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.

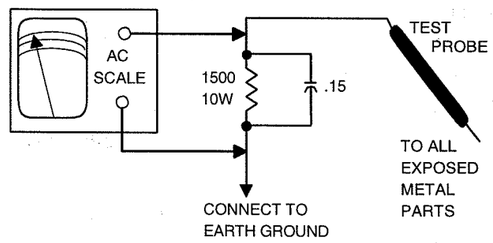
SAFETY CHECKS -- FIRE AND SHOCK HAZARD

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.



HORIZONTAL OSCILLATOR DISABLE TEST

Connect a variable DC power supply to the cathode of D531 and ground. Start low and increase the DC voltage. The horizontal should lose sync when the DC voltage reaches about 26.8V. If the horizontal fails to lose sync, horizontal oscillator disable circuit should be repaired.

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PANASONIC MODEL CT-27SF26A (CHASSIS D323) SET 4319

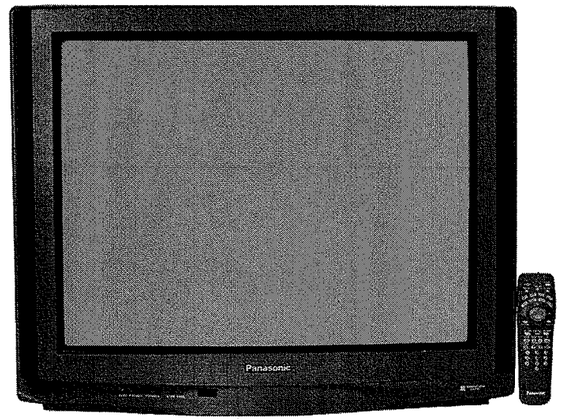
PHOTOFACT® Technical Service Data

INDEX

For Supplier Address, See PHOTOFACT Annual Index

PANASONIC

Model CT-27SF26A (Chassis D323)



Representative Model

Essential coverage for servicing a television receiver...

- **Schematics**
- **Component locations**
- **Parts list**

Coverage includes this additional model and chassis:

MODEL	CHASSIS
CT-27XF26CA	D323

SAMS™ Technical Publishing

JULY 2000 SET 4319

4319

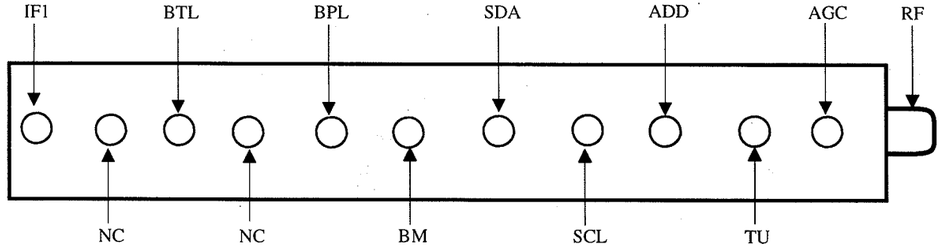
TUNER INFORMATION

TUNER VOLTAGE CHART

Pin	VHF Low Band	VHF High Band	UHF Band
AGC	4.6V	5.8V	4.8V
TU	1.2V	4.3V	5.1V
ADD	0V	0V	0V
SCL	4.3V	4.3V	4.3V
SDA	4.3V	4.3V	4.3V
BM	8.8V	8.8V	8.8V
BPL	5.0V	5.0V	5.0V
NC	0V	0V	0V
BTL	4.3V	7.4V	8.2V
NC	0V	0V	0V
IF1	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



SERVICE INFORMATION

POWER SUPPLY SHUTDOWN

When the horizontal or the vertical circuit exceed their normal current draw, the B+ feedback voltage at pin 6 of IC001 will increase to 3.3V or above, through Q804 or Q451, which will cause pin 31 of IC001 to go low. When pin 31 of IC001 goes low, it will cause RL801 to open and shut down the receiver.

MISCELLANEOUS ADJUSTMENTS

NOTE: This receiver employs digital customer controls. All adjustments are at normalized position unless otherwise indicated.

HIGH VOLTAGE CHECK

Tune in a picture. Connect a high voltage probe to CRT anode. High voltage should read between 26kV to 28kV.

VIDEO LEVEL

NOTE: Do not adjust unless R115 has been replaced or misadjusted.

Tune in a color bar pattern with 100 IRE white and 87.5% modulation. Connect oscilloscope to pin 6 of connector A21. Adjust R115 for 1.0Vp-p ± .1Vp-p. Perform sub contrast (B03) adjustment, refer to the Sub Adjustments section of Miscellaneous Adjustments.

CONVERGENCE

Connect a signal generator to antenna terminals and tune in a dot pattern. Adjust the 4-pole magnets to converge the red and blue dots at the center of the screen. Adjust the 6-pole magnets to converge the red/blue dots over the green dots at the center of the screen.

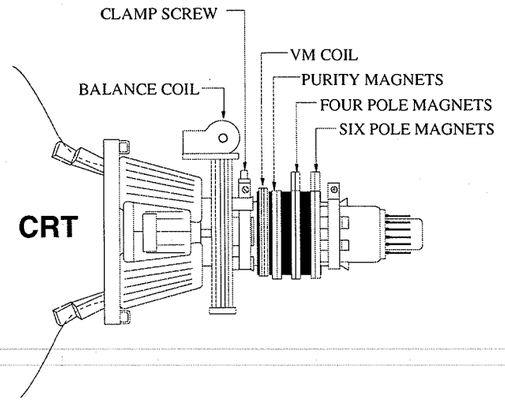
NOTE: Spread the two tabs of each set of magnets equally and opposite to converge vertically, and rotate both tabs in the same direction to converge horizontally. Since the 4 and 6-pole magnets interact, repeat the adjustment until center convergence is correct.

Tune in a crosshatch pattern. Remove the rubber wedges between the deflection yoke and the CRT. Tilt the deflection yoke up or down to converge the vertical lines at the top and bottom of the screen and the horizontal lines at the left and right sides of the screen. Tilt the deflection yoke left or right to converge the horizontal lines at the top and bottom of the screen and the vertical lines at the left and right sides of the screen. Adjust the balance coil to correct misconvergence of red and blue horizontal lines at the right and left sides of the screen. Repeat convergence procedure if necessary to obtain the best overall convergence. Replace rubber wedges. To obtain the best corner convergence it may be necessary to order the permalloy convergence corrector strip (Part No. 0FMK014ZZ). Place strip between CRT and yoke in area needing correction. Move and or rotate the strip until the best correction is obtained. Use tape in addition to the adhesive strip to secure it to the CRT.

PURITY CHECK

Enter serviceman mode. Ensure that the red CHK is on the screen and press the recall button on the remote transmitter to enter purity check mode. Press recall button to display desired screen color. Repeatedly pressing the recall button will cycle the screen color from normal to white, to red, to green, to blue, and then back to normal.

CRT NECK ASSEMBLY



PURITY

Operate the receiver for 60 minutes with the brightness control at maximum to allow CRT temperature to stabilize. Use a degaussing coil to demagnetize the CRT. Perform the Purity Check procedure. Select a green screen. Loosen the deflection yoke and move it back as far as possible. Move the purity tabs to center the vertical green band. Slowly slide the deflection yoke forward until a uniform green screen is obtained. Check purity adjustment for blue, white, and red screens.

ENTERING SERVICEMAN MODE

Turn on receiver and momentarily short pins 3 and 8 of connector TP. The letters "CHK" will appear in yellow on the upper right of the screen, volume up and down will adjust rapidly. Press the action button and volume up button on L board simultaneously. The receiver will enter the serviceman mode, the letters "CHK" will turn red, the volume up and down buttons will adjust normally and all customer controls are set to normal. Press power button on remote to select one of seven service modes.

- B = Sub Adjustments
- C = White Balance Adjustments
- D = Pincushion Adjustments
- P = PIP Adjustments
- S = Options Adjustments
- X = Comb Filter Adjustments
- Y = Y Adjustments
- CHK = Normal operation of channel and volume buttons

SERVICEMAN MODE QUICK ENTRY

From the on screen menu, select the setup icon and select cable mode. Select the timer icon and set sleep timer to 30. Press the action button twice. Press the volume down button. Tune to channel 124. Adjust the volume to minimum. Press the receiver volume down button. The set will enter the serviceman mode and the red letters "CHK" will appear on the screen.

EXIT SERVICEMAN MODE

Press action and power buttons simultaneously and hold for approximately 2 seconds to exit serviceman mode. The receiver will shutoff then come back on channel 3 with audio.

SUB ADJUSTMENTS

Write down original levels in detail before making any adjustments in case a misadjustment occurs. Always exit serviceman mode after making adjustments. Enter serviceman mode and select service mode B. Press channel up and down buttons on remote to select adjustment. Press volume up and down buttons on remote to change level of adjustment.

Sub Adjustments Chart

Sub Adjustments	Range	Default Level	On Set Level
Sub Color (B00)	0-63	26	24
Sub Tint (B01)	0-63	37	25
Sub Brightness (B02)	0-192	92	114
Sub Contrast (B03)	0-63	32	36
RF AGC (B04)	0-255	133	131
Sub Brightness For AI (B05)	0-192	85	100
VCJ Sharpness (B06)	0-127	5	5
Sub Color AI on (B07)	0-15	5	5
Sub Tint Video (B08)	0-15	5	5

Sub Tint (B01) and Sub Color (B00)

Normalize picture settings, set brightness to minimum, set auto color to off position. Connect jumpers between TPD2 and ground. Connect jumpers between TP82 and ground. Record original levels of C00, C01, C02, C05, C06, S01, and S02, then set as follows:

C00	2 020	C06	127
C01	128	S01	0
C02	2 020	S02	0
C05	127		

Tune in a color bar pattern. Connect oscilloscope to pin 5 of connector C01. Adjust B02 for minimum saturation. Adjust B00 for 2.4Vp-p ±.05Vp-p. Adjust B01 so that peak 2 of the waveform is halfway between peaks 3 and 4. Record waveform voltage. Connect oscilloscope to pin 3 of connector C01. Adjust S06 so that voltage of waveform is equal to voltage recorded at pin 5 of connector C01 times 1.1V. Connect oscilloscope to pin 5 of connector C01. Adjust B01 so that peak 2 is halfway between peaks 3 and 4. Connect oscilloscope to pin 4 of connector C01. Adjust B00 for .9Vp-p ±.02Vp-p. Remove jumpers. Set S01 to 7 and S02 to 15. Insure that color phase and saturation are normal.

Sub Brightness (B02)

This adjustment must be made after sub contrast or color temperature adjustments are made. DO NOT adjust screen after sub brightness is set. Tune in a color bar signal with 100 IRE white and 7.5 IRE black. Switch generator color to off. Adjust B02 until the black bar starts to turn gray, then decrease adjustment until bar just turns black.

Sub Contrast (B03)

NOTE: This adjustment is factory set, DO NOT adjust unless repairs are made to associated circuits, CRT board, or CRT is replaced.

Tune in a pattern with 87.5% modulation 70% saturated color bar with 100 IRE white and 7.5 black. Set picture to maximum, color and brightness to minimum, and sharpness to center. Set video NR to off. Record levels of B02, S01, and S02 and set levels to 0. Connect a jumper from TP82 to ground. Connect a jumper from TPD2 to ground. Connect oscilloscope to pin 4 of connector C01. Adjust B3 for 2.8Vp-p ±.1Vp-p from white to black level. Do not include sync tip in measurement. Return B02, S01, and S02 to recorded levels. Perform Sub Brightness (B02) adjustment.

RF AGC (B04)

Tune in a picture. Adjust B04 until snow appears in picture, then back until snow disappears.

WHITE BALANCE ADJUSTMENTS

Write down original values in detail before making any adjustments in case a misadjustment occurs. Always exit serviceman mode after making adjustments. Enter serviceman mode and select service mode C. Press channel up and down buttons on remote to select adjustment. Press volume up and down buttons on remote to change level of adjustment.

White Balance Adjustments Chart

White Balance Adjustments	Range	Default Level	On Set Level
Red Cutoff (C00)	0-1 0-255	3 121	2 118
Green Cutoff (C01)	0-255	227	148
Blue Cutoff (C02)	0-1 0-255	2 215	2 72
User Brightness (C03)	0-63	31	31
Sub Brightness (C04)	0-194	92	104
Red Drive (C05)	0-255	68	64
Blue Drive (C06)	0-255	74	94
Red Drive Offset - Cool (C07)	0-63	12	12
Blue Drive Offset - Cool (C08)	0-63	12	12
Red Drive Offset - Warm (C09)	0-63	20	20
Blue Drive Offset - Warm (C0A)	0-63	12	12

NOTE: C03 adjustment and the brightness adjustment in the picture adjustment menu of the on screen menu are the same adjustment. C04 and B02 are the same adjustment.

Color Temperature (C00, C01, C02, C05, C06)

Tune in a white raster and allow 10 to 30 minutes warm-up time. Adjust C00, C01, and C02 for a white raster. Adjust C05 and C06 for warm white. Adjust C03 from low scale to high scale and check black and white tracking. Make needed adjustments to C00, C01, C02, C05, and C06. Perform Sub Brightness (B02) adjustment.

PINCUSHION ADJUSTMENTS

Write down original values in detail before making any adjustments in case a misadjustment occurs. Always exit serviceman mode after making adjustments. Enter serviceman mode and select service mode D. Press channel up and down buttons on remote to select adjustment. Press volume up and down buttons on remote to change level of adjustment.

Pincushion Adjustments Chart

Pincushion Adjustments	Range	Default Level	On Set Level
Vertical Size (D00)	0-127	43	42
Vertical Linearity (D01)	0-63	44	44
S Compensation (D02)	0-63	11	11
Horizontal Size (D03)	0-63	55	48
Horizontal Centering (D04)	0-31	12	12
E-W Parabola (D05)	0-63	12	16
Trapezoid Compensation (D06)	0-63	36	36
E-W Corner 2 (D07)	0-15	4	9
E-W Corner 1 (D08)	0-15	2	5
Vertical EHT (D09)	0-15	8	8
Horizontal EHT (D0A)	0-15	8	8
Vertical Position (D0B)	0-63	18	18

Vertical Linearity (D01)

Tune in a crosshatch pattern. Adjust D01 so that boxes at top and bottom of screen are the same proportion.

Vertical Size (D00) and S Compensation (D02)

Tune in a crosshatch pattern. Adjust D00 for 1/2 inch overscan at top and bottom of screen. Adjust D02 so that the top and bottom boxes are the same proportion as the center boxes.

Horizontal Size (D03)

Tune in a crosshatch pattern. Adjust D03 so that the picture is just at the left and right edge of the screen and then increase the level by 3 digits.

Horizontal Centering (D04)

Tune in a crosshatch pattern. Adjust D04 so that pattern is centered.

E-W Pincushion Correction (D05, D07, D08)

Tune in a crosshatch pattern. Normalize picture settings. Set auto color to off. Adjust D05 for straight vertical lines at left and right side of screen. Adjust D07 for straight vertical lines at top of screen. Adjust D08 for straight vertical lines at bottom of screen.

Trapezoid Compensation (D06)

Tune in a crosshatch pattern. Adjust D06 so vertical lines are perpendicular to horizontal lines.

Vertical DC and Dynamic Range Confirmation (D0B)

Connect digital voltmeter to pin 2 of connector DY. Connect oscilloscope to pin 3 of connector DY. Tune in a monoscope pattern. Adjust D0B for 13.0V ±.1V with no distortion at top and bottom of vertical waveform. Remove jumper.

PIP ADJUSTMENTS

NOTE: Adjustment of PIP adjustments not listed is not recommended.

Write down original values in detail before making any adjustments in case a misadjustment occurs. Always exit serviceman mode after making adjustments. Enter serviceman mode and select service mode P. Press channel up and down buttons on remote to select adjustment. Press volume up and down buttons on remote to change level of adjustment.

MISCELLANEOUS ADJUSTMENTS continued

PIP Adjustments Chart

PIP Adjustments	Range	Default Level	On Set Level
PIP Color (P00)	0-127	92	92
PIP Tint (P01)	0-255	54	54
PIP Brightness (P02)	0-31	22	22
PIP Contrast (P03)	0-127	86	58
PIP Position 1/9 Upper (P04)	0-255	12	12
PIP Position 1/9 Lower (P05)	0-255	143	143
PIP Position 1/9 Left (P06)	0-255	15	15
PIP Position 1/9 Right (P07)	0-255	106	106
PIP Position 1/16 Upper (P08)	0-255	27	27
PIP Position 1/16 Lower (P09)	0-255	162	162
PIP Position 1/16 Left (P0A)	0-255	15	15
PIP Position 1/16 Right (P0B)	0-255	121	121
PIP Freerun (P0C)	0	0	0
PIP Y Delay (P0D)	0-15	4	4

PIP Color, Tint, Brightness, and Contrast (P00 thru P03)

Tune in a color bar pattern on the PIP and main picture. Adjust P00 to match the PIP color with the main picture color. Adjust P01 to match the PIP tint with the main picture tint. Adjust P02 to match the PIP brightness with the main picture brightness. Adjust P03 to match the PIP contrast with the main picture contrast.

OPTIONS ADJUSTMENTS

NOTE: Adjustment of options adjustments not listed is not recommended.

Write down original values in detail before making any adjustments in case a misadjustment occurs. Always exit serviceman mode after making adjustments. Enter serviceman mode and select service mode S. Press channel up and down buttons on remote to select adjustment. Press volume up and down buttons on remote to change level of adjustment.

Options Adjustments Chart

Options Adjustments	Range	Default Level	On Set Level
Pre & Overshoot (S00)	0-7	3	3
Black Expansion (S01)	0-15	4	4
White Gamma Level (S02)	0-15	15	15
White Gamma Gain (S03)	0-15	15	15
Small Gamma Level (S04)	0-15	7	7
Demodulation Angle (S05)	0-31	12	12
Demodulation Gain (S06)	0-63	23	23
G-Y Ratio (S07)	0-3	1	1
White Letter Compensation (S08)	0-15	4	4
White Letter Slice Voltage (S09)	0-15	5	5
Switches TV (S0A)	0-255	36	36
Switches Video (S0B)	0-255	36	36
Gradient of Contrast (S0C)	0-255	90	90
Stereo Input Level (S0D)	0-63	46	46
Stereo PLL VCO (S0E)	0-63	22	36
Stereo Filter (S0F)	0-63	26	26
Low Frequency Separation (S10)	0-63	32	40
High Frequency Separation (S11)	0-63	20	23
Clock Adjustment (S12)	0-255	121	121
S-Cutoff Red (S13)	0-28	14	14
S-Cutoff Blue (S14)	0-28	14	14
Loudness (S15)	0-15	7	7
Closed Caption Digital Filter (S16)	0,1	1	1
Closed Caption Scroll (S17)	0-2	1	1
Spatializer Effect (S18)	0-63	25	25

Stereo PLL VCO (S0E)

Tune in a stereo signal. Connect a frequency counter to pin 25 of IC2201, adjust S0E level to obtain 15.534kHz ± 50Hz.

Stereo Filter (S0F)

Tune in a stereo signal. On generator select 1kHz audio frequency, and L-R modulating signal. Connect a scope to pin 26 of IC2201, adjust S0F for minimum amplitude on the scope.

Frequency Separation (S10 & S11)

On generator select pilot, 1kHz audio frequency, and right modulating signal. Connect an oscilloscope to pin 26 of IC2201. Adjust S10 for minimum amplitude of waveform. On generator select 8kHz audio frequency. Adjust S11 for minimum amplitude of waveform.

Stereo Input Level (S0D)

On generator select pilot, 1kHz audio frequency, and L-R modulating signal. Connect oscilloscope to pin 25 of IC2201 adjust S0D for 900mVp-p.

Clock Adjustment (S12)

Connect a frequency counter to pin 34 of IC001. With AC power applied and receiver off, measure and record the frequency at pin 34 of IC001. Turn receiver on and enter the serviceman mode. Set S12 for the following formula:

S12=128 + 1.35 x 1000000 x (187.5 - (recorded frequency))/187.5

X ADJUSTMENTS

NOTE: Adjustment of X adjustments not listed is not recommended.

Write down original values in detail before making any adjustments in case a misadjustment occurs. Always exit serviceman mode after making adjustments. Enter serviceman mode and select service mode X. Press channel up and down buttons on remote to select adjustment. Press volume up and down buttons on remote to change level of adjustment.

X Adjustments Chart

Comb Filter Adjustments	Range	Default Level	On Set Level
Edge Corr. (X00)	0-255	8	8
Edge Corr. Blk Comp. (X01)	0-3	0	0
Edge Corr.Comp.(X02)	0-3	1	1
Comparison Level (X03)	0-63	12	12
Detail Corr Limit Level (X04)	0-63	24	24
Coring Level of Edge Cor. (X05)	0-63	41	41
Comparison Det SW (X06)	0,1	1	1
Y Delay Adj. (X07)	0-7	3	3
C Delay Adj. RF (X08)	0-15	5	5
C Delay Adj. Video (X09)	0-15	7	7
VM Limit Level (X0A)	0-127	90	90
VM Freq SW (X0B)	0,1	1	1
VM Coring Level (X0C)	0-15	8	8
VM SW/S Chroma SW (X0D)	0-3	1	1
VMLM Corr Coeffic. (X0E)	0-255	255	255
Sharpness Offset Level (X0F)	0-127	90	90

Y ADJUSTMENTS

Write down original values in detail before making any adjustments in case a misadjustment occurs. Always exit serviceman mode after making adjustments.

Enter serviceman mode and select service mode Y. Press channel up and down buttons on remote to select adjustment. Press volume up and down buttons on remote to change level of adjustment.

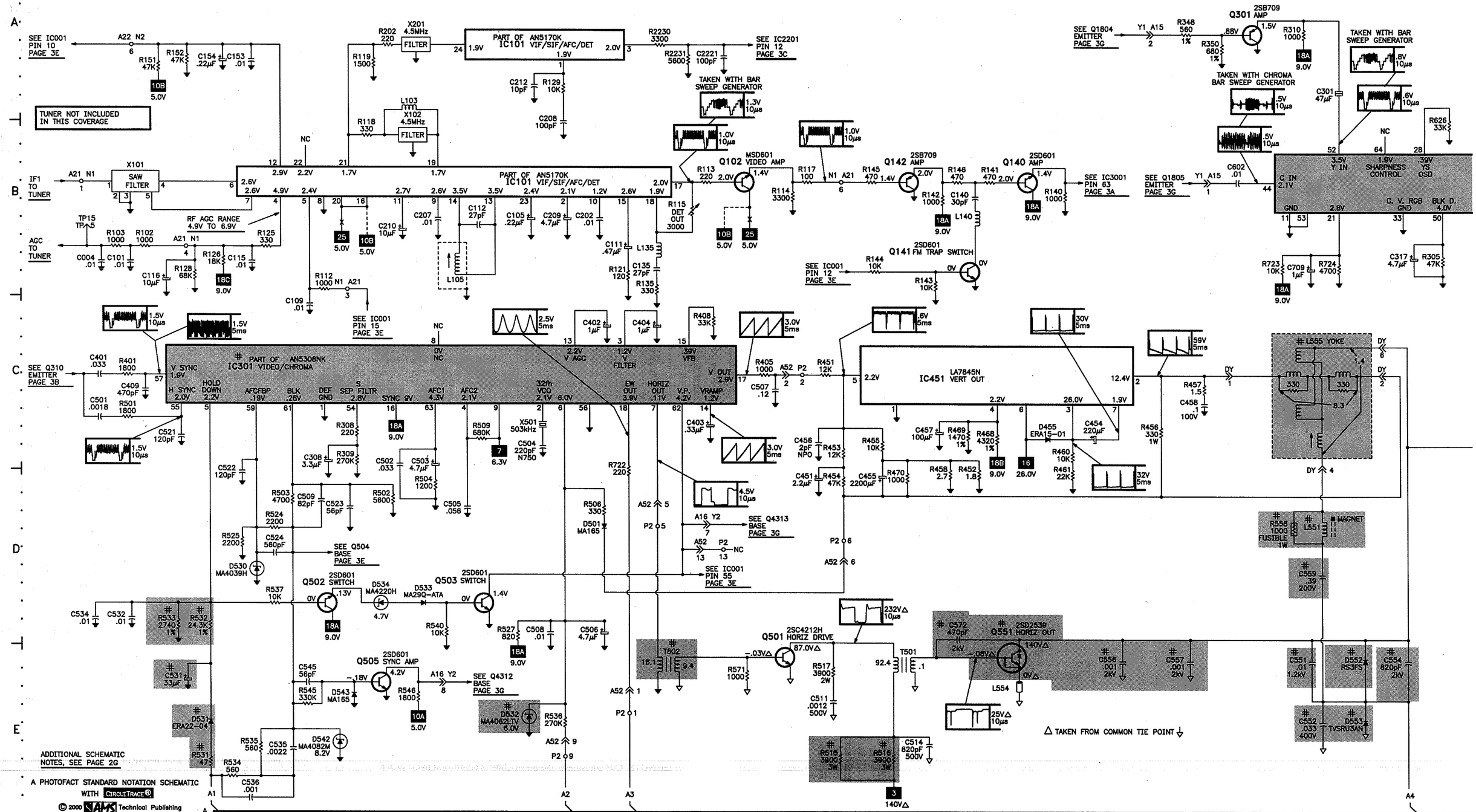
Y Adjustments Chart

Y Adjustments	Range	Default Level	On Set Level
Sync Separation (Y00)	0-7	4	4
Sync Separation (Y01)	0-255	24	24
Sync Separation (Y02)	0-255	44	44
Sync Separation (Y03)	0-255	12	12
V Comp Hold Start (Y04)	0-7	2	2
V Comp Hold End (Y05)	0-15	6	6
H Clamp Mode Level (Y06)	0-255	64	64
V Edge Coring Level (Y07)	0-31	22	22
V Edge Corr Limit Lev (Y08)	0-15	3	3
3D NStand Level (Y09)	0-15	15	15
3D Stand Level (Y0A)	0-15	2	2
1F2F Mdet High Level (Y0B)	0-15	5	5
1F2F Mdet Low Level (Y0C)	0-15	9	9
Mdet Set (Y0D)	0-15	12	12
Mdet Test (Y0E)	0,1	0	0
V Edge Gain (Y0F)	0-3	3	1
1F Color MLevel Set (Y10)	0-15	14	14
1F Color MLevel Set (Y11)	0-15	12	12
Mdet Set (Y12)	0-15	15	15
Color MEdge Det Lev (Y13)	0-15	5	5
1F Mdet Level (Y14)	0-15	8	8
2F Mdet Level (Y15)	0-15	2	2
1F Mdet Filter SW (Y16)	0,1	0	0
1F Mdet Edge Sens (Y17)	0,1	1	1
1F Mdet Sens (Y18)	0-15	15	15
1F Mdet High Level (Y19)	0-15	8	8
1F Mdet Low Level (Y1A)	0-15	4	4
2F Mdet High Level (Y1B)	0-15	3	3
2F Mdet Low Level (Y1C)	0-15	1	1
Mdet Edge Det Level (Y1D)	0-15	7	7
AI V Sampling start (Y1E)	0-31	4	4
AI V Sampling stop (Y1F)	0-63	30	30
AI H Sampling start (Y20)	0-31	5	5
AI H Sampling stop (Y21)	0-63	22	22
BGP Position (Y22)	0-255	16	16
B Exp APL Thresh L (Y23)	0-63	20	20
Pedestal Comp (Y24)	0-7	3	3
B Exp APL Calc (Y25)	0-31	6	6
B Comp Var Limiter (Y26)	0-15	4	4
Luminance Diff Gain (Y27)	0-3	3	3
Pseudo Contour Killer (Y28)	0,1	0	0
B Exp APL Reflection (Y29)	0,1	0	0
Base Value (Y2A)	0-15	15	15
B Exp Var Reflection (Y2B)	0-3	2	2
AntiBloom Threshold (Y2C)	0-63	0	0
S1 Histogram Limiter (Y2D)	0-63	30	30
S2 Histogram Limiter (Y2E)	0-63	30	30
S3 Histogram Limiter (Y2F)	0-63	30	30

Y Adjustments Chart continued

Y Adjustments	Range	Default Level	On Set Level
S4 Histogram Limiter (Y30)	0-63	30	30
Ymin Det Offset (Y31)	0-7	4	4
Ymin Det Gain (Y32)	0-3	2	2
Ymin Limiter (Y33)	0-63	42	42
Ymax Limit Value (Y34)	0-63	39	39
AI Fleshtone SW (Y35)	0,1	1	1
APL Corr Limiter (Y36)	0-63	10	10
APL Corr SW Point (Y37)	0-127	37	37
Col Cont Level L APL (Y38)	0-63	28	28
Col Cont Gain L APL (Y39)	0-3	0	0
Col Cont Gain H APL (Y3A)	0-63	54	54
AI Col Corr Gain (Y3B)	0-3	2	2
Color Det Gain (Y3C)	0-3	1	1
Color Det Threshold (Y3D)	0-63	39	39
DSC Noise Removal (Y3E)	0-63	4	4
DSC Delay SW (Y3F)	0,1	0	0
DSC Off SW (Y40)	0,1	0	0
DSC Limit Level (Y41)	0-255	112	112
Clip point Edge Corr (Y42)	0-15	8	8
BPF SW RF (Y43)	0-3	3	3
BPF SW Video (Y44)	0-3	0	0
DSC Gain SW big sig (Y45)	0-3	1	1
DSC Limit SW big sig (Y46)	0-63	12	12
DSC Gain SW sm sig (Y47)	0-3	1	1
DSC Limit SW sm sig (Y48)	0-63	24	24
Edge Corr Gain SW (Y49)	0-15	8	8
Detail Corr Limit Lev (Y4A)	0-15	8	8
B corr Gain on Edge (Y4B)	0-3	2	2
Coring Level on Edge (Y4C)	0-63	8	8
VM Freq SW (Y4D)	0,1	1	1
VM Coring Level (Y4E)	0-15	8	8
VM Limit Level (Y4F)	0-127	67	67
VM B corr SW (Y50)	0,1	0	0
Y Delay Adj (Y51)	0-7	3	3
C Delay Adj RF (Y52)	0-15	6	6
C Delay Adj Video (Y53)	0-15	6	6
DCOR Corr COEFFI A (Y54)	0-255	10	10
DCOR Corr COEFFI B (Y55)	0-255	200	200
DCOR Corr COEFFI C (Y56)	0-255	100	100
VMLM Corr COEFFI A (Y57)	0-255	255	255
VMLM Corr COEFFI B (Y58)	0-255	200	200
Sharp Offset Level (Y59)	0-127	0	0
WECOR Thresh s sig (Y5A)	0-255	28	28
WECOR Thresh w sig (Y5B)	0-255	34	34
Burst In 16msXn (Y5C)	0-255	6	6
Burst Out 16msXn (Y5D)	0-255	0	0
SD Threshold on (Y5E)	0-255	226	226
SD Threshold off (Y5F)	0-255	226	226
VP Threshold max (Y60)	0-255	127	127
VP Threshold min (Y61)	0-255	107	107
VP (NG---OK) 16msXn (Y62)	0-255	12	12
VP (OK---NG) 16msXn (Y63)	0-255	12	12
Std time 16msXn (Y64)	0-255	6	6
SD (NG---OK) 16msXn (Y65)	0-255	12	12
SD (OK---NG) 16msXn (Y66)	0-255	12	12
Freq Avg Quantity (Y67)	0-4	3	3

TELEVISION SCHEMATIC



TELEVISION SCHEMATIC continued

C

D

SEE Q1871 EMITTER PAGE 3B
SEE Q015 EMITTER PAGE 3F
SEE IC001 PIN 44 PAGE 3E
SEE IC001 PIN 42 PAGE 3E
SEE IC001 PIN 43 PAGE 3E
SEE IC001 PIN 59 PAGE 3E
SEE IC001 PIN 60 PAGE 3E
SEE IC001 PIN 18 PAGE 3E

Q602 2SB709 AMP
Q603 2SB709 BUFFER
Q605 2SD601 AMP
Q606 2SD601 AMP
Q607 2SB709 AMP

IC301 VIDEO/CHROMA
PART OF AN5308NK

SEE IC001 PIN 3 PAGE 3E
SEE IC6501 PIN 12 PAGE 3B

Q303 2SB709 AMP
Q304 2SD601 AMP
Q560 2SA564 ABL AMP

T551 BOTTOM VIEW

SEE IC1601 PIN 1 PAGE 3F
SEE IC1601 PIN 8 PAGE 3F
SEE IC1601 PIN 4 PAGE 3F

Q354 2SC1685 RED AMP
Q355 2SC1685 BLUE AMP
Q356 2SC1685 GREEN AMP
Q363 2SA564 BIAS

T551
CRT ANODE
HV ANODE 26kV TO 28kV

SEE POWER SUPPLY PAGE 2E
SEE CRT FILAMENTS PAGE 2H
FOCUS
SCREEN

TPD1
TPD2

Q751 JC501 DRIVER
IC751 TLP621GRH OPTO-COUPLER
Q754 2SA564 AMP
Q755 2SC1685 AMP
Q752 2SA564 E-W PCC DRIVE
Q753 2SD1267 E-W PCC DRIVE
IC752 TLP621GRH OPTO-COUPLER
Q758 JA101 BIAS
Q756 JC501 AMP
Q757 JA101 AMP

△ TAKEN FROM COMMON TIE POINT

ADDITIONAL SCHEMATIC NOTES, SEE PAGE 2G

A PHOTOFACT STANDARD NOTATION SCHEMATIC WITH CIRCUITRACE®

POWER SUPPLY SCHEMATIC

E

F

A

B

C

D

E

17

18

19

20

21

22

23

24

120VAC 970mA POLARIZED

PRINTED SPARK GAP

130pF 125VAC

3.6M

F801 6.3A

CRA802

CRA801

C834 .22 250VAC

L801

L802

PART OF RLB01 POWER

R801 7W

D850 COLD PTC 2.9 68.5

R804 100 5W

D801 RM10B

D802 RM10B

DEGAUSS L814

C805 560µF 200V

C806 560µF 200V

R805 270K

R806 270K

L804

C813 .01 400V

C824 .0015 1kV

R822 47K 2W

C818 .001 2kV

C817 470pF 1kV

R824 4700

C815 100µF

C819 100pF 1kV

D821 AG01V0

D822 AU01Z

L810

R823 680

D820 AG01V0

R827 .39

R828 .39

R829 10

R830 1200

R831 3300

IC801 STRF6524F53 REG

DRAIN 314V△ 140V△

VIN 155V△ SOURCE 140V△

OCP/FB 142V△

△ TAKEN FROM COMMON TIE POINT ▽

T801 BOTTOM VIEW

S4 NC P1

NC V1

S3 NC NC

NC NC PT

S2 NC

S1 P2

NC E1

NC E2

R832 33K

D832 MA4200M

R833 1000

IC803 ON3131R OPTO-COUPLER

20.5V△

19.4V△

DO NOT MEASURE

IC802 SE139NLF4 REFERENCE

L811

L812

C810 .015 250VAC

C811 .015 250VAC

Q001 2SC1685 SWITCH

R009 5600 .7V

.1V

D002 MA165

PART OF RLB01 POWER

277

6A 9.4V

P3 10

A53 10

SEE IC001 PIN 31 PAGE 3E

T001 675 25.8

IC804 TVSS1WBS20

19.2VAC

A15 Y1

A16 Y2

A22 N2

A21 N1

A1 X1

SEE T551 PAGE 2C

PART OF T551

240V 10µs

84V 10µs

250V 10µs

124V 10µs

D554 AU02

C570 .001 500V

C561 560pF 500V

R552

D561 AU02

F551 2.5A

D551 RU2N

C564 560pF 500V

L556

R566 1

D557 AU02

C562 560pF 500V

C558 220µF

L557

R569 18 3W

R338 39 1W

IC552 AN7809 9V REG

D011 MA178

R110 27

C573 470µF

D302 MA4051M 5.1V

C320 .01

C305 .01

C314 100µF

C324 1000µF

C553 2200µF

C318 .01

C332 10µF

C1610 10µF

C574 10µF

C313 47µF

C2382 100µF

C2232 .01

C2231 100µF

C3002 .01

C3001 470µF

L958

C904 .01

C952 10µF

C841 3300µF

Q803 2SC1383 REG

10.8V

9.9V

R836 3300

R835 220

C837 100µF

D835 MA4110L

Q510 2SA564 REG

9.4V

9.2V

8.6V

R521 120

SEE Q090 COLLECTOR PAGE 3F

IC005 PQ05RD1B 5V REG

IN OUT GND

D005 MA4056M

L008

C014 22µF

C010 47µF

C024 1000µF

C047 2200µF

C085 22µF

C055 .01

C084 .01

C048 .01

C053 .01

C021 .01

C032 47µF

IC554 AN7805 5V REG

8.2V

C005 100µF

C578 10µF

C6523 .1

C6502 .01

C6521 47µF

C6501 100µF

L004

Q4315 2SC1384 3.3V REG

4.0V

R4336 68

C4304 10µF

D4301 MA3036H

C4318 100µF

C4302 .01

C4301 .01

C1813 .01

C1809 47µF

C1835 10µF

C4316 330µF

C1827 .01

C4317 .01

C1808 .01

C1814 47µF

L1806

C1819 .1

C1820 47µF

L118

C104 .01

C103 33µF

R808 1

R809 1

L805

R778 3900 5W

C809 330µF 200V

D825 SR2KL

C823 33µF 160V

D752 MA2270B

C753 47µF

C751 47µF

R819 3.3

L806

D811 AU02A

L808

C840 100µF 160V

P13 C3 7 7 FUSIBLE 1W

R961 330

C958 10µF 160V

R818 .22 FUSIBLE 1W

L813

D809 RU3YX

C821 560pF 500V

D830 MA4330M 33.0V

C822 2200µF

C577 470µF

C583 330µF

R393 100 FUSIBLE

R395 390K

C357 820pF 500V

C366 .0033 500V

C585 10µF 250V

C569 330µF

R471 1.2

C452 .047

C453 470µF

1 140V△ SOURCE

2 140V△ SOURCE

3 140V△ SOURCE

19 27.0V△ SOURCE

4 132V SOURCE

5 30.0V SOURCE

6A 9.4V SOURCE

6B 9.4V SOURCE

7 6.3V SOURCE

8 5.0V SOURCE

9 5.0V SOURCE

10A 5.0V SOURCE

10C 5.0V SOURCE

10B 5.0V SOURCE

25 5.0V SOURCE

26 5.0V SOURCE

11 3.3V SOURCE

12 3.3V SOURCE

13 220V SOURCE

14 210V SOURCE

15 26.6V SOURCE

16 26.0V SOURCE

17 13.0V SOURCE

20 5.0V SOURCE

18A 9.0V SOURCE

18B 9.0V SOURCE

18C 9.0V SOURCE

18D 9.0V SOURCE

18E 9.0V SOURCE

18F 9.0V SOURCE

307V△ 10µs

310V△ 10µs

300V 10µs

265V△ 10µs

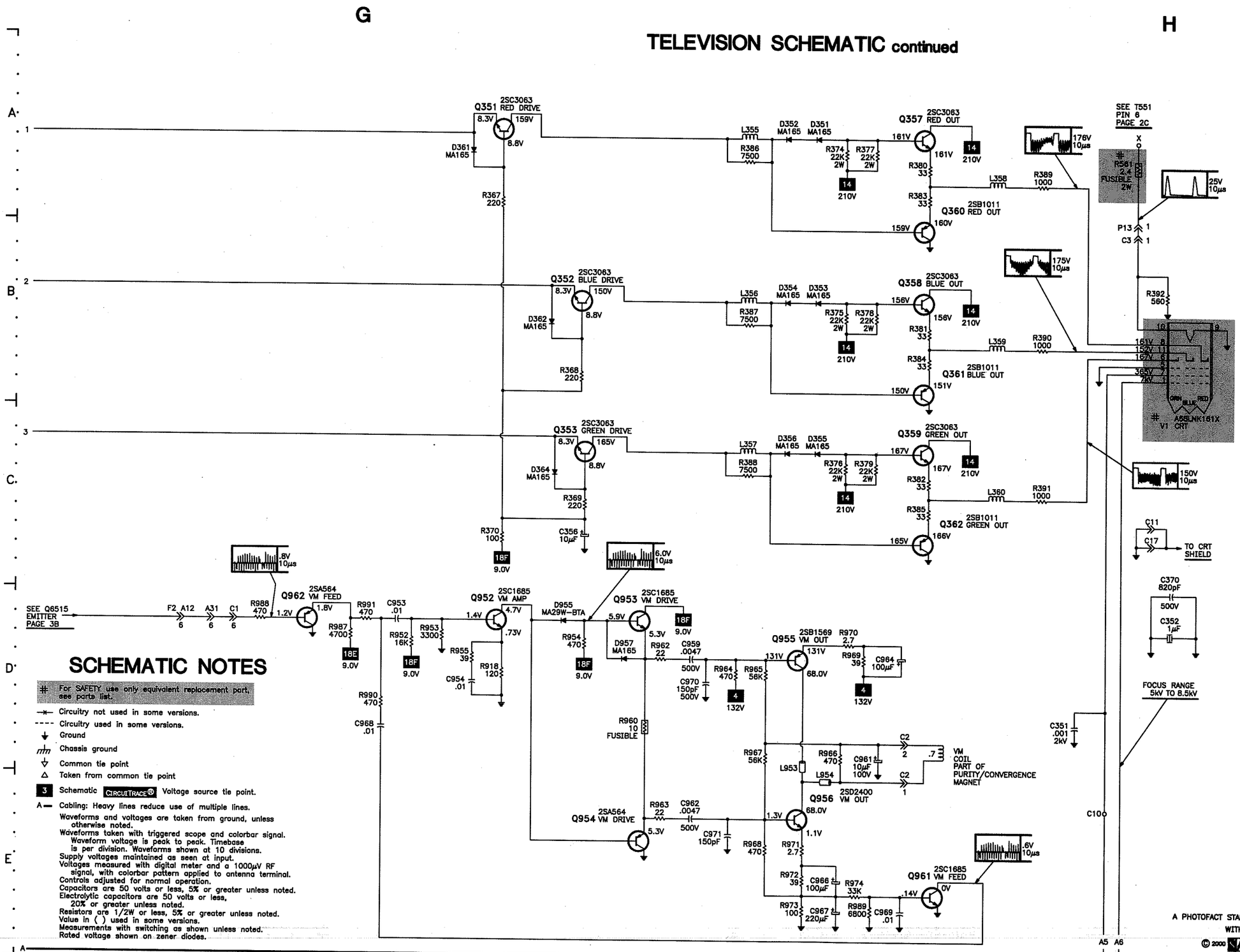
70V 10µs

11V△ 5ms

ADDITIONAL SCHEMATIC NOTES, SEE PAGE 2G

A PHOTOFACT STANDARD NOTATION SCHEMATIC WITH CIRCUITRACE®

TELEVISION SCHEMATIC continued



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.

A/V SWITCHING SCHEMATIC

A B

SEE Q140 EMITTER PAGE 2B — A1 X1 8 — 1.0V 10µs — C3007 10µF — R3027 220 — PART OF IC3001 CXA2079Q TV/AV SWITCH — TV 4.1V 63

NC — V5 3.8V 60

SEE IC001 PIN 28 PAGE 3E — R3022 220 — DSA 4.1V 34

SEE IC001 PIN 29 PAGE 3E — R3021 220 — SCL 4.1V 33

C3004 47µF — BIAS 4.1V 50

PART OF JK3001 EXT VIDEO IN 1 — V1 — PRINTED SPARK GAP — C3073 10µF — R3001 220 — V1 3.8V 1

D3001 MA3110M

PART OF JK3001 EXT VIDEO IN 2 — V2 — PRINTED SPARK GAP — C3078 10µF — R3006 220 — V2 3.8V 8

D3006 MA3110M — NC — LV5 4.5V 59

PART OF JK3001 AV1 S-VIDEO — C Y — Y1 — PRINTED SPARK GAP — D3074 MA3110M — D3073 MA3110M — C3072 10µF — R3003 220 — Y1 3.8V 3

NC — RV5 4.5V 61

NC — TRAP1 3.5V 55

C1 — PRINTED SPARK GAP — D3072 MA3110M — D3071 MA3110M — C3071 .01 — R3005 220 — C1 4.3V 5

NC — S2-4 .1V 27

NC — S2-1 .1V 6

ACTIVATED BY INSERTION OF PLUG INTO JK3001 — SW1 — R3073 10K — PRINTED SPARK GAP — D3075 MA3110M — S-1 4.7V 7

NC — S-4 4.8V 28

NC — NC 0V 31

NC — NC 0V 30

NC — Y3 3.8V 17

NC — Y2 4.3V 10

NC — S2-2 .1V 13

NC — C3 4.3V 19

NC — S2-3 .11V 20

NC — S-3 4.7V 21

NC — C2 3.8V 12

NC — NC 0V 29

NC — ROUT2 0V 40

NC — S-2 4.5V 14

NC — CIN2 4.3V 43

NC — YIN2 3.8V 45

NC — MUTE .01V 48

NC — CIN1 4.3V 51

A1 X1 NC 27 — A1 X1 NC 4 — A1 X1 NC 28 — A1 X1 NC 21 — A1 X1 NC 30 — A1 X1 NC 23 — A1 X1 NC 25 — A1 X1 NC 24 — A1 X1 NC 26

ADDITIONAL SCHEMATIC NOTES, SEE PAGE 2G

A PHOTOFACT STANDARD NOTATION SCHEMATIC WITH CIRCUITRACE®

YOUT1 3.8V 56 — ADR 32 — AGND 35 — VGND 57 — AGND2 44

1.9V 10µs — R3031 470 — 3.8V — Q3031 2SB709 AMP — 4.5V — R3033 680 — 18D 9.0V — R3040 100 — X1 A1 15 — A11 F1 2 — C6529 10µF — R6555 15K — R6556 33K — R6509 470 — 3.2V — Q6504 2SD601 LUMA IN FILTER — 2.5V — R6510 1000 — C6510 12pF — C6513 27pF — R6523 5600 — 10C 5.0V — R6512 1000 — L6505 — 2.1V — Q6509 MSD601 LUMA IN FILTER — 1.5V — R6526 1000 — 10C 5.0V — C6517 1µF — 1.4V — Q6516 2SB709 AMP — 2.1V — R6559 2700 — 10C 5.0V

Q6517 MSD601 AMP — 1.4V — R6560 120K — 10C 5.0V

COUT1 4.2V 58 — R3034 470 — 4.3V — Q3032 2SD601 AMP — 3.6V — R3036 680 — 18D 9.0V — X1 A1 14 — A11 F1 4 — C6503 .01 — R6503 10K — R6504 10K — 10C 5.0V — Q6503 MSD601 CHROMA IN FILTER — 2.3V — 2.6V — 1.7V — R6507 1000 — C6506 12pF — C6509 27pF — R6517 5600 — R6508 1000 — 10C 5.0V — L6504 — Q6507 MSD601 CHROMA IN FILTER — 2.6V — 1.9V — R6521 1000 — 10C 5.0V — C6514 .01 — C6518 .01 — R6530 22K — R6529 22K — C6516 .01

SEE IC1801 PIN 31 PAGE 3G — Y2 A16 2 — R1871 10K — R1872 470 — .01V — Q1871 2SB709 AMP — .7V — R1873 1000 — 10A 5.0V — R1874 390 — D097 MA165 — D098 MA165 — R085 3900 — A12 F2 7

SEE IC301 PIN 26 PAGE 2C — R6554 47K — C6526 10µF — C6528 47µF — C6527 .1 — L6507 — 10C 5.0V

SEE IC001 PIN 29 PAGE 3A — A12 F2 4 — R6553 100

SEE IC001 PIN 28 PAGE 3A — A12 F2 5 — R6552 100

SEE IC301 PIN 40 PAGE 2C — A12 F2 8 — R6558 330 — C6525 .01

MN8284 IC6501 COMB FILTER

FSC 2.2V 12 — Y IN 2.1V 18 — DVSS 1 — DATAIN 11 — REFL 1.4V 21 — CIN 2.3V 20 — REFHS 3.3V 16 — REFH 3.3V 17 — YS .2V 7 — RST 4.8V 8 — DVDD 4.8V 2 — SCL 4.1V 9 — SDA 4.1V 10

VREF 1.1V 26 — 1.7V 10µs — R6537 3900 — R6538 1200 — C6531 .01 — 10C 5.0V — .8V 10µs

YO .35V 22 — CO .38V 24 — COMP 3.1V 27 — C6524 1µF — .6V 10µs

AVSS 19 — SCAN 5 — CKSEL 4 — I REF 1.1V 25 — R6543 1200 — DATAOUT 0V 6 — NC

VMO .56V 28 — Q6515 2SB709 AMP — .56V — .0V — SEE Q962 BASE PAGE 2G — R6550 470 — R6545 220 — .9V 10µs — R6551 3300 — 10C 5.0V

TEST 3 — VSS 13 — PCO 2.4V 14 — R6549 2200 — VCOI 2.7V 15 — R6557 12K — 10C 5.0V — R6542 68 — C6522 220pF — AVDD 23 — C6520 10µF

YOUT2 3.1V 39 — YIN1 4.5V 49 — C3003 1µF — VOUT1 4.1V 53 — DCOUT 4.3V 36 — V4 3.8V 22 — LV4 4.3V 23 — RV4 4.3V 25 — Y4 3.8V 24 — C4 4.3V 26 — V3 3.8V 15 — LV3 4.3V 16 — RV3 4.3V 18

VOUT2 4.1V 41 — 2.0V 10µs — R3037 6800 — Q3033 2SD601 AMP — 2.0V — 1.4V — R3038 6800 — 18D 9.0V — R3041 100 — X1 A1 11 — SEE Q4309 BASE PAGE 3G

LOUT2 4.4V 38 — COUT2 4.1V 37 — 42 — 18D 9.0V

Q6514 MSB709 CHROMA AMP — R6548 470 — .39V — 1.0V — C6519 .01 — R6533 1500 — R6540 150 — R6544 1000 — 10C 5.0V

SEE IC001 PIN 30 PAGE 3E — A11 F1 7 — Q6513 MSD601 LEVEL SW — R6547 22K — 0V — 3.5V — R6546 22K — R6541 10K — 10C 5.0V — Q6508 MSD601 BPF SW — R6528 22K — .64V — 0V — C6515 82pF — L6506 — R6527 47K — 10C 5.0V — C6512 .01 — R6519 33K — R6518 33K — 10C 5.0V

Q6511 MSD601 LEVEL SW — R6536 22K — 0V — .18V — R6534 22K — R6532 47K — R6531 1800 — 10C 5.0V

Q6505 MSD601 CHROMA OUT FILTER — R6568 470 — 2.3V — 1.6V — R6515 1000 — 10C 5.0V

Q6519 MSD601 CHROMA OUT FILTER — 3.2V — 1.0V — C6532 .01 — R6567 470 — R6566 680 — R6565 1000 — 10C 5.0V — L6502 — C6507 12pF — C6504 27pF — R6505 470 — 3.3V

Q6501 MSD601 CHROMA OUT FILTER — 2.6V — R6501 470 — 10C 5.0V — F2 A12 A15 Y1 2 4 — SEE IC1801 PIN 51 PAGE 3G — .8V 10µs

R6524 470 — .36V — Q6510 MSB709 LUMA OUT FILTER — 1.0V — R6522 1000 — R6520 750 — 10C 5.0V — R6535 180

Q6506 MSD601 LUMA OUT FILTER — 2.0V — 3.5V — 2.6V — C6511 1µF — R6511 10K — R6516 12K — 10C 5.0V — R6513 1000 — 10C 5.0V — C6508 12pF — C6505 27pF — L6503

Q6502 MSD601 AMP — R6506 470 — 3.5V — 2.8V — R6502 470 — 10C 5.0V — 1.0V 10µs — F1 A11 8 — R330 470 — 2.8V

Q6305 MSD601 LUMA AMP — 2.2V — R331 1000 — 18A 9.0V — A15 Y1 5 — SEE IC1801 PIN 49 PAGE 3G

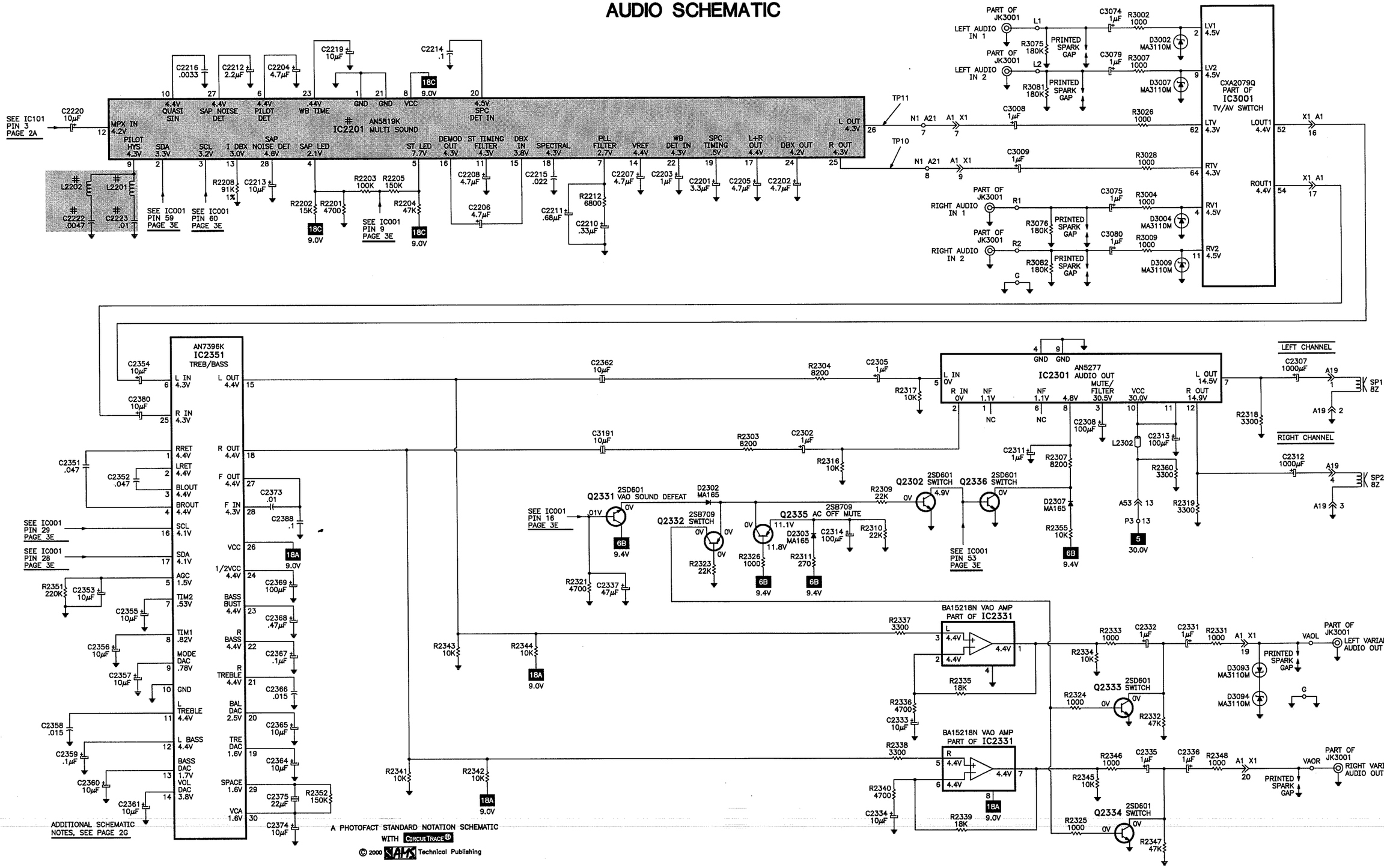
Q6308 2SB709 BUFFER — R311 470 — 2.2V — 2.9V — R314 1000 — 18A 9.0V — R313 1000

Q6309 MSD601 6dB SYNC AMP — 3.3V — 7.6V — 3.9V — C319 100µF — R317 10K — R315 10K — 18A 9.0V — R316 470 — 7.6V

Q6310 MSD601 BUFFER — 6.9V — R318 2700 — 18A 9.0V — R319 3300 — SEE Q306 BASE PAGE 3E — SEE IC301 PIN 57 PAGE 2A

33 34 35 36 37 38 39 40

AUDIO SCHEMATIC



SYSTEM CONTROL SCHEMATIC

E

F

RM001 REMOTE RECEIVER
VCC 5.0V ROUT GND
9 5.0V
R045 1000
P3 6 A53 6
R008 1000
C011 100pF
NC 13
NC 14
SEE IC101 PIN 12 PAGE 2A
R018 10K
SEE Q310 EMITTER PAGE 3B
R332 2200
R340 22K
C330 100pF
Q306 2SD601 SYNC AMP 4.4V 5.0V 18A 9.0V
C016 .47µF
C015 180pF NC 11
C017 1µF
R334 3300
K1N1 TP
C1875 180pF NC 19
R013 1800
S007 TV/VIDEO
S005 CH UP
S004 CH DN
S003 VOL UP
S002 VOL DN
S001 POWER
R037 8200
R036 4700
R035 3300
R034 2200
R033 2200
P3 8 A53 8
R038 18K TPS7
S006 ACTION
R032 10K 1% 9 5.0V
R039 1000
P3 4 A53 4
R014 1800
R820 15K
R821 3900
R063 100
C060 1000µF
17 13.0V
△ TAKEN FROM COMMON TIE POINT
Q804 2SA1767 SWITCH .3V 140V
R810 2700
C808 100µF
C807 3.3µF
2 140V 1 140V
.05V .18V 9.0V
PC817X2 IC806 OPTO-COUPLER
R120 10
R812 18K
D838 MA165
D837 MA4100M 10.0V
R839 10K
5 30.0V
6A 9.4V
R472 10K
C466 33µF
16 26.0V 15 26.6V
Q451 JA101 SWITCH 27.6V 0V
R473 22K
C467 1µF
15 26.6V
R474 10K
D806 MA4047H 5.1V
R813 5600
D807 MA165
D456 MA165
R050 10K 8 5.0V
NC 17
NC 56
NC 36
NC 34
SEE Q607 EMITTER PAGE 2D
18
33
38
2
SEE IC301 PIN 58 PAGE 2C
R011 10K
C1873 .47µF
C1874 1µF
R1882 3300
Q1872 2SB709 AMP 2.2V
R1875 470 1.5V
R1876 1000 18A 9.0V
Q1873 2SD601 AMP 3.3V 5.9V 3.9V
R1877 820
R1878 12K
R1879 15K 18A 9.0V
C1871 10µF
R1880 2200 18A 9.0V
C1872 100pF
Q1874 2SD601 AMP 5.9V 5.3V
R1881 470
18A 9.0V
SEE Q4309 BASE PAGE 3G
SEE IC301 PIN 62 PAGE 2A
R048 1000
4.8V 5ms
SEE IC301 PIN 61 PAGE 2A
D540 MA4047M 4.7V
R541 1000
C541 .0039
R543 2200
C540 820pF
R542 6800
Q504 2SD601 HORIZ PULSE 4.4V -.11V
R544 1800
R060 1000
10A 5.0V
C542 .0039
D541 MA165
4.8V 10µs
C040 27pF
X001 12MHz
C039 22pF
63
62
SEE IC2201 PIN 5 PAGE 3C
N2 A22 5
R017 10K 9
FA1 TP 8
FA2 TP 3
R015 1800
R016 10K 8 5.0V
8 5.0V
52
7
64
54
ADDITIONAL SCHEMATIC NOTES, SEE PAGE 2G
A PHOTOFACT STANDARD NOTATION SCHEMATIC WITH CIRCUITRACE®

8 5.0V
2 VDD IC006 MN1280-R RESET OUT 4.9V 1 VSS 3
R047 1000
C044 .01
C035 4.7µF
C036 .1
8 5.0V

MN102L35GTG1 # IC001 CPU

RM IN 4.9V	1	TV/VIDEO 0V	30
SDA3 0V	13	SDA1 4.3V	59
SCL3 0V	14	OSDX1 4.9V	37
AFC 1 2.6V	10	SCL1 4.3V	60
AFC 2 2.6V	11	SDA2 2.8V	28
CREFO .09V	23	VERSION 0V	4
VPHO 2.4V	24	SCL2 2.8V	29
CVBSO 2.1V	26	SUB PWR 0V	57
SPATIALIZER 4.9V	19	VCP 1.3V	25
G.S. MODE .1V	20	RF AGC 2.3V	15
KEY SCAN1 4.9V	5	PV1 (YUV SW) 0V	58
KEY SCAN2 2.6V	6	SPEAKER 4.8V	53
V-SIZE 4.9V	17	ANT SW 3.9V	40
HALT 4.9V	56	FM TRAP 0V	12
OSDXO 0V	36	RED OSD 0V	42
MNTY POWER 0V	34	GREEN OSD 0V	43
ROTATION 0V	18	DOLBY SW 4.9V	35
DIGI CON	33	BLU OSD 0V	44
VSS	38	YM 0V	48
CTV PTV	2	VREF 1.4V	47
LOCK DET 2.9V	3	SUB WOOFER 0V	32
G.S. RESET 2.5V	21	YS 0V	41
CVBS1 2.2V	27	IREF 1.4V	46
V-SYNC 4.2V	55	AVDO 4.9V	49
H-SYNC 4.2V	39	AVDO 4.9V	22
OSC2 2.5V	63	MTS BROD 4.4V	61
OSC1 2.4V	62	COMP 3.4V	45
		PDO 1.2V	50
		VCO1 1.2V	51
		S DEFEAT 0V	16
		POWER 4.7V	31

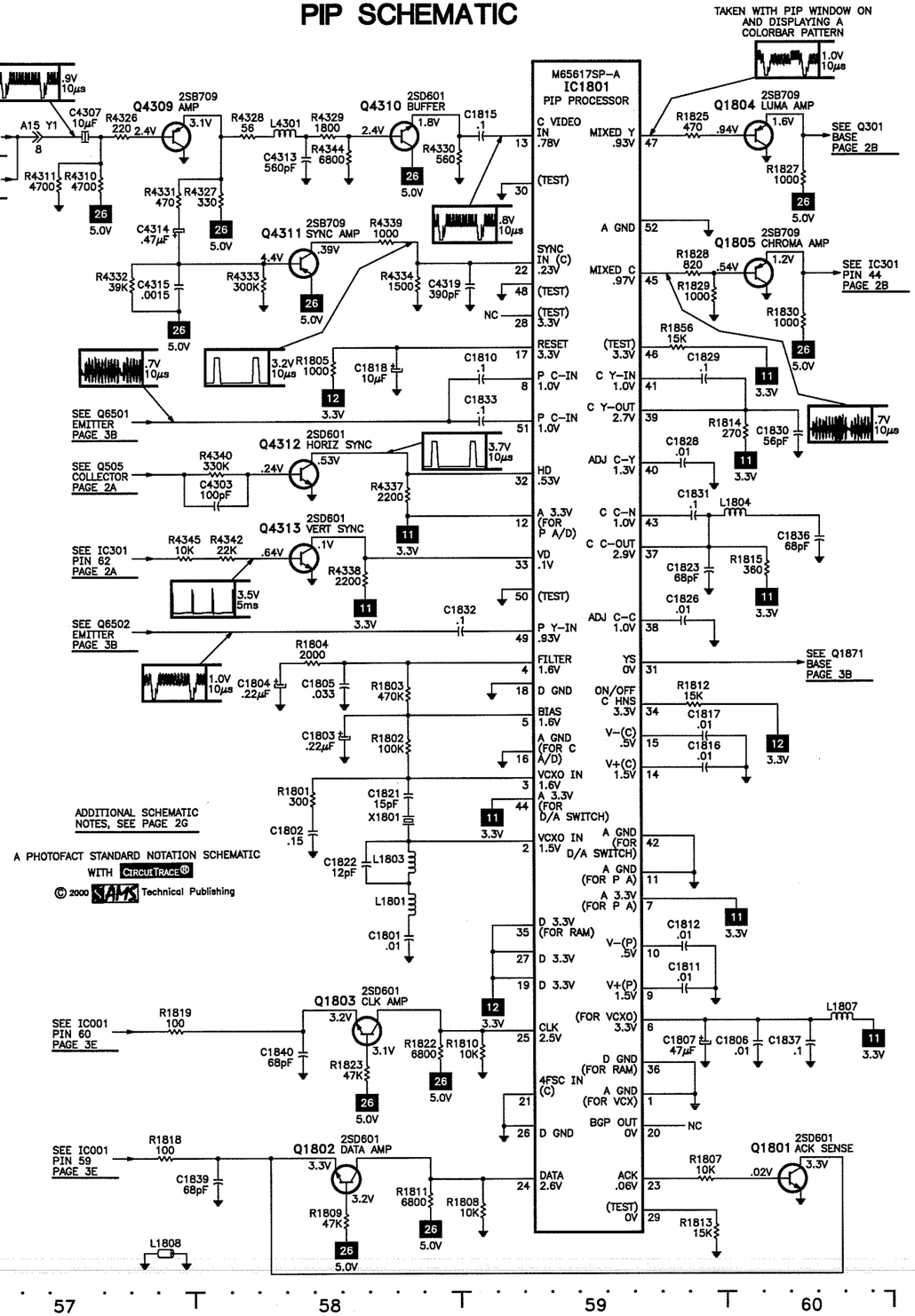
R026 100 SEE Q6513 BASE PAGE 3A
L015
R092 47K .60V .02V R510 10K SEE Q510 BASE PAGE 2F
R093 100K Q090 2SD601 SWITCH
L016
SEE IC3001 PIN 34 PAGE 3A
SEE IC6501 PIN 9 PAGE 3B
SEE IC2351 PIN 17 PAGE 3C
SEE IC6501 PIN 10 PAGE 3B
SEE IC2351 PIN 16 PAGE 3C
SEE IC3001 PIN 33 PAGE 3A
SEE IC101 PIN 5 PAGE 2A
SEE Q2336 BASE PAGE 3D
SEE Q141 BASE PAGE 2B
SEE IC301 PIN 30 PAGE 2C
SEE IC301 PIN 29 PAGE 2C
SEE IC301 PIN 27 PAGE 2C
SEE Q2331 BASE PAGE 3C
SEE Q001 BASE PAGE 2E
R012 10K 8 5.0V
R058 1800 8 5.0V
R059 1800 8 5.0V
A1 X1 2
A1 X1 1
SDA2 TP 1
L012
L013
R021 5600
C012 100pF
C013 22µF
R068 10K
R020 470
R064 120 1%
R066 120 1%
R040 120 1%
C1608 100pF
R1606 33K
Q1601 2SD601 SWITCH 0V
R1605 5600 18A 9.0V
R042 1000
R082 1600 1%
C031 .01
R083 680 1%
8 5.0V
Q015 2SD601 AMP 0V
R087 470
R062 100
R086 10K
R088 330
8 5.0V
C054 .01
R041 1000 (1200) 1%
8 5.0V
L010
C029 1µF
C042 .022
C083 .01
C041 1000µF
8 5.0V
R043 6800
R044 150
C034 .0027
R022 1000
R028 100
R1608 33K
C1609 100pF
Q1602 2SD601 SWITCH 0V
R1607 3300 18A 9.0V
C1607 10µF
R1604 1800
R1609 6800 18A 9.0V
SEE IC301 PIN 26 PAGE 2C
TC4066BP IC1601 TRANSPARENT
11 .24V 10
12 8.9V
R1602 330
3 2.7V 4
SEE Q356 BASE PAGE 2D
5 .24V
R1601 330
9 1.8V 3.0V 8
SEE Q355 BASE PAGE 2D
6 .24V
R1603 330
2 1.8V 2.7V 1 14 18A 9.0V
SEE Q354 BASE PAGE 2D
13 7

TUNER NOT INCLUDED IN THIS COVERAGE

C037 100pF R057 2700 8 5.0V
C038 100pF R056 2700 8 5.0V
SDA1 TP 7
SCL1 TP 4
R053 100
R052 100
5
6
4.3V SDA1 IC002 24LC08BIP I²C EEPROM SCL1 4.3V 0V
1 2 3 4 7
8 5.0V
C043 .01
L017
D015 MA4051M
D014 MA4051M
8 5.0V
L001
18A 9.0V
C001 100µF
10A 5.0V
P2 11 A52 11
R560 68K 2W 13 220V
C008 10µF
D004 MA4330H
A16 Y2 4 SEE Q1802 EMITTER PAGE 3G
A22 N2 4 SEE IC2201 PIN 2 PAGE 3G
SEE IC301 PIN 10 PAGE 2C
SDA TO TUNER
SEE IC301 PIN 12 PAGE 2C
SCL TO TUNER
A22 N2 3 SEE IC2201 PIN 3 PAGE 3G
A16 Y2 5 SEE Q1803 EMITTER PAGE 3G
ADD TO TUNER
NC TU TO TUNER
BM TO TUNER
BPL TO TUNER
BTL TO TUNER
NC TO TUNER
NC TO TUNER

SET 4319 Page 3

G
PIP SCHEMATIC

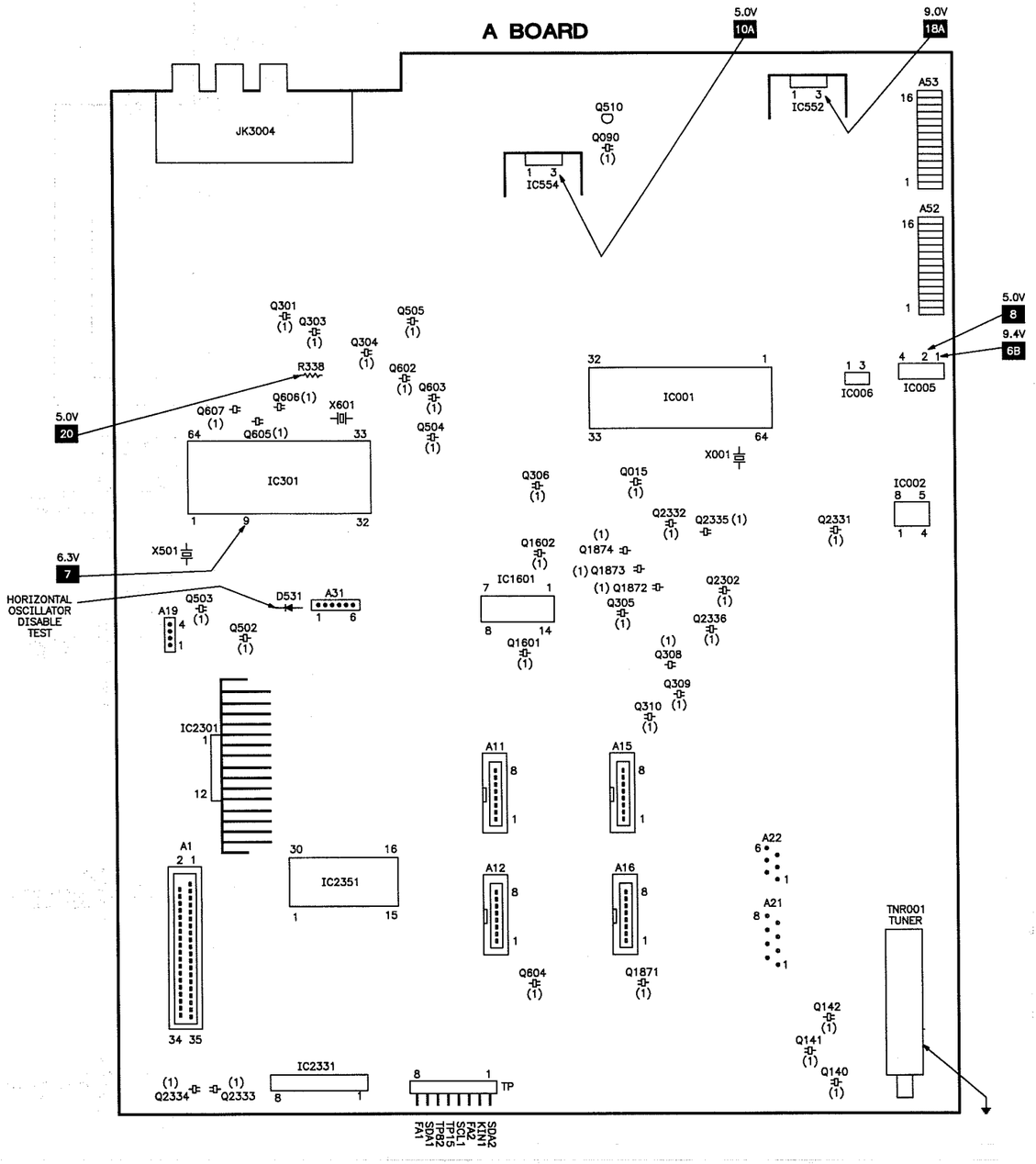


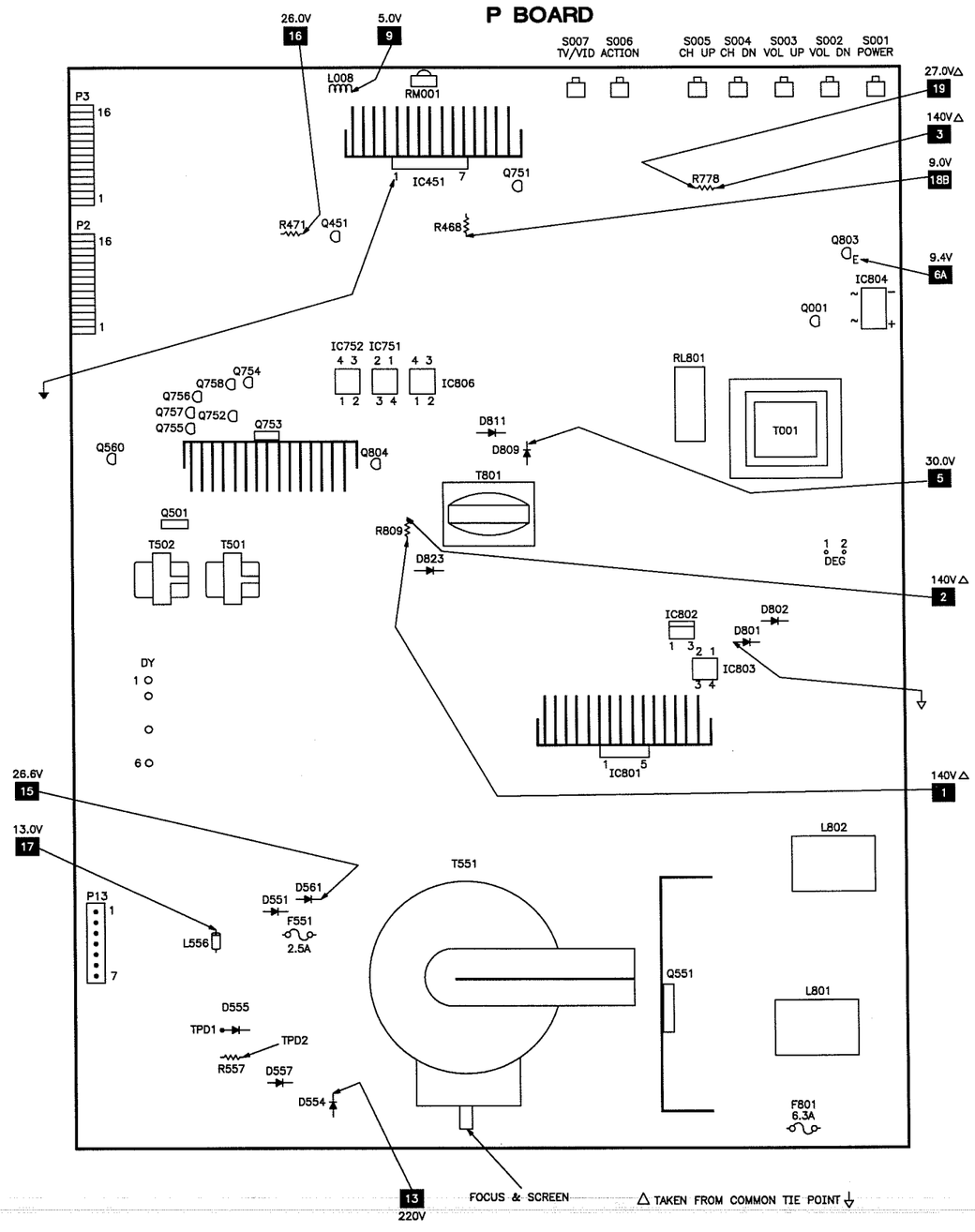
TEST EQUIPMENT

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	CM2125
Multiburst Signal	VG91
Color Bar	VG91
TV Stereo	VG91
Digital VOM	SC3100
Frequency Meter	SC3100
Hi-Voltage Probe	HP200
Accessory Probes	TP212
Isolation Transformer	PR570
Capacitance Analyzer	LC102
CRT Analyzer	CR7000
AC Leakage Tester	PR570
Inductance Analyzer	LC102
Flyback Yoke Tester	TVA92
Field Strength Meter	SL753
Transistor Tester	TF46
Horizontal Analyzer	HA-2500
Video Analyzer	VG91, TVA92

PLACEMENT CHART





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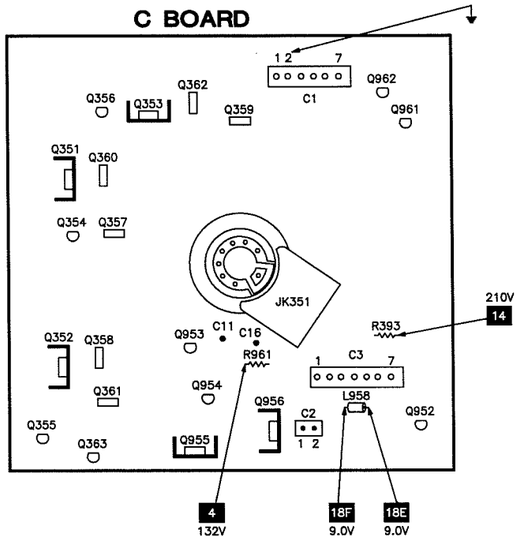
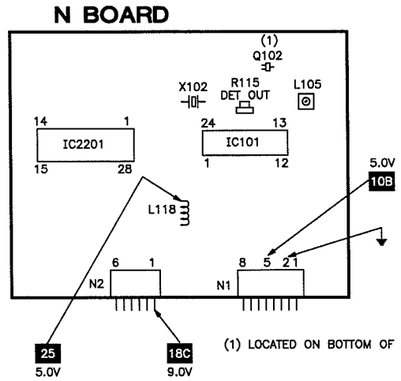
PLACEMENT CHART continued

C BOARD



N BOARD



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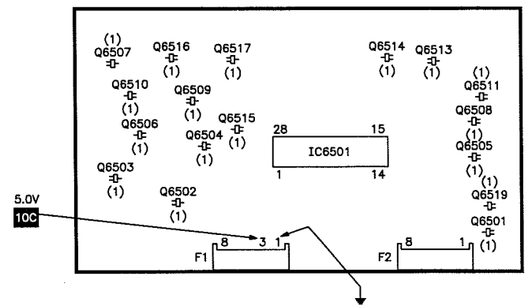
F2 BOARD



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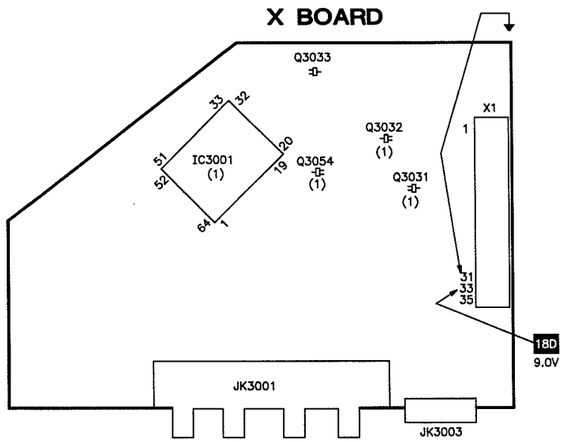
X BOARD



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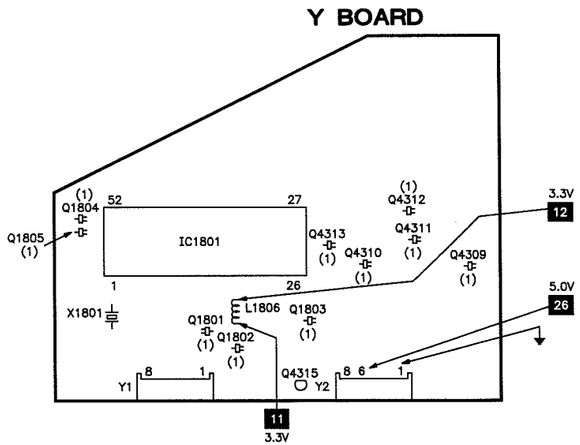

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IC FUNCTIONS

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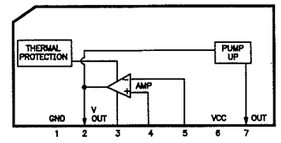
LA7845N



IC801
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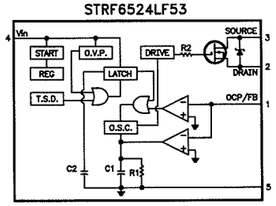

IC101
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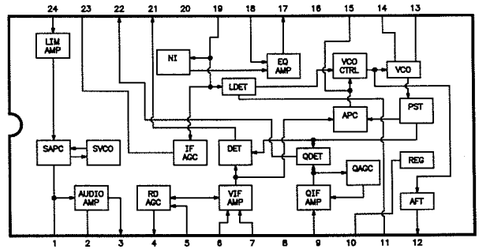

SCHEMATIC COMPONENT LOCATION GUIDE

C001	C56	C316	C12	C560	E9	C1608	D53	C2312	C48	C6510	A37	D802	A19	JK3001	E48	Q308	E38	Q4312	B58	R088	D54	R364	C15	R541	D49	R805	A20	R1815	C60	R3003	C34	R6526	A38
C004	B1	C317	B8	C561	D19	C1609	D54	C2313	C47	C6511	E36	D806	C50	L001	C56	Q309	E39	Q4313	C58	R092	A53	R367	B27	R542	D50	R806	B20	R1818	E57	R3004	B47	R6527	D37
C005	D24	C318	E21	C562	E18	C1610	E21	C2314	D45	C6512	D37	D807	C51	L004	E23	Q310	E40	Q4315	E23	R093	A53	R368	B27	R543	D50	R808	A23	R1819	E57	R3005	C34	R6528	D36
C006	C56	C319	E39	C563	E22	C1801	D58	C2331	D47	C6513	A37	D809	B23	L008	C23	Q351	A27	Q6501	D39	R102	B1	R369	C27	R544	D51	R809	A23	R1822	E58	R3006	B34	R6529	B38
C010	C24	C320	D21	C564	D19	C1802	D58	C2332	D47	C6514	B38	D811	B23	L010	E54	Q352	B27	Q6502	E37	R103	B1	R370	C27	R545	E2	R810	C49	R1823	E58	R3007	A47	R6530	B38
C011	A51	C324	D22	C565	C22	C1803	C58	C2333	E46	C6515	D37	D820	B21	L012	B53	Q353	C27	Q6503	B36	R110	E19	R371	B16	R546	E3	R812	C50	R1825	A59	R3009	B47	R6531	D36
C012	C53	C330	B51	C569	D22	C1804	C58	C2334	E45	C6516	B38	D821	B22	L013	B53	Q354	A16	Q6504	A36	R112	C2	R372	B16	R552	D19	R813	C51	R1827	A60	R3021	B33	R6532	D36
C013	C53	C332	E21	C570	D19	C1805	C58	C2335	E47	C6517	A38	D822	B21	L015	A53	Q355	B16	Q6505	D38	R113	B4	R373	C16	R556	D9	R818	B23	R1828	B59	R3022	A33	R6533	D37
C014	C23	C351	D30	C572	E6	C1806	E60	C2336	E47	C6518	B38	D823	A22	L016	B52	Q356	C16	Q6506	E36	R114	B5	R374	A29	R557	E9	R819	B22	R1829	B59	R3026	A47	R6534	D36
C015	B51	C352	D30	C573	E19	C1807	E59	C2337	D44	C6519	D37	D825	A24	L017	B55	Q357	A29	Q6507	B37	R115	B4	R375	B29	R558	D8	R820	B50	R1830	B60	R3027	A34	R6535	E35
C016	B51	C353	B16	C574	E21	C1808	E24	C2351	C41	C6520	C40	D830	B24	L103	B3	Q358	B29	Q6508	D36	R117	B5	R376	C29	R560	C55	R821	B50	R1856	B59	R3028	B47	R6536	D36
C017	B51	C354	B16	C577	E22	C1809	E24	C2352	C41	C6521	D24	D832	B20	L105	B3	Q359	C29	Q6509	A37	R118	B2	R377	A29	R561	A30	R822	B20	R1871	B37	R3031	A35	R6537	A39
C021	C24	C355	C16	C578	D24	C1810	B59	C2353	D41	C6522	C40	D835	C22	L118	E23	Q360	B29	Q6510	E35	R119	A2	R378	B29	R563	C9	R823	B21	R1872	B37	R3033	A35	R6538	A39
C022	B24	C356	C27	C602	B7	C1811	D59	C2354	C41	C6523	D23	D837	C50	L135	B4	Q361	C29	Q6511	D36	R120	C50	R379	C29	R564	C9	R824	A21	R1873	B37	R3034	B35	R6540	D36
C024	C24	C357	D21	C604	B11	C1812	D59	C2355	D41	C6524	B39	D838	C50	L140	B6	Q362	C29	Q6513	D36	R121	B4	R380	A29	R565	C9	R826	B21	R1874	B38	R3036	B35	R6541	D36
C029	E53	C358	B15	C605	B11	C1813	E23	C2356	D41	C6525	A38	D955	D27	L355	A28	Q363	C14	Q6514	D36	R125	B2	R381	B29	R566	D18	R827	B21	R1875	D49	R3037	C35	R6542	C40
C031	D53	C359	C15	C607	B10	C1814	E24	C2357	D41	C6526	C39	D957	D28	L356	B28	Q451	C51	Q6515	B40	R126	B2	R382	C29	R569	D20	R829	B22	R1876	D50	R3038	C35	R6543	B39
C032	C24	C360	B15	C610	A10	C1815	A59	C2358	E41	C6527	C38	D2302	C44	L357	C28	Q501	E5	Q6516	A38	R128	B1	R383	A29	R571	E4	R830	B21	R1877	D50	R3039	C35	R6544	D37
C034	E54	C364	C14	C611	A11	C1816	D59	C2359	E41	C6528	C38	D2303	D45	L358	A30	Q502	D2	Q6517	A38	R129	A3	R384	B29	R602	A9	R831	B21	R1878	D50	R3040	A35	R6545	B39
C035	E51	C366	D22	C612	A10	C1817	C59	C2360	E41	C6529	A36	D2307	C46	L359	B30	Q503	D3	Q6519	D38	R135	C4	R385	C29	R606	C11	R832	B19	R1879	D50	R3041	C36	R6546	D36
C036	E51	C370	D30	C614	A12	C1818	B58	C2361	E41	C6531	A40	D3001	B34	L360	C30	Q504	D51	R008	A51	R140	B6	R386	A28	R607	A14	R833	B20	R1880	D50	R3073	C33	R6547	D36
C037	A54	C371	C15	C615	B10	C1819	E24	C2362	C44	C6532	D38	D3002	A47	L551	D8	Q505	E2	R009	B18	R141	B6	R387	B28	R608	A14	R835	B22	R1881	D51	R3075	A46	R6548	D36
C038	B54	C401	C1	C616	B10	C1820	E24	C2364	E42	CRA801	A17	D3004	B47	L554	E6	Q510	C23	R011	C51	R142	B6	R388	C28	R609	C14	R836	B22	R1882	D51	R3076	B46	R6549	C39
C039	D51	C402	C4	C617	B9	C1821	D58	C2365	E42	CRA802	A17	D3006	B34	L555	C7	Q551	E6	R012	B52	R143	C6	R389	A30	R610	C14	R839	C50	R2201	B42	R3081	A46	R6550	B39
C040	D51	C403	C4	C620	B13	C1822	D58	C2366	D42	D002	B18	D3007	A47	L556	D19	Q560	C9	R013	B51	R144	B5	R390	B30	R611	B14	R918	D27	R2202	B42	R3082	B46	R6551	C40
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C042	E53	C407	C24	C622	B10	C1826	C59	C2368	D42	D005	C23	D3071	C34	L601	B11	Q603	A9	R015	E51	R146	B6	R392	B31	R613	B13	R953	D27	R2204	B43	R3291	C14	R6553	C38
C043	B55	C409	C1	C623	B11	C1827	E24	C2369	D42	D011	E19	D3072	C34	L751	E15	Q605	A11	R016	E51	R151	A1	R393	C21	R614	B12	R954	D27	R2205	B43	R3293	C14	R6554	C38
C044	E51	C451	D5	C624	B10	C1828	B59	C2373	C42	D014	B55	D3073	C34	L801	A18	Q606	A12	R017	E51	R152	A1	R395	D21	R615	C11	R955	D27	R2208	B42	R3294	C14	R6555	A36
C047	C24	C452	D21	C627	A12	C1829	B59	C2374	E42	D015	B55	D3074	C34	L802	A18	Q607	A13	R018	A51	R202	A2	R401	C1	R616	A10	R960	D28	R2212	B44	R4310	A57	R6556	A36
C048	C24	C453	D22	C709	B8	C1830	B60	C2375	E42	D097	B38	D3075	C33	L804	A20	Q751	D11	R020	C53	R301	C9	R405	C5	R618	C11	R961	B24	R2230	A4	R4311	A57	R6557	C39
C050	B24	C454	C6	C751	A24	C1831	C59	C2380	C41	D098	B38	D3093	D48	L805	A23	Q752	D14	R021	C53	R302	B9	R408	C4	R621	B9	R962	D28	R2231	A4	R4326	A57	R6558	A38
C053	C24	C455	D5	C753	A23	C1832	C58	C2382	E22	D302	D21	D3094	E48	L806	B23	Q753	D14	R022	E53	R303	C13	R451	C5	R622	B9	R963	E28	R2303	C45	R4327	A58	R6559	A38
C054	D53	C456	C5	C756	D14	C1833	B59	C2388	D42	D351	A29	D4301	E23	L808	B23	Q754	D12	R026	A53	R304	C13	R452	D6	R623	B10	R964	D28	R2304	C45	R4328	A58	R6560	A38
C055	C23	C457	C6	C757	E12	C1835	E24	C3001	E22	D352	A29	F551	D19	L810	B21	Q755	D13	R028	E53	R305	B8	R453	C5	R625	A9	R965	D28	R2307	C46	R4329	A58	R6565	D39
C060	B51	C458	C7	C805	A20	C1836	C60	C3002	E21	D353	B29	F801	A17	L811	C19	Q756	E13	R032	B50	R306	B12	R454	D5	R626	B8	R966	D29	R2309	C45	R4330	A58	R6566	D38
C083	E53	C466	C50	C806	B20	C1837	E60	C3003	D35	D354	B29	IC001	A52	L812	C19	Q757	E13	R033	B50	R307	C12	R455	C5	R639	B11	R967	D28	R2310	D45	R4331	A57	R6567	D38
C084	C24	C467	C51	C807	C49	C1839	E58	C3004	B34	D355	C29	IC002	B55	L813	B23	Q758	E12	R034	B50	R308	C2	R456	C7	R640	B11	R968	E28	R2311	D45	R4332	B57	R6568	D37
C085	C23	C501	C1	C808	C49	C1840	E58	C3007	A34	D356	C29	IC005	C22	L814	A18	Q803	B22	R035	B49	R309	C2	R457	C7	R641	A12	R969	D29	R2316	C45	R4333	B58	RL801	A18
C101	B1	C502	D3	C809	A24	C1871	D50	C3008	A46	D361	A27	IC006	E50	L953	D29	Q804	C49	R036	B49	R310	A8	R458	D6	R642	A12	R970	D29	R2317	C46	R4334	B58	RL801	B18
C103	E24	C503	D3	C810	C19	C1872	D51	C3009	B46	D362	B27	IC101	A3	L954	E29	Q952	D27	R037	B49	R311	E38	R460	C6	R643	A13	R971	E29	R2318	C48	R4336	E23	RM001	A50
C104	E24	C504	C3	C811	C19	C1873	D51	C3071	C34	D364	C27	IC101	B3	L958	E21	Q953	D28	R038	B49	R313	E39	R461	D6	R644	A12	R972	E29	R2319	C47	R4337	B58	S001	B50
C105	B3	C505	D3	C813	A20	C1874	D51	C3072	C34	D366	C14	IC301	B9	L1801	D58	Q954	E28	R039	B51	R314	E39	R468	C6	R645	A13	R973	E29	R2321	D44	R4338	C58	S002	B50
C109	C2	C506	D4	C815	A21	C1875	B51	C3073	B33	D367	A15	IC301	C2	L1803	D58	Q955	D29	R040	D53	R315	E39	R469	C6	R722	D4	R974	E29	R2323	D44	R4339	B58	S003	B50
C111	B4	C507	C5	C817	B21	C2201	B45	C3074	A47	D368	B15	IC451	C6	L1804	C59	Q956	E29	R041	D53	R316	E39	R470	D5	R723	B7	R987	D26	R2324	E46	R4340	B58	S004	B49
C112	B3	C508	D3	C818	A21	C2202	B45	C3075	B47	D369	C15	IC552	D20	L1806	E23	Q961	E29	R042	D53	R317	E39	R471	D21	R724	B8	R988	D26	R2325	E46	R4342	C58	S005	B49
C115	B2	C509	D2	C819	B21	C2203	B44	C3078	B33	D455	C6	IC554	C22	L1807	E60	Q962	D26	R043	E53	R318	E39	R472	C50	R751	D13	R989	E29	R2326	D45	R4344	A58	S006	B50
C116	B1	C511	E5	C821	B23	C2204	A42	C3079	A47	D456	C51	IC751	D12	L1808	E57	Q1601	D53	R044	E54	R319	E40	R473	C51	R752	D12	R990	D26	R2331	D47	R4345	C57	S007	B49
C135	B4	C514	E5	C822	B24	C2205	B45	C3080	B47	D501	D4	IC752	E11	L2201	B41	Q1602	D54	R045	A50	R325	C13	R474	C51	R755	D13	R991	D26	R2332	E47	R6501	D40	SP1	C48
C140	B6	C521	C1	C823	A24	C2206	B43	C3191	C44	D530	D2	IC801	B21	L2202	B41	Q1801	E60	R047	E51	R327	C13	R501	C1	R756	E13	R1601	D55	R2333	D47	R6502	E37	SP2	C48
C153	A2	C522	D2	C824	B20	C2207	B44	C4301	E24	D531	E2	IC802	C20	L2302	C47	Q1802	E58	R048	D49	R330	E38	R502	D3	R757	E13	R1602	D55	R2334	D47	R6503	B36	T001	C17
C154	A2	C523	D2	C834	A17	C2208	B43	C4302	E24	D532	E3	IC803	B20	L4301	A58	Q1803	E58	R050	C51	R331	E38	R503	D2	R758	E14	R1603	E55	R2335	E46	R6504	B36	T501	E5
C202	B4	C524	D2	C837	C22	C2210	B44	C4303	C58	D533	D3	IC804	C18	L6502	D39	Q1804	A60	R052	B55	R332	B50	R504	D3	R761	D14	R1604	E54	R2336	E46	R6505	D39	T502	E4
C207	B3	C531	E1	C840	B23	C2211	B44	C4304	E23	D534	D2	IC806	C50	L6503	E37	Q1805	B60	R053	B55	R334	B51	R506	D4	R762	D14	R1605	D54	R2337	D45	R6506	E37	T551	C10
C208	B3	C532	D1	C841	C21	C2212	A42	C4307	A57	D540	D49	IC1601	D55	L6504	B37	Q1871	B37	R056	B54	R335	B10	R509	C3	R763	D14	R1606	D53	R2338	E45	R6507	B37	T801	A22
C209	B3	C534	D1	C904	E21	C2213	B42	C4313	A58	D541	D50	IC1801	A59	L6505	A37	Q1872	D49	R057	A54	R336	C10	R510	A53	R764	D15	R1607	D55	R2339	E46	R6508	B36	V1	C31
C210	B3	C535	E2	C952	E22	C2214	A43	C4314	A57	D542	E2	IC2201	A43	L6506	D37	Q1873	D50	R058	B53	R338	D20	R515	E5	R765	D11	R1608	D54	R2340	E45	R6509	A36	X001	D52
C212	A3	C536	E2	C953	D26	C2215	B44	C4315	B57	D543	E2	IC2301	C46	L6507	C38	Q1874	D51	R059	B53	R340	B50	R516	E5	R766	D11	R1609	E55	R2341	E43	R6510	A37	X101	B1
C301	A8	C540	D49	C954	D27	C2216	A42	C4316	E24	D551	D19	IC2331	D46	M015	A17	Q2302	C46	R060	D51	R348	A7	R517	E5	R767	D11	R1801	D58	R2342	E43	R6511	E36	X102	B3
C302	B9	C541	D49	C958	B24	C2219	A42	C4317	E24	D552	E8	IC2331	E46	Q001	B18	Q2331	D44	R062	D54	R350	A7	R521	C23	R769	D12	R1802	C58	R2343	D43	R6512	A37	X201	A3
C304	B12	C542	D50	C959	D28	C2220	A41	C4318	E24	D553	E8	IC2351	C42	Q015	D53	Q2332	D44	R063	B50	R351	A16	R524	D2	R771	D11	R1803	C58	R2344	D43	R6513	E36	X501	C3
C305	D21	C545	E2	C961	D29	C2221	A4	C4319	B59	D554	C19	IC3001	A34	Q090	A53	Q2333	E47	R064	C53	R352	B16	R525	D2	R772	E12	R1804	C58	R2345	E47	R6515	D38	X601	B10
C306	B12	C549	B9	C962	E28	C2222	B41	C6501	D24	D555	D9	IC3001	A47	Q102	B4	Q2334	E47	R066	C54	R353	C16	R527	D3	R773	E11	R1805	B58	R2346	E47	R6516	E36	X1801	D58
C307	B10	C551	E8	C964	D29	C2223	B41	C6502	D23	D556	E9	IC6501	A39	Q140	B6	Q2335	D45	R068	C53	R354	A15	R531	E2	R774	D13	R1807	E59	R2347	E47	R6517	B37		
C308	C2	C552	E8	C966	E29	C2231	E22	C6503	B36	D557	E18	JK3001	A46	Q141	B6	Q2336	C46	R079	A10	R355	C15	R532	D2	R775	E12	R1808	E59	R2348	E47	R6518	D37		
C309	B12	C553	D21	C967	E29	C2232	E21	C6504	D39	D561	D19	JK3001	A46	Q142	B5	Q3031	A35	R080	A10	R356	B15	R533	D1	R777	E11	R1809	E58	R2351	D41	R6519	D37		
C311	C13	C554	E8	C968	D26	C2302	C45	C6505	E37	D752	A23	JK3001	B33	Q301	A7	Q3032	B35	R082	D53	R357	A15	R534	E2	R778	A23	R1810	E59	R2352	E42	R6520	E36		
C312	C13	C556	E7	C969	E29	C2305	C45	C6506	B37	D753	D13	JK3001	B33	Q303	C13	Q3033	C35	R083	D53	R358	B15	R535	E2	R779	E12	R1811	E58	R2355	D46	R6521	B38		
C313	E21	C557	E7	C970	D28	C2307	C48	C6507	D39	D754	D13	JK3001	B46	Q304	C13	Q4309	A57	R085	B38	R359	C15	R536	E3	R801	A19	R1812	C59	R2360	C47	R6522	E36		
C314	D21	C558	E18	C971	E28	C2308	C47	C6508	E37	D755	D12	JK3001	B46	Q305	E38	Q4310	A58	R086	D53	R360	A15	R537	D2	R802	A17	R1813	E59	R3001	B34	R6523	A37		
C315	C9	C559	D8	C1607	E54	C2311	C46	C6509	B37	D801	A19	JK3001	D48	Q306	B51	Q4311	B58	R087	D53	R363	B15	R540	D3	R804	A19	R1814	B60	R3002	A47	R6524	E35		

PARTS LIST

SEMICONDUCTORS

(Select the replacement that gives the best results.)

	Item No.	Type No.	Mfr. Part No.	ECG Part No.
	D002	-	MA165	ECG519
	D004	-	MA4330H	-
	D005	-	MA5056M	-
	D011	-	MA178	ECG519
	D014, 15	-	MA4051M	ECG5010T1
	D097, 98	-	MA165	ECG519
	D302	-	MA4051M	ECG5010T1
	D351 Thru			
	D356	-	MA165	ECG519
	D361, 62	-	MA165	ECG519
	D364, 66	-	MA165	ECG519
	D367, 68, 69	-	MA4056H	ECG5011A
	D455	-	ERA15-01	ECG116
	D456	-	MA165	ECG519
	D501	-	MA165	ECG519
	D530	-	MA4039H	-
#	**D531**	-	ERA22-04	ECG552
#	**D532**	MA4062LTV	MA4062L	ECG5012A
	D533	-	MA29Q-ATA	-
	D534	-	MA4220H	ECG5030A
	D540	-	MA4047M	ECG5009A
	D541	-	MA165	ECG519
	D542	-	MA4082M	ECG5016A
	D543	-	MA165	ECG519
#	**D551**	RU2N	TVSRU2N	ECG552
#	**D552**	-	RS3FS	ECG506
#	D553	TVSRU3AN	TVSRU3ANV	ECG580
#	**D554**	AU02	-	ECG552
		-	BYD33G-143	-
	D555	-	MA165	ECG519
	D556	-	MA4360H	-
#	**D557**	-	AU02	ECG552
#	**D561**	AU02	-	ECG552
		-	BYD33G-143	-
	D752	-	MA2270B	-
	D753, 54	-	MA165	ECG519
	D755	MA165	MA165VT	ECG519
#	**D801, 02**	RM10B	TVSRM10B	ECG125
	D806	-	MA4047H	ECG5009A
	D807	-	MA165	ECG519
#	**D809**	RU3YX	RU3YX-M	ECG588
#	**D811**	-	AU02A	ECG552
	D820, 21	-	AG01V0	-
	D822	-	AU01Z	ECG552
#	**D823**	-	RL30A	-
#	**D825**	SR2KL	TVSSR2KL	-
#	**D830**	-	MA4330M	-
	D832	-	MA4200M	-
	D835	-	MA4100L	-
	D837	-	MA4100M	ECG5019T1

 # For SAFETY use only equivalent replacement part.

SEMICONDUCTORS continued

(Select the replacement that gives the best results.)

	Item No.	Type No.	Mfr. Part No.	ECG Part No.
	D838	-	MA165	ECG519
	D955	-	MA29W-BTA	-
	D957	-	MA165	ECG519
	D2302, 03, 07	-	MA165	ECG519
	D3001, 02	-	MA3110M	-
	D3004, 06, 07	-	MA3110M	-
	D3009	-	MA3110M	-
	D3071	-	MA3110M	-
	D3072 Thru			
	D3075	-	MA3110M	-
	D3093, 94	-	MA3110M	-
	D4301	-	MA3036H	-
#	**IC001**	MN102L35GTG1	MN102L35GTG	-
	IC002	-	24LC08BIP	-
	IC005	-	PQ05RD1B	-
	IC006	-	MN1280-R	ECG15044
	IC101	-	AN5170K	-
#	**IC301**	-	AN5308NK	-
	IC451	-	LA7845N	-
#	**IC552**	-	AN7809	ECG1910
#	**IC554**	-	AN7805	ECG960
#	**IC751, 52**	-	TLP621GRH	ECG3098
#	**IC801**	-	STRF6524LF53	-
#	**IC802**	-	SE139NLF4	-
#	**IC803**	-	0N3131R	ECG3098
	IC804	-	TVSS1WBS20	-
#	**IC806**	-	0N3131R	ECG3098
		TLP621GR	-	ECG3098
		PC817X2	-	-
	IC1601	-	TC4066BP	ECG4066B
	IC1801	M65617SP-A	M65617SP	-
#	**IC2201**	-	AN5819K	-
	IC2301	-	AN5277	-
	IC2331	-	BA15218N	ECG778S
	IC2351	-	AN7396K	-
	IC3001	-	CXA2079Q	-
	IC6501	MN8284	MN82840	-
	Q001	-	2SC1685QRS	ECG85
	Q015, 90	2SD601A	2SD601ARTX	ECG2408
	Q102	2SD601A	2SD601ARTX	ECG2408
		MSD601	-	-
	Q140, 41	2SD601A	2SD601ARTX	ECG2408
	Q142	2SB709A	2SB709ARTX	ECG2409
	Q301, 03	2SB709A	2SB709ARTX	ECG2409
	Q304, 05, 06	2SD601A	2SD601ARTX	ECG2408
		MSD601	-	-
	Q308	2SB709A	2SB709ARTX	ECG2409
	Q309, 10	2SD601A	2SD601ARTX	ECG2408
		MSD601	-	-
	Q351, 52, 53	2SC3063RL	2SC3063	ECG157

 # For SAFETY use only equivalent replacement part.

PARTS LIST continued

SEMICONDUCTORS continued

(Select the replacement that gives the best results.)

Item No.	Type No.	Mfr. Part No.	ECG Part No.
Q354, 55, 56	2SC1685Q	2SC1685QRS	ECG85
Q357, 58, 59	2SC3063RL	2SC3063	ECG157
Q360, 61, 62	2SB1011RL	2SB1011	-
Q363	2SA564AQRS	2SA564AQRSTA	ECG234
	2SB642QRS	-	ECG19
Q451	JA101PQ	-	ECG290A
	-	2SA564AQRS	ECG234
Q501	2SC4212HLB	2SC4212H	ECG2501
Q502 Thru			
Q505	2SD601A	2SD601ARTX	ECG2408
Q510	2SA564AQ	2SA564AQRSTA	ECG290A
# **Q551**	2SD2539	2SD2539306	ECG2353
Q560	2SA564AQ	2SA564AQRSTA	ECG290A
Q602, 03	2SB709A	2SB709ARTX	ECG2409
Q605, 06	2SD601A	2SD601ARTX	ECG2408
Q607	2SB709A	2SB709ARTX	ECG2409
Q751	2SC1685Q	2SC1685QRS	ECG85
	JC501	-	ECG85
Q752	2SA564AQ	2SA564AQRSTA	ECG290A
Q753	2SD1267A	2SD1267AP	ECG377
Q754	2SA564AQ	2SA564AQRSTA	ECG290A
Q755, 56	2SC1685Q	2SC1685QRS	ECG85
	JC501	-	ECG85
Q757, 58	2SA564AQ	2SA564AQRSTA	ECG290A
	JA101PQ	-	ECG290A
Q803	2SC1383	2SC1383NC	ECG293
Q804	2SA1767QTA	2SA1767Q	-
Q952, 53	2SC1685R	2SC1685QRS	ECG85
Q954	-	2SA564AQRSTA	ECG290A
Q955	2SB1569AF51	2SB1569AF51E	-
Q956	2SD2400AF51	2SD2400AF51E	-
Q961	-	2SC1685QRS	ECG85
Q962	2SA564AQRS	2SA564AQRSTA	ECG234
Q1601	2SD601A	2SD601ARTX	ECG2408
Q1602	2SD601A	2SD601ARTX	ECG2408
Q1801, 02, 03	2SD601A	2SD601ARTX	ECG2408
Q1804, 05	2SB709A	2SB709ARTX	ECG2409
Q1871, 72	2SB709A	2SB709ARTX	ECG2409
Q1873, 74	2SD601A	2SD601ARTX	ECG2408
Q2302, 31	2SD601A	2SD601ARTX	ECG2408
Q2332	2SB709A	2SB709ARTX	ECG2409
Q2333, 34	2SD601A	2SD601ARTX	ECG2408
Q2335	2SB709A	2SB709ARTX	ECG2409
Q2336	2SD601A	2SD601ARTX	ECG2408
Q3031	2SB709A	2SB709ARTX	ECG2409
Q3032, 33	2SD601A	2SD601ARTX	ECG2408
Q4309	2SB709A	2SB709ARTX	ECG2409
Q4310	2SD601A	2SD601ARTX	ECG2408
Q4311	2SB709A	2SB709ARTX	ECG2409
Q4312, 13	2SD601A	2SD601ARTX	ECG2408

 # For SAFETY use only equivalent replacement part.

SEMICONDUCTORS continued

(Select the replacement that gives the best results.)

Item No.	Type No.	Mfr. Part No.	ECG Part No.
Q4315	2SC1384	2SC1384Q	ECG293
Q6501 Thru			
Q6509	2SD601A	2SD601ARTX	ECG2408
	MSD601	-	-
Q6510	2SB709	2SB709ARTX	ECG2409
	MSB709	-	-
Q6511, 13	2SD601A	2SD601ARTX	ECG2408
	MSD601	-	-
Q6514, 15, 16	2SB709	2SB709ARTX	ECG2409
	MSB709	-	-
Q6517, 19	2SD601A	2SD601ARTX	ECG2408
	MSD601	-	-

PARTS LIST continued

CAPACITORS & ELECTROLYTICS

	Item No.	Rating	Mfr. Part No.
	C016	.47µF 50V NP	ECEA1HNR47U
	C301	47µF 16V NP	ECEA1CN470U
	C309	1µF 50V NP	ECEA1HN010U
	C351	.001 10% 2kV	ECKD3D102KB
	C352	1µF 50V NP	ECEA1HN010U
	C402	1µF 25V Tantalum	ECSF1EE105
	C403	.33µF 35V Tantalum	ECSF1VE334
	C456	2pF 50V NPO	ECCF1H020CC
	C504	220pF 5% 50V N750	ECUX1H221JUX
#	**C531**	33µF 10% 50V	ECA1HM330
#	**C551**	.01 5% 1.2kV	ECWH12H103JS
#	**C552**	.033 5% 400V	ECQM4333JZ
#	**C553**	2200µF 20% 16V	ECA1CM222
#	**C554**	820pF 10% 2kV	ECKD3D821KB
#	**C556, 57**	.001 5% 2KV	ECKD3D102JB
#	**C558**	220µF 20% 16V	ECA1CM221
#	**C559**	.39µF 5% 200V	ECWF2394JB7
#	**C560**	4.7µF 50V NP	ECEA1HN4R7U
#	**C563**	330µF 16V	ECA1CM331
#	**C565**	10uF 250V	ECA2EM100
#	**C569**	330µF 35V	ECA1VM331
#	**C572**	470pF 5% 2kV	ECKD3D471JB
	C604	2.2µF 50V NP	ECEA1HN2R2U
	C607	9pF ±.5pF 50V NPO	ECUX1H090DCX
	C615	33pF 5% 50V NPO	ECUX1H330JCX
#	**C805, 06**	560µF 20% 200V	EC0S2DA561BB
#	**C809**	330µF 20% 200V	EC0S2DA331BB
#	**C810, 11**	.015 20% 250VAC	ECQU2A153MN
	C817	470pF 10% 1kV	ECKD3A471KB
	C818	.001 10% 2kV	ECKD3D102KB
	C819	100pF 10% 1kV	ECKD3A101KB
#	**C822**	2200µF 35V	ECA1VM222
#	**C823**	33µF 160V	ECEA160V33Z
	C824	.0015 5% 1kV	ECKD3A152KB
#	**C834**	.22 20% 250VAC	ECQU2A224MV
#	**C840**	100µF 160V	ECA2CM101
	C1873	.47µF 20% 50V NP	ECEA1HNR47U
	C2201	3.3µF 16V Tantalum	AP335K016CAE
	C2219	10µF 16V Tantalum	AP106K016CAE
#	**C2222**	.0047 10% 50V	ECUX1H472KBX
#	**C2223**	.01 10% 50V	TCUX1H103KBN
	C2362	10µF 16V NP	ECEA1CN100U
	C2375	22µF 16V NP	ECEA1CN220U
	C3191	10µF 16V NP	ECEA1CN100U
	C4307	10µF 16V NP	ECEA1CKN100
	C6517	1µF 50V NP	ECEA1HN010U

 # For SAFETY use only equivalent replacement part.

CONTROLS & RESISTORS

	Item No.	Function/Rating	Mfr. Part No.
#	**D850**	2.9/68.5 PTC Cold	TAP107M003
	R032	10K 1% 1/4W	ER0S2CKF1002
	R040	120 1% 1/10W	ERJ6ENF1200
	R041	1000 1% 1/10W	-
		1200 1% 1/10W	ERJ6ENF1201
	R064, 66	120 1% 1/10W	ERJ6ENF1200
	R082	1600 1%1/10W	ERJ6ENF1601
	R083	680 1% 1/10W	ERJ6ENF6800
	R115	3000 Detector Output	EVND2AA03B33
	R304	1650 1% 1/10W	ERJ6ENF1651
	R325	5600 1% 1/10W	ERJ6ENF5601
	R327	2200 1% 1/10W	ERJ6ENF2201
	R348	560 1% 1/10W	ERJ6ENF5600
	R350	680 1% 1/10W	REJ6ENF6800
	R393	100 5% 1/2W Fusible	ERQ12AJ101
	R468	4320 1% 1/4W	ER0S2CKF4321
	R469	1470 1% 1/4W	ER0S2CKF1471
#	**R515,16**	3900 5% 3W	ERG3FJ392H
#	**R531**	47 5% 1/4W	ERD25FJ470
#	**R532**	24.3K 1% 1/10W	ERJ6ENF2432
#	**R533**	2740 1% 1/10W	ERJ6ENF2741
#	**R552**	1 5% 1/4W	ERD25FJ1R0
#	**R558**	1000 5% 1W Fusible	ERQ1CJP102
#	**R561**	2.4 5% 2W Fusible	ERQ2CJ2R4
#	**R566**	1 5% 1/2W	ERDS1FJ1R0
	R569	18 5% 3W	ERG3FJ180H
	R641	1100 1% 1/10W	ERJ6ENF1101
	R642	3900 1% 1/10W	ERJ6ENF3901
	R764	10 5% 2W Fusible	ERQ2CJP100
	R778	3900 5% 5W Wirewound	ERG5ZXJ392
#	**R801**	1 10% 7W Wirewound	ERF7ZK1R0
#	**R802**	8.2M 20% 1/2W	ERC12ZGM825
	R804	100 5% 5W	ERG5FJ101
#	**R818**	.22 10% 1W Fusible	ERQ1CKR22
#	**R819**	3.3 5% 1/4W	ERD25FJ3R3
#	**R826, 27**	.39 10% 1/2W	ERW12PKR39
	R960	10 5% 1/4W Fusible	ERQ14AJ100
	R961	330 5% 1W Fusible	ERQ1CJP331
	R2208	91K 1% 1/4W	ERJ6ENF9102

 # For SAFETY use only equivalent replacement part.

PARTS LIST continued

COILS & TRANSFORMERS

	Item No.	Function/Rating	Mfr. Part No.
	L001	39µH	ELESN390KA
	L004	22µH	ELESN220KA
	L008	47µH	TLUABTA470K
	L010	Ferrite Bead	EXCELSA35T
	L012, 13, 15	10µH	TLUABTA100K
	L016	10µH	TLUABTA100K
	L017	Ferrite Bead	EXCELSA35T
	L103	15µH	ELESN150JA
	L105	VCO	EIV7EN053B
	L118	15µH	ELESN150JA
	L135	56µH	ELESN560JA
	L140	33µH	ELESN330JA
	L355, 56	39µH	ELESN390KA
	L357, 58	27µH	ELESN270KA
	L359	18µH	ELESN180KA
	L360	10µH	ELESN100KA
#	**L551**	Horizontal Linearity	TLH6626P
	L554	Ferrite Bead	EXCELSA24T
#	**L555**	Yoke Horiz 1.2mH Vert 20.3mH	KDY4UW739F
	L556, 57	Ferrite Bead	EXCELSA24T
	L601	82µH	ELESN820KA
	L751	Phasing	TLH15733M
#	**L801, 02**	Line Filter	ELF24V030A
	L804	Ferrite Bead	EXCELSA39
	L805	Line Filter	ELC08D470F
	L806, 08	Ferrite Bead	EXCELSA35
	L810, 11	Ferrite Bead	EXCELSA35
	L812	Ferrite Bead	EXCELSA39
	L813	Ferrite Bead	EXCELSA35
#	**L814**	Degaussing	0LK19045A
	L953, 54, 58	Ferrite Bead	EXCELSA35
	L1801	1.5µH	ELESN1R5KA
	L1803	2.2µH	ELESN2R2K
	L1804	15µH	ELESN150KA
	L1806, 07	1µH	ELESN1R0KA
	L1808	Ferrite Bead	EXCELDR25
#	**L2201**	1000µH	ELESN102JA
#	**L2202**	470µH	ELESN471JA
	L2302	Ferrite Bead	EXCELSA35T
	L4301	3.9µH	ELESN3R9KA
	L6502 Thru L6505	33µH	ELESN330JA
	L6506, 07	15µH	ELESN150JA
#	**T001**	Power	ETP28Z448AF
	T501	Horizontal Driver	ETH19Y70AYM
#	**T502**	Horizontal Coupling	ETE19Z30AY
#	**T551** (1)	Horizontal Output	KFT4AB139F1
#	**T801**	Power	ETS29AK2K6PC

 # For SAFETY use only equivalent replacement part.
(1) Screen and focus controls are part of T551.

MISCELLANEOUS

	Item No.	Description	Mfr. Part No.	Notes
#	**CRA801, 02**	Capristor	EXNG131P365	130pF 125VAC, 3.6M, Spark Gap
#	**F551**	Fuse	TSF39252	2.5A
#	**F801**	Fuse	XBA2A00101	6.3Amp, 125V, Fast Acting
	JK3001	Jack	TJB2AA0122	Assembly
		Jack	1TJB2AA0122	Assembly
#	**M015**	Line Cord	TSX2AA0111	AC, Polarized
#	**RL801**	Relay	TSEH0029	Power
	RM001	Receiver	RPM-637CBRS1	Remote
	S001	Switch	EVQPF106K	Power
	S002	Switch	EVQPF106K	Volume Down
	S003	Switch	EVQPF106K	Volume Up
	S004	Switch	EVQPF106K	Channel Down
	S005	Switch	EVQPF106K	Channel Up
	S006	Switch	EVQPF106K	Action
	S007	Switch	EVQPF106K	TV/Video
	SP1, 2	Speaker	TAS2AA0008	1 1/2" X 8", 8 Ohms, 10W
#	**TNR001** (1)	Tuner	ENV56D35G3R	UHF/VHF
#	**V1**	CRT	M68LNK161X	A68LNK161X
	X001	Crystal	TSSA096	12MHz
	X101	Filter	M1972M	SAW
	X102	Filter	EFCS4R5MW5BA	4.5MHz
	X201	Filter	SFSH4R5MDB	4.5MHz
	X501	Crystal	TAFCSB503F3	503kHz
	X601	Crystal	TSS816MX	3.58MHz
	X1801	Crystal	TSSA050	Oscillator
		Convergence	0FMK014ZZ	Correction Strip
		Magnet (2)	ETC35C65NA	Purity/Convergence
		PC Board	TNPH0280AD	A
		PC Board	TNPA1128AF	C
		PC Board	TNPA1113AB	F2
		PC Board	TNP2AA027AB	N
		PC Board	TNPH0200AJ	P
		PC Board	TNPA1422AB	X
		PC Board	TNPA1059AC	Y
		Socket	TJSC01200	CRT
		Transmitter	EUR511170B	Remote
		Wedge	TMM2A30702	Yoke Positioning (3 Used)

 # For SAFETY use only equivalent replacement part.
(1) Contact TNI Electronics for replacement; order by manufacturer's part number.
(2) Includes VM coil.

PARTS LIST continued

CABINET PARTS

Item	Mfr. Part No.
Model CT-27SF26A	
Badge (PANASONIC)	TBM2A10141
Button, 7 Key	TBX2AA1501G
Cabinet Back Assembly	TXFKU43ASER
Cabinet Front Assembly	TXFKY27ASER
Model CT-27XF26CA	
Badge (PANASONIC)	TBM2A10141
Button, 7 Key	TBX2AA1501G
Cabinet Back Assembly	TXFKU44ASER
Cabinet Front Assembly	TXFKY28ASER
Remote Transmitter	
Battery Cover	UR51EC892A

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)