

CABINET-REAR VIEW

DISASSEMBLY INSTRUCTIONS

CHASSIS REMOVAL

Remove ten screws holding cabinet back and remove back. Remove two screws holding AC cord to cabinet bottom. Remove one screw holding antenna terminal to top of cabinet. Disconnect HV anode, CRT socket, deflection yoke connector, degaussing coil connector, speaker connector, ground leads, and all required cabling. Remove two screws holding main board in cabinet frame. Depress two latches holding main board and slide board out of frame and cabinet. Remove UHF and VHF tuning knobs from front of set. Remove four

screws holding tuner to cabinet front and remove tuner and antenna terminal from cabinet. Remove three screws holding control board to cabinet front and remove board from cabinet.

CRT REMOVAL

Follow "Chassis Removal" procedure and lay set facedown on a soft protective surface. Loosen and remove CRT neck assemblies. Remove four nuts holding CRT to cabinet front and lift CRT out of cabinet. Do not lift CRT by the neck.

SERVICING IN THE FIELD

CRT IMPLSION PROTECTION AND CLEANING

Implosion protection is an integral part of the picture tube, cleaning accomplished without CRT removal.

FUSE DEVICES

A 2-amp fuse is used for low-voltage power-supply protection. (See photo, Cabinet - Rear View.)

A 4-amp fuse is used for AC line protection. (See photo, Cabinet - Rear View.)

LAMP ACCESSIBILITY

Tuner assembly must be removed. See Disassembly Instructions.

VHF/UHF TUNER

See Miscellaneous Adjustments.

VHF TUNER

The fine tuning mechanically engages oscillator slug for adjustment (one slug for each channel).

UHF TUNER

The UHF tuner employs a detent mechanism for

channel selection. Fine tuning is adjusted by rotating the fine tuning knob.

HORIZONTAL OSCILLATOR

Fine adjustment of the horizontal hold is accomplished by the proper setting of the Horizontal Hold (See photo, Main Board - Top View.)

HIGH VOLTAGE

For high voltage procedure, refer to Miscellaneous Adjustments.

WIDTH

The Horiz width may be varied by adjusting the Horiz width coil. (See photo, Main Board - Top View.)

FOCUS

The focus may be varied by a Focus Control. (See photo, Cabinet - Rear View.)

AGC

The RF AGC may be varied by an RF AGC Control. (See photo, Main Board - Top View.)

FOLDER 1

SET 2722

QUASAR

CHASSIS C136/S1,LC136/S1,YC136/S1

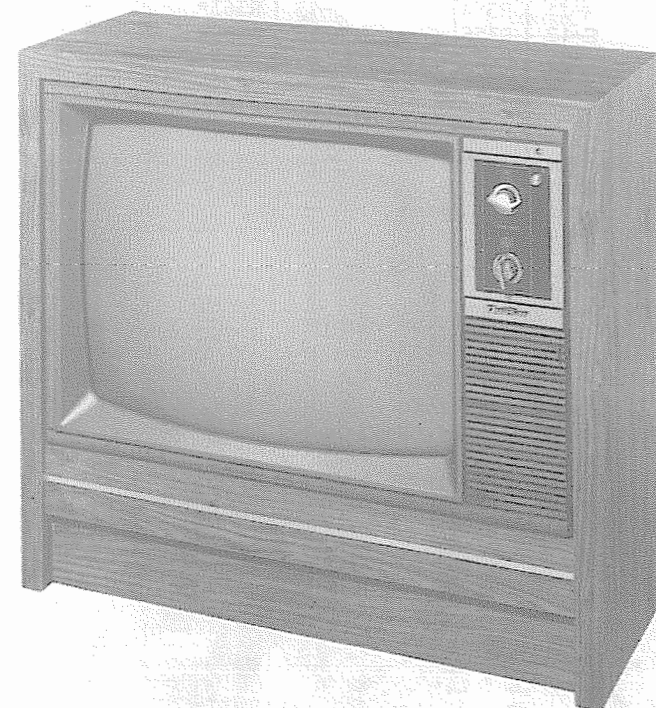
SAMS

PHOTOFACT®

For Supplier Address See PHOTOFACT Index

QUASAR
CHASSIS C136/S1,LC136/S1,YC136/S1

MODEL	CHASSIS
WL 9439BP-1	C136/S1
WL 9439CP	LC136/S1
WU9410BU-1	C136/S1
WU9411U	LC136/S1
YWU9410BU-1	YC136/S1
YWU9411U	LC136/S1
YWU9420BK-1	YC136/S1



Model WU9411U

SAFETY PRECAUTIONS

See Page 1.

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The listing of any available replacement part herein does not constitute in any case a recommendation, warranty or guaranty by Howard W. Sams & Co. as to the quality and suitability of such replacement part. The numbers of these parts have been compiled from information furnished to Howard W. Sams & Co. by the manufacturers of the particular type of replacement part listed.

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DATE 2-90

SET 2722 FOLDER 1

10 9 8 7 6 5 4 3 2 1 0

CHASSIS C136/S1,LC136/S1,YC136/S1

QUASAR

SET 2722 FOLDER 1

SAFETY PRECAUTIONS

SERVICE WARNING

Service work should be performed only by qualified service technicians who are familiar with safety checks and guide lines.

1. For continued safety, no modification of any circuit should be attempted unless recommended by manufacturer.
2. Disconnect power source before replacing parts as some parts may be electrostatic sensitive.
3. Use an isolation transformer between the line cord and power receptacle, when servicing chassis.

SERVICING HIGH VOLTAGE AND PICTURE TUBE

When servicing the High Voltage circuits, extreme caution should be used.

1. Discharge static High Voltage by connecting a 10 kohms resistor in series with a test lead between chassis and anode lead of picture tube.
2. Wear shatter-proof eye protection (goggles) when handling the picture tube in case of implosion.
3. DO NOT lift picture tube by the neck.

X-RAY RADIATION AND HIGH VOLTAGE LIMITS

Service personnel should be aware of the procedures and instructions covering x-ray radiation. The only potential source of x-ray in present day solid state receivers and monitors is the picture tube.

1. It is only when High Voltage is excessive that x-ray radiation is capable of being emitted from shell of picture tube. Be sure the High Voltage is set at specified level.
2. An accurate High Voltage meter should be available at all times. Meter calibration should be checked periodically.
3. High Voltage should be kept at rated value - NO HIGHER. Higher voltages may cause x-ray radiation or failure of other associated components. DO NOT depend on protection circuit to keep voltages at rated value.
4. Every time a chassis is serviced, High Voltage should be checked at various brightness levels to be sure it is regulating properly.
5. While troubleshooting a set with excessive High Voltage, avoid being close to picture tube. DO NOT operate longer than it is necessary to locate the cause of excessive High Voltage. Use a variable AC transformer to regulate voltage.
6. Many components, electrical and mechanical, in present chassis have safety related characteristics which are not evident with visual inspection. When these components are known, they are identified with a # on the schematic and in the parts list. When replacing these components, for SAFETY, use only an equivalent replacement part.

SAFETY CHECKS-FIRE AND SHOCK HAZARD

Cold Leakage Checks (Sets with isolated ground.)

1. Unplug the AC cord and connect a jumper across the two prongs on the plug.
2. Turn on power switch.
3. Measure the resistance, with an Ohm meter, between the jumpered AC plug and any exposed metal cabinet parts on the set such as: antenna screw heads, control shafts, handle brackets. Exposed metal parts that have a return path should measure between 200 kohms and 5 megohm. Parts without a return path must measure infinity.

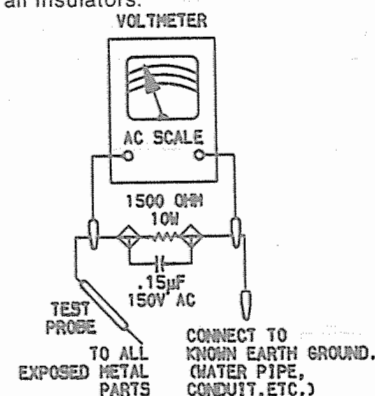
Leakage Current Hot Check

1. Plug the AC cord directly into AC outlet. DO NOT use an isolation transformer.
2. Connect a 1500 Ohm 10 watt resistor, in parallel with a .15 μ F 150V AC capacitor, between any exposed metal parts on the set and a good earth ground such as a water pipe. (See Figure below.)
3. Using an AC volt meter, with 1000 Ohms per volt or more sensitivity, measure the voltage across the resistor. Check each exposed part and measure voltage at each point.
4. Reverse the AC plug and repeat voltage measurement at each point.
5. The voltage at any point should not exceed .75 volts RMS. This corresponds to .5 milliamps AC. Any value exceeding this limit constitutes a potential shock hazard and must be corrected.

GENERAL GUIDE LINES

A final SAFETY check before returning the set to customer.

1. Check area repaired for poorly soldered or de-soldered connections. Check entire circuit board surface for solder splashes.
2. Check interboard wiring for pinched wires or wires contacting any high-wattage resistors.
3. Check that all control knobs, shields, covers, grounds and mounting hardware have been replaced. Be sure to replace all insulators.



TROUBLESHOOTING AID

Note: Waveforms taken with triggered scope, Keyed-Rainbow generator. Schematic voltages measured with digital meter, no signal. Controls adjusted for normal operation.

PICTURE or SOUND

NO PIC, NO SOUND, NO RASTER: Check AC power supply and sources generated from Horizontal Output Transformer (T551). Refer to "Troubleshooting" Power Supply and Horizontal circuits.

NO PIC, NO SOUND, HAS RASTER: Check IF-AGC and source voltages from Horizontal Output Transformer (T551). Refer to "Troubleshooting" IF-AGC and Horizontal circuits.

NO PIC, HAS SOUND, NO RASTER: Check Horizontal Output Transformer (T551) sources and Video circuit. Refer to "Troubleshooting" Horizontal and Video circuits.

NO PIC, HAS SOUND, HAS RASTER: Refer to "Troubleshooting" Video circuit.

HAS PIC, NO SOUND: Refer to "Troubleshooting" Audio circuit.

OVERLOADED PICTURE: Refer to "Troubleshooting" IF-AGC circuit.

LOW OR EXCESSIVE BRIGHTNESS: Check Video and Luminance circuits. Refer to "Troubleshooting" Video circuit.

SWEEP

NO RASTER, HAS SOUND: Check HV rectifier, Part of Horizontal Output Transformer (T551). Refer to "Troubleshooting" Horizontal circuit.

NO RASTER, NO SOUND: Refer to "Troubleshooting" Horizontal circuit.

NO VERT DEFLECTION: Refer to "Troubleshooting" Vertical circuit.

POOR VERT LIN OR FOLDOVER: Refer to "Troubleshooting" Vertical circuit.

POOR HORIZ LIN OR FOLDOVER: Refer to "Troubleshooting" Horizontal circuit.

NARROW PICTURE: Refer to "Troubleshooting" Horizontal circuit.

VERT OFF FREQUENCY: Refer to "Troubleshooting" Vertical circuit.

HORIZ OFF FREQUENCY: Refer to "Troubleshooting" Horizontal circuit.

SYNC

NO VERT/HORIZ SYNC: Refer to "Troubleshooting" Sync circuit.

RASTER

YELLOW (NO BLUE): Check Chroma and Blue Output circuits. Refer to "Troubleshooting" Raster circuit.

CYAN (NO RED): Check Chroma and Red Output circuits. Refer to "Troubleshooting" Raster circuit.

MAGENTA (NO GREEN): Check Chroma and Green Output circuits. Refer to "Troubleshooting" Raster circuit.

COLOR (B/W operating normally)

NO COLOR: Refer to "Troubleshooting" Chroma circuit.

WEAK COLOR: Refer to "Troubleshooting" Chroma circuit.

NO COLOR SYNC: Refer to "Troubleshooting" Chroma circuit.

NO GREEN: Check Chroma and Green Output circuits. Refer to "Troubleshooting" Raster circuit.

NO BLUE: Check Chroma and Blue Output circuits. Refer to "Troubleshooting" Raster circuit.

NO RED: Check Chroma and Red Output circuits. Refer to "Troubleshooting" Raster circuit.

INCORRECT HUE (TINT): Refer to "Troubleshooting" Chroma circuit.

TEST JIG HOOKUP

FUNCTION	Chek-A-Color ADAPTER NO.	P.C. BOARD PLUG # DY	PIN 1	RED
			PIN 2	YELLOW
			PIN 3	BLUE
			PIN 4	BLACK
CRT	B239			
YOKE	D482			
YOKE SETTING	YP1			
	FOCUS TAP			

TROUBLESHOOTING

POWER SUPPLY

Check Ac Fuse (F001). If Fuse F001 is open, check Bridge Rectifier Diodes (D801 thru D804), Capacitors C801 thru C804, C807 and Electrolytic C805. Apply 120V AC and check for 160V at the cathode of Diode D801. If this voltage is missing, check Line Filter (L801) and Power Switch (SW801). If 160V is present at the cathode of D801, check for 130V at pin 4 of Regulator IC (IC801). If this voltage is missing, check voltages and components associated with IC801 and Horizontal Output Transistor (Q551). If proper voltage is present at pin 4 of IC801, refer to the "Horizontal" section of this Troubleshooting guide.

HORIZONTAL

Determine if TV is in shutdown, refer to the "High Voltage Shutdown" section of this Troubleshooting guide. If TV is not in shutdown, Inject a horizontal signal at the base of Horizontal Output Transistor (Q551). If horizontal deflection is now present, check voltages, waveforms and components associated with pins 2 thru 10 of Sync/Sweep IC (IC401) and Horizontal Driver Transistor (Q501). If there is still no horizontal sweep, check voltages, waveforms and components associated with Transistor Q551 and Horizontal Output Transformer (T551). Check voltages and components associated with Diodes D531, D552, D553, D554 and D560 for defects. The High Voltage Rectifier is part of Transformer T551 and if defective will affect the performance of the horizontal circuits. If the Horizontal Oscillator is off frequency, check voltages, waveforms and components associated with pins 4 thru 8 of IC401. Horizontal linearity or foldover problems may be caused by Capacitors C551, C552, C553, C556 and C561 being defective.

HIGH VOLTAGE SHUTDOWN

The high voltage is monitored by Diode D531. Diode D531 rectifies pulses from Horizontal Output Transformer (T551). Should the high voltage increase, the rectified voltage at the cathode of Diode D531 will also increase and trigger X-Ray Protect Circuit at pin 8 of Sync/Sweep IC (IC401). This throws the Horizontal Oscillator off frequency, lowering the high voltage. To troubleshoot, disconnect

Diode D531 from the circuit and use a Variable AC Supply. Start at 90V AC and increase as necessary to locate defect. Return D531 to the circuit.

NOTE: Care should be taken in defeating the high voltage shutdown circuit, as this may cause excessive X-radiation and damage to the CRT, Transformer T551 and associated components. Monitor the high voltage and troubleshoot.

Voltages Taken with TV In Shutdown IC401		
Pin 6	0.0V	
Pin 7	6.10V	
Pin 8	6.13V	

HIGH VOLTAGE SHUTDOWN TEST

Apply 120V AC, turn set On, set all customer controls for normal operation and apply a Variable 30V to the cathode of Diode D531. Set should lose horizontal sync at 25.5V. If set does not lose horizontal sync, the shutdown circuit should be repaired. To resume normal operation, remove voltage from the cathode of D531.

IF-AGC

Inject a video IF signal at the IF Input and check for video on the CRT. If video is present, check Tuner, Tuner Control and Tuner AFC circuits. If there is no video on the CRT, check for a video waveform at TP12. If video is present at TP12, refer to the "Video" section of this Troubleshooting guide. If there is no video at TP12, apply AGC bias to pin 5 of VIF/SIF/AGC/AFC/DET IC (IC101). If video is now present at TP12, check voltages, waveforms and components associated with the AGC circuit at pins 5, 6 and 7 of IC101. If there is still no video at TP12, check voltages, waveforms and components associated with pins 2, 3, 4 and 8 thru 20 of IC101. A defective AGC circuit can cause an overloaded picture, excessive snow or loss of audio and video. See the AGC Voltage Chart for AGC voltages with signal.

AGC VOLTAGE CHART IC101		
Pin 5	5.2V	
Pin 6	5.8V	
Pin 7	4.1V	

TROUBLESHOOTING (Continued)

AUDIO

Select an active TV channel and check for an audio waveform at pin 2 of Audio Output IC (IC201). If there is no audio, check voltages, waveforms and components associated with pins 22 thru 28 of VIF/SIF/AGC/AFC/DET IC (IC101) and pin 2 of IC201. If an audio waveform is present at pin2 of IC201, check for audio at the Speaker with Volume at Maximum. If there is no audio, check voltages, waveforms and components associated with IC201. Check voltage at pin 4 of IC201. It should measure 0.0V at MINIMUM Volume and 12.V at Maximum Volume.

VIDEO

Inject a video signal at TP12 and check for video on the CRT. If video is present, troubleshoot the "IF-AGC" section of this Troubleshooting guide. If there is no video on the CRT, check for a video waveform at TP13. If there is no video TP13, check voltages, waveforms and components associated with pins 1 thru 4, 17, 21 and 22 of Video/Chroma IC (IC301) and Video Amp Transistors (Q172 and Q301). If video is present at TP13, check voltages, waveforms and components associated with the CRT and Output Transistors (Q351, Q352 and Q353). If the brightness is inadequate or cannot be controlled, check the voltages, waveforms and components associated with pins 1, 2 and 21 of IC301 and pin 7 of the CRT.

VERTICAL

Inject a vertical drive signal at pin 12 of Sync/Sweep IC (IC401). If vertical deflection is now present, check voltages, waveforms and components associated with pins 12 thru 19 of IC401. If there is still no vertical sweep, check voltages, waveforms and components associated with Vertical output IC (IC451) and the Deflection Yoke (L561). Vertical linearity or foldover problems may be caused by vertical feedback and bias circuits, check Electrolytics C401, C404, C405 and C408 for defects.

SYNC

If there is no vertical or horizontal sync, check voltages, waveforms and components associated with pins 20 thru 23 of Sync/Sweep IC (IC401). If there is no vertical sync, check voltages, waveforms and components associated with pins 16, 17 and 18 of IC401. If there is no horizontal sync, check voltages and components associated with pins 2 thru 8 of IC401.

RASTER

Check the CRT and CRT voltages. If there is no Red, check voltages and components associated with pin 18 of Video/Chroma IC (IC301) and Red Output Transistor (Q351). If there is no Green, check voltages and components associated with pin 19 of IC301 and Green Output Transistor (Q352). If there is no Blue, check voltages and components associated with pin 20 of IC301 and Blue Output Transistor (Q353). If raster has a keystone shape, check Deflection Yoke (L561). If raster has height or width problems, refer to the "Vertical", "Horizontal" and "Power" sections of this Troubleshooting guide.

CHROMA

Check for a chroma waveform at pin 6 of Video/Chroma IC (IC301). If waveform is missing, check components associated with pin 6. If a chroma waveform is present at pin 6, check for proper chroma waveforms at pins 18, 19 and 20 of IC301. Ifd these waveforms are missing, check voltages, waveforms and components associated with pins 6 thru 20 of IC301. Check the 3.58MHz Oscillator at pins 15 and 16 of IC301. Check voltages and components associated with the Tint Control and pins 9 thru 16 of IC301. If proper chroma waveforms are present at pins 18, 19 and 20 of IC301, refer to the "Raster" section of this Troubleshooting guide.

TEST EQUIPMENT

Test Equipment listed by Manufacturer illustrates typical or equivalent equipment used by SAMS' Engineers to obtain measurements and is compatible with most types used by field service technicians.

Equipment	B&K Precision Equipment No.	Sencore Equipment No.	Notes
OSCILLOSCOPE	1541A, 2120, 2125, 2160	SC61	
GENERATORS			
RGB	1249, 1260	RG67	
MULTIBURST SIGNAL	1251, 1260	VA62A	
COLOR BAR	1211A, 1249, 1251, 1260	VA62A, CG25, NT64	
ANALOG VOM	114, 117, 177, 214		
DIGITAL VOM	388HD, 2900 SERIES	DVM37, DVM56A, SC61	
FREQUENCY METER	1803, 1804, 1805	FC71, SC61	
HI-VOLTAGE PROBE VOM/DMM Accessory probes	HV-44 PR-28(HV)	HP200 TP212	
ISOLATION TRANSFORMER	TR110, 1604, 1653, 1655	PR57	
CAPACITANCE ANALYZER	820, 810, 830	LC76, LC101, LC102	
CRT ANALYZER	467, 470, 480, 490	CR70	
TEMPERATURE PROBE	TP-28, TP-30		
AC LEAKAGE TESTER	1655	PR57	
LOGIC PROBE	DP51, DP21		
LOGIC PULSER	DP101, DP31		
INDUCTANCE ANALYZER	875A	LC76, LC101, LC102	
FLYBACK YOKE TESTER	875A	VA62A, LC76, LC101, LC102	
TV STEREO GENERATOR	2009	ST65, ST66	
TV STEREO POWER MONITOR		SR68	
FIELD STRENGTH METER		FS73, FS74	
TRANSISTOR TESTER		TF46	
VIDEO ANALYZER		VA62A	

TV ALIGNMENT INSTRUCTIONS

Use an Isolation transformer and observe power supply polarity. Maintain line voltage at 120V AC. Allow a 20-minute warm-up period for receiver and test equipment.
Suggested Alignment Tools: GC-THORSEN
L104, L152, L201, T201, Tuner IF Output Coil9440

PRELIMINARY INSTRUCTIONS

Set the channel selector to the highest unused channel. Set scope sweep to external. Connect scope vertical input to scope vertical input on sweep/marker generator. Connect scope external horizontal input to scope horizontal input on sweep/marker generator. Ground test equipment to TV chassis unless specified otherwise. Use only enough generator output to provide a usable indication.
Note: Response may vary slightly from that shown.
Connect a 4.7 Volt Bias to TP14.

VIDEO IF ALIGNMENT (SWEEP MARKER GENERATOR)

DIRECT PROBE FROM SWEEP/MARKER GENERATOR	SWEEP GENERATOR OUTPUT	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	REMARKS
To TP12	To TP on VHF Tuner	44MHz (10MHz Sweep)	45.75MHz	Adjust L104 and Tuner IF Output Coil to place 45.75MHz Marker as high on the response curve as possible without affecting symmetry of response. See Figure 1.

TV ALIGNMENT INSTRUCTIONS (Continued)

VIDEO IF ALIGNMENT (BAR SWEEP GENERATOR)

BAR SWEEP GENERATOR	SCOPE INPUT	REMARKS
To Antenna Terminals	To TP12	Perform Video IF Adjustments per SWEEP/MARKER GENERATOR Instructions. See Figure 2.

SOUND IF ALIGNMENT

Tune in a station and adjust L201 and T201 for Maximum sound. Reduce signal strength at the antenna terminals until distortion appears. Continue to reduce the signal while aligning for undistorted output by adjusting T201.

AUTOMATIC FINE TUNING ALIGNMENT

Connect as explained in preliminary instructions unless specified otherwise. Connect a DC Voltmeter from TP16 to ground. Connect a Jumper from TP14 to ground. Set AFC Switch to On and record voltage. Remove Jumper and tune in a picture. Set AFC Switch to Off and Adjust AFT Control (R153) for recorded voltage.

DIRECT PROBE FROM SWEEP/MARKER GENERATOR	SWEEP GENERATOR OUTPUT	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	REMARKS
To TP110 (Pin 10 of IC101)	To TP on VHF Tuner	44MHz (10MHz Sweep)	45.75MHz	Adjust L152 to place 45.75MHz Marker at crossover. See Figure 3.

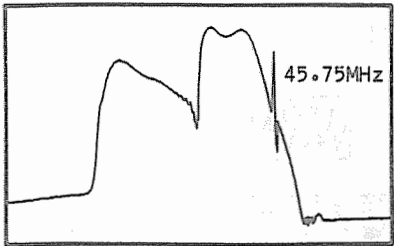


Figure 1

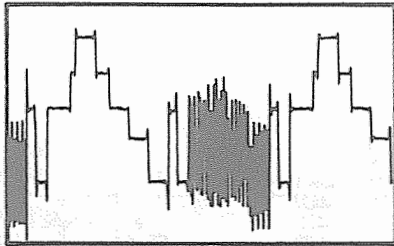


Figure 2

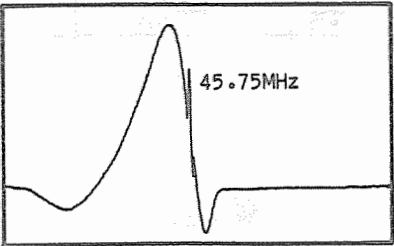
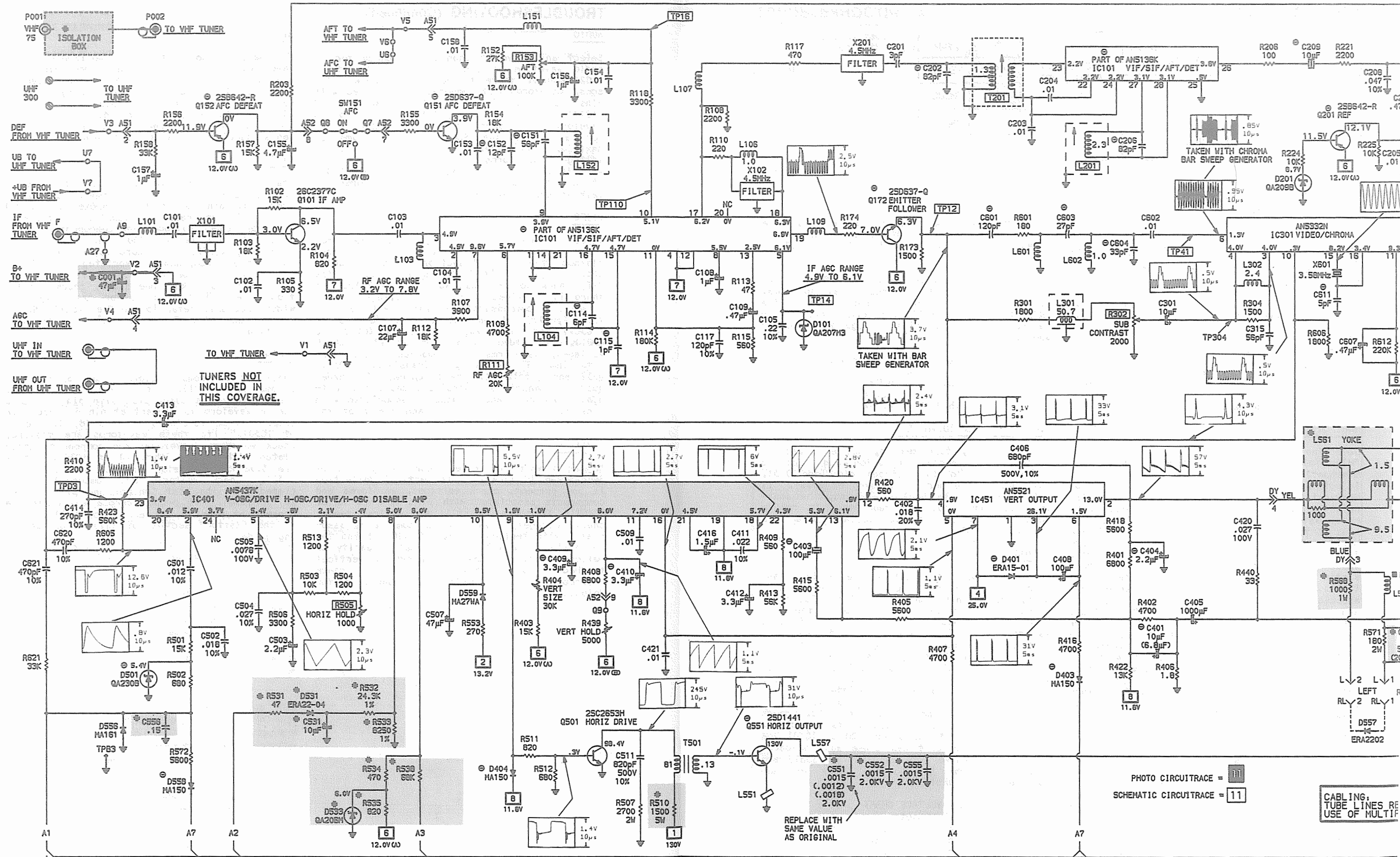
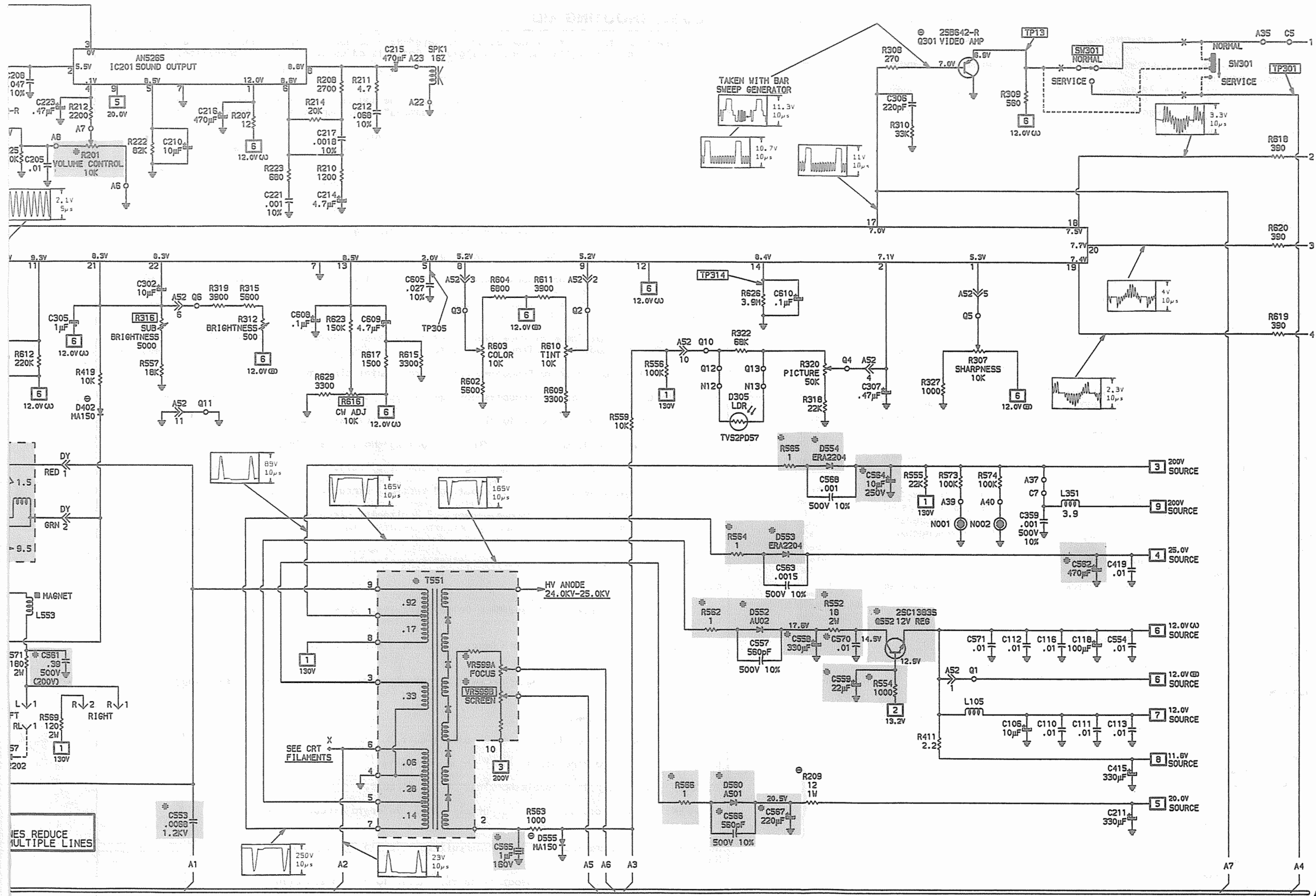
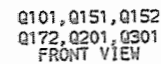









Figure 3

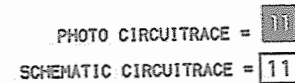






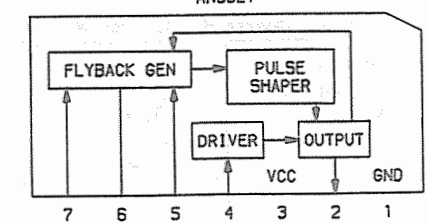
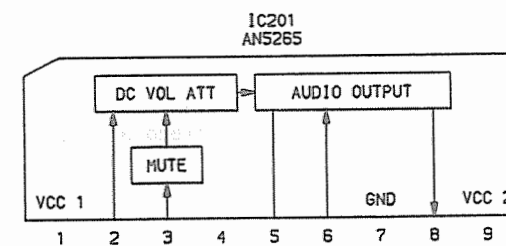
-  Circuitry not used in some versions
-  Circuitry used in some versions
-  See Parts List
-  Nominal value
-  Ground
-  Chassis
-  Common tie point

Supply voltage maintained as shown at input.
 Voltages measured with digital meter, no signal.
 Controls adjusted for normal operation.
 Terminal identification may not be found on unit.
 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.



POWER SUPPLY

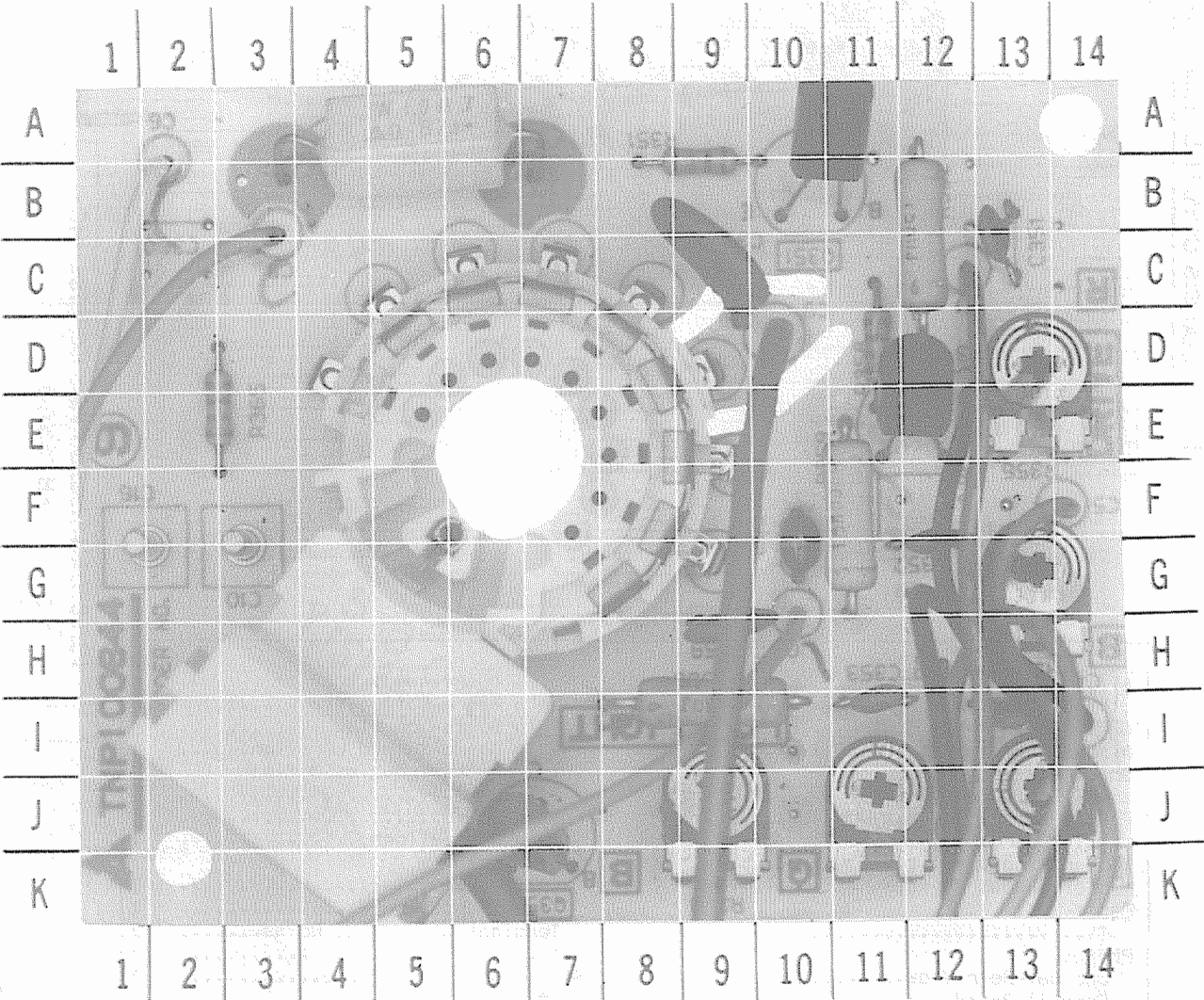
IC101
AN5136K-R



CRT BOARD-GridTrace LOCATION GUIDE

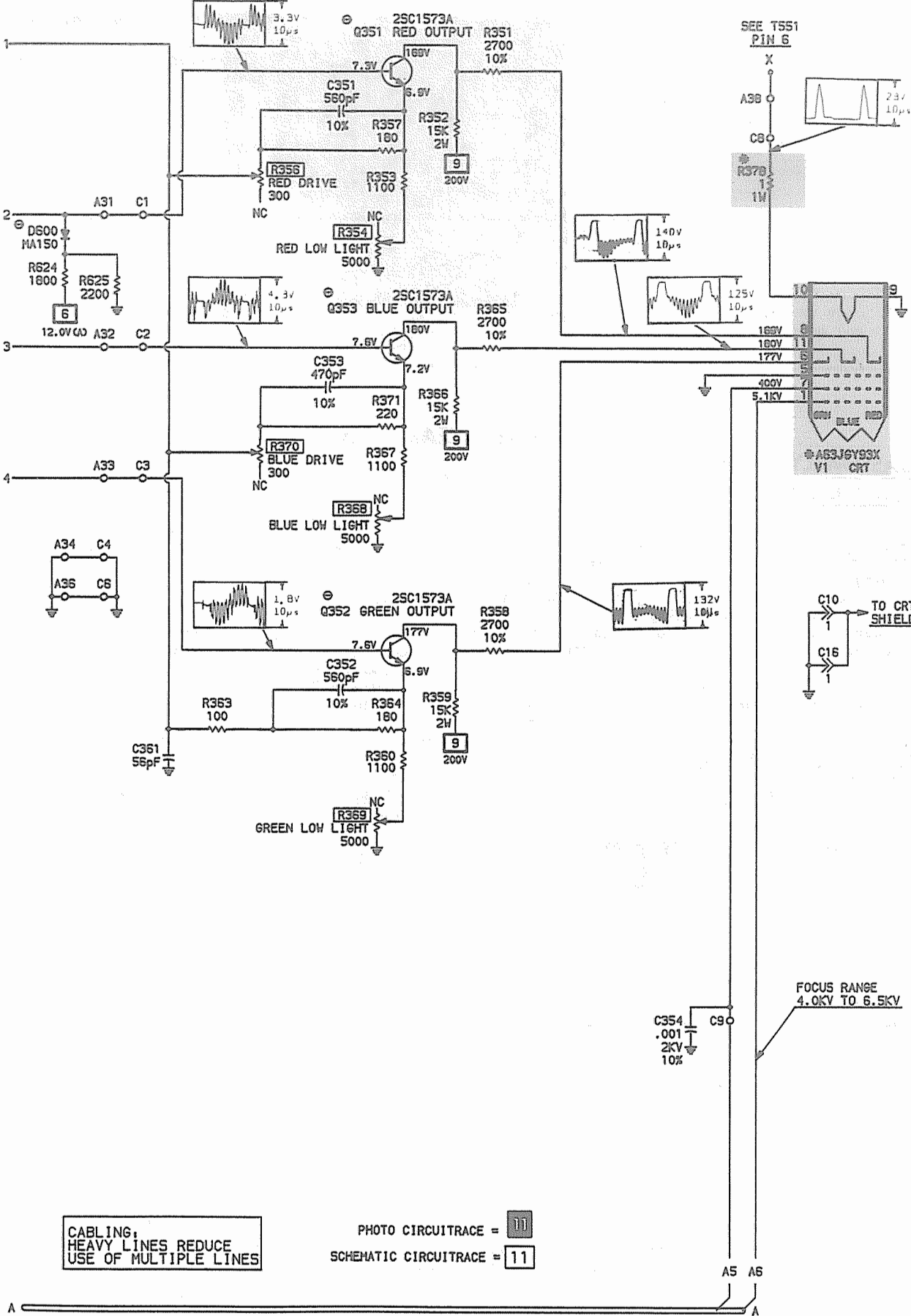
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C353	I-11	Q351	A-11	R354	J-13	R363*	F-12	R369	J-11
C354	C-9	Q352	E-12	R356	D-13	R364*	G-12	R370	G-13
C359	H-9	Q353	J-7	R357*	C-14	R365	E-5	R371*	J-10
C361	I-13	R351	A-9	R358	D-11	R366	I-9	R378	A-5

*Located on bottom of board.



A Howard W. Sams GRIDTRACE™ Photo

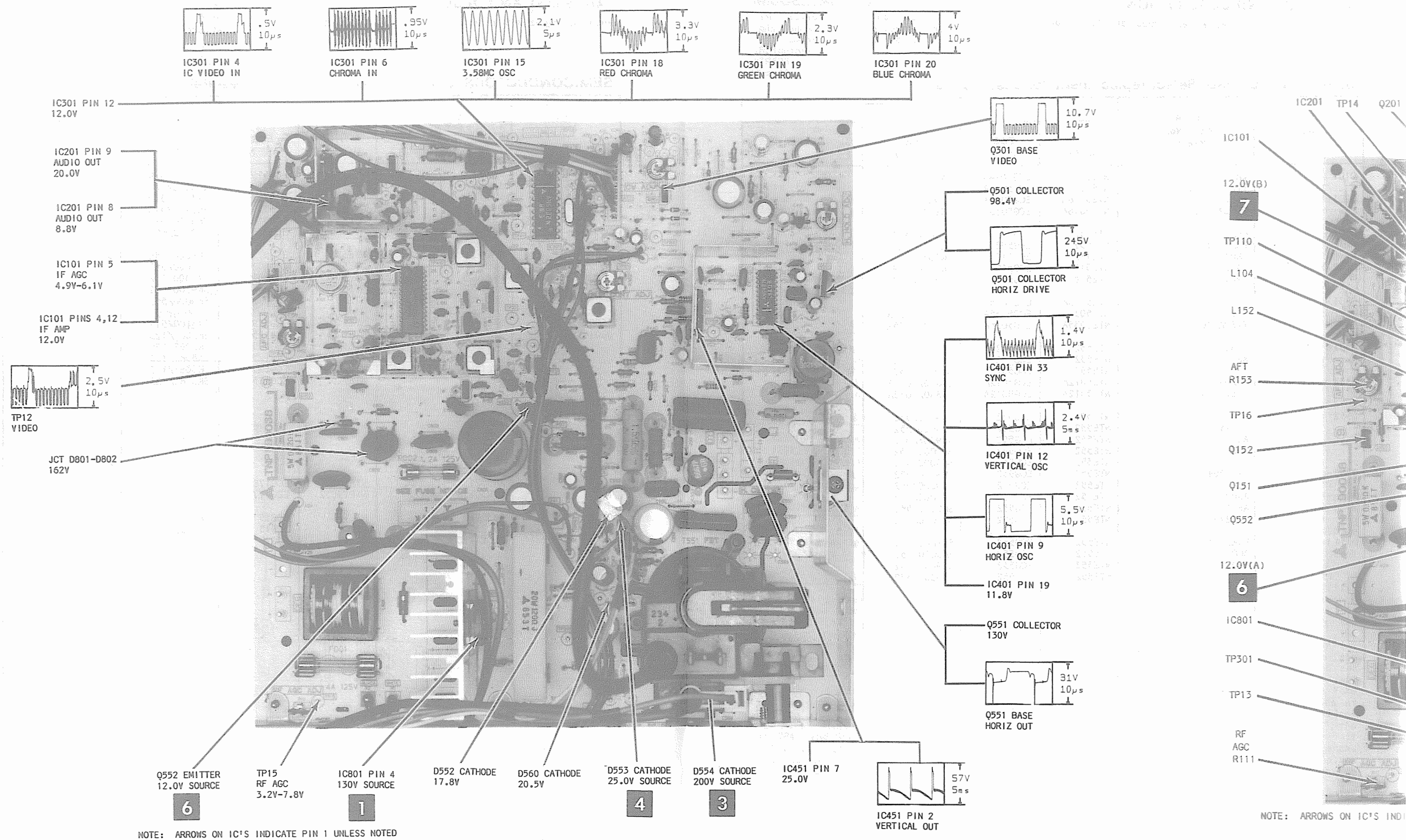
CRT BOARD

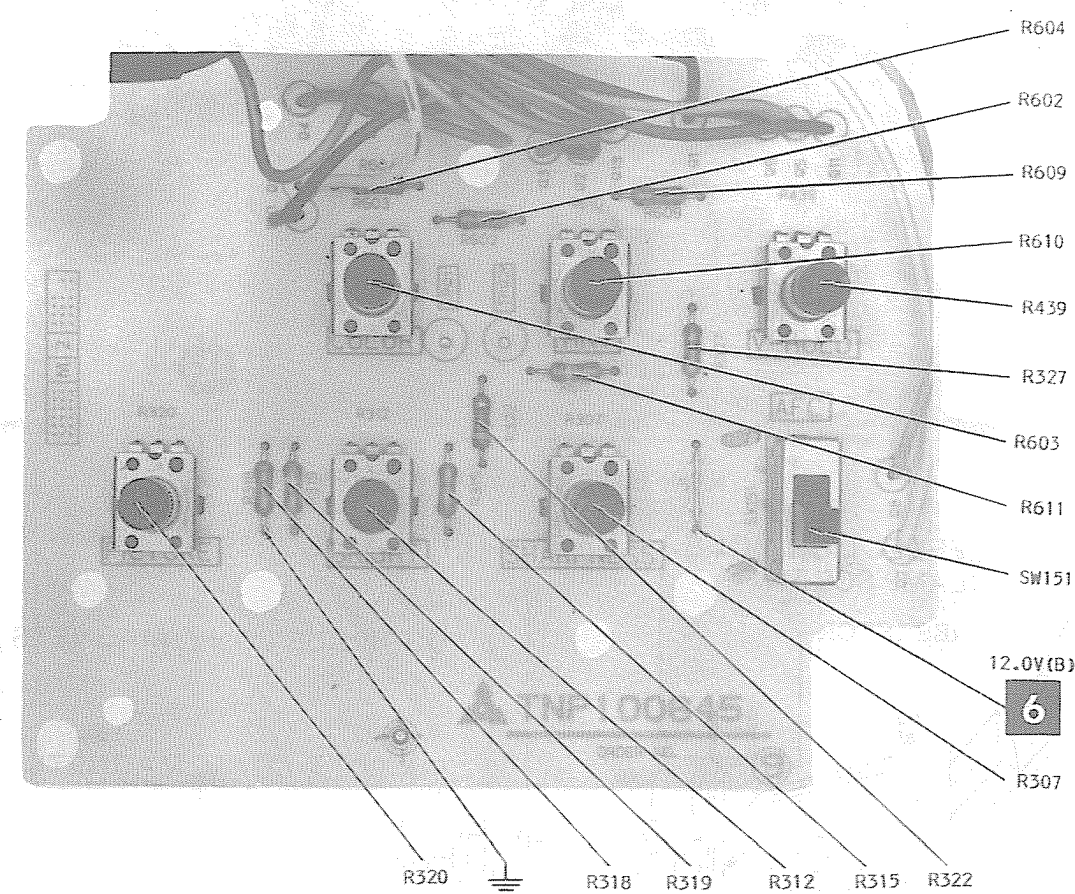


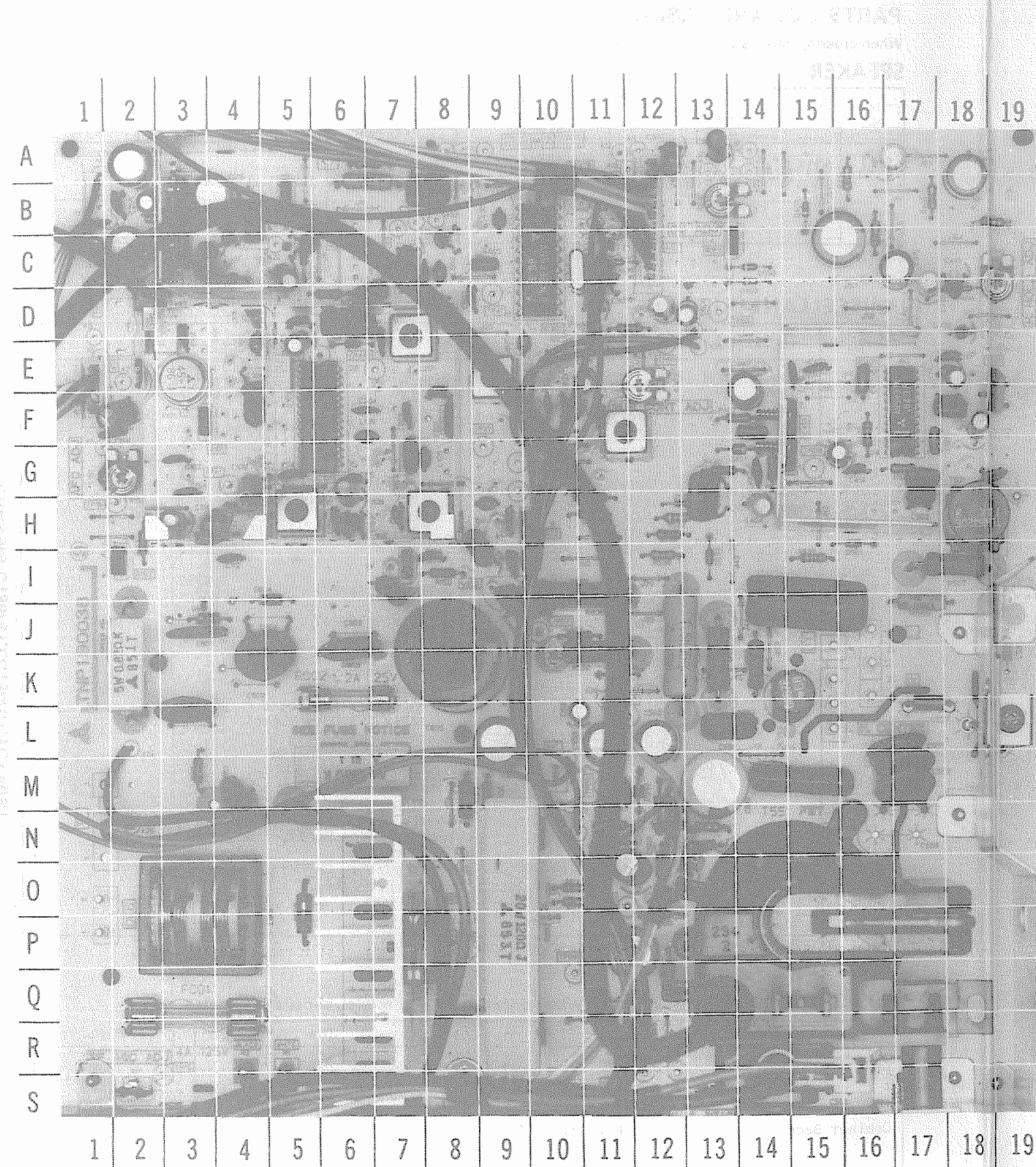
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CRT

SET 2722 FOLDER 1



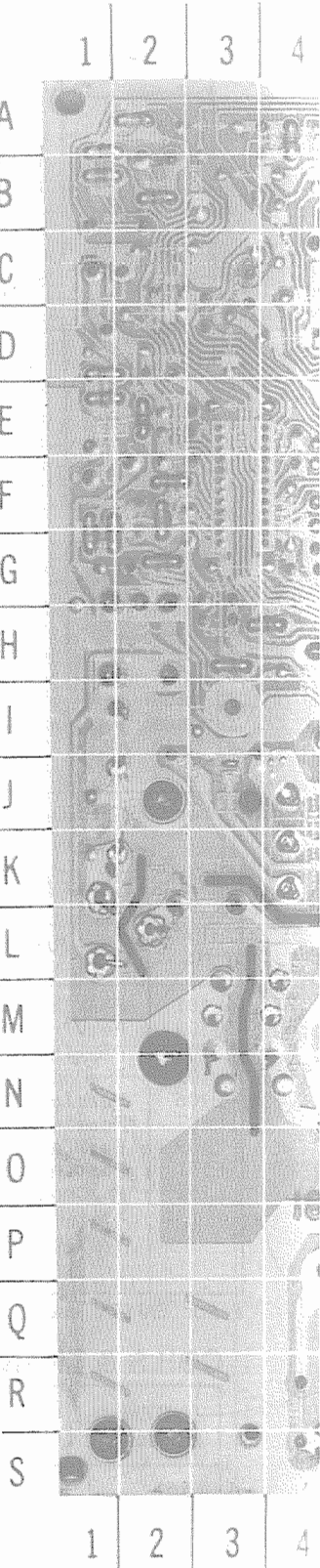




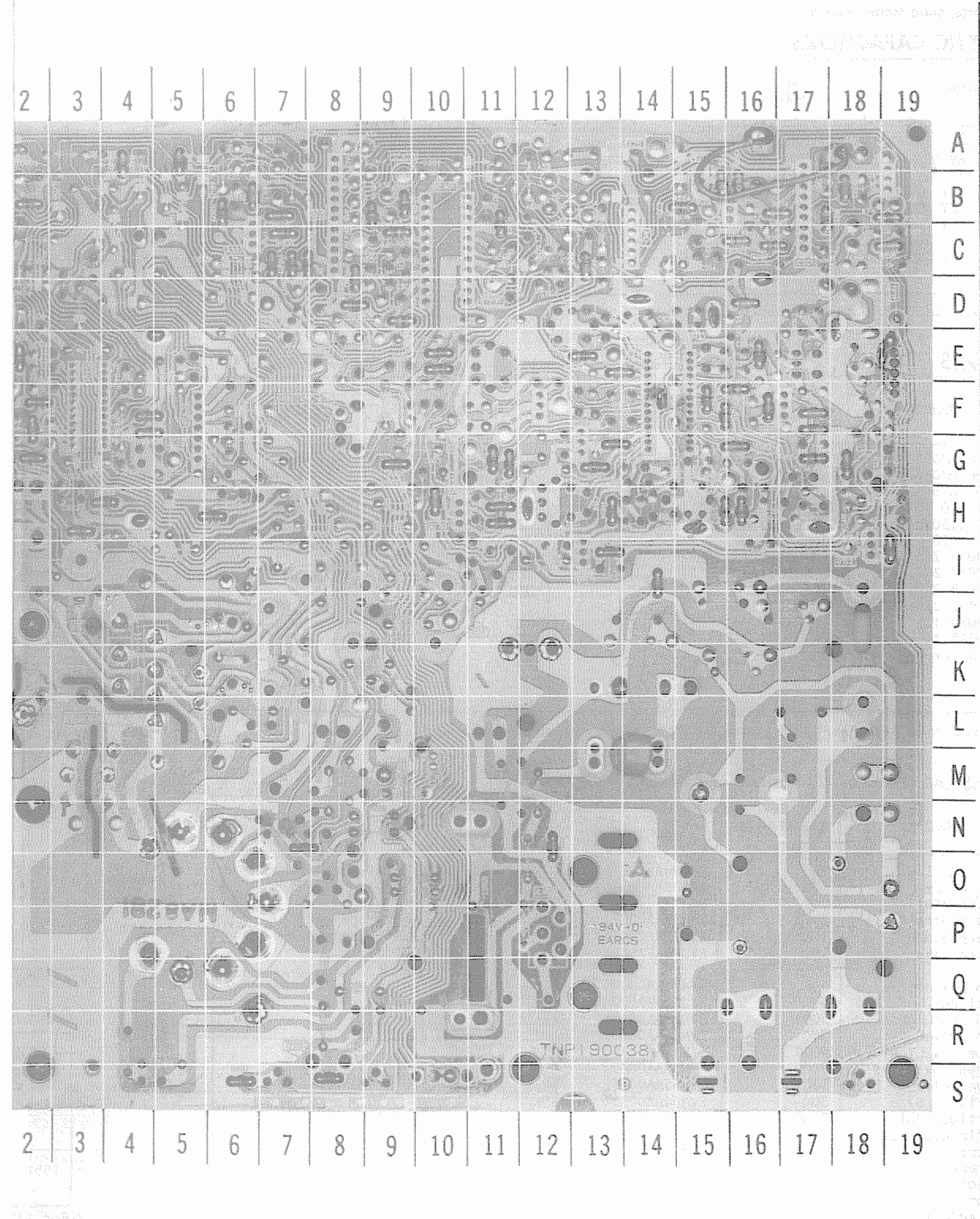
MAIN BOARD (TOP VIEW)

MAIN BOARD (TOP VIEW)-GridTrace LOCATION GUIDE

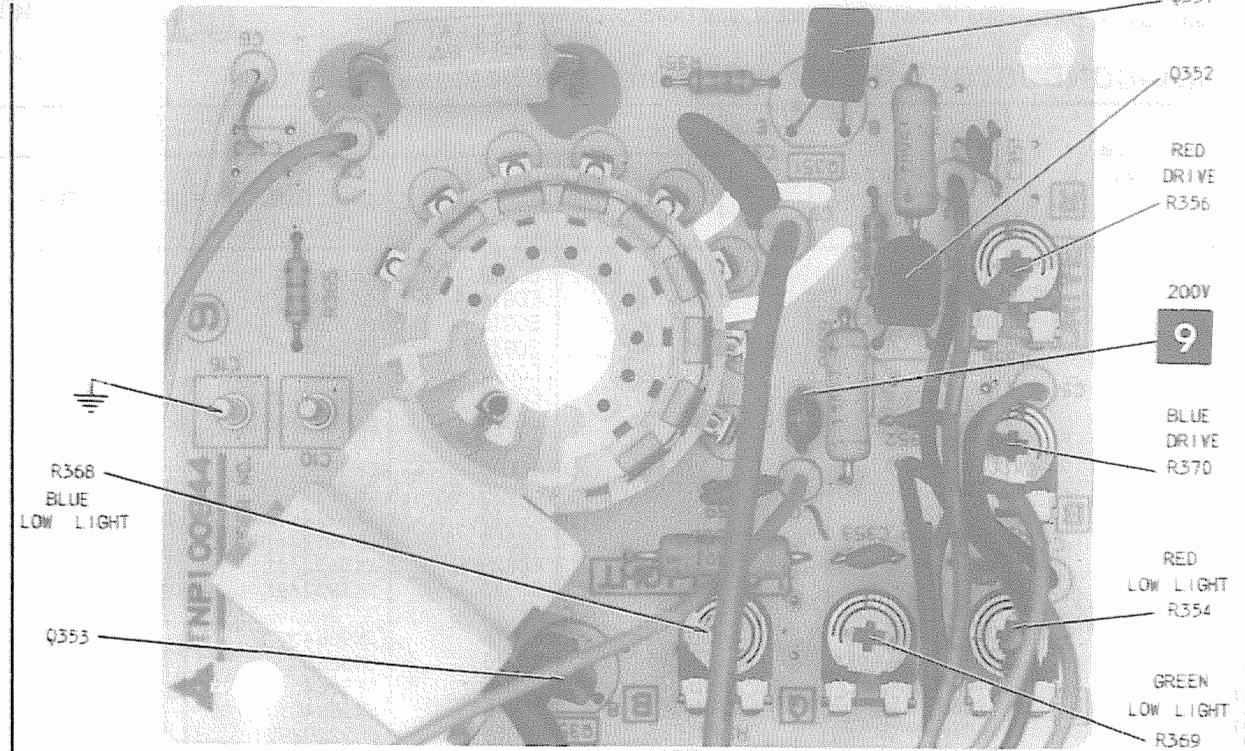
A51	E-1	C505	F-18	IC801	P-8	R605	H-11
A52	B-12	C507	E-18	L101	E-3	R616	B-13
C101	E-3	C509	E-18	L103	E-5	R624	D-12
C102	G-3	C511	G-18	L104	H-8	R801	K-2
C103	F-4	C531	L-10	L105	E-4	R802	M-6
C104	F-4	C551	L-17	L106	G-8	R803	P-9
C105	D-6	C552	M-17	L107	H-9	R805	M-8
C106	E-5	C553	M-15	L109	F-6	R806	M-9
C107	H-3	C554	H-9	L151	G-1	R807	Q-8
C108	G-6	C555	M-17	L152	H-6	R808	I-11
C109	G-4	C556	L-13	L201	E-7	R809	O-5
C110	H-6	C557	M-11	L301	G-12	R811	M-3
C111	G-5	C558	L-11	L302	B-9	SERVICE	S-10
C112	I-4	C559	I-9	L551	J-19	POST	
C113	D-5	C561	J-15	L553	L-14	T201	E-9
C114	H-7	C562	L-12	L557	L-17	T501	H-18
C115	G-6	C563	N-12	L601	E-10	T551	Q-14
C116	E-2	C564	P-12	L602	C-8	TP12	F-11
C117	H-4	C565	R-12	L801	P-3	TP13	S-9
C118	F-2	C567	O-11	Q101	F-3	TP14	E-6
C151	H-6	C568	S-15	Q151	I-7	TP16	H-2
C152	H-6	C570	I-9	Q152	I-2	TP41	D-9
C153	I-8	C571	I-10	Q172	H-10	TP110	F-5
C154	G-3	C601	F-11	Q201	B-5	TP301	S-10
C155	I-7	C602	D-8	Q301	C-14	TP314	D-11
C156	H-4	C603	D-8	Q501	F-19	TPD3	G-11
C157	C-1	C604	C-8	Q551	L-19	TPD91	Q-10
C158	F-2	C605	C-9	Q552	I-9	X101	E-3
C201	F-8	C607	C-7	R111	S-2	X102	G-7
C202	F-9	C608	D-12	R152	H-2	X201	F-8
C203	F-7	C609	D-13	R153	G-2	X601	C-10
C204	F-6	C610	D-11	R155	I-8		
C205	B-2	C611	C-11	R207	C-4		
C206	E-7	C620	F-10	R209	A-7		
C208	C-2	C621	F-10	R211	A-7		
C209	D-7	C801	J-3	R221	D-6		
C210	B-2	C803	J-6	R301	F-11		
C211	A-2	C804	J-4	R302	F-12		
C212	B-8	C805	K-9	R316	S-15		
C214	C-5	C807	L-3	R403	J-11		
C215	B-4	C812	M-13	R404	S-11		
C216	C-2	D101	E-6	R406	C-16		
C217	B-4	D201	C-5	R407	F-14		
C221	C-5	D401	G-14	R408	B-17		
C223	C-3	D402	B-15	R410	H-11		
C301	E-11	D403	C-14	R411	B-19		
C302	B-10	D404	D-18	R416	B-16		
C305	A-13	D501	I-16	R420	G-14		
C306	C-11	D531	K-11	R423	F-16		
C307	A-12	D533	I-13	R440	G-13		
C315	C-8	D552	M-12	R505	C-19		
C401	A-17	D553	M-12	R507	I-18		
C402	F-14	D554	S-15	R510	K-13		
C403	A-18	D555	R-11	R531	N-13		
C404	H-14	D556	L-14	R532	H-12		
C405	C-15	D558	C-14	R533	I-15		
C406	G-14	D559	H-13	R535	H-12		
C408	F-14	D560	P-12	R538	I-12		
C409	D-18	D600	C-11	R552	K-11		
C410	D-18	D801	J-3	R553	I-11		
C411	E-16	D802	K-4	R554	J-10		
C412	G-15	D803	K-6	R555	Q-11		
C413	G-10	D804	J-5	R559	N-11		
C414	G-16	D851	M-4	R562	O-12		
C415	C-17	DEG	P-1	R564	N-13		
C416	D-17	DY	L-15	R565	R-16		
C419	E-15	F001	Q-3	R566	Q-12		
C420	G-13	F002	K-6	R568	K-14		
C421	E-15	IC101	F-5	R569	J-17		
C501	G-17	IC201	B-3	R571	K-13		
C502	H-17	IC301	C-10	R572	G-17		
C503	F-18	IC401	F-17	R573	O-10		
C504	G-17	IC451	G-15	R574	O-10		



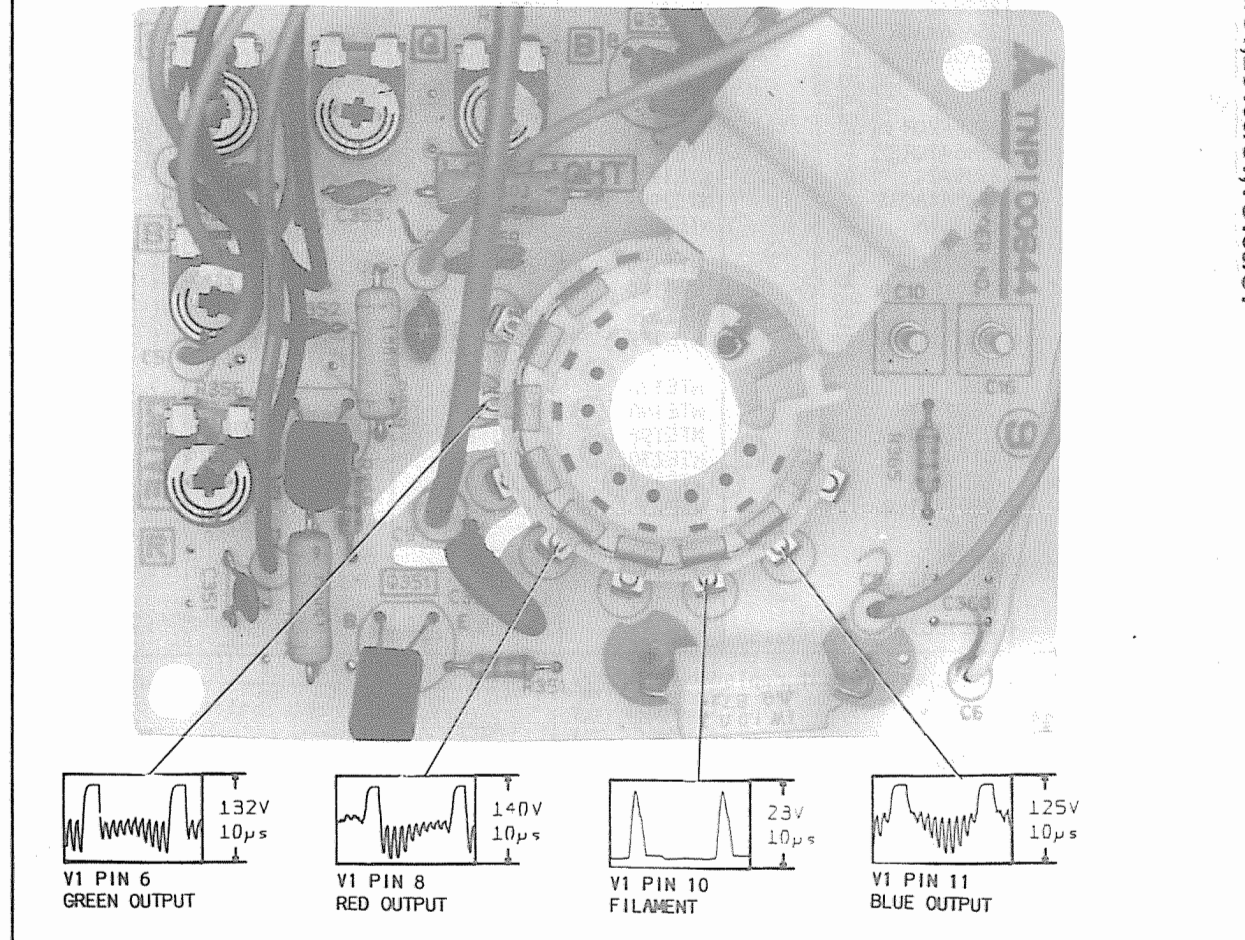
MAIN BOARD (BOTTOM VIEW)-GridTrace LOCATION GUIDE



JA1	F-17	R626	D-9
JA2	D-16	R629	B-7
JA3	H-11	R804	N-12
JA4	H-10	R810	I-14
JA6	B-6		
JA7	F-2		
JA9	E-13		
R102	F-16		
R103	F-17		
R104	E-16		
R105	G-17		
R107	F-16		
R108	G-13		
R109	F-15		
R110	G-13		
R112	G-18		
R113	H-15		
R114	G-16		
R115	H-16		
R117	G-11		
R118	F-15		
R154	H-13		
R156	I-19		
R157	I-13		
R158	C-19		
R173	H-11		
R174	G-11		
R203	B-19		
R206	E-13		
R208	B-16		
R210	C-16		
R212	B-17		
R214	B-17		
R222	B-18		
R223	C-16		
R224	B-15		
R225	B-15		
R304	B-11		
R308	C-7		
R309	B-6		
R310	C-8		
R401	B-1		
R402	A-4		
R405	A-1		
R409	F-4		
R413	F-4		
R415	B-2		
R418	H-6		
R419	A-5		
R422	A-2		
R501	G-2		
R502	H-3		
R503	G-1		
R504	E-2		
R506	G-1		
R511	D-1		
R512	E-1		
R513	F-2		
R534	H-4		
R556	N-7		
R557	S-6		
R563	S-8		
R601	E-10		
R606	E-10		
R612	C-13		
R615	C-7		
R617	C-7		
R618	C-9		
R619	B-9		
R620	B-9		
R621	G-9		
R623	C-7		
R625	D-8		



A Howard W. Sams CIRCUITRACE Photo

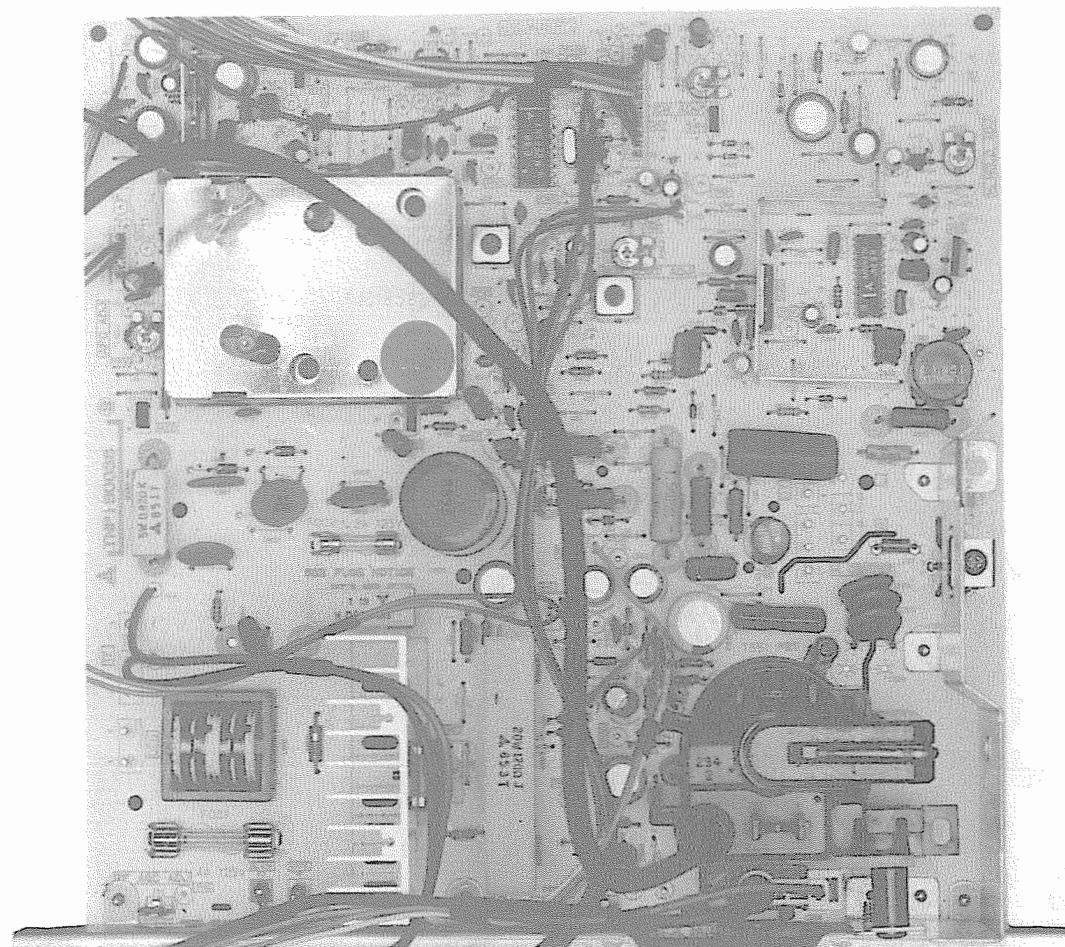


A Howard W. Sams QUICK-CHECKS™ Photo

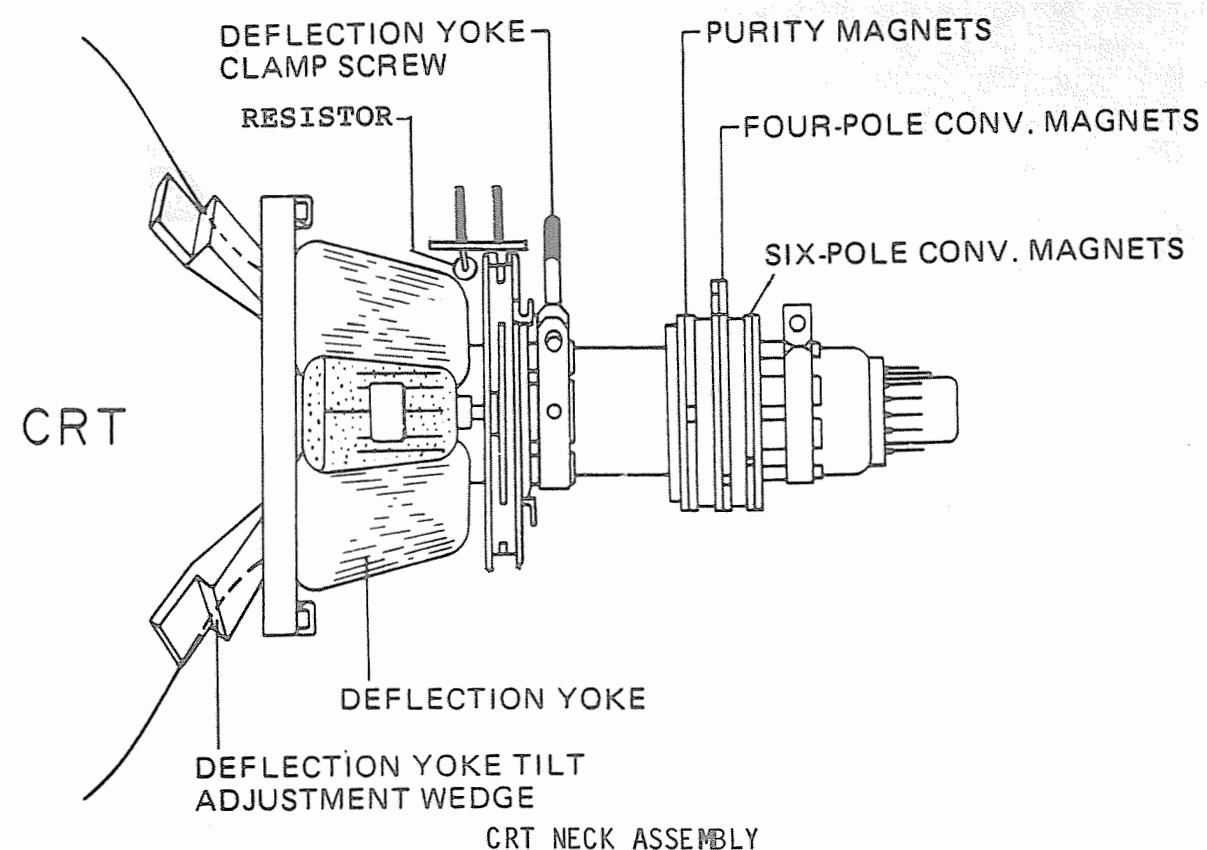
CRT BOARD

SET 2722 FOLDER 1

QUASAR
CHASSIS C136/S1,LC136/S1,YC136/S1



MAIN BOARD-SHIELD LOCATION



MISCELLANEOUS ADJUSTMENTS

The following Control settings were used for all adjustments unless otherwise indicated, AFT Switch (SW301) to ON, Sharpness (R307), Brightness (R312), Picture (R320), Color (R603), and Tint (R610) to Normal Viewing Levels.

B+ CHECK

Connect a Digital DC Voltmeter to TPD91, low side to Ground. With AC Line Voltage set at 120VAC B+ should read $130.5 \pm 1\text{VDC}$.

HIGH VOLTAGE CHECK

Tune in a picture. Connect a High Voltage probe to CRT Anode. High Voltage should read 24.0 KV and 25.0 KV. High Voltage must never exceed 27.0 KV.

RF AGC ADJUSTMENT

Tune in a picture. Adjust RF AGC Control (R111) Counterclockwise until snow appears in picture, then Clockwise to a point where snow disappears.

SUB BRIGHTNESS ADJUSTMENT

Tune in a picture. Set Brightness (R312), Color (R603), and Picture (R320) Controls to MINIMUM. Adjust Sub Brightness Control (R316) for just visible highlights. Check for blooming on all channels.

SUB CONTRAST ADJUSTMENT

Tune in a Crosshatch Pattern. Set Picture (R320) and Brightness (R312) Controls to Maximum. Connect an Oscilloscope to TP13, low side to Ground. Adjust Sub Contrast Control (R302) for 6.0V p-p.

HORIZONTAL HOLD ADJUSTMENT

Tune in a picture. Short TPD3 to Ground. Adjust Horizontal Hold Control (R505) until picture locks in or stands straight.

HORIZONTAL CENTERING ADJUSTMENT

Tune in a picture. If horizontal centering is off, check for Diode D557 on Horizontal Centering Posts. Solder D557 to either R or L posts, or remove it from the receiver entirely to provide the best horizontal centering.

CW ADJUSTMENT

Tune in a Color Bar pattern. Set Tint (R610) and Brightness (R312) Controls to Midrange. Picture (R320) and Color (R603) Controls to Maximum. Connect a 0.25 microfarad Capacitor to TP41 and Ground. Connect a 10 VDC Bias to TP314 (Jct IC301, pin 14 and C610 + side), low side to Ground. Adjust CW Control R616 until colors stop or slowly float across the screen. Remove capacitor and bias supply.

COLOR PURITY ADJUSTMENT

Operate the receiver for 15 minutes with brightness control at Maximum. Use a degaussing coil to demagnetize the CRT. Short TP14 to Ground for a blank raster. Set

Picture Control (R320) to Maximum, Brightness Control (R312) to produce a visible raster. Set Red (R354), and Blue (R368) Low Light Controls to MINIMUM, and Green (R369) Low Light Control to obtain a green raster. Loosen the Deflection Yoke clamp screw and slide the Deflection Yoke (L561) backward to obtain a vertical green band. Rotate and spread the purity magnet tabs until the green band is centered on the screen. Move the Deflection Yoke forward until a uniform green screen is obtained. Check red and blue purity by adjusting respective Low Light controls.

COLOR TEMPERATURE ADJUSTMENT (B/W TRACKING)

Tune in a picture. Set Color (R603), Brightness (R312), and Picture (R320) Controls to MINIMUM. Set Red (R356), and Blue (R370) Drive controls to Midrange. Set Red (R354), Blue (R368), and Green (R369) Low Light Controls to MINIMUM. Set Screen Control (VR599B) to MINIMUM. Set Service Switch (SW301) to service position (if there is no service switch Connect a Jumper to TP13 and TP301. Connect a 1000 ohm resistor to Jumper and Ground). Slowly advance Screen Control (VR599B) to obtain a dim horizontal line of one color. Adjust 2 Low Light Controls not of visible color to obtain a dim white line. Place Service Switch to Normal (remove Jumper/resistor). Set Brightness and Picture Control to Maximum. Adjust the Blue and Red Drive Controls for best Black and White picture. Check tracking at low and high brightness. If necessary, readjust Controls slightly.

CONVERGENCE ADJUSTMENTS

Operate the receiver for 15 minutes. Connect a color bar generator to the antenna terminals and tune in a dot pattern. Adjust the 4-pole magnet tabs to converge the red and blue dots at the center of the screen. Adjust the 6-pole magnet tabs to converge the red, blue dots over the green dots at the center of the screen. NOTE: Rotate the two tabs of each set of magnets equally and opposite to converge vertically and rotate both tabs in the same direction to converge horizontally. Four and six pole magnets interact, repeat adjustment until center convergence is correct. Tune in a Crosshatch pattern and remove the rubber wedges between the Deflection Yoke (L561) and the CRT. Tilt the Deflection Yoke up or down to converge the Vertical lines at top and bottom of screen and the Horizontal lines at the right and left sides of the screen. Tilt the Deflection Yoke right or left to converge Horizontal lines at top and bottom of screen and the Vertical lines at the right and left sides of the screen. Repeat convergence procedure if necessary to obtain best overall convergence. Apply adhesive to wedges and carefully replace on CRT. If misconvergence is still present on circumference of screen place Permalloy Convergence Corrector Strip Part #OFMK014ZZ between Deflection Deflection Yoke and CRT behind area needing correction. Move and/or rotate for best correction. Adhere to CRT rear.

PARTS LIST AND DESCRIPTION (Continued)

When ordering parts, state Model, Part Number, and Description

SEMICONDUCTORS (Select replacement for best results)

ITEM No.	MFGR. PART No./ TYPE No.				NOTES
		NTE PART No.	ECG PART No.	TCE PART No.	
Q151	D637-Q 2SD637-Q 2SD637PQ 2SD637PQR 2SD637 2SC1685PQR 2SC1685	NTE16	ECG16	SK9664	
		NTE16	ECG16	SK9664	
		NTE16	ECG16	SK9664	
		NTE16	ECG16	SK9664	
		NTE16	ECG16	SK9664	
		NTE85	ECG85	SK9229/85	
		NTE85	ECG85	SK9229/85	
		NTE85	ECG85	SK9229/85	
Q152	B642-R 2SB642-R 2SB642QR 2SB642 2SA564AQR 2SA564A	NTE19	ECG19	SK3912	
		NTE19	ECG19	SK3912	
		NTE19	ECG19	SK3912	
		NTE19	ECG19	SK3912	
		NTE290A	ECG290A	SK3932/91	
		NTE290A	ECG290A	SK3932/91	
		NTE290A	ECG290A	SK3932/91	
		NTE290A	ECG290A	SK3932/91	
Q172	D637-Q 2SD637PQ 2SD637PQR 2SD637 2SC1685PQR 2SC1685	NTE16	ECG16	SK9664	
		NTE16	ECG16	SK9664	
		NTE16	ECG16	SK9664	
		NTE16	ECG16	SK9664	
		NTE85	ECG85	SK9229/85	
		NTE85	ECG85	SK9229/85	
		NTE85	ECG85	SK9229/85	
		NTE85	ECG85	SK9229/85	
Q201	B642-R 2SB642QR 2SB642 2SA564AQR 2SA564A	NTE19	ECG19	SK3912	
		NTE19	ECG19	SK3912	
		NTE19	ECG19	SK3912	
		NTE19	ECG19	SK3912	
		NTE290A	ECG290A	SK3932/91	
		NTE290A	ECG290A	SK3932/91	
		NTE290A	ECG290A	SK3932/91	
		NTE290A	ECG290A	SK3932/91	
Q301	B642-R 2SB642QR 2SB642QRS 2SB642 2SA564AQRS 2SA564A	NTE19	ECG19	SK3912	
		NTE19	ECG19	SK3912	
		NTE19	ECG19	SK3912	
		NTE19	ECG19	SK3912	
		NTE19	ECG19	SK3912	
		NTE290A	ECG290A	SK3932/91	
		NTE290A	ECG290A	SK3932/91	
		NTE290A	ECG290A	SK3932/91	
Q351, 2, 3	C1573A 2SC1573A 2SC1573AQ 2SC1573NC	NTE399	ECG399	SK9352/399	
		NTE399	ECG399	SK9352/399	
		NTE399	ECG399	SK9352/399	
		NTE399	ECG399	SK9352/399	
		NTE399	ECG399	SK9352/399	
		NTE399	ECG399	SK9352/399	
		NTE399	ECG399	SK9352/399	
		NTE399	ECG399	SK9352/399	
Q501	C2653H 2SC2653H 2SC2653HCL D1441 2SD1441 2SD1441LB	NTE198	ECG198	SK3220/198	
		NTE198	ECG198	SK3220/198	
		NTE198	ECG198	SK3220/198	
		NTE198	ECG198	SK3220/198	
		NTE2302	ECG2302	SK9422	
		NTE2302	ECG2302	SK9422	
		NTE2302	ECG2302	SK9422	
		NTE2302	ECG2302	SK9422	
Q551	C1383S 2SC1383S 2SC1383RS 2SC1383	NTE293	ECG293	SK3849/293	#
		NTE293	ECG293	SK3849/293	
		NTE293	ECG293	SK3849/293	
		NTE293	ECG293	SK3849/293	
		NTE293	ECG293	SK3849/293	
		NTE293	ECG293	SK3849/293	
		NTE293	ECG293	SK3849/293	
		NTE293	ECG293	SK3849/293	
Q552	C1383S 2SC1383S 2SC1383RS 2SC1383	NTE293	ECG293	SK3849/293	#
		NTE293	ECG293	SK3849/293	
		NTE293	ECG293	SK3849/293	
		NTE293	ECG293	SK3849/293	
		NTE293	ECG293	SK3849/293	
		NTE293	ECG293	SK3849/293	
		NTE293	ECG293	SK3849/293	
		NTE293	ECG293	SK3849/293	

For SAFETY use only equivalent replacement part.

PARTS LIST AND DESCRIPTION (Continued)

When ordering parts, state Model, Part Number, and Description

ELECTROLYTIC CAPACITORS

Items Not Listed Are Normally Available at Local Distributors.

ITEM No.	RATING	MFGR. PART No.	ITEM No.	RATING	MFGR. PART No.
# C001	47 16V	ECEA1CU470	# C558	330 25V	ECEA1EU331
C209	10 16V NP	ECEA1CN100S	# C559	22 16V	ECEA1CU220
C401	10 25V 10%		# C562	470 35V	ECEA1VU471
	6.8 25V	ECEA25Z6R8	# C564	10 250V	ECEA2ES100
C403	100 10V NP	ECEA1AN101S	# C565	1 160V NP	ECEA160N1
C404	2.2 50V 10%	ECEA50Z2R2K	# C567	220 25V	ECEA1EU221
C409	3.3 16V 10%	ECSZ16EF3R3	# C805	470 200V	ECET2DR471SW
C410	3.3 16V 10%	ECSZ16EF3R3	# C806	22 160V	ECEA2CS220
# C531	10 25V	ECEA1VU100	# C812	33 160V	ECEA160V33Z

For SAFETY use only equivalent replacement part.

CAPACITORS

Items Not Listed Are Normally Available at Local Distributors.

ITEM No.	RATING	MFGR. PART No.	ITEM No.	RATING	MFGR. PART No.
C114	6pF NPO 50V ±.25	ECCF1H060CC	# C561	.39 500V 5%	ECQF2H394JZ
C115	1pF NPO 50V ±.25	ECCF1H010CC	# C566	560 500V 10%	ECKD2H561KB
C151	56 N075 50V 5%	ECCF1H560JL	# C570	.01 50V	ECKF1H103ZF
C152	12 NPO 50V 5%	ECCF1H120JC	C601	120 N150 50V 5%	ECCF1H121JP
C202	82 N150 50V 10%	ECCF1H820KP	C603	27 NPO 50V 5%	ECCF1H270JC
C206	82 N150 50V 10%	ECCF1H820KP	C604	33 NPO 50V 5%	ECCF1H330JC
# C551	.0015 2KV 5%	ECKD3D152JB	C611	5pF NPO 50V ±.25	ECCF1H050CC
	.0012 2KV 5%	ECKD3D122JB	# C801	.01 500V	ECKD2H103PE
	.0018 2KV 5%	ECKD3D182JB	# C802		
# C552	.0015 2KV 5%	ECKD3D152JB	# C803	.01 500V	ECKD2H103PE
# C553	.0068 1.2KV 5%	ECWH12H682JS	# C804	.01 500V	ECKD2H103PE
# C555	.0015 2KV 5%	ECKD3D152JB	# C807	.01 500V	ECKD2H103PE
# C556	.15 50V 5%	ECQM1H154JV			

For SAFETY use only equivalent replacement part.

CONTROLS (All wattages 1/2 watt, or less, unless listed)

ITEM NO.	FUNCTION	RESISTANCE	MFGR. PART NO.	NOTES
R111	RF AGC	20K	EVN74AA00B24	# For SAFETY use only equivalent replacement part. (1) R599A and R599B are part of #T551 Flyback Transformer, Part No. TLF15513F.
R153	AFT Adjust	100K	EVN89AA00B15	
R201	Volume/Switch	10K	862MMALM10KB	
R302	Sub Contrast	2000	EVN89AA00B23	
R307	Sharpness	10K	EVUF2AE25B14	
R312	Brightness	500	EVUF3AE2552S	
		Detent 50%		
R316	Sub Brightness	500	EVN74AA00B53	
R320	Picture	50K	EVUF2AE25B54	
R354	Red Low Light	5000	EVN89AA00B53	
R356	Red Drive	300	EVN65AA00B32	
R368	Blue Low Light	5000	EVN89AA00B53	
R369	Green Low Light	5000	EVN89AA00B53	(1) (1)
R370	Blue Drive	300	EVN65AA00B32	
R404	Vertical Size	30K	EVN64AA00B34	
R439	Vertical Hold	5000	EVUF2AE25B53	
R505	Horizontal Hold	1000	EVN65AA00B13	
# R599A	Focus		(1)	
# R599B	Screen		(1)	
R603	Color	10K	EVUF2AE25B14	
R610	Tint	10K	EVUF2AE25B14	
R616	CW Adjust	10K	EVN65AA00B14	

PARTS LIST AND DESCRIPTION

When ordering parts, state Model, Part Number, and Description

SEMICONDUCTORS (Select replacement for best results)

ITEM No.	MFGR. PART No./ TYPE No.				
		NTE PART No.	ECG PART No.	TCE PART No.	NOTES
D101	QA207M3	NTE5014A	ECG5014A	SK6A8/5014A	
	TVSQA207M3	NTE5014A	ECG5014A	SK6A8/5014A	
D201	QA209B	NTE5018A	ECG5018A	SK9A1/5018A	
	TVSQA209B	NTE5018A	ECG5018A	SK9A1/5018A	
D401	ERA15-01	NTE552	ECG552	SK9000/552	
	ERA1501	NTE552	ECG552	SK9000/552	
	AM01Z	NTE116	ECG116	SK3313/116	
D402, 3, 4	MA150	NTE519	ECG519	SK3100/519	
	1N4148	NTE519	ECG519	SK3100/519	
D501	QA230B	NTE5035A	ECG5035A	SK30A/5035A	
	QA230C	NTE5035A	ECG5035A	SK30A/5035A	
	TVSQA230B	NTE5035A	ECG5035A	SK30A/5035A	
D531	ERA2204	NTE552	ECG552	SK9000/552	#
	AS01V0	NTE552	ECG552	SK9000/552	
	AS01	NTE552	ECG552	SK9000/552	
D533	QA206M	NTE5012A	ECG5012A	SK6A0/5012A	#
	TVSQA206M	NTE5012A	ECG5012A	SK6A0/5012A	
D552	AU02	NTE552	ECG552	SK9000/552	#
	AS01V0	NTE552	ECG552	SK9000/552	
	AU01	NTE552	ECG552	SK9000/552	
	AS01	NTE552	ECG552	SK9000/552	
D553	ERA2204	NTE552	ECG552	SK9000/552	#
	ERA2204	NTE552	ECG552	SK9000/552	
	AU01	NTE552	ECG552	SK9000/552	
	AU02	NTE552	ECG552	SK9000/552	
	AS01	NTE552	ECG552	SK9000/552	
	AU02V0	NTE552	ECG552	SK9000/552	
D554	ERA2204	NTE552	ECG552	SK9000/552	#
	AU01	NTE552	ECG552	SK9000/552	
	AS01	NTE552	ECG552	SK9000/552	
	AS01V0	NTE552	ECG552	SK9000/552	

PARTS LIST AND DESCRIPTION (Continued)

When ordering parts, state Model, Part Number, and Description

SEMICONDUCTORS (Select replacement for best results)

ITEM No.	MFGR. PART No./ TYPE No.				
		NTE PART No.	ECG PART No.	TCE PART No.	NOTES
D555	MA150	NTE519	ECG519	SK3100/519	
	1N4148	NTE519	ECG519	SK3100/519	
D556	MA161	NTE519	ECG519	SK3100/519	
D558	MA150	NTE519	ECG519	SK3100/519	
	1N4148	NTE519	ECG519	SK3100/519	
D559	MA27WA	NTE605A	ECG605A	SK7952/605A	
D560	AS01	NTE552	ECG552	SK9000/552	#
	AU02	NTE552	ECG552	SK9000/552	
	ERA2204	NTE552	ECG552	SK9000/552	
	AU01	NTE552	ECG552	SK9000/552	
	AS01V0	NTE552	ECG552	SK9000/552	
D600	MA150	NTE519	ECG519	SK3100/519	
D801 THRU D804	EM02BM	NTE125	ECG125	SK3081/125	#
	EM02BMV0	NTE125	ECG125	SK3081/125	
	ERC12-08	NTE125	ECG125	SK3081/125	
	ERC13-08	NTE125	ECG125	SK3081/125	
	RM11B	NTE125	ECG125	SK3081/125	
IC101	AN5136K				
	AN5136KR				
IC201	AN5265	NTE1789	ECG1789		
IC301	AN5332N				
IC401	AN5437K				#
	AN5437KR				
IC451	AN5521	NTE1782	ECG1782	SK9730	
IC801	STR30130	NTE15032	ECG1777		#
Q101	C2377-C	NTE15	ECG15	SK9663	
	2SC2377-C	NTE15	ECG15	SK9663	
	2SC2377C	NTE15	ECG15	SK9663	

PARTS LIST AND DESCRIPTION (Continued)

When ordering parts, state Model, Part Number, and Description

RESISTORS (Power and Special)

ITEM No.	RATING	REPLACEMENT DATA		
		MFGR. PART No.	NTE PART No.	
D305	LDR	TVS2PD57		
D851	8.5 Cold PTC	ERPZ4BOM080B		
R209	12 5% 1W Fusible	ERQ1ABJP120	1W012	
R378	1 5% 1W Fusible	ERQ1CJP1R0	1W1D0	
R510	1500 5% 5W Metal Oxide Film	ERG5SJ152	5W215	
R531	47 5% 1/4W Carbon Film	ERD25FJ470	QW047	
R532	24.3K 1% 1/4W Metal Oxide Film	ER025CKF2432		
R533	8250 1% 1/4W Metal Oxide Film	ER025CKF8251		
R534	470 5% 1/4W Carbon Film	ERD25TLJ471		
R535	820 5% 1/4W Carbon Film	ERDS2TJ821	QW482	
R538	68K 5% 1/2W Carbon Film	ERDS1TJ683	HW368	
R552	18 5% 2W Metal Oxide Film	ERG2ANJ180	2W018	
R554	1000 5% 1/4W Carbon Film	ERDS2T102	QW210	
R562	1 5% 1/2W Carbon Film	ERDS1FJ1R0	HW1D0	
R564	1 5% 1/2W Carbon Film	ERDS1FJ1R0	HW1D0	
R565	1 5% 1/4W Carbon Film	ERD25FJ1R0	QW1D0	
R566	1 5% 1/2W Carbon Film	ERD25FJ1R0	HW1D0	
R568	1000 5% 1W Metal Oxide Film	ERG1ANJ102	1W210	
R801	.82 10% 5W WW	ERF5AKR82	5W082	
R802	6.8 10% 5W WW	ERF5ZK6R8	5W6D8	
R803	120 5% 20W WW	ERF20ZJ121		
R804	220K 5% 1/4W Carbon Film	ERD25TL224		
R805	10K 5% 1/2W Carbon Film	ERD50FJ103	HW310	
R806	47 5% 1/4W Carbon Film	ERD25FJ470	QW047	
R807	39 5% 1/4W Carbon Film	ERD25FJ390	QW039	
R808	10K 5% 2W Metal Oxide Film	ERG2ANJ103	2W310	
R809	820K 10% 1/2W Carbon Composition	ERC12ZGK824	HW482	
R810	150K 5% 1/4W Carbon Film	ERD25TLJ154		
R811	330 5% 1/2W Carbon Film	ERDS1FJ331	HW133	

For SAFETY use only equivalent replacement part.

COILS (RF-IF)

ITEM No.	FUNCTION	MFGR. PART No.	ITEM No.	FUNCTION	MFGR. PART No.
L101	Peaking (.56uH)	TLQR56N205C	L201	RF Choke (Quadrature)	TLS63318-2
L103	Peaking (1uH)	TLQ010K205C	L302	RF Choke (82uH)	ELEPH820KA
L104	Peaking (VCO)	TL1158755	L351	RF Choke (150uH)	ELEPH151KA
L105	RF Choke (3.3uH)	ELEPH3R3KA	L553	Peaking (Linearity)	TLH6667P
L106	Peaking (15uH)	ELEPH150KA	L601	RF Choke (12uH)	ELEPH120JA
L107	Peaking (4.7uH)	ELEPH4R7KA	L602	RF Choke (18uH)	ELEPH180JA
L109	Peaking (1uH)	ELEPH1R0KA	L801	RF Choke (AC Line)	ELF18D605
L151	Peaking (1uH)	ELEPH1R0KA	T201	Audio IF	TLS62366-1
L152	RF Choke (AFT)	TL167394-1			

For SAFETY use only equivalent replacement part.

COILS & TRANSFORMERS

ITEM No.	FUNCTION	MFGR. PART No.	OTHER IDENTIFICATION	NOTES
L561	Yoke 100° Horiz 1.61mh Vert 24.9mh	TLY15518F	(1)	
T501	Alt	OLY15504F	(1)	
T551	Horizontal Driver Horizontal Out	TLH15420E TLF15513F	(1) (1)	

For SAFETY use only equivalent replacement part.
(1) Number on unit.

PARTS LIST AND DESCRIPTION (Continued)

When ordering parts, state Model, Part Number, and Description

SPEAKER

ITEM No.	TYPE	REPLACEMENT DATA		NOTES
		MFGR. PART No.	QUAM PART No.	
SPK1	4" x 6" PM 16 Ohms 4" x 6" PM 8 Ohms	EAS15D34SDG EAS15D34SCG	46A1Z16	Model WL9439BP-1

MISCELLANEOUS

ITEM No.	PART NAME	MFGR. PART No.	NOTES
F001	Fuse 4 Amp @ 125V Holder	XBA1F40NU100 TJC8319 (2)	Slow Blow (2) Two used for each fuse
F002	Fuse 1.2 Amp @ 125V Holder	XBA1C12NU100 TJC8320 (2)	Slow Blow (2) Two used for each fuse
L301	Delay Line	TLK150828	
L551	Ferrite Bead	TLP408C	
L557	Ferrite Bead	TSC925	
L805	Degaussing Coil	OLK19003R	
N001	Neon Lamp	XAN14Y	
N002	Neon Lamp	XAN14Y	
P1	Cord, Ac Line	OSX110105	Polarized
SW151	Switch	ESD3228	AFC
SW301	Switch	EVQR743L13	Service
SW801	Switch	EVVON6F25B14	Off/ON (Volume)
V1	CRT	A63ADN26X A63ADN26X	Model WL9439BP-1
X101	Saw Filter	EFCH45MVK11T	
X102	Trap	EFCS4R5MW3BA	4.5MHz
X201	Filter	EFCS4R5MS5	4.5MHz Bandpass
X601	Crystal	TSS916D1	3.58MHz Oscillator
		TJB1721605	Antenna Terminal Board
		TXKU107SER	Assembly CRT Cover Rear
		JUW2A54101	Bracket Antenna Mtg
		TXAJS02NRR	Cable Shielded UHF/VHF
		TXAJS01SLR1	Cable Shielded VHF
		TJB1721700	Converter 75-300 Ohm
		OFMK014ZZ	Convergence Corrector Strip
		TKK2Q0501	Cover CRT Rear (WU9410BU-1)
		TLC2047-2	Magnet. Rings Purity and Static
			Convergence
		TMM2A50303	Rubber Washer CRT Mtg
		TMM27504	Rubber Pad Yoke
		TMM27609	Shield LDR
		TJS1A5050	Socket CRT

For SAFETY use only equivalent replacement part.

CABINETS & CABINET PARTS (When ordering specify model, chassis & color)

ITEM	PART No.	ITEM	PART No.
Escutcheon Assembly	TXFKE067SER (1) TXFKE018SER (4) TXFKE057SER (5) TXF2QKE003	Control Door Assembly	TXFKP087SER TXFKP018SER (4)
Cabinet Back	TKU2A07618 (1) TKU2Q9410B-1 (2) TKU2Q9420B-1 (3) TKU2A07617 (4)	Knob Channel Selector UHF	TBX2A10310
		Knob Channel Selector VHF	TBX2A10407
		Knob Fine Tune UHF/VHF (2 used)	TBX2A40203
		Knob Volume/On/Off	TBX2A50408

(1) Model WL9439BP-1.
(2) Models WU9410BU-1 & YWU9410BU-1.
(3) Model YWU9420BK-1.
(4) Model WU9411U.
(5) Model YWU9411U.