MODEL A3M0039

CMT8-1 APPLE MODEL A3M0039

SAFETY PRECAUTIONS

See page 14.

PRELMINARY SERVICE CHECKS

ENCLOSED

INDEX

SAMS™ Howard W. Sams & Co., Inc.
4300 West 62nd Street, P.O. Box 7092, Indianapolis, Indiana 46206 U.S.A.

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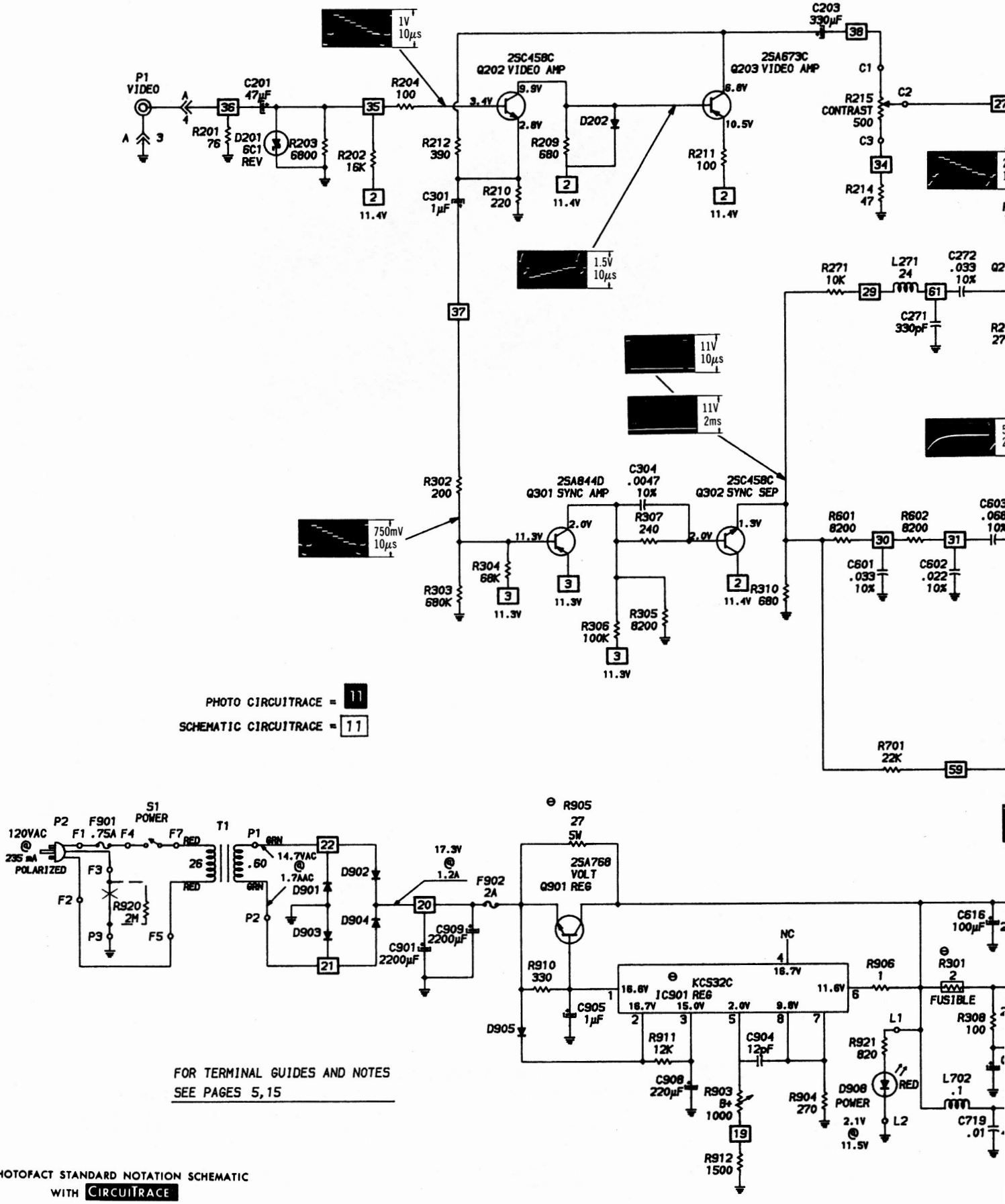
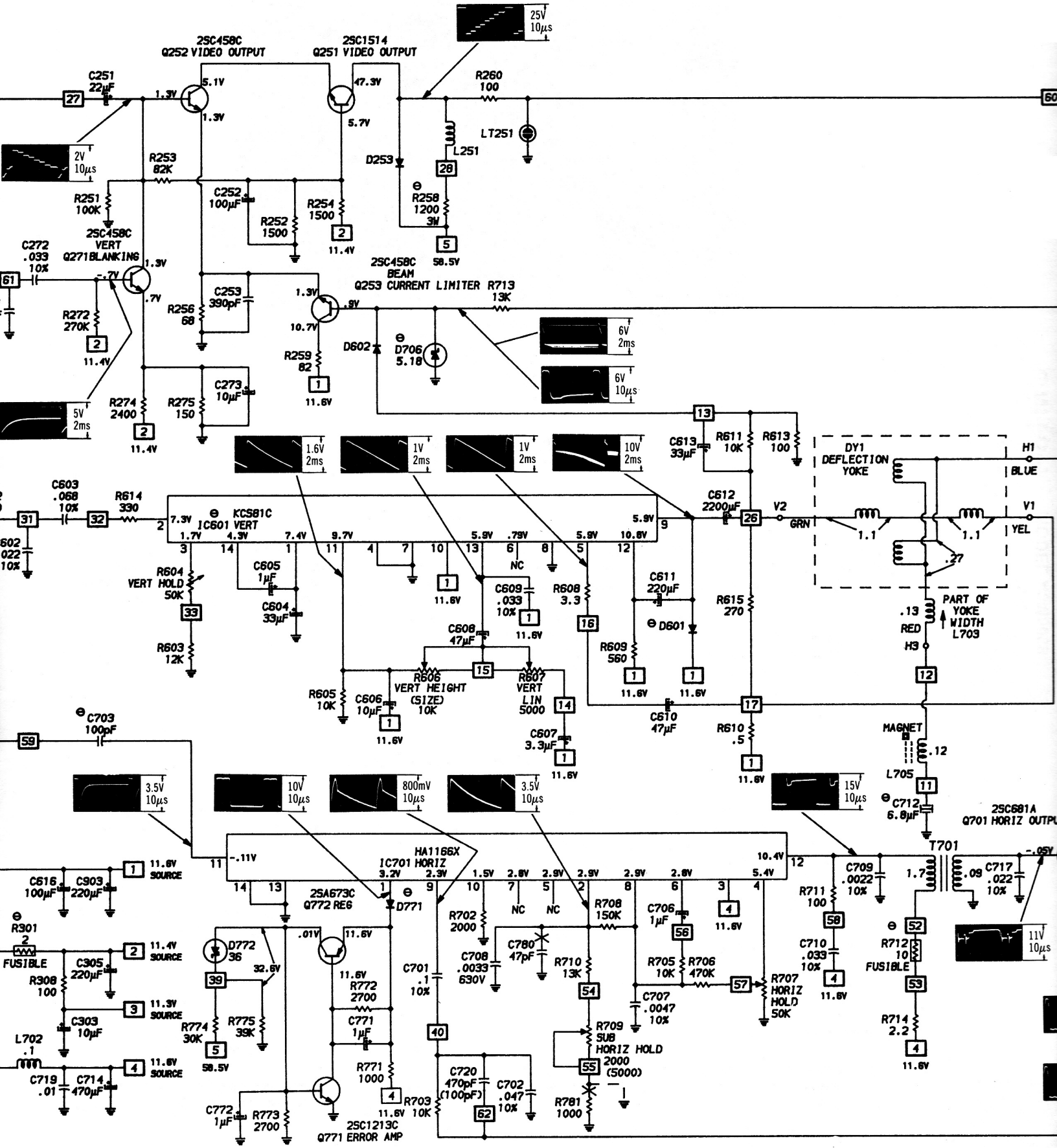
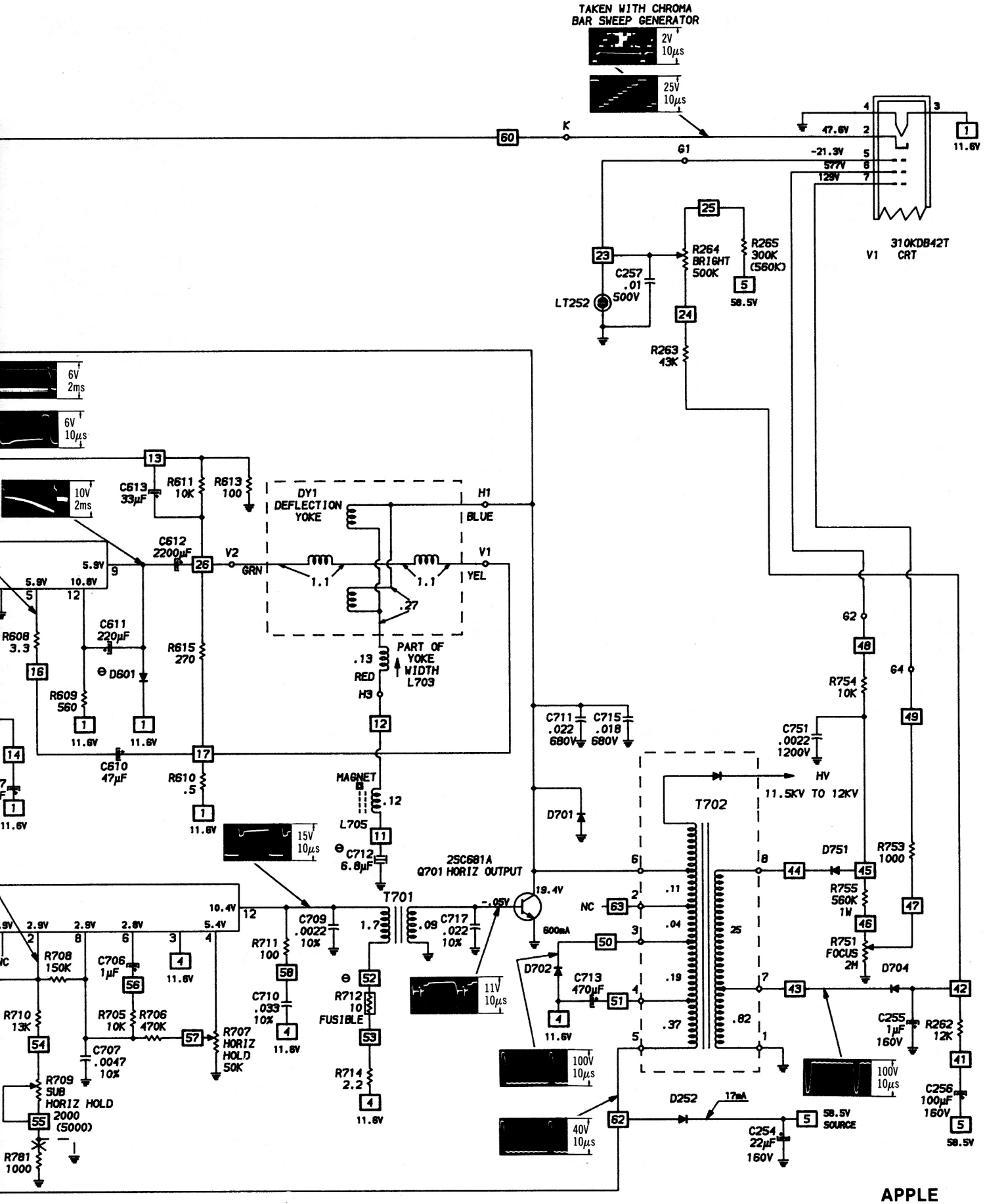


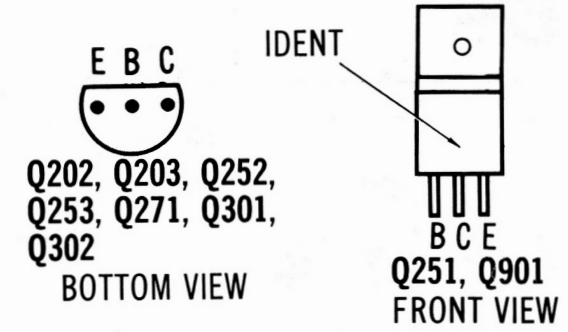
A PHOTOFACT STANDARD NOTATION SCHEMATIC WITH CIRCUITRACE


2SC458C
Q252 VIDEO OUTPUT
2SC1514
Q251 VIDEO OUTPUT
C251
22µF
R260
100
LT251
L251
D253
R253
82K
R251
100K
C252
100µF
R252
1500
R254
1500
R258
1200
3W
2SC458C
VERT
Q271BLANKING
C272
.033
10%
R272
270K
R256
68
C253
390pF
2SC458C
BEAM
Q253 CURRENT LIMITER
R713
13K
D602
D706
5.1V
R259
82
R274
2400
R275
150
C273
10µF
C613
33µF
R611
10K
R613
100
DY1
DEFLECTION
YOKE
H1
BLUE
V1
YEL
V2
GRN
PART OF
YOKE
WIDTH
L703
C603
.068
10%
R614
330
KCS81C
IC601 VERT
C612
2200µF
R604
VERT HOLD
50K
R603
12K
C605
1µF
C604
33µF
C609
.033
10%
R608
3.3
C611
220µF
D601
R615
270
C608
47µF
R606
VERT HEIGHT
(SIZE)
10K
R607
VERT
LIN
5000
R605
10K
C606
10µF
R609
560
C610
47µF
R610
.5
C607
3.3µF
C703
100pF
MAGNET
L705
C712
6.8µF
2SC681A
Q701 HORIZ OUTPU
T701
HA1166X
IC701 HORIZ
2SA673C
Q772 REG
D771
D772
36
R772
2700
C771
1µF
R771
1000
R773
2700
C772
1µF
2SC1213C
Q771 ERROR AMP
R774
30K
R775
39K
C701
.1
10%
R702
2000
C708
.0033
630V
C780
47pF
R708
150K
R710
13K
R709
SUB
HORIZ HOLD
2000
(5000)
R781
1000
R703
10K
C720
470pF
(100pF)
C702
.047
10%
C706
1µF
R705
10K
R706
470K
R707
HORIZ
HOLD
50K
C707
.0047
10%
R711
100
C709
.0022
10%
C710
.033
10%
R712
10
FUSIBLE
R714
2.2
C717
.022
10%
C616
100µF
C903
220µF
R301
2
FUSIBLE
C305
220µF
R308
100
C303
10µF
L702
.1
C719
.01
C714
470µF
11.6V SOURCE
11.4V SOURCE
11.3V SOURCE
11.6V SOURCE
25V 10µs
2V 10µs
6V 2ms
6V 10µs
5V 2ms
1.6V 2ms
1V 2ms
1V 2ms
10V 2ms
3.5V 10µs
10V 10µs
800mV 10µs
3.5V 10µs
15V 10µs
11V 10µs



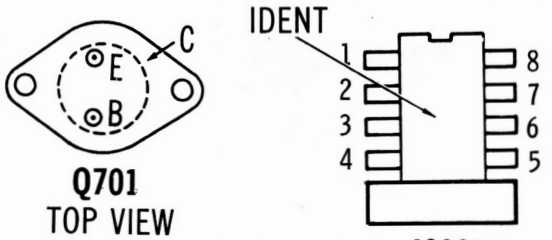
APPLE
MODEL A3M0039

TERMINAL GUIDES



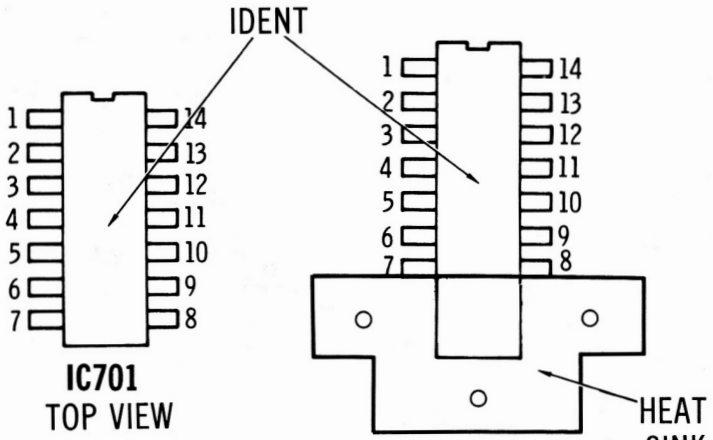
Q202, Q203, Q252, Q253, Q271, Q301, Q302
BOTTOM VIEW

Q251, Q901
FRONT VIEW



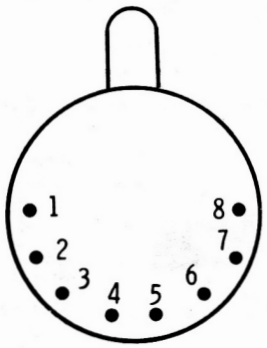
Q701
TOP VIEW

IC901
TOP VIEW

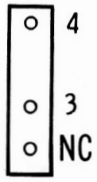


IC701
TOP VIEW

IC601
TOP VIEW

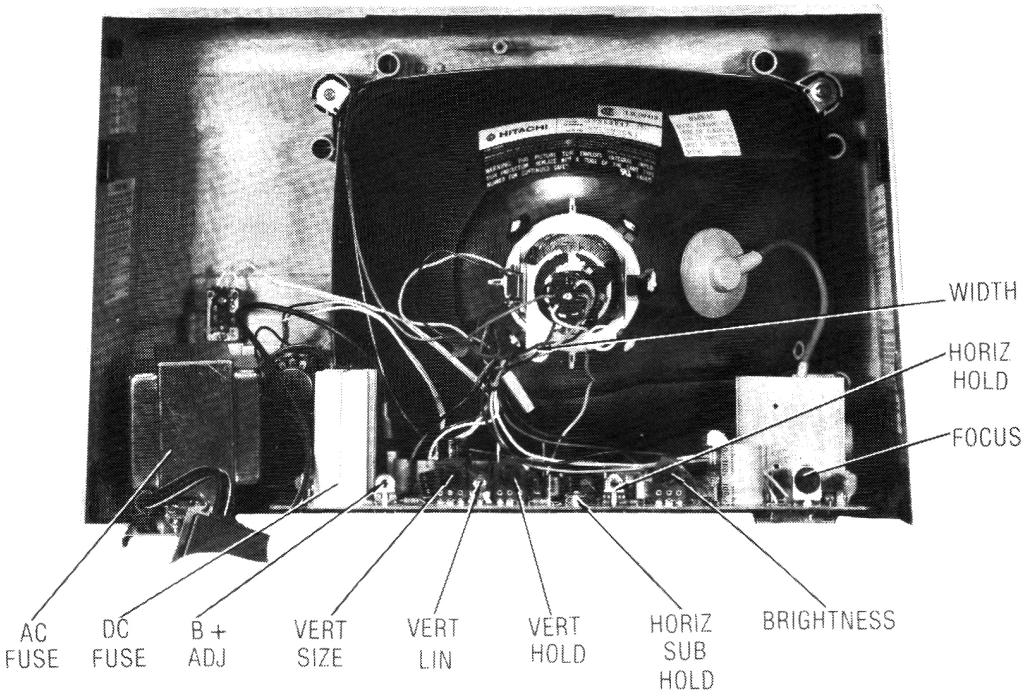


T702
BOTTOM VIEW



A
WIRE VIEW

TERMINAL GUIDES



CABINET-REAR VIEW DISASSEMBLY INSTRUCTIONS

CHASSIS REMOVAL

Remove four screws holding cabinet back and lift back from set. Disconnect CRT socket, HV anode lead and ground wire. Loosen and remove deflection yoke from CRT neck.

Remove one screw holding Power Indicator and one screw holding power switch bracket to cabinet front. Remove one screw holding power transformer bracket to cabinet front. The Main Board and assemblies may now be removed from cabinet.

CRT REMOVAL

Disconnect CRT socket and HV anode lead. Loosen and remove deflection yoke from CRT neck. Lay set face down on a soft protective surface. Remove four screws holding CRT to cabinet front. Lift CRT from cabinet. **Do not** lift CRT by the neck.

SERVICING IN THE FIELD

CRT IMPLOSION 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 Placement Chart.)

A .75-amp fuse is used for AC line protection. (See Placement Chart.)

HORIZONTAL OSCILLATOR

Coarse adjustment of the horizontal hold is accomplished by the proper setting of the Sub Horiz Hold Control. (See photo, Cabinet-Rear View.)

Fine adjustment of the horizontal hold is accomplished by the proper setting of the Horiz Hold Control. (See photo, Cabinet-Rear View.)

WIDTH

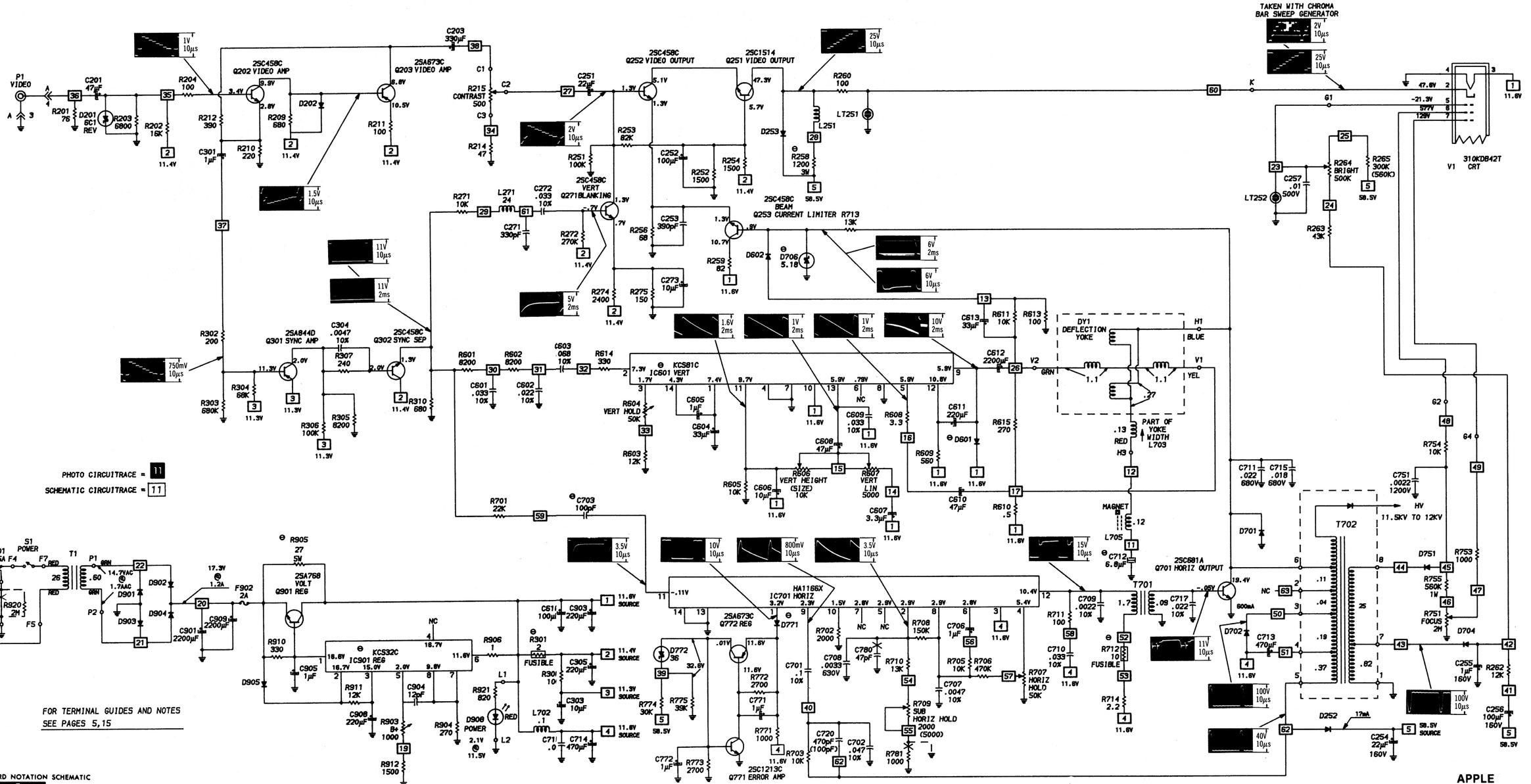
The width may be varied by adjusting the width coil located on the yoke. (See photo, Cabinet-Rear View.)

FOCUS

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

CENTERING

Centering is accomplished by proper adjustment of two magnetic rings located on the yoke rear cover.



PRELIMINARY SERVICE CHECKS

This data provides the user with a time-saving service tool designed for quick isolation and repair of monitor malfunctions.

Check all interconnecting cables for good connection and correct hook-up before making service checks.

PARTS LIST AND DESCRIPTION

ITEM	PART NO.	DESCRIPTION
C303		Electrolytic, 10μF 25V
D252		Diode, Rectifier
D701		Diode, Damper
D901 Thru D904		Diode, Bridge Rectifiers
F901		AC Fuse, 750mA, 250V
F901		DC Fuse, 2A, 125V
L702		Coil RF Choke
Q701		Transistor, Horizontal Output 2SC681A
Q901		Transistor, Voltage Regulator 2SA768
R215		Control, Contrast 500 Ohms
R264		Control, Brightness 500K
R301		Resistor, Fusible 2 Ohms
R308		Resistor, 100 Ohms
R903		Resistor, 1000 Ohms
T1	2211687	Power Transformer

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SAMS™ Howard W. Sams & Co., Inc.
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PRELIMINARY SERVICE CHECKS (Continued)

SERVICE CHECKS

SEE INTERCONNECTING DIAGRAM, PLACEMENT CHART, AND PHOTOS TO MATCH THE NUMBER IN THE CIRCLES WITH THOSE IN THE FOLLOWING DATA FOR SERVICE CHECKS TO BE PERFORMED.

(1.) POWER SUPPLY

(A) Check for open Fuse (F901).

(B) Check for open Fuse (F902).

(C) If Fuse F901 is open, check Power Transformer (T1) with an ohmmeter.

(D) If Fuse F902 is open, check the Voltage Regulator Transistor (Q901), Diodes D901 thru D904, Horizontal Output Transistor (Q701), and Diode D701.

(E) Check for 11.6V at the collector of Transistor Q901.

(F) Check for 11.4V at the junction of R301 and R308.

(G) Check for 11.3V at the junction of Resistor R308 and Electrolytic C303.

(H) Check for 11.6V at Coil L702.

(I) Check for 58.5V at the cathode of Diode D252.

(J) Check adjustment of the B + Control (R903).

(2.) NO DISPLAY

(A) Check for bad connection at the Video Input Jack (P1).

(B) Check CRT voltages.

(C) Check high voltage with HV probe.

(D) Check CRT with CRT tester.

(E) Check Horizontal Output Transistor (Q701).

(3.) POOR CONTRAST AND BRIGHTNESS

(A) Clean Contrast Control (R215).

(B) Clean Brightness Control (R264).

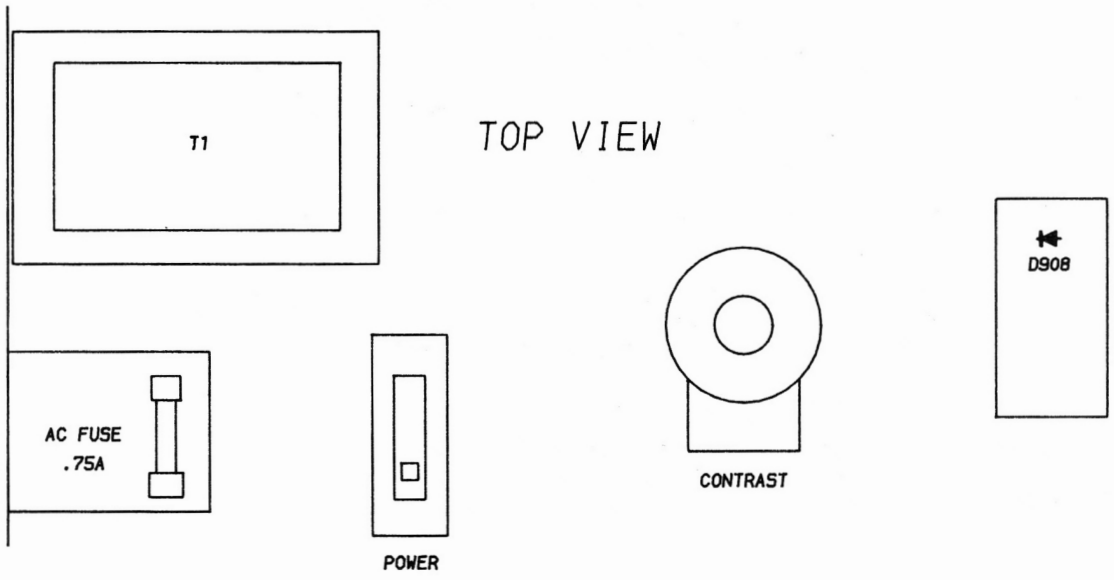
TEST EQUIPMENT AND TOOLS

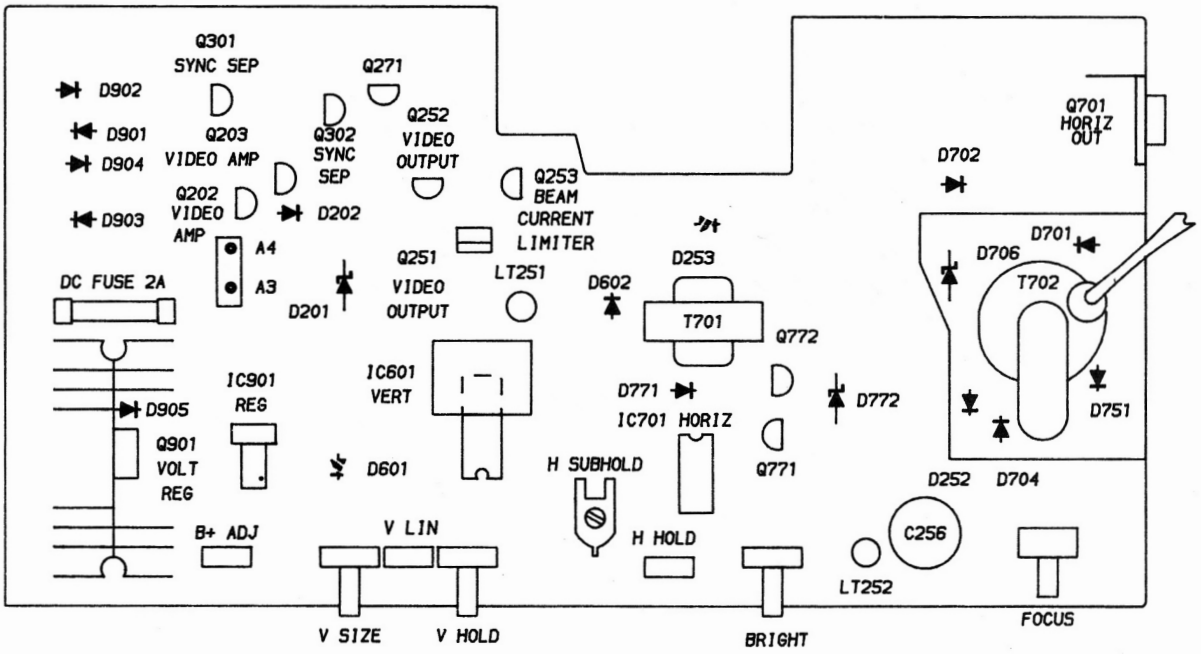
TEST EQUIPMENT

Digital Volt/Ohm Meter
HV Test Probe

TOOLS

Phillips Screwdriver
Low Voltage Soldering Iron
Contact Cleaner
Desoldering Tool





PLACEMENT CHART

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 RASTER: Check AC power supply, sources generated from Horizontal Output Transformer (T702) and Video circuit. Refer to "Troubleshooting" Power Supply, Video and Horizontal circuits.

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

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

SWEEP

NO RASTER: Check HV Rectifier, Rectifier (Part of T702) and Horizontal circuit. Refer to "Troubleshooting" Horizontal circuit.

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

POOR VERT 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.

MISCELLANEOUS ADJUSTMENTS

B + ADJUSTMENT

Connect a DC volt meter to the collector of Voltage Regulator Transistor (Q901). Adjust B + Control (R903) for 11.6V on the meter.

TROUBLESHOOTING

POWER SUPPLY

Check AC Fuse (F901). If open, check Diodes (D901 thru D904), and Electrolytics C901 and C909. Replace any defective parts and check DC Fuse (F902). If open, check Voltage Regulator Transistor (Q901). Regulator IC (IC901) and associated circuitry. Check for a short at the Horizontal Output Transistor (Q701) and Diode (D701).

Check for 11.6V at the collector of Q901. If the voltage is incorrect, check the adjustment of B+ Control (R903). See "B+ Adjustment" section of the Miscellaneous Adjustments. Check voltages and components associated with IC901.

Check for 58.5V at the cathode of Rectifier Diode (D252). If voltage is missing, refer to the "Horizontal" section of this Troubleshooting guide.

HORIZONTAL

High voltage is missing. Check for 19.4V at the collector of Horizontal Output Transistor (Q701). If the voltage is missing, check for B+ at pin 3 of the Horizontal Output Transformer (T702). If the voltage is present at pin 3, check the continuity between pins 3, 4, and 6 of T702.

Check for a horizontal waveform at pin 12 of the Horizontal IC (IC701). If the waveform is missing, check the voltages, waveforms, and components associated with IC701. If the waveform is present, check Q701, Diode (D701), and Horizontal Driver Transformer (T701).

Check for 58.5V source at the cathode of Diode (D252). This voltage is developed from T702. If voltage is in error loading of the horizontal circuits may occur. The high voltage rectifier is part of T702 and it may be defective. Check the voltages, waveforms, and components associated with T702.

Poor horizontal width, linearity, or foldover problems can be caused by Deflection Yoke (DY1), the Width Coil, which is part of the yoke, Coil L705, and Electrolytic C712.

VIDEO

Check voltages and waveforms on the CRT and check condition of the CRT. To find a defective stage, connect a video signal to the Video Input Jack (P1). Check for a video waveform at pin 2 of the CRT. If waveform is missing, check for waveform at the bases of Video Output Transistor (Q252) and Video Amp Transistors (Q202 and Q203) to isolate defective stage.

If there are retrace lines on the CRT, check the voltages, waveform and components associated with Vertical Blanking Transistor (Q271).

The Beam Current Limiter Transistor (Q253) prevents CRT screen from being burned during prolonged use and should be checked if the CRT becomes etched.

VERTICAL

Check for a vertical waveform at pin 9 of the Vertical IC (IC601). If the waveform is present, check the voltages and components associated with the vertical section of the Deflection Yoke (DY1). If the waveform is missing, check the voltages, waveforms, and components associated with IC601.

Vertical linearity or foldover problems can be caused by the condition of Electrolytics C604 thru C608 and C610. Check adjustment of the Vertical Height (Size) Control (R606) and Linearity Control (R607).

SYNC

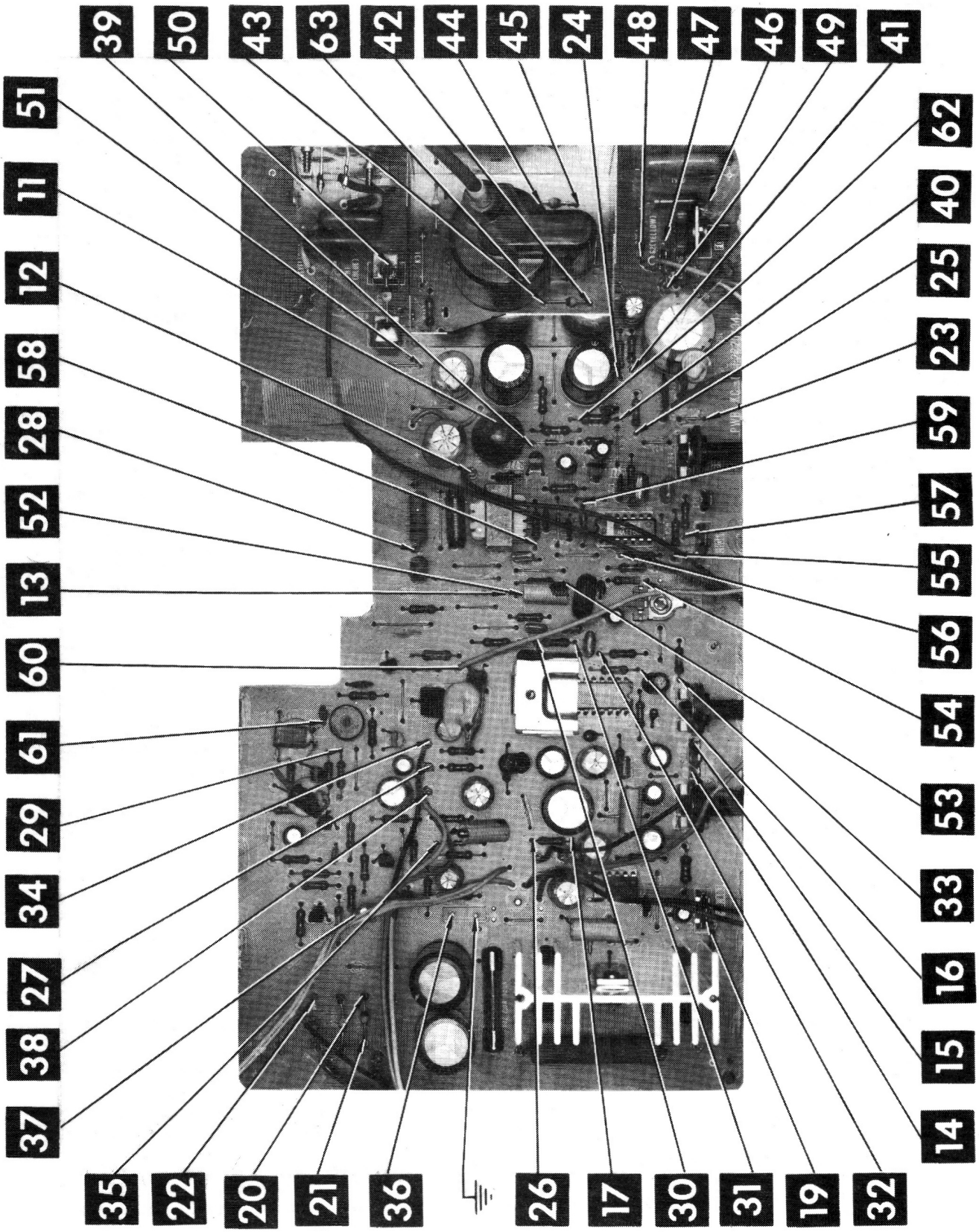
No vertical or horizontal sync. Check for the proper vertical and horizontal sync waveforms at the emitter of the Sync Sep Transistor (Q302). If either of the waveforms are incorrect, check the voltages and components associated with the Sync Amp Transistor (Q301) and Q302.

SCHEMATIC NOTES

—x— Circuitry not used in some versions
- - - Circuitry used in some versions
⊖ See parts list
⏚ Ground
⏚ Chassis

Waveforms and voltages are taken from ground, unless noted otherwise.
Waveforms: triggered scope, keyed rainbow signal applied to video input.
Item numbers in rectangles appear in the alignment/adjustment instructions.

Supply voltages 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% unless noted.
Electrolytic capacitors are 50 volts or less, 20% unless noted.
Resistors are ½W or less, 5% unless noted.
Value in ( ) used in some versions.
Measurements with switching as shown, unless noted.



MAIN BOARD

A Howard W. Sams CIRCUITRACE® Photo

PARTS LIST AND DESCRIPTION

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

SEMICONDUCTORS (Select replacement for best results)

ITEM No.	TYPE No.	MFGR. PART No.	REPLACEMENT DATA					
			GENERAL ELECTRIC PART No.	NEW-TONE NTE PART No.	PHILIPS ECG PART No.	RCA PART No.	WORKMAN PART No.	ZENITH PART No.
D201	HZ6C1		GEZD-6.0	NTE5012A	ECG5012A	SK6A0/5012A	WEP1413/5012	
D202	1S2076		GE-514	NTE519	ECG519	SK3100/519	WEP925/519	103-131
D252	V09C		GE-511	NTE552	ECG552	SK5002	WEP172/506	103-287
D253	1S582							
D601	V06CS		GE-511	NTE552	ECG552	SK9000/552	WEP172/506	103-287
D602	1S2076		GE-514	NTE519	ECG519	SK3100/519	WEP925/519	103-131
D701	V06E		GE-531	NTE125	ECG125	SK3017B	WEP170/125	903-334
D702	U06C		GE-533	NTE525	ECG580	SK3925/525	WEP177/525	212-Z9010
D704	U06CS		GE-533	NTE525	ECG580	SK3925/525	WEP177/525	212-Z9010
D706	RD5.1E		GEZD-5.1	NTE5010A	ECG5010A	SK5A1/5010A	WEP1411/5010	103-279-10
D751	V11J		GE-511	NTE506	ECG506	SK3032A	WEP172/506	103-287
D771	1S2076		GE-514	NTE519	ECG519	SK3100/519	WEP925/519	103-131
D772	HZ36-1		GEZD-36	NTE5037A	ECG5037A	SK36A/5037A	WEP1439/5037	103-279-37
D901								
D902								
D903								
D904								
D905	1S2076		GE-514	NTE519	ECG519	SK3100/519	WEP925/519	103-131
IC601	KC581C		GE-1258	NTE1258	ECG1258			
IC701	HA1166X							905-166
IC901	KC582C			NTE1251	ECG1251			
Q202	2SC458C		GE-210	NTE85	ECG85	SK3124A/289A	WEP910/289	121-972*
Q203	2SA673C		GE-269	NTE290A	ECG290A	SK9132	WEP911/290A	121-Z9003*
Q251	2SC1514		GE-251	NTE376	ECG376	SK9362/376	WEP779/198	121-Z9028
Q252,3	2SC458C		GE-210	NTE85	ECG85	SK3124A/289A	WEP910/289	121-972*
Q271	2SC458C		GE-210	NTE85	ECG85	SK3124A/289A	WEP910/289	121-972*
Q301	2SA844D		GE-65	NTE234	ECG234	SK3247/234	WEP907/234	121-Z9005
Q302	2SC458C		GE-210	NTE85	ECG85	SK3124A/289A	WEP910/289	121-972*
Q701	2SC681A		GE-36	NTE283	ECG283	SK3439A/163A	WEP707/162	121-Z9090
Q771	2SC1213C		GE-268	NTE289A	ECG289A	SK3122	WEP910/289	121-Z9065
Q772	2SA673C		GE-269	NTE290A	ECG290A	SK9132	WEP911/290A	121-Z9003*
Q901	2SA768		GE-69A	NTE153	ECG153	SK3274/153	WEP746/153	121-988-03

* Lead configuration may vary from original.

PARTS LIST AND DESCRIPTION (Continued)

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

ELECTROLYTIC CAPACITORS

ITEM No.	RATING	MFGR. PART No.
C712	6.8uF 25V NP	

ITEM No.	RATING	MFGR. PART No.

Items not listed are normally available at local distributors.

CAPACITORS

ITEM No.	RATING	MFGR. PART No.
C703	100 NPO 50V 5%	

ITEM No.	RATING	MFGR. PART No.

Items not listed are normally available at local distributors.

RESISTORS (Power and Special) (cont)

ITEM No.	RATING	REPLACEMENT DATA		
		MFGR. PART No.	NEW-TONE PART No.	WORKMAN PART No.
R258	1200 5% 3W Metal Oxide			
R301	2 5% 1/4W Fusible			
R712	10 5% 1/4W Fusible			
R905	27 5% 5W WW		5W027	

CONTROLS (All wattages ½ watt, or less, unless listed)

ITEM NO.	FUNCTION	RESISTANCE	MFGR. PART NO.	NOTES
R215	Contrast	500		
R264	Brightness	500K		
R604	Vert Hold	50K		
R606	Vert Height (Size)	10K		
R607	Vert Linearity	5000		
R707	Horiz Hold	50K		
R709	Sub Horiz Hold	2000		
R751	Focus	2M		
R903	B+ Adjust	1000		

COILS (RF-IF)

ITEM No.	FUNCTION	MFGR. PART No.
L251 L271 L702	Peaking (15uH) Peaking (15mH) R.F. Choke	

ITEM No.	FUNCTION	MFGR. PART No.
L705	Horizontal Linearity	

COILS & TRANSFORMERS (Sweep Circuits)

ITEM No.	FUNCTION	REPLACEMENT DATA		
		MFGR. PART No.	OTHER IDENTIFICATION	THORDARSON PART No.
DY1	Yoke Horiz 138uH 90° Vert 2.9mH	2441377(1)		
L703	Width (Horiz Size)	(2)		
T701	Horiz Driver	2260016(1)		
T702	Horiz Output	2431861BK16M(1)		

(1) Number on unit.
(2) Part of Deflection Yoke.

TRANSFORMER (Power)

ITEM No.	RATING			REPLACEMENT DATA		
	PRI.	SEC. 1	SEC. 2	MFGR. PART No.	THORDARSON PART No.	NOTES
T1	120V AC @ 235mA	14.65V AC @ 1.2A DC		2211687(1)		
	SEC. 3	SEC. 4	SEC. 5			

(1) Number on unit.

PARTS LIST AND DESCRIPTION (Continued)

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

FUSE DEVICES

ITEM NO.	DESCRIPTION	MFGR. PART NO.		NOTES
		DEVICE	HOLDER	
F901	750mA @ 250V Fast Acting, Pigtail			
F902	2A @ 125V Slow Blow, Pigtail			

MISCELLANEOUS

ITEM No.	PART NAME	MFGR. PART No.	NOTES
D908	LED		Power, Red
LT251	Lamp		Neon, used as a Spark Gap
LT252	Lamp		Neon, Used as a Spark Gap
P1	Jack		Video In
P2	Cord		AC Power, Polarized
S1	Switch		Power
V1	CRT	310KDB42(T)	
	P.C. Board		Main

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

WIRING DATA

High Voltage Lead	Use BELDEN No.	8869 (17 KV) or 8868 (24 KV)
Shielded Hook-up Wire	Use BELDEN No.	8401 or 8421 (Single-Conductor)
		8208 (Two-Conductor)
General-use Unshielded Hook-up Wire	Use BELDEN No.	8529 (Solid) Available in 13 Colors
		8522 (Stranded) Available in 13 Colors
300-Ohm Tuner Input Lead	Use BELDEN No.	8225
300-Ohm Antenna Lead-In	Use BELDEN No.	8230 or 8275
Antenna Rotor Cable	Use BELDEN No.	8464 (Flat) or 8484 (Round) 4-Conductor
		8485 (Round) 5-Conductor
		8488 (Round) 8-Conductor

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APPLE
MODEL A3M0039

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MAIN BOARD

MAIN BOARD GridTrace LOCATION GUIDE

A3	D-3	C707	H-10	D902	B-1	R252	D-7	R613	E-8
A4	D-3	C708	F-8	D903	C-2	R253	C-6	R614	F-7
C201	D-4	C709	E-9	D904	B-2	R254	D-6	R615	E-4
C203	C-5	C710	E-9	D905	F-3	R256	B-7	R701	F-9
C251	C-6	C711	B-14	F902	D-2	R258	C-9	R702	G-10
C252	D-6	C712	E-12	IC601	F-7	R259	C-8	R703	F-11
C253	B-7	C713	D-12	IC701	G-9	R260	D-7	R705	G-9
C254	F-12	C714	D-11	IC901	F-4	R262	G-12	R706	G-10
C255	G-13	C715	B-14	L251	C-9	R263	F-12	R707	H-9
C256	G-12	C717	A-13	L271	B-6	R264	H-11	R708	G-9
C257	G-11	C719	F-9	L702	D-9	R265	G-11	R709	G-8
C271	B-6	C720	F-11	L705	E-11	R271	B-5	R710	G-8
C272	A-6	C751	G-15	LT251	D-7	R272	B-5	R711	E-9
C273	B-5	C771	F-10	LT252	H-12	R274	A-5	R712	E-8
C301	B-3	C772	F-11	Q202	C-4	R275	A-6	R713	C-13
C303	A-4	C780	F-8	Q203	C-4	R301	D-5	R714	E-8
C304	B-4	C901	D-1	Q251	D-7	R302	B-4	R751	H-14
C305	D-5	C903	F-4	Q252	C-6	R303	B-3	R753	G-13
C601	E-8	C904	G-3	Q253	C-7	R304	B-4	R754	G-14
C602	F-8	C905	G-3	Q271	B-5	R305	A-3	R755	G-14
C603	F-7	C908	F-4	Q301	B-3	R306	B-4	R771	E-10
C604	G-7	C909	D-2	Q302	B-5	R307	B-4	R772	F-10
C605	G-6	D201	D-4	Q771	F-10	R308	A-4	R773	F-11
C606	F-6	D202	C-4	Q772	E-10	R310	A-5	R774	E-11
C607	G-5	D252	F-13	Q901	F-2	R601	E-7	R775	E-11
C608	G-6	D253	C-9	R201	D-4	R602	E-8	R781	G-9
C609	G-6	D601	G-5	R202	D-5	R603	G-7	R903	H-3
C610	G-4	D602	D-8	R203	D-4	R604	H-6	R904	G-4
C611	F-6	D701	D-14	R204	C-4	R605	G-6	R905	F-1
C612	F-5	D702	C-13	R209	C-4	R606	H-5	R906	F-3
C613	E-6	D704	F-13	R210	C-3	R607	H-6	R910	F-2
C616	E-6	D706	D-12	R211	C-5	R608	F-7	R911	G-4
C701	G-10	D751	E-14	R212	B-4	R609	F-6	R912	H-3
C702	G-10	D771	E-9	R214	D-6	R610	G-5	T701	E-10
C703	F-10	D772	E-11	R251	D-6	R611	E-6	T702	E-14
C706	F-8	D901	B-2						

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APPLE
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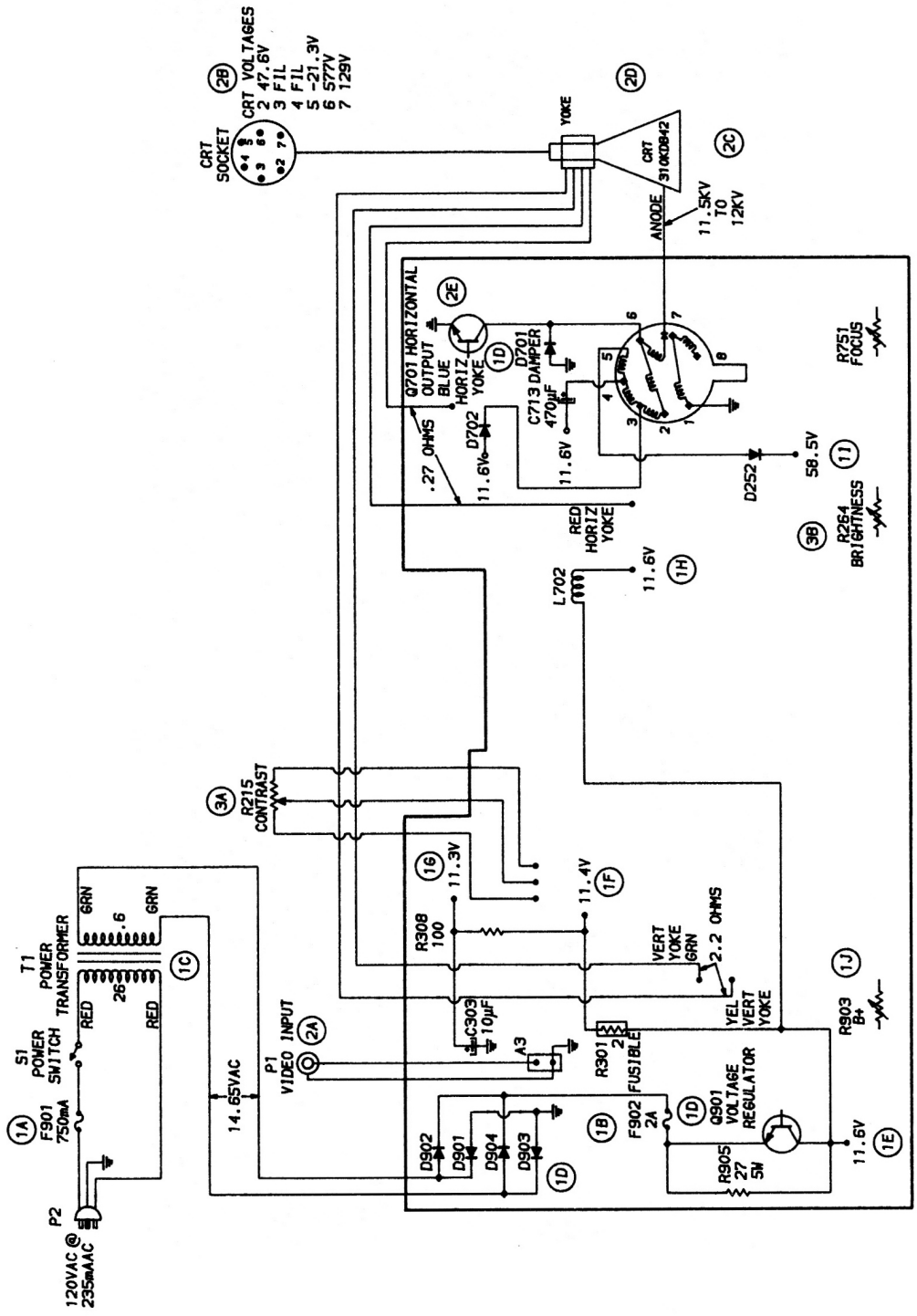
MAIN BOARD

SAFETY PRECAUTIONS

1. Use an isolation transformer for servicing.
2. Maintain AC line voltage at rated input.
3. Remove AC power from the monitor before servicing or installing electrostatically sensitive devices. Examples of typical ES devices are integrated circuits and semiconductor "chip" components.
4. Use extreme caution when handling the printed circuit boards. Some semiconductor devices can be damaged easily by static electricity. Drain off any electrostatic charge on your body by touching a known earth ground. Wear a commercially available discharging wrist strap device. This should be removed prior to applying power to the unit under test.
5. Use a grounded-tip, low voltage soldering iron.
6. Use an isolation (times 10) probe on scope.
7. Do not remove or install boards with monitor AC power On.
8. Do not use freon-propelled sprays. These can generate electrical charges sufficient to damage semiconductor devices.
9. This monitor is equipped with a grounded three-pronged AC plug. This plug must fit into a grounded AC power outlet. Do not defeat the AC plug safety feature.
10. Periodically examine the AC power cord for damaged or cracked insulation.
11. The monitor cabinet is equipped with vents to prevent heat build-up. Never block, cover, or obstruct these vents.
12. Instructions should be given, especially to children, that objects should not be dropped or pushed into the vents of the cabinet. This could cause shock or equipment damage.
13. Never expose the monitor to water. If exposed to water turn the unit off. Do not place the monitor near possible water sources.
14. Never leave the monitor unattended or plugged into the AC outlet for long periods of time. Remove AC plug from AC outlet during lightning storms.
15. Do not allow anything to rest on AC power cord.
16. Unplug AC power cord from outlet before cleaning monitor.
17. Never use liquids or aerosols directly on the monitor. Spray on cloth and then apply to the monitor cabinet. Make sure the monitor is disconnected from the AC power line.

RESISTANCE MEASUREMENTS

MEASUREMENTS TAKEN WITH LOW POWER OHMS METER														
ITEM	PIN 1	PIN 2	PIN 3	PIN 4	PIN 5	PIN 6	PIN 7	PIN 8	PIN 9	PIN 10	PIN 11	PIN 12	PIN 13	PIN 14
V1	NC	INF	FIL	FIL	INF	INF	600K							
IC601	4770	24K	29K	.04	INF	INF	.04	0	INF	33	10K	586	13K	INF
IC701	1.6M	14K	33	10K	6600	INF	11K	120K	5670	2000	13K	44	.03	.03
IC901	385	720	6000	10K	1342	32	270							
ITEM	E	B	C		ITEM	E	B	C		ITEM	E	B	C	
Q202	220	4800	720		Q253	68	INF	113		Q701	0	.09	INF	
Q203	137	720	600		Q271	140	270K	45K		Q771	0	2700	3700	
Q251	INF	750	INF		Q301	132	62K	7560		Q772	1023	3700	2700	
Q252	68	INF	INF		Q302	675	7800	33		Q901	58	385	33	



INTERCONNECTING DIAGRAM

PRELIMINARY SERVICE CHECKS

SERVICING IN THE FIELD

CRT IMPLOSION 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 Placement Chart.)

A .75-amp fuse is used for AC line protection. (See Placement Chart.)

HORIZONTAL OSCILLATOR

Coarse adjustment of the horizontal hold is accomplished by the proper setting of the Sub Horiz Hold Control. (See photo, Cabinet-Rear View.)

Fine adjustment of the horizontal hold is accomplished by the proper setting of the Horiz Hold Control. (See photo, Cabinet-Rear View.)

WIDTH

The width may be varied by adjusting the width coil located on the yoke. (See photo, Cabinet-Rear View.)

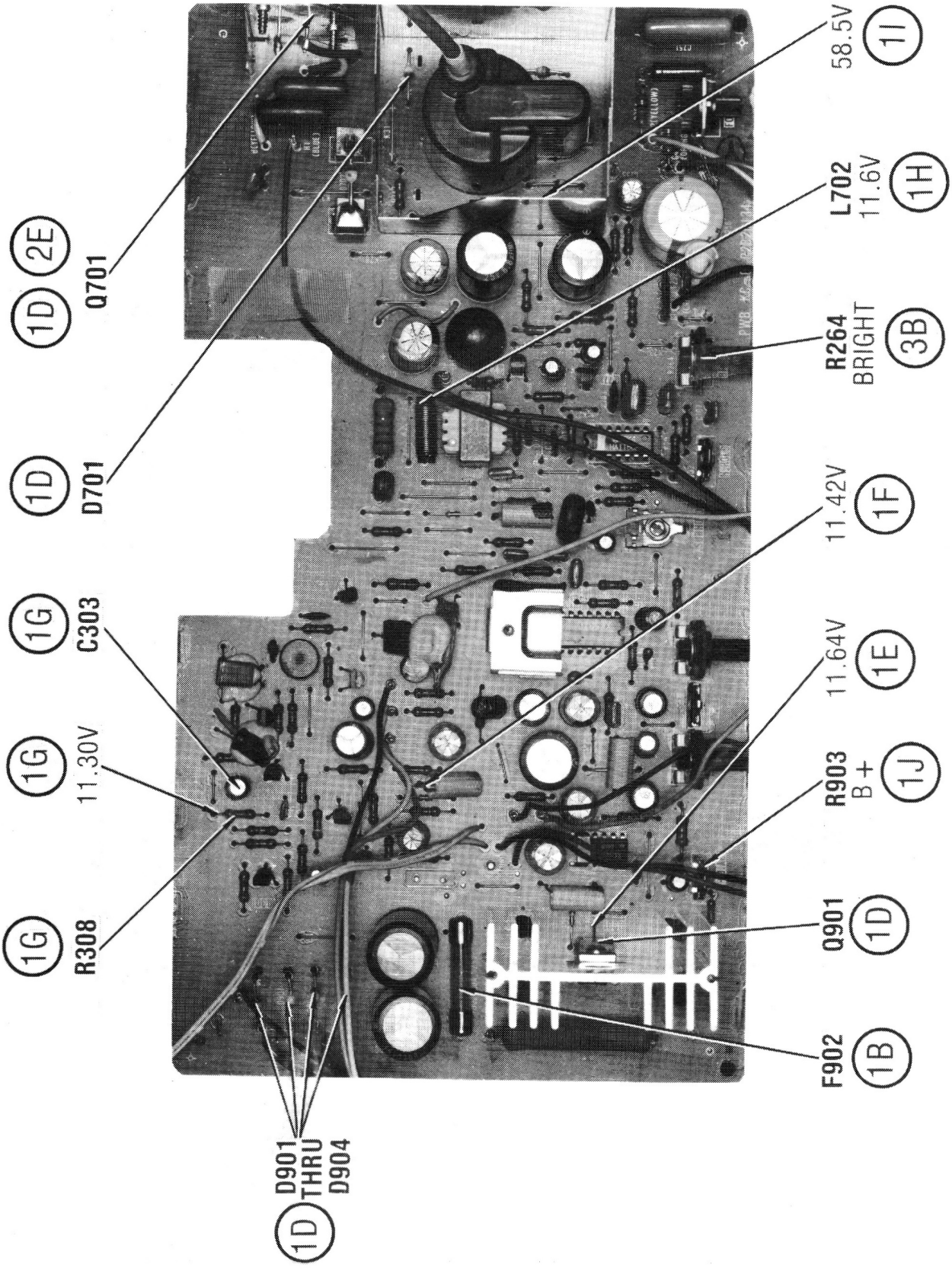
FOCUS

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

CENTERING

Centering is accomplished by proper adjustment of two magnetic rings located on the yoke rear cover.

PRELIMINARY SERVICE CHECKS



MAIN BOARD