

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

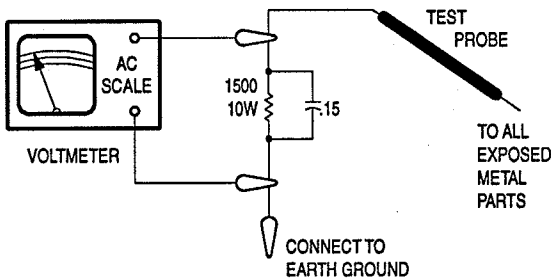
Unplug the AC cord, connect a jumper across the plug prongs, and turn the power switch on (if applicable). Use an ohmmeter to measure the resistance between the jumped AC plug and any exposed metal cabinet parts such as antenna screw heads, control shafts, or handle brackets. Exposed metal parts with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



95PF02730



PHOTOFACT® Technical Service Data

SET 3432

MODELS 27F-S40 / 50 / 100 / 120

SHARP

INDEX

GridTrace Location
Main Board 3
MTS Board 4
VAO Board 4
IC Functions 1
Important Parts Information 4
Miscellaneous Adjustments 1
Parts List 4
Placement Chart 3
Safety Precautions 1
Schematics
Audio 3
Audio / Video
Inputs & Outputs 2
Power Supply 2
System Control 2
Television 2
Schematic Notes 1
Stereo Adjustments 1
Test Equipment 4
Test Jig Hookup 1
Troubleshooting 1
Tuner Information 1

SHARP
Models 27F-S40 / 50 / 100 / 120



Model 27F-S100
Complete coverage
for servicing a television receiver...

- Schematics
- Parts list
- Component locations
- Troubleshooting guide



HOWARD W. SAMS & COMPANY

JANUARY 1995 SET 3432

For Supplier Address,
See PHOTOFACT Annual Index

TROUBLESHOOTING

POWER SUPPLY

Check F701, if open, check C701 thru C705, D701 thru D704, D705, and T701. Apply 120VAC and check for 11.6V at the emitter of Q703. If 11.6V is missing, check T701, D705, Q703, and Q2701. Turn receiver on and check for 148V at the cathode of D704. If missing, check R702, C705, and RY701. If voltage is present, check for 128V at the cathode (K) of D713. If voltage is missing, check D713, IC702, and IC703. If voltage is present, refer to the "Horizontal" section of this Troubleshooting guide.

HIGH VOLTAGE SHUTDOWN

CAUTION: Care should be taken in defeating the high voltage shutdown circuit, as this may cause excessive X-radiation and damage to the CRT, T602, and associated components.

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 D654 into conduction shutting down the receiver. To troubleshoot, disconnect pin 29 of IC201. Use a variable AC transformer for AC power, start at 90VAC and increase as necessary to isolate and correct the defect.

Voltages Taken in Shutdown		
IC201	Pin 29	4.1V

HIGH VOLTAGE SHUTDOWN TEST

Momentarily short TP651 to TP652. If the receiver fails to go into shutdown, the high voltage shutdown circuit requires repair. To return to normal operation, momentarily short TP653 to TP654.

HORIZONTAL

Determine if the receiver is in shutdown, refer to the "High Voltage Shutdown" section of this Troubleshooting guide. If receiver is not in shutdown, inject a horizontal signal at the base of Q602. If horizontal sweep returns, check Q601, T601, and pins 26, 29 thru 32 of IC201. If horizontal sweep is missing, check Q602, T602, D502, D713, D751, D752 and IC703 for defects. The high voltage rectifier is part of T602 and may be defective. Poor horizontal linearity or foldover problems may be caused by C608 and C609.

VERTICAL

Inject a vertical drive signal at pin 4 of IC501. If vertical deflection returns, check pins 22 and 24 of IC201. If vertical deflection does not return, check IC501 and DY601. Vertical linearity or foldover problems may be caused by C508, C511, and C513 being defective.

RASTER

Check the CRT and CRT voltages. If red is missing, check Q852, Q406, and pin 19 of IC201. If green is missing, check Q854, Q407, and pin 20 of IC201. If blue is missing, check Q856, Q408, and pin 21 of IC201. If the raster has a keystone shape, check DY601. If the raster has height or width problems, refer to the "Vertical," "Horizontal," or "Power Supply" sections of this Troubleshooting guide.

VIDEO

Inject a video signal at pin 47 of IC201 and check for video on the CRT. If video is present, refer to the "IF AGC" section of this Troubleshooting guide. If video is missing, check for a video waveform at pin 43 of IC201. If missing, check Q405, Q401, Q402, Q403, and pins 37 and 41 of IC201. If the waveform is present, check pins 14 thru 21 and 36 of IC201.

CHROMA

Check for the proper waveforms at pins 45, 19, 20, and 21 of IC201. If waveforms are missing, check IC201 and pin 12 of IC201 for 3.58MHz. If the proper waveforms are present, refer to the "Raster" section of this Troubleshooting guide.

IF AGC

Inject an IF signal at the IF input and check for video on the CRT. If a picture is present on the CRT, check the tuner and AGC circuits. If the picture is missing, check for a video waveform at pin 47 of IC201. If the waveform is present, refer to the "Video" section of this Troubleshooting guide. If the waveform is missing, apply AGC bias to pin 5 of IC201, if the waveform is now present, check pins 3, 7, 8, and 44 of IC201. If the waveform is still missing, check Q201 and pins 3, 5 thru 9, 42, 44, 47 thru 50, 53, and 54 of IC201. A defective AGC circuit can cause an overloaded picture, excessive snow or loss of audio and video.

AUDIO

Select an active stereo channel and check for an audio waveform at pin 39 of IC3001. If waveform is missing, check Q301 and pins 52, and 54 of IC201. If waveform is present, check for audio waveforms at pins 17 and 18 of IC3001 and at pins 55 and 56 of IC201. If audio waveforms are missing, check IC3001 and IC3301. Check for audio waveforms at pins 1 and 2 of IC201, if waveforms are missing, check IC201. If waveforms are present, check IC352 and pin 5 of IC351. Check IC351, IC352, Q351, Q354, C353, C358, SP1, and SP2.

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 pin 39 of IC3001, low side to ground. Adjust R3030 for 600mV p-p.

VCO

Set volume to an audible level. Connect a DC voltmeter to pin 2 of IC3001. Set R3013 fully clockwise, then turn it counterclockwise to a point where the voltage drops to approximately .02V.

VARIABLE DE-EMPHASIS

Set the generator for pilot, 8kHz audio frequency, and left modulating signal. Connect an oscilloscope to pin 56 of IC201. Adjust R3011 for 55mV 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 R3015 for minimum.

SEPARATION

Set the generator for pilot, 300Hz audio frequency, and left modulating signal. Connect an oscilloscope to pin 8 of IC3001, set volume to maximum, adjust R3003 for minimum.

SERVICE ADJUSTMENTS RANGE AND DEFAULT LEVELS				
Service No.	Adjustment	Data Range	Data Value	Notes
S1	Sub Picture	0-127	80	-
S2	Sub Tint	0-127	64	-
S3	Sub Color	0-127	45	-
S4	Sub Brightness	0-127	64	-
S5	Sharpness	0-63	32	-
S6	Vertical Phase	0-7	0	Must be set to "0"
S7	Horizontal Position	0-31	20	-
S8	RF AGC	0-63	32	"0" produces black raster
S9	Vertical Size	0-63	32	-
S10	VCO	0-127	45	-
S11	Red Cutoff	0-255	0	-
S12	Green Cutoff	0-255	0	-
S13	Blue Cutoff	0-255	0	-
S14	Green Gain	0-255	128	-
S15	Blue Gain	0-255	128	-
S16	3.58MHz Trap	0-1	0	"0"= On, "1"= Off
S17 (1)	BPF	0-1	1	"0"= On, "1"= Off
S18 (1)	Blanking	0-1	0	"0"= On, "1"= Off
S19	Y-Mute/Vertical, Collapse	0-3	0	"0"= Normal Raster, "1"= No Y, "2"= Test Mode, "3"= No Vertical
S20 (1)	Horizontal AFC	0-1	1	"0"= X2 Gain, "1"= Normal Gain
S21	White Peak Limit	0-1	1	"1"= On, "0"= Off
S22 (1)	60Hz	0-1	0	"0"= Normal Viewing, "1"= NA
S23	Volume	8-58	26	-
S24	Audio Balance	0-63	32	-
S25	Caption Position	0-15	7	-
(1) No adjustment is required, proper setting is automatic.				

MISCELLANEOUS ADJUSTMENTS

HIGH VOLTAGE CHECK

Tune in a picture. Set brightness, color, picture, and screen to minimum. Connect a high voltage probe to CRT anode. High voltage must never exceed 29.3kV.

ENTERING SERVICE MODE

Turn on receiver and use reset function in the video adjust menu to ensure customer controls are in their proper reset position. Momentarily short TP2001 to TP2002. The receiver will enter the service mode. Channel up/down button will change service numbers. Volume up/down button will adjust data value numbers. To exit service mode turn off the power or unplug the receiver.

RF AGC

Tune in a picture. Enter the service mode, select service number "S8". Adjust the data value to a point where no snow (noise) appears in picture. Check other channels for proper operation.
NOTE: To select another channel, you must exit the service mode.

VCO

Connect a digital voltmeter to pin 44 of IC201, and ground. Tune in a local channel. Enter the service mode, select service number "S10" and data value "60". Adjust L206 to obtain 4.0V on the digital voltmeter.

SUB PICTURE

Tune in a picture. Set brightness to minimum. Set picture to maximum. Enter the service mode, select service number "S1". Set the data value to achieve normal contrast range.

SUB TINT

Tune in a picture. Set tint at center of its range level. Enter the service mode, select service number "S2". Set the data value to achieve normal flesh tones.

SUB COLOR

Tune in a picture. Set color at center of its range level. Enter the service mode, select service number "S3". Set the data value to achieve normal color level.

SUB BRIGHTNESS

Tune in a picture. Set brightness at reset level. Enter the service mode, select service number "S4". Set the data value to achieve normal brightness level.

VERTICAL SIZE

Tune in a crosshatch pattern. Enter the service mode, select service number "S9". Set the data value to achieve proper vertical size and for the best vertical linearity.

VERTICAL PHASE

Tune in a crosshatch pattern. Enter the service mode, select service number "S6". Set the data value to "0".

HORIZONTAL POSITION

Tune in a crosshatch pattern. Enter the service mode, select service number "S7". Set the data value for the best centering on screen.

CAPTION POSITION

Tune in a local channel. Enter the service mode, select service number "S25". A black box will appear on the screen. Set the data value to center the black box on the screen.

WHITE BALANCE

Operate the receiver for 15 minutes. Enter the service mode, select service number "S3". Set the data value to "0". Set brightness for a visible raster. Alternately select service numbers "S14" and "S15" and adjust data value until a good gray scale with normal white is obtained. Select service number "S3". Set the data value to achieve normal color level.

GRAY SCALE (SCREEN)

Connect a digital voltmeter across R852 on the CRT board. Tune in an active channel. Set color, brightness, and picture to minimum. Enter the service mode, select service number "S3". Set the data value to "0". Select service number "S19", adjust the data value to "1", this turns off the luminance signal (Y mute). Select service number "S4" and adjust the data value to obtain .15V on the digital voltmeter. Adjust master screen control, if necessary, to obtain a barely visible raster. Adjust data values of service numbers "S11", "S12", and "S13" for a good gray scale with normal white at high and low brightness. Select service number "S19" and adjust the data value to "0". Select service number "S3" and adjust the data value to normal color level. Remove digital voltmeter and reset screen control to obtain normal brightness.

HORIZONTAL AFC

Tune in a local channel. Enter the service mode and select service number "S20". Set data value to "1", which is normal AFC gain. If increased horizontal gain is required, adjust data value to "0".

BLANKING

Tune in a local channel. Enter the service mode and select service number "S18". Set data value to "0", which is normal blanking. If data value is set to "1", blanking will be turned off.

WHITE PEAK LIMITER (WPL)

Tune in a local channel. Enter the service mode and select service number "S21". Set data value to "1", which is normal WPL. If data value is set to "0", WPL will be turned off.

3.58MHz TRAP

Tune in a local channel. Enter the service mode and select service number "S16". If data value is set to "0", 3.58MHz trap is on. If data value is set to "1", 3.58MHz trap will be turned off.

BANDPASS FILTER (BPF)

Tune in a local channel. Enter the service mode and select service number "S17". If data value is set to "0", bandpass is on. If data value is set to "1", bandpass will be off. Normal setting is "1".

SHARPNESS

Tune in a local channel. Enter the service mode and select service number "S5". Set data value to "32" which is center of data range.

AUDIO BALANCE

Tune in a local channel. Enter the service mode and select service number "S24". Set data value to "32" which is center of data range.

VOLUME

Tune in a local channel. Enter the service mode and select service number "S23". Set data value to "26" or for normal listening volume.

60Hz

Tune in a local channel. Enter the service mode and select service number "S22". Set data value to "0" which is normal viewing. If data value is set to "1", you will have a "no sync" condition.

AUDIO INPUT LEVEL

Connect a 1.2Vp-p, 400Hz signal to the left and right audio input jack.

Left Channel

Connect scope to pin 5 of connector HB on VAO board. Adjust R1377 for 1.2Vp-p .

Right Channel

Connect scope to pin 7 of connector HB on VAO board. Adjust R1357 for 1.2Vp-p .

AUDIO OUTPUT LEVEL

Connect a 1.4Vp-p, 400Hz signal to the left and right audio line output jack.

Left Channel

Connect a 1.4Vp-p, 400Hz signal to pin 2 of connector HA on VAO board. Connect a 47K ohms resistor across the left output jack. Connect scope to left output jack. Adjust R1330 for 2.7Vp-p. Remove resistor.

Right Channel

Connect a 1.4Vp-p, 400Hz signal to pin 4 of connector HA on VAO board. Connect a 47K ohms resistor across the right output jack. Connect scope to right output jack. Adjust R1309 for 2.7Vp-p. Remove resistor

VIDEO LEVEL

Connect a 2.0Vp-p color bar signal to the video input jack. Connect scope to pin 3 of connector HB on VAO board. Adjust R1478 for 1.0Vp-p.

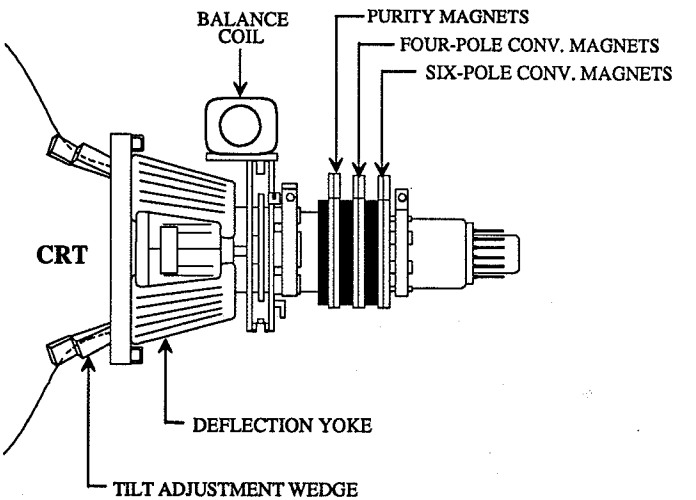
CONVERGENCE

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

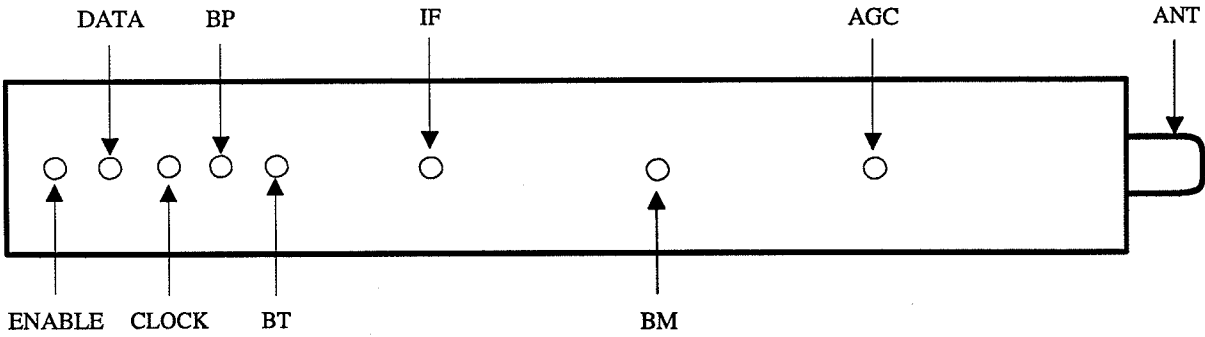


TUNER INFORMATION

TUNER VOLTAGE CHART

Pin	VHF Low Band	VHF High Band	UHF Band	Pin	VHF Low Band	VHF High Band	UHF Band
Enable	0V	0V	0V	BM	8.8V	8.8V	8.8V
Data	0V	0V	0V	AGC	5.6V	5.6V	5.6V
Clock	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.			
BP	5.2V	5.2V	5.2V				
BT	33.1V	33.4V	33.5V				
IF	0V	0V	0V				

TUNER TERMINAL GUIDE

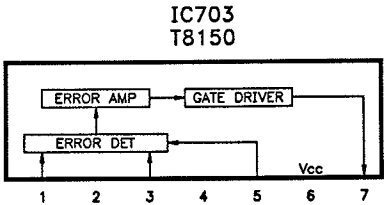
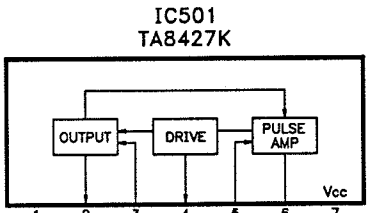
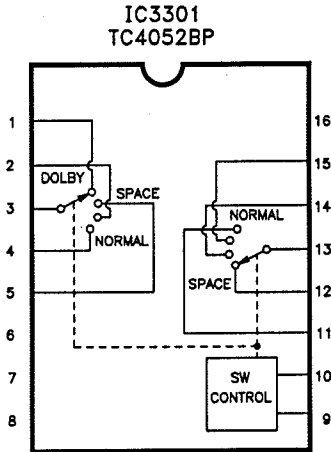
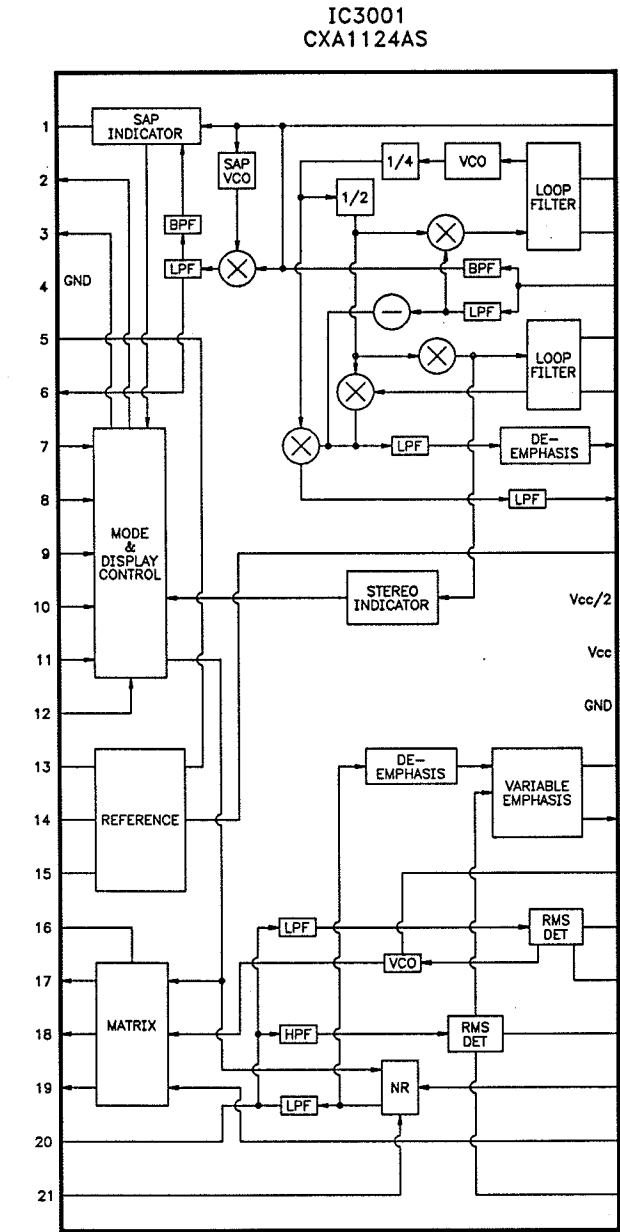


SCHEMATIC NOTES

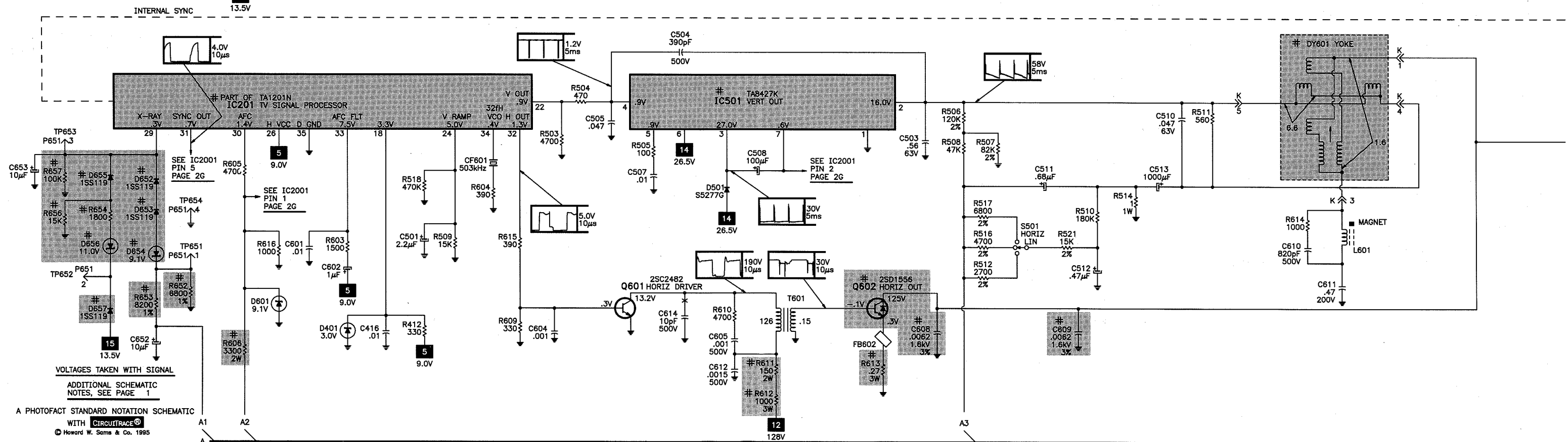
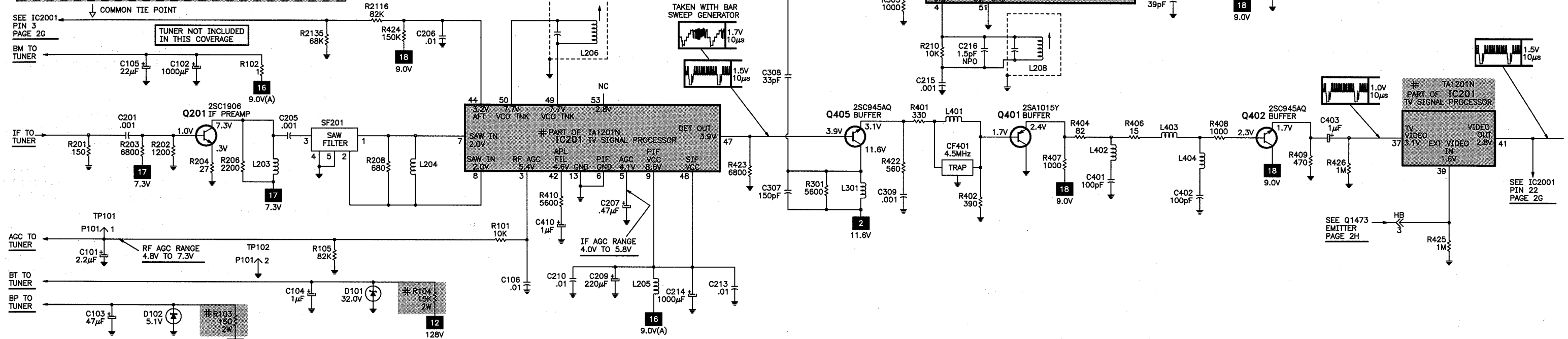
- # For SAFETY use only equivalent replacement part, see parts list.
- ✕ Circuitry not used in some versions.
- Circuitry used in some versions.
- ⏏ Ground
- ⏏ Chassis ground
- ⏏ Common tie point
- △ Taken from common tie point
- 3 Schematic CIRCUITRACE®: Voltage source tie point.
- A Cabling: Heavy lines reduce use of multiple lines.

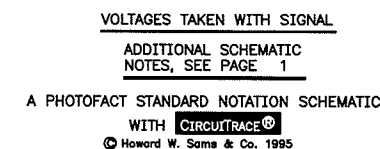
Waveforms and voltages are taken from ground, unless noted otherwise.
Waveforms taken with triggered scope and colorbar signal. Waveform voltage is peak to peak. Timebase is per division. Waveforms shown at 10 divisions.
Supply voltages maintained as seen at input.
Voltages measured with digital meter 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.

IC FUNCTIONS

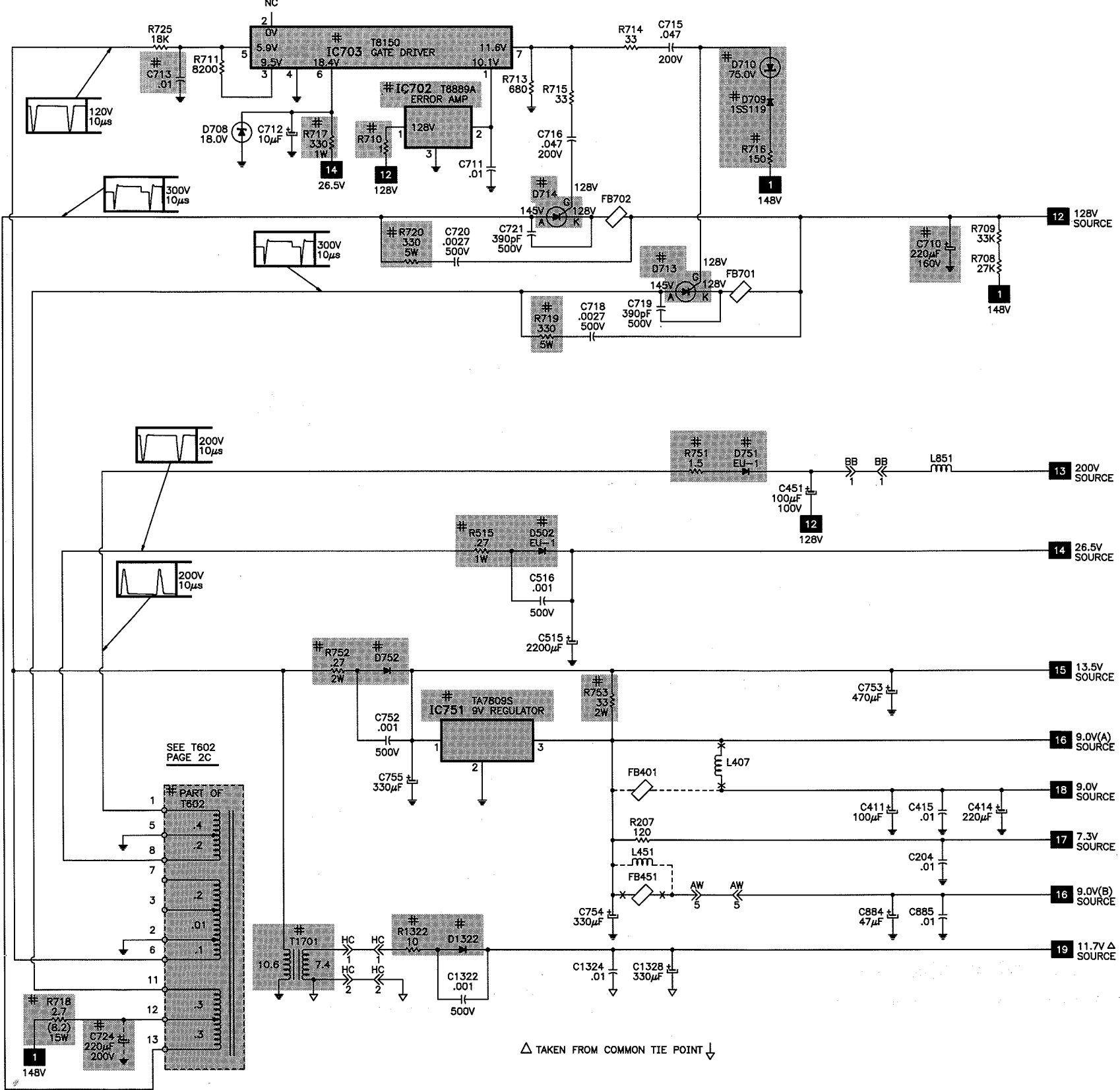
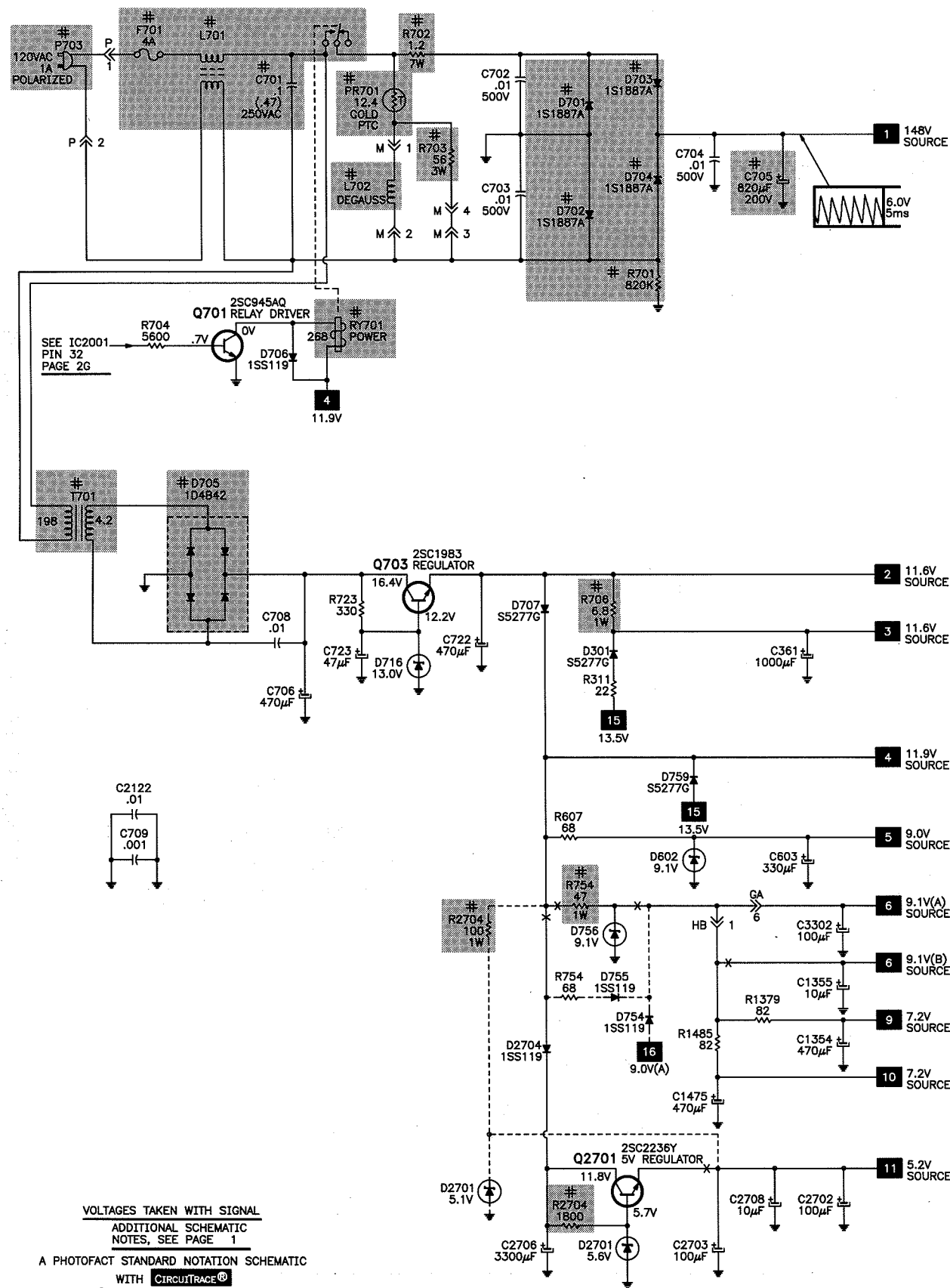


TEST JIG HOOKUP				
Function	Chek-A-Color Adapter No.	PC Board Plug No.	Pin	Color
CRT	B239	K	1	Red
Yoke	D4137		3	Blue
Yoke Setting	YP1A		4	Yellow
Comments	Focus Tap		5	Green





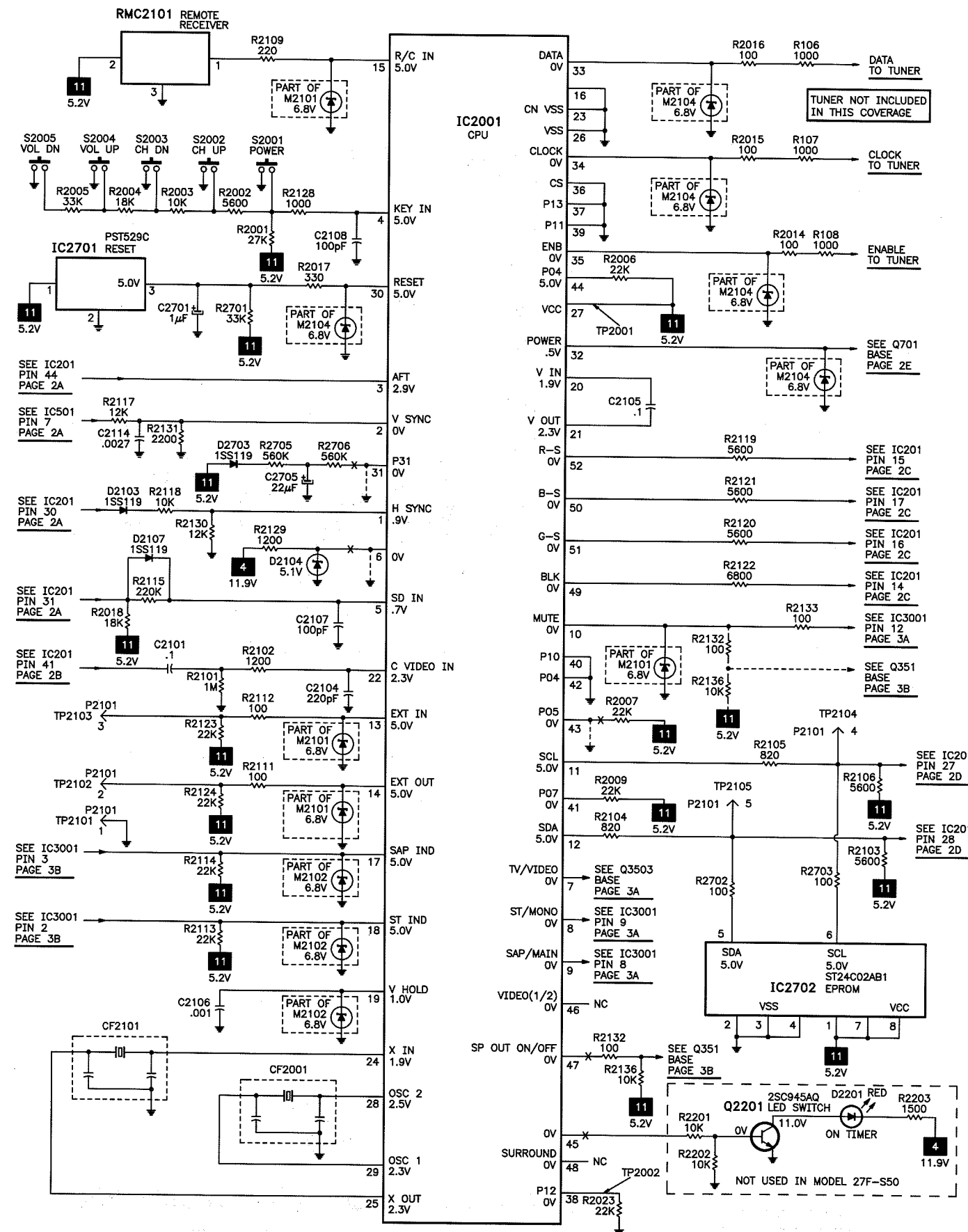
POWER SUPPLY SCHEMATIC



E

F

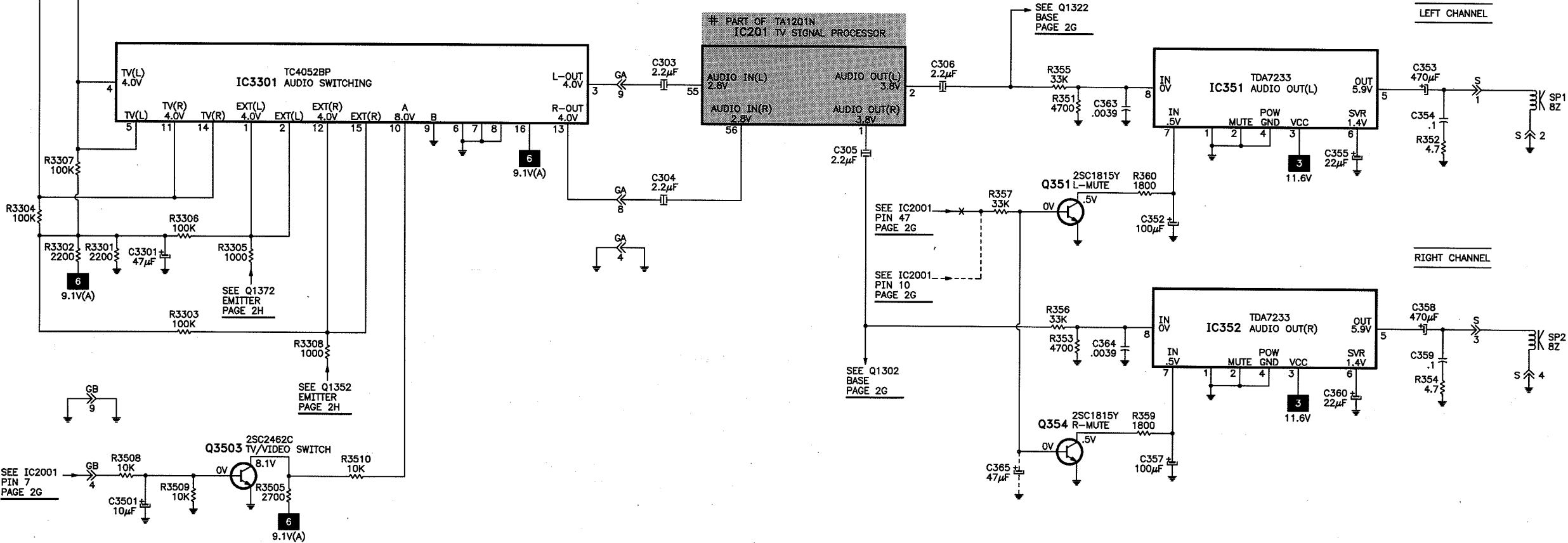
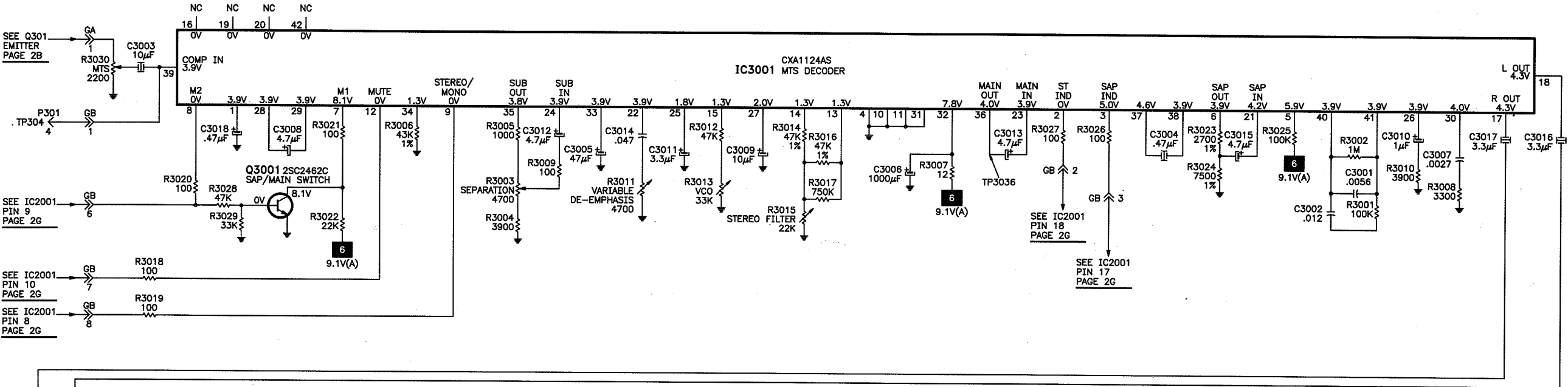
SYSTEM CONTROL SCHEMATIC



A

B

AUDIO SCHEMATIC



VOLTAGES TAKEN WITH SIGNAL

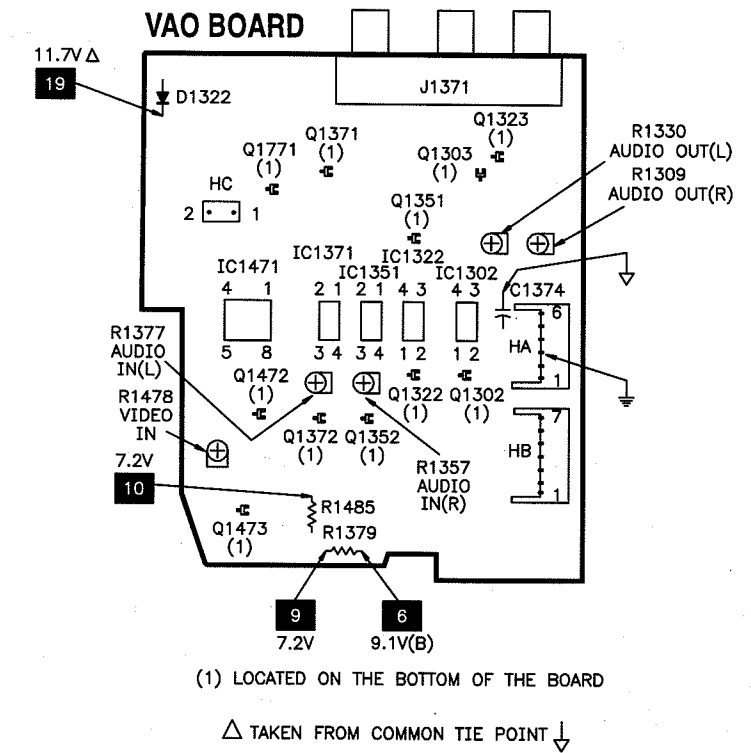
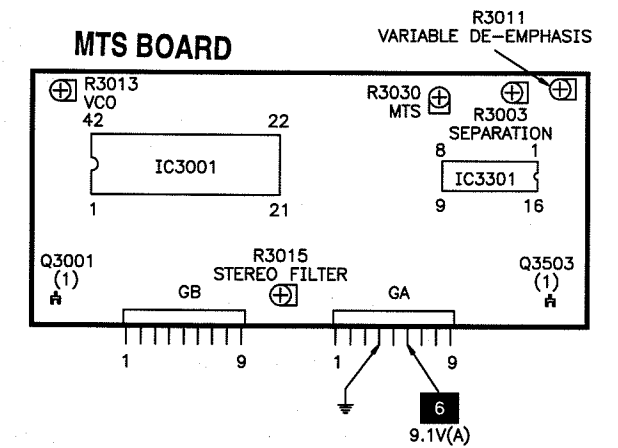
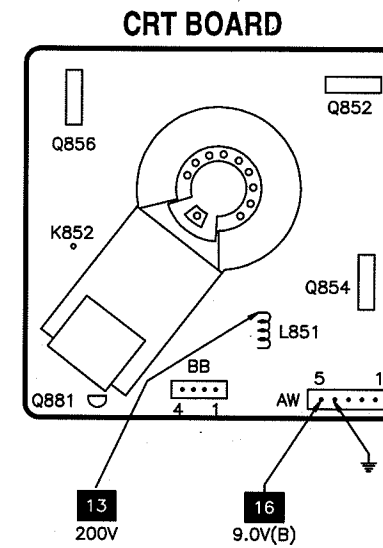
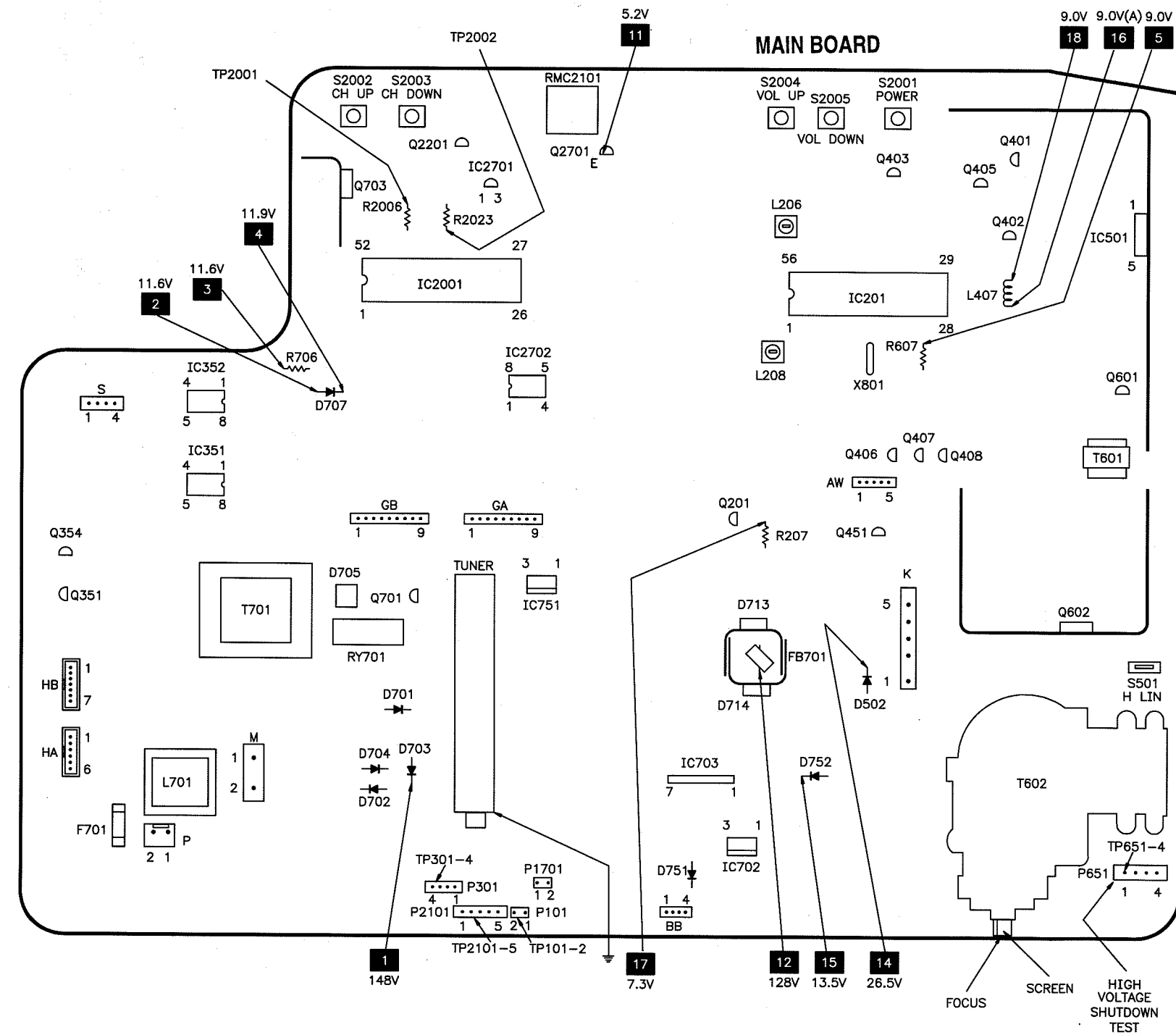
ADDITIONAL SCHEMATIC
NOTES, SEE PAGE 1

A PHOTOFAC STANDARD NOTATION SCHEMATIC

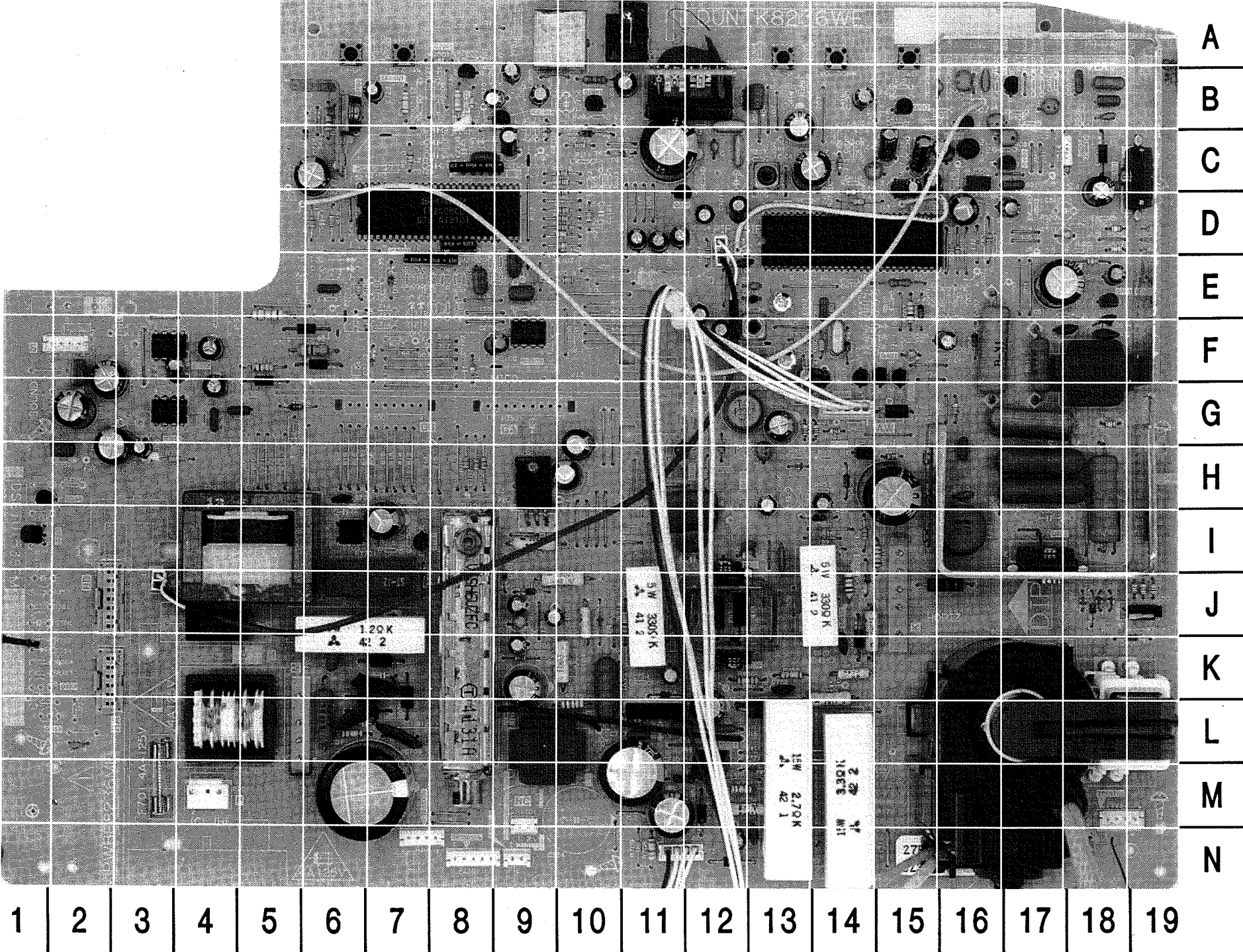
WITH CIRCUITTRACE

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PLACEMENT CHART



MAIN BOARD - TOP VIEW

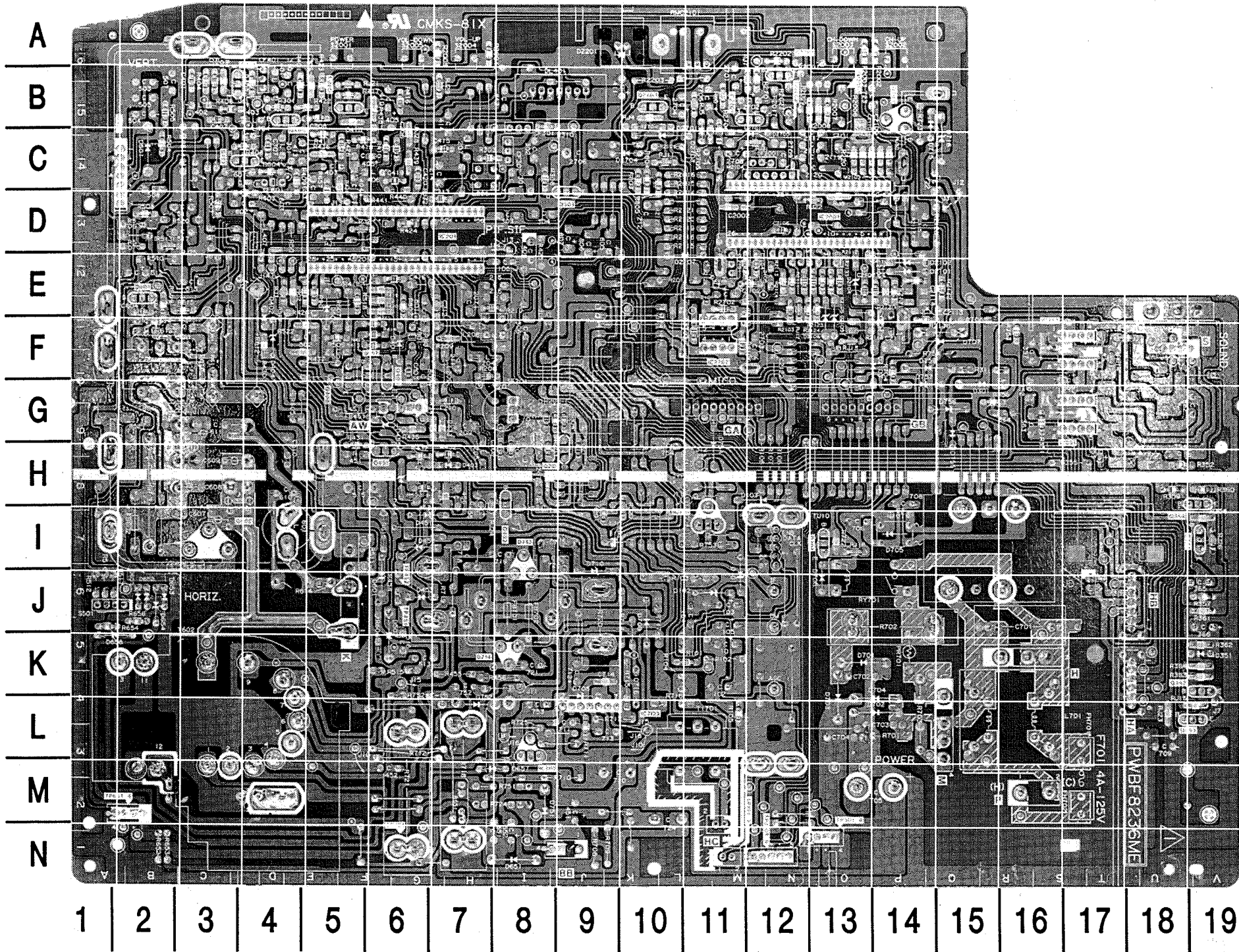


A HOWARD W. SAMS GRIDTRACE™ PHOTO

MAIN BOARD - TOP VIEW, GRIDTRACE LOCATION GUIDE

AW	G-14	C706	I-7	D713	J-12	Q2201	B-8	R2006	B-7
BB	N-11	C708	H-6	D714	K-12	Q2701	B-10	R2014	D-10
C101	K-9	C709	L-2	D716	C-5	R102	K-9	R2015	C-10
C102	K-9	C710	M-11	D751	M-12	R103	J-10	R2016	C-10
C103	J-9	C711	L-11	D752	L-13	R104	K-10	R2017	B-8
C104	J-9	C712	K-11	D756	G-5	R106	H-8	R2018	E-10
C105	J-9	C713	L-11	D759	F-6	R107	H-8	R2023	B-8
C106	E-12	C715	I-12	D2103	F-7	R108	H-8	R2109	C-10
C207	E-13	C716	K-10	D2104	E-7	R207	H-12	R2115	D-10
C209	G-13	C718	I-13	D2107	E-10	R209	F-13	R2116	D-10
C211	F-13	C719	I-13	D2201	A-11	R311	F-5	R2117	D-6
C214	C-14	C720	I-12	D2701	C-10	R355	H-3	R2118	F-6
C215	E-13	C721	K-12	D2703	C-9	R412	E-15	R2119	D-10
C216	E-13	C722	C-6	D2704	C-10	R425	E-12	R2120	D-10
C303	D-12	C723	B-7	DL401	B-12	R433	G-13	R2121	D-10
C304	D-12	C752	K-13	F701	M-3	R434	G-14	R2122	D-10
C305	E-12	C753	L-12	FB451	G-15	R435	G-14	R2128	D-6
C306	F-12	C754	G-10	FB602	I-18	R439	C-14	R2129	E-9
C309	B-16	C755	H-10	FB701	J-12	R440	D-14	R2135	E-6
C352	G-4	C801	E-13	FB702	J-12	R441	D-14	R2136	E-14
C353	H-2	C802	F-14	GA	G-8	R451	H-15	R2201	C-7
C354	H-2	C805	D-11	GB	G-6	R454	J-14	R2203	B-10
C355	H-3	C806	D-11	HA	K-2	R455	K-13	R2704	B-10
C357	F-4	C807	D-11	HB	J-2	R456	K-12	RMC2101	A-10
C358	G-2	C2101	E-9	HC	N-9	R501	D-16	RY701	J-6
C359	F-2	C2105	E-8	IC201	E-13	R506	D-18	S	F-1
C360	F-3	C2114	E-6	IC351	G-4	R507	D-18	S501	J-19
C361	G-2	C2122	F-8	IC352	F-4	R510	E-18	S2001	A-15
C363	G-4	C2701	B-9	IC501	C-19	R511	I-15	S2002	A-6
C403	C-15	C2702	B-8	IC702	L-12	R512	J-19	S2003	A-7
C404	C-15	C2703	F-9	IC703	L-11	R514	C-18	S2004	A-13
C405	C-15	C2705	B-9	IC751	H-9	R515	K-14	S2005	A-14
C410	B-14	C2706	C-11	IC2001	D-6	R516	J-19	SF201	G-12
C411	B-11	C2708	C-9	IC2701	B-9	R517	J-19	T601	F-18
C412	B-13	CF301	B-12	IC2702	F-9	R521	G-18	T602	L-17
C413	C-15	CF302	C-12	K	I-15	R605	G-16	T701	I-5
C414	B-13	CF401	B-16	L203	H-12	R606	J-14	T1701	L-9
C451	M-11	CF601	C-16	L204	F-13	R607	E-15	TP651	M-18
C452	M-14	CF2001	C-8	L205	H-13	R610	F-17	TP652	M-18
C453	H-14	CF2101	E-9	L206	C-13	R611	F-17	TP653	M-18
C455	H-13	D101	J-9	L208	F-13	R612	F-16	TP654	M-19
C501	F-15	D102	J-9	L301	C-16	R613	H-18	TP2001	B-7
C502	F-16	D301	G-5	L401	B-16	R614	J-16	TP2002	B-8
C503	B-18	D401	F-14	L402	B-17	R616	I-14	X801	F-14
C504	B-18	D402	F-15	L403	B-16	R651	M-13		
C505	B-18	D403	H-13	L404	C-17	R652	N-18		
C507	B-18	D404	F-16	L406	C-15	R653	N-18		
C508	C-18	D451	I-14	L407	D-16	R701	L-6		
C510	H-16	D452	I-14	L601	I-16	R702	J-6		
C511	D-18	D453	J-14	L701	L-4	R703	L-6		
C512	E-18	D454	H-14	M	K-5	R706	E-5		
C513	E-17	D501	C-18	M2101	E-8	R708	N-11		
C515	H-15	D502	K-14	M2102	D-8	R709	N-11		
C516	K-14	D601	J-14	M2104	C-8	R710	M-12		
C601	C-17	D602	E-15	P	M-4	R713	L-11		
C602	D-17	D651	N-12	PR701	K-6	R714	J-11		
C603	D-16	D652	J-18	Q201	H-12	R715	K-10		
C605	F-18	D653	J-18	Q301	D-11	R716	L-10		
C608	H-17	D654	J-18	Q351	I-1	R717	J-10		
C609	H-17	D655	J-18	Q354	H-1	R718	M-13		
C610	H-16	D656	K-19	Q401	B-17	R719	J-14		
C611	G-17	D657	M-13	Q402	C-17	R720	J-11		
C612	F-18	D701	K-7	Q403	B-15	R721	M-14		
C614	F-18	D702	L-7	Q405	B-16	R723	B-6		
C651	N-13	D703	K-7	Q406	F-14	R724	M-13		
C652	N-12	D704	K-7	Q407	F-15	R725	L-12		
C653	C-15	D705	I-6	Q408	F-15	R751	M-12		
C701	J-4	D706	J-7	Q451	H-14	R752	K-14		
C702	K-7	D707	F-6	Q601	E-18	R753	I-9		
C703	L-6	D708	K-11	Q602	I-17	R754	F-6		
C704	L-7	D709	J-10	Q701	I-7	R801	F-14		
C705	M-6	D710	J-11	Q703	B-6	R2001	A-8		

MAIN BOARD - BOTTOM VIEW

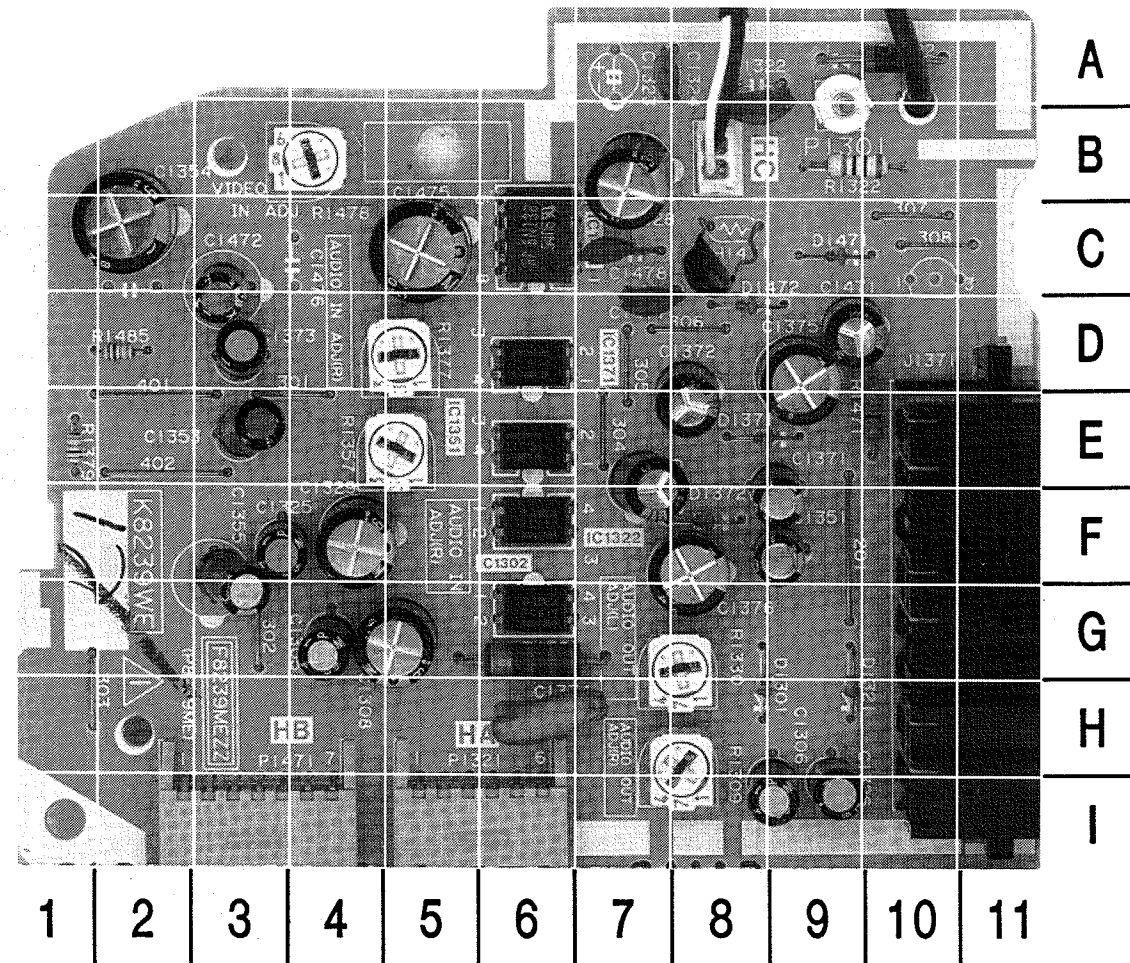


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MAIN BOARD - BOTTOM VIEW,
GRIDTRACE LOCATION GUIDE

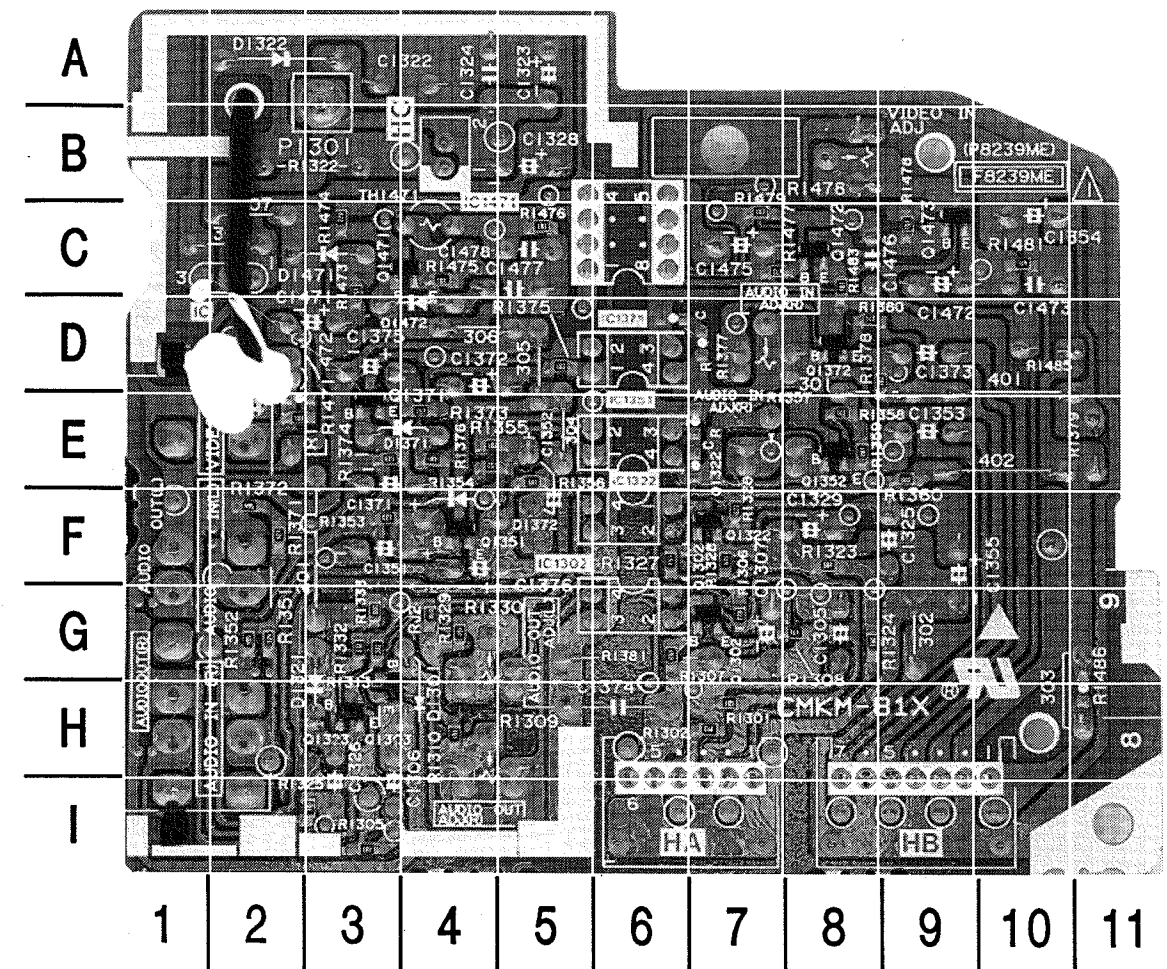
C201	H-9	R508	D-2
C204	G-8	R509	F-5
C205	H-8	R518	E-5
C206	C-6	R603	D-4
C210	G-7	R604	C-4
C212	E-7	R609	E-2
C213	D-7	R615	E-3
C302	C-12	R654	J-1
C307	C-4	R656	J-2
C308	B-5	R657	C-5
C364	G-4	R704	F-14
C401	B-3	R711	L-9
C402	B-3	R802	E-6
C415	C-7	R803	C-10
C416	E-6	R804	C-10
C419	C-6	R805	C-10
C420	C-6	R901	E-5
C604	E-2	R902	E-4
C803	F-6	R2002	A-14
C2104	E-12	R2003	A-13
C2106	D-12	R2004	A-7
C2107	E-13	R2005	A-7
C2108	E-14	R2007	B-13
R101	K-11	R2009	B-12
R105	L-11	R2101	E-11
R201	I-9	R2102	E-12
R202	H-8	R2103	E-12
R203	G-8	R2104	E-13
R204	G-9	R2105	E-13
R206	H-8	R2106	F-11
R208	F-7	R2111	E-12
R210	E-7	R2112	E-13
R301	B-4	R2113	E-12
R303	C-7	R2114	E-12
R308	C-8	R2123	E-13
R310	B-9	R2124	E-12
R351	G-16	R2130	E-14
R352	H-19	R2131	E-14
R353	F-16	R2132	E-15
R354	F-17	R2133	E-13
R356	G-15	R2202	A-12
R357	J-19	R2701	B-12
R359	H-18	R2702	E-11
R360	H-19	R2703	F-11
R401	B-4	R2705	C-11
R402	B-4	R2706	C-11
R404	B-3		
R406	B-3		
R407	B-3		
R408	C-3		
R409	C-4		
R410	C-6		
R411	C-5		
R413	F-6		
R414	F-6		
R415	F-6		
R416	B-6		
R417	B-5		
R418	C-5		
R422	B-4		
R423	B-5		
R424	D-6		
R426	C-5		
R431	H-5		
R432	H-6		
R452	H-7		
R453	H-6		
R503	D-3		
R504	C-2		
R505	B-2		

VAO BOARD - TOP VIEW



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VAO BOARD - BOTTOM VIEW



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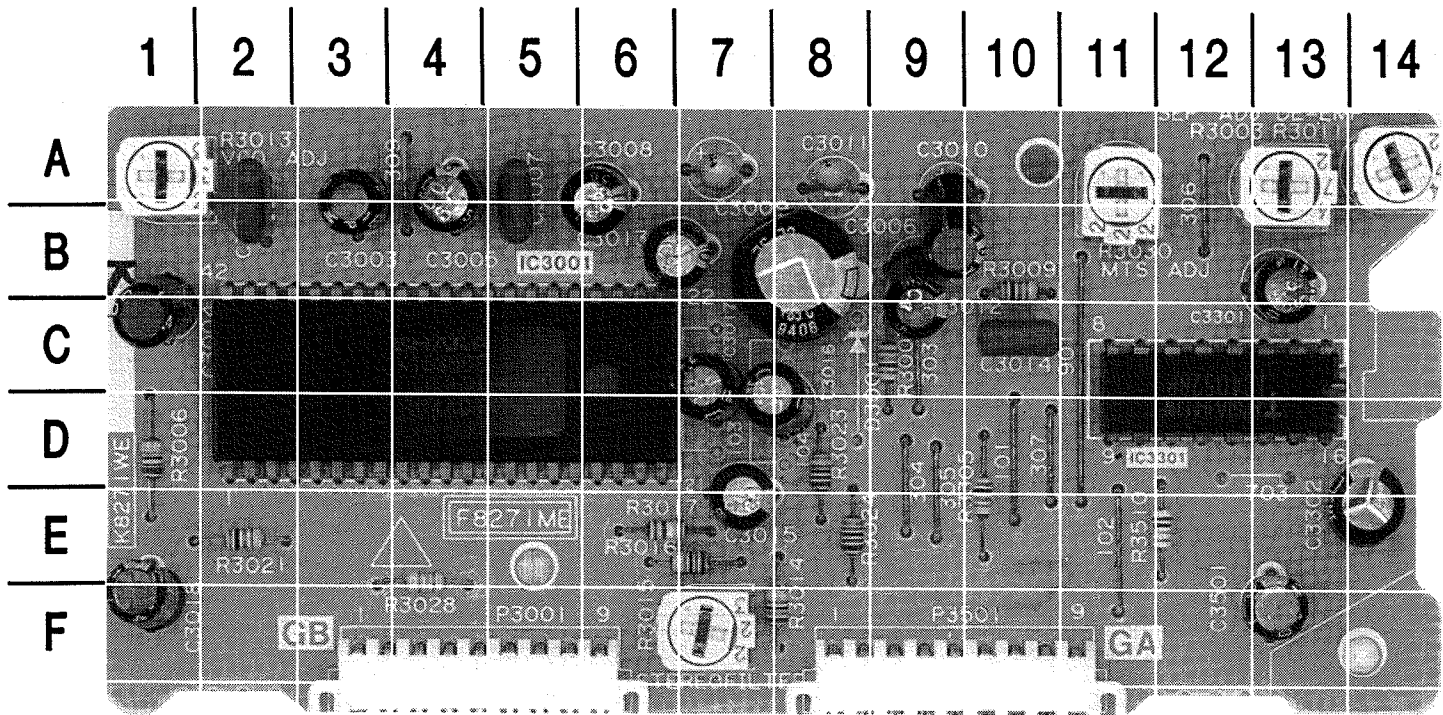
VAO BOARD - TOP VIEW, GRIDTRACE LOCATION GUIDE

C1305	G-4	C1353	E-3	C1475	C-5	HB	I-2	R1330	G-8
C1306	I-9	C1354	C-2	C1477	D-7	HC	B-8	R1357	E-5
C1308	G-5	C1355	G-3	C1478	C-7	IC1302	G-6	R1377	D-5
C1322	A-8	C1371	F-9	D1301	H-8	IC1322	F-6	R1379	E-1
C1324	A-8	C1372	E-8	D1321	H-9	IC1351	E-6	R1381	G-6
C1325	F-3	C1373	D-3	D1322	A-10	IC1371	D-6	R1471	E-10
C1326	I-9	C1374	H-6	D1371	E-8	IC1471	C-6	R1478	B-4
C1328	B-7	C1375	D-9	D1372	F-8	J1371	E-11	R1485	D-2
C1329	F-4	C1376	F-8	D1471	C-9	P1301	B-9	TH1471	C-8
C1351	F-9	C1471	D-9	D1472	D-8	R1309	H-8		
C1352	F-7	C1472	D-3	HA	I-5	R1322	B-9		

VAO BOARD - BOTTOM VIEW, GRIDTRACE LOCATION GUIDE

Q1302	G-7	R1301	H-7	R1326	F-7	R1358	E-8	R1473	C-3
Q1303	H-3	R1302	H-7	R1327	F-6	R1359	E-8	R1474	C-3
Q1322	F-7	R1305	I-3	R1328	F-7	R1371	F-2	R1475	C-4
Q1323	H-3	R1306	G-7	R1329	G-4	R1372	F-2	R1476	C-5
Q1351	F-4	R1307	G-6	R1332	G-3	R1373	E-4	R1477	C-7
Q1352	F-7	R1308	G-8	R1351	G-2	R1374	E-3	R1479	C-7
Q1371	E-3	R1310	H-4	R1352	G-2	R1375	D-5	R1481	C-10
Q1372	D-8	R1313	G-3	R1353	F-3	R1376	E-4	R1483	C-8
Q1471	C-4	R1323	F-8	R1354	E-4	R1378	D-9	R1487	C-9
Q1472	C-8	R1324	G-8	R1355	E-4	R1380	D-8		
Q1473	C-9	R1325	I-3	R1356	E-5	R1472	E-2		

MTS BOARD



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MTS BOARD, GRIDTRACE LOCATION GUIDE

C3001*	B-2	C3016	C-7	R3004*	B-13	R3019*	F-6	R3304*	C-13
C3002	A-2	C3017	C-7	R3005*	A-4	R3020*	E-3	R3305	E-10
C3003	B-3	C3018	F-1	R3006	D-1	R3021	E-2	R3306*	C-13
C3004	C-1	C3301	B-13	R3007	C-9	R3022*	F-11	R3307*	C-12
C3005	B-4	C3302	E-14	R3008*	B-5	R3023	D-8	R3308*	D-12
C3006	B-8	C3501	F-13	R3009	B-10	R3024	E-8	R3505*	E-12
C3007	A-5	GA	F-8	R3010*	B-9	R3025*	C-8	R3508*	F-12
C3008	A-6	GB	F-3	R3011	A-14	R3026*	D-2	R3509*	F-12
C3009	A-7	IC3001	D-2	R3012*	C-2	R3027*	D-2	R3510	E-12
C3010	A-9	IC3301	C-13	R3013	A-1	R3028	E-4		
C3011	A-8	Q3001*	F-1	R3014	F-8	R3029*	F-1		
C3012	B-9	Q3503*	F-13	R3015	F-7	R3030	A-11		
C3013	B-6	R3001*	B-2	R3016	E-7	R3301*	C-11		
C3014	C-10	R3002*	C-2	R3017	E-6	R3302*	C-13		
C3015	E-7	R3003	A-13	R3018*	E-3	R3303*	C-13		

* Located on
bottom of board

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

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.
D101	-	RH-EX0198GEZZ	-	-	-
D102	-	RH-EX0294CEZZ	-	-	-
D301	S5277G	RH-DX0110CEZZ	NTE116	ECG116	SK3312
D401	-	RH-EX0280CEZZ	-	-	-
D402, 03	1SS119	VHD1SS119//1	NTE519	ECG519	SK3100
D404	1N4148	RH-DX0045GEZZ	NTE519	ECG519	SK3100
D404	-	RH-EX0092CEZZ	NTE5006A	ECG5006A	SK3A6
D451, 52	-	RH-EX0217CEZZ	NTE5023A	ECG5023A	SK14A
D453	1SS119	VHD1SS119//1	NTE519	ECG519	SK3100
D453	1N4148	RH-DX0045GEZZ	NTE519	ECG519	SK3100
D454	-	RH-EX0131CEZZ	NTE5010A	ECG5010A	SK5A1
D501	S5277G	RH-DX0110CEZZ	NTE116	ECG116	SK3312
# D502	EU-1	RH-DX0131CEZZ	NTE552	ECG552	SK9000
D601	-	RH-EX0313CEZZ	-	-	-
D602	-	RH-EX0114CEZZ	-	-	-
# D651	-	RH-DX0130CEZZ	NTE552	ECG552	SK9000
# D652, 53	1SS119	VHD1SS119//1	NTE519	ECG519	SK3100
D652, 53	1N4148	RH-DX0045GEZZ	NTE519	ECG519	SK3100
# D654	-	RH-EX0655CEZZ	-	-	-
# D655	1SS119	VHD1SS119//1	NTE519	ECG519	SK3100
D655	1N4148	RH-DX0045GEZZ	NTE519	ECG519	SK3100
# D656	-	RH-EX0318CEZZ	-	-	-
# D657	1SS119	VHD1SS119//1	NTE519	ECG519	SK3100
D657	1N4148	RH-DX0045GEZZ	NTE519	ECG519	SK3100
# D701 Thru	-	-	-	-	-
# D704	1S1887A	RH-DX0154CEZZ	NTE552	ECG552	SK9000
# D705	1D4B42	RH-DX0200CEZZ	NTE5332	ECG5332	SK9232
D706	1SS119	VHD1SS119//1	NTE519	ECG519	SK3100
D706	1N4148	RH-DX0045GEZZ	NTE519	ECG519	SK3100
D707	S5277G	RH-DX0110CEZZ	NTE116	ECG116	SK3312
D708	-	RH-EX0334CEZZ	-	-	-
# D709	1SS119	VHD1SS119//1	NTE519	ECG519	SK3100
D709	1N4148	RH-DX0045GEZZ	NTE519	ECG519	SK3100
# D710	-	RH-EX0238CEZZ	-	-	-
# D713, 14	-	VHSS6785GLB2E	NTE5424	ECG5424	-
D716	-	RH-EX0324CEZZ	-	-	-
# D751	EU-1	RH-DX0131CEZZ	NTE552	ECG552	SK9000
# D752	-	RH-DX0382CEZZ	-	-	-
D754, 55	1SS119	VHD1SS119//1	NTE519	ECG519	SK3100
D754, 55	1N4148	RH-DX0045GEZZ	NTE519	ECG519	SK3100
D756	-	RH-EX0041TAZZ	NTE5014A	ECG5014A	SK6A8
D759	S5277G	RH-DX0110CEZZ	NTE116	ECG116	SK3312
D881, 82	1SS119	VHD1SS119//1	NTE519	ECG519	SK3100
D881, 82	1N4148	RH-DX0045GEZZ	NTE519	ECG519	SK3100
D1301, 21	1SS119	VHD1SS119//1	NTE519	ECG519	SK3100
D1301, 21	1N4148	RH-DX0045GEZZ	NTE519	ECG519	SK3100
# D1322	-	RH-DX0131CEZZ	NTE552	ECG552	SK9000
D1371, 72	1SS119	VHD1SS119//1	NTE519	ECG519	SK3100
D1371, 72	1N4148	RH-DX0045GEZZ	NTE519	ECG519	SK3100
D1471, 72	1SS119	VHD1SS119//1	NTE519	ECG519	SK3100
D1471, 72	1N4148	RH-DX0045GEZZ	NTE519	ECG519	SK3100
D2103	1SS119	VHD1SS119//1	NTE519	ECG519	SK3100
D2103	1N4148	RH-DX0045GEZZ	NTE519	ECG519	SK3100
D2104	-	RH-EX0294CEZZ	-	-	-
D2107	1SS119	VHD1SS119//1	NTE519	ECG519	SK3100
D2107	1N4148	RH-DX0045GEZZ	NTE519	ECG519	SK3100
D2201	-	RH-PX0304CEZZ	-	-	-
D2701	-	RH-EX0103CEZZ	-	-	-
D2701	-	RH-EX0294CEZZ	-	-	-
D2703, 04	1SS119	VHD1SS119//1	NTE519	ECG519	SK3100
D2703, 04	1N4148	RH-DX0045GEZZ	NTE519	ECG519	SK3100
# IC201	TA1201N	RH-IX2429CEZZ	-	-	-
IC351, 52	TDA7233	VHITDA7233/-1	-	-	-

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.
# IC501	TA8427K	RH-IX1224CEZZ	-	-	-
# IC702	T8889A	VHIT8889A/-1	-	-	-
# IC703	T8150	RH-IX0758CEZZ	-	-	-
# IC751	TA7809S	VHITA7809S/-1	-	-	-
# IC1302, 22	PC817A	RH-FX0011CEZZ	NTE3098	ECG3098	SK9763
# IC1351, 71	PC817A	RH-FX0011CEZZ	NTE3098	ECG3098	SK9763
# IC1471	6N136	RH-FX0014CEZZ	NTE3092	ECG3092	SK9770
IC2001	-	RH-IX2406CEZZ	-	-	-
IC2001	-	RH-IX2428CEZZ	-	-	-
IC2701	PST529C	-	-	-	-
IC2701	PST529C2	-	-	-	-
IC2702	PST529C-2	VHIST529C2-1	-	-	-
IC2702	ST24C02AB1	RH-IX2448CEZZ	-	-	-
IC3001	CSA1124AS	RH-IX2447CEZZ	-	-	-
IC3301	TC4052BP	RH-IX1535CEZZ	-	-	-
M2101	-	VHITC4052BP-1	NTE4052B	ECG4052B	SK4052B
M2102	-	RMPTJ0155CEZZ	-	-	-
M2104	-	RMPTJ0156CEZZ	-	-	-
M2104	-	RMPTJ0157CEZZ	-	-	-
Q201	2SC1906	VS2SC1906//1E	NTE107	ECG107	SK3293
Q301	2SC945AQ	VS2SC945AQ/-1	NTE85	ECG85	SK3124A
Q351, 54	2SC1815(Y)	VS2SC1815YW-1	NTE85	ECG85	SK3124A
Q401	2SC1815Y	VS2SC1815YW-1	NTE85	ECG85	SK3124A
Q402	2SA1015Y	VS2SA1015Y/1E	NTE290A	ECG290A	SK9132
Q402	2SC945AQ	VS2SC945AQ/-1	NTE85	ECG85	SK3124A
Q403	2SC1815(Y)	VS2SC1815YW-1	NTE85	ECG85	SK3124A
Q405	2SA1015Y	VS2SA1015Y/1E	NTE290A	ECG290A	SK9132
Q405	2SC945AQ	VS2SC945AQ/-1	NTE85	ECG85	SK3124A
Q405	2SC1815Y	VS2SC1815YW-1	NTE85	ECG85	SK3124A
Q406 Thru	-	-	-	-	-
Q408	2SA1015Y	VS2SA1015Y/1E	NTE290A	ECG290A	SK9132
Q451	2SC945AQ	VS2SC945AQ/-1	NTE85	ECG85	SK3124A
Q451	2SC1815(Y)	VS2SC1815YW-1	NTE85	ECG85	SK3124A
Q601	2SC2482	VS2SC2482//1	NTE399	ECG399	SK9352
# Q602	2SD1556	VS2SD1556//1E	NTE2331	ECG2331	SK10088
Q701	2SC945AQ	VS2SC945AQ/-1	NTE85	ECG85	SK3124A
Q701	2SC1815(Y)	VS2SC1815YW-1	NTE85	ECG85	SK3124A
Q703	2SC1983	VS2SC1983//2	NTE56	ECG56	SK3929
Q852, 54, 56	2SC3619	VS2SC3619LB1E	NTE157	ECG157	SK3747
Q881	2SA1015Y	VS2SA1015Y/1E	NTE290A	ECG290A	SK9132
Q1302	2SC2462C	VS2SC2462-C-1	NTE2408	ECG2408	SK10099
Q1303	2SA1122	VS2SA1122CC1E	NTE2409	ECG2409	SK10100
Q1322	2SC2462C	VS2SC2462-C-1	NTE2408	ECG2408	SK10099
Q1323	2SA1122	VS2SA1122CC1E	NTE2409	ECG2409	SK10100
Q1351	2SC2462C	VS2SC2462-C-1	NTE2408	ECG2408	SK10099
Q1352	2SA1122	VS2SA1122CC1E	NTE2409	ECG2409	SK10100
Q1371	2SC2462C	VS2SC2462-C-1	NTE2408	ECG2408	SK10099
Q1372	2SA1122	VS2SA1122CC1E	NTE2409	ECG2409	SK10100
Q1471 Thru	-	-	-	-	-
Q1473	2SC2462C	VS2SC2462-C-1	NTE2408	ECG2408	SK10099
Q2201	2SC945AQ	VS2SC945AQ/-1	NTE85	ECG85	SK3124A
Q2701	2SC1815(Y)	VS2SC1815YW-1	NTE85	ECG85	SK3124A
Q3001	2SC2236Y	VS2SC2236Y/-1	NTE382	ECG382	SK3849
Q3503	2SC2462C	VS2SC2462-C-1	NTE2408	ECG2408	SK10099
Q3503	2SC2462C	VS2SC2462-C-1	NTE2408	ECG2408	SK10099

For SAFETY use only equivalent replacement part.

CONTROLS & RESISTORS

Item No.	Function/Rating	Mfr. Part No.	NTE Part No.
# PR701	12.4 Cold PTC	RMPTP0026CEZZ	-
# R103	150 5% 2W	VRS-RG3DB151J	2W115
# R104	15K 5% 2W	VRS-RG3DB153J	2W315
# R454	10K 5% 1/2W	VRS-RG2HC103J	HW310
R506	120K 2% 1/8W	VRD-RA2BE124G	QW412
R507	82K 2% 1/8W	VRD-RA2BE823G	QW382
R512	2700 2% 1/8W	VRD-RA2BE272G	QW227
# R515	.27 5% 1W	VRN-RL3ABR27J	1WD27
R516	4700 2% 1/8W	VRD-RA2BE472G	QW247
R517	6800 2% 1/8W	VRD-RA2BE682G	QW268
R521	15K 2% 1/8W	VRD-RA2BE153G	QW315
# R606	3300 5% 2W	VRS-VV3DB332J	2W233
# R611	150 5% 2W	VRS-SV3DB151J	2W115
# R612	1000 5% 3W	VRS-SV3LB102J	3W210
# R613	.27 5% 3W	VRN-RV3LBR27J	-
# R651	39 5% 1/2W	VRS-RG2HC390J	HW039
# R652	6800 1% 1/8W	VRN-RA2BK682F	-
# R653	8200 1% 1/8W	VRN-RA2BK822F	-
# R654	1800 5% 1/8W SMT	VRD-MN2BE182J	-
# R656	15K 5% 1/8W SMT	VRD-MN2BE153J	-
# R657	100K 5% 1/8W SMT	VRD-MN2BE104J	-
# R701	820K 5% 1/2W	VRD-RM2HD824J	HW482
# R702	1.2 10% 7W Wirewound	VRW-KQ3NC1R2K	-
# R703	56 5% 3W	VRS-VV3LB560J	3W056
# R706	6.8 5% 1W	VRN-VV3AB6R8J	1W6D8
# R710	1.5 5% 1/4W	VRN-GA2EB1R0J	QW1D0
# R716	150 5% 1/2W	VRS-RG2HC151J	HW115
# R717	330 5% 1W	VRS-RG3AB331J	1W133
# R718	2.7 10% 15W Wirewound	VRW-KQ41C2R7K	-
# R719, 20	8.2 10% 15W Wirewound	-	-
# R721	330 10% 5W Wirewound	VRW-KQ3HC331K	5W133
# R724	3.3 10% 15W Wirewound	VRW-KQ41C3R3K	-
# R751	1.2 5% 2W	VRN-VV3DB1R2J	2W1D2
# R752	.47 5% 1W	VRN-VV3ABR47J	1WD47
# R753	1.5 5% 1/2W	VRN-SV2HC1R5J	HW1D5
# R754	.27 5% 2W	VRN-RL3DBR27J	2WD27
# R755	33 5% 2W	VRS-VV3DB330J	2W033
# R756	47 5% 1W	VRS-VV3AB470J	1W047
# R857, 65, 73	12K 5% 2W	VRS-VV3DB123J	2W312
# R890	1.5 5% 2W	VRN-VV3DB1R5J	2W1D5
R1309	5.6 5% 1W	VRN-VV3AB5R6J	1W5D6
# R1322	470 Audio Output (R)	RVR-M4326CEZZ	-
R1330	10 5% 1/2W	VRS-SV2HC100J	HW010
R1357	470 Audio Output (L)	RVR-M4326CEZZ	-
R1377	330 Audio Input (R)	RVR-M4325CEZZ	-
# R1381	330 Audio Input (L)	RVR-M4325CEZZ	-
R1478	2.7M 10% 1/2W	VRC-UA2HG275K	HW527
# R2704	680 Video In	RVR-M4327CEZZ	-
R3003	100 5% 1W	VRS-VV3AB101J	1W110
R3006	1800 5% 1/8W	VRD-RA2BE182J	EW218
R3011	4700 Separation	RVR-M4332CEZZ	-
R3013	43K 1% 1/8W	VRN-RA2BK433F	-
R3014	4700 Variable De-Emphasis	RVR-M4332CEZZ	-
R3015	33K VCO	RVR-M4337CEZZ	-
R3016	47K 1% 1/8W	VRN-RA2BK473F	-
R3023	22K Stereo Filter	RVR-M4336CEZZ	-
R3024	47K 1% 1/8W	VRN-RA2BK473F	-
R3030	2700 1% 1/8W	VRN-RA2BK272F	-
TH1471	7500 1% 1/8W	VRN-RA2BK752F	-
	2200 MTS	RVR-M4330CEZZ	-
	213 Cold NTC	RH-HZ0006CEZZ	-

For SAFETY use only equivalent replacement part.

PARTS LIST continued

COILS & TRANSFORMERS

Item No.	Function/Rating	Mfr. Part No.	On-Unit No.
# DY601 (2)	Yoke 100° Horiz 1.2mH Vert 14.5mH	RCiLH0070MEZZ	H0070ME
(3)	Yoke 100°	RCiLH0069MEZZ	H0069ME
FB401	Ferrite Bead	-	-
FB451	Ferrite Bead	-	-
FB602	Ferrite Bead	RBLN-0037CEZZ	-
FB701, 02	Ferrite Bead	RBLN-0037CEZZ	-
L203	.82µH	VP-XFR82K0000	-
L204	.68µH	VP-XFR68K0000	-
L205	10µH	VP-MK100K0000	-
L206	VCO	RCiLI0588CEZZ	-
L208	SIF	RCiLI0591CEZZ	-
L301	8.2µH	VP-OF8R2K0000	-
L401	12µH	VP-MK120K0000	-
L402	10µH	VP-MK100K0000	-
L403	8.2µH	VP-MK8R2K0000	-
L404	6.8µH	VP-MK6R8K0000	-
L406	VCO	RCiLI0588CEZZ	-
L407	4.7µH	VP-XF4R7K0000	-
L451	4.7µH	VP-XF4R7K0000	-
L601	Horizontal Linearity	RCiLZ0621CEZZ	Z621
# L701	Line Filter	RCiLF0087CEZZ	-
	Line Filter	RCiLF0235CEZZ	-
	Line Filter	RCiLF0098CEZZ	-
# L702	Degaussing	RCiLG0018MEZZ	-
L851	82µH	VP-MK820K0000	-
T601	Horizontal Driver	RTRNZ0367CEZZ	Z0367CE
# T602 (1)	Horizontal Output	RTRNF0009MEZZ	F0009ME
# T701	Power	RTRNP0416CEZZ	P0416CE
# T1701	Separator	RTRNZ0594CEZZ	Z0594CE

For SAFETY use only equivalent replacement part.
(1) Focus and screen controls are part of T602.
(2) Used with CRT VB68KRQ88X/*S.
(3) Used with CRT VB68AFW02X/*S.

CAPACITORS & ELECTROLYTICS

Item No.	Rating	Mfr. Part No.
# C1 Thru		
# C3 (1)	.001	-
C105	22µF 10% 16V Tantalum	VCSATA1CE226K
C216	1.5pF NPO	-
C303 Thru		
C306	2.2µF 20% 50V NP	VCE9GA1HW225M
C501	2.2µF 10% 16V Tantalum	VCSATA1CE225K
C511	.68µF 10% 35V Tantalum	VCSATA1VE684K
# C608, 09	.0062 3% 1.6kV	VCFPD3CA622H
# C701	.1 250VAC	RC-FZ008SGEZZ
	.1 250VAC	RC-QZ002SCEZZ
	.47 250VAC	RC-FZ001SCEZZ
# C705	820µF 200V	RC-EZ0334CEZZ
	820µF 200V	RC-EZ0395CEZZ
# C710	220µF 20% 160V	VCEAGW2CW227M
# C713	.01 10% 50V	VCQYTA1HM103K
# C724	220µF 200V	-
C854	.0047 2kV	VCKYPB3DE472Z
C1305, 06	10µF 20% 16V NP	VCE9GA1CW106M
C1325, 26	10µF 20% 16V NP	VCE9GA1CW106M
C1353, 73	10µF 20% 16V NP	VCE9GA1CW106M
# C1374	.0033 5% 250VAC	RC-KZ0030CEZZ
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	3.3µF 20% 50V NP	VCE9GA1HW335M

For SAFETY use only equivalent replacement part.
(1) Part of Antenna Terminal Assembly.

CABINET PARTS

Item	Part No.
MODEL 27F-S40	
Button - Channel Up/Down	JBTN-1037MEKA
Button - Power,	
Volume Up/Down	JBTN-1036MEKA
Cabinet Front	GCABA1184MEKA
Cabinet Front Complete	CCABA1184MES1
Cabinet Rear	GCABB1084MEKA
MODEL 27F-S50	
Button - Channel Up/Down	JBTN-1037MEKA
Button - Power,	
Volume Up/Down	JBTN-1036MEKA
Cabinet Front	GCABA1184MEKA
Cabinet Front Complete	CCABA1184MES0
Cabinet Rear	GCABB1084MEKA
MODEL 27F-S100	
Button - Channel Up/Down	JBTN-1037MEKA
Button - Power,	
Volume Up/Down	JBTN-1036MEKA
Cabinet Front	GCABA1186MEKA
Cabinet Front Complete	CCABA1186MES0
Cabinet Rear	GCABB1084MEKA
Speaker Grille, Left	HDECA0105MESA
Speaker Grille, Right	HDECA0104MESA
MODEL 27F-S120	
Button - Channel Up/Down	JBTN-1048MEKA
Button - Power,	
Volume Up/Down	JBTN-1049MEKA
Cabinet Front	GCABA1185MEKA
Cabinet Front Complete	CCABA1185MES0
Cabinet Rear	GCABB1086MEKA
Speaker Grille, Left	HDECA0103MESA
Speaker Grille, Right	HDECA0102MESA

MISCELLANEOUS

Item No.	Description	Mfr. Part No.	Notes
CF301	Filter	RFiLC0001AJZZ	4.5MHz
CF302	Filter	RFiLC0267CEZZ	4.5MHz
CF401	Trap	RFiLC0002AJZZ	4.5MHz
CF601	Crystal	RFiLA0034CEZZ	503kHz
CF2001	Crystal	RFiLC0327CEZZ	-
CF2101	Crystal	RFiLC0121GEZZ	-
# CR1, 2 (6)	Component Combination	-	470pF, 3.6M
DL401	Comb Filter	RCiLZ0861CEZZ	-
# F701	Fuse	QFS-B4023CEZZ	4Amp, 125VAC, Slow Blow
	Fuse	QFS-B4021CEZZ	4Amp, 125VAC, Slow Blow
J1371 (2)(3)	Jack	QTANJ0521CEZZ	Assembly
(4)(5)	Jack	QTANJ0322CEZZ	Assembly
# P703	Line Cord	QACCD3031CESA	AC, Polarized
RMC2101	Receiver	RRMCU0215CEZZ	Remote
# RY701	Relay	RRLYU0028CEZZ	Power
S501	Switch	QSW-B0015CEZZ	Horizontal Linearity
S2001	Switch	QSW-K0079GEZZ	Power
S2002	Switch	QSW-K0079GEZZ	Channel Up
S2003	Switch	QSW-K0079GEZZ	Channel Down
S2004	Switch	QSW-K0079GEZZ	Volume Up
S2005	Switch	QSW-K0079GEZZ	Volume Down
SF201	Filter	RFiLC0137CEZZ	SAW
SP1, 2 (2)(3)(4)	Speaker	VSP0077PB018T	3", 8 Ohms, 4W
(5)	Speaker	VSP1205PB038A	-
# V101	CRT	VB68KRQ88X/*S	A68KRQ88X
	CRT	VB68AFW02X/*S	A68AFW02X
X801	Crystal	RCRSB0001PEZZ	3.58MHz
	CRT Socket	QSQCVO916CEZZ	-
	Fuse Holder	QFSHD1013CEZZ	For F701
	Fuse Holder	QFSHD1014CEZZ	For F701
	Magnet	PMAGF3001MEZZ	Purity & Convergence
	PC Board (1)(2)(3)	DUNTK8237WEK5	CRT
	PC Board (1)(4)(5)	DUNTK8237WEK4	CRT
	PC Board (1)(2)	DUNTK8236WEK6	Main
	PC Board (1)(3)	DUNTK8236WEK7	Main
	PC Board (1)(4)	DUNTK8236WEK5	Main
	PC Board (1)(5)	DUNTK8236WEK4	Main
	PC Board (1)	DUNTK8271WEK1	MTS
	PC Board (1)(2)(3)	DUNTK8239WEK1	VAO
	PC Board (1)(4)(5)	DUNTK8239WEK0	VAO
#	Terminal	QTANZ0144CE01	Antenna
#	Terminal (3)	QTANZ0148CE01	Antenna
#	Terminal (4)(5)	QTANZ0147CE01	Antenna
	Transmitter	RRMCG1035CESA	Remote
	Transmitter (4)	RRMCG1020CESA	Remote
	Transmitter (5)	RRMCG1030CESA	Remote
	Tuner (1)	VTUVTSH6UZFC/	UHF/VHF

For SAFETY use only equivalent replacement part.
(1) Contact PTS Electronics Corporation for replacement; order by manufacturer's part number.
(2) Used in model 27F-S100.
(3) Used in model 27F-S120.
(4) Used in model 27F-S40.
(5) Used in model 27F-S50.
(6) Part of Antenna Terminal Assembly.



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