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.

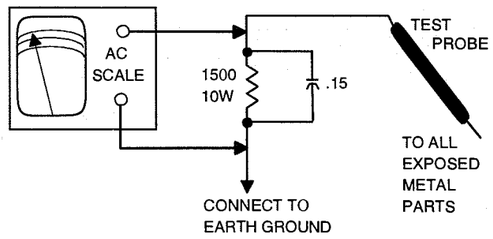
SAFETY CHECKS -- FIRE AND SHOCK HAZARD

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.



TEST JIG HOOKUP

Function	Chek-A-Color Adapter No.	PC Board Plug No.	Pin	Color
CRT	B239	DY	1	Red
Yoke	D482		2	Blue
Yoke Setting	YP1A		4	Yellow
Comments	Focus Tap		5	Green

HORIZONTAL OSCILLATOR SHUTDOWN TEST

After servicing the high voltage circuits, test the shutdown circuit by connecting an 82 ohms resistor between the cathode of D554 and the anode of D542. The horizontal oscillation should stop and the picture should collapse vertically. If the horizontal oscillation does not stop, the shutdown circuit requires repair. To return to normal operation, remove the 82 ohms resistor.

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SET 3850

MODELS CK-32308, CS-32207, CS-32307

MITSUBISHI

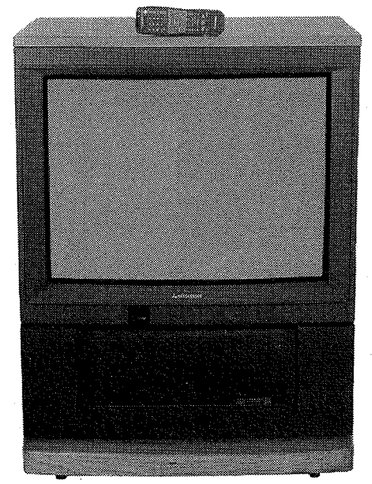
PHOTOFACT® Technical Service Data

INDEX

For Supplier Address,
See PHOTOFACT Annual Index

MITSUBISHI

Models CK-32308, CS-32207, CS-32307



Model CK-32308

Essential coverage for servicing a television receiver...

- Schematics
- Component locations
- Parts list

HOWARD W. SAMS & COMPANY
JULY 1997 SET 3850

3850

SCHEMATIC NOTES

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

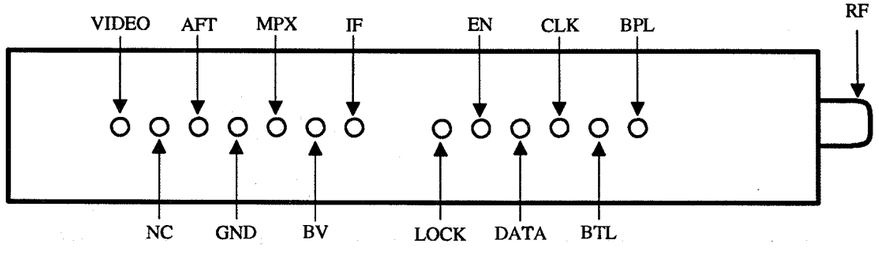
TUNER / IF PACK INFORMATION

TUNER / IF PACK VOLTAGE CHART

Pin	Voltage	Pin	Voltage
BPL	5.0V	BV	9.0V
BTL	32.2V	MPX	4.2V
CLK	.1V	GND	0V
DATA	4.8V	AFT	2.7V
EN	.2V	NC	0V
LOCK	0V	VIDEO	4.7V
IF	0V		

NOTE: Voltages remain the same in each band.

TUNER / IF PACK TERMINAL GUIDE



MISCELLANEOUS ADJUSTMENTS

COLOR OUTPUT

Tune in a color bar pattern. Enter the circuit adjustment mode and select VCH. Select DRG and DRB and set each data value to 44. Connect an oscilloscope to pin 1 of connector GB. Select CON and adjust the data value for 5.4Vp-p. Connect a 1000µF 16V electrolytic capacitor to the emitter of Q2V04 and ground. Select SHUE and adjust the data value so that the sixth bar crosses over. Remove the 1000µF 16V electrolytic capacitor from the emitter of Q2V04 and ground. Select SCL and adjust the data value so that the amplitude of the sixth bar is 1.2V ± .05V. Save the new data and perform the "Sub Contrast" adjustment.

SUB CONTRAST

Tune in a 10 bar staircase pattern. Enter the circuit adjustment mode and select VCH. Connect a current meter to pins 1 and 4 of connector TP. Select CON and adjust the data value for 2mA ± .1mA. Save the new data.

HORIZONTAL WIDTH

Tune in a window circle pattern. Enter the circuit adjustment mode and select VCH. Select HWD and set the data value to 32. Adjust VR501 for best circle dimensions. Adjust HWD data value for best circle dimensions. Save the new data.

VERTICAL HEIGHT

Tune in a window circle pattern. Enter the circuit adjustment mode and select VCH. Select VCO and set the data value to 0. Select VHT and adjust the data value for best circle dimensions. Save the new data.

SIDE PINCUSHION

NOTE: Perform "Horizontal Width" and "Vertical Height" adjustments before adjusting "Side Pincushion".

Tune in a crosshatch pattern. Enter the circuit adjustment mode and select VCH. Select COM and adjust the data value to staighten lines at the left and right sides of the picture. Select PHA and adjust the data value to staighten lines at the left and right sides of the picture. If sides are distorted in middle, set LPN and UPN for minimum distortion of sides. Select AAG and adjust the data value to make lines at the left and right sides of the picture vertical. Select ABW and adjust the data value to staighten bowed vertical lines at the left and right sides of the picture. Select VSL and PHA and adjust the data values for best phase. Repeat for fine adjustment. Save the new data.

VERTICAL LINEARITY / VERTICAL SIZE CORRECTION

Tune in a window circle pattern. Enter the circuit adjustment mode and select VCH. Select VSC and set the data value to 0. Select VLR and adjust the data value to equalize the top and bottom dimensions of the circle. Save the new data. Perform "Vertical Height" adjustment.

HORIZONTAL POSITION

NOTE: Perform "Horizontal Width" adjustment before adjusting "Horizontal Position".

Tune in a window circle pattern. Enter the circuit adjustment mode and select VCH. Select HPS and adjust the data value to center the circle. Save the new data.

VERTICAL POSITION

Enter the circuit adjustment mode and select VCH. Select VSF and set the data value to 32. Save the new data.

CRT BIAS

Tune in a black raster and connect an oscilloscope to the red, blue, and green cathodes and determine which one has the highest black level. Adjust the screen control to set the black level of that waveform to 190V. Save the new data and perform the "White Balance" adjustment.

WHITE BALANCE

NOTE: Perform "CRT Bias" adjustment before adjusting "White Balance".

Tune in a white raster. Enter the circuit adjustment mode and select VCH. Select DRG and DRB and adjust the data values for best white balance. Save the new data and perform "Black Level" adjustment.

BLACK LEVEL

NOTE: Perform "White Balance" adjustment before adjusting "Black Level".

Tune in a crosshatch pattern. Enter the circuit adjustment mode and select VCH. Select SBR and adjust for best black to white ratio. Save the new data and perform "Sub Contrast" adjustment.

CONVERGENCE / PURITY

Yoke is bonded and part of the CRT. Adjustment is not recommended.

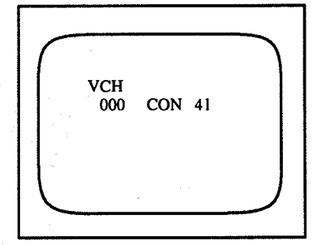
CHARACTER POSITION

Enter the circuit adjustment mode and select HR. Adjust to center the four squares displayed on the picture. Select HR and save the new data.

CIRCUIT ADJUSTMENT MODE

NOTE: Perform "Initial Set Up" adjustment first if it is necessary to reset the receiver to its initial state.

To enter the circuit adjustment mode, turn the receiver on, select TV mode, and then press menu, 2, 3, 5, and 7. The following display indicates circuit adjustment mode menu. Use the audio button to select between 5 menus:VCH, MCS, PIP, HR, and V-POS. Use the video button to select adjustment items. The video button increases the item number each time it is pressed. After selecting the adjustment item, use the adjust buttons to adjust the data. After adjustments are made, save the new data by pressing the enter button. The on-screen characters will turn red for about 2 seconds. After saving data, exit the circuit adjustment mode by pressing the menu button twice. See the following charts for circuit adjustment mode listings.



VCH Listing

Number	Item	Name	Range	Data	On-Set Data
000	CON	Picture	0 - 63	35	41
001	TNT	Tint	0 - 63	32	32
002	COL	Color	0 - 63	38	38
003	BRT	Brightness	0 - 63	32	32
004	SHP	Sharpness	0 - 15	8	8
005	CTG	Green Cut-Off	0 - 15	8	8
006	CTB	Blue Cut-Off	0 - 15	8	8
007	DRG	Green Drive	0 - 63	44	47
008	DRB	Blue Drive	0 - 63	44	35
009	YDL	Y-Delay	0 - 1	0	0
010	VM	Velocity Modulator	0 - 1	1	1
011	DCT	Y DC Transmission	0 - 1	1	1
012	DPC	Y Black Expansion	0 - 1	0	1
013	TOT	Chroma TOT Filter	0 - 1	0	0
014	AXS	Axis	0 - 1	1	1
015	DCO	Dynamic Color	0 - 1	0	0
016	ABL	ABL Mode	0 - 1	0	0
017	DL1	Preshoot/Overshoot	0 - 3	1	1
018	DL2	Sharpness	0 - 3	3	3
019	SCN	Contrast Gain	0 - 15	12	13
020	CTA	Chroma Trap	0 - 15	3	9
021	SCL	Color Gain	0 - 15	0	0
022	SHU	Hue	0 - 15	8	8
023	SBR	Bright Level	0 - 63	32	32
024	GMG	Gamma	0 - 3	2	2

MISCELLANEOUS ADJUSTMENTS continued

VCH Listing continued

Number	Item	Name	Range	Data	On-Set Data
025	AG1	White Output Aging	0 - 1	0	0
027	RON	Red Picture Output	0 - 1	1	1
028	GON	Green Picture Output	0 - 1	1	1
029	BON	Blue Picture	0 - 1	1	1
031	VOF	Vertical Sawtooth	0 - 1	0	0
034	AKB	AKB On/Off	0 - 1	0	0
035	VHT	Vertical Height	0 - 63	32	27
036	VCO	Vertical High Voltage	0 - 3	2	0
037	VSF	Vertical Position	0 - 63	32	32
038	AFC	AFC Loop Gain	0 - 3	1	1
039	VSC	Vertical S Correction	0 - 15	0	0
040	VLR	Vertical Linearity	0 - 15	8	14
041	HWD	Horizontal Width	0 - 63	32	37
042	RPO	Reference Pulse Timing	0 - 3	2	2
043	COM	Horizontal Pin	0 - 63	32	23
044	VBL	VBLK Width	0 - 3	2	2
045	HPS	Horizontal Position	0 - 15	8	8
046	PHA	Horizontal Trapezoida	0 - 15	8	9
047	UPN	Top Horizontal Pin	0 - 15	8	9
048	LPN	Bottom Horizontal Pin	0 - 15	8	8
049	ABW	Vertical Line Bowing	0 - 15	8	8
050	AAG	Vertical Line Inclination	0 - 15	8	10
053	HBL	HBLK Soft Full Mode	0 - 1	1	1
054	VSL	Picture Scroll	0 - 63	32	2
057	UVN	Top Vertical Linearity	0 - 15	0	0
058	LVN	Bottom Vertical Linearity	0 - 15	0	0
059	LBK	Left BLK	0 - 15	15	15
060	RBK	Right BLK	0 - 15	8	8

MCS Listing

Number	Item	Name	Range	Data	On-Set Data
000	PVC	SAP VCO	0 - 63	32	26
001	TVC	Stereo VCO	0 - 63	32	18
002	INP	Input Level	0 - 63	32	18
003	FIL	Filter	0 - 63	63	24
004	LSP	Low Separation	0 - 63	32	30
005	HSP	High Separation	0 - 63	32	27

PIP Listing

Number	Item	Name	Range	Data	On-Set Data
000	TINT	Tint	0 - 63	32	24
001	COLR	Color Saturation	0 - 63	32	45
002	DECD	Color Reset	0 - 1	0	0
003	SYNC	Sub Picture Sync	0 - 7	2	1
004	RVS	RVS	0 - 1	0	0
005	BG-Y	Background Luminance	0 - 15	7	7
006	BSTB	Burst with Background	0 - 63	10	10
007	MVW	Sub Picture Macro Vision	0 - 3	1	3
008	CRTN	Sub Picture Tint Offset	0 - 3	1	1
009	VXA	Sub Picture Vertical	85 - 255	110	110
010	HXAO	Sub Picture Horizontal	17 - 139	126	126
011	ADJ9	Delay	0 - 15	7	7
012	YDL9	Sub Picture Y Delay	8 - 29	14	14
013	HPX9	Writing Horizontal Position	0 - 255	54	54
014	VYA9	Sub Picture Height	0 - 255	188	188
015	HYA9	Sub Picture Width	6 - 255	60	60
016	ADJ6	Delay	0 - 15	7	7
017	YDL6	Sub Picture Y Delay	8 - 29	14	14
018	HPX6	Writing Horizontal Position	0 - 255	104	104
019	VYA6	Sub Picture Height	0 - 255	206	206
020	HYA6	Sub Picture Width	6 - 255	46	46
021	BGBY	B-Y Background Setting	0 - 7	4	4
022	BGRY	R-Y Background Setting	0 - 7	4	4

HR Listing

Number	Item	Name	Range	Data	On-Set Data
-	HR	Menu Centering	0 - 25	-	6

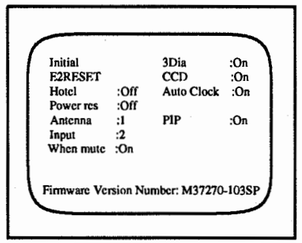
V-POS Listing

Number	Item	Name	Range	Data	On-Set Data
-	V-POS	Vertical Position	0 - 63	32	32

INITIAL SET UP

To enter the initial set up mode, turn the receiver on, select TV mode, and then press menu, 1, 3, 7, and 0. The following display indicates current circuit and register information as shown on the CRT. To reset the receiver to its initial state, select Initial using the adjust button and then press the enter button. The receiver will automatically select channel 3. After resetting, enter the initial set up mode again and use the adjust and enter buttons to set up the menu to match the following display. After saving data, exit the circuit adjustment mode by pressing the menu button twice.

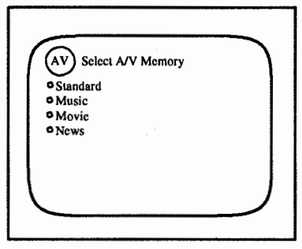
NOTE: Do not change any data before resetting the receiver to its initial state. Also, do not select E2RESET and press the QV button as this will reset the data stored in the EEPROM.



AV MEMORY

NOTE: Perform "Initial Set Up" adjustment before adjusting "AV Memory".

To enter the AV memory mode, turn the receiver on, and then press menu, 1, 3, 7, and 9. The following display indicates AV memory menu as shown on the CRT.



Using the adjust and enter buttons, set the data to the values listed in the chart below.

AV Memory Listing

Item	Standard	Music	Movie	News
Tint	Center	Center	Center	Center
Color	Center	Center	Center - 3	Center
Contrast	Maximum	Center - 4	Center - 8	Center + 4
Brightness	Center	Center	Center + 5	Center + 4
Sharpness	Center	Center	Center - 5	Center
Notch Filter	(1)	Off	Off	Off
Color Temp	High	Middle	Low	Middle

(1) Cable-On: Indoor/Outdoor/Input-Off

AV Memory Listing continued

Item	Standard	Music	Movie	News
Background	Gray	Gray	Gray	Gray
CC	When Muting	When Muting	When Muting	When Muting
Bass	Center	Center + 4	Center + 4	Center - 2
Treble	Center	Center + 4	Center	Center - 2
Balance	Center	Center	Center	Center
Surround	Off	Off	Off	Off
Speaker	On	On	On	On

STEREO ADJUSTMENTS

NOTE: Adjustments made while in the circuit adjustment mode using a MTS TV/stereo generator connected to antenna terminal. To enter the circuit adjustment mode, refer to the "Circuit Adjustment Mode" in the Miscellaneous Adjustments.

SAP VCO

Select SAP mode on the receiver. Select SAP, 300Hz audio frequency, and R modulating signal. Connect a 10µF 25V electrolytic capacitor between TP0M0 and ground (the tuner shield is the best ground for the audio circuit). Connect a 820 ohms resistor between TPM1 and ground. Connect a frequency counter between TP0M2 and ground. Enter the circuit adjustment mode and select MCS. Select PVC, TVC, INP, LSP, and HSP and set each data value to 32. Select FIL and set the data value to 63. Select PVC and adjust the data value for 78.67kHz ± .4kHz. Save the new data. Leave capacitor, resistor, and frequency counter connected and perform "Stereo VCO" adjustment.

Stereo VCO

NOTE: Perform "SAP VCO" adjustment before adjusting "Stereo VCO".

Select stereo mode on the receiver. Select TVC and adjust the data value for 15.73kHz ± .08Hz. Save the new data. Remove capacitor, resistor, and frequency counter and perform "Input Level" adjustment.

Input Level

NOTE: Perform "Stereo VCO" adjustment before adjusting "Input Level".

Select 300Hz audio frequency and L modulating signal on the generator. Connect an oscilloscope between TP0M2 and ground. Enter the circuit adjustment mode and select MCS. Select INP and adjust the data value for 1.41Vp-p ± .03Vp-p. Save the new data and perform "Filter" adjustment.

Filter

NOTE: Perform "Input Level" adjustment before adjusting "Filter".

Select pilot on the generator. Connect an oscilloscope between TP0M2 and ground. Enter the circuit adjustment mode and select MCS. Select FIL and adjust the data value for minimum amplitude of the waveform. Save the new data and perform "Separation" adjustment.

Separation

NOTE: Perform "Filter" adjustment before adjusting "Separation".

Select 300Hz audio frequency and L modulating signal on the generator. Connect an oscilloscope between TP0M2 and ground. Enter the circuit adjustment mode and select MCS. Select HSP and set the data to 32. Select LSP and adjust the data value for minimum amplitude of the waveform. Select 8kHz audio frequency on the generator. Select HSP and adjust the data value for minimum amplitude of the waveform. Repeat for fine adjustment. Save the new data and perform "Separation" adjustment.

PIP ADJUSTMENTS

PIP FSC

Tune in a local channel on the PIP window. Tune main picture to no signal. Connect a frequency counter to TP61 and ground. Adjust VC7P08 for 3579545Hz ± 30Hz. Save the new data.

PIP Chroma Gain

Tune in a color bar pattern. Enter the circuit adjustment mode and select PIP. Connect an oscilloscope to TP62 and ground. Select COLR and adjust the data value to make the amplitudes of the main and PIP waveforms equal. Save the new data and perform "Sub Tint" adjustment.

Sub Tint

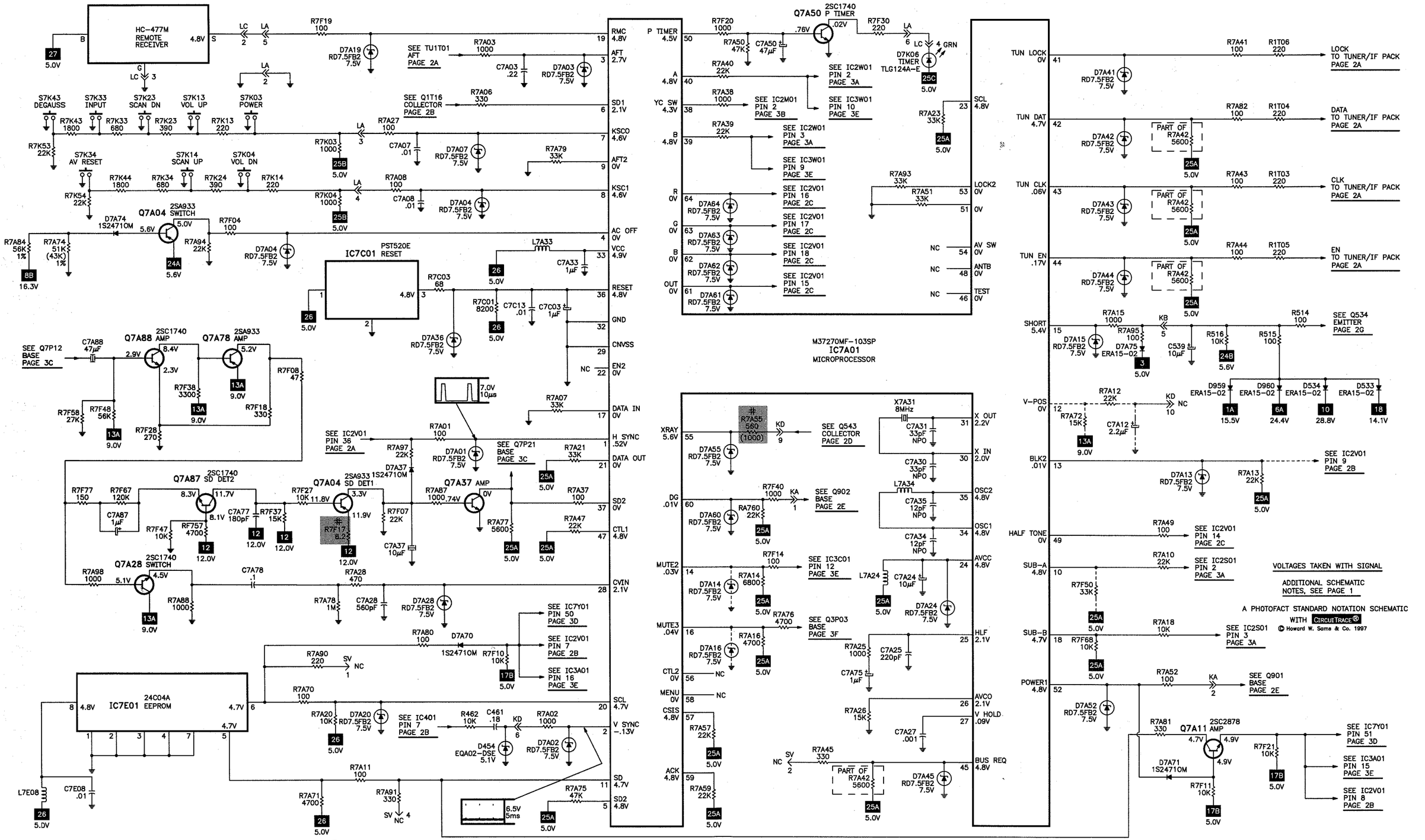
Tune in a color bar pattern on the main picture and PIP window. Enter the circuit adjustment mode and select PIP. Select TINT and adjust the data value to make the hues of the main and PIP pictures equal. Save the new data.

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.
Oscilloscope	SC3100
Generators	
RGB	CM2000
Multiburst Signal	VG91
Color Bar	VG91
TV Stereo	VG91
Digital VOM	SC3100
Frequency Meter	SC3100
Hi-Voltage Probe	HP200
Accessory Probes	TP212
Isolation Transformer	PR57
Capacitance Analyzer	LC101, LC102
CRT Analyzer	CR70
AC Leakage Tester	PR57
Inductance Analyzer	LC101, LC102
Flyback Yoke Tester	TVA92
TV Stereo Power Monitor	SR68, PA81
Field Strength Meter	SL750
Transistor Tester	TF46
Video Analyzer	VG91, TVA92

SYSTEM CONTROL SCHEMATIC



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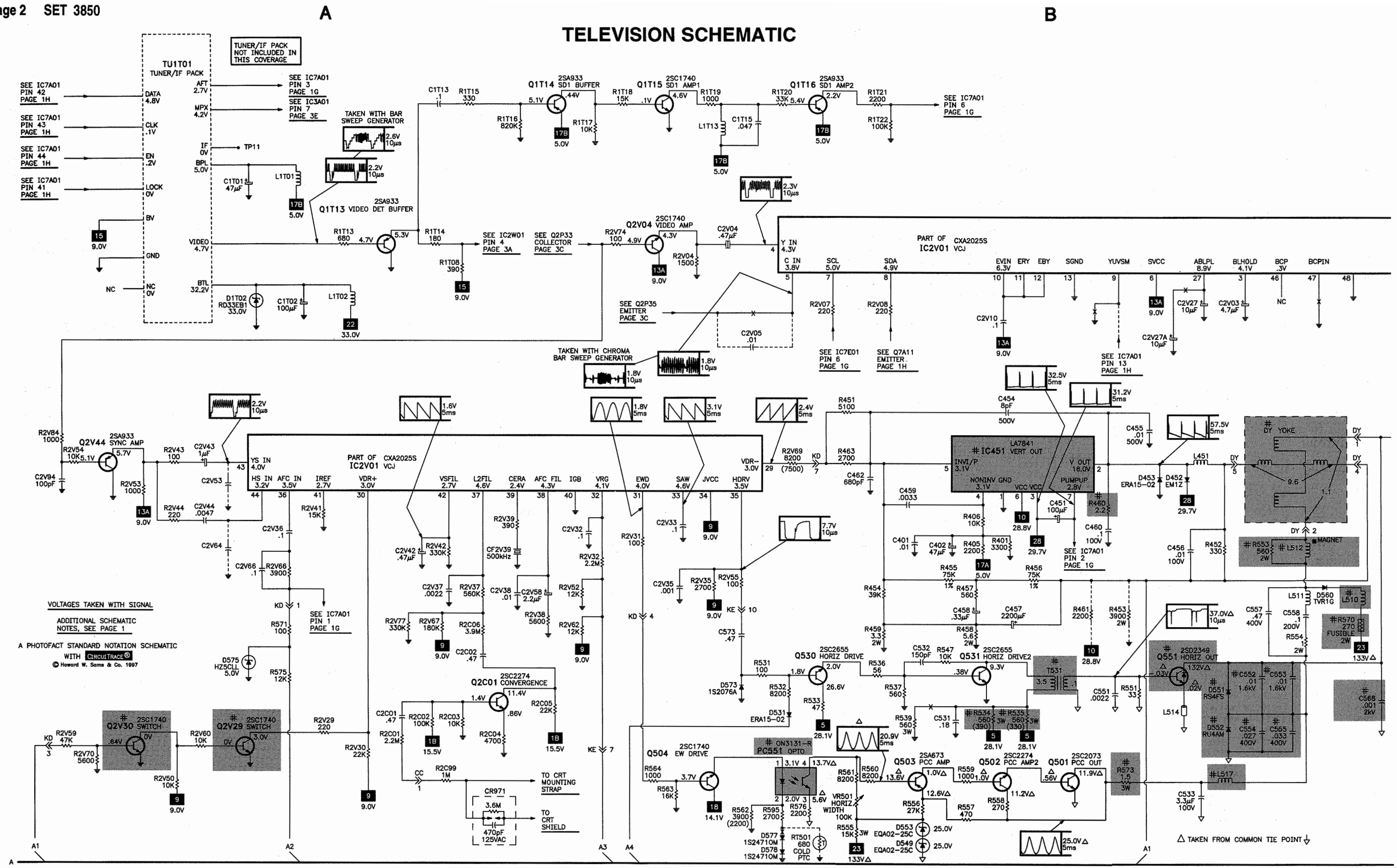
TELEVISION SCHEMATIC



TELEVISION SCHEMATIC continued

C D

SEE IC7A01 PIN 61 PAGE 1G
SEE IC7A01 PIN 64 PAGE 1G
SEE IC7A01 PIN 63 PAGE 1G
SEE IC7A01 PIN 62 PAGE 1G
2.8V 10µs
Q2V45 2SC1740 AMP
7.0V
6.3V
13A 9.0V
R2V99 4700
D2V98
D2V99
R2V45 1000
SEE Q8005 BASE PAGE 3A
R2V15 1800
R2V95 2700
R2V56 2200
R2V16 330
C2V16 .01
R2V57 2200
R2V17 330
C2V17 .01
R2V58 2200
R2V18 330
C2V18 .01
15 0V YS
16 5.1V R IN
17 5.1V G IN
18 5.1V B IN
45 7.0V VM
20 1.8V R OUT
B OUT 1.9V 24
G OUT 1.7V 22
YM 0V 14
XTAL 2.2V 1
APCFIL 5.6V 2
GSH 4.7V 21
BSH 4.6V 23
RSH 4.4V 19
VITN .61V 28
ABL 4.6V 26
IRIN 4.0V 25
R2V64 2700
R2V14 1800
SEE IC7A01 PIN 49 PAGE 1H
R2V01 1800
X2V01 3.58MHz
C2V01 15pF NPO
C2V02 47pF NPO
R2V02 15K
C2V52 .47µF
C2V21 .1
C2V23 .1
C2V19 .1
R2V28 22K
C2V25 .001
C2V55 1µF
D2V25 RD5.1EB1 5.1V
R2V25 100
R2V20 100
R2V24 100
R2V22 100
GA 5 5
GA 3 3
GA 4 4
GA 8
GA 8
GA 2 2
NC GB 1
NC GB 2
D660 (D659) 1S24710M
D661 1S24710M
D659 (D660) 1S24710M
5.5V 10µs
5.2V 10µs
4.5V 10µs
Q654 2SC1740 RED AMP
Q656 2SC1740 BLUE AMP
Q655 2SC1740 GREEN AMP
Q660 2SA933 SWITCH
Q661 2SA933 SRS
D657 1S24710M
D658 RD3.9EB3 3.9V
R666 470
R668 470
R667 470
R669 470
R670 470
R671 150
R672 22
R675 150
R676 22
R673 150
R674 22
R680 10K
R681 180
R682 220
R679 47K
R678 1000
R677 22K
C658 680pF (.001)
C660 680pF
C659 680pF
C663 22µF
C664 22µF
C665 .01
C655 680pF
C657 680pF
C656 680pF
D654 1S24710M
D656 1S24710M
D655 1S24710M
Q651 2SC3789 RED DRIVE
Q653 2SC3789 BLUE DRIVE
Q652 2SC3789 GREEN DRIVE
8.5V 169V 9.1V
8.5V 163V 9.1V
8.5V 173V 9.1V
R663 220
R668 220
R664 220
13B 9.0V
C652 680pF
C654 680pF
C653 680pF
D651 1S24710M
D653 1S24710M
D652 1S24710M
R651 8200 3W
R653 8200 3W
R652 8200 3W
19 207V
169V 1.8V
159V 1.9V
173V 1.8V
R660 220
R662 220
R661 220
Q657 2SA1480 RED OUT
Q659 2SA1480 BLUE OUT
Q658 2SA1480 GREEN OUT
L654
L656
L655
R657 150K
R659 150K
R658 150K
R654 6800
R656 6800
R655 6800
143V 10µs
131V 10µs
104V 10µs
PART OF CRT SOCKET SPARK GAP
SEE T551 PIN 10 PAGE 2C
GP 4
R666 47 FUSIBLE 2W
22.6V 10µs
168V 8
163V 11
171V 6
186V 7
6.5kV 1
GRN BLUE RED
ABOAEJ15X02 V271 CRT
FOCUS RANGE 4.5kV TO 6.5kV
R684 2200
C667 .001 2kV
C668 .001 2kV
SK 3 TO CRT SHIELD
SK NC 2
SK 1 TO CRT SHIELD
SB
HV RANGE 29kV TO 32kV
PART OF # T551
HV
CRT ANODE
7 135V△
T551 BOTTOM VIEW
SEE POWER SUPPLY PAGE 2G
SEE CRT FILAMENTS PAGE 2D
FOCUS
SCREEN
GP 6
R568 1.2
KE 1
C2V26 .27
R2V26 22K
NC TP3 4
D541 TVR1G
R586 560K
R520 100K
18 14.1V
R526 15K 1%
R527 27K (15K) 1%
C541 .082
D542 EQA02-08B 8.0V
R529 10K
R528 330
Q541 2SA933 PROT 1
5.2V .06V
17A 5.0V
R530 1800
C543 220µF
R540 10K
R591 220
Q542 2SC1740 PROT2
.04V 0V
D543 1S2076A
R543 100
D544 HZT33-10 33.0V
R542 56K 1%
R541 18K 1%
21 48.8V
C544 47µF
R545 1000 1%
C545 220µF
R546 2700 1%
Q543 2SC1740 XRAY
.29V 5.6V
R580 560
R544 3300 1%
24B 5.6V
KD 9
SEE IC7A01 PIN 55 PAGE 1G
VOLTAGES TAKEN WITH SIGNAL
ADDITIONAL SCHEMATIC NOTES, SEE PAGE 1
A PHOTOFACT STANDARD NOTATION SCHEMATIC WITH CIRCUITRACE®

A2 A5 A6 A3 A4 A5 A6 A

POWER SUPPLY SCHEMATIC

△ TAKEN FROM COMMON TIE POINT

P900 120VAC 1.2A POLARIZED

F901 6.3A

C901 .1 250VAC (125VAC)

RV901

L901

C902 .1 250VAC (125VAC)

L902

R950 2.2 20W

PRINTED SPARK GAP

PRINTED SPARK GAP

PART OF K901 POWER

PART OF K902 DEGAUSS

C952 .0022 250VAC

C951 .0022 250VAC

D951 RM2C

D952 RM2C

C953 820µF 180V

C954 820µF 180V

R951 820K

RP901 16Ω COLD NTC

5.4Ω COLD PTC

L914

PC 1

L901 DEGAUSS

PC 2

C969 .022 250VAC (125VAC)

C970 .01 250VAC (125VAC)

R964 1M

R965 1M

9.2V△ 10µs

312V△ 10µs

316V△ 10µs

IC951 STR-D4512 SW REG

278V△

272V△

136V

136V△ 257V△

R954 .47 2W

R955 .56 2W

2SC2655 Q951 CURRENT LIMITER

T951

C961 560pF 500V

R962 .56 3W

D955 RU3M

L961

C963 1000µF

C990 470µF

41.9V 10µs

61.2V 10µs

C955 .0039 500V

R956 10

136V△

R990 56 3W

R960 56 3W

C958 2.2µF

D957 TVR1G

R957 1000 1%

R952 180K

R953 180K

D953 TVR1G

R959 33 3W

C957 .047

314V△ 10µs

312V△ 10µs

C956 10µF 160V

C992 .18 200V

C964 680pF 1kV

D956 RU3B

C966 .0027 500V

C965 .0027 500V

R963 56 3W

R961 .56 3W

C960 560pF 500V

D954 RU4Z

C962 2200µF

D958 ES1A

C959 .001 1kV

SEE IC7A01 PIN 60 PAGE 1G

Q902 2SC1740 POWER

15.5V

.01V

R903 100

C904 .01

R904 47K

R902 56 1W

D903 EM1Z

PART OF K902 DEGAUSS

260

1A 15.5V

SEE IC7A01 PIN 52 PAGE 1H

Q901 2SC1740 DEGAUSS

.05V

.68V

R906 560Ω

C905 .01

R907 3900

R905 120 1W

D902 EM1Z

PART OF K901 POWER

260

8A 16.3V

C967 220µF 160V

L951

D961 R2KV

C968 100µF 200V

F501 2A

R574 1.5 3W

C570 4700µF

T552

R552 2.7 10W

D537 ERB12-02RK

D538 ERB12-02RK

10 28.8V

KB 4

KB 3

C540 .01

C991 470µF

C5X08 .01

R5X01 270 3W

R5X11 .47 FUSIBLE

Q5X01 2SD2012 REG

15.5V

5.1V

PART OF M5223L IC5X01

R5X03 4700

C5X03 47µF

D5X03 HZ5C3 5.0V

C7Y00 470µF

LC7Y13 FILTER

L7Y13

C7Y13 470µF

C7Y33 .01

L7Y08

C7P11 100µF

C7P41 .01

NC

KA 5

KA 6

C3P09 100µF

1A 15.5V SOURCE

1B 15.5V SOURCE

3 5.0V SOURCE

4 5.0V SOURCE

2 5.0V SOURCE

30 5.0V SOURCE

5 28.1V SOURCE

6A 24.4V SOURCE

6B 24.4V SOURCE

23 133V△ SOURCE

7 135V△ SOURCE

8A 16.3V SOURCE

8B 16.3V SOURCE

24A 5.6V SOURCE

24B 5.6V SOURCE

25A 5.0V SOURCE

25B 5.0V SOURCE

25C 5.0V SOURCE

27 5.0V SOURCE

26 5.0V SOURCE

9 9.0V SOURCE

T901 229 6.1

15.4VAC

D901 S1WBS10

C930 4700µF

#IC950 78M09A 9V REG

16.3V

9.3V

.31V

R970 47

KB 8

KB 7

C935 100µF

L2V34

C2V74 1000µF

L2V54

R2V34 180 3W

C2V34 220µF

C2V54 .01

D2V34 RD9.1EB3 9.1V

IC5A01 NJM78L05A REG

11.8V

5.6V

.64V

R5A01 68 2W

D5A01 ERA15-02

C5A01 1000µF

R5A11 5600

D5A02 1S24710M

R5A02 39

C5A03 100µF

KD 8

D5A13 1S24710M

LA 1

LC 1

C7K01 220µF

L7K01

D5A03 1S24710M

L5A03

C7C11 .01

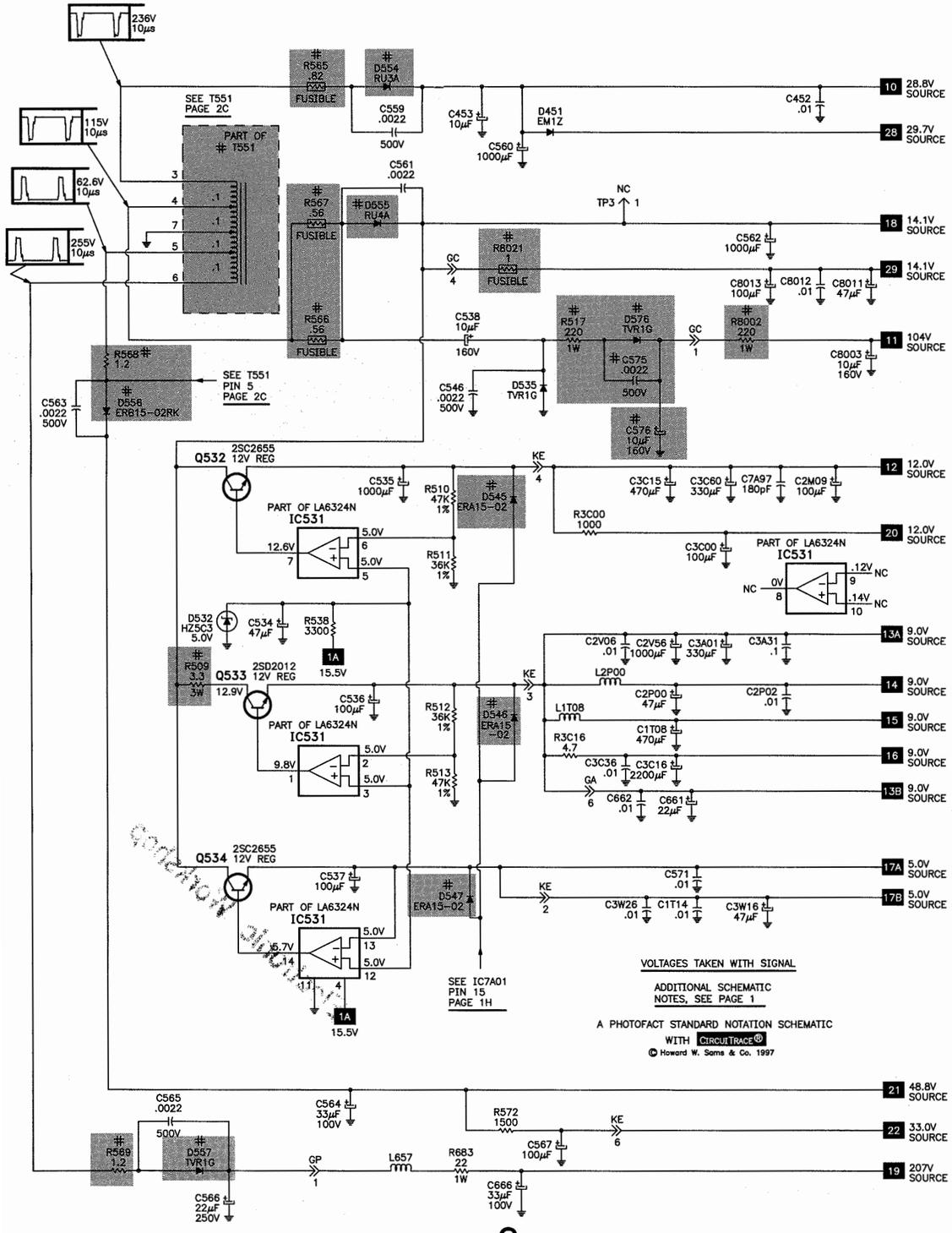
C7C01 3300µF

VOLTAGES TAKEN WITH SIGNAL

ADDITIONAL SCHEMATIC NOTES, SEE PAGE 1

A PHOTOFACT STANDARD NOTATION SCHEMATIC WITH CIRCUITRACE®

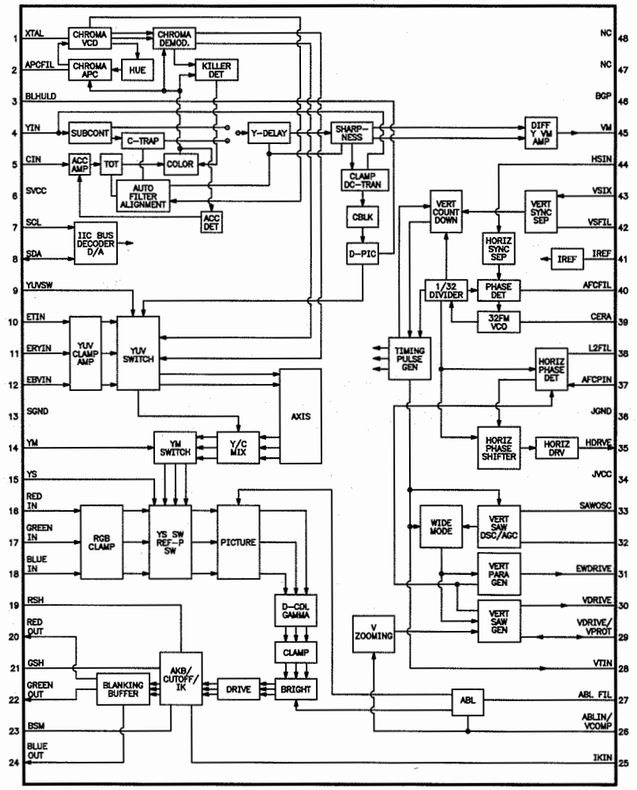
POWER SUPPLY SCHEMATIC continued



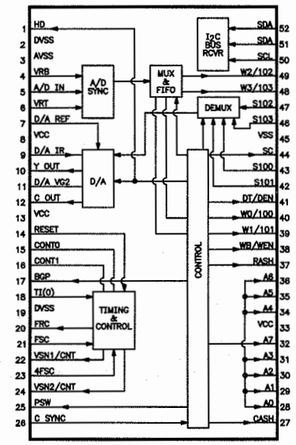
G

IC FUNCTIONS

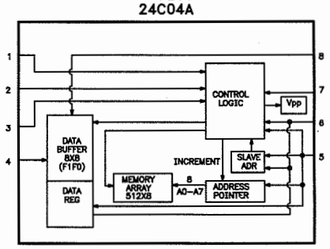
IC2V01
CXA2025S



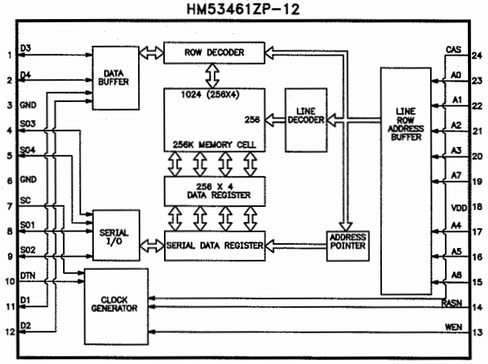
IC7Y01
M65607SP



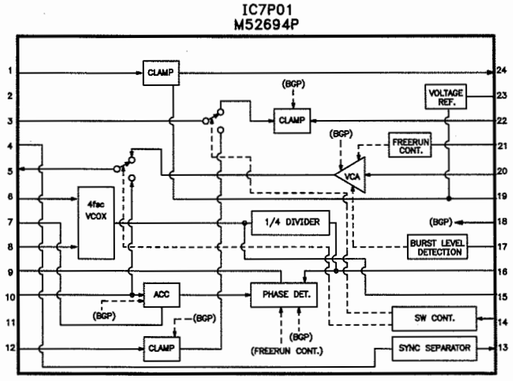
IC7E01
24C04A



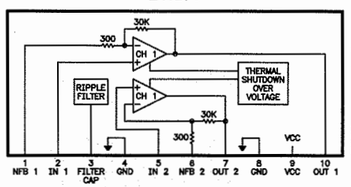
IC7Y02
HM53461ZP-12



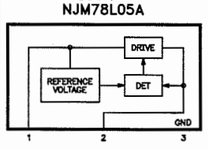
IC7P01
M52694P



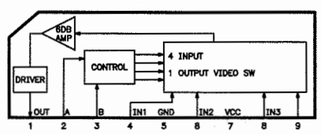
IC3P01
LA4270



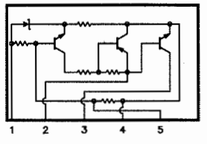
IC5A01
NJM78L05A



IC2S01, IC2W01
LA7956



IC951
STR-D4512



MITSUBISHI

MODELS CK-32308, CS-32207, CS-32307

A

B

VIDEO, VM SCHEMATIC

SEE Q1T13 EMITTER PAGE 2A

C2W04 3.3µF

R2W04 820K

IC2W01 LA7956 VIDEO SW/MAIN

L IN1 4.1V
Y IN3 3.8V
Y IN2 3.8V
VCC 11.0V
A 4.6V
B 4.8V
GND
OUT 6.3V
VIN4

C2W07 330µF
R2W07 33
C2W17 .01
12 12.0V

SEE IC7A01 PIN 39 PAGE 1G

C2L01 22µF

DL2L01 COMB FILTER MODULE

V IN 7.3V
VCC 11.9V
GND
GND
GND 6.7V
Y OUT 6.6V

C2L02 47µF
L2L02
12 12.0V

R2L05 1000
DL2L05 DELAY LINE
R2L15 1000

Q2L05 2SA933 Y BUFFER 3.3V 3.9V

C2M12 47µF
R2L25 470
12 12.0V

C2L04 .0022
R2L04 1000
BP2L04 FILTER
R2L14 1000
C2M05 .01

SEE IC7A01 PIN 38 PAGE 1G

IC2M01 LA7222 Y/C SW

Y IN1 7.8V
C IN1 7.9V
CTL2 4.3V
CTL1
Y IN2 7.9V
C IN2 7.9V
GND GND GND
VCC
Y OUT 7.2V
C OUT 7.2V

R2M11 100
SEE Q7P12 BASE PAGE 3C

R2M08 100
SEE Q7P10 BASE PAGE 3C

12 12.0V

SEE IC7A01 PIN 40 PAGE 1G

D2M04 1S24710M

R2M04 470K

C2M10 47µF
C2M07 .01

D2M02 1S24710M

J2Y01 S-VIDEO

C2S04 3.3µF

R2S04 820K

IC2S01 LA7956 VIDEO SW/SUB

Y IN1 4.1V
VCC 11.2V
V IN3 3.8V
Y IN2 3.8V
A 4.5V
GND
B 4.6V
Y IN4 3.8V
OUT 6.5V

SEE Q7P61 BASE PAGE 3C

C2S07 330µF
R2S07 33
C2S17 .01
12 12.0V

SEE IC7A01 PIN 18 PAGE 1H

Q2S03 2SA933 SWITCH 4.1V 4.6V .01V

C2S09 10µF

R2S03 1000

PART OF J2A01 VIDEO IN 2

C2A02 100µF
R2A02 75

PART OF J2A01 VIDEO IN 1

C2A01 100µF
R2A01 75

SEE IC7A01 PIN 10 PAGE 1H

D2S02 1S24710M
D2S03 1S24710M

R2S02 100K
R2M02 22K
17B 5.0V

C2Y01 100µF
R2Y11 820
R2Y01 75

C2Y12 .01
R2Y12 820
R2Y02 75
C2Y02 1µF
R2S13 390

Q2S10 2SC1740 Y/C M2X2 2.6V 5.7V 3.3V
R2S12 820
R2S15 10K
R2S14 22K
C2S10 10µF
C2S11 22µF
R2S11 100
12 12.0V

R2S10 100 5.6V
Q2S09 2SC1740 Y/C M2X1 5.0V
R2S09 1500
12 12.0V

SEE Q2V45 EMITTER PAGE 2C

GA 1
C8016 .01
R8020 8200
R8018 47K
29 14.1V
C8010 220pF
R8019 220

Q8005 2SC1740 AMP 1.9V 8.2V 1.3V

D8005 1S2076A
R8017 820
29 14.1V

Q8003 2SC1740 AMP 8.9V 8.6V
29 14.1V

R8014 10 FUSIBLE
R8016 10 FUSIBLE

C8006 .01 200V
C8007 100pF
R8009 1200
R8008 1000
D8001 1S2076A
11 104V

Q8001 2SB940 AMP 103V 103V

R8010 68K
R8007 12K
R8011 12K

Q8002 2SD1264 AMP .61V 69.4V .67V

R8015 22 FUSIBLE
C8008 .01
R8013 1200
R8012 1000
C8009 100pF
D8002 1S2076A

Q8004 2SA933 AMP 8.2V 8.5V

R8005 47
R8006 2.7
C8005 47µF

D8003 EM1Z
D8004 EM1Z

R8003 47
11 104V
R8004 2.7
C8004 47µF
11 104V

L8001

C8002 180pF 500V
R8001 390 3W
R8100 470 3W
C8001 22µF 160V

MY 3
MY 1

VOLTAGES TAKEN WITH SIGNAL

ADDITIONAL SCHEMATIC NOTES, SEE PAGE 1

A PHOTOFACT STANDARD NOTATION SCHEMATIC WITH CIRCUITRACE®

PIP SCHEMATIC

SEE IC2M01 PIN 11 PAGE 3B
SEE IC2M01 PIN 8 PAGE 3B
SEE IC2S01 PIN 1 PAGE 3A
SEE Q7A88 BASE PAGE 1G
SEE Q7A37 COLLECTOR PAGE 1G
SEE Q2V04 BASE PAGE 2A
SEE IC2V01 PIN 5 PAGE 2B
SEE Q7A11 EMITTER PAGE 1H
SEE IC7E01 PIN 6 PAGE 1G

Q7P12 2SA933 Y BUFFER
Q7P10 2SA933 C BUFFER
Q7P61 2SA933 C BUFFER
Q7P21 2SA933 C BUFFER
Q7Y25 2SA933 C BUFFER
Q2P03 2SC1740 Y AMP
Q2P33 2SA933 Y AMP
Q2P05 2SC1740 C AMP
Q2P35 2SC1740 C BUFFER
Q7P51 2SA933 SWITCH
Q7P41 2SC1740 SWITCH
Q7P31 2SC1740 SWITCH
Q7P01 2SA950 SWITCH
Q7Y52 2SC1740 SWITCH

M52694P IC7P01 PIP ANALOG CONTROLLER
M65607SP IC7Y01 PIP DIGITAL CONTROLLER
HM53461ZP-12 IC7Y02 256K V RAM

L7CP01 FILTER
LC7Y10 FILTER
LC7Y12 FILTER
LC7Y50 FILTER
LC7Y51 FILTER

D7P21 1S24710M
D7Y25 1S24710M
D7Y14 1S2076A

X7P08 VCXO OUT 2.7V
TP62
TP61

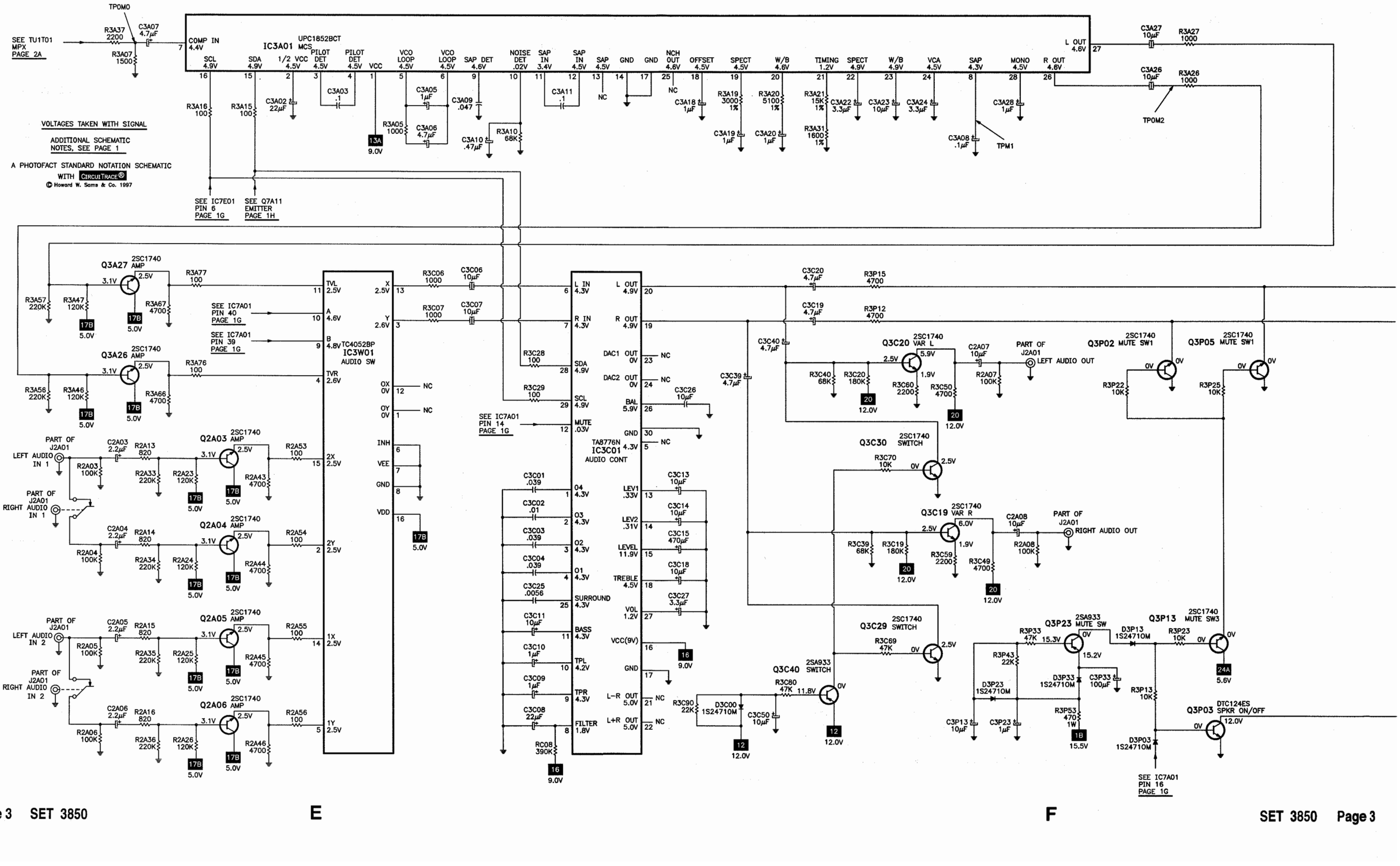
R7Y18 22K x4

VOLTAGES TAKEN WITH SIGNAL

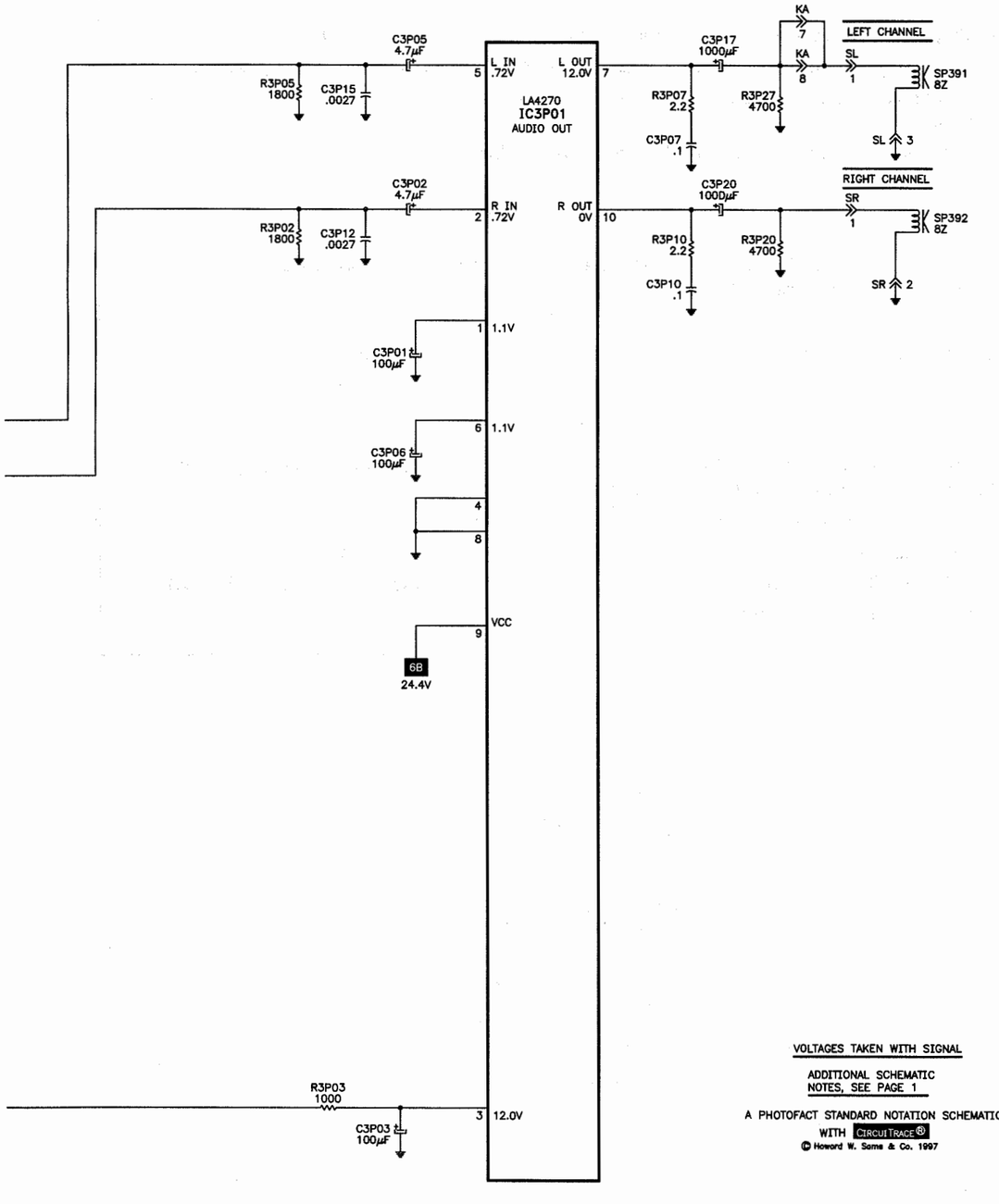
ADDITIONAL SCHEMATIC NOTES, SEE PAGE 1

A PHOTOFACT STANDARD NOTATION SCHEMATIC WITH CIRCUITRACE®

AUDIO SCHEMATIC



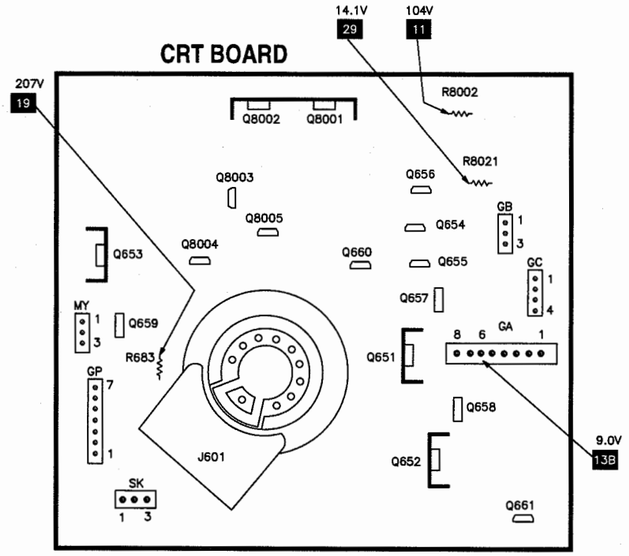
AUDIO SCHEMATIC continued



VOLTAGES TAKEN WITH SIGNAL

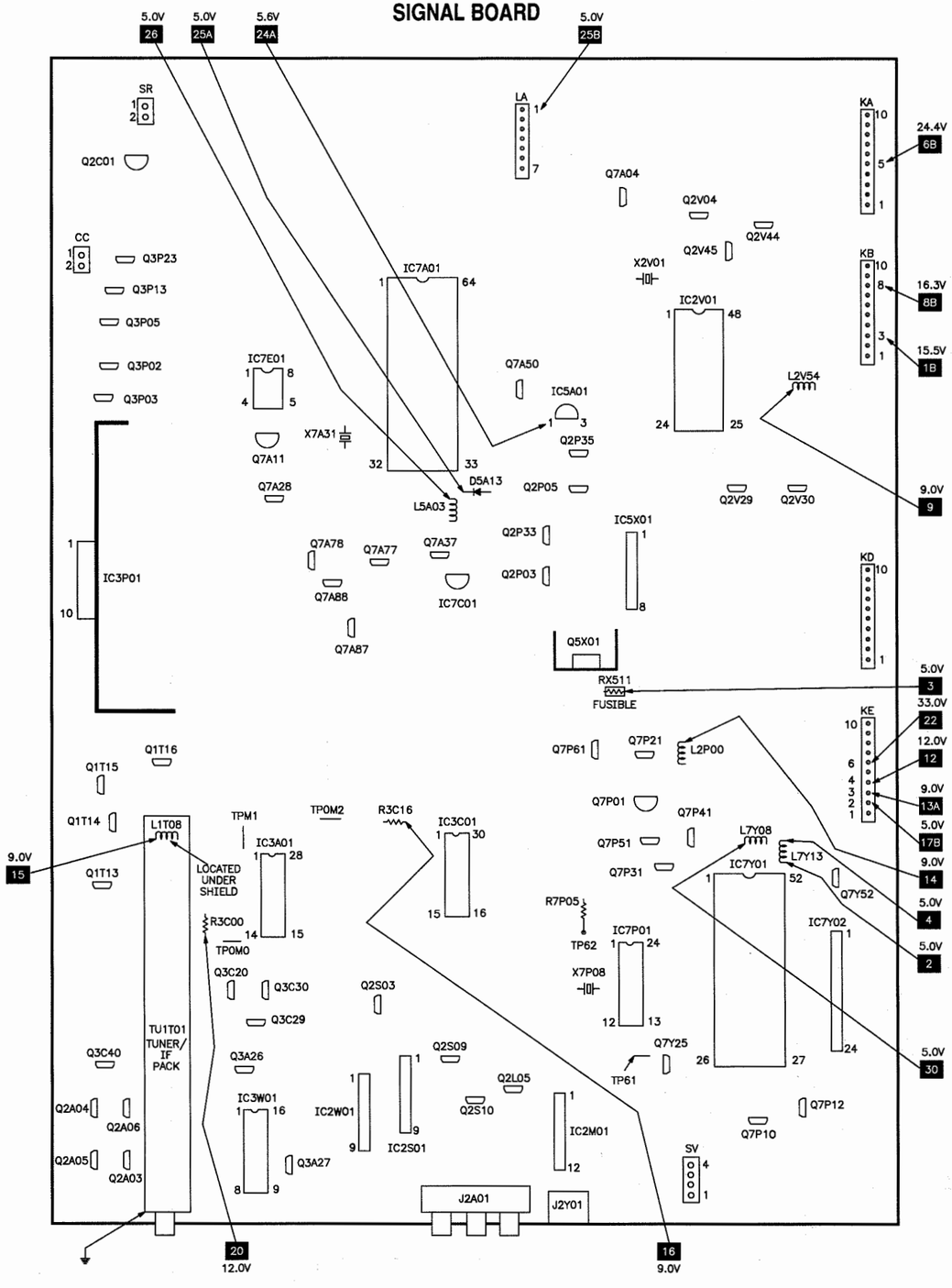
ADDITIONAL SCHEMATIC NOTES, SEE PAGE 1

PLACEMENT CHART

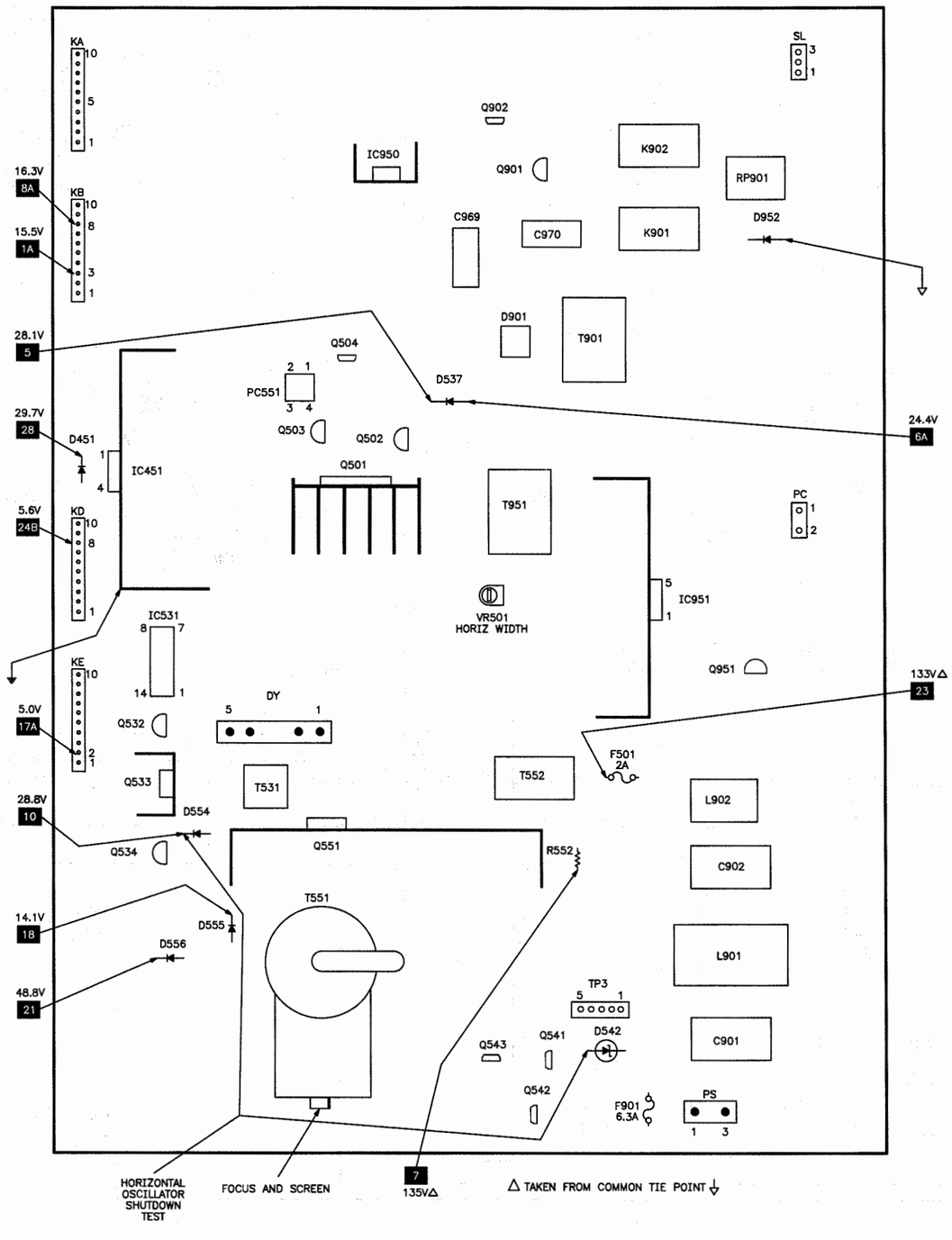


PLACEMENT CHART continued

SIGNAL BOARD



DEFLECTION BOARD



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.
D1T02	RD33EB1	264P470040	NTE5035A	ECG5035A	SK30A
D2M02, 04	1S2471OM	264P045040	NTE519	ECG519	SK3100
D2S02, 03	1S2471OM	264P045040	NTE519	ECG519	SK3100
D2V25	RD5.1EB1	264P483070	NTE5010A	ECG5010A	SK5A1
	RD5.1FB1	-	NTE5010A	ECG5010A	SK5A1
D2V34	RD9.1EB3	264P486060	NTE5018A	ECG5018A	SK9A1
	RD9.1FB3	-	NTE5018A	ECG5018A	SK9A1
D2V98	-	-	-	-	-
D2V99	-	-	-	-	-
D3C00	1S2471OM	264P045040	NTE519	ECG519	SK3100
D3P03, 13	1S2471OM	264P045040	NTE519	ECG519	SK3100
D3P23, 33	1S2471OM	264P045040	NTE519	ECG519	SK3100
D5A01	ERA15-02	264P825010	NTE552	ECG552	SK9000
D5A02, 03, 13	1S2471OM	264P045040	NTE519	ECG519	SK3100
D5X03	HZ5C3	264P452030	NTE5010T1	ECG5010T1	SK9967
D7A01 Thru					
D7A04	RD7.5FB2	264P485060	NTE138A	ECG138A	SK7V5
D7A07, 08	RD7.5FB2	264P485060	NTE138A	ECG138A	SK7V5
D7A11	RD7.5FB2	264P485060	NTE138A	ECG138A	SK7V5
D7A13 Thru					
D7A16	RD7.5FB2	264P485060	NTE138A	ECG138A	SK7V5
D7A19, 20, 24	RD7.5FB2	264P485060	NTE138A	ECG138A	SK7V5
D7A28, 36	RD7.5FB2	264P485060	NTE138A	ECG138A	SK7V5
D7A37	1S2471OM	264P045040	NTE519	ECG519	SK3100
D7A41 Thru					
D7A45	RD7.5FB2	264P485060	NTE138A	ECG138A	SK7V5
D7A52, 55	RD7.5FB2	264P485060	NTE138A	ECG138A	SK7V5
D7A60 Thru					
D7A64	RD7.5FB2	264P485060	NTE138A	ECG138A	SK7V5
D7A70, 71, 74	1S2471OM	264P045040	NTE519	ECG519	SK3100
D7A75	ERA15-02	264P825010	NTE552	ECG552	SK9000
D7K06	TLG124A-E	264P203020	-	-	-
D7P21	1S2471OM	264P045040	NTE519	ECG519	SK3100
D7Y14	1S2076A	-	NTE519	ECG519	SK3100
	1S2471OM	264P045040	NTE519	ECG519	SK3100
	R2KL	264P306050	-	-	-
D7Y25	1S2471OM	264P045040	NTE519	ECG519	SK3100
D451, 52	EM1Z	-	NTE552	ECG552	SK9000
	S5500D	-	NTE116	ECG116	SK3313
	ERB12-02RK	264D056020	-	-	-
D453	ERA15-02	264P825010	NTE552	ECG552	SK9000
D454	EQA02-DSE	-	-	-	-
	RD5.1EB3	-	NTE5010A	ECG5010A	SK5A1
	RD5.1FB3	264P483090	-	-	-
D531	ERA15-02	264P825010	NTE552	ECG552	SK9000
D532	HZ5C3	264P452030	NTE5010T1	ECG5010T1	SK9967
D533, 34	ERA15-02	264P825010	NTE552	ECG552	SK9000
D535	TVR1G	-	NTE552	ECG552	SK9000
	ES1	-	NTE552	ECG552	SK9000
	ES1C	264P295020	NTE552	ECG552	SK9000
D537, 38	ERB12-02RK	264D056020	NTE552	ECG552	SK9000
	EM1Z	-	NTE552	ECG552	SK9000
	S5500D	-	NTE116	ECG116	SK3313
D541	TVR1G	-	NTE552	ECG552	SK9000
	ES1	-	NTE552	ECG552	SK9000
	ES1C	264P295020	NTE552	ECG552	SK9000
# **D542**	EQA02-08B	-	NTE5015A	ECG5015A	SK7A5
	RD8.2EB1	264P463010	NTE5015A	ECG5015A	SK7A5
D543	1S2471OM	264P045040	NTE519	ECG519	SK3100
	1S2076A	-	NTE519	ECG519	SK3100

 # 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.
# **D544**	HZT33-10	264P244020	NTE615P	ECG615A	SK9976
# **D545, 46, 47**	ERA15-02	264P825010	NTE552	ECG552	SK9000
D549	EQA02-25C	-	NTE5032A	ECG5032A	SK25A
	RD27EB3	264P469050	NTE5033A	ECG5033A	SK27A
# **D551**	RS4FS	264P533030	-	ECG506	-
# **D552**	RU4AM	264P358070	NTE580	ECG580	SK5036
D553	EQA02-25C	-	NTE5032A	ECG5032A	SK25A
	RD27EB3	264P469050	NTE5033A	ECG5033A	SK27A
# **D554**	RU3A	-	NTE580	ECG580	SK3318A
	RU3B	264P102020	NTE552	ECG552	SK3318A
# **D555**	RU4A	264P358040	NTE506	ECG506	SK3925
# **D556**	EM1Z	-	NTE552	ECG552	SK9000
	S5500D	-	NTE116	ECG116	SK3313
	ERB12-02RK	264D056020	NTE552	ECG552	SK9000
# **D557**	TVR1G	-	NTE552	ECG552	SK9000
	ES1	-	NTE552	ECG552	SK9000
	ES1C	264P295020	NTE552	ECG552	SK9000
D560	TVR1G	-	NTE552	ECG552	SK9000
	ES1	-	NTE552	ECG552	SK9000
	ES1C	264P295020	NTE552	ECG552	SK9000
D573	1S2076A	-	NTE519	ECG519	SK3100
	1S2471OM	264P045040	NTE519	ECG519	SK3100
D575	HZ5CLL	264P502030	NTE5010T1	ECG5010T1	SK9967
# **D576**	TVR1G	-	NTE552	ECG552	SK9000
	ES1	-	NTE552	ECG552	SK9000
	ES1C	264P295020	NTE552	ECG552	SK9000
D577, 78	1S2076A	-	NTE519	ECG519	SK3100
	1S2471OM	264P045040	NTE519	ECG519	SK3100
D651 Thru					
D657	1S2471OM	264P045040	NTE519	ECG519	SK3100
D658	RD3.9EB3	264P458040	-	-	-
D659, 60, 61	1S2471OM	264P045040	NTE519	ECG519	SK3100
D901	S1WBS10	-	NTE5332	ECG5332	SK9230
	S1WB(A)10	264P508010	NTE5332	ECG5332	SK9230
D902, 03	EM1Z	-	NTE552	ECG552	SK9000
	S5500D	-	NTE116	ECG116	SK3313
	ERB12-02RK	264D056020	NTE552	ECG552	SK9000
# **D951, 52**	RM2C	264P147010	NTE552	ECG552	SK9000
D953	TVR1G	-	NTE552	ECG552	SK9000
	ES1	-	NTE552	ECG552	SK9000
	ES1C	264P295020	NTE552	ECG552	SK9000
# **D954**	RU4Z	-	NTE580	ECG580	SK5036
	RU4AM	264P358070	NTE580	ECG580	SK5036
# **D955**	RU3M	264P102040	NTE580	ECG580	SK3318A
# **D956**	RU3B	264P102020	NTE552	ECG552	SK3318A
	RU3A	-	NTE552	ECG552	SK3318A
# **D957**	TVR1G	-	NTE552	ECG552	SK9000
	ES1	-	NTE552	ECG552	SK9000
	ES1C	264P295020	NTE552	ECG552	SK9000
D958	ES1A	264P295040	NTE552	ECG552	SK9000
# **D959, 60**	ERA15-02	264P825010	NTE552	ECG552	SK9000
# **D961**	R2KV	-	-	-	-
D8001, 02	1S2471OM	264P045040	NTE519	ECG519	SK3100
	1S2471	-	NTE519	ECG519	SK3100
	1S2076A	-	NTE519	ECG519	SK3100
D8003, 04	ERB12-02RK	264D056020	NTE552	ECG552	SK9000
	S5500D	-	NTE116	ECG116	SK3313
	EM1Z	-	NTE552	ECG552	SK9000
D8005	1S2471OM	264P045040	NTE519	ECG519	SK3100
	1S2471	-	NTE519	ECG519	SK3100
	1S2076A	-	NTE519	ECG519	SK3100

 # 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.
IC2M01	LA7222	272P184010	NTE7066	ECG7066	-
IC2S01	LA7956	272P394010	-	-	-
IC2V01	CXA2025S	270P347010	-	-	-
IC2W01	LA7956	272P394010	-	-	-
IC3A01	UPC1852BCT	270P188010	-	-	-
	UPC1852ACT	-	-	-	-
IC3C01	TA8776N	272P942010	-	-	-
IC3P01	LA4270	272P140010	NTE1798	ECG1798	SK9745
IC3W01	TC4052BP	263P052020	NTE4052B	ECG4052B	SK4052B
IC5A01	NJM78L05A	272P603010	NTE977	ECG977	SK3462
IC5X01	M5223L	266P419030	-	-	-
IC7A01	M37270MF-103SP	274P762040	-	-	-
	M37270	-	-	-	-
IC7C01	PST520E	266P130030	-	-	-
IC7E01	24C04A	274P333010	-	-	-
	24C04A*P	-	-	-	-
	CAT24C04P	-	-	-	-
	X24C04P	-	-	-	-
IC7P01	M52694P	270P187010	-	-	-
IC7Y01	M65607SP	274P553010	-	-	-
IC7Y02	HM53461ZP-12	263P548010	-	-	-
# **IC451**	LA7841	270P320010	-	-	-
IC531	LA6324N	272P237010	-	-	-
# **IC950**	78M09A	-	-	-	-
	NJM78M09FA	270P367010	NTE1966	-	-
# **IC951**	STR-D4512	267P104020	-	-	-
# **PC551**	0N3131-R	268P058010	-	-	-
Q1T13, 14	2SA933S-S	260P560040	NTE290A	ECG290A	SK9132
Q1T15	2SC1740S-S	260P559030	NTE85	ECG85	SK3122
Q1T16	2SA933S-S	260P560040	NTE290A	ECG290A	SK9132
Q2A03 Thru					
Q2A06	2SC1740S-S	260P559030	NTE85	ECG85	SK3122
Q2C01	2SC2274-F	260P416030	NTE289A	ECG289A	SK3124A
Q2L05	2SA933S-S	260P560040	NTE290A	ECG290A	SK9132
Q2P03, 05	2SC1740S-S	260P559030	NTE85	ECG85	SK3122
Q2P33	2SA933S-S	260P560040	NTE290A	ECG290A	SK9132
Q2P35	2SC1740S-S	260P559030	NTE85	ECG85	SK3122
Q2S03	2SA933S-S	260P560040	NTE290A	ECG290A	SK9132
Q2S09, 10	2SC1740S-S	260P559030	NTE85	ECG85	SK3122
Q2V04	2SC1740S-S	260P559030	NTE85	ECG85	SK3122
# **QV29, 30**	2SC1740S-S	260P559030	NTE85	ECG85	SK3122
Q2V44	2SA933S-S	260P560040	NTE290A	ECG290A	SK9132
Q2V45	2SC1740S-S	260P559030	NTE85	ECG85	SK3122
Q3A26, 27	2SC1740S-S	260P559030	NTE85	ECG85	SK3122
Q3C19, 20	2SC1740S-S	260P559030	NTE85	ECG85	SK3122
Q3C29, 30	2SC1740S-S	260P559030	NTE85	ECG85	SK3122
Q3C40	2SA933S-S	260P560040	NTE290A	ECG290A	SK9132
Q3P02	2SC1740S-S	260P559030	NTE85	ECG85	SK3122
Q3P03	DTC124ES	260P632010	NTE2357	ECG2357	SK9742
	DTC124CS	260P632010	NTE2357	ECG2357	SK9742
	UN4212	-	-	-	-
Q3P05, 13	2SC1740S-S	260P559030	NTE85	ECG85	SK3122
Q3P23	2SA933S-S	260P560040	NTE290A	ECG290A	SK9132
Q5X01	2SD2012	260P630010	NTE54	ECG54	SK9366
Q7A04	2SA933S-S	260P560040	NTE290A	ECG290A	SK9132
Q7A11	2SC2878-B	260P521010	-	-	-
Q7A28, 37, 50	2SC1740S-S	260P559030	NTE85	ECG85	SK3122
Q7A77, 78	2SA933S-S	260P560040	NTE290A	ECG290A	SK9132
Q7A87, 88	2SC1740S-S	260P559030	NTE85	ECG85	SK3122
Q7P01	2SA950Y	260P255040	NTE290A	ECG290A	SK3841

 # 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.
	Q7P10, 12, 21	2SA933S-S	260P560040	NTE290A	ECG290A	SK9132
	Q7P31, 41	2SC1740S-S	260P559030	NTE85	ECG85	SK3122
	Q7P51, 61	2SA933S-S	260P560040	NTE290A	ECG290A	SK9132
	Q7Y25	2SA933S-S	260P560040	NTE290A	ECG290A	SK9132
	Q7Y52	2SC1740S-S	260P559030	NTE85	ECG85	SK3122
	Q501	2SC2073-B	260P420020	NTE375	ECG375	SK3929
		2SC2073-C	260P420020	NTE375	ECG375	SK3929
	Q502	2SC2274-F	260P416030	NTE289A	ECG289A	SK3124A
		2SC2274K-F	-	-	-	-
	Q503	2SA673A-C	260P167030	NTE290A	ECG290A	SK9132
	Q504	2SC1740S-E	260P559050	NTE85	ECG85	SK3122
		2SC2603-G	-	NTE289	ECG289	SK9137
	Q530	2SC2655-Y	260P325030	NTE293	ECG293	SK3849
	Q531, 32	2SC2655-Y	260P325030	NTE293	ECG293	SK3849
		2SC2655-O	-	NTE293	ECG293	SK3849
	Q533	2SD2012	260P630010	NTE54	ECG54	SK9366
	Q534	2SC2655-Y	260P325030	NTE293	ECG293	SK3849
		2SC2655-O	-	NTE293	ECG293	SK3849
#	**Q541**	2SA933S-R,S	260P560040	NTE290A	ECG290A	SK9132
		2SA1309A-R,S	-	NTE2362	NTE2362	SK10094
#	**Q542**	2SC1740S-R,S	260P559030	NTE85	ECG85	SK3122
#	**Q543**	2SC1740S-R,S	260P559030	NTE85	ECG85	SK3122
		2SC3311A-R,S	-	NTE2361	ECG2361	SK10093
#	**Q551**	2SD2349	260P797020	-	-	-
	Q651, 52, 53	2SC3271F-N	261P004010	NTE157	ECG157	SK3747
		2SC3271F-P	261P004010	-	-	-
		2SC3789-D	-	NTE157	ECG2501*	SK3747
		2SC3789-E	-	NTE2501	ECG2501*	SK3747
	Q654, 55, 56	2SC1740S-S	260P559030	NTE85	ECG85	SK3122
		2SC3311A-R,S	-	NTE2361	ECG2361	SK10093
	Q657, 58, 59	2SA1480-D,E	260P627020	-	-	-
	Q660, 61	2SA933S-R,S	260P560040	NTE290A	ECG290A	SK9132
	Q901	2SC2274-F	260P416030	NTE289A	ECG289A	SK3124A
		2SC2274K-F	-	-	-	-
	Q902	2SC1740S-R,S	260P559030	NTE85	ECG85	SK3122
	Q951	2SC2655-Y	260P325030	NTE293	ECG293	SK3849
		2SC2655-O	-	NTE293	ECG293	SK3849
	Q8001	2SB940A-P	260P573020	NTE398	ECG398	SK9363
		2SB940	260P573020	NTE398	ECG398	SK9363
	Q8002	2SD1264A-P	260P574020	NTE375	ECG375	SK9118
		2SD1264P	-	NTE375	ECG375	SK9118
	Q8003	2SC1740S-E	260P559050	NTE85	ECG85	SK3122
		2SC2603	-	NTE289	ECG289	SK9137
	Q8004	2SA933S-S	260P560040	NTE290A	ECG290A	SK9132
		2SA1115-F	-	NTE290A	ECG290A	SK9138
	Q8005	2SC1740S-E	260P559050	NTE85	ECG85	SK3122
		2SC2603-F	-	NTE289	ECG289	SK9137

 # For SAFETY use only equivalent replacement part.
* Lead configuaration may vary from original.

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)

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PARTS LIST continued

CAPACITORS & ELECTROLYTICS

	Item No.	Rating	Mfr. Part No.
	C3A22	3.3µF 10% 16V Tantalum	189D058030
	C3A23	10µF 10% 16V Tantalum	189D028010
	C7P08	6pF NPO	-
#	**C552, 53**	.01 5% 1.6kV	172P171030
#	**C554**	.027 5% 400V	172P085050
#	**C555**	.033 5% 400V	172P085060
#	**C568**	.001 10% 2kV	154P262080
#	**C575**	.0022 500V	-
#	**C576**	10µF 20% 160V	181P190090
#	**C901, 02**	.1 20% 250VAC	189P153040
		.1 125VAC	-
#	**C951, 52**	.0022 +80% -20% 250VAC	189P060060
#	**C953**	820µF 20% 180V	185D101040
#	**C954**	820µF 20% 180V	185D101030
#	**C962**	2200µF 20% 35V	181P358010
#	**C963**	1000µF 20% 35V	181P186050
#	**C967**	220µF 20% 160V	185D058040
#	**C969**	.022 20% 250VAC	-
		.022 20% 125VAC	189P033080
#	**C970**	.01 20% 250VAC	-
		.01 20% 125VAC	189P033060
#	**C990**	470µF 20% 35V	181P354090
	VC7P08	5.5pF - 30pF Trimmer	202P109030

 # For SAFETY use only equivalent replacement part.

CABINET PARTS

Item	Mfr. Part No.
MODELS CK-32308, CS-32207, CS-32307	
Cabinet Assembly	740A282030
Cabinet Back Board	700C210050
CRT Cover	761B162030
Door	752C173000
Door Catch	761C352010
Pushbutton Knob Assembly	704C849010
Speaker Grille	761B224020
Terminal Board Panel	761A137010

CONTROLS & RESISTORS

	Item No.	Function/Rating	Mfr. Part No.	NTE Part No.
	R2V34	180 3W	-	3W118
	R5X01	270 5% 3W	-	3W127
	R5X11	.47 10% 1/4W Fusible	103P377060	-
	R7A42	5600 1/8W X 4 Network	103P543040	-
#	**R7A55**	560 5% 1/4W	103P712020	QW156
		560 5% 1/6W	103P712020	-
		1000 5% 1/4W	-	QW210
#	**R7F17**	8.2 5% 1/4W	103P719010	QW8D2
		8.2 5% 1/6W	103P719010	-
	R7Y18	22K 1/8W X 4 Network	103P544010	-
#	**R460**	2.2 5% 1/4W	103P338040	QW2D2
#	**R509**	3.3 5% 3W	103C198060	3W3D3
#	**R517**	220 5% 1W	103C171070	1W122
#	**R526**	15K 1% 1/4W	103P465030	-
#	**R527**	27K 1% 1/4W	-	-
		15K 1% 1/4W	103P465030	-
#	**R534**	560 5% 3W	103C392020	3W156
		390 5% 3W	-	3W139
#	**R535**	560 5% 3W	103C392020	3W156
		330 5% 3W	-	3W133
	R539	560 5% 3W	-	3W156
#	**R541**	18K 1% 1/4W	103P465050	-
#	**R542**	56K 1% 1/4W	103P466070	-
#	**R544**	3300 1% 1/4W	103P463070	-
#	**R545**	1000 1% 1/4W	103P462050	-
#	**R546**	2700 1% 1/4W	103P463050	-
	R552	2.7 10% 10W Wirewound	109D067070	10W2D7
#	**R553**	560 5% 2W	103C182020	2W156
	R555	15K 5% 3W	-	3W315
#	**R565**	.82 5% 1/2W Fusible	103P397090	-
#	**R566, 67**	.56 10% 1/4W Fusible	103P377070	-
#	**R568, 69**	1.2 5% 1/4W	103P338010	QW1D2
#	**R570**	270 5% 2W Fusible	103P451080	F2W127
		270 10% 2W Fusible	103P451080	F2W127
#	**R573, 74**	1.5 5% 3W	103C298020	3W1D5
#	**R580**	560 5% 1/4W	103P712020	QW156
		560 5% 1/6W	103P712020	-
#	**R651, 62, 63**	8200 5% 3W	103C393060	3W282
#	**R686**	.47 5% 2W Fusible	103P437060	-
		.47 10% 2W Fusible	103P437060	-
#	**R950**	2.2 10% 20W Wirewound	109D132050	-
#	**R951**	820 10% 1/2W	109D031080	HW182
	R959	33 5% 3W	-	-
#	**R960**	56 5% 3W	103C391000	3W056
#	**R961, 62**	.56 10% 3W	103C397070	-
#	**R963**	56 5% 3W	103C391000	3W056
#	**R964, 65**	1M 10% 1/2W	109D036030	HW510
#	**R990**	56 5% 3W	103C391000	3W056
	R8001	390 5% 3W	-	3W139
#	**R8002**	220 5% 1W	103C171070	1W122
#	**R8004, 06**	2.7 5% 1/2W	103P148050	HW2D7
	R8100	470 5% 3W	-	3W147
#	**R8014**	10 5% 1/4W Fusible	103P370010	-
#	**R8015**	22 5% 1/4W Fusible	103P370050	-
#	**R8016**	10 5% 1/4W Fusible	103P370010	-
#	**R8021**	1 5% 1/4W Fusible	103P378000	-
#	**RP901**	5.4 Cold PTC/168 Cold NTC	265P071040	-
	RT501	680 Cold PTC	265P090040	-
#	**RV901**	Varistor	265P100010	-
	VR501	100K Horizontal Width	127C081020	-

 # For SAFETY use only equivalent replacement part.

COILS & TRANSFORMERS

	Item No.	Function/Rating	Mfr. Part No.
#	**DY** (1)(2)	Yoke Horiz 1.0mH Vert 24.7mH	-
	L1T01	100µH	325C112050
	L1T02	4.7µH	325C120090
	L1T08	10µH	325C121030
	L1T13	2200µH	321C114010
	L2L02	10µH	325C121030
	L2V54	-	-
	L2P00	10µH	325C121030
	L2V34	100µH	325C102050
	L5A03	10µH	325C121030
	L7A24	10µH	325C121030
	L7A33	3.3µH	325C120070
	L7A34	8.2µH	325C121020
	L7E08	10µH	325C121030
	L7K01	10µH	325C121030
	L7Y08	10µH	325C121030
	L7Y13	10µH	325C121030
	L451	2mH	321C130010
#	**L510**	6800µH	321C144070
	L511	180µH	409P252020
#	**L512**	Horizontal Linearity	333P040030
	L514	Ferrite Bead	411D009020
#	**L517**	250mH	335P012010
	L654	56µH	325C402020
	L655	56µH	325C402020
	L656	56µH	325C402020
	L657	15µH	325C111050
#	**L901**	Line Filter	351P090010
#	**L902**	Line Filter	351P093030
	L914	Ferrite Bead	411P001040
#	**L951**	Filter	351P069010
	L961	33µH	321C141090
#	**L991**	Degaussing	409B134010
	L8001	Ferrite Bead	411D009020
#	T901	Power	350P365030
#	**T531**	Horizontal Driver	336P012040
#	**T551** (3)	Horizontal Output	334D101019
#	**T552**	Side PCC	349P122020
#	**T951**	Power	350P608020

 # For SAFETY use only equivalent replacement part.
(1) Bonded to CRT.
(2) Includes VM coil.
(3) Focus and screen controls are part of T551.

MISCELLANEOUS

	Item No.	Description	Mfr. Part No.	Notes
	BP2L04	Filter	349P198010	Chroma Bandpass
	CF2V39	Resonator	299P128010	500kHz
	CR971	Capristor	149P008010	470pF, 3.6M, Spark Gap
	DL2L01	Module	337P096090	Comb Filter
	DL2L05	Delay Line	337P189010	-
	F501	Fuse	283D035070	2Amp, 125V, Fast Acting
#	**F901**	Fuse	283D060030	6.3Amp, 125V, Slow Blow
	J2A01	Jack	440C272060	Assembly
	J2Y01	Jack	449C121020	S-Video
	J601	Socket	449C081070	CRT
#	**K901**	Relay	287P049080	Power
#	**K902**	Relay	287P049080	Degaussing
	LC7P01	Filter	-	-
	LC7Y10, 12, 13	Filter	409P402010	-
	LC7Y50, 51	Filter	409P402010	-
#	**P900**	Line Cord	246C266020	AC, Polarized
	S7K03	Switch	432P100010	Power
	S7K04	Switch	432P100010	Volume Down
	S7K13	Switch	432P100010	Volume Up
	S7K14	Switch	432P100010	Scan Up
	S7K23	Switch	432P100010	Scan Down
	S7K33	Switch	432P100010	Input
	S7K34	Switch	432P100010	AV Reset
	S7K43	Switch	432P100010	Degaussing
	SP391, 92	Speaker	480P406040	4" X 4", 8 Ohms, 5W
	TU1T01 (1)(2)	Tuner/IF Pack	295P420040	UHF/VHF, ENG26105G
#	**V271**	CRT	255P962010	A80AEJ15X02
	X2V01	Resonator	285P066010	3.58MHz
	X7A31	Resonator	285P039020	8MHz
	X7P08	Resonator	285P069020	-
	Z7K05	Receiver	939P481030	Remote, HC-477M
		Magnet	540D226010	Purity/Convergence
		PC Board (1)	930C591013	Control
		PC Board (1)	930C993003	CRT
		PC Board (1)	930B740003	Deflection
		PC Board (1)	930B741003	Signal
		Transmitter	290P066030	Remote

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