SAMSUNG

Service Manual

CD - 1453M1

COLOUR MONITOR

Model Number: CD1453M1 / CM4531

+ OTHERS

Connect the resistor connection to all exposed metal parts having a return path to the chassis (metal cabinet, screw heads, knobs and control shafts, escutcheon, etc.) and measure the AC voltage drop across the resistor.

All checks must be repeated with the AC line cord plug connection reversed. (If necessary, a nonpolarized adapter plug must be used only for the purpose of completing these checks.)

Any reading of 0.3 volt RMS (this corresponds to 0.2 milliamp. AC) or more is excessive and indicates a potential shock hazard which must be corrected before returning the display monitor to the user.

SAFETY NOTICE

Many electrical and mechanical parts in display monitors have special safety-related characteristics. These characteristics often pass unnoticed and the protection afforded by them cannot necessarily be obtained by using replacement components rated for higher voltage, wattage, etc.

Replacement parts that have these special safety characteristics are identified in this manual; electrical components having such features are identified by a Δ and shaded in the Replacement Parts Lists and Schematic Diagram. For continued protection, replacement parts must be identical to those used in the original circuit. The use of a substitute replacement part that does not have the same safety characteristics as specified in this service manual, may create shock, fire, X-radiation or other hazards.

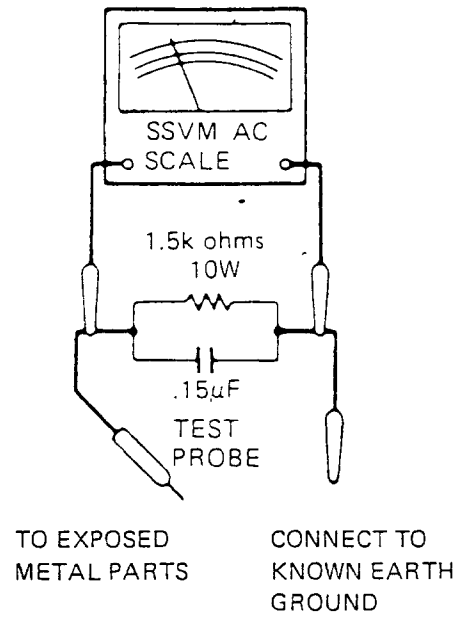


Figure 1. Leakage Current Test Circuit

THEORY OF OPERATION

GENERAL

CD-1453M1 is a high-resolution color display using a 0.31 pitch CRT with etched faceplate. It uses six TTL-level color input signals and separate sync signals. It can operate in either 200 or 350-line mode.
The switching is automatic and based on the polarity of vertical sync.

DESCRIPTION

1. Power Supply

This is a constant-frequency quasi-bridge switched-mode power supply of flyback type. The output voltage regulation is achieved by means of variable duty cycle. The control circuit IC911 monitors the voltage at pin 13 of MM912 and regulates the duty cycle so that this voltage is kept constant. The output voltages can be varied by means of VR911.
Q915 and Q916 act as switches. D924 and D925 form the rest of the quasibridge circuit. R933, C930 and D921 form a DIAC oscillator which is used to start the power supply.
When the power-supply starts R932 and D923, turn off the DIAC oscillator.

Output Voltages:	Pin No.	V
	M1/1	12
	M1/2	GND
	M1/3	6.2
	M1/4	Heater GND
	M2/1	153
	M2/3	55
	M2/4	GND
	M2/5	20

IMPORTANT: When replacing the power supply, make sure that the green/yellow ground wire is properly attached to the main chassis frame. When replacing the fuse, make sure that the fuse is of the same type and rating as the original.

2. Main Board

2-1. Vertical Oscillator/Amplifier IC411

IC411 (TDA 2653A) Includes the Following Functions.

- o Vertical oscillator
- o Ramp generator
- o Linearity control
- o Output amplifier

There are two vertical height controls: RT1 and RT2. RT1 is for the 200 line mode and RT2 for the 350 line mode. The potentiometers are automatically selected by analog switch IC511.

2-2. Horizontal Combination IC311 (TDA2593)

IC311 Includes the Following Functions.

- o Horizontal oscillator
- o Phase-locked loop for frequency and phase comparison.
- o Phase locked loop to compensate various delay times of the horizontal output transistor.
- o Driver stage.

The sync signal is input to pin 9 and the horizontal flyback pulse to pin 6. These two signals are compared and the circuit is locked to a correct frequency and phase. Analog switch IC312 uses the mode signal to switch the horizontal oscillator to 15.7KHz or 22 KHz mode.

2-3. Horizontal Output Stage Q362

Q362 is a horizontal output swtch, which is closed during the scan period and opened during the flyback. It receives a drive signal from IC311 via Q361 and M361.
The flyback time is determined by the resonance of C366 and the deflection yoke.
The additional energy to compensate for the losses in the circuit is driven via L363.
C363 makes the necessary S-correction. Because of the losses in the deflection yoke, a linearity correction is required. This is achieved by L362, which is a saturating choke.
The saturation is controlled by means of adjustable permanent-magnet rings.

2-4. Horizontal Width Control Stage Q511

The amount of energy fed to the horizontal output stage is controlled by Q511. It is simply a linear series regulator. D513 forms a reference voltage. This voltage and a rectified flyback voltage are compared in an error amplifier Q512, which controls Q511. In this way a very stable picture width is achieved. Pincushion correction is achieved by adding a parabolic waveform to the reference voltage. This

parabola is formed by integrating a vertical sawtooth in the first stage of IC512. The second stage of IC512 inverts the parabola. Analog switch IC511 takes care of the width correction between the two deflection frequencies.

2-5. High-Voltage Generator Q214

A voltage of 22kV for the CRT is generated by a flyback generator which is synchronized to the horizontal frequency in order to avoid jitter. High-voltage transformer M213 provides an output voltage of about 7kV, which is fed to a tripler. The focus voltage is also divided in the tripler from the anode voltage resulting in a good focus tracking.

Anode voltage is regulated against the variations in the beam current. IC211/Q213 form a series regulator with a feedback from the focus voltage divider. D214 is a reference diode. R225 and Q231 with its peripheral components limit the average beam current to 300μA max.

IC211 is also used for X-ray protection. In case of abnormaly high voltage, the X-ray protection circuit periodically shuts down the high-voltage generator. D219 is used as a reference for this purpose.

2-6. CRT Socket Board.

Functions: G2 voltage alignment VR1

2-7. Video Amplifier

Video card receives six TTL-level color signals in the high-resolution mode and three color signals plus an intensity bit in the medium-resolution mode. These input bits plus mode bit address a multiplexer (IC102).

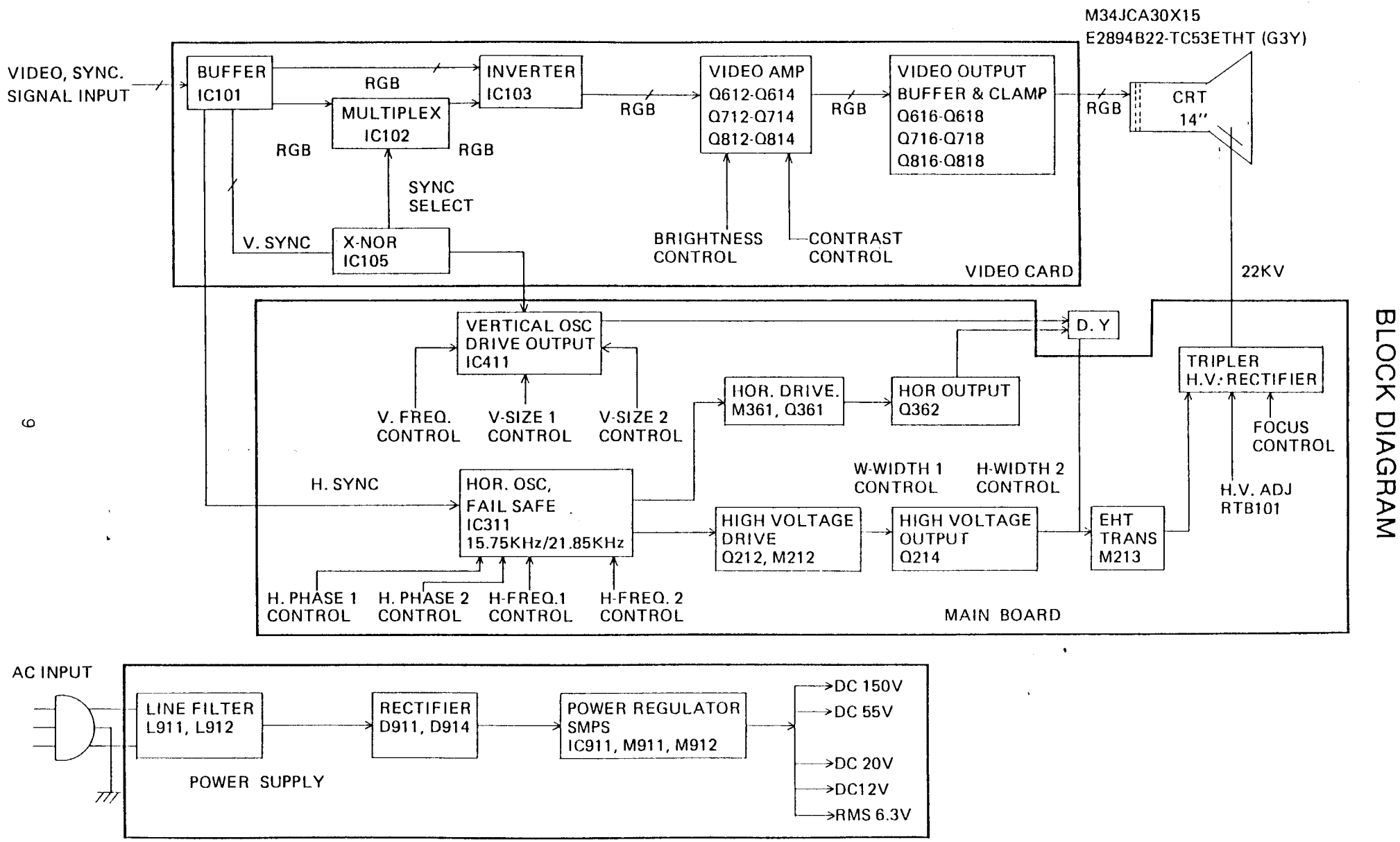
Six bits of the contents of each memory location are used to determine the color. The outputs of the multiplexer (IC102) are designated R0, B0, G0 and R1, B1, G1, R0, B0 and G0 are LSBs; R1, G1 and B1 are MSBs.

The brightness control in the front has an effect on both MSB and LSB, while contrast controls only LSB. The consequence of this is that contrast works as a HUE control.

The front contrast control can be made effective by pulling out the knob. Otherwise the HUE is in a normalized position, which is determined by RT4 in the rear panel. The background brightness can be slightly varied by RT3 in the rear panel.

Pin	16 Color(Mode 1)	64 Color(Mode 2)
1	Shield GND	Ground
2	Shield GND	R0
3	R1	R1
4	G1	G1
5	B1	B1
6	Intensity	G0
7	Unused	B0
8	Horiz Sync	Horiz Sync
9	Vert Sync (+)	Vert Sync (–)

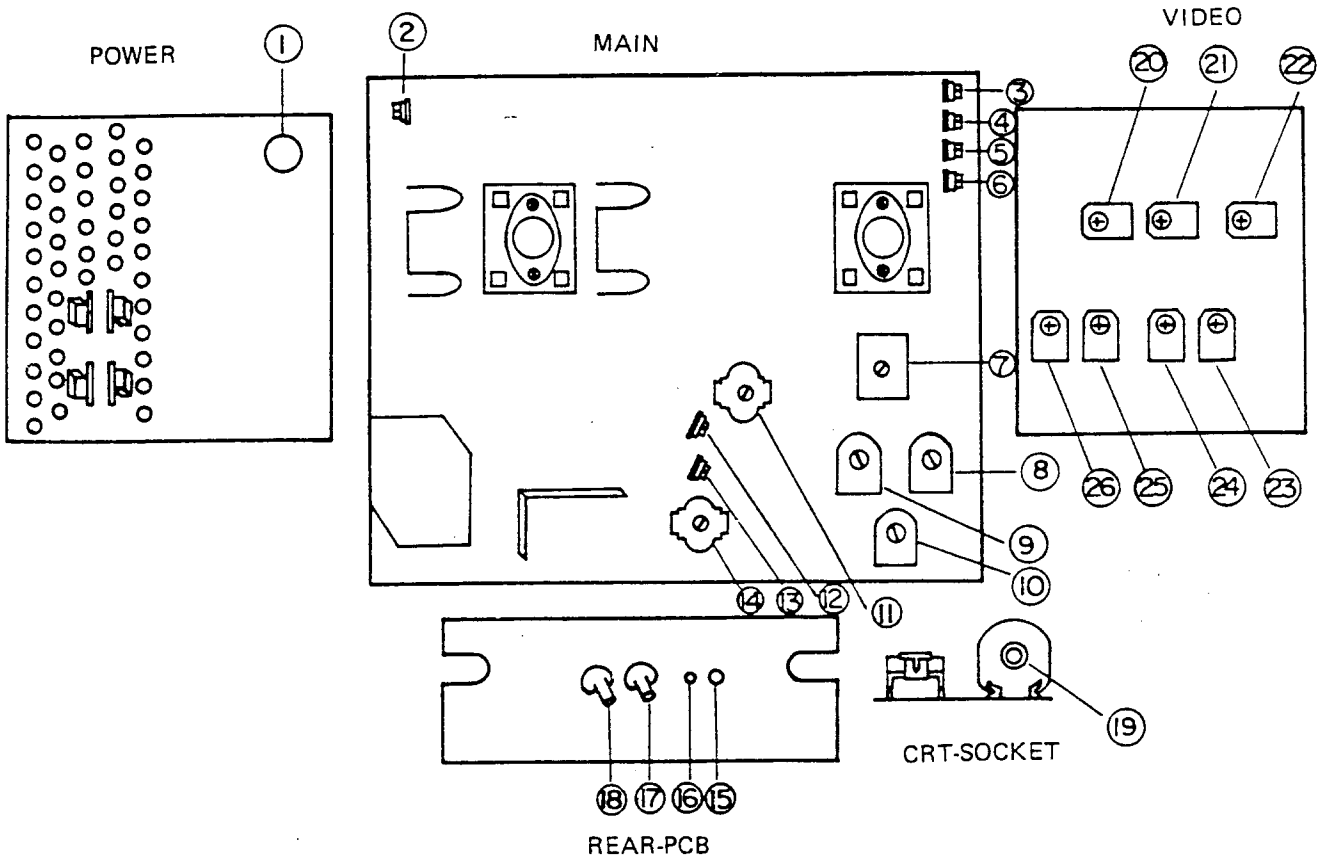
Signal cable pin connections.



BLOCK DIAGRAM

ALIGNMENT INSTRUCTIONS

- ADJUSTMENT POINT/PARTS LOCATION



NO.	REF. NO.	CONTROL FUNCTION	NO.	REF. NO.	CONTROL FUNCTION
1	VR911	POWER SUPPLY VOLTAGE (153V)	14	VR413	V-CENTERING
2	VR212	ANODE VOLTAGE (22kV)	15	RT4	SUB-CONTRAST
3	VR312	H-FREQ. MODE 1	16	RT3	SUB-BRIGHTNESS
4	VR313	H-FREQ. MODE 2	17	RT2	V. SIZE MODE 2
5	VR314	H-PHASE. MODE 1	18	RT1	V. SIZE MODE 1
6	VR315	H-PHASE. MODE 2	19	VR1	G2 VOLTAGE
7	L362	HORIZONTAL LINEARITY	20	VR814	G-CUT OFF VOLTAGE
8	VR513	H-WIDTH. MODE 1	21	VR714	B-CUT OFF VOLTAGE
9	VR512	H-WIDTH. MODE 2	22	VR614	R-CUT OFF VOLTAGE
10	VR515	PINCUSHION	23	VR812	G-MSB
11	VR362	H-CENTERING	24	VR813	G-LSB
12	VR412	V-FREQ.	25	VR712	B-MSB
13	VR414	VERTICAL LINEARITY	26	VR713	B-LSB

• ALIGNMENTS AFTER REPAIRING PARTS ON PCB LEVEL

Alignment \ PCB Level	Power PCB	Main PCB	Video PCB	CRT PCB	CRT
Ext. Degaussing	0	0	0	0	0
Power S. Output Voltage	0				
Vertical Freq.		0			
Horizontal Freq.		0			
Anode Voltage		0	x	x	0
Focus		0	x	x	0
Hor. Centering		0			0
Hor. Linearity		0			0
Pincushion		0			0
Width		0			0
Vertical Cent.		0			0
Vertical Lin.		0			0
Height 1	x	0			0
Height 2	x	0			0
White X/Y		0	0	0	0
CRT Tilt					0
Convergence		x			0

0 = Alignment Items x = Check Items

• ALIGNMENT PROCEDURE (Unit Facing East)

1. Power Supply Output Voltage

Connect a DVM to connector M2 pin 1. Adjust the voltage to 153V by means of ① VR911.

2. Vertical Frequency

Connect a frequency counter across the vertical deflection coil and adjust the frequency to 45Hz by means of ⑫ VR421. The signal cable must be disconnected from the computer.

3. **Horizontal Frequency**

Use a crosshatch pattern. Short-circuit connector B5 pin 1 to ground. Use ④ VR313 in the High-Res. Mode and ③ VR 312 in the Med-Res. Mode to get the crosshatch in an upright position remove the short.

4. **Horizontal Centering**

Increase background brightness to show the raster. Use ⑥ VR315 in the high-resolution mode to center the crosshatch within the raster. Use ⑦ VR362 to center the raster. Centering tolerance should be ±2mm. Use ⑤ VR314 to center the crosshatch in the medium-resolution mode.

5. **Anode Voltage**

Adjust the best overall focus. Measure the anode voltage from the CRT anode CAP. Adjust anode voltage to 22kV using ② VR212. Check the focus and readjust if necessary.

6. **Horizontal Linearity**

High-resolution mode. Crosshatch pattern.
Adjust ⑦ L362 for maximum picture width. Then slowly back until the squares are equal in width.

7. **Pincushion**

Straighten the side lines with ⑩ VR515.

8. **Width**

Adjust the data area width to 9.84" (250±2mm) using ⑨ VR512 in the high-resolution mode and using ⑧ VR513 in the medium-resolution mode.

9. **Vertical Centering**

Center the data area with ⑭ VR413.

10. **Vertical Linearity**

Adjust the squares equal in height with ⑬ VR414.

11. **Height 1 (200 Lines)**

Adjust data-area height to 6.7" (170±2mm) with ⑱ RT1.

12. **Height 2 (350 Lines)**

Switch to 350 line mode. Adjust data-area height to 6.7" (170±2mm) with ⑰ RT2.

13. **White X/Y**

White data area, high-resolution mode. Turn the brightness to the minimum position. Connect the DVM to each CRT cathode (200 V/DC range). Use respective potentiometers ㉒ VR614, ㉑ 714, and ⑳ 814 to adjust a voltage of 110V to each cathode. Turn the G2 control to a position where the raster just disappears.
Disconnect the vertical deflection yoke (connector B3). Turn ⑲ VR1 so that the horizontal line just disappears. Notice the color of the line. Connect the vertical deflection yoke.
Place the sensor of the color analyzer on the center of the screen. Turn the brightness clockwise to a point where the reading of the analyzer is reliable. Use two potentiometers out of ㉒ VR614 and ⑳ 814 to achieve the correct color coordinates (X=0.281, Y=0.311). You should not change the voltage of the most sensitive color any more (color of the horizontal line). White data area, gray 1 (MSB only). Pull out the contrast knob and turn the contrast to maximum. Adjust ㉔ VR813 and ㉖ VR713 to achieve the correct color coordinates. Push down the contrast knob.
Brown data area. Adjust ⑮ RT4 to set the data area brown.

14. **CRT Tilt Adjustment**

Use a cross-hatch pattern. Adjust the CRT with fastening screws so that dimensions A and B, measured from bezel edge, are separately equal. (Fig. 2, Below)

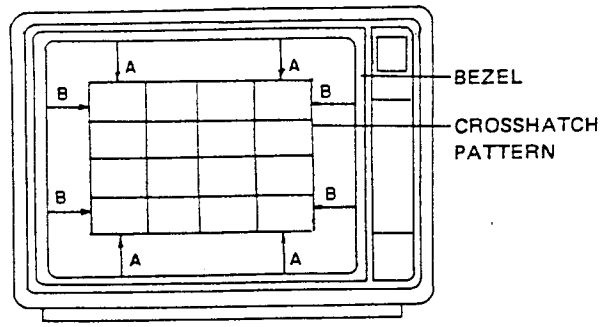


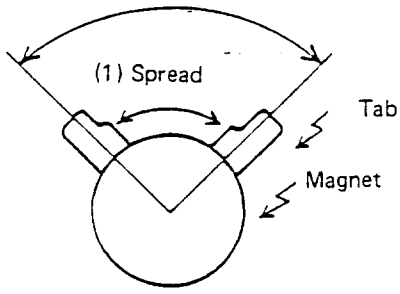
Fig. 2.

15. **Static Convergence Adjustment**

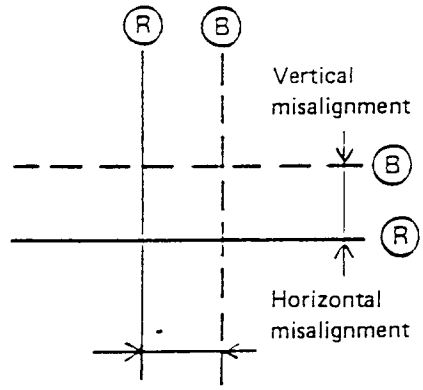
Use a cross-hatch pattern. Convergence error should not be over 0.5mm. Preheat monitor at least 15 minutes.
Turn the CRT to face east and degauss it.

A. Alignment of (R) and (B) with the 4-pole magnet

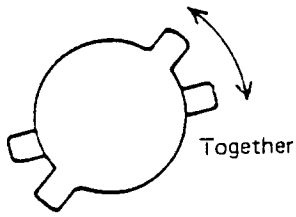
(2) Movable in spread condition



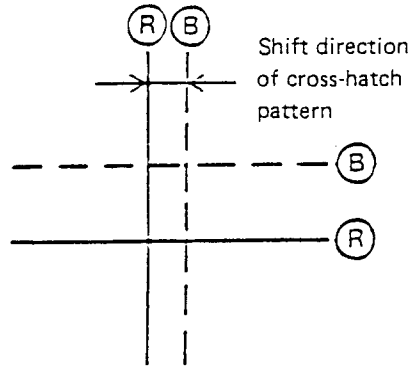
O-MAGNETIC FIELD



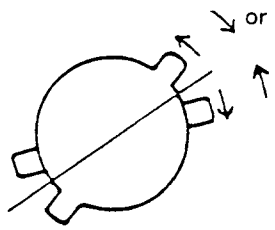
Vertical direction



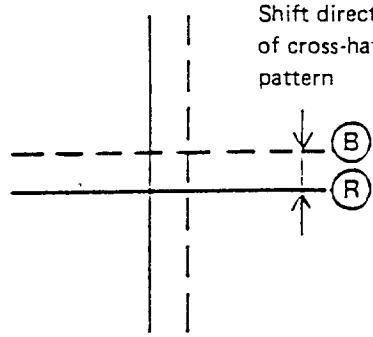
MOTION (1)



Horizontal direction

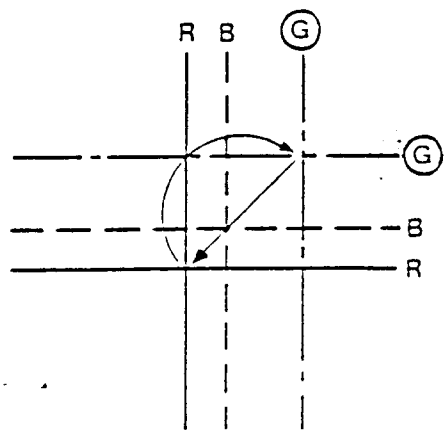


MOTION (2)

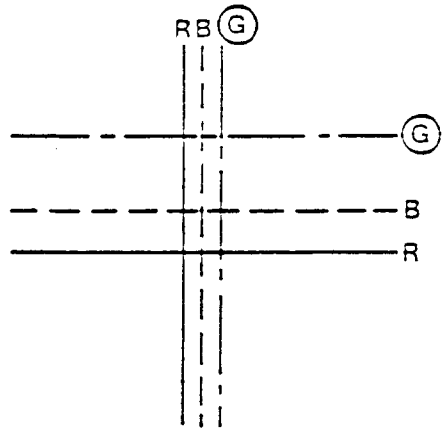


B. Alignment of (R) and (B) with (G) (6-pole magnet)

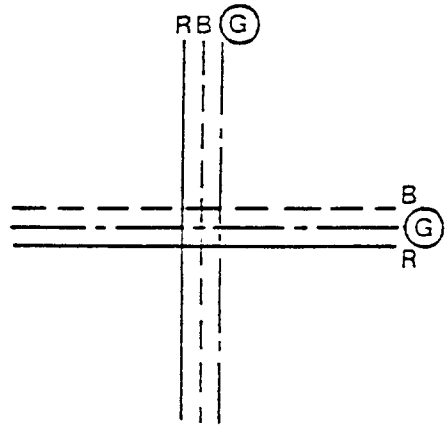
O-MAGNETIC FIELD



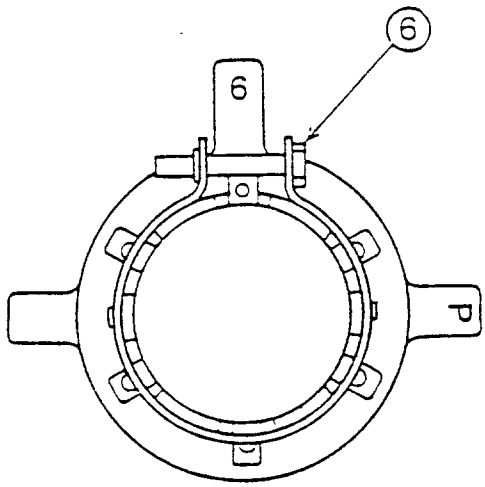
MOTION (1)

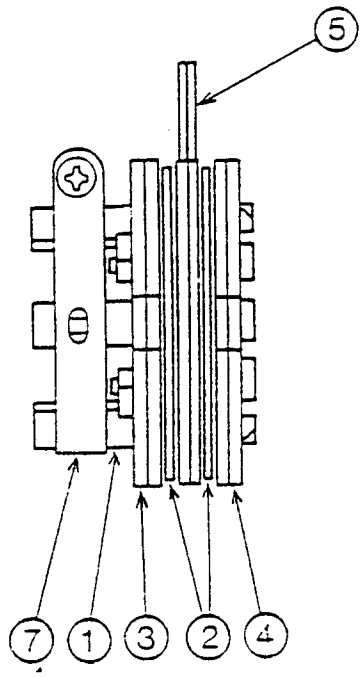


MOTION (2)



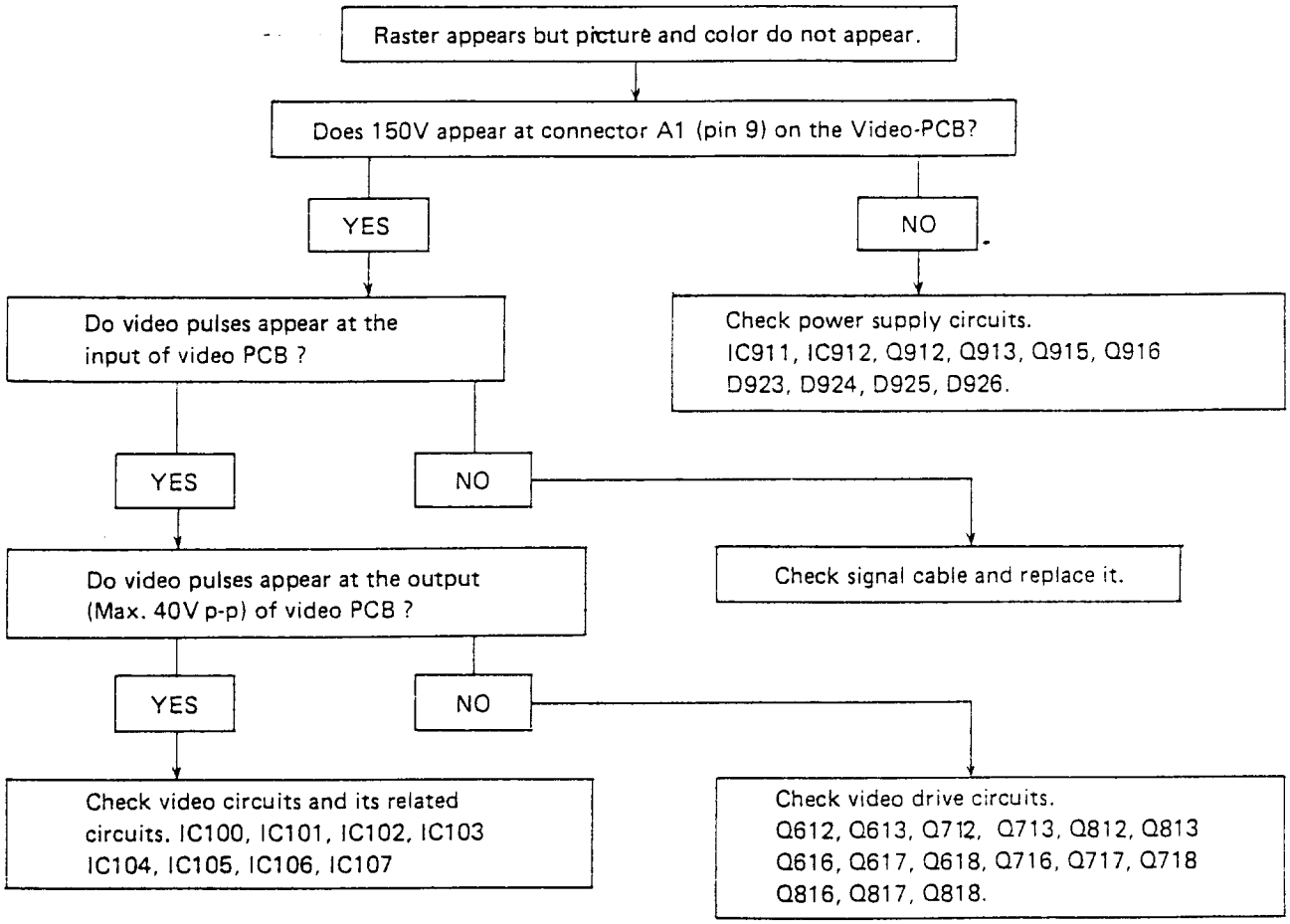
Convergence Purity Magnet

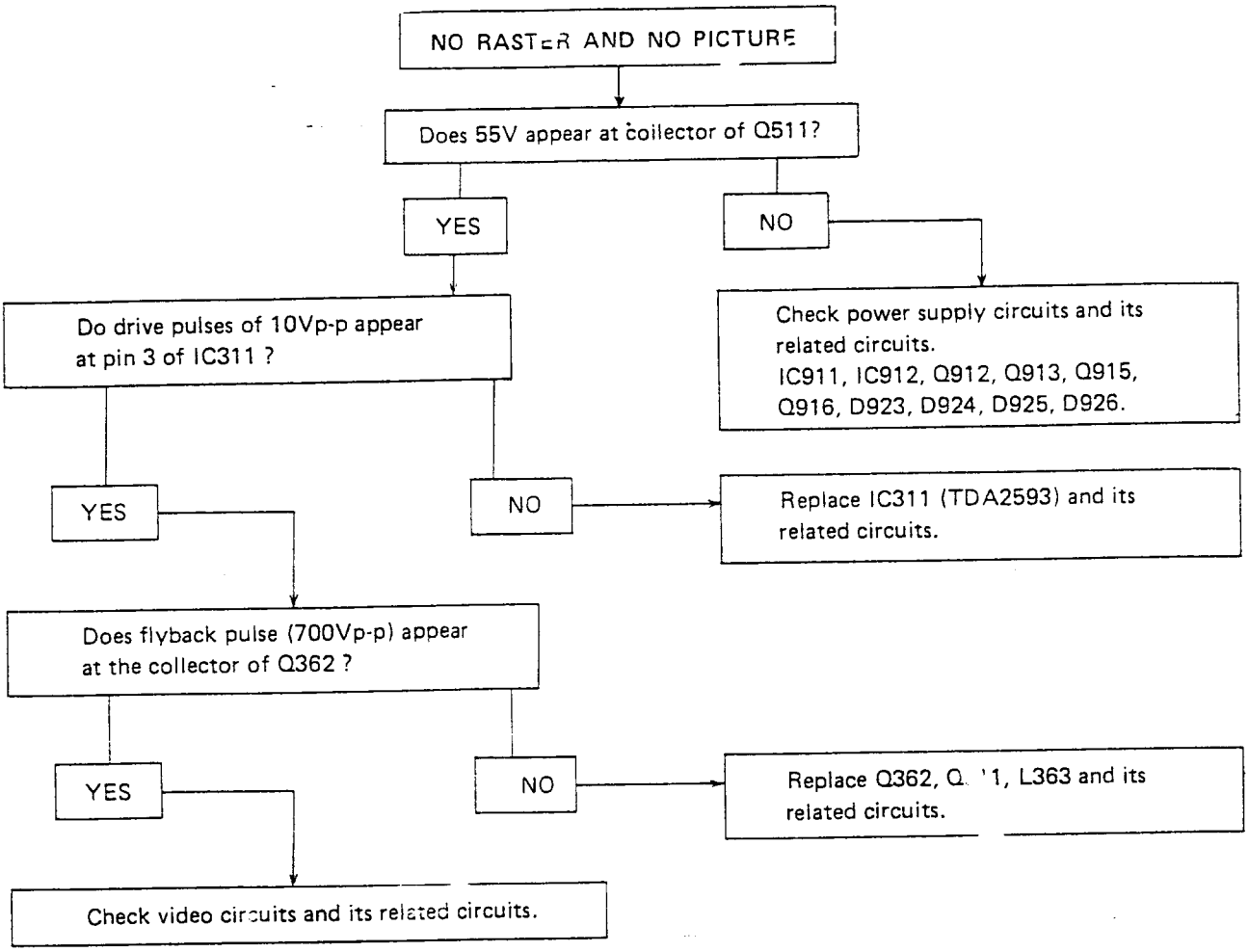




1. Holder
2. Spacer
3. Purity magnet
4. 4 pole magnet
5. 6 pole magnet
6. Setup bolt
7. Band

TROUBLESHOOTING GUIDE



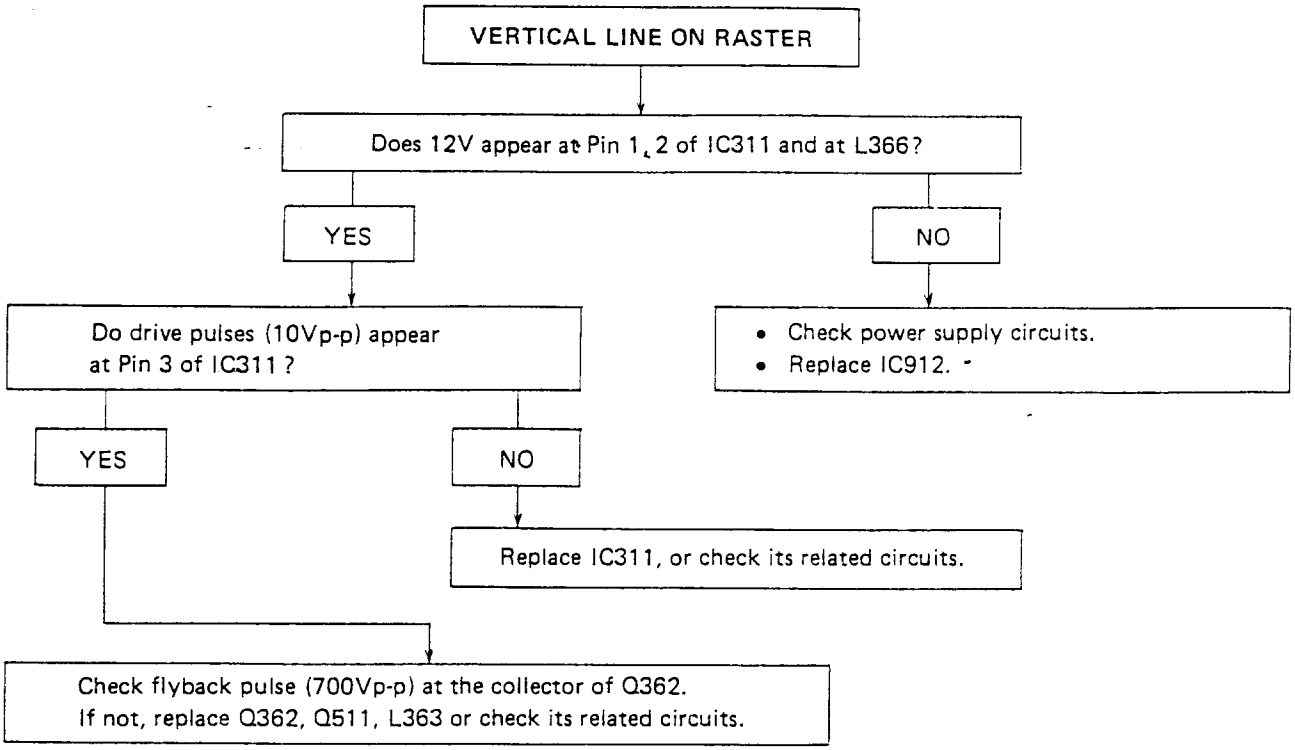


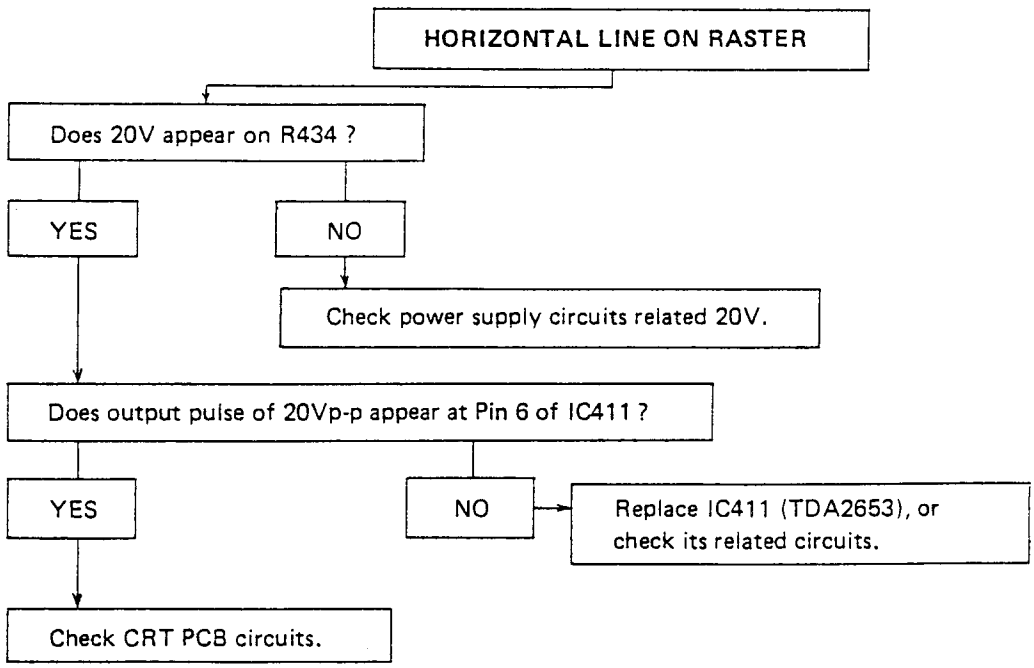
CIRCUITS TO BE CHECKED:

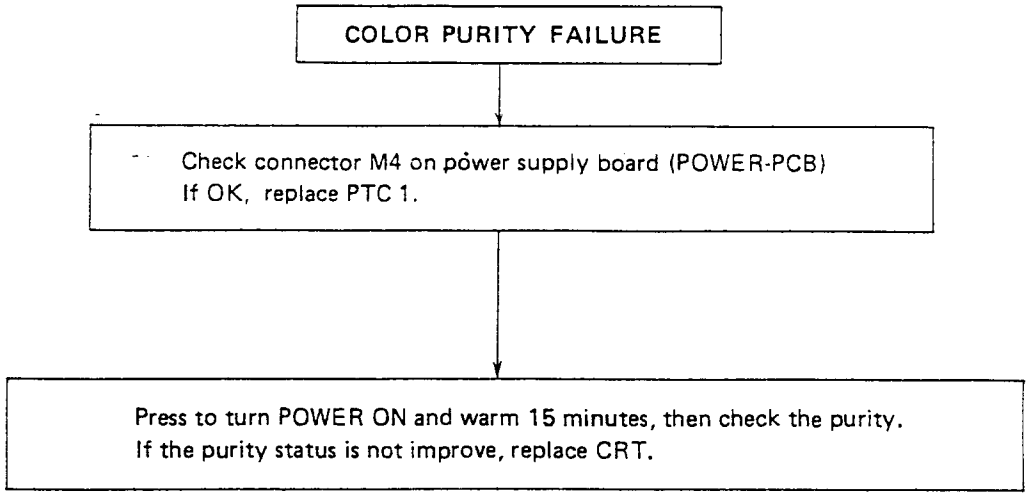
1. No raster appears
   - Power circuits
   - Horizontal sync circuits
   - Protector circuits (Related IC311 Pin 4)

2. A high voltage develops but no raster appears.
   - Video output circuits.

3. A high voltage is not developed.
   - High voltage circuits.

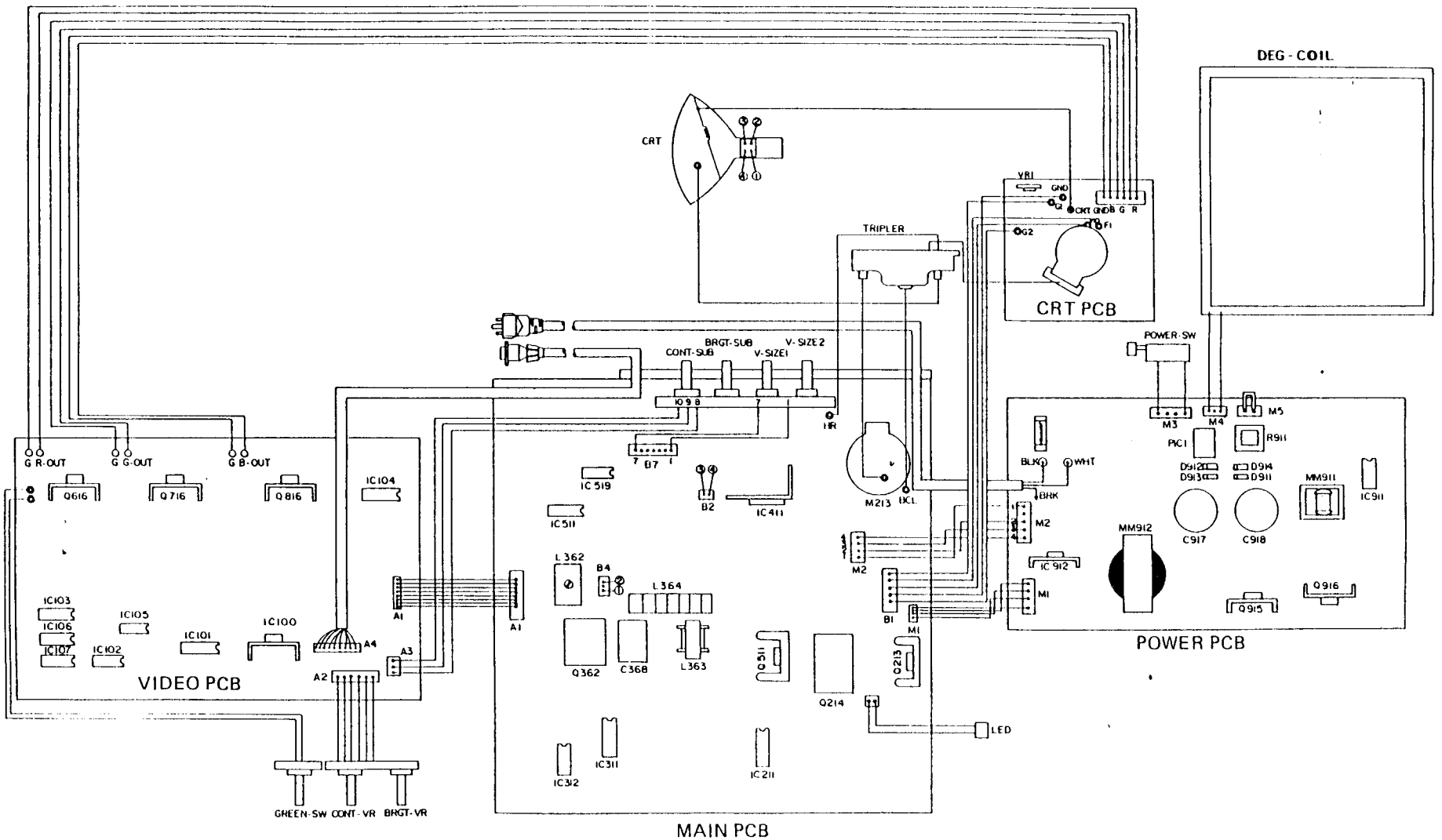

VERTICAL LINE ON RASTER
Does 12V appear at Pin 1, 2 of IC311 and at L366?
YES
NO
Do drive pulses (10Vp-p) appear at Pin 3 of IC311 ?
• Check power supply circuits.
• Replace IC912.
YES
NO
Replace IC311, or check its related circuits.
Check flyback pulse (700Vp-p) at the collector of Q362.
If not, replace Q362, Q511, L363 or check its related circuits.


HORIZONTAL LINE ON RASTER
Does 20V appear on R434 ?
YES
NO
Check power supply circuits related 20V.
Does output pulse of 20Vp-p appear at Pin 6 of IC411 ?
YES
NO
Replace IC411 (TDA2653), or check its related circuits.
Check CRT PCB circuits.



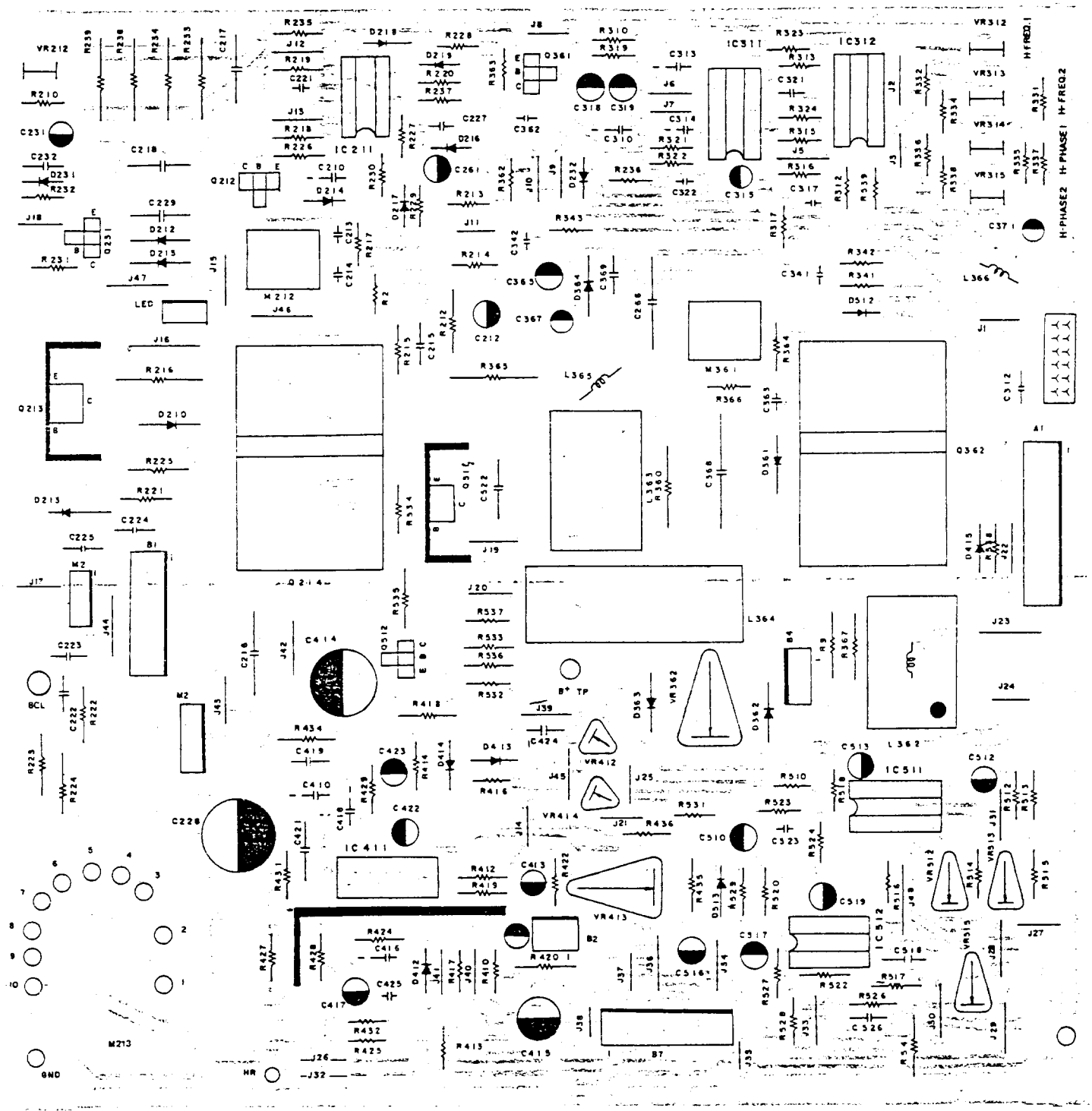
NOTE: If color purity is not normal, manual degauss should be done by mandatory method using the manual degaussing coil before inspecting.

WIRING DIAGRAM AND PARTS LOCATION

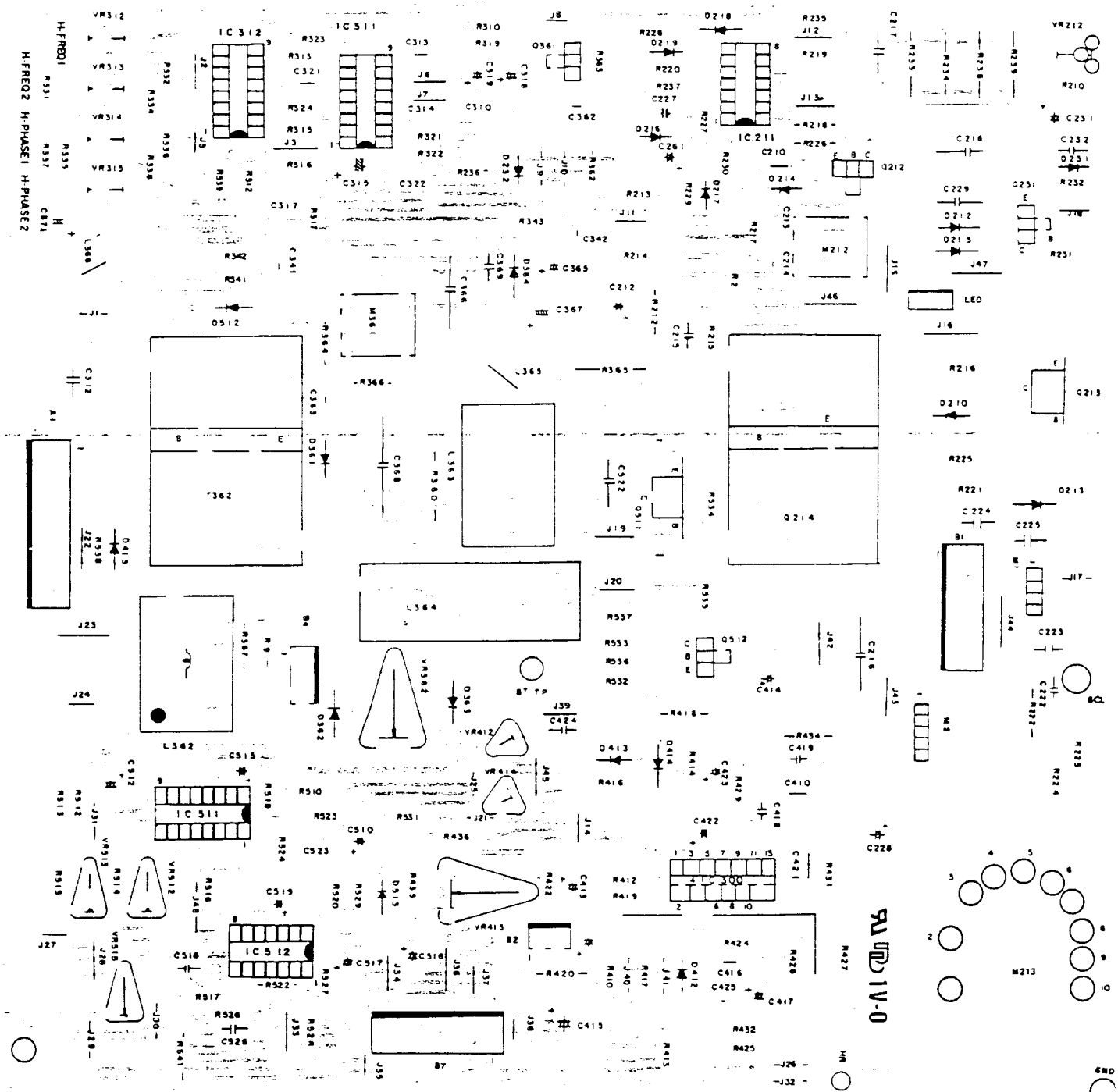


PRINTED CIRCUIT BOARD(Top and Botton Views)

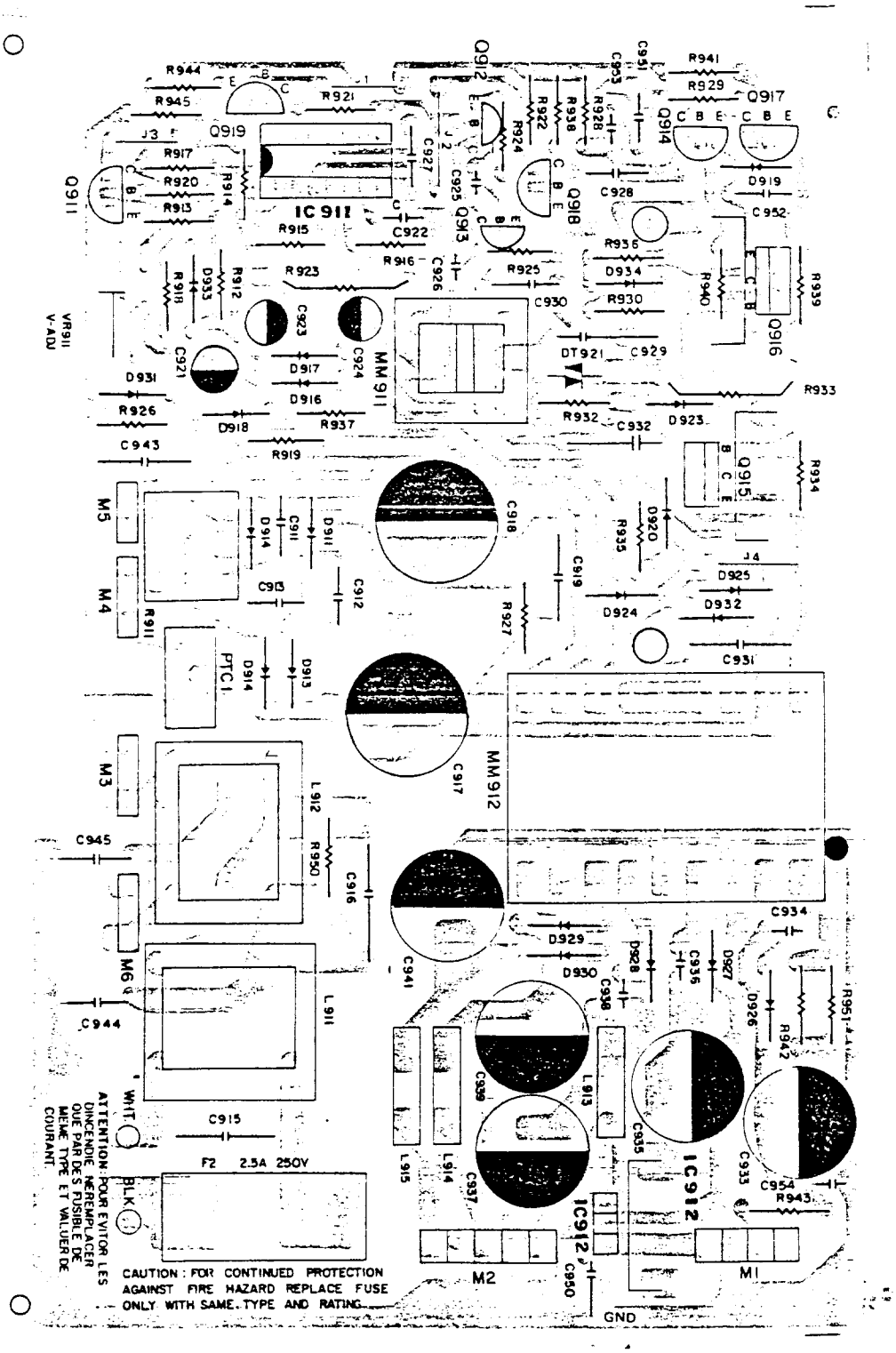
Main PCB (Top View)



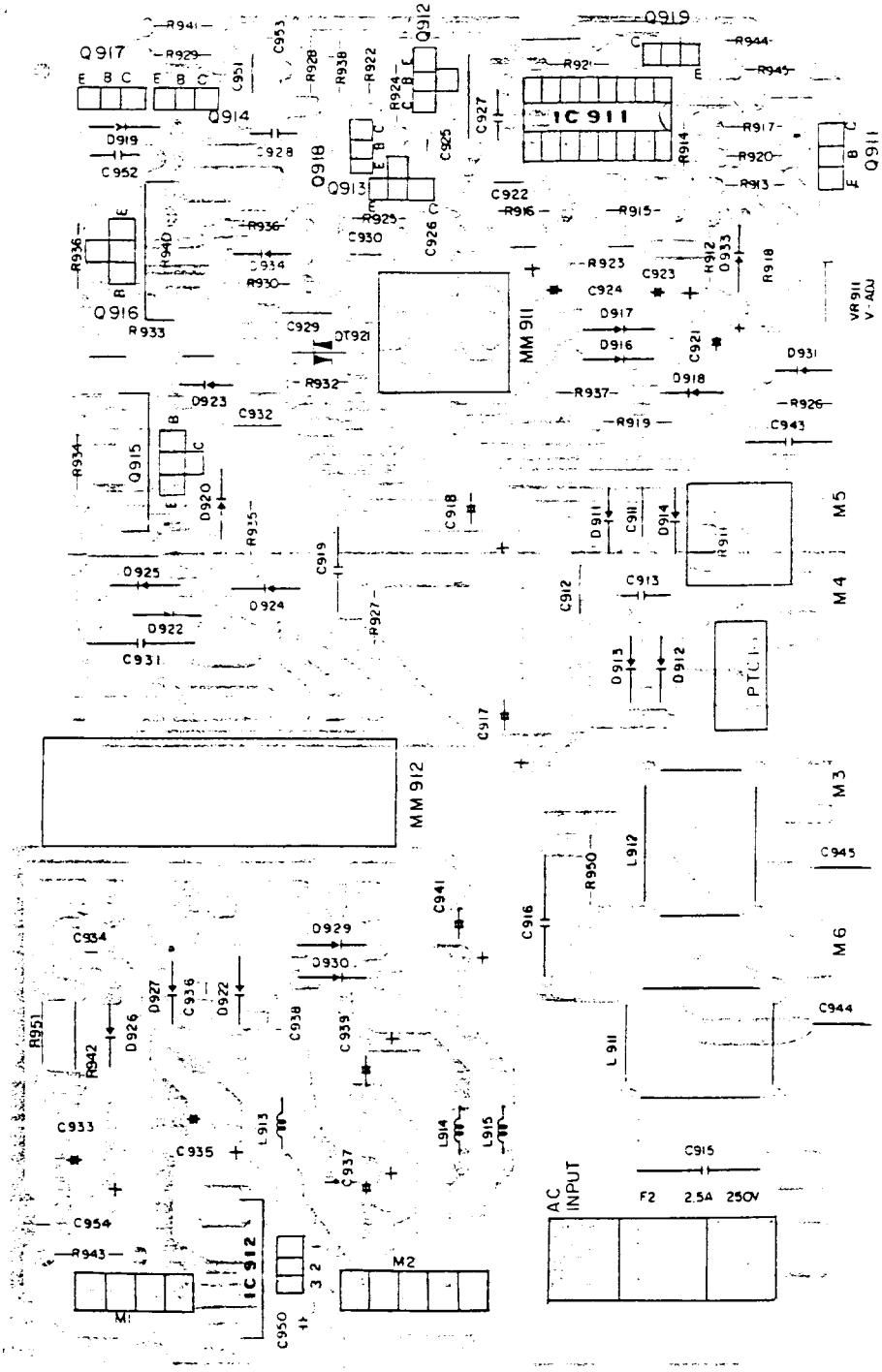
Main PCB (Bottom View)



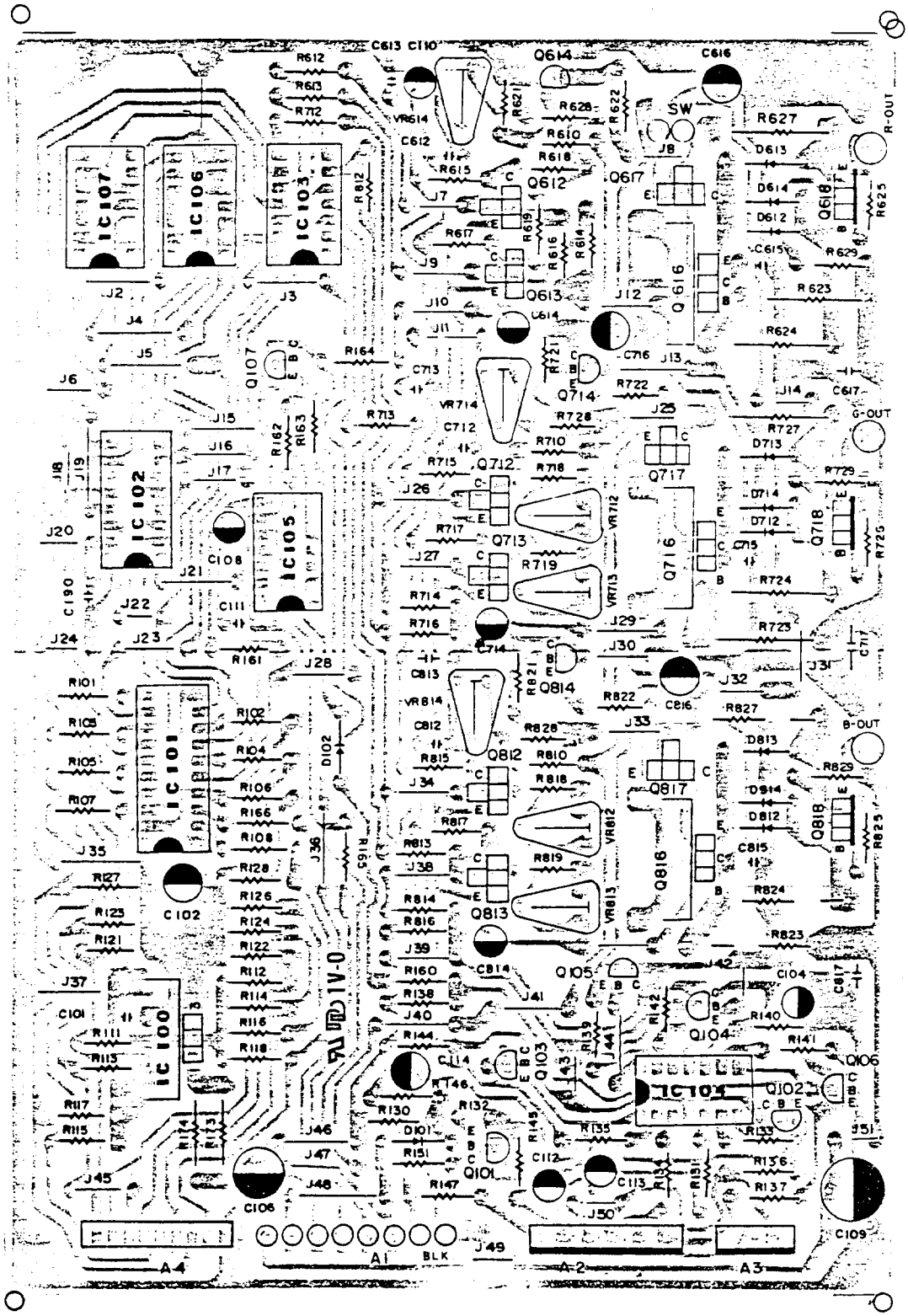
Power PCB (Top View)



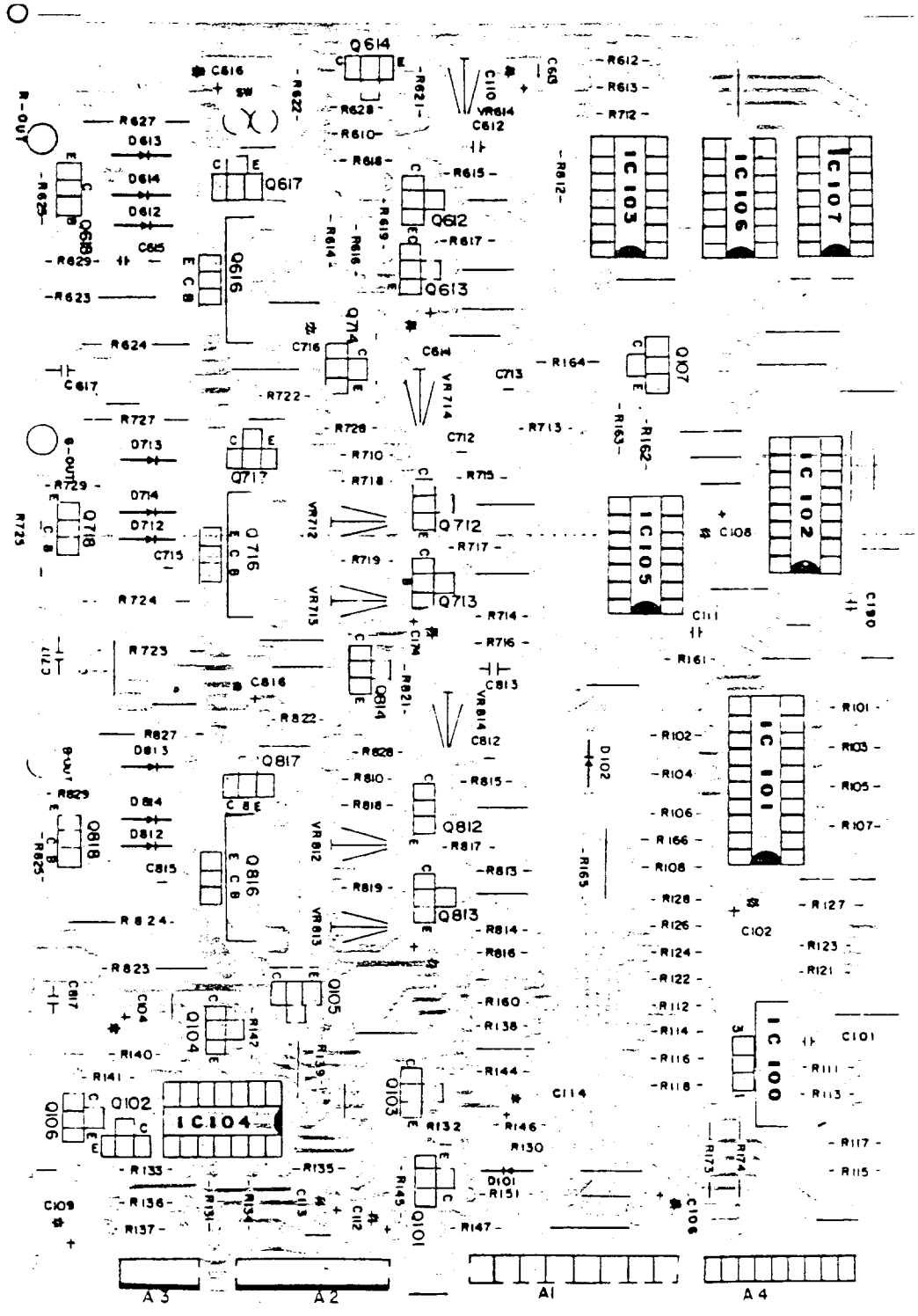
Power PCB (Bottom View)



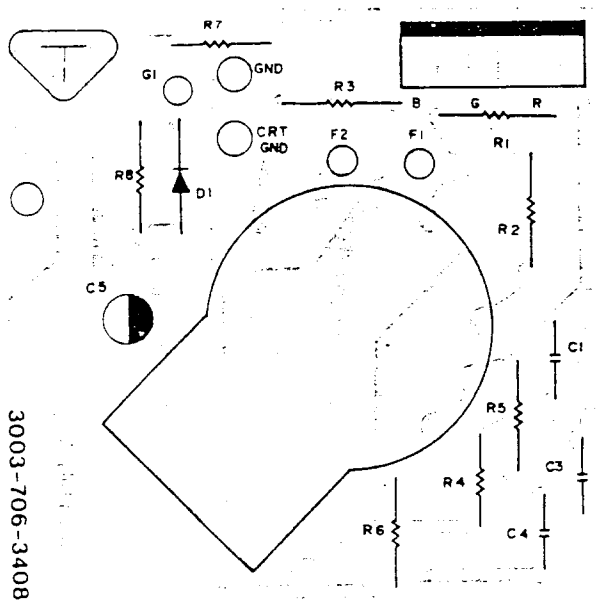
Video PCB (Top View)



Video PCB (Bottom View)



CRT Socket PCB (Top View)



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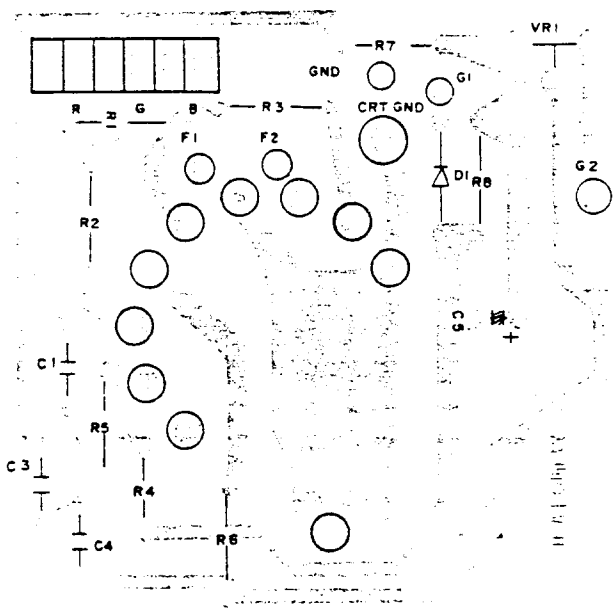
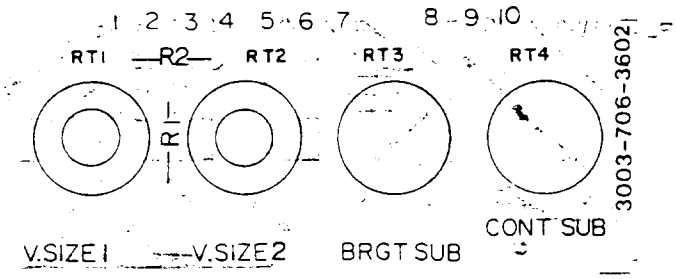
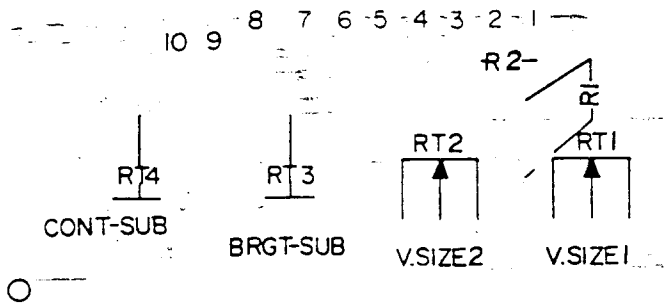
CRT Socket PCB (Bottom View)



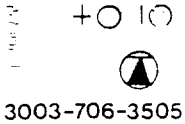
Rear PCB (Top View)



Rear PCB (Bottom View)

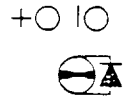


LED PCB (Top View)

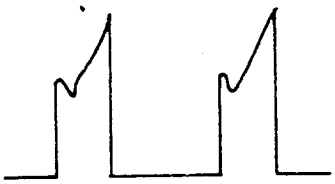


3003-706-3505

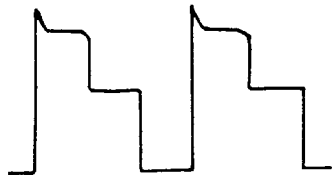
LED PCB (Bottom View)



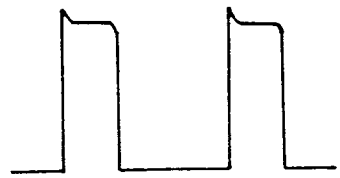
WAVEFORMS



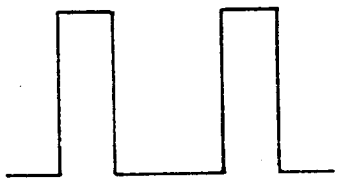
① 50Vp-p



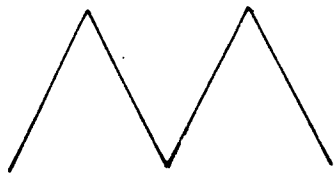
② 370Vp-p



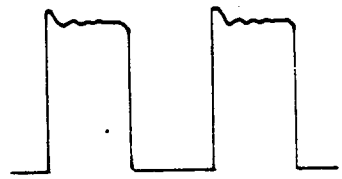
③ 12Vp-p



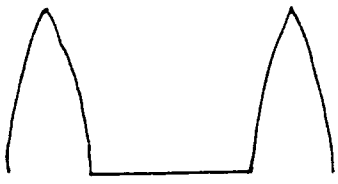
④ 5Vp-p



⑤ 3.5Vp-p



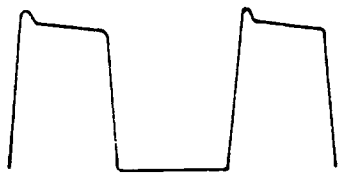
⑥ 25Vp-p



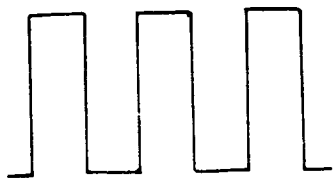
⑦ 700Vp-p

⑧ 2.5Vp-p

⑨ 5.5Vp-p

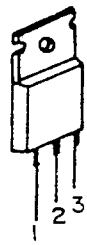
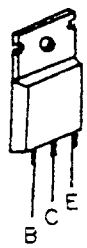
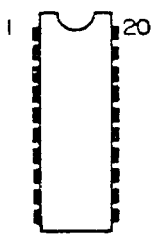
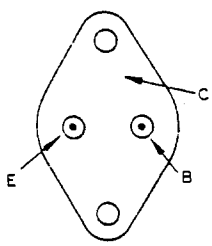
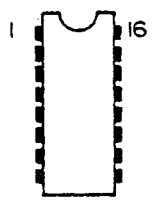
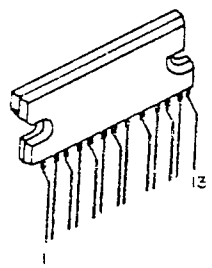
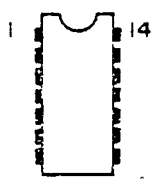


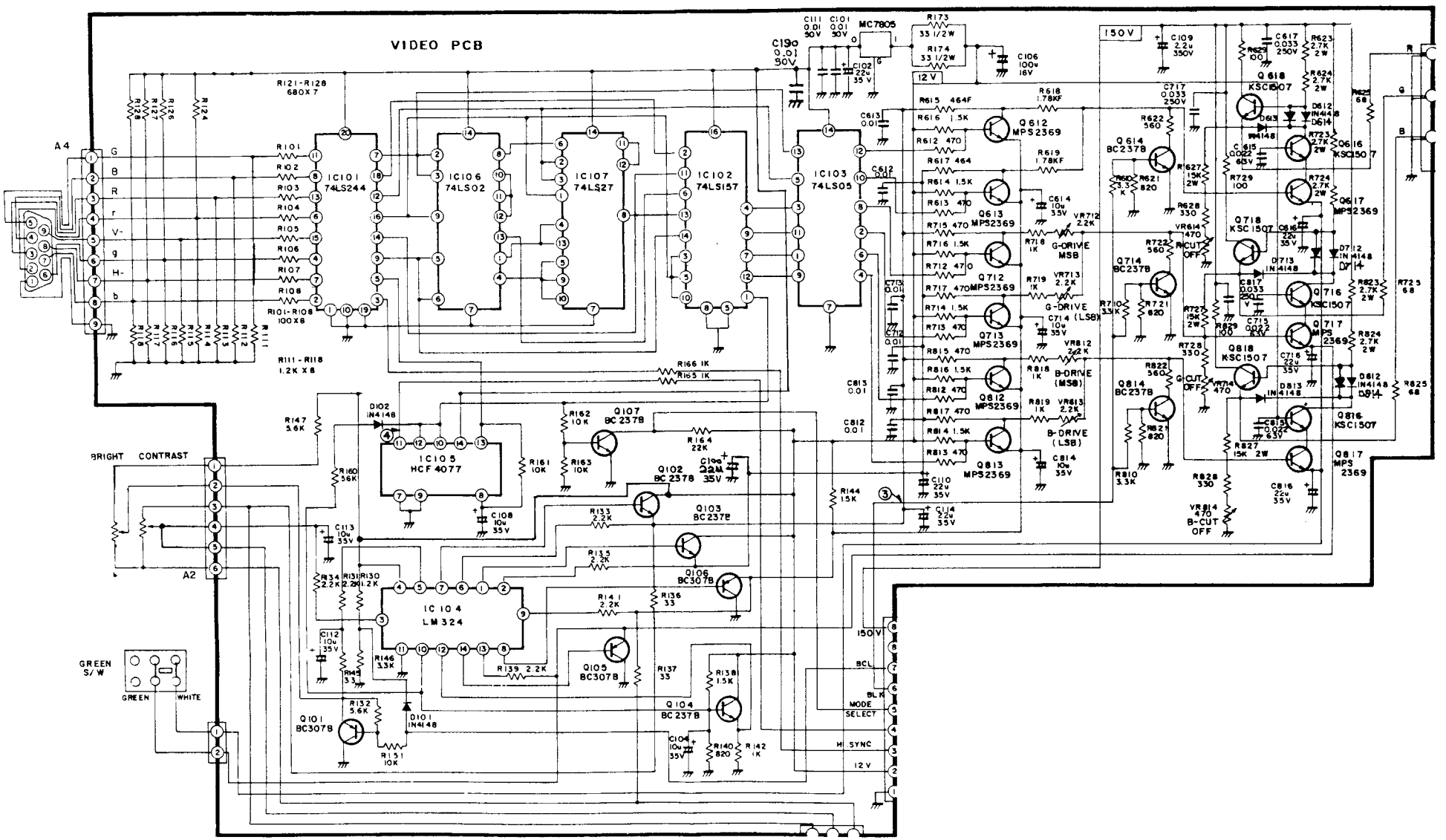
⑩ 700Vp-p

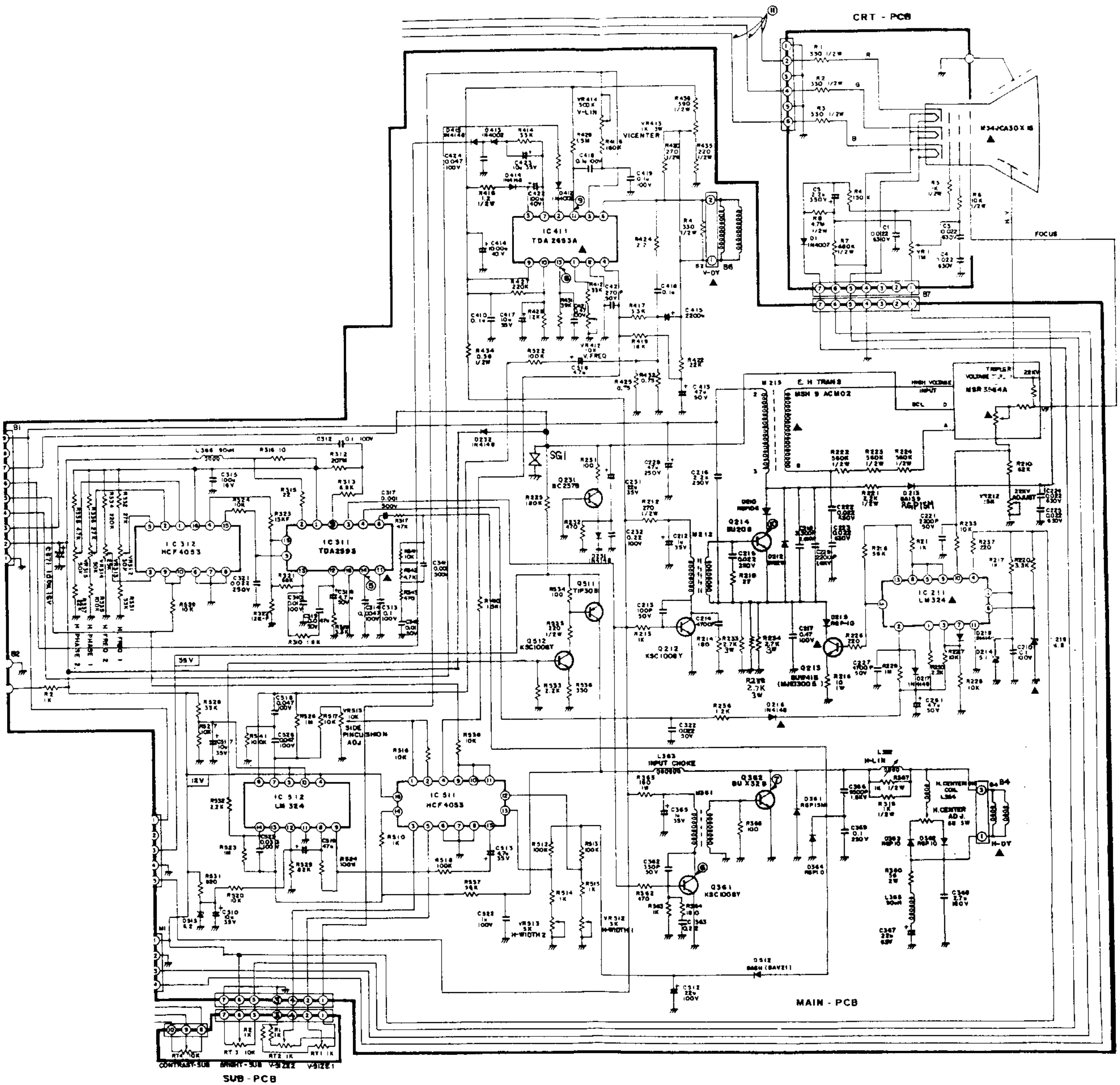


⑪ 40Vp-p

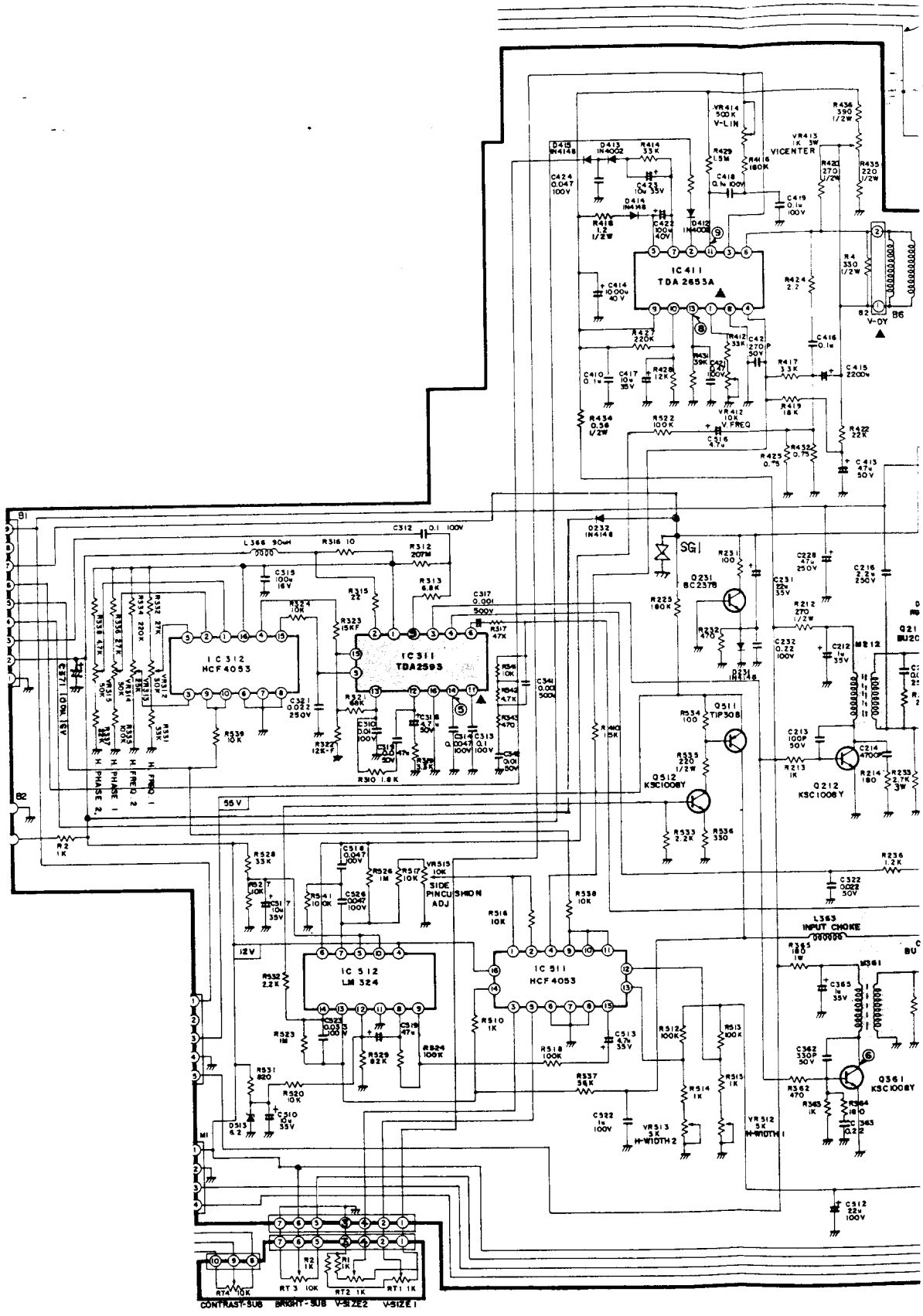
SEMICONDUCTOR LEAD IDENTIFICATION

PARTS	DESCRIPTION	REF. NO.	PARTS	DESCRIPTION	REF. NO.
	BC307B BC237B	Q919, Q917, Q105 Q106, Q101 Q911, Q918, Q914 Q107, Q614, Q714 Q814, Q103, Q102 Q104, Q231		MPS2369	Q617, Q717, Q612, Q613, Q713, Q812, Q817 Q712 Q813
	KSC1008-Y	Q912, Q913 Q512, Q212, Q361		MC7805CT MC7812CT	IC100 IC912
	MJE13005 TIP30B KSC1507-O	Q213, Q916, Q915 Q511 Q616, Q716, Q816 Q618, Q718, Q818		SN74LS244N	IC101
	BUX32B BU208	Q362 Q214		SN74LS157N CA3524E HCF4053BE/ HEF4053B TDA2593	IC102 IC911 IC511, IC312 IC311
	TDA2653A	IC411		SN74LS27N SN74LS02N SN74LS05N HCF4077BE LM324N	IC107 IC106 IC103 IC105 IC104, IC512 IC211

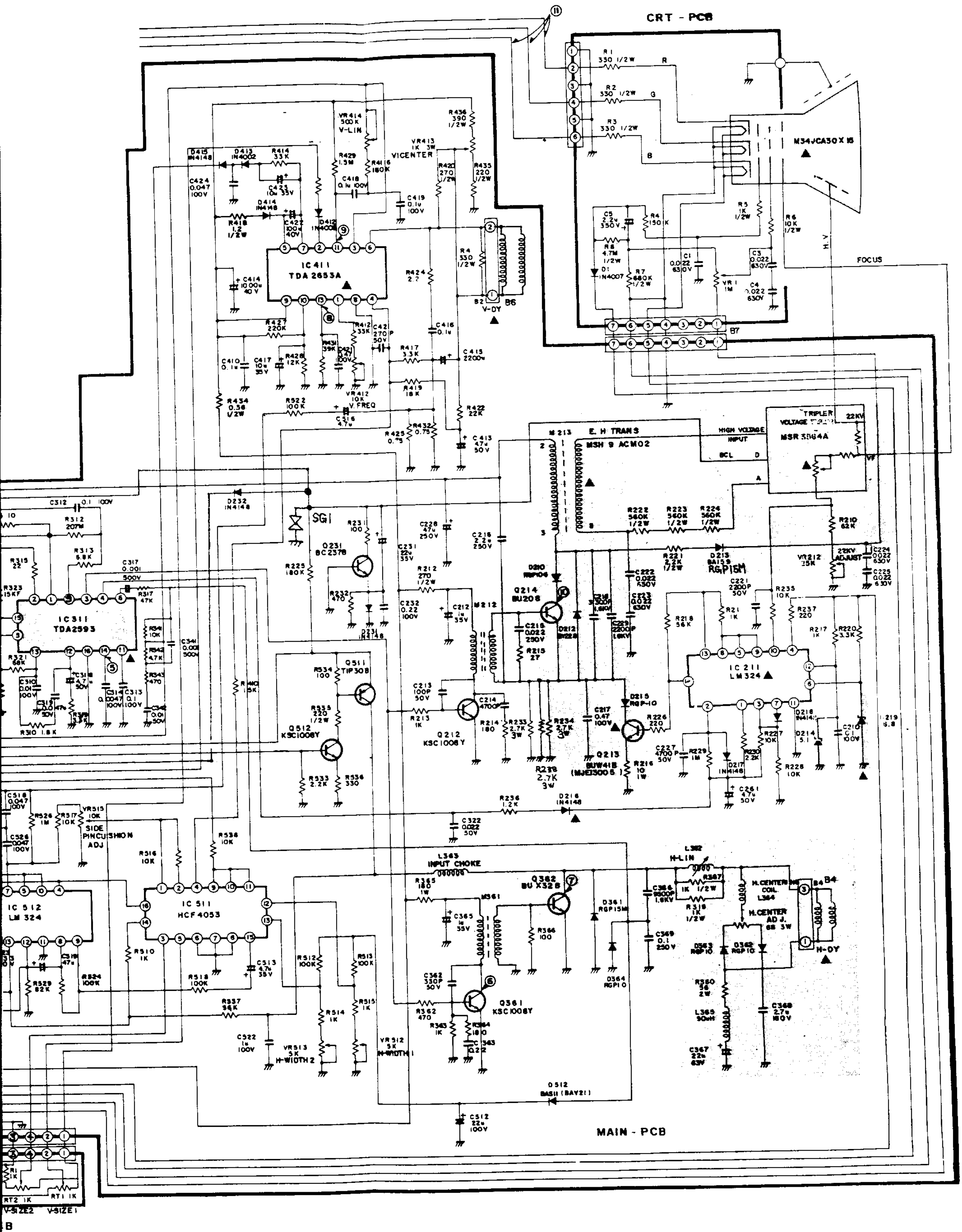

VIDEO PCB
A4
A2
G
B
R
r
V-
g
H-
b
R101-R108
100X8
R121-R128
680X7
R111-R118
1.2K X8
IC101
74LS244
IC106
74LS02
IC107
74LS27
IC102
74LS157
IC103
74LS05
IC105
HCF 4077
IC104
LM324
MC7805
C190
0.01
50V
C111
0.01
50V
C101
0.01
50V
C102
22u
35 V
C106
100u
16V
R173
33 1/2W
R174
33 1/2W
12 V
150V
C109
2.2u
350V
R166 1K
R165 1K
BRIGHT
CONTRAST
GREEN
S/W
GREEN
WHITE
D102
IN4148
D101
IN4148
Q101
BC307B
Q102
BC 2378
Q103
BC 2378
Q104
BC 2378
Q105
BC307B
Q106
BC307B
Q107
BC 2378
Q612
MPS2369
Q613
MPS2369
Q712
MPS2369
Q713
MPS2369
Q812
MPS2369
Q813
MPS2369
G-DRIVE
MSB
G-DRIVE
(LSB)
B-DRIVE
(MSB)
B-DRIVE
(LSB)
Q614
BC2378
Q714
BC2378
Q814
BC2378
Q618
KSC1507
Q616
KSC1507
Q718
KSC1507
Q716
KSC1507
Q818
KSC1507
Q816
KSC1507
Q617
MPS2369
Q717
MPS
2369
Q817
MPS
2369
R-CUT
OFF
G-CUT
OFF
B-CUT
OFF
VR814
470
B-CUT
OFF
150V
BCL
BLK
MODE
SELECT
H. SYNC
12V



CRT - PCB
FOCUS
IC411
TDA2653A
V-DY
IC312
HCF4053
IC311
TDA2593
E. H TRANS
IC211
LM324
IC512
LM324
IC511
HCF4053
INPUT CHOKE
H-DY
MAIN - PCB
SUB - PCB
CONTRAST-SUB
BRIGHT-SUB
V-SIZE2
V-SIZE1


IC 411
TDA 2653A
IC 311
TDA2593
IC 312
HCF4053
IC 511
HCF4053
IC 512
LM 324
Q231
BC 237B
Q511
TIP30B
Q512
KSC1008Y
Q212
KSC1008Y
Q361
KSC1008Y
VR414
500K
V-LIN
VR415
1K 3W
VICENTER
VR412
10K
V FREQ
VR513
3K
H-WIDTH 2
VR512
3K
H-WIDTH 1
VR511
10K
SIDE PINCUSHION
ADJ
L363
INPUT CHOKE
V-DY
SG1
55V
12V
H PHASE 2
H PHASE 1
H FREQ 2
H FREQ 1
CONTRAST-SUB
BRIGHT-SUB
V-SIZE2
V-SIZE1
RT4 10K
RT3 10K
RT2 1K
RT1 1K

SUB - PCB



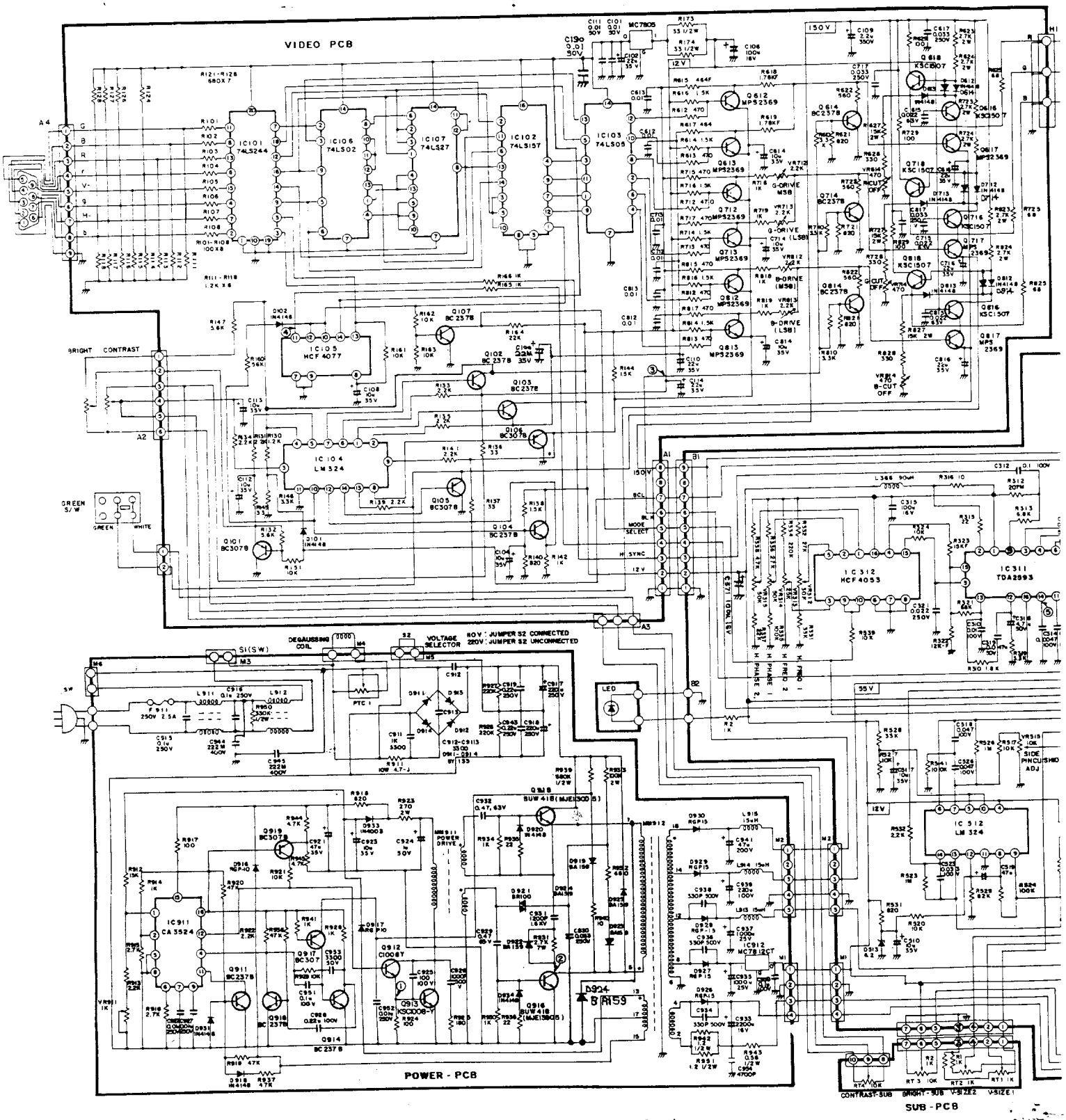
CRT - PCB
M34JCA30X 16
FOCUS
H.V
IC411
TDA 2653A
V-DY
B6
B7
VR414 500K V-LIN
VR413 1K 3W V/CENTER
VR412 10K V.FREQ
IC311
TDA2593
SG1
Q231 BC237B
Q511 TIP30B
Q512 KSC1008Y
Q212 KSC1008Y
Q214 BU208
Q213 BUW41B (MJE13005)
M213 E.H TRANS
MSH 9 ACM02
TRIPLER
HIGH VOLTAGE INPUT
MSR 3864A
22KV
22KV ADJUST
VR212 25K
IC211 LM324
VR515 10K SIDE PINCUSHION ADJ
IC512 LM324
IC511 HCF4053
L363 INPUT CHOKE
Q362 BU X32 B
Q361 KSC1008Y
L362 H-LIN
H.CENTERING COIL L364
H.CENTER ADJ. 68 3W
H-DY
B4
VR513 5K H-WIDTH 2
VR512 5K H-WIDTH 1
D512 BA511 (BAY21)
MAIN - PCB
RT2 1K
RT1 1K
V-SIZE2
V-SIZE1

SCHEMATIC DIAGRAM

Catalog Number:

WARNING: THIS MONITOR CONTAINS SAFETY CRITICAL COMPONENTS. ALL PARTS SHOWN IN THE SHADED AREAS OF THE SCHEMATIC ARE SAFETY CRITICAL. FOR CONTINUED SAFETY, REPLACE SAFETY CRITICAL COMPONENTS ONLY WITH MANUFACTURER'S RECOMMENDED PARTS. REFER TO PARTS LIST FOR EXACT REPLACEMENTS.

AVERTISSEMENT: CE RECEPTEUR EST EQUIPE DE COMPOSANTS CRITIQUES POUR LA SECURITE. TOUTES LES PIECES INDIQUEES DANS LES ZONES OMBREES DU SCHEMA SONT CRITIQUES POUR LA SECURITE POUR MAINTENIR LE DEGRE DE SECURITE DE L'APPAREIL, NE REMPLACER LES COMPOSANTS DONT LE FONCTIONNEMENT EST POUR LA SECURITE QUE PAR DES PIECES RECOMMANDEES PAR LE FABRICANT. CONSULTER LA NOMENCLATURE DES PIECES POUR TROUVER LES PIECES DE RECHANGE EXACTES.



SCHEMATIC DIAGRAM

ISSEMENT " CE RECEPTEUR EST EQUIPE DE COMPOSANTS
POUR LA SECURITE TOUTES LES PIECES INDIQUEES DANS
S OMBREES OU SCHEMA SONT CRITIQUES POUR LA SECURITE
NTENIR LE DEGRE DE SECURITE DE L'APPAREIL NE
R LES COMPOSANTS DONT LE FONCTIONNEMENT EST POUR
ITE QUE PAR DES PIECES RECOMMANDEES PAR LE
T CONSULTER LA NOMENCLATURE DES PIECES POUR
LES PIECES DE RECHANGE EXACTES. "

NOTES

1. RESISTOR VALUES ARE IN(OHM) Ω, K=1,000Ω M=1,000,000Ω
2. ALL RESISTORS ARE 1/4W EXCEPT WHERE OTHERWISE INDICATED.
3. ALL CAPACITORS ARE 50V EXCEPT WHERE OTHERWISE INDICATED.
4. CAPACITORS VALUES ARE uF UNLESS OTHERWISE INDICATED U=uF=10^-6 F
5. THIS SCHEMATIC DIAGRAM IS SUBJECT TO CHANGE WITHOUT NOTICE FOR FURTHER IMPROVEMENT.

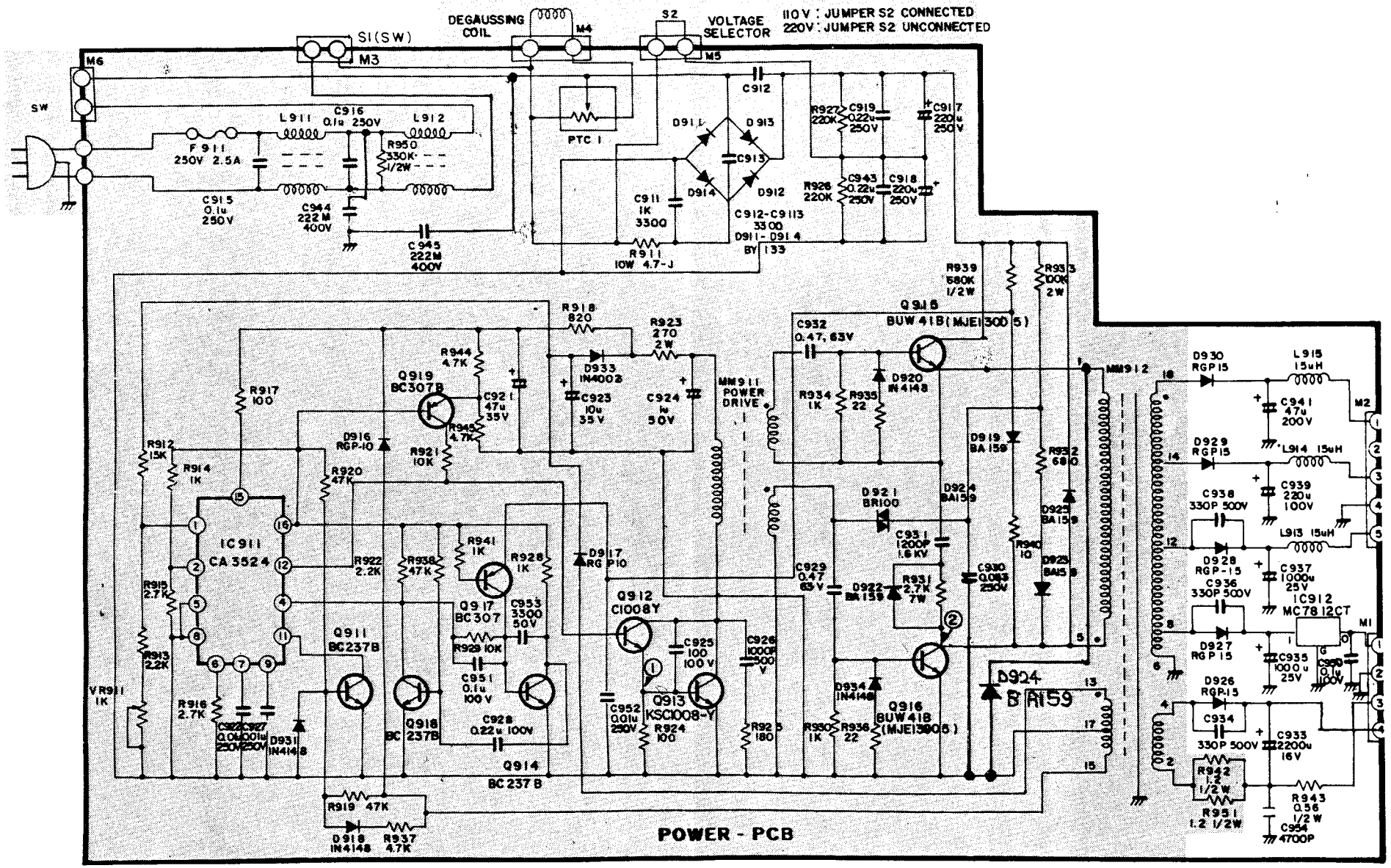
SHADED COMPONENTS : SAFETY RELATED PARTS.

▲MARK : X-RAY RELATED PARTS.

CRT - PCB

MAIN - PCB

SUB - PCB


110V : JUMPER S2 CONNECTED
220V : JUMPER S2 UNCONNECTED
DEGAUSSING COIL
S1(SW)
S2
VOLTAGE SELECTOR
M1
M2
M3
M4
M5
M6
SW
F911 250V 2.5A
L911
L912
C916 0.1u 250V
R950 330K 1/2W
C915 0.1u 250V
C944 222M 400V
C945 222M 400V
PTC 1
D911
D912
D913
D914
C912
C913
C911 1K 3300
C912-C913 3300
D911-D914 BY133
R911 10W 4.7-J
R927 220K
C919 0.22u 250V
C917 220u 250V
R926 220K
C943 0.22u 250V
C918 220u 250V
R939 680K 1/2W
R933 100K 2W
Q915 BUW41B(MJE13005)
R918 820
R923 270 2W
D933 IN4002
C923 10u 35V
C924 1u 50V
C932 0.47, 63V
D920 IN4148
R934 1K
R935 22
MM911 POWER DRIVE
MM912
R944 4.7K
Q919 BC307B
C921 47u 35V
R945 4.7K
R917 100
D916 RGP-10
R921 10K
R912 15K
R914 1K
R920 47K
IC911 CA3524
R922 2.2K
R938 47K
R941 1K
R928 1K
D917 RGP10
Q917 BC307
C953 3300 50V
R929 10K
C951 0.1u 100V
Q911 BC237B
Q918 BC237B
C928 0.22u 100V
Q914 BC237B
R919 47K
D918 IN4148
R937 4.7K
R915 2.7K
R913 2.2K
VR911 1K
R916 2.7K
C926 C927 0.04 0.01u 250V 250V
D931 IN4148
Q912 C1008Y
C925 100 100V
C952 0.01u 250V
Q913 KSC1008-Y
R924 100
R925 180
C926 1000P 500V
C929 0.47 63V
C930 0.033 250V
D921 BR100
C931 1200P 1.6KV
D922 BA159
R931 2.7K 7W
D924 BA159
D925 BA159
R940 10
D919 BA159
R932 680
D934 IN4148
R930 1K
R936 22
Q916 BUW41B (MJE13005)
D924 BA159
D930 RGP15
L915 15uH
C941 47u 200V
D929 RGP15
L914 15uH
C938 330P 500V
C939 220u 100V
D928 RGP-15
L913 15uH
C937 1000u 25V
C936 330P 500V
IC912 MC78 12CT
D927 RGP15
C935 1000u 25V
C950 0.1u 100V
D926 RGP-15
C934 330P 500V
C933 2200u 16V
R942 1.2 1/2W
R951 1.2 1/2W
R943 0.56 1/2W
C954 4700P
POWER - PCB

SCHEMATIC DIAGRAM

Catalog Number:

WARNING: THIS MONITOR CONTAINS SAFETY CRITICAL COMPONENTS. ALL PARTS SHOWN IN THE SHADED AREAS OF THE SCHEMATIC ARE SAFETY CRITICAL. FOR CONTINUED SAFETY REPLACE SAFETY CRITICAL COMPONENTS ONLY WITH MANUFACTURER'S RECOMMENDED PARTS. REFER TO PARTS LIST FOR EXACT PART REPLACEMENTS.

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NOTES:
1. RESISTOR VALUES ARE IN OHMS (Ω, K=1000Ω, M=1000000Ω)
2. ALL RESISTORS ARE 1/4W EXCEPT WHERE OTHERWISE INDICATED.
3. ALL CAPACITORS ARE 50V EXCEPT WHERE OTHERWISE INDICATED.
4. CAPACITORS VALUES ARE UF UNLESS OTHERWISE INDICATED (UF=MFD).
5. THIS SCHEMATIC DIAGRAM IS SUBJECT TO CHANGE WITHOUT NOTICE FOR FURTHER IMPROVEMENT.

SHADED COMPONENTS: SAFETY RELATED PARTS

⚠MARK: X-RAY RELATED PARTS