

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 ground and CRT anode lead. DO NOT lift the CRT by the neck. Always wear shatterproof goggles when handling the CRT to protect eyes in case of implosion.

X-RAY RADIATION AND HIGH VOLTAGE LIMITS

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

GENERAL GUIDELINES

Perform a final SAFETY CHECK before returning receiver to customer. Check repaired area for poorly soldered connections, and check entire circuit board for solder splashes. Check 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.

HIGH VOLTAGE SHUTDOWN TEST

Apply 120VAC, turn the receiver on, and set all customer controls for normal operation. Measure the voltage at TP7. Voltage should measure between 16.5V and 21.0V. If voltage exceeds this range the circuit must be repaired. Momentarily connect a jumper between TP7 and the cathode of D421. The receiver should lose raster and sound. If receiver does not lose raster and sound, the shutdown circuit should be repaired. To resume normal operation, remove AC power for 30 seconds and then restore AC power.

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

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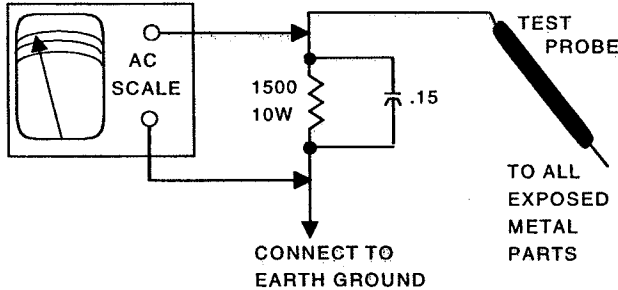
SAFETY CHECKS — FIRE AND SHOCK HAZARD

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.



4526



SET 4526

MODEL DS27510 (CHASSIS 27510-00)

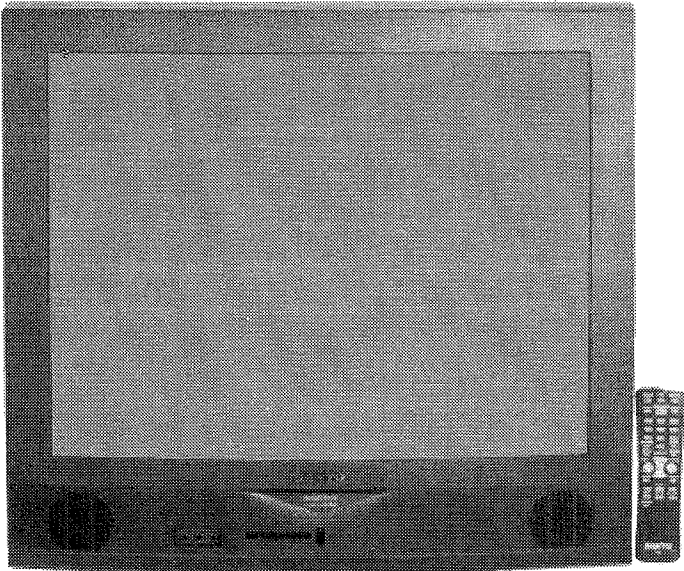
SANYO

PHOTOFACT® Technical Service Data

4526

SANYO

Model DS27510 (Chassis 27510-00)

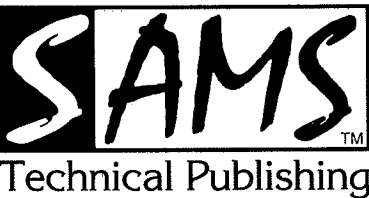


Essential coverage
for servicing a television receiver...

- Schematics
- Component locations
- Parts list

Coverage includes these additional models and chassis:

Models	Chassis
AVM-2751S	G7V-2751S0
DS27510	27510-01



DECEMBER 2001 SET 4526

For Supplier Address,
See PHOTOFACT Annual Index

4526

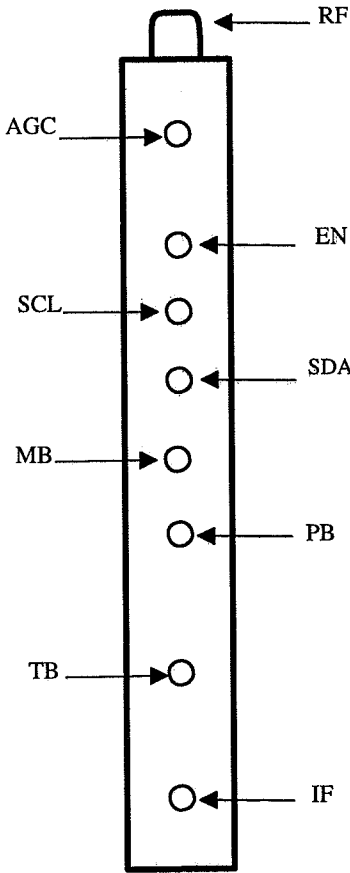
TUNER INFORMATION

TUNER VOLTAGE CHART

Pin	VHF Low Band	VHF High Band	UHF Band
AGC	2.1V	2.2V	2.7V
EN	0V	0V	0V
SCL	4.3V	4.3V	4.3V
SDA	4.2V	4.2V	4.2V
MB	5.0V	5.0V	5.0V
PB	5.0V	5.0V	5.0V
TB	33.0V	33.0V	33.0V
IF	0V	0V	0V

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

TUNER TERMINAL GUIDE



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.

- NTE Electronics, Inc. (NTE)
- Sencore, Inc.

SCHEMATIC COMPONENT LOCATION GUIDE

A1901	A33	C601	A25	C3436	B2	K1002	C4	R252	C19	R619	C26	R882	C37
C001	A5	C608	B29	C3437	C3	K1002	C4	R272	B19	R620	B26	R883	E37
C002	B5	C609	A28	C3439	D3	K1011	A1	R273	C19	R621	B30	R884	E37
C003	A5	C612	C27	C3442	C1	K1011	A14	R274	C19	R622	C27	R886	E37
C004	B5	C613	C27	C3444	B1	L164	B13	R276	C19	R627	B31	R1001	A15
C010	B7	C620	B27	C3446	B1	L401	E14	R281	D10	R628	C31	R1021	A15
C011	A7	C622	B30	C3448	A1	L413	D16	R284	B19	R629	C30	R1046	A15
C015	B6	C625	A30	D101	B39	L601	C28	R287	B21	R630	A31	R1047	A15
C101	E32	C626	B30	D351	E10	L621	B30	R288	B21	R631	D27	R1048	A15
C103	B40	C628	A32	D421	D11	L623	B30	R289	B21	R632	D27	R1049	A15
C106	C10	C629	B32	D422	E11	L625	A29	R321	A20	R634	D27	R1082	B15
C131	B13	C630	A32	D428	B34	L801	E31	R353	E10	R683	C30	R1901	B34
C133	B12	C631	A27	D429	B34	L821	D35	R401	E9	R686	B31	R1902	B34
C134	B12	C632	B27	D481	E27	L851	A37	R402	E9	R691	B30	R1903	B33
C137	A12	C634	D28	D482	E11	L881	D37	R404	D12	R692	C28	R1904	B33
C141	C10	C683	C30	D483	E26	L882	C37	R405	D9	R693	D28	R1905	B33
C142	B12	C693	D28	D486	D31	L901	B26	R406	E12	R694	C27	R1906	B33
C143	B10	C701	B22	D487	D19	L1901	E31	R407	E13	R695	C27	R1907	B33
C146	E32	C711	C22	D490	E31	LF601	A25	R411	E14	R701	B23	R1909	A35
C147	E32	C721	A23	D501	D14	PS601	A26	R416	E13	R703	B22	R1910	B34
C151	B11	C741	C23	D503	E28	Q001	B5	R418	D16	R704	B22	R3401	C2
C153	B11	C742	D24	D508	B34	Q005	B6	R421	E11	R706	B23	R3402	C2
C161	B10	C801	E32	D601	A27	Q135	A13	R422	E11	R707	B23	R3406	D3
C211	B17	C806	E32	D602	A27	Q202	B14	R423	D11	R711	C23	R3407	D3
C212	C18	C811	A36	D603	A27	Q208	C33	R426	D11	R713	C22	R3411	E2
C221	A17	C822	D36	D604	A27	Q401	E12	R428	B34	R714	C22	R3421	D2
C252	B19	C829	C35	D609	C27	Q402	E14	R441	C18	R716	C23	R3422	E2
C253	C19	C835	B35	D610	B27	Q486	D31	R442	C18	R717	C23	R3426	E2
C256	B19	C841	A20	D611	C26	Q490	E31	R443	C10	R721	B23	R3432	C3
C257	D32	C842	A20	D612	B26	Q601	C28	R444	C11	R723	A22	R3433	D3
C258	D32	C843	A19	D614	C27	Q604	C27	R449	D9	R724	A22	R3434	C4
C272	C19	C853	C34	D621	B30	Q605	B26	R481	E27	R726	A23	R3435	C3
C274	C19	C854	C35	D625	A30	Q627	B31	R482	E11	R727	A23	R3436	C4
C284	B19	C856	E37	D627	D28	Q635	D27	R483	E26	R803	B12	R3437	D3
C285	B19	C857	E37	D629	B30	Q681	C31	R485	D19	R804	B12	R3441	C1
C401	E9	C858	C36	D680	C31	Q693	C28	R486	D30	R806	D37	R3442	C1
C402	E9	C862	C36	D683	B32	Q695	C27	R487	D30	R807	D35	R3443	B1
C403	D9	C1001	A15	D693	D28	Q701	B23	R488	E31	R808	D35	R3444	B1
C405	D9	C1004	D31	D694	D28	Q711	C23	R489	D30	R809	C37	R3445	B1
C406	E12	C1005	D32	D801	B35	Q721	A23	R491	D19	R810	A37	R3447	A1
C407	E12	C1021	A15	D831	A35	Q831	A35	R492	D19	R813	A35	R3456	B1
C408	E13	C1081	D32	D834	C34	Q901	B24	R493	D19	R814	A35	R3458	A1
C410	E15	C1902	E31	D836	C34	R001	A4	R494	D19	R816	A34	RL601	A26
C412	E15	C3401	D2	D843	C35	R002	B4	R495	D31	R824	E35	RL601	B32
C416	E16	C3404	A3	D1001	A15	R003	A4	R497	A24	R829	E36	SP901	A8
C417	E16	C3406	D4	D1021	A15	R004	B4	R499	E31	R831	C35	SP902	B8
C421	D11	C3407	D3	D1901	E32	R005	C6	R503	D12	R833	C34	SW1901	B33
C427	D11	C3408	D2	D624A	B29	R006	B6	R504	D13	R835	B35	SW1902	B33
C441	C18	C3411	A2	DY	D16	R012	B5	R505	D13	R841	C38	SW1903	B33
C473	E15	C3412	D2	F601	A25	R106	B39	R506	D13	R842	B38	SW1904	B33
C482	E27	C3413	D2	IC002	A6	R131	B13	R507	D13	R843	C38	SW1905	B33
C484	E11	C3414	D32	IC101	A13	R133	B12	R508	D13	R844	B38	SW1906	C33
C486	E26	C3416	A2	IC101	B12	R137	A14	R509	D13	R846	B37	T151	A11
C487	E28	C3417	D2	IC101	B19	R142	C11	R511	D15	R847	B37	T401	E13
C489	D31	C3418	B3	IC101	D10	R143	B10	R517	D14	R848	C37	T402	D17
C493	D19	C3421	D2	IC501	D14	R151	C11	R518	D14	R849	B37	T402	E25
C497	E31	C3422	E2	IC601	D26	R161	B10	R601	A26	R851	E37	T601	A29
C502	D14	C3423	C2	IC681	E30	R162	B10	R602	B26	R852	B35	W601	A25
C503	D13	C3424	D3	IC801	B36	R163	B13	R603	A28	R853	C34	X141	B9
C504	D13	C3426	C2	IC802	D34	R164	B13	R604	B29	R854	C35	X161	B13
C505	D11	C3427	E2	IC1002	A16	R166	B13	R613	C28	R856	D38	X251	B18
C506	D13	C3431	E2	IC1002	B15	R167	B13	R614	C27	R857	C38	X801	B35
C508	C13	C3432	C2	IC1002	B16	R201	B14	R615	B28	R862	C35		
C509	D11	C3433	E2	IC3401	A2	R208	C33	R616	C26	R864	C35		
C511	D15	C3434	E2	K1002	A14	R212	C18	R617	C27	R871	A37		
C516	D14	C3435	C3	K1002	B1	R251	C19	R618	C28	R881	D37		

MISCELLANEOUS ADJUSTMENTS

B+ CHECK

Connect a digital DC voltmeter to the cathode of D625. Set brightness and picture to minimum. With AC line set to 120VAC, B+ should read 130V ±2.0V.

HIGH VOLTAGE CHECK

Tune in a picture. Set customer controls to minimum. Connect a high voltage probe to CRT anode. High voltage should measure 26kV to 28kV.

ENTERING SERVICE MODE

Disconnect the AC power cord. While pressing the menu button on the front of the set, connect the AC power cord. Use the channel up and down buttons to select the service number. Use volume up and down buttons to change the value. Press the menu button to exit the service mode.

HORIZONTAL WIDTH

Tune in a crosshatch pattern. Enter the service mode and select service item number 47 EWD. Adjust for the proper horizontal width.

HORIZONTAL POSITION

Tune in a crosshatch pattern. Enter the service mode and select service item number 03 HP. Adjust for the best horizontal centering.

RF AGC DELAY

Tune in a picture. Enter the service mode and select service number 42 RAD. Adjust where no snow (noise) appears in picture.

VERTICAL SIZE

Tune in a crosshatch pattern. Enter the service mode and select service item number 04 VS. Adjust for proper vertical size and best vertical linearity.

VERTICAL CENTERING

Tune in a crosshatch pattern. Check that the pattern is centered. If too low, replace resistor R513 (1000 ohms 1/2W) with a (470 ohms 1W). If too high, remove resistor R513 (1000 ohms 1/2W).

VCO

VCO must be adjusted after IC101, IC802, or T151 is replaced. Tune in a picture. Connect positive lead of a digital voltmeter to pin 58 of IC101 and the negative lead to TE7. Adjust T151 to obtain a reading of 3.6V ± 0.2V.

VIDEO LEVEL

Tune in a color bar pattern. Set picture and brightness to normal. Connect an oscilloscope to the emitter of Q202, and the negative lead to ground. Enter the service mode and select service number 46 VL. Adjust for 1.0Vp-p ±0.1Vp-p waveform on the oscilloscope.

GRAY SCALE

Tune in an active channel. Enter the service mode. Set the value of service numbers 15 RB, 16 GB, and 17 BB to 0. Set the value of service numbers 18 RD and 20 BD to 55. Set screen control, color, brightness, and picture to minimum. Adjust screen control, if necessary, to obtain a barely visible horizontal line. Select service number 73. Adjust the bias levels for a white line. Select service number 72 DRV and adjust the drive values for normal black and white picture at all brightness levels.

SUB BRIGHTNESS

Tune in a color bar pattern. Set picture and brightness to normal. Connect positive lead of a digital voltmeter to TP51 and the negative lead to TP50. Enter the service mode and select service number 53 SB. Adjust for 820mV ±10mV.

SUB COLOR, SUB TINT, SUB SHARPNESS

Tune in a picture. Enter the service mode. Select service number 54 SCO. Adjust for normal color level. Select service number 55 STI. Adjust for normal flesh tones. Select service number 56 SSH. Adjust for contrast range.

OSD HORIZONTAL POSITION

Tune in a local channel. Enter the service mode and select service item number 59 HR. Adjust for centered on screen menu.

SOUND

Tune in a local channel. Connect an oscilloscope to the base of Q135, and the negative lead to ground. Enter the service mode and select service number 45 FL. Adjust for 0.693Vp-p ± 0.07Vp-p waveform on the oscilloscope.

Input Level

Set generator to 1kHz audio frequency and L-R modulating signal. Connect an oscilloscope to pin 38 of IC3401. Enter service mode and select the service item number 60 ATT. Adjust for 0.7Vp-p waveform.

Separation

Set generator to pilot, 300Hz audio frequency, and left modulating signal. Connect an oscilloscope to pin 38 of IC3401 and ground. Enter the service mode and select service number 61 WDB. Adjust for minimum amplitude of the waveform. Set generator to 8kHz audio frequency. Select service number 62 SPC and adjust for minimum amplitude of the waveform.

IC802 REPLACEMENT

Perform the following adjustments after replacing IC802. Enter the service mode, select service number 03 HP and set value to 8. Select service number 05 VPO and set value to 25. Select service number 07 VLN and set value to 15. Select service number 10 VSC and set value to 13. Select service number 14 VC and set value to 7. Select service number 21 SBI and set value to 54. Select service number 24 FLS and set value to 1. Select service number 28 PRE and set value to 3. Select service number 29 WP and set value to 1. Select service number 32 BSG and set value to 2. Select service number 34 DCR and set value to 1. Select service number 37 AF and set value to 1. Select service number 41 RYA and set value to 2. Select service number 55 STI and set value to 19. Select service number 57 OPT and set value to 0. Select service number 58 OP2 and set value to 98. Select service number 59 HR and set value to 20. Select service number 60 ATT and set value to 7. Select service number 63 SBO and set value to 5. Press the menu button to exit service mode.

CONVERGENCE / PURITY

The deflection yoke is bonded to the CRT. Convergence and purity adjustments are not required.

SERVICE MODE ADJUSTMENT CHART

Service No.	Adjustment	Value Range	Initial Value	On-Set Value	Notes
01	HFR	0 - 63	29	29	Horizontal Frequency
02	AFC	0, 1	0	0	AFC Gain
03	HP	0 - 31	8	10	H-Position (H-Centering)
04	VS	0 - 127	64	57	Vertical Size
05	VPO	0 - 63	25	25	Vertical Position
06	VSP	0, 1	0	0	Vertical Set Up
07	VLN	0 - 31	15	15	Vertical Linearity
08	CRS	0 - 3	0	0	Cross B/W
09	GRY	0, 1	1	1	Gray Mode
10	VSC	0 - 31	13	13	Vertical SCorrection
11	HBR	0 - 7	3	3	H BLK R
12	HBL	0 - 7	4	4	H BLK L
13	CDM	0, 1	0	0	CD Mode
14	VC	0 - 7	7	7	Vertical Compression
15	RB	0 - 255	0	0	Red Bias
16	GB	0 - 255	0	0	Green Bias
17	BB	0 - 255	0	0	Blue Bias
18	RD	0 - 127	64	78	Red Drive
19	GD	0 - 15	8	8	Green Drive
20	BD	0 - 127	64	60	Blue Drive
21	SBI	0 - 127	54	54	Sub Bias
22	OSD	0 - 3	2	2	OSD Contrast
23	POS	0, 1	0	0	Pre/Over/SW
24	FLS	0 - 7	1	1	Filter System
25	CKO	0 - 7	3	3	Color Killer Operation
26	GYA	0, 1	0	0	G-Y Angle
27	CRG	0 - 3	2	2	Coring Gain
28	PRE	0 - 3	3	3	Pre Shoot Adjust
29	WP	0, 1	1	1	White Peak Limiter, 0 = On, 1 = Off
30	FSW	0, 1	0	0	FBP Blanking Switch
31	VBL	0, 1	0	0	Vertical Blanking Switch
32	BSG	0 - 3	2	2	Black Stretch Gain
33	BSS	0 - 3	1	1	Black Stretch Start
34	DCR	0 - 3	1	1	DC Reset
35	YGM	0 - 3	1	1	Y Gamma
36	CBP	0, 1	0	0	C Bypass
37	AF	0, 1	1	1	Auto Flesh, 0 = Off, 1 = On
38	BAT	0 - 7	4	4	Bright ABL Threshold
39	MSD	0, 1	0	0	Mid Stop Def
40	ABL	0, 1	0	0	ABL Defeat, 0 = On, 1 = Off
41	RYA	0 - 15	2	2	R-Y/B-Y Angle
42	RAD	0 - 63	20	20	RF AGC Delay
43	IAS	0, 1	0	0	IF AGC Switch, 0 = TV (Normal), 1 = AV (IF Gain Minimum)
44	FMM	0, 1	0	0	FM Mute
45	FL	0 - 31	15	15	FM Level
46	VL	0 - 7	4	4	Video Level
47	EWD	0 - 63	39	39	EW DC
48	EWA	0 - 63	30	28	EW Amp
49	EWT	0 - 63	34	33	EW Tilt
50	EWP	0 - 7	7	7	EW Corner Top
51	EWB	-	8	10	EW Corner Bottom
52	HSC	-	4	4	Horz Size Comp
53	SB	0 - 63	32	31	Sub Brightness
54	SCO	0 - 31	7	7	Sub Color
55	STI	0 - 31	19	19	Sub Tint
56	SSH	0 - 15	8	8	Sub Sharpness
57	OPT	0 - 255	0	0	Option, data 1 should be set to "0", in binary 8 bit 00000000
58	OP2	0 - 255	98	98	Option, data 2 should be set to "98", in binary 8 bit 01100010
59	HR	0 - 63	20	20	OSD Horizontal Position
60	ATT	0 - 15	7	7	Attenuation
61	WDB	0 - 63	32	41	Wide Band
62	SPC	0 - 63	32	17	Spectral
63	SBO	0 - 255	5	5	Sub Bright Offset
64	PCO	0 - 63	40	40	PIP Color
65	PTI	0 - 63	40	40	PIP Tint
66	PUV	0 - 63	24	24	PIP Top Position
67	PDV	0 - 255	147	147	PIP Bottom Position
68	PLH	0 - 63	10	10	PIP Left Position
69	PRH	0 - 255	101	101	PIP Right Position
70	PCN	0 - 63	52	42	PIP Y Level
71	PBS	0 - 63	15	15	PIP BGP Phase
72	DRV	0 - 127	64	R 78	Red Drive, press 1 to decrease value and 3 to increase value.
	DRV	0 - 127	64	B 60	Blue Drive, press 7 to decrease value and 9 to increase value.
73	-	0 - 255	0	0	Red Bias, press 1 to decrease value and 3 to increase value.
	-	0 - 255	0	0	Green Bias, press 4 to decrease value and 6 to increase value.
	-	0 - 255	0	0	Blue Bias, press 7 to decrease value and 9 to increase value.
74	R00				
Thru	Thru				
146	R48	0 - 255	0	0	-

AUDIO SCHEMATIC

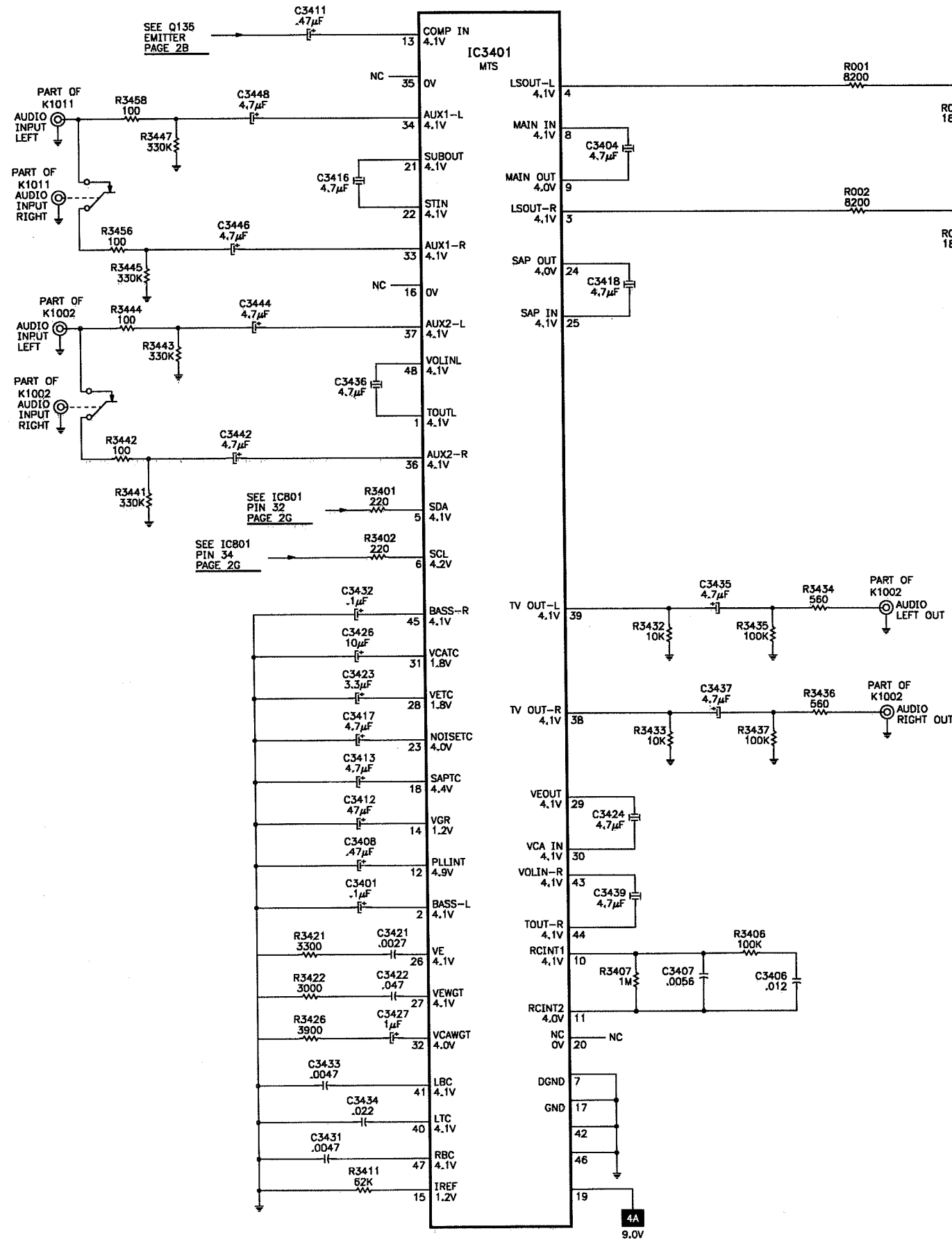
A

B

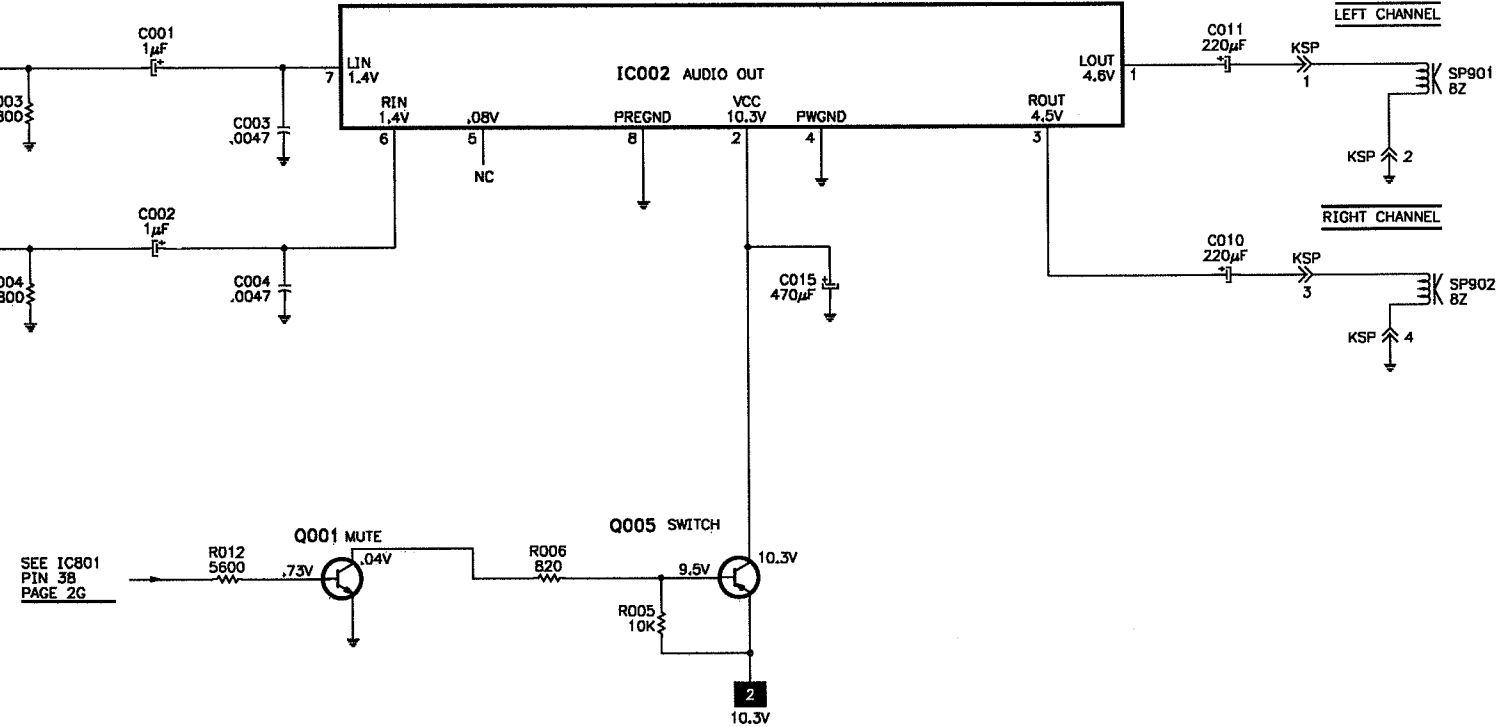
C

D

E



H



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	PR570
Generators		Capacitance Analyzer	LC102
RGB	CM2125	CRT Analyzer	CR7000
Multiburst Signal	VG91	AC Leakage Tester	PR570
Color Bar	VG91	Inductance Analyzer	LC102
TV Stereo	VG91	Flyback Yoke Tester	TVA92
Digital VOM	SC3100	Field Strength Meter	SL753
Frequency Meter	SC3100	Transistor Tester	TF46
Hi-Voltage Probe	HP200	Horizontal Analyzer	HA-2500
Accessory Probes	TP212	Video Analyzer	VG91, TVA92

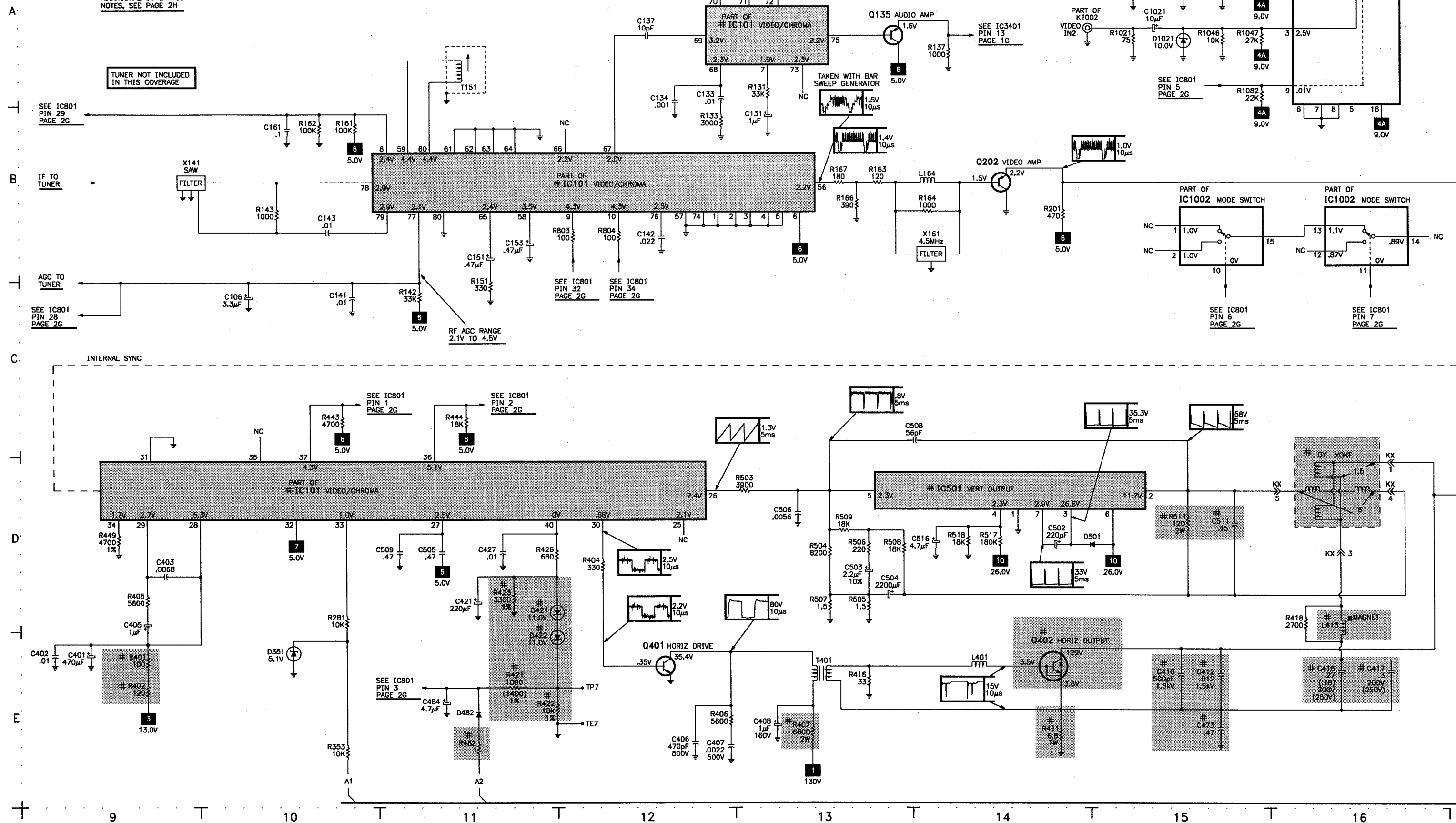
ADDITIONAL SCHEMATIC
NOTES, SEE PAGE 2H

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WITH CIRCUITTRACE[®]
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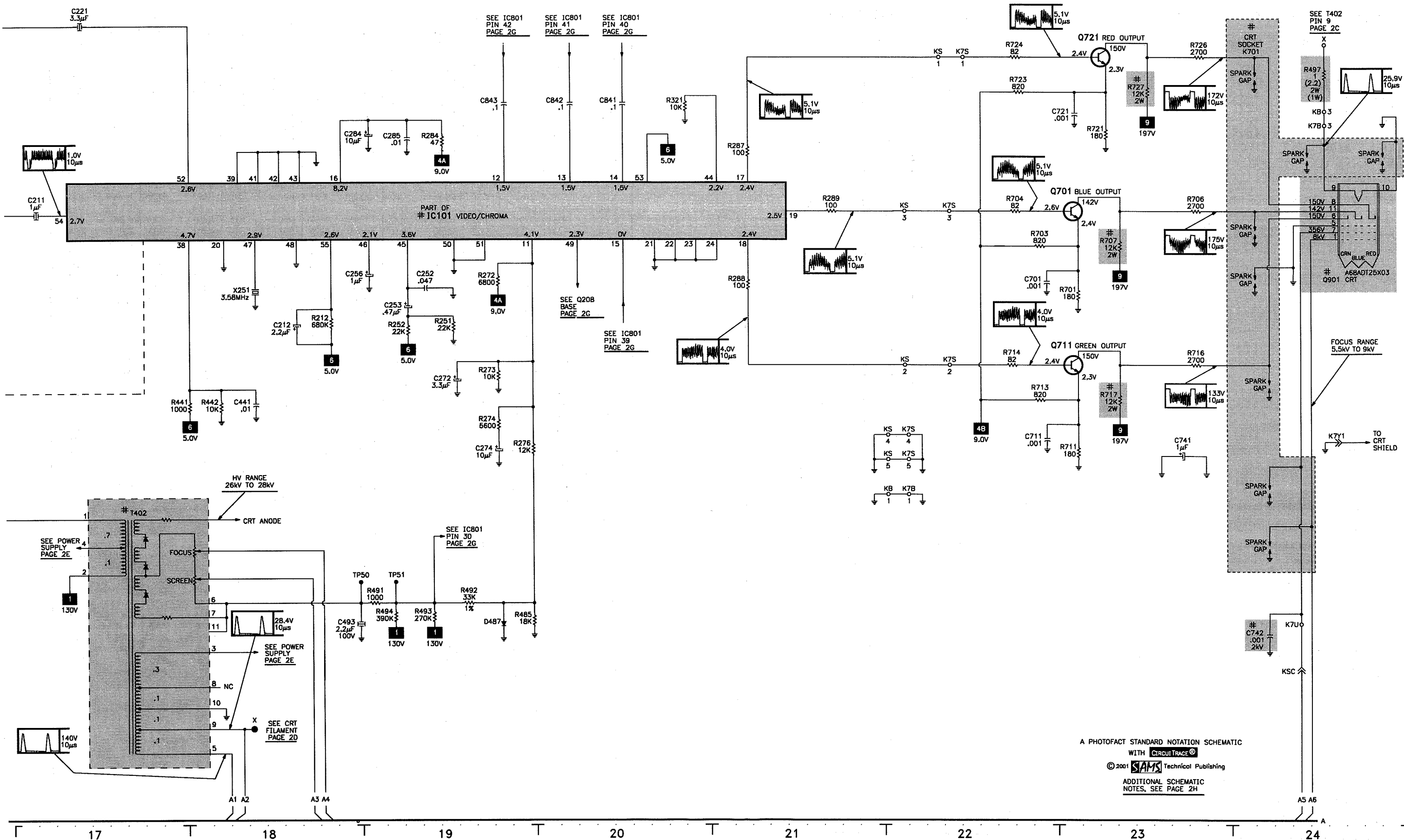
B

WITH **CIRCUITRACE®**

ADDITIONAL SCHEMATIC
NOTES, SEE PAGE 2H



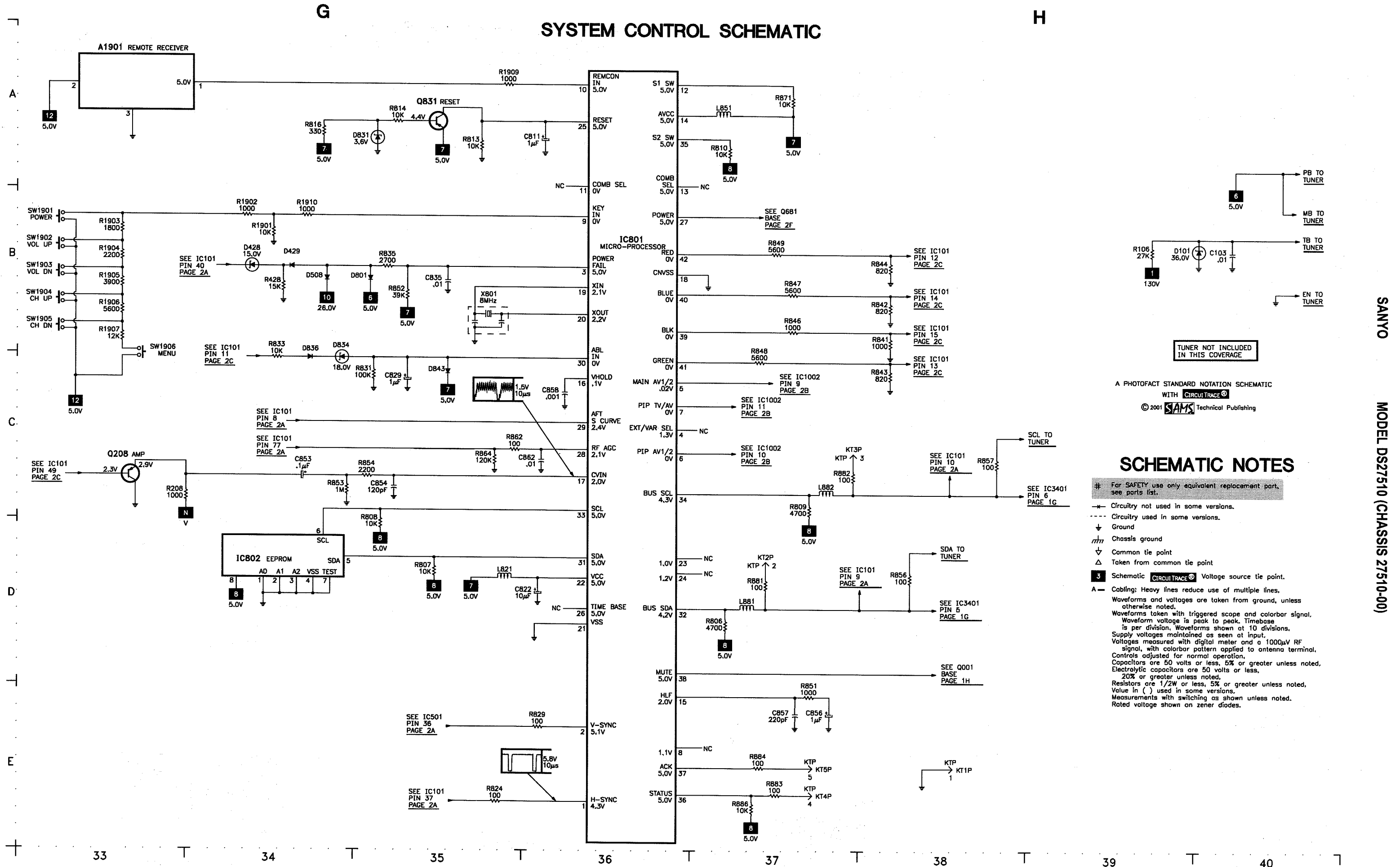
TELEVISION SCHEMATIC continued



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ADDITIONAL SCHEMATIC
NOTES, SEE PAGE 2H

F

SYSTEM CONTROL SCHEMATIC

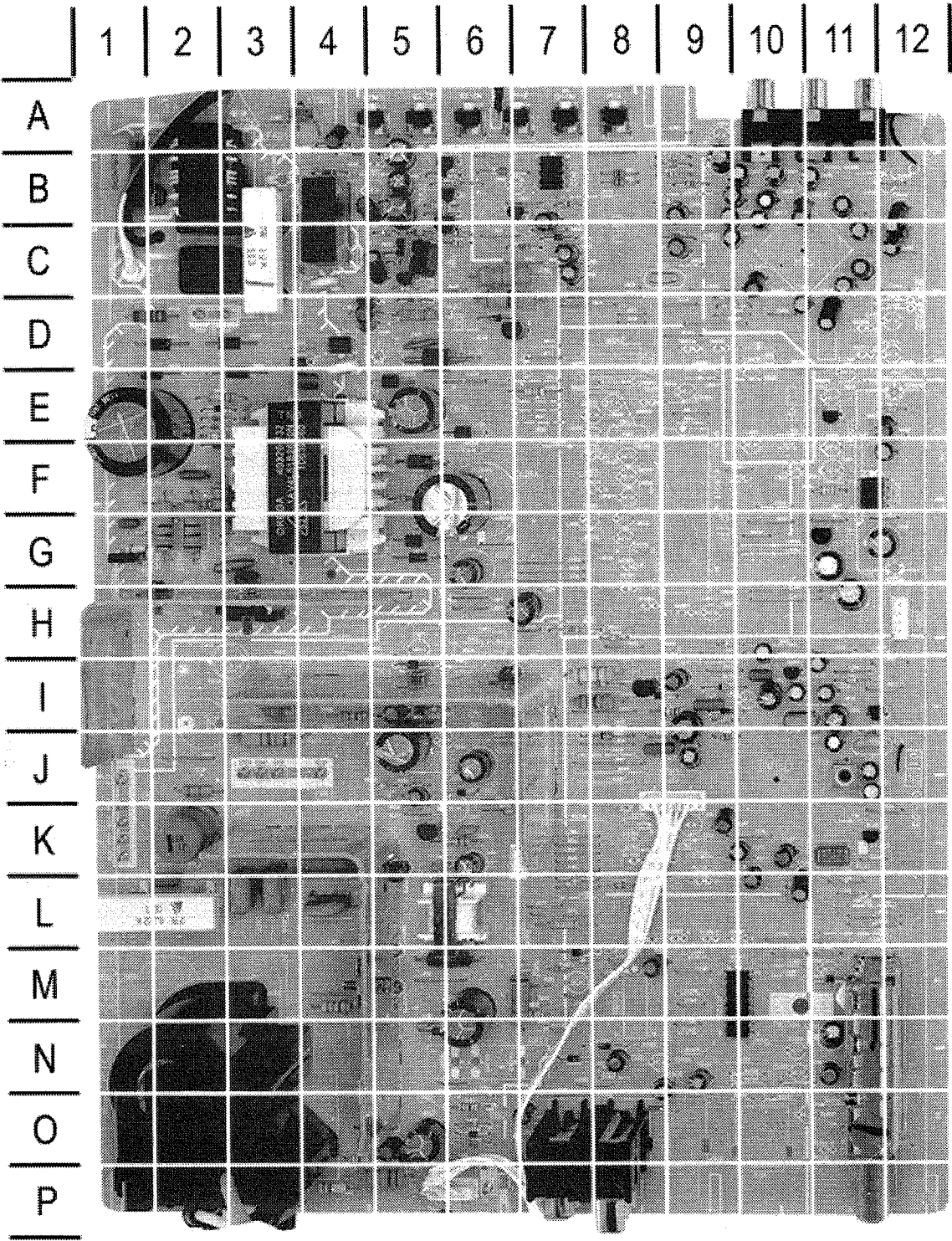


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SCHEMATIC NOTES

- # 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 otherwise noted. 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.

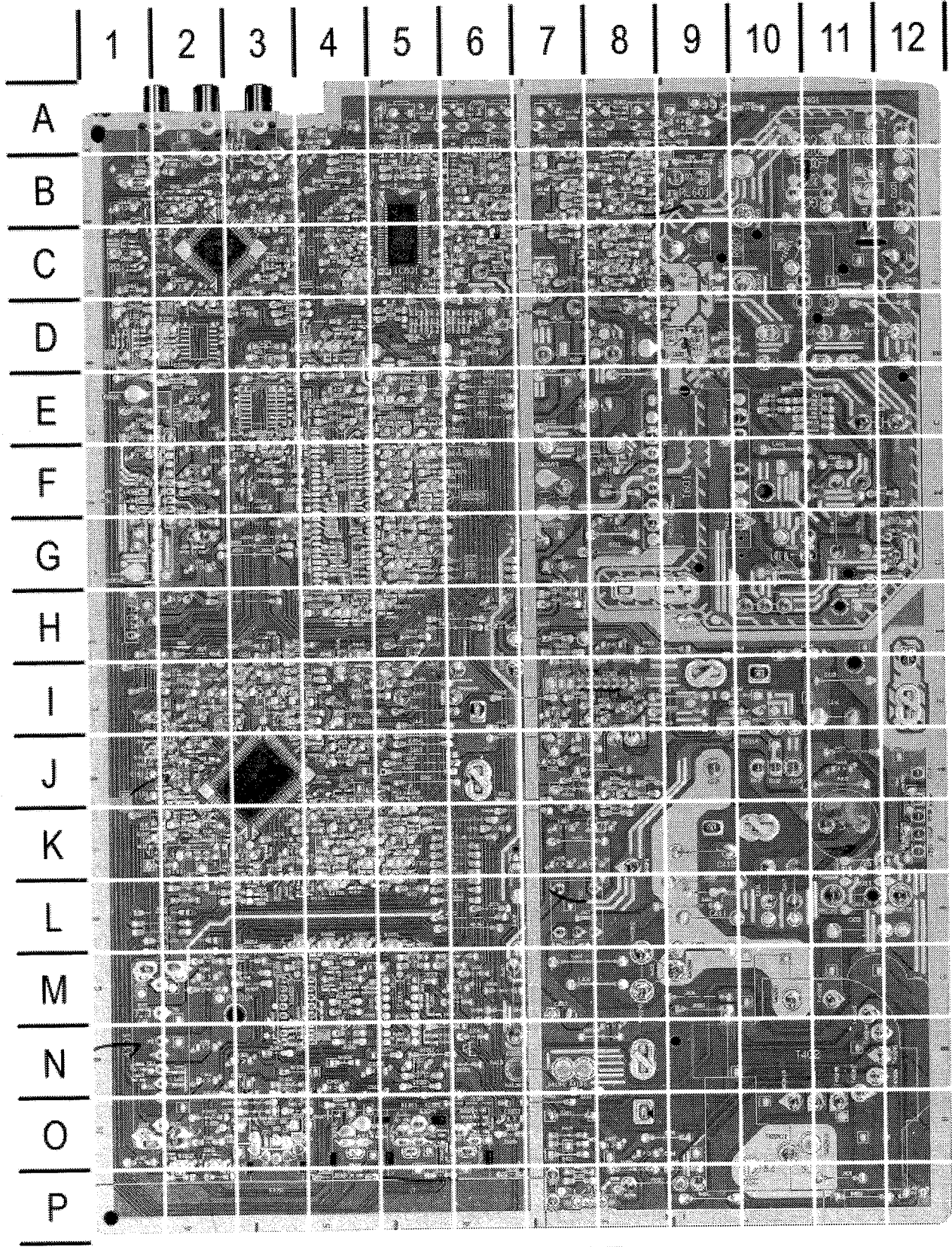
MAIN BOARD - TOP VIEW



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MAIN BOARD - TOP VIEW, GRIDTRACE LOCATION GUIDE													
A101	N11	C497	I9	C3413	B10	D624A	F5	L882	B8	R421	O6	R619	G1
A1901	A4	C502	J6	C3414	B9	D625	D5	L1901	A4	R422	P6	R620	D4
C001	E12	C503	J5	C3416	B10	D627	D5	LF601	B2	R428	O6	R622	G2
C002	F12	C504	J5	C3417	B10	D629	B6	PS601	C2	R441	I9	R627	C6
C010	H11	C505	I9	C3418	B10	D680	B6	Q001	E11	R443	H9	R630	D5
C011	G11	C506	I5	C3424	B11	D683	B4	Q005	G11	R444	H8	R631	D4
C015	G12	C509	J8	C3427	C11	D693	C5	Q135	K11	R449	J9	R683	B6
C101	N11	C511	I3	C3432	C11	D694	F5	Q202	I11	R481	P4	R686	B5
C106	N11	C516	I5	C3435	N8	D801	H7	Q208	I10	R482	O4	R691	C6
C131	L10	C601	B1	C3436	D11	D834	C7	Q401	K5	R483	M4	R692	C5
C147	K10	C608	G3	C3437	N9	D836	C7	Q402	M4	R485	M7	R693	C5
C151	J11	C609	E1	C3439	C11	D843	B7	Q486	D6	R486	C6	R694	C5
C153	J11	C612	F2	C3442	B11	D1001	N7	Q490	I8	R487	C6	R695	C5
C211	J11	C613	G1	C3444	B10	D1021	N8	Q601	H3	R488	I8	R803	L10
C212	I11	C620	E4	C3446	B12	D1901	A4	Q604	G1	R489	C6	R804	L10
C221	I11	C622	G6	C3448	C12	F601	B2	Q605	D4	R491	O6	R810	B7
C252	I10	C625	D5	D101	M11	IC002	F11	Q627	B6	R492	M7	R835	B9
C253	H10	C626	E5	D351	I9	IC501	I5	Q635	D4	R493	M7	R852	B9
C256	I10	C628	F6	D421	I9	IC601	C5	Q681	B6	R494	M7	R1909	B9
C258	I11	C629	B5	D422	J8	IC681	B6	Q693	C5	R495	I8	R1910	B9
C272	K10	C630	C4	D428	O6	IC802	B7	Q695	C5	R497	P5	R3401	D10
C274	K10	C631	C4	D429	O6	IC1002	M9	Q831	B7	R499	I8	R3402	D10
C284	K9	C632	D4	D481	O4	K1001	O7	R001	E12	R503	J6	RL601	B4
C401	I9	C634	C5	D482	O5	K1011	A10	R002	E12	R504	J4	SW1901	A5
C403	J9	C683	B5	D483	N5	K7B	P6	R006	F11	R505	I4	SW1902	A5
C405	J9	C693	B4	D486	D6	KD	D3	R012	B9	R506	J5	SW1903	A6
C406	K5	C806	A5	D487	M7	KS	J8	R106	L7	R507	I4	SW1904	A7
C407	K6	C811	C7	D490	I8	KSP	H12	R201	I11	R508	J5	SW1905	A7
C408	K6	C822	C7	D501	I5	KTP	J1	R272	L8	R509	J5	SW1906	A8
C410	L4	C829	B7	D503	J6	KX	J4	R273	K10	R511	J3	T151	J11
C412	K4	C853	C9	D508	M7	L164	I11	R276	L7	R517	I5	T401	L6
C416	L3	C856	B9	D601	D3	L401	M5	R284	K9	R601	C3	T402	O2
C417	L3	C1001	O7	D602	D3	L413	K2	R353	N6	R602	D2	T601	F4
C421	I10	C1021	N8	D603	D2	L601	G3	R401	I9	R603	E2	TE7	P6
C473	L2	C1081	M8	D604	D2	L621	G5	R402	E7	R604	F2	TP7	O6
C482	O5	C1902	A4	D609	E2	L623	E6	R404	K6	R613	G2	TP50	O6
C484	O5	C3401	D10	D610	E2	L625	E5	R406	K6	R614	F2	TP51	O6
C486	N5	C3404	C10	D611	E2	L801	B6	R407	M7	R615	E2	X141	K11
C487	N6	C3408	B9	D612	D4	L821	C7	R411	L1	R616	E3	X161	J11
C489	H7	C3411	C10	D614	E2	L851	C9	R416	M6	R617	E3	X251	I10
C493	P1	C3412	B10	D621	G5	L881	B8	R418	J2	R618	G2	X801	C9

MAIN BOARD - BOTTOM VIEW

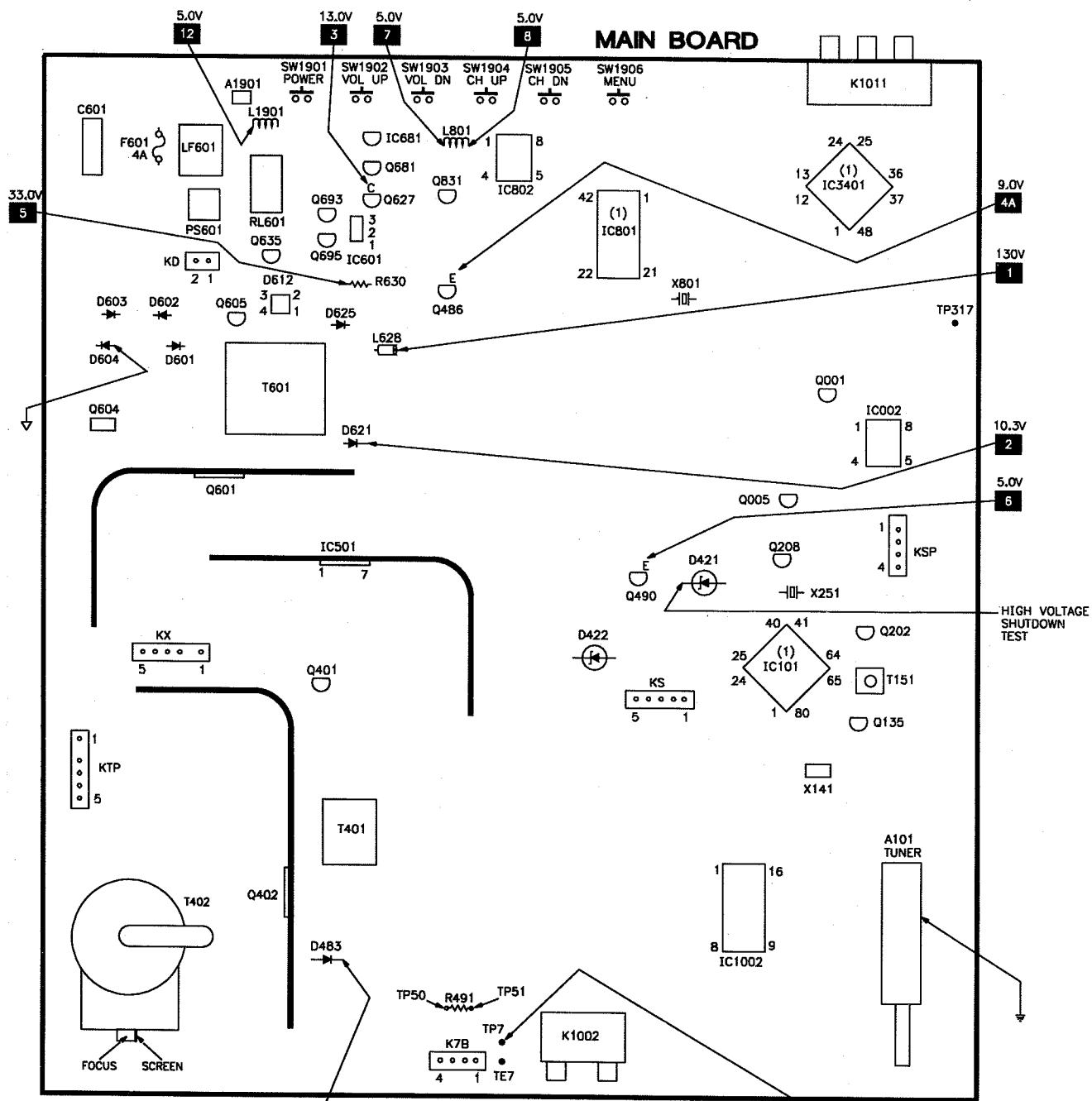


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MAIN BOARD - BOTTOM VIEW, GRIDTRACE LOCATION GUIDE

C003	F1	C843	L3	R004	E2	R288	J4	R829	D4	R883	B5	R3422	B2
C004	F1	C854	C4	R005	G2	R289	J4	R831	B6	R884	B5	R3426	C2
C103	M1	C857	C4	R131	K3	R321	I3	R833	C6	R886	B5	R3432	C1
C133	J2	C858	C4	R133	K2	R405	J4	R841	D6	R1001	O4	R3433	C1
C134	K2	C862	B6	R137	K1	R423	I3	R842	D6	R1021	O5	R3434	O6
C137	K2	C1004	M5	R142	K2	R426	I3	R843	D5	R1046	M4	R3435	O6
C141	K2	C1005	M3	R143	K2	R442	I3	R844	D5	R1047	M4	R3436	O6
C142	K2	C3406	C3	R151	J2	R518	I8	R846	D6	R1048	M4	R3437	O6
C143	K2	C3407	C3	R161	K3	R621	G7	R847	D6	R1049	M4	R3441	O5
C146	K2	C3421	B2	R162	L3	R628	B6	R848	D5	R1082	N3	R3442	O5
C161	K3	C3422	B2	R163	J2	R629	B8	R849	D5	R1901	A5	R3443	O5
C257	I2	C3423	B2	R164	J1	R632	C8	R851	B4	R1902	A8	R3444	O5
C285	K3	C3426	B2	R166	J2	R634	C8	R853	C4	R1903	A8	R3445	P5
C402	J4	C3431	D2	R167	J2	R806	B5	R854	C4	R1904	A7	R3447	O4
C427	I3	C3433	C1	R208	I2	R807	B6	R856	N1	R1905	A6	R3456	A3
C441	I3	C3434	C1	R212	J2	R808	B6	R857	N1	R1906	A6	R3458	A3
C508	I8	D831	C6	R251	I3	R809	B5	R862	B6	R1907	A5		
C801	B6	IC101	K3	R252	H3	R813	C6	R864	B6	R3406	C3		
C835	B5	IC801	B5	R274	K3	R814	C6	R871	B4	R3407	C3		
C841	L3	IC3401	C3	R281	J3	R816	C6	R881	B5	R3411	B3		
C842	L3	R003	E2	R287	J4	R824	D4	R882	B5	R3421	B2		

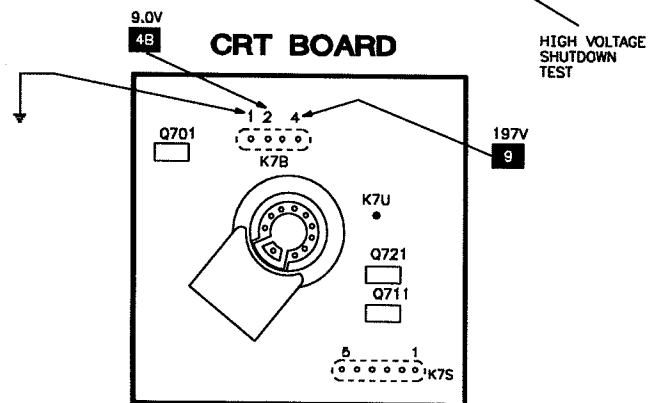
PLACEMENT CHART



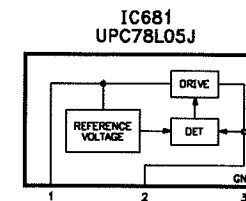
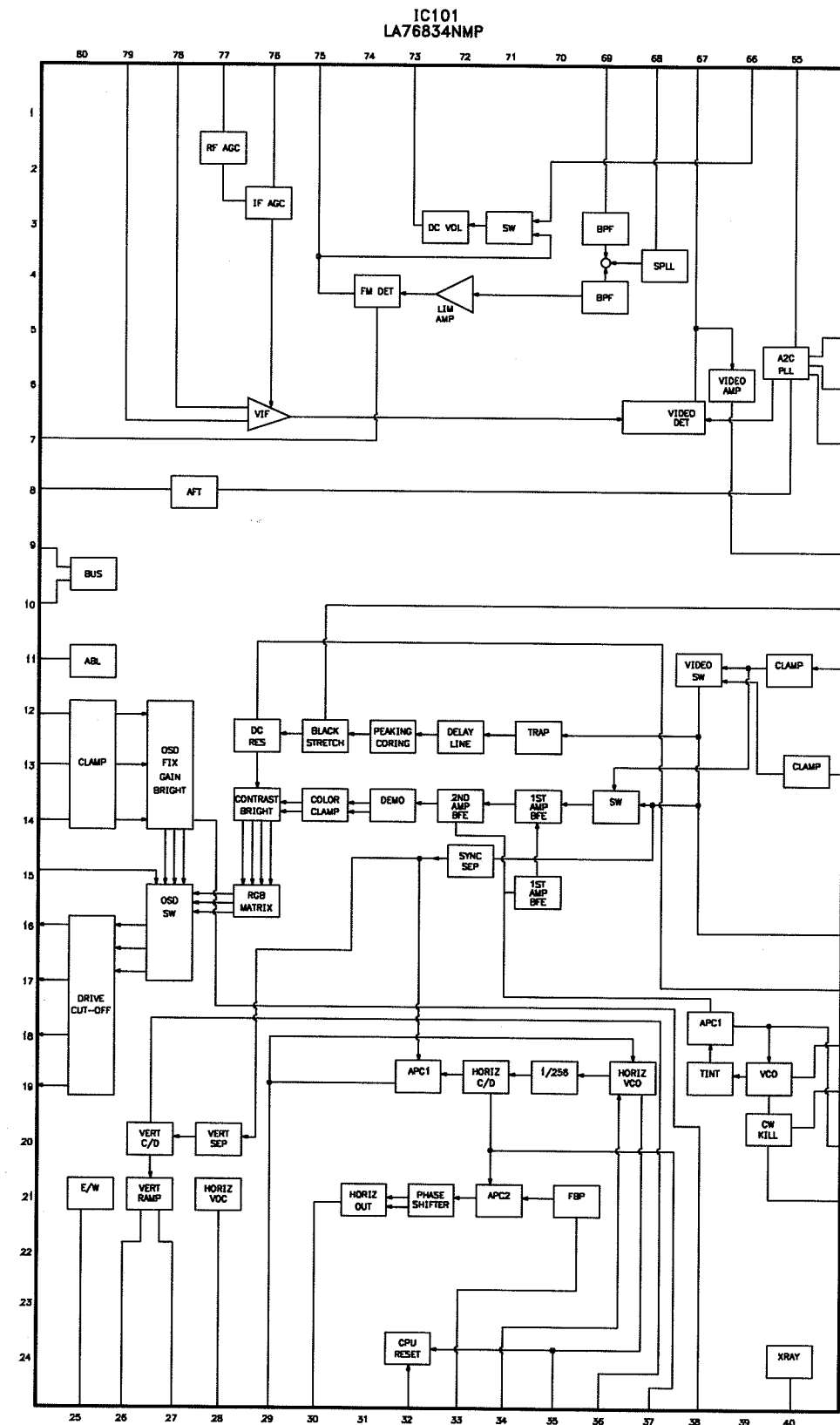
(1) LOCATED ON BOTTOM OF BOARD

↓ COMMON TIE POINT

CRT BOARD



IC FUNCTIONS



PARTS LIST

Item No.	Type No.	Mfr. Part No.	NTE Part No.	Item No.	Type No.	Mfr. Part No.	NTE Part No.	Item No.	Function/Rating	Mfr. Part No.	Notes
D101	RD36EB1	407 056 2307	NTE5037A	IC802	24LC02B/P	409 333 3700	-	L1901	5.6μH	645 008 2894	-
D351	MTZJ36A	407 100 0204	-		ST24C02B6	409 376 1503	-	# LF601	5.6μH	645 016 3104	-
# D421, 22	RD5.1EB2	407 056 8002	NTE5010A		M24C02-BN6	409 440 8902	-		Line Filter	645 012 0589	-
	MTZJ5.1A	407 063 8606	NTE5010T1		CAT24WC02P	409 495 6908	-	# PS601	Line Filter	645 026 8274	-
D428	HZ11B2L	407 158 1307	NTE5020A		S524C20D21-DCB0	409 497 0706	-		3 Cold PTC	408 038 5606	-
D429	RD15EB1	407 054 5706	NTE5023A		TC4053BP	409 051 3006	NTE4053B		3 Cold PTC	408 041 8205	-
	MTZJ15A	407 099 6904	-	IC1002	CXA2134Q-T6	409 467 1108	-	# Q901 (2)(3)	CRT	414 009 7005	A68ADT25X03
D481	1S2076A	407 013 4306	NTE519	Q001	2SC1740S-Q	405 011 8401	NTE85	# Q901 (4)	CRT	414 010 9500	A68QDN891X003
	1S2473	407 073 7109	NTE177	Q005	2SB764-E	405 008 4805	NTE383	# R401	130 5% 1/4W	401 012 4503	-
D481	1N4148	408 008 2406	NTE519	Q135	2SC1740S-Q	405 011 8401	NTE85	# R402	120 5% 1/4W	401 013 4205	-
	ES1	407 007 6606	NTE552	Q202, 08	2SA1015-0(SAN)	405 001 7407	NTE290A	# R407	6800 5% 2W	401 069 3702	-
D482	RMPG06G	407 124 5506	NTE552	Q401	2SC2271-D-CTV	405 013 6207	NTE399	# R411	6.8 10% 7W Wirewound	402 083 6205	-
	ERA18-04	407 124 6404	NTE552	# Q402	2SD2578-YB	405 153 0202	-	# R421	1000 1% 1/6W	401 052 6505	-
D483	TVRJG	407 011 4407	NTE552	Q486, 90	2SD400-E-MP	405 023 5009	NTE382		1400 1% 1/6W	401 277 5208	-
D483	ES1	407 007 6606	NTE552	# Q601	2SC4423-CTV	405 095 9004	NTE2308	# R422	10K 1% 1/16W	401 052 6802	-
	RMPG06G	407 124 5506	NTE552	Q604	2SC3807-R-CTV-YA	405 058 0208	NTE2504	# R423	3300 1% 1/10W	401 264 9301	-
D486	ERA18-04	407 124 6404	NTE552	Q605	2SA1015-O(SAN)	405 001 7407	NTE290A	R449	4700 1% 1/6W	401 053 3206	-
	RD10EB2	407 054 0008	NTE5019A	Q627	2SB985-S	405 009 6907	-	# R481	33 5% 1/2W Nonflammable	401 009 4905	-
D487	MTZJ10B	407 099 6102	-	Q635, 81, 93	2SC1740S-Q	405 011 8401	NTE85	# R482	1 5% 1/4W Nonflammable	401 011 9004	-
	ERA15-02	407 005 8602	NTE552	Q695	2SA1015-Y(SAN)	405 001 7605	NTE290A	# R483	1 5% 1/2W Nonflammable	401 006 7701	-
D490	S5277B	407 011 3004	NTE552	Q701, 11, 21	2SC2621-D-RA	405 041 6507	NTE157	# R486	8.2 5% 2W	401 069 5607	-
	MPG06D	407 088 6502	NTE552	Q831	2SA1015-GR(SAN)	406 000 6804	NTE290A	# R488	15 5% 1W	401 059 1602	-
D501	1N4002ID	408 009 9404	NTE116				-	# R489	18 5% 2W	401 065 9609	-
	RD5.6EB3	407 057 0104	NTE5011A	Item No.	Function/Rating	Mfr. Part No.	Notes	R492	33K 1% 1/6W	401 156 8504	-
D501	MTZJ5.6C	407 063 8903	-	# A101	Tuner	645 040 5150	-	# R495	27 5% 1W	401 060 6405	-
	ERA15-02	407 005 8602	NTE552	A1901	Receiver	645 027 4213	Remote	# R497	1 5% 2W	401 064 3806	-
D503	S5277B	407 011 3004	NTE552	C211	1μF 20% 50V NP	403 086 2607	-		2.2 5% 1W	401 059 9608	-
	MPG06D	407 088 6502	NTE552	C221	3.3μF 20% 50V NP	403 086 6902	-	# R511	120 5% 2W	401 065 2808	-
D508	RD36EB1	407 056 2307	NTE116	# C210	500pF 1.5kV	403 254 9506	-	# R601	1 10% 7W Wirewound	402 083 6106	-
	MTZJ36A	407 100 0204	NTE5037A	# C412	.012 3% 1.5kV	403 343 7703	-	# R602	3.3M 10% 1/2W	402 000 0705	-
D508	1S2076A	407 013 4306	-		.012 3% 1.5kV	404 079 1607	-	# R604	10 5% 2W	401 064 6302	-
	1S2473	407 013 7109	NTE519	# C416	27 5% 250V	403 346 7126	-	# R613	56 5% 2W	401 068 6902	-
# D601 Thru	1N4148	408 008 2406	NTE177		27 20% 200V	404 081 2609	-	R616	3000 2% 1/6W	401 026 2809	-
			NTE519	# C417	.3 5% 250V	403 349 3204	-	R617	680 2% 1/6W	401 099 1501	-
# D604	EM2B	407 005 7605	NTE125		.3 20% 200V	404 081 2708	-	# R618	56 5% 2W	401 068 6902	-
D609	1S1887A	407 013 3200	NTE552		.18 5% 250V	403 346 6723	-	R622	3000 2% 1/16W	401 026 2809	-
	ES1Z	407 007 6903	NTE552	# C473	.18 20% 200V	404 081 2203	-	# R630	22K 5% 1W	401 060 5002	-
D610	RMPG06D	407 124 5605	NTE587		.47 5% 50V	403 067 7805	-	# R707, 17, 27	12K 5% 2W	401 065 4604	-
	BYD33D	408 009 9008	NTE569		.47 5% 63V	403 166 7706	-	# RL601	Relay	645 000 4155	Degaussing
D611	1N4148	408 008 2406	NTE519	C493	2.2μF 20% 100V NP	404 056 5307	-		Relay	645 011 2713	Degaussing
	1S2473	407 013 7109	NTE177	C503	2.2μF 10% 50V	403 276 0208	-		Relay	645 015 8629	Degaussing
# D612	RD7.5EB1	407 057 6304	NTE5015A	# C511	.15 10% 50V	403 058 5407	-		Relay	645 024 7767	Degaussing
	MTZJ7.5A	407 099 5808	-		.15 5% 50V	403 141 5802	-	SP901, 02	Speaker	645 024 7828	Degaussing
D614	PC817C	407 104 2402	NTE3098	# C601	.22 20% 275VAC	404 066 2204	-	SW1901	Switch	645 027 7382	Power
	0N3131S	407 147 5705	-		.22 20% 250VAC	404 071 2404	-	SW1902	Switch	645 027 7382	Volume Up
D621	1N4148	408 008 2406	NTE519	# C608	.0033 10% 1kV	403 247 3702	-	SW1903	Switch	645 027 7382	Volume Down
	1S2473	407 013 7109	NTE177	# C609	.0033 10% 1kV	403 271 9701	-	SW1904	Switch	645 027 7382	Channel Up
# D624A	EU2	407 007 7603	NTE552	# C625	470μF 20% 200V	404 075 5005	-	SW1905	Switch	645 027 7382	Channel Down
# D625	RU3YX	407 106 2806	NTE588	C631	.0027 10% 1kV	403 266 5008	-	SW1906	Switch	645 027 7382	Menu
D627	RU4AMLF-L1	407 129 7000	NTE580		.001 10% 125VAC	404 008 6604	-	T151	Oscillator, 45.75MHz	645 027 6088	-
	FE201-6L43	407 211 5808	-		.001 20% 125VAC	404 046 5409	-	T401	Horizontal Drive	610 000 1138	-
D629	1N4148	408 008 2406	NTE519	# C632	.001 20% 250VAC	404 073 4000	-		Horizontal Drive	610 223 1663	-
	1S2473	407 013 7109	NTE177		.0022 20% 125VAC	404 008 6802	-	# T402 (5)	Horizontal Output	645 018 9579	-
D680, 83	RD16EB1	407 054 7007	NTE5025A		.0022 20% 125VAC	404 046 5003	-	# T601	Horizontal Output	645 032 8978	-
	MTZJ16A	407 099 7208	-	# C742	.0022 20% 250VAC	404 073 4604	-		Power	645 035 9910	-
D693	1N4148	408 008 2406	NTE519		.001 +80% -20% 2kV	403 077 2807	-	# W601	Power	645 040 1527	-
	1S2473	407 013 7109	NTE177	C3404, 16, 18	4.7μF 20% 25V NP	403 086 0108	-	X141	Line Cord	645 030 5290	AC, Polarized
D694	RD6.2EB2	407 057 2702	NTE5013A	C3423	3.3μF 10% 10V Tantalum	403 342 9203	-	X161	Filter	421 008 9008	SAW
	MTZJ6.2B	407 099 5402	NTE5013T1	C3424	4.7μF 20% 25V NP	403 086 0108	-		Trap	610 015 3059	4.5MHz
D801	1N4148	408 008 2406	NTE519	C3426	10μF 10% 10V Tantalum	403 299 1820	-	X251	Trap	645 041 1618	4.5MHz
	1S2473	407 013 7109	NTE177	C3436, 39	4.7μF 20% 25V NP	403 086 0108	-		Crystal	610 012 0655	3.58MHz
D831	1N4148	408 008 2406	NTE519	# DY (1)	Yoke	-	Horiz, 1.1mH, Vert 17.7mH	Crystal	610 204 4195	3.58MHz	
	1S2473	407 013 7109	NTE177	# F601	Fuse	423 007 1601	4Amp, 125V Fast Acting	Crystal	610 245 9746	3.58MHz	
D834	MTZJ3.6B	407 065 1308	-		Fuse	423 007 1809	4Amp, 125V Fast Acting	Crystal	645 000 6692	8MHz	
	RD4.3EB2	407 056 4707	NTE5008A		Fuse	423 018 8101	4Amp, 125V Fast Acting	Crystal	645 021 5483	8MHz	
D836, 43	RD18EB3	407 054 8509	NTE5027A	K1002	Jack	645 038 1898	Assembly	Crystal	645 000 5077	For F601 (2 Used)	
	1N4148	408 008 2406	NTE519	K1011	Jack	645 039 2610	Assembly	Crystal	645 016 0479	For F601 (2 Used)	
D1001, 21	1S2473	407 013 7109	NTE177	# K701	Socket	645 025 6103	CRT	PC Board	610 289 6183	CRT	
	RD10EB2	407 054 0008	NTE5019A	L164	15μH	645 003 9713	-	PC Board (2)(3)	610 289 2802	Main	
D1901	MTZJ10B	407 099 6102	-		15μH	645 016 2657	-	PC Board (4)	610 289 7419	Main	
	RD7.5EB3	407 057 6502	NTE5015A	# L401	1μH	645 036 4198	-	Transmitter (2)	645 044 3190	Remote	
# IC002	MTZJ7.5C	407 063 9306	-	# L413 (2)(3)	Horizontal Linearity	645 025 4413	-	Transmitter (3)(4)	645 044 3237	Remote	
	LA4525	409 275 7903	-		Horizontal Linearity	645 029 8042	-		645 044 3275	Remote	
# IC101	LA76834NM-TBM	409 491 4809	-	# L413 (4)	Horizontal Linearity	645 025 4413	-				
# IC501	LA7841	409 340 1904	-		Horizontal Linearity	645 029 8042	-				
# IC601	SE130NH	409 172 8102	-	L601	Ferrite Bead	610 078 6820	-				
	UPC78L05J	409 066 7303	NTE977	L621, 23, 25	Ferrite Bead	610 078 5946	-				
IC681	TA78L05S	409 241 8309	NTE977		Ferrite Bead	652 000 1725	-				
	M37272M8-528FP	410 388 2006	-	L801, 21, 51	5.6μH	645 008 2894	-				
IC801			-		5.6μH	645 016 3104	-				
			-	L881, 82	1μH	645 006 2490	-				
			-	# L901	1μH	645 016 2411	-				
			-		Degaussing	645 044 9161	-				

For SAFETY use only equivalent replacement part.
(1) Bonded part of CRT.
(2) Used in chassis G7V-2751S0.
(3) Used in chassis 27510-00.
(4) Used in chassis 27510-01.
(5) Screen and focus controls are part of T402.