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.

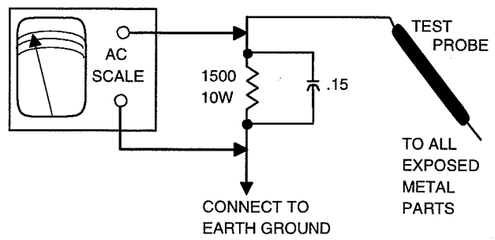
SAFETY CHECKS -- FIRE AND SHOCK HAZARD

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

Set all customer controls for normal picture. Check for 10.2V ±.5V at TP653. Using an external power supply, apply 13.1V to TP653. The receiver should shut down. If the receiver fails to shut down, the high voltage shutdown circuit requires repair. To return to normal operation, remove external power supply, and momentarily place a short between TP651 and TP652. Restore AC power and check receiver for proper operation.

5436 West 78th Street
Indianapolis, IN 46268-4149

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

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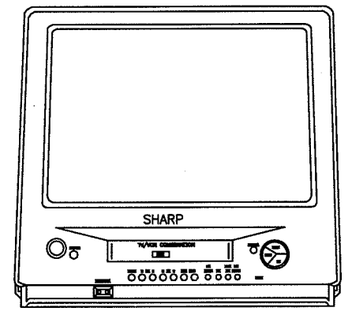
TVCRfacts™ Technical Service Data

INDEX

For Supplier Address,
See PHOTOFACT Annual Index

SHARP

Models 20VT-CH6, 20VT-H60 (Chassis VN-61)



Coverage includes these additional models.

BRAND	MODELS
SHARP	13VT-CH6 (Chassis VN-61)
SHARP	13VT-H60 (Chassis VN-61)
SHARP	13VT-H100 (Chassis VN-61)
SHARP	13VT-H150 (Chassis VN-61)

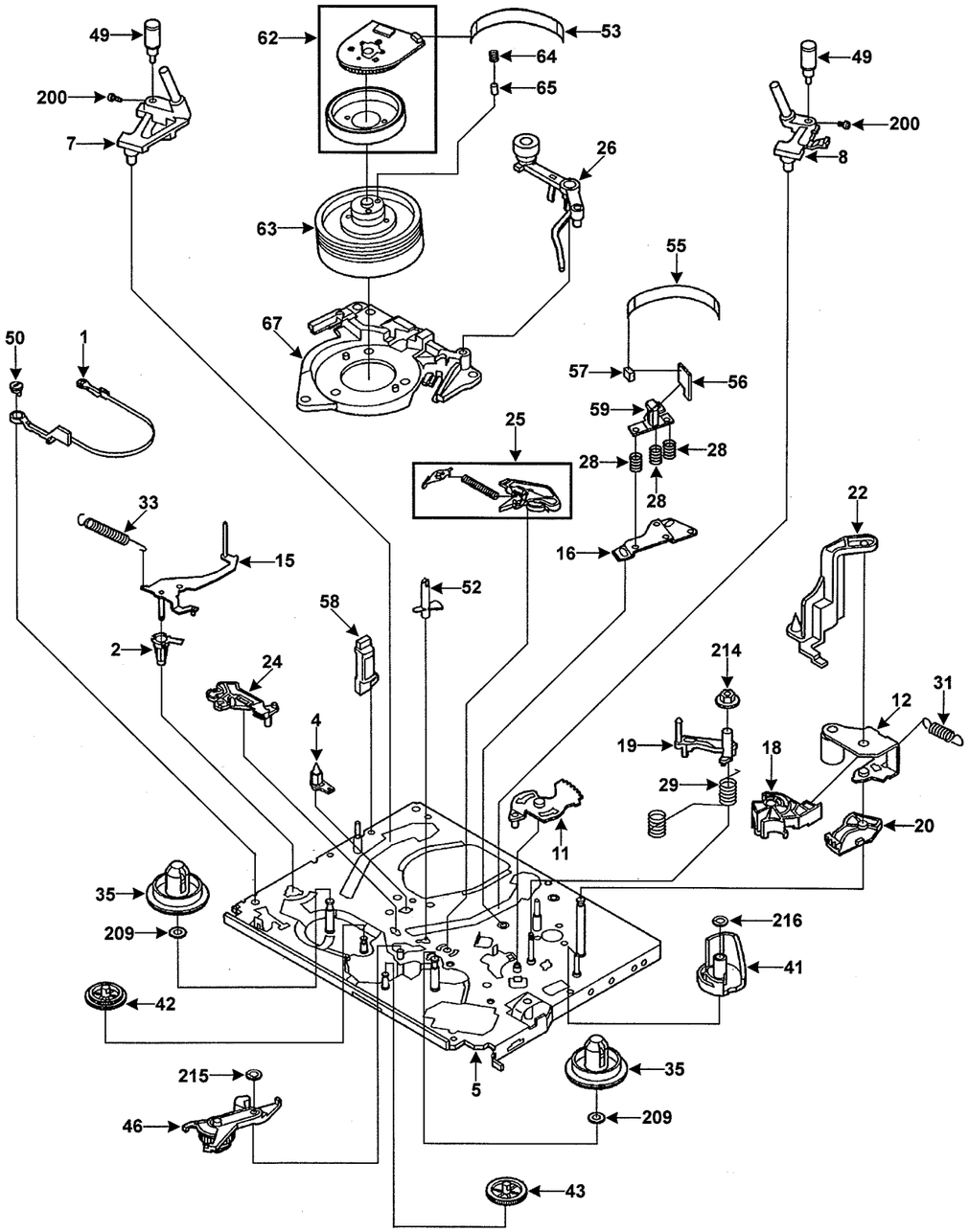
Essential coverage for servicing a TV/VCR...

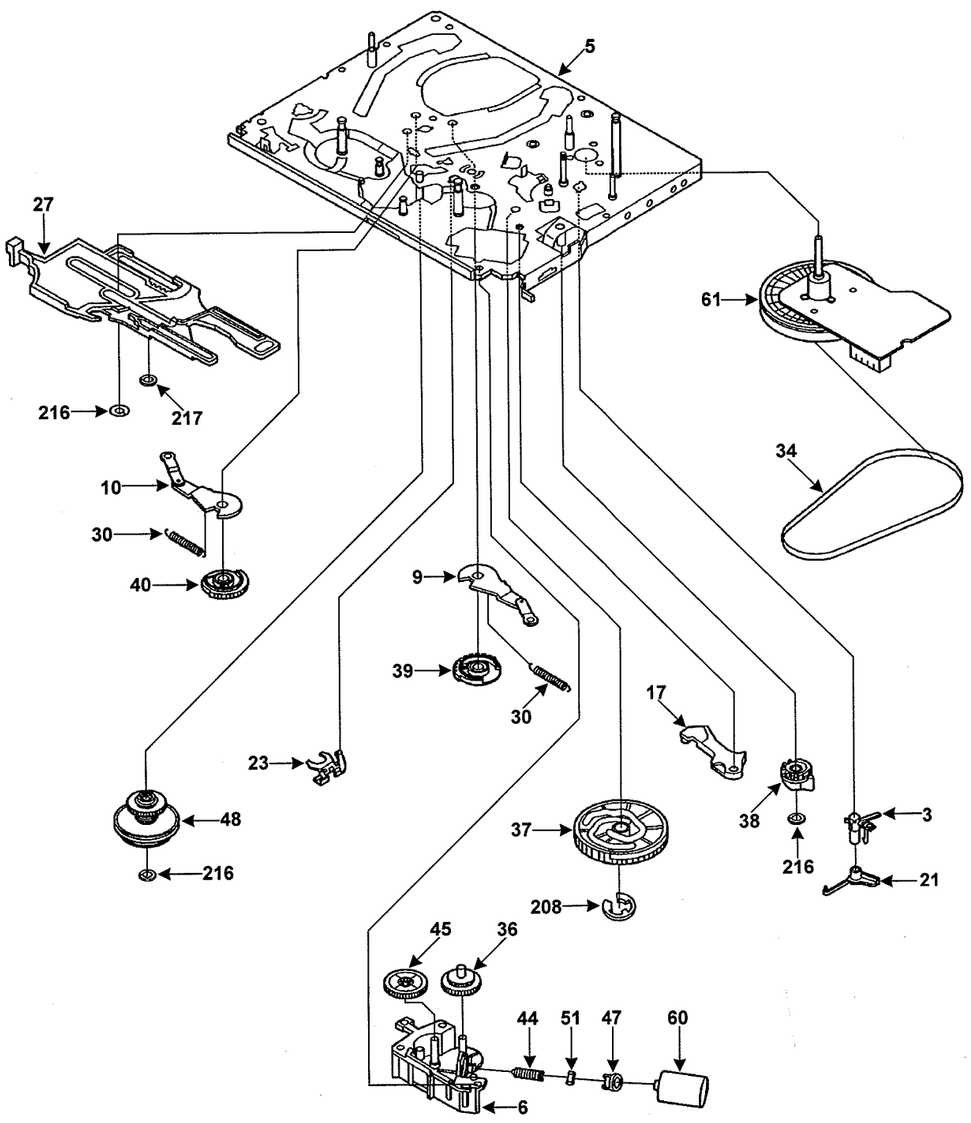
- Schematics
- Interconnect Diagram
- Electrical Parts List
- Placement Chart
- Exploded Views
- Mechanical Alignment
- Mechanical Parts List
- Waveforms

SAMS™ Technical Publishing

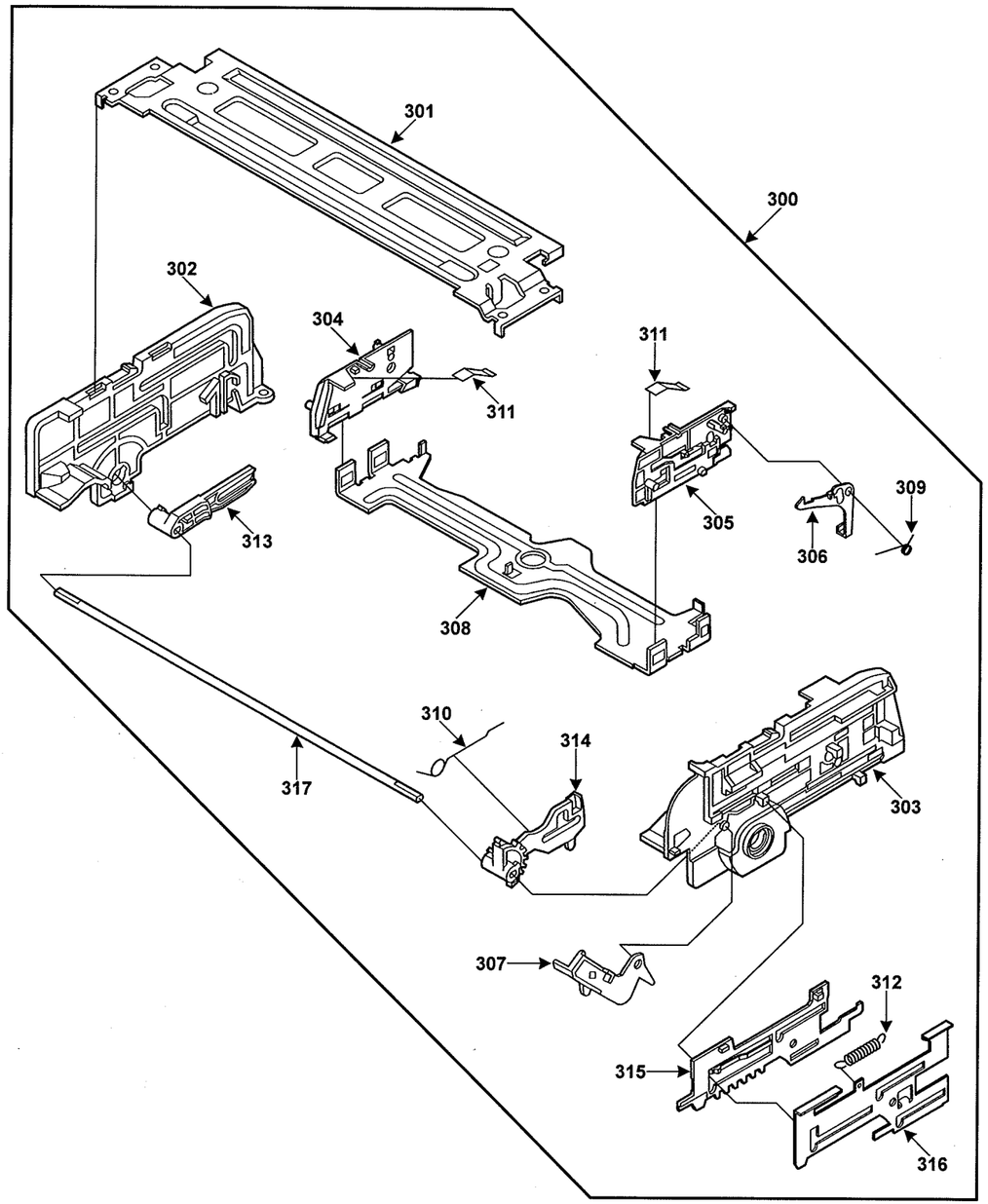
AUGUST 2000 SET TVCR-324

EXPLODED VIEW - TOP





EXPLODED VIEW - CASSETTE HOUSING CONTROL ASSEMBLY



MECHANICAL PARTS LIST

Item No.	Description	Part No.
1	Tension Band Assembly	LBNDK1009AJZZ
2	Tension Arm Boss	LBOSZ1001AJZZ
3	Slow Brake Boss	LBOSZ1002AJZZ
4	Cassette Stay Left	LBOSZ1003AJZZ
5	Main Chassis Assembly	LCHSM0158AJZZ
6	Loading Motor Block	LHLDZ1958AJZZ
7	Supply Pole Base Assembly	LPOLM0056GEZZ
8	Take-Up Pole Base Assembly	LPOLM0057GEZZ
9	Take-Up Loading Arm Assembly	MLEVF0459AJZZ
10	Supply Loading Arm Assembly	MLEVF0461AJZZ
11	Pinch Drive Lever Assembly	MLEVF0463AJZZ
12	Pinch Roller Lever Assembly	MLEVF0464GEZZ
15	Tension Arm Assembly	MLEVF0467AJZZ
16	Audio/Control Head Arm	MLEVF0468AJFW
17	Shifter Drive Lever	MLEVP0271AJZZ
18	Pinch Double Action Lever	MLEVP0272AJZZ
19	Reverse Guide Lever Assembly	MLEVP0273AJZZ
20	Reverse Drive Lever	MLEVP0275AJZZ
21	Slow Brake	MLEVP0276AJZZ
22	Open Lever	MLEVP0277AJZZ
23	Clutch Lever	MLEVP0278AJZZ
24	Supply Main Brake Assembly	MLEVP0279AJZZ
25	Take-Up Main Brake Assembly	MLEVP0280AJZZ
26	Auto Head Cleaner	MLEVP0282AJZZ
27	Shifter	MSLiP0008AJZZ
28	Audio/Control Head Spring	MSPRC0205AJFJ
29	Reverse Guide Spring	MSPRD0165AJFJ
30	Loading Double Action Spring	MSPRT0402AJFJ
31	Pinch Double Action Spring	MSPRT0403AJFJ
33	Tension Spring	MSPRT0405AJFJ
34	Drive Belt	NBLTK0066AJ00
35	Reel Disk	NDAiV1070AJ00
36	Loading Connect Gear	NGERH1267AJZZ
37	Master Cam	NGERH1268AJ00
38	Cassette Control Drive Gear	NGERH1269AJZZ
39	Take-Up Loading Gear	NGERH1270AJZZ
40	Supply Loading Gear	NGERH1271AJZZ
41	Pinch Drive Cam	NGERH1272AJZZ
42	Supply Reel Relay Gear	NGERH1275AJZZ
43	Take-Up Reel Relay Gear	NGERH1276AJZZ
44	Worm Gear	NGERW1062AJZZ
45	Worm Wheel Gear	NGERW1063AJZZ
46	Idler Wheel Assembly	NiDR-0015AJZZ
47	Motor Pully	NPLYV0155AJZZ
48	Pulley Limiter Assembly	NPLYV0156AJZZ
49	Guide Roller	NROLP0110GEZZ
50	Tension Pole Adjuster	NSFTP0034AJZZ
51	Damper Raber	PGUMM0043AJZZ
52	Light Guide	PREFL1007AJZZ
53	Flat Cable	QCNW-0247AJZZ
55	Flat Cable	QCNW-0272AJZZ
56	Audio/Control Head Board	QPWBF5243AJZZ
57	6 pin Socket	QSOCN0685REZZ
58	Full Erase Head	RHEDT0031AJZZ
59	Audio/Control Head Assembly	RHEDU0085GEZZ
60	Loading Motor	RMOTM1062GEZZ
61	Capstan Motor	RMOTN2053GEZZ
62	Drum Drive Motor	RMOTP1129GEZZ
63	Upper and Lower Drum Assembly	DDRMW0014TEX0
64	Drum Earth Brush Spring	MSPRC0194GEFJ
65	Drum Earth Brush	QBRSK0034GEZZ
67	Drum Base	PGiDC0055GEFW
200	Screw	LX-XZ3030GEFD
208	E-Ring	XRESJ40-06000
209	Washer 5.2 X 9.5 X .3	XWHJZ52-03095
	Washer 5.2 X 9.5 X .4	XWHJZ52-04095
	Washer 5.2 X 9.5 X .5	XWHJZ52-05095
	Washer 5.2 X 9.5 X .6	XWHJZ52-06095
	Washer 5.2 X 9.5 X .7	XWHJZ52-07095
214	Reverse Guide Adjusting Nut	PSPAP0009AJZZ
215	Cut Washer (1)	LX-WZ1003GE00
216	Cut Washer (1)	LX-WZ1041GE00
217	Cut Washer (1)	LX-WZ1073GE00
300	Cassette Housing Control Assembly	CHLDX3074TVE0
301	Upper Plate	LANGF9592AJFW
302	Left Frame	LHLDX1028AJ00
303	Right Frame	LHLDX1029AJ00
304	Left Holder	LHLDX1030AJZZ
305	Right Holder	LHLDX1031AJZZ
306	Right Proof Lever	MLEVF0469AJFW
307	Door Opener Lever	MLEVP0281AJ00
308	Slider	MSLiF0073AJFW
309	Right Proof Lever Spring	MSPRD0151AJFJ
310	Right Drive Gear Spring	MSPRD0166AJFJ
311	Cassette Spring	MSPRP0175AJFJ
312	Spring	MSPRT0381AJFJ
313	Left Drive Gear	NGERH1278AJZZ
314	Right Drive Gear	NGERH1279AJZZ
315	Double Action Rack Gear	NGERR1008AJ00
316	Drive Angle Gear	NGERR3005AJFW
317	Main Shaft	NSFTD0041AJFD

(1) Cut washer is not reusable. If removed, replace with a new one.

MECHANICAL ALIGNMENT

Numbers in parenthesis indicate the number used in the Mechanical Parts List and Exploded Views. All alignments are made with unit in the eject mode.

MECHANISM INITIAL SETTING

Turn the pulley on the Loading Motor (60) until the initial setting is achieved.

CASSETTE HOUSING CONTROL ALIGNMENT

Cassette Control Drive Gear / Drive Angle Gear

Align the Cassette Control Drive Gear (38) with the Drive Angle Gear (316) as shown in figure 1.

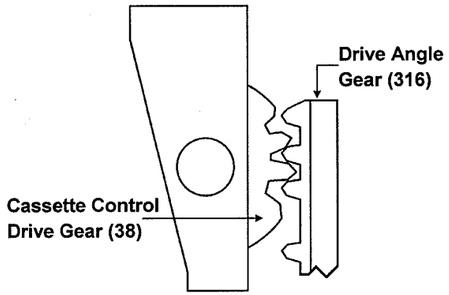


Figure 1

Drive Angle Gear / Right Drive Gear

Align the Drive Angle Gear (316) with the Right Drive Gear (314) as shown in figure 2.

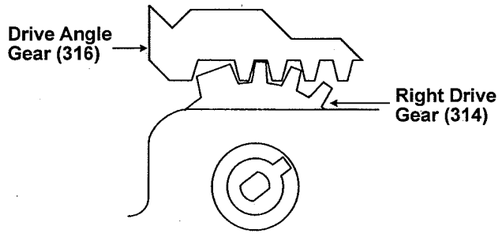


Figure 2

GEAR ALIGNMENT

Pinch Drive Lever Assembly / Reverse Guide Lever Assembly / Reverse Drive Lever / Pinch Drive Cam

Align the Reverse Drive Lever (20) with the Reverse Guide Lever Assembly (19) and the Pinch Drive Lever Assembly (11). Align the Pinch Drive Cam (41) with the Pinch Drive Lever Assembly as shown in figure 3.

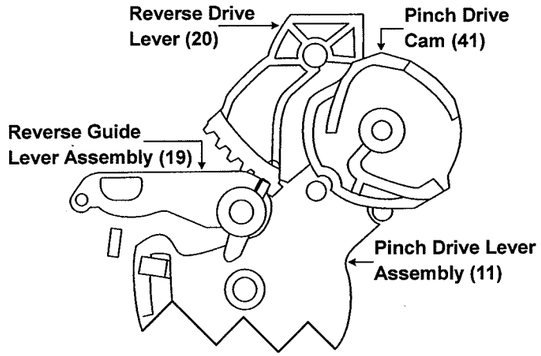


Figure 3

Take-Up Loading Gear / Supply Loading Gear

Align the Take-Up Loading Gear (39) with the Supply Loading Gear (40) as shown in figure 4.

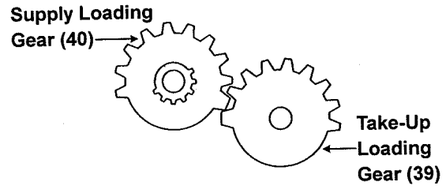


Figure 4

Take-Up Loading Gear / Shifter

Align the Take-Up Loading Gear (39) with the hole in the Shifter (27) as shown in figure 5.

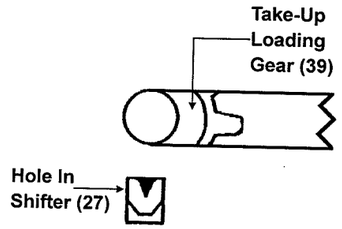


Figure 5

Cassette Control Drive Gear / Master Cam

Align the Cassette Control Drive Gear (38) with the wide tooth of Master Cam (37) as shown in figure 6.

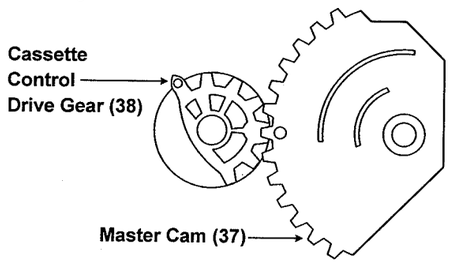


Figure 6

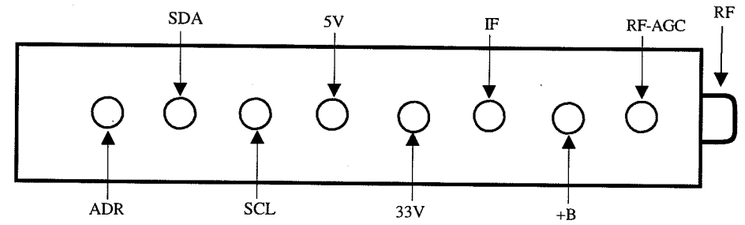
TUNER INFORMATION

TUNER VOLTAGE CHART

Pin	VHF Low Band	VHF High Band	UHF Band
RF-AGC	4.0V	3.7V	3.1V
+B	9.0V	9.0V	9.0V
IF	0V	0V	0V
33V	33.0V	33.0V	33.0V
5V	5.0V	5.0V	5.0V
SCL	4.6V	4.6V	4.6V
SDA	4.6V	4.6V	4.6V
ADR	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



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

TELEVISION SCHEMATIC

A

B

PART OF TA8822SN
IC402 EXT/VTR SWITCHING

#PART OF TA1201BN
IC401 TV SIGNAL PROCESSOR

TA7233 AUDIO OUT
IC321

TA8403K
IC501 VERT OUT

DY601 YOKE

Q201 2SC1906 IF AMP
Q311 2SD601 SWITCH
Q401 2SD601 BUFFER
Q402 2SB709 BUFFER
Q403 2SD601 BUFFER
Q421 2SB709 AMP
Q611 2SC2482 HORIZ DRIVER
Q612 2SD2095 HORIZ OUT

SEE IC2201 PIN 46 PAGE 3B
SEE IC2201 PIN 42 PAGE 3A
SEE IC2201 PIN 43 PAGE 3A
SEE IC2201 PIN 61 PAGE 3A
SEE IC2201 PIN 57 PAGE 3B
SEE IC2201 PIN 60 PAGE 3A
SEE IC3101 PIN 7 PAGE 2G
SEE IC3101 PIN 1 PAGE 2G
SEE IC3101 PIN 22 PAGE 2G
SEE IC3101 PIN 35 PAGE 2G
SEE IC3101 PIN 49 PAGE 2G
SEE Q3110 BASE PAGE 2G

PART OF J401 AUDIO IN
PART OF J401 VIDEO IN

+B TO TUNER
IF TO TUNER
RF-AGC TO TUNER
33V TO TUNER
5V TO TUNER
ADR TO TUNER
INTERNAL SYNC

TUNER NOT INCLUDED IN THIS COVERAGE

TAKEN WITH BAR SWEEP GENERATOR

SAW FILTER
SF201
T201
T301
T611
TRAP
CF401 4.5MHz
CF301 4.5MHz FILTER
CF302 4.5MHz FILTER
CF601 503kHz

(1) USED IN MODELS 20VT-CH6 AND 20VT-H60.
(2) USED IN MODELS 13VT-CH6, 13VT-H60, 13VT-H100, AND 13VT-H150.

A PHOTOFACT STANDARD NOTATION SCHEMATIC WITH CIRCUITRACE®

ADDITIONAL SCHEMATIC NOTES, SEE PAGE 2F

△ TAKEN FROM COMMON TIE POINT

TELEVISION SCHEMATIC continued

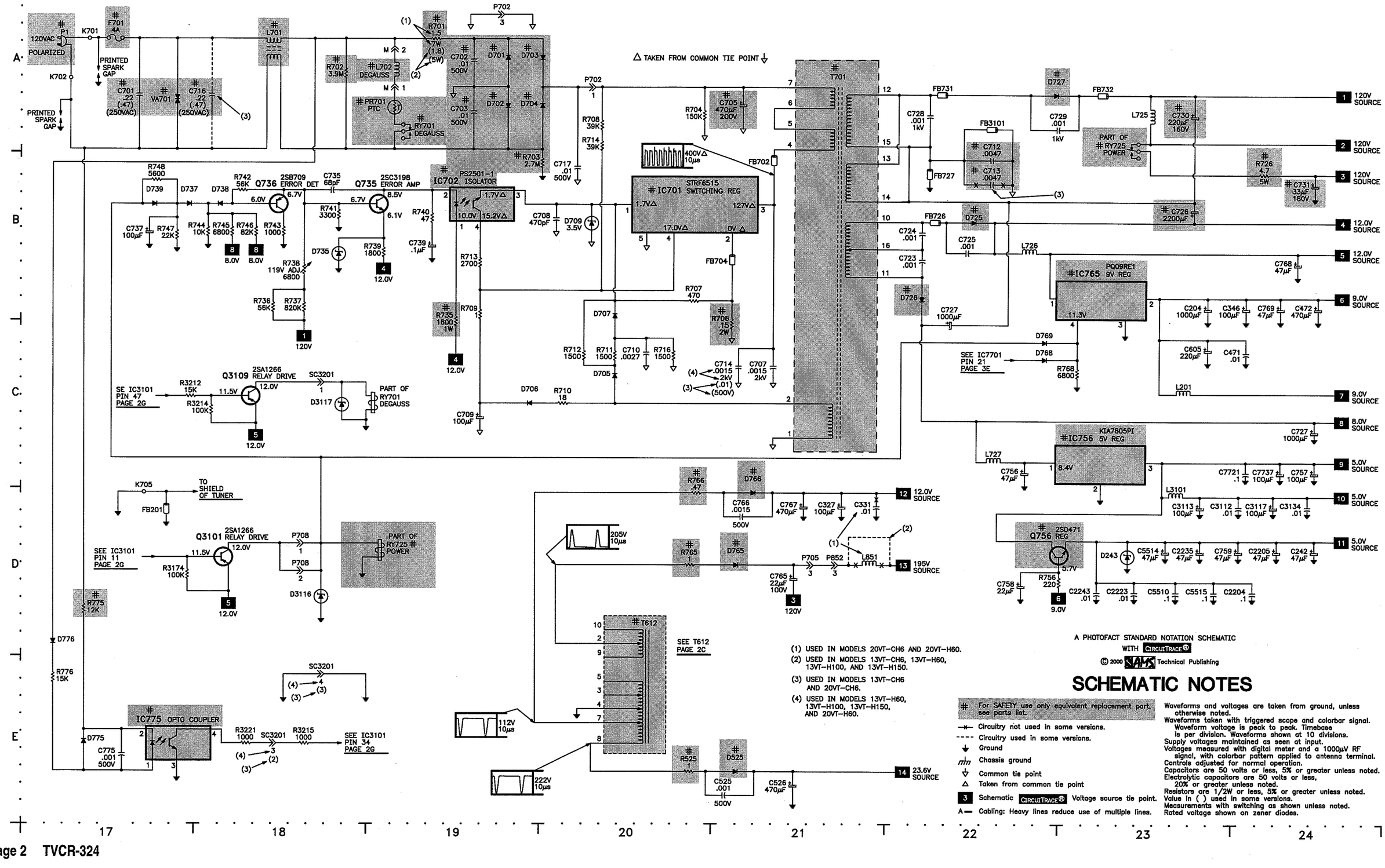
C

D

Q431 2SD601 BUFFER 3.0V
Q432 2SB709 BUFFER 3.0V
R432 1800
C432 47pF
L432
R431 1800
R434 1000
R437 2200
9.0V
C435 .1
C802 27pF
R804 33K
45
C IN 1.6V
#PART OF TA1201BN
IC401 TV SIGNAL PROCESSOR
43 4.5V Y IN
15 4.7V R–S
16 4.7V G–S
17 4.7V B–S
14 0V BLK
27 4.6V SCL
28 4.6V SDA
19 2.4V R
21 B 2.6V
20 G 2.2V
25 6.4V
10 LOOP FIL 4.4V
36 ABL 3.1V
46 VCC
11 APC FIL 6.2V
38 ACL 3.3V
40 BLK DET 5.1V
12 VCOX 4.7V
R3190 2200
R3189 2200
R3188 2200
R3192 3300
R3191 100
R3187 100
R3186 100
C3126 .01
C3125 .01
C3124 .01
SEE IC3101 PIN 52 PAGE 2G
SEE IC3101 PIN 51 PAGE 2G
SEE IC3101 PIN 50 PAGE 2G
SEE IC3101 PIN 49 PAGE 2G
SEE IC3101 PIN 39 PAGE 2G
SEE IC3101 PIN 37 PAGE 2G
(3) R520 390K
C512 2.2µF
C216 .001
R212 330
C215 .47µF
C212 .022
R211 10K
C211 1µF
R451 100K
C451 10µF
C452 1µF
X801 3.58MHz
C806 10pF
C455 1µF
D453
(1) R455 22K (12K)
(2)
D452 3.9V
R452 27K
D450
R460 10K
R453 1000
3.1V
Q450 2SB709 ACL 3.0V
C454 10µF
D451 5.6V
(1) R461 220K (270K)
(2)
(1) R462 220K (270K)
(2)
C460 .1
△ TAKEN FROM COMMON TIE POINT
HV RANGE 24kV TO 26kV
#T612
10
SEE POWER SUPPLY PAGE 2E
2
9
3 120V
CRT ANODE
FOCUS
SCREEN
140V 10µs
5
SEE CRT FILAMENTS PAGE 2D
X
3
4
7
SEE POWER SUPPLY PAGE 2E
8
1
A1
A2
A3
A4
R811 150
P404 P851 1 5
R851 47
1.9V 10µs
Q852 2SC2229 RED OUT
2.8V
164V
2.5V
(1) R852 220 (270)
(2)
TP852
TP853
R853 120
C851 270pF
88V 10µs
R858 3300
#R857 12K 1W
13 195V
R815 150
P404 P851 3 3
R867 47
1.9V 10µs
Q856 2SC2229 BLUE OUT
2.8V
156V
2.5V
(1) R868 220 (270)
(2)
R869 120
C853 270pF
76V 10µs
R874 3300
#R873 12K 1W
13 195V
P404 P851 4 2
R813 150
P404 P851 2 4
R859 47
.7V 10µs
Q854 2SC2229 GREEN OUT
2.8V
129V
2.5V
(1) R860 220 (270)
(2)
R861 120
C852 270pF
80V 10µs
R866 3300
#R865 12K 1W
13 195V
C858 .001
(1)
Q881 2SA1266 BIAS
1.2V
.5V
D881 1SS119
D885 1SS119
D882 1SS119
C881 10µF
R882 330
R881 1000
C883 33µF
R884 1500
R883 560
P851 1
P404 5
6 9.0V
P705 P852 2 2
P705 P852 4 4
SEE T612 PIN 3 PAGE 2C
X
(1) R624 3.3 (2.7) 2W
(2)
P705 1
P852 1
(1) R890 .68 1W
9 10
164V 8
156V 11
158V 6
5
350V 7
9kV 1
GRN BLUE RED
#A51KPD02XX V101 CRT
K852 TO CRT SHIELD
FOCUS RANGE 6kV TO 10kV
C854 .01 1.4kV
K8510
A3 A4
A
(1) USED IN MODELS 20VT–CH6 AND 20VT–H60.
(2) USED IN MODELS 13VT–CH6, 13VT–H60, 13VT–H100, AND 13VT–H150.
(3) USED IN MODELS 13VT–CH6 AND 20VT–CH6.
ADDITIONAL SCHEMATIC NOTES, SEE PAGE 2F
A PHOTOFACT STANDARD NOTATION SCHEMATIC WITH CIRCUITRACE®

9 10 11 12 13 14 15 16

POWER SUPPLY SCHEMATIC



A PHOTOFACT STANDARD NOTATION SCHEMATIC WITH CIRCUITRACE®

SCHEMATIC NOTES

For SAFETY use only equivalent replacement part, see parts list.

—×— Circuitry not used in some versions.

- - - - Circuitry used in some versions.

Ground

Chassis ground

Common tie point

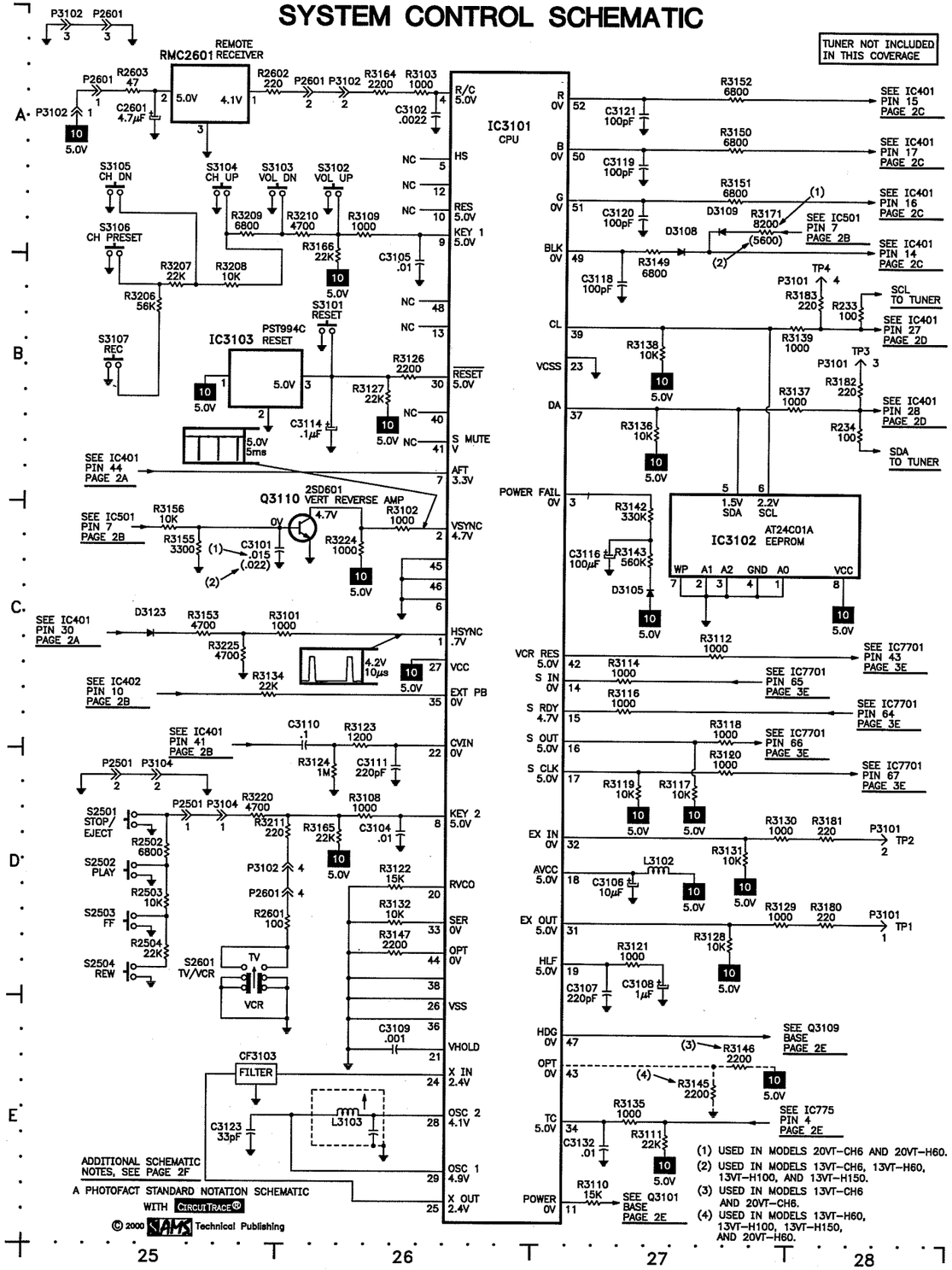
△ Taken from common tie point

3 Schematic CIRCUITRACE® Voltage source tie point.

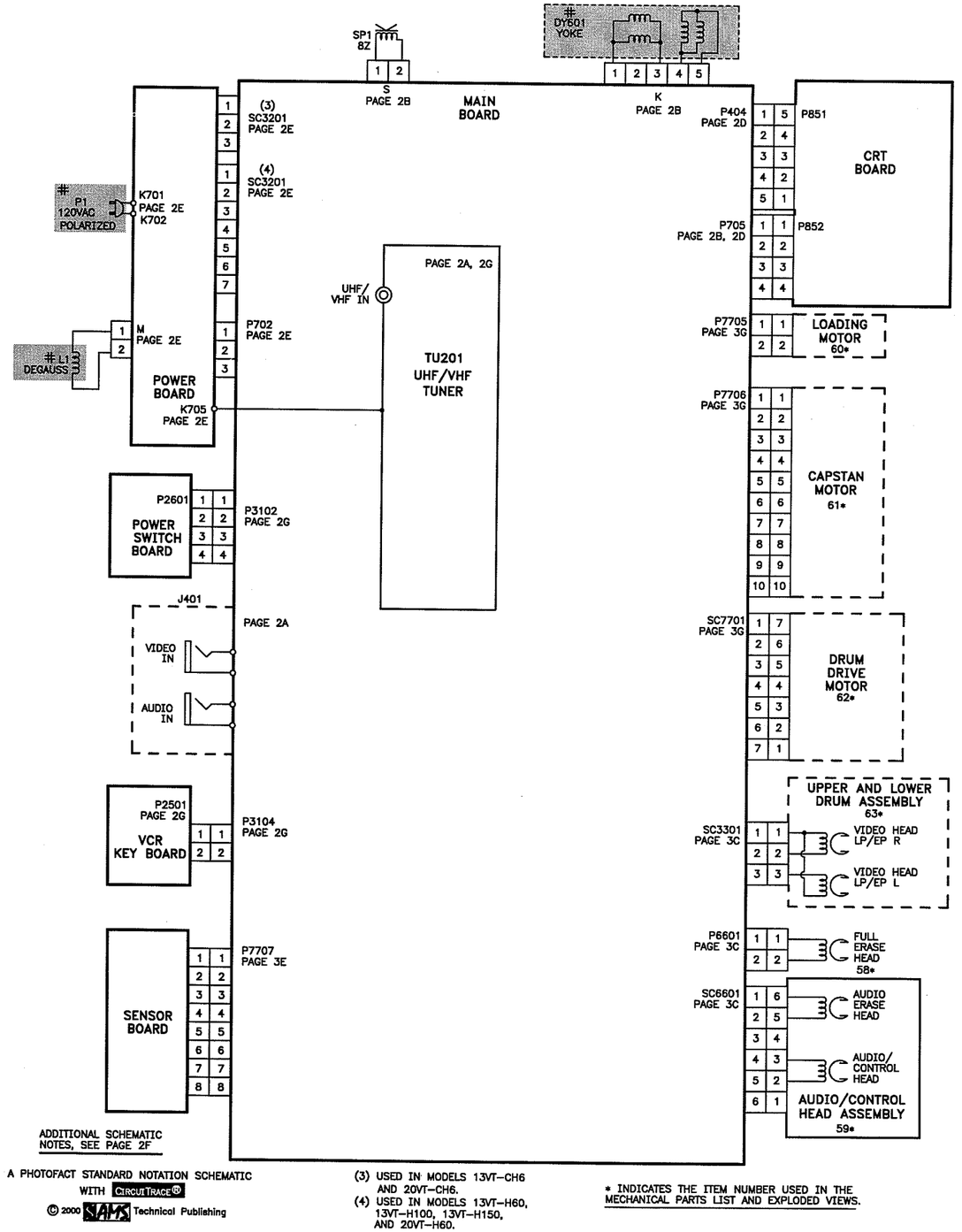
A— Cabling: Heavy lines reduce use of multiple lines.

Waveforms and voltages are taken from ground, unless otherwise noted.
Waveforms taken with triggered scope and colorbar signal. Waveform voltage is peak to peak. Timebase is per division. Waveforms shown at 10 divisions.
Supply voltages maintained as seen at input.
Voltages measured with digital meter and a 1000µV RF signal, with colorbar pattern applied to antenna terminal.
Controls adjusted for normal operation.
Capacitors are 50 volts or less, 5% or greater unless noted.
Electrolytic capacitors are 50 volts or less, 20% or greater unless noted.
Resistors are 1/2W or less, 5% or greater unless noted.
Value in ( ) used in some versions.
Measurements with switching as shown unless noted.
Rated voltage shown on zener diodes.

G
SYSTEM CONTROL SCHEMATIC

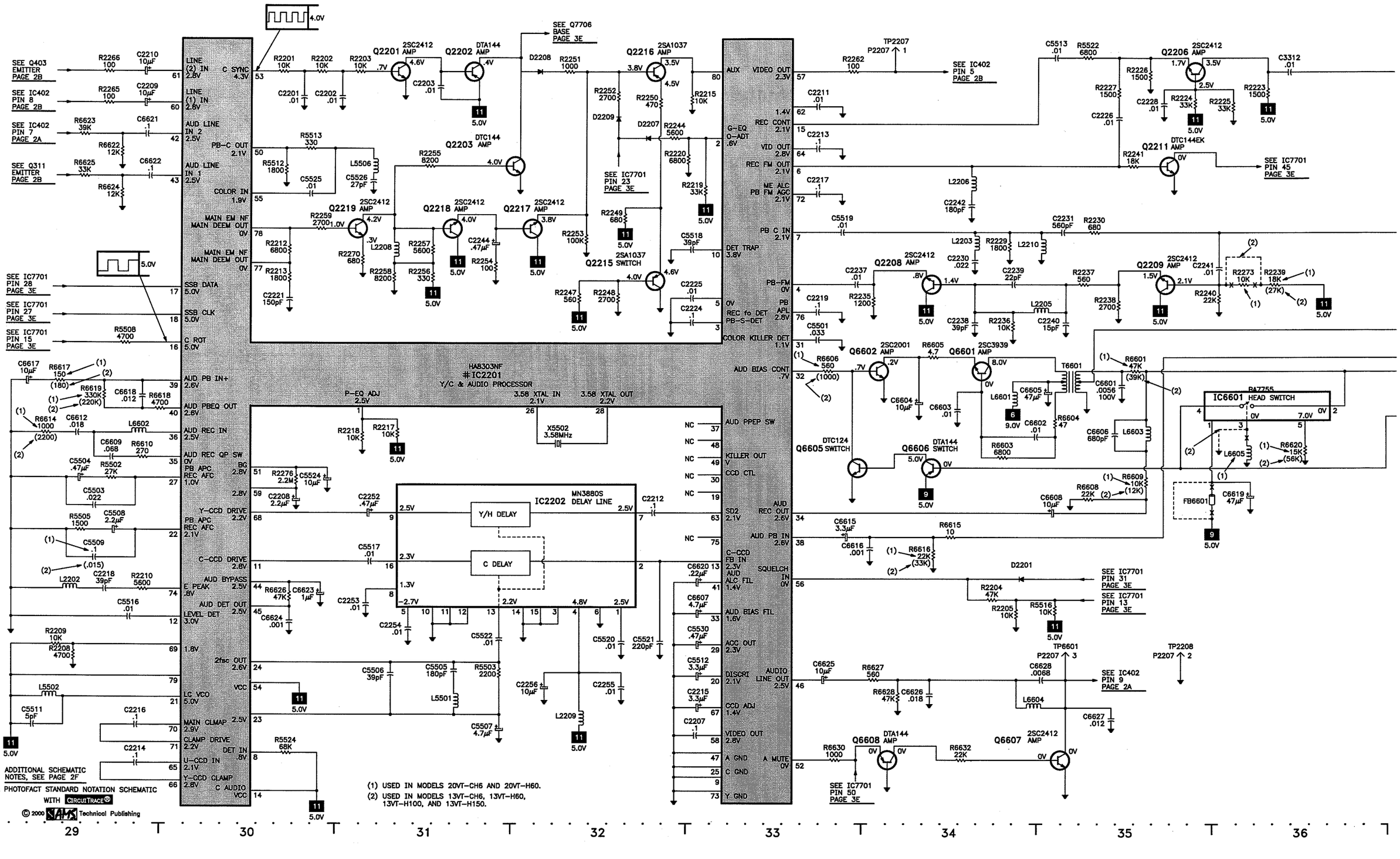


INTERCONNECT DIAGRAM

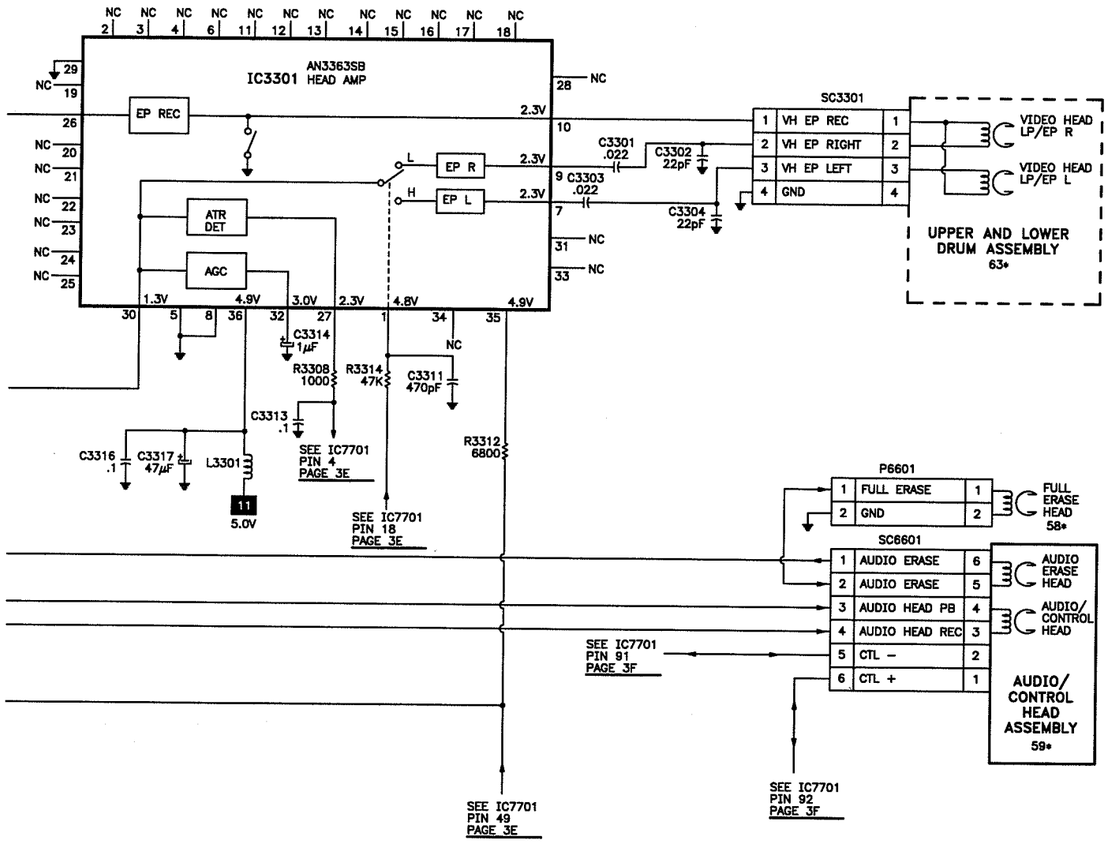


SHARP MODELS 20VT-CH6, 20VT-H60 (CHASSIS VN-61)

VCR Y/C, AUDIO SCHEMATIC



C
VCR Y/C, AUDIO SCHEMATIC continued



* INDICATES THE ITEM NUMBER USED IN THE MECHANICAL PARTS LIST AND EXPLODED VIEWS.

ADDITIONAL SCHEMATIC NOTES, SEE PAGE 2F

A PHOTOFACT STANDARD NOTATION SCHEMATIC WITH CIRCUITRACE®

MISCELLANEOUS ADJUSTMENTS

HIGH VOLTAGE CHECK

Tune in a picture. Set brightness, color, picture, and screen control to minimum. Connect a high voltage probe to CRT anode. High voltage should measure 24kV to 26kV.

119V ADJUST

Tune in a picture. Connect voltmeter to the cathode of D727 and ground. Adjust R738 for 120V ±1V.

ENTERING SERVICE MODE

Service mode adjustments are required when IC401 and IC3102 are replaced. If CRT is replaced perform only adjustments relating to the CRT. If IC3101 is replaced no adjustment is required.

Turn on receiver and use reset function in the video adjustment menu to ensure that customer controls are in their proper reset position. Remove AC power. Press and hold the channel up button on the receiver while restoring AC power. The service mode will now be displayed.

When in the service mode a number is displayed indicating the service number and it is changed by pressing the channel up / down buttons on the receiver or remote transmitter. The on-set data value can be changed by pressing the volume up / down buttons on the receiver or remote transmitter. For a complete listing of the service adjustments, refer to the Service Mode Adjustment Chart.

EXIT SERVICE MODE

Turn off the power or unplug the receiver to exit service mode.

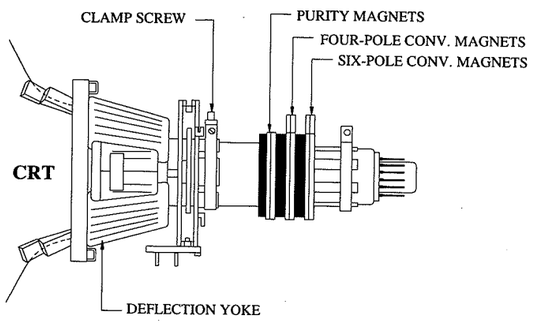
RESETTING TO INITIAL VALUES

The initial values are written to IC3102 by entering the service mode and pressing the channel up and down buttons on the receiver for more than two seconds.

COLOR PURITY

Operate the receiver for 15 minutes. Tune in a green raster. Use a degaussing coil to demagnetize the CRT and mounting brackets. Loosen the deflection yoke clamp screw and slide the deflection yoke backward to obtain a vertical green band. Rotate and spread the purity magnet tabs until the green band is centered on the screen. Move the deflection yoke forward to obtain a uniform green screen.

CRT NECK ASSEMBLY



RF AGC

Tune in a picture. Enter the service mode and select service number S09. Set the data value to a point where no snow (noise) appears in picture. Exit the service mode to select another channel. Check all channels for proper operation.

CAPTION POSITION

Enter the service mode and select service number S25. A black text box appears on screen. Adjust data value to center text box.

VCO

Connect a digital voltmeter to pin 44 of IC401 and ground. Tune in a local channel. Enter the service mode and select service number S10. Set the data value to 64. Adjust T201 to obtain a reading of 2.2V on the digital voltmeter.

WHITE BALANCE

Operate the receiver for 15 minutes. Enter the service mode and select service number S03. Set the data value to 0. Set brightness for a visible raster. Alternately adjust data value of S14 and S15 until a good gray scale with normal white is obtained. Select service number S03. Set the data value for normal color level.

GRAY SCALE

Connect a digital voltmeter between TP852 and TP853 on the CRT board. Tune in an active channel. Set color, brightness, and picture to minimum. Enter the service mode, select service number S21 and adjust the data value to 1 to turn off the luminance signal (Y mute). Select service number S03 and adjust the data value to obtain .26V on the digital voltmeter. Adjust screen control, if necessary, to obtain a barely visible raster. Adjust service numbers S11, S12, S13, for a good gray scale with normal white at high and low brightness. Set color to midrange. Adjust screen control for normal brightness.

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. Since the 4-pole and 6-pole magnets interact, repeat the 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.

SERVO SCHEMATIC

(1) USED IN MODELS 20VT-CH6 AND 20VT-H60.
(2) USED IN MODELS 13VT-CH6, 13VT-H60, 13VT-H100, AND 13VT-H150.

ADDITIONAL SCHEMATIC NOTES, SEE PAGE 2F

A PHOTOFACT STANDARD NOTATION SCHEMATIC WITH CIRCUITRACE®

SEE IC3101 PIN 16 PAGE 2G
SEE IC3101 PIN 17 PAGE 2G
SEE IC3301 PIN 27 PAGE 3C
SEE IC3101 PIN 42 PAGE 2G
SEE Q2211 COLLECTOR PAGE 3B
SEE Q2202 COLLECTOR PAGE 3A

Q7706 2SC2412 VERT SYNC

S7701 REC TIP

Q7703 START SENSOR

Q7704 END SENSOR

SENSOR BOARD

D7707 CASSETTE
D7705 CAM SW A
D7704 CAM SW B
D7702 TAKEUP REEL SENSOR
D7703 SUPPLY REEL SENSOR

P7707

1	AT5V	1	
2	CAM SWA	2	CAM SW A
3	CAM SWB	3	CAM SW B
4	TAKE UP REEL PULSE	4	TAKE UP REEL
5	SUPPLY REEL PULSE	5	SUPPLY REEL
6	GND	6	
7	NC	7	
8	NC	8	

DRUN PG IN 5.0V (66)
DRUM FG IN 5.0V (67)
ATR DATA 2.4V (4)
RESET 4.8V (43)
FV-CTL (H) 0V (45)
VSYNC IN (L) 4.5V (84)
REC TIP SW 0V (41)
START SENSOR 5.0V (2)
END SENSOR 5.0V (3)
1/2 VCC IN 2.5V (90)

SYS CON READY 5.0V (64) → SEE IC3101 PIN 15 PAGE 2G
SYS CON DATA 5.0V (65) → SEE IC3101 PIN 14 PAGE 2G
REC BIAS CTL 5.0V (49) → SEE IC3301 PIN 35 PAGE 3C
H.S.P. 5.0V (18) → SEE IC3301 PIN 1 PAAGE 3C
A MUTE (H) 0V (50) → SEE Q6608 EMITTER PAGE 3B
PCOM (H) 5.0V (21) → SEE IC765 PIN 4 PAGE 2F

NC 9, NC 10, NC 14 (HEAD SHORT H), NC 16 (HA SW), NC 19 (AHSO), NC 29 (EQ SW H), NC 30 (EE H), NC 32 (AUX H), NC 33 (OUTPUT SELECT)

RH-IX2747CEN2
IC7701
SYSTEM CONTROLLER/SERVO CONTROLLER

SEARCH H 44, NC 46, NC 47, NC 48, ALPB L, NC 51, HIFI CLK, NC 70, DRUM FG MON, NC 71, PB CTL MON, NC 81

EP (H) NC 22
NC 24
NC 25
NC 26
HIFI NC 52
SERIAL MONITOR NC 63
CAP FG MONITOR NC 68
DRUM PG MONITOR NC 69

YC CLK 5.0V (27) → SEE IC2201 PIN 18 PAGE 3A
YC DATA 5.0V (28) → SEE IC2201 PIN 17 PAGE 3A
FV OUT 0V (13) → SEE IC2201 PIN 56 PAGE 3B
SPT (L) 0V (23) → SEE IC2201 PIN 2 PAGE 3B
VIDEO MUTE 0V (31) → SEE IC2201 PIN 56 PAGE 3B
CHROMA ROTATION 0V (15) → SEE IC2201 PIN 16 PAGE 3A

SYSTEM SELECT 0V (5)
ENV DET IN 0V (17)
SVHS DET IN 0V (42)
INITIAL JUMPER 1 0V (53)
INITIAL JUMPER 2 0V (54)
AUDIO NORMAL L 0V (57)
AUDIO NORMAL H 0V (82)
CTRL AMP C 2.5V (95)
NUB GND (34)
NUA GND (35)
DIGITAL GND (40)
DIGITAL AMP GND (88)
CTRL GND (96)

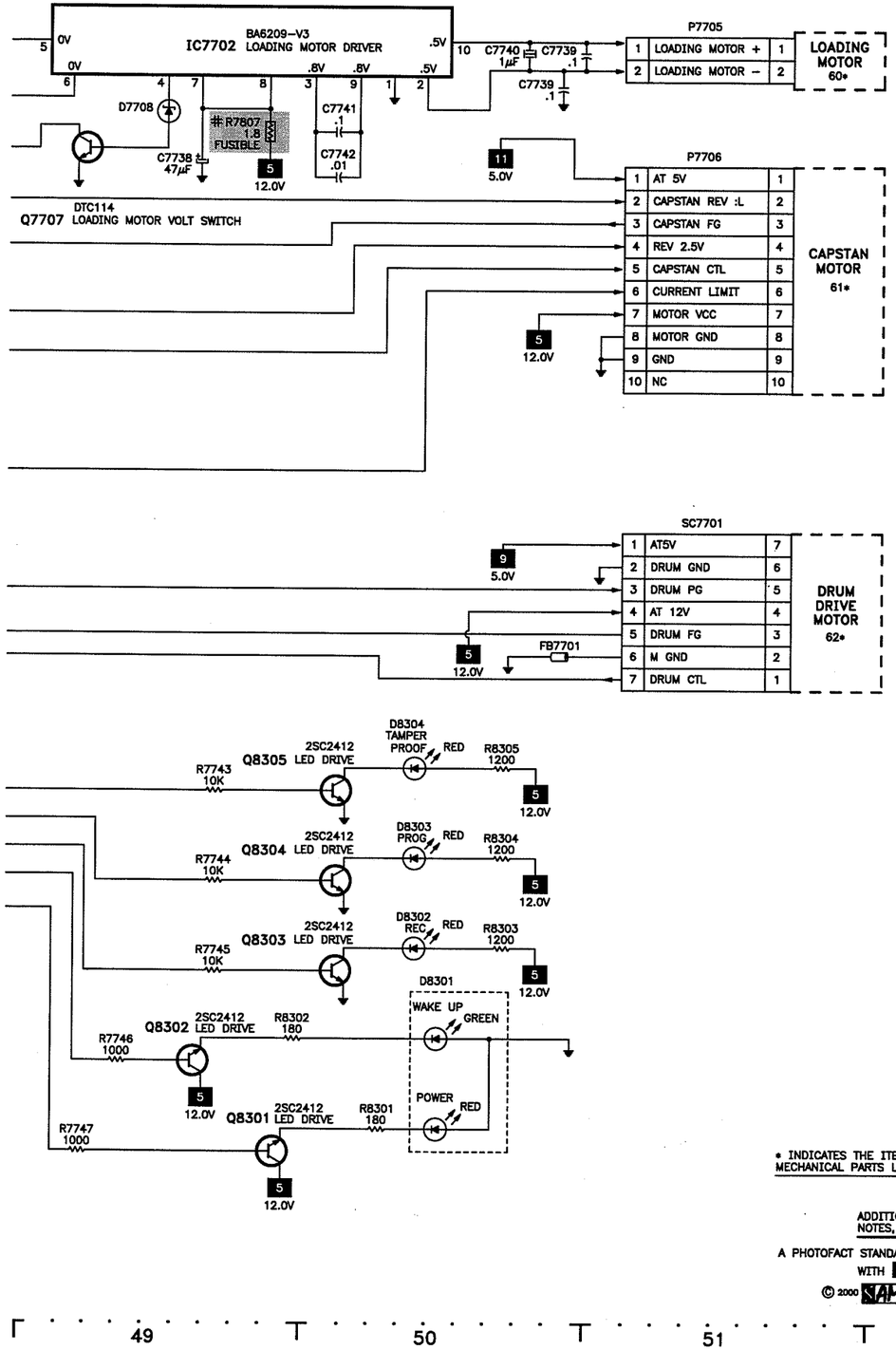
VCR KEY 1 5.0V (6)
VCR KEY 2 5.0V (7)
VCR KEY 3 5.0V (8)
INITIAL JUMPER 3 5.0V (55)
INITIAL JUMPER 4 5.0V (56)
ANALOG AMP VCC (98)
A/D (99)
DIGITAL VCC 5.0V (37)
CLK SEL (36)
NON CASSETTE JUMPER 0V (83)
CTL AMP OUT 2.5V (97)
CTL+SW OUT 0V (93)
CTL AMP IN 2.5V (94)

LDM FWD 0V (12)
LDM REV 0V (11)
LDM VOLTAGE SW 0V (20)
CAP REV L 5.0V (73)
CAP FG IN 4.4V (85)
1/2 VCC OUT 2.5V (89)
CAP ERROR OUT 5.0V (77)
CAP ACC 2.6V (75)
5.0V (74)
DRUM PG IN 4.0V (86)
DRUM FG IN 4.0V (87)
DRIM ERROR OUT 5.0V (78)
DRUM ACC/STOP 2.6V (76)
LED 1 0V (58)
LED 2 0V (59)
LED 3 5.0V (60)
LED 4 0V (61)
LED 5 5.0V (62)
CTL+ 4.2V (92)
HIGH SPEED FF/REW (L) 5.0V (72)
CTL- 4.2V (91)
16MHz OSC OUT 2.3V (39)
16MHz AOSC IN 2.3V (38)

Q7705 2SD1306 FF/REW SW

SEE AUDIO/CONTROL HEAD CONNECTOR SC6601 PIN 6 PAGE 3C
SEE AUDIO/CONTROL HEAD CONNECTOR SC6601 PIN 5 PAGE 3C

G
SERVO SCHEMATIC continued



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ADDITIONAL SCHEMATIC NOTES, SEE PAGE 2F

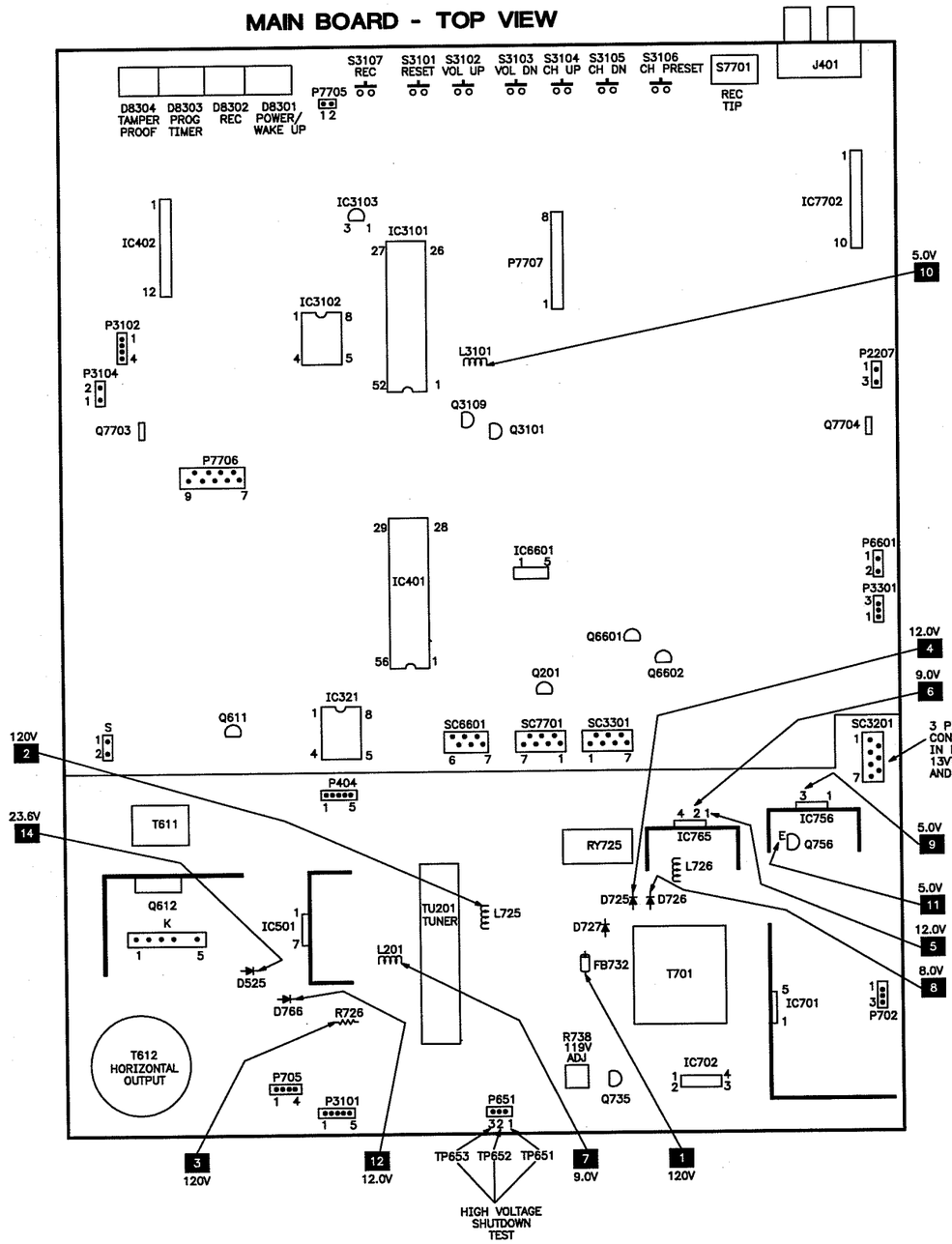
MISCELLANEOUS ADJUSTMENTS continued

SERVICE MODE ADJUSTMENT CHART

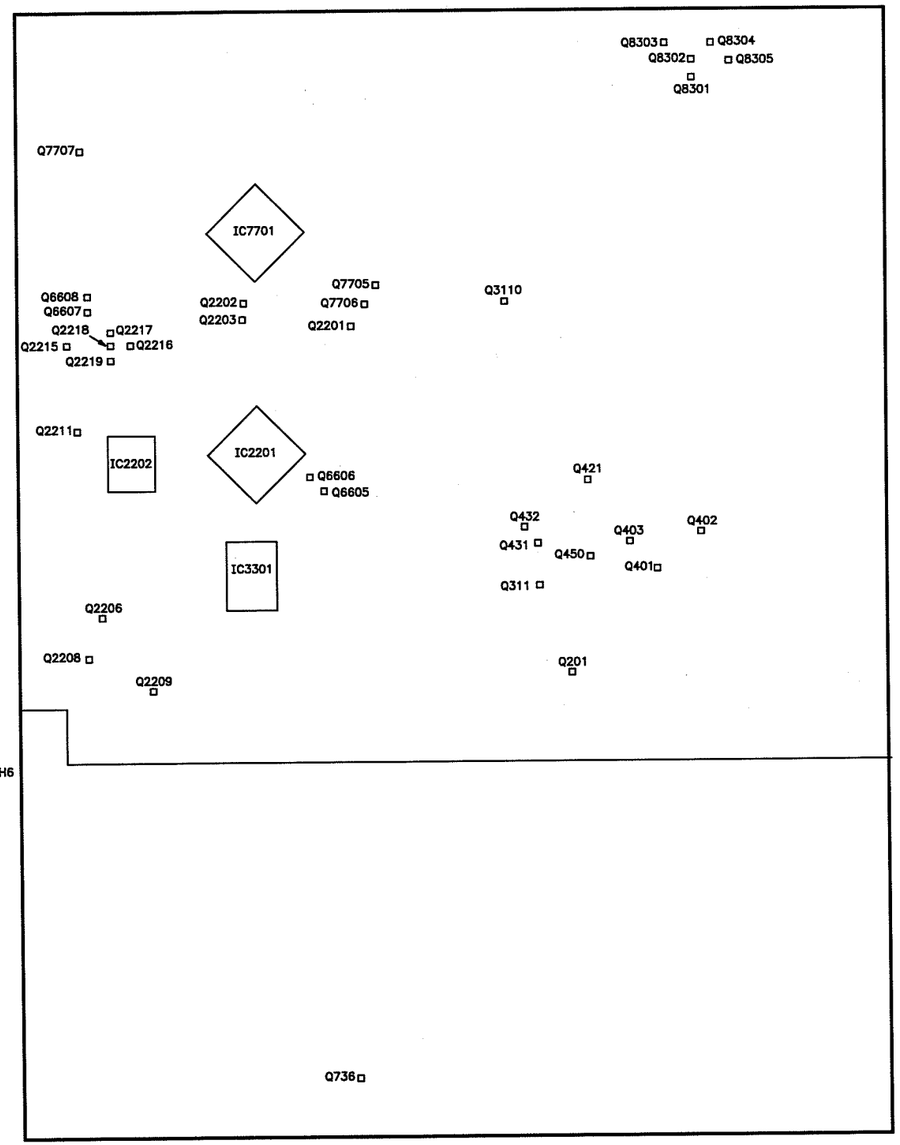
Service No.	Service Adjustment	Data Value Range	Initial Data Value	Notes
S01	Sub Color	0-127	55	Adjust for normal color level.
S02	Sub Tint	0-127	64	Adjust for normal flesh tones.
S03	Sub Brightness	0-127	64	Adjust for normal brightness level.
S04	Sub Picture	0-127	80	Adjust for normal contrast range.
S05	Sharpness	0-63	32	Must be set to 32.
S06	Vertical Phase	0-7	3	Must be set between 0 and 3.
S07	Vertical Amp	0-63	29	Adjust for proper vertical size with best linearity.
S08	Horizontal Phase	0-31	20	Adjust for best horizontal centering on screen.
S09	RF AGC	0-63	32	0 produces black raster.
S10	VCO	0-127	64	-
S11	Red Cutoff	0-255	00	-
S12	Green Cutoff	0-255	00	-
S13	Blue Cutoff	0-255	00	-
S14	Green Gain	0-255	128	-
S15	Blue Gain	0-255	128	-
S16	60Hz	0-1	0	Must be set to 0.
S17	Trap	0-1	0	No adjustment required.
S18	AFC	0-1	1	No adjustment required.
S19	White Peak Limiter	0-1	1	-
S20	Blanking	0-1	0	No adjustment required.
S21	Y-Mute	0-3	0	0 = Normal, 1 = No Y, 2 = Test mode, and 3 = Vertical collapse.
S22	Balance	0-63	32	No adjustment required.
S23	Audio Switch	0-1	0	-
S24	Video Switch	0-1	0	-
S25	Caption Position	-	-	Adjust to center the black box on the screen.
S26	Text Picture	0-80	20	-
S27	CCD Level	0-10	7	-

PLACEMENT CHART

MAIN BOARD - TOP VIEW

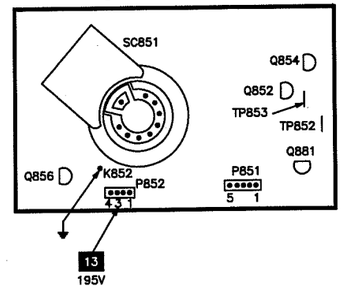


MAIN BOARD - BOTTOM VIEW



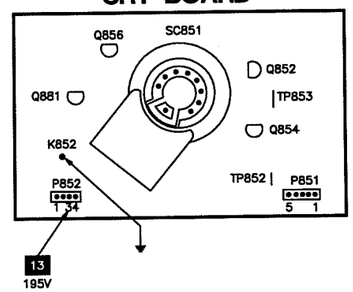
USED IN MODELS 13VT–CH6, 13VT–H60, 13VT–H100, AND 13VT–H150..

CRT BOARD



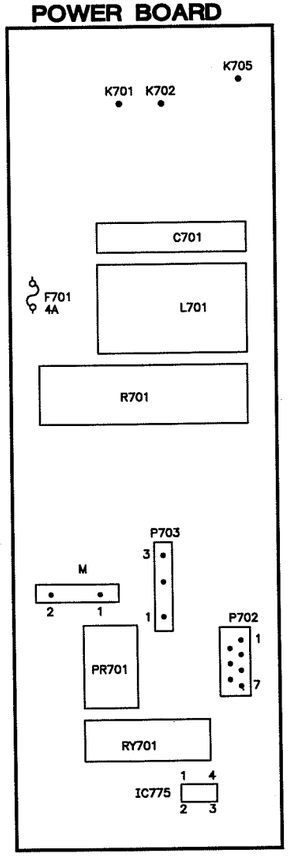
USED IN MODELS 20VT–CH6 AND 20VT–H60.

CRT BOARD

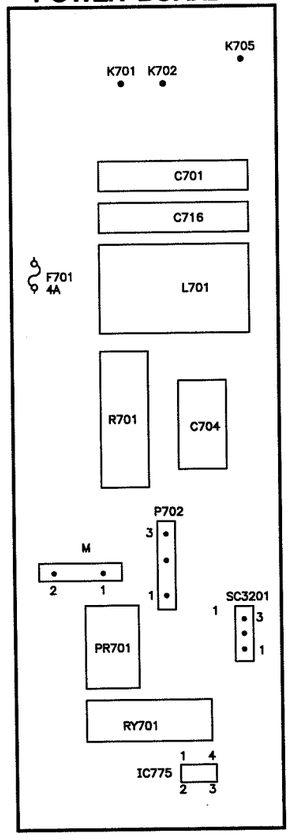


PLACEMENT CHART continued

USED IN MODELS 13VT-H60, 13VT-H100, 13VT-H150, AND 20VT-H60.

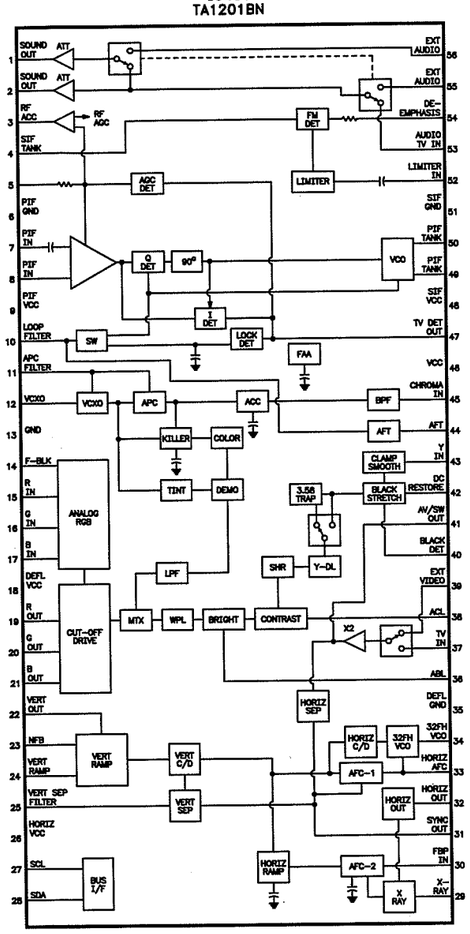


USED IN MODELS 13VT-CH6 AND 20VT-CH6.

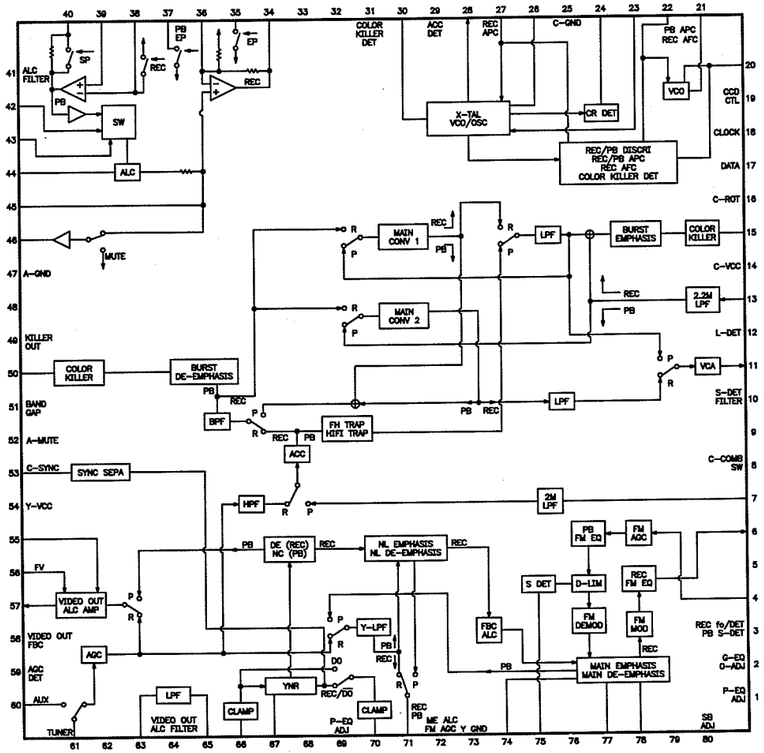


IC FUNCTIONS

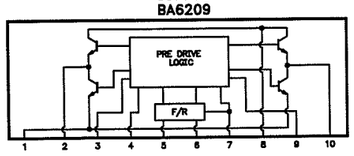
IC401
TA1201BN



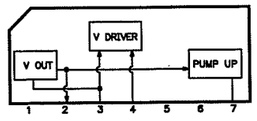
IC2201
HA8303NF



IC7702
BA6209



IC501
TA8403K



SCHEMATIC COMPONENT LOCATION GUIDE

C201	B1	C525	E20	C2212	D32	C5503	D29	C7726	C47	D3110	D2	L702	A19	Q7706	B41	R508	D7	R852	A15	R2503	D25	R3207	B25	R7745	D49	R7827	A46
C202	B2	C526	E21	C2213	B33	C5504	D29	C7727	C48	D3116	D18	L725	A23	Q7707	A49	R509	D7	R853	B15	R2504	D25	R3208	B25	R7746	E49	R7828	E47
C203	B2	C601	E1	C2214	E29	C5505	E31	C7728	E43	D3117	C18	L726	B22	Q8301	E49	R510	D6	R857	A15	R2601	D26	R3209	B25	R7747	E49	R8301	E50
C204	C23	C602	E2	C2215	E32	C5506	E31	C7729	E43	D3123	C25	L727	C22	Q8302	E49	R511	D6	R858	A16	R2602	A25	R3210	B26	R7748	A44	R8302	E49
C205	B1	C603	D2	C2216	E29	C5507	E31	C7730	B48	D7701	C47	L851	D21	Q8303	D50	R512	D7	R859	C14	R2603	A25	R3211	D26	R7749	A44	R8303	D50
C211	C12	C605	C23	C2217	B33	C5508	D29	C7731	B48	D7702	E41	L2202	D29	Q8304	D50	R513	D7	R860	C15	R3101	C25	R3212	C17	R7750	A43	R8304	D50
C212	C12	C610	E3	C2218	D29	C5509	D29	C7732	D47	D7703	E41	L2203	B34	Q8305	D50	R516	D3	R861	C15	R3102	C26	R3214	C18	R7751	A42	R8305	D50
C213	C3	C611	E4	C2219	C33	C5510	D23	C7733	D48	D7704	D41	L2205	C34	R201	B1	R518	D3	R865	C15	R3103	A26	R3215	E18	R7752	E47	R8306	E4
C214	C3	C612	E5	C2221	B30	C5511	E29	C7734	C48	D7705	D41	L2206	B34	R202	B1	R520	B10	R866	C15	R3107	B2	R3220	D25	R7753	B47	R9902	B44
C215	C11	C613	E6	C2223	D23	C5512	E32	C7735	D42	D7707	C42	L2208	B31	R203	B1	R525	E20	R867	B14	R3108	D26	R3221	E18	R7754	C47	RMC2601	A25
C216	B11	C614	E7	C2224	C32	C5513	A35	C7736	D42	D7708	A49	L2209	E32	R204	B2	R601	D3	R868	B15	R3109	B26	R3224	C26	R7755	C48	RY701	A19
C217	B2	C615	D8	C2225	C32	C5514	D23	C7737	C24	D8301	E50	L2210	B34	R205	B2	R602	E1	R869	B15	R3110	E27	R3225	C25	R7756	C48	RY701	C18
C231	C1	C616	D8	C2226	A35	C5515	D23	C7738	A49	D8302	D50	L3101	D23	R206	B1	R603	D1	R873	B15	R3111	E27	R3308	B38	R7757	C47	RY725	B23
C232	C3	C631	E2	C2228	A35	C5516	D29	C7739	A50	D8303	D50	L3102	D27	R211	C12	R605	D2	R874	B15	R3112	C27	R3312	B38	R7758	C47	RY725	D19
C233	B4	C701	A17	C2230	B34	C5517	D31	C7739	A51	D8304	D50	L3103	E26	R212	B11	R609	E5	R881	C13	R3114	C27	R3314	B38	R7759	B47	S2501	D25
C241	B2	C702	A19	C2231	B35	C5518	B32	C7740	A50	DY601	D8	L3301	B37	R231	C2	R610	E3	R882	C13	R3116	C27	R5502	D29	R7760	D47	S2502	D25
C242	D24	C703	A19	C2235	D23	C5519	B33	C7741	A50	F701	A17	L5501	E31	R232	C2	R612	E4	R883	C14	R3117	D27	R5503	E31	R7761	C47	S2503	D25
C243	C2	C705	A21	C2237	B33	C5520	D32	C7742	A50	FB201	D17	L5502	E29	R233	B28	R613	E4	R884	C14	R3118	D27	R5505	D29	R7762	B47	S2504	D25
C244	B1	C707	C21	C2238	C34	C5521	D32	C7743	B48	FB611	E6	L5506	B31	R234	B28	R614	E4	R890	B16	R3119	D27	R5508	C29	R7763	B48	S2601	D25
C301	B6	C708	B20	C2239	B34	C5522	D31	C7749	B42	FB702	B21	L6601	C34	R301	B6	R615	E8	R2201	A30	R3120	D27	R5512	B30	R7764	B48	S3101	B26
C302	A3	C709	C19	C2240	C35	C5524	D30	C7750	D45	FB704	B21	L6602	C29	R302	B3	R617	E8	R2202	A30	R3121	D27	R5513	B30	R7765	C47	S3102	A26
C303	A3	C710	C20	C2241	B35	C5525	B30	CF301	A4	FB726	B22	L6603	C35	R303	A4	R618	D8	R2203	A31	R3122	D26	R5516	D35	R7766	D43	S3103	A25
C314	A5	C712	B22	C2242	B34	C5526	B31	CF302	A4	FB727	B22	L6604	E34	R311	B5	R624	A16	R2204	D34	R3123	D26	R5522	A35	R7767	D43	S3104	A25
C316	B5	C713	B22	C2243	D23	C5530	E32	CF401	B5	FB731	A22	L6605	C36	R312	B5	R625	E1	R2205	D34	R3124	D26	R5524	E30	R7769	B46	S3105	A25
C321	A6	C714	C21	C2244	B31	C6601	C35	CF601	D3	FB732	A23	L7701	D46	R313	A5	R626	E1	R2208	E29	R3126	B26	R6601	C35	R7770	B43	S3106	B25
C322	A6	C716	A18	C2252	D31	C6602	C34	CF3103	E25	FB3101	B22	P1	A17	R321	A6	R630	E2	R2209	E29	R3127	B26	R6603	C34	R7771	B47	S3107	B25
C323	A7	C717	B20	C2253	D31	C6603	C34	D242	C2	FB6601	D35	PR701	A19	R322	A7	R631	E2	R2210	D29	R3128	D27	R6604	C35	R7772	C47	S7701	B43
C324	A8	C723	B22	C2254	D31	C6604	C34	D243	D23	FB7701	C50	Q201	B1	R323	A8	R632	E2	R2212	B30	R3129	D27	R6605	C34	R7773	C48	SF201	B2
C325	A8	C724	B22	C2255	E32	C6605	C35	D450	D12	FB7702	D45	Q311	B5	R341	A3	R701	A19	R2213	B30	R3130	D27	R6606	C33	R7774	D47	SP1	A8
C326	A7	C725	B22	C2256	E32	C6606	C35	D451	E11	IC321	A7	Q401	B4	R342	A2	R702	A18	R2215	A32	R3131	D27	R6608	D35	R7775	E46	T201	B3
C327	D21	C726	B23	C2601	A25	C6607	D32	D452	D11	IC401	A5	Q402	B5	R343	A2	R703	B19	R2217	C31	R3132	D26	R6609	D35	R7776	E46	T301	B6
C328	B4	C727	C22	C3101	C25	C6608	D34	D453	D11	IC401	B10	Q403	B6	R344	B3	R704	A20	R2218	C31	R3134	C25	R6610	C29	R7777	E41	T611	E5
C329	B4	C727	C24	C3102	A26	C6609	C29	D501	D5	IC401	B3	Q421	C7	R401	B4	R706	C21	R2219	B33	R3135	E27	R6614	C29	R7778	E41	T612	D10
C331	D21	C728	A22	C3104	D26	C6612	C29	D525	E21	IC401	B7	Q431	A10	R402	B5	R707	C20	R2220	B32	R3136	B27	R6615	D34	R7779	E41	T612	D20
C341	A3	C729	B22	C3105	B26	C6615	D33	D601	E2	IC401	D2	Q432	A10	R404	B4	R708	A20	R2223	A36	R3137	B27	R6616	D34	R7780	E41	T701	A21
C342	A2	C730	A23	C3106	D27	C6616	D33	D625	E1	IC402	A2	Q450	E12	R407	B6	R709	C19	R2224	A35	R3138	B27	R6617	C29	R7781	E46	T6601	C35
C343	A2	C731	B24	C3107	D27	C6617	C29	D631	E2	IC402	C6	Q611	E4	R409	B6	R710	C20	R2225	A36	R3139	B27	R6618	C29	R7782	E46	V101	B16
C344	A2	C735	B18	C3108	D27	C6618	C29	D632	E2	IC501	D5	Q612	E6	R410	B6	R711	C20	R2226	A35	R3142	C27	R6619	C29	R7788	E42	VA701	A17
C345	B2	C737	B17	C3109	E26	C6619	D36	D701	A19	IC701	B20	Q735	B18	R411	B6	R712	C20	R2227	A35	R3143	C27	R6620	C36	R7789	C48	X801	B13
C346	C24	C739	B19	C3110	D26	C6620	D32	D702	A19	IC702	B19	Q736	B18	R412	B7	R713	B19	R2229	B34	R3145	E27	R6622	B29	R7790	C47	X5502	C32
C347	A2	C756	C22	C3111	D26	C6621	B29	D703	A19	IC756	C23	Q756	D22	R415	B5	R714	B20	R2230	B35	R3146	E27	R6623	B29	R7791	B48	X7701	E47
C401	B4	C757	C24	C3112	D23	C6622	B29	D704	A19	IC765	B23	Q852	A15	R416	B5	R716	C20	R2235	C34	R3147	D26	R6624	B29	R7792	C43	58 *	B40
C402	B5	C758	D22	C3113	D23	C6623	D30	D705	C20	IC775	E17	Q854	C15	R421	C7	R726	B24	R2236	C34	R3149	B27	R6625	B29	R7793	E43	59 *	C40
C405	B6	C759	D23	C3114	B26	C6624	D30	D706	C19	IC2201	C31	Q856	B15	R423	C5	R727	C2	R2237	B35	R3150	A27	R6626	D30	R7794	C43	60 *	A51
C406	B6	C765	D21	C3116	C27	C6625	E33	D707	C20	IC2202	D32	Q881	C14	R424	C5	R735	C19	R2238	C35	R3151	A27	R6627	E33	R7795	C42	61 *	B51
C408	B7	C766	D21	C3117	D24	C6626	E34	D709	B20	IC3101	A26	Q2201	A31	R425	C5	R736	C18	R2239	B36	R3152	A27	R6628	E34	R7796	D47	62 *	C51
C421	C7	C767	D21	C3118	B27	C6627	E35	D725	B22	IC3102	C27	Q2202	A31	R426	C4	R737	C18	R2240	B35	R3153	C25	R6630	E33	R7797	E48	63 *	A40
C422	C5	C768	B24	C3119	A27	C6628	E34	D726	B22	IC3103	B25	Q2203	B31	R427	C7	R738	B18	R2241	B35	R3155	C25	R6632	E34	R7798	C48		
C423	C5	C769	C24	C3120	A27	C7701	A43	D727	A22	IC3301	A37	Q2206	A35	R428	C7	R739	B19	R2244	B32	R3156	C25	R7701	C43	R7799	D41		
C432	A9	C775	E17	C3121	A27	C7702	E44	D735	B18	IC6601	C36	Q2208	B34	R431	B9	R740	B19	R2247	B32	R3164	A26	R7702	C43	R7800	D41		
C435	B11	C802	B9	C3123	E25	C7704	D46	D737	B17	IC7701	C45	Q2209	B35	R432	A9	R741	B18	R2248	B32	R3165	D26	R7703	A43	R7801	D41		
C450	C3	C806	C13	C3124	B12	C7705	E47	D738	B18	IC7702	A49	Q2211	B35	R434	A10	R742	B18	R2249	B32	R3166	B26	R7707	E44	R7802	D41		
C451	C13	C851	B15	C3125	B12	C7706	E48	D739	B17	J401	A1	Q2215	B32	R437	A11	R743	B18	R2250	A32	R3171	B27	R7708	E44	R7803	B42		
C452	C12	C852	C15	C3126	B11	C7707	B43	D765	D21	J401	C4	Q2216	A32	R438	B8	R744	B18	R2251	A32	R3174	D17	R7711	A46	R7804	B41		
C454	E11	C853	C15	C3127	D1	C7708	B48	D766	D21	L201	C23	Q2217	B32	R450	B3	R745	B18	R2252	A32	R3180	D28	R7712	B44	R7805	A47		
C455	C12	C854	D16	C3130	C6	C7709	C47	D768	C22	L202	B2	Q2218	B31	R451	C12	R746	B18	R2253	B32	R3181	D28	R7714	A47	R7806	A47		
C460	E11	C858	D15	C3132	E27	C7710	C48	D769	C22	L204	B2	Q2219	B31	R452	D12	R747	B17	R2254	B31	R3182	B28	R7719	D44	R7807	A49		
C471	C24	C881	C13	C3134	D24	C7713	B48	D775	E17	L211	C3	Q3101	D18	R453	E12	R748	B17	R2255	B31	R3183	B28	R7720	D44	R7808	B48		
C472	C24	C883	C14	C3301	A38	C7714	B42	D776	D17	L301	A3	Q3109	C18	R455	D11	R756	D22	R2256	B31	R3185	D5	R7723	E44	R7809	D46		
C502	D5	C2201	A30	C3302	A39	C7715	E46	D881	C13	L321	B4	Q3110	C26	R460	E11	R765	D20	R2257	B31	R3186	A13	R7724	B43	R7810	C46		
C503	D4	C2202	A31	C3303	B38	C7716	E45	D882	C13	L401	B4	Q6601	C34	R461	E11	R766	D20	R2258	B31	R3187	A13	R7727	B43	R7811	C46		
C504	D5	C2203	A31	C3304	B39	C7717	B46	D885	C13	L402	B5	Q6602	C33	R462	E11	R768	C23	R2259	B30	R3188	B12	R7730	A44	R7812	A46		
C505	D5	C2204	D24	C3311	B38	C7718	C43	D2201	D34	L404	B6	Q6605	C33	R501	D4	R775	D17	R2262	A33	R3189	B12	R7731	B44	R7818	B43		
C506	D6	C2205	D24	C3312	A36	C7719	E46	D2207	B32	L405	B6	Q6606	C34	R502	D4	R776	E17	R2265	A29	R3190	B12	R7735	A46	R7820	B43		
C507	D7	C2207	E32	C3313	B37	C7720	C43	D2208	A32	L406	B6	Q6607	E35	R503	D4	R804	B9	R2266	A29	R3191	B12	R7737	B46	R7821	B42		
C509	D7	C2208	D30	C3314	B37	C7721	C24	D2209	A32	L432	B9	Q6608	E34	R504	D5	R811	A13	R2270	B31	R3192	B12	R7738	D46	R7822	B43		
C511	D3	C2209	A29	C3316	B37	C7722	E42	D3105	C27	L615	E8	Q7703	C43	R505	D6	R813	C13	R2273	B36	R3193	D2	R7740	D46	R7823	D43		
C512	B11	C2210	A29	C3317	B37	C7723	E42	D3108	B27	L616	D8	Q7704	C43	R506	D6	R815	B13	R2276	D30	R3195	C6	R7743	D49	R7824	D43		
C516	D3	C2211	A33	C5501	C33	C7725	B48	D3109	B27	L701	A18	Q7705	E47	R507	D6	R851	A14	R2502	D25	R3206	B25	R7744	D49	R7826	B46		

* Indicates the item number used in the mechanical parts list and exploded views.

ELECTRICAL PARTS LIST

SEMICONDUCTORS

(Select the replacement that gives the best results.)

	Item No.	Type No.	Mfr. Part No.	ECG Part No.
	D242	-	RH-EX0207CEZZ	ECG5035A
	D243	-	RH-EX0301CEZZ	-
	D450	1SS119	VHD1SS119//-1	ECG519
	D451	-	RH-EX0298CEZZ	-
	D452	-	RH-EX0285CEZZ	-
	D453	1SS119	VHD1SS119//-1	ECG519
	D501	-	RH-DX0441CEZZ	ECG116
#	**D525**	-	RH-DX0131CEZZ	ECG552
#	**D601**	1SS119	VHD1SS119//-1	ECG519
	D625	-	RH-EX0313CEZZ	ECG139A
#	**D631**	-	VHD1SS82///1A	ECG177
#	**D632**	-	RH-EX0313CEZZ	ECG139A
#	**D701** Thru			
#	**D704**	-	RH-DX0154CEZZ	ECG116
	D705	-	VHD1SS82///1A	ECG177
	D706	-	VHD10ELS2//-1	-
	D707	1SS82	VHD1SS82///1A	ECG177
	D709	-	RH-EX0283CEZZ	-
#	**D725**	-	RH-DX0473CEZZ	-
#	**D726**	-	RH-DX0433CEZZ	-
#	**D727**	-	RH-DX0461CEZZ	-
	D735	-	RH-EX0299CEZZ	-
	D737, 38, 39	1SS119	VHD1SS119//-1	ECG519
#	**D765, 66**	EU-1	RH-DX0131CEZZ	ECG552
	D768, 69	1SS119	VHD1SS119//-1	ECG519
	D775	-	RH-DX0441CEZZ	ECG116
#	**D776**	-	RH-DX0279CEZZ	-
	D881, 82, 85	1SS119	VHD1SS119//-1	ECG519
	D2201	1SS119	VHD1SS119//-1	ECG519
	D2207, 08, 09	1SS119	VHD1SS119//-1	ECG519
	D3105, 08, 09	1SS119	VHD1SS119//-1	ECG519
	D3110	-	RH-EX0281CEZZ	-
	D3116, 17	-	RH-EX0335CEZZ	-
	D3123	1SS119	VHD1SS119//-1	ECG519
	D7701	1SS119	VHD1SS119//-1	ECG519
	D7702, 03	-	RH-PX0252GEZZ	-
	D7704, 05	-	RH-PX0253GEZZ	-
	D7707	-	RH-PX0234GEZZ	-
	D7708	-	RH-EX0615GEZZ	-
	D8301	-	RH-PX0302CEZZ	-
	D8302, 03, 04	-	RH-PX0348CEZZ	-
	IC321	TDA7233	VHiTDA7233/-1	-
#	**IC401**	TA1201BN	RH-iX2701CEZZ	-
	IC402	TA8822SN	RH-iX2345CEZZ	-
#	**IC501**	TA8403K	VHiTA8403K/-1	-
#	IC701 (1)	STRF6515	VHiSTRF6515-1	
#	**IC701** (2)	STRF6514	VHiSTRF6514-1	-

 # For SAFETY use only equivalent replacement part.
(1) Used in models 20VT-CH6 and 20VT-H60.
(2) Used in models 13VT-CH6, 13VT-H60, 13VT-H100, and 13VT-H150.

SEMICONDUCTORS continued

(Select the replacement that gives the best results.)

	Item No.	Type No.	Mfr. Part No.	ECG Part No.
#	**IC702**	PS2501-1	RH-FX0002GEZZ	-
#	**IC756**	KIA7805PI	VHiKA7805Pi-1	ECG1960
#	**IC765**	PQ09RE1	VHiPQ09RE1/-1	-
#	**IC775**	PS2501-1	RH-FX0002GEZZ	-
#	**IC2201**	HA8303NF	VHiHA8303NF-1	-
	IC2202	MN3880S	VHiMN3880S/-1	-
	IC3101 (3)	-	RH-iX2742CEZZ	-
	IC3101 (4)	-	RH-iX2711CEN1	-
	IC3102	AT24C01A	VHiAT24C01A-1	-
	IC3103	PST994C	VHiPST994C/-1	-
	IC3301	AN3363SB	VHiAN3363S/-1	-
	IC6601	BA7755	VHiBA7755//-1	-
	IC7701 (1)	RH-IX2747CEN2	M37776M5A105GP	-
	IC7701 (2)	-	RH-iX2747CEZZ	-
	IC7702	BA6209-V3	VHiBA6209//1E	-
	Q201	2SC1906	VS2SC1906//1E	ECG107
	Q311	2SD601(A)	VS2SD601A//-1	ECG2408
	Q401	2SD601(A)	VS2SD601A//-1	ECG2408
	Q402	2SB709(A)	VS2SB709A//-1	ECG2409
	Q403	2SD601(A)	VS2SD601A//-1	ECG2408
	Q421	2SB709(A)	VS2SAB709A//-1	ECG2409
	Q431	2SD601(A)	VS2SD601A//-1	ECG2408
	Q432, 50	2SB709(A)	VS2SB709A//-1	ECG2409
	Q611	2SC2482	VS2SC2482//-1	ECG399
#	**Q612** (1)	2SD2095	VS2SD2095//1E	ECG2331
#	**Q612** (2)	2SD1554	VS2SD1554//1E	ECG2331
	Q735	2SC3198(Y)	VS2SC3198-Y-1	ECG85
	Q736	2SB709(A)	VS2SB709A//-1	ECG2409
#	**Q756**	2SD471(KL)	VS2SD471-KL1E	ECG293
	Q852, 54, 56	2SC2229(O)	VS2SC2229O/1E	ECG399
	Q881	2SA1266(Y)	VS2SA1266-Y-1	ECG290A
	Q2201	2SC2412(KQ)	VS2SC2412KQ-1	ECG2408
	Q2202	DTA144(EK)	VSDTA144EK/-1	ECG2419
	Q2203	DTC144(EK)	VSDTC144EK/-1	ECG2418
	Q2206, 08, 09	2SC2412(KQ)	VS2SC2412KQ-1	ECG2408
	Q2211	DTC144(EK)	VSDTC144EK/-1	ECG2418
	Q2215, 16	2SA1037(KQ)	VS2SA1037KQ-1	ECG2409
	Q2217, 18, 19	2SC2412(KQ)	VS2SC2412KQ-1	ECG2408
	Q3101, 09	2SA1266(G)	VS2SA1266-G-1	ECG290A
	Q3110	2SD601(A)	VS2SD601A//-1	ECG2408
	Q6601	2SC3939(QR)	VS2SC3939SQR-1	-
	Q6602	2SC2001(LK)	V2SC2001LK-1	ECG85
	Q6605	DTC124(EK)	VSDTC124EK/-1	ECG2357
	Q6606	DTA144(EK)	VSDTA144EK/-1	ECG2419
	Q6607	2SC2412(KQ)	VS2SC2412KQ-1	ECG2408

 # For SAFETY use only equivalent replacement part.
(1) Used in models 20VT-CH6 and 20VT-H60.
(2) Used in models 13VT-CH6, 13VT-H60, 13VT-H100, and 13VT-H150.
(3) Used in models 13VT-CH6 and 20VT-CH6.
(4) Used in models 13VT-H60, 13VT-H100, 13VT-H150, and 20VT-H60.

ELECTRICAL PARTS LIST continued

SEMICONDUCTORS continued

(Select the replacement that gives the best results.)

Item No.	Type No.	Mfr. Part No.	ECG Part No.
Q6608	DTA144(EK)	VSDTA144EK/-1	ECG2419
Q7703, 04	-	RH-PX0004PEZZ	-
Q7705	2SD1306	VS2SD1306-E1E	ECG2406
Q7706	2SC2412K	-	ECG2408
	2SD601(A)	VS2SD601A//-1	ECG2408
Q7707	DTC114(EK)	VSDTC114EK/-1	ECG2414
Q8301 Thru			
Q8305	2SC2412K(Q)	-	ECG2408
	2SD601(A)	VS2SD601A//-1	ECG2408

CAPACITORS & ELECTROLYTICS

	Item No.	Rating	Mfr. Part No.
	C314, 21	2.2µF 20% 50V NP	VCE9EA1HW225M
#	**C460**	.1 10% 50V	VCQTA1HM104K
#	**C613** (1)	.0091 1.6kV	VCFPPD3CA912H
#	**C613** (2)	.0047 1.6kV	VCFPPD3CA472H
#	**C614** (1)	180pF 2kV	RC-KZ0034CEZZ
#	**C614** (2)	560pF 10% 2kV	VCYPH3DB561K
#	**C631**	10µF 20% 35V	VCEAGA1VW106M
#	**C701**	.22 250VAC	RC-FZ012SGEZZ
		.47 250VAC	-
#	**C702, 03**	.01 500V	VCKYPB2HE103P
#	**C705** (3)	470µF 200V	RC-EZ0394CEZZ
#	**C705** (4)	470µF 200V	RC-EZ0514CEZZ
	C707	.0015 2kV	RC-KZ0371CEZZ
#	**C712** (3)	.0047 50V	RC-KZ0311CEZZ
#	**C712** (4)	.0047 50V	RC-KZ0312CEZZ
#	**C713** (3)	.0047 50V	RC-KZ0311CEZZ
	C714 (3)	.01 500V	VCKYPB2HE103P
	C714 (4)	.0015 2kV	RC-KZ0371CEZZ
#	**C716** (3)	.22 250VAC	RC-FZ012SGEZZ
		.47 250VAC	-
#	**C726**	2200µF 20% 25V	VCEAGA1EW228M
	C728, 29	.001 1kV	RC-KZ0365CEZZ
#	**C730**	220µF 160V	RC-EZ0618CEZZ
#	**C731**	33µF 160V	RC-EZ0580CEZZ
	C854	.01 1.4kV	RC-KZ0016CEZZ
	C7740	1µF 50V NP	VCE9EA1HW105M

 # For SAFETY use only equivalent replacement part.
(1) Used in models 20VT-CH6 and 20VT-H60.
(2) Used in models 13VT-CH6, 13VT-H60, 13VT-H100, and 13VT-H150.
(3) Used in models 13VT-CH6 and 20VT-CH6.
(4) Used in models 13VT-H60, 13VT-H100, 13VT-H150, and 20VT-H60.

CONTROLS & RESISTORS

	Item No.	Function/Rating	Mfr. Part No.
#	**PR701**	PTC Thermistor	RMPTP0026CEZZ
	R505 (1)	56K 2% 1/8W	VRD-RA2BE563G
	R505 (2)	68K 2% 1/8W	VRD-RA2BE683G
	R506	100K 2% 1/8W	VRD-RA2BE104G
	R510 (2)	22K 2% 1/8W	VRD-RA2BE223G
	R511 (1)	10K 2% 1/8W	VRD-RA2BE103G
	R511 (2)	10K 2% 1/8W	VRD-RA2BE123G
#	**R525**	1 5% 1/4W	VRN-GA2EB1R0J
#	**R605**	100K 5% 1/16W	VRS-CY1JF104J
#	**R614** (1)	1500 5% 2W	VRS-VV3DB122J
#	**R614** (2)	1200 5% 2W	VRS-VV3DB122J
#	**R615**	270 5% 1W	VRS-VV3AB271J
#	**R617** (1)	820 5% 2W	VRS-VV3DB821J
#	**R625** (1)	2200 5% 1W	VRS-VV3AB222J
#	**R625** (2)	6800 5% 1W	VRS-VV3AB682J
#	**R630**	68 5% 1/2W	VRD-RM2HD680J
#	**R631**	8200 2% 1/4W	VRD-RA2EE822G
#	**R632** (1)	6800 2% 1/4W	VRD-RA2EE682G
#	**R632** (2)	10K 2% 1/4W	VRD-RA2EE103G
#	**R701** (1)	1.5 10% 7W Wirewound	VRW-KP3NC1R5K
#	**R701** (2)	1.8 10% 5W Wirewound	VRW-KP3HC1R8K
#	**R702**	3.9M 10% 1/2W	VRC-UA2HG395K
#	**R703**	2.7M 10% 1/2W	VRC-UA2HG275K
#	**R706**	.15 2W	RR-NZ0048CEZZ
#	**R726**	4.7 10% 5W Wirewound	VRW-KQ3HC4R7K
#	**R727**	18K 5% 2W	VRS-VV3DB183J
#	**R735**	1800 5% 1W	VRD-RM2HD182J
	R738	6800 119V Adjust	RVR-M4333CEZZ
#	**R765**	1 5% 1/4W	VRN-GA2EB1R0J
#	**R766**	.47 5% 1/4W	VRN-GA2EBR47J
#	**R775**	12K 5% 1/2W	VRD-RM2HD123J
#	**R857, 65, 73**	12K 5% 1W	VRS-VV3AB123J
	R7788, 93	10K 1% 1/16W	VRS-CY1JF103F
#	**R7807**	1.8 5% 1/2W Fusible	VRG-SC2EB1R8J
#	**R8306** (1)	1500 5% 2W	VRS-VV3DB152J
#	**R8306** (2)	1000 5% 2W	VRS-VV3DB102J
#	**VA701**	Varistor	RH-VX0026CEZZ

 # For SAFETY use only equivalent replacement part.
(1) Used in models 20VT-CH6 and 20VT-H60.
(2) Used in models 13VT-CH6, 13VT-H60, 13VT-H100, and 13VT-H150.

COILS & TRANSFORMERS

	Item No.	Function/Rating		Mfr. Part No.
#	**DY601** (1)	Yoke	Horiz 2.1mH Vert 25.6mH	RCiLH0071PEZZ
#	**DY601** (2)	Yoke	Horiz 3.7mH Vert 29.4mH	RCiLH0124PEZZ
	FB201	Ferrite Bead		RBLN-0037CEZZ
	FB611 (1)	Ferrite Bead		RBLN-0047CEZZ
	FB611 (2)	Ferrite Bead		RBLN-0037CEZZ
	FB702	Ferrite Bead		RBLN-0037CEZZ
	FB704	Ferrite Bead		RBLN-0036CEZZ
	FB726	Ferrite Bead		RBLN-0054CEZZ
	FB727	Ferrite Bead		RBLN-0020CEZZ
	FB731, 32	Ferrite Bead		RBLN-0020CEZZ
	FB3101	Ferrite Bead		RBLN-0037CEZZ
	FB6601	Ferrite Bead		RBLN-0036CEZZ
	FB7701	Ferrite Bead		RBLN-0036CEZZ
	FB7702	Ferrite Bead		RBLN-0036CEZZ
	L201	5.6µH		VP-MK5R6K0000
	L202	1.2µH		VP-XF1R2K0000
	L204	22µH		VP-MK220K0000
	L211	56µH		VP-XF560K0000
	L301	22µH		VP-MK220K0000
	L321	56µH		VP-XF560K0000
	L401	8.2µH		VP-XF8R2K0000
	L402	12µH		VP-MK120K0000
	L404	2.7µH		VP-XF2R7K0000
	L405	6.8µH		VP-XF6R8K0000
	L406	8.2µH		VP-XF8R2K0000
	L432	39µH		VP-XF390K0000
	L615	-		RCiLP0270CEZZ
	L616 (1)	-		RCiLZ0956CEZZ
#	**L701** (3)	Line Filter		RCiLF0090CEZZ
#	**L701** (4)	Line Filter		RCiLF0235CEZZ
#	**L702** (1)	Degaussing		RCiLG0406PEZZ
#	**L702** (2)	Degaussing		RCiLG0403PEZZ
	L725	-		RCiLP0238CEZZ
	L726, 27	-		RCiLP0236CEZZ
	L851	150µH		VP-DF151K0000
	L2202	82µH		VP-XF820K0000
	L2203	470µH		VP-MK471K0000
	L2205	15µH		VP-XF150K0000
	L2206	150µH		VP-XF151K0000
	L2208	100µH		VP-XF101K0000
	L2209	4.7µH		VP-DF4R7K0000
	L2210	560µH		VP-MK561K0000
	L3101, 02	10µH		VP-XF100K0000
	L3103	Oscillator		RCiLB0021PEZZ
	L3301	100µH		VP-MK101K0000

 # For SAFETY use only equivalent replacement part.
(1) Used in models 20VT-CH6 and 20VT-H60.
(2) Used in models 13VT-CH6, 13VT-H60, 13VT-H100, and 13VT-H150.
(3) Used in models 13VT-CH6 and 20VT-CH6.
(4) Used in models 13VT-H60, 13VT-H100, 13VT-H150, and 20VT-H60.

COILS & TRANSFORMERS continued

	Item No.	Function/Rating	Mfr. Part No.
	L5501	10µH	VP-XF100K0000
	L5502	12µH	VP-XF120K0000
	L5506	39µH	VP-XF390K0000
	L6601	220µH	VP-DF221K0000
	L6602, 03	8200µH	VPADK822J0000
	L6604	-	VPADK153J0000
	L6605 (1)	6.8µH	VP-DF6R8K0000
	L6605 (2)	18µH	VP-DF180K0000
	L7701	1µH	VP-XF1R0K0000
	T201	VCO	RCiLi0614CEZZ
	T301	SIF	RCiLi0605CEZZ
#	**T611** (1)	Horizontal Drive	RTRNZ0057PEZZ
#	**T611** (2)	Horizontal Drive	RTRNZ0650CEZZ
#	**T612** (1)(5)	Horizontal Output	RTRNF0121PEZZ
#	**T612** (2)(5)	Horizontal Output	RTRNF0120PEZZ
#	T701	Power	RTRNZ0094PEZZ
	T6601	Oscillator	RTRNH0053GEZZ

 # For SAFETY use only equivalent replacement part.
(1) Used in models 20VT-CH6 and 20VT-H60.
(2) Used in models 13VT-CH6, 13VT-H60, 13VT-H100, and 13VT-H150.
(5) Screen and focus controls are part of T612.

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)

ELECTRICAL PARTS LIST continued

MISCELLANEOUS

	Item No.	Description	Mfr. Part No.	Notes
	CF301	Filter	RFiLC0267CEZZ	4.5MHz
	CF302	Filter	RFiLC0029TAZZ	4.5MHz
	CF401	Trap	RFiLC0013CEZZ	4.5MHz
	CF601	Crystal	RFiLA0034CEZZ	503kHz
	CF3103	Filter	RFiLC0121GEZZ	-
#	**F701**	Fuse	QFS-B4023CEZZ	4Amp
	FH701	Fuse Holder	QFSHD1017CEZZ	For F701
	FH702	Fuse Holder	QFSHD1018CEZZ	For F701
	J401	Jack	QJAKF0040CEZZ	Assembly
#	**P1** (1)	Line Cord	QACCD3043CESA	AC, Polarized
#	**P1** (2)	Line Cord	QACCD3043CESB	AC, Polarized
	RMC2601	Receiver	RRMCU0222CEZZ	Remote Control
#	**RY701**	Relay	RRLYU0036CEZZ	Degaussing
#	**RY725**	Relay	RRLYJ0071CEZZ	Power
	S2501	Switch	QSW-K0077GEZZ	Stop/Eject
	S2502	Switch	QSW-K0077GEZZ	Play
	S2503	Switch	QSW-K0077GEZZ	Fast Foward
	S2504	Switch	QSW-K0077GEZZ	Rewind
	S2601	Switch	QSW-P0593CEZZ	TV/VCR
	S3101	Switch	QSW-K0077GEZZ	Reset
	S3102	Switch	QSW-K0077GEZZ	Volume Up
	S3103	Switch	QSW-K0077GEZZ	Volume Down
	S3104	Switch	QSW-K0077GEZZ	Channel Up
	S3105	Switch	QSW-K0077GEZZ	Channel Down
	S3106	Switch	QSW-K0077GEZZ	Channel Preset
	S3107	Switch	QSW-K0077GEZZ	Record
	S7701	Switch	QSW-F0001PEZZ	Record Tip
	SC851 (3)	Socket	QSOCV0913CEZZ	CRT
	SC851 (4)	Socket	QSOCV0829CEZZ	CRT
	SF201	Filter	RFiLC0236CEZZ	SAW
	SP1	Speaker	VSP0080PBK7WA	3" Round, 8 Ohms
#	**TU201** (5)	Tuner	VTUVTSR6UF78/	UHF/VHF
#	**V101** (3)	CRT	VB51KPD02X/*S	A51KPD02XX
#	**V101** (4)	CRT	VB34KPU02X/*S	A34KPU02XX
	X801	Crystal	RCRSB0001PEZZ	3.58MHz
	X5502	Crystal	RCRSB0204GEZZ	3.58MHz
	X7701	Crystal	RCRSB0159GEZZ	-
	58 *	Head	RHEDT0031AJZZ	Full Erase
	59 *	Head	RHEDU0085GEZZ	Audio/Control, Assembly
	60 *	Motor	RMOTM1062GEZZ	Loading
	61 *	Motor	RMOTN2053GEZZ	Capstan
	62 *	Motor	RMOTP1129GEZZ	Drum Drive
	63 *	Drum	DDRMW0014TEX0	Upper & Lower, Assembly

 # For SAFETY use only equivalent replacement part.
* Indicates the item number used in Mechanical Parts List and Exploded Views.
(1) Used in models 13VT-CH6, 13VT-H60, 13VT-H100, 20VT-CH6, and 20VT-CH6.
(2) Used in model 13VT-H150.
(3) Used in models 20VT-CH6 and 20VT-H60.
(4) Used in models 13VT-CH6, 13VT-H60, 13VT-H100, and 13VT-H150.
(5) Contact TNI Electronics for replacement; order by manufacturer's part number.

MISCELLANEOUS continued

Item No.	Description	Mfr. Part No.	Notes
	Adapter (6)	RUNTK0393CEZZ	Antenna
	Antenna (6)	QANTR0018PEZZ	Rod
	Antenna (7)	QANTR0019PEZZ	Rod
	Magnet (3)	PMAGF3003CEZZ	Purity/Convergence
	Magnet (4)	PMAGF3006CEZZ	Purity/Convergence
	PC Board (6)	DUNTK8606WEV4	CRT
	PC Board (7)	DUNTK8606WEV7	CRT
	PC Board (8)	DUNTK8641WEV5	CRT
	PC Board (9)	DUNTK8641WEV1	CRT
	PC Board (6)	DUNTK8988WEW2	Main
	PC Board (7)	DUNTK8988WEW5	Main
	PC Board (8)	DUNTK8988WEW6	Main
	PC Board (9)	DUNTK8988WEW3	Main
	PC Board (2)	DUNTK9059WEV4	Power
	PC Board (7)	DUNTK9160WEV0	Power
	PC Board (8)	DUNTK9160WEV1	Power
	PC Board (9)	DUNTK9059WEV1	Power
	PC Board (10)	DUNTK9059WEV0	Power
	PC Board (3)	DUNTK9055WEV4	Power Switch
	PC Board (6)	DUNTK9055WEV2	Power Switch
	PC Board (7)	DUNTK9055WEV7	Power Switch
	PC Board	DUNTK9066WEV0	Sensor
	PC Board (3)	DUNTK9056WEV4	VCR Key
	PC Board (6)	DUNTK9056WEV2	VCR Key
	PC Board (7)	DUNTK9056WEV7	VCR Key
	Transmitter (2)	RRMCG1244PESB	Remote
	Transmitter (3)	RRMCG1242PESA	Remote
	Transmitter (11)	RRMCG1242PESA	Remote
	Transmitter (12)	RRMCG1244PESA	Remote
	Wedge (3)	PSPAG0003PEZZ	Yoke Positioning (3 Used)
	Wedge (4)	PSPAG0004PEZZ	Yoke Positioning (3 Used)

(2) Used in model 13VT-H150.
(3) Used in models 20VT-CH6 and 20VT-H60.
(4) Used in models 13VT-CH6, 13VT-H60, 13VT-H100, and 13VT-H150.
(6) Used in models 13VT-H60, 13VT-H100, and 13VT-H150.
(7) Used in model 13VT-CH6.
(8) Used in model 20VT-CH6.
(9) Used in model 20VT-H60.
(10) Used in models 13VT-H60 and 13VT-H100.
(11) Used in models 13VT-CH6 and 13VT-H60.
(12) Used in model 13VT-H100.

CABINET PARTS LIST

CABINET

Item	Mfr. Part No.
Model 13VT-CH6	
Badge, SHARP (1)	HBDGB0014PESB
Button - Control Assembly (1)	JBTN-0229PASA
Button - Eject (1)	JBTN-0225PESA
Button - Power (1)	JBTN-0155PESA
Cabinet Complete Assembly	CCABA2339WEV4
Cabinet Rear	GCABB2290PEKA
Cassette Door Flap (1)	HDECQ0081PESA
LED Decoration Plate	HDECQ0079PESA
Spring - Cassette Door (1)	MSPRD0123AJFJ
Spring - Power Button (1)	MSPRC0005PEFW
VCR Control Button Assembly (1)	CBTN-0228WEV0
Model 13VT-H60/H100	
Badge, SHARP (1)	HBDGB0014PESB
Button - Control Assembly (1)	JBTN-0229PASA
Button - Eject (1)	JBTN-0225PESA
Button - Power (1)	JBTN-0155PESA
Cabinet Complete Assembly	CCABA2339WEV0
Cabinet Rear	GCABB2270PEKA
Cassette Door Flap (1)	HDECQ0081PESA
LED Decoration Plate	HDECQ0079PESA
Spring - Cassette Door (1)	MSPRD0123AJFJ
Spring - Power Button (1)	MSPRC0005PEFW
VCR Control Button Assembly (1)	CBTN-0228WEV0
Model 13VT-H150	
Badge, SHARP (1)	HBDGB0014PESB
Button - Control Assembly (1)	JBTN-0229PASB
Button - Eject (1)	JBTN-0225PESB
Button - Power (1)	JBTN-0155PESC
Cabinet Complete Assembly	CCABA2339WEV3
Cabinet Rear	GCABB2270PEKB
Cassette Door Flap (1)	HDECQ0081PESB
LED Decoration Plate	HDECQ0079PESA
Spring - Cassette Door (1)	MSPRD0123AJFJ
Spring - Power Button (1)	MSPRC0005PEFW
VCR Control Button Assembly (1)	CBTN-0228WEV1

(1) Part of cabinet complete assembly.

CABINET continued

Item	Mfr. Part No.
Model 20VT-CH6	
Badge, SHARP (1)	HBDGB0019PESA
Button - Control Assembly (1)	JBTN-0229PESA
Button - Eject (1)	JBTN-0225PESA
Button - Power (1)	JBTN-0155PESA
Cabinet Complete Assembly	CCABA2344WEV4
Cabinet Rear	GCABB2295PEKA
Cassette Door Flap (1)	HDECQ0081 PESA
Cassette Door Spring (1)	MSPRD0123AJFJ
LED Decoration Plate	HDECQ0079PESA
Spring - Cassette Door (1)	MSPRD0123AJFJ
Spring - Power Button (1)	MSPRC0005PEFW
VCR Control Button Assembly (1)	CBTN-0228WEV0
Model 20VT-H60	
Badge, SHARP (1)	HBDGB0019PESA
Button - Control Assembly (1)	JBTN-0229PESA
Button - Eject (1)	JBTN-0225PESA
Button - Power (1)	JBTN-0155PESA
Cabinet Complete Assembly	CCABA2344WEV0
Cabinet Rear	GCABB2275PEKA
Cassette Door Flap (1)	HDECQ0081PESA
Cassette Door Spring (1)	MSPRD0123AJFJ
LED Decoration Plate	HDECQ0079PESA
Spring - Cassette Door (1)	MSPRD0123AJFJ
Spring - Power Button (1)	MSPRC0005PEFW
VCR Control Button Assembly (1)	CBTN-0228WEV0
Transmitter	
Cover	GCOVA0052PESA

(1) Part of cabinet complete assembly.