

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 and press the power button. Momentarily place a 4220 ohms resistor between the cathode of D411 and the cathode of D402. The receiver should shutdown. If the receiver does not shut down, the shutdown circuit should be repaired. To resume normal operation, remove AC power and wait 30 seconds. Reapply 120VAC, press the power button, and check for normal operation.

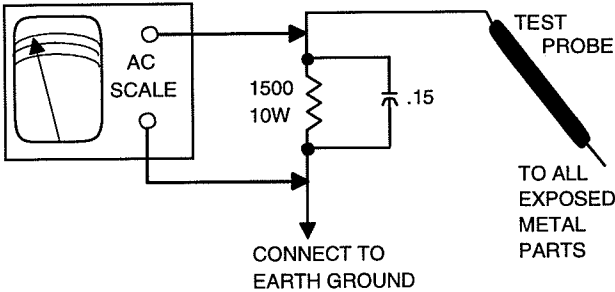
SAFETY CHECKS -- FIRE AND SHOCK HAZARD

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.



PHOTOFACT® Technical Service Data

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SET 4380

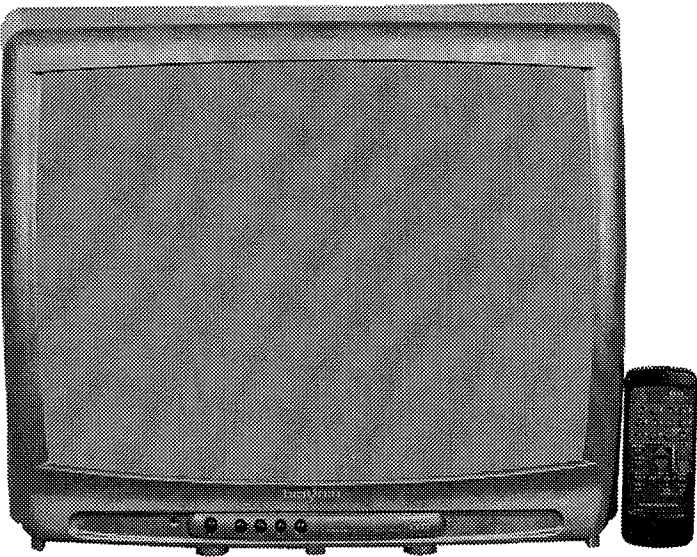
MODEL CTGV-5463TT (VERSION A)

BROKSONIC

INDEX

GridTrace Location
CRT Board 3
Main Board 3
High Voltage Shutdown Test 1
IC Functions 2
Important Parts Information 1
Miscellaneous Adjustments 1
Parts List 4
Placement Chart 2
Safety Precautions 1
Schematic Component Location 1
Schematic Notes 1
Schematics
Power Supply 2
System Control 2
Television 2
Test Equipment 1
Tuner Information 1

BROKSONIC
Model CTGV-5463TT (Version A)

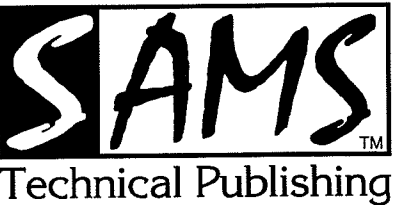


Essential coverage
for servicing a television receiver...

- Schematics
- Component locations
- Parts list

Coverage includes this additional model:

MODEL
CTGV-4563TT (Version A)



DECEMBER 2000 SET 4380

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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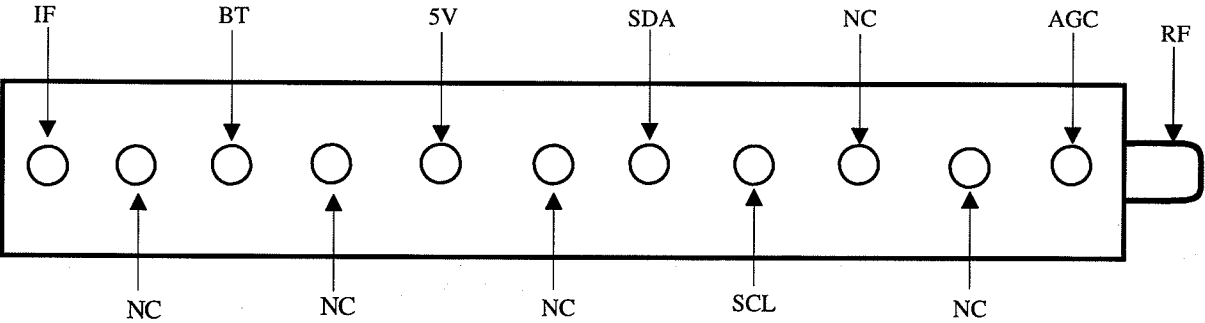
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TUNER INFORMATION

TUNER VOLTAGE CHART				
Pin		VHF Low Band	VHF High Band	UHF Band
1	(AGC)	2.2V	2.2V	1.7V
2	(NC)	1.0V	4.7V	5.0V
3	(NC)	.4V	.4V	.4V
4	(SCL)	4.8V	4.8V	4.8V
5	(SDA)	4.8V	4.8V	4.8V
6	(NC)	0V	0V	0V
7	(5V)	5.0V	5.0V	5.0V
8	(NC)	0V	0V	0V
9	(BT)	31.3V	31.4V	31.4V
10	(NC)	0V	0V	0V
11	(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



SCHEMATIC COMPONENT LOCATION GUIDE

ATC001	D16	C433	D18	C640	C3	D608	A18	R101	A14	R420	D5	R626	D2
C002	E20	C434	E13	C642	A4	D609	A18	R102	B15	R421	E11	R627	B9
C003	C1	C435	E11	C643	B5	D610	B9	R103	A15	R422	E2	R630	C9
C004	A1	C437	D7	C644	A19	D611	C9	R104	A15	R424	D13	R631	B9
C007	B16	C439	E4	C645	E19	D612	B9	R105	B15	R427	E5	R632	C6
C113	D14	C440	E4	C646	A18	D613	D3	R106	C15	R428	D9	R633	C7
C114	D14	C443	E6	C647	A18	D699	D1	R107	D14	R429	D9	R634	A3
C115	D13	C444	E7	C655	A20	DY	D7	R110	B15	R443	D19	R635	C5
C116	C15	C446	E5	C661	B8	F501	A17	R111	D15	R445	E11	R636	B4
C117	B15	C448	D19	C801	C11	FB401	D10	R112	A14	R446	E4	R638	B8
C118	C20	C449	D18	C804	B10	FB401	D17	R113	A13	R447	E5	R639	C6
C119	C19	C502	B18	C805	C10	IC101	B14	R114	D15	R448	E5	R640	A18
C120	C14	C503	A19	C806	C10	IC199	C15	R115	B13	R449	E5	R641	D3
C121	B14	C504	B19	C819	C12	IC351	A6	R116	B15	R501	B17	R642	C8
C122	B14	C506	B20	CD501	A17	IC401	D5	R117	D15	R502	A19	R643	A18
C123	B13	C507	C18	CF601	B1	IC402	E18	R119	D13	R503	C18	R655	A18
C124	C13	C519	C17	CF603	A3	IC501	B18	R120	A15	R504	E15	R698	B8
C125	D14	C601	E19	CF604	B4	IC601	A4	R121	A15	R505	E15	R699	B5
C126	C15	C603	D1	D001	A1	IC601	B2	R122	A15	R506	B19	R802	A11
C127	B15	C604	A4	D101	A14	IC601	B5	R123	B15	R507	C17	R803	A11
C128	D15	C605	C2	D103	A13	IC601	D2	R124	A15	R508	C17	R804	C11
C129	D14	C606	C2	D104	B13	L101	D14	R126	A13	R509	C18	R805	C11
C130	C19	C607	D1	D125	E15	L406	D9	R128	A13	R515	B17	R806	B11
C131	C14	C609	C9	D126	C17	L501	A17	R129	C13	R601	D3	R807	B11
C132	C18	C610	D3	D127	D17	L502	B18	R130	B14	R602	E3	R809	A10
C133	D17	C612	A19	D128	A18	L601	B1	R131	B13	R603	B1	R811	C10
C351	D20	C613	D3	D401	D14	L605	B1	R177	C17	R604	B2	R813	B11
C352	A5	C614	D13	D402	D14	L606	B3	R351	A6	R605	E1	R814	B10
C354	B5	C616	C7	D403	D5	L607	B4	R353	B6	R606	C2	R815	C11
C357	A5	C618	C2	D404	E17	L801	D19	R354	A5	R608	C9	R816	C11
C401	E2	C621	B2	D405	E2	OS101	A13	R356	B5	R609	C2	RY101	A18
C403	E18	C622	C6	D407	D18	Q101	E14	R357	B5	R611	A5	RY101	E16
C404	E18	C623	A4	D408	E18	Q401	E6	R401	E14	R612	A5	SP351	A7
C404-1	E18	C624	C6	D410	D18	Q402	E4	R404	E14	R613	B2	SW101	A13
C405	D17	C625	C6	D411	D13	Q403	E13	R405	E14	R614	B9	SW102	A13
C407	E2	C626	B3	D422	D18	Q501	E15	R406	E13	R615	B3	SW103	A13
C411	D4	C627	B4	D501	B19	Q603	C19	R407	D4	R616	C9	SW104	A13
C412	D18	C630	C5	D502	B19	Q606	A19	R408	D13	R617	C10	SW105	A14
C414	D5	C631	A19	D503	B19	Q608	C9	R409	D13	R618	B3	T401	E5
C415	D5	C632	B3	D504	B19	Q801	A10	R410	D6	R619	C9	TH501	B18
C416	D9	C634	B1	D601	C6	Q802	C10	R413	D7	R620	C9	V801	B12
C417	D4	C635	C5	D602	C6	Q803	B10	R415	D7	R621	B1	W030	D3
C418	D4	C636	B2	D603	C9	R001	A1	R416	D6	R622	B3	W034	D3
C422	D6	C637	E20	D604	C9	R002	A1	R417	D4	R623	C18	X101	C14
C427	D5	C638	C8	D605	C8	R006	C16	R418	D4	R624	D3	X602	C7
C430	D6	C639	D3	D607	C6	R007	B16	R419	D4	R625	B9		

MISCELLANEOUS ADJUSTMENTS

B+ CHECK

Turn receiver on and tune in an active station. Set picture and brightness to normal. Check the voltage at pin 4 of IC501, it should be 136V ±1V.

HIGH VOLTAGE CHECK

Tune in a picture. Set brightness, color, and picture to minimum. Connect a high voltage probe to the CRT anode. The high voltage should read between 24kV and 26kV.

SERVICE ADJUSTMENT MODE DISPLAY

Turn receiver on and tune in an active station. There is a hole below the TV button on the remote. Insert the point of a paper clip into the hole and press once. There is another way to access the service adjustment mode display, press the volume down button on the set, and at the same time press the 9 button on the remote for two seconds. The adjustment items will be displayed one at a time on the screen each followed by a number. Select the item desired by pressing the item number, or by pressing the channel up or down button. Pressing the volume up or down button will change the value. To exit the service adjustment mode press the menu button.

BASIC ADJUSTMENTS			
No	Item	Adjustment	Value Range On-set Value
00	OSD H	On Screen Display	0 - 35 24
01	CUT OFF	Vertical collaps, adjust items 8, 9, 10, 11, and 12 to have a white line across the screen.	
02	RF DLY	RF AGC Delay	0 - 127 59
03	VIF VCO	Video IF VCO	0 - 63 35
04	H VCO	Horizontal Frequency	0 -7 4
05	H PHASE	Horizontal Centering	0 - 31 20
06	V SIZE	Vertical Size Center	0 - 63 41
07	V SHIFT	Vertical Centering	0 - 7 2
08	RED DRIVE	Red Drive	0 - 127 80
09	BLUE DRIVE	Blue Drive	0 - 127 64
10	RED BIAS	Red Cut Off	0 - 255 37
11	GREEN BIAS	Green Cut Off	0 - 255 64
12	BLUE BIAS	Blue Cut Off	0 - 255 65
13	BRIGHT	Sub Brightness	64 - 192 146
14	CONTRAST	Sub Contrast	64 - 127 95
15	COLOR	Sub Color	32 - 96 38
16	TINT	Sub Tint	32 - 96 51
17	SHARPNESS	Sharpness	24 - 40 40
18	FM LEVEL	FM Level	0 - 127 0
19	LEVEL	Input Level	0 - 63 0
20	SEPARATION 1	Low Level Separation	0 - 15 0
21	SEPARATION 2	High Level Separation	0 - 63 0
22	TEST MONO	-	0 - 127 0
23	TEST STEREO	-	0 - 80 0

OSD HORIZONTAL CENTERING

Activate the service adjustment mode. Press the volume up or down button to adjust for best horizontal centering of the on screen display.

CUT OFF

Activate the service adjustment mode. Press 8 button on the remote to select item Red drive, set its value to 10, press channel up button to select Blue drive, set its value to 10, press channel up button to select Red bias, set its value to 64, press channel up button to select Green bias, set its value to 64, press channel up button to select Blue bias, set its value to 64, press channel up button to select Bright, set its value to 100, press channel up button to select Contrast and set its value to 64. Press the 1 button on the remote, the vertical will collapse to a horizontal line. Adjust the screen control to have a very faint line. Repeat the process and reset the values to have a white line across the screen.

RF AGC DELAY

Tune in an active station. Activate the service adjustment mode. Press the 2 button on the remote, to select RF DLY. Press the volume up or down button to a point where snow just appears, then press the volume up or down button until snow disappears.

SUB BRIGHTNESS

Tune in a picture. Set color, contrast, and brightness to minimum. Activate the service adjustment mode. Press the channel up button on the remote to select Bright item. Press the volume up or down button to a point where highlights are just visible.

SUB COLOR

Tune in a color bar pattern. Set color and brightness to midrange. Set the contrast to maximum. Activate the service adjustment mode. Press the channel up button on the remote to select Color item. Press volume up or down button for best color level on screen. Check all channels.

SUB TINT

Tune in a picture. Set color and brightness to midrange. Set the contrast to maximum. Activate the service adjustment mode. Press the channel up button on the remote to select Tint item. Press the volume up or down button to adjust for best flesh tone. Check other channels.

HORIZONTAL PHASE

Tune in a crosshatch pattern. Set color and brightness to midrange. Set the contrast to maximum. Activate the service adjustment mode. Press the 5 button on the remote to select H Phase. Press the volume up or down button to adjust for best horizontal centering with slight overscan on both sides.

VERTICAL SIZE

Tune in a crosshatch pattern. Set color and brightness to midrange. Set the contrast to maximum. Activate the service adjustment mode. Press the 6 button on the remote to select V Size. Press volume up or down button to adjust for slight overscan on top and bottom.

VERTICAL SHIFT

Tune in a crosshatch pattern. Set color and brightness to midrange. Set the contrast to maximum. Activate the service adjustment mode. Press the 7 button on the remote to select V Shift. Press volume up or down button to adjust for best vertical centering.

WHITE BALANCE

Operate the receiver for 15 minutes. Activate the service adjustment mode. Press the channel up button on the remote to select service numbers 8, 9, 10, 11, and 12. Set the data values to obtain white screen. Set brightness for a visible raster. Alternately adjust data value of service numbers 8 and 9 until a good gray scale with normal white is obtained. Set the data values for normal color level.

PURITY

NOTE: Operate the receiver for 15 minutes to allow warm-up of CRT. Use a degaussing coil to demagnetize the CRT.

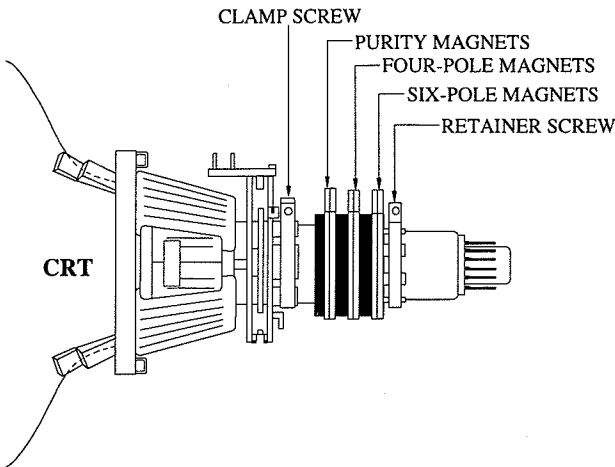
Set contrast to maximum. Set brightness and color to minimum. Tune in a green raster. Loosen the clamp screw and slide the deflection yoke back. Loosen the retainer screw. Adjust purity tabs to center the vertical green band. Slide the deflection yoke forward to produce a uniform green screen. Tighten the clamp and retainer screws.

CONVERGENCE

NOTE: Spread 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. Since the four and six pole magnets interact, repeat the adjustment until center convergence is correct.

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

CRT NECK ASSEMBLY



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.

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.

- Philips ECG Company (ECG)
- Sencore, Inc.
- Terrell & Nobis (TNI Electronics)

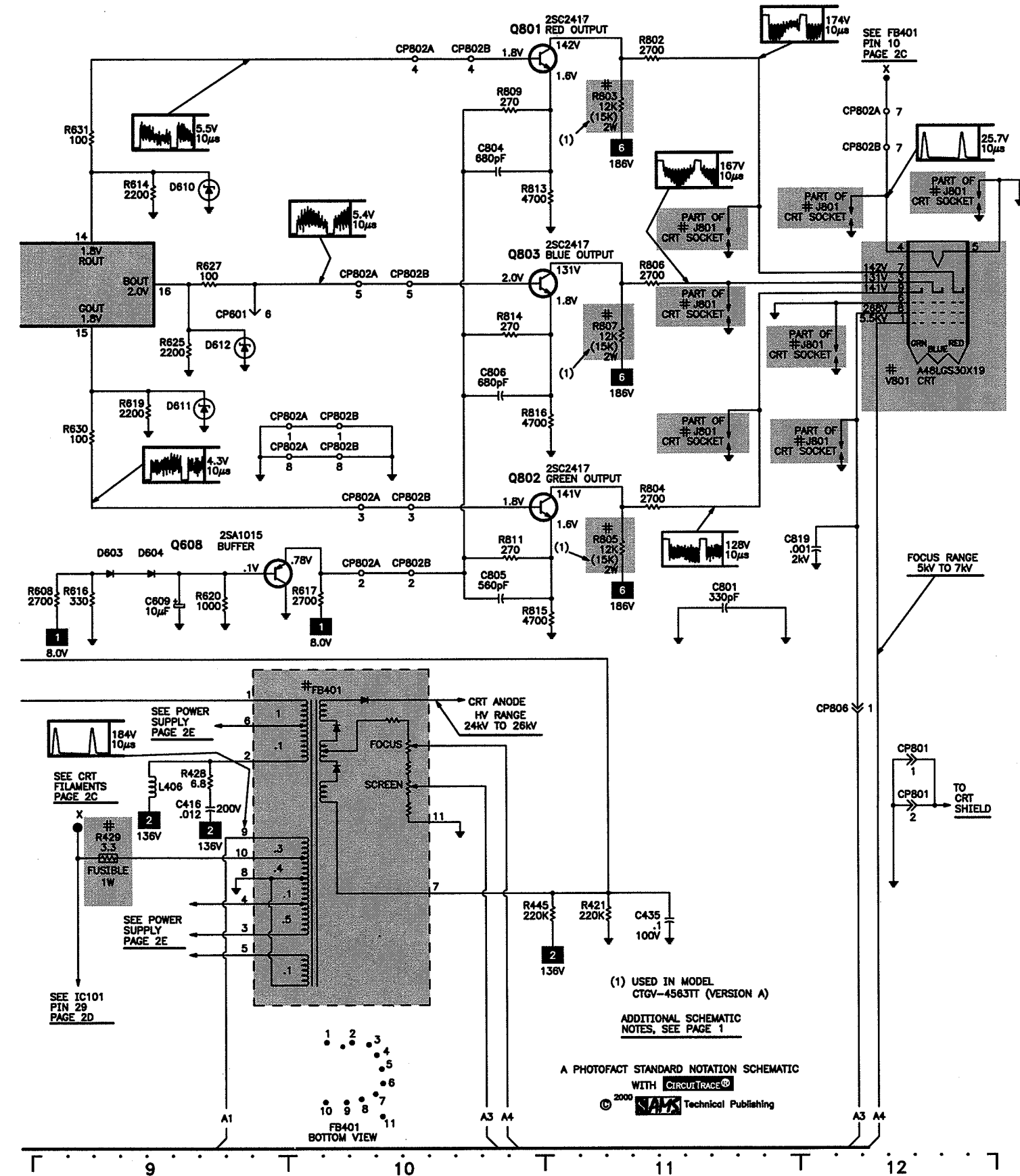
TEST EQUIPMENT

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

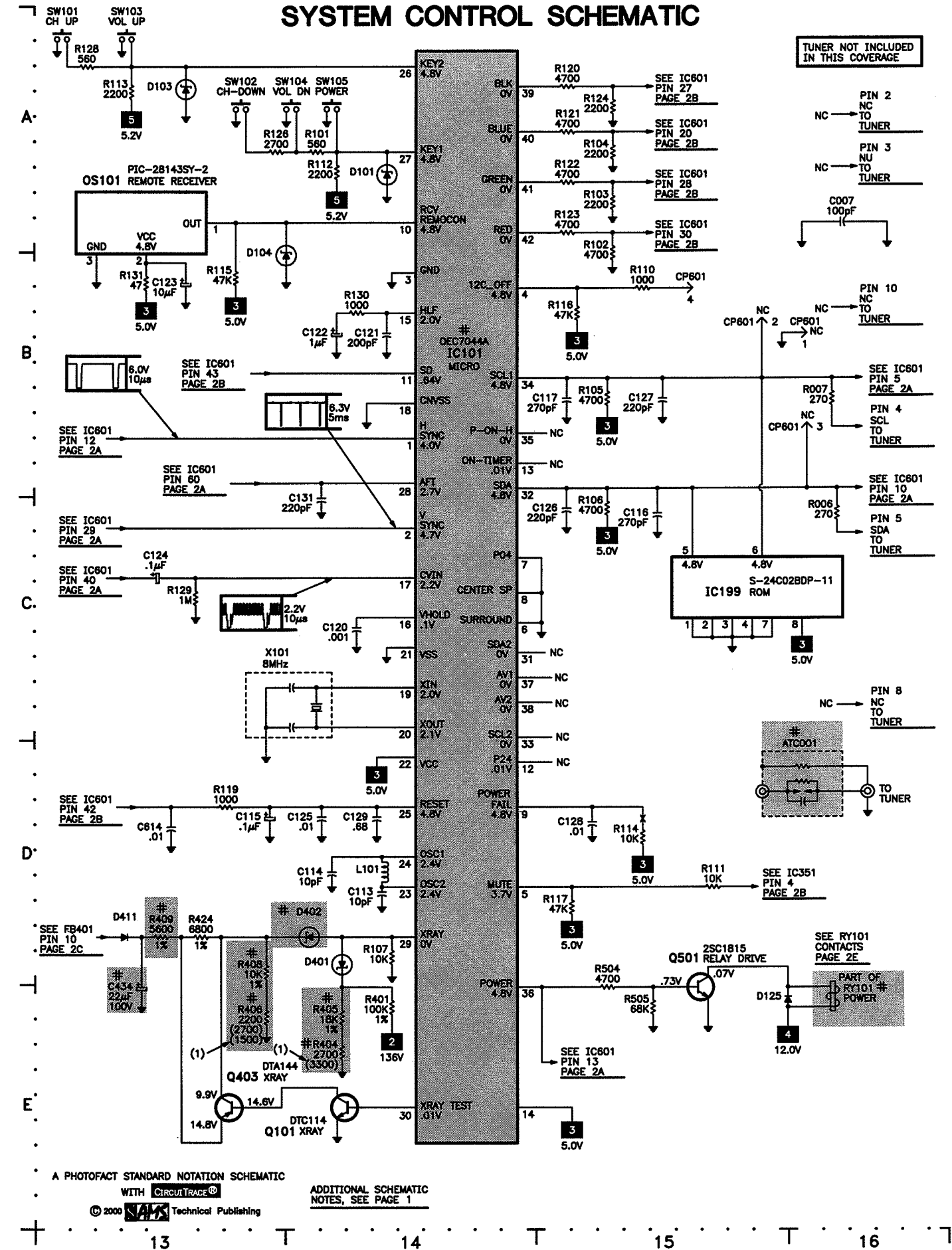
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TELEVISION SCHEMATIC continued



D

SYSTEM CONTROL SCHEMATIC



E



B.

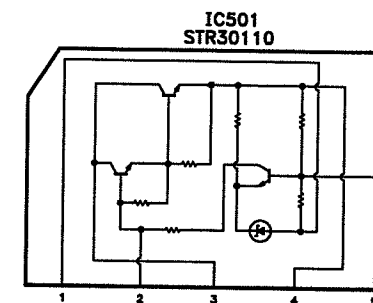
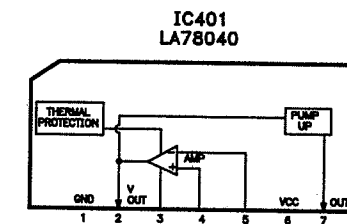
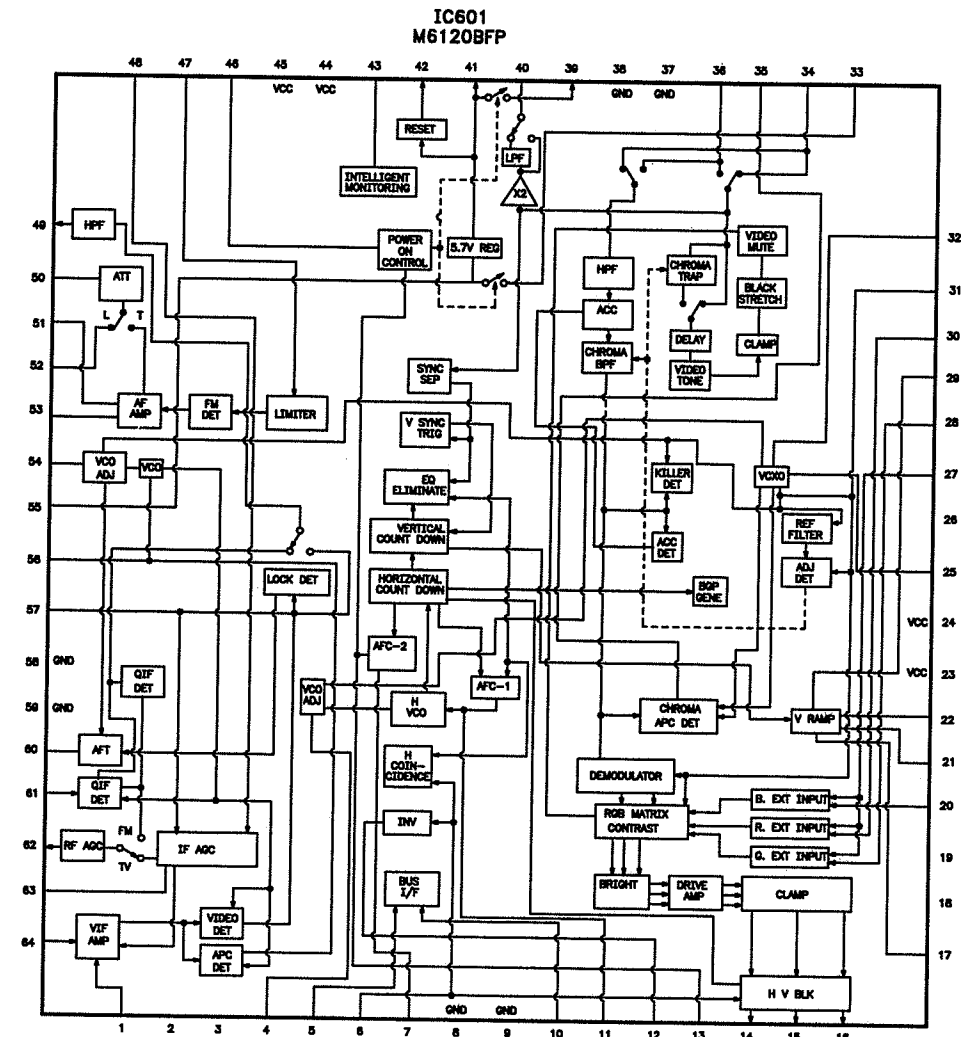
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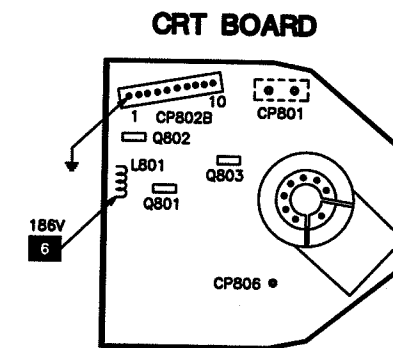
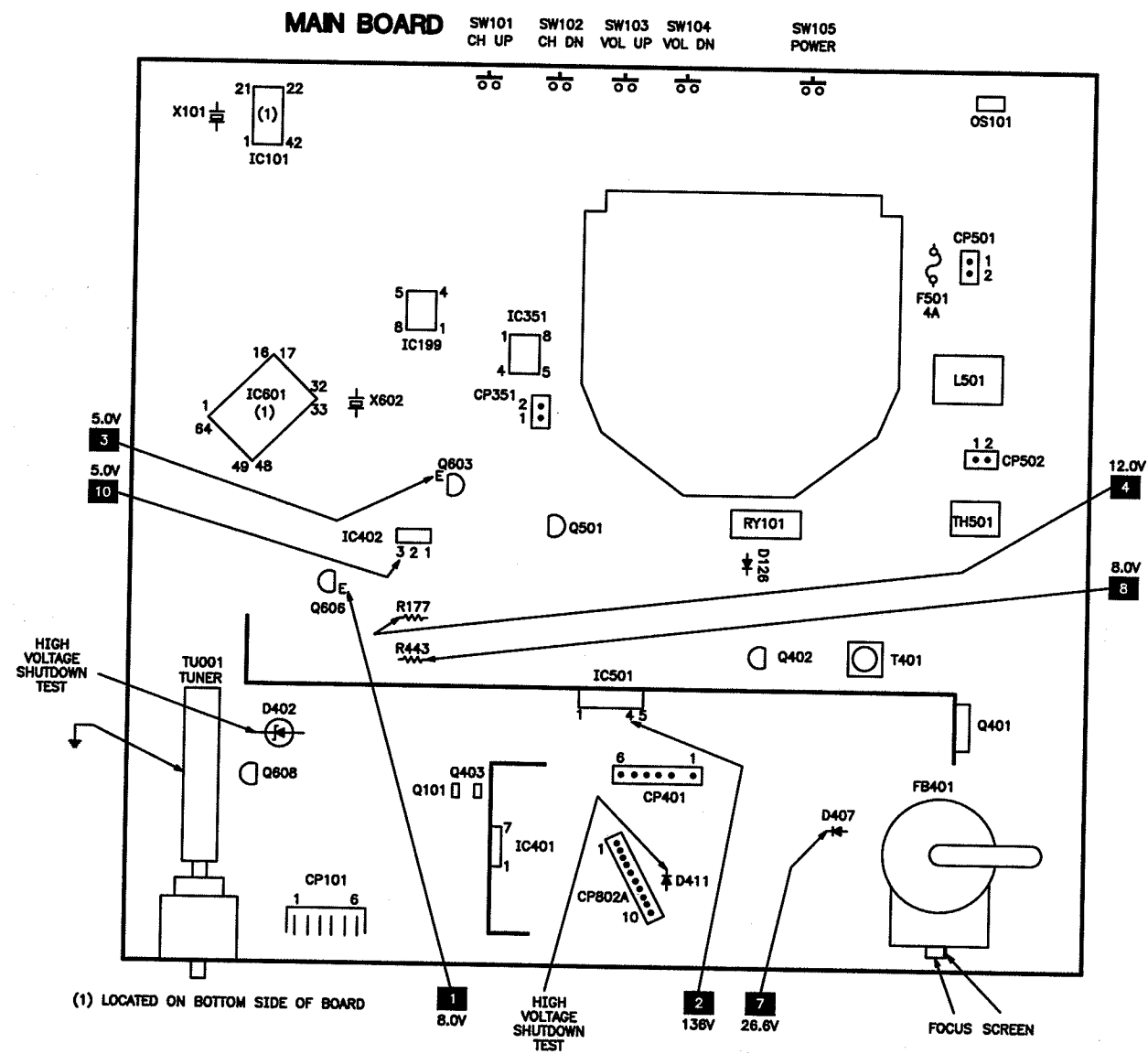
E'

Page 2 SET 4380

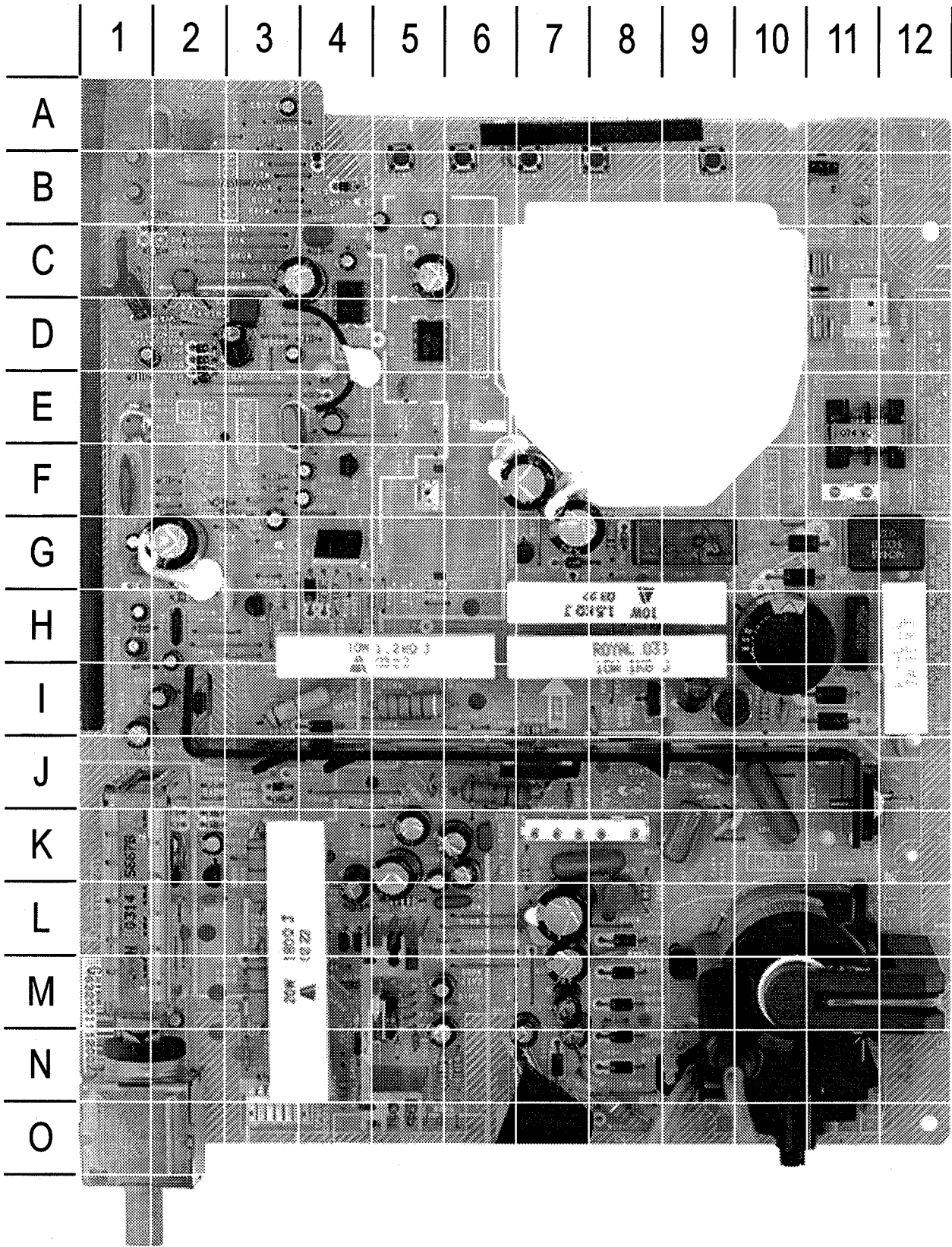
IC FUNCTIONS



PLACEMENT CHART



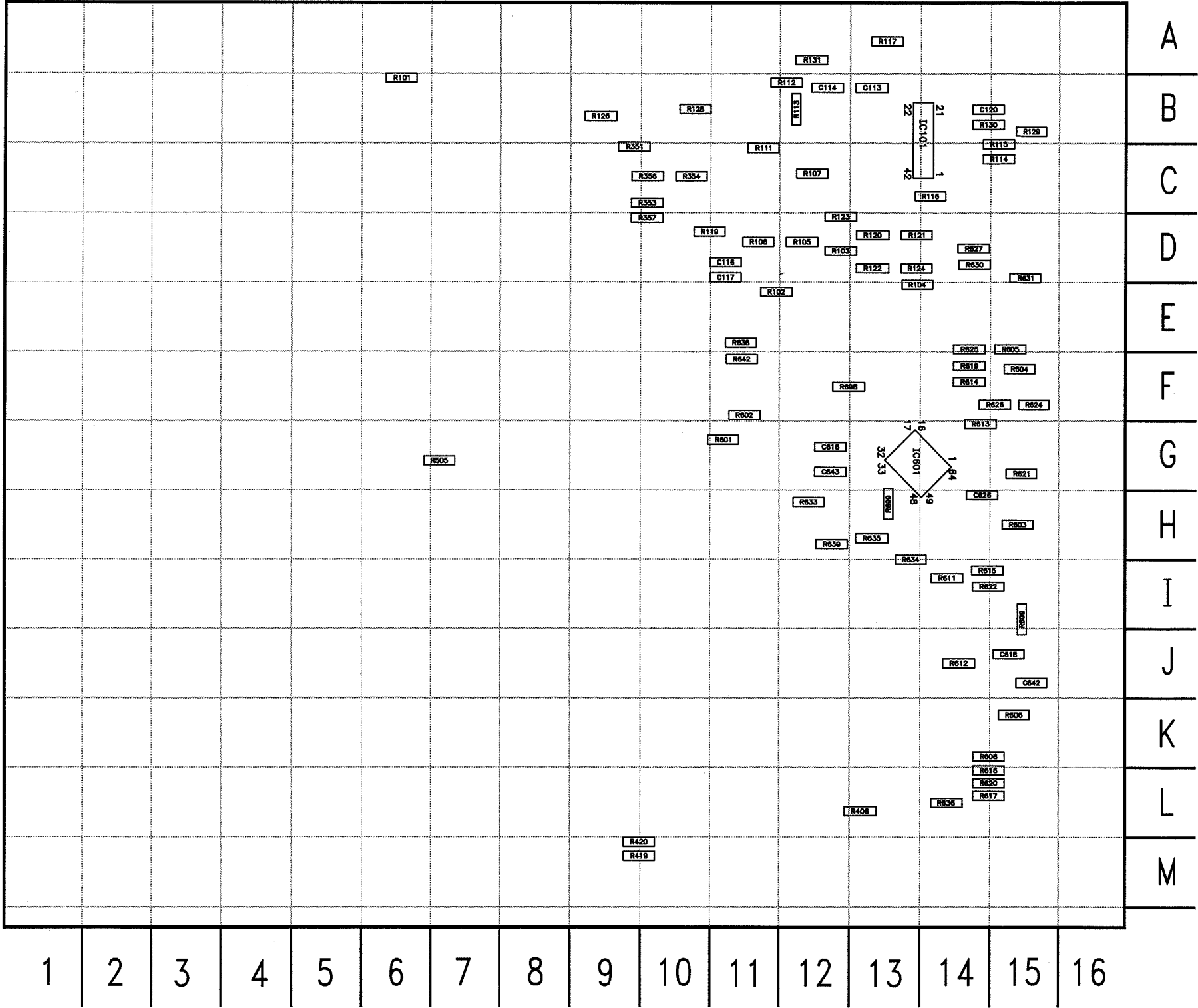
MAIN BOARD - TOP VIEW



MAIN BOARD - TOP VIEW, GRIDTRACE LOCATION GUIDE

ATC001	O1	C418	K5	C625	F4	D402	L4	L601	G1	R429	O8
C002	I1	C422	L6	C627	F4	D403	N4	L605	E1	R443	I5
C003	M2	C427	K5	C630	F3	D404	M8	L606	G2	R445	J6
C004	L2	C430	L7	C631	F3	D405	O7	L607	H2	R446	I10
C007	O1	C433	M7	C632	H1	D407	L8	OS101	B11	R447	M3
C115	C4	C434	L4	C634	E1	D408	M8	Q101	L4	R448	I4
C118	C3	C435	K6	C635	G3	D410	N8	Q401	J11	R449	K3
C119	A2	C437	K9	C636	F2	D411	N7	Q402	I8	R501	D12
C121	B1	C439	I8	C637	E1	D422	N8	Q403	L4	R502	H12
C122	B1	C440	I10	C638	D4	D501	I11	Q501	G7	R503	I6
C123	A3	C443	J10	C639	E1	D502	I11	Q603	F4	R504	H4
C124	B1	C444	K10	C640	D2	D503	G10	Q606	H3	R506	L3
C125	C4	C446	I9	C644	I2	D504	G10	Q608	K2	R507	J5
C126	N4	C448	N7	C645	E4	D601	J3	R001	M3	R508	I7
C127	N3	C449	L8	C646	F7	D602	J3	R002	M3	R509	J7
C129	C4	C502	H11	C647	G8	D603	K2	R006	N1	R515	J6
C130	B1	C503	J12	C655	F2	D604	K2	R007	N1	R618	H1
C131	C4	C504	G10	C661	D4	D605	G4	R110	C1	R623	H5
C132	G7	C506	H10	CF603	H3	D607	H4	R177	H5	R632	H5
C133	H8	C507	L7	CF604	H2	D608	G7	R401	N4	R640	H8
C351	C5	C519	K5	CF601	F1	D609	H7	R404	N4	R643	G8
C352	B5	C601	C1	CP101	N3	D610	D2	R405	N4	R655	H8
C354	B5	C603	D1	CP351	F5	D611	D2	R407	M4	RY101	G9
C357	E5	C604	H2	CP401	K8	D612	D2	R408	L3	SW101	B5
C401	N7	C605	H1	CP501	C11	D613	E4	R409	L4	SW102	B6
C403	M8	C606	G1	CP502	F11	D699	E2	R410	K7	SW103	B7
C404	K6	C607	E1	CP802A	N7	F501	C11	R413	N5	SW104	B8
C404-1	M7	C609	K2	D001	M3	FB401	M10	R415	N6	SW105	B9
C405	K6	C610	D3	D101	B4	IC199	D4	R416	L5	T401	I10
C407	O7	C612	D3	D103	B4	IC351	D5	R417	M4	TH501	G12
C411	N5	C613	D3	D104	C2	IC401	M5	R418	N5	TU001	L1
C412	N7	C614	F3	D125	G8	IC402	G4	R421	J6	W030	N1
C414	N6	C621	F2	D126	H8	IC501	J7	R422	O8	W034	D2
C415	M5	C622	E4	D127	H4	L101	A3	R424	L4	X101	A2
C416	K7	C623	I1	D128	I4	L406	L8	R427	J10	X602	E3
C417	M5	C624	G2	D401	L4	L501	E11	R428	L8		

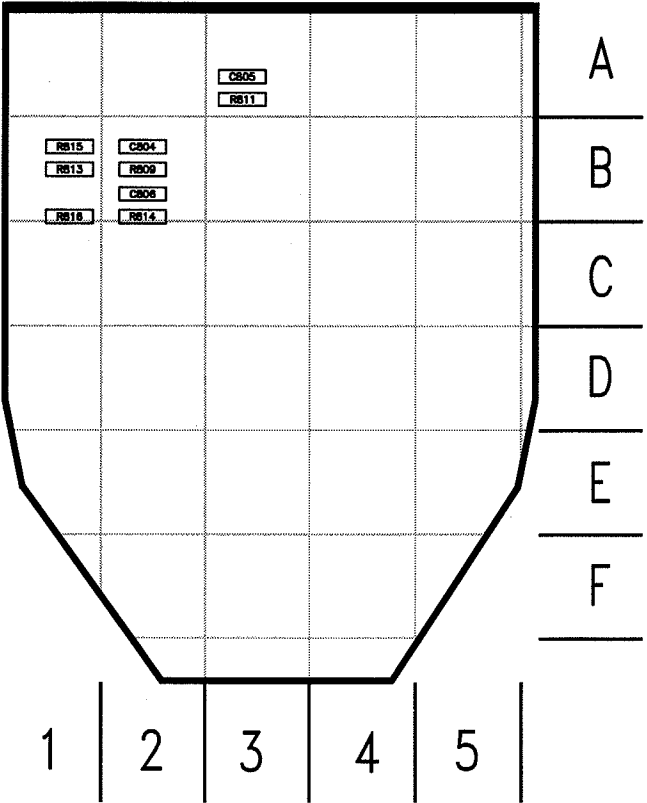
MAIN BOARD - BOTTOM VIEW



MAIN BOARD - BOTTOM VIEW, GRIDTRACE LOCATION GUIDE

C113	B13	R103	D12	R121	D13	R406	L13	R613	G14	R631	D15
C114	B12	R104	E13	R122	D13	R419	M9	R614	F14	R633	H12
C116	D11	R105	D12	R123	D12	R420	M9	R615	I14	R634	I13
C117	D11	R106	D11	R124	D13	R505	G7	R616	L14	R635	H13
C120	B14	R107	C12	R126	B9	R601	G11	R617	L14	R636	L14
C616	G12	R111	C11	R128	B10	R602	F11	R619	F14	R638	E11
C618	J15	R112	B12	R129	B15	R603	J15	R620	L14	R639	H12
C626	H14	R113	B12	R130	B14	R604	F15	R621	G15	R642	F11
C642	J15	R114	C15	R131	A12	R605	E15	R622	I14	R698	F12
C643	G12	R115	C15	R351	C9	R606	K15	R624	F15	R699	H13
IC101	C14	R116	C14	R353	C10	R608	K14	R625	E14		
IC601	G14	R117	A13	R354	C10	R609	I15	R626	F15		
R101	B6	R119	D10	R356	C10	R611	I14	R627	D14		
R102	E11	R120	D13	R357	D10	R612	J14	R630	D14		

CRT BOARD - BOTTOM VIEW



CRT BOARD - BOTTOM VIEW, GRIDTRACE LOCATION GUIDE

C804	B2	R813	B1
C805	A3	R814	B2
C806	B2	R815	B1
R809	B2	R816	B1
R811	A3		

PARTS LIST

SEMICONDUCTORS

(Select the replacement that gives the best results.)

Item No.	Type No.	Mfr. Part No.	ECG Part No.
D001	HZ30-3LTD	D94TA30013	-
D101, 03, 04	MTZJ6.8BT-77	D97U06R81B	-
D125	1S2472T-77	D1VT024720	ECG519
# D126	EM1CV1	D2BT0EM1C0	-
D127	11E1N-TA1B2	D28T11E1N1	ECG116
D128	1S2472T-77	D1VT024720	ECG519
D401	HZ27-1LTD	D94TA27011	-
# D402	HZ11B1LTD	D94TA11B11	-
D403	11E1N-TA1B2	D28T11E1N1	ECG116
# D404	AU02AV0	D2BTAU02A0	-
D405	MTZJ6.2BT-77	D97U06R21B	ECG5013T1
# D407, 08	AU02AV0	D2BTAU02A0	-
	10ELS6TA1B2	D28T10ELS6	ECG552
# D410, 11	AU02AV0	D2BTAU02A0	-
	10ELS6TA1B2	D28T10ELS6	ECG552
# D422	AU02AV0	D2BTAU02A0	-
	10ELS6TA1B2	D28T10ELS6	ECG552
# D501 Thru			
# D504	RM11C	D2BTRM11C0	ECG125
D601	1SS133T-77	D1VT001330	ECG519
D602	MTZJ8.2BT-77	D97U08R21B	-
D603, 04	1SS133T-77	D1VT001330	ECG519
D605	11E1-EIC	D2WT011E10	-
D607	1SS133T-77	D1VT001330	ECG519
D608	RD15FB1	D9201150B1	-
D609	1SS133T-77	D1VT001330	ECG519
D610, 11, 12	MTZJ6.8BT-77	D97U06R81B	-
D613	1SS133T-77	D1VT001330	ECG519
# IC101	OEC7044A	I56F07044A	-
IC199	S-24C02BDP-11	A3H251G015	-
# IC351	AN7511	I01DP75110	-
# IC401	LA78040	I03TD80400	-
# IC402	KIA7805PI	I1KA978050	ECG1960
# IC501	STR30110	I2B4901100	ECG7077
# IC601	M61203BFP	I06FC12030	-
Q101	DTC114TSTP	TNYTJ03001	-
# Q401 (1)	2SD2499	TDUU024990	-
# Q401 (2)	2SD2599	TDUU025990	-
# Q402 (1)	2SC2621(D,E)-RAC	TC3Q026210	ECG157
# Q402 (2)	2SC2271(D,E)-AE	TC3T022710	ECG399
Q403	DTA144ESTP	TPYTD03001	ECG2360
Q501	2SC1815(TPE2)	TC5T018154	ECG85
Q603, 06	2SD734(E,F)-AA	TD3T007340	ECG85
Q608	2SA1015Y(TPE2)	TA5T010154	ECG290A
# Q801, 02, 03 (1)	2SC4217(D,E)-RAC	TC3F042170	ECG157
# Q801, 02, 03 (1)	2SC1473A-TA-(RQ)	TCKT1473A0	ECG399

For SAFETY use only equivalent replacement part.
(1) Used in model CTGV-5463TT (Version A).
(2) Used in model CTGV-4563TT (Version A).

CAPACITORS & ELECTROLYTICS

Item No.	Rating	Mfr. Part No.
# C404	470µF 20% 10V	E02LT1471M
	470µF 20% 10V	E01VT1471M
	470µF 20% 10V	E632T1471D
# C405	470µF 20% 16V	E02LT2471M
	470µF 20% 10V	E01VT1471M
# C412	470µF 20% 10V	E02LT1471M
	470µF 20% 10V	E01VT1471M
	470µF 20% 10V	E632T1471D
# C414	100µF 20% 35V	E02LT4101M
	100µF 20% 35V	E01VT4101M
# C418	1000µF 20% 25V	E02LF3102M
# C433	470µF 20% 35V	E02LT4471M
# C434	22µF 20% 100V	E02LT8220M
# C443 (1)	.0056 1.25kV	-
	.0056 1.6kV	P414F9562H
# C443 (2)	.0047 1.6kV	P414F9472H
# C446 (1)	1µF 20% 160V	E53ZTB010M
# C446 (2)	1µF 20% 160V	E02LTB010M
# C448	22µF 20% 100V	E02LT8220M
# C502	.1 20% 275VAC	-
	.1 20% 250VAC	P2122B104M
# C506 (1)	470µF 20% 200V	E52DGC471M
# C506 (2)	220µF 20% 200V	E02LFC221M
# C519	10µF 20% 160V	E02LTB100M
C819	.001 10% 2kV	C13VB0713K

For SAFETY use only equivalent replacement part.
(1) Used in model CTGV-5463TT (Version A).
(2) Used in model CTGV-4563TT (Version A).

CONTROLS & RESISTORS

Item No.	Function/Rating	Mfr. Part No.
# R177 (1)	1200 5% 10W Wirewound	R5Y2CF122J
# R177 (2)	1500 5% 10W Wirewound	R5W2CF152J
R401	100K 1% 1/4W	R4X5T4104F
	100K 1% 1/4W	R425T4104F
# R404 (1)	2700 5% 1/8W	R903N8272J
# R404 (2)	3300 5% 1/8W	R903N8332J
# R405	18K 1% 1/4W	R4X5T4183F
# R406 (1)	2200 5% 1/8W	-
	2700 5% 1/8W	R903N8272J
# R406 (2)	1500 5% 1/8W	R903N8152J
# R407	2.2 5% 1/2W	R002T22R2J
	1.5 5% 1/2W	R002T21R5J
# R408	10K 1% 1/6W	R4X5T6103F
# R409	5600 1% 1/6W	R4X5T6562F
# R417	11K 1% 1/6W	R425T6113F
# R418	12K 1% 1/6W	-
	10K 1% 1/6W	R425T6103F
# R422	10K 5% 1/4W	-
	22K 5% 1/4W	R002T4223J
R424	6800 1% 1/6W	R4X5T6682F
# R429	3.3 5% 1W Fusible	R655813R3J
# R443 (1)	5.6 5% 2W Fusible	R6550A5R6J
# R443 (2)	4.7 5% 2W Fusible	R6550A4R7JJ
# R447 (1)	3300 5% 2W	R3X18A332J
# R447 (2)	3900 5% 2W	R3X18A332J
# R448	3300 5% 2W	R3X18A332J
# R449 (1)	3300 5% 2W	R3X18A332J
# R449 (2)	3900 5% 2W	R3X18A332J
# R502 (1)	3.9 5% 7W Wirewound	R5Y2CE3R9J
# R502 (2)	2.2 5% 5W Wirewound	R5Y2CD2R2J
# R506	180 5% 20W Wirewound	R5Y2CH181J
# R507	47 5% 1/4W Fusible	R655U4470J
# R509	12K 1% 1/6W	R4X5T6123F
	12K 1% 1/6W	R425T6123F
# R515	1.5 5% 3W	R3X28B1R5J
# R640	1500 5% 10W Wirewound	-
	1800 5% 10W Wirewound	R5X2CF182J
# R655	1800 5% 10W Wirewound	R5X2CF182J
# R803, 05, 07 (1)	12K 5% 2W	R3X18A123J
# R803, 05, 07 (2)	15K 5% 2W	R3X18A153J
TH501	3.6 Cold PTC/164 Cold	DF20GR3R0Q

For SAFETY use only equivalent replacement part.
(1) Used in model CTGV-5463TT (Version A).
(2) Used in model CTGV-4563TT (Version A).

PARTS LIST continued

COILS & TRANSFORMERS

Item No.	Function/Rating	Mfr. Part No.
# DY (3)	Yoke Horiz 3mH Vert 25.8mH	
# FB401 (1)(4)	Horizontal Output	043220045F
# FB401 (2)(4)	Horizontal Output	043214029F
L101	3.3μH	021LA63R3K
L406	18μH	02186G180M
# L501	Line Filter	029K000074
# L502	Degaussing	028F140025
L601	15μH	021LA6150K
	1.2μH	0216731R2K
L605	1μH	021LA61R0M
L606	2.2μH	021LA62R2K
L607	15μH	021LA6150K
L801	100μH	02167D101K
T401	Horizontal Drive	03305Y002S

For SAFETY use only equivalent replacement part.

(1) Used in model CTGV-5463TT (Version A).

(2) Used in model CTGV-4563TT (Version A).

(3) Bonded part of CRT.

(4) Screen and focus controls are part of FB401.

MISCELLANEOUS

Item No.	Description	Mfr. Part No.	Notes
ANT001 (2)	Antenna	125C108030	Rod
# ATC001	Antenna	0623400008	Unit
	Antenna	0623400007	Unit
# CD501	Line Cord	120R614908	AC, Polarized
CF601	Filter	1022T45R72	SAW
	Filter	1022T45R71	SAW
CF603	Filter	1011T4R504	4.5MHz
CF604	Trap	1011T4R517	4.5MHz
# F501	Fuse	081PA04003	4Amp, Slow Blowing
FH501, 02	Fuse Holder	06710T0006	For F501
# J801	Socket	066X120014	CRT
OS101	Receiver	077Q014003	Remote, PIC-28143SY-2
# RY101	Relay	0560V20115	Power
# SP351	Speaker	070C132014	3" Round, 8 Ohms, 1W
SW101 (1)	Switch	0504R01T38	Channel Up
SW101 (2)	Switch	0504201T31	Channel Up
SW102 (1)	Switch	0504R01T38	Channel Down
SW102 (2)	Switch	0504201T31	Channel Down
SW103 (1)	Switch	0504R01T38	Volume Up
SW103 (2)	Switch	0504201T31	Volume Up
SW104 (1)	Switch	0504R01T38	Volume Down
SW104 (2)	Switch	0504201T31	Volume Down
SW105 (1)	Switch	0504R01T38	Power
SW105 (2)	Switch	0504201T31	Power
# TU001 (3)	Tuner	0145S00049	UHF/VHF, ENV56D67G3
# V801 (1)	CRT	098Y200480	A48LGS30X19
# V801 (2)	CRT	098Q140495	A34AGT13X98
X101	Osillator	1002T00801	8MHz
X602	Crystal	100CT3R505	3.58MHz
	Transmitter	076R074150	Remote, R25-1028

For SAFETY use only equivalent replacement part.

(1) Used in model CTGV-5463TT (Version A).

(2) Used in model CTGV-4563TT (Version A).

(3) Contact TNI Electronics for replacement; order by manufacturer's part number.

CABINET PARTS

Item	Mfr. Part No.
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Model CTGV-4563TT (Version A)

Button Frame	735WPA0399
Button Holder	735WPA0398
Cabinet Front	701WPJA522
Cabinet Front Assembly	A3H101A720
Cabinet Rear	702WPA0535
Guide, Remote Control	713WPA0093

Model CTGV-5463TT (Version A)

Button Frame	735WPA0399
Button Holder	735WPA0398
Cabinet Front	701WPJA523
Cabinet Front Assembly	A3H501C720
Cabinet Rear	702WPA0557
Guide, Remote Control	713WPA0093

BROKSONIC

MODEL CTGV-5463TT (VERSION A)