R3205	A-12
C3011	C-2	C3151	E-11	C3304	A-6	J1	D-13	R3021	F-5	R3206	A-12
C3012	C-4	C3153	D-10	C3305	G-8	J3601	F-14	R3022	F-5	R3604	G-11
C3013	D-4	C3155	C-12	C3306	B-6	Q3001	H-6	R3023	F-5	S	A-9

E BOARD - BOTTOM VIEW, GRIDTRACE LOCATION GUIDE

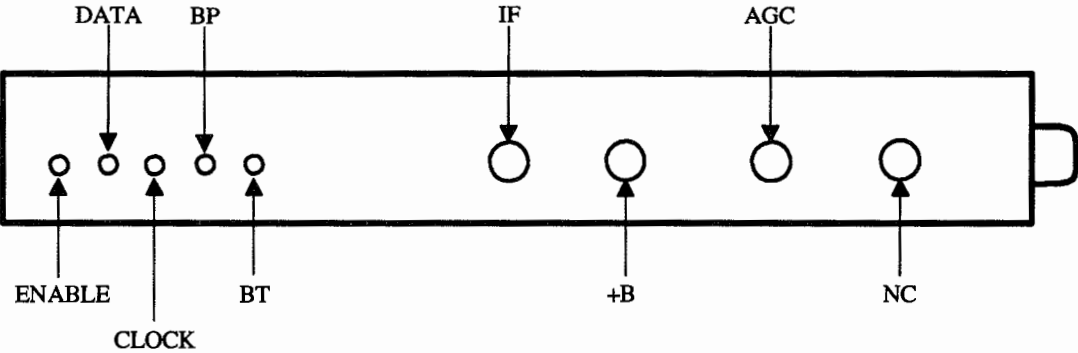
C3001	H-13	R3008	E-13	R3027	H-10	R3155	E-3	R3304	D-9
C3107	C-5	R3009	B-12	R3028	G-9	R3156	C-3	R3305	D-8
C3152	E-3	R3010	C-12	R3029	H-9	R3157	C-4	R3306	E-8
C3154	E-4	R3012	I-11	R3103	F-5	R3158	D-4	R3307	E-7
C3203	B-6	R3013	H-10	R3105	D-5	R3159	C-3	R3308	B-11
C3206	B-4	R3014	H-12	R3106	D-5	R3160	E-4	R3602	H-3
R3001	H-13	R3017	G-10	R3107	F-5	R3201	B-2	R3603	G-3
R3002	H-13	R3018	G-10	R3151	F-4	R3203	B-3	R3605	G-6
R3003	A-11	R3019	H-10	R3152	E-4	R3301	D-8		
R3005	B-12	R3020	G-8	R3153	F-3	R3302	D-9		
R3007	H-13	R3025	E-10	R3154	F-3	R3303	E-8		

TUNER INFORMATION

TUNER VOLTAGE CHART

Pin	VHF Low Band	VHF High Band	UHF Band	Pin	VHF Low Band	VHF High Band	UHF Band
NC	1.7V	3.9V	5.8V	DATA	4.9V	4.9V	4.9V
AGC	5.2V	6.8V	7.1V	ENABLE	0.3V	0.3V	0.3V
+B	8.6V	8.6V	8.6V	NOTE: VHF Low Band voltages taken on channel 2. VHF High Band voltages taken on channel 7. UHF Band voltages taken on channel 14.			
BT	32.6V	32.6V	32.6V				
BP	5.0V	5.0V	5.0V				
CLOCK	4.9V	4.9V	4.9V				

TUNER TERMINAL GUIDE



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

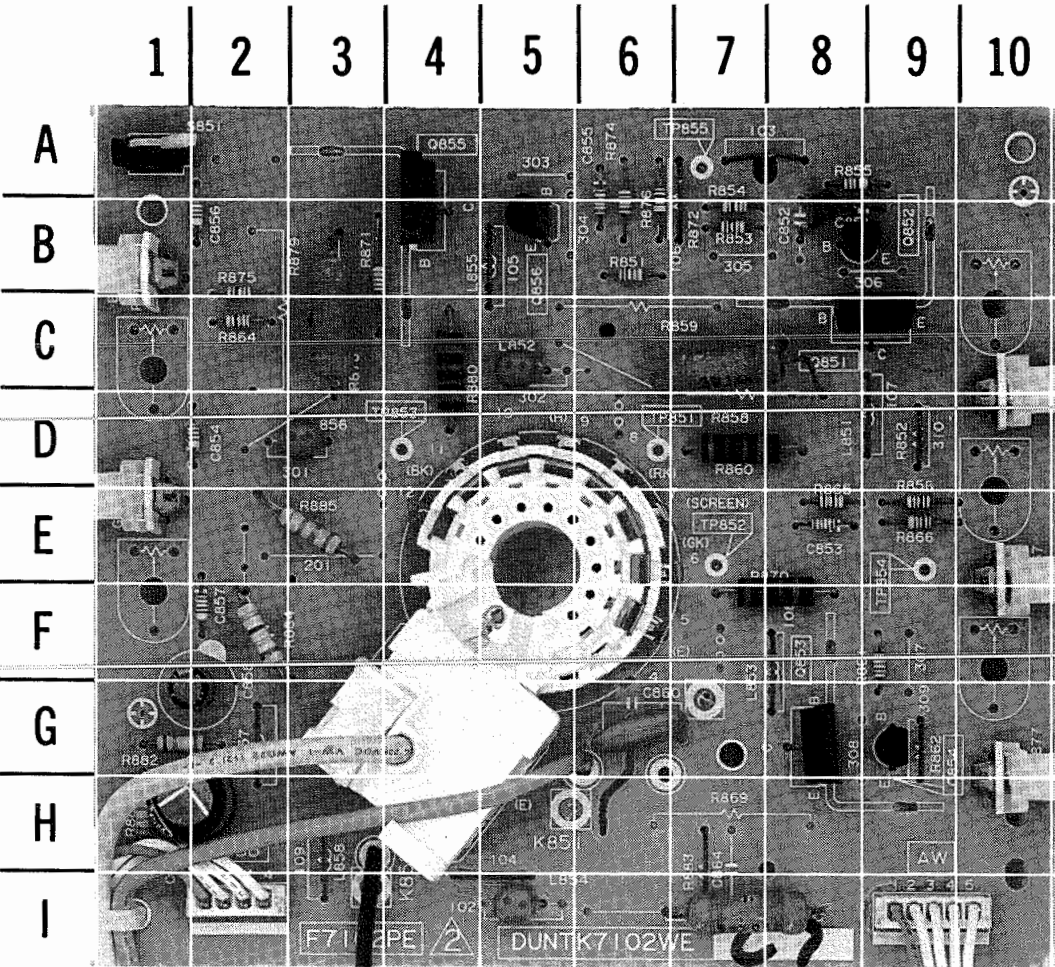
△ Taken from common tie point

3 Schematic **CIRCUITRACE**®: 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.

C BOARD

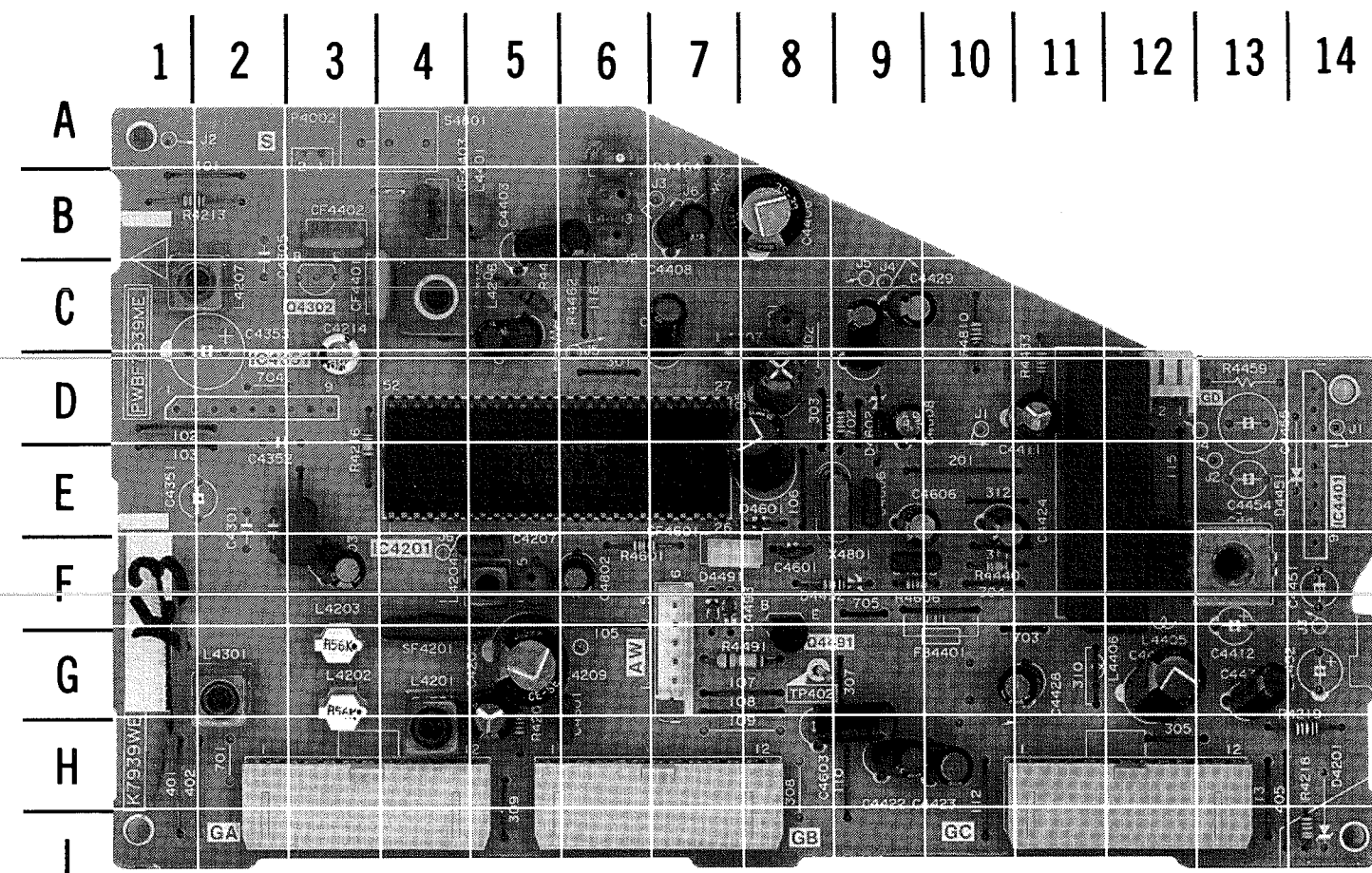


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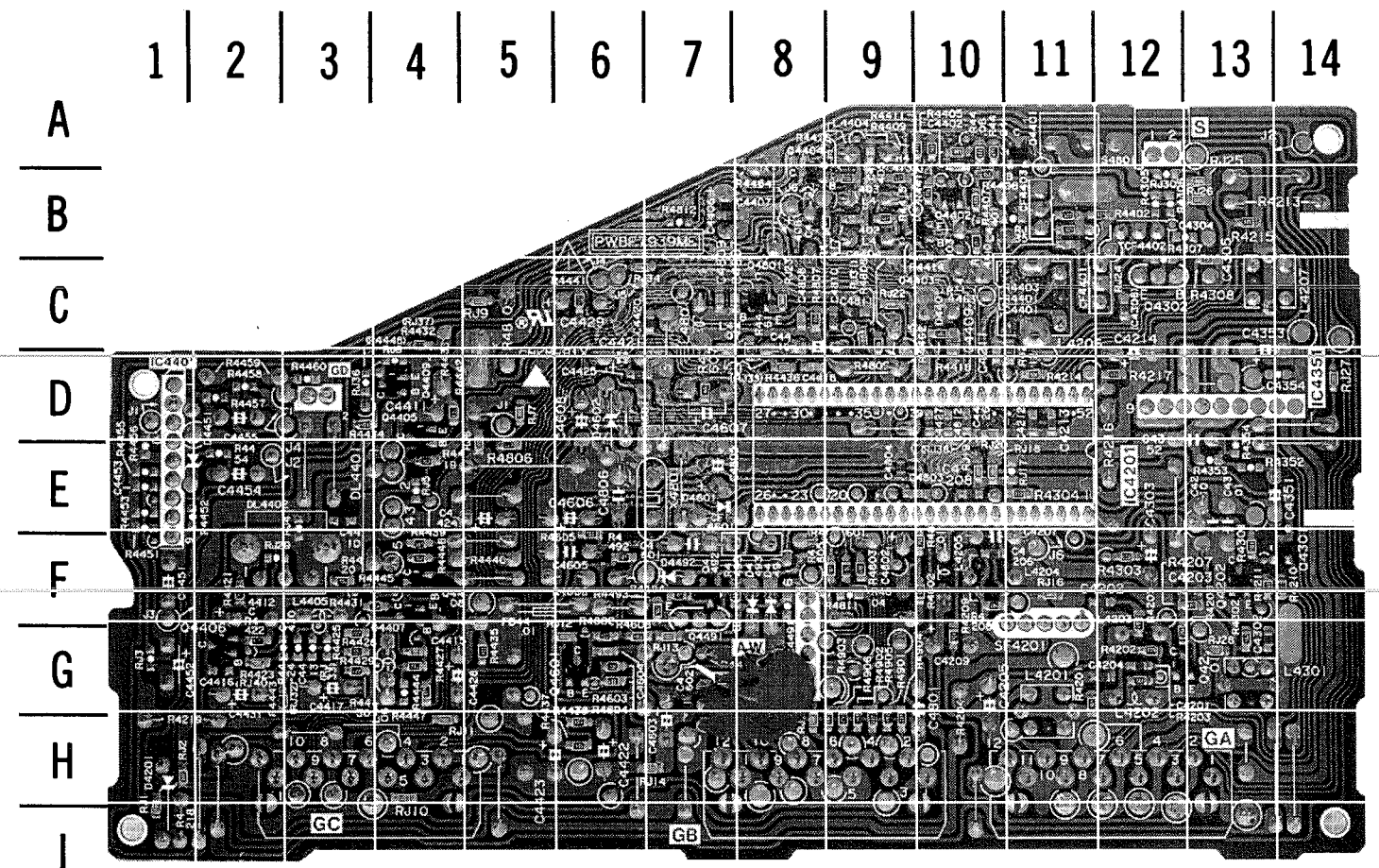
C BOARD, GRIDTRACE LOCATION GUIDE

AW	I-9	L852	C-5	R856	E-9	R873	B-1
BB	I-2	L854	I-5	R857	C-10	R874	B-6
C851	B-9	L856	D-3	R858	C-7	R875	B-2
C852	B-8	Q851	C-9	R860	D-7	R876	B-6
C853	E-8	Q852	B-9	R861	F-9	R877	G-10
C854	D-2	Q853	G-8	R863	E-1	R878	C-3
C855	B-6	Q854	G-9	R864	C-2	R880	C-4
C856	B-2	Q855	A-4	R865	E-8	R881	H-1
C857	F-2	Q856	B-5	R866	E-9	R882	G-1
C858	G-2	R851	B-6	R867	E-10	R884	F-2
C859	H-1	R853	B-7	R868	I-7	R885	E-3
C860	G-6	R854	B-7	R870	F-7	S851	A-1
K852	H-3	R855	A-8	R871	B-3		

G BOARD - TOP VIEW



G BOARD - BOTTOM VIEW



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G BOARD - TOP VIEW, GRIDTRACE LOCATION GUIDE

AW	G-7	C4419	C-7	C4608	D-9	DL4401	F-12	L4207	C-2	R4219	H-14
C4205	H-5	C4421	C-9	C4801	H-6	DL4402	F-13	L4301	G-2	R4433	D-11
C4207	F-5	C4422	H-9	C4802	F-6	GA	I-2	L4401	B-5	R4440	F-10
C4209	G-5	C4423	H-10	C4805	E-8	GB	I-5	L4402	B-6	R4463	C-5
C4210	E-3	C4424	F-10	C4806	E-9	GC	I-11	L4403	B-6	R4491	G-7
C4214	D-3	C4428	G-11	CF4401	C-4	GD	D-12	L4404	A-6	R4496	F-9
C4303	F-3	C4429	C-9	CF4402	B-3	IC4201	E-4	L4407	D-7	R4501	D-9
C4403	B-5	C4431	G-13	CF4403	B-4	L4201	H-4	L4801	D-8	R4601	F-6
C4406	B-8	C4601	F-8	CF4601	F-7	L4202	H-3	Q4491	G-8	R4606	F-9
C4408	B-7	C4603	H-9	D4491	F-7	L4203	H-3	R4204	H-5	R4810	C-10
C4409	C-5	C4605	F-9	D4493	F-7	L4204	F-5	R4213	B-2	SF4201	G-4
C4411	D-11	C4606	E-10	D4601	E-8	L4205	F-5	R4216	E-3	X4801	E-9
C4417	G-12	C4607	D-8	D4602	D-9	L4206	C-4	R4218	I-14		

G BOARD - BOTTOM VIEW, GRIDTRACE LOCATION GUIDE

C4201	G-12	C4427	D-10	Q4409	D-4	R4401	B-11	R4428	G-3	R4604	G-6
C4202	F-12	C4499	G-8	Q4492	F-7	R4402	B-12	R4429	G-3	R4605	F-6
C4203	F-13	C4602	G-7	Q4601	G-6	R4403	B-11	R4430	G-3	R4607	D-7
C4204	G-12	C4604	G-6	Q4801	C-8	R4404	A-10	R4431	F-4	R4608	G-6
C4206	F-10	C4803	E-9	R4201	G-11	R4405	A-10	R4432	C-4	R4801	F-10
C4208	E-10	C4804	E-9	R4202	G-12	R4406	A-10	R4434	D-3	R4802	F-10
C4211	D-11	C4807	C-7	R4203	G-12	R4407	B-10	R4435	G-5	R4803	F-9
C4212	D-11	C4808	C-8	R4205	G-12	R4408	B-10	R4437	H-6	R4804	F-9
C4213	D-11	C4809	C-7	R4206	G-12	R4409	A-10	R4438	H-6	R4805	F-9
C4302	G-13	C4810	C-9	R4207	F-13	R4410	B-10	R4439	F-4	R4806	E-5
C4306	C-12	C4811	C-9	R4208	F-10	R4411	A-10	R4441	C-6	R4807	C-8
C4401	B-11	C4812	D-10	R4209	G-10	R4412	B-10	R4442	D-4	R4809	C-9
C4402	B-10	Q4201	G-12	R4210	F-14	R4413	B-9	R4443	G-2	R4901	H-9
C4404	B-9	Q4202	B-10	R4211	F-13	R4414	B-10	R4444	G-4	R4902	H-9
C4405	A-9	Q4301	F-14	R4212	D-11	R4415	B-9	R4445	F-4	R4903	H-9
C4407	B-7	Q4401	A-11	R4214	D-11	R4416	B-9	R4446	F-4	R4904	H-9
C4410	E-3	Q4402	F-13	R4215	B-13	R4417	B-9	R4461	D-8	R4905	H-9
C4415	G-4	Q4403	B-10	R4217	D-12	R4418	C-10	R4492	F-6	R4906	H-9
C4416	G-2	Q4404	B-8	R4301	F-13	R4419	E-4	R4493	F-7		
C4418	D-8	Q4405	D-4	R4302	G-13	R4420	F-3	R4494	F-7		
C4420	C-7	Q4406	G-2	R4303	F-12	R4421	F-2	R4495	F-8		
C4425	D-6	Q4407	F-4	R4304	E-11	R4422	G-2	R4602	G-6		
C4426	D-10	Q4408	F-4	R4308	C-13	R4427	G-4	R4603	G-6		