

## 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.

### 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 knobs, shields, covers, grounds, and mounting hardware have been replaced. Be sure to replace all insulators and restore proper lead dress.

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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A Bell Atlantic Company  
2647 Waterfront Parkway East Drive, Suite 100  
Indianapolis, IN 46214-2012

Printed in the United States of America 5 4 3 2 1

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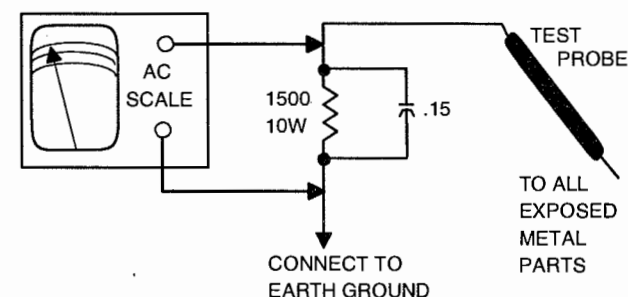
### SAFETY CHECKS -- FIRE AND SHOCK HAZARD

#### 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.



#### HIGH VOLTAGE SHUTDOWN TEST

Apply 120VAC. Momentarily short between the cathodes of D302 and D651 using a 10K ohm resistor. The receiver should lose raster and sound. If the receiver does not shutdown, the high voltage shutdown circuit should be repaired. To resume normal operation, remove AC power and wait 30 seconds, then turn the receiver on.



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# PHOTOFACT® Technical Service Data

SET 3740

MODELS FT1351, FTV13TE

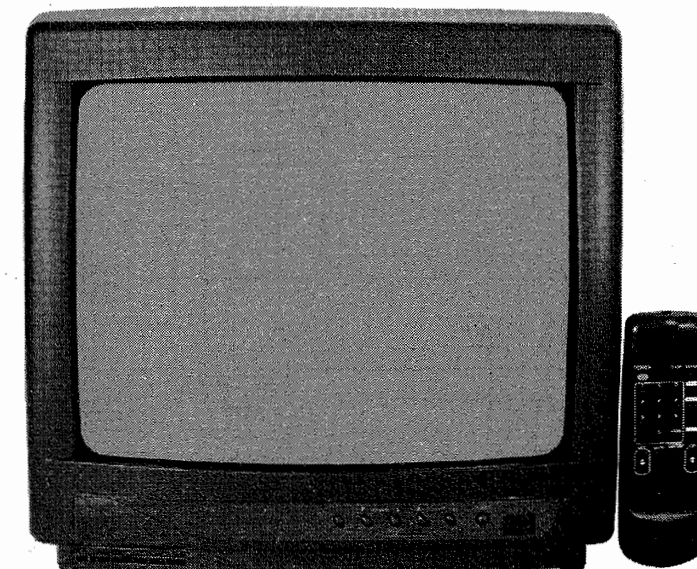
FUNAI

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## FUNAI

Models FT1351, FTV13TE



Representative Model

Essential coverage  
for servicing a television receiver...

- Schematics
- Component locations
- Parts list

For Supplier Address,  
See PHOTOFACT Annual Index

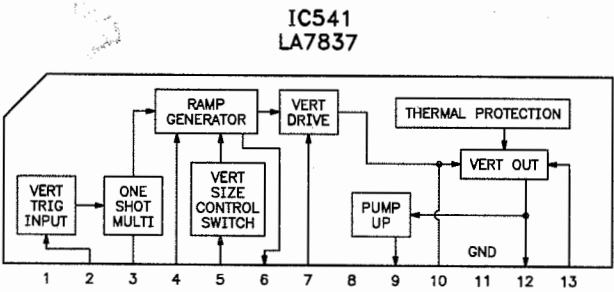
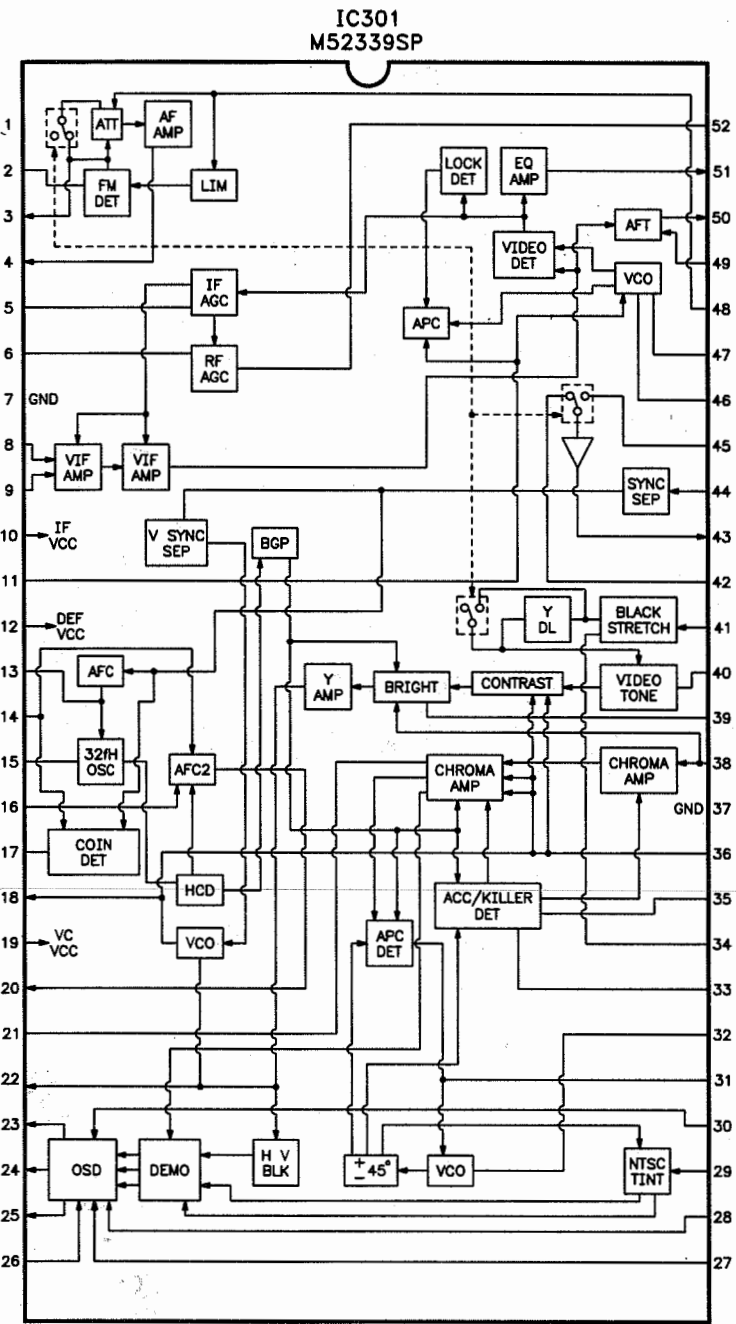
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NOVEMBER 1996 SET 3740

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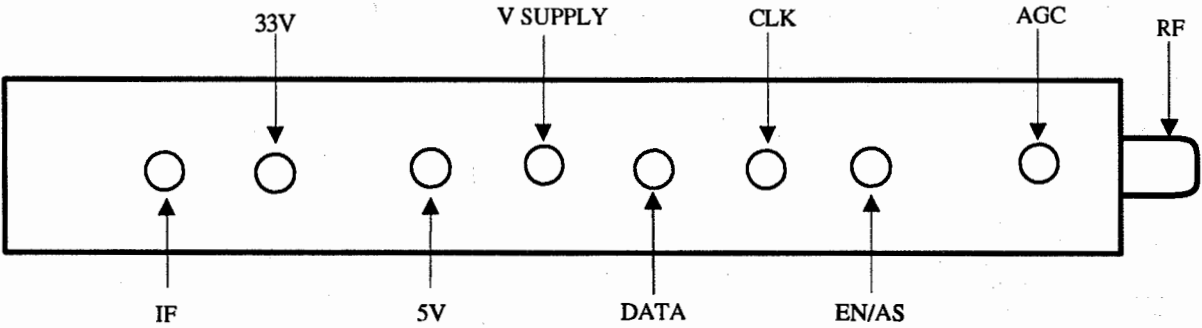
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IC FUNCTIONS



TUNER INFORMATION

TUNER TERMINAL GUIDE



TUNER VOLTAGE CHART

Pin	VHF Low Band	VHF High Band	UHF Band
AGC	6.0V	6.0V	6.0V
EN/AS	0V	0V	0V
CLK	0V	0V	0V
DATA	0V	0V	0V
V SUPPLY	9.0V	9.0V	9.0V
5V	5.0V	5.0V	5.0V
33V	32.2V	32.2V	32.2V
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.

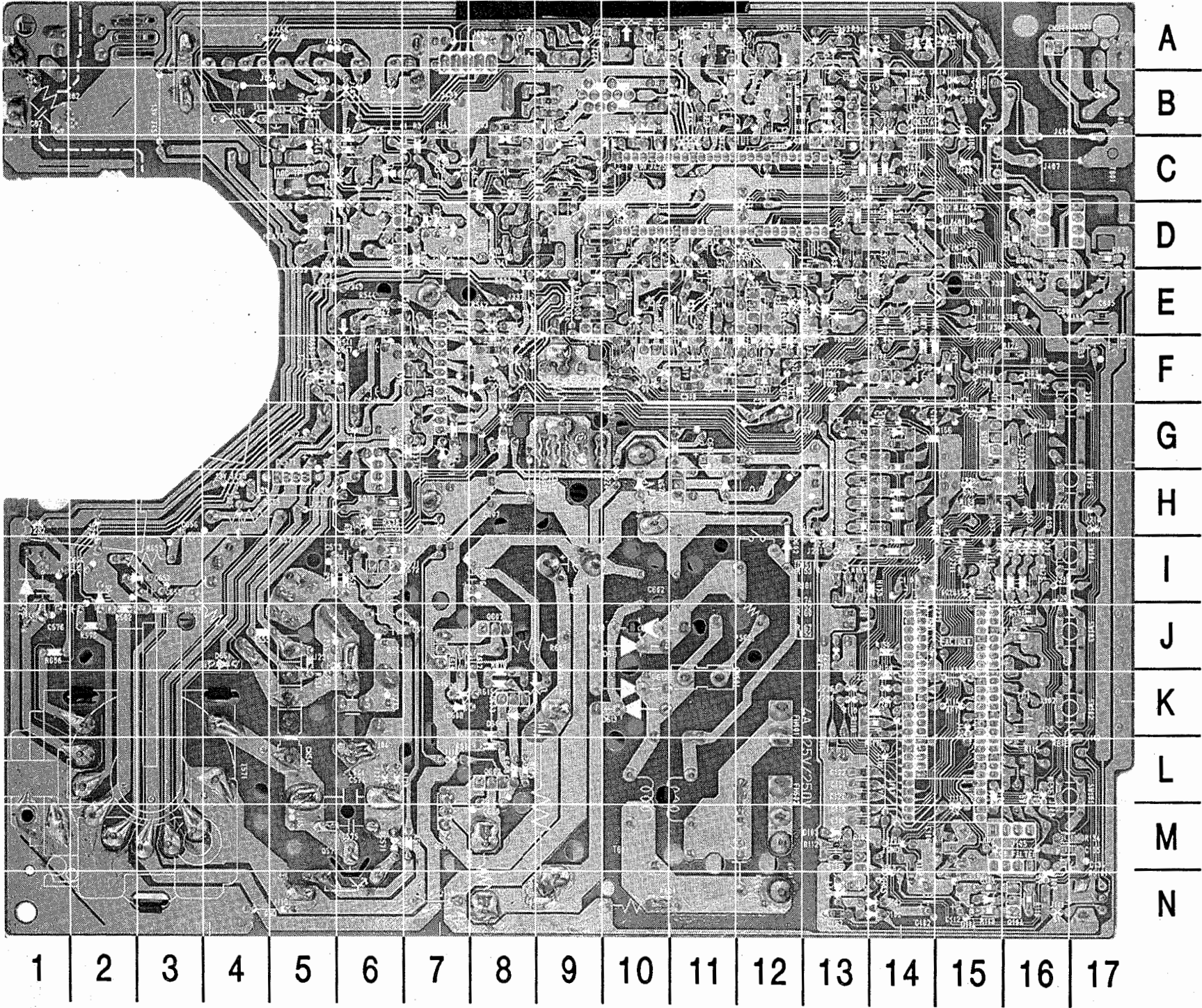
SCHEMATIC NOTES

- # 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.

FUNAI  
MODELS FT1351, FTV13TE

MAIN BOARD - BOTTOM VIEW

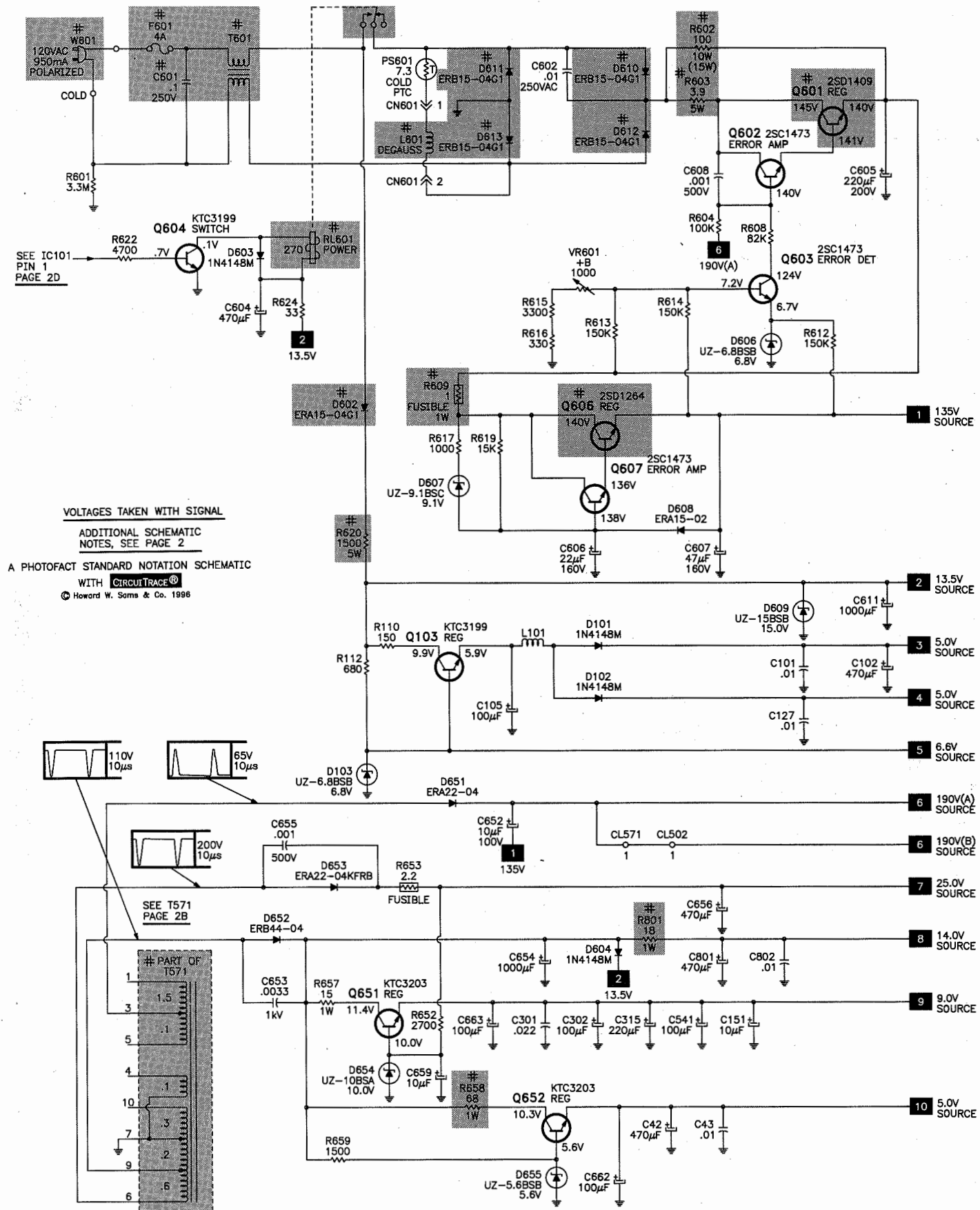


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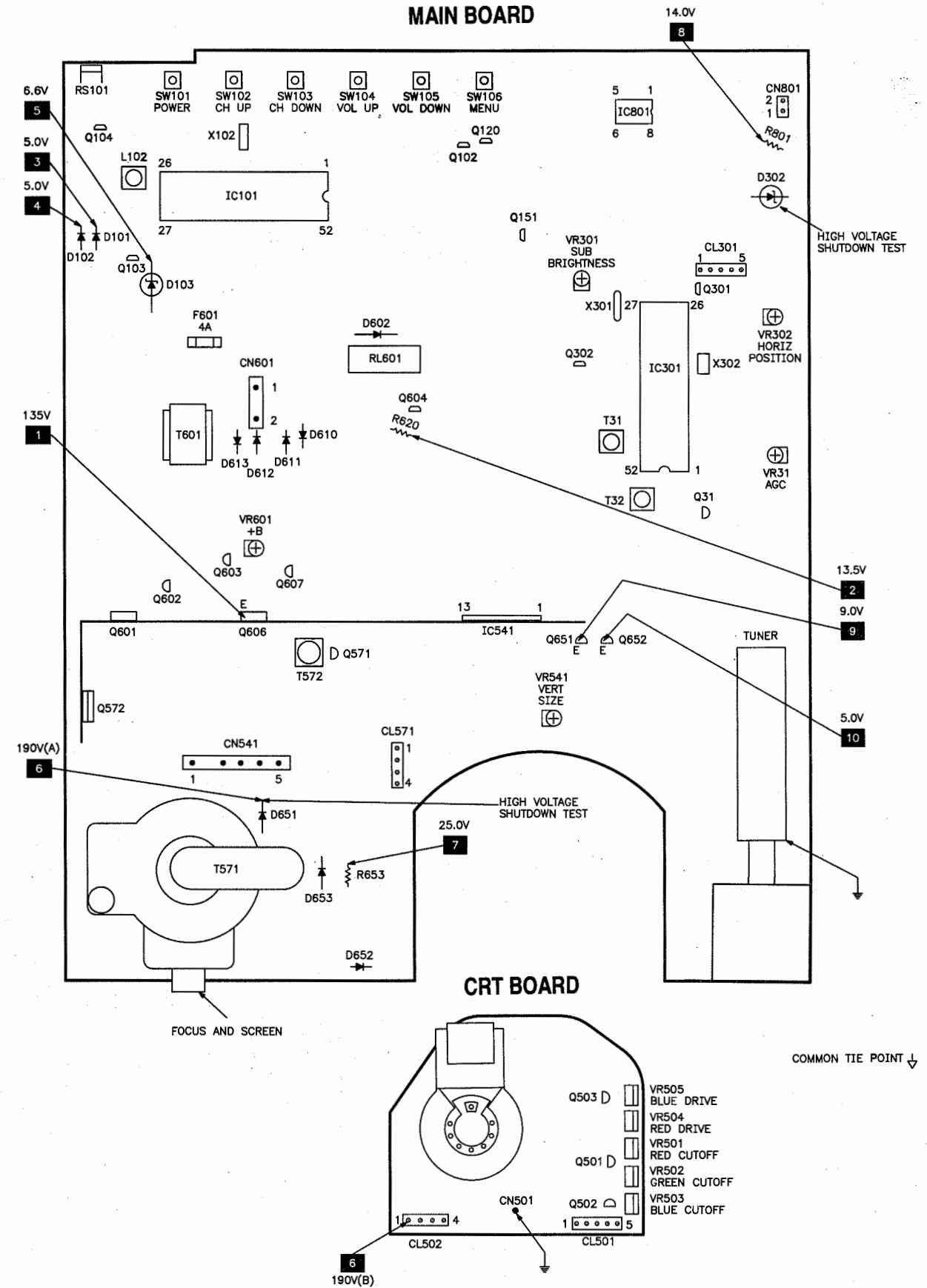
MODELS FT1351, FTV13TE



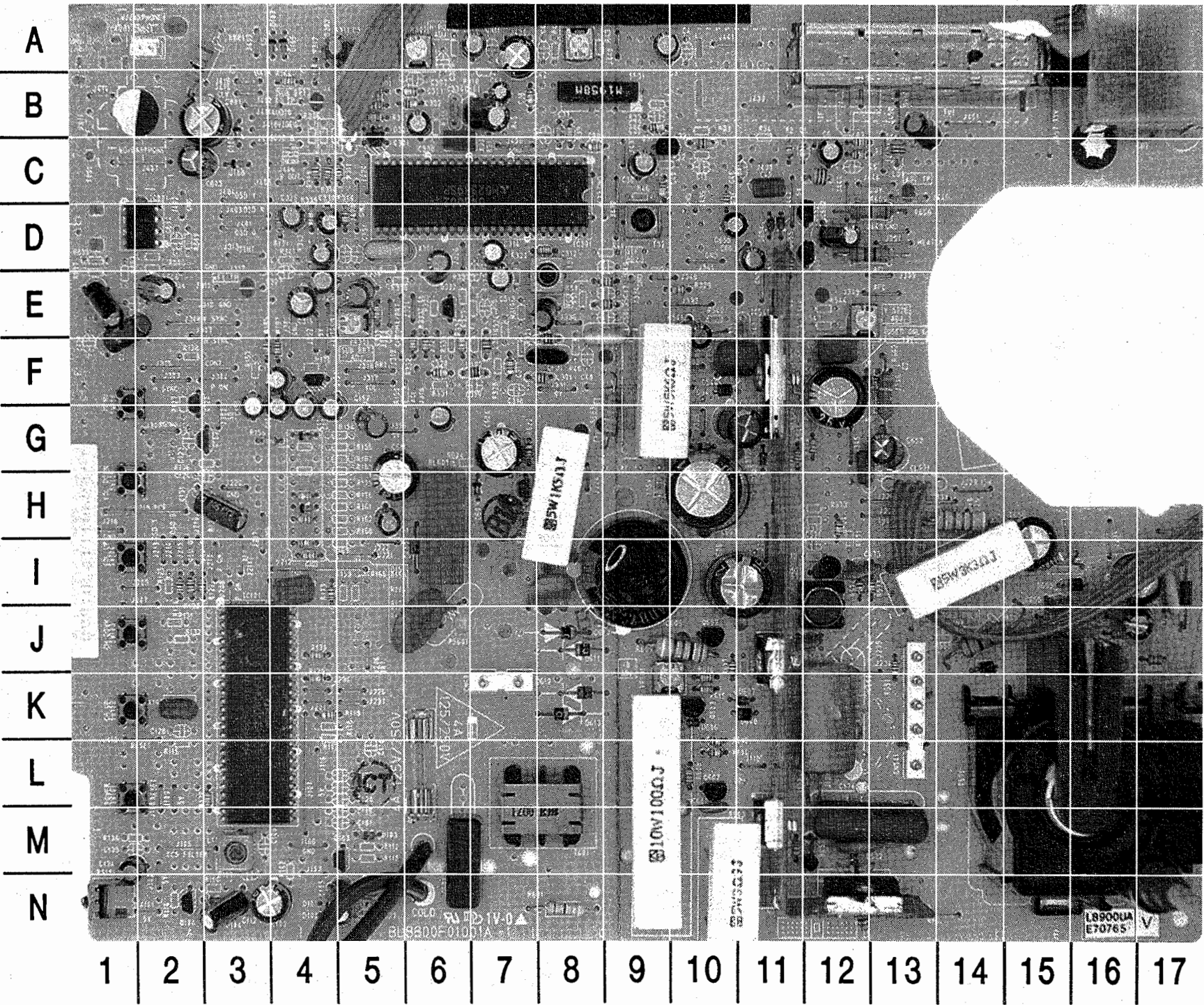
## POWER SUPPLY SCHEMATIC



## PLACEMENT CHART



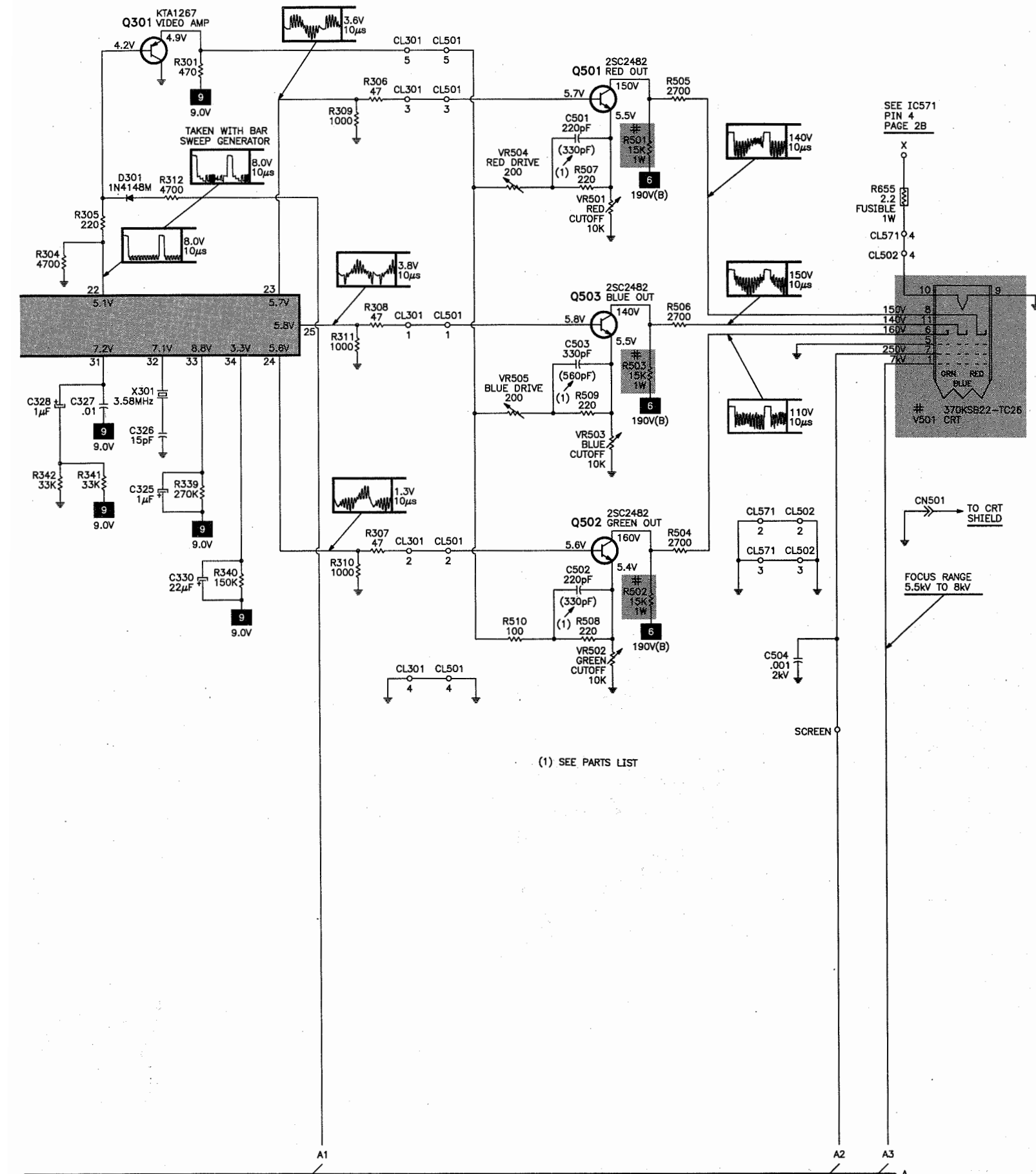
MAIN BOARD - TOP VIEW



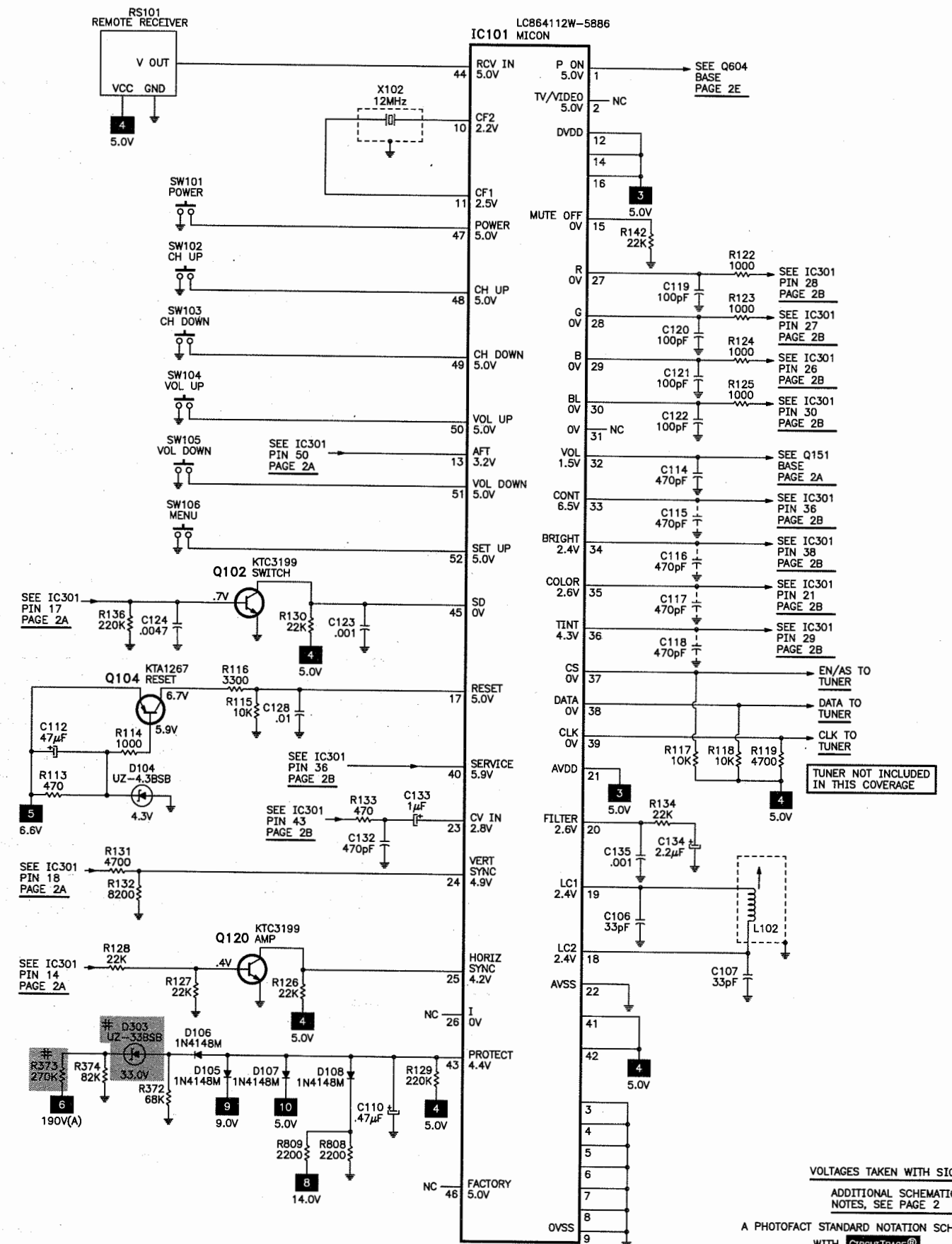
# C TELEVISION SCHEMATIC continued

# D SYSTEM CONTROL SCHEMATIC

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(1) SEE PARTS LIST



VOLTAGES TAKEN WITH SIGNAL  
ADDITIONAL SCHEMATIC  
NOTES, SEE PAGE 2  
A PHOTOFACT STANDARD NOTATION SCHEMATIC  
WITH CIRCUITTRACE®  
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MAIN BOARD - TOP VIEW, GRIDTRACE LOCATION GUIDE

BC571	M-12	C544	F-10	D541	F-10	R1	C-12	R582	J-16
C1	C-11	C545	G-11	D571	I-16	R2	C-12	R601	N-8
C2	F-13	C547	F-12	D602	I-6	R3	C-11	R602	K-9
C3	A-9	C548	F-12	D603	H-7	R31	C-10	R603	M-10
C6	C-12	C549	G-12	D604	G-10	R39	B-8	R604	H-12
C32	B-13	C550	K-12	D606	K-10	R50	E-9	R608	L-10
C35	B-9	C572	J-12	D607	K-11	R52	I-4	R609	J-10
C36	B-7	C573	I-12	D608	K-11	R82	B-17	R612	K-10
C37	B-8	C574	M-12	D609	H-8	R119	K-4	R613	L-10
C38	C-9	C575	M-12	D610	J-8	R122	I-4	R614	L-10
C39	C-8	C576	J-17	D611	J-8	R123	I-4	R615	K-10
C40	C-9	C601	M-6	D612	K-8	R124	I-4	R616	K-10
C42	A-7	C602	I-8	D613	K-8	R126	L-3	R617	J-10
C44	B-7	C604	G-7	D651	J-14	R129	K-4	R620	G-8
C45	C-11	C605	I-9	D652	I-17	R130	J-4	R622	G-7
C46	C-11	C606	I-10	D653	I-16	R138	H-3	R652	D-11
C51	E-8	C607	H-10	D654	D-11	R156	G-4	R653	I-15
C82	B-17	C608	M-10	D655	D-11	R160	H-4	R655	H-14
C85	A-15	C611	H-5	D661	F-10	R164	B-4	R656	J-17
C102	N-3	C652	G-13	F601	L-6	R167	I-4	R657	D-12
C105	N-5	C653	I-17	IC101	J-3	R171	D-4	R658	D-12
C110	I-4	C654	I-17	IC301	C-5	R173	I-4	R659	C-12
C112	N-3	C655	I-15	IC541	E-11	R174	H-4	R662	F-13
C131	H-3	C656	H-15	IC801	D-1	R185	F-3	R663	G-9
C133	E-2	C659	D-10	L1	C-12	R187	F-4	R666	F-9
C134	M-1	C661	B-7	L31	C-13	R301	B-5	R801	A-3
C151	H-5	C662	D-12	L32	C-10	R304	B-5	RL601	H-6
C152	G-5	C663	D-11	L35	E-9	R305	B-5	RS101	N-1
C153	F-4	C801	B-2	L36	E-8	R309	C-4	SF31	B-8
C154	G-4	C803	C-2	L101	N-5	R310	C-4	SW101	L-1
C155	F-3	C804	E-2	L102	M-3	R311	C-5	SW102	K-1
C156	G-4	C805	E-1	L301	F-7	R312	A-4	SW103	J-1
C157	G-4	CF31	F-8	L302	F-7	R314	A-4	SW104	I-1
C301	B-6	CF32	E-8	L304	F-8	R329	E-10	SW105	H-1
C302	A-5	CL301	B-5	PS601	J-6	R332	F-6	SW106	F-1
C308	B-6	CL571	H-13	Q31	C-9	R333	F-6	T31	D-8
C310	A-7	CN801	A-2	Q102	G-3	R334	F-6	T32	D-9
C312	D-8	CN541	J-13	Q103	M-5	R337	E-5	T571	L-16
C313	E-7	CN601	K-7	Q104	N-2	R339	D-4	T572	I-12
C314	D-7	D1	F-13	Q120	F-2	R340	D-5	T601	L-7
C315	E-4	D101	N-4	Q151	F-4	R371	G-11	VR301	E-5
C317	F-7	D102	N-4	Q301	C-5	R372	G-11	VR302	A-6
C320	F-6	D103	M-5	Q302	E-6	R374	G-12	VR31	A-8
C323	D-4	D104	N-3	Q571	I-12	R544	E-6	VR541	E-12
C324	E-5	D105	A-4	Q572	N-12	R549	F-11	VR601	J-9
C325	D-4	D106	B-3	Q601	M-11	R551	J-13	W601	M-6
C328	E-4	D107	A-4	Q602	L-10	R552	J-14	X102	K-2
C329	G-6	D108	C-3	Q603	K-10	R573	I-13	X301	D-5
C330	D-4	D151	G-4	Q604	H-7	R574	I-12	X302	C-6
C332	B-6	D152	H-4	Q606	J-11	R575	J-16		
C334	B-6	D301	B-5	Q607	J-10	R576	M-11		
C541	E-10	D302	A-4	Q651	D-12	R579	I-14		
C543	E-11	D303	G-11	Q652	D-12	R581	J-15		

MAIN BOARD - BOTTOM VIEW, GRIDTRACE LOCATION GUIDE

C4	A-8	R112	M-13	R341	D-14
C5	C-6	R113	N-15	R342	D-14
C15	C-8	R114	N-15	R361	A-12
C31	B-5	R115	L-16	R370	H-6
C33	B-9	R116	N-16	R373	H-6
C41	B-10	R117	K-14	R541	F-8
C43	A-10	R118	K-14	R542	E-8
C47	E-9	R125	I-16	R543	E-7
C48	F-10	R127	F-16	R545	F-7
C49	D-9	R128	F-16	R546	E-7
C50	E-9	R131	J-16	R547	E-6
C101	M-13	R132	J-16	R548	E-6
C106	M-15	R133	E-17	R571	H-6
C107	N-15	R134	M-17	R572	I-6
C114	L-13	R136	G-15	R619	J-7
C119	M-13	R137	H-15	R624	G-11
C120	L-13	R142	M-14	R803	D-17
C121	L-13	R150	F-12	R805	D-17
C122	L-13	R153	G-14	R806	D-16
C123	G-16	R154	G-13	R807	E-17
C124	H-15	R155	G-13	R808	D-16
C127	N-13	R157	F-15	R809	D-16
C128	K-16	R159	I-13		
C132	F-17	R161	H-13		
C135	M-17	R162	H-13		
C307	B-12	R166	I-13		
C309	A-12	R168	H-13		
C311	A-11	R169	I-13		
C316	E-11	R175	H-13		
C318	F-11	R176	H-13		
C319	F-11	R178	F-14		
C321	D-11	R181	G-14		
C326	D-13	R182	G-13		
C327	D-14	R183	G-13		
C331	D-13	R306	B-14		
C542	F-8	R307	B-14		
C546	G-7	R308	B-14		
C571	I-6	R313	B-11		
C802	D-16	R315	B-12		
C806	E-16	R318	B-11		
R32	C-8	R319	E-11		
R33	B-8	R320	D-11		
R34	B-7	R321	F-11		
R35	C-9	R324	E-11		
R37	B-9	R325	E-12		
R40	A-10	R326	E-11		
R41	D-9	R327	F-11		
R43	A-10	R328	F-11		
R45	B-11	R330	E-12		
R46	C-9	R331	F-12		
R48	F-10	R335	F-12		
R51	F-10	R336	E-13		
R110	M-13	R338	D-13		



[illegible]



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.
  - Terrell & Nobis (TNI Electronics)
  - 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

CAPACITORS & ELECTROLYTICS

Item No.	Rating	Mfr. Part No.
# C81 Thru		
# C85	.001 400V	1220278
C501 (1)	220pF 10% 50V	CCA1JKT0B221
C501 (2)	330pF 10% 50V	CCA1JKT0B331
C502 (1)	220pF 10% 50V	CCA1JKT0B221
C502 (2)	330pF 10% 50V	CCA1JKT0B331
C503 (1)	330pF 10% 50V	CCA1JKT0B331
C503 (2)	560pF 10% 50V	CCA1JKT0B561
C504	.001 10% 2kV	CCD3DKP0B102
	.001 10% 2kV	6220585
# C550	.27 5% 200V	122Z254
	.27 5% 200V	1220508
	.27 5% 200V	CBP2DKD00274
	.22 5% 200V	122Z253
	.22 5% 200V	CBP2DKD00224
	.22 5% 200V	1220507
# C574	.0047 5% 1.6kV	122Z183
# C574	.0047 5% 1.6kV	CA3C472DT007
# C574 (3)	.0056 5% 1.6kV	122Z182
# C574 (3)	.0056 5% 1.6kV	CA3C562DT007
# C575	.001 10% 2kV	CCD3DKA0B102
	470pF 10% 2kV	CCD3DKA0B471
# C601	.1 10% 250V	CT2E104NC011
	.1 20% 250V	CA2E104MS005
C602	.01 250VAC	CCD2EZA0F103
	.01 250VAC	CCH2EZA0F103
C653	.0033 10% 1kV	CCD3AKP0B332
	.0033 10% 1kV	6220577

# For SAFETY use only equivalent replacement part.  
(1) Used with 370KSB22-TC26 CRT.  
(2) Used with 37GDA85X-TC99 CRT.  
(3) Used with 370KSB22-TC26 CRT and 154-064Z Horizontal Output Transformer.

CABINET PARTS

Item	Mfr. Part No.
MODEL FT1351	
Cabinet Front	OEM200537
Cabinet Rear	OEM000204
Control Plate	OEM300898
MODEL FTV13TE	
Cabinet Front	OEM200537
Cabinet Rear	OEM000204
Control Plate	OEM300899

MISCELLANEOUS

Item No.	Description	Mfr. Part No.	Notes
CF31	Trap	FBE455PMS001	4.5MHz
	Trap	1810897	4.5MHz
CF32	Filter	FBB455PMS001	4.5MHz
	Filter	FBB455PMR001	4.5MHz
# F601	Fuse	PAGJ20CAG402	4Amp, 125V, Fast Acting
# RL601	Relay	MRNDC12QN008	Power
	Relay	MRNDC12QN007	Power
	Relay	MRNDC12QN002	Power
RS101	Receiver	USESJRSKK016	Remote
SF31	Filter	FBB456PEB001	SAW (M1958M)
	Filter	FBB456PKC001	SAW (KAF-45MR-ML)
SP801	Speaker	DSD0808XQ001	3" Round, 8 Ohm
	Speaker	DSD0807MS001	-
	Speaker	DSD0808SM001	-
	Speaker	1520614	-
SW101	Switch	SST0101RZ001	Power
	Switch	SST0101AL013	Power
SW102	Switch	SST0101RZ001	Channel Up
	Switch	SST0101AL013	Channel Up
SW103	Switch	SST0101RZ001	Channel Down
	Switch	SST0101AL013	Channel Down
SW104	Switch	SST0101RZ001	Volume Up
	Switch	SST0101AL013	Volume Up
SW105	Switch	SST0101RZ001	Volume Down
	Switch	SST0101AL013	Volume Down
SW106	Switch	SST0101RZ001	Menu
	Switch	SST0101AL013	Menu
# V501	CRT	1833074	370KSB22-TC26
	CRT	1833079	37GDA85X-TC99
# W601	Line Cord	WAC0172CM001	Polarized
	Line Cord	WAC0172LW001	Polarized
X102	Resonator	FYA126PMR001	12MHz
X301	Crystal	1811291	3.58MHz
	Crystal	1811203	3.579545MHz
X302	Resonator	FY0504PMR001	-
	Coupler (1)	OEM402961	Antenna
	Fuse Holder	XH01Z00DK001	For F601 (2 Used)
	PC Board (2)	BL8800F01001-1	Main
	PC Board (2)	BL8800F01001-2	CRT
	Socket	JSCC220PK001	CRT
	Socket	1780080	CRT
	Transmitter	UREMT24SR007	Remote
	Tuner (2) (3)	UTUNNTUSM004	UHF/VHF, (TECC1880PK25A)
		UTUNNTUSM002	UHF/VHF, (TECC1880PK21G)

# For SAFETY use only equivalent replacement part.  
(1) Used with TECC1880PK21G Tuner.  
(2) Contact PTS Electronics Corporation for replacement; order by manufacturer's part number.  
(3) Contact TNI Electronics for replacement; order by part number on tuner.

COILS & TRANSFORMERS

Item No.	Function/Rating	Mfr. Part No.
BC571	Ferrite Bead	1190024
L1, 31	100µH	2162101S
L32	1µH	2165109T
L33 (1)	1µH	2165109T
L35	18µH	2165180T
L36	10µH	2165100T
L101	100µH	2162101S
L102	14.11MHz	LFA7V0VD008
	14.11MHz	LFA08V0SF001
L301	22µH	2165220T
L302	10µH	2165100T
L304	27µH	2165270T
L542 (2)	Yoke Horiz 4.65mH Vert 31.1mH	
# L601	Degaussing	LLBH00ZTZ017
T31	IF	LFA07V0VD007
	IF	LFA07V0SF110
T32	SIF	LFA07V0VD005
	SIF	LFA07V0SF112
# T571 (3) (4)	Horizontal Output	LTF00CPGS008
# T571 (3) (5)	Horizontal Output	LTF00CPSM010
T572	Horizontal Drive	1150325
# T601	Line Filter	LLBG00ZTZ001

# For SAFETY use only equivalent replacement part.  
(1) Used with SF31 Saw Filter KAF-45MR-ML.  
(2) Part of CRT.  
(3) Focus and screen controls are part of T571.  
(4) On unit number 154-277Q.  
(5) On unit number FCM-20B029B.

FUNAI

MODELS FT1351, FTV13TE

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.
D1	UZ-33BSB	QDTB00UZ33BS	-	-	-
D101, 02	1N4148M	NDTZ01N4148M	NTE519	ECG519	SK3100
	1N4148M	QDTZ01N4148M	NTE519	ECG519	SK3100
	1SS133	1SS133TZ	NTE177	ECG177	SK9091
D103	UZ-6.8BSB	QDTB0UZ6R8BS	-	-	-
D104	UZ-4.3BSB	UDTB0UZ4R3BS	-	-	-
D105 Thru					
D108	1N4148M	NDTZ01N4148M	NTE519	ECG519	SK3100
	1N4148M	QDTZ01N4148M	NTE519	ECG519	SK3100
	1SS133	1SS133TZ	NTE177	ECG177	SK9091
D151, 52	1N4148M	NDTZ01N4148M	NTE519	ECG519	SK3100
	1N4148M	QDTZ01N4148M	NTE519	ECG519	SK3100
	1SS133	1SS133TZ	NTE177	ECG177	SK9091
D301	1N4148M	NDTZ01N4148M	NTE519	ECG519	SK3100
	1N4148M	QDTZ01N4148M	NTE519	ECG519	SK3100
	1SS133	1SS133TZ	NTE177	ECG177	SK9091
# D302	UZ-15BSB	QDTB00UZ15BS	-	-	-
# D303	UZ-33BSB	QDTB00UZ33BS	-	-	-
D541	ERA15-02	-	NTE552	ECG552	SK9000
	ERA15-02KFRB	QDNZ0ERA1502	NTE552	ECG552	SK9000
D571	1N4148M	NDTZ01N4148M	NTE519	ECG519	SK3100
	1N4148M	QDTZ01N4148M	NTE519	ECG519	SK3100
	1SS133	1SS133TZ	NTE177	ECG177	SK9091
# D602	ERA15-04G1	QDPZERA1504G	NTE552	ECG552	SK9000
D603, 04	1N4148M	NDTZ01N4148M	NTE519	ECG519	SK3100
	1N4148M	QDTZ01N4148M	NTE519	ECG519	SK3100
	1SS133	1SS133TZ	NTE177	ECG177	SK9091
D606	UZ-6.8BSB	QDTB0UZ6R8BS	-	-	-
D607	UZ-9.1BSC	QDTC0UZ9R1BS	-	-	-
D608	ERA15-02	-	NTE552	ECG552	SK9000
	ERA15-02KFRB	QDNZ0ERA1502	NTE552	ECG552	SK9000
D609	UZ-15BSB	QDTB00UZ15BS	-	-	-
# D610 Thru					
# D613	ERB15-04-G1	-	-	-	-
	ERB15-04GI	QDPZERA1504G	-	-	-
D651	ERA22-04	-	NTE116	ECG116	SK3312
	ERA22-04KFRB	QDSZ0ERA2204	-	-	-
# D652	ERB44-04	-	NTE552	ECG552	SK9000
	ERB44-04L3	QDQZ0ERB4404	NTE552	ECG552	SK9000
# D653	ERA22-04KFRB	QDSZ0ERA2204	-	-	-
D654	UZ-10BSB	QDTB00UZ10BS	-	-	-
D655	UZ-5.6BSB	QDTB0UZ5R6BS	-	-	-
D661	UZ-9.1BSC	QDTC0UZ9R1BS	-	-	-
IC101	LC864112W-5886	QSMQA0SSY006	-	-	-
IC301	M52339SP	QSBLA0SMB012	-	-	-
IC541	LA7837	QSBLA0ZSY003	NTE7104	ECG7104	-
IC801	KIA6278P	NSBLA0SJY022	-	-	-
Q31	2SC3000E	2SC3000EZ	NTE85	ECG85	SK9229

# 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.
Q102, 03	KTC3199(GR)	NQS10KTC3199	-	-	-
	KTC3198(GR)	NQS40KTC3198	-	-	-
	2SC3331(T)-AANP	2SC3331TZ	-	-	-
Q104	KTA1267(GR)	NQS10KTA1267	-	-	-
	KTA1266(GR)	NQS40KTA1266	-	-	-
	2SA1318(T)-AA-NP	QSA1318TAANP	NTE159*	ECG159*	SK3466*
Q120	KTC3199(GR)	NQS10KTC3199	-	-	-
	KTC3198(GR)	NQS40KTC3198	-	-	-
	2SC3331(T)-AANP	2SC3331TZ	-	-	-
Q151	KTA1267(GR)	NQS10KTA1267	-	-	-
	KTA1266(GR)	NQS40KTA1266	-	-	-
	2SA1318(T)-AA-NP	QSA1318TAANP	NTE159*	ECG159*	SK3466*
Q301	KTA1267(GR)	NQS10KTA1267	-	-	-
	KTA1266(GR)	NQS40KTA1266	-	-	-
	2SA1318(T)-AA-NP	QSA1318TAANP	NTE159*	ECG159*	SK3466*
Q302	KTC3199(GR)	NQS10KTC3199	-	-	-
	KTC3198(GR)	NQS40KTC3198	-	-	-
	2SC3331(T)-AANP	2SC3331TZ	-	-	-
Q501, 02, 03	2SC2482TPE6	QQSZ02SC2482	-	-	-
Q571	2SC2482TPE6	QQSZ02SC2482	-	-	-
# Q572	2SD1877	-	NTE2331	ECG2331	SK10088
	2SD2331	QQPZ02SD2331	-	-	-
# Q601	2SD1409	QQQZ02SD1409	-	-	-
Q602, 03	2SC1473(R)	QQSR02SC1473	NTE399	ECG399	SK9352
Q604	KTC3199(GR)	NQS10KTC3199	-	-	-
	KTC3198(GR)	NQS40KTC3198	-	-	-
	2SC3331(T)-AANP	2SC3331TZ	-	-	-
# Q606	2SD1264AP	-	NTE375	ECG375	SK9118
	2SD1264A	QQ4Z2SD1264A	NTE375	ECG375	SK9118
Q607	2SC1473(R)	QQSR02SC1473	NTE399	ECG399	SK9352
Q651, 52	KTC3203(Y)	NQSY0KTC3203	-	-	-
	2SC2120-Y	QQSY02SC2120	NTE289A	ECG289A	SK3849

# For SAFETY use only equivalent replacement part.

\* Lead configuration may vary from original.



PARTS LIST continued

CONTROLS & RESISTORS			
Item No.	Function/Rating	Mfr. Part No.	NTE Part No.
PS601	7.3 Cold PTC	QNQZPA2A57R0	-
	7.3 Cold PTC	5790124	-
# R81, 82	3.3M 5% 1/2W	RCX2335KA014	HW533
	3.3M 5% 1/2W	RCX2335PY001	HW533
# R370, 73	270K 5% 1/10W	RRXAJBBZ0274	-
# R501, 02, 03	15K 5% 1W	RN01153XG001	1W315
	15K 5% 1W	RN01153UB001	1W315
	15K 5% 1W	534A153	1W315
# R552	1000 5% 2W	RN02102XG002	2W210
	1000 5% 2W	RN02102UB001	2W210
	1000 5% 2W	534B102	2W210
# R579	3300 5% 5W Wirewound	RW05332UB004	5W233
	3300 5% 5W Wirewound	RW05332PG004	5W233
	3300 5% 5W Wirewound	RW05332LX023	5W233
# R602	100 5% 10W Wirewound	-	-
	100 5% 15W Wirewound	RW10101LX023	-
	100 10% 15W Wirewound	RW10101UB004	-
	100 10% 15W Wirewound	RW10101PG002	-
# R603	3.9 5% 5W Wirewound	RW053R9LX023	-
	3.9 10% 5W Wirewound	RW053R9UB004	-
	3.9 10% 5W Wirewound	RW053R9PG002	-
# R609	1 5% 1W Fusible	RF011R0UB001	F1W1D0
	1 5% 1W Fusible	5368109	F1W1D0
	1 5% 1W Fusible	RF011R0QJ001	F1W1D0
	1 5% 1W Fusible	RF011R0MS002	F1W1D0
# R620	1500 5% 5W Wirewound	RW05152LX023	5W215
	1500 10% 5W Wirewound	RW05152PG004	5W215
	1500 10% 5W Wirewound	RW05152UB004	5W215
R653	2.2 5% 1/4W Fusible	5366229	-
	2.2 5% 1/4W Fusible	RFX42R2MS002	-
	2.2 5% 1/4W Fusible	RFX42R2QJ001	-
R655	2.2 5% 1W Fusible	RF012R2UB001	-
	2.2 5% 1W Fusible	5368229	-
	2.2 5% 1W Fusible	RF012R2QJ1001	-
	2.2 5% 1W Fusible	RF012R2MS002	-
# R658	68 5% 1W	RN01680XG002	1W068
	68 5% 1W	RN01680UB001	1W068
	68 5% 1W	534A680	1W068
# R666	5600 5% 5W Wirewound	RW05562LX023	-
	5600 10% 5W Wirewound	RW05562PG004	-
	5600 10% 5W Wirewound	RW05562UB004	-
# R801	18 5% 1W	RN01120XG002	1W018
	18 5% 1W	534A120	1W018
	18 5% 1W	RH01120UB001	1W018
VR31	10K AGC	138J781	-
	10K AGC	238N252	-
	10K AGC	638A103	-
# For SAFETY use only equivalent replacement part.			

CONTROLS & RESISTORS continued			
Item No.	Function/Rating	Mfr. Part No.	NTE Part No.
VR301	20K Sub Brightness	138J782	-
	20K Sub Brightness	238N253	-
	20K Sub Brightness	638A233	-
VR302	50K Horizontal Position	138J784	-
	47K Horizontal Position	638A473	-
	Horizontal Position	238N255	-
VR501	10K Red Cutoff	138J917	-
	10K Red Cutoff	138A959	-
VR502	10K Green Cutoff	138J917	-
	10K Green Cutoff	138A959	-
VR503	10K Blue Cutoff	138J917	-
	10K Blue Cutoff	138A959	-
VR504	200 Red Drive	138J910	-
	200 Red Drive	138A949	-
VR505	200 Blue Drive	138J910	-
	200 Blue Drive	138A949	-
VR541	50K Vertical Size	138J784	-
	47K Vertical Size	638A473	-
	Vertical Size	238N255	-
VR601	1000 B+	138J777	-
	1000 B+	238N248	-
	1000 B+	638A102	-



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