

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

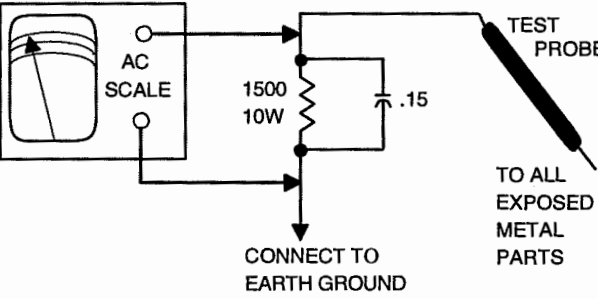
Perform a final SAFETY CHECK before returning receiver to customer. Check repaired area for poorly soldered connections, and check entire circuit board for solder splashes. Check inner board wiring for pinched wires or wires contacting any high wattage resistors. Check that all control knobs, shields, covers, grounds, and mounting hardware have been replaced. Be sure to replace all insulators and restore proper lead dress.

SAFETY CHECKS -- FIRE AND SHOCK HAZARD  
Cold Leakage Checks for Receivers with Isolated Ground

Unplug the AC cord, connect a jumper across the plug prongs, and turn the power switch on (if applicable). Use an ohmmeter to measure the resistance between the jumped AC plug and any exposed metal cabinet parts such as antenna screw heads, control shafts, or handle brackets. Exposed metal parts with a return path should measure between 1M ohms and 5.2M ohms. Parts without a return path must measure infinity.

Hot Leakage Current Check

Plug the AC cord directly into an AC outlet. DO NOT use an isolation transformer. Use a 1500 ohms, 10W resistor in parallel with a .15µF capacitor to connect between any exposed metal parts on the receiver and a good earth ground. (See figure below.) Use an AC voltmeter with at least 5000 ohms per volt sensitivity to measure the voltage across the resistor. Check all exposed metal parts and measure voltage at each point. Voltage measurements should not exceed .75VAC, 500µA. Any value exceeding this limit constitutes a potential shock hazard and must be corrected. If the AC plug is not polarized, reverse the AC plug and repeat exposed metal part voltage measurement at each point.



**HIGH VOLTAGE SHUTDOWN TEST**

Apply 120VAC and turn receiver on. Set all digital customer controls for normal operation. Momentarily short test point X to test point R. Receiver should lose raster and sound. If the receiver does not lose raster and sound, the shutdown circuit should be repaired. To resume normal operation, remove AC power and wait 30 seconds. After restoring AC power, the receiver should power up automatically.

TEST JIG HOOKUP				
Function	Chek-A-Color Adapter No.	PC Board Plug No.	Pin	Color
CRT	B239	P401	7	Red
Yoke	D4137		8	Blue
Yoke Setting	YP1		9	Yellow
Comments	Focus Tap		10	Green

The listing of any available replacement part herein in no case constitutes a recommendation, warranty, or guarantee by Howard W. Sams & Company as to the quality and suitability of such replacement part. The numbers of the listed parts have been compiled from information furnished to Howard W. Sams & Company by the manufacturers of the specific type of replacement part listed.

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PHOTOFACT® Technical Service Data

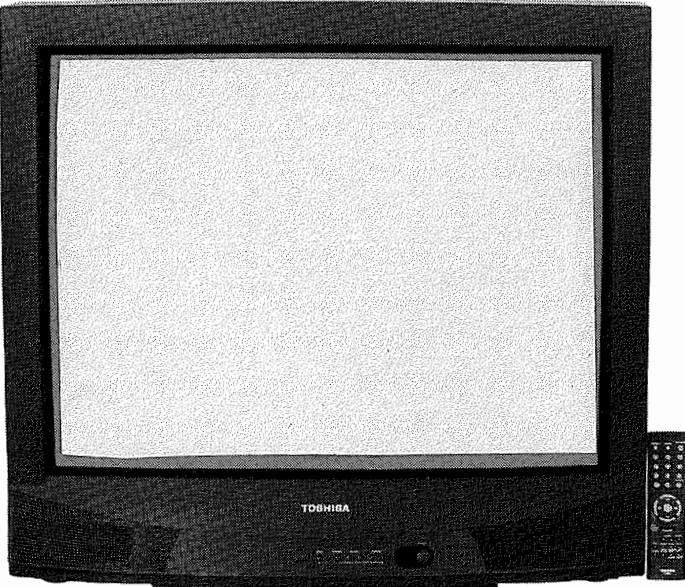
SET 4191

MODEL CF36H50 (CHASSIS TAC9816)

TOSHIBA

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TOSHIBA  
Model CF36H50 (Chassis TAC9816)



Essential coverage  
for servicing a television receiver...

- Schematics
- Component locations
- Parts list

Coverage includes this additional model and chassis:

MODEL	CHASSIS
CE36H15	TAC9809



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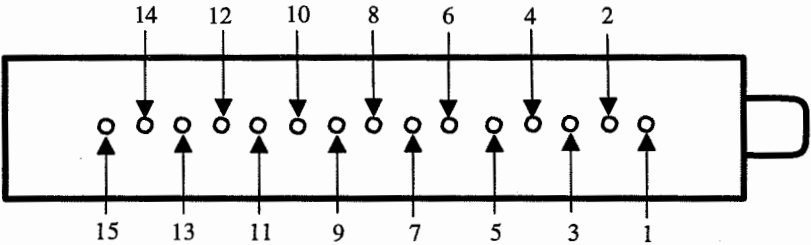
For Supplier Address,  
See PHOTOFACT Annual Index

TUNER / IF MODULE INFORMATION

TUNER / IF MODULE VOLTAGE CHART				
Pin	Function	VHF Low Band	VHF High Band	UHF Band
1	NC	0V	0V	0V
2	+32V	32.9V	32.9V	32.9V
3	SCL	4.5V	4.5V	4.5V
4	SDA	4.5V	4.5V	4.5V
5	NC	0V	0V	0V
6	ADS	4.9V	4.9V	4.9V
7	+5V	5.4V	5.4V	5.0V
8	RF AGC	3.5V	3.7V	3.4V
9	9V	9.0V	9.0V	9.0V
10	A OUT	3.6V	3.6V	3.6V
11	GND	0V	0V	0V
12	AFT	3.5V	1.4V	1.5V
13	NC	0V	0V	0V
14	GND	0V	0V	0V
15	V OUT	4.5V	4.5V	4.5V

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 / IF MODULE TERMINAL GUIDE



MISCELLANEOUS ADJUSTMENTS

HIGH VOLTAGE CHECK

Tune in a picture. Set brightness, contrast, and color to minimum. Connect a high voltage probe to the CRT anode. High voltage should read 30kV to 32kV.

ENTERING THE SERVICE AND DESIGN MODES

To enter the service mode, press the mute button on the remote. Press the mute button again and keep pressing while simultaneously pressing the menu button on the receiver. The letter S will appear on the screen indicating that the receiver is in the service mode.

To enter the design mode, enter the service mode. Press and hold the recall button on the remote and keep pressing while simultaneously pressing the menu button on the receiver. The letter D will appear on the screen indicating that the receiver is in the design mode.

When in the service or design mode, press the menu button on the receiver to display the adjustment menu. To select the item to be adjusted, press the channel up or down button. To adjust the reference value, press the volume up or down button. To exit from the service mode, press the power button to turn off the receiver.

TEST PATTERN SELECTION

Enter the service mode. Press the TV/video button on the remote to display the built-in test patterns in the following order:

Normal picture, red raster, green raster, blue raster, black screen, white screen, black screen with white window, black crossbar, white crossbar, black crosshatch, white crosshatch, black crossdot, white crossdot, and back to normal picture.

NOTE: If a video cable is connected to the video input jack, the built-in test patterns will not be displayed on the screen.

SELF DIAGNOSTIC FUNCTION

Enter the service mode. Press the 9 button on the remote to check for proper execution of IC interfacing. The following is an explanation of what is displayed on screen:

Display	Explanation
[SELF CHECK]	Self diagnostic function.
No. 23906358	Part number of QA01
POWER : 000	Operation number of protecting circuit. "000" display is normal
BUS LINE : OK	BUS line check. "OK" is normal. "NG" indicates a short to ground of the SCL or SDA signal or a short between SCL and SDA.
BUS CONT : OK	Bus line acknowledge check. "OK" is normal. A location number is NG.
BLOCK : UV V1 QV01 QV01S	Green display is normal. Cyan display is no check. Red display is NG.

INITIALIZATION OF QA02

NOTE: QA02 must be initialized after replacement. Do not initialize unless QA02 is replaced.

Enter the service mode. Press the recall button on the remote and keep pressing while simultaneously pressing the channel up button on the receiver. The initialization of QA02 is complete. Program channels into memory.

DESIGN MODE

When QA02 is initialized, design mode item option setting 0 should be set to 00H and option setting 1 should be set to 02H.

SUB COLOR (COLC) & SUB TINT (TNTC)

Tune in a color bar pattern. Press the reset button on the remote. Connect an oscilloscope to the red cathode. Enter the service mode. Select item COLC, adjust reference value to obtain 150Vp-p. Tune in an active channel. Select item TNTC, adjust reference value for proper flesh tones.

SUB BRIGHTNESS (BRTC)

Tune in a picture. Set contrast to minimum. Enter the service mode. Select item HIT and reduce the vertical size. Select item BRTC, adjust reference value until vertical retrace line at bottom of screen just disappears. Perform Height (HIT) adjustment. Adjust contrast for normal picture.

WIDTH (WID)

Enter the service mode. Press the TV/video button on remote until a crosshatch pattern is displayed. Select item WID, adjust reference value for slight underscan. Advance the reference value by 7 steps. Check for proper horizontal position of the picture.

E-W PARABOLA (DPC)

Enter the service mode. Press the TV/video button on remote until a crosshatch pattern is displayed. Select item DPC, adjust reference value for straight vertical lines on both sides of the pattern.

HORIZONTAL POSITION (HPOS) & VERTICAL POSITION (VPOS)

Enter the service mode. Press the TV/video button on remote until a crossbar pattern is displayed. Select item HPOS or VPOS, adjust reference value for the horizontal and vertical position alternately until the pattern is centered on the screen. Check the position of the picture with off-air signal.

HEIGHT (HIT)

Enter the service mode. Press the TV/video button on remote until a crosshatch pattern is displayed. Select item HIT, adjust reference value for slight underscan. Advance the data value by 9 steps. Check for proper vertical position of the picture.

WHITE BALANCE (RCUT, GCUT, BCUT, GDRV, BDRV)

Turn receiver on. Allow a 10 to 30 minute warm up time. Adjust contrast to center position, brightness to maximum. Enter the service mode. Press the TV/video button on remote until the white screen pattern is displayed. Select items RCUT, GCUT, and BCUT, set the reference value for each at 40H. Select items GDRV and BDRV, set the reference value for each at 40H. Press the TV/video button on the receiver to obtain a single horizontal line. Advance the screen control until a faint line of one dominant color appears on the screen. Adjust the other two cutoffs to obtain a dim white line. Press the TV/video button on the receiver, to go to a normal picture. Select items GDRV and BDRV, adjust reference value of each for the best black and white picture on screen.

COLOR PURITY

Operate the receiver for 15 minutes. Use a degaussing coil to demagnetize the CRT and mounting hardware. Tune in a green raster. Loosen the locking ring and slide the deflection yoke backward to obtain a vertical green band. Rotate and spread the tabs of the purity magnets until the green band is centered on the screen. Move the deflection yoke forward until a uniform green screen is obtained. Check red and blue purity.

MISCELLANEOUS ADJUSTMENTS continued

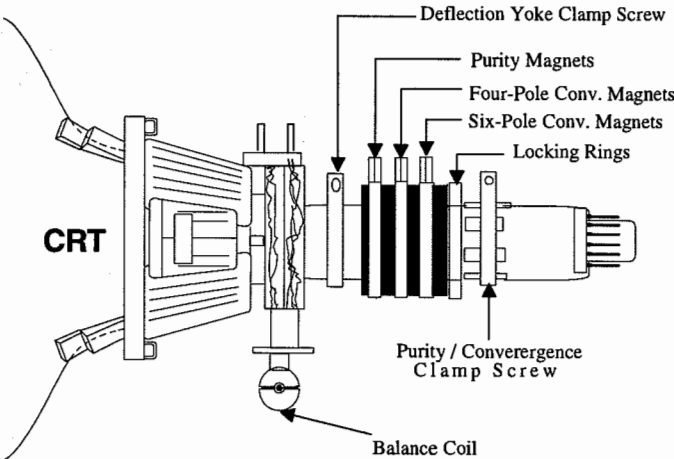
CONVERGENCE

Operate the receiver for 15 minutes. Connect a color bar generator to antenna terminals and tune in a dot pattern. Loosen clamp. Adjust 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: Rotate the two tabs of each set of magnets equally and opposite to converge vertically and rotate both tabs in the same direction to converge horizontally. The 4 and 6 pole magnets interact, repeat adjustment until center convergence is correct. Tighten clamp.

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

CRT NECK ASSEMBLY



STEREO ADJUSTMENTS

Adjustments were made using a MTS TV/stereo generator connected to antenna terminals. Enter the service mode.

Attenuator (ATT)

Select pilot, 1kHz audio frequency, and L+R modulating signal. Connect an oscilloscope to pin 34 of QG01. Select item ATT, adjust reference value for 1.55Vp-p.

Stereo VCO (STVC)

Short across resistor RG44, connect a frequency counter to pin 34 of QG01. Select item STVC. Adjust reference value to obtain a reading of 15.73kHz. Remove the short.

SAP VCO (SAVC)

Short across resistor RG44, connect 1M resistor between pin 12 of QG01 and ground. Connect a frequency counter to pin 34 of QG01. Select item SAVC. Adjust reference value to obtain a reading of 78.67kHz. Remove the short and the resistor.

SERVICE MODE ADJUSTMENT CHART

Item	Adjustment Name	Reference Value	On Set Value
RCUT (1)	Red Cutoff	40H	44H
GCUT (1)	Green Cutoff	40H	5CH
BCUT (1)	Blue Cutoff	40H	40H
GDRV (1)	Green Drive	40H	40H
BDRV (1)	Blue Drive	40H	44H
SCNT	Sub Contrast	08H	08H
BRTC (1)	Sub Brightness	40H	48H
COLC (1)	Sub Color	40H	44H
TNTC (1)	Sub Tint	40H	42H
ATT (1)	Attenuator	20H	1AH
STVC (1)	Stereo VCO	20H	21H
STRF (1)	Stereo Filter	20H	28H
WBAN (1)	Stereo Separation	20H	30H
SPEC (1)	Spectral	20H	16H
SAVC (1)	SAP VCO	20H	1DH
MFT	-	FFH	FFH
HPOS (1)	Horizontal Position	15H	14H
VPOS (1)	Vertical Position	03H	03H
HIT (1)	Height	20H	25H
LIN	Vertical Linearity	07H	08H
VSC	V-S Correction	05H	02H
VPS	Vertical Shift	1BH	1BH
VCP	Vertical Compensation	03H	03H
WID (1)	Width	1CH	35H
WID (1)(2)	Width	1CH	37H
DPC (1)	E-W Parabola	0FH	17H
DPC (1)(2)	E-W Parabola	0FH	1BH
CNR	E-W Corner	08H	06H
TRAP	Trapezium	0AH	08H
HCP	Horizontal Compensation	00H	00H
VFC	V-F Correction	0FH	0FH
PCOL	PIP Color	91H	91H
PHUE	PIP Tint	09H	09H
PBRT	-	0DH	0DH

(1) May need adjustment when replacing QA02 or Q501.  
(2) Used in model CE36H15.

Stereo Filter (STRF)

Remove the solder link at SL02 (pin 10 of tuner/IF module H001). Inject a signal of 15.734kHz, 1Vp-p to the junction of RG43 and RG44. Connect an oscilloscope to pin 34 of QG01. Select item STRF. Adjust reference value to obtain minimum AC noise.

Stereo Separation (WBAN) & Spectral (SPEC)

Select stereo mode on receiver. Select pilot, 300Hz audio frequency, and right modulating signal. Connect an oscilloscope to pin 35 of QG01. Select item WBAN, adjust reference value for minimum amplitude of waveform on the scope. Change audio frequency to 8kHz. Select item SPEC, adjust reference value for minimum amplitude of waveform. Repeat adjustment until no further decrease in amplitude can be obtained.

Test Audio Signal (1kHz) On And Off

Enter the service mode. Press the 8 button on remote transmitter to toggle the test audio signal (1kHz) on and off.

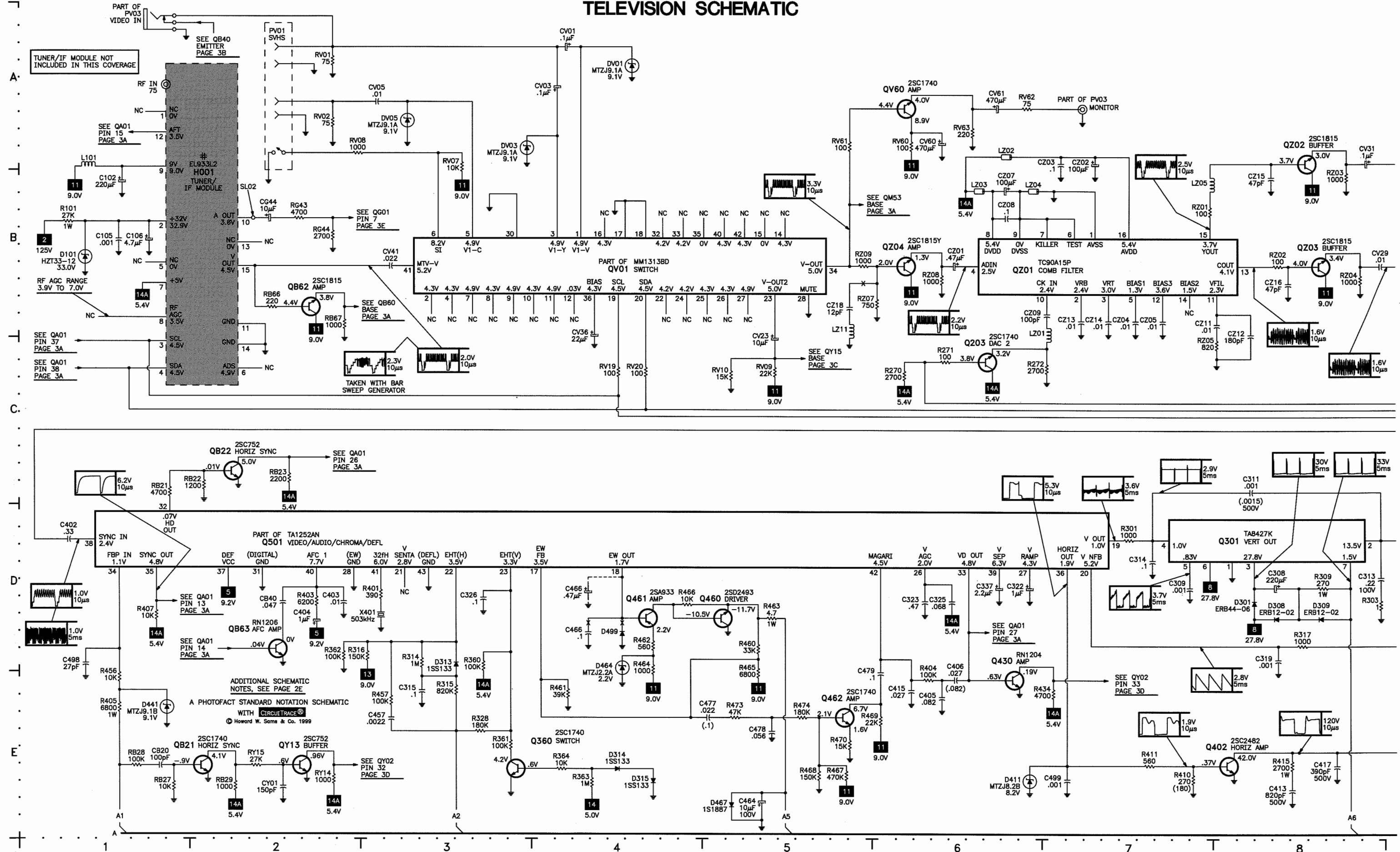
DESIGN MODE ADJUSTMENT CHART

Item	Adjustment Name	On Set Value	Item	Adjustment Name	On Set Value
RCUT	Red Cutoff	44H	PHR9	PIP Horizontal Position 1/9 Right	6DH
GCUT	Green Cutoff	5Ch	PHL6	PIP Horizontal Position 1/6 Left	09H
BCUT	Blue Cutoff	40H	PHR6	PIP Horizontal Position 1/6 Right	7AH
GDRV	Green Drive	40H	PHW6	PIP Horizontal Width 1/6	27H
BDRV	Blue Drive	44H	PHW9	PIP Horizontal Width 1/9	35H
SCNT	Sub Contrast	08H	HADJ	-	84H
BRTC	Sub Brightness	48H	PBRT	-	0DH
COLC	Sub Color	44H	PGST	-	4FH
TNTC	Sub Tint	42H	PI28	-	83H
CNTC	Contrast Center	20H	PCL2	-	37H
CNTN	Contrast Minimum	06H	EXBG	-	1DH
BRTX	Brightness Maximum	17H	EXB2	-	7FH
BRTN	Brightness Minimum	17H	PVSS	-	2AH
COLX	Color Maximum	60H	PVSW	-	00H
COLN	Color Minimum	04H	ACCL	-	15H
TNTX	Tint Maximum	1BH	DFGT	-	DFH
TNTN	Tint Minimum	1BH	PRST	-	7FH
SHPT	Sharpness Center (RF)	24H	ADJ6	-	04H
SHPV	Sharpness Center (VIDEO)	20H	PWR	Detection Number Of Overcurrent and Overvoltage Limiters	00H
VM0	Vcd Bit Data	63H	BUS	Check Result Of Bus Line	00H
ATT	Attenuator	1AH	MEM	Test Pattern Number	00H
STVC	Stereo VCO	21H	OPT0	Option Setting 0	20H
STRF	Stereo Filter	28H	OPT1	Option Setting 1	80H
WBAN	Wide Band	30H	BASC	-	1FH
SPEC	Spectral	16H	TREC	-	1FH
SAVC	SAP VCO	1DH	MFT	-	08H
MFT	-	FFH	OSCT	-	08H
HPOS	Horizontal Position	14H	OSBR	-	00H
VPOS	Vertical Position	03H	OSCL	-	F7H
HIT	Height	25H	OSTT	-	FEH
LIN	Vertical Linearity	08H	SHPX	-	12H
VSC	V-S Correction	02H	SHPN	-	12H
VPS	Vertical Shift	1BH	OSPT	-	00H
VCP	Vertical Compensation	03H	OSPV	-	00H
WID	Width	35H	RGBB	-	08H
WID (1)	Width	37H	ORGB	-	00H
DPC	E-W Parabola	17H	CNTX	-	3FH
DPC (1)	E-W Parabola	1BH	OMRC	-	00H
CNR	E-W Corner	06H	OMGC	-	04H
TRAP	Trapezium	08H	OMBC	-	08H
HCP	Horizontal Compensation	00H	OTRC	-	00H
VFC	V-F Correction	0FH	OTGC	-	07H
PCOL	PIP Color	91H	OTBC	-	0EH
PHUE	PIP Tint	09H	OMGD	-	F7H
EXTP	-	E3H	OMBD	-	F0H
PYD6	PIP Vertical Position 1/6	04H	OTGD	-	F0H
PYD9	PIP Vertical Position 1/9	04H	OTBD	-	E3H
WHP6	PIP Horizontal Centering 1/6 (Fine)	44H	OVMO	-	F8H
WHP9	PIP Horizontal Centering 1/9 (Fine)	4DH	VM1	-	25H
YCON	-	2AH	VD	-	C0H
PSYN	PIP Sync	19H	SYNN	-	1CH
WKY	Set Frame Background Brightness (Usual)	0AH	SYNX	-	23H
WKYS	Set Frame Background Brightness (Still)	0AH	SYCN	-	1EH
WKC	PIP Frame Color (Normal)	12H	SYCX	-	23H
WKCS	PIP Frame Color (Still)	32H	CHAT	-	06H
PBST	Burst Adjust In Displaying Background	57H	VCHP	-	00H
PVU9	PIP Vertical Position 1/9 Top	16H	CCOP	-	01H
PVD9	PIP Vertical Position 1/9 Bottom	97H	SHPS	-	12H
PVU6	PIP Vertical Position 1/6 Top	16H	OSPS	-	00H
PVD6	PIP Vertical Position 1/6 Bottom	A9H	OSD	OSD Horizontal Position	3DH
PVW6	PIP Vertical Height 1/6	32H			
PVW9	PIP Vertical Height 1/9	44H			
PHL9	PIP Horizontal Position 1/9 Left	09H			

(1) Used in model CE36H15.



## TELEVISION SCHEMATIC

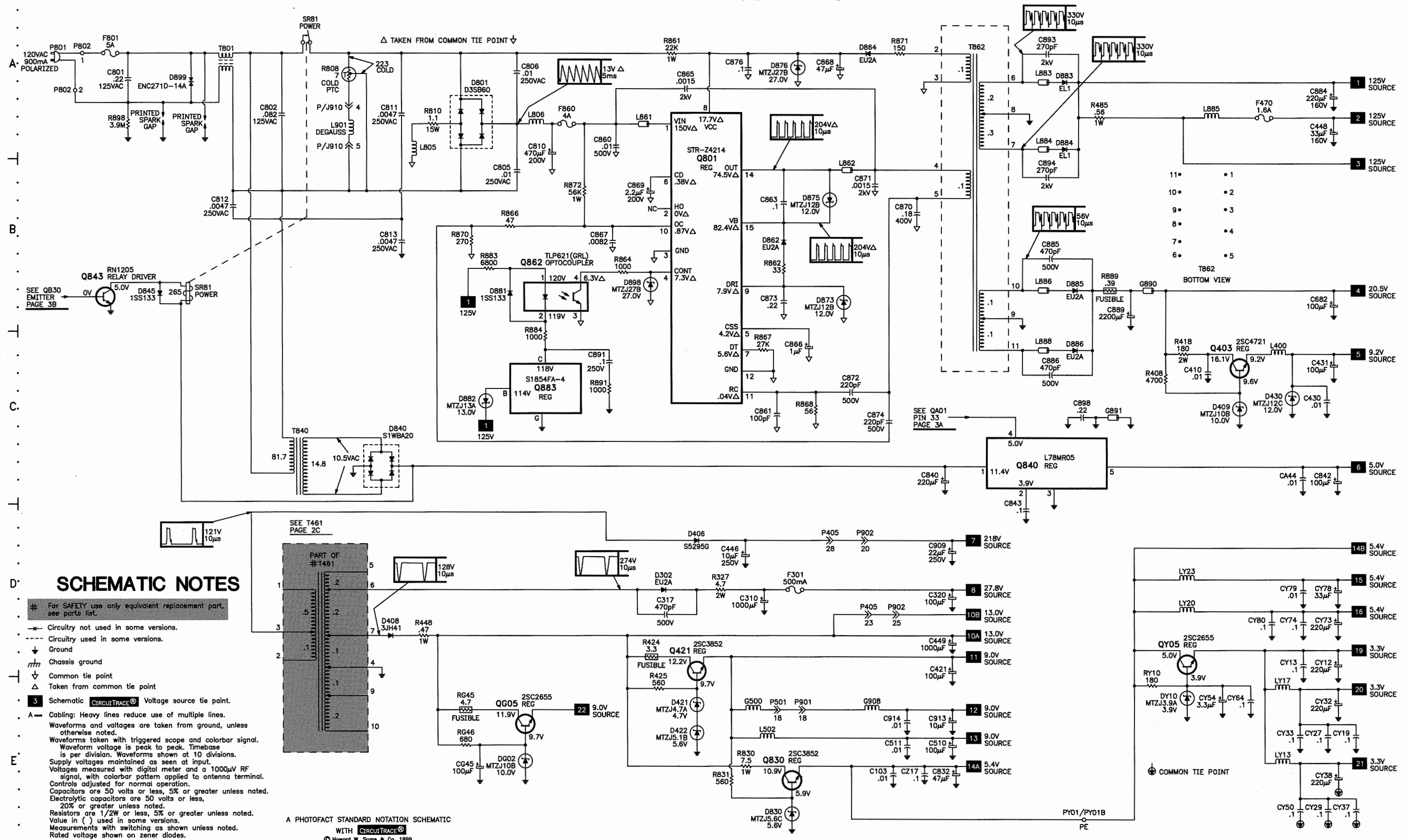




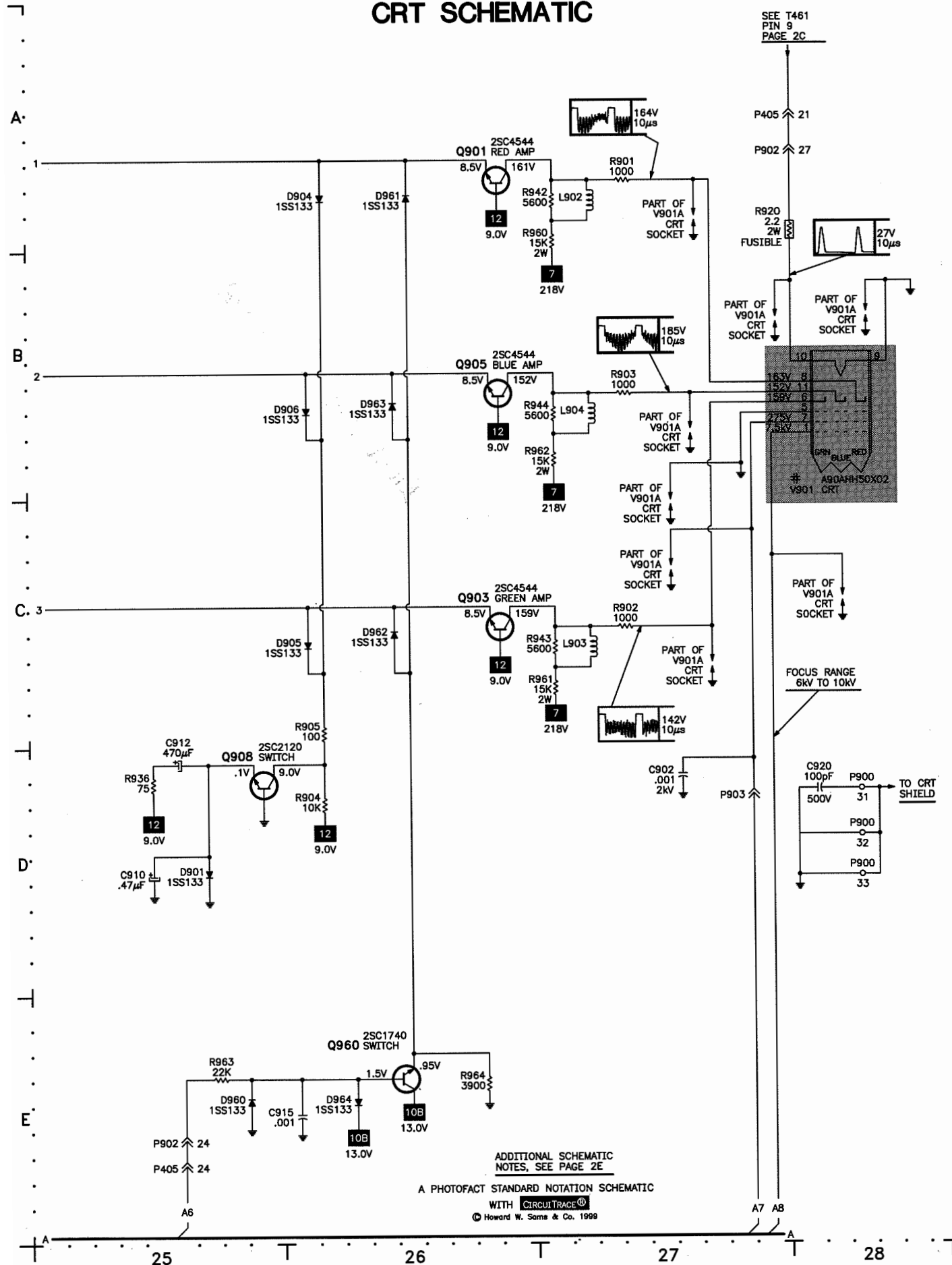
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## POWER SUPPLY SCHEMATIC

F



# G CRT SCHEMATIC



## 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)
- Terrell & Nobis (TNI Electronics)
- Sencore, Inc.
- Thomson Consumer Electronics, Inc. (SK, TCE)

## TEST EQUIPMENT

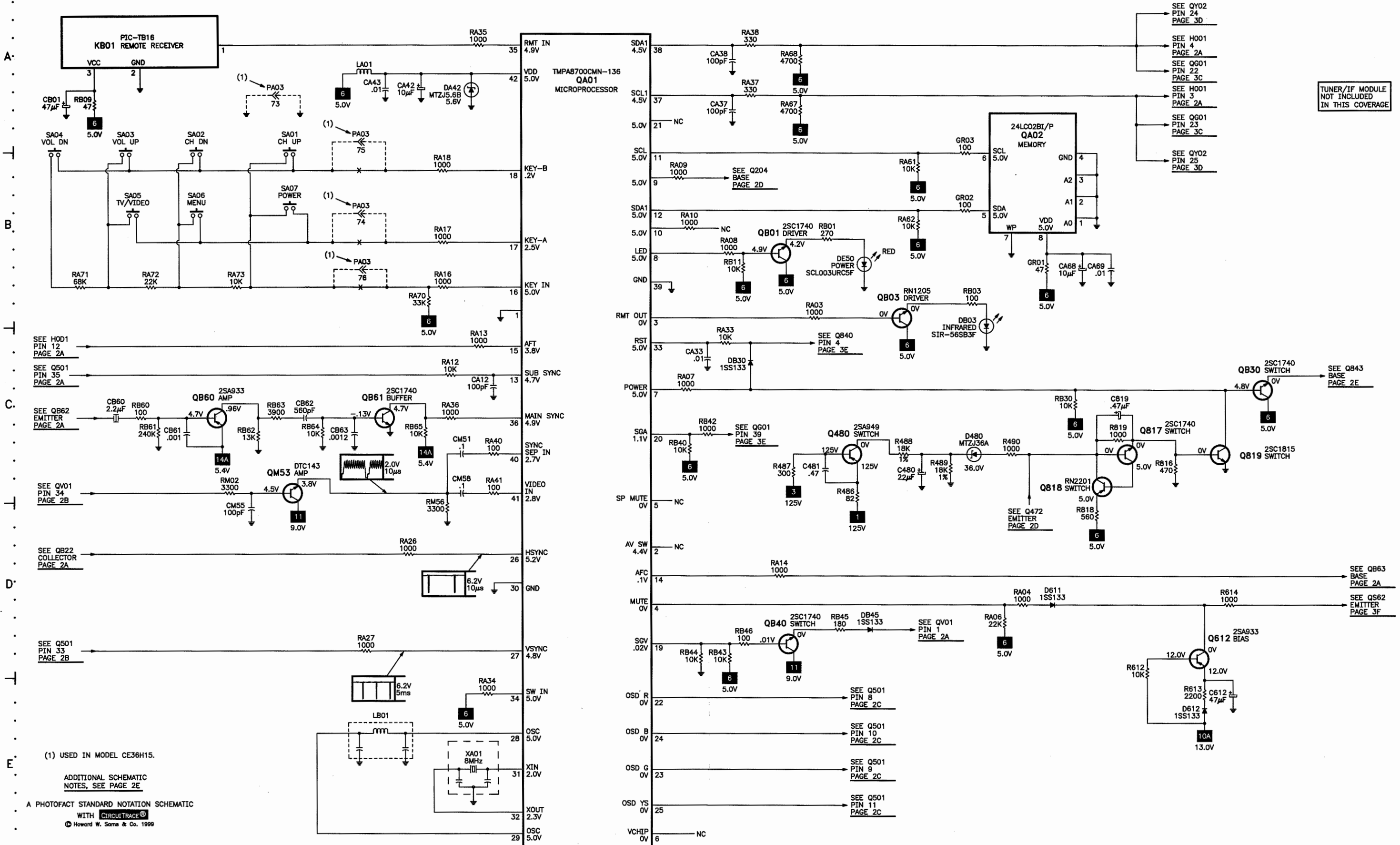
Test equipment listed by participating manufacturer illustrates typical or equivalent equipment used by Sams engineers to obtain measurements. This equipment is compatible with most types used by field service technicians.

Equipment	Sencore No.	Equipment	Sencore No.
Oscilloscope	SC3100	Isolation Transformer	PR570
Generators		Capacitance Analyzer	LC102
RGB	CM2125	CRT Analyzer	CR7000
Multiburst Signal	VG91	AC Leakage Tester	PR570
Color Bar	VG91	Inductance Analyzer	LC102
TV Stereo	VG91	Flyback Yoke Tester	TVA92
Digital VOM	SC3100	Field Strength Meter	SL753
Frequency Meter	SC3100	Transistor Tester	TF46
Hi-Voltage Probe	HP200	Horizontal Analyzer	HA-2500
Accessory Probes	TP212	Video Analyzer	VG91, TVA92

A

SYSTEM CONTROL SCHEMATIC

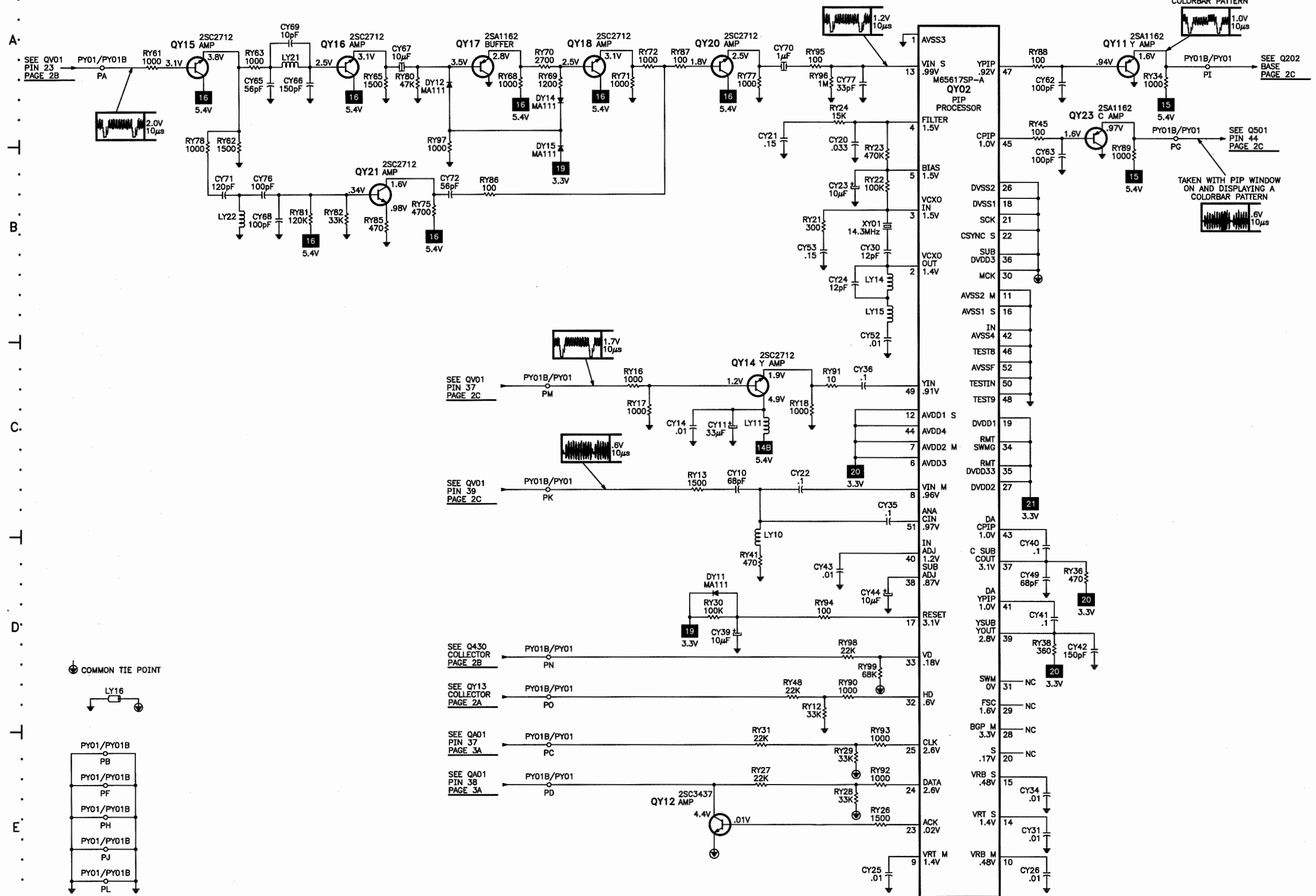
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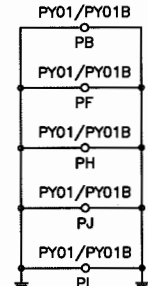
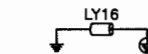
TUNER/IF MODULE NOT INCLUDED IN THIS COVERAGE

(1) USED IN MODEL CE36H15.  
ADDITIONAL SCHEMATIC NOTES, SEE PAGE 2E  
A PHOTOFAC STANDARD NOTATION SCHEMATIC  
WITH CIRCUITTRACE  
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PIP SCHEMATIC

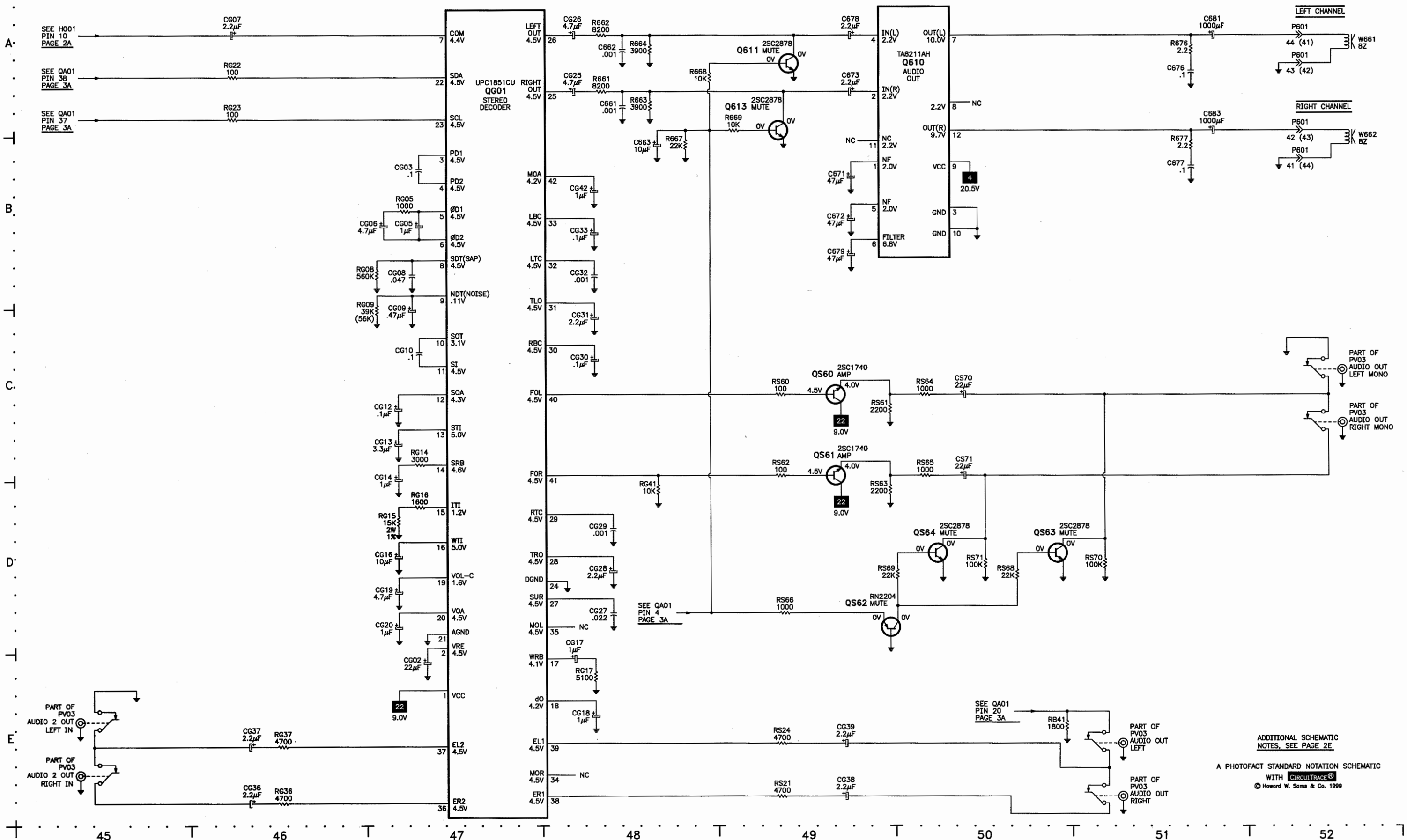


COMMON TIE POINT



ADDITIONAL SCHEMATIC  
NOTES, SEE PAGE 2E  
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WITH CIRCUITTRACE  
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## AUDIO SCHEMATIC

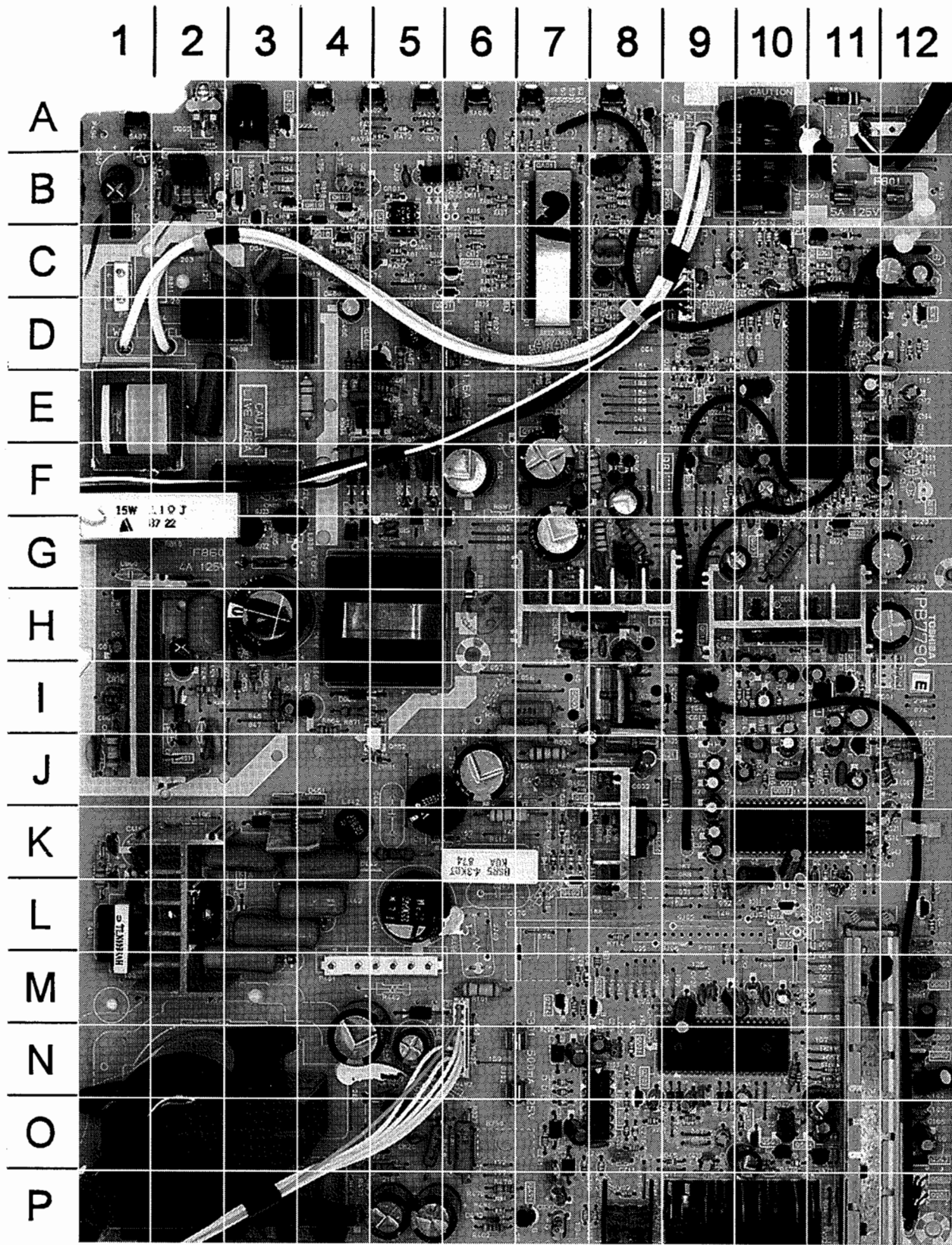


ADDITIONAL SCHEMATIC  
NOTES, SEE PAGE 2E

A PHOTOFACT STANDARD NOTATION SCHEMATIC  
WITH **CIRCUITRACE®**  
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MAIN BOARD



MAIN BOARD, GRIDTRACE LOCATION GUIDE

C102	N12	C676	H11	CG31	K10	D864	I4	Q404	L2	R309	G8	R677	H11	RB65	M12
C103	O12	C677	H11	CG32	K11	D873	I2	Q421	J8	R313	G7	R808	D2	RB66	N11
C105	O12	C678	I10	CG33	K10	D875	J1	Q430	F9	R314	E9	R810	G2	RB67	N12
C106	O12	C679	I11	CG36	P7	D876	I3	Q460	K8	R315	F9	R816	B3	RG05	J11
C201	D11	C681	G12	CG37	P7	D881	J5	Q461	K7	R316	D9	R818	B4	RG08	J11
C204	D11	C682	G9	CG38	O9	D882	E5	Q462	K7	R317	D9	R819	C4	RG09	J10
C205	C11	C683	H12	CG39	O9	D883	F5	Q471	P7	R327	O6	R830	J7	RG14	J10
C216	C10	C801	A10	CG42	K11	D884	F5	Q472	C4	R328	D9	R831	I8	RG15	J10
C245	C10	C802	E2	CG44	K12	D885	F4	Q480	D5	R336	I7	R861	E4	RG16	J10
C246	D10	C805	F3	CG45	I11	D886	F4	Q501	D10	R360	E10	R862	I2	RG17	J10
C305	F7	C806	E3	CM51	B9	D898	H1	Q610	H10	R361	D9	R864	I4	RG22	L9
C306	G7	C810	H3	CM55	B8	D899	B11	Q611	I11	R362	D9	R866	I3	RG23	L9
C307	G8	C811	D3	CM58	B8	DA42	B7	Q612	B4	R363	E9	R867	H2	RG36	K11
C308	F8	C812	C3	CS70	O10	DB03	A2	Q613	I11	R364	D9	R868	I1	RG37	K11
C309	H9	C813	C3	CS71	O11	DB30	B3	Q801	H1	R368	C10	R870	I3	RG41	K11
C310	P5	C819	C4	CV01	O8	DB45	O9	Q817	C4	R369	C10	R871	I4	RG43	J12
C311	H7	C832	J8	CV03	O9	DE50	A3	Q818	B4	R401	E11	R872	J1	RG44	J12
C313	G8	C840	B1	CV05	N9	DG02	J12	Q819	B3	R403	F11	R883	D5	RG45	J12
C314	H7	C842	B2	CV13	N10	DV01	N9	Q830	I8	R404	F9	R884	D4	RG46	J12
C315	E9	C843	B2	CV23	M10	DV03	N9	Q840	B2	R405	O5	R889	H6	RM02	C9
C317	N5	C860	G1	CV29	M10	DV05	N9	Q843	B3	R407	F11	R891	E5	RM56	B8
C319	D9	C861	I1	CV31	M10	DV13	N9	Q862	J5	R408	G10	R898	A11	RM93	D8
C320	H8	C863	J2	CV36	M10	F301	N7	Q883	E5	R410	K2	RA03	B6	RS21	K11
C322	F10	C865	J1	CV38	M9	F470	D6	QA01	B7	R411	K2	RA04	B6	RS24	K11
C323	E10	C866	H1	CV39	M9	F801	B11	QA02	B5	R415	K1	RA06	B6	RS60	P11
C325	F10	C867	I1	CV41	M9	F860	G3	QB01	B2	R416	K6	RA07	B6	RS61	P11
C326	D9	C868	I3	CV60	O11	G217	L6	QB03	A3	R418	G10	RA08	B6	RS62	P11
C337	F11	C869	H2	CV61	O10	G317	C11	QB21	C6	R421	C11	RA09	B6	RS63	P11
C360	C12	C870	H2	CY20	E7	G500	C9	QB22	G11	R422	C11	RA10	B6	RS64	P11
C402	E11	C871	J2	CZ01	N7	G890	F8	QB30	B3	R424	J9	RA12	C6	RS65	P11
C403	F12	C872	I2	CZ02	N8	G891	F8	QB40	C6	R425	J8	RA13	C6	RS66	O12
C404	F12	C873	I2	CZ03	N8	GR01	B5	QB60	M12	R430	P4	RA14	C6	RS68	O10
C405	F9	C874	I3	CZ04	O7	GR02	C5	QB61	L12	R431	C4	RA16	A7	RS69	O11
C406	F9	C876	I1	CZ05	O8	GR03	C5	QB62	N12	R432	C4	RA17	A7	RS70	O10
C410	F10	C884	F6	CZ07	O7	H001	O11	QB63	A8	R434	F9	RA18	A7	RS71	O11
C413	K1	C885	G5	CZ08	O8	KB01	A2	QG01	K11	R441	K5	RA22	D7	RV01	O9
C415	E11	C886	G5	CZ09	O7	L101	N12	QG05	J11	R448	O5	RA23	D7	RV02	P8
C416	K1	C889	F7	CZ11	O8	L301	H7	QM53	B9	R456	F10	RA24	D7	RV03	O10
C417	K1	C891	E5	CZ12	O8	L400	F9	QS60	P12	R457	E9	RA25	D8	RV07	O8
C421	J8	C893	F5	CZ13	N7	L441	L5	QS61	P12	R460	J7	RA26	D8	RV08	P8
C430	F10	C894	F5	CZ14	N7	L442	K4	QS62	O12	R461	K8	RA27	C8	RV09	M10
C431	F10	C898	F7	CZ15	N8	L461	J5	QS63	O10	R462	J7	RA33	C8	RV10	M10
C439	K4	CA12	C6	CZ16	O8	L463	K3	QS64	O11	R463	K6	RA34	B8	RV19	N11
C440	M3	CA33	C8	CZ17	P7	L501	C11	QV01	N9	R464	J8	RA35	B8	RV20	N11
C442	L4	CA37	B8	CZ18	M7	L502	D8	QV60	O10	R465	J8	RA36	B8	RV60	N10
C444	L3	CA38	B8	D101	P11	L805	G3	QY13	E7	R466	K8	RA37	C8	RV61	N10
C445	P4	CA42	B8	D201	C9	L806	G3	QZ01	N8	R467	K7	RA38	C8	RV62	O10
C446	N5	CA43	B8	D221	E9	L861	H1	QZ02	M8	R468	K7	RA40	B8	RV63	O10
C448	N4	CA44	A6	D222	E9	L862	J1	QZ03	N8	R469	K7	RA41	B8	RY14	L8
C449	P5	CA68	B5	D301	H8	L883	G6	QZ04	M8	R470	K7	RA61	C5	RY15	E7
C457	E9	CA69	B5	D302	N5	L884	G5	R	P3	R472	O5	RA62	C5	RZ01	N8
C463	L2	CB01	B1	D308	G8	L885	D5	R101	M6	R473	K7	RA67	C8	RZ02	O8
C464	J6	CB20	O5	D309	G8	L886	G4	R201	L10	R474	K7	RA68	C8	RZ03	M7
C466	J7	CB40	A8	D313	E9	L888	G4	R203	C11	R475	P7	RA70	A6	RZ04	N8
C467	K3	CB60	M12	D314	E9	LA01	B8	R207	D10	R476	P6	RA71	A5	RZ05	O8
C471	P4	CB61	M12	D315	E10	LB01	C8	R208	D10	R477	P4	RA72	A5	RZ07	M7
C474	C5	CB62	M12	D316	C11	LV01	M9	R209	D10	R478	P6	RA73	A5	RZ08	N7
C477	K7	CB63	L12	D406	M5	LZ01	O7	R216	E9	R481	P6	RB01	A2	RZ09	M7
C478	K7	CG02	J11	D408	O5	LZ02	N7	R223	L11	R482	P6	RB03	A3	SA01	A4
C479	K8	CG03	J11	D409	G10	LZ03	O7	R228	K6	R485	E5	RB09	B2	SA02	A5
C480	D4	CG05	J11	D411	F11	LZ04	O7	R238	C12	R486	E5	RB11	B2	SA03	A5
C481	D5	CG06	I11	D421	I8	LZ05	N8	R239	C11	R487	D5	RB21	F11	SA04	A6
C498	F10	CG07	J12	D422	I9	LZ11	M8	R240	C11	R488	D4	RB22	G11	SA05	A7
C499	F11	CG08	J11	D430	F10	P401	M4	R245	C10	R489	D4	RB23	F11	SA06	A8
C501	E12	CG09	J10	D441	O5	P405	N6	R261	C10	R490	C4	RB27	D6	SA07	A1
C504	E12	CG10	J10	D461	K4	P501	C9	R262	C10	R501	E12	RB28	O5	SL02	O11
C505	D11	CG12	I10	D464	K8	P601	H12	R263	C10	R502	F11	RB29	C6	SR81	D3
C508	E11	CG13	I9	D467	J6	P802	A12	R264	C10	R503	F11	RB30	B3	T401	L1
C510	E10	CG14	J10	D471	O5	P910	C1	R265	C10	R511	F12	RB40	D5	T461	O2
C511	D10	CG16	I9	D472	P6	PV01	P8	R266	C10	R612	C4	RB41	P7	T801	B10
C512	E12	CG17	J10	D473	C4	PV03	P10	R270	D12	R613	B4	RB42	D6	T840	E1
C582	C11	CG18	J9	D480	C4	PY01	L10	R271	D12	R614	C6	RB43	C5	T862	H5
C583	C12	CG19	J9	D499*	J7	Q202	L10	R272	D12	R661	I10	RB44	C6	X	P4
C612	B4	CG20	J9	D611	B6	Q203	D12	R301	G8	R662	I10	RB45	E7	X401	E12
C661	I9	CG25	K9	D612	C4	Q204	C10	R303	G8	R663	I9	RB46	C5	X501	D11
C662	I10	CG26	K9	D801	F3	Q301	H7	R304	G7	R664	I10	RB60	M12	XA01	C8
C663	I10	CG27	L10	D830	I8	Q360	E9	R305	F8	R667	I10	RB61	M12		
C671	I9	CG28	K10	D840	B1	Q361	C11	R306	G7	R668	I11	RB62	M12		
C672	I10	CG29	K9	D845	C3	Q402	L1	R307	G7	R669	I11	RB63	M12		
C673	I10	CG30	L11	D862	I2	Q403	G10	R308	I7	R676	H10	RB64	L12		

PARTS LIST

SEMICONDUCTORS

(Select the replacement that gives the best results.)

Item No.	Type No.	Mfr. Part No.	ECG Part No.	NTE Part No.	TCE Part No.
D101	HZT33-12	-	ECG615A	NTE615	SK9976
D201, 21, 22	1SS133	23118859	ECG519	NTE519	SK3100
D301, 02	ERB44-06	23118095	ECG552	NTE552	SK9000
	EU2A	23118094	ECG552	NTE552	SK9000
D308, 09	ERB12-02	23118822	ECG552	NTE552	SK9000
D313, 14, 15	1SS133	23118859	ECG519	NTE519	SK3100
D316	MTZJ6.8C	23316679	-	-	-
D406	S5295G	A7978850	ECG552	NTE552	SK9000
D408	3JH41	A7580658	-	-	-
	RU4Z	-	ECG580	NTE580	SK5036
D409	MTZJ10B	23316690	-	-	-
D411	MTZJ8.2B	23316684	-	-	-
	UZ8.2BSB	-	-	-	-
D421	MTZJ4.7A	23316665	-	-	-
	RD4.7ESAB1	-	-	-	-
D422	MTZJ5.1B	23316669	ECG5010T1	-	-
	RD5.6ESAB2	-	ECG5011A	NTE5011A	SK5A6
D430	MTZJ12C	23316720	-	-	-
	UZ129SC	-	-	-	-
D441	MTZJ9.1B	23316687	-	-	-
D461	ERC20-06	23316582	ECG598	NTE598	SK9859
D464	MTZJ2.2A	23316648	-	-	-
	RD2.2ESAB1	-	-	-	-
D467	1S1887	A7568719	ECG116	NTE116	SK3312
	1S1887(FA)	-	ECG116	NTE116	SK3312
D471	TVR-1B	A7568460	ECG552	NTE552	SK9000
# D472	RD6.2E	-	ECG5013A	NTE5013A	SK6A2
	RD6.2E(4)	23115774	ECG5013A	NTE5013A	SK6A2
D473	1SS133	23118859	ECG519	NTE519	SK3100
D480	MTZJ36A	23316757	-	-	-
	RD36ESAB1	-	-	-	-
D499	-	-	-	-	-
D611, 12	1SS133	23118859	ECG519	NTE519	SK3100
D801	D3SB60	23316391	ECG5310	NTE5310	SK5030
D830	MTZJ5.6C	23316673	-	-	-
	RD5.6ESAB3	-	-	-	-
D840	S1WBA20	23316962	-	-	-
	S1WBA60	-	ECG5332	NTE5332	SK9232
D845	1SS133	23118859	ECG519	NTE519	SK3100
D862, 64	EU2A	-	ECG552	NTE552	SK9000
	EL1	23357021	-	-	-
D873, 75	MTZJ12B	23316719	-	-	-
	RD12ESAB2	-	-	-	-
D876	MTZJ27B	23316746	-	-	-
D881	1SS133	23118859	ECG519	NTE519	SK3100
D882	MTZJ13A	23316721	-	-	-
D883, 84	EL1	23357021	-	-	-
D885, 86	EU2A	23118094	ECG552	NTE552	SK9000
D898	MTZJ27B	23316746	-	-	-
	RD27ESAB2	-	-	-	-
D901 Thru					
D906	1SS133	23118859	ECG519	NTE519	SK3100
D911	1S1834	A7568250	ECG552	NTE552	SK9000

# 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.	NTE Part No.	TCE Part No.
D960 Thru					
D964	1SS133	23118859	ECG519	NTE519	SK3100
	1SS120-7	-	-	-	-
DA42	MTZJ5.6B	23316672	ECG5011T1	NTE5011T1	SK9968
	RD5.6ESAB2	-	ECG5011A	NTE5011A	SK5A6
DB03	SIR-56SB3F	23358522	-	-	-
DB30, 45	1SS133	23118859	ECG519	NTE519	SK3100
	1SS120-7	-	-	-	-
DE50	SCL003URC5F	23358501	-	-	-
DG02	MTZJ10B	23316690	-	-	-
DV01, 03, 05, 13	MTZJ9.1A	23316686	-	-	-
	UZ9.1BSA	-	-	-	-
DY10	MTZJ3.9A	23316660	-	-	-
DY11, 12, 14, 15	MA111	-	ECG552	NTE552	SK9000
G317	1SS133	23118859	ECG519	NTE519	SK3100
Q202, 03	2SC1740S-Q	23114528	ECG85	NTE85	SK3122
Q204	RN1204	A6002040	ECG2359	NTE2359	SK9959
Q301	TA8427K	B0378560	-	-	-
Q360	2SC1740S-Q	23114528	ECG85	NTE85	SK3122
Q361	2SC2655-Y	-	ECG293	NTE293	SK3849
	2SC4721P	23314444	-	-	-
Q402	2SC2482	-	ECG399	NTE399	SK9352
	2SC1569FA-5	A678971D	ECG376	NTE376	SK3219
Q403	2SC4721P	23314444	-	-	-
Q404	2SD2553FA	A6872801	-	-	-
Q421	2SC3852	23314141	ECG56%	NTE56%	SK9364%
Q430 (1)	RN1204	23114460	ECG2359	NTE2359	SK9959
Q430 (2)	RN1204	A6002040	ECG2359	NTE2359	SK9959
Q460	2SD2493(D)	23314938	-	-	-
Q461	2SA933S-Q	23114530	ECG290A	NTE290A	SK9132
Q462	2SC1740S-Q	23114528	ECG85	NTE85	SK3122
Q471	2SA1015-0	A6534036	ECG290A	NTE290A	SK9132
Q472	2SC1740S-Q	23114528	ECG85	NTE85	SK3122
Q480	2SA949-Y(C)	A6532853	ECG383	NTE383	SK9138
Q501	TA1252AN	B0385957	-	-	-
Q610	TA8211AH	B0376856	ECG7070	-	-
Q611	2SC2878-A(TE)	A6342206	-	-	-
Q612	2SA933S-Q	23114530	ECG290A	NTE290A	SK9132
Q613	2SC2878-A(TE)	A6342206	-	-	-
Q801	STR-Z4214	23906369	-	-	-
Q817	2SC1740S-Q	23114528	ECG85	NTE85	SK3122
Q818	RN2201	A6012010	ECG2368	-	-
Q819	2SC1815Y	-	ECG85	NTE85	SK3124A
	2SC1685-Q,TH	-	ECG85	NTE85	SK9229
	2SC1740S-Q	23114528	ECG85	NTE85	SK3122
Q830	2SC3852	23314141	ECG56%	NTE56%	SK9364%
	2SD1944H	-	-	-	-
	2SD1405BL	-	-	-	-
Q840	L78MR05	23318299	-	-	-
Q843	RN1205	A6002050	-	-	-
Q862	TLP621(GRL)	A8643135	ECG3098	NTE3098	SK10178
Q883	S1854FA-4	A6907777	-	-	-

% Use insulating hardware supplied with replacement.

(1) Used in model CF36H50.

(2) Used in model CE36H15.

PARTS LIST continued

SEMICONDUCTORS continued

(Select the replacement that gives the best results.)

Item No.	Type No.	Mfr. Part No.	ECG Part No.	NTE Part No.	TCE Part No.
Q901	2SC4544	A6368700	ECG376%	NTE376%	SK9362A%
Q902	2SC1740S-Q	23114528	ECG85	NTE85	SK3122
Q903	2SC4544	A6368700	ECG376%	NTE376%	SK9362A%
Q904	2SC1740S-Q	23114528	ECG85	NTE85	SK3122
Q905	2SC4544	A6368700	ECG376%	NTE376%	SK9362A%
Q906	2SC1740S-Q	23114528	ECG85	NTE85	SK3122
Q907	2SA933S-Q	23114530	ECG290A	NTE290A	SK9132
Q908	2SC2120-Y(TE)	A6321265	ECG289A	NTE289A	SK3849
Q910, 11	2SC1740S-Q	23114528	ECG85	NTE85	SK3122
Q912, 13	2SA933S-Q	23114530	ECG290A	NTE290A	SK9132
Q914, 60	2SC1740S-Q	23114528	ECG85	NTE85	SK3122
QA01	TMPA8700CMN-136	23906516	-	-	-
QA02	24LC02BI/P	-	-	-	-
	ST24C02CB6	-	-	-	-
	AT24C0210PC	70129483	-	-	-
QB01	2SC1740S-Q	23114528	ECG85	NTE85	SK3122
	2SC1685-Q,TH	-	ECG85	NTE85	SK9229
	2SC1815Y	-	ECG85	NTE85	SK3124A
QB03	RN1205	A6002050	-	-	-
QB21	2SC1740S-Q	23114528	ECG85	NTE85	SK3122
	2SC1685-Q,TH	-	ECG85	NTE85	SK9229
	2SC1815Y	-	ECG85	NTE85	SK3124A
QB22	2SC752(G)TM-Y	A6734590	ECG85	NTE85	SK3122
QB30, 40	2SC1740S-Q	23114528	ECG85	NTE85	SK3122
	2SC1815Y	-	ECG85	NTE85	SK3124A
	2SC1685-Q,TH	-	ECG85	NTE85	SK9229
QB60	2SA933S-Q	23114530	ECG290A	NTE290A	SK9132
	2SA1015Y	-	ECG290A	NTE290A	SK9132
QB61, 62	2SC1740S-Q	23114528	ECG85	NTE85	SK3122
	2SC1815Y	-	ECG85	NTE85	SK3124A
QB63	RN1206	A6002060	ECG2369	-	-
QG01	UPC1851CU	23905591	-	-	-
QG05	2SC2655-Y(C)	A6333346	ECG293	NTE293	SK3849
QM53	DTC143TN	23314360	-	-	-
QS60, 61	2SC1740S-Q	23114528	ECG85	NTE85	SK3122
QS62	RN2204	A6012040	ECG2360	NTE2360	SK9960
QS63, 64	2SC2878-A(TE)	A6342206	-	-	-
QV01	MM1313BD	23906364	-	-	-
QV60	2SC1740S-Q	23114528	ECG85	NTE85	SK3122
QY02	M65617SP-A	-	-	-	-
QY05	2SC2655Y	-	ECG293	NTE293	SK3849
QY11	2SA1162	-	ECG2409	NTE2409	SK10100
QY12	2SC3437	-	-	-	-
QY13 (1)	2SC752(G)TM-Y	23114437	ECG85	NTE85	SK3122
QY13 (2)	2SC752(G)TM-Y	A6734590	ECG85	NTE85	SK3122
QY14, 15, 16	2SC2712	-	ECG2408	NTE2408	SK10099
QY17	2SA1162	-	ECG2409	NTE2409	SK10100
QY18, 20, 21	2SC2712	-	ECG2408	NTE2408	SK10099
QY23	2SA1162	-	ECG2409	NTE2409	SK10100
QZ01	TC90A15P	B0410867	-	-	-
QZ02, 03, 04	2SC1740S-Q	23114528	ECG85	NTE85	SK3122
	2SC1815Y	-	ECG85	NTE85	SK3124A

% Use insulating hardware supplied with replacement.

(1) Used in model CF36H50.

(2) Used in model CE36H15.

CONTROLS & RESISTORS

Item No.	Function/Rating	Mfr. Part No.	NTE Part No.
D899	Varistor, ENC271D-14A	24000268	-
R368	4.7 5% 1/4W Fusible	24545479	-
R416	4300 5W	-	-
	5600 5W	24019335	-
R424	3.3 5% 1/2W Fusible	24546339	-
R441	1000 5% 1W Fusible	24532102	F1W210
# R475	390 5% 1/6W	24366391	-
# R478	13K 1% 1/4W	24327133	-
# R482	4700 1% 1/4W	24327472	-
R488, 89	18K 1% 1/4W	24327183	-
R808	7 PTC Cold 20% 140V / 223 Cold	24000862	-
R810	1.1 5% 15W	24007873	-
R889	.39 5% 1/2W Fusible	24546398	-
R920	2.2 2W Fusible	24000961	F2W2D2
R984	1500 2% 1/8W	24367152	EW215
R985	470 2% 1/8W	24367471	EW147
R986, 87	680 2% 1/8W	24367681	EW168
R988, 89	4700 2% 1/8W	24367472	EW247
R991	680 2% 1/8W	24367681	EW168
RG15	15K 1% 2W	24383153	2W315
RG45	4.7 5% 1/4W Fusible	24545479	-

# For SAFETY use only equivalent replacement part.



Created with pride by the employees  
of Howard W. Sams & Company.

*J. Barker, N. Beck, B. Buchanan,  
T. Clensy, G. Farrell, B. Fink,  
M. Herkless, J. Kocha, F. Malek,  
B. Medaris, R. Raus, B. Skinner*

PARTS LIST continued

CAPACITORS & ELECTROLYTICS

Item No.	Rating	Mfr. Part No.
# C440	.008 3% 1.5kV	24082959
# C442	.43 315V	24082920
# C444	.0056 3% 1.8kV	24082837
# C467	.015 3% 630V	24095883
C505	12pF NPO	24353120
C801	.22 20% 125VAC	24095670
C802	.082 20% 125VAC	24095852
C805, 06	.01 +80% - 20% 250VAC	24092300
C811 Thru		
C813	.0047 20% 250VAC	24092585
C865, 71	.0015 10% 2kV	24092347
C893, 94	270pF 10% 2kV	24092338
C902	.001 10% 2kV	24092345
CB60	2.2μF 20% 50V NP	24085944
CG13	3.3μF 16V Tantalum	
CG16	10μF 20% 16V Tantalum	24704106
CY67	10μF 20% 16V NP	24085981
CY70	1μF 20% 50V NP	24085958

# For SAFETY use only equivalent replacement part.

CABINET PARTS

Item	Mfr. Part No.
<b>Model CE36H15</b>	
Button, Power	23445184
Cabinet Front	23510448
Cabinet Rear	23426761
<b>Model CF36H50</b>	
Button, Power	23445162
Cabinet Front	23510497
Cabinet Rear	23427321

COILS & TRANSFORMERS

Item No.	Function/Rating	Mfr. Part No.
G500	-	23289100
G890, 91	Ferrite Bead	23103775
G908	-	23289100
L101	-	23289220
L301	Ferrite Bead	23103880
L400	-	23238714
# L441	Horizontal Linearity	23233953
L442	-	23248122
# L461	-	23248179
# L462	Yoke Horiz 1.3mH Vert 10.9mH	-
L463	Ferrite Bead	23103880
L501	-	23289101
L502	47μH	23289470
L805	-	23248213
L806	-	23248213
L861, 62	Ferrite Bead	23103880
L883, 84	Ferrite Bead	23103880
L885	-	23248073
L886, 88	Ferrite Bead	23103880
L901	Degaussing	23200279
L902	-	23289221
L903	-	23289221
L904	-	23289221
L910	4.7μH	23237991
LA01	-	23289100
LB01	Oscillator	23262280
LV01	-	23289100
LY10	56μH	-
LY11	-	-
LY13, 14	2.2μH	-
LY15	-	-
LY16	Ferrite Bead	-
LY17, 20	2.2μH	-
LY21	150μH	-
LY22	27μH	-
LY23	2.2μH	-
LZ01	-	23238708
LZ02, 03, 04	Ferrite Bead	23103880
LZ05	-	23289100
LZ11	-	-
T401	Horizontal Drive	23224336
# T461 (1)	Horizontal Output	23236540
T801	Line Filter	23211708
T840	Power	23213513
T862	Converter	23217379

# For SAFETY use only equivalent replacement part.  
(1) Screen and Focus controls are part of T461.

MISCELLANEOUS

Item No.	Description	Mfr. Part No.	Notes
F301	Fuse	23144908	500mA, 125V, Fast Acting
F470	Fuse	23144731	1.6Amp
F801	Fuse	23144888	5Amp, 125V, Slow Blow
F860	Fuse	23144511	4Amp, 125V
# H001 (1)	Module	23321310	Tuner/IF (EL933L2)
KB01	Receiver	23905177	Remote (PIC-TB16)
P801	Line Cord	23372065	AC, Polarized
PV01	Jack	23365818	SVHS
PV03	Jack	23365848	Assembly
SA01 (2)	Switch	23145227	Channel Up
SA01 (3)	Switch	23145226	Channel Up
SA02 (2)	Switch	23145227	Channel Down
SA02 (3)	Switch	23145226	Channel Down
SA03 (2)	Switch	23145227	Volume Up
SA03 (3)	Switch	23145226	Volume Up
SA04 (2)	Switch	23145227	Volume Down
SA04 (3)	Switch	23145226	Volume Down
SA05 (2)	Switch	23145227	TV/Video
SA05 (3)	Switch	23145226	TV/Video
SA06 (2)	Switch	23145227	Menu
SA06 (3)	Switch	23145226	Menu
SA07	Switch	23145227	Power
SR81	Relay	23146564	Power
# V901	CRT	23312713	A90AHH50X02
V901A	Socket	23902068	CRT
W661, 62	Speaker	23351088	2 1/2" X 5", 8 Ohms, 5W
X401	Crystal	23153721	503kHz
X501	Crystal	23153961	3.58MHz
XA01	Crystal	23153325	8MHz
XY01	Crystal	-	14.3MHz
	Fuse Holder	23165433	For F301, F470, F801
	PC Board (3)	PB7809D	Control
	PC Board	PB7809D	CRT
	PC Board (2)	PB7790E	Main
	PC Board (3)	PB7790C	Main
	PC Board	PB7712	PIP
	Transmitter (2)	23306266	Remote, CT-9951
	Transmitter (3)	23306261	Remote, CT-9945

# For SAFETY use only equivalent replacement part.  
(1) Contact TNI Electronics for replacement; order by manufacturer's part number.  
(2) Used in model CF36H50.  
(3) Used in model CE36H15.

TOSHIBA

MODEL CF36H50 (CHASSIS TAC9816)